APPENDIX C2

CALCULATION OF RESIDUAL RISK NON-TIDAL WETLAND AREAS OUTSIDE THE CONTAINMENT BARRIER

Mare Island, Vallejo, California

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SECTION 1
INTRODUCTION

This appendix presents the human health and ecological residual risk evaluation for the Non-Tidal Wetland Areas of Investigation Area H1 (IA-H1) of the former Mare Island Naval Shipyard (MINS). A baseline human health risk assessment (HHRA) and baseline ecological risk assessment (ERA) were prepared for soil, sediment, groundwater, and surface water in the Non-Tidal Wetland Areas of IA-H1 and are included in the Revised Final Remedial Investigation (RI) for IA-H1 (Weston Solutions, Inc. [WESTON], 2006). The HHRA characterized potential cancer risks and the potential adverse noncancer health effects associated with chemicals present in sediment, soil, groundwater, and surface water present in IA-H1 if no additional remedial action had been taken (baseline risk assessment). The baseline ERA risk estimation integrates the information from the problem formulation and the exposure and ecological effects characterizations to estimate the nature and extent of potential ecological risk.

This residual risk evaluation re-evaluates the potential human health cancer risks, potential adverse noncancer health effects to humans, and ecological risk associated with chemicals present at the Non-Tidal Wetland Areas after a proposed remedial action alternative is conducted at IA-H1. Both current and future exposure scenarios were evaluated. The 0- to 2-feet below ground surface (bgs) soil zone was used to represent current soil conditions. The 0- to 10-feet bgs mixed soil zone was used to represent future soil conditions.

It should be noted that an outlier study was conducted on the data set for the Non-Tidal Wetland Areas prior to calculation of the cancer risks, noncancer adverse health effects, and ecological risks. Outlier chemical concentrations were excluded from the baseline HHRA and baseline ERA presented in the Revised Final RI (WESTON, 2006). The outlier chemical concentrations that were not determined to present a risk to human or ecological receptors, and are not included as areas of remediation under the various alternatives, have been included in the data set for the residual risk calculations. Two additional sample locations (WETBSD033 and WETBSD053) were included as hot spots requiring remediation for Alternative 5 based on conversations with the agencies on 19 April 2006. These locations are not included in the Alternative 5 data set for residual risk calculations.

This Feasibility Study (FS) evaluates five alternatives for the Non-Tidal Wetland Areas:

- Alternative 1—No Action
- Alternative 2—Institutional Controls, Hot Spot Removal (Hazard Quotient [HQ]=10), and Monitoring
- Alternative 3—Institutional Controls, Hot Spot Removal (HQ=5), and Monitoring
- Alternative 4—Institutional Controls, Hot Spot Removal (HQ=3), and Monitoring
- Alternative 5—Institutional Controls, Hot Spot Removal (HQ=1), and Monitoring

The following sections summarize the residual risk for each of the five Non-Tidal Wetland Areas alternatives.

SECTION 2
NON-TIDAL WETLAND AREAS ALTERNATIVE 1

The "No Action" alternative implies that no remedial action would be undertaken within the Non-Tidal Wetland Areas of IA-H1. Outlier chemical concentrations were excluded from the baseline HHRA and baseline ERA presented in the Revised Final IA-H1 RI (WESTON, 2006). Thus, the residual risk at the Non-Tidal Wetland Areas of IA-H1 under the "No Action" alternative (which means that outliers would remain) would be greater than the risk estimates presented in the HHRA and ERA for all receptors and exposure pathways.

SECTION 3
NON-TIDAL WETLAND AREAS ALTERNATIVE 2

Non-Tidal Wetland Areas Alternative 2 includes institutional controls to be placed on the property to prohibit the development of the land for unauthorized uses; excavation of all hot spots including areas that exceed a human health cancer risk estimate of $1x10^{-4}$, a human health hazard index (HI) of 1 for noncancer adverse health effects, an ecological HQ of 10, threats to groundwater, and locations exhibiting visible oil or free product; and wetland monitoring.

3.1 CURRENT EXPOSURE SCENARIO

The current exposure scenario evaluated soil and sediment at depths of 0 to 2 feet bgs within the Non-Tidal Wetland Areas of IA-H1. The data set that was evaluated in the HHRA and baseline ERA was modified for this residual risk evaluation to remove data from hot spot sample locations. The exposure point concentrations (EPCs) were recalculated for chemicals of concern (COCs) prior to implementation of a remedial alternative. Consistent with United States Environmental Protection Agency (EPA) guidelines, the EPCs used are the lesser of the maximum detected concentration and the upper confidence limit (UCL) of the mean. The revised analytical data set and the EPA ProUCL Software Version 3.0 were used to estimate the UCL for each chemical at each exposure point. A summary of revised EPCs are provided in Table C2-1a.

3.1.1 Total Risk for Recreational User

The revised noncancer HQ estimates and cancer risk estimates are included in Tables C2-1b and C2-1c for the child recreational user. Table C2-1d presents total risk across all media at IA-H1 for the child recreational user. As shown in Table C2-1d, the total reasonable maximum exposure (RME) lifetime excess cancer risk estimate to a recreational user for all exposure media (i.e., sediment, soil, groundwater, and surface water) after removal of hot spots for Alternative 2 is $8.4x10^{-5}$. The total lifetime excess cancer risk estimate for exposure to the remaining soil and sediment contaminants within the 0 to 2 feet bgs zone is $6.4x10^{-5}$ after hot spot removal. The only remaining chemical exhibiting a cancer risk estimate greater than $1x10^{-5}$ is arsenic. The calculated EPC for arsenic is 22 milligrams per kilogram (mg/kg), which is a lower concentration than the 95th percentile ambient/background concentration of 36 mg/kg. The cancer risk estimate for exposure to arsenic is $6.3x10^{-5}$, which is slightly higher than the

ambient/background cancer risk estimate for arsenic of $4.2x10^{-5}$ (based on the 95 percent upper confidence limit [95UCL] average concentration). Exposure to arsenic accounts for 98 percent of the total cancer risk estimate for exposure to soil. When exposure to arsenic is excluded from the total risk estimate for sediment, the total risk estimate for the remaining contaminants is $1.4x10^{-6}$ as presented in Table C2-1e. Table C2-1e also presents a comparison of total baseline risk estimates for soil to risk estimates after hot spot removal for Alternative 2. The estimated HI is equal to 0.3 for combined sediment, groundwater, and surface water exposure. The estimated HI for soil exposure is equal to 0.20. No individual chemical or target organ HI exceeded 1. Table C2-1f presents a comparison of EPCs, cancer risk estimates, and noncancer HQ values for soil for the baseline risk assessment and the residual risk evaluation for Alternative 2. Only the chemicals identified as outlier chemicals or chemicals that presented a risk to human or ecological receptors are included in this comparison.

3.1.2 Ecological Risk

The residual ecological baseline risk analysis indicates that exposure to benzo(a)pyrene, polychlorinated biphenyls (PCBs), antimony, arsenic, barium, cadmium, chromium, copper, lead, manganese, mercury, nickel, tin, vanadium, and zinc in the Non-Tidal Wetland Areas sediment pose a risk to Non-Tidal Wetland Areas receptors (i.e., gray fox, northern harrier, mallard [breeding and non-breeding], great blue heron, killdeer, and the salt marsh harvest mouse). The summary of HQ values based on the low and high toxicity reference values (TRVs) are presented in Tables C2-1g through C2-1m for the Non-Tidal Wetland Areas receptors. Table C2-1n presents a summary of HQ values for all Non-Tidal Wetland Areas receptors based on both the low and high TRV values.

Lead in sediment presents a potential risk to the northern harrier and mallard (non-breeding) based on the low TRV. Lead and manganese in sediment present a potential risk to the mallard (breeding) based on the low TRV. Lead and PCBs in sediment present a potential risk to the great blue heron based on the low TRV. No chemicals in sediment present a significant or immediate risk (a HQ greater than 1 based on the high TRV) to the gray fox, northern harrier, mallard, or the great blue heron. There is a potential risk to the killdeer exposed to barium, cadmium, copper, lead, mercury, nickel, zinc, benzo(a)pyrene, and PCBs in sediment and a significant or immediate risk to the killdeer exposed to chromium and manganese in sediment.

There is an immediate or significant risk (a HQ greater than 1 based on the low TRV) to the salt marsh harvest mouse exposed to antimony, arsenic, cadmium, copper, lead, manganese, nickel, tin, vanadium, and zinc in sediment.

While antimony, arsenic, barium, cadmium, chromium, manganese, mercury, nickel, vanadium, and zinc in sediment in the Non-Tidal Wetland Areas do pose an ecological risk, these contaminants may be present at ambient levels.

3.2 FUTURE EXPOSURE SCENARIO

The future exposure scenario evaluated soil at depths of 0 to 10 feet bgs within the Non-Tidal Wetland Areas of IA-H1 for both a child recreational user and an adult construction worker. The data set that was evaluated in the HHRA and baseline ERA was modified for this residual risk evaluation to remove data from hot spot sample locations. The EPCs were recalculated for COCs prior to implementation of a remedial alternative. Consistent with EPA guidelines, the EPCs used are the lesser of the maximum detected concentration and the UCL of the mean. The revised analytical data set and the EPA ProUCL Software Version 3.0 were used to estimate the UCL for each chemical at each exposure point. A summary of revised EPCs are provided in Table C2-2a.

3.2.1 Total Risk for Recreational User

The revised noncancer HQ estimates and cancer risk estimates are included in Tables C2-2b and C2-2d for the child recreational user. Table C2-2f presents total risk across all media at IA H1 for the child recreational user. As shown in Table C2-2f, the total RME lifetime excess cancer risk estimate to a recreational user for all exposure media (i.e., sediment, soil, groundwater, and surface water) after removal of hot spots for Alternative 2 is $8.4x10^{-5}$. The total lifetime excess cancer risk estimate for exposure to the remaining soil and sediment contaminants within the 0 to 10 feet bgs zone is $6.4x10^{-5}$ after hot spot removal. The only remaining chemical exhibiting a cancer risk estimate greater than $1x10^{-5}$ is arsenic. The calculated EPC for arsenic is 21.5 mg/kg, which is a lower concentration than the 95th percentile ambient/background concentration of 36 mg/kg. The cancer risk estimate for exposure to arsenic is $6.1x10^{-5}$, which is slightly higher than the ambient/background cancer risk estimate for arsenic of $4.2\ x10^{-5}$ (based on the 95UCL average concentration). Exposure to arsenic accounts for 96 percent of the total cancer risk

estimate for exposure to soil. When exposure to arsenic is excluded from the total risk estimate for sediment, the total risk estimate for the remaining contaminants is $2.8x10^{-6}$ as presented in Table C2-2h. Table C2-2h also presents a comparison of total baseline risk estimates for soil to risk estimates after hot spot removal for Alternative 2. The estimated HI is equal to 0.33 for combined sediment, groundwater, and surface water exposure. The estimated HI for soil exposure is equal to 0.22. No individual chemical or target organ HI exceeded 1. Table C2-2i presents a comparison of EPCs, cancer risk estimates, and noncancer HQ values for soil for the baseline risk assessment and the residual risk evaluation for Alternative 2. Only the chemicals identified as outlier chemicals or chemicals that presented a risk to human or ecological receptors are included in this comparison.

3.2.2 Total Risk for Construction Worker

The revised noncancer HQ estimates and cancer risk estimates are included in Tables C2-2c and C2-2e for the construction worker. Table C2-2g presents total risk across all media at IA-H1 for the construction worker. As shown in Table C2-2g, the total RME lifetime excess cancer risk estimate to a construction worker for all exposure media (i.e., sediment, soil, and groundwater) after removal of hot spots for Alternative 2 is $1.1x10^{-5}$. The total lifetime excess cancer risk estimate for exposure to the remaining soil and sediment contaminants within the 0 to 10 feet bgs zone is $1.1x10^{-5}$ after hot spot removal. The only remaining chemical exhibiting a cancer risk estimate greater than $1x10^{-5}$ is arsenic. The calculated EPC for arsenic is 21.5 mg/kg, which is a lower concentration than the 95th percentile ambient/background concentration of 36 mg/kg. The cancer risk estimate for exposure to arsenic is $1x10^{-5}$, which is slightly higher than the ambient/background cancer risk estimate for arsenic of 6.9×10^{-6} (based on the 95UCL average concentration). When exposure to arsenic is excluded from the total risk estimate for sediment, the total risk estimate for the remaining contaminants is $4.7x10^{-7}$ as presented in Table C2-2h. Table C2-2h also presents a comparison of total baseline risk estimates for soil to risk estimates after hot spot removal for Alternative 2. The estimated HI is equal to 1.5 for combined sediment, groundwater, and surface water exposure. The estimated HI for soil exposure is equal to 1.2. No individual chemical or target organ HI exceeded 1. Table C2-2i presents a comparison of EPCs, cancer risk estimates, and noncancer HQ values for soil for the baseline risk assessment and the residual risk evaluation for Alternative 2. Only the chemicals identified as outlier chemicals or chemicals that presented a risk to human or ecological receptors are included in this comparison.

3.2.3 Ecological Risk

The residual ecological baseline risk analysis indicates that exposure to benzo(a)pyrene, PCBs, antimony, arsenic, barium, cadmium, chromium, copper, lead, manganese, mercury, nickel, selenium, vanadium, and zinc in the Non-Tidal Wetland Areas sediment (0 to 10 feet bgs) pose a risk to Non-Tidal Wetland Areas receptors (i.e., gray fox, northern harrier, mallard [breeding and non-breeding], great blue heron, killdeer, and the salt marsh harvest mouse). The summary of HQ values based on the low and high TRVs are presented in Tables C2-2j through C2-2p for the Non-Tidal Wetland Areas receptors. Table C2-2q presents a summary of HQ values for all Non-Tidal Wetland Areas receptors based on both the low and high TRV values.

Selenium in sediment presents a potential risk to the gray fox based on the low TRV. Lead in sediment presents a potential risk to the northern harrier and mallard (non-breeding) based on the low TRV. Copper, lead, and manganese in sediment present a potential risk to the mallard (breeding) based on the low TRV. Lead, selenium, and PCBs in sediment present a potential risk to the great blue heron based on the low TRV. No chemicals in sediment present a significant or immediate risk (a HQ greater than 1 based on the high TRV) to the gray fox, northern harrier, mallard, or the great blue heron. There is a potential risk to the killdeer exposed to barium, cadmium, copper, lead, manganese, mercury, nickel, zinc, benzo(a)pyrene, and PCBs in sediment and a significant or immediate risk to the killdeer exposed to chromium in sediment. There is an immediate or significant risk (a HQ greater than 1 based on the low TRV) to the salt marsh harvest mouse exposed to antimony, arsenic, cadmium, copper, lead, manganese, nickel, vanadium, and zinc in sediment.

While antimony, arsenic, barium, cadmium, manganese, mercury, nickel, and vanadium in sediment in the Non-Tidal Wetland Areas do pose an ecological risk, these contaminants may be present at ambient/background levels.

SECTION 4
NON-TIDAL WETLAND AREAS ALTERNATIVE 3

Non-Tidal Wetland Areas Alternative 3 includes institutional controls to be placed on the property to prohibit the development of the land for unauthorized uses; excavation of all hot spots including areas that exceed a human health cancer risk estimate of $1x10^{-4}$, a human health HI of 1 for noncancer adverse health effects, an ecological HQ of 5, threats to groundwater, and locations exhibiting visible oil or free product; and wetland monitoring.

4.1 CURRENT EXPOSURE SCENARIO

The current exposure scenario evaluated soil and sediment at depths of 0 to 2 feet bgs within the Non-Tidal Wetland Areas of IA-H1. The data set that was evaluated in the HHRA and baseline ERA was modified for this residual risk evaluation to remove data from hot spot sample locations. The EPCs were recalculated for COCs prior to implementation of a remedial alternative. Consistent with EPA guidelines, the EPCs used are the lesser of the maximum detected concentration and the UCL of the mean. The revised analytical data set and the EPA ProUCL Software Version 3.0 were used to estimate the UCL for each chemical at each exposure point. A summary of revised EPCs are provided in Table C2-3a.

4.1.1 Total Risk for Recreational User

The revised noncancer HQ estimates and cancer risk estimates are included in Tables C2-3b and C2-3c for the child recreational user. Table C2-3d presents total risk across all media at IA-H1 for the child recreational user. As shown in Table C2-3d, the total RME lifetime excess cancer risk estimate to a recreational user for all exposure media (i.e., sediment, soil, groundwater, and surface water) after removal of hot spots for Alternative 3 is $8.4x10^{-5}$. The total lifetime excess cancer risk estimate for exposure to the remaining soil and sediment contaminants within the 0 to 2 feet bgs zone is $6.4x10^{-5}$ after hot spot removal. The only remaining chemical exhibiting a cancer risk estimate greater than $1x10^{-5}$ is arsenic. The calculated EPC for arsenic is 22 mg/kg, which is a lower concentration than the 95th percentile ambient/background concentration of 36 mg/kg. The cancer risk estimate for exposure to arsenic is $6.3x10^{-5}$, which is slightly higher than the ambient/background cancer risk estimate for arsenic of $4.2x10^{-5}$ (based on the 95UCL average concentration). Exposure to arsenic accounts for 98 percent of the total cancer risk

estimate for exposure to soil. When exposure to arsenic is excluded from the total risk estimate for sediment, the total risk estimate for the remaining contaminants is $1.4x10^{-6}$ as presented in Table C2-3e. Table C2-3e also presents a comparison of total baseline risk estimates for soil to risk estimates after hot spot removal for Alternative 3. The estimated HI is equal to 0.3 for combined sediment, groundwater, and surface water exposure. The estimated HI for soil exposure is equal to 0.20. No individual chemical or target organ HI exceeded 1. Table C2-3f presents a comparison of EPCs, cancer risk estimates, and noncancer HQ values for soil for the baseline risk assessment and the residual risk evaluation for Alternative 3. Only the chemicals identified as outlier chemicals or chemicals that presented a risk to human or ecological receptors are included in this comparison.

4.1.2 Ecological Risk

The residual ecological baseline risk analysis indicates that exposure to benzo(a)pyrene, PCBs, antimony, arsenic, barium, cadmium, copper, lead, manganese, mercury, nickel, tin, vanadium, and zinc in the Non-Tidal Wetland Areas sediment pose a risk to Non-Tidal Wetland Areas receptors (i.e., gray fox, northern harrier, mallard [breeding and non-breeding], great blue heron, killdeer, and the salt marsh harvest mouse). The summary of HQ values based on the low and high TRVs are presented in Tables C2-3g through C2-3m for the Non-Tidal Wetland Areas receptors. Table C2-3n presents a summary of HQ values for all Non-Tidal Wetland Areas receptors based on both the low and high TRV values.

Selenium in sediment presents a potential risk to the gray fox based on the low TRV. Lead in sediment presents a potential risk to the northern harrier and mallard (non-breeding) based on the low TRV. Lead and manganese in sediment present a potential risk to the mallard (breeding) based on the low TRV. Lead, selenium, and PCBs in sediment present a potential risk to the great blue heron based on the low TRV. There is a potential risk to the killdeer exposed to barium, cadmium, copper, lead, mercury, nickel, zinc, benzo(a)pyrene, and PCBs in sediment. No chemicals in sediment present a significant or immediate risk (a HQ greater than 1 based on the high TRV) to the gray fox, northern harrier, mallard, great blue heron, or the killdeer. There is an immediate or significant risk (a HQ greater than 1 based on the low TRV) to the salt marsh harvest mouse exposed to antimony, arsenic, cadmium, copper, lead, manganese, nickel, tin, vanadium, and zinc in sediment.

While antimony, arsenic, barium, cadmium, manganese, mercury, nickel, vanadium, and zinc in sediment in the Non-Tidal Wetland Areas do pose an ecological risk, these contaminants may be present at ambient/background levels.

4.2 FUTURE EXPOSURE SCENARIO

The future exposure scenario evaluated soil at depths of 0 to 10 feet bgs within the Non-Tidal Wetland Areas of IA-H1 for both a child recreational user and an adult construction worker. The data set that was evaluated in the HHRA and baseline ERA was modified for this residual risk evaluation to remove data from hot spot sample locations. The EPCs were recalculated for COCs prior to implementation of a remedial alternative. Consistent with EPA guidelines, the EPCs used are the lesser of the maximum detected concentration and the UCL of the mean. The revised analytical data set and the EPA ProUCL Software Version 3.0 were used to estimate the UCL for each chemical at each exposure point. A summary of revised EPCs are provided in Table C2-4a.

4.2.1 Total Risk for Recreational User

The revised noncancer HQ estimates and cancer risk estimates are included in Tables C2-4b and C2-4d for the child recreational user. Table C2-4f presents total risk across all media at IA-H1 for the child recreational user. As shown in Table C2-4f, the total RME lifetime excess cancer risk estimate to a recreational user for all exposure media (i.e., sediment, soil, groundwater, and surface water) after removal of hot spots for Alternative 3 is 8.2×10^{-5}. The total lifetime excess cancer risk estimate for exposure to the remaining soil and sediment contaminants within the 0 to 10 feet bgs zone is 6.3×10^{-5} after hot spot removal. The only remaining chemical exhibiting a cancer risk estimate greater than 1×10^{-5} is arsenic. The calculated EPC for arsenic is 21 mg/kg, which is a lower concentration than the 95th percentile ambient/background concentration of 36 mg/kg. The cancer risk estimate for exposure to arsenic is 6.0×10^{-5}, which is lower than the ambient/background cancer risk estimate for arsenic of 4.2×10^{-5} (based on the 95UCL average concentration). Exposure to arsenic accounts for 95 percent of the total cancer risk estimate for exposure to soil. When exposure to arsenic is excluded from the total risk estimate for sediment, the total risk estimate for the remaining contaminants is 2.9×10^{-6} as presented in Table C2-4h. Table C2-4h also presents a comparison of total baseline risk estimates for soil to risk estimates

after hot spot removal for Alternative 3. The estimated HI is equal to 0.32 for combined sediment, groundwater, and surface water exposure. The estimated HI for soil exposure is equal to 0.22. No individual chemical or target organ HI exceeded 1. Table C2-4i presents a comparison of EPCs, cancer risk estimates, and noncancer HQ values for soil for the baseline risk assessment and the residual risk evaluation for Alternative 3. Only the chemicals identified as outlier chemicals or chemicals that presented a risk to human or ecological receptors are included in this comparison.

4.2.2 Total Risk for Construction Worker

The revised noncancer HQ estimates and cancer risk estimates are included in Tables C2-4c and C2-4e for the construction worker. Table C2-4g presents total risk across all media at IA-H1 for the construction worker. As shown in Table C2-4g, the total RME lifetime excess cancer risk estimate to a construction worker for all exposure media (i.e., sediment, soil, and groundwater) after removal of hot spots for Alternative 3 is $1.1x10^{-5}$. The total lifetime excess cancer risk estimate for exposure to the remaining soil and sediment contaminants within the 0 to 10 feet bgs zone is $1.0x10^{-5}$ after hot spot removal. Table C2-4h presents a comparison of total baseline risk estimates for soil to risk estimates after hot spot removal for Alternative 3. The estimated HI is equal to 1.5 for combined sediment, groundwater, and surface water exposure. The estimated HI for soil exposure is equal to 1.2. No individual chemical or target organ HI exceeded 1. Table C2-4i presents a comparison of EPCs, cancer risk estimates, and noncancer HQ values for soil for the baseline risk assessment and the residual risk evaluation for Alternative 3. Only the chemicals identified as outlier chemicals or chemicals that presented a risk to human or ecological receptors are included in this comparison.

4.2.3 Ecological Risk

The residual ecological baseline risk analysis indicates that exposure to benzo(a)pyrene, PCBs, antimony, arsenic, barium, cadmium, chromium, copper, lead, manganese, mercury, nickel, selenium, vanadium, and zinc in the Non-Tidal Wetland Areas sediment (0 to 10 feet) pose a risk to Non-Tidal Wetland Areas receptors (i.e., gray fox, northern harrier, mallard [breeding and non-breeding], great blue heron, killdeer, and the salt marsh harvest mouse). The summary of HQ values based on the low and high TRVs are presented in Table C2-4j through C2-4p for the

Non-Tidal Wetland Areas receptors. Table C2-4q presents a summary of HQ values for all Non-Tidal Wetland Areas receptors based on both the low and high TRV values.

Selenium in sediment presents a potential risk to the gray fox based on the low TRV. Lead in sediment presents a potential risk to the northern harrier and mallard (non-breeding) based on the low TRV. Copper, lead, and manganese in sediment present a potential risk to the mallard (breeding) based on the low TRV. Lead, selenium, and PCBs in sediment present a potential risk to the great blue heron based on the low TRV. No chemicals in sediment present a significant or immediate risk (a HQ greater than 1 based on the high TRV) to the gray fox, northern harrier, mallard, or the great blue heron. There is a potential risk to the killdeer exposed to barium, cadmium, copper, lead, manganese, mercury, nickel, zinc, benzo(a)pyrene, and PCBs in sediment and a significant or immediate risk to the killdeer exposed to chromium in sediment. There is an immediate or significant risk (a HQ greater than 1 based on the low TRV) to the salt marsh harvest mouse exposed to antimony, arsenic, cadmium, copper, lead, manganese, nickel, vanadium, and zinc in sediment.

While antimony, arsenic, barium, cadmium, manganese, mercury, nickel, and vanadium in sediment in the Non-Tidal Wetland Areas do pose an ecological risk, these contaminants may be present at ambient/background levels.

SECTION 5
NON-TIDAL WETLAND AREAS ALTERNATIVE 4

Non-Tidal Wetland Areas Alternative 4 includes institutional controls to be placed on the property to prohibit the development of the land for unauthorized uses; excavation of all hot spots including areas that exceed a human health cancer risk estimate of $1x10^{-4}$, a human health HI of 1 for noncancer adverse health effects, an ecological HQ of 3, threats to groundwater, and locations exhibiting visible oil or free product; and wetland monitoring.

5.1 CURRENT EXPOSURE SCENARIO

The current exposure scenario evaluated soil and sediment at depths of 0 to 2 feet bgs within the Non-Tidal Wetland Areas of IA-H1. The data set that was evaluated in the HHRA and baseline ERA was modified for this residual risk evaluation to remove data from hot spot sample locations. The EPCs were recalculated for COCs prior to implementation of a remedial alternative. Consistent with EPA guidelines, the EPCs used are the lesser of the maximum detected concentration and the UCL of the mean. The revised analytical data set and the EPA ProUCL Software Version 3.0 were used to estimate the UCL for each chemical at each exposure point. A summary of revised EPCs are provided in Table C2-5a.

5.1.1 Total Risk for Recreational User

The revised noncancer HQ estimates and cancer risk estimates are included in Tables C2-5b and C2-5c for the child recreational user. Table C2-5d presents total risk across all media at IA-H1 for the child recreational user. As shown in Table C2-5d, the total RME lifetime excess cancer risk estimate to a recreational user for all exposure media (i.e., sediment, soil, groundwater, and surface water) after removal of hot spots for Alternative 4 is $8.3x10^{-5}$. The total lifetime excess cancer risk estimate for exposure to the remaining soil and sediment contaminants within the 0 to 2 feet bgs zone is $6.4x10^{-5}$ after hot spot removal. The only remaining chemical exhibiting a cancer risk estimate greater than $1x10^{-5}$ is arsenic. The calculated EPC for arsenic is 21.8 mg/kg, which is a lower concentration than the 95th percentile ambient/background concentration of 36 mg/kg. The cancer risk estimate for exposure to arsenic is $6.2x10^{-5}$, which is slightly higher than the ambient/background cancer risk estimate for arsenic of $4.2x10^{-5}$ (based on the 95UCL average concentration). Exposure to arsenic accounts for 98 percent of the total cancer risk

estimate for exposure to soil. When exposure to arsenic is excluded from the total risk estimate for sediment, the total risk estimate for the remaining contaminants is $1.4x10^{-6}$ as presented in Table C2-5e. Table C2-5e also presents a comparison of total baseline risk estimates for soil to risk estimates after hot spot removal for Alternative 4. The estimated HI is equal to 0.3 for combined sediment, groundwater, and surface water exposure. The estimated HI for soil exposure is equal to 0.19. No individual chemical or target organ HI exceeded 1. Table C2-5f presents a comparison of EPCs, cancer risk estimates, and noncancer HQ values for soil for the baseline risk assessment and the residual risk evaluation for Alternative 4. Only the chemicals identified as outlier chemicals or chemicals that presented a risk to human or ecological receptors are included in this comparison.

5.1.2 Ecological Risk

The residual ecological baseline risk analysis indicates that exposure to benzo(a)pyrene, PCBs, antimony, arsenic, barium, cadmium, copper, lead, manganese, mercury, nickel, tin, vanadium, and zinc in the Non-Tidal Wetland Areas sediment pose a risk to Non-Tidal Wetland Areas receptors (i.e., gray fox, northern harrier, mallard [breeding and non-breeding], great blue heron, killdeer, and the salt marsh harvest mouse). The summary of HQ values based on the low and high TRVs are presented in Tables C2-5g through C2-5m for the Non-Tidal Wetland Areas receptors. Table C2-5n presents a summary of HQ values for all Non-Tidal Wetland Areas receptors based on both the low and high TRV values.

Selenium in sediment presents a potential risk to the gray fox based on the low TRV. Lead in sediment presents a potential risk to the northern harrier and mallard (non-breeding) based on the low TRV. Lead and manganese in sediment present a potential risk to the mallard (breeding) based on the low TRV. Lead, selenium, and PCBs in sediment present a potential risk to the great blue heron based on the low TRV. There is a potential risk to the killdeer exposed to barium, cadmium, copper, lead, mercury, nickel, zinc, benzo(a)pyrene, and PCBs in sediment. No chemicals in sediment present a significant or immediate risk (a HQ greater than 1 based on the high TRV) to the gray fox, northern harrier, mallard, great blue heron, or killdeer. There is an immediate or significant risk (a HQ greater than 1 based on the low TRV) to the salt marsh harvest mouse exposed to antimony, arsenic, cadmium, copper, lead, manganese, nickel, tin, vanadium, and zinc in sediment.

While antimony, arsenic, barium, cadmium, manganese, mercury, nickel, vanadium, and zinc in sediment in the Non-Tidal Wetland Areas do pose an ecological risk, these contaminants may be present at ambient/background levels.

5.2 FUTURE EXPOSURE SCENARIO

The future exposure scenario evaluated soil at depths of 0 to 10 feet bgs within the Non-Tidal Wetland Areas of IA-H1 for both a child recreational user and an adult construction worker. The data set that was evaluated in the HHRA and baseline ERA was modified for this residual risk evaluation to remove data from hot spot sample locations. The EPCs were recalculated for COCs prior to implementation of a remedial alternative. Consistent with EPA guidelines, the EPCs used are the lesser of the maximum detected concentration and the UCL of the mean. The revised analytical data set and the EPA ProUCL Software Version 3.0 were used to estimate the UCL for each chemical at each exposure point. A summary of revised EPCs are provided in Table C2-6a.

5.2.1 Total Risk for Recreational User

The revised noncancer HQ estimates and cancer risk estimates are included in Tables C2-6b and C2-6d for the child recreational user. Table C2-6f presents total risk across all media at IA-H1 for the child recreational user. As shown in Table C2-6f, the total RME lifetime excess cancer risk estimate to a recreational user for all exposure media (i.e., sediment, soil, groundwater, and surface water) after removal of hot spots for Alternative 4 is 8.3×10^{-5}. The total lifetime excess cancer risk estimate for exposure to the remaining soil and sediment contaminants within the 0 to 10 feet bgs zone is 6.4×10^{-5} after hot spot removal. The only remaining chemical exhibiting a cancer risk estimate greater than 1×10^{-5} is arsenic. The calculated EPC for arsenic is 21.3 mg/kg, which is a lower concentration than the 95th percentile ambient/background concentration of 36 mg/kg. The cancer risk estimate for exposure to arsenic is 6.1×10^{-5}, which is slightly higher than the ambient/background cancer risk estimate for arsenic of 4.2×10^{-5} (based on the 95UCL average concentration). Exposure to arsenic accounts for 95 percent of the total cancer risk estimate for exposure to soil. When exposure to arsenic is excluded from the total risk estimate for sediment, the total risk estimate for the remaining contaminants is 2.8×10^{-6} as presented in Table C2-6h. Table C2-6h also presents a comparison of total baseline risk estimates for soil to

risk estimates after hot spot removal for Alternative 4. The estimated HI is equal to 0.32 for combined sediment, groundwater, and surface water exposure. The estimated HI for soil exposure is equal to 0.21. No individual chemical or target organ HI exceeded 1. Table C2-6i presents a comparison of EPCs, cancer risk estimates, and noncancer HQ values for soil for the baseline risk assessment and the residual risk evaluation for Alternative 4. Only the chemicals identified as outlier chemicals or chemicals that presented a risk to human or ecological receptors are included in this comparison.

5.2.2 Total Risk for Construction Worker

The revised noncancer HQ estimates and cancer risk estimates are included in Tables C2-6c and C2-6e for the construction worker. Table C2-6g presents total risk across all media at IA-H1 for the construction worker. As shown in Table C2-6g, the total RME lifetime excess cancer risk estimate to a construction worker for all exposure media (i.e., sediment, soil, and groundwater) after removal of hot spots for Alternative 4 is $1.1x10^{-5}$. The total lifetime excess cancer risk estimate for exposure to the remaining soil and sediment contaminants within the 0 to 10 feet bgs zone is $1.0x10^{-5}$ after hot spot removal. Table C2-6h presents a comparison of total baseline risk estimates for soil to risk estimates after hot spot removal for Alternative 4. The estimated HI is equal to 1.5 for combined sediment, groundwater, and surface water exposure. The estimated HI for soil exposure is equal to 1.2. No individual chemical or target organ HI exceeded 1. Table C2-6i presents a comparison of EPCs, cancer risk estimates, and noncancer HQ values for soil for the baseline risk assessment and the residual risk evaluation for Alternative 4. Only the chemicals identified as outlier chemicals or chemicals that presented a risk to human or ecological receptors are included in this comparison.

5.2.3 Ecological Risk

The residual ecological baseline risk analysis indicates that exposure to benzo(a)pyrene, PCBs, antimony, arsenic, barium, cadmium, chromium, copper, lead, manganese, mercury, nickel, selenium, vanadium, and zinc in the Non-Tidal Wetland Areas sediment (0 to 10 feet) pose a risk to Non-Tidal Wetland Areas receptors (i.e., gray fox, northern harrier, mallard [breeding and non-breeding], great blue heron, killdeer, and the salt marsh harvest mouse). The summary of HQ values based on the low and high TRVs are presented in Tables C2-6j through C2-6p for the

Non-Tidal Wetland Areas receptors. Table C2-6q presents a summary of HQ values for all Non-Tidal Wetland Areas receptors based on both the low and high TRV values.

Selenium in sediment presents a potential risk to the gray fox based on the low TRV. Lead in sediment presents a potential risk to the northern harrier and mallard (non-breeding) based on the low TRV. Copper, lead, and manganese in sediment present a potential risk to the mallard (breeding) based on the low TRV. Lead, selenium, and PCBs in sediment present a potential risk to the great blue heron based on the low TRV. No chemicals in sediment present a significant or immediate risk (a HQ greater than 1 based on the high TRV) to the gray fox, northern harrier, mallard, or great blue heron. There is a potential risk to the killdeer exposed to barium, cadmium, copper, lead, manganese, mercury, nickel, zinc, benzo(a)pyrene, and PCBs in sediment and a significant or immediate risk to the killdeer exposed to chromium in sediment. There is an immediate or significant risk (a HQ greater than 1 based on the low TRV) to the salt marsh harvest mouse exposed to antimony, arsenic, cadmium, copper, lead, manganese, nickel, vanadium, and zinc in sediment.

While antimony, arsenic, barium, cadmium, manganese, mercury, nickel, and vanadium in sediment in the Non-Tidal Wetland Areas do pose an ecological risk, these contaminants may be present at ambient/background levels.

SECTION 6
NON-TIDAL WETLAND AREAS ALTERNATIVE 5

Non-Tidal Wetland Areas Alternative 5 includes institutional controls to be placed on the property to prohibit the development of the land for unauthorized uses; excavation of all hot spots including areas that exceed a human health cancer risk estimate of $1x10^{-4}$, a human health HI of 1 for noncancer adverse health effects, an ecological HQ of 1, threats to groundwater, and locations exhibiting visible oil or free product; and wetland monitoring. Two additional sample locations (WETBSD033 and WETBSD053) were included as hotspots requiring remediation for Alternative 5 based on conversations with the agencies on 19 April 2006. These locations are not included in the Alternative 5 data set for residual risk calculations.

6.1 CURRENT EXPOSURE SCENARIO

The current exposure scenario evaluated soil and sediment at depths of 0 to 2 feet bgs within the Non-Tidal Wetland Areas of IA-H1. The data set that was evaluated in the HHRA and baseline ERA was modified for this residual risk evaluation to remove data from hot spot sample locations. The EPCs were recalculated for COCs prior to implementation of a remedial alternative. Consistent with EPA guidelines, the EPCs used are the lesser of the maximum detected concentration and the UCL of the mean. The revised analytical data set and the EPA ProUCL Software Version 3.0 were used to estimate the UCL for each chemical at each exposure point. A summary of revised EPCs are provided in Table C2-7a.

6.1.1 Total Risk for Recreational User

The revised noncancer HQ estimates and cancer risk estimates are included in Tables C2-7b and C2-7c for the child recreational user. Table C2-7d presents total risk across all media at IA-H1 for the child recreational user. As shown in Table C2-7d, the total RME lifetime excess cancer risk estimate to a recreational user for all exposure media (i.e., sediment, soil, groundwater, and surface water) after removal of hot spots for Alternative 5 is $8.3x10^{-5}$. The total lifetime excess cancer risk estimate for exposure to the remaining soil and sediment contaminants within the 0 to 2 feet bgs zone is $6.3x10^{-5}$ after hot spot removal. The only remaining chemical exhibiting a cancer risk estimate greater than $1x10^{-5}$ is arsenic. The calculated EPC for arsenic is 21.7 mg/kg, which is a lower concentration than the 95th percentile ambient/background concentration of 36

mg/kg. The cancer risk estimate for exposure to arsenic is $6.2x10^{-5}$, which is slightly higher than the ambient/background cancer risk estimate for arsenic of $4.2x10^{-5}$ (based on the 95UCL average concentration). Exposure to arsenic accounts for 98 percent of the total cancer risk estimate for exposure to soil. When exposure to arsenic is excluded from the total risk estimate for sediment, the total risk estimate for the remaining contaminants is $1.2x10^{-6}$ as presented in Table C2-7e. Table C2-7e also presents a comparison of total baseline risk estimates for soil to risk estimates after hot spot removal for Alternative 5. The estimated HI is equal to 0.29 for combined sediment, groundwater, and surface water exposure. The estimated HI for soil exposure is equal to 0.19. No individual chemical or target organ HI exceeded 1. Table C2-7f presents a comparison of EPCs, cancer risk estimates, and noncancer HQ values for soil for the baseline risk assessment and the residual risk evaluation for Alternative 5. Only the chemicals identified as outlier chemicals or chemicals that presented a risk to human or ecological receptors are included in this comparison.

6.1.2 Ecological Risk

The residual ecological baseline risk analysis indicates that exposure to benzo(a)pyrene, PCBs, aluminum, antimony, arsenic, barium, cadmium, trivalent chromium, copper, lead, manganese, mercury, nickel, selenium, vanadium, and zinc in the Non-Tidal Wetland Areas sediment pose a risk to one or more Non-Tidal Wetland Areas receptors (i.e., gray fox, northern harrier, mallard [breeding and non-breeding], great blue heron, killdeer, and the salt marsh harvest mouse). Aluminum is only considered to be toxic to ecological receptors if the pH is less than 5.5, which is not the case at this site. The summary of HQ values based on the low and high TRVs are presented in Table C2-7g through C2-7m for the Non-Tidal Wetland Areas receptors. Table C2-7n presents a summary of HQ values for all Non-Tidal Wetland Areas receptors based on both the low and high TRV values.

Selenium in sediment presents a potential risk to the gray fox based on the low TRV. Lead in sediment presents a potential risk to the northern harrier and mallard (non-breeding) based on the low TRV. Lead and manganese in sediment present a potential risk to the mallard (breeding) based on the low TRV. Lead, selenium, and PCBs in sediment present a potential risk to the great blue heron based on the low TRV. There is a potential risk to the killdeer exposed to antimony, barium, cadmium, trivalent chromium, copper, lead, manganese, nickel, zinc, and

benzo(a)pyrene in sediment. No chemicals in sediment present a significant or immediate risk (a HQ greater than 1 based on the high TRV) to the gray fox, northern harrier, mallard, or great blue heron. There is an immediate or significant risk (a HQ greater than 1 based on the low TRV) to the salt marsh harvest mouse exposed to antimony, arsenic, cadmium, copper, lead, manganese, nickel, vanadium, and zinc in sediment and an immediate or significant risk (a HQ greater than one based on the high TRV) to the killdeer exposed to trivalent chromium.

While antimony, arsenic, barium, cadmium, manganese, mercury, nickel, vanadium, and zinc in sediment in the Non-Tidal Wetland Areas do pose an ecological risk, these contaminants may be present at ambient/background levels.

6.2 FUTURE EXPOSURE SCENARIO

The future exposure scenario evaluated soil at depths of 0 to 10 feet bgs within the Non-Tidal Wetland Areas of IA-H1 for both a child recreational user and an adult construction worker. The data set that was evaluated in the HHRA and baseline ERA was modified for this residual risk evaluation to remove data from hot spot sample locations. The EPCs were recalculated for COCs prior to implementation of a remedial alternative. Consistent with EPA guidelines, the EPCs used are the lesser of the maximum detected concentration and the UCL of the mean. The revised analytical data set and the EPA ProUCL Software Version 3.0 were used to estimate the UCL for each chemical at each exposure point. A summary of revised EPCs are provided in Table C2-8a.

6.2.1 Total Risk for Recreational User

The revised noncancer HQ estimates and cancer risk estimates are included in Tables C2-8b and C2-8d for the child recreational user. Table C2-8f presents total risk across all media at IA-H1 for the child recreational user. As shown in Table C2-8f, the total RME lifetime excess cancer risk estimate to a recreational user for all exposure media (i.e., sediment, soil, groundwater, and surface water) after removal of hot spots for Alternative 5 is 8.3×10^{-5}. The total lifetime excess cancer risk estimate for exposure to the remaining soil and sediment contaminants within the 0 to 10 feet bgs zone is 6.3×10^{-5} after hot spot removal. The only remaining chemical exhibiting a cancer risk estimate greater than 1×10^{-5} is arsenic. The calculated EPC for arsenic is 21.2 mg/kg, which is a lower concentration than the 95th percentile ambient/background concentration of 36

mg/kg. The cancer risk estimate for exposure to arsenic is $6.1x10^{-5}$, which is slightly higher than the ambient cancer risk estimate for arsenic of $4.2x10^{-5}$ (based on the 95UCL average concentration). Exposure to arsenic accounts for 95 percent of the total cancer risk estimate for exposure to soil. When exposure to arsenic is excluded from the total risk estimate for sediment, the total risk estimate for the remaining contaminants is $2.8x10^{-6}$ as presented in Table C2-8h. Table C2-8h also presents a comparison of total baseline risk estimates for soil to risk estimates after hot spot removal for Alternative 5. The estimated HI is equal to 0.31 for combined sediment, groundwater, and surface water exposure. The estimated HI for soil exposure is equal to 0.21. No individual chemical or target organ HI exceeded 1. Table C2-8i presents a comparison of EPCs, cancer risk estimates, and noncancer HQ values for soil for the baseline risk assessment and the residual risk evaluation for Alternative 5. Only the chemicals identified as outlier chemicals or chemicals that presented a risk to human or ecological receptors are included in this comparison.

6.2.2 Total Risk for Construction Worker

The revised noncancer HQ estimates and cancer risk estimates are included in Tables C2-8c and C2-8e for the construction worker. Table C2-8g presents total risk across all media at IA-H1 for the construction worker. As shown in Table C2-8g, the total RME lifetime excess cancer risk estimate to a construction worker for all exposure media (i.e., sediment, soil, and groundwater) after removal of hot spots for Alternative 5 is $1.1x10^{-5}$. The total lifetime excess cancer risk estimate for exposure to the remaining soil and sediment contaminants within the 0 to 10 feet bgs zone is $1.1x10^{-5}$ after hot spot removal. Table C2-8h presents a comparison of total baseline risk estimates for soil to risk estimates after hot spot removal for Alternative 5. The estimated HI is equal to 1.2 for combined sediment, groundwater, and surface water exposure. The estimated HI for soil exposure is equal to 1.2. No individual chemical or target organ HI exceeded 1. Table C2-8i presents a comparison of EPCs, cancer risk estimates, and noncancer HQ values for soil for the baseline risk assessment and the residual risk evaluation for Alternative 5. Only the chemicals identified as outlier chemicals or chemicals that presented a risk to human or ecological receptors are included in this comparison.

6.2.3 Ecological Risk

The residual ecological baseline risk analysis indicates that exposure to benzo(a)pyrene, PCBs, antimony, arsenic, barium, cadmium, trivalent chromium, copper, lead, manganese, mercury, nickel, selenium, vanadium, and zinc in the Non-Tidal Wetland Areas sediment (0 to 10 feet bgs) pose a risk to one or more Non-Tidal Wetland Areas receptors (i.e., gray fox, northern harrier, mallard [breeding and non-breeding], great blue heron, killdeer, and the salt marsh harvest mouse). The summary of HQ values based on the low and high TRVs are presented in Tables C2-8j through C2-8p for the Non-Tidal Wetland Areas receptors. Table C2-8q presents a summary of HQ values for all Non-Tidal Wetland Areas receptors based on both the low and high TRV values.

Selenium in sediment presents a potential risk to the gray fox based on the low TRV. Lead in sediment presents a potential risk to the northern harrier and mallard (non-breeding) based on the low TRV. Copper, lead, and manganese in sediment present a potential risk to the mallard (breeding) based on the low TRV. Lead, selenium, and PCBs in sediment present a potential risk to the great blue heron based on the low TRV. No chemicals in sediment present a significant or immediate risk (a HQ greater than 1 based on the high TRV) to the gray fox, northern harrier, mallard, or great blue heron. There is a potential risk to the killdeer exposed to barium, cadmium, copper, lead, manganese, mercury, nickel, zinc, benzo(a)pyrene, and PCBs in sediment and a significant or immediate risk to the killdeer exposed to trivalent chromium in sediment. There is an immediate or significant risk (a HQ greater than 1 based on the low TRV) to the salt marsh harvest mouse exposed to antimony, arsenic, cadmium, copper, lead, manganese, nickel, vanadium, and zinc in sediment.

While antimony, arsenic, barium, cadmium, manganese, mercury, nickel, and vanadium in sediment in the Non-Tidal Wetland Areas do pose an ecological risk, these contaminants may be present at ambient/background levels.

SECTION 7
REFERENCES

Weston Solutions, Inc., 2006. "Revised Final Remedial Investigation, Investigation Area H1, Mare Island, Vallejo, California." May.

Table C2-1a
Medium-Specific Exposure Point Concentration Summary
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Medium:	Soil (0 to 2 feet bgs)
Exposure Medium:	Soil
Exposure Point:	On-Site Soil

Chemical of Potential Concern	Distribution[a]	Mean of Normal Data[b]	Mean of Lognormal Data[c]	Median	UCL[d]	Maximum Detected Concentration	Reasonable Maximum Exposure		Central Tendency Exposure	
							Medium EPC Value[e]	Medium EPC Statistic and Rationale[f]	Medium EPC Value[e]	Medium EPC Statistic and Rationale[f]
INORGANICS (mg/kg)										
ALUMINUM	Non-Par	25870	10.1	24950	26988	42800	26988	Student's-t UCL	26988	Student's-t UCL
ANTIMONY	Lognormal	2.17	0.47	1.7	2.6	8	2.6	H-UCL	2.6	H-UCL
ARSENIC	Normal	20.9	2.9	20.45	22	43.2	22	Student's-t UCL	22	Student's-t UCL
BARIUM	Non-Par	84.4	4.37	79.5	90	330	90	Student's-t UCL	90	Student's-t UCL
BERYLLIUM	Gamma	0.38	-1.49	0.225	0.44	2.5	0.44	Approximate Gamma UCL	0.44	Approximate Gamma UCL
CADMIUM	Non-Par	1.6	-0.128	0.94	2.6	7.5	2.6	97.5% Chebyshev UCL	2.6	97.5% Chebyshev UCL
CHROMIUM	Non-Par	107	4.6	94.9	112	257	112	Student's-t UCL	112	Student's-t UCL
COBALT	Non-Par	17.9	2.7	20	21	38.2	21	95% Chebyshev UCL	21	95% Chebyshev UCL
COPPER	Non-Par	113	4.6	94.6	125	755	125	Student's-t UCL	125	Student's-t UCL
LEAD	Non-Par	66.4	4	53	88	415	88	95% Chebyshev UCL	88	95% Chebyshev UCL
MANGANESE	Non-Par	929	6.7	840	1017	4810	1017	Student's-t UCL	1017	Student's-t UCL
MERCURY	Gamma	1.1	-0.1	0.985	1.2	5.1	1.2	Approximate Gamma UCL	1.2	Approximate Gamma UCL
MOLYBDENUM	Non-Par	1.8	-1.12	0.1125	4.8	44.3	4.8	97.5% Chebyshev UCL	4.8	97.5% Chebyshev UCL
NICKEL	Non-Par	104	4.6	107	108	222	108	Student's-t UCL	108	Student's-t UCL
SELENIUM	Non-Par	0.71	-0.8	0.245	1	2.7	1	95% Chebyshev UCL	1	95% Chebyshev UCL
SILVER	Non-Par	1.21	-1.25	0.195	2.3	5.2	2.3	97.5% Chebyshev UCL	2.3	97.5% Chebyshev UCL
THALLIUM	Non-Par	0.24	-1.6	0.19	0.29	2.6	0.29	Student's-t UCL	0.29	Student's-t UCL
TIN	Non-Par	17	2.8	15.9	20.1	59.8	20.1	Student's-t UCL	20.1	Student's-t UCL
VANADIUM	Non-Par	97	4.5	87.5	102	192	102	Student's-t UCL	102	Student's-t UCL
ZINC	Non-Par	204	5.2	185	225	1790	225	Student's-t UCL	225	Student's-t UCL
PESTICIDES (mg/kg)										
ALPHA-CHLORDANE	Non-Par	0.0015	-7.9	0.0004	0.0048	0.051	0.0048	97.5% Chebyshev UCL	0.0048	97.5% Chebyshev UCL
BETA BHC	NA	NA	NA	NA	NA	0.001	0.001	Max Detected	0.001	Max Detected
DELTA BHC	NA	NA	NA	NA	NA	0.002	0.002	Max Detected	0.002	Max Detected
2,4- DDD	Non-Par	0.0064	-5.98	0.001	0.03	0.03	0.03	99% Chebyshev UCL	0.03	99% Chebyshev UCL
4,4- DDD	Non-Par	0.029	-5.69	0.003	0.092	0.8	0.092	97.5% Chebyshev UCL	0.092	97.5% Chebyshev UCL
4,4- DDE	Non-Par	0.0052	-6.94	0.001	0.018	0.2	0.018	97.5% Chebyshev UCL	0.018	97.5% Chebyshev UCL
4,4- DDT	Non-Par	0.0051	-6.6	0.002	0.012	0.08	0.012	97.5% Chebyshev UCL	0.012	97.5% Chebyshev UCL
DIELDRIN	Non-Par	0.0014	-7.55	0.00095	0.0029	0.015	0.0029	97.5% Chebyshev UCL	0.0029	97.5% Chebyshev UCL
ENDOSULFAN I	NA	NA	NA	NA	NA	0.004	0.004	Max Detected	0.004	Max Detected
ENDOSULFAN SULFATE	NA	NA	NA	NA	NA	0.003	0.003	Max Detected	0.003	Max Detected
ENDRIN	NA	NA	NA	NA	NA	0.02	0.02	Max Detected	0.02	Max Detected
ENDRIN ALDEHYDE	NA	NA	NA	NA	NA	0.006	0.006	Max Detected	0.006	Max Detected
ENDRIN KETONE	Non-Par	0.00099	-7.96	0.0004	0.0023	0.003	0.0023	97.5% Chebyshev UCL	0.0023	97.5% Chebyshev UCL
GAMMA-CHLORDANE	Non-Par	0.0015	-7.97	0.0004	0.0052	0.059	0.0052	97.5% Chebyshev UCL	0.0052	97.5% Chebyshev UCL

Table C2-1a
Medium-Specific Exposure Point Concentration Summary
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Medium:	Soil (0 to 2 feet bgs)
Exposure Medium:	Soil
Exposure Point:	On-Site Soil

Chemical of Potential Concern	Distribution[a]	Mean of Normal Data[b]	Mean of Lognormal Data[c]	Median	UCL[d]	Maximum Detected Concentration	Reasonable Maximum Exposure		Central Tendency Exposure	
							Medium EPC Value[e]	Medium EPC Statistic and Rationale[f]	Medium EPC Value[e]	Medium EPC Statistic and Rationale[f]
HEPTACHLOR	NA	NA	NA	NA	NA	0.0002	0.0002	Max Detected	0.0002	Max Detected
HEPTACHLOR EPOXIDE	NA	NA	NA	NA	NA	0.0003	0.0003	Max Detected	0.0003	Max Detected
HEXACHLOROBENZENE	Non-Par	0.00083	-8.13	0.0003	0.0023	0.0008	0.0008	Max Detected	0.0008	Max Detected
METHOXYCHLOR	Non-Par	0.0038	-7.3	0.00045	0.012	0.04	0.012	99% Chebyshev UCL	0.012	99% Chebyshev UCL
MIREX	NA	NA	NA	NA	NA	0.004	0.004	Max Detected	0.004	Max Detected
TRANS-NONACHLOR	Non-Par	0.00087	-8.2	0.000275	0.0024	0.005	0.0024	97.5% Chebyshev UCL	0.0024	97.5% Chebyshev UCL
PCBs (mg/kg)										
PCBs (TOTAL)	Lognormal	0.07	-4.32	0.0121	0.11	4	0.11	H-UCL	0.11	H-UCL
SVOCs (mg/kg)										
ACENAPHTHENE	Non-Par	0.067	-3.13	0.02575	0.1	0.0573	0.057	Max Detected	0.057	Max Detected
ACENAPHTHYLENE	Non-Par	0.061	-3.23	0.02575	0.09	0.0396	0.040	Max Detected	0.0396	Max Detected
ANTHRACENE	Non-Par	0.055	-3.7	0.0235	0.08	0.0658	0.0658	97.5% Chebyshev UCL	0.0658	97.5% Chebyshev UCL
BENZO(A)ANTHRACENE	Non-Par	0.054	-3.53	0.0235	0.09	0.1028	0.09	97.5% Chebyshev UCL	0.09	97.5% Chebyshev UCL
BENZO(A)PYRENE	Non-Par	0.052	-3.67	0.01975	0.09	0.1013	0.09	97.5% Chebyshev UCL	0.09	97.5% Chebyshev UCL
BENZO(B)FLUORANTHENE	Non-Par	0.055	-3.33	0.025	0.08	0.11	0.08	95% Chebyshev UCL	0.08	95% Chebyshev UCL
BENZO(G,H,I)PERYLENE	Non-Par	0.056	-3.35	0.0245	0.08	0.13	0.08	95% Chebyshev UCL	0.08	95% Chebyshev UCL
BENZO(K)FLUORANTHENE	Non-Par	0.056	-3.5	0.0235	0.1	0.067	0.067	97.5% Chebyshev UCL	0.067	97.5% Chebyshev UCL
BIS(2-ETHYLHEXYL)PHTHALATE	Non-Par	0.066	-3.53	0.01325	0.12	0.59	0.12	97.5% Chebyshev UCL	0.12	97.5% Chebyshev UCL
BUTYLBENZYLPHTHALATE	NA	NA	NA	NA	NA	0.025	0.025	Max Detected	0.03	Max Detected
CARBAZOLE	NA	NA	NA	NA	NA	0.141	0.14	Max Detected	0.141	Max Detected
4- CHLOROANILINE	NA	NA	NA	NA	NA	0.003	0.003	Max Detected	0.003	Max Detected
2- CHLOROPHENOL	NA	NA	NA	NA	NA	0.0433	0.043	Max Detected	0.0433	Max Detected
CHRYSENE	Non-Par	0.05	-3.7	0.019	0.08	0.2	0.08	97.5% Chebyshev UCL	0.080	97.5% Chebyshev UCL
DIBENZOFURAN	NA	NA	NA	NA	NA	0.0789	0.079	Max Detected	0.0789	Max Detected
3,3- DICHLOROBENZIDINE	NA	NA	NA	NA	NA	0.012	0.012	Max Detected	0.012	Max Detected
FLUORANTHENE	Non-Par	0.054	-3.46	0.025	0.08	0.1345	0.08	95% Chebyshev UCL	0.080	95% Chebyshev UCL
FLUORENE	Non-Par	0.055	-3.48	0.0235	0.1	0.054	0.054	Max Detected	0.05	Max Detected
INDENO(1,2,3-CD)PYRENE	Non-Par	0.05	-3.67	0.02	0.1	0.15	0.10	97.5% Chebyshev UCL	0.100	97.5% Chebyshev UCL
2- METHYLNAPHTHALENE	NA	NA	NA	NA	NA	0.0523	0.052	Max Detected	0.052	Max Detected
4- METHYLPHENOL	NA	NA	NA	NA	NA	0.0668	0.067	Max Detected	0.0668	Max Detected
NAPHTHALENE	Non-Par	0.06	-3.3	0.0255	0.09	0.1102	0.09	95% Chebyshev UCL	0.090	95% Chebyshev UCL
PENTACHLOROPHENOL	NA	NA	NA	NA	NA	0.0484	0.048	Max Detected	0.0484	Max Detected
PHENANTHRENE	Non-Par	0.052	-3.7	0.01975	0.09	0.1	0.09	97.5% Chebyshev UCL	0.09	97.5% Chebyshev UCL
PHENOL	NA	NA	NA	NA	NA	0.14	0.14	Max Detected	0.14	Max Detected
PYRENE	Non-Par	0.052	-3.4	0.0295	0.08	0.16	0.08	95% Chebyshev UCL	0.08	95% Chebyshev UCL

Table C2-1a
Medium-Specific Exposure Point Concentration Summary
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Medium:	Soil (0 to 2 feet bgs)
Exposure Medium:	Soil
Exposure Point:	On-Site Soil

Chemical of Potential Concern	Distribution[a]	Mean of Normal Data[b]	Mean of Lognormal Data[c]	Median	UCL[d]	Maximum Detected Concentration	Reasonable Maximum Exposure		Central Tendency Exposure	
							Medium EPC Value[e]	Medium EPC Statistic and Rationale[f]	Medium EPC Value[e]	Medium EPC Statistic and Rationale[f]
TPH (mg/kg)										
TPH AS DIESEL	Non-Par	21	3	19.15	23	81	23	Student's-t UCL	23	Student's-t UCL
TPH AS GASOLINE	Non-Par	0.15	-3.9	0.0153	0.7	8	0.7	97.5% Chebyshev UCL	0.7	97.5% Chebyshev UCL
TPH AS MOTOR OIL	Non-Par	143	4.34	66.215	246	1690	246	95% Chebyshev UCL	246	95% Chebyshev UCL
VOCs (mg/kg)										
ACETONE	Non-Par	0.022	-4.53	0.005	0.1	0.1	0.1	99% Chebyshev UCL	0.1	99% Chebyshev UCL
CARBON DISULFIDE	NA	NA	NA	NA	NA	0.007	0.007	Max Detected	0.007	Max Detected
CHLOROBENZENE	NA	NA	NA	NA	NA	0.005	0.005	Max Detected	0.005	Max Detected
ETHYLBENZENE	NA	NA	NA	NA	NA	0.018	0.018	Max Detected	0.018	Max Detected
TOLUENE	NA	NA	NA	NA	NA	0.03	0.03	Max Detected	0.03	Max Detected
TRICHLOROETHENE	NA	NA	NA	NA	NA	0.007	0.007	Max Detected	0.007	Max Detected
XYLENE (TOTAL)	Non-Par	0.062	-3.54	0.1	0.15	0.167	0.15	99% Chebyshev UCL	0.15	99% Chebyshev UCL

The UCL for chemicals that are italicized and underlined have been modified for post remediation residual risk.

bgs Below Ground Surface.
EPC Exposure Point Concentration.
mg/kg Milligram per kilogram.
NA Not Applicable for small data sets.
PCBs Polychlorinated Biphenyls
SVOC Semivolatile Organic Compound
TPH Total Petroleum Hydrocarbon
UCL Upper confidence limit of the mean.
VOCs Volatile Organic Compounds

a Gamma = Data follow gamma distribution using chi-square approximation.
Normal = Data are normally distributed.
Lognormal = Data are lognormally distributed.
Non-par = Data are non-parametric.
Lilliefors Test was used to determine the distribution for sample sets greater than 50.
Shapiro and Wilk W-Test was used to determine the distribution for sample sets less than 50.

b The value presented is the arithmetic mean calculated using distribution-dependent formulas. One half the sample quantitation limit was used as a proxy concentration for non-detects to calculate the mean.

c The value presented is the mean of log-transformed data calculated using distribution-dependent formulas. One half the sample quantitation limit was used as a proxy concentration for non-detects to calculate the mean.

d The value presented is the UCL calculated using distribution-dependent formulas. One half the sample quantitation limit was used as a proxy concentration for non-detects to calculate the UCL.

e If the UCL value exceeds the maximum detected concentration, the maximum detected concentration is used for the medium EPC value.

f Recommended UCL statistic using United States Environmental Protection Agency ProUCL Version 3.0 software.

Table C2-1b
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil (0 to 2 feet)
Exposure Point:	Surface Soil (0 to 2 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
INGESTION	**INORGANICS**									
	ALUMINUM	26,988	mg/kg	2.95E-02	1.23E-02	mg/kg-day	1.00E+00	mg/kg-day	2.95E-02	1.23E-02
	ANTIMONY	2.6	mg/kg	2.84E-06	1.18E-06	mg/kg-day	4.00E-04	mg/kg-day	7.10E-03	2.96E-03
	ARSENIC	22.0	mg/kg	2.40E-05	1.00E-05	mg/kg-day	3.00E-04	mg/kg-day	8.01E-02	3.34E-02
	BARIUM	90.0	mg/kg	9.84E-05	4.10E-05	mg/kg-day	7.00E-02	mg/kg-day	1.41E-03	5.85E-04
	BERYLLIUM	0.4	mg/kg	4.81E-07	2.00E-07	mg/kg-day	2.00E-03	mg/kg-day	2.40E-04	1.00E-04
	CADMIUM	2.6	mg/kg	2.84E-06	1.18E-06	mg/kg-day	5.00E-04	mg/kg-day	5.68E-03	2.37E-03
	CHROMIUM	112	mg/kg	1.22E-04	5.10E-05	mg/kg-day	1.50E+00	mg/kg-day	8.16E-05	3.40E-05
	COBALT	21	mg/kg	2.29E-05	9.56E-06	mg/kg-day	2.00E-02	mg/kg-day	1.15E-03	4.78E-04
	COPPER	125	mg/kg	1.37E-04	5.69E-05	mg/kg-day	4.00E-02	mg/kg-day	3.42E-03	1.42E-03
	LEAD	88	mg/kg	9.62E-05	4.01E-05	mg/kg-day	NA	mg/kg-day	NA	NA
	MANGANESE	1017	mg/kg	1.11E-03	4.63E-04	mg/kg-day	1.40E-01	mg/kg-day	7.94E-03	3.31E-03
	MERCURY	1.2	mg/kg	1.31E-06	5.46E-07	mg/kg-day	3.00E-04	mg/kg-day	4.37E-03	1.82E-03
	MOLYBDENUM	4.8	mg/kg	5.25E-06	2.19E-06	mg/kg-day	5.00E-03	mg/kg-day	1.05E-03	4.37E-04
	NICKEL	108	mg/kg	1.18E-04	4.92E-05	mg/kg-day	2.00E-02	mg/kg-day	5.90E-03	2.46E-03
	SELENIUM	1.0	mg/kg	1.09E-06	4.55E-07	mg/kg-day	5.00E-03	mg/kg-day	2.19E-04	9.11E-05
	SILVER	2.3	mg/kg	2.51E-06	1.05E-06	mg/kg-day	5.00E-03	mg/kg-day	5.03E-04	2.09E-04
	THALLIUM	0.29	mg/kg	3.17E-07	1.32E-07	mg/kg-day	6.60E-05	mg/kg-day	4.80E-03	2.00E-03
	TIN	20.1	mg/kg	2.20E-05	9.15E-06	mg/kg-day	6.00E-01	mg/kg-day	3.66E-05	1.53E-05
	VANADIUM	102	mg/kg	1.11E-04	4.64E-05	mg/kg-day	7.00E-03	mg/kg-day	1.59E-02	6.64E-03
	ZINC	225	mg/kg	2.46E-04	1.02E-04	mg/kg-day	3.00E-01	mg/kg-day	8.20E-04	3.42E-04
	PESTICIDES									
	ALPHA-CHLORDANE	0.0048	mg/kg	5.25E-09	2.19E-09	mg/kg-day	5.00E-04	mg/kg-day	1.05E-05	4.37E-06
	BETA BHC	0.001	mg/kg	1.09E-09	4.55E-10	mg/kg-day	2.00E-04	mg/kg-day	5.46E-06	2.28E-06
	DELTA BHC	0.002	mg/kg	2.19E-09	9.11E-10	mg/kg-day	NA	mg/kg-day	NA	NA
	2,4- DDD	0.03	mg/kg	3.28E-08	1.37E-08	mg/kg-day	5.00E-04	mg/kg-day	6.56E-05	2.73E-05
	4,4- DDD	0.092	mg/kg	1.01E-07	4.19E-08	mg/kg-day	5.00E-04	mg/kg-day	2.01E-04	8.38E-05
	4,4- DDE	0.018	mg/kg	1.97E-08	8.20E-09	mg/kg-day	5.00E-04	mg/kg-day	3.93E-05	1.64E-05
	4,4- DDT	0.012	mg/kg	1.31E-08	5.46E-09	mg/kg-day	5.00E-04	mg/kg-day	2.62E-05	1.09E-05
	DIELDRIN	0.0029	mg/kg	3.17E-09	1.32E-09	mg/kg-day	5.00E-05	mg/kg-day	6.34E-05	2.64E-05
	ENDOSULFAN I	0.004	mg/kg	4.37E-09	1.82E-09	mg/kg-day	6.00E-03	mg/kg-day	7.29E-07	3.04E-07

Table C2-1b
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil (0 to 2 feet)
Exposure Point:	Surface Soil (0 to 2 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
INGESTION (CONTINUED)	ENDOSULFAN SULFATE	0.003	mg/kg	3.28E-09	1.37E-09	mg/kg-day	6.00E-03	mg/kg-day	5.46E-07	2.28E-07
	ENDRIN	0.02	mg/kg	2.19E-08	9.11E-09	mg/kg-day	3.00E-04	mg/kg-day	7.29E-05	3.04E-05
	ENDRIN ALDEHYDE	0.006	mg/kg	6.56E-09	2.73E-09	mg/kg-day	3.00E-04	mg/kg-day	2.19E-05	9.11E-06
	ENDRIN KETONE	0.0023	mg/kg	2.51E-09	1.05E-09	mg/kg-day	3.00E-04	mg/kg-day	8.38E-06	3.49E-06
	GAMMA-CHLORDANE	0.0052	mg/kg	5.68E-09	2.37E-09	mg/kg-day	5.00E-04	mg/kg-day	1.14E-05	4.74E-06
	HEPTACHLOR	0.0002	mg/kg	2.19E-10	9.11E-11	mg/kg-day	5.00E-04	mg/kg-day	4.37E-07	1.82E-07
	HEPTACHLOR EPOXIDE	0.0003	mg/kg	3.28E-10	1.37E-10	mg/kg-day	1.30E-05	mg/kg-day	2.52E-05	1.05E-05
	HEXACHLOROBENZENE	0.0008	mg/kg	8.74E-10	3.64E-10	mg/kg-day	8.00E-04	mg/kg-day	1.09E-06	4.55E-07
	METHOXYCHLOR	0.012	mg/kg	1.31E-08	5.46E-09	mg/kg-day	5.00E-03	mg/kg-day	2.62E-06	1.09E-06
	MIREX	0.004	mg/kg	4.37E-09	1.82E-09	mg/kg-day	2.00E-04	mg/kg-day	2.19E-05	9.11E-06
	TRANS-NONACHLOR	0.0024	mg/kg	2.62E-09	1.09E-09	mg/kg-day	5.00E-04	mg/kg-day	5.25E-06	2.19E-06
	PCBs									
	PCBs (TOTAL)	0.11	mg/kg	1.20E-07	5.01E-08	mg/kg-day	2.00E-05	mg/kg-day	6.01E-03	2.50E-03
	SVOCs									
	ACENAPHTHENE	0.057	mg/kg	6.26E-08	2.61E-08	mg/kg-day	6.00E-02	mg/kg-day	1.04E-06	4.35E-07
	ACENAPHTHYLENE	0.04	mg/kg	4.33E-08	1.80E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	ANTHRACENE	0.0658	mg/kg	7.19E-08	3.00E-08	mg/kg-day	3.00E-01	mg/kg-day	2.40E-07	9.99E-08
	BENZO(A)ANTHRACENE	0.090	mg/kg	9.84E-08	4.10E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(A)PYRENE	0.090	mg/kg	9.84E-08	4.10E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(B)FLUORANTHENE	0.080	mg/kg	8.74E-08	3.64E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(G,H,I)PERYLENE	0.080	mg/kg	8.74E-08	3.64E-08	mg/kg-day	4.00E-02	mg/kg-day	2.19E-06	9.11E-07
	BENZO(K)FLUORANTHENE	0.07	mg/kg	7.32E-08	3.05E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	BIS(2-ETHYLHEXYL)PHTHAL	0.12	mg/kg	1.31E-07	5.46E-08	mg/kg-day	2.00E-02	mg/kg-day	6.56E-06	2.73E-06
	BUTYLBENZYLPHTHALATE	0.025	mg/kg	2.73E-08	1.14E-08	mg/kg-day	2.00E-01	mg/kg-day	1.37E-07	5.69E-08
	CARBAZOLE	0.14	mg/kg	1.54E-07	6.42E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	4- CHLOROANILINE	0.003	mg/kg	3.28E-09	1.37E-09	mg/kg-day	4.00E-03	mg/kg-day	8.20E-07	3.42E-07
	2- CHLOROPHENOL	0.043	mg/kg	4.73E-08	1.97E-08	mg/kg-day	5.00E-03	mg/kg-day	9.46E-06	3.94E-06
	CHRYSENE	0.080	mg/kg	8.74E-08	3.64E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	DIBENZOFURAN	0.079	mg/kg	8.62E-08	3.59E-08	mg/kg-day	2.00E-03	mg/kg-day	4.31E-05	1.80E-05
	3,3- DICHLOROBENZIDINE	0.012	mg/kg	1.31E-08	5.46E-09	mg/kg-day	NA	mg/kg-day	NA	NA
	FLUORANTHENE	0.080	mg/kg	8.74E-08	3.64E-08	mg/kg-day	4.00E-02	mg/kg-day	2.19E-06	9.11E-07
	FLUORENE	0.054	mg/kg	5.90E-08	2.46E-08	mg/kg-day	4.00E-02	mg/kg-day	1.48E-06	6.15E-07

Table C2-1b
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil (0 to 2 feet)
Exposure Point:	Surface Soil (0 to 2 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
INGESTION (CONTINUED)	*INDENO(1,2,3-CD)PYRENE*	0.10	mg/kg	1.09E-07	4.55E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	2- METHYLNAPHTHALENE	0.052	mg/kg	5.72E-08	2.38E-08	mg/kg-day	4.00E-03	mg/kg-day	1.43E-05	5.95E-06
	4- METHYLPHENOL	0.067	mg/kg	7.30E-08	3.04E-08	mg/kg-day	5.00E-03	mg/kg-day	1.46E-05	6.08E-06
	NAPHTHALENE	0.090	mg/kg	9.84E-08	4.10E-08	mg/kg-day	2.00E-02	mg/kg-day	4.92E-06	2.05E-06
	PENTACHLOROPHENOL	0.048	mg/kg	5.29E-08	2.20E-08	mg/kg-day	3.00E-02	mg/kg-day	1.76E-06	7.35E-07
	PHENANTHRENE	0.090	mg/kg	9.84E-08	4.10E-08	mg/kg-day	3.00E-01	mg/kg-day	3.28E-07	1.37E-07
	PHENOL	0.14	mg/kg	1.53E-07	6.37E-08	mg/kg-day	6.00E-01	mg/kg-day	2.55E-07	1.06E-07
	PYRENE	0.080	mg/kg	8.74E-08	3.64E-08	mg/kg-day	3.00E-02	mg/kg-day	2.91E-06	1.21E-06
	TPH									
	TPH AS DIESEL	23	mg/kg	2.51E-05	1.05E-05	mg/kg-day	NA	mg/kg-day	NA	NA
	TPH AS GASOLINE	0.7	mg/kg	7.65E-07	3.19E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	TPH AS MOTOR OIL	246	mg/kg	2.69E-04	1.12E-04	mg/kg-day	NA	mg/kg-day	NA	NA
	VOCs									
	ACETONE	0.10	mg/kg	1.09E-07	4.55E-08	mg/kg-day	9.00E-01	mg/kg-day	1.21E-07	5.06E-08
	CARBON DISULFIDE	0.007	mg/kg	7.65E-09	3.19E-09	mg/kg-day	1.00E-01	mg/kg-day	7.65E-08	3.19E-08
	CHLOROBENZENE	0.005	mg/kg	5.46E-09	2.28E-09	mg/kg-day	2.00E-02	mg/kg-day	2.73E-07	1.14E-07
	ETHYLBENZENE	0.018	mg/kg	1.97E-08	8.20E-09	mg/kg-day	1.00E-01	mg/kg-day	1.97E-07	8.20E-08
	TOLUENE	0.03	mg/kg	3.28E-08	1.37E-08	mg/kg-day	2.00E-01	mg/kg-day	1.64E-07	6.83E-08
	TRICHLOROETHENE	0.007	mg/kg	7.65E-09	3.19E-09	mg/kg-day	3.00E-04	mg/kg-day	2.55E-05	1.06E-05
	XYLENE (TOTAL)	0.15	mg/kg	1.64E-07	6.83E-08	mg/kg-day	2.00E-01	mg/kg-day	8.20E-07	3.42E-07
DERMAL CONTACT	**INORGANICS**									
	ALUMINUM	26,988	mg/kg	NA	NA	mg/kg-day	1.00E+00	mg/kg-day	NA	NA
	ANTIMONY	2.6	mg/kg	NA	NA	mg/kg-day	6.00E-05	mg/kg-day	NA	NA
	ARSENIC	22.0	mg/kg	3.31E-06	1.38E-06	mg/kg-day	3.00E-04	mg/kg-day	1.10E-02	4.60E-03
	BARIUM	90.0	mg/kg	NA	NA	mg/kg-day	4.90E-03	mg/kg-day	NA	NA
	BERYLLIUM	0.4	mg/kg	NA	NA	mg/kg-day	1.40E-05	mg/kg-day	NA	NA
	CADMIUM	2.6	mg/kg	1.30E-08	5.43E-09	mg/kg-day	1.25E-05	mg/kg-day	1.04E-03	4.35E-04
	CHROMIUM	112	mg/kg	NA	NA	mg/kg-day	1.95E-02	mg/kg-day	NA	NA
	COBALT	21	mg/kg	NA	NA	mg/kg-day	2.00E-02	mg/kg-day	NA	NA
	COPPER	125	mg/kg	NA	NA	mg/kg-day	4.00E-02	mg/kg-day	NA	NA
	LEAD	88	mg/kg	NA	NA	mg/kg-day	NA	mg/kg-day	NA	NA

Table C2-1b
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil (0 to 2 feet)
Exposure Point:	Surface Soil (0 to 2 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
DERMAL CONTACT (CONTINUED)	*MANGANESE*	1017	mg/kg	NA	NA	mg/kg-day	5.60E-03	mg/kg-day	NA	NA
	MERCURY	1.2	mg/kg	NA	NA	mg/kg-day	2.10E-05	mg/kg-day	NA	NA
	MOLYBDENUM	4.8	mg/kg	NA	NA	mg/kg-day	5.00E-03	mg/kg-day	NA	NA
	NICKEL	108	mg/kg	NA	NA	mg/kg-day	8.00E-04	mg/kg-day	NA	NA
	SELENIUM	1.0	mg/kg	NA	NA	mg/kg-day	5.00E-03	mg/kg-day	NA	NA
	SILVER	2.3	mg/kg	NA	NA	mg/kg-day	2.00E-04	mg/kg-day	NA	NA
	THALLIUM	0.29	mg/kg	NA	NA	mg/kg-day	6.60E-05	mg/kg-day	NA	NA
	TIN	20.1	mg/kg	NA	NA	mg/kg-day	6.00E-01	mg/kg-day	NA	NA
	VANADIUM	102	mg/kg	NA	NA	mg/kg-day	1.82E-04	mg/kg-day	NA	NA
	ZINC	225	mg/kg	NA	NA	mg/kg-day	3.00E-01	mg/kg-day	NA	NA
	PESTICIDES									
	ALPHA-CHLORDANE	0.0048	mg/kg	9.63E-10	4.01E-10	mg/kg-day	5.00E-04	mg/kg-day	1.93E-06	8.03E-07
	BETA BHC	0.001	mg/kg	2.01E-10	8.36E-11	mg/kg-day	2.00E-04	mg/kg-day	1.00E-06	4.18E-07
	DELTA BHC	0.002	mg/kg	4.01E-10	1.67E-10	mg/kg-day	NA	mg/kg-day	NA	NA
	2,4- DDD	0.03	mg/kg	4.51E-09	1.88E-09	mg/kg-day	5.00E-04	mg/kg-day	9.03E-06	3.76E-06
	4,4- DDD	0.092	mg/kg	1.38E-08	5.77E-09	mg/kg-day	5.00E-04	mg/kg-day	2.77E-05	1.15E-05
	4,4- DDE	0.018	mg/kg	2.71E-09	1.13E-09	mg/kg-day	5.00E-04	mg/kg-day	5.42E-06	2.26E-06
	4,4- DDT	0.012	mg/kg	1.81E-09	7.52E-10	mg/kg-day	5.00E-04	mg/kg-day	3.61E-06	1.50E-06
	DIELDRIN	0.0029	mg/kg	1.45E-09	6.06E-10	mg/kg-day	5.00E-05	mg/kg-day	2.91E-05	1.21E-05
	ENDOSULFAN I	0.004	mg/kg	2.01E-09	8.36E-10	mg/kg-day	6.00E-03	mg/kg-day	3.34E-07	1.39E-07
	ENDOSULFAN SULFATE	0.003	mg/kg	1.50E-09	6.27E-10	mg/kg-day	6.00E-03	mg/kg-day	2.51E-07	1.05E-07
	ENDRIN	0.02	mg/kg	1.00E-08	4.18E-09	mg/kg-day	3.00E-04	mg/kg-day	3.34E-05	1.39E-05
	ENDRIN ALDEHYDE	0.006	mg/kg	3.01E-09	1.25E-09	mg/kg-day	3.00E-04	mg/kg-day	1.00E-05	4.18E-06
	ENDRIN KETONE	0.0023	mg/kg	1.15E-09	4.81E-10	mg/kg-day	3.00E-04	mg/kg-day	3.85E-06	1.60E-06
	GAMMA-CHLORDANE	0.0052	mg/kg	1.04E-09	4.35E-10	mg/kg-day	5.00E-04	mg/kg-day	2.09E-06	8.69E-07
	HEPTACHLOR	0.0002	mg/kg	1.00E-10	4.18E-11	mg/kg-day	5.00E-04	mg/kg-day	2.01E-07	8.36E-08
	HEPTACHLOR EPOXIDE	0.0003	mg/kg	1.50E-10	6.27E-11	mg/kg-day	1.30E-05	mg/kg-day	1.16E-05	4.82E-06
	HEXACHLOROBENZENE	0.0008	mg/kg	4.01E-10	1.67E-10	mg/kg-day	8.00E-04	mg/kg-day	5.02E-07	2.09E-07
	METHOXYCHLOR	0.012	mg/kg	2.41E-09	1.00E-09	mg/kg-day	5.00E-03	mg/kg-day	4.82E-07	2.01E-07
	MIREX	0.004	mg/kg	2.01E-09	8.36E-10	mg/kg-day	2.00E-04	mg/kg-day	1.00E-05	4.18E-06
	TRANS-NONACHLOR	0.0024	mg/kg	4.82E-10	2.01E-10	mg/kg-day	5.00E-04	mg/kg-day	9.63E-07	4.01E-07

Table C2-1b
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil (0 to 2 feet)
Exposure Point:	Surface Soil (0 to 2 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
DERMAL CONTACT (CONTINUED)	**PCBs**									
	PCBs (TOTAL)	0.11	mg/kg	7.72E-08	3.22E-08	mg/kg-day	2.00E-05	mg/kg-day	3.86E-03	1.61E-03
	SVOCs									
	ACENAPHTHENE	0.057	mg/kg	3.74E-08	1.56E-08	mg/kg-day	6.00E-02	mg/kg-day	6.23E-07	2.59E-07
	ACENAPHTHYLENE	0.04	mg/kg	2.58E-08	1.08E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	ANTHRACENE	0.0658	mg/kg	4.29E-08	1.79E-08	mg/kg-day	3.00E-01	mg/kg-day	1.43E-07	5.96E-08
	BENZO(A)ANTHRACENE	0.090	mg/kg	5.87E-08	2.45E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(A)PYRENE	0.090	mg/kg	5.87E-08	2.45E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(B)FLUORANTHENE	0.080	mg/kg	5.22E-08	2.17E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(G,H,I)PERYLENE	0.080	mg/kg	5.22E-08	2.17E-08	mg/kg-day	4.00E-02	mg/kg-day	1.30E-06	5.43E-07
	BENZO(K)FLUORANTHENE	0.07	mg/kg	4.37E-08	1.82E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	BIS(2-ETHYLHEXYL)PHTHAL	0.12	mg/kg	6.02E-08	2.51E-08	mg/kg-day	2.00E-02	mg/kg-day	3.01E-06	1.25E-06
	BUTYLBENZYLPHTHALATE	0.025	mg/kg	1.25E-08	5.23E-09	mg/kg-day	2.00E-01	mg/kg-day	6.27E-08	2.61E-08
	CARBAZOLE	0.14	mg/kg	7.07E-08	2.95E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	4- CHLOROANILINE	0.003	mg/kg	1.50E-09	6.27E-10	mg/kg-day	4.00E-03	mg/kg-day	3.76E-07	1.57E-07
	2- CHLOROPHENOL	0.043	mg/kg	2.17E-08	9.05E-09	mg/kg-day	5.00E-03	mg/kg-day	4.34E-06	1.81E-06
	CHRYSENE	0.080	mg/kg	5.22E-08	2.17E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	DIBENZOFURAN	0.079	mg/kg	3.96E-08	1.65E-08	mg/kg-day	2.00E-03	mg/kg-day	1.98E-05	8.25E-06
	3,3- DICHLOROBENZIDINE	0.012	mg/kg	6.02E-09	2.51E-09	mg/kg-day	NA	mg/kg-day	NA	NA
	FLUORANTHENE	0.080	mg/kg	5.22E-08	2.17E-08	mg/kg-day	4.00E-02	mg/kg-day	1.30E-06	5.43E-07
	FLUORENE	0.054	mg/kg	3.52E-08	1.47E-08	mg/kg-day	4.00E-02	mg/kg-day	8.80E-07	3.67E-07
	INDENO(1,2,3-CD)PYRENE	0.10	mg/kg	6.52E-08	2.72E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	2- METHYLNAPHTHALENE	0.052	mg/kg	2.62E-08	1.09E-08	mg/kg-day	4.00E-03	mg/kg-day	6.56E-06	2.73E-06
	4- METHYLPHENOL	0.067	mg/kg	3.35E-08	1.40E-08	mg/kg-day	5.00E-03	mg/kg-day	6.70E-06	2.79E-06
	NAPHTHALENE	0.090	mg/kg	5.87E-08	2.45E-08	mg/kg-day	2.00E-02	mg/kg-day	2.93E-06	1.22E-06
	PENTACHLOROPHENOL	0.048	mg/kg	2.43E-08	1.01E-08	mg/kg-day	3.00E-02	mg/kg-day	8.09E-07	3.37E-07
	PHENANTHRENE	0.090	mg/kg	5.87E-08	2.45E-08	mg/kg-day	3.00E-01	mg/kg-day	1.96E-07	8.15E-08
	PHENOL	0.14	mg/kg	7.02E-08	2.93E-08	mg/kg-day	6.00E-01	mg/kg-day	1.17E-07	4.88E-08
	PYRENE	0.080	mg/kg	5.22E-08	2.17E-08	mg/kg-day	3.00E-02	mg/kg-day	1.74E-06	7.25E-07
	TPH									
	TPH AS DIESEL	23	mg/kg	NA	NA	mg/kg-day	NA	mg/kg-day	NA	NA

Table C2-1b
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil (0 to 2 feet)
Exposure Point:	Surface Soil (0 to 2 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
DERMAL CONTACT (CONTINUED)	*TPH AS GASOLINE*	0.7	mg/kg	NA	NA	mg/kg-day	NA	mg/kg-day	NA	NA
	TPH AS MOTOR OIL	246	mg/kg	NA	NA	mg/kg-day	NA	mg/kg-day	NA	NA
	VOCs									
	ACETONE	0.10	mg/kg	NA	NA	mg/kg-day	9.00E-01	mg/kg-day	NA	NA
	CARBON DISULFIDE	0.007	mg/kg	NA	NA	mg/kg-day	1.00E-01	mg/kg-day	NA	NA
	CHLOROBENZENE	0.005	mg/kg	NA	NA	mg/kg-day	2.00E-02	mg/kg-day	NA	NA
	ETHYLBENZENE	0.018	mg/kg	NA	NA	mg/kg-day	1.00E-01	mg/kg-day	NA	NA
	TOLUENE	0.03	mg/kg	NA	NA	mg/kg-day	2.00E-01	mg/kg-day	NA	NA
	TRICHLOROETHENE	0.007	mg/kg	NA	NA	mg/kg-day	3.00E-04	mg/kg-day	NA	NA
	XYLENE (TOTAL)	0.15	mg/kg	NA	NA	mg/kg-day	2.00E-01	mg/kg-day	NA	NA
INHALATION OF PARTICULATES AND VAPORS	**INORGANICS**									
	ALUMINUM	26,988	mg/kg	1.24E-06	5.17E-07	mg/kg-day	1.40E-03	mg/kg-day	8.86E-04	3.69E-04
	ANTIMONY	2.6	mg/kg	1.19E-10	4.98E-11	mg/kg-day	NA	mg/kg-day	NA	NA
	ARSENIC	22.0	mg/kg	1.01E-09	4.21E-10	mg/kg-day	8.57E-06	mg/kg-day	1.18E-04	4.92E-05
	BARIUM	90.0	mg/kg	4.14E-09	1.72E-09	mg/kg-day	1.43E-04	mg/kg-day	2.89E-05	1.20E-05
	BERYLLIUM	0.4	mg/kg	2.02E-11	8.42E-12	mg/kg-day	2.00E-06	mg/kg-day	1.01E-05	4.22E-06
	CADMIUM	2.6	mg/kg	1.19E-10	4.98E-11	mg/kg-day	5.71E-06	mg/kg-day	2.09E-05	8.72E-06
	CHROMIUM	112	mg/kg	5.15E-09	2.14E-09	mg/kg-day	NA	mg/kg-day	NA	NA
	COBALT	21	mg/kg	9.65E-10	4.02E-10	mg/kg-day	5.70E-06	mg/kg-day	1.69E-04	7.05E-05
	COPPER	125	mg/kg	5.74E-09	2.39E-09	mg/kg-day	NA	mg/kg-day	NA	NA
	LEAD	88	mg/kg	4.04E-09	1.68E-09	mg/kg-day	NA	mg/kg-day	NA	NA
	MANGANESE	1017	mg/kg	4.67E-08	1.95E-08	mg/kg-day	1.43E-05	mg/kg-day	3.27E-03	1.36E-03
	MERCURY	1.2	mg/kg	5.51E-11	2.30E-11	mg/kg-day	2.57E-05	mg/kg-day	2.15E-06	8.94E-07
	MOLYBDENUM	4.8	mg/kg	2.21E-10	9.19E-11	mg/kg-day	NA	mg/kg-day	NA	NA
	NICKEL	108	mg/kg	4.96E-09	2.07E-09	mg/kg-day	1.43E-05	mg/kg-day	3.48E-04	1.45E-04
	SELENIUM	1.0	mg/kg	4.59E-11	1.91E-11	mg/kg-day	5.71E-03	mg/kg-day	8.05E-09	3.35E-09
	SILVER	2.3	mg/kg	1.06E-10	4.40E-11	mg/kg-day	NA	mg/kg-day	NA	NA
	THALLIUM	0.29	mg/kg	1.33E-11	5.55E-12	mg/kg-day	NA	mg/kg-day	NA	NA
	TIN	20.1	mg/kg	9.24E-10	3.85E-10	mg/kg-day	NA	mg/kg-day	NA	NA
	VANADIUM	102	mg/kg	4.69E-09	1.95E-09	mg/kg-day	NA	mg/kg-day	NA	NA
	ZINC	225	mg/kg	1.03E-08	4.31E-09	mg/kg-day	NA	mg/kg-day	NA	NA

Table C2-1b
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil (0 to 2 feet)
Exposure Point:	Surface Soil (0 to 2 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
INHALATION OF PARTICULATES AND VAPORS (CONTINUED)	**PESTICIDES**									
	ALPHA-CHLORDANE	0.0048	mg/kg	2.21E-13	9.19E-14	mg/kg-day	2.00E-04	mg/kg-day	1.10E-09	4.59E-10
	BETA BHC	0.001	mg/kg	4.59E-14	1.91E-14	mg/kg-day	2.00E-04	mg/kg-day	2.30E-10	9.57E-11
	DELTA BHC	0.002	mg/kg	9.19E-14	3.83E-14	mg/kg-day	NA	mg/kg-day	NA	NA
	2,4- DDD	0.03	mg/kg	1.38E-12	5.74E-13	mg/kg-day	5.00E-04	mg/kg-day	2.76E-09	1.15E-09
	4,4- DDD	0.092	mg/kg	4.23E-12	1.76E-12	mg/kg-day	5.00E-04	mg/kg-day	8.45E-09	3.52E-09
	4,4- DDE	0.018	mg/kg	8.27E-13	3.45E-13	mg/kg-day	5.00E-04	mg/kg-day	1.65E-09	6.89E-10
	4,4- DDT	0.012	mg/kg	5.51E-13	2.30E-13	mg/kg-day	5.00E-04	mg/kg-day	1.10E-09	4.59E-10
	DIELDRIN	0.0029	mg/kg	1.33E-13	5.55E-14	mg/kg-day	5.00E-05	mg/kg-day	2.67E-09	1.11E-09
	ENDOSULFAN I	0.004	mg/kg	1.84E-13	7.66E-14	mg/kg-day	6.00E-03	mg/kg-day	3.06E-11	1.28E-11
	ENDOSULFAN SULFATE	0.003	mg/kg	1.38E-13	5.74E-14	mg/kg-day	6.00E-03	mg/kg-day	2.30E-11	9.57E-12
	ENDRIN	0.02	mg/kg	9.19E-13	3.83E-13	mg/kg-day	3.00E-04	mg/kg-day	3.06E-09	1.28E-09
	ENDRIN ALDEHYDE	0.006	mg/kg	2.76E-13	1.15E-13	mg/kg-day	3.00E-04	mg/kg-day	9.19E-10	3.83E-10
	ENDRIN KETONE	0.0023	mg/kg	1.06E-13	4.40E-14	mg/kg-day	3.00E-04	mg/kg-day	3.52E-10	1.47E-10
	GAMMA-CHLORDANE	0.0052	mg/kg	2.39E-13	9.96E-14	mg/kg-day	2.00E-04	mg/kg-day	1.19E-09	4.98E-10
	HEPTACHLOR	0.0002	mg/kg	9.19E-15	3.83E-15	mg/kg-day	5.00E-04	mg/kg-day	1.84E-11	7.66E-12
	HEPTACHLOR EPOXIDE	0.0003	mg/kg	1.38E-14	5.74E-15	mg/kg-day	1.30E-05	mg/kg-day	1.06E-09	4.42E-10
	HEXACHLOROBENZENE	0.0008	mg/kg	3.68E-14	1.53E-14	mg/kg-day	8.00E-04	mg/kg-day	4.59E-11	1.91E-11
	METHOXYCHLOR	0.012	mg/kg	5.51E-13	2.30E-13	mg/kg-day	5.00E-03	mg/kg-day	1.10E-10	4.59E-11
	MIREX	0.004	mg/kg	1.84E-13	7.66E-14	mg/kg-day	2.00E-04	mg/kg-day	9.19E-10	3.83E-10
	TRANS-NONACHLOR	0.0024	mg/kg	1.10E-13	4.59E-14	mg/kg-day	2.00E-04	mg/kg-day	5.51E-10	2.30E-10
	PCBs									
	PCBs (TOTAL)	0.11	mg/kg	5.05E-12	2.11E-12	mg/kg-day	2.00E-05	mg/kg-day	2.53E-07	1.05E-07
	SVOCs									
	ACENAPHTHENE	0.057	mg/kg	1.93E-08	8.05E-09	mg/kg-day	6.00E-02	mg/kg-day	3.22E-07	1.34E-07
	ACENAPHTHYLENE	0.04	mg/kg	1.82E-12	7.58E-13	mg/kg-day	NA	mg/kg-day	NA	NA
	ANTHRACENE	0.0658	mg/kg	5.70E-09	2.38E-09	mg/kg-day	3.00E-01	mg/kg-day	1.90E-08	7.92E-09
	BENZO(A)ANTHRACENE	0.090	mg/kg	4.14E-12	1.72E-12	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(A)PYRENE	0.090	mg/kg	4.14E-12	1.72E-12	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(B)FLUORANTHENE	0.080	mg/kg	3.68E-12	1.53E-12	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(G,H,I)PERYLENE	0.080	mg/kg	3.68E-12	1.53E-12	mg/kg-day	4.00E-02	mg/kg-day	9.19E-11	3.83E-11

Table C2-1b
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil (0 to 2 feet)
Exposure Point:	Surface Soil (0 to 2 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
INHALATION OF PARTICULATES AND VAPORS (CONTINUED)	*BENZO(K)FLUORANTHENE*	0.07	mg/kg	3.08E-12	1.28E-12	mg/kg-day	NA	mg/kg-day	NA	NA
	BIS(2-ETHYLHEXYL)PHTHAL	0.12	mg/kg	5.51E-12	2.30E-12	mg/kg-day	2.00E-02	mg/kg-day	2.76E-10	1.15E-10
	BUTYLBENZYLPHTHALATE	0.025	mg/kg	1.15E-12	4.79E-13	mg/kg-day	2.00E-01	mg/kg-day	5.74E-12	2.39E-12
	CARBAZOLE	0.14	mg/kg	6.48E-12	2.70E-12	mg/kg-day	NA	mg/kg-day	NA	NA
	4- CHLOROANILINE	0.003	mg/kg	1.38E-13	5.74E-14	mg/kg-day	4.00E-03	mg/kg-day	3.45E-11	1.44E-11
	2- CHLOROPHENOL	0.043	mg/kg	1.99E-12	8.29E-13	mg/kg-day	5.00E-03	mg/kg-day	3.98E-10	1.66E-10
	CHRYSENE	0.080	mg/kg	1.80E-09	7.49E-10	mg/kg-day	NA	mg/kg-day	NA	NA
	DIBENZOFURAN	0.079	mg/kg	3.63E-12	1.51E-12	mg/kg-day	2.00E-03	mg/kg-day	1.81E-09	7.55E-10
	3,3- DICHLOROBENZIDINE	0.012	mg/kg	5.51E-13	2.30E-13	mg/kg-day	NA	mg/kg-day	NA	NA
	FLUORANTHENE	0.080	mg/kg	3.68E-12	1.53E-12	mg/kg-day	4.00E-02	mg/kg-day	9.19E-11	3.83E-11
	FLUORENE	0.054	mg/kg	9.10E-09	3.79E-09	mg/kg-day	4.00E-02	mg/kg-day	2.27E-07	9.48E-08
	INDENO(1,2,3-CD)PYRENE	0.10	mg/kg	4.59E-12	1.91E-12	mg/kg-day	NA	mg/kg-day	NA	NA
	2- METHYLNAPHTHALENE	0.052	mg/kg	2.40E-12	1.00E-12	mg/kg-day	NA	mg/kg-day	NA	NA
	4- METHYLPHENOL	0.067	mg/kg	3.07E-12	1.28E-12	mg/kg-day	NA	mg/kg-day	NA	NA
	NAPHTHALENE	0.090	mg/kg	1.27E-07	5.29E-08	mg/kg-day	8.57E-04	mg/kg-day	1.48E-04	6.17E-05
	PENTACHLOROPHENOL	0.048	mg/kg	2.22E-12	9.27E-13	mg/kg-day	3.00E-02	mg/kg-day	7.41E-11	3.09E-11
	PHENANTHRENE	0.090	mg/kg	4.14E-12	1.72E-12	mg/kg-day	3.00E-01	mg/kg-day	1.38E-11	5.74E-12
	PHENOL	0.14	mg/kg	6.43E-12	2.68E-12	mg/kg-day	5.71E-02	mg/kg-day	1.13E-10	4.69E-11
	PYRENE	0.080	mg/kg	1.28E-09	5.32E-10	mg/kg-day	3.00E-02	mg/kg-day	4.26E-08	1.77E-08
	TPH									
	TPH AS DIESEL	23	mg/kg	1.06E-09	4.40E-10	mg/kg-day	NA	mg/kg-day	NA	NA
	TPH AS GASOLINE	0.7	mg/kg	3.22E-11	1.34E-11	mg/kg-day	NA	mg/kg-day	NA	NA
	TPH AS MOTOR OIL	246	mg/kg	1.13E-08	4.71E-09	mg/kg-day	NA	mg/kg-day	NA	NA
	VOCs									
	ACETONE	0.10	mg/kg	4.67E-07	1.94E-07	mg/kg-day	9.00E-01	mg/kg-day	5.18E-07	2.16E-07
	CARBON DISULFIDE	0.007	mg/kg	3.54E-07	1.47E-07	mg/kg-day	2.00E-01	mg/kg-day	1.77E-06	7.37E-07
	CHLOROBENZENE	0.005	mg/kg	4.81E-08	2.01E-08	mg/kg-day	5.71E-03	mg/kg-day	8.43E-06	3.51E-06
	ETHYLBENZENE	0.018	mg/kg	2.02E-07	8.42E-08	mg/kg-day	2.86E-01	mg/kg-day	7.07E-07	2.95E-07
	TOLUENE	0.03	mg/kg	4.55E-07	1.90E-07	mg/kg-day	8.57E-02	mg/kg-day	5.31E-06	2.21E-06
	TRICHLOROETHENE	0.007	mg/kg	1.29E-07	5.36E-08	mg/kg-day	1.00E-02	mg/kg-day	1.29E-05	5.36E-06
	XYLENE (TOTAL)	0.15	mg/kg	1.49E-06	6.21E-07	mg/kg-day	2.86E-02	mg/kg-day	5.21E-05	2.17E-05

Table C2-1b
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil (0 to 2 feet)
Exposure Point:	Surface Soil (0 to 2 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)

Notes:
The HQ for chemicals that are italicized and underlined have been modified for post remediation residual risk.
CTE = Central Tendency Exposure
EPC = Exposure point concentration
HQ = Hazard Quotient
mg/kg = milligrams per kilogram
mg/kg-day = milligrams per kilogram per day
NA = Not Applicable
PCBs = Polychlorinated Biphenyls
RfD = Reference Dose
RME = Reasonable Maximum Exposure
SVOCs = Semivolatile Organic Compounds
TPH = Total Petroleum Hydrocarbons
VOCs = Volatile Organic Compounds

Table C2-1c
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil (0 to 2 feet)
Exposure Point:	Surface Soil (0 to 2 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INGESTION	**INORGANICS**									
	ALUMINUM	26,988	mg/kg	7.16E-03	2.98E-03	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ANTIMONY	2.6	mg/kg	6.90E-07	2.88E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ARSENIC	22.0	mg/kg	5.84E-06	2.43E-06	mg/kg-day	9.45E+00	$(mg/kg\text{-}day)^{-1}$	5.52E-05	2.30E-05
	BARIUM	90.0	mg/kg	2.39E-05	9.95E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BERYLLIUM	0.4	mg/kg	1.17E-07	4.87E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CADMIUM	2.6	mg/kg	6.90E-07	2.88E-07	mg/kg-day	3.80E-01	$(mg/kg\text{-}day)^{-1}$	2.62E-07	1.09E-07
	CHROMIUM	112	mg/kg	2.97E-05	1.24E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	COBALT	21	mg/kg	5.57E-06	2.32E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	COPPER	125	mg/kg	3.32E-05	1.38E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	LEAD	88	mg/kg	2.34E-05	9.73E-06	mg/kg-day	8.50E-03	$(mg/kg\text{-}day)^{-1}$	1.99E-07	8.27E-08
	MANGANESE	1017	mg/kg	2.70E-04	1.12E-04	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MERCURY	1.2	mg/kg	3.18E-07	1.33E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MOLYBDENUM	4.8	mg/kg	1.27E-06	5.31E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	NICKEL	108	mg/kg	2.87E-05	1.19E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	SELENIUM	1.0	mg/kg	2.65E-07	1.11E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	SILVER	2.3	mg/kg	6.10E-07	2.54E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	THALLIUM	0.29	mg/kg	7.70E-08	3.21E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TIN	20.1	mg/kg	5.33E-06	2.22E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	VANADIUM	102	mg/kg	2.71E-05	1.13E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ZINC	225	mg/kg	5.97E-05	2.49E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PESTICIDES									
	ALPHA-CHLORDANE	0.0048	mg/kg	1.27E-09	5.31E-10	mg/kg-day	1.30E+00	$(mg/kg\text{-}day)^{-1}$	1.66E-09	6.90E-10
	BETA BHC	0.001	mg/kg	2.65E-10	1.11E-10	mg/kg-day	1.80E+00	$(mg/kg\text{-}day)^{-1}$	4.78E-10	1.99E-10

Table C2-1c
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil (0 to 2 feet)
Exposure Point:	Surface Soil (0 to 2 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INGESTION (CONTINUED)	DELTA BHC	0.002	mg/kg	5.31E-10	2.21E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	2,4- DDD	0.03	mg/kg	7.96E-09	3.32E-09	mg/kg-day	2.40E-01	$(mg/kg\text{-}day)^{-1}$	1.91E-09	7.96E-10
	4,4- DDD	0.092	mg/kg	2.44E-08	1.02E-08	mg/kg-day	2.40E-01	$(mg/kg\text{-}day)^{-1}$	5.86E-09	2.44E-09
	4,4- DDE	0.018	mg/kg	4.78E-09	1.99E-09	mg/kg-day	3.40E-01	$(mg/kg\text{-}day)^{-1}$	1.62E-09	6.77E-10
	4,4- DDT	0.012	mg/kg	3.18E-09	1.33E-09	mg/kg-day	3.40E-01	$(mg/kg\text{-}day)^{-1}$	1.08E-09	4.51E-10
	DIELDRIN	0.0029	mg/kg	7.70E-10	3.21E-10	mg/kg-day	1.60E+01	$(mg/kg\text{-}day)^{-1}$	1.23E-08	5.13E-09
	ENDOSULFAN I	0.004	mg/kg	1.06E-09	4.42E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDOSULFAN SULFATE	0.003	mg/kg	7.96E-10	3.32E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN	0.02	mg/kg	5.31E-09	2.21E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN ALDEHYDE	0.006	mg/kg	1.59E-09	6.64E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN KETONE	0.0023	mg/kg	6.10E-10	2.54E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	GAMMA-CHLORDANE	0.0052	mg/kg	1.38E-09	5.75E-10	mg/kg-day	1.30E+00	$(mg/kg\text{-}day)^{-1}$	1.79E-09	7.48E-10
	HEPTACHLOR	0.0002	mg/kg	5.31E-11	2.21E-11	mg/kg-day	4.50E+00	$(mg/kg\text{-}day)^{-1}$	2.39E-10	9.95E-11
	HEPTACHLOR EPOXIDE	0.0003	mg/kg	7.96E-11	3.32E-11	mg/kg-day	9.10E+00	$(mg/kg\text{-}day)^{-1}$	7.25E-10	3.02E-10
	HEXACHLOROBENZENE	0.0008	mg/kg	2.12E-10	8.85E-11	mg/kg-day	1.80E+00	$(mg/kg\text{-}day)^{-1}$	3.82E-10	1.59E-10
	METHOXYCHLOR	0.012	mg/kg	3.18E-09	1.33E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MIREX	0.004	mg/kg	1.06E-09	4.42E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TRANS-NONACHLOR	0.0024	mg/kg	6.37E-10	2.65E-10	mg/kg-day	1.30E+00	$(mg/kg\text{-}day)^{-1}$	8.28E-10	3.45E-10
	PCBs									
	PCBs (TOTAL)	0.11	mg/kg	2.92E-08	1.22E-08	mg/kg-day	5.00E+00	$(mg/kg\text{-}day)^{-1}$	1.46E-07	6.08E-08
	SVOCs									
	ACENAPHTHENE	0.057	mg/kg	1.52E-08	6.34E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ACENAPHTHYLENE	0.04	mg/kg	1.05E-08	4.38E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ANTHRACENE	0.0658	mg/kg	1.75E-08	7.28E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

Table C2-1c
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Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

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Exposure Medium:	Surface Soil (0 to 2 feet)
Exposure Point:	Surface Soil (0 to 2 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INGESTION (CONTINUED)	*BENZO(A)ANTHRACENE*	0.090	mg/kg	2.39E-08	9.95E-09	mg/kg-day	1.20E+00	$(mg/kg\text{-}day)^{-1}$	2.87E-08	1.19E-08
	BENZO(A)PYRENE	0.090	mg/kg	2.39E-08	9.95E-09	mg/kg-day	1.20E+01	$(mg/kg\text{-}day)^{-1}$	2.87E-07	1.19E-07
	BENZO(B)FLUORANTHENE	0.080	mg/kg	2.12E-08	8.85E-09	mg/kg-day	1.20E+00	$(mg/kg\text{-}day)^{-1}$	2.55E-08	1.06E-08
	BENZO(G,H,I)PERYLENE	0.080	mg/kg	2.12E-08	8.85E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BENZO(K)FLUORANTHENE	0.07	mg/kg	1.78E-08	7.41E-09	mg/kg-day	1.20E+00	$(mg/kg\text{-}day)^{-1}$	2.13E-08	8.89E-09
	BIS(2-ETHYLHEXYL)PHTHALATE	0.12	mg/kg	3.18E-08	1.33E-08	mg/kg-day	1.40E-02	$(mg/kg\text{-}day)^{-1}$	4.46E-10	1.86E-10
	BUTYLBENZYLPHTHALATE	0.025	mg/kg	6.64E-09	2.76E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CARBAZOLE	0.14	mg/kg	3.74E-08	1.56E-08	mg/kg-day	2.00E-02	$(mg/kg\text{-}day)^{-1}$	7.48E-10	3.12E-10
	4- CHLOROANILINE	0.003	mg/kg	7.96E-10	3.32E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	2- CHLOROPHENOL	0.043	mg/kg	1.15E-08	4.79E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CHRYSENE	0.080	mg/kg	2.12E-08	8.85E-09	mg/kg-day	1.20E-01	$(mg/kg\text{-}day)^{-1}$	2.55E-09	1.06E-09
	DIBENZOFURAN	0.079	mg/kg	2.09E-08	8.73E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	3,3- DICHLOROBENZIDINE	0.012	mg/kg	3.18E-09	1.33E-09	mg/kg-day	4.50E-01	$(mg/kg\text{-}day)^{-1}$	1.43E-09	5.97E-10
	FLUORANTHENE	0.080	mg/kg	2.12E-08	8.85E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	FLUORENE	0.054	mg/kg	1.43E-08	5.97E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	INDENO(1,2,3-CD)PYRENE	0.10	mg/kg	2.65E-08	1.11E-08	mg/kg-day	1.20E+00	$(mg/kg\text{-}day)^{-1}$	3.18E-08	1.33E-08
	2- METHYLNAPHTHALENE	0.052	mg/kg	1.39E-08	5.78E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	4- METHYLPHENOL	0.067	mg/kg	1.77E-08	7.39E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	NAPHTHALENE	0.090	mg/kg	2.39E-08	9.95E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PENTACHLOROPHENOL	0.048	mg/kg	1.28E-08	5.35E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PHENANTHRENE	0.090	mg/kg	2.39E-08	9.95E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PHENOL	0.14	mg/kg	3.72E-08	1.55E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PYRENE	0.080	mg/kg	2.12E-08	8.85E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

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Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil (0 to 2 feet)
Exposure Point:	Surface Soil (0 to 2 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INGESTION (CONTINUED)	**TPH**									
	TPH AS DIESEL	23	mg/kg	6.10E-06	2.54E-06	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA
	TPH AS GASOLINE	0.7	mg/kg	1.86E-07	7.74E-08	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA
	TPH AS MOTOR OIL	246	mg/kg	6.53E-05	2.72E-05	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA
	VOCs									
	ACETONE	0.10	mg/kg	2.65E-08	1.11E-08	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA
	CARBON DISULFIDE	0.007	mg/kg	1.86E-09	7.74E-10	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA
	CHLOROBENZENE	0.005	mg/kg	1.33E-09	5.53E-10	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA
	ETHYLBENZENE	0.018	mg/kg	4.78E-09	1.99E-09	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA
	TOLUENE	0.03	mg/kg	7.96E-09	3.32E-09	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA
	TRICHLOROETHENE	0.007	mg/kg	1.86E-09	7.74E-10	mg/kg-day	4.10E-01	$(mg/kg-day)^{-1}$	7.62E-10	3.17E-10
	XYLENE (TOTAL)	0.15	mg/kg	3.98E-08	1.66E-08	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA
DERMAL CONTACT	**INORGANICS**									
	ALUMINUM	26,988	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA
	ANTIMONY	2.6	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA
	ARSENIC	22.0	mg/kg	8.04E-07	3.35E-07	mg/kg-day	9.45E+00	$(mg/kg-day)^{-1}$	7.60E-06	3.17E-06
	BARIUM	90.0	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA
	BERYLLIUM	0.4	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA
	CADMIUM	2.6	mg/kg	3.17E-09	1.32E-09	mg/kg-day	1.52E+01	$(mg/kg-day)^{-1}$	4.81E-08	2.01E-08
	CHROMIUM	112	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA
	COBALT	21	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA
	COPPER	125	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA
	LEAD	88	mg/kg	NA	NA	mg/kg-day	8.50E-03	$(mg/kg-day)^{-1}$	NA	NA
	MANGANESE	1017	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA

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Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
DERMAL CONTACT (CONTINUED)	*MERCURY*	1.2	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MOLYBDENUM	4.8	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	NICKEL	108	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	SELENIUM	1.0	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	SILVER	2.3	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	THALLIUM	0.29	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TIN	20.1	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	VANADIUM	102	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ZINC	225	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PESTICIDES									
	ALPHA-CHLORDANE	0.0048	mg/kg	2.34E-10	9.75E-11	mg/kg-day	1.30E+00	$(mg/kg\text{-}day)^{-1}$	3.04E-10	1.27E-10
	BETA BHC	0.001	mg/kg	4.87E-11	2.03E-11	mg/kg-day	1.80E+00	$(mg/kg\text{-}day)^{-1}$	8.77E-11	3.65E-11
	DELTA BHC	0.002	mg/kg	9.75E-11	4.06E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	2,4- DDD	0.03	mg/kg	1.10E-09	4.57E-10	mg/kg-day	2.40E-01	$(mg/kg\text{-}day)^{-1}$	2.63E-10	1.10E-10
	4,4- DDD	0.092	mg/kg	3.36E-09	1.40E-09	mg/kg-day	2.40E-01	$(mg/kg\text{-}day)^{-1}$	8.07E-10	3.36E-10
	4,4- DDE	0.018	mg/kg	6.58E-10	2.74E-10	mg/kg-day	3.40E-01	$(mg/kg\text{-}day)^{-1}$	2.24E-10	9.32E-11
	4,4- DDT	0.012	mg/kg	4.39E-10	1.83E-10	mg/kg-day	3.40E-01	$(mg/kg\text{-}day)^{-1}$	1.49E-10	6.21E-11
	DIELDRIN	0.0029	mg/kg	3.53E-10	1.47E-10	mg/kg-day	1.60E+01	$(mg/kg\text{-}day)^{-1}$	5.65E-09	2.36E-09
	ENDOSULFAN I	0.004	mg/kg	4.87E-10	2.03E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDOSULFAN SULFATE	0.003	mg/kg	3.65E-10	1.52E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN	0.02	mg/kg	2.44E-09	1.02E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN ALDEHYDE	0.006	mg/kg	7.31E-10	3.05E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN KETONE	0.0023	mg/kg	2.80E-10	1.17E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	GAMMA-CHLORDANE	0.0052	mg/kg	2.53E-10	1.06E-10	mg/kg-day	1.30E+00	$(mg/kg\text{-}day)^{-1}$	3.29E-10	1.37E-10

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Exposure Point:	Surface Soil (0 to 2 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
DERMAL CONTACT (CONTINUED)	HEPTACHLOR	0.0002	mg/kg	2.44E-11	1.02E-11	mg/kg-day	4.50E+00	$(mg/kg\text{-}day)^{-1}$	1.10E-10	4.57E-11
	HEPTACHLOR EPOXIDE	0.0003	mg/kg	3.65E-11	1.52E-11	mg/kg-day	9.10E+00	$(mg/kg\text{-}day)^{-1}$	3.33E-10	1.39E-10
	HEXACHLOROBENZENE	0.0008	mg/kg	9.75E-11	4.06E-11	mg/kg-day	1.80E+00	$(mg/kg\text{-}day)^{-1}$	1.75E-10	7.31E-11
	METHOXYCHLOR	0.012	mg/kg	5.85E-10	2.44E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MIREX	0.004	mg/kg	4.87E-10	2.03E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TRANS-NONACHLOR	0.0024	mg/kg	1.17E-10	4.87E-11	mg/kg-day	1.30E+00	$(mg/kg\text{-}day)^{-1}$	1.52E-10	6.33E-11
	PCBs									
	PCBs (TOTAL)	0.11	mg/kg	1.88E-08	7.82E-09	mg/kg-day	5.00E+00	$(mg/kg\text{-}day)^{-1}$	9.38E-08	3.91E-08
	SVOCs									
	ACENAPHTHENE	0.057	mg/kg	9.07E-09	3.78E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ACENAPHTHYLENE	0.04	mg/kg	6.27E-09	2.61E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ANTHRACENE	0.0658	mg/kg	1.04E-08	4.34E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BENZO(A)ANTHRACENE	0.090	mg/kg	1.43E-08	5.94E-09	mg/kg-day	1.20E+00	$(mg/kg\text{-}day)^{-1}$	1.71E-08	7.13E-09
	BENZO(A)PYRENE	0.090	mg/kg	1.43E-08	5.94E-09	mg/kg-day	1.20E+01	$(mg/kg\text{-}day)^{-1}$	1.71E-07	7.13E-08
	BENZO(B)FLUORANTHENE	0.080	mg/kg	1.27E-08	5.28E-09	mg/kg-day	1.20E+00	$(mg/kg\text{-}day)^{-1}$	1.52E-08	6.33E-09
	BENZO(G,H,I)PERYLENE	0.080	mg/kg	1.27E-08	5.28E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BENZO(K)FLUORANTHENE	0.07	mg/kg	1.06E-08	4.42E-09	mg/kg-day	1.20E+00	$(mg/kg\text{-}day)^{-1}$	1.27E-08	5.31E-09
	BIS(2-ETHYLHEXYL)PHTHALATE	0.12	mg/kg	1.46E-08	6.09E-09	mg/kg-day	1.40E-02	$(mg/kg\text{-}day)^{-1}$	2.05E-10	8.53E-11
	BUTYLBENZYLPHTHALATE	0.025	mg/kg	3.05E-09	1.27E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CARBAZOLE	0.14	mg/kg	1.72E-08	7.16E-09	mg/kg-day	2.00E-02	$(mg/kg\text{-}day)^{-1}$	3.44E-10	1.43E-10
	4- CHLOROANILINE	0.003	mg/kg	3.65E-10	1.52E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	2- CHLOROPHENOL	0.043	mg/kg	5.27E-09	2.20E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CHRYSENE	0.080	mg/kg	1.27E-08	5.28E-09	mg/kg-day	1.20E-01	$(mg/kg\text{-}day)^{-1}$	1.52E-09	6.33E-10
	DIBENZOFURAN	0.079	mg/kg	9.61E-09	4.00E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

Table C2-1c
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil (0 to 2 feet)
Exposure Point:	Surface Soil (0 to 2 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
DERMAL CONTACT (CONTINUED)	3,3- DICHLOROBENZIDINE	0.012	mg/kg	1.46E-09	6.09E-10	mg/kg-day	4.50E-01	$(mg/kg\text{-}day)^{-1}$	6.58E-10	2.74E-10
	FLUORANTHENE	0.080	mg/kg	1.27E-08	5.28E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	FLUORENE	0.054	mg/kg	8.55E-09	3.56E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	INDENO(1,2,3-CD)PYRENE	0.10	mg/kg	1.58E-08	6.60E-09	mg/kg-day	1.20E+00	$(mg/kg\text{-}day)^{-1}$	1.90E-08	7.92E-09
	2- METHYLNAPHTHALENE	0.052	mg/kg	6.37E-09	2.65E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	4- METHYLPHENOL	0.067	mg/kg	8.14E-09	3.39E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	NAPHTHALENE	0.090	mg/kg	1.43E-08	5.94E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PENTACHLOROPHENOL	0.048	mg/kg	5.90E-09	2.46E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PHENANTHRENE	0.090	mg/kg	1.43E-08	5.94E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PHENOL	0.14	mg/kg	1.71E-08	7.11E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PYRENE	0.080	mg/kg	1.27E-08	5.28E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TPH									
	TPH AS DIESEL	23	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TPH AS GASOLINE	0.7	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TPH AS MOTOR OIL	246	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	VOCs									
	ACETONE	0.10	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CARBON DISULFIDE	0.007	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CHLOROBENZENE	0.005	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ETHYLBENZENE	0.018	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TOLUENE	0.03	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TRICHLOROETHENE	0.007	mg/kg	NA	NA	mg/kg-day	4.10E-01	$(mg/kg\text{-}day)^{-1}$	NA	NA
	XYLENE (TOTAL)	0.15	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

Table C2-1c
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil (0 to 2 feet)
Exposure Point:	Surface Soil (0 to 2 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INHALATION OF PARTICULATES AND VAPORS	**INORGANICS**									
	ALUMINUM	26,988	mg/kg	3.01E-07	1.25E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ANTIMONY	2.6	mg/kg	2.90E-11	1.21E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ARSENIC	22.0	mg/kg	2.46E-10	1.02E-10	mg/kg-day	1.20E+01	$(mg/kg\text{-}day)^{-1}$	2.95E-09	1.23E-09
	BARIUM	90.0	mg/kg	1.00E-09	4.18E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BERYLLIUM	0.4	mg/kg	4.91E-12	2.05E-12	mg/kg-day	8.40E+00	$(mg/kg\text{-}day)^{-1}$	4.12E-11	1.72E-11
	CADMIUM	2.6	mg/kg	2.90E-11	1.21E-11	mg/kg-day	1.50E+01	$(mg/kg\text{-}day)^{-1}$	4.35E-10	1.81E-10
	CHROMIUM	112	mg/kg	1.25E-09	5.21E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	COBALT	21	mg/kg	2.34E-10	9.76E-11	mg/kg-day	9.80E+00	$(mg/kg\text{-}day)^{-1}$	2.30E-09	9.57E-10
	COPPER	125	mg/kg	1.39E-09	5.81E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	LEAD	88	mg/kg	9.82E-10	4.09E-10	mg/kg-day	4.20E-02	$(mg/kg\text{-}day)^{-1}$	4.12E-11	1.72E-11
	MANGANESE	1017	mg/kg	1.13E-08	4.73E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MERCURY	1.2	mg/kg	1.34E-11	5.58E-12	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MOLYBDENUM	4.8	mg/kg	5.36E-11	2.23E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	NICKEL	108	mg/kg	1.21E-09	5.02E-10	mg/kg-day	9.10E-01	$(mg/kg\text{-}day)^{-1}$	1.10E-09	4.57E-10
	SELENIUM	1.0	mg/kg	1.12E-11	4.65E-12	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	SILVER	2.3	mg/kg	2.57E-11	1.07E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	THALLIUM	0.29	mg/kg	3.24E-12	1.35E-12	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TIN	20.1	mg/kg	2.24E-10	9.35E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	VANADIUM	102	mg/kg	1.14E-09	4.74E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ZINC	225	mg/kg	2.51E-09	1.05E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PESTICIDES									
	ALPHA-CHLORDANE	0.0048	mg/kg	5.36E-14	2.23E-14	mg/kg-day	3.50E-01	$(mg/kg\text{-}day)^{-1}$	1.87E-14	7.81E-15
	BETA BHC	0.001	mg/kg	1.12E-14	4.65E-15	mg/kg-day	1.86E+00	$(mg/kg\text{-}day)^{-1}$	2.08E-14	8.65E-15

Table C2-1c
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil (0 to 2 feet)
Exposure Point:	Surface Soil (0 to 2 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INHALATION OF PARTICULATES AND VAPORS (CONTINUED)	DELTA BHC	0.002	mg/kg	2.23E-14	9.30E-15	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	2,4- DDD	0.03	mg/kg	3.35E-13	1.39E-13	mg/kg-day	2.40E-01	$(mg/kg\text{-}day)^{-1}$	8.03E-14	3.35E-14
	4,4- DDD	0.092	mg/kg	1.03E-12	4.28E-13	mg/kg-day	2.40E-01	$(mg/kg\text{-}day)^{-1}$	2.46E-13	1.03E-13
	4,4- DDE	0.018	mg/kg	2.01E-13	8.37E-14	mg/kg-day	3.40E-01	$(mg/kg\text{-}day)^{-1}$	6.83E-14	2.85E-14
	4,4- DDT	0.012	mg/kg	1.34E-13	5.58E-14	mg/kg-day	3.40E-01	$(mg/kg\text{-}day)^{-1}$	4.55E-14	1.90E-14
	DIELDRIN	0.0029	mg/kg	3.24E-14	1.35E-14	mg/kg-day	1.60E+01	$(mg/kg\text{-}day)^{-1}$	5.18E-13	2.16E-13
	ENDOSULFAN I	0.004	mg/kg	4.46E-14	1.86E-14	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDOSULFAN SULFATE	0.003	mg/kg	3.35E-14	1.39E-14	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN	0.02	mg/kg	2.23E-13	9.30E-14	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN ALDEHYDE	0.006	mg/kg	6.70E-14	2.79E-14	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN KETONE	0.0023	mg/kg	2.57E-14	1.07E-14	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	GAMMA-CHLORDANE	0.0052	mg/kg	5.80E-14	2.42E-14	mg/kg-day	3.50E-01	$(mg/kg\text{-}day)^{-1}$	2.03E-14	8.46E-15
	HEPTACHLOR	0.0002	mg/kg	2.23E-15	9.30E-16	mg/kg-day	4.50E+00	$(mg/kg\text{-}day)^{-1}$	1.00E-14	4.18E-15
	HEPTACHLOR EPOXIDE	0.0003	mg/kg	3.35E-15	1.39E-15	mg/kg-day	9.10E+00	$(mg/kg\text{-}day)^{-1}$	3.05E-14	1.27E-14
	HEXACHLOROBENZENE	0.0008	mg/kg	8.93E-15	3.72E-15	mg/kg-day	1.80E+00	$(mg/kg\text{-}day)^{-1}$	1.61E-14	6.70E-15
	METHOXYCHLOR	0.012	mg/kg	1.34E-13	5.58E-14	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MIREX	0.004	mg/kg	4.46E-14	1.86E-14	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TRANS-NONACHLOR	0.0024	mg/kg	2.68E-14	1.12E-14	mg/kg-day	3.50E-01	$(mg/kg\text{-}day)^{-1}$	9.37E-15	3.91E-15
	PCBs									
	PCBs (TOTAL)	0.11	mg/kg	1.23E-12	5.11E-13	mg/kg-day	2.00E+00	$(mg/kg\text{-}day)^{-1}$	2.46E-12	1.02E-12
	SVOCs									
	ACENAPHTHENE	0.057	mg/kg	4.69E-09	1.95E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ACENAPHTHYLENE	0.04	mg/kg	4.42E-13	1.84E-13	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ANTHRACENE	0.0658	mg/kg	1.38E-09	5.77E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

Table C2-1c
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil (0 to 2 feet)
Exposure Point:	Surface Soil (0 to 2 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INHALATION OF PARTICULATES AND VAPORS (CONTINUED)	*BENZO(A)ANTHRACENE*	0.090	mg/kg	1.00E-12	4.18E-13	mg/kg-day	3.90E-01	$(mg/kg\text{-}day)^{-1}$	3.92E-13	1.63E-13
	BENZO(A)PYRENE	0.090	mg/kg	1.00E-12	4.18E-13	mg/kg-day	3.90E+00	$(mg/kg\text{-}day)^{-1}$	3.92E-12	1.63E-12
	BENZO(B)FLUORANTHENE	0.080	mg/kg	8.93E-13	3.72E-13	mg/kg-day	3.90E-01	$(mg/kg\text{-}day)^{-1}$	3.48E-13	1.45E-13
	BENZO(G,H,I)PERYLENE	0.080	mg/kg	8.93E-13	3.72E-13	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BENZO(K)FLUORANTHENE	0.07	mg/kg	7.48E-13	3.12E-13	mg/kg-day	3.90E-01	$(mg/kg\text{-}day)^{-1}$	2.92E-13	1.21E-13
	BIS(2-ETHYLHEXYL)PHTHALATE	0.12	mg/kg	1.34E-12	5.58E-13	mg/kg-day	1.40E-02	$(mg/kg\text{-}day)^{-1}$	1.87E-14	7.81E-15
	BUTYLBENZYLPHTHALATE	0.025	mg/kg	2.79E-13	1.16E-13	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CARBAZOLE	0.14	mg/kg	1.57E-12	6.56E-13	mg/kg-day	2.00E-02	$(mg/kg\text{-}day)^{-1}$	3.15E-14	1.31E-14
	4- CHLOROANILINE	0.003	mg/kg	3.35E-14	1.39E-14	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	2- CHLOROPHENOL	0.043	mg/kg	4.83E-13	2.01E-13	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CHRYSENE	0.080	mg/kg	4.36E-10	1.82E-10	mg/kg-day	3.90E-02	$(mg/kg\text{-}day)^{-1}$	1.70E-11	7.09E-12
	DIBENZOFURAN	0.079	mg/kg	8.80E-13	3.67E-13	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	3,3- DICHLOROBENZIDINE	0.012	mg/kg	1.34E-13	5.58E-14	mg/kg-day	4.50E-01	$(mg/kg\text{-}day)^{-1}$	6.03E-14	2.51E-14
	FLUORANTHENE	0.080	mg/kg	8.93E-13	3.72E-13	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	FLUORENE	0.054	mg/kg	2.21E-09	9.21E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	INDENO(1,2,3-CD)PYRENE	0.10	mg/kg	1.12E-12	4.65E-13	mg/kg-day	3.90E-01	$(mg/kg\text{-}day)^{-1}$	4.35E-13	1.81E-13
	2- METHYLNAPHTHALENE	0.052	mg/kg	5.84E-13	2.43E-13	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	4- METHYLPHENOL	0.067	mg/kg	7.45E-13	3.11E-13	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	NAPHTHALENE	0.090	mg/kg	3.08E-08	1.28E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PENTACHLOROPHENOL	0.048	mg/kg	5.40E-13	2.25E-13	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PHENANTHRENE	0.090	mg/kg	1.00E-12	4.18E-13	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PHENOL	0.14	mg/kg	1.56E-12	6.51E-13	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PYRENE	0.080	mg/kg	3.10E-10	1.29E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

Table C2-1c
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil (0 to 2 feet)
Exposure Point:	Surface Soil (0 to 2 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INHALATION OF PARTICULATES AND VAPORS (CONTINUED)	**TPH**									
	TPH AS DIESEL	23	mg/kg	2.57E-10	1.07E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TPH AS GASOLINE	0.7	mg/kg	7.81E-12	3.25E-12	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TPH AS MOTOR OIL	246	mg/kg	2.75E-09	1.14E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	VOCs									
	ACETONE	0.10	mg/kg	1.13E-07	4.72E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CARBON DISULFIDE	0.007	mg/kg	8.59E-08	3.58E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CHLOROBENZENE	0.005	mg/kg	1.17E-08	4.87E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ETHYLBENZENE	0.018	mg/kg	4.91E-08	2.05E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TOLUENE	0.03	mg/kg	1.10E-07	4.60E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TRICHLOROETHENE	0.007	mg/kg	3.12E-08	1.30E-08	mg/kg-day	7.00E-03	$(mg/kg\text{-}day)^{-1}$	2.19E-10	9.11E-11
	XYLENE (TOTAL)	0.15	mg/kg	3.62E-07	1.51E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

Notes:
The cancer risk for chemicals that are italicized and underlined have been modified for post remediation residual risk.
CTE = Central Tendency Exposure
EPC = Exposure point concentration
HQ = Hazard Quotient
mg/kg = milligrams per kilogram
mg/kg-day = milligrams per kilogram per day
NA = Not Applicable
PCBs = Polychlorinated Biphenyls
RME = Reasonable Maximum Exposure
SVOCs = Semivolatile Organic Compounds
TPH = Total Petroleum Hydrocarbons
VOCs = Volatile Organic Compounds

Table C2-1d
Summary of Current Receptor RME Cancer Risks and Noncarcinogenic Hazard Indices
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Receptor Population:	Recreational User
Receptor Age:	Child (1 to 17 years)

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Primary Target Organ	Non-Carconogenic Hazard Index			
				Ingestion	Dermal	Inhalation (Outdoor)	Exposure Routes Total			Ingestion HQ	Dermal HQ	Inhalation (Outdoor) HQ	Total HI
Soil (0 to 2 feet)	Soil	On-Site Soil	**INORGANICS (mg/kg)**					**INORGANICS (mg/kg)**					
			ALUMINUM	NA	NA	NA	NA	ALUMINUM	Body Weight	2.95E-02	NA	8.86E-04	3.04E-02
			ANTIMONY	NA	NA	NA	NA	ANTIMONY	Blood; Whole Body	7.10E-03	NA	NA	7.10E-03
			ARSENIC	5.52E-05	7.60E-06	2.95E-09	6.28E-05	ARSENIC	Cardiovascular System; Fetal; Nervous System; Skin	8.01E-02	1.10E-02	1.18E-04	9.13E-02
			BARIUM	NA	NA	NA	NA	BARIUM	Cardiovascular System; Fetal; Kidney; NOEL	1.41E-03	NA	2.89E-05	1.43E-03
			BERYLLIUM	NA	NA	4.12E-11	4.12E-11	BERYLLIUM	GI System; Immune System; Respiratory	2.40E-04	NA	1.01E-05	2.51E-04
			CADMIUM	2.62E-07	4.81E-08	4.35E-10	3.11E-07	CADMIUM	Kidney; Respiratory	5.68E-03	1.04E-03	2.09E-05	6.75E-03
			CHROMIUM	NA	NA	NA	NA	CHROMIUM	NOEL	8.16E-05	NA	NA	8.16E-05
			COBALT	NA	NA	2.30E-09	2.30E-09	COBALT	Cardiovascular System; Respiratory	1.15E-03	NA	1.69E-04	1.32E-03
			COPPER	NA	NA	NA	NA	COPPER	GI System	3.42E-03	NA	NA	3.42E-03
			LEAD	1.99E-07	NA	4.12E-11	1.99E-07	LEAD	NA	NA	NA	NA	NA
			MANGANESE	NA	NA	NA	NA	MANGANESE	Nervous System	7.94E-03	NA	3.27E-03	1.12E-02
			MERCURY	NA	NA	NA	NA	MERCURY	Nervous System	4.37E-03	NA	2.15E-06	4.37E-03
			MOLYBDENUM	NA	NA	NA	NA	MOLYBDENUM	Kidney	1.05E-03	NA	NA	1.05E-03
			NICKEL	NA	NA	1.10E-09	1.10E-09	NICKEL	Body Weight; Respiratory	5.90E-03	NA	3.48E-04	6.25E-03
			SELENIUM	NA	NA	NA	NA	SELENIUM	Cardiovascular System; Liver; Nervous System; Skin	2.19E-04	NA	8.05E-09	2.19E-04
			SILVER	NA	NA	NA	NA	SILVER	Skin	5.03E-04	NA	NA	5.03E-04
			THALLIUM	NA	NA	NA	NA	THALLIUM	Blood; Liver	4.80E-03	NA	NA	4.80E-03
			TIN	NA	NA	NA	NA	TIN	Kidney; Liver	3.66E-05	NA	NA	3.66E-05
			VANADIUM	NA	NA	NA	NA	VANADIUM	NOEL	1.59E-02	NA	NA	1.59E-02
			ZINC	NA	NA	NA	NA	ZINC	Blood	8.20E-04	NA	NA	8.20E-04
			PESTICIDES (mg/kg)					**PESTICIDES (mg/kg)**					
			ALPHA-CHLORDANE	1.66E-09	3.04E-10	1.87E-14	1.96E-09	ALPHA-CHLORDANE	Liver	1.05E-05	1.93E-06	1.10E-09	1.24E-05
			BETA BHC	4.78E-10	8.77E-11	2.08E-14	5.65E-10	BETA BHC	Liver	5.46E-06	1.00E-06	2.30E-10	6.47E-06
			DELTA BHC	NA	NA	NA	NA	DELTA BHC	NA	NA	NA	NA	NA
			2,4- DDD	1.91E-09	2.63E-10	8.03E-14	2.17E-09	2,4 DDD	Liver	6.56E-05	9.03E-06	2.76E-09	7.46E-05
			4,4- DDD	5.86E-09	8.07E-10	2.46E-13	6.67E-09	4,4- DDD	Liver	2.01E-04	2.77E-05	8.45E-09	2.29E-04
			4,4- DDE	1.62E-09	2.24E-10	6.83E-14	1.85E-09	4,4- DDE	Liver	3.93E-05	5.42E-06	1.65E-09	4.48E-05
			4,4- DDT	1.08E-09	1.49E-10	4.55E-14	1.23E-09	4,4- DDT	Liver	2.62E-05	3.61E-06	1.10E-09	2.98E-05
			DIELDRIN	1.23E-08	5.65E-09	5.18E-13	1.80E-08	DIELDRIN	Liver	6.34E-05	2.91E-05	2.67E-09	9.25E-05

Table C2-1d
Summary of Current Receptor RME Cancer Risks and Noncarcinogenic Hazard Indices
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Receptor Population:	Recreational User
Receptor Age:	Child (1 to 17 years)

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Primary Target Organ	Non-Carconogenic Hazard Index			
				Ingestion	Dermal	Inhalation (Outdoor)	Exposure Routes Total			Ingestion HQ	Dermal HQ	Inhalation (Outdoor) HQ	Total HI
			ENDOSULFAN I	NA	NA	NA	NA	ENDOSULFAN I	Body Weight; Kidney; Nervous System	7.29E-07	3.34E-07	3.06E-11	1.06E-06
			ENDOSULFAN SULFATE	NA	NA	NA	NA	ENDOSULFAN SULFATE	Body Weight; Kidney; Nervous System	5.46E-07	2.51E-07	2.30E-11	7.97E-07
			ENDRIN	NA	NA	NA	NA	ENDRIN	Liver; Kidney; Nervous System	7.29E-05	3.34E-05	3.06E-09	1.06E-04
			ENDRIN ALDEHYDE	NA	NA	NA	NA	ENDRIN ALDEHYDE	Liver; Kidney; Nervous System	2.19E-05	1.00E-05	9.19E-10	3.19E-05
			ENDRIN KETONE	NA	NA	NA	NA	ENDRIN KETONE	Liver; Kidney; Nervous System	8.38E-06	3.85E-06	3.52E-10	1.22E-05
			GAMMA-CHLORDANE	1.79E-09	3.29E-10	2.03E-14	2.12E-09	GAMMA-CHLORDANE	Liver	1.14E-05	2.09E-06	1.19E-09	1.35E-05
			HEPTACHLOR	2.39E-10	1.10E-10	1.00E-14	3.49E-10	HEPTACHLOR	Liver	4.37E-07	2.01E-07	1.84E-11	6.38E-07
			HEPTACHLOR EPOXIDE	7.25E-10	3.33E-10	3.05E-14	1.06E-09	HEPTACHLOR EPOXIDE	Liver	2.52E-05	1.16E-05	1.06E-09	3.68E-05
			HEXACHLOROBENZENE	3.82E-10	1.75E-10	1.61E-14	5.58E-10	HEXACHLOROBENZENE	Liver	1.09E-06	5.02E-07	4.59E-11	1.59E-06
			METHOXYCHLOR	NA	NA	NA	NA	METHOXYCHLOR	Fetal	2.62E-06	4.82E-07	1.10E-10	3.10E-06
			MIREX	NA	NA	NA	NA	MIREX	Liver	2.19E-05	1.00E-05	9.19E-10	3.19E-05
			TRANS-NONACHLOR	8.28E-10	1.52E-10	9.37E-15	9.80E-10	TRANS-NONACHLOR	Liver	5.25E-06	9.63E-07	5.51E-10	6.21E-06
			PCBs (mg/kg)					**PCBs (mg/kg)**					
			PCBs (TOTAL)	1.46E-07	9.38E-08	2.46E-12	2.40E-07	PCBs (TOTAL)	Immune System	6.01E-03	3.86E-03	2.53E-07	9.87E-03
			SVOCs (mg/kg)					**SVOCs (mg/kg)**					
			ACENAPHTHENE	NA	NA	NA	NA	ACENAPHTHENE	Liver	1.04E-06	6.23E-07	3.22E-07	1.99E-06
			ACENAPHTHYLENE	NA	NA	NA	NA	ACENAPHTHYLENE	NA	NA	NA	NA	NA
			ANTHRACENE	NA	NA	NA	NA	ANTHRACENE	NOEL	2.40E-07	1.43E-07	1.90E-08	4.02E-07
			BENZO(A)ANTHRACENE	2.87E-08	1.71E-08	3.92E-13	4.58E-08	BENZO(A)ANTHRACENE	NA	NA	NA	NA	NA
			BENZO(A)PYRENE	2.87E-07	1.71E-07	3.92E-12	4.58E-07	BENZO(A)PYRENE	NA	NA	NA	NA	NA
			BENZO(B)FLUORANTHENE	2.55E-08	1.52E-08	3.48E-13	4.07E-08	BENZO(B)FLUORANTHENE	NA	NA	NA	NA	NA
			BENZO(G,H,I)PERYLENE	NA	NA	NA	NA	BENZO(G,H,I)PERYLENE	Kidney; Nervous System	2.19E-06	1.30E-06	9.19E-11	3.49E-06
			BENZO(K)FLUORANTHENE	2.13E-08	1.27E-08	2.92E-13	3.41E-08	BENZO(K)FLUORANTHENE	NA	NA	NA	NA	NA
			BIS(2-ETHYLHEXYL)PHTHALATE	4.46E-10	2.05E-10	1.87E-14	6.51E-10	BIS(2-ETHYLHEXYL)PHTHALATE	Liver	6.56E-06	3.01E-06	2.76E-10	9.57E-06
			BUTYLBENZYPHTHALATE	NA	NA	NA	NA	BUTYLBENZYPHTHALATE	Liver	1.37E-07	6.27E-08	5.74E-12	1.99E-07
			CABAZOLE	7.48E-10	3.44E-10	3.15E-14	1.09E-09	CABAZOLE	NA	NA	NA	NA	NA
			4- CHLOROANILINE	NA	NA	NA	NA	4- CHLOROANILINE	Spleen	8.20E-07	3.76E-07	3.45E-11	1.20E-06
			2- CHLOROPHENOL	NA	NA	NA	NA	2- CHLOROPHENOL	Reproductive	9.46E-06	4.34E-06	3.98E-10	1.38E-05
			CHRYSENE	2.55E-09	1.52E-09	1.70E-11	4.09E-09	CHRYSENE	NA	NA	NA	NA	NA
			DIBENZOFURAN	NA	NA	NA	NA	DIBENZOFURAN	NA	4.31E-05	1.98E-05	1.81E-09	6.29E-05
			3,3- DICHLOROBENZIDINE	1.43E-09	6.58E-10	6.03E-14	2.09E-09	3,3- DICHLOROBENZIDINE	NA	NA	NA	NA	NA
			FLUORANTHENE	NA	NA	NA	NA	FLUORANTHENE	Blood; Kidney; Liver	2.19E-06	1.30E-06	9.19E-11	3.49E-06

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Mare Island, Vallejo, California

Scenario Timeframe:	Current
Receptor Population:	Recreational User
Receptor Age:	Child (1 to 17 years)

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Primary Target Organ	Non-Carconogenic Hazard Index			
				Ingestion	Dermal	Inhalation (Outdoor)	Exposure Routes Total			Ingestion HQ	Dermal HQ	Inhalation (Outdoor) HQ	Total HI
			FLUORENE	NA	NA	NA	NA	FLUORENE	Blood	1.48E-06	8.80E-07	2.27E-07	2.58E-06
			INDENO(1,2,3-CD)PYRENE	3.18E-08	1.90E-08	4.35E-13	5.09E-08	INDENO(1,2,3-CD)PYRENE	NA	NA	NA	NA	NA
			2- METHYLNAPHTHALENE	NA	NA	NA	NA	2- METHYLNAPHTHALENE	Body Weight; Respiratory	1.43E-05	6.56E-06	NA	2.08E-05
			4- METHYPHENOL	NA	NA	NA	NA	4- METHYLPHENOL	Nervous System; Respiratory	1.46E-05	6.70E-06	NA	2.13E-05
			NAPHTHALENE	NA	NA	NA	NA	NAPHTHALENE	Body Weight; Respiratory	4.92E-06	2.93E-06	1.48E-04	1.56E-04
			PENTACHLOROPHENOL	NA	NA	NA	NA	PENTACHLOROPHENOL	Liver; Kidney	1.76E-06	8.09E-07	7.41E-11	2.57E-06
			PHENANTHRENE	NA	NA	NA	NA	PHENANTHRENE	NOEL	3.28E-07	1.96E-07	1.38E-11	5.24E-07
			PHENOL	NA	NA	NA	NA	PHENOL	Cardiovascular System; Fetal; Kidney; Liver; Nervous System	2.55E-07	1.17E-07	1.13E-10	3.72E-07
			PYRENE	NA	NA	NA	NA	PYRENE	Kidney	2.91E-06	1.74E-06	4.26E-08	4.70E-06
			TPH (mg/kg)					**TPH (mg/kg)**					
			TPH AS DIESEL	NA	NA	NA	NA	TPH AS DIESEL	NA	NA	NA	NA	NA
			TPH AS GASOLINE	NA	NA	NA	NA	TPH AS GASOLINE	NA	NA	NA	NA	NA
			TPH AS MOTOR OIL	NA	NA	NA	NA	TPH AS MOTOR OIL	NA	NA	NA	NA	NA
			VOCs (mg/kg)					**VOCs (mg/kg)**					
			ACETONE	NA	NA	NA	NA	ACETONE	Kidney; Liver	1.21E-07	NA	5.18E-07	6.40E-07
			CARBON DISULFIDE	NA	NA	NA	NA	CARBON DISULFIDE	Fetal	7.65E-08	NA	1.77E-06	1.85E-06
			CHLOROBENZENE	NA	NA	NA	NA	CHLOROBENZENE	Kidney; Liver; Reproductive System	2.73E-07	NA	8.43E-06	8.70E-06
			ETHYLBENZENE	NA	NA	NA	NA	ETHYLBENZENE	Fetal; Kidney; Liver	1.97E-07	NA	7.07E-07	9.04E-07
			TOLUENE	NA	NA	NA	NA	TOLUENE	Fetal; Kidney; Liver; Nervous System; Respiratory	1.64E-07	NA	5.31E-06	5.47E-06
			TRICHLOROETHENE	7.62E-10	NA	2.19E-10	9.80E-10	TRICHLOROETHENE	Eyes; Nervous System	2.55E-05	NA	1.29E-05	3.84E-05
			XYLENE (TOTAL)	NA	NA	NA	NA	XYLENE (TOTAL)	Body Weight; Fetal; Nervous System; Respiratory	8.20E-07	NA	5.21E-05	5.30E-05
Groundwater	Shallow Groundwater	Vapors	**VOCs (ug/L)**					**VOCs (ug/L)**					
			ACETONE	NA	NA	NA	NA	ACETONE	Kidney; Liver	NA	NA	5.63E-04	5.63E-04
			BENZENE	NA	NA	9.57E-07	9.57E-07	BENZENE	Fetal; Immune System; Nervous System; Respiratory	NA	NA	4.60E-03	4.60E-03
			2- BUTANONE	NA	NA	NA	NA	2- BUTANONE	Fetal	NA	NA	3.82E-03	3.82E-03
			CARBON DISULFIDE	NA	NA	NA	NA	CARBON DISULFIDE	Fetal; Nervous System	NA	NA	3.55E-04	3.55E-04

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Mare Island, Vallejo, California

Scenario Timeframe:	Current
Receptor Population:	Recreational User
Receptor Age:	Child (1 to 17 years)

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Primary Target Organ	Non-Carconogenic Hazard Index			
				Ingestion	Dermal	Inhalation (Outdoor)	Exposure Routes Total			Ingestion HQ	Dermal HQ	Inhalation (Outdoor) HQ	Total HI
			CHLOROBENZENE	NA	NA	NA	NA	CHLOROBENZENE	Kidney; Liver; Reproductive System	NA	NA	2.66E-03	2.66E-03
			CHLOROMETHANE	NA	NA	6.50E-08	6.50E-08	CHLOROMETHANE	NA	NA	NA	4.94E-04	4.94E-04
			CIS-1,2-DICHLOROETHENE	NA	NA	NA	NA	CIS-1,2-DICHLOROETHENE	Blood	NA	NA	6.98E-03	6.98E-03
			1,3- DICHLOROBENZENE			NA		1,3- DICHLOROBENZENE	NA	NA	NA	3.84E-04	3.84E-04
			1,2- DICHLOROETHENE (TOTAL)	NA	NA	NA	NA	1,2- DICHLOROETHENE (TOTAL)	Blood, Liver	NA	NA	3.28E-02	3.28E-02
			ETHYLBENZENE	NA	NA	NA	NA	ETHYLBENZENE	Fetal; Kidney; Liver	NA	NA	7.42E-05	7.42E-05
			TOLUENE	NA	NA	NA	NA	TOLUENE	Fetal; Kidney; Liver; Nervous System; Respiratory	NA	NA	2.12E-04	2.12E-04
			TRANS-1,2-DICHLOROETHENE	NA	NA	NA	NA	TRANS-1,2-DICHLOROETHENE	Blood; Liver	NA	NA	6.52E-04	6.52E-04
			1,2,4- TRIMETHYLBENZENE	NA	NA	NA	NA	1,2,4- TRIMETHYLBENZENE	NA	NA	NA	6.60E-03	6.60E-03
			1,3,5- TRIMETHYLBENZENE	NA	NA	NA	NA	1,3,5- TRIMETHYLBENZENE	NA	NA	NA	4.99E-03	4.99E-03
			VINYL CHLORIDE	NA	NA	9.07E-08	9.07E-08	VINYL CHLORIDE	GI System; Liver; Nervous System	NA	NA	8.48E-04	8.48E-04
			XYLENE (TOTAL)	NA	NA	NA	NA	XYLENE (TOTAL)	Body Weight; Fetal; Nervous System; Respiratory	NA	NA	1.49E-03	1.49E-03
Groundwater	Intermediate and Deep Groundwater	Vapors	**VOCs (ug/L)**					**VOCs (ug/L)**					
			ACETONE	NA	NA	NA	NA	ACETONE	Kidney; Liver	NA	NA	1.25E-04	1.25E-04
			BENZENE	NA	NA	1.40E-06	1.40E-06	BENZENE	Fetal; Immune System; Nervous System; Respiratory	NA	NA	6.73E-03	6.73E-03
			2- BUTANONE	NA	NA	NA	NA	2- BUTANONE	Fetal	NA	NA	5.83E-04	5.83E-04
			CARBON DISULFIDE	NA	NA	NA	NA	CARBON DISULFIDE	Fetal; Nervous System	NA	NA	5.61E-04	5.61E-04
			CHLOROBENZENE	NA	NA	NA	NA	CHLOROBENZENE	Kidney; Liver; Reproductive System	NA	NA	1.01E-02	1.01E-02
			4- METHYL-2-PENTANONE	NA	NA	NA	NA	4- METHYL-2-PENTANONE	Fetal; Kidney; Liver	NA	NA	2.12E-04	2.12E-04
Wetland Surface Water	Surface Water	Surface Water	**INORGANICS (ug/L)**					**INORGANICS (ug/L)**					
			ALUMINUM	NA	NA	NA	NA	ALUMINUM	Body Weight	2.34E-04	2.15E-05	NA	2.56E-04
			ANTIMONY	NA	NA	NA	NA	ANTIMONY	Blood; Whole Body	1.94E-04	1.18E-04	NA	3.12E-04
			ARSENIC	1.63E-05	1.50E-07	NA	1.65E-05	ARSENIC	Cardiovascular System; Fetal; Nervous System; Skin	2.37E-03	2.17E-04	NA	2.59E-03
			BARIUM	NA	NA	NA	NA	BARIUM	Cardiovascular System; Fetal; Kidney; NOEL	5.13E-05	6.72E-05	NA	1.18E-04
			CADMIUM	3.66E-08	6.71E-09	NA	4.33E-08	CADMIUM	Kidney; Respiratory	3.96E-05	7.27E-05	NA	1.12E-04
			CHROMIUM	NA	NA	NA	NA	CHROMIUM	NOEL	1.61E-07	1.14E-06	NA	1.30E-06

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Scenario Timeframe:	Current
Receptor Population:	Recreational User
Receptor Age:	Child (1 to 17 years)

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Primary Target Organ	Non-Carconogenic Hazard Index			
				Ingestion	Dermal	Inhalation (Outdoor)	Exposure Routes Total			Ingestion HQ	Dermal HQ	Inhalation (Outdoor) HQ	Total HI
			COBALT	NA	NA	NA	NA	COBALT	Cardiovascular System; Respiratory	1.98E-05	7.27E-07	NA	2.05E-05
			COPPER	NA	NA	NA	NA	COPPER	GI System	3.75E-05	3.44E-06	NA	4.09E-05
			LEAD	2.07E-09	1.90E-12	NA	2.07E-09	LEAD	NA	NA	NA	NA	NA
			MANGANESE	NA	NA	NA	NA	MANGANESE	Nervous System	1.29E-03	2.95E-03	NA	4.23E-03
			MERCURY	NA	NA	NA	NA	MERCURY	Nervous System	3.79E-05	4.98E-05	NA	8.77E-05
			MOLYBDENUM	NA	NA	NA	NA	MOLYBDENUM	Kidney	5.46E-05	5.02E-06	NA	5.97E-05
			NICKEL	NA	NA	NA	NA	NICKEL	Body Weight; Respiratory	2.57E-04	1.18E-04	NA	3.75E-04
			SELENIUM	NA	NA	NA	NA	SELENIUM	Cardiovascular System; Liver; Nervous System; Skin	2.00E-04	1.84E-05	NA	2.19E-04
			SILVER	NA	NA	NA	NA	SILVER	Skin	1.55E-05	2.13E-05	NA	3.68E-05
			VANADIUM	NA	NA	NA	NA	VANADIUM	NOEL	1.01E-04	3.56E-04	NA	4.57E-04
			ZINC	NA	NA	NA	NA	ZINC	Blood	1.97E-06	1.09E-07	NA	2.08E-06
			PESTICIDES (ug/L)					**PESTICIDES (ug/L)**					
			ALPHA BHC	5.92E-09	NA	NA	5.92E-09	ALPHA BHC	Liver	7.74E-07	NA	NA	7.74E-07
			4,4- DDE	1.02E-10	8.40E-10	NA	9.41E-10	4,4- DDE	Liver	2.46E-07	2.03E-05	NA	2.06E-05
			4,4- DDT	3.20E-09	4.96E-08	NA	5.28E-08	4,4- DDT	Liver	7.74E-06	1.20E-03	NA	1.21E-03
			ENDOSULFAN SULFATE	NA	NA	NA	NA	ENDOSULFAN SULFATE	Body Weight; Kidney; Nervous System	4.86E-07	NA	NA	4.86E-07
			ENDRIN	NA	NA	NA	NA	ENDRIN	Liver; Kidney; Nervous System	2.12E-06	1.98E-05	NA	2.19E-05
			GAMMA-BHC	1.34E-09	NA	NA	1.34E-09	GAMMA-BHC	Kidney; Liver	1.67E-06	8.97E-06	NA	1.06E-05
			HEPTACHLOR	1.39E-09	8.86E-10	NA	2.28E-09	HEPTACHLOR	Liver	2.55E-07	1.62E-06	NA	1.88E-06
			PCBs (ug/L)					**PCBs (ug/L)**					
			PCBs (TOTAL)	8.29E-09	2.04E-07	NA	2.12E-07	PCBs (TOTAL)	Immune System	3.42E-05	8.39E-03	NA	8.43E-03
			SVOCs (ug/L)					**SVOCs (ug/L)**					
			BIS(2-ETHYLHEXYL)PHTHALATE	1.27E-08	2.63E-08	NA	3.90E-08	BIS(2-ETHYLHEXYL)PHTHALATE	Liver	1.87E-05	3.87E-04	NA	4.05E-04
			CHRYSENE	2.65E-09	4.51E-08	NA	4.78E-08	CHRYSENE	NA	NA	NA	NA	NA
			2,4 DIMETHYLPHENOL	NA	NA	NA	NA	2,4- DIMETHYLPHENOL	Blood; Nervous System	4.55E-07	9.17E-07	NA	1.37E-06
			DI-N-BUTYLPHTHALATE	NA	NA	NA	NA	DI-N-BUTYLPHTHALATE	Whole Body	2.37E-06	2.55E-05	NA	2.79E-05
			ISOPHORONE	NA	NA	NA	NA	ISOPHORONE	NOEL	2.28E-08	1.56E-08	NA	3.84E-08
			4- METHYLPHENOL	NA	NA	NA	NA	4- METHYLPHENOL	Nervous System; Respiratory	2.36E-04	3.02E-04	NA	5.38E-04
			TPH (mg/L)					**TPH (mg/L)**					
			TPH AS DIESEL	NA	NA	NA	NA	TPH AS DIESEL	NA	NA	NA	NA	NA

Table C2-1d
Summary of Current Receptor RME Cancer Risks and Noncarcinogenic Hazard Indices
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Receptor Population:	Recreational User
Receptor Age:	Child (1 to 17 years)

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Primary Target Organ	Non-Carconogenic Hazard Index			
				Ingestion	Dermal	Inhalation (Outdoor)	Exposure Routes Total			Ingestion HQ	Dermal HQ	Inhalation (Outdoor) HQ	Total HI
			TPH AS GASOLINE	NA	NA	NA	NA	TPH AS GASOLINE	NA	NA	NA	NA	NA
			TPH AS MOTOR OIL	NA	NA	NA	NA	TPH AS MOTOR OIL	NA	NA	NA	NA	NA

Cancer Risk Across Soil:	6.4E-05
Cancer Risk Across Groundwater:	2.5E-06
Cancer Risk Across Surface Water:	1.7E-05
Total Cancer Risk:	8.4E-05

HI Across Soil:	2.0E-01
HI Across Groundwater:	8.6E-02
HI Across Surface Water:	2.0E-02
Total HI:	3.0E-01
Total Blood HI:	5.3E-02
Total Body Weight HI:	3.9E-02
Total Cardiovascular System HI:	9.7E-02
Total Fetal/Reproductive System HI:	1.2E-01
Total GI System HI:	4.6E-03
Total Immune System HI:	3.0E-02
Total Kidney HI:	2.4E-02
Total Liver HI:	5.6E-02
Total Nervous System HI:	1.3E-01
Total NOEL HI:	1.8E-02
Total Respiratory HI:	2.9E-02
Total Skin HI:	9.5E-02
Total Whole Body HI:	7.4E-03

Notes:
EPC = Exposure point concentration
GI = Gastrointestinal
HQ = Hazard Quotient
HI = Hazard Index
mg/kg = milligrams per kilogram
mg/L = milligrams per liter
NA = Not Applicable
PCBs = Polychlorinated Biphenyls
RME = Reasonable Maximum Exposure
SVOCs = Semivolatile Organic Compounds
TPH = Total Petroleum Hydrocarbons
VOCs = Volatile Organic Compounds
ug/L = microgram per liter

Table C2-1e
Summary of Estimated Cancer Risks and Hazard Indices for Soil
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	RME Result			
	Baseline Cancer Risk*	**Baseline Hazard Index***	**Residual Cancer Risk**	**Residual Hazard Index**
Recreational User - Current				
Total Risk Across Soil	6.5E-05	2.0E-01	6.4E-05	2.0E-01
Total Risk Across Soil (without arsenic)	1.8E-06	1.1E-01	1.4E-06	1.1E-01

Notes:

RME = Reasonable Maximum Exposure

* - Baseline HHRA did not include full data set; outlier concentrations were excluded.

Table C2-1f
Comparison of EPCs, Cancer Risk Estimates, and Hazard Indices from Baseline Risk Assessment
Non-Tidal Wetland Areas Alternative 2
Soil (0 to 2 feet bgs)
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Chemical of Potential Concern	Baseline Risk Estimates			Alternative 2 Estimates		
		Recreational User			Recreational User	
	Medium EPC Value	RME Carcinogenic Risk	RME Total HI	Medium EPC Value	RME Carcinogenic Risk	RME Total HI
INORGANICS (mg/kg)						
ALUMINUM	26852	NA	3.02E-02	26988	NA	3.04E-02
ANTIMONY	2.9	NA	7.92E-03	2.6	NA	7.10E-03
ARSENIC	22.1	6.31E-05	9.17E-02	22	6.28E-05	9.13E-02
BARIUM	86.4	NA	1.38E-03	90	NA	1.43E-03
BERYLLIUM	0.6	5.62E-11	3.42E-04	0.44	4.12E-11	2.51E-04
CADMIUM	2.6	3.11E-07	6.75E-03	2.6	3.11E-07	6.75E-03
CHROMIUM	113	NA	8.23E-05	112	NA	8.16E-05
COBALT	21	2.30E-09	1.32E-03	21	2.30E-09	1.32E-03
COPPER	108	NA	2.95E-03	125	NA	3.42E-03
LEAD	184	4.15E-07	NA	88	1.99E-07	NA
MANGANESE	935	NA	1.03E-02	1017	NA	1.12E-02
MERCURY	1.2	NA	4.37E-03	1.2	NA	4.37E-03
MOLYBDENUM	4.8	NA	1.05E-03	4.8	NA	1.05E-03
NICKEL	108	1.10E-09	6.25E-03	108	1.10E-09	6.25E-03
SELENIUM	1.1	NA	2.40E-04	1	NA	2.19E-04
SILVER	2.2	NA	4.81E-04	2.3	NA	5.03E-04
THALLIUM	0.29	NA	4.80E-03	0.29	NA	4.80E-03
TIN	16.6	NA	3.02E-05	20.1	NA	3.66E-05
VANADIUM	102	NA	1.59E-02	102	NA	1.59E-02
ZINC	200	NA	7.29E-04	225	NA	8.20E-04
PCBs (mg/kg)						
PCBs (TOTAL)	0.17	3.71E-07	1.53E-02	0.11	2.40E-07	9.87E-03
SVOCs (mg/kg)						
ACENAPHTHENE	0.099	NA	3.42E-06	0.057	NA	1.99E-06
ACENAPHTHYLENE	0.127	NA	NA	0.040	NA	NA
ANTHRACENE	0.14	NA	8.55E-07	0.0658	NA	4.02E-07
BENZO(A)ANTHRACENE	0.097	4.93E-08	NA	0.09	4.58E-08	NA
BENZO(A)PYRENE	0.094	4.78E-07	NA	0.09	4.58E-07	NA
BENZO(B)FLUORANTHENE	0.096	4.88E-08	NA	0.08	4.07E-08	NA

Table C2-1f
Comparison of EPCs, Cancer Risk Estimates, and Hazard Indices from Baseline Risk Assessment
Non-Tidal Wetland Areas Alternative 2
Soil (0 to 2 feet bgs)
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Chemical of Potential Concern	Baseline Risk Estimates			Alternative 2 Estimates		
		Recreational User			Recreational User	
	Medium EPC Value	RME Carcinogenic Risk	RME Total HI	Medium EPC Value	RME Carcinogenic Risk	RME Total HI
BENZO(G,H,I)PERYLENE	0.084	NA	3.66E-06	0.08	NA	3.49E-06
BENZO(K)FLUORANTHENE	0.11	5.59E-08	NA	0.067	3.41E-08	NA
CHRYSENE	0.087	4.44E-09	NA	0.08	4.09E-09	NA
FLUORANTHENE	0.083	NA	3.62E-06	0.08	NA	3.49E-06
FLUORENE	0.091	NA	4.37E-06	0.054	NA	2.58E-06
INDENO(1,2,3-CD)PYRENE	0.10	5.09E-08	NA	0.10	5.09E-08	NA
NAPHTHALENE	0.091	NA	1.58E-04	0.09	NA	1.56E-04
PHENANTHRENE	0.095	NA	5.53E-07	0.09	NA	5.24E-07
PYRENE	0.079	NA	4.64E-06	0.08	NA	4.70E-06
TPH (mg/kg)						
TPH AS DIESEL	26.2	NA	NA	23	NA	NA
TPH AS GASOLINE	0.7	NA	NA	0.7	NA	NA
TPH AS MOTOR OIL	243	NA	NA	246	NA	NA
SOIL TOTALS:		**6.5E-05**	**2.0E-01**		**6.4E-05**	**2.0E-01**

Table C2-1g
Post-Remediation Gray Fox Risk Calculations (Wetland Sediment Residual Concentration)
Shallow Soil (0 - 2 ft bgs) at Hazard Quotient of 10
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Concentrations				Intake (mg/kg BW-day)					Hazard Quotient (HQ) - Low					Hazard Quotient (HQ) - High			
COPEC[a]	Surface Water (mg/L)[b]	Sediment[c]	Small Mammal BAF[d]	Small Mammal Tissue[d]	Surface Water	Sediment	Small Mammal	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Small Mammal	Total Intake		High TRV (mg/kg BW-day)	Surface Water	Sediment	Small Mammal	Total Intake
Metals (mg/kg)																			
Aluminum	12.6	2.70E+04	1.11E-02	2.98E+02	2.72E-01	8.62E+00	3.40E+00	1.23E+01	1.93	1.4E-01	4.5E+00	1.8E+00	6.4E+00	>1	19.3	1.4E-02	4.5E-01	1.8E-01	6.4E-01
Antimony	0.003	2.60E+00	1.22E+00	3.17E+00	6.48E-05	8.30E-04	3.61E-02	3.70E-02	0.06	1.1E-03	1.4E-02	6.1E-01	6.3E-01		23.4	2.8E-06	3.5E-05	1.5E-03	1.6E-03
Arsenic	0.0436	2.20E+01	--	0	9.42E-04	7.03E-03	0.00E+00	7.97E-03	0.32	2.9E-03	2.2E-02	0	2.5E-02		4.7	2.0E-04	1.5E-03	0.0E+00	1.7E-03
Barium	0.24	9.00E+01	9.41E-02	8.47E+00	5.10E-03	2.87E-02	9.66E-02	1.30E-01	51.8	9.8E-05	5.5E-04	1.9E-03	2.5E-03		66.0	7.7E-05	4.4E-04	1.5E-03	2.0E-03
Beryllium		4.40E-01	--	0		1.41E-04	0.00E+00	1.41E-04	0.532		2.6E-04	0	2.6E-04		0.554		2.5E-04	0.0E+00	2.5E-04
Cadmium	0.0016	2.60E+00	--	0	3.46E-05	8.30E-04	0.00E+00	8.65E-04	0.06	5.8E-04	1.4E-02	0	1.4E-02		2.64	1.3E-05	3.1E-04	0.0E+00	3.3E-04
Chromium +3	0.0263	9.33E+01	2.60E-02	2.43E+00	5.68E-04	2.98E-02	2.77E-02	5.81E-02	2	2.4E-04	1.2E-02	1.2E-02	2.4E-02		23.1	2.5E-05	1.3E-03	1.2E-03	2.5E-03
Chromium +6	0.0263	1.87E+01	2.60E-02	4.86E-01	5.68E-04	5.96E-03	5.54E-03	1.21E-02	5.66	1.0E-04	1.1E-03	0	2.1E-03		35.1	1.6E-05	1.7E-04	1.6E-04	3.4E-04
Cobalt	0.0164	2.10E+01	--	0	3.54E-04	6.71E-03	0.00E+00	7.06E-03	1.2	3.0E-04	5.6E-03	0	5.9E-03		20	1.8E-05	3.4E-04	0.0E+00	3.5E-04
Copper	0.233	1.25E+02	3.45E-01	4.32E+01	5.04E-03	3.99E-02	4.92E-01	5.37E-01	2.67	1.9E-03	1.5E-02	1.8E-01	2.0E-01		632	8.0E-06	6.3E-05	7.8E-04	8.5E-04
Lead	0.0031	8.80E+01	6.10E-01	5.37E+01	6.70E-05	2.81E-02	6.13E-01	6.41E-01	1	6.7E-05	2.8E-02	6.1E-01	6.4E-01		241	2.8E-07	1.2E-04	2.5E-03	2.7E-03
Manganese	7.42	1.02E+03	--	0	1.60E-01	3.25E-01	0.00E+00	4.85E-01	13.7	1.2E-02	2.4E-02	0	3.5E-02		159.09	1.0E-03	2.0E-03	0.0E+00	3.0E-03
Mercury	0.00029	1.20E+00	--	0	6.27E-06	3.83E-04	0.00E+00	3.89E-04	0.027	2.3E-04	1.4E-02	0	1.4E-02		0.27	2.3E-05	1.4E-03	0.0E+00	1.4E-03
Molybdenum	0.0312	4.80E+00	--	0	6.74E-04	1.53E-03	0.00E+00	2.21E-03	0.26	2.6E-03	5.9E-03	0	8.5E-03		2.6	2.6E-04	5.9E-04	0.0E+00	8.5E-04
Nickel	0.166	1.08E+02	--	0	3.59E-03	3.45E-02	0.00E+00	3.81E-02	0.13	2.7E-02	2.6E-01	0	2.9E-01		31.6	1.1E-04	1.1E-03	0.0E+00	1.2E-03
Selenium	0.029	1.00E+00	6.12E+00	6.12E+00	6.27E-04	3.19E-04	6.97E-02	7.07E-02	0.05	1.3E-02	6.4E-03	1.4E+00	1.4E+00		1.21	5.2E-04	2.6E-04	5.8E-02	5.8E-02
Silver	0.0019	2.30E+00	--	0	4.11E-05	7.34E-04	0.00E+00	7.76E-04	0.38	1.1E-04	2.0E-03	0	2.1E-03		3.75	1.1E-05	2.0E-04	0.0E+00	2.1E-04
Thallium		2.90E-01	1.01E+00	2.92E-01		9.26E-05	3.33E-03	3.43E-03	0.48		1.9E-04	6.9E-03	7.1E-03		1.43		6.5E-05	2.3E-03	2.4E-03
Tin		2.01E+01	--	0		6.42E-03	0.00E+00	6.42E-03	23.4		2.7E-04	0	2.7E-04		35		1.8E-04	0.0E+00	1.8E-04
Vanadium	0.05	1.02E+02	--	0	1.08E-03	3.26E-02	0.00E+00	3.37E-02	0.21	5.1E-03	1.6E-01	0	1.6E-01		2.1	5.1E-04	1.6E-02	0.0E+00	1.6E-02
Zinc	0.042	2.25E+02	1.11E+00	2.49E+02	9.08E-04	7.18E-02	2.84E+00	2.92E+00	9.6	9.5E-05	7.5E-03	3.0E-01	3.0E-01		411	2.2E-06	1.7E-04	6.9E-03	7.1E-03
Volatile Organics (mg/kg)																			
Acetone		1.00E-01	--	0		3.19E-05	0.00E+00	3.19E-05	10		3.2E-06	0	3.2E-06		50		6.4E-07	0.0E+00	6.4E-07
Benzene			--	0		0	0.00E+00	0.00E+00	26.4		0.0E+00	0	0.0E+00		263.6		0.0E+00	0.0E+00	0.0E+00
Carbon disulfide		7.00E-03	--	0		2.24E-06	0.00E+00	2.24E-06	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Chlorobenzene		5.00E-03	--	0		1.60E-06	0.00E+00	1.60E-06	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
cis-1,2-Dichlorobenzene			--	0		0	0.00E+00	0.00E+00	45.2		0.0E+00	0	0.0E+00		452		0.0E+00	0.0E+00	0.0E+00
Ethylbenzene		1.80E-02	--	0		5.75E-06	0.00E+00	5.75E-06	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
4-Isopropyltoluene			--	0		0	0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Methylene chloride			--	0		0	0.00E+00	0.00E+00	5.9		0.0E+00	0	0.0E+00		50		0.0E+00	0.0E+00	0.0E+00
Naphthalene			--	0		0	0.00E+00	0.00E+00	50		0.0E+00	0	0.0E+00		150		0.0E+00	0.0E+00	0.0E+00
Toluene		3.00E-02	--	0		9.58E-06	0.00E+00	9.58E-06	26		3.7E-07	0	3.7E-07		260		3.7E-08	0.0E+00	3.7E-08
trans-1,2-Dichloroethene			--	0		0	0.00E+00	0.00E+00	45.2		0.0E+00	0	0.0E+00		452		0.0E+00	0.0E+00	0.0E+00
Trichloroethene		7.00E-03	--	0		2.24E-06	0.00E+00	2.24E-06	0.7		3.2E-06	0	3.2E-06		7		3.2E-07	0.0E+00	3.2E-07
1,2,4-Trimethylbenzene			--	0		0	0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
1,3,5-Trimethylbenzene			--	0		0	0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Vinyl chloride			--	0		0	0.00E+00	0.00E+00	0.17		0.0E+00	0	0.0E+00		2		0.0E+00	0.0E+00	0.0E+00
Xylenes		1.50E-01	--	0		4.79E-05	0.00E+00	4.79E-05	2.1		2.3E-05	0	2.3E-05		2.6		1.8E-05	0.0E+00	1.8E-05
Pesticides (mg/kg)																			
alpha-Chlordane		4.80E-03	--	0		1.53E-06	0.00E+00	1.53E-06	4.6		3.3E-07	0	3.3E-07		9.2		1.7E-07	0	1.7E-07
beta-BHC		1.00E-03	--	0		3.19E-07	0.00E+00	3.19E-07	1.6		2.0E-07	0	2.0E-07		3.2		1.0E-07	0	1.0E-07
delta-BHC		2.00E-03	--	0		6.39E-07	0.00E+00	6.39E-07	1.6		4.0E-07	0	4.0E-07		3.2		2.0E-07	0	2.0E-07
2,4-DDD		3.00E-02	1.04E+00	3.13E-02		9.58E-06	3.57E-04	3.67E-04	0.8		1.2E-05	4.5E-04	4.6E-04		16		6.0E-07	2.2E-05	2.3E-05
DDD		9.20E-02	1.04E+00	9.60E-02		2.94E-05	1.10E-03	1.12E-03	0.8		3.7E-05	1.4E-03	1.4E-03		16		1.8E-06	6.8E-05	7.0E-05
DDE	0.0000027	1.80E-02	1.04E+00	1.88E-02	5.84E-08	5.75E-06	2.14E-04	2.20E-04	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
DDTs	0.00014	1.20E-02	1.04E+00	1.25E-02	3.03E-06	3.83E-06	1.43E-04	1.50E-04	0.8	3.8E-06	4.8E-06	1.8E-04	1.9E-04		16	1.9E-07	2.4E-07	8.9E-06	9.4E-06
Dieldrin		2.90E-03	--	0		9.26E-07	0.00E+00	9.26E-07	0.015		6.2E-05	0	6.2E-05		1.7		5.4E-07	0	5.4E-07
Endosulfan I		4.00E-03	--	0		1.28E-06	0.00E+00	1.28E-06	0.15		8.5E-06	0	8.5E-06		1.5		8.5E-07	0	8.5E-07
Endosulfan sulfate	0.00012	3.00E-03	--	0	2.59E-06	9.58E-07	0.00E+00	3.55E-06	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV

Table C2-1g
Post-Remediation Gray Fox Risk Calculations (Wetland Sediment Residual Concentration)
Shallow Soil (0 - 2 ft bgs) at Hazard Quotient of 10
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Concentrations				Intake (mg/kg BW-day)					Hazard Quotient (HQ) - Low					Hazard Quotient (HQ) - High			
COPEC[a]	Surface Water (mg/L)[b]	Sediment[c]	Small Mammal BAF[d]	Small Mammal Tissue[d]	Surface Water	Sediment	Small Mammal	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Small Mammal	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Sediment	Small Mammal	Total Intake
Endrin	0.000014	2.00E-02	--	0	3.03E-07	6.39E-06	0.00E+00	6.69E-06	0.09	3.3E-06	6.9E-05	0	7.3E-05	0.92	3.3E-07	6.9E-06	0	7.3E-06
Endrin aldehyde		6.00E-03	--	0		1.92E-06	0.00E+00	1.92E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Endrin Ketone		2.30E-03	--	0		7.34E-07	0.00E+00	7.34E-07	NTV	NTV	NTV	NTV	NTV	0.92		8.0E-07	0	8.0E-07
gamma-Chlordane		5.20E-03	--	0		1.66E-06	0.00E+00	1.66E-06	4.6		3.6E-07	0	3.6E-07	9.2		1.8E-07	0	1.8E-07
Heptachlor	0.0000028	2.00E-04	--	0	6.05E-08	6.39E-08	0.00E+00	1.24E-07	0.13	4.7E-07	4.9E-07	0.0	9.6E-07	6.8	8.9E-09	9.4E-09	0	1.8E-08
Heptachlor epoxide		3.00E-04	--	0		9.58E-08	0.00E+00	9.58E-08	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Hexachlorobenzene		8.00E-04	--	0		2.55E-07	0.00E+00	2.55E-07	1.6		1.6E-07	0	1.6E-07	16		1.6E-08	0	1.6E-08
Methoxychlor	0	1.20E-02	--	0		3.83E-06	0.00E+00	3.83E-06	2.5		1.5E-06	0	1.5E-06	50		7.7E-08	0	7.7E-08
Mirex		4.00E-03	--	0		1.28E-06	0.00E+00	1.28E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
trans-Nonachlor		2.40E-03	--	0		7.66E-07	0.00E+00	7.66E-07	4.6		1.7E-07	0	1.7E-07	9.2		8.3E-08	0	8.3E-08
SVOCs (mg/kg)																		
Acenaphthene		5.73E-02	--	0		1.83E-05	0.00E+00	1.83E-05	1.31		1.4E-05	0	1.4E-05	32.8		5.6E-07	0	5.6E-07
Acenaphthylene		3.96E-02	--	0		1.26E-05	0.00E+00	1.26E-05	1.31		9.7E-06	0	9.7E-06	32.8		3.9E-07	0	3.9E-07
Anthracene		6.58E-02	--	0		2.10E-05	0.00E+00	2.10E-05	1.31		1.6E-05	0	1.6E-05	32.8		6.4E-07	0	6.4E-07
Benzo(a)anthracene		9.00E-02	--	0		2.87E-05	0.00E+00	2.87E-05	1.31		2.2E-05	0	2.2E-05	32.8		8.8E-07	0	8.8E-07
Benzo(a)pyrene		9.00E-02	--	0		2.87E-05	0.00E+00	2.87E-05	1.31		2.2E-05	0	2.2E-05	32.8		8.8E-07	0	8.8E-07
Benzo(b)fluoranthene		8.00E-02	--	0		2.55E-05	0.00E+00	2.55E-05	1.31		2.0E-05	0	2.0E-05	32.8		7.8E-07	0	7.8E-07
Benzo(g,h,i)perylene		8.00E-02	--	0		2.55E-05	0.00E+00	2.55E-05	1.31		2.0E-05	0	2.0E-05	32.8		7.8E-07	0	7.8E-07
Benzo(k)fluoranthene		6.70E-02	--	0		2.14E-05	0.00E+00	2.14E-05	1.31		1.6E-05	0	1.6E-05	32.8		6.5E-07	0	6.5E-07
Benzoic acid			--	0		0	0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Bis(2-ethylhexyl)phthalate	0.027	1.20E-01	--	0	5.84E-04	3.83E-05	0.00E+00	6.22E-04	18.3	3.2E-05	2.1E-06	0	3.4E-05	183	3.2E-06	2.1E-07	0	3.4E-06
Butylbenzylphthalate		2.50E-02	--	0		7.98E-06	0.00E+00	7.98E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Carbazole		1.41E-01	--	0		4.50E-05	0.00E+00	4.50E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Chloroaniline		3.00E-03	--	0		9.58E-07	0.00E+00	9.58E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2-Chloropropane		4.33E-02	--	0		1.38E-05	0.00E+00	1.38E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chrysene	0.0002	8.00E-02	--	0	4.32E-06	2.55E-05	0.00E+00	2.99E-05	1.31	3.3E-06	2.0E-05	0	2.3E-05	32.8	1.3E-07	7.8E-07	0	9.1E-07
Dibenzofuran		7.89E-02	--	0		2.52E-05	0.00E+00	2.52E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
3,3-Dichlorobenzidine		1.20E-02	--	0		3.83E-06	0.00E+00	3.83E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2,6-Dinitrotoluene			--	0		0	0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Fluoranthene		8.00E-02	--	0		2.55E-05	0.00E+00	2.55E-05	1.31		2.0E-05	0	2.0E-05	32.8		7.8E-07	0	7.8E-07
Fluorene		5.40E-02	--	0		1.72E-05	0.00E+00	1.72E-05	1.31		1.3E-05	0	1.3E-05	32.8		5.3E-07	0	5.3E-07
Indeno(1,2,3-cd)pyrene		1.00E-01	--	0		3.19E-05	0.00E+00	3.19E-05	1.31		2.4E-05	0	2.4E-05	32.8		9.7E-07	0	9.7E-07
2-Methylnaphthalene		5.23E-02	--	0		1.67E-05	0.00E+00	1.67E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Methylphenol	0.12	6.68E-02	--	0	2.59E-03	2.13E-05	0.00E+00	2.61E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Naphthalene		9.00E-02	--	0		2.87E-05	0.00E+00	2.87E-05	50		5.7E-07	0	5.7E-07	150		1.9E-07	0	1.9E-07
Pentachlorophenol		4.84E-02	--	0		1.55E-05	0.00E+00	1.55E-05	8.42		1.8E-06	0	1.8E-06	27.4		5.6E-07	0	5.6E-07
Phenanthrene		9.00E-02	--	0		2.87E-05	0.00E+00	2.87E-05	1.31		2.2E-05	0	2.2E-05	32.8		8.8E-07	0	8.8E-07
Phenol		1.40E-01	--	0		4.47E-05	0.00E+00	4.47E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pyrene		8.00E-02	--	0		2.55E-05	0.00E+00	2.55E-05	1.31		2.0E-05	0	2.0E-05	32.8		7.8E-07	0	7.8E-07
PCBs (mg/kg)																		
PCBs (Total Congeners)	0.000016	1.10E-01	1.81E+01	1.99E+00	3.46E-07	3.51E-05	2.27E-02	2.27E-02	0.36	9.6E-07	9.8E-05	6.3E-02	6.3E-02	1.28	2.7E-07	2.7E-05	1.8E-02	1.8E-02

>1 = The calculated hazard quotient exceeds 1 (i.e., > 1.5)

Table C2-1g
Post-Remediation Gray Fox Risk Calculations (Wetland Sediment Residual Concentration)
Shallow Soil (0 - 2 ft bgs) at Hazard Quotient of 10
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Concentrations				Intake (mg/kg BW-day)					Hazard Quotient (HQ) - Low					Hazard Quotient (HQ) - High			
COPEC[a]	Surface Water (mg/L)[b]	Sediment[c]	Small Mammal BAF[d]	Small Mammal Tissue[d]	Surface Water	Sediment	Small Mammal	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Small Mammal	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Sediment	Small Mammal	Total Intake

Exposure Assumptions and Equation:[e]

		Value	
Ingestion Rate (IR) prey(dry wt.)	=	0.177	kg/day (dry weight)
IRmammal(dry wt.)	=	0.177	kg/day (dry weight)
IRsediment (dry wt.)[f]	=	0.00496	kg-day (dry weight)
IRsurface water[g]	=	0.335	L/day
Cprey	=	chem-specific	mg/kg or µg/kg
Csediment	=	chem-specific	mg/kg or µg/kg
Csurface water	=	chem-specific	mg/L or µg/L
Tissue Moisture (TMsmall mammal)	=	68%	percent
Dietary Composition Factor (DCF)[h]	=	100%	percent
Site Use Factor (SUF)[i]	=	25%	percent
Body Weight (BW)	=	3.88	kg

Intake Equation = [IRmammal(dry wt) x (Cprey(mammal, dry wt)/1-TM) x DCF x SUF]/BW] + [(IRsoil x Csoil x DCF x SUF)]/BW] + [(IRsurface water x Csurface water x DCF x SUF)]/BW]

Risk (hazard quotient) = Intake / TRV

Prey tissue(dry wt) = Prey tissue (wet wt.) / (1-Tissue Moisture)

NTV = No toxicity data available.

NA = Not applicable.

Blank cell indicates COPEC was not detected in this medium.

Notes:

a All chemicals detected in sediments are considered as constituents of potential ecological concern.

b All concentrations of constituents in surface water are based on the maximum concentration.

c All concentrations of constituents in sediment are based on the residual concentrations expressed in dry weight.

d Site-specific BAFs (dry weight basis). Calculated small mammal tissue concentrations (sediment concentration x BAF). Tissue concentrations are on a dry weight basis.

e Exposure parameters used to calculate risk are discussed in detail in Section 4.2 of the ERA..

f Ingestion rate of soil based on 2.8 percent of of the prey ingestion rate (dry weight); based on a red fox (Beyer et al. (1994).

g Based on equation for mammals: Water intake (L/day) = $0.099Wt(kg)^{0.90}$ (EPA 1993)

h Dietary composition factor was based on a conservative assumption of 100% dietary intake of small mammals from the site.

i Site use factor was based on a 25% use of the site for the fox's foraging range.

Table C2-1h
Post-Remediation Northern Harrier Risk Calculations (Wetland Sediment Residual Concentration)
Shallow Soil (0 - 2 ft bgs) at Hazard Quotient of 10
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Concentrations				Intake (mg/kg BW-day)					Hazard Quotient (HQ) - Low					Hazard Quotient (HQ) - High			
COPEC[a]	Surface Water (mg/L)[b]	Sediment[c]	Small Mammal BAF[d]	Small Mammal Tissue[d]	Surface Water	Sediment	Small Mammal	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Small Mammal	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Sediment	Small Mammal	Total Intake
Metals (mg/kg)																		
Aluminum	12.6	2.70E+04	1.11E-02	298	2.43E-01	5.14E+00	8.12E+00	1.35E+01	109.7	2.2E-03	4.7E-02	7.4E-02	1.2E-01	1,097	2.2E-04	4.7E-03	7.4E-03	1.2E-02
Antimony	0.003	2.60E+00	1.22E+00	3	5.80E-05	4.95E-04	8.62E-02	8.67E-02	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Arsenic	0.0436	2.20E+01	--	0	8.43E-04	4.19E-03	0.00E+00	5.03E-03	5.5	1.5E-04	7.6E-04	0.0E+00	9.2E-04	22	3.8E-05	1.9E-04	0.0E+00	2.3E-04
Barium	0.24	9.00E+01	9.41E-02	8	4.56E-03	1.71E-02	2.31E-01	2.52E-01	20.8	2.2E-04	8.2E-04	1.1E-02	1.2E-02	41.7	1.1E-04	4.1E-04	5.5E-03	6.0E-03
Beryllium		4.40E-01		0		8.38E-05		8.38E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Cadmium	0.0016	2.60E+00	--	0	3.09E-05	4.95E-04	0.00E+00	5.26E-04	0.08	3.9E-04	6.2E-03	0.0E+00	6.6E-03	10.4	3.0E-06	4.8E-05	0.0E+00	5.1E-05
Chromium +3	0.0263	9.33E+01	2.60E-02	2	5.08E-04	1.78E-02	6.61E-02	8.44E-02	2.66	1.9E-04	6.7E-03	2.5E-02	3.2E-02	2.78	1.8E-04	6.4E-03	2.4E-02	3.0E-02
Chromium +6	0.0263	1.87E+01	2.60E-02	0	5.08E-04	3.56E-03	1.32E-02	1.73E-02	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Cobalt	0.0164	2.10E+01	--	0	3.17E-04	4.00E-03	0.00E+00	4.32E-03	7.61	4.2E-05	5.3E-04	0.0E+00	5.7E-04	17	1.9E-05	2.4E-04	0.0E+00	2.5E-04
Copper	0.233	1.25E+02	3.45E-01	43	4.50E-03	2.38E-02	1.17E+00	1.20E+00	2.3	2.0E-03	1.0E-02	5.1E-01	5.2E-01	52.3	8.6E-05	4.6E-04	2.2E-02	2.3E-02
Lead	0.0031	8.80E+01	6.10E-01	54	5.99E-05	1.68E-02	1.46E+00	1.48E+00	0.014	4.3E-03	1.2E+00	1.0E+02	1.1E+02 >1	8.75	6.8E-06	1.9E-03	1.7E-01	1.7E-01
Manganese	7.42	1.02E+03	--	0	1.43E-01	1.94E-01	0.00E+00	3.37E-01	77.6	1.8E-03	2.5E-03	0.0E+00	4.3E-03	776	1.8E-04	2.5E-04	0.0E+00	4.3E-04
Mercury	0.00029	1.20E+00	--	0	5.60E-06	2.29E-04	0.00E+00	2.34E-04	0.039	1.4E-04	5.9E-03	0.0E+00	6.0E-03	0.18	3.1E-05	1.3E-03	0.0E+00	1.3E-03
Molybdenum	0.0312	4.80E+00	--	0	6.03E-04	9.14E-04	0.00E+00	1.52E-03	3.5	1.7E-04	2.6E-04	0.0E+00	4.3E-04	35.3	1.7E-05	2.6E-05	0.0E+00	4.3E-05
Nickel	0.166	1.08E+02	--	0	3.21E-03	2.06E-02	0.00E+00	2.38E-02	1.38	2.3E-03	1.5E-02	0.0E+00	1.7E-02	56.3	5.7E-05	3.7E-04	0.0E+00	4.2E-04
Selenium	0.029	1.00E+00	6.12E+00	6	5.60E-04	1.90E-04	1.66E-01	1.67E-01	0.23	2.4E-03	8.3E-04	7.2E-01	7.3E-01	0.93	6.0E-04	2.0E-04	1.8E-01	1.8E-01
Silver	0.0019	2.30E+00	--	0	3.67E-05	4.38E-04	0.00E+00	4.75E-04	178.00	2.1E-07	2.5E-06	0.0E+00	2.7E-06	NTV	NTV	NTV	NTV	NTV
Thallium		2.90E-01	1.01E+00	0		5.52E-05	7.95E-03	8.01E-03	0.35		1.6E-04	2.3E-02	2.3E-02	NTV	NTV	NTV	NTV	NTV
Tin		2.01E+01	--	0		3.83E-03	0.00E+00	3.83E-03	6.80		5.6E-04	0.0E+00	5.6E-04	16.9		2.3E-04	0.0E+00	2.3E-04
Vanadium	0.05	1.02E+02	--	0	9.66E-04	1.94E-02	0.00E+00	2.04E-02	11.4	8.5E-05	1.7E-03	0.0E+00	1.8E-03	114	8.5E-06	1.7E-04	0.0E+00	1.8E-04
Zinc	0.042	2.25E+02	1.11E+00	249	8.12E-04	4.29E-02	6.78E+00	6.83E+00	17.2	4.7E-05	2.5E-03	3.9E-01	4.0E-01	172	4.7E-06	2.5E-04	3.9E-02	4.0E-02
Volatile Organics (mg/kg)																		
Acetone		1.00E-01	--	0		1.90E-05	0.00E+00	1.90E-05	52		3.7E-07	0.0E+00	3.7E-07	520		3.7E-08	0.0E+00	3.7E-08
Benzene			--	0			0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Carbon disulfide		7.00E-03	--	0		1.33E-06	0.00E+00	1.33E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chlorobenzene		5.00E-03	--	0		9.52E-07	0.00E+00	9.52E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
cis-1,2-Dichlorobenzene			--	0			0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Ethylbenzene		1.80E-02	--	0		3.43E-06	0.00E+00	3.43E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Isopropyltoluene			--	0			0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Methylene chloride			--	0			0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Naphthalene			--	0			0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Toluene		3.00E-02	--	0		5.71E-06	0.00E+00	5.71E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
trans-1,2-Dichloroethene			--	0			0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Trichloroethene		7.00E-03	--	0		1.33E-06	0.00E+00	1.33E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
1,2,4-Trimethylbenzene			--	0			0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
1,3,5-Trimethylbenzene			--	0			0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Vinyl chloride			--	0			0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Xylenes		1.50E-01	--	0		2.86E-05	0.00E+00	2.86E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pesticides (mg/kg)																		
alpha-Chlordane		4.80E-03	--	0		9.14E-07	0.00E+00	9.14E-07	0.0014		6.5E-04	0.0E+00	6.5E-04	0.014		6.5E-05	0.0E+00	6.5E-05
beta-BHC		1.00E-03	--	0		1.90E-07	0.00E+00	1.90E-07	0.56		3.4E-07	0.0E+00	3.4E-07	2.25		8.5E-08	0.0E+00	8.5E-08
delta-BHC		2.00E-03	--	0		3.81E-07	0.00E+00	3.81E-07	0.56		6.8E-07	0.0E+00	6.8E-07	2.25		1.7E-07	0.0E+00	1.7E-07
2,4-DDD		3.00E-02	1.04E+00	0		5.71E-06	8.52E-04	8.58E-04	0.009		6.3E-04	9.5E-02	9.5E-02	1.5		3.8E-06	5.7E-04	5.7E-04
DDD		9.20E-02	1.04E+00	0		1.75E-05	2.61E-03	2.63E-03	0.009		1.9E-03	2.9E-01	2.9E-01	1.5		1.2E-05	1.7E-03	1.8E-03
DDE	0.0000027	1.80E-02	1.04E+00	0	5.22E-08	3.43E-06	5.11E-04	5.15E-04	NTV	NTV	NTV	NTV	NTV	0.6	8.7E-08	5.7E-06	8.5E-04	8.6E-04
DDTs	0.00014	1.20E-02	1.04E+00	0	2.71E-06	2.29E-06	3.41E-04	3.46E-04	0.009	3.0E-04	2.5E-04	3.8E-02	3.8E-02	1.5	1.8E-06	1.5E-06	2.3E-04	2.3E-04

Table C2-1h
Post-Remediation Northern Harrier Risk Calculations (Wetland Sediment Residual Concentration)
Shallow Soil (0 - 2 ft bgs) at Hazard Quotient of 10
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Concentrations				Intake (mg/kg BW-day)					Hazard Quotient (HQ) - Low					Hazard Quotient (HQ) - High			
COPEC[a]	Surface Water (mg/L)[b]	Sediment[c]	Small Mammal BAF[d]	Small Mammal Tissue[d]	Surface Water	Sediment	Small Mammal	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Small Mammal	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Sediment	Small Mammal	Total Intake
Dieldrin		2.90E-03	--	0		5.52E-07	0.00E+00	5.52E-07	0.0709		7.8E-06	0.0E+00	7.8E-06	0.98		5.6E-07	0.0E+00	5.6E-07
Endosulfan I		4.00E-03	--	0		7.62E-07	0.00E+00	7.62E-07	10		7.6E-08	0.0E+00	7.6E-08	100		7.6E-09	0.0E+00	7.6E-09
Endosulfan sulfate	0.00012	3.00E-03	--	0	2.32E-06	5.71E-07	0.00E+00	2.89E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Endrin	0.000014	2.00E-02	--	0	2.71E-07	3.81E-06	0.00E+00	4.08E-06	0.3	9.0E-07	1.3E-05	0.0E+00	1.4E-05	3	9.0E-08	1.3E-06	0.0E+00	1.4E-06
Endrin aldehyde		6.00E-03	--	0		1.14E-06	0.00E+00	1.14E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Endrin Ketone		2.30E-03	--	0		4.38E-07	0.00E+00	4.38E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
gamma-Chlordane		5.20E-03	--	0		9.90E-07	0.00E+00	9.90E-07	0.0014		7.1E-04	0.0E+00	7.1E-04	0.014		7.1E-05	0.0E+00	7.1E-05
Heptachlor	0.0000028	2.00E-04	--	0	5.41E-08	3.81E-08	0.00E+00	9.22E-08	0.065	8.3E-07	5.9E-07	0.0E+00	1.4E-06	0.65	8.3E-08	5.9E-08	0.0E+00	1.4E-07
Heptachlor epoxide		3.00E-04	--	0		5.71E-08	0.00E+00	5.71E-08	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Hexachlorobenzene		8.00E-04	--	0		1.52E-07	0.00E+00	1.52E-07	0.23		6.6E-07	0.0E+00	6.6E-07	2.3		6.6E-08	0.0E+00	6.6E-08
Methoxychlor		1.20E-02	--	0		2.29E-06	0.00E+00	2.29E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Mirex		4.00E-03	--	0		7.62E-07	0.00E+00	7.62E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
trans-Nonachlor		2.40E-03	--	0		4.57E-07	0.00E+00	4.57E-07	0.0014		3.3E-04	0.0E+00	3.3E-04	0.014		3.3E-05	0.0E+00	3.3E-05
SVOCs (mg/kg)																		
Acenaphthene		5.73E-02	--	0		1.09E-05	0.00E+00	1.09E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Acenaphthylene		3.96E-02	--	0		7.54E-06	0.00E+00	7.54E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Anthracene		6.58E-02	--	0		1.25E-05	0.00E+00	1.25E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(a)anthracene		9.00E-02	--	0		1.71E-05	0.00E+00	1.71E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(a)pyrene		9.00E-02	--	0		1.71E-05	0.00E+00	1.71E-05	0.001		1.7E-02	0.0E+00	1.7E-02	0.01		1.7E-03	0.0E+00	1.7E-03
Benzo(b)fluoranthene		8.00E-02	--	0		1.52E-05	0.00E+00	1.52E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(g,h,i)perylene		8.00E-02	--	0		1.52E-05	0.00E+00	1.52E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(k)fluoranthene		6.70E-02	--	0		1.28E-05	0.00E+00	1.28E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzoic acid			--	0			0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Bis(2-ethylhexyl)phthalate	0.027	1.20E-01	--	0	5.22E-04	2.29E-05	0.00E+00	5.45E-04	1.1	4.7E-04	2.1E-05	0.0E+00	5.0E-04	11	4.7E-05	2.1E-06	0.0E+00	5.0E-05
Butylbenzylphthalate		2.50E-02	--	0		4.76E-06	0.00E+00	4.76E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Carbazole		1.41E-01	--	0		2.69E-05	0.00E+00	2.69E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Chloroaniline		3.00E-03	--	0		5.71E-07	0.00E+00	5.71E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2-Chloropropane		4.33E-02	--	0		8.25E-06	0.00E+00	8.25E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chrysene	0.0002	8.00E-02	--	0	3.87E-06	1.52E-05	0.00E+00	1.91E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Dibenzofuran		7.89E-02	--	0		1.50E-05	0.00E+00	1.50E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
3,3-Dichlorobenzidine		1.20E-02	--	0		2.29E-06	0.00E+00	2.29E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2,6-Dinitrotoluene			--	0			0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Fluoranthene		8.00E-02	--	0		1.52E-05	0.00E+00	1.52E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Fluorene		5.40E-02	--	0		1.03E-05	0.00E+00	1.03E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Indeno(1,2,3-cd)pyrene		1.00E-01	--	0		1.90E-05	0.00E+00	1.90E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2-Methylnaphthalene		5.23E-02	--	0		9.96E-06	0.00E+00	9.96E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Methylphenol	0.12	6.68E-02	--	0	2.32E-03	1.27E-05	0.00E+00	2.33E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Naphthalene		9.00E-02	--	0		1.71E-05	0.00E+00	1.71E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pentachlorophenol		4.84E-02	--	0		9.22E-06	0.00E+00	9.22E-06	6.7		1.4E-06	0.0E+00	1.4E-06	22.5		4.1E-07	0.0E+00	4.1E-07
Phenanthrene		9.00E-02	--	0		1.71E-05	0.00E+00	1.71E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Phenol		1.40E-01	--	0		2.67E-05	0.00E+00	2.67E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pyrene		8.00E-02	--	0		1.52E-05	0.00E+00	1.52E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
PCBs (mg/kg)																		
PCBs (Total Congeners)	0.000016	1.10E-01	1.81E+01	2	3.09E-07	2.10E-05	5.41E-02	5.41E-02	0.09	3.4E-06	2.3E-04	6.0E-01	6.0E-01	1.27	2.4E-07	1.6E-05	4.3E-02	4.3E-02

>1 = The calculated hazard quotient exceeds 1 (i.e., > 1.5)

Table C2-1h
Post-Remediation Northern Harrier Risk Calculations (Wetland Sediment Residual Concentration)
Shallow Soil (0 - 2 ft bgs) at Hazard Quotient of 10
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Concentrations				Intake (mg/kg BW-day)					Hazard Quotient (HQ) - Low					Hazard Quotient (HQ) - High			
COPEC[a]	Surface Water (mg/L)[b]	Sediment[c]	Small Mammal BAF[d]	Small Mammal Tissue[d]	Surface Water	Sediment	Small Mammal	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Small Mammal	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Sediment	Small Mammal	Total Intake

Exposure Assumptions and Equation:[e]

	Value	
Ingestion Rate (IR) prey(dry wt.) =	0.048	
IRsmall mammal (dry wt.) =	0.048	kg/day (dry weight)
IRsoil (dry wt.)[f] =	0.000336	kg-day (dry weight)
IRsurface water[g] =	0.034	L/day
Cprey =	chem-specific	mg/kg or µg/kg
Csoil =	chem-specific	mg/kg or µg/kg
Csurface water =	chem-specific	mg/L or µg/L
Tissue Moisture (TMsmall mammal) =	68%	percent
Dietary Composition Factor (DCF)[h] =	100%	percent
Site Use Factor (SUF)[i] =	25%	percent
Body Weight (BW) =	0.441	kg

Intake Equation = [IRmammal(dry wt) x (Cprey(mammal, dry wt)/1-TM) x DCF x SUF]/BW] + [(IRsoil x Csoil x DCF x SUF)]/BW] + [(IRsurface water x Csurface water x DCF x SUF)]/BW]

Risk (hazard quotient) = Intake / TRV

Prey tissue(dry wt) = Prey tissue (wet wt.) / (1-Tissue Moisture)

NTV = No toxicity data available.

NA = Not applicable.

Blank cell indicates COPEC was not detected in this medium.

Notes:

a All chemicals detected in sediments are considered as constituents of potential ecological concern.

b All concentrations of constituents in surface water are based on the maximum concentration.

c All concentrations of constituents in sediment are based on the residual concentrations expressed in dry weight.

d Site-specific BAFs (dry weight basis). Calculated small mammal tissue concentrations (sediment concentration x BAF). Tissue concentrations are on a dry weight basis.

e Exposure parameters used to calculate risk are discussed in detail in Section 4.2 of ERA.

f Ingestion rate of sedimentl based on 0.7 percent of of the prey ingestion rate (dry weight); based on rate for bald eagle in Pascoe et al. (1996).

g Based on equation for birds: Water intake (L/day) = $0.059Wt(kg)^{0.67}$ (EPA 1993)

h Dietary composition factor was based on a conservative assumption of 100% dietary intake of small mammals from the site.

i Site use factor was based on 25% use of the site for the harrier's foraging range.

Table C2-1i
Post-Remediation Mallard (Non-Breeding) Risk Calculations (Wetland Sediment Residual Concentration)
Shallow Soil (0 - 2 ft bgs) at Hazard Quotient of 10
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Concentrations				Intake (mg/kg BW-day)					Hazard Quotient (HQ) - Low					Hazard Quotient (HQ) - High			
COPEC[a]	Surface Water (mg/L)[b]	Sediments[c]	Plant BAF[d]	Plant Tissue[d]	Surface Water	Sediment	Plant	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Plant	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Sediment	Plant	Total Intake
Metals (mg/kg)																		
Aluminum	12.6	2.70E+04	7.56E-03	2.04E+02	7.60E-02	8.72E+00	2.00E+00	1.08E+01	109.7	6.9E-04	8.0E-02	1.8E-02	9.8E-02	1,097	6.9E-05	8.0E-03	1.8E-03	9.8E-03
Antimony	0.003	2.60E+00	2.27E-01	5.91E-01	1.81E-05	8.40E-04	5.79E-03	6.65E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Arsenic	0.0436	2.20E+01	1.15E-01	2.54E+00	2.63E-04	7.11E-03	2.49E-02	3.22E-02	5.5	4.8E-05	1.3E-03	4.5E-03	5.9E-03	22	1.2E-05	3.2E-04	1.1E-03	1.5E-03
Barium	0.24	9.00E+01	7.87E-02	7.08E+00	1.42E-03	2.91E-02	6.94E-02	9.99E-02	20.8	6.8E-05	1.4E-03	3.3E-03	4.8E-03	41.7	3.4E-05	7.0E-04	1.7E-03	2.4E-03
Beryllium		4.40E-01	--	0		1.42E-04	0	1.42E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Cadmium	0.0016	2.60E+00	1.40E+00	3.63E+00	9.65E-06	8.40E-04	3.56E-02	3.64E-02	0.08	1.2E-04	1.1E-02	4.4E-01	4.6E-01	10.40	9.3E-07	8.1E-05	3.4E-03	3.5E-03
Chromium +3	0.0263	9.33E+01	--	0	1.59E-04	3.02E-02	0	3.03E-02	2.66	6.0E-05	1.1E-02	0.0E+00	1.1E-02	2.78	5.7E-05	1.1E-02	0.0E+00	1.1E-02
Chromium +6	0.0263	1.87E+01	--	0	1.59E-04	6.03E-03	0	6.19E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Cobalt	0.0164	2.10E+01	--	0	9.89E-05	6.79E-03	0	6.89E-03	7.61	1.3E-05	8.9E-04	0.0E+00	9.1E-04	17	5.8E-06	4.0E-04	0.0E+00	4.1E-04
Copper	0.233	1.25E+02	5.68E-02	7.10E+00	1.40E-03	4.04E-02	6.96E-02	1.11E-01	2.3	6.1E-04	1.8E-02	3.0E-02	4.8E-02	52.3	2.7E-05	7.7E-04	1.3E-03	2.1E-03
Lead	0.0031	8.80E+01	7.51E-03	6.61E-01	1.87E-05	2.84E-02	6.47E-03	3.49E-02	0.014	1.3E-03	2.0E+00	4.6E-01	2.5E+00 >1	8.75	2.1E-06	3.3E-03	7.4E-04	4.0E-03
Manganese	7.42	1.02E+03	4.89E-01	4.97E+02	4.47E-02	3.29E-01	4.87E+00	5.25E+00	77.6	5.8E-04	4.2E-03	6.3E-02	6.8E-02	776	5.8E-05	4.2E-04	6.3E-03	6.8E-03
Mercury	0.00029	1.20E+00	--	0	1.75E-06	3.88E-04	0	3.90E-04	0.039	4.5E-05	9.9E-03	0.0E+00	1.0E-02	0.18	9.7E-06	2.2E-03	0.0E+00	2.2E-03
Molybdenum	0.0312	4.80E+00	--	0	1.88E-04	1.55E-03	0	1.74E-03	3.5	5.4E-05	4.4E-04	0.0E+00	5.0E-04	35.3	5.3E-06	4.4E-05	0.0E+00	4.9E-05
Nickel	0.166	1.08E+02	1.39E-02	1.50E+00	1.00E-03	3.49E-02	1.47E-02	5.06E-02	1.38	7.3E-04	2.5E-02	1.1E-02	3.7E-02	56.3	1.8E-05	6.2E-04	2.6E-04	9.0E-04
Selenium	0.029	1.00E+00	--	0	1.75E-04	3.23E-04	0	4.98E-04	0.23	7.6E-04	1.4E-03	0.0E+00	2.2E-03	0.93	1.9E-04	3.5E-04	0.0E+00	5.4E-04
Silver	0.0019	2.30E+00	--	0	1.15E-05	7.44E-04	0	7.55E-04	178.00	6.4E-08	4.2E-06	0.0E+00	4.2E-06	NTV	NTV	NTV	NTV	NTV
Thallium		2.90E-01	--	0		9.37E-05	0	9.37E-05	0.35		2.7E-04	0.0E+00	2.7E-04	NTV	NTV	NTV	NTV	NTV
Tin		2.01E+01	1.55E+00	3.12E+01		6.50E-03	3.06E-01	3.13E-01	6.80		9.6E-04	4.5E-02	4.6E-02	16.9		3.8E-04	1.8E-02	1.8E-02
Vanadium	0.05	1.02E+02	2.20E-02	2.25E+00	3.01E-04	3.30E-02	2.20E-02	5.53E-02	11.4	2.6E-05	2.9E-03	1.9E-03	4.9E-03	114	2.6E-06	2.9E-04	1.9E-04	4.9E-04
Zinc	0.042	2.25E+02	8.47E-02	1.91E+01	2.53E-04	7.27E-02	1.87E-01	2.60E-01	17.2	1.5E-05	4.2E-03	1.1E-02	1.5E-02	172	1.5E-06	4.2E-04	1.1E-03	1.5E-03
Volatile Organics (mg/kg)																		
Acetone		1.00E-01	--	0		3.23E-05	0	3.23E-05	52		6.2E-07	0.0E+00	6.2E-07	520		6.2E-08	0.0E+00	6.2E-08
Benzene			--	0			0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Carbon disulfide		7.00E-03	--	0		2.26E-06	0	2.26E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chlorobenzene		5.00E-03	--	0		1.62E-06	0	1.62E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
cis-1,2-Dichlorobenzene			--	0			0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Ethylbenzene		1.80E-02	--	0		5.82E-06	0	5.82E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Isopropyltoluene			--	0			0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Methylene chloride			--	0			0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Naphthalene			--	0			0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Toluene		3.00E-02	--	0		9.70E-06	0	9.70E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
trans-1,2-Dichloroethene			--	0			0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Trichloroethene		7.00E-03	--	0		2.26E-06	0	2.26E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
1,2,4-Trimethylbenzene			--	0			0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
1,3,5-Trimethylbenzene			--	0			0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Vinyl chloride			--	0			0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Xylenes		1.50E-01	--	0		4.85E-05	0	4.85E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pesticides (mg/kg)																		
alpha-Chlordane		4.80E-03	--	0		1.55E-06	0	1.55E-06	0.0014		1.1E-03	0.0E+00	1.1E-03	0.014		1.1E-04	0.0E+00	1.1E-04
beta-BHC		1.00E-03	--	0		3.23E-07	0	3.23E-07	0.56		5.8E-07	0.0E+00	5.8E-07	2.25		1.4E-07	0.0E+00	1.4E-07
delta-BHC		2.00E-03	--	0		6.47E-07	0	6.47E-07	0.56		1.2E-06	0.0E+00	1.2E-06	2.25		2.9E-07	0.0E+00	2.9E-07
2,4-DDD		3.00E-02	--	0		9.70E-06	0	9.70E-06	0.009		1.1E-03	0.0E+00	1.1E-03	1.5		6.5E-06	0.0E+00	6.5E-06
4,4-DDD		9.20E-02	--	0		2.97E-05	0	2.97E-05	0.009		3.3E-03	0.0E+00	3.3E-03	1.5		2.0E-05	0.0E+00	2.0E-05
DDE	0.0000027	1.80E-02	--	0	1.63E-08	5.82E-06	0	5.84E-06	NTV	NTV	NTV	NTV	NTV	0.6	2.7E-08	9.7E-06	0.0E+00	9.7E-06
DDTs	0.00014	1.20E-02	--	0	8.44E-07	3.88E-06	0	4.72E-06	0.009	9.4E-05	4.3E-04	0.0E+00	5.2E-04	1.5	5.6E-07	2.6E-06	0.0E+00	3.1E-06
Dieldrin		2.90E-03	--	0		9.37E-07	0	9.37E-07	0.0709		1.3E-05	0.0E+00	1.3E-05	0.98		9.6E-07	0.0E+00	9.6E-07
Endosulfan I		4.00E-03	--	0		1.29E-06	0	1.29E-06	10		1.3E-07	0.0E+00	1.3E-07	100		1.3E-08	0.0E+00	1.3E-08
Endosulfan sulfate	0.00012	3.00E-03	--	0	7.24E-07	9.70E-07	0	1.69E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Endrin	0.000014	2.00E-02	--	0	8.44E-08	6.47E-06	0	6.55E-06	0.3	2.8E-07	2.2E-05	0.0E+00	2.2E-05	3	2.8E-08	2.2E-06	0.0E+00	2.2E-06
Endrin aldehyde		6.00E-03	--	0		1.94E-06	0	1.94E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Endrin Ketone		2.30E-03	--	0		7.44E-07	0	7.44E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
gamma Chlordane		5.20E-03	--	0		1.68E-06	0	1.68E-06	0.0014		1.2E-03	0.0E+00	1.2E-03	0.014		1.2E-04	0.0E+00	1.2E-04
Heptachlor	0.0000028	2.00E-04	--	0	1.69E-08	6.47E-08	0	8.15E-08	0.065	2.6E-07	9.9E-07	0.0E+00	1.3E-06	0.65	2.6E-08	9.9E-08	0.0E+00	1.3E-07
Heptachlor epoxide		3.00E-04	--	0		9.70E-08	0	9.70E-08	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Hexachlorobenzene		8.00E-04	--	0		2.59E-07	0	2.59E-07	0.23		1.1E-06	0.0E+00	1.1E-06	2.3		1.1E-07	0.0E+00	1.1E-07
Methoxychlor		1.20E-02	--	0		3.88E-06	0	3.88E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Mirex		4.00E-03	--	0		1.29E-06	0	1.29E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
trans-Nonachlor		2.40E-03	--	0		7.76E-07	0	7.76E-07	0.0014		5.5E-04	0.0E+00	5.5E-04	0.014		5.5E-05	0.0E+00	5.5E-05

Table C2-1i
Post-Remediation Mallard (Non-Breeding) Risk Calculations (Wetland Sediment Residual Concentration)
Shallow Soil (0 - 2 ft bgs) at Hazard Quotient of 10
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Concentrations				Intake (mg/kg BW-day)					Hazard Quotient (HQ) - Low					Hazard Quotient (HQ) - High			
COPEC[a]	Surface Water (mg/L)[b]	Sediments[c]	Plant BAF[d]	Plant Tissue[d]	Surface Water	Sediment	Plant	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Plant	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Sediment	Plant	Total Intake
SVOCs (mg/kg)																		
Acenaphthene		5.73E-02	--	0		1.85E-05	0	1.85E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Acenaphthylene		3.96E-02	--	0		1.28E-05	0	1.28E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Anthracene		6.58E-02	1.89E+00	1.24E-01		2.13E-05	1.22E-03	1.24E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(a)anthracene		9.00E-02	--	0		2.91E-05	0	2.91E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(a)pyrene		9.00E-02	--	0		2.91E-05	0	2.91E-05	0.001		2.9E-02	0.0E+00	2.9E-02	0.01		2.9E-03	0.0E+00	2.9E-03
Benzo(b)fluoranthene		8.00E-02	--	0		2.59E-05	0	2.59E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(ghi)perylene		8.00E-02	--	0		2.59E-05	0	2.59E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(k)fluoranthene		6.70E-02	--	0		2.17E-05	0	2.17E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzoic acid			--	0			0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Bis(2-ethylhexyl)phthalate	0.027	1.20E-01	--	0	1.63E-04	3.88E-05	0	2.02E-04	1.1	1.5E-04	3.5E-05	0.0E+00	1.8E-04	11	1.5E-05	3.5E-06	0.0E+00	1.8E-05
Butylbenzylphthalate		2.50E-02	--	0		8.08E-06	0	8.08E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Carbazole		1.41E-01	--	0		4.56E-05	0	4.56E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Chloroaniline		3.00E-03	--	0		9.70E-07	0	9.70E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2-Chloropropane		4.33E-02	--	0		1.40E-05	0	1.40E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chrysene	0.0002	8.00E-02	--	0	1.21E-06	2.59E-05	0	2.71E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Dibenzofuran		7.89E-02	--	0		2.55E-05	0	2.55E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
3,3-Dichlorobenzidine		1.20E-02	--	0		3.88E-06	0	3.88E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2,6-Dinitrotoluene			--	0			0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Fluoranthene		8.00E-02	1.17E+00	9.39E-02		2.59E-05	9.20E-04	9.45E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Fluorene		5.40E-02	--	0		1.75E-05	0	1.75E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Indeno(123,cd)pyrene		1.00E-01	--	0		3.23E-05	0	3.23E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2-Methylnaphthalene		5.23E-02	--	0		1.69E-05	0	1.69E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Methylphenol	0.12	6.68E-02	--	0	7.24E-04	2.16E-05	0	7.45E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Naphthalene		9.00E-02	--	0		2.91E-05	0	2.91E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pentachlorophenol		4.84E-02	--	0		1.56E-05	0	1.56E-05	6.7		2.3E-06	0.0E+00	2.3E-06	22.5		7.0E-07	0.0E+00	7.0E-07
Phenanthrene		9.00E-02	1.64E+00	1.47E-01		2.91E-05	1.44E-03	1.47E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Phenol		1.40E-01	--	0		4.53E-05	0	4.53E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pyrene		8.00E-02	--	0		2.59E-05	0	2.59E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
PCBs (mg/kg)																		
PCBs (TOTAL)-congeners	0.000016	1.10E-01	1.09E-01	1.20E-02	9.65E-08	3.56E-05	1.18E-04	1.53E-04	0.09	1.1E-06	4.0E-04	1.3E-03	1.7E-03	1.27	7.6E-08	2.8E-05	9.3E-05	1.2E-04

>1 = The calculated hazard quotient exceeds 1 (i.e., > 1.5)

Exposure Assumptions and Equation:[e]

	Value	Units
Ingestion Rate (IR) prey(dry wt.) =	0.0917	kg/day (dry weight)
IRplant(dry wt.) =	0.0917	kg/day (dry weight)
IRsediment (dry wt.)[f] =	0.00303	kg/day (dry weight)
Cprey =	chem-specific	kg-day (dry weight)
Csediment =	chem-specific	kg-day (dry weight)
Tissue Moisture (TMplant) =	8.5%	percent
IRsurface water[g] =	0.056	L/day
Csurface water =	chem-specific	mg/L or µg/L
Dietary Composition Factor (DCF)[h] =	100%	percent
Site Use Factor (SUF)[i] =	10%	percent
Body Weight (BW) =	0.9361	kg

Intake Equation = [IRplant (dry wt) x [Cprey (plant, wet wt) /1-TM] x DCF x SUF]/BW + [IRsediment x Csediment x DCF x SUF)]/BW +[(IRsurface water x Csurface water x DCF x SUF)]/BW

Risk (hazard quotient) = Intake / TRV

NTV = Not toxicity data available.

Prey tissue(dry wt) = Prey tissue (wet wt.) / (1-Tissue Moisture)

NA = Not available.

Blank cell indicates COPEC was not detected in this medium.

Notes:

a All chemicals detected in sediments are considered as constituents of potential ecological concern.

b All concentrations of constituents in surface water are based on the maximum concentration.

c All concentrations of constituents in sediment are based on the residual concentrations expressed in dry weight.

d Site-specific BAFs (dry weight basis). Calculated plant tissue concentrations (sediment concentration x BAF). Tissue concentrations are on a dry weight basis.

e Exposure parameters used to calculate risk are discussed in detail in Section 4.2 of ERA.

f Ingestion rate of sediment based on 3.3 percent of of the prey ingestion rate (dry weight); based on mallard data from Beyer et al. (1994).

g Based on equation for birds: Water intake (L/day) = $0.059Wt(kg)^{0.67}$ (EPA 1993)

h Dietary composition factor was based on a conservative assumption of 100% dietary intake of plants from the site.

i Site use factor was based on 10% use of the site for the mallard's foraging range.

Table C2-1j
Post-Remediation Mallard (Breeding) Risk Calculations (Wetland Sediment Residual Concentration)
Shallow Soil (0 - 2 ft bgs) at Hazard Quotient of 10
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Point Concentration						Intake (mg/kg BW-day)						Hazard Quotient (HQ) - Low						Hazard Quotient (HQ) - High					
COPEC[a]	Surface Water (mg/L)[b]	Sediments[c]	Plant BAF[d]	Plant Tissue[d]	Invertebrate BAF[d]	Invertebrate Tissue[d]	Surface Water	Sediment	Plant	Invertebrate	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Plant	Invertebrate	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Sediment	Plant	Invertebrate	Total Intake
Metals (mg/kg)																								
Aluminum	12.6	2.70E+04	7.56E-03	2.04E+02	1.93E-01	5.20E+03	3.04E-01	3.49E+01	2.00E+00	1.53E+02	1.90E+02	109.7	2.8E-03	3.2E-01	1.8E-02	1.4E+00	1.7E+00 >1	1,097	2.8E-04	3.2E-02	1.8E-03	1.4E-01	1.7E-01	
Antimony	0.003	2.60E+00	2.27E-01	5.91E-01	2.32E-01	6.02E-01	7.24E-05	3.36E-03	5.79E-03	1.77E-02	2.69E-02	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Arsenic	0.0436	2.20E+01	1.15E-01	2.54E+00	1.92E-01	4.22E+00	1.05E-03	2.84E-02	2.49E-02	1.24E-01	1.78E-01	5.5	1.9E-04	5.2E-03	4.5E-03	2.3E-02	3.2E-02	22	4.8E-05	1.3E-03	1.1E-03	5.6E-03	8.1E-03	
Barium	0.24	9.00E+01	7.87E-02	7.08E+00	1.50E+00	1.35E+02	5.69E-03	1.16E-01	6.94E-02	3.96E+00	4.15E+00	20.8	2.7E-04	5.6E-03	3.3E-03	1.9E-01	2.0E-01	41.7	1.4E-04	2.8E-03	1.7E-03	9.5E-02	1.0E-01	
Beryllium		4.40E-01	--	0	--	0		5.69E-04	0.00E+00	0.00E+00	5.69E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Cadmium	0.0016	2.60E+00	1.40E+00	3.63E+00	2.15E-01	5.59E-01	3.86E-05	3.36E-03	3.56E-02	1.64E-02	5.54E-02	0.08	4.8E-04	4.2E-02	4.4E-01	2.1E-01	6.9E-01	10.40	3.7E-06	3.2E-04	3.4E-03	1.6E-03	5.3E-03	
Chromium +3	0.0263	9.33E+01	--	0	5.53E-01	5.17E+01	6.34E-04	1.21E-01	0.00E+00	1.52E+00	1.64E+00	2.66	2.4E-04	4.5E-02	0.0E+00	5.7E-01	6.2E-01	2.78	2.3E-04	4.3E-02	0.0E+00	5.5E-01	5.9E-01	
Chromium +6	0.0263	1.87E+01	--	0	5.53E-01	1.03E+01	6.34E-04	2.41E-02	0.00E+00	3.04E-01	3.28E-01	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Cobalt	0.0164	2.10E+01	--	0	--	0	3.96E-04	2.72E-02	0.00E+00	0.00E+00	2.75E-02	7.61	5.2E-05	3.6E-03	0.0E+00	0.0E+00	3.6E-03	17	2.3E-05	1.6E-03	0.0E+00	0.0E+00	1.6E-03	
Copper	0.233	1.25E+02	5.68E-02	7.10E+00	6.67E-01	8.34E+01	5.62E-03	1.62E-01	6.96E-02	2.45E+00	2.69E+00	2.3	2.4E-03	7.0E-02	3.0E-02	1.1E+00	1.2E+00	52.3	1.1E-04	3.1E-03	1.3E-03	4.7E-02	5.1E-02	
Lead	0.0031	8.80E+01	7.51E-03	6.61E-01	5.07E-02	4.46E+00	7.48E-05	1.14E-01	6.47E-03	1.31E-01	2.52E-01	0.014	5.3E-03	8.1E+00	4.6E-01	9.4E+00	1.8E+01 >1	8.75	8.5E-06	1.3E-02	7.4E-04	1.5E-02	2.9E-02	
Manganese	7.42	1.02E+03	4.89E-01	4.97E+02	5.29E+00	5.38E+03	1.79E-01	1.32E+00	4.87E+00	1.58E+02	1.65E+02	77.6	2.3E-03	1.7E-02	6.3E-02	2.0E+00	2.1E+00 >1	776	2.3E-04	1.7E-03	6.3E-03	2.0E-01	2.1E-01	
Mercury	0.00029	1.20E+00	--	0	6.96E-01	8.36E-01	6.99E-06	1.55E-03	0.00E+00	2.46E-02	2.61E-02	0.039	1.8E-04	4.0E-02	0.0E+00	6.3E-01	6.7E-01	0.18	3.9E-05	8.6E-03	0.0E+00	1.4E-01	1.5E-01	
Molybdenum	0.0312	4.80E+00	--	0	--	0	7.53E-04	6.21E-03	0.00E+00	0.00E+00	6.96E-03	3.5	2.2E-04	1.8E-03	0.0E+00	0.0E+00	2.0E-03	35.3	2.1E-05	1.8E-04	0.0E+00	0.0E+00	2.0E-04	
Nickel	0.166	1.08E+02	1.39E-02	1.50E+00	3.65E-01	3.94E+01	4.00E-03	1.40E-01	1.47E-02	1.16E+00	1.32E+00	1.38	2.9E-03	1.0E-01	1.1E-02	8.4E-01	9.5E-01	56.3	7.1E-05	2.5E-03	2.6E-04	2.1E-02	2.3E-02	
Selenium	0.029	1.00E+00	--	0	--	0	6.99E-04	1.29E-03	0.00E+00	0.00E+00	1.99E-03	0.23	3.0E-03	5.6E-03	0.0E+00	0.0E+00	8.7E-03	0.93	7.5E-04	1.4E-03	0.0E+00	0.0E+00	2.1E-03	
Silver	0.0019	2.30E+00	--	0	--	0	4.58E-05	2.97E-03	0.00E+00	0.00E+00	3.02E-03	178.00	2.6E-07	1.7E-05	0.0E+00	0.0E+00	1.7E-05	NTV	NTV	NTV	NTV	NTV	NTV	
Thallium		2.90E-01	--	0	--	0		3.75E-04	0.00E+00	0.00E+00	3.75E-04	0.35		1.1E-03	0.0E+00	0.0E+00	1.1E-03	NTV	NTV	NTV	NTV	NTV	NTV	
Tin		2.01E+01	1.55E+00	3.12E+01	--	0		2.60E-02	3.06E-01	0.00E+00	3.32E-01	6.80		3.8E-03	4.5E-02	0.0E+00	4.9E-02	16.9		1.5E-03	1.8E-02	0.0E+00	2.0E-02	
Vanadium	0.05	1.02E+02	2.20E-02	2.25E+00	2.96E-02	3.01E+00	1.21E-03	1.32E-01	2.20E-02	8.86E-02	2.44E-01	11.4	1.1E-04	1.2E-02	1.9E-03	7.8E-03	2.1E-02	114	1.1E-05	1.2E-03	1.9E-04	7.8E-04	2.1E-03	
Zinc	0.042	2.25E+02	8.47E-02	1.91E+01	1.51E+00	3.40E+02	1.01E-03	2.91E-01	1.87E-01	1.00E+01	1.05E+01	17.2	5.9E-05	1.7E-02	1.1E-02	5.8E-01	6.1E-01	172	5.9E-06	1.7E-03	1.1E-03	5.8E-02	6.1E-02	
Volatile Organics (mg/kg)																								
Acetone		1.00E-01	--	0	--	0		1.29E-04	0.00E+00	0.00E+00	1.29E-04	52		2.5E-06	0.0E+00	0.0E+00	2.5E-06	520		2.5E-07	0.0E+00	0.0E+00	2.5E-07	
Benzene			--	0	--	0			0.00E+00	0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Carbon disulfide		7.00E-03	--	0	--	0		9.05E-06	0.00E+00	0.00E+00	9.05E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Chlorobenzene		5.00E-03	--	0	--	0		6.47E-06	0.00E+00	0.00E+00	6.47E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
cis-1,2-Dichlorobenzene			--	0	--	0			0.00E+00	0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Ethylbenzene		1.80E-02	--	0	--	0		2.33E-05	0.00E+00	0.00E+00	2.33E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
4-Isopropyltoluene			--	0	--	0			0.00E+00	0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Methylene chloride			--	0	--	0			0.00E+00	0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Naphthalene			--	0	--	0			0.00E+00	0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Toluene		3.00E-02	--	0	--	0		3.88E-05	0.00E+00	0.00E+00	3.88E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
trans-1,2-Dichloroethene			--	0	--	0			0.00E+00	0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Trichloroethene		7.00E-03	--	0	--	0		9.05E-06	0.00E+00	0.00E+00	9.05E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
1,2,4-Trimethylbenzene			--	0	--	0			0.00E+00	0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
1,3,5-Trimethylbenzene			--	0	--	0			0.00E+00	0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Vinyl chloride			--	0	--	0			0.00E+00	0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Xylenes		1.50E-01	--	0	--	0		1.94E-04	0.00E+00	0.00E+00	1.94E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Pesticides (mg/kg)																								
alpha-Chlordane		4.80E-03	--	0	--	0		6.21E-06	0.00E+00	0.00E+00	6.21E-06	0.0014		4.4E-03	0.0E+00	0.0E+00	4.4E-03	0.014		4.4E-04	0.0E+00	0.0E+00	4.4E-04	
beta-BHC		1.00E-03	--	0	--	0		1.29E-06	0.00E+00	0.00E+00	1.29E-06	0.56		2.3E-06	0.0E+00	0.0E+00	2.3E-06	2.25		5.7E-07	0.0E+00	0.0E+00	5.7E-07	
delta-BHC		2.00E-03	--	0	--	0		2.59E-06	0.00E+00	0.00E+00	2.59E-06	0.56		4.6E-06	0.0E+00	0.0E+00	4.6E-06	2.25		1.1E-06	0.0E+00	0.0E+00	1.1E-06	
2,4-DDD		3.00E-02	--	0	--	0		3.88E-05	0.00E+00	0.00E+00	3.88E-05	0.009		4.3E-03	0.0E+00	0.0E+00	4.3E-03	1.5		2.6E-05	0.0E+00	0.0E+00	2.6E-05	
4,4-DDD		9.20E-02	--	0	--	0		1.19E-04	0.00E+00	0.00E+00	1.19E-04	0.009		1.3E-02	0.0E+00	0.0E+00	1.3E-02	1.5		7.9E-05	0.0E+00	0.0E+00	7.9E-05	
DDE	0.0000027	1.80E-02	--	0	--	0	6.51E-08	2.33E-05	0.00E+00	0.00E+00	2.33E-05	NTV	NTV	NTV	NTV	NTV	NTV	0.6	1.1E-07	3.9E-05	0.0E+00	0.0E+00	3.9E-05	
DDTs	0.00014	1.20E-02	--	0	--	0	3.38E-06	1.55E-05	0.00E+00	0.00E+00	1.89E-05	0.009	3.8E-04	1.7E-03	0.0E+00	0.0E+00	2.1E-03	1.5	2.3E-06	1.0E-05	0.0E+00	0.0E+00	1.3E-05	
Dieldrin		2.90E-03	--	0	--	0		3.75E-06	0.00E+00	0.00E+00	3.75E-06	0.0709		5.3E-05	0.0E+00	0.0E+00	5.3E-05	0.98		3.8E-06	0.0E+00	0.0E+00	3.8E-06	
Endosulfan I		4.00E-03	--	0	--	0		5.17E-06	0.00E+00	0.00E+00	5.17E-06	10		5.2E-07	0.0E+00	0.0E+00	5.2E-07	100		5.2E-08	0.0E+00	0.0E+00	5.2E-08	
Endosulfan sulfate	0.00012	3.00E-03	--	0	--	0	2.89E-06	3.88E-06	0.00E+00	0.00E+00	6.77E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Endrin	0.000014	2.00E-02	--	0	--	0	3.38E-07	2.59E-05	0.00E+00	0.00E+00	2.62E-05	0.3	1.1E-06	8.6E-05	0.0E+00	0.0E+00	8.7E-05	3	1.1E-07	8.6E-06	0.0E+00	0.0E+00	8.7E-06	
Endrin aldehyde		6.00E-03	--	0	--	0		7.76E-06	0.00E+00	0.00E+00	7.76E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Endrin Ketone		2.30E-03	--	0	--	0		2.97E-06	0.00E+00	0.00E+00	2.97E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
gamma-Chlordane		5.20E-03	--	0	--	0		6.72E-06	0.00E+00	0.00E+00	6.72E-06	0.0014		4.8E-03	0.0E+00	0.0E+00	4.8E-03	0.014		4.8E-04	0.0E+00	0.0E+00	4.8E-04	
Heptachlor	0.0000028	2.00E-04	--	0	--	0	6.75E-08	2.59E-07	0.00E+00	0.00E+00	3.26E-07	0.065	1.0E-06	4.0E-06	0.0E+00	0.0E+00	5.0E-06	0.65	1.0E-07	4.0E-07	0.0E+00	0.0E+00	5.0E-07	
Heptachlor epoxide		3.00E-04	--	0	--	0		3.88E-07	0.00E+00	0.00E+00	3.88E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Hexachlorobenzene		8.00E-04	--	0	--	0		1.03E-06	0.00E+00	0.00E+00	1.03E-06	0.23		4.5E-06	0.0E+00	0.0E+00	4.5E-06	2.3		4.5E-07	0.0E+00	0.0E+00	4.5E-07	
Methoxychlor		1.20E-02	--	0	--	0		1.55E-05	0.00E+00	0.00E+00	1.55E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Mirex		4.00E-03	--	0	--	0		5.17E-06	0.00E+00	0.00E+00	5.17E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
trans-Nonachlor		2.40E-03	--	0	--	0		3.10E-06	0.00E+00	0.00E+00	3.10E-06	0.0014		2.2E-03	0.0E+00	0.0E+00	2.2E-03	0.014		2.2E-04	0.0E+00	0.0E+00	2.2E-04	
SVOCs (mg/kg)																								
Acenaphthene		5.73E-02	--	0	--	0		7.41E-05	0.00E+00	0.00E+00	7.41E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Acenaphthylene		3.96E-02	--	0	--	0		5.12E-05	0.00E+00	0.00E+00	5.12E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Anthracene		6.58E-02	1.89E+00	1.24E-01	--	0		8.51E-05	1.22E-03	0.00E+00	1.30E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Benzo(a)anthracene		9.00E-02	--	0	--	0		1.16E-04	0.00E+00	0.00E+00	1.16E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Benzo(a)pyrene		9.00E-02	--	0	--	0		1.16E-04	0.00E+00	0.00E+00	1.16E-04	0.001		1.2E-01	0.0E+00	0.0E+00	1.2E-01	0.01		1.2E-02	0.0E+00	0.0E+00	1.2E-02	
Benzo(b)fluoranthene		8.00E-02	--	0	--	0		1.03E-04	0.00E+00	0.00E+00	1.03E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Benzo(ghi)perylene		8.00E-02	--	0	--	0		1.03E-04	0.00E+00	0.00E+00	1.03E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Benzo(k)fluoranthene		6.70E-02	--	0	--	0		8.66E-05	0.00E+00	0.00E+00	8.66E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Benzoic acid			--	0	--	0			0.00E+00	0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Bis(2-ethylhexyl)phthalate	0.027	1.20E-01	--	0	--	0	6.51E-04	1.55E-04	0.00E+00	0.00E+00	8.06E-04	1.1	5.9E-04	1.4E-04	0.0E+00	0.0E+00	7.3E-04	11	5.9E-05	1.4E-05	0.0E+00	0.0E+00	7.3E-05	
Butylbenzylphthalate		2.50E-02	--	0	--	0		3.23E-05	0.00E+00	0.00E+00	3.23E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Carbazole		1.41E-01	--	0	--	0		1.82E-04	0.00E+00	0.00E+00	1.82E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
4-Chloroaniline		3.00E-03	--	0	--	0		3.88E-06	0.00E+00	0.00E+00	3.88E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
2-Chloropropane		4.33E-02	--	0	--	0		5.60E-05	0.00E+00	0.00E+00	5.60E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Chrysene	0.0002	8.00E-02	--	0	--	0	4.82E-06	1.03E-04	0.00E+00	0.00E+00	1.08E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Dibenzofuran		7.89E-02	--	0	--	0		1.02E-04	0.00E+00	0.00E+00	1.02E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
3,3-Dichlorobenzidine		1.20E-02	--	0	--	0		1.55E-05	0.00E+00	0.00E+00	1.55E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
2,6-Dinitrotoluene			--	0	--	0			0.00E+00	0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Fluoranthene		8.00E-02	1.17E+00	9.39E-02	--	0		1.03E-04	9.20E-04	0.00E+00	1.02E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	

Table C2-1j
Post-Remediation Mallard (Breeding) Risk Calculations (Wetland Sediment Residual Concentration)
Shallow Soil (0 - 2 ft bgs) at Hazard Quotient of 10
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Point Concentration						Intake (mg/kg BW-day)						Hazard Quotient (HQ) - Low						Hazard Quotient (HQ) - High				
COPEC[a]	Surface Water (mg/L)[b]	Sediments[c]	Plant BAF[d]	Plant Tissue[d]	Invertebrate BAF[d]	Invertebrate Tissue[d]	Surface Water	Sediment	Plant	Invertebrate	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Plant	Invertebrate	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Sediment	Plant	Invertebrate	Total Intake
Fluorene		5.40E-02	--	0	--	0		6.98E-05	0.00E+00	0.00E+00	6.98E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Indeno(123,cd)pyrene		1.00E-01	--	0	--	0		1.29E-04	0.00E+00	0.00E+00	1.29E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2-Methylnaphthalene		5.23E-02	--	0	--	0		6.76E-05	0.00E+00	0.00E+00	6.76E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Methylphenol	0.12	6.68E-02	--	0	--	0	2.89E-03	8.64E-05	0.00E+00	0.00E+00	2.98E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Naphthalene		9.00E-02	--	0	--	0		1.16E-04	0.00E+00	0.00E+00	1.16E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pentachlorophenol		4.84E-02	--	0	--	0		6.26E-05	0.00E+00	0.00E+00	6.26E-05	6.7		9.3E-06	0.0E+00	0.0E+00	9.3E-06	22.5		2.8E-06	0.0E+00	0.0E+00	2.8E-06
Phenanthrene		9.00E-02	1.64E+00	1.47E-01	2.51E+00	2.26E-01		1.16E-04	1.44E-03	6.64E-03	8.20E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Phenol		1.40E-01	--	0	--	0		1.81E-04	0.00E+00	0.00E+00	1.81E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pyrene		8.00E-02	--	0	--	0		1.03E-04	0.00E+00	0.00E+00	1.03E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
PCBs (mg/kg)																							
PCBs (TOTAL)-congeners	0.000016	1.10E-01	1.09E-01	1.20E-02	1.16E+01	1.28E+00	3.86E-07	1.42E-04	1.18E-04	3.76E-02	3.78E-02	0.09	4.3E-06	1.6E-03	1.3E-03	4.2E-01	4.2E-01	1.27	3.0E-07	1.1E-04	9.3E-05	3.0E-02	3.0E-02

>1 = The calculated hazard quotient exceeds 1 (i.e., > 1.5)

Exposure Assumptions and Equation:[e]

	Value	Units
Ingestion Rate (IR) prey(dry wt.) =	0.0917	kg/day (dry weight)
IRplant(dry wt.)[f] =	0.0229	kg/day (dry weight)
IRinvertebrate(dry wt.)[f] =	0.0688	kg/day (dry weight)
IRsediment (dry wt.)[g] =	0.00303	kg-day (dry weight)
Cprey =	chem-specific	mg/kg or µg/kg
Csediment =	chem-specific	mg/kg or µg/kg
Tissue Moisture (TMplant) =	8.5%	percent
IRsurface water[h] =	0.056	L/day
Csurface water =	chem-specific	mg/L or µg/L
Dietary Composition Factor (DCF)[i] =	100%	percent
Site Use Factor (SUF)[j] =	40%	percent
Body Weight =	0.9361	kg

Intake Equation= [IRplant (dry wt) x [Cprey(plant, dry wt)/1-TM) x DCF x SUF]/BW] + [IRinvertebrate (dry wt) x Cprey(invertebrate, dry wt) x DCF x SUF)/BW] + [(IRsediment x Csediment x DCF x SUF))/BW +[(IRsurface water x Csurface water x DCF x SUF))/

Risk (hazard quotient) = Intake / TRV

Prey tissue(dry wt) = Prey tissue (wet wt.) / (1-Tissue Moisture)

NTV = Not toxicity data available.

Blank cell indicates COPEC was not detected in this medium.

Notes:

a All chemicals detected in sediments are considered as constituents of potential ecological concern.

b All concentrations of constituents in surface water are based on the maximum concentration.

c All concentrations of constituents in sediment are based on the residual concentrations expressed in dry weight.

d Site-specific BAFs (dry weight basis). Calculated plant and invertebrate tissue concentrations (sediment concentration x BAF). Tissue concentrations are on a dry weight basis.

e Exposure parameters used to calculate risk are discussed in detail in Section 4.2 of ERA.

f Based on dietary composition of 25% plant and 75% invertebrate.

g Ingestion rate of sediment based on 3.3 percent of of the prey ingestion rate (dry weight); based on mallards (Beyer et al. 1994).

h Based on equation for birds: Water intake (L/day) = $0.059Wt(kg)^{.67}$ (EPA 1993)

i Dietary composition factor was based on a conservative assumption of 100% dietary intake of plants and invertebrates from the site.

j Site use factor was based on 40% use of the site for the mallard's foraging range.

Table C2-1k
Post-Remediation Great Blue Heron Risk Calculations (Wetland Sediment Residual Concentration)
Shallow Soil (0 - 2 ft bgs) at Hazard Quotient of 10
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Point Concentration						Intake (mg/kg BW-day)						Hazard Quotient (HQ) - Low						Hazard Quotient (HQ) - High				
COPEC[a]	Surface Water (mg/L)[b]	Sediments[c]	Small Mammal BAF[d]	Small Mammal Tissue[d]	Amphibian BAF[d]	Amphibian Tissue[d]	Surface Water	Sediment	Small mammal	Amphibian	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Small mammal	Amphibian	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Sediment	Small mammal	Amphibian	Total Intake
Metals (mg/kg)																							
Aluminum	12.6	2.70E+04	1.11E-02	298	7.75E-03	209	5.65E-01	4.89E+01	8.19E+00	5.74E+00	6.34E+01	109.7	5.2E-03	4.5E-01	7.5E-02	5.2E-02	5.8E-01	1,097	5.2E-04	4.5E-02	7.5E-03	5.2E-03	5.8E-02
Antimony	0.003	2.60E+00	1.22E+00	3	--	0	1.35E-04	4.71E-03	8.69E-02	0	9.18E-02	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Arsenic	0.0436	2.20E+01	--	0	--	0	1.96E-03	3.99E-02	0	0	4.18E-02	5.5	3.6E-04	7.2E-03	0.0E+00	0.0E+00	7.6E-03	22	8.9E-05	1.8E-03	0.0E+00	0.0E+00	1.9E-03
Barium	0.24	9.00E+01	9.41E-02	8	--	0	1.06E-02	1.63E-01	2.33E-01	0	4.06E-01	20.8	5.1E-04	7.8E-03	1.1E-02	0.0E+00	2.0E-02	41.7	2.5E-04	3.9E-03	5.6E-03	0.0E+00	9.7E-03
Beryllium		4.40E-01	--	0	--	0		7.97E-04	0.00E+00	0	7.97E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Cadmium	0.0016	2.60E+00	--	0	--	0	7.18E-05	4.71E-03	0.00E+00	0	4.78E-03	0.08	9.0E-04	5.9E-02	0.0E+00	0.0E+00	6.0E-02	10.40	6.9E-06	4.5E-04	0.0E+00	0.0E+00	4.6E-04
Chromium +3	0.0263	9.33E+01	2.60E-02	2	2.45E-01	23	1.18E-03	1.69E-01	6.67E-02	6.28E-01	8.65E-01	2.66	4.4E-04	6.4E-02	2.5E-02	2.4E-01	3.3E-01	2.78	4.2E-04	6.1E-02	2.4E-02	2.3E-01	3.1E-01
Chromium +6	0.0263	1.87E+01	2.60E-02	0	2.45E-01	5	1.18E-03	3.38E-02	1.33E-02	1.26E-01	1.74E-01	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Cobalt	0.0164	2.10E+01	--	0	--	0	7.36E-04	3.80E-02	0	0	3.88E-02	7.61	9.7E-05	5.0E-03	0.0E+00	0.0E+00	5.1E-03	17	4.3E-05	2.2E-03	0.0E+00	0.0E+00	2.3E-03
Copper	0.233	1.25E+02	3.45E-01	43	--	0	1.05E-02	2.26E-01	1.19E+00	0	1.42E+00	2.3	4.5E-03	9.8E-02	5.2E-01	0.0E+00	6.2E-01	52.3	2.0E-04	4.3E-03	2.3E-02	0.0E+00	2.7E-02
Lead	0.0031	8.80E+01	6.10E-01	54	--	0	1.39E-04	1.59E-01	1.47E+00	0	1.63E+00	0.014	9.9E-03	1.1E+01	1.1E+02	0.0E+00	1.2E+02 >1	8.75	1.6E-05	1.8E-02	1.7E-01	0.0E+00	1.9E-01
Manganese	7.42	1.02E+03	--	0	4.78E-02	49	3.33E-01	1.84E+00	0	1.34E+00	3.51E+00	77.6	4.3E-03	2.4E-02	0.0E+00	1.7E-02	4.5E-02	776	4.3E-04	2.4E-03	0.0E+00	1.7E-03	4.5E-03
Mercury	0.00029	1.20E+00	--	0	7.42E-01	1	1.30E-05	2.17E-03	0	2.44E-02	2.66E-02	0.039	3.3E-04	5.6E-02	0.0E+00	6.3E-01	6.8E-01	0.18	7.2E-05	1.2E-02	0.0E+00	1.4E-01	1.5E-01
Molybdenum	0.0312	4.80E+00	--	0	--	0	1.40E-03	8.70E-03	0	0	1.01E-02	3.5	4.0E-04	2.5E-03	0.0E+00	0.0E+00	2.9E-03	35.3	4.0E-05	2.5E-04	0.0E+00	0.0E+00	2.9E-04
Nickel	0.166	1.08E+02	--	0	--	0	7.45E-03	1.96E-01	0	0	2.03E-01	1.38	5.4E-03	1.4E-01	0.0E+00	0.0E+00	1.5E-01	56.3	1.3E-04	3.5E-03	0.0E+00	0.0E+00	3.6E-03
Selenium	0.029	1.00E+00	6.12E+00	6	5.77E+00	6	1.30E-03	1.81E-03	1.68E-01	1.58E-01	3.29E-01	0.23	5.7E-03	7.9E-03	7.3E-01	6.9E-01	1.4E+00	0.93	1.4E-03	1.9E-03	1.8E-01	1.7E-01	3.5E-01
Silver	0.0019	2.30E+00	--	0	--	0	8.52E-05	4.17E-03	0	0	4.25E-03	178.00	4.8E-07	2.3E-05	0.0E+00	0.0E+00	2.4E-05	NTV	NTV	NTV	NTV	NTV	NTV
Thallium		2.90E-01	1.01E+00	0	--	0		5.25E-04	8.02E-03	0	8.55E-03	0.35		1.5E-03	2.3E-02	0.0E+00	2.4E-02	NTV	NTV	NTV	NTV	NTV	NTV
Tin		2.01E+01	--	0	--	0		3.64E-02	0	0	3.64E-02	6.80		5.4E-03	0.0E+00	0.0E+00	5.4E-03	16.9		2.2E-03	0.0E+00	0.0E+00	2.2E-03
Vanadium	0.05	1.02E+02	--	0	--	0	2.24E-03	1.85E-01	0	0	1.87E-01	11.4	2.0E-04	1.6E-02	0.0E+00	0.0E+00	1.6E-02	114	2.0E-05	1.6E-03	0.0E+00	0.0E+00	1.6E-03
Zinc	0.042	2.25E+02	1.11E+00	249	7.87E-01	177	1.88E-03	4.08E-01	6.84E+00	4.86E+00	1.21E+01	17.2	1.1E-04	2.4E-02	4.0E-01	2.8E-01	7.0E-01	172	1.1E-05	2.4E-03	4.0E-02	2.8E-02	7.0E-02
Volatile Organics (mg/kg)																							
Acetone		1.00E-01	--	0	--	0		1.81E-04	0	0	1.81E-04	52		3.5E-06	0.0E+00	0.0E+00	3.5E-06	520		3.5E-07	0.0E+00	0.0E+00	3.5E-07
Benzene			--	0	--	0			0	0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Carbon disulfide		7.00E-03	--	0	--	0		1.27E-05	0	0	1.27E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chlorobenzene		5.00E-03	--	0	--	0		9.06E-06	0	0	9.06E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
cis-1,2-Dichlorobenzene			--	0	--	0			0	0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Ethylbenzene		1.80E-02	--	0	--	0		3.26E-05	0	0	3.26E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Isopropyltoluene			--	0	--	0			0	0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Methylene chloride			--	0	--	0			0	0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Naphthalene			--	0	--	0			0	0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Toluene		3.00E-02	--	0	--	0		5.44E-05	0	0	5.44E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
trans-1,2-Dichloroethene			--	0	--	0			0	0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Trichloroethene		7.00E-03	--	0	--	0		1.27E-05	0	0	1.27E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
1,2,4-Trimethylbenzene			--	0	--	0			0	0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
1,3,5-Trimethylbenzene			--	0	--	0			0	0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Vinyl chloride			--	0	--	0			0	0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Xylenes		1.50E-01	--	0	--	0		2.72E-04	0	0	2.72E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pesticides (mg/kg)																							
alpha-Chlordane		4.80E-03	--	0	--	0		8.70E-06	0	0	8.70E-06	0.0014		6.2E-03	0.0E+00	0.0E+00	6.2E-03	0.014		6.2E-04	0.0E+00	0.0E+00	6.2E-04
beta-BHC		1.00E-03	--	0	--	0		1.81E-06	0	0	1.81E-06	0.56		3.2E-06	0.0E+00	0.0E+00	3.2E-06	2.25		8.1E-07	0.0E+00	0.0E+00	8.1E-07
delta-BHC		2.00E-03	--	0	--	0		3.62E-06	0	0	3.62E-06	0.56		6.5E-06	0.0E+00	0.0E+00	6.5E-06	2.25		1.6E-06	0.0E+00	0.0E+00	1.6E-06
2,4-DDD		3.00E-02	1.04E+00	0	--	0		5.44E-05	8.60E-04	0	9.14E-04	0.009		6.0E-03	9.6E-02	0.0E+00	1.0E-01	1.5		3.6E-05	5.7E-04	0.0E+00	6.1E-04
4,4-DDD		9.20E-02	1.04E+00	0	--	0		1.67E-04	2.64E-03	0	2.80E-03	0.009		1.9E-02	2.9E-01	0.0E+00	3.1E-01	1.5		1.1E-04	1.8E-03	0.0E+00	1.9E-03
DDE	0.0000027	1.80E-02	1.04E+00	0	--	0	1.21E-07	3.26E-05	5.16E-04	0	5.49E-04	NTV	NTV	NTV	NTV	NTV	NTV	0.6	2.0E-07	5.4E-05	8.6E-04	0.0E+00	9.1E-04
DDTs	0.00014	1.20E-02	1.04E+00	0	--	0	6.28E-06	2.17E-05	3.44E-04	0	3.72E-04	0.009	7.0E-04	2.4E-03	3.8E-02	0.0E+00	4.1E-02	1.5	4.2E-06	1.4E-05	2.3E-04	0.0E+00	2.5E-04
Dieldrin		2.90E-03	--	0	--	0		5.25E-06	0	0	5.25E-06	0.0709		7.4E-05	0.0E+00	0.0E+00	7.4E-05	0.98		5.4E-06	0.0E+00	0.0E+00	5.4E-06
Endosulfan I		4.00E-03	--	0	--	0		7.25E-06	0	0	7.25E-06	10		7.2E-07	0.0E+00	0.0E+00	7.2E-07	100		7.2E-08	0.0E+00	0.0E+00	7.2E-08
Endosulfan sulfate	0.00012	3.00E-03	--	0	--	0	5.38E-06	5.44E-06	0	0	1.08E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Endrin	0.000014	2.00E-02	--	0	--	0	6.28E-07	3.62E-05	0	0	3.69E-05	0.3	2.1E-06	1.2E-04	0.0E+00	0.0E+00	1.2E-04	3	2.1E-07	1.2E-05	0.0E+00	0.0E+00	1.2E-05
Endrin aldehyde		6.00E-03	--	0	--	0		1.09E-05	0	0	1.09E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Endrin Ketone		2.30E-03	--	0	--	0		4.17E-06	0	0	4.17E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
gamma-Chlordane		5.20E-03	--	0	--	0		9.42E-06	0	0	9.42E-06	0.0014		6.7E-03	0.0E+00	0.0E+00	6.7E-03	0.014		6.7E-04	0.0E+00	0.0E+00	6.7E-04
Heptachlor	0.0000028	2.00E-04	--	0	--	0	1.26E-07	3.62E-07	0	0	4.88E-07	0.065	1.9E-06	5.6E-06	0.0E+00	0.0E+00	7.5E-06	0.65	1.9E-07	5.6E-07	0.0E+00	0.0E+00	7.5E-07
Heptachlor epoxide		3.00E-04	--	0	--	0		5.44E-07	0	0	5.44E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Hexachlorobenzene		8.00E-04	--	0	--	0		1.45E-06	0	0	1.45E-06	0.23		6.3E-06	0.0E+00	0.0E+00	6.3E-06	2.3		6.3E-07	0.0E+00	0.0E+00	6.3E-07
Methoxychlor		1.20E-02	--	0	--	0		2.17E-05	0	0	2.17E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Mirex		4.00E-03	--	0	--	0		7.25E-06	0	0	7.25E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
trans-Nonachlor		2.40E-03	--	0	--	0		4.35E-06	0	0	4.35E-06	0.0014		3.1E-03	0.0E+00	0.0E+00	3.1E-03	0.014		3.1E-04	0.0E+00	0.0E+00	3.1E-04
SVOCs (mg/kg)																							
Acenaphthene		5.73E-02	--	0	--	0		1.04E-04	0	0	1.04E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Acenaphthylene		3.96E-02	--	0	--	0		7.17E-05	0	0	7.17E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Anthracene		6.58E-02	--	0	--	0		1.19E-04	0	0	1.19E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(a)anthracene		9.00E-02	--	0	--	0		1.63E-04	0	0	1.63E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(a)pyrene		9.00E-02	--	0	--	0		1.63E-04	0	0	1.63E-04	0.001		1.6E-01	0.0E+00	0.0E+00	1.6E-01	0.01		1.6E-02	0.0E+00	0.0E+00	1.6E-02
Benzo(b)fluoranthene		8.00E-02	--	0	--	0		1.45E-04	0	0	1.45E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(ghi)perylene		8.00E-02	--	0	--	0		1.45E-04	0	0	1.45E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(k)fluoranthene		6.70E-02	--	0	--	0		1.21E-04	0	0	1.21E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzoic acid			--	0	--	0			0	0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Bis(2-ethylhexyl)phthalate	0.027	1.20E-01	--	0	--	0	1.21E-03	2.17E-04	0	0	1.43E-03	1.1	1.1E-03	2.0E-04	0.0E+00	0.0E+00	1.3E-03	11	1.1E-04	2.0E-05	0.0E+00	0.0E+00	1.3E-04
Butylbenzylphthalate		2.50E-02	--	0	--	0		4.53E-05	0	0	4.53E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Carbazole		1.41E-01	--	0	--	0		2.55E-04	0	0	2.55E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Chloroaniline		3.00E-03	--	0	--	0		5.44E-06	0	0	5.44E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2-Chloropropane		4.33E-02	--	0	--	0		7.84E-05	0	0	7.84E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chrysene	0.0002	8.00E-02	--	0	--	0	8.97E-06	1.45E-04	0	0	1.54E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Dibenzofuran		7.89E-02	--	0	--	0		1.43E-04	0	0	1.43E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
3,3-Dichlorobenzidine		1.20E-02	--	0	--	0		2.17E-05	0	0	2.17E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2,6-Dinitrotoluene			--	0	--	0			0	0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Fluoranthene		8.00E-02	--	0	--	0		1.45E-04	0	0	1.45E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV

Table C2-1k
Post-Remediation Great Blue Heron Risk Calculations (Wetland Sediment Residual Concentration)
Shallow Soil (0 - 2 ft bgs) at Hazard Quotient of 10
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Point Concentration						Intake (mg/kg BW-day)						Hazard Quotient (HQ) - Low						Hazard Quotient (HQ) - High					
COPEC[a]	Surface Water (mg/L)[b]	Sediments[c]	Small Mammal BAF[d]	Small Mammal Tissue[d]	Amphibian BAF[d]	Amphibian Tissue[d]	Surface Water	Sediment	Small mammal	Amphibian	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Small mammal	Amphibian	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Sediment	Small mammal	Amphibian	Total Intake
Fluorene		5.40E-02	--	0	--	0		9.78E-05	0	0	9.78E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Indeno(123,cd)pyrene		1.00E-01	--	0	--	0		1.81E-04	0	0	1.81E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2-Methylnaphthalene		5.23E-02	--	0	--	0		9.48E-05	0	0	9.48E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Methylphenol	0.12	6.68E-02	--	0	--	0	5.38E-03	1.21E-04	0	0	5.50E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Naphthalene		9.00E-02	--	0	--	0		1.63E-04	0	0	1.63E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pentachlorophenol		4.84E-02	--	0	--	0		8.77E-05	0	0	8.77E-05	6.7		1.3E-05	0.0E+00	0.0E+00	1.3E-05	22.5		3.9E-06	0.0E+00	0.0E+00	3.9E-06
Phenanthrene		9.00E-02	--	0	--	0		1.63E-04	0	0	1.63E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Phenol		1.40E-01	--	0	--	0		2.54E-04	0	0	2.54E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pyrene		8.00E-02	--	0	--	0		1.45E-04	0	0	1.45E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
PCBs (mg/kg)																							
PCBs (TOTAL)-congeners	0.000016	1.10E-01	1.81E+01	2	1.03E+01	1	7.18E-07	1.99E-04	5.46E-02	2.83E-01	3.38E-01	0.09	8.0E-06	2.2E-03	6.1E-01	3.1E+00	3.8E+00	>1	1.27	5.7E-07	1.6E-04	4.3E-02	2.2E-01	2.7E-01

>1 = The calculated hazard quotient exceeds 1 (i.e., > 1.5)

Exposure Assumptions and Equation:[e]

	Value	Units
Ingestion Rate (IR) prey(dry wt.) =	0.126	kg/day (dry weight)
IRsmall mammal(dry wt.)[f] =	0.063	kg/day (dry weight)
IRamphibian (dry wt.)[f] =	0.063	kg/day (dry weight)
IRsediment (dry wt.)[g] =	0.00416	kg-day (dry weight)
Cprey =	chem-specific	mg/kg or µg/kg
Csediment =	chem-specific	mg/kg or µg/kg
Tissue Moisture (TMsmall mammal) =	68%	percent
Tissue Moisture (TMamphibian) =	85%	percent
IRsurface water[h] =	0.103	L/day
Csurface water =	chem-specific	mg/L or µg/L
Dietary Composition Factor (DCF)[i] =	100%	percent
Site Use Factor (SUF)[j] =	100%	percent
Body Weight (BW) =	2.295	kg

Intake Equation= [Irsmall mammal (dry wt) x (Cprey(small mammal, dry wt)/1-TM) x DCF x SUF]/BW] + [IRamphibian (dry wt) x Cprey(amphibians, dry wt) x DCF x SUF]/BW] + [(IRsediment x Csediment x DCF x SUF))/BW + [(IRsurface water x Csurface water x DCF x

Risk (hazard quotient) = Intake / TRV

Prey tissue(dry wt) = Prey tissue (wet wt.) / (1-Tissue Moisture)

NTV = Not toxicity data available.

Blank cell indicates COPEC was not detected in this medium.

Notes:

a All chemicals detected in sediments are considered as constituents of potential ecological concern.

b All concentrations of constituents in surface water are based on the maximum concentration.

c All concentrations of constituents in sediment are based on the residual concentrations expressed in dry weight.

d Site-specific BAFs (dry weight basis). Calculated small mammal tissue and amphibian concentrations (sediment concentration x BAF). Tissue concentrations are on a dry weight basis.

e Exposure parameters used to calculate risk are discussed in detail in Section 4.2 of ERA.

f Based on dietary composition of 50% small mammal and 50% amphibians.

g Ingestion rate of sediment based on 3.3 percent of of the prey ingestion rate (dry weight); based on mallards (Beyer et al. 1994).

h Based on equation for birds: Water intake (L/day) = $0.059Wt(kg)^{0.67}$ (EPA 1993)

i Dietary composition factor was based on a conservative assumption of 100% dietary intake of small mammals and amphibians from the site.

j Site use factor was based on a conservative 100% use of the site for the heron's foraging range.

Table C2-11
Post-Remediation Kildeer Risk Calculations (Wetland Sediment Residual Concentration)
Shallow Soil (0 - 2 ft bgs) at Hazard Quotient of 10
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Concentrations				Intake (mg/kg BW-day)					Hazard Quotient (HQ) - Low					Hazard Quotient (HQ) - High			
COPEC[a]	Surface Water (mg/L)[b]	Sediments[c]	Invertebrate BAF[d]	Invertebrate Tissue[d]	Surface Water	Soils	Invertebrate	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Soils	Invertebrate	Total Intake		High TRV (mg/kg BW-day)	Surface Water	Soils	Invertebrate	Total Intake
Metals (mg/kg)																			
Aluminum	12.6	2.70E+04	1.93E-01	5.20E+03	1.78E+00	1.04E+03	1.11E+03	2.15E+03	109.7	1.6E-02	9.5E+00	1.0E+01	2.0E+01	>1	1,097	1.6E-03	9.5E-01	1.0E+00	2.0E+00 >1
Antimony	0.003	2.60E+00	2.32E-01	6.02E-01	4.24E-04	1.00E-01	1.29E-01	2.29E-01	NTV	NTV	NTV	NTV	NTV	>1	NTV	NTV	NTV	NTV	NTV
Arsenic	0.0436	2.20E+01	1.92E-01	4.22E+00	6.15E-03	8.47E-01	9.02E-01	1.75E+00	5.5	1.1E-03	1.5E-01	1.6E-01	3.2E-01		22	2.8E-04	3.8E-02	4.1E-02	8.0E-02
Barium	0.24	9.00E+01	1.50E+00	1.35E+02	3.33E-02	3.46E+00	2.88E+01	3.23E+01	20.8	1.6E-03	1.7E-01	1.4E+00	1.6E+00	>1	41.7	8.0E-04	8.3E-02	6.9E-01	7.7E-01
Beryllium		4.40E-01	--	0		1.69E-02	0.00E+00	1.69E-02	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Cadmium	0.0016	2.60E+00	2.15E-01	5.59E-01	2.26E-04	1.00E-01	1.20E-01	2.20E-01	0.08	2.8E-03	1.3E+00	1.5E+00	2.7E+00	>1	10.40	2.2E-05	9.6E-03	1.1E-02	2.1E-02
Chromium +3	0.0263	9.33E+01	5.53E-01	5.17E+01	3.71E-03	3.59E+00	1.10E+01	1.46E+01	2.66	1.4E-03	1.4E+00	4.2E+00	5.5E+00	>1	2.78	1.3E-03	1.3E+00	4.0E+00	5.3E+00 >1
Chromium +6	0.0263	1.87E+01	5.53E-01	10	3.71E-03	7.18E-01	2.21E+00	2.93E+00	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Cobalt	0.0164	2.10E+01	--	0	2.32E-03	8.08E-01	0.00E+00	8.10E-01	7.61	3.0E-04	1.1E-01	0.0E+00	1.1E-01		17	1.4E-04	4.8E-02	0.0E+00	4.8E-02
Copper	0.233	1.25E+02	6.67E-01	8.34E+01	3.29E-02	4.81E+00	1.78E+01	2.27E+01	2.3	1.4E-02	2.1E+00	7.7E+00	9.9E+00	>1	52.3	6.3E-04	9.2E-02	3.4E-01	4.3E-01
Lead	0.0031	8.80E+01	5.07E-02	4.46E+00	4.38E-04	3.39E+00	9.54E-01	4.34E+00	0.014	3.1E-02	2.4E+02	6.8E+01	3.1E+02	>1	8.75	5.0E-05	3.9E-01	1.1E-01	5.0E-01
Manganese	7.42	1.02E+03	5.29E+00	5.38E+03	1.05E+00	3.91E+01	1.15E+03	1.19E+03	77.6	1.3E-02	5.0E-01	1.5E+01	1.5E+01	>1	776	1.3E-03	5.0E-02	1.5E+00	1.5E+00 >1
Mercury	0.00029	1.20E+00	6.96E-01	8.36E-01	4.09E-05	4.62E-02	1.79E-01	2.25E-01	0.039	1.0E-03	1.2E+00	4.6E+00	5.8E+00	>1	0.18	2.3E-04	2.6E-01	9.9E-01	1.2E+00
Molybdenum	0.0312	4.80E+00	--	0	4.40E-03	1.85E-01	0.00E+00	1.89E-01	3.5	1.3E-03	5.3E-02	0.0E+00	5.4E-02		35.3	1.2E-04	5.2E-03	0.0E+00	5.4E-03
Nickel	0.166	1.08E+02	3.65E-01	3.94E+01	2.34E-02	4.16E+00	8.42E+00	1.26E+01	1.38	1.7E-02	3.0E+00	6.1E+00	9.1E+00	>1	56.3	4.2E-04	7.4E-02	1.5E-01	2.2E-01
Selenium	0.029	1.00E+00	--	0	4.09E-03	3.85E-02	0.00E+00	4.26E-02	0.23	1.8E-02	1.7E-01	0.0E+00	1.9E-01		0.93	4.4E-03	4.1E-02	0.0E+00	4.6E-02
Silver	0.0019	2.30E+00	--	0	2.68E-04	8.85E-02	0.00E+00	8.88E-02	178.00	1.5E-06	5.0E-04	0.0E+00	5.0E-04		NTV	NTV	NTV	NTV	NTV
Thallium		2.90E-01	--	0		1.12E-02	0.00E+00	1.12E-02	0.35		3.2E-02	0.0E+00	3.2E-02		NTV	NTV	NTV	NTV	NTV
Tin		2.01E+01	--	0		7.73E-01	0.00E+00	7.73E-01	6.80		1.1E-01	0.0E+00	1.1E-01		16.9		4.6E-02	0.0E+00	4.6E-02
Vanadium	0.05	1.02E+02	2.96E-02	3.01E+00	7.06E-03	3.93E+00	6.44E-01	4.58E+00	11.4	6.2E-04	3.4E-01	5.7E-02	4.0E-01		114	6.2E-05	3.4E-02	5.7E-03	4.0E-02
Zinc	0.042	2.25E+02	1.51E+00	3.40E+02	5.93E-03	8.66E+00	7.27E+01	8.14E+01	17.2	3.4E-04	5.0E-01	4.2E+00	4.7E+00	>1	172	3.4E-05	5.0E-02	4.2E-01	4.7E-01
Volatile Organics (mg/kg)																			
Acetone		1.00E-01	--	0		3.85E-03	0.00E+00	3.85E-03	52		7.4E-05	0.0E+00	7.4E-05		520		7.4E-06	0.0E+00	7.4E-06
Benzene			--	0			0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Carbon disulfide		7.00E-03	--	0		2.69E-04	0.00E+00	2.69E-04	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Chlorobenzene		5.00E-03	--	0		1.92E-04	0.00E+00	1.92E-04	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
cis-1,2-Dichlorobenzene			--	0			0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Ethylbenzene		1.80E-02	--	0		6.93E-04	0.00E+00	6.93E-04	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
4-Isopropyltoluene			--	0			0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Methylene chloride			--	0			0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Naphthalene			--	0			0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Toluene		3.00E-02	--	0		1.15E-03	0.00E+00	1.15E-03	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
trans-1,2-Dichloroethene			--	0			0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Trichloroethene		7.00E-03	--	0		2.69E-04	0.00E+00	2.69E-04	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
1,2,4-Trimethylbenzene			--	0			0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
1,3,5-Trimethylbenzene			--	0			0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Vinyl chloride			--	0			0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Xylenes		1.50E-01	--	0		5.77E-03	0.00E+00	5.77E-03	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Pesticides (mg/kg)																			
alpha-Chlordane		4.80E-03	--	0		1.85E-04	0.00E+00	1.85E-04	0.0014		1.3E-01	0.0E+00	1.3E-01		0.014		1.3E-02	0.0E+00	1.3E-02
beta-BHC		1.00E-03	--	0		3.85E-05	0.00E+00	3.85E-05	0.56		6.9E-05	0.0E+00	6.9E-05		2.25		1.7E-05	0.0E+00	1.7E-05
delta-BHC		2.00E-03	--	0		7.70E-05	0.00E+00	7.70E-05	0.56		1.4E-04	0.0E+00	1.4E-04		2.25		3.4E-05	0.0E+00	3.4E-05
2,4-DDD		3.00E-02	--	0		1.15E-03	0.00E+00	1.15E-03	0.009		1.3E-01	0.0E+00	1.3E-01		1.5		7.7E-04	0.0E+00	7.7E-04
4,4-DDD		9.20E-02	--	0		3.54E-03	0.00E+00	3.54E-03	0.009		3.9E-01	0.0E+00	3.9E-01		1.5		2.4E-03	0.0E+00	2.4E-03
DDE	0.0000027	1.80E-02	--	0	3.81E-07	6.93E-04	0.00E+00	6.93E-04	NTV	NTV	NTV	NTV	NTV		0.6	6.4E-07	1.2E-03	0.0E+00	1.2E-03
DDTs	0.00014	1.20E-02	--	0	1.98E-05	4.62E-04	0.00E+00	4.82E-04	0.009	2.2E-03	5.1E-02	0.0E+00	5.4E-02		1.5	1.3E-05	3.1E-04	0.0E+00	3.2E-04
Dieldrin		2.90E-03	--	0		1.12E-04	0.00E+00	1.12E-04	0.0709		1.6E-03	0.0E+00	1.6E-03		0.98		1.1E-04	0.0E+00	1.1E-04
Endosulfan I		4.00E-03	--	0		1.54E-04	0.00E+00	1.54E-04	10		1.5E-05	0.0E+00	1.5E-05		100		1.5E-06	0.0E+00	1.5E-06
Endosulfan sulfate	0.00012	3.00E-03	--	0	1.69E-05	1.15E-04	0.00E+00	1.32E-04	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Endrin	0.000014	2.00E-02	--	0	1.98E-06	7.70E-04	0.00E+00	7.72E-04	0.3	6.6E-06	2.6E-03	0.0E+00	2.6E-03		3	6.6E-07	2.6E-04	0.0E+00	2.6E-04
Endrin aldehyde		6.00E-03	--	0		2.31E-04	0.00E+00	2.31E-04	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Endrin Ketone		2.30E-03	--	0		8.85E-05	0.00E+00	8.85E-05	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Gamma-BHC	0.000011	5.20E-03	--	0	1.55E-06	2.00E-04	0.00E+00	2.02E-04	2	7.8E-07	1.0E-04	0.0E+00	1.0E-04		20	7.8E-08	1.0E-05	0.0E+00	1.0E-05
Heptachlor	0.0000028	2.00E-04	--	0	3.95E-07	7.70E-06	0.00E+00	8.09E-06	0.065	6.1E-06	1.2E-04	0.0E+00	1.2E-04		0.65	6.1E-07	1.2E-05	0.0E+00	1.2E-05
Heptachlor epoxide		3.00E-04	--	0		1.15E-05	0.00E+00	1.15E-05	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Hexachlorobenzene		8.00E-04	--	0		3.08E-05	0.00E+00	3.08E-05	0.23		1.3E-04	0.0E+00	1.3E-04		2.3		1.3E-05	0.0E+00	1.3E-05
Methoxychlor		1.20E-02	--	0		4.62E-04	0.00E+00	4.62E-04	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Mirex		4.00E-03	--	0		1.54E-04	0.00E+00	1.54E-04	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
trans-Nonachlor		2.40E-03	--	0		9.24E-05	0.00E+00	9.24E-05	0.0014		6.6E-02	0.0E+00	6.6E-02		0.014		6.6E-03	0.0E+00	6.6E-03

Table C2-11
Post-Remediation Kildeer Risk Calculations (Wetland Sediment Residual Concentration)
Shallow Soil (0 - 2 ft bgs) at Hazard Quotient of 10
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Concentrations				Intake (mg/kg BW-day)					Hazard Quotient (HQ) - Low					Hazard Quotient (HQ) - High			
COPEC[a]	Surface Water (mg/L)[b]	Sediments[c]	Invertebrate BAF[d]	Invertebrate Tissue[d]	Surface Water	Soils	Invertebrate	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Soils	Invertebrate	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Soils	Invertebrate	Total Intake
SVOCs (mg/kg)																		
Acenaphthene		5.73E-02	--	0		2.20E-03	0.00E+00	2.20E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Acenaphthylene		3.96E-02	--	0		1.52E-03	0.00E+00	1.52E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Anthracene		6.58E-02	--	0		2.53E-03	0.00E+00	2.53E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(a)anthracene		9.00E-02	--	0		3.46E-03	0.00E+00	3.46E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(a)pyrene		9.00E-02	--	0		3.46E-03	0.00E+00	3.46E-03	0.001		3.5E+00	0.0E+00	3.5E+00 >1	0.01		3.5E-01	0.0E+00	3.5E-01
Benzo(b)fluoranthene		8.00E-02	--	0		3.08E-03	0.00E+00	3.08E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(ghi)perylene		8.00E-02	--	0		3.08E-03	0.00E+00	3.08E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(k)fluoranthene		6.70E-02	--	0		2.58E-03	0.00E+00	2.58E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzoic acid			--	0			0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Bis(2-ethylhexyl)phthalate	0.027	1.20E-01	--	0	3.81E-03	4.62E-03	0.00E+00	8.43E-03	1.1	3.5E-03	4.2E-03	0.0E+00	7.7E-03	11	3.5E-04	4.2E-04	0.0E+00	7.7E-04
Butylbenzylphthalate		2.50E-02	--	0		9.62E-04	0.00E+00	9.62E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Carbazole		1.41E-01	--	0		5.43E-03	0.00E+00	5.43E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Chloroaniline		3.00E-03	--	0		1.15E-04	0.00E+00	1.15E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2-Chloropropane		4.33E-02	--	0		1.67E-03	0.00E+00	1.67E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chrysene	0.0002	8.00E-02	--	0	2.82E-05	3.08E-03	0.00E+00	3.11E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Dibenzofuran		7.89E-02	--	0		3.04E-03	0.00E+00	3.04E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
3,3-Dichlorobenzidine		1.20E-02	--	0		4.62E-04	0.00E+00	4.62E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2,6-Dinitrotoluene			--	0			0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Fluoranthene		8.00E-02	--	0		3.08E-03	0.00E+00	3.08E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Fluorene		5.40E-02	--	0		2.08E-03	0.00E+00	2.08E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Indeno(123,cd)pyrene		1.00E-01	--	0		3.85E-03	0.00E+00	3.85E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2-Methylnaphthalene		5.23E-02	--	0		2.01E-03	0.00E+00	2.01E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Methylphenol	0.12	6.68E-02	--	0	1.69E-02	2.57E-03	0.00E+00	1.95E-02	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Naphthalene		9.00E-02	--	0		3.46E-03	0.00E+00	3.46E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pentachlorophenol		4.84E-02	--	0		1.86E-03	0.00E+00	1.86E-03	6.7		2.8E-04	0.0E+00	2.8E-04	22.5		8.3E-05	0.0E+00	8.3E-05
Phenanthrene		9.00E-02	2.51E+00	2.26E-01		3.46E-03	4.83E-02	5.18E-02	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Phenol		1.40E-01	--	0		5.39E-03	0.00E+00	5.39E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pyrene		8.00E-02	--	0		3.08E-03	0.00E+00	3.08E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
PCBs (mg/kg)																		
PCBs (TOTAL)-congeners	0.000016	1.10E-01	1.16E+01	1.28E+00	2.26E-06	4.23E-03	2.73E-01	2.77E-01	0.09	2.5E-05	4.7E-02	3.0E+00	3.1E+00 >1	1.27	1.8E-06	3.3E-03	2.2E-01	2.2E-01

>1 = The calculated hazard quotient exceeds 1 (i.e., > 1.5)

Exposure Assumptions and Equation[e]:

		Value	Units
Ingestion Rate (IR) prey(dry wt.)	=	0.0152	kg/day (dry weight)
IRinvertebrate(dry wt.)	=	0.0152	kg/day (dry weight)
IRsediment (dry wt.)[f]	=	0.00274	kg-day (dry weight)
Cprey	=	chem-specific	mg/kg or µg/kg
Csediment	=	chem-specific	mg/kg or µg/kg
IRsurface water[g]	=	0.010	L/day
Csurface water	=	chem-specific	mg/L or µg/L
Dietary Composition Factor (DCF)[h]	=	100%	percent
Site Use Factor (SUF)[i]	=	100%	percent
Body Weight (BW)	=	0.0711	kg

Intake Equation = [IRinvertebrate (dry wt) x Cprey(invertebrate, dry wt) x DCF x SUF]/BW] +[(IRsediment x Csediment x DCF x SUF)]/BW] + [(IRsurface water x Csurface water x DCF x SUF)]/BW]

Risk (hazard quotient) = Intake / TRV

Prey tissue(dry wt) = Prey tissue (wet wt.) / (1-Tissue Moisture)

NTV = Not toxicity data available.

NA = Not available.

Blank cell indicates COPEC was not detected in this medium.

Notes:

a All chemicals detected in sediments are considered as constituents of potential ecological concern.

b All concentrations of constituents in surface water are based on the maximum concentration.

c All concentrations of constituents in sediment are based on the residual concentrations expressed in dry weight.

d Site-specific BAFs (dry weight basis). Calculated invertebrate tissue concentrations (sediment concentration x BAF). Tissue concentrations are on a dry weight basis.

e Exposure parameters used to calculate risk are discussed in detail in Section 4.2 of ERA.

f Ingestion rate of sediment based on 18 percent of of the prey ingestion rate (dry weight); based on average of sandpiper data from Beyer et al. 1994).

g Based on equation for birds: Water intake (L/day) = $0.059Wt(kg)^{0.67}$ (EPA 1993)

h Dietary composition factor was based on a conservative assumption of 100% dietary intake of invertebrates from the site.

i Site use factor was based on a conservative 100% use of the site for the killdeer's foraging range.

Table C2-1m
Post-Remediation Salt Marsh Harvest Mouse Risk Calculations (Wetland Sediment Residual Concentration)
Shallow Soil (0 - 2 ft bgs) at Hazard Quotient of 10
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Concentrations				Intake (mg/kg BW-day)					HQ - Low TRV					HQ - High TRV			
COPEC[a]	Surface Water (mg/L)[b]	Sediments[c]	Pickelweed BAF[d]	Pickleweed Tissue[d]	Surface Water	Sediment	Pickleweed	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Pickleweed	Total Intake		High TRV (mg/kg BW-day)	Surface Water	Sediment	Pickleweed	Total Intake	
Metals (mg/kg)																				
Aluminum	12.6	2.70E+04	3.64E-03	98	1.98E+00	1.98E+02	3.00E+01	2.30E+02	1.93	1.0E+00	1.0E+02	1.6E+01	1.2E+02	>1	19.3	1.0E-01	1.0E+01	1.6E+00	1.2E+01	>1
Antimony	0.003	2.60E+00	2.95E+00	8	4.71E-04	1.91E-02	2.35E+00	2.37E+00	0.06	8.0E-03	3.2E-01	4.0E+01	4.0E+01	>1	23.4	2.0E-05	8.2E-04	1.0E-01	1.0E-01	
Arsenic	0.0436	2.20E+01	1.50E-01	3	6.84E-03	1.62E-01	1.01E+00	1.18E+00	0.32	2.1E-02	5.0E-01	3.2E+00	3.7E+00	>1	4.7	1.5E-03	3.4E-02	2.2E-01	2.5E-01	
Barium	0.24	9.00E+01	5.56E-01	50	3.70E-02	6.61E-01	1.53E+01	1.60E+01	51.8	7.1E-04	1.3E-02	3.0E-01	3.1E-01		66.0	5.6E-04	1.0E-02	2.3E-01	2.4E-01	
Beryllium		4.40E-01	--	0		3.23E-03	0	3.23E-03	0.532		6.1E-03	0.0E+00	6.1E-03		0.554		5.8E-03	0.0E+00	5.8E-03	
Cadmium	0.0016	2.60E+00	6.76E-01	2	2.51E-04	1.91E-02	5.38E-01	5.58E-01	0.06	4.2E-03	3.2E-01	9.0E+00	9.3E+00	>1	2.64	9.5E-05	7.2E-03	2.0E-01	2.1E-01	
Chromium +3	0.0263	9.33E+01	--	0	4.13E-03	6.85E-01	0	6.90E-01	2	1.7E-03	2.9E-01	0.0E+00	2.9E-01		23.1	1.8E-04	3.0E-02	0.0E+00	3.0E-02	
Chromium +6	0.0263	1.87E+01	--	0	4.13E-03	1.37E-01	0	1.41E-01	5.66	7.3E-04	2.4E-02	0.0E+00	2.5E-02		35.1	1.2E-04	3.9E-03	0.0E+00	4.0E-03	
Cobalt	0.0164	2.10E+01	--	0	2.57E-03	1.54E-01	0	1.57E-01	1.2	2.1E-03	1.3E-01	0.0E+00	1.3E-01		20	1.3E-04	7.7E-03	0.0E+00	7.8E-03	
Copper	0.233	1.25E+02	1.82E-01	23	3.66E-02	9.18E-01	6.95E+00	7.90E+00	2.67	1.4E-02	3.4E-01	2.6E+00	3.0E+00	>1	632	5.8E-05	1.5E-03	1.1E-02	1.3E-02	
Lead	0.0031	8.80E+01	7.92E-02	7	4.86E-04	6.46E-01	2.13E+00	2.78E+00	1	4.9E-04	6.5E-01	2.1E+00	2.8E+00	>1	241	2.0E-06	2.7E-03	8.9E-03	1.2E-02	
Manganese	7.42	1.02E+03	1.75E+00	1782	1.16E+00	7.47E+00	5.45E+02	5.54E+02	13.7	8.5E-02	5.5E-01	4.0E+01	4.0E+01	>1	159.09	7.3E-03	4.7E-02	3.4E+00	3.5E+00	>1
Mercury	0.00029	1.20E+00	--	0	4.55E-05	8.81E-03	0	8.86E-03	0.027	1.7E-03	3.3E-01	0.0E+00	3.3E-01		0.27	1.7E-04	3.3E-02	0.0E+00	3.3E-02	
Molybdenum	0.0312	4.80E+00	--	0	4.90E-03	3.53E-02	0	4.01E-02	0.26	1.9E-02	1.4E-01	0.0E+00	1.5E-01		2.6	1.9E-03	1.4E-02	0.0E+00	1.5E-02	
Nickel	0.166	1.08E+02	1.14E-01	12	2.60E-02	7.93E-01	3.76E+00	4.58E+00	0.13	2.0E-01	6.0E+00	2.8E+01	3.4E+01	>1	31.6	8.2E-04	2.5E-02	1.2E-01	1.4E-01	
Selenium	0.029	1.00E+00	--	0	4.55E-03	7.34E-03	0	1.19E-02	0.05	9.1E-02	1.5E-01	0.0E+00	2.4E-01		1.21	3.8E-03	6.1E-03	0.0E+00	9.8E-03	
Silver	0.0019	2.30E+00	--	0	2.98E-04	1.69E-02	0	1.72E-02	0.38	7.9E-04	4.5E-02	0.0E+00	4.6E-02		3.75	7.9E-05	4.5E-03	0.0E+00	4.6E-03	
Thallium		2.90E-01	--	0		2.13E-03	0	2.13E-03	0.48		4.4E-03	0.0E+00	4.4E-03		1.43		1.5E-03	0.0E+00	1.5E-03	
Tin		2.01E+01	6.21E+00	125		1.48E-01	3.82E+01	3.83E+01	23.4		6.3E-03	1.6E+00	1.6E+00	>1	35		4.2E-03	1.1E+00	1.1E+00	
Vanadium	0.05	1.02E+02	--	0	7.85E-03	7.49E-01	0	7.57E-01	0.21	3.7E-02	3.6E+00	0.0E+00	3.6E+00	>1	2.1	3.7E-03	3.6E-01	0.0E+00	3.6E-01	
Zinc	0.042	2.25E+02	3.77E-01	85	6.59E-03	1.65E+00	2.59E+01	2.76E+01	9.6	6.9E-04	1.7E-01	2.7E+00	2.9E+00	>1	411	1.6E-05	4.0E-03	6.3E-02	6.7E-02	
Volatile Organics (mg/kg)																				
Acetone		1.00E-01	--	0		7.34E-04	0	7.34E-04	10	1.0E+01	7.3E-05	0.0E+00	7.3E-05		50		1.5E-05	0.0E+00	1.5E-05	
Benzene			--	0			0	0.00E+00	26.4			0.0E+00	0.0E+00		263.6			0.0E+00	0.0E+00	
Carbon disulfide		7.00E-03	--	0		5.14E-05	0	5.14E-05	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV	
Chlorobenzene		5.00E-03	--	0		3.67E-05	0	3.67E-05	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV	
cis-1,2-Dichlorobenzene			--	0			0	0.00E+00	45.2			0.0E+00	0.0E+00		452			0.0E+00	0.0E+00	
Ethylbenzene		1.80E-02	--	0		1.32E-04	0	1.32E-04	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV	
4-Isopropyltoluene			--	0			0	0.00E+00	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV	
Methylene chloride			--	0			0	0.00E+00	5.9			0.0E+00	0.0E+00		50			0.0E+00	0.0E+00	
Naphthalene			--	0			0	0.00E+00	50			0.0E+00	0.0E+00		150			0.0E+00	0.0E+00	
Toluene		3.00E-02	--	0		2.20E-04	0	2.20E-04	26		8.5E-06	0.0E+00	8.5E-06		260		8.5E-07	0.0E+00	8.5E-07	
trans-1,2-Dichloroethene			--	0			0	0.00E+00	45.2			0.0E+00	0.0E+00		452			0.0E+00	0.0E+00	
Trichloroethene		7.00E-03	--	0		5.14E-05	0	5.14E-05	0.7		7.3E-05	0.0E+00	7.3E-05		7		7.3E-06	0.0E+00	7.3E-06	
1,2,4-Trimethylbenzene			--	0			0	0.00E+00	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV	
1,3,5-Trimethylbenzene			--	0			0	0.00E+00	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV	
Vinyl chloride			--	0			0	0.00E+00	0.17			0.0E+00	0.0E+00		2			0.0E+00	0.0E+00	
Xylenes		1.50E-01	--	0		1.10E-03	0	1.10E-03	2.1		5.2E-04	0.0E+00	5.2E-04		2.6		4.2E-04	0.0E+00	4.2E-04	
Pesticides (mg/kg)																				
alpha-Chlordane		4.80E-03	--	0		3.53E-05	0	3.53E-05	4.6		7.7E-06	0.0E+00	7.7E-06		9.2		3.8E-06	0.0E+00	3.8E-06	
beta-BHC		1.00E-03	--	0		7.34E-06	0	7.34E-06	1.6		4.6E-06	0.0E+00	4.6E-06		3.2		2.3E-06	0.0E+00	2.3E-06	
delta-BHC		2.00E-03	--	0		1.47E-05	0	1.47E-05	1.6		9.2E-06	0.0E+00	9.2E-06		3.2		4.6E-06	0.0E+00	4.6E-06	
2,4-DDD		3.00E-02	--	0		2.20E-04	0	2.20E-04	0.8		2.8E-04	0.0E+00	2.8E-04		16		1.4E-05	0.0E+00	1.4E-05	
4,4-DDD		9.20E-02	--	0		6.76E-04	0	6.76E-04	0.8		8.4E-04	0.0E+00	8.4E-04		16		4.2E-05	0.0E+00	4.2E-05	
DDE	0.0000027	1.80E-02	--	0	4.24E-07	1.32E-04	0	1.33E-04	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV	
DDTs	0.00014	1.20E-02	--	0	2.20E-05	8.81E-05	0	1.10E-04	0.8	2.7E-05	1.1E-04	0.0E+00	1.4E-04		16	1.4E-06	5.5E-06	0.0E+00	6.9E-06	
Dieldrin		2.90E-03	--	0		2.13E-05	0	2.13E-05	0.015		1.4E-03	0.0E+00	1.4E-03		1.7		1.3E-05	0.0E+00	1.3E-05	
Endosulfan I		4.00E-03	--	0		2.94E-05	0	2.94E-05	0.15		2.0E-04	0.0E+00	2.0E-04		1.5		2.0E-05	0.0E+00	2.0E-05	
Endosulfan sulfate	0.00012	3.00E-03	--	0	1.88E-05	2.20E-05	0	4.09E-05	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV	
Endrin	0.000014	2.00E-02	--	0	2.20E-06	1.47E-04	0	1.49E-04	0.09	2.4E-05	1.6E-03	0.0E+00	1.6E-03		0.92	2.4E-06	1.6E-04	0.0E+00	1.6E-04	
Endrin aldehyde		6.00E-03	--	0		4.41E-05	0	4.41E-05	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV	
Endrin Ketone		2.30E-03	--	0		1.69E-05	0	1.69E-05	NTV	NTV	NTV	NTV	NTV		0.92		1.8E-05	0.0E+00	1.8E-05	
gamma-Chlordane		5.20E-03	--	0		3.82E-05	0	3.82E-05	4.6		8.3E-06	0.0E+00	8.3E-06		9.2		4.2E-06	0.0E+00	4.2E-06	
Heptachlor	0.0000028	2.00E-04	--	0	4.39E-07	1.47E-06	0	1.91E-06	0.13	3.4E-06	1.1E-05	0.0E+00	1.5E-05		6.8	6.5E-08	2.2E-07	0.0E+00	2.8E-07	
Heptachlor epoxide		3.00E-04	--	0		2.20E-06	0	2.20E-06	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV	
Hexachlorobenzene		8.00E-04	--	0		5.88E-06	0	5.88E-06	1.6		3.7E-06	0.0E+00	3.7E-06		16		3.7E-07	0.0E+00	3.7E-07	
Methoxychlor		1.20E-02	--	0		8.81E-05	0	8.81E-05	2.5		3.5E-05	0.0E+00	3.5E-05		50		1.8E-06	0.0E+00	1.8E-06	
Mirex		4.00E-03	--	0		2.94E-05	0	2.94E-05	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV	

Table C2-1m
Post-Remediation Salt Marsh Harvest Mouse Risk Calculations (Wetland Sediment Residual Concentration)
Shallow Soil (0 - 2 ft bgs) at Hazard Quotient of 10
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Concentrations				Intake (mg/kg BW-day)					HQ - Low TRV					HQ - High TRV			
COPEC[a]	Surface Water (mg/L)[b]	Sediments[c]	Pickelweed BAF[d]	Pickleweed Tissue[d]	Surface Water	Sediment	Pickleweed	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Pickleweed	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Sediment	Pickleweed	Total Intake
trans-Nonachlor		2.40E-03	--	0		1.76E-05	0	1.76E-05	4.6		3.8E-06	0.0E+00	3.8E-06	9.2		1.9E-06	0.0E+00	1.9E-06
SVOCs (mg/kg)																		
Acenaphthene		5.73E-02	--	0		4.21E-04	0	4.21E-04	1.31		3.2E-04	0.0E+00	3.2E-04	32.8		1.3E-05	0.0E+00	1.3E-05
Acenaphthylene		3.96E-02	--	0		2.91E-04	0	2.91E-04	1.31		2.2E-04	0.0E+00	2.2E-04	32.8		8.9E-06	0.0E+00	8.9E-06
Anthracene		6.58E-02	--	0		4.83E-04	0	4.83E-04	1.31		3.7E-04	0.0E+00	3.7E-04	32.8		1.5E-05	0.0E+00	1.5E-05
Benzo(a)anthracene		9.00E-02	1.29E+00	0		6.61E-04	3.56E-02	3.63E-02	1.31		5.0E-04	2.7E-02	2.8E-02	32.8		2.0E-05	1.1E-03	1.1E-03
Benzo(a)pyrene		9.00E-02	2.31E+00	0		6.61E-04	6.37E-02	6.44E-02	1.31		5.0E-04	4.9E-02	4.9E-02	32.8		2.0E-05	1.9E-03	2.0E-03
Benzo(b)fluoranthene		8.00E-02	1.55E+00	0		5.88E-04	3.80E-02	3.86E-02	1.31		4.5E-04	2.9E-02	2.9E-02	32.8		1.8E-05	1.2E-03	1.2E-03
Benzo(ghi)perylene		8.00E-02	1.55E+00	0		5.88E-04	3.80E-02	3.86E-02	1.31		4.5E-04	2.9E-02	2.9E-02	32.8		1.8E-05	1.2E-03	1.2E-03
Benzo(k)fluoranthene		6.70E-02	1.55E+00	0		4.92E-04	3.18E-02	3.23E-02	1.31		3.8E-04	2.4E-02	2.5E-02	32.8		1.5E-05	9.7E-04	9.9E-04
Benzoic acid			--	0			0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Bis(2-ethylhexyl)phthalate	0.027	1.20E-01	--	0	4.24E-03	8.81E-04	0	5.12E-03	18.3	2.3E-04	4.8E-05	0.0E+00	2.8E-04	183	2.3E-05	4.8E-06	0.0E+00	2.8E-05
Butylbenzylphthalate		2.50E-02	--	0		1.84E-04	0	1.84E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Carbazole		1.41E-01	--	0		1.04E-03	0	1.04E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Chloroaniline		3.00E-03	--	0			0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2-Chlorophenol		4.33E-02	--	0		3.18E-04	0	3.18E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chrysene	0.0002	8.00E-02	2.09E+00	0	3.14E-05	5.88E-04	5.12E-02	5.18E-02	1.31	2.4E-05	4.5E-04	3.9E-02	4.0E-02	32.8	9.6E-07	1.8E-05	1.6E-03	1.6E-03
Dibenzofuran		7.89E-02	--	0		5.79E-04	0	5.79E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
3,3-Dichlorobenzidine		1.20E-02	--	0		8.81E-05	0	8.81E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2,6-Dinitrotoluene			--	0			0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Fluoranthene		8.00E-02	--	0		5.88E-04	0	5.88E-04	1.31		4.5E-04	0.0E+00	4.5E-04	32.8		1.8E-05	0.0E+00	1.8E-05
Fluorene		5.40E-02	--	0		3.97E-04	0	3.97E-04	1.31		3.0E-04	0.0E+00	3.0E-04	32.8		1.2E-05	0.0E+00	1.2E-05
Indeno(123,cd)pyrene		1.00E-01	3.17E+00	0		7.34E-04	9.70E-02	9.77E-02	1.31		5.6E-04	7.4E-02	7.5E-02	32.8		2.2E-05	3.0E-03	3.0E-03
2-Methylnaphthalene		5.23E-02	--	0		3.84E-04	0	3.84E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Methylphenol	0.12	6.68E-02	--	0	1.88E-02	4.91E-04	0	1.93E-02	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Naphthalene		9.00E-02	--	0		6.61E-04	0	6.61E-04	50		1.3E-05	0.0E+00	1.3E-05	150		4.4E-06	0.0E+00	4.4E-06
Pentachlorophenol		4.84E-02	--	0		3.55E-04	0	3.55E-04	8.42		4.2E-05	0.0E+00	4.2E-05	27.4		1.3E-05	0.0E+00	1.3E-05
Phenanthrene		9.00E-02	--	0		6.61E-04	0	6.61E-04	1.31		5.0E-04	0.0E+00	5.0E-04	32.8		2.0E-05	0.0E+00	2.0E-05
Phenol		1.40E-01	--	0		1.03E-03	0	1.03E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pyrene		8.00E-02	--	0		5.88E-04	0	5.88E-04	1.31		4.5E-04	0.0E+00	4.5E-04	32.8		1.8E-05	0.0E+00	1.8E-05
PCBs (mg/kg)																		
PCBs (TOTAL)-congeners	0.000016	1.10E-01	2.72E+00	0	2.51E-06	8.08E-04	9.15E-02	9.23E-02	0.36	7.0E-06	2.2E-03	2.5E-01	2.6E-01	1.28	2.0E-06	6.3E-04	7.1E-02	7.2E-02
																		>1 = The calculated hazard quotient exceeds 1 (i.e., > 1.5)

Exposure Assumptions and Equation:[e]

	Value	Units
Ingestion Rate (IR) prey(dry wt.) =	0.00306	kg/day (dry weight)
Irpickleweed (dry wt.) =	0.00306	kg/day (dry weight)
IRsediment (dry wt.)[f] =	0.0000734	kg-day (dry weight)
Cprey =	chem-specific	mg/kg or µg/kg
Csediment =	chem-specific	mg/kg or µg/kg
Tissue Moisture (pickleweed) =	81.6%	percent
IRsurface water[g] =	0.00157	L/day
Csurface water =	chem-specific	mg/L or µg/L
Dietary Composition Factor (DCF)[h] =	100%	percent
Site Use Factor (SUF)[i] =	100%	percent
Body Weight (BW) =	0.01	kg

Intake Equation = [Irpickleweed (dry wt) x (Cprey(pickleweed, dry wt)/1-TM) x DCF x SUF]/BW] + [(IRsediment x Csediment x DCF x SUF)]/BW]+ [(Irsurface water x Csurface water x DCF x SUF)]/BW]

Risk (hazard quotient) = Intake / TRV

Prey tissue(dry wt) = Prey tissue (wet wt.) / (1-Tissue Moisture)

NTV = Not toxicity data available.

Blank cell indicates COPEC was not detected in this medium.

Notes:

a All chemicals detected in sediments are considered as constituents of potential ecological concern.

b All concentrations of constituents in surface water are based on the maximum concentration.

c All concentrations of constituents in sediment are based on the residual concentrations expressed in dry weight.

d Site-specific BAFs (dry weight basis). Calculated pickelweed tissue concentrations (sediment concentration x BAF). Tissue concentrations are on a dry weight basis.

e Exposure parameters used to calculate risk are discussed in detail in Section 4.2 of ERA.

f Ingestion rate of sediment based on 2.4 percent of of the prey ingestion rate (dry weight); based on a meadow vole (Beyer et al. (1994).

g Based on equation for mammals: Water intake (L/day) = $0.099Wt(kg)^{.90}$ (EPA 1993)

h Dietary composition factor was based on a conservative assumption of 100% dietary intake of pickleweed from the site.

i Site use factor was based on a conservative 100% use of the site for the harvest mouse's foraging range.

Table C2-1n
Summary of Residual Risk Estimates: Shallow Soil (0 - 2 ft bgs)
Hazard Quotient = 10
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Fox		Harrier		Mallard (breeding)		Mallard (non-breeding)		Heron		Killdeer		Salt Marsh Harvest Mouse	
Chemical	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**
Hazard Quotient = 10														
Metals (mg/kg)														
Aluminum	6.4E+00 >1	6.4E-01	1.2E-01	1.2E-02	1.7E+00 >1	1.7E-01	9.8E-02	9.8E-03	5.8E-01	5.8E-02	2.0E+01 >1	2.0E+00 >1	1.2E+02 >1	1.2E+01 >1
Antimony	6.3E-01	1.6E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV >1	NTV	4.0E+01 >1	1.0E-01
Arsenic	2.5E-02	1.7E-03	9.2E-04	2.3E-04	3.2E-02	8.1E-03	5.9E-03	1.5E-03	7.6E-03	1.9E-03	3.2E-01	8.0E-02	3.7E+00 >1	2.5E-01
Barium	2.5E-03	2.0E-03	1.2E-02	6.0E-03	2.0E-01	1.0E-01	4.8E-03	2.4E-03	2.0E-02	9.7E-03	1.6E+00 >1	7.7E-01	3.1E-01	2.4E-01
Beryllium	2.6E-04	2.5E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	6.1E-03	5.8E-03
Cadmium	1.4E-02	3.3E-04	6.6E-03	5.1E-05	6.9E-01	5.3E-03	4.6E-01	3.5E-03	6.0E-02	4.6E-04	2.7E+00 >1	2.1E-02	9.3E+00 >1	2.1E-01
Chromium +3	2.4E-02	2.5E-03	3.2E-02	3.0E-02	6.2E-01	5.9E-01	1.1E-02	1.1E-02	3.3E-01	3.1E-01	5.5E+00 >1	5.3E+00 >1	2.9E-01	3.0E-02
Chromium +6	2.1E-03	3.4E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	2.5E-02	4.0E-03
Cobalt	5.9E-03	3.5E-04	5.7E-04	2.5E-04	3.6E-03	1.6E-03	9.1E-04	4.1E-04	5.1E-03	2.3E-03	1.1E-01	4.8E-02	1.3E-01	7.8E-03
Copper	2.0E-01	8.5E-04	5.2E-01	2.3E-02	1.2E+00	5.1E-02	4.8E-02	2.1E-03	6.2E-01	2.7E-02	9.9E+00 >1	4.3E-01	3.0E+00 >1	1.3E-02
Lead	6.4E-01	2.7E-03	1.1E+02 >1	1.7E-01	1.8E+01 >1	2.9E-02	2.5E+00 >1	4.0E-03	1.2E+02 >1	1.9E-01	3.1E+02 >1	5.0E-01	2.8E+00 >1	1.2E-02
Manganese	3.5E-02	3.0E-03	4.3E-03	4.3E-04	2.1E+00 >1	2.1E-01	6.8E-02	6.8E-03	4.5E-02	4.5E-03	1.5E+01 >1	1.5E+00 >1	4.0E+01 >1	3.5E+00 >1
Mercury	1.4E-02	1.4E-03	6.0E-03	1.3E-03	6.7E-01	1.5E-01	1.0E-02	2.2E-03	6.8E-01	1.5E-01	5.8E+00 >1	1.2E+00	3.3E-01	3.3E-02
Molybdenum	8.5E-03	8.5E-04	4.3E-04	4.3E-05	2.0E-03	2.0E-04	5.0E-04	4.9E-05	2.9E-03	2.9E-04	5.4E-02	5.4E-03	1.5E-01	1.5E-02
Nickel	2.9E-01	1.2E-03	1.7E-02	4.2E-04	9.5E-01	2.3E-02	3.7E-02	9.0E-04	1.5E-01	3.6E-03	9.1E+00 >1	2.2E-01	3.4E+01 >1	1.4E-01
Selenium	1.4E+00	5.8E-02	7.3E-01	1.8E-01	8.7E-03	2.1E-03	2.2E-03	5.4E-04	1.4E+00	3.5E-01	1.9E-01	4.6E-02	2.4E-01	9.8E-03
Silver	2.1E-03	2.1E-04	2.7E-06	NTV	1.7E-05	NTV	4.2E-06	NTV	2.4E-05	NTV	5.0E-04	NTV	4.6E-02	4.6E-03
Thallium	7.1E-03	2.4E-03	2.3E-02	NTV	1.1E-03	NTV	2.7E-04	NTV	2.4E-02	NTV	3.2E-02	NTV	4.4E-03	1.5E-03
Tin	2.7E-04	1.8E-04	5.6E-04	2.3E-04	4.9E-02	2.0E-02	4.6E-02	1.8E-02	5.4E-03	2.2E-03	1.1E-01	4.6E-02	1.6E+00 >1	1.1E+00
Vanadium	1.6E-01	1.6E-02	1.8E-03	1.8E-04	2.1E-02	2.1E-03	4.9E-03	4.9E-04	1.6E-02	1.6E-03	4.0E-01	4.0E-02	3.6E+00 >1	3.6E-01
Zinc	3.0E-01	7.1E-03	4.0E-01	4.0E-02	6.1E-01	6.1E-02	1.5E-02	1.5E-03	7.0E-01	7.0E-02	4.7E+00 >1	4.7E-01	2.9E+00 >1	6.7E-02
Volatile Organics (mg/kg)														
Acetone	3.2E-06	6.4E-07	3.7E-07	3.7E-08	2.5E-06	2.5E-07	6.2E-07	6.2E-08	3.5E-06	3.5E-07	7.4E-05	7.4E-06	7.3E-05	1.5E-05
Benzene	0.0E+00	0.0E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	0.0E+00	0.0E+00
Carbon disulfide	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chlorobenzene	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
cis-1,2-Dichlorobenzene	0.0E+00	0.0E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	0.0E+00	0.0E+00
Ethylbenzene	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Isopropyltoluene	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Methylene chloride	0.0E+00	0.0E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	0.0E+00	0.0E+00
Naphthalene	0.0E+00	0.0E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	0.0E+00	0.0E+00
Toluene	3.7E-07	3.7E-08	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	8.5E-06	8.5E-07
trans-1,2-Dichloroethene	0.0E+00	0.0E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	0.0E+00	0.0E+00
Trichloroethene	3.2E-06	3.2E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	7.3E-05	7.3E-06
1,2,4-Trimethylbenzene	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
1,3,5-Trimethylbenzene	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Vinyl chloride	0.0E+00	0.0E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	0.0E+00	0.0E+00
Xylenes	2.3E-05	1.8E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	5.2E-04	4.2E-04

Table C2-1n
Summary of Residual Risk Estimates: Shallow Soil (0 - 2 ft bgs)
Hazard Quotient = 10
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Fox		Harrier		Mallard (breeding)		Mallard (non-breeding)		Heron		Killdeer		Salt Marsh Harvest Mouse	
Chemical	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**
Pesticides (mg/kg)														
alpha-Chlordane	3.3E-07	1.7E-07	6.5E-04	6.5E-05	4.4E-03	4.4E-04	1.1E-03	0.000110834	6.2E-03	6.2E-04	1.3E-01	1.3E-02	7.7E-06	3.8E-06
beta-BHC	2.0E-07	1.0E-07	3.4E-07	8.5E-08	2.3E-06	5.7E-07	5.8E-07	1.4E-07	3.2E-06	8.1E-07	6.9E-05	1.7E-05	4.6E-06	2.3E-06
delta-BHC	4.0E-07	2.0E-07	6.8E-07	1.7E-07	4.6E-06	1.1E-06	1.2E-06	2.9E-07	6.5E-06	1.6E-06	1.4E-04	3.4E-05	9.2E-06	4.6E-06
2,4-DDD	4.6E-04	2.3E-05	9.5E-02	5.7E-04	4.3E-03	2.6E-05	1.1E-03	6.5E-06	1.0E-01	6.1E-04	1.3E-01	7.7E-04	2.8E-04	1.4E-05
DDD	1.4E-03	7.0E-05	2.9E-01	1.8E-03	1.3E-02	7.9E-05	3.3E-03	2.0E-05	3.1E-01	1.9E-03	3.9E-01	2.4E-03	8.4E-04	4.2E-05
DDE	NTV	NTV	NTV	8.6E-04	NTV	3.9E-05	NTV	9.7E-06	NTV	9.1E-04	NTV	1.2E-03	NTV	NTV
DDTs	1.9E-04	9.4E-06	3.8E-02	2.3E-04	2.1E-03	1.3E-05	5.2E-04	3.1E-06	4.1E-02	2.5E-04	5.4E-02	3.2E-04	1.4E-04	6.9E-06
Dieldrin	6.2E-05	5.4E-07	7.8E-06	5.6E-07	5.3E-05	3.8E-06	1.3E-05	9.6E-07	7.4E-05	5.4E-06	1.6E-03	1.1E-04	1.4E-03	1.3E-05
Endosulfan I	8.5E-06	8.5E-07	7.6E-08	7.6E-09	5.2E-07	5.2E-08	1.3E-07	1.3E-08	7.2E-07	7.2E-08	1.5E-05	1.5E-06	2.0E-04	2.0E-05
Endosulfan sulfate	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Endrin	7.3E-05	7.3E-06	1.4E-05	1.4E-06	8.7E-05	8.7E-06	2.2E-05	2.2E-06	1.2E-04	1.2E-05	2.6E-03	2.6E-04	1.6E-03	1.6E-04
Endrin aldehyde	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Endrin Ketone	NTV	8.0E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	1.8E-05
gamma-Chlordane	3.6E-07	1.8E-07	7.1E-04	7.1E-05	4.8E-03	4.8E-04	1.2E-03	1.2E-04	6.7E-03	6.7E-04	1.0E-04	1.0E-05	8.3E-06	4.2E-06
Heptachlor	9.6E-07	1.8E-08	1.4E-06	1.4E-07	5.0E-06	5.0E-07	1.3E-06	1.3E-07	7.5E-06	7.5E-07	1.2E-04	1.2E-05	1.5E-05	2.8E-07
Heptachlor epoxide	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Hexachlorobenzene	1.6E-07	1.6E-08	6.6E-07	6.6E-08	4.5E-06	4.5E-07	1.1E-06	1.1E-07	6.3E-06	6.3E-07	1.3E-04	1.3E-05	3.7E-06	3.7E-07
Methoxychlor	1.5E-06	7.7E-08	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	3.5E-05	1.8E-06
Mirex	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
trans-Nonachlor	1.7E-07	8.3E-08	3.3E-04	3.3E-05	2.2E-03	2.2E-04	5.5E-04	5.5E-05	3.1E-03	3.1E-04	6.6E-02	6.6E-03	3.8E-06	1.9E-06
Acenaphthene	1.4E-05	5.6E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	3.2E-04	1.3E-05
Acenaphthylene	9.7E-06	3.9E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	2.2E-04	8.9E-06
Anthracene	1.6E-05	6.4E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	3.7E-04	1.5E-05
Benzo(a)anthracene	2.2E-05	8.8E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	2.8E-02	1.1E-03
Benzo(a)pyrene	2.2E-05	8.8E-07	1.7E-02	1.7E-03	1.2E-01	1.2E-02	2.9E-02	2.9E-03	1.6E-01	1.6E-02	3.5E+00 >1	3.5E-01	4.9E-02	2.0E-03
Benzo(b)fluoranthene	2.0E-05	7.8E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	2.9E-02	1.2E-03
Benzo(g,h,i)perylene	2.0E-05	7.8E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	2.9E-02	1.2E-03
Benzo(k)fluoranthene	1.6E-05	6.5E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	2.5E-02	9.9E-04
Benzoic acid	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Bis(2-ethylhexyl)phthalate	3.4E-05	3.4E-06	5.0E-04	5.0E-05	7.3E-04	7.3E-05	1.8E-04	1.8E-05	1.3E-03	1.3E-04	7.7E-03	7.7E-04	2.8E-04	2.8E-05
Butylbenzylphthalate	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Carbazole	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Chloroaniline	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2-Chloropropane	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chrysene	2.3E-05	9.1E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	4.0E-02	1.6E-03
Dibenzofuran	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
3,3-Dichlorobenzidine	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2,6-Dinitrotoluene	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Fluoranthene	2.0E-05	7.8E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	4.5E-04	1.8E-05
Fluorene	1.3E-05	5.3E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	3.0E-04	1.2E-05
Indeno(1,2,3-cd)pyrene	2.4E-05	9.7E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	7.5E-02	3.0E-03
2-Methylnaphthalene	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV

Table C2-1n
Summary of Residual Risk Estimates: Shallow Soil (0 - 2 ft bgs)
Hazard Quotient = 10
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Fox		Harrier		Mallard (breeding)		Mallard (non-breeding)		Heron		Killdeer		Salt Marsh Harvest Mouse	
Chemical	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**
4-Methylphenol	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Naphthalene	5.7E-07	1.9E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	1.3E-05	4.4E-06
Pentachlorophenol	1.8E-06	5.6E-07	1.4E-06	4.1E-07	9.3E-06	2.8E-06	2.3E-06	7.0E-07	1.3E-05	3.9E-06	2.8E-04	8.3E-05	4.2E-05	1.3E-05
Phenanthrene	2.2E-05	8.8E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	5.0E-04	2.0E-05
Phenol	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pyrene	2.0E-05	7.8E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	4.5E-04	1.8E-05
PCBs (mg/kg)														
PCBs (Total Congeners)	6.3E-02	1.8E-02	6.0E-01	4.3E-02	4.2E-01	3.0E-02	1.7E-03	1.2E-04	3.8E+00 >1	2.7E-01	3.1E+00 >1	2.2E-01	2.6E-01	7.2E-02

Table C2-2a
Medium-Specific Exposure Point Concentration Summary
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil (0 to 10 feet bgs)
Exposure Medium:	Soil
Exposure Point:	On-Site Soil

Chemical of Potential Concern	Distribution[a]	Mean of Normal Data[b]	Mean of Lognormal Data[c]	Median	UCL[d]	Maximum Detected Concentration	Reasonable Maximum Exposure		Central Tendency Exposure	
							Medium EPC Value[e]	Medium EPC Statistic and Rationale[f]	Medium EPC Value[e]	Medium EPC Statistic and Rationale[f]
INORGANICS (mg/kg)										
ALUMINUM	Non-Par	25517	10	25000	30140	42800	30,140	97.5% Chebyshev UCL	30,140	97.5% Chebyshev UCL
ANTIMONY	Non-Par	3.1	0.73	2.1	4.5	49.9	4.5	95% Chebyshev UCL	4.5	95% Chebyshev UCL
ARSENIC	Normal	20.4	2.91	20.15	21.5	43.2	21.5	Student's-t UCL	21.5	Student's-t UCL
BARIUM	Non-Par	88	4.4	80.9	94	330	94	Student's-t UCL	94	Student's-t UCL
BERYLLIUM	Non-Par	0.44	-1.31	0.315	0.65	2.5	0.65	97.5% Chebyshev UCL	0.65	97.5% Chebyshev UCL
CADMIUM	Non-Par	2	0.06	1.1	2.9	7.5	2.9	97.5% Chebyshev UCL	2.9	97.5% Chebyshev UCL
CHROMIUM	Non-Par	138	4.7	102	213	3100	213	95% Chebyshev UCL	213	95% Chebyshev UCL
COBALT	Non-Par	15.7	2.53	18.6	18.7	38.2	18.7	95% Chebyshev UCL	18.7	95% Chebyshev UCL
COPPER	Non-Par	130	4.6	95	197	2600	197	95% Chebyshev UCL	197	95% Chebyshev UCL
HEXAVALENT CHROMIUM	Non-Par	0.34	-2.5	0.039	1.7	0.07	0.07	Max Detected	0.07	Max Detected
LEAD	Non-Par	71.3	4	53.2	96	651	96	95% Chebyshev UCL	96	95% Chebyshev UCL
MANGANESE	Non-Par	897	6.7	811	967	4810	967	Student's-t UCL	967	Student's-t UCL
MERCURY	Non-Par	1.1	-0.17	0.95	1.4	6	1.4	95% Chebyshev UCL	1.4	95% Chebyshev UCL
MOLYBDENUM	Non-Par	2.4	-0.67	0.23	5	44.3	5	97.5% Chebyshev UCL	5	97.5% Chebyshev UCL
NICKEL	Non-Par	108	4.6	108	114	493	114	Student's-t UCL	114	Student's-t UCL
SELENIUM	Non-Par	0.85	-0.64	0.52	1.2	4.5	1.2	95% Chebyshev UCL	1.2	95% Chebyshev UCL
SILVER	Non-Par	1.7	-0.78	0.28	2.7	5.2	2.7	97.5% Chebyshev UCL	2.7	97.5% Chebyshev UCL
THALLIUM	Non-Par	0.29	-1.5	0.19	0.46	2.6	0.46	95% Chebyshev UCL	0.46	95% Chebyshev UCL
TIN	Normal	14.8	2.6	14.1	16.2	59.8	16.2	Student's-t UCL	16.2	Student's-t UCL
VANADIUM	Non-Par	103	4.54	103.3	117	203	117	95% Chebyshev UCL	117	95% Chebyshev UCL
ZINC	Non-Par	217	5.3	191	237	1790	237	Student's-t UCL	237	Student's-t UCL
PESTICIDES (mg/kg)										
ALPHA-CHLORDANE	Non-Par	0.0029	-7.67	0.0004	0.0082	0.051	0.0082	97.5% Chebyshev UCL	0.0082	97.5% Chebyshev UCL
BETA BHC	NA	NA	NA	NA	NA	0.001	0.001	Max Detected	0.001	Max Detected
DELTA BHC	NA	NA	NA	NA	NA	0.002	0.002	Max Detected	0.002	Max Detected
2,4- DDD	Non-Par	0.0064	-5.98	0.001	0.029	0.03	0.029	99% Chebyshev UCL	0.029	99% Chebyshev UCL
4,4- DDD	Non-Par	0.028	-5.63	0.003	0.086	0.8	0.086	97.5% Chebyshev UCL	0.086	97.5% Chebyshev UCL
4,4- DDE	Non-Par	0.0054	-6.8	0.001	0.017	0.2	0.017	97.5% Chebyshev UCL	0.017	97.5% Chebyshev UCL
4,4- DDT	Non-Par	0.0053	-6.48	0.002	0.012	0.08	0.012	97.5% Chebyshev UCL	0.012	97.5% Chebyshev UCL
DIELDRIN	Non-Par	0.0019	-7.37	0.001	0.0039	0.005	0.0039	97.5% Chebyshev UCL	0.0039	97.5% Chebyshev UCL
ENDOSULFAN I	NA	NA	NA	NA	NA	0.004	0.004	Max Detected	0.004	Max Detected
ENDOSULFAN SULFATE	NA	NA	NA	NA	NA	0.003	0.003	Max Detected	0.003	Max Detected
ENDRIN	NA	NA	NA	NA	NA	0.02	0.02	Max Detected	0.02	Max Detected
ENDRIN ALDEHYDE	NA	NA	NA	NA	NA	0.006	0.006	Max Detected	0.006	Max Detected
ENDRIN KETONE	Non-Par	0.0013	-7.84	0.0004	0.003	0.003	0.003	97.5% Chebyshev UCL	0.003	97.5% Chebyshev UCL
GAMMA-CHLORDANE	Non-Par	0.0029	-7.75	0.0004	0.0085	0.059	0.0085	97.5% Chebyshev UCL	0.0085	97.5% Chebyshev UCL
HEPTACHLOR	NA	NA	NA	NA	NA	0.0002	0.0002	Max Detected	0.0002	Max Detected
HEPTACHLOR EPOXIDE	NA	NA	NA	NA	NA	0.0003	0.0003	Max Detected	0.0003	Max Detected

Table C2-2a
Medium-Specific Exposure Point Concentration Summary
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil (0 to 10 feet bgs)
Exposure Medium:	Soil
Exposure Point:	On-Site Soil

Chemical of Potential Concern	Distribution[a]	Mean of Normal Data[b]	Mean of Lognormal Data[c]	Median	UCL[d]	Maximum Detected Concentration	Reasonable Maximum Exposure		Central Tendency Exposure	
							Medium EPC Value[e]	Medium EPC Statistic and Rationale[f]	Medium EPC Value[e]	Medium EPC Statistic and Rationale[f]
HEXACHLOROBENZENE	Non-Par	0.00083	-8.13	0.0003	0.0023	0.0008	0.0008	Max Detected	0.0008	Max Detected
METHOXYCHLOR	Non-Par	0.0065	-7.02	0.00125	0.02	0.04	0.02	99% Chebyshev UCL	0.02	99% Chebyshev UCL
MIREX	NA	NA	NA	NA	NA	0.004	0.004	Max Detected	0.004	Max Detected
TRANS-NONACHLOR	Non-Par	0.00087	-8.17	0.000275	0.0024	0.005	0.0024	97.5% Chebyshev UCL	0.0024	97.5% Chebyshev UCL
PCBs (mg/kg)										
PCBs (TOTAL)	Lognormal	0.11	-4	0.0179	0.2	2	0.2	H-UCL	0.2	H-UCL
SVOCs (mg/kg)										
ACENAPHTHENE	Non-Par	0.088	-2.9	0.0425	0.13	1.0567	0.13	95% Chebyshev UCL	0.13	95% Chebyshev UCL
ACENAPHTHYLENE	Non-Par	0.08	-3	0.0335	0.11	0.4388	0.11	95% Chebyshev UCL	0.11	95% Chebyshev UCL
ANTHRACENE	Non-Par	0.07	-3.5	0.0245	0.13	0.678	0.13	97.5% Chebyshev UCL	0.13	97.5% Chebyshev UCL
BENZO(A)ANTHRACENE	Non-Par	0.1	-3.3	0.0245	0.27	3.6821	0.27	97.5% Chebyshev UCL	0.27	97.5% Chebyshev UCL
BENZO(A)PYRENE	Non-Par	0.09	-3.4	0.023	0.23	3.0884	0.23	97.5% Chebyshev UCL	0.23	97.5% Chebyshev UCL
BENZO(B)FLUORANTHENE	Non-Par	0.1	-3.05	0.031	0.23	2.755	0.23	97.5% Chebyshev UCL	0.23	97.5% Chebyshev UCL
BENZO(G,H,I)PERYLENE	Non-Par	1.5	-3.2	0.026	0.16	1.5074	0.16	97.5% Chebyshev UCL	0.16	97.5% Chebyshev UCL
BENZO(K)FLUORANTHENE	Non-Par	0.1	-3.22	0.02475	0.23	2.774	0.23	97.5% Chebyshev UCL	0.23	97.5% Chebyshev UCL
BENZOIC ACID	NA	NA	NA	NA	NA	0.68	0.68	Max Detected	0.68	Max Detected
BIS(2-ETHYLHEXYL)PHTHALATE	Non-Par	0.27	-3.17	0.04	1.1	15.4642	1.1	97.5% Chebyshev UCL	1.1	97.5% Chebyshev UCL
BUTYLBENZYLPHTHALATE	NA	NA	NA	NA	NA	0.025	0.025	Max Detected	0.025	Max Detected
CARBAZOLE	Non-Par	0.21	-2.67	0.026	0.55	4.0942	0.55	97.5% Chebyshev UCL	0.55	97.5% Chebyshev UCL
4- CHLOROANILINE	NA	NA	NA	NA	NA	0.003	0.003	Max Detected	0.003	Max Detected
2- CHLOROPHENOL	NA	NA	NA	NA	NA	0.0433	0.0433	Max Detected	0.0433	Max Detected
CHRYSENE	Non-Par	0.09	-3.44	0.024	0.26	3.742	0.26	97.5% Chebyshev UCL	0.26	97.5% Chebyshev UCL
DIBENZOFURAN	Non-Par	0.18	-2.52	0.1	0.36	2.8628	0.36	97.5% Chebyshev UCL	0.36	97.5% Chebyshev UCL
3,3- DICHLOROBENZIDINE	NA	NA	NA	NA	NA	0.012	0.012	Max Detected	0.012	Max Detected
2,6- DINITROTOLUENE	NA	NA	NA	NA	NA	0.37	0.37	Max Detected	0.37	Max Detected
FLUORANTHENE	Non-Par	0.11	-3.24	0.03	0.37	5.6279	0.37	97.5% Chebyshev UCL	0.37	97.5% Chebyshev UCL
FLUORENE	Non-Par	0.08	-3.26	0.0245	0.13	0.7256	0.13	97.5% Chebyshev UCL	0.13	97.5% Chebyshev UCL
INDENO(1,2,3-CD)PYRENE	Non-Par	0.08	-3.42	0.0235	0.16	1.4573	0.16	97.5% Chebyshev UCL	0.16	97.5% Chebyshev UCL
2- METHYLNAPHTHALENE	Non-Par	0.12	-2.76	0.0445	0.18	0.6251	0.18	97.5% Chebyshev UCL	0.18	97.5% Chebyshev UCL
4- METHYLPHENOL	Non-Par	0.15	-2.55	0.1	0.23	0.8757	0.23	97.5% Chebyshev UCL	0.23	97.5% Chebyshev UCL
NAPHTHALENE	Non-Par	0.07	-3.1	0.0335	0.11	0.4723	0.11	95% Chebyshev UCL	0.11	95% Chebyshev UCL
PENTACHLOROPHENOL	Non-Par	0.36	-1.68	0.2375	0.54	0.7512	0.54	97.5% Chebyshev UCL	0.54	97.5% Chebyshev UCL
PHENANTHRENE	Non-Par	0.09	-3.42	0.023	0.2	2.2809	0.2	97.5% Chebyshev UCL	0.2	97.5% Chebyshev UCL
PHENOL	Non-Par	0.17	-2.52	0.1	0.29	1.7625	0.29	97.5% Chebyshev UCL	0.29	97.5% Chebyshev UCL
PYRENE	Non-Par	0.12	-3.13	0.036	0.42	6.3265	0.42	97.5% Chebyshev UCL	0.42	97.5% Chebyshev UCL
TPH (mg/kg)										
TPH AS DIESEL	Non-Par	73.2	3.35	19.15	172	1100	172	97.5% Chebyshev UCL	172	97.5% Chebyshev UCL
TPH AS GASOLINE	Non-Par	0.86	-3.44	0.0153	4	51	4	97.5% Chebyshev UCL	4	97.5% Chebyshev UCL
TPH AS MOTOR OIL	Non-Par	160	4.3	61	324	2700	324	97.5% Chebyshev UCL	324	97.5% Chebyshev UCL

Table C2-2a
Medium-Specific Exposure Point Concentration Summary
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil (0 to 10 feet bgs)
Exposure Medium:	Soil
Exposure Point:	On-Site Soil

Chemical of Potential Concern	Distribution[a]	Mean of Normal Data[b]	Mean of Lognormal Data[c]	Median	UCL[d]	Maximum Detected Concentration	Reasonable Maximum Exposure		Central Tendency Exposure	
							Medium EPC Value[e]	Medium EPC Statistic and Rationale[f]	Medium EPC Value[e]	Medium EPC Statistic and Rationale[f]
VOCs (mg/kg)										
ACETONE	Non-Par	0.087	-3.69	0.0175	0.32	0.4	0.32	99% Chebyshev UCL	0.32	99% Chebyshev UCL
BENZENE	NA	NA	NA	NA	NA	0.025	0.005	Max Detected	0.005	Max Detected
CARBON DISULFIDE	Non-Par	0.011	-5.02	0.005	0.025	0.04	0.025	95% Chebyshev UCL	0.025	95% Chebyshev UCL
CHLOROBENZENE	Non-Par	0.0099	-5.09	0.005	0.024	0.04	0.024	95% Chebyshev UCL	0.024	95% Chebyshev UCL
CIS-1,2-DICHLOROETHENE	NA	NA	NA	NA	NA	0.052	0.005	Max Detected	0.005	Max Detected
ETHYLBENZENE	Non-Par	0.025	-4.1	0.03	0.044	0.2	0.044	97.5% Chebyshev UCL	0.044	97.5% Chebyshev UCL
4- ISOPROPYLTOLUENE	NA	NA	NA	NA	NA	0.0072	0.0072	Max Detected	0.0072	Max Detected
METHYLENE CHLORIDE	NA	NA	NA	NA	NA	0.3	0.3	Max Detected	0.3	Max Detected
NAPHTHALENE	NA	NA	NA	NA	NA	0.016	0.016	Max Detected	0.016	Max Detected
TOLUENE	NA	NA	NA	NA	NA	0.03	0.03	Max Detected	0.03	Max Detected
TRANS-1,2-DICHLOROETHENE	NA	NA	NA	NA	NA	0.023	0.023	Max Detected	0.023	Max Detected
TRICHLOROETHENE	NA	NA	NA	NA	NA	0.007	0.007	Max Detected	0.007	Max Detected
1,2,4- TRIMETHYLBENZENE	NA	NA	NA	NA	NA	0.025	0.025	Max Detected	0.025	Max Detected
1,3,5- TRIMETHYLBENZENE	NA	NA	NA	NA	NA	0.0093	0.0093	Max Detected	0.0093	Max Detected
VINYL CHLORIDE	NA	NA	NA	NA	NA	0.034	0.034	Max Detected	0.034	Max Detected
XYLENE (TOTAL)	Non-Par	0.07	-3.37	0.1	0.11	0.2	0.11	97.5% Chebyshev UCL	0.11	97.5% Chebyshev UCL

The UCL for chemicals that are italicized and underlined have been modified for post remediation residual risk.

bgs Below Ground Surface.
EPC Exposure Point Concentration.
mg/kg Milligram per kilogram.
NA Not Applicable for small data sets.
PCBs Polychlorinated Biphenyls
SVOC Semivolatile Organic Compound
TPH Total Petroleum Hydrocarbon
UCL Upper confidence limit of the mean.
VOCs Volatile Organic Compounds

a Gamma = Data follow gamma distribution using chi-square approximation.
Normal = Data are normally distributed.
Lognormal = Data are lognormally distributed.
Non-par = Data are non-parametric.
Lilliefors Test was used to determine the distribution for sample sets greater than 50.
Shapiro and Wilk W-Test was used to determine the distribution for sample sets less than 50.

b The value presented is the arithmetic mean calculated using distribution-dependent formulas. One half the sample quantitation limit was used as a proxy concentration for non-detects to calculate the mean.

c The value presented is the mean of log-transformed data calculated using distribution-dependent formulas. One half the sample quantitation limit was used as a proxy concentration for non-detects to calculate the mean.

d The value presented is the UCL calculated using distribution-dependent formulas. One half the sample quantitation limit was used as a proxy concentration for non-detects to calculate the UCL.

e If the UCL value exceeds the maximum detected concentration, the maximum detected concentration is used for the medium EPC value.

f Recommended UCL statistic using United States Environmental Protection Agency ProUCL Version 3.0 software.

Table C2-2b
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
INGESTION	**INORGANICS**									
	ALUMINUM	30,140	mg/kg	3.29E-02	1.37E-02	mg/kg-day	1.00E+00	mg/kg-day	3.29E-02	1.37E-02
	ANTIMONY	4.5	mg/kg	4.92E-06	2.05E-06	mg/kg-day	4.00E-04	mg/kg-day	1.23E-02	5.12E-03
	ARSENIC	21.5	mg/kg	2.35E-05	9.79E-06	mg/kg-day	3.00E-04	mg/kg-day	7.83E-02	3.26E-02
	BARIUM	94.0	mg/kg	1.03E-04	4.28E-05	mg/kg-day	7.00E-02	mg/kg-day	1.47E-03	6.11E-04
	BERYLLIUM	0.65	mg/kg	7.10E-07	2.96E-07	mg/kg-day	2.00E-03	mg/kg-day	3.55E-04	1.48E-04
	CADMIUM	2.90	mg/kg	3.17E-06	1.32E-06	mg/kg-day	5.00E-04	mg/kg-day	6.34E-03	2.64E-03
	CHROMIUM	213	mg/kg	2.33E-04	9.70E-05	mg/kg-day	1.50E+00	mg/kg-day	1.55E-04	6.47E-05
	COBALT	18.7	mg/kg	2.04E-05	8.52E-06	mg/kg-day	2.00E-02	mg/kg-day	1.02E-03	4.26E-04
	COPPER	197	mg/kg	2.15E-04	8.97E-05	mg/kg-day	4.00E-02	mg/kg-day	5.38E-03	2.24E-03
	HEXAVALENT CHROMIUM	0.07	mg/kg	7.65E-08	3.19E-08	mg/kg-day	3.00E-03	mg/kg-day	2.55E-05	1.06E-05
	LEAD	96	mg/kg	1.05E-04	4.37E-05	mg/kg-day	NA	mg/kg-day	NA	NA
	MANGANESE	967	mg/kg	1.06E-03	4.40E-04	mg/kg-day	1.40E-01	mg/kg-day	7.55E-03	3.15E-03
	MERCURY	1.4	mg/kg	1.53E-06	6.37E-07	mg/kg-day	3.00E-04	mg/kg-day	5.10E-03	2.12E-03
	MOLYBDENUM	5.0	mg/kg	5.46E-06	2.28E-06	mg/kg-day	5.00E-03	mg/kg-day	1.09E-03	4.55E-04
	NICKEL	114	mg/kg	1.25E-04	5.19E-05	mg/kg-day	2.00E-02	mg/kg-day	6.23E-03	2.60E-03
	SELENIUM	1.2	mg/kg	1.31E-06	5.46E-07	mg/kg-day	5.00E-03	mg/kg-day	2.62E-04	1.09E-04
	SILVER	2.7	mg/kg	2.95E-06	1.23E-06	mg/kg-day	5.00E-03	mg/kg-day	5.90E-04	2.46E-04
	THALLIUM	0.46	mg/kg	5.03E-07	2.09E-07	mg/kg-day	6.60E-05	mg/kg-day	7.62E-03	3.17E-03
	TIN	16.2	mg/kg	1.77E-05	7.38E-06	mg/kg-day	6.00E-01	mg/kg-day	2.95E-05	1.23E-05
	VANADIUM	117	mg/kg	1.28E-04	5.33E-05	mg/kg-day	7.00E-03	mg/kg-day	1.83E-02	7.61E-03
	ZINC	237	mg/kg	2.59E-04	1.08E-04	mg/kg-day	3.00E-01	mg/kg-day	8.63E-04	3.60E-04
	PESTICIDES									
	ALPHA-CHLORDANE	0.0082	mg/kg	8.96E-09	3.73E-09	mg/kg-day	5.00E-04	mg/kg-day	1.79E-05	7.47E-06
	BETA BHC	0.001	mg/kg	1.09E-09	4.55E-10	mg/kg-day	2.00E-04	mg/kg-day	5.46E-06	2.28E-06
	DELTA BHC	0.002	mg/kg	2.19E-09	9.11E-10	mg/kg-day	NA	mg/kg-day	NA	NA
	2,4- DDD	0.029	mg/kg	3.17E-08	1.32E-08	mg/kg-day	5.00E-04	mg/kg-day	6.34E-05	2.64E-05
	4,4- DDD	0.086	mg/kg	9.40E-08	3.92E-08	mg/kg-day	5.00E-04	mg/kg-day	1.88E-04	7.83E-05

Table C2-2b
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
INGESTION (CONTINUED)	4,4- DDE	0.017	mg/kg	1.86E-08	7.74E-09	mg/kg-day	5.00E-04	mg/kg-day	3.72E-05	1.55E-05
	4,4- DDT	0.012	mg/kg	1.31E-08	5.46E-09	mg/kg-day	5.00E-04	mg/kg-day	2.62E-05	1.09E-05
	DIELDRIN	0.0039	mg/kg	4.26E-09	1.78E-09	mg/kg-day	5.00E-05	mg/kg-day	8.52E-05	3.55E-05
	ENDOSULFAN I	0.004	mg/kg	4.37E-09	1.82E-09	mg/kg-day	6.00E-03	mg/kg-day	7.29E-07	3.04E-07
	ENDOSULFAN SULFATE	0.003	mg/kg	3.28E-09	1.37E-09	mg/kg-day	6.00E-03	mg/kg-day	5.46E-07	2.28E-07
	ENDRIN	0.02	mg/kg	2.19E-08	9.11E-09	mg/kg-day	3.00E-04	mg/kg-day	7.29E-05	3.04E-05
	ENDRIN ALDEHYDE	0.006	mg/kg	6.56E-09	2.73E-09	mg/kg-day	3.00E-04	mg/kg-day	2.19E-05	9.11E-06
	ENDRIN KETONE	0.003	mg/kg	3.28E-09	1.37E-09	mg/kg-day	3.00E-04	mg/kg-day	1.09E-05	4.55E-06
	GAMMA-CHLORDANE	0.0085	mg/kg	9.29E-09	3.87E-09	mg/kg-day	5.00E-04	mg/kg-day	1.86E-05	7.74E-06
	HEPTACHLOR	0.0002	mg/kg	2.19E-10	9.11E-11	mg/kg-day	5.00E-04	mg/kg-day	4.37E-07	1.82E-07
	HEPTACHLOR EPOXIDE	0.0003	mg/kg	3.28E-10	1.37E-10	mg/kg-day	1.30E-05	mg/kg-day	2.52E-05	1.05E-05
	HEXACHLOROBENZENE	0.0008	mg/kg	8.74E-10	3.64E-10	mg/kg-day	8.00E-04	mg/kg-day	1.09E-06	4.55E-07
	METHOXYCHLOR	0.02	mg/kg	2.19E-08	9.11E-09	mg/kg-day	5.00E-03	mg/kg-day	4.37E-06	1.82E-06
	MIREX	0.004	mg/kg	4.37E-09	1.82E-09	mg/kg-day	2.00E-04	mg/kg-day	2.19E-05	9.11E-06
	TRANS-NONACHLOR	0.0024	mg/kg	2.62E-09	1.09E-09	mg/kg-day	5.00E-04	mg/kg-day	5.25E-06	2.19E-06
	PCBs									
	PCBs (TOTAL)	0.20	mg/kg	2.19E-07	9.11E-08	mg/kg-day	2.00E-05	mg/kg-day	1.09E-02	4.55E-03
	SVOCs									
	ACENAPHTHENE	0.13	mg/kg	1.42E-07	5.92E-08	mg/kg-day	6.00E-02	mg/kg-day	2.37E-06	9.87E-07
	ACENAPHTHYLENE	0.11	mg/kg	1.20E-07	5.01E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	ANTHRACENE	0.13	mg/kg	1.42E-07	5.92E-08	mg/kg-day	3.00E-01	mg/kg-day	4.74E-07	1.97E-07
	BENZO(A)ANTHRACENE	0.27	mg/kg	2.95E-07	1.23E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(A)PYRENE	0.23	mg/kg	2.51E-07	1.05E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(B)FLUORANTHENE	0.23	mg/kg	2.51E-07	1.05E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(G,H,I)PERYLENE	0.16	mg/kg	1.75E-07	7.29E-08	mg/kg-day	4.00E-02	mg/kg-day	4.37E-06	1.82E-06
	BENZO(K)FLUORANTHENE	0.23	mg/kg	2.51E-07	1.05E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZOIC ACID	0.68	mg/kg	7.43E-07	3.10E-07	mg/kg-day	4.00E+00	mg/kg-day	1.86E-07	7.74E-08
	BIS(2-ETHYLHEXYL)PHTHAL	1.1	mg/kg	1.20E-06	5.01E-07	mg/kg-day	2.00E-02	mg/kg-day	6.01E-05	2.50E-05

Table C2-2b
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
INGESTION (CONTINUED)	BUTYLBENZYLPHTHALATE	0.025	mg/kg	2.73E-08	1.14E-08	mg/kg-day	2.00E-01	mg/kg-day	1.37E-07	5.69E-08
	CARBAZOLE	0.55	mg/kg	6.01E-07	2.50E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	4- CHLOROANILINE	0.003	mg/kg	3.28E-09	1.37E-09	mg/kg-day	4.00E-03	mg/kg-day	8.20E-07	3.42E-07
	2- CHLOROPHENOL	0.043	mg/kg	4.73E-08	1.97E-08	mg/kg-day	5.00E-03	mg/kg-day	9.46E-06	3.94E-06
	CHRYSENE	0.26	mg/kg	2.84E-07	1.18E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	DIBENZOFURAN	0.36	mg/kg	3.93E-07	1.64E-07	mg/kg-day	2.00E-03	mg/kg-day	1.97E-04	8.20E-05
	3,3- DICHLOROBENZIDINE	0.012	mg/kg	1.31E-08	5.46E-09	mg/kg-day	NA	mg/kg-day	NA	NA
	2,6- DINITROTOLUENE	0.37	mg/kg	4.04E-07	1.68E-07	mg/kg-day	1.00E-03	mg/kg-day	4.04E-04	1.68E-04
	FLUORANTHENE	0.370	mg/kg	4.04E-07	1.68E-07	mg/kg-day	4.00E-02	mg/kg-day	1.01E-05	4.21E-06
	FLUORENE	0.1	mg/kg	1.42E-07	5.92E-08	mg/kg-day	4.00E-02	mg/kg-day	3.55E-06	1.48E-06
	INDENO(1,2,3-CD)PYRENE	0.16	mg/kg	1.75E-07	7.29E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	2- METHYLNAPHTHALENE	0.18	mg/kg	1.97E-07	8.20E-08	mg/kg-day	4.00E-03	mg/kg-day	4.92E-05	2.05E-05
	4- METHYLPHENOL	0.23	mg/kg	2.51E-07	1.05E-07	mg/kg-day	5.00E-03	mg/kg-day	5.03E-05	2.09E-05
	NAPHTHALENE	0.11	mg/kg	1.20E-07	5.01E-08	mg/kg-day	2.00E-02	mg/kg-day	6.01E-06	2.50E-06
	PENTACHLOROPHENOL	0.54	mg/kg	5.90E-07	2.46E-07	mg/kg-day	3.00E-02	mg/kg-day	1.97E-05	8.20E-06
	PHENANTHRENE	0.20	mg/kg	2.19E-07	9.11E-08	mg/kg-day	3.00E-01	mg/kg-day	7.29E-07	3.04E-07
	PHENOL	0.29	mg/kg	3.17E-07	1.32E-07	mg/kg-day	6.00E-01	mg/kg-day	5.28E-07	2.20E-07
	PYRENE	0.420	mg/kg	4.59E-07	1.91E-07	mg/kg-day	3.00E-02	mg/kg-day	1.53E-05	6.37E-06
	TPH									
	TPH AS DIESEL	172	mg/kg	1.88E-04	7.83E-05	mg/kg-day	NA	mg/kg-day	NA	NA
	TPH AS GASOLINE	4.0	mg/kg	4.37E-06	1.82E-06	mg/kg-day	NA	mg/kg-day	NA	NA
	TPH AS MOTOR OIL	324	mg/kg	3.54E-04	1.48E-04	mg/kg-day	NA	mg/kg-day	NA	NA
	VOCs									
	ACETONE	0.32	mg/kg	3.50E-07	1.46E-07	mg/kg-day	9.00E-01	mg/kg-day	3.89E-07	1.62E-07
	BENZENE	0.005	mg/kg	5.46E-09	2.28E-09	mg/kg-day	4.00E-03	mg/kg-day	1.37E-06	5.69E-07
	CARBON DISULFIDE	0.025	mg/kg	2.73E-08	1.14E-08	mg/kg-day	1.00E-01	mg/kg-day	2.73E-07	1.14E-07
	CHLOROBENZENE	0.024	mg/kg	2.62E-08	1.09E-08	mg/kg-day	2.00E-02	mg/kg-day	1.31E-06	5.46E-07
	CIS-1,2-DICHLOROETHENE	0.005	mg/kg	5.46E-09	2.28E-09	mg/kg-day	1.00E-02	mg/kg-day	5.46E-07	2.28E-07

Table C2-2b
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
INGESTION (CONTINUED)	ETHYLBENZENE	0.044	mg/kg	4.81E-08	2.00E-08	mg/kg-day	1.00E-01	mg/kg-day	4.81E-07	2.00E-07
	4- ISOPROPYLTOLUENE	0.007	mg/kg	7.87E-09	3.28E-09	mg/kg-day	NA	mg/kg-day	NA	NA
	METHYLENE CHLORIDE	0.3	mg/kg	3.28E-07	1.37E-07	mg/kg-day	6.00E-02	mg/kg-day	5.46E-06	2.28E-06
	NAPHTHALENE	0.016	mg/kg	1.75E-08	7.29E-09	mg/kg-day	2.00E-02	mg/kg-day	8.74E-07	3.64E-07
	TOLUENE	0.03	mg/kg	3.28E-08	1.37E-08	mg/kg-day	2.00E-01	mg/kg-day	1.64E-07	6.83E-08
	TRANS-1,2-DICHLOROETHEN	0.023	mg/kg	2.51E-08	1.05E-08	mg/kg-day	2.00E-02	mg/kg-day	1.26E-06	5.24E-07
	TRICHLOROETHENE	0.007	mg/kg	7.65E-09	3.19E-09	mg/kg-day	3.00E-04	mg/kg-day	2.55E-05	1.06E-05
	1,2,4- TRIMETHYLBENZENE	0.025	mg/kg	2.73E-08	1.14E-08	mg/kg-day	5.00E-02	mg/kg-day	5.46E-07	2.28E-07
	1,3,5- TRIMETHYLBENZENE	0.009	mg/kg	1.02E-08	4.23E-09	mg/kg-day	5.00E-02	mg/kg-day	2.03E-07	8.47E-08
	VINYL CHLORIDE	0.034	mg/kg	3.72E-08	1.55E-08	mg/kg-day	3.00E-03	mg/kg-day	1.24E-05	5.16E-06
	XYLENE (TOTAL)	0.11	mg/kg	1.20E-07	5.01E-08	mg/kg-day	2.00E-01	mg/kg-day	6.01E-07	2.50E-07
DERMAL CONTACT	**INORGANICS**									
	ALUMINUM	30,140	mg/kg	NA	NA	mg/kg-day	1.00E+00	mg/kg-day	NA	NA
	ANTIMONY	4.5	mg/kg	NA	NA	mg/kg-day	6.00E-05	mg/kg-day	NA	NA
	ARSENIC	21.5	mg/kg	3.24E-06	1.35E-06	mg/kg-day	3.00E-04	mg/kg-day	1.08E-02	4.49E-03
	BARIUM	94.0	mg/kg	NA	NA	mg/kg-day	4.90E-03	mg/kg-day	NA	NA
	BERYLLIUM	0.65	mg/kg	NA	NA	mg/kg-day	1.40E-05	mg/kg-day	NA	NA
	CADMIUM	2.90	mg/kg	1.45E-08	6.06E-09	mg/kg-day	1.25E-05	mg/kg-day	1.16E-03	4.85E-04
	CHROMIUM	213	mg/kg	NA	NA	mg/kg-day	1.95E-02	mg/kg-day	NA	NA
	COBALT	18.7	mg/kg	NA	NA	mg/kg-day	2.00E-02	mg/kg-day	NA	NA
	COPPER	197	mg/kg	NA	NA	mg/kg-day	4.00E-02	mg/kg-day	NA	NA
	HEXAVALENT CHROMIUM	0.07	mg/kg	NA	NA	mg/kg-day	7.50E-05	mg/kg-day	NA	NA
	LEAD	96	mg/kg	NA	NA	mg/kg-day	NA	mg/kg-day	NA	NA
	MANGANESE	967	mg/kg	NA	NA	mg/kg-day	5.60E-03	mg/kg-day	NA	NA
	MERCURY	1.4	mg/kg	NA	NA	mg/kg-day	2.10E-05	mg/kg-day	NA	NA
	MOLYBDENUM	5.0	mg/kg	NA	NA	mg/kg-day	5.00E-03	mg/kg-day	NA	NA
	NICKEL	114	mg/kg	NA	NA	mg/kg-day	8.00E-04	mg/kg-day	NA	NA
	SELENIUM	1.2	mg/kg	NA	NA	mg/kg-day	5.00E-03	mg/kg-day	NA	NA

Table C2-2b
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
DERMAL CONTACT (CONTINUED)	*SILVER*	2.7	mg/kg	NA	NA	mg/kg-day	2.00E-04	mg/kg-day	NA	NA
	THALLIUM	0.46	mg/kg	NA	NA	mg/kg-day	6.60E-05	mg/kg-day	NA	NA
	TIN	16.2	mg/kg	NA	NA	mg/kg-day	6.00E-01	mg/kg-day	NA	NA
	VANADIUM	117	mg/kg	NA	NA	mg/kg-day	1.82E-04	mg/kg-day	NA	NA
	ZINC	237	mg/kg	NA	NA	mg/kg-day	3.00E-01	mg/kg-day	NA	NA
	PESTICIDES									
	ALPHA-CHLORDANE	0.0082	mg/kg	1.65E-09	6.86E-10	mg/kg-day	5.00E-04	mg/kg-day	3.29E-06	1.37E-06
	BETA BHC	0.001	mg/kg	2.01E-10	8.36E-11	mg/kg-day	2.00E-04	mg/kg-day	1.00E-06	4.18E-07
	DELTA BHC	0.002	mg/kg	4.01E-10	1.67E-10	mg/kg-day	NA	mg/kg-day	NA	NA
	2,4- DDD	0.029	mg/kg	4.36E-09	1.82E-09	mg/kg-day	5.00E-04	mg/kg-day	8.73E-06	3.64E-06
	4,4- DDD	0.086	mg/kg	1.29E-08	5.39E-09	mg/kg-day	5.00E-04	mg/kg-day	2.59E-05	1.08E-05
	4,4- DDE	0.017	mg/kg	2.56E-09	1.07E-09	mg/kg-day	5.00E-04	mg/kg-day	5.12E-06	2.13E-06
	4,4- DDT	0.012	mg/kg	1.81E-09	7.52E-10	mg/kg-day	5.00E-04	mg/kg-day	3.61E-06	1.50E-06
	DIELDRIN	0.0039	mg/kg	1.96E-09	8.15E-10	mg/kg-day	5.00E-05	mg/kg-day	3.91E-05	1.63E-05
	ENDOSULFAN I	0.004	mg/kg	2.01E-09	8.36E-10	mg/kg-day	6.00E-03	mg/kg-day	3.34E-07	1.39E-07
	ENDOSULFAN SULFATE	0.003	mg/kg	1.50E-09	6.27E-10	mg/kg-day	6.00E-03	mg/kg-day	2.51E-07	1.05E-07
	ENDRIN	0.02	mg/kg	1.00E-08	4.18E-09	mg/kg-day	3.00E-04	mg/kg-day	3.34E-05	1.39E-05
	ENDRIN ALDEHYDE	0.006	mg/kg	3.01E-09	1.25E-09	mg/kg-day	3.00E-04	mg/kg-day	1.00E-05	4.18E-06
	ENDRIN KETONE	0.003	mg/kg	1.50E-09	6.27E-10	mg/kg-day	3.00E-04	mg/kg-day	5.02E-06	2.09E-06
	GAMMA-CHLORDANE	0.0085	mg/kg	1.71E-09	7.11E-10	mg/kg-day	5.00E-04	mg/kg-day	3.41E-06	1.42E-06
	HEPTACHLOR	0.0002	mg/kg	1.00E-10	4.18E-11	mg/kg-day	5.00E-04	mg/kg-day	2.01E-07	8.36E-08
	HEPTACHLOR EPOXIDE	0.0003	mg/kg	1.50E-10	6.27E-11	mg/kg-day	1.30E-05	mg/kg-day	1.16E-05	4.82E-06
	HEXACHLOROBENZENE	0.0008	mg/kg	4.01E-10	1.67E-10	mg/kg-day	8.00E-04	mg/kg-day	5.02E-07	2.09E-07
	METHOXYCHLOR	0.02	mg/kg	4.01E-09	1.67E-09	mg/kg-day	5.00E-03	mg/kg-day	8.03E-07	3.34E-07
	MIREX	0.004	mg/kg	2.01E-09	8.36E-10	mg/kg-day	2.00E-04	mg/kg-day	1.00E-05	4.18E-06
	TRANS-NONACHLOR	0.0024	mg/kg	4.82E-10	2.01E-10	mg/kg-day	5.00E-04	mg/kg-day	9.63E-07	4.01E-07
	PCBs									

Table C2-2b
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
	PCBs (TOTAL)	0.20	mg/kg	1.40E-07	5.85E-08	mg/kg-day	2.00E-05	mg/kg-day	7.02E-03	2.93E-03

Table C2-2b
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
DERMAL CONTACT (CONTINUED)	**SVOCs**									
	ACENAPHTHENE	0.13	mg/kg	8.48E-08	3.53E-08	mg/kg-day	6.00E-02	mg/kg-day	1.41E-06	5.89E-07
	ACENAPHTHYLENE	0.11	mg/kg	7.17E-08	2.99E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	ANTHRACENE	0.13	mg/kg	8.48E-08	3.53E-08	mg/kg-day	3.00E-01	mg/kg-day	2.83E-07	1.18E-07
	BENZO(A)ANTHRACENE	0.27	mg/kg	1.76E-07	7.34E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(A)PYRENE	0.23	mg/kg	1.50E-07	6.25E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(B)FLUORANTHENE	0.23	mg/kg	1.50E-07	6.25E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(G,H,I)PERYLENE	0.16	mg/kg	1.04E-07	4.35E-08	mg/kg-day	4.00E-02	mg/kg-day	2.61E-06	1.09E-06
	BENZO(K)FLUORANTHENE	0.23	mg/kg	1.50E-07	6.25E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZOIC ACID	0.68	mg/kg	3.41E-07	1.42E-07	mg/kg-day	4.00E+00	mg/kg-day	8.53E-08	3.55E-08
	BIS(2-ETHYLHEXYL)PHTHAL	1.1	mg/kg	5.52E-07	2.30E-07	mg/kg-day	2.00E-02	mg/kg-day	2.76E-05	1.15E-05
	BUTYLBENZYLPHTHALATE	0.025	mg/kg	1.25E-08	5.23E-09	mg/kg-day	2.00E-01	mg/kg-day	6.27E-08	2.61E-08
	CARBAZOLE	0.55	mg/kg	2.76E-07	1.15E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	4- CHLOROANILINE	0.003	mg/kg	1.50E-09	6.27E-10	mg/kg-day	4.00E-03	mg/kg-day	3.76E-07	1.57E-07
	2- CHLOROPHENOL	0.043	mg/kg	2.17E-08	9.05E-09	mg/kg-day	5.00E-03	mg/kg-day	4.34E-06	1.81E-06
	CHRYSENE	0.26	mg/kg	1.70E-07	7.06E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	DIBENZOFURAN	0.36	mg/kg	1.81E-07	7.52E-08	mg/kg-day	2.00E-03	mg/kg-day	9.03E-05	3.76E-05
	3,3- DICHLOROBENZIDINE	0.012	mg/kg	6.02E-09	2.51E-09	mg/kg-day	NA	mg/kg-day	NA	NA
	2,6- DINITROTOLUENE	0.37	mg/kg	1.86E-07	7.73E-08	mg/kg-day	1.00E-03	mg/kg-day	1.86E-04	7.73E-05
	FLUORANTHENE	0.370	mg/kg	2.41E-07	1.01E-07	mg/kg-day	4.00E-02	mg/kg-day	6.03E-06	2.51E-06
	FLUORENE	0.1	mg/kg	8.48E-08	3.53E-08	mg/kg-day	4.00E-02	mg/kg-day	2.12E-06	8.83E-07
	INDENO(1,2,3-CD)PYRENE	0.16	mg/kg	1.04E-07	4.35E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	2- METHYLNAPHTHALENE	0.18	mg/kg	9.03E-08	3.76E-08	mg/kg-day	4.00E-03	mg/kg-day	2.26E-05	9.41E-06
	4- METHYLPHENOL	0.23	mg/kg	1.15E-07	4.81E-08	mg/kg-day	5.00E-03	mg/kg-day	2.31E-05	9.61E-06
	NAPHTHALENE	0.11	mg/kg	7.17E-08	2.99E-08	mg/kg-day	2.00E-02	mg/kg-day	3.59E-06	1.49E-06
	PENTACHLOROPHENOL	0.54	mg/kg	2.71E-07	1.13E-07	mg/kg-day	3.00E-02	mg/kg-day	9.03E-06	3.76E-06
	PHENANTHRENE	0.20	mg/kg	1.30E-07	5.43E-08	mg/kg-day	3.00E-01	mg/kg-day	4.35E-07	1.81E-07
	PHENOL	0.29	mg/kg	1.45E-07	6.06E-08	mg/kg-day	6.00E-01	mg/kg-day	2.42E-07	1.01E-07

Table C2-2b
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
DERMAL CONTACT (CONTINUED)	*PYRENE*	0.420	mg/kg	2.74E-07	1.14E-07	mg/kg-day	3.00E-02	mg/kg-day	9.13E-06	3.80E-06
	TPH									
	TPH AS DIESEL	172	mg/kg	NA	NA	mg/kg-day	NA	mg/kg-day	NA	NA
	TPH AS GASOLINE	4.0	mg/kg	NA	NA	mg/kg-day	NA	mg/kg-day	NA	NA
	TPH AS MOTOR OIL	324	mg/kg	NA	NA	mg/kg-day	NA	mg/kg-day	NA	NA
	VOCs									
	ACETONE	0.32	mg/kg	NA	NA	mg/kg-day	9.00E-01	mg/kg-day	NA	NA
	BENZENE	0.005	mg/kg	NA	NA	mg/kg-day	4.00E-03	mg/kg-day	NA	NA
	CARBON DISULFIDE	0.025	mg/kg	NA	NA	mg/kg-day	1.00E-01	mg/kg-day	NA	NA
	CHLOROBENZENE	0.024	mg/kg	NA	NA	mg/kg-day	2.00E-02	mg/kg-day	NA	NA
	CIS-1,2-DICHLOROETHENE	0.005	mg/kg	NA	NA	mg/kg-day	1.00E-02	mg/kg-day	NA	NA
	ETHYLBENZENE	0.044	mg/kg	NA	NA	mg/kg-day	1.00E-01	mg/kg-day	NA	NA
	4- ISOPROPYLTOLUENE	0.007	mg/kg	NA	NA	mg/kg-day	NA	mg/kg-day	NA	NA
	METHYLENE CHLORIDE	0.3	mg/kg	NA	NA	mg/kg-day	6.00E-02	mg/kg-day	NA	NA
	NAPHTHALENE	0.016	mg/kg	NA	NA	mg/kg-day	2.00E-02	mg/kg-day	NA	NA
	TOLUENE	0.03	mg/kg	NA	NA	mg/kg-day	2.00E-01	mg/kg-day	NA	NA
	TRANS-1,2-DICHLOROETHENI	0.023	mg/kg	NA	NA	mg/kg-day	2.00E-02	mg/kg-day	NA	NA
	TRICHLOROETHENE	0.007	mg/kg	NA	NA	mg/kg-day	3.00E-04	mg/kg-day	NA	NA
	1,2,4- TRIMETHYLBENZENE	0.025	mg/kg	NA	NA	mg/kg-day	5.00E-02	mg/kg-day	NA	NA
	1,3,5- TRIMETHYLBENZENE	0.009	mg/kg	NA	NA	mg/kg-day	5.00E-02	mg/kg-day	NA	NA
	VINYL CHLORIDE	0.034	mg/kg	NA	NA	mg/kg-day	3.00E-03	mg/kg-day	NA	NA
	XYLENE (TOTAL)	0.11	mg/kg	NA	NA	mg/kg-day	2.00E-01	mg/kg-day	NA	NA
INHALATION OF PARTICULATES AND VAPORS	**INORGANICS**									
	ALUMINUM	30,140	mg/kg	1.38E-06	5.77E-07	mg/kg-day	1.40E-03	mg/kg-day	9.89E-04	4.12E-04
	ANTIMONY	4.5	mg/kg	2.07E-10	8.62E-11	mg/kg-day	NA	mg/kg-day	NA	NA
	ARSENIC	21.5	mg/kg	9.88E-10	4.12E-10	mg/kg-day	8.57E-06	mg/kg-day	1.15E-04	4.81E-05
	BARIUM	94.0	mg/kg	4.32E-09	1.80E-09	mg/kg-day	1.43E-04	mg/kg-day	3.02E-05	1.26E-05
	BERYLLIUM	0.65	mg/kg	2.99E-11	1.24E-11	mg/kg-day	2.00E-06	mg/kg-day	1.49E-05	6.23E-06

Table C2-2b
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
INHALATION OF PARTICULATES AND VAPORS (CONTINUED)	*CADMIUM*	2.90	mg/kg	1.33E-10	5.55E-11	mg/kg-day	5.71E-06	mg/kg-day	2.33E-05	9.72E-06
	CHROMIUM	213	mg/kg	9.79E-09	4.08E-09	mg/kg-day	NA	mg/kg-day	NA	NA
	COBALT	18.7	mg/kg	8.59E-10	3.58E-10	mg/kg-day	5.70E-06	mg/kg-day	1.51E-04	6.28E-05
	COPPER	197	mg/kg	9.05E-09	3.77E-09	mg/kg-day	NA	mg/kg-day	NA	NA
	HEXAVALENT CHROMIUM	0.07	mg/kg	3.22E-12	1.34E-12	mg/kg-day	2.86E-05	mg/kg-day	1.12E-07	4.69E-08
	LEAD	96	mg/kg	4.41E-09	1.84E-09	mg/kg-day	NA	mg/kg-day	NA	NA
	MANGANESE	967	mg/kg	4.44E-08	1.85E-08	mg/kg-day	1.43E-05	mg/kg-day	3.11E-03	1.29E-03
	MERCURY	1.4	mg/kg	6.43E-11	2.68E-11	mg/kg-day	2.57E-05	mg/kg-day	2.50E-06	1.04E-06
	MOLYBDENUM	5.0	mg/kg	2.30E-10	9.57E-11	mg/kg-day	NA	mg/kg-day	NA	NA
	NICKEL	114	mg/kg	5.24E-09	2.18E-09	mg/kg-day	1.43E-05	mg/kg-day	3.67E-04	1.53E-04
	SELENIUM	1.2	mg/kg	5.51E-11	2.30E-11	mg/kg-day	5.71E-03	mg/kg-day	9.66E-09	4.02E-09
	SILVER	2.7	mg/kg	1.24E-10	5.17E-11	mg/kg-day	NA	mg/kg-day	NA	NA
	THALLIUM	0.46	mg/kg	2.11E-11	8.81E-12	mg/kg-day	NA	mg/kg-day	NA	NA
	TIN	16.2	mg/kg	7.44E-10	3.10E-10	mg/kg-day	NA	mg/kg-day	NA	NA
	VANADIUM	117	mg/kg	5.38E-09	2.24E-09	mg/kg-day	NA	mg/kg-day	NA	NA
	ZINC	237	mg/kg	1.09E-08	4.54E-09	mg/kg-day	NA	mg/kg-day	NA	NA
	PESTICIDES									
	ALPHA-CHLORDANE	0.0082	mg/kg	3.77E-13	1.57E-13	mg/kg-day	2.00E-04	mg/kg-day	1.88E-09	7.85E-10
	BETA BHC	0.001	mg/kg	4.59E-14	1.91E-14	mg/kg-day	2.00E-04	mg/kg-day	2.30E-10	9.57E-11
	DELTA BHC	0.002	mg/kg	9.19E-14	3.83E-14	mg/kg-day	NA	mg/kg-day	NA	NA
	2,4- DDD	0.029	mg/kg	1.33E-12	5.55E-13	mg/kg-day	5.00E-04	mg/kg-day	2.67E-09	1.11E-09
	4,4- DDD	0.086	mg/kg	3.95E-12	1.65E-12	mg/kg-day	5.00E-04	mg/kg-day	7.90E-09	3.29E-09
	4,4- DDE	0.017	mg/kg	7.81E-13	3.25E-13	mg/kg-day	5.00E-04	mg/kg-day	1.56E-09	6.51E-10
	4,4- DDT	0.012	mg/kg	5.51E-13	2.30E-13	mg/kg-day	5.00E-04	mg/kg-day	1.10E-09	4.59E-10
	DIELDRIN	0.0039	mg/kg	1.79E-13	7.47E-14	mg/kg-day	5.00E-05	mg/kg-day	3.58E-09	1.49E-09
	ENDOSULFAN I	0.004	mg/kg	1.84E-13	7.66E-14	mg/kg-day	6.00E-03	mg/kg-day	3.06E-11	1.28E-11
	ENDOSULFAN SULFATE	0.003	mg/kg	1.38E-13	5.74E-14	mg/kg-day	6.00E-03	mg/kg-day	2.30E-11	9.57E-12
	ENDRIN	0.02	mg/kg	9.19E-13	3.83E-13	mg/kg-day	3.00E-04	mg/kg-day	3.06E-09	1.28E-09

Table C2-2b
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
INHALATION OF PARTICULATES AND VAPORS (CONTINUED)	ENDRIN ALDEHYDE	0.006	mg/kg	2.76E-13	1.15E-13	mg/kg-day	3.00E-04	mg/kg-day	9.19E-10	3.83E-10
	ENDRIN KETONE	0.003	mg/kg	1.38E-13	5.74E-14	mg/kg-day	3.00E-04	mg/kg-day	4.59E-10	1.91E-10
	GAMMA-CHLORDANE	0.0085	mg/kg	3.91E-13	1.63E-13	mg/kg-day	2.00E-04	mg/kg-day	1.95E-09	8.14E-10
	HEPTACHLOR	0.0002	mg/kg	9.19E-15	3.83E-15	mg/kg-day	5.00E-04	mg/kg-day	1.84E-11	7.66E-12
	HEPTACHLOR EPOXIDE	0.0003	mg/kg	1.38E-14	5.74E-15	mg/kg-day	1.30E-05	mg/kg-day	1.06E-09	4.42E-10
	HEXACHLOROBENZENE	0.0008	mg/kg	3.68E-14	1.53E-14	mg/kg-day	8.00E-04	mg/kg-day	4.59E-11	1.91E-11
	METHOXYCHLOR	0.02	mg/kg	9.19E-13	3.83E-13	mg/kg-day	5.00E-03	mg/kg-day	1.84E-10	7.66E-11
	MIREX	0.004	mg/kg	1.84E-13	7.66E-14	mg/kg-day	2.00E-04	mg/kg-day	9.19E-10	3.83E-10
	TRANS-NONACHLOR	0.0024	mg/kg	1.10E-13	4.59E-14	mg/kg-day	2.00E-04	mg/kg-day	5.51E-10	2.30E-10
	PCBs									
	PCBs (TOTAL)	0.20	mg/kg	9.19E-12	3.83E-12	mg/kg-day	2.00E-05	mg/kg-day	4.59E-07	1.91E-07
	SVOCs									
	ACENAPHTHENE	0.13	mg/kg	4.38E-08	1.83E-08	mg/kg-day	6.00E-02	mg/kg-day	7.30E-07	3.04E-07
	ACENAPHTHYLENE	0.11	mg/kg	5.05E-12	2.11E-12	mg/kg-day	NA	mg/kg-day	NA	NA
	ANTHRACENE	0.13	mg/kg	1.13E-08	4.69E-09	mg/kg-day	3.00E-01	mg/kg-day	3.75E-08	1.56E-08
	BENZO(A)ANTHRACENE	0.27	mg/kg	1.24E-11	5.17E-12	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(A)PYRENE	0.23	mg/kg	1.06E-11	4.40E-12	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(B)FLUORANTHENE	0.23	mg/kg	1.06E-11	4.40E-12	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(G,H,I)PERYLENE	0.16	mg/kg	7.35E-12	3.06E-12	mg/kg-day	4.00E-02	mg/kg-day	1.84E-10	7.66E-11
	BENZO(K)FLUORANTHENE	0.23	mg/kg	1.06E-11	4.40E-12	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZOIC ACID	0.68	mg/kg	3.12E-11	1.30E-11	mg/kg-day	4.00E+00	mg/kg-day	NA	NA
	BIS(2-ETHYLHEXYL)PHTHAL	1.1	mg/kg	5.05E-11	2.11E-11	mg/kg-day	2.00E-02	mg/kg-day	2.53E-09	1.05E-09
	BUTYLBENZYLPHTHALATE	0.025	mg/kg	1.15E-12	4.79E-13	mg/kg-day	2.00E-01	mg/kg-day	5.74E-12	2.39E-12
	CARBAZOLE	0.55	mg/kg	2.53E-11	1.05E-11	mg/kg-day	NA	mg/kg-day	NA	NA
	4- CHLOROANILINE	0.003	mg/kg	1.38E-13	5.74E-14	mg/kg-day	4.00E-03	mg/kg-day	3.45E-11	1.44E-11
	2- CHLOROPHENOL	0.043	mg/kg	1.99E-12	8.29E-13	mg/kg-day	5.00E-03	mg/kg-day	3.98E-10	1.66E-10
	CHRYSENE	0.26	mg/kg	5.84E-09	2.43E-09	mg/kg-day	NA	mg/kg-day	NA	NA
	DIBENZOFURAN	0.36	mg/kg	1.65E-11	6.89E-12	mg/kg-day	2.00E-03	mg/kg-day	8.27E-09	3.45E-09

Table C2-2b
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
INHALATION OF PARTICULATES AND VAPORS (CONTINUED)	3,3- DICHLOROBENZIDINE	0.012	mg/kg	5.51E-13	2.30E-13	mg/kg-day	NA	mg/kg-day	NA	NA
	2,6- DINITROTOLUENE	0.37	mg/kg	1.70E-11	7.08E-12	mg/kg-day	1.00E-03	mg/kg-day	1.70E-08	7.08E-09
	FLUORANTHENE	0.370	mg/kg	1.70E-11	7.08E-12	mg/kg-day	4.00E-02	mg/kg-day	4.25E-10	1.77E-10
	FLUORENE	0.1	mg/kg	2.19E-08	9.13E-09	mg/kg-day	4.00E-02	mg/kg-day	5.48E-07	2.28E-07
	INDENO(1,2,3-CD)PYRENE	0.16	mg/kg	7.35E-12	3.06E-12	mg/kg-day	NA	mg/kg-day	NA	NA
	2- METHYLNAPHTHALENE	0.18	mg/kg	8.27E-12	3.45E-12	mg/kg-day	NA	mg/kg-day	NA	NA
	4- METHYLPHENOL	0.23	mg/kg	1.06E-11	4.40E-12	mg/kg-day	NA	mg/kg-day	NA	NA
	NAPHTHALENE	0.11	mg/kg	1.55E-07	6.46E-08	mg/kg-day	8.57E-04	mg/kg-day	1.81E-04	7.54E-05
	PENTACHLOROPHENOL	0.54	mg/kg	2.48E-11	1.03E-11	mg/kg-day	3.00E-02	mg/kg-day	8.27E-10	3.45E-10
	PHENANTHRENE	0.20	mg/kg	9.19E-12	3.83E-12	mg/kg-day	3.00E-01	mg/kg-day	3.06E-11	1.28E-11
	PHENOL	0.29	mg/kg	1.33E-11	5.55E-12	mg/kg-day	5.71E-02	mg/kg-day	2.33E-10	9.72E-11
	PYRENE	0.420	mg/kg	6.70E-09	2.79E-09	mg/kg-day	3.00E-02	mg/kg-day	2.23E-07	9.31E-08
	TPH									
	TPH AS DIESEL	172	mg/kg	7.90E-09	3.29E-09	mg/kg-day	NA	mg/kg-day	NA	NA
	TPH AS GASOLINE	4.0	mg/kg	1.84E-10	7.66E-11	mg/kg-day	NA	mg/kg-day	NA	NA
	TPH AS MOTOR OIL	324	mg/kg	1.49E-08	6.20E-09	mg/kg-day	NA	mg/kg-day	NA	NA
	VOCs									
	ACETONE	0.32	mg/kg	1.49E-06	6.22E-07	mg/kg-day	9.00E-01	mg/kg-day	1.66E-06	6.91E-07
	BENZENE	0.005	mg/kg	1.12E-07	4.68E-08	mg/kg-day	8.57E-03	mg/kg-day	1.31E-05	5.46E-06
	CARBON DISULFIDE	0.025	mg/kg	1.26E-06	5.27E-07	mg/kg-day	2.00E-01	mg/kg-day	6.32E-06	2.63E-06
	CHLOROBENZENE	0.024	mg/kg	2.31E-07	9.63E-08	mg/kg-day	5.71E-03	mg/kg-day	4.05E-05	1.69E-05
	CIS-1,2-DICHLOROETHENE	0.005	mg/kg	1.05E-07	4.36E-08	mg/kg-day	1.00E-02	mg/kg-day	1.05E-05	4.36E-06
	ETHYLBENZENE	0.044	mg/kg	4.94E-07	2.06E-07	mg/kg-day	2.86E-01	mg/kg-day	1.73E-06	7.20E-07
	4- ISOPROPYLTOLUENE	0.007	mg/kg	NA	NA	mg/kg-day	NA	mg/kg-day	NA	NA
	METHYLENE CHLORIDE	0.3	mg/kg	7.28E-06	3.03E-06	mg/kg-day	1.14E-01	mg/kg-day	6.38E-05	2.66E-05
	NAPHTHALENE	0.016	mg/kg	2.26E-08	9.40E-09	mg/kg-day	8.57E-04	mg/kg-day	2.63E-05	1.10E-05
	TOLUENE	0.03	mg/kg	4.55E-07	1.90E-07	mg/kg-day	8.57E-02	mg/kg-day	5.31E-06	2.21E-06
	TRANS-1,2-DICHLOROETHEN	0.023	mg/kg	6.07E-07	2.53E-07	mg/kg-day	2.00E-02	mg/kg-day	3.03E-05	1.26E-05

Table C2-2b
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
INHALATION OF PARTICULATES AND VAPORS (CONTINUED)	TRICHLOROETHENE	0.007	mg/kg	1.29E-07	5.36E-08	mg/kg-day	1.00E-02	mg/kg-day	1.29E-05	5.36E-06
	1,2,4- TRIMETHYLBENZENE	0.025	mg/kg	7.58E-08	3.16E-08	mg/kg-day	1.70E-03	mg/kg-day	4.46E-05	1.86E-05
	1,3,5- TRIMETHYLBENZENE	0.009	mg/kg	7.05E-08	2.94E-08	mg/kg-day	1.70E-03	mg/kg-day	4.15E-05	1.73E-05
	VINYL CHLORIDE	0.034	mg/kg	2.06E-06	8.59E-07	mg/kg-day	2.86E-02	mg/kg-day	7.21E-05	3.00E-05
	XYLENE (TOTAL)	0.11	mg/kg	1.09E-06	4.56E-07	mg/kg-day	2.86E-02	mg/kg-day	3.82E-05	1.59E-05

Notes:
The HQ for chemicals that are italicized and underlined have been modified for post remediation residual risk.
CTE = Central Tendency Exposure
EPC = Exposure point concentration
HQ = Hazard Quotient
mg/kg = milligrams per kilogram
mg/kg-day = milligrams per kilogram per day
NA = Not Applicable
PCBs = Polychlorinated Biphenyls
RfD = Reference Dose
RME = Reasonable Maximum Exposure
SVOCs = Semivolatile Organic Compounds
TPH = Total Petroleum Hydrocarbons
VOCs = Volatile Organic Compounds

Table C2-2c
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
INGESTION	**INORGANICS**									
	ALUMINUM	30,140	mg/kg	9.73E-02	9.73E-02	mg/kg-day	1.00E+00	mg/kg-day	9.73E-02	9.73E-02
	ANTIMONY	4.5	mg/kg	1.45E-05	1.45E-05	mg/kg-day	4.00E-04	mg/kg-day	3.63E-02	3.63E-02
	ARSENIC	21.5	mg/kg	6.94E-05	6.94E-05	mg/kg-day	3.00E-04	mg/kg-day	2.31E-01	2.31E-01
	BARIUM	94.0	mg/kg	3.04E-04	3.04E-04	mg/kg-day	7.00E-02	mg/kg-day	4.34E-03	4.34E-03
	BERYLLIUM	0.65	mg/kg	2.10E-06	2.10E-06	mg/kg-day	2.00E-03	mg/kg-day	1.05E-03	1.05E-03
	CADMIUM	2.90	mg/kg	9.36E-06	9.36E-06	mg/kg-day	5.00E-04	mg/kg-day	1.87E-02	1.87E-02
	CHROMIUM	213	mg/kg	6.88E-04	6.88E-04	mg/kg-day	1.50E+00	mg/kg-day	4.59E-04	4.59E-04
	COBALT	18.7	mg/kg	6.04E-05	6.04E-05	mg/kg-day	2.00E-02	mg/kg-day	3.02E-03	3.02E-03
	COPPER	197	mg/kg	6.36E-04	6.36E-04	mg/kg-day	4.00E-02	mg/kg-day	1.59E-02	1.59E-02
	HEXAVALENT CHROMIUM	0.07	mg/kg	2.26E-07	2.26E-07	mg/kg-day	3.00E-03	mg/kg-day	7.53E-05	7.53E-05
	LEAD	96	mg/kg	3.10E-04	3.10E-04	mg/kg-day	NA	mg/kg-day	NA	NA
	MANGANESE	967	mg/kg	3.12E-03	3.12E-03	mg/kg-day	1.40E-01	mg/kg-day	2.23E-02	2.23E-02
	MERCURY	1.4	mg/kg	4.52E-06	4.52E-06	mg/kg-day	3.00E-04	mg/kg-day	1.51E-02	1.51E-02
	MOLYBDENUM	5.0	mg/kg	1.61E-05	1.61E-05	mg/kg-day	5.00E-03	mg/kg-day	3.23E-03	3.23E-03
	NICKEL	114	mg/kg	3.68E-04	3.68E-04	mg/kg-day	2.00E-02	mg/kg-day	1.84E-02	1.84E-02
	SELENIUM	1.2	mg/kg	3.87E-06	3.87E-06	mg/kg-day	5.00E-03	mg/kg-day	7.75E-04	7.75E-04
	SILVER	2.7	mg/kg	8.72E-06	8.72E-06	mg/kg-day	5.00E-03	mg/kg-day	1.74E-03	1.74E-03
	THALLIUM	0.46	mg/kg	1.49E-06	1.49E-06	mg/kg-day	6.60E-05	mg/kg-day	2.25E-02	2.25E-02
	TIN	16.2	mg/kg	5.23E-05	5.23E-05	mg/kg-day	6.00E-01	mg/kg-day	8.72E-05	8.72E-05
	VANADIUM	117	mg/kg	3.78E-04	3.78E-04	mg/kg-day	7.00E-03	mg/kg-day	5.40E-02	5.40E-02
	ZINC	237	mg/kg	7.65E-04	7.65E-04	mg/kg-day	3.00E-01	mg/kg-day	2.55E-03	2.55E-03
	PESTICIDES									
	ALPHA-CHLORDANE	0.0082	mg/kg	2.65E-08	2.65E-08	mg/kg-day	5.00E-04	mg/kg-day	5.30E-05	5.30E-05
	BETA BHC	0.001	mg/kg	3.23E-09	3.23E-09	mg/kg-day	2.00E-04	mg/kg-day	1.61E-05	1.61E-05
	DELTA BHC	0.002	mg/kg	6.46E-09	6.46E-09	mg/kg-day	NA	mg/kg-day	NA	NA
	2,4- DDD	0.029	mg/kg	9.36E-08	9.36E-08	mg/kg-day	5.00E-04	mg/kg-day	1.87E-04	1.87E-04
	4,4- DDD	0.086	mg/kg	2.78E-07	2.78E-07	mg/kg-day	5.00E-04	mg/kg-day	5.55E-04	5.55E-04

Table C2-2c
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
INGESTION (CONTINUED)	4,4- DDE	0.017	mg/kg	5.49E-08	5.49E-08	mg/kg-day	5.00E-04	mg/kg-day	1.10E-04	1.10E-04
	4,4- DDT	0.012	mg/kg	3.87E-08	3.87E-08	mg/kg-day	5.00E-04	mg/kg-day	7.75E-05	7.75E-05
	DIELDRIN	0.0039	mg/kg	1.26E-08	1.26E-08	mg/kg-day	5.00E-05	mg/kg-day	2.52E-04	2.52E-04
	ENDOSULFAN I	0.004	mg/kg	1.29E-08	1.29E-08	mg/kg-day	6.00E-03	mg/kg-day	2.15E-06	2.15E-06
	ENDOSULFAN SULFATE	0.003	mg/kg	9.69E-09	9.69E-09	mg/kg-day	6.00E-03	mg/kg-day	1.61E-06	1.61E-06
	ENDRIN	0.02	mg/kg	6.46E-08	6.46E-08	mg/kg-day	3.00E-04	mg/kg-day	2.15E-04	2.15E-04
	ENDRIN ALDEHYDE	0.006	mg/kg	1.94E-08	1.94E-08	mg/kg-day	3.00E-04	mg/kg-day	6.46E-05	6.46E-05
	ENDRIN KETONE	0.003	mg/kg	9.69E-09	9.69E-09	mg/kg-day	3.00E-04	mg/kg-day	3.23E-05	3.23E-05
	GAMMA-CHLORDANE	0.0085	mg/kg	2.74E-08	2.74E-08	mg/kg-day	5.00E-04	mg/kg-day	5.49E-05	5.49E-05
	HEPTACHLOR	0.0002	mg/kg	6.46E-10	6.46E-10	mg/kg-day	5.00E-04	mg/kg-day	1.29E-06	1.29E-06
	HEPTACHLOR EPOXIDE	0.0003	mg/kg	9.69E-10	9.69E-10	mg/kg-day	1.30E-05	mg/kg-day	7.45E-05	7.45E-05
	HEXACHLOROBENZENE	0.0008	mg/kg	2.58E-09	2.58E-09	mg/kg-day	8.00E-04	mg/kg-day	3.23E-06	3.23E-06
	METHOXYCHLOR	0.02	mg/kg	6.46E-08	6.46E-08	mg/kg-day	5.00E-03	mg/kg-day	1.29E-05	1.29E-05
	MIREX	0.004	mg/kg	1.29E-08	1.29E-08	mg/kg-day	2.00E-04	mg/kg-day	6.46E-05	6.46E-05
	TRANS-NONACHLOR	0.0024	mg/kg	7.75E-09	7.75E-09	mg/kg-day	5.00E-04	mg/kg-day	1.55E-05	1.55E-05
	PCBs									
	PCBs (TOTAL)	0.20	mg/kg	6.46E-07	6.46E-07	mg/kg-day	2.00E-05	mg/kg-day	3.23E-02	3.23E-02
	SVOCs									
	ACENAPHTHENE	0.13	mg/kg	4.20E-07	4.20E-07	mg/kg-day	6.00E-02	mg/kg-day	7.00E-06	7.00E-06
	ACENAPHTHYLENE	0.11	mg/kg	3.55E-07	3.55E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	ANTHRACENE	0.13	mg/kg	4.20E-07	4.20E-07	mg/kg-day	3.00E-01	mg/kg-day	1.40E-06	1.40E-06
	BENZO(A)ANTHRACENE	0.27	mg/kg	8.72E-07	8.72E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(A)PYRENE	0.23	mg/kg	7.43E-07	7.43E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(B)FLUORANTHENE	0.23	mg/kg	7.43E-07	7.43E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(G,H,I)PERYLENE	0.16	mg/kg	5.17E-07	5.17E-07	mg/kg-day	4.00E-02	mg/kg-day	1.29E-05	1.29E-05
	BENZO(K)FLUORANTHENE	0.23	mg/kg	7.43E-07	7.43E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZOIC ACID	0.68	mg/kg	2.20E-06	2.20E-06	mg/kg-day	4.00E+00	mg/kg-day	5.49E-07	5.49E-07
	BIS(2-ETHYLHEXYL)PHTHALATE	1.1	mg/kg	3.55E-06	3.55E-06	mg/kg-day	2.00E-02	mg/kg-day	1.78E-04	1.78E-04

Table C2-2c
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
INGESTION (CONTINUED)	BUTYLBENZYLPHTHALATE	0.025	mg/kg	8.07E-08	8.07E-08	mg/kg-day	2.00E-01	mg/kg-day	4.04E-07	4.04E-07
	CARBAZOLE	0.55	mg/kg	1.78E-06	1.78E-06	mg/kg-day	NA	mg/kg-day	NA	NA
	4- CHLOROANILINE	0.003	mg/kg	9.69E-09	9.69E-09	mg/kg-day	4.00E-03	mg/kg-day	2.42E-06	2.42E-06
	2- CHLOROPHENOL	0.043	mg/kg	1.40E-07	1.40E-07	mg/kg-day	5.00E-03	mg/kg-day	2.80E-05	2.80E-05
	CHRYSENE	0.26	mg/kg	8.40E-07	8.40E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	DIBENZOFURAN	0.36	mg/kg	1.16E-06	1.16E-06	mg/kg-day	2.00E-03	mg/kg-day	5.81E-04	5.81E-04
	3,3- DICHLOROBENZIDINE	0.012	mg/kg	3.87E-08	3.87E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	2,6- DINITROTOLUENE	0.37	mg/kg	1.19E-06	1.19E-06	mg/kg-day	1.00E-03	mg/kg-day	1.19E-03	1.19E-03
	FLUORANTHENE	0.370	mg/kg	1.19E-06	1.19E-06	mg/kg-day	4.00E-02	mg/kg-day	2.99E-05	2.99E-05
	FLUORENE	0.1	mg/kg	4.20E-07	4.20E-07	mg/kg-day	4.00E-02	mg/kg-day	1.05E-05	1.05E-05
	INDENO(1,2,3-CD)PYRENE	0.16	mg/kg	5.17E-07	5.17E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	2- METHYLNAPHTHALENE	0.18	mg/kg	5.81E-07	5.81E-07	mg/kg-day	4.00E-03	mg/kg-day	1.45E-04	1.45E-04
	4- METHYLPHENOL	0.23	mg/kg	7.43E-07	7.43E-07	mg/kg-day	5.00E-03	mg/kg-day	1.49E-04	1.49E-04
	NAPHTHALENE	0.11	mg/kg	3.55E-07	3.55E-07	mg/kg-day	2.00E-02	mg/kg-day	1.78E-05	1.78E-05
	PENTACHLOROPHENOL	0.54	mg/kg	1.74E-06	1.74E-06	mg/kg-day	3.00E-02	mg/kg-day	5.81E-05	5.81E-05
	PHENANTHRENE	0.20	mg/kg	6.46E-07	6.46E-07	mg/kg-day	3.00E-01	mg/kg-day	2.15E-06	2.15E-06
	PHENOL	0.29	mg/kg	9.36E-07	9.36E-07	mg/kg-day	6.00E-01	mg/kg-day	1.56E-06	1.56E-06
	PYRENE	0.420	mg/kg	1.36E-06	1.36E-06	mg/kg-day	3.00E-02	mg/kg-day	4.52E-05	4.52E-05
	TPH									
	TPH AS DIESEL	172	mg/kg	5.55E-04	5.55E-04	mg/kg-day	NA	mg/kg-day	NA	NA
	TPH AS GASOLINE	4.0	mg/kg	1.29E-05	1.29E-05	mg/kg-day	NA	mg/kg-day	NA	NA
	TPH AS MOTOR OIL	324	mg/kg	1.05E-03	1.05E-03	mg/kg-day	NA	mg/kg-day	NA	NA
	VOCs									
	ACETONE	0.32	mg/kg	1.03E-06	1.03E-06	mg/kg-day	9.00E-01	mg/kg-day	1.15E-06	1.15E-06
	BENZENE	0.005	mg/kg	1.61E-08	1.61E-08	mg/kg-day	4.00E-03	mg/kg-day	4.04E-06	4.04E-06
	CARBON DISULFIDE	0.025	mg/kg	8.07E-08	8.07E-08	mg/kg-day	1.00E-01	mg/kg-day	8.07E-07	8.07E-07
	CHLOROBENZENE	0.024	mg/kg	7.75E-08	7.75E-08	mg/kg-day	2.00E-02	mg/kg-day	3.87E-06	3.87E-06
	CIS-1,2-DICHLOROETHENE	0.005	mg/kg	1.61E-08	1.61E-08	mg/kg-day	1.00E-02	mg/kg-day	1.61E-06	1.61E-06

Table C2-2c
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
INGESTION (CONTINUED)	ETHYLBENZENE	0.044	mg/kg	1.42E-07	1.42E-07	mg/kg-day	1.00E-01	mg/kg-day	1.42E-06	1.42E-06
	4- ISOPROPYLTOLUENE	0.007	mg/kg	2.32E-08	2.32E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	METHYLENE CHLORIDE	0.3	mg/kg	9.69E-07	9.69E-07	mg/kg-day	6.00E-02	mg/kg-day	1.61E-05	1.61E-05
	NAPHTHALENE	0.016	mg/kg	5.17E-08	5.17E-08	mg/kg-day	2.00E-02	mg/kg-day	2.58E-06	2.58E-06
	TOLUENE	0.03	mg/kg	9.69E-08	9.69E-08	mg/kg-day	2.00E-01	mg/kg-day	4.84E-07	4.84E-07
	TRANS-1,2-DICHLOROETHENE	0.023	mg/kg	7.43E-08	7.43E-08	mg/kg-day	2.00E-02	mg/kg-day	3.71E-06	3.71E-06
	TRICHLOROETHENE	0.007	mg/kg	2.26E-08	2.26E-08	mg/kg-day	3.00E-04	mg/kg-day	7.53E-05	7.53E-05
	1,2,4- TRIMETHYLBENZENE	0.025	mg/kg	8.07E-08	8.07E-08	mg/kg-day	5.00E-02	mg/kg-day	1.61E-06	1.61E-06
	1,3,5- TRIMETHYLBENZENE	0.009	mg/kg	3.00E-08	3.00E-08	mg/kg-day	5.00E-02	mg/kg-day	6.01E-07	6.01E-07
	VINYL CHLORIDE	0.034	mg/kg	1.10E-07	1.10E-07	mg/kg-day	3.00E-03	mg/kg-day	3.66E-05	3.66E-05
	XYLENE (TOTAL)	0.11	mg/kg	3.55E-07	3.55E-07	mg/kg-day	2.00E-01	mg/kg-day	1.78E-06	1.78E-06
DERMAL CONTACT	**INORGANICS**									
	ALUMINUM	30,140	mg/kg	NA	NA	mg/kg-day	1.00E+00	mg/kg-day	NA	NA
	ANTIMONY	4.5	mg/kg	NA	NA	mg/kg-day	6.00E-05	mg/kg-day	NA	NA
	ARSENIC	21.5	mg/kg	6.25E-06	6.25E-06	mg/kg-day	3.00E-04	mg/kg-day	2.08E-02	2.08E-02
	BARIUM	94.0	mg/kg	NA	NA	mg/kg-day	4.90E-03	mg/kg-day	NA	NA
	BERYLLIUM	0.65	mg/kg	NA	NA	mg/kg-day	1.40E-05	mg/kg-day	NA	NA
	CADMIUM	2.90	mg/kg	2.81E-08	2.81E-08	mg/kg-day	1.25E-05	mg/kg-day	2.25E-03	2.25E-03
	CHROMIUM	213	mg/kg	NA	NA	mg/kg-day	1.95E-02	mg/kg-day	NA	NA
	COBALT	18.7	mg/kg	NA	NA	mg/kg-day	2.00E-02	mg/kg-day	NA	NA
	COPPER	197	mg/kg	NA	NA	mg/kg-day	4.00E-02	mg/kg-day	NA	NA
	HEXAVALENT CHROMIUM	0.07	mg/kg	NA	NA	mg/kg-day	7.50E-05	mg/kg-day	NA	NA
	LEAD	96	mg/kg	NA	NA	mg/kg-day	NA	mg/kg-day	NA	NA
	MANGANESE	967	mg/kg	NA	NA	mg/kg-day	5.60E-03	mg/kg-day	NA	NA
	MERCURY	1.4	mg/kg	NA	NA	mg/kg-day	2.10E-05	mg/kg-day	NA	NA
	MOLYBDENUM	5.0	mg/kg	NA	NA	mg/kg-day	5.00E-03	mg/kg-day	NA	NA
	NICKEL	114	mg/kg	NA	NA	mg/kg-day	8.00E-04	mg/kg-day	NA	NA
	SELENIUM	1.2	mg/kg	NA	NA	mg/kg-day	5.00E-03	mg/kg-day	NA	NA

Table C2-2c
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
DERMAL CONTACT (CONTINUED)	*SILVER*	2.7	mg/kg	NA	NA	mg/kg-day	2.00E-04	mg/kg-day	NA	NA
	THALLIUM	0.46	mg/kg	NA	NA	mg/kg-day	6.60E-05	mg/kg-day	NA	NA
	TIN	16.2	mg/kg	NA	NA	mg/kg-day	6.00E-01	mg/kg-day	NA	NA
	VANADIUM	117	mg/kg	NA	NA	mg/kg-day	1.82E-04	mg/kg-day	NA	NA
	ZINC	237	mg/kg	NA	NA	mg/kg-day	3.00E-01	mg/kg-day	NA	NA
	PESTICIDES									
	ALPHA-CHLORDANE	0.0082	mg/kg	3.18E-09	3.18E-09	mg/kg-day	5.00E-04	mg/kg-day	6.35E-06	6.35E-06
	BETA BHC	0.001	mg/kg	3.87E-10	3.87E-10	mg/kg-day	2.00E-04	mg/kg-day	1.94E-06	1.94E-06
	DELTA BHC	0.002	mg/kg	7.75E-10	7.75E-10	mg/kg-day	NA	mg/kg-day	NA	NA
	2,4- DDD	0.029	mg/kg	8.43E-09	8.43E-09	mg/kg-day	5.00E-04	mg/kg-day	1.69E-05	1.69E-05
	4,4- DDD	0.086	mg/kg	2.50E-08	2.50E-08	mg/kg-day	5.00E-04	mg/kg-day	5.00E-05	5.00E-05
	4,4- DDE	0.017	mg/kg	4.94E-09	4.94E-09	mg/kg-day	5.00E-04	mg/kg-day	9.88E-06	9.88E-06
	4,4- DDT	0.012	mg/kg	3.49E-09	3.49E-09	mg/kg-day	5.00E-04	mg/kg-day	6.97E-06	6.97E-06
	DIELDRIN	0.0039	mg/kg	3.78E-09	3.78E-09	mg/kg-day	5.00E-05	mg/kg-day	7.56E-05	7.56E-05
	ENDOSULFAN I	0.004	mg/kg	3.87E-09	3.87E-09	mg/kg-day	6.00E-03	mg/kg-day	6.46E-07	6.46E-07
	ENDOSULFAN SULFATE	0.003	mg/kg	2.91E-09	2.91E-09	mg/kg-day	6.00E-03	mg/kg-day	4.84E-07	4.84E-07
	ENDRIN	0.02	mg/kg	1.94E-08	1.94E-08	mg/kg-day	3.00E-04	mg/kg-day	6.46E-05	6.46E-05
	ENDRIN ALDEHYDE	0.006	mg/kg	5.81E-09	5.81E-09	mg/kg-day	3.00E-04	mg/kg-day	1.94E-05	1.94E-05
	ENDRIN KETONE	0.003	mg/kg	2.91E-09	2.91E-09	mg/kg-day	3.00E-04	mg/kg-day	9.69E-06	9.69E-06
	GAMMA-CHLORDANE	0.0085	mg/kg	3.29E-09	3.29E-09	mg/kg-day	5.00E-04	mg/kg-day	6.59E-06	6.59E-06
	HEPTACHLOR	0.0002	mg/kg	1.94E-10	1.94E-10	mg/kg-day	5.00E-04	mg/kg-day	3.87E-07	3.87E-07
	HEPTACHLOR EPOXIDE	0.0003	mg/kg	2.91E-10	2.91E-10	mg/kg-day	1.30E-05	mg/kg-day	2.24E-05	2.24E-05
	HEXACHLOROBENZENE	0.0008	mg/kg	7.75E-10	7.75E-10	mg/kg-day	8.00E-04	mg/kg-day	9.69E-07	9.69E-07
	METHOXYCHLOR	0.02	mg/kg	7.75E-09	7.75E-09	mg/kg-day	5.00E-03	mg/kg-day	1.55E-06	1.55E-06
	MIREX	0.004	mg/kg	3.87E-09	3.87E-09	mg/kg-day	2.00E-04	mg/kg-day	1.94E-05	1.94E-05
	TRANS-NONACHLOR	0.0024	mg/kg	9.30E-10	9.30E-10	mg/kg-day	5.00E-04	mg/kg-day	1.86E-06	1.86E-06
	PCBs									
	PCBs (TOTAL)	0.20	mg/kg	2.71E-07	2.71E-07	mg/kg-day	2.00E-05	mg/kg-day	1.36E-02	1.36E-02

Table C2-2c
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
DERMAL CONTACT (CONTINUED)	**SVOCs**									
	ACENAPHTHENE	0.13	mg/kg	1.64E-07	1.64E-07	mg/kg-day	6.00E-02	mg/kg-day	2.73E-06	2.73E-06
	ACENAPHTHYLENE	0.11	mg/kg	1.39E-07	1.39E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	ANTHRACENE	0.13	mg/kg	1.64E-07	1.64E-07	mg/kg-day	3.00E-01	mg/kg-day	5.46E-07	5.46E-07
	BENZO(A)ANTHRACENE	0.27	mg/kg	3.40E-07	3.40E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(A)PYRENE	0.23	mg/kg	2.90E-07	2.90E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(B)FLUORANTHENE	0.23	mg/kg	2.90E-07	2.90E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(G,H,I)PERYLENE	0.16	mg/kg	2.01E-07	2.01E-07	mg/kg-day	4.00E-02	mg/kg-day	5.04E-06	5.04E-06
	BENZO(K)FLUORANTHENE	0.23	mg/kg	2.90E-07	2.90E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZOIC ACID	0.68	mg/kg	6.59E-07	6.59E-07	mg/kg-day	4.00E+00	mg/kg-day	1.65E-07	1.65E-07
	BIS(2-ETHYLHEXYL)PHTHALATE	1.1	mg/kg	1.07E-06	1.07E-06	mg/kg-day	2.00E-02	mg/kg-day	5.33E-05	5.33E-05
	BUTYLBENZYLPHTHALATE	0.025	mg/kg	2.42E-08	2.42E-08	mg/kg-day	2.00E-01	mg/kg-day	1.21E-07	1.21E-07
	CARBAZOLE	0.55	mg/kg	5.33E-07	5.33E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	4- CHLOROANILINE	0.003	mg/kg	2.91E-09	2.91E-09	mg/kg-day	4.00E-03	mg/kg-day	7.27E-07	7.27E-07
	2- CHLOROPHENOL	0.043	mg/kg	4.19E-08	4.19E-08	mg/kg-day	5.00E-03	mg/kg-day	8.39E-06	8.39E-06
	CHRYSENE	0.26	mg/kg	3.27E-07	3.27E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	DIBENZOFURAN	0.36	mg/kg	3.49E-07	3.49E-07	mg/kg-day	2.00E-03	mg/kg-day	1.74E-04	1.74E-04
	3,3- DICHLOROBENZIDINE	0.012	mg/kg	1.16E-08	1.16E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	2,6- DINITROTOLUENE	0.37	mg/kg	3.58E-07	3.58E-07	mg/kg-day	1.00E-03	mg/kg-day	3.58E-04	3.58E-04
	FLUORANTHENE	0.370	mg/kg	4.66E-07	4.66E-07	mg/kg-day	4.00E-02	mg/kg-day	1.16E-05	1.16E-05
	FLUORENE	0.1	mg/kg	1.64E-07	1.64E-07	mg/kg-day	4.00E-02	mg/kg-day	4.09E-06	4.09E-06
	INDENO(1,2,3-CD)PYRENE	0.16	mg/kg	2.01E-07	2.01E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	2- METHYLNAPHTHALENE	0.18	mg/kg	1.74E-07	1.74E-07	mg/kg-day	4.00E-03	mg/kg-day	4.36E-05	4.36E-05
	4- METHYLPHENOL	0.23	mg/kg	2.23E-07	2.23E-07	mg/kg-day	5.00E-03	mg/kg-day	4.46E-05	4.46E-05
	NAPHTHALENE	0.11	mg/kg	1.39E-07	1.39E-07	mg/kg-day	2.00E-02	mg/kg-day	6.93E-06	6.93E-06
	PENTACHLOROPHENOL	0.54	mg/kg	5.23E-07	5.23E-07	mg/kg-day	3.00E-02	mg/kg-day	1.74E-05	1.74E-05
	PHENANTHRENE	0.20	mg/kg	2.52E-07	2.52E-07	mg/kg-day	3.00E-01	mg/kg-day	8.40E-07	8.40E-07
	PHENOL	0.29	mg/kg	2.81E-07	2.81E-07	mg/kg-day	6.00E-01	mg/kg-day	4.68E-07	4.68E-07

Table C2-2c
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
DERMAL CONTACT (CONTINUED)	*PYRENE*	0.420	mg/kg	5.29E-07	5.29E-07	mg/kg-day	3.00E-02	mg/kg-day	1.76E-05	1.76E-05
	TPH									
	TPH AS DIESEL	172	mg/kg	NA	NA	mg/kg-day	NA	mg/kg-day	NA	NA
	TPH AS GASOLINE	4.0	mg/kg	NA	NA	mg/kg-day	NA	mg/kg-day	NA	NA
	TPH AS MOTOR OIL	324	mg/kg	NA	NA	mg/kg-day	NA	mg/kg-day	NA	NA
	VOCs									
	ACETONE	0.32	mg/kg	NA	NA	mg/kg-day	9.00E-01	mg/kg-day	NA	NA
	BENZENE	0.005	mg/kg	NA	NA	mg/kg-day	4.00E-03	mg/kg-day	NA	NA
	CARBON DISULFIDE	0.025	mg/kg	NA	NA	mg/kg-day	1.00E-01	mg/kg-day	NA	NA
	CHLOROBENZENE	0.024	mg/kg	NA	NA	mg/kg-day	2.00E-02	mg/kg-day	NA	NA
	CIS-1,2-DICHLOROETHENE	0.005	mg/kg	NA	NA	mg/kg-day	1.00E-02	mg/kg-day	NA	NA
	ETHYLBENZENE	0.044	mg/kg	NA	NA	mg/kg-day	1.00E-01	mg/kg-day	NA	NA
	4- ISOPROPYLTOLUENE	0.007	mg/kg	NA	NA	mg/kg-day	NA	mg/kg-day	NA	NA
	METHYLENE CHLORIDE	0.3	mg/kg	NA	NA	mg/kg-day	6.00E-02	mg/kg-day	NA	NA
	NAPHTHALENE	0.016	mg/kg	NA	NA	mg/kg-day	2.00E-02	mg/kg-day	NA	NA
	TOLUENE	0.03	mg/kg	NA	NA	mg/kg-day	2.00E-01	mg/kg-day	NA	NA
	TRANS-1,2-DICHLOROETHENE	0.023	mg/kg	NA	NA	mg/kg-day	2.00E-02	mg/kg-day	NA	NA
	TRICHLOROETHENE	0.007	mg/kg	NA	NA	mg/kg-day	3.00E-04	mg/kg-day	NA	NA
	1,2,4- TRIMETHYLBENZENE	0.025	mg/kg	NA	NA	mg/kg-day	5.00E-02	mg/kg-day	NA	NA
	1,3,5- TRIMETHYLBENZENE	0.009	mg/kg	NA	NA	mg/kg-day	5.00E-02	mg/kg-day	NA	NA
	VINYL CHLORIDE	0.034	mg/kg	NA	NA	mg/kg-day	3.00E-03	mg/kg-day	NA	NA
	XYLENE (TOTAL)	0.11	mg/kg	NA	NA	mg/kg-day	2.00E-01	mg/kg-day	NA	NA
INHALATION OF PARTICULATES AND VAPORS	**INORGANICS**									
	ALUMINUM	30,140	mg/kg	1.80E-04	9.35E-05	mg/kg-day	1.40E-03	mg/kg-day	1.28E-01	6.68E-02
	ANTIMONY	4.5	mg/kg	2.68E-08	1.40E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	ARSENIC	21.5	mg/kg	1.28E-07	6.67E-08	mg/kg-day	8.57E-06	mg/kg-day	1.50E-02	7.79E-03
	BARIUM	94.0	mg/kg	5.61E-07	2.92E-07	mg/kg-day	1.43E-04	mg/kg-day	3.92E-03	2.04E-03
	BERYLLIUM	0.65	mg/kg	3.88E-09	2.02E-09	mg/kg-day	2.00E-06	mg/kg-day	1.94E-03	1.01E-03

Table C2-2c
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
INHALATION OF PARTICULATES AND VAPORS (CONTINUED)	*CADMIUM*	2.90	mg/kg	1.73E-08	9.00E-09	mg/kg-day	5.71E-06	mg/kg-day	3.03E-03	1.58E-03
	CHROMIUM	213	mg/kg	1.27E-06	6.61E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	COBALT	18.7	mg/kg	1.12E-07	5.80E-08	mg/kg-day	5.70E-06	mg/kg-day	1.96E-02	1.02E-02
	COPPER	197	mg/kg	1.18E-06	6.11E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	HEXAVALENT CHROMIUM	0.07	mg/kg	4.18E-10	2.17E-10	mg/kg-day	2.86E-05	mg/kg-day	1.46E-05	7.59E-06
	LEAD	96	mg/kg	5.73E-07	2.98E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	MANGANESE	967	mg/kg	5.77E-06	3.00E-06	mg/kg-day	1.43E-05	mg/kg-day	4.03E-01	2.10E-01
	MERCURY	1.4	mg/kg	8.35E-09	4.34E-09	mg/kg-day	2.57E-05	mg/kg-day	3.25E-04	1.69E-04
	MOLYBDENUM	5.0	mg/kg	2.98E-08	1.55E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	NICKEL	114	mg/kg	6.80E-07	3.54E-07	mg/kg-day	1.43E-05	mg/kg-day	4.76E-02	2.48E-02
	SELENIUM	1.2	mg/kg	7.16E-09	3.72E-09	mg/kg-day	5.71E-03	mg/kg-day	1.25E-06	6.52E-07
	SILVER	2.7	mg/kg	1.61E-08	8.38E-09	mg/kg-day	NA	mg/kg-day	NA	NA
	THALLIUM	0.46	mg/kg	2.74E-09	1.43E-09	mg/kg-day	NA	mg/kg-day	NA	NA
	TIN	16.2	mg/kg	9.67E-08	5.03E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	VANADIUM	117	mg/kg	6.98E-07	3.63E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	ZINC	237	mg/kg	1.41E-06	7.35E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	PESTICIDES									
	ALPHA-CHLORDANE	0.0082	mg/kg	4.89E-11	2.54E-11	mg/kg-day	2.00E-04	mg/kg-day	2.45E-07	1.27E-07
	BETA BHC	0.001	mg/kg	5.97E-12	3.10E-12	mg/kg-day	2.00E-04	mg/kg-day	2.98E-08	1.55E-08
	DELTA BHC	0.002	mg/kg	1.19E-11	6.20E-12	mg/kg-day	NA	mg/kg-day	NA	NA
	2,4- DDD	0.029	mg/kg	1.73E-10	9.00E-11	mg/kg-day	5.00E-04	mg/kg-day	3.46E-07	1.80E-07
	4,4- DDD	0.086	mg/kg	5.13E-10	2.67E-10	mg/kg-day	5.00E-04	mg/kg-day	1.03E-06	5.34E-07
	4,4- DDE	0.017	mg/kg	1.01E-10	5.27E-11	mg/kg-day	5.00E-04	mg/kg-day	2.03E-07	1.05E-07
	4,4- DDT	0.012	mg/kg	7.16E-11	3.72E-11	mg/kg-day	5.00E-04	mg/kg-day	1.43E-07	7.45E-08
	DIELDRIN	0.0039	mg/kg	2.33E-11	1.21E-11	mg/kg-day	5.00E-05	mg/kg-day	4.65E-07	2.42E-07
	ENDOSULFAN I	0.004	mg/kg	2.39E-11	1.24E-11	mg/kg-day	6.00E-03	mg/kg-day	3.98E-09	2.07E-09
	ENDOSULFAN SULFATE	0.003	mg/kg	1.79E-11	9.31E-12	mg/kg-day	6.00E-03	mg/kg-day	2.98E-09	1.55E-09
	ENDRIN	0.02	mg/kg	1.19E-10	6.20E-11	mg/kg-day	3.00E-04	mg/kg-day	3.98E-07	2.07E-07

Table C2-2c
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
INHALATION OF PARTICULATES AND VAPORS (CONTINUED)	ENDRIN ALDEHYDE	0.006	mg/kg	3.58E-11	1.86E-11	mg/kg-day	3.00E-04	mg/kg-day	1.19E-07	6.20E-08
	ENDRIN KETONE	0.003	mg/kg	1.79E-11	9.31E-12	mg/kg-day	3.00E-04	mg/kg-day	5.97E-08	3.10E-08
	GAMMA-CHLORDANE	0.0085	mg/kg	5.07E-11	2.64E-11	mg/kg-day	2.00E-04	mg/kg-day	2.54E-07	1.32E-07
	HEPTACHLOR	0.0002	mg/kg	1.19E-12	6.20E-13	mg/kg-day	5.00E-04	mg/kg-day	2.39E-09	1.24E-09
	HEPTACHLOR EPOXIDE	0.0003	mg/kg	1.79E-12	9.31E-13	mg/kg-day	1.30E-05	mg/kg-day	1.38E-07	7.16E-08
	HEXACHLOROBENZENE	0.0008	mg/kg	4.77E-12	2.48E-12	mg/kg-day	8.00E-04	mg/kg-day	5.97E-09	3.10E-09
	METHOXYCHLOR	0.02	mg/kg	1.19E-10	6.20E-11	mg/kg-day	5.00E-03	mg/kg-day	2.39E-08	1.24E-08
	MIREX	0.004	mg/kg	2.39E-11	1.24E-11	mg/kg-day	2.00E-04	mg/kg-day	1.19E-07	6.20E-08
	TRANS-NONACHLOR	0.0024	mg/kg	1.43E-11	7.45E-12	mg/kg-day	2.00E-04	mg/kg-day	7.16E-08	3.72E-08
	PCBs									
	PCBs (TOTAL)	0.20	mg/kg	1.19E-09	6.20E-10	mg/kg-day	2.00E-05	mg/kg-day	5.97E-05	3.10E-05
	SVOCs									
	ACENAPHTHENE	0.13	mg/kg	1.41E-07	7.35E-08	mg/kg-day	6.00E-02	mg/kg-day	2.36E-06	1.22E-06
	ACENAPHTHYLENE	0.11	mg/kg	6.56E-10	3.41E-10	mg/kg-day	NA	mg/kg-day	NA	NA
	ANTHRACENE	0.13	mg/kg	3.63E-08	1.89E-08	mg/kg-day	3.00E-01	mg/kg-day	1.21E-07	6.30E-08
	BENZO(A)ANTHRACENE	0.27	mg/kg	1.61E-09	8.38E-10	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(A)PYRENE	0.23	mg/kg	1.37E-09	7.14E-10	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(B)FLUORANTHENE	0.23	mg/kg	1.37E-09	7.14E-10	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(G,H,I)PERYLENE	0.16	mg/kg	9.55E-10	4.96E-10	mg/kg-day	4.00E-02	mg/kg-day	2.39E-08	1.24E-08
	BENZO(K)FLUORANTHENE	0.23	mg/kg	1.37E-09	7.14E-10	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZOIC ACID	0.68	mg/kg	4.06E-09	2.11E-09	mg/kg-day	4.00E+00	mg/kg-day	1.01E-09	5.27E-10
	BIS(2-ETHYLHEXYL)PHTHALATE	1.1	mg/kg	6.56E-09	3.41E-09	mg/kg-day	2.00E-02	mg/kg-day	3.28E-07	1.71E-07
	BUTYLBENZYLPHTHALATE	0.025	mg/kg	1.49E-10	7.76E-11	mg/kg-day	2.00E-01	mg/kg-day	7.46E-10	3.88E-10
	CARBAZOLE	0.55	mg/kg	3.28E-09	1.71E-09	mg/kg-day	NA	mg/kg-day	NA	NA
	4- CHLOROANILINE	0.003	mg/kg	1.79E-11	9.31E-12	mg/kg-day	4.00E-03	mg/kg-day	4.47E-09	2.33E-09
	2- CHLOROPHENOL	0.043	mg/kg	2.58E-10	1.34E-10	mg/kg-day	5.00E-03	mg/kg-day	5.17E-08	2.69E-08
	CHRYSENE	0.26	mg/kg	1.88E-08	9.80E-09	mg/kg-day	NA	mg/kg-day	NA	NA
	DIBENZOFURAN	0.36	mg/kg	2.15E-09	1.12E-09	mg/kg-day	2.00E-03	mg/kg-day	1.07E-06	5.58E-07

Table C2-2c
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
INHALATION OF PARTICULATES AND VAPORS (CONTINUED)	3,3- DICHLOROBENZIDINE	0.012	mg/kg	7.16E-11	3.72E-11	mg/kg-day	NA	mg/kg-day	NA	NA
	2,6- DINITROTOLUENE	0.37	mg/kg	2.21E-09	1.15E-09	mg/kg-day	1.00E-03	mg/kg-day	2.21E-06	1.15E-06
	FLUORANTHENE	0.370	mg/kg	2.21E-09	1.15E-09	mg/kg-day	4.00E-02	mg/kg-day	5.52E-08	2.87E-08
	FLUORENE	0.1	mg/kg	7.07E-08	3.67E-08	mg/kg-day	4.00E-02	mg/kg-day	1.77E-06	9.19E-07
	INDENO(1,2,3-CD)PYRENE	0.16	mg/kg	9.55E-10	4.96E-10	mg/kg-day	NA	mg/kg-day	NA	NA
	2- METHYLNAPHTHALENE	0.18	mg/kg	1.07E-09	5.58E-10	mg/kg-day	NA	mg/kg-day	NA	NA
	4- METHYLPHENOL	0.23	mg/kg	1.37E-09	7.14E-10	mg/kg-day	NA	mg/kg-day	NA	NA
	NAPHTHALENE	0.11	mg/kg	5.01E-07	2.60E-07	mg/kg-day	8.57E-04	mg/kg-day	5.84E-04	3.04E-04
	PENTACHLOROPHENOL	0.54	mg/kg	3.22E-09	1.68E-09	mg/kg-day	3.00E-02	mg/kg-day	1.07E-07	5.58E-08
	PHENANTHRENE	0.20	mg/kg	1.19E-09	6.20E-10	mg/kg-day	3.00E-01	mg/kg-day	3.98E-09	2.07E-09
	PHENOL	0.29	mg/kg	1.73E-09	9.00E-10	mg/kg-day	5.71E-02	mg/kg-day	3.03E-08	1.58E-08
	PYRENE	0.420	mg/kg	2.16E-08	1.12E-08	mg/kg-day	3.00E-02	mg/kg-day	7.21E-07	3.75E-07
	TPH									
	TPH AS DIESEL	172	mg/kg	1.03E-06	5.34E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	TPH AS GASOLINE	4.0	mg/kg	2.39E-08	1.24E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	TPH AS MOTOR OIL	324	mg/kg	1.93E-06	1.01E-06	mg/kg-day	NA	mg/kg-day	NA	NA
	VOCs									
	ACETONE	0.32	mg/kg	4.82E-06	2.50E-06	mg/kg-day	9.00E-01	mg/kg-day	5.35E-06	2.78E-06
	BENZENE	0.005	mg/kg	3.62E-07	1.88E-07	mg/kg-day	8.57E-03	mg/kg-day	4.23E-05	2.20E-05
	CARBON DISULFIDE	0.025	mg/kg	4.08E-06	2.12E-06	mg/kg-day	2.00E-01	mg/kg-day	2.04E-05	1.06E-05
	CHLOROBENZENE	0.024	mg/kg	7.46E-07	3.88E-07	mg/kg-day	5.71E-03	mg/kg-day	1.31E-04	6.79E-05
	CIS-1,2-DICHLOROETHENE	0.005	mg/kg	3.37E-07	1.75E-07	mg/kg-day	1.00E-02	mg/kg-day	3.37E-05	1.75E-05
	ETHYLBENZENE	0.044	mg/kg	1.59E-06	8.29E-07	mg/kg-day	2.86E-01	mg/kg-day	5.58E-06	2.90E-06
	4- ISOPROPYLTOLUENE	0.007	mg/kg	NA	NA	mg/kg-day	NA	mg/kg-day	NA	NA
	METHYLENE CHLORIDE	0.3	mg/kg	2.35E-05	1.22E-05	mg/kg-day	1.14E-01	mg/kg-day	2.06E-04	1.07E-04
	NAPHTHALENE	0.016	mg/kg	7.28E-08	3.79E-08	mg/kg-day	8.57E-04	mg/kg-day	8.50E-05	4.42E-05
	TOLUENE	0.03	mg/kg	1.47E-06	7.63E-07	mg/kg-day	8.57E-02	mg/kg-day	1.71E-05	8.91E-06
	TRANS-1,2-DICHLOROETHENE	0.023	mg/kg	1.96E-06	1.02E-06	mg/kg-day	2.00E-02	mg/kg-day	9.78E-05	5.09E-05

Table C2-2c
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
INHALATION OF PARTICULATES AND VAPORS (CONTINUED)	TRICHLOROETHENE	0.007	mg/kg	4.15E-07	2.16E-07	mg/kg-day	1.00E-02	mg/kg-day	4.15E-05	2.16E-05
	1,2,4- TRIMETHYLBENZENE	0.025	mg/kg	2.45E-07	1.27E-07	mg/kg-day	1.70E-03	mg/kg-day	1.44E-04	7.48E-05
	1,3,5- TRIMETHYLBENZENE	0.009	mg/kg	2.27E-07	1.18E-07	mg/kg-day	1.70E-03	mg/kg-day	1.34E-04	6.96E-05
	VINYL CHLORIDE	0.034	mg/kg	6.65E-06	3.46E-06	mg/kg-day	2.86E-02	mg/kg-day	2.33E-04	1.21E-04
	XYLENE (TOTAL)	0.11	mg/kg	3.53E-06	1.84E-06	mg/kg-day	2.86E-02	mg/kg-day	1.23E-04	6.42E-05

Notes:
The HQ for chemicals that are italicized and underlined have been modified for post remediation residual risk.
CTE = Central Tendency Exposure
EPC = Exposure point concentration
HQ = Hazard Quotient
mg/kg = milligrams per kilogram
mg/kg-day = milligrams per kilogram per day
NA = Not Applicable
PCBs = Polychlorinated Biphenyls
RfD = Reference Dose
RME = Reasonable Maximum Exposure
SVOCs = Semivolatile Organic Compounds
TPH = Total Petroleum Hydrocarbons
VOCs = Volatile Organic Compounds

Table C2-2d
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INGESTION	**INORGANICS**									
	ALUMINUM	30,140	mg/kg	8.00E-03	3.33E-03	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ANTIMONY	4.5	mg/kg	1.19E-06	4.98E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ARSENIC	21.5	mg/kg	5.71E-06	2.38E-06	mg/kg-day	9.45E+00	$(mg/kg\text{-}day)^{-1}$	5.39E-05	2.25E-05
	BARIUM	94.0	mg/kg	2.49E-05	1.04E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BERYLLIUM	0.65	mg/kg	1.73E-07	7.19E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CADMIUM	2.90	mg/kg	7.70E-07	3.21E-07	mg/kg-day	3.80E-01	$(mg/kg\text{-}day)^{-1}$	2.92E-07	1.22E-07
	CHROMIUM	213	mg/kg	5.65E-05	2.36E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	COBALT	18.7	mg/kg	4.96E-06	2.07E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	COPPER	197	mg/kg	5.23E-05	2.18E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	HEXAVALENT CHROMIUM	0.07	mg/kg	1.86E-08	7.74E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	LEAD	96	mg/kg	2.55E-05	1.06E-05	mg/kg-day	8.50E-03	$(mg/kg\text{-}day)^{-1}$	2.17E-07	9.02E-08
	MANGANESE	967	mg/kg	2.57E-04	1.07E-04	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MERCURY	1.4	mg/kg	3.72E-07	1.55E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MOLYBDENUM	5.0	mg/kg	1.33E-06	5.53E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	NICKEL	114	mg/kg	3.03E-05	1.26E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	SELENIUM	1.2	mg/kg	3.18E-07	1.33E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	SILVER	2.7	mg/kg	7.17E-07	2.99E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	THALLIUM	0.46	mg/kg	1.22E-07	5.09E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TIN	16.2	mg/kg	4.30E-06	1.79E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	VANADIUM	117	mg/kg	3.11E-05	1.29E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ZINC	237	mg/kg	6.29E-05	2.62E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

Table C2-2d
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INGESTION (CONTINUED)	**PESTICIDES**									
	ALPHA-CHLORDANE	0.0082	mg/kg	2.18E-09	9.07E-10	mg/kg-day	1.30E+00	$(mg/kg\text{-}day)^{-1}$	2.83E-09	1.18E-09
	BETA BHC	0.001	mg/kg	2.65E-10	1.11E-10	mg/kg-day	1.80E+00	$(mg/kg\text{-}day)^{-1}$	4.78E-10	1.99E-10
	DELTA BHC	0.002	mg/kg	5.31E-10	2.21E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	2,4- DDD	0.029	mg/kg	7.70E-09	3.21E-09	mg/kg-day	2.40E-01	$(mg/kg\text{-}day)^{-1}$	1.85E-09	7.70E-10
	4,4- DDD	0.086	mg/kg	2.28E-08	9.51E-09	mg/kg-day	2.40E-01	$(mg/kg\text{-}day)^{-1}$	5.48E-09	2.28E-09
	4,4- DDE	0.017	mg/kg	4.51E-09	1.88E-09	mg/kg-day	3.40E-01	$(mg/kg\text{-}day)^{-1}$	1.53E-09	6.39E-10
	4,4- DDT	0.012	mg/kg	3.18E-09	1.33E-09	mg/kg-day	3.40E-01	$(mg/kg\text{-}day)^{-1}$	1.08E-09	4.51E-10
	DIELDRIN	0.0039	mg/kg	1.04E-09	4.31E-10	mg/kg-day	1.60E+01	$(mg/kg\text{-}day)^{-1}$	1.66E-08	6.90E-09
	ENDOSULFAN I	0.004	mg/kg	1.06E-09	4.42E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDOSULFAN SULFATE	0.003	mg/kg	7.96E-10	3.32E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN	0.02	mg/kg	5.31E-09	2.21E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN ALDEHYDE	0.006	mg/kg	1.59E-09	6.64E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN KETONE	0.003	mg/kg	7.96E-10	3.32E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	GAMMA-CHLORDANE	0.0085	mg/kg	2.26E-09	9.40E-10	mg/kg-day	1.30E+00	$(mg/kg\text{-}day)^{-1}$	2.93E-09	1.22E-09
	HEPTACHLOR	0.0002	mg/kg	5.31E-11	2.21E-11	mg/kg-day	4.50E+00	$(mg/kg\text{-}day)^{-1}$	2.39E-10	9.95E-11
	HEPTACHLOR EPOXIDE	0.0003	mg/kg	7.96E-11	3.32E-11	mg/kg-day	9.10E+00	$(mg/kg\text{-}day)^{-1}$	7.25E-10	3.02E-10
	HEXACHLOROBENZENE	0.0008	mg/kg	2.12E-10	8.85E-11	mg/kg-day	1.80E+00	$(mg/kg\text{-}day)^{-1}$	3.82E-10	1.59E-10
	METHOXYCHLOR	0.02	mg/kg	5.31E-09	2.21E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MIREX	0.004	mg/kg	1.06E-09	4.42E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TRANS-NONACHLOR	0.0024	mg/kg	6.37E-10	2.65E-10	mg/kg-day	1.30E+00	$(mg/kg\text{-}day)^{-1}$	8.28E-10	3.45E-10
	PCBs									
	PCBs (TOTAL)	0.20	mg/kg	5.31E-08	2.21E-08	mg/kg-day	5.00E+00	$(mg/kg\text{-}day)^{-1}$	2.65E-07	1.11E-07

Table C2-2d
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INGESTION (CONTINUED)	**SVOCs**									
	ACENAPHTHENE	0.13	mg/kg	3.45E-08	1.44E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ACENAPHTHYLENE	0.11	mg/kg	2.92E-08	1.22E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ANTHRACENE	0.13	mg/kg	3.45E-08	1.44E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BENZO(A)ANTHRACENE	0.27	mg/kg	7.17E-08	2.99E-08	mg/kg-day	1.20E+00	$(mg/kg\text{-}day)^{-1}$	8.60E-08	3.58E-08
	BENZO(A)PYRENE	0.23	mg/kg	6.10E-08	2.54E-08	mg/kg-day	1.20E+01	$(mg/kg\text{-}day)^{-1}$	7.33E-07	3.05E-07
	BENZO(B)FLUORANTHENE	0.23	mg/kg	6.10E-08	2.54E-08	mg/kg-day	1.20E+00	$(mg/kg\text{-}day)^{-1}$	7.33E-08	3.05E-08
	BENZO(G,H,I)PERYLENE	0.16	mg/kg	4.25E-08	1.77E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BENZO(K)FLUORANTHENE	0.23	mg/kg	6.10E-08	2.54E-08	mg/kg-day	1.20E+00	$(mg/kg\text{-}day)^{-1}$	7.33E-08	3.05E-08
	BENZOIC ACID	0.68	mg/kg	1.80E-07	7.52E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BIS(2-ETHYLHEXYL)PHTHALATE	1.1	mg/kg	2.92E-07	1.22E-07	mg/kg-day	1.40E-02	$(mg/kg\text{-}day)^{-1}$	4.09E-09	1.70E-09
	BUTYLBENZYLPHTHALATE	0.025	mg/kg	6.64E-09	2.76E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CARBAZOLE	0.55	mg/kg	1.46E-07	6.08E-08	mg/kg-day	2.00E-02	$(mg/kg\text{-}day)^{-1}$	2.92E-09	1.22E-09
	4- CHLOROANILINE	0.003	mg/kg	7.96E-10	3.32E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	2- CHLOROPHENOL	0.043	mg/kg	1.15E-08	4.79E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CHRYSENE	0.26	mg/kg	6.90E-08	2.88E-08	mg/kg-day	1.20E-01	$(mg/kg\text{-}day)^{-1}$	8.28E-09	3.45E-09
	DIBENZOFURAN	0.36	mg/kg	9.55E-08	3.98E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	3,3- DICHLOROBENZIDINE	0.012	mg/kg	3.18E-09	1.33E-09	mg/kg-day	4.50E-01	$(mg/kg\text{-}day)^{-1}$	1.43E-09	5.97E-10
	2,6- DINITROTOLUENE	0.37	mg/kg	9.82E-08	4.09E-08	mg/kg-day	6.10E-01	$(mg/kg\text{-}day)^{-1}$	5.99E-08	2.50E-08
	FLUORANTHENE	0.370	mg/kg	9.82E-08	4.09E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	FLUORENE	0.1	mg/kg	3.45E-08	1.44E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	INDENO(1,2,3-CD)PYRENE	0.16	mg/kg	4.25E-08	1.77E-08	mg/kg-day	1.20E+00	$(mg/kg\text{-}day)^{-1}$	5.10E-08	2.12E-08
	2- METHYLNAPHTHALENE	0.18	mg/kg	4.78E-08	1.99E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

Table C2-2d
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INGESTION (CONTINUED)	4- METHYLPHENOL	0.23	mg/kg	6.10E-08	2.54E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	NAPHTHALENE	0.11	mg/kg	2.92E-08	1.22E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PENTACHLOROPHENOL	0.54	mg/kg	1.43E-07	5.97E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PHENANTHRENE	0.20	mg/kg	5.31E-08	2.21E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PHENOL	0.29	mg/kg	7.70E-08	3.21E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PYRENE	0.420	mg/kg	1.11E-07	4.64E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TPH									
	TPH AS DIESEL	172	mg/kg	4.57E-05	1.90E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TPH AS GASOLINE	4.0	mg/kg	1.06E-06	4.42E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TPH AS MOTOR OIL	324	mg/kg	8.60E-05	3.58E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	VOCs									
	ACETONE	0.32	mg/kg	8.49E-08	3.54E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BENZENE	0.005	mg/kg	1.33E-09	5.53E-10	mg/kg-day	1.00E-01	$(mg/kg\text{-}day)^{-1}$	1.33E-10	5.53E-11
	CARBON DISULFIDE	0.025	mg/kg	6.64E-09	2.76E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CHLOROBENZENE	0.024	mg/kg	6.37E-09	2.65E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CIS-1,2-DICHLOROETHENE	0.005	mg/kg	1.33E-09	5.53E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ETHYLBENZENE	0.044	mg/kg	1.17E-08	4.87E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	4- ISOPROPYLTOLUENE	0.007	mg/kg	1.91E-09	7.96E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	METHYLENE CHLORIDE	0.3	mg/kg	7.96E-08	3.32E-08	mg/kg-day	1.40E-02	$(mg/kg\text{-}day)^{-1}$	1.11E-09	4.64E-10
	NAPHTHALENE	0.016	mg/kg	4.25E-09	1.77E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TOLUENE	0.03	mg/kg	7.96E-09	3.32E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TRANS-1,2-DICHLOROETHENE	0.023	mg/kg	6.10E-09	2.54E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TRICHLOROETHENE	0.007	mg/kg	1.86E-09	7.74E-10	mg/kg-day	4.10E-01	$(mg/kg\text{-}day)^{-1}$	7.62E-10	3.17E-10

Table C2-2d
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INGESTION (CONTINUED)	1,2,4- TRIMETHYLBENZENE	0.025	mg/kg	6.64E-09	2.76E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	1,3,5- TRIMETHYLBENZENE	0.009	mg/kg	2.47E-09	1.03E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	VINYL CHLORIDE	0.034	mg/kg	9.02E-09	3.76E-09	mg/kg-day	1.50E+00	$(mg/kg\text{-}day)^{-1}$	1.35E-08	5.64E-09
	XYLENE (TOTAL)	0.11	mg/kg	2.92E-08	1.22E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
DERMAL CONTACT	**INORGANICS**									
	ALUMINUM	30,140	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ANTIMONY	4.5	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ARSENIC	21.5	mg/kg	7.86E-07	3.27E-07	mg/kg-day	9.45E+00	$(mg/kg\text{-}day)^{-1}$	7.43E-06	3.09E-06
	BARIUM	94.0	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BERYLLIUM	0.65	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CADMIUM	2.90	mg/kg	3.53E-09	1.47E-09	mg/kg-day	1.52E+01	$(mg/kg\text{-}day)^{-1}$	5.37E-08	2.24E-08
	CHROMIUM	213	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	COBALT	18.7	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	COPPER	197	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	HEXAVALENT CHROMIUM	0.07	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	LEAD	96	mg/kg	NA	NA	mg/kg-day	8.50E-03	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MANGANESE	967	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MERCURY	1.4	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MOLYBDENUM	5.0	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	NICKEL	114	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	SELENIUM	1.2	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	SILVER	2.7	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	THALLIUM	0.46	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

Table C2-2d
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
DERMAL CONTACT (CONTINUED)	*TIN*	16.2	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	VANADIUM	117	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ZINC	237	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PESTICIDES									
	ALPHA-CHLORDANE	0.0082	mg/kg	4.00E-10	1.66E-10	mg/kg-day	1.30E+00	$(mg/kg\text{-}day)^{-1}$	5.19E-10	2.16E-10
	BETA BHC	0.001	mg/kg	4.87E-11	2.03E-11	mg/kg-day	1.80E+00	$(mg/kg\text{-}day)^{-1}$	8.77E-11	3.65E-11
	DELTA BHC	0.002	mg/kg	9.75E-11	4.06E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	2,4- DDD	0.029	mg/kg	1.06E-09	4.42E-10	mg/kg-day	2.40E-01	$(mg/kg\text{-}day)^{-1}$	2.54E-10	1.06E-10
	4,4- DDD	0.086	mg/kg	3.14E-09	1.31E-09	mg/kg-day	2.40E-01	$(mg/kg\text{-}day)^{-1}$	7.54E-10	3.14E-10
	4,4- DDE	0.017	mg/kg	6.21E-10	2.59E-10	mg/kg-day	3.40E-01	$(mg/kg\text{-}day)^{-1}$	2.11E-10	8.80E-11
	4,4- DDT	0.012	mg/kg	4.39E-10	1.83E-10	mg/kg-day	3.40E-01	$(mg/kg\text{-}day)^{-1}$	1.49E-10	6.21E-11
	DIELDRIN	0.0039	mg/kg	4.75E-10	1.98E-10	mg/kg-day	1.60E+01	$(mg/kg\text{-}day)^{-1}$	7.60E-09	3.17E-09
	ENDOSULFAN I	0.004	mg/kg	4.87E-10	2.03E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDOSULFAN SULFATE	0.003	mg/kg	3.65E-10	1.52E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN	0.02	mg/kg	2.44E-09	1.02E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN ALDEHYDE	0.006	mg/kg	7.31E-10	3.05E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN KETONE	0.003	mg/kg	3.65E-10	1.52E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	GAMMA-CHLORDANE	0.0085	mg/kg	4.14E-10	1.73E-10	mg/kg-day	1.30E+00	$(mg/kg\text{-}day)^{-1}$	5.38E-10	2.24E-10
	HEPTACHLOR	0.0002	mg/kg	2.44E-11	1.02E-11	mg/kg-day	4.50E+00	$(mg/kg\text{-}day)^{-1}$	1.10E-10	4.57E-11
	HEPTACHLOR EPOXIDE	0.0003	mg/kg	3.65E-11	1.52E-11	mg/kg-day	9.10E+00	$(mg/kg\text{-}day)^{-1}$	3.33E-10	1.39E-10
	HEXACHLOROBENZENE	0.0008	mg/kg	9.75E-11	4.06E-11	mg/kg-day	1.80E+00	$(mg/kg\text{-}day)^{-1}$	1.75E-10	7.31E-11
	METHOXYCHLOR	0.02	mg/kg	9.75E-10	4.06E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MIREX	0.004	mg/kg	4.87E-10	2.03E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

Table C2-2d
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
DERMAL CONTACT (CONTINUED)	TRANS-NONACHLOR	0.0024	mg/kg	1.17E-10	4.87E-11	mg/kg-day	1.30E+00	$(mg/kg\text{-}day)^{-1}$	1.52E-10	6.33E-11
	PCBs									
	PCBs (TOTAL)	0.20	mg/kg	3.41E-08	1.42E-08	mg/kg-day	5.00E+00	$(mg/kg\text{-}day)^{-1}$	1.71E-07	7.11E-08
	SVOCs									
	ACENAPHTHENE	0.13	mg/kg	2.06E-08	8.58E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ACENAPHTHYLENE	0.11	mg/kg	1.74E-08	7.26E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ANTHRACENE	0.13	mg/kg	2.06E-08	8.58E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BENZO(A)ANTHRACENE	0.27	mg/kg	4.28E-08	1.78E-08	mg/kg-day	1.20E+00	$(mg/kg\text{-}day)^{-1}$	5.13E-08	2.14E-08
	BENZO(A)PYRENE	0.23	mg/kg	3.64E-08	1.52E-08	mg/kg-day	1.20E+01	$(mg/kg\text{-}day)^{-1}$	4.37E-07	1.82E-07
	BENZO(B)FLUORANTHENE	0.23	mg/kg	3.64E-08	1.52E-08	mg/kg-day	1.20E+00	$(mg/kg\text{-}day)^{-1}$	4.37E-08	1.82E-08
	BENZO(G,H,I)PERYLENE	0.16	mg/kg	2.53E-08	1.06E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BENZO(K)FLUORANTHENE	0.23	mg/kg	3.64E-08	1.52E-08	mg/kg-day	1.20E+00	$(mg/kg\text{-}day)^{-1}$	4.37E-08	1.82E-08
	BENZOIC ACID	0.68	mg/kg	8.28E-08	3.45E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BIS(2-ETHYLHEXYL)PHTHALATE	1.1	mg/kg	1.34E-07	5.58E-08	mg/kg-day	1.40E-02	$(mg/kg\text{-}day)^{-1}$	1.88E-09	7.82E-10
	BUTYLBENZYLPHTHALATE	0.025	mg/kg	3.05E-09	1.27E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CARBAZOLE	0.55	mg/kg	6.70E-08	2.79E-08	mg/kg-day	2.00E-02	$(mg/kg\text{-}day)^{-1}$	1.34E-09	5.58E-10
	4- CHLOROANILINE	0.003	mg/kg	3.65E-10	1.52E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	2- CHLOROPHENOL	0.043	mg/kg	5.27E-09	2.20E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CHRYSENE	0.26	mg/kg	4.12E-08	1.72E-08	mg/kg-day	1.20E-01	$(mg/kg\text{-}day)^{-1}$	4.94E-09	2.06E-09
	DIBENZOFURAN	0.36	mg/kg	4.39E-08	1.83E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	3,3- DICHLOROBENZIDINE	0.012	mg/kg	1.46E-09	6.09E-10	mg/kg-day	4.50E-01	$(mg/kg\text{-}day)^{-1}$	6.58E-10	2.74E-10
	2,6- DINITROTOLUENE	0.37	mg/kg	4.51E-08	1.88E-08	mg/kg-day	6.10E-01	$(mg/kg\text{-}day)^{-1}$	2.75E-08	1.15E-08
	FLUORANTHENE	0.370	mg/kg	5.86E-08	2.44E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

Table C2-2d
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
DERMAL CONTACT (CONTINUED)	*FLUORENE*	0.1	mg/kg	2.06E-08	8.58E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	INDENO(1,2,3-CD)PYRENE	0.16	mg/kg	2.53E-08	1.06E-08	mg/kg-day	1.20E+00	$(mg/kg\text{-}day)^{-1}$	3.04E-08	1.27E-08
	2- METHYLNAPHTHALENE	0.18	mg/kg	2.19E-08	9.14E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	4- METHYLPHENOL	0.23	mg/kg	2.80E-08	1.17E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	NAPHTHALENE	0.11	mg/kg	1.74E-08	7.26E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PENTACHLOROPHENOL	0.54	mg/kg	6.58E-08	2.74E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PHENANTHRENE	0.20	mg/kg	3.17E-08	1.32E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PHENOL	0.29	mg/kg	3.53E-08	1.47E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PYRENE	0.420	mg/kg	6.65E-08	2.77E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TPH									
	TPH AS DIESEL	172	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TPH AS GASOLINE	4.0	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TPH AS MOTOR OIL	324	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	VOCs									
	ACETONE	0.32	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BENZENE	0.005	mg/kg	NA	NA	mg/kg-day	1.00E-01	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CARBON DISULFIDE	0.025	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CHLOROBENZENE	0.024	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CIS-1,2-DICHLOROETHENE	0.005	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ETHYLBENZENE	0.044	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	4- ISOPROPYLTOLUENE	0.007	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	METHYLENE CHLORIDE	0.3	mg/kg	NA	NA	mg/kg-day	1.40E-02	$(mg/kg\text{-}day)^{-1}$	NA	NA
	NAPHTHALENE	0.016	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

Table C2-2d
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
DERMAL CONTACT (CONTINUED)	TOLUENE	0.03	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TRANS-1,2-DICHLOROETHENE	0.023	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TRICHLOROETHENE	0.007	mg/kg	NA	NA	mg/kg-day	4.10E-01	$(mg/kg\text{-}day)^{-1}$	NA	NA
	1,2,4- TRIMETHYLBENZENE	0.025	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	1,3,5- TRIMETHYLBENZENE	0.009	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	VINYL CHLORIDE	0.034	mg/kg	NA	NA	mg/kg-day	1.50E+00	$(mg/kg\text{-}day)^{-1}$	NA	NA
	XYLENE (TOTAL)	0.11	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
INHALATION OF PARTICULATES AND VAPORS	**INORGANICS**									
	ALUMINUM	30,140	mg/kg	3.36E-07	1.40E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ANTIMONY	4.5	mg/kg	5.02E-11	2.09E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ARSENIC	21.5	mg/kg	2.40E-10	1.00E-10	mg/kg-day	1.20E+01	$(mg/kg\text{-}day)^{-1}$	2.88E-09	1.20E-09
	BARIUM	94.0	mg/kg	1.05E-09	4.37E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BERYLLIUM	0.65	mg/kg	7.25E-12	3.02E-12	mg/kg-day	8.40E+00	$(mg/kg\text{-}day)^{-1}$	6.09E-11	2.54E-11
	CADMIUM	2.90	mg/kg	3.24E-11	1.35E-11	mg/kg-day	1.50E+01	$(mg/kg\text{-}day)^{-1}$	4.85E-10	2.02E-10
	CHROMIUM	213	mg/kg	2.38E-09	9.90E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	COBALT	18.7	mg/kg	2.09E-10	8.69E-11	mg/kg-day	9.80E+00	$(mg/kg\text{-}day)^{-1}$	2.05E-09	8.52E-10
	COPPER	197	mg/kg	2.20E-09	9.16E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	HEXAVALENT CHROMIUM	0.07	mg/kg	7.81E-13	3.25E-13	mg/kg-day	5.10E+02	$(mg/kg\text{-}day)^{-1}$	3.98E-10	1.66E-10
	LEAD	96	mg/kg	1.07E-09	4.46E-10	mg/kg-day	4.20E-02	$(mg/kg\text{-}day)^{-1}$	4.50E-11	1.87E-11
	MANGANESE	967	mg/kg	1.08E-08	4.50E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MERCURY	1.4	mg/kg	1.56E-11	6.51E-12	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MOLYBDENUM	5.0	mg/kg	5.58E-11	2.32E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	NICKEL	114	mg/kg	1.27E-09	5.30E-10	mg/kg-day	9.10E-01	$(mg/kg\text{-}day)^{-1}$	1.16E-09	4.82E-10

Table C2-2d
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INHALATION OF PARTICULATES AND VAPORS (CONTINUED)	*SELENIUM*	1.2	mg/kg	1.34E-11	5.58E-12	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	SILVER	2.7	mg/kg	3.01E-11	1.26E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	THALLIUM	0.46	mg/kg	5.13E-12	2.14E-12	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TIN	16.2	mg/kg	1.81E-10	7.53E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	VANADIUM	117	mg/kg	1.31E-09	5.44E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ZINC	237	mg/kg	2.64E-09	1.10E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PESTICIDES									
	ALPHA-CHLORDANE	0.0082	mg/kg	9.15E-14	3.81E-14	mg/kg-day	3.50E-01	$(mg/kg\text{-}day)^{-1}$	3.20E-14	1.33E-14
	BETA BHC	0.001	mg/kg	1.12E-14	4.65E-15	mg/kg-day	1.86E+00	$(mg/kg\text{-}day)^{-1}$	2.08E-14	8.65E-15
	DELTA BHC	0.002	mg/kg	2.23E-14	9.30E-15	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	2,4- DDD	0.029	mg/kg	3.24E-13	1.35E-13	mg/kg-day	2.40E-01	$(mg/kg\text{-}day)^{-1}$	7.77E-14	3.24E-14
	4,4- DDD	0.086	mg/kg	9.60E-13	4.00E-13	mg/kg-day	2.40E-01	$(mg/kg\text{-}day)^{-1}$	2.30E-13	9.60E-14
	4,4- DDE	0.017	mg/kg	1.90E-13	7.90E-14	mg/kg-day	3.40E-01	$(mg/kg\text{-}day)^{-1}$	6.45E-14	2.69E-14
	4,4- DDT	0.012	mg/kg	1.34E-13	5.58E-14	mg/kg-day	3.40E-01	$(mg/kg\text{-}day)^{-1}$	4.55E-14	1.90E-14
	DIELDRIN	0.0039	mg/kg	4.35E-14	1.81E-14	mg/kg-day	1.60E+01	$(mg/kg\text{-}day)^{-1}$	6.96E-13	2.90E-13
	ENDOSULFAN I	0.004	mg/kg	4.46E-14	1.86E-14	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDOSULFAN SULFATE	0.003	mg/kg	3.35E-14	1.39E-14	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN	0.02	mg/kg	2.23E-13	9.30E-14	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN ALDEHYDE	0.006	mg/kg	6.70E-14	2.79E-14	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN KETONE	0.003	mg/kg	3.35E-14	1.39E-14	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	GAMMA-CHLORDANE	0.0085	mg/kg	9.49E-14	3.95E-14	mg/kg-day	3.50E-01	$(mg/kg\text{-}day)^{-1}$	3.32E-14	1.38E-14
	HEPTACHLOR	0.0002	mg/kg	2.23E-15	9.30E-16	mg/kg-day	4.50E+00	$(mg/kg\text{-}day)^{-1}$	1.00E-14	4.18E-15
	HEPTACHLOR EPOXIDE	0.0003	mg/kg	3.35E-15	1.39E-15	mg/kg-day	9.10E+00	$(mg/kg\text{-}day)^{-1}$	3.05E-14	1.27E-14

Table C2-2d
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INHALATION OF PARTICULATES AND VAPORS (CONTINUED)	HEXACHLOROBENZENE	0.0008	mg/kg	8.93E-15	3.72E-15	mg/kg-day	1.80E+00	$(mg/kg\text{-}day)^{-1}$	1.61E-14	6.70E-15
	METHOXYCHLOR	0.02	mg/kg	2.23E-13	9.30E-14	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MIREX	0.004	mg/kg	4.46E-14	1.86E-14	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TRANS-NONACHLOR	0.0024	mg/kg	2.68E-14	1.12E-14	mg/kg-day	3.50E-01	$(mg/kg\text{-}day)^{-1}$	9.37E-15	3.91E-15
	PCBs									
	PCBs (TOTAL)	0.20	mg/kg	2.23E-12	9.30E-13	mg/kg-day	2.00E+00	$(mg/kg\text{-}day)^{-1}$	4.46E-12	1.86E-12
	SVOCs									
	ACENAPHTHENE	0.13	mg/kg	1.06E-08	4.43E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ACENAPHTHYLENE	0.11	mg/kg	1.23E-12	5.11E-13	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ANTHRACENE	0.13	mg/kg	2.74E-09	1.14E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BENZO(A)ANTHRACENE	0.27	mg/kg	3.01E-12	1.26E-12	mg/kg-day	3.90E-01	$(mg/kg\text{-}day)^{-1}$	1.18E-12	4.90E-13
	BENZO(A)PYRENE	0.23	mg/kg	2.57E-12	1.07E-12	mg/kg-day	3.90E+00	$(mg/kg\text{-}day)^{-1}$	1.00E-11	4.17E-12
	BENZO(B)FLUORANTHENE	0.23	mg/kg	2.57E-12	1.07E-12	mg/kg-day	3.90E-01	$(mg/kg\text{-}day)^{-1}$	1.00E-12	4.17E-13
	BENZO(G,H,I)PERYLENE	0.16	mg/kg	1.79E-12	7.44E-13	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BENZO(K)FLUORANTHENE	0.23	mg/kg	2.57E-12	1.07E-12	mg/kg-day	3.90E-01	$(mg/kg\text{-}day)^{-1}$	1.00E-12	4.17E-13
	BENZOIC ACID	0.68	mg/kg	7.59E-12	3.16E-12	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BIS(2-ETHYLHEXYL)PHTHALATE	1.1	mg/kg	1.23E-11	5.11E-12	mg/kg-day	1.40E-02	$(mg/kg\text{-}day)^{-1}$	1.72E-13	7.16E-14
	BUTYLBENZYLPHTHALATE	0.025	mg/kg	2.79E-13	1.16E-13	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CARBAZOLE	0.55	mg/kg	6.14E-12	2.56E-12	mg/kg-day	2.00E-02	$(mg/kg\text{-}day)^{-1}$	1.23E-13	5.11E-14
	4- CHLOROANILINE	0.003	mg/kg	3.35E-14	1.39E-14	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	2- CHLOROPHENOL	0.043	mg/kg	4.83E-13	2.01E-13	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CHRYSENE	0.26	mg/kg	1.42E-09	5.91E-10	mg/kg-day	3.90E-02	$(mg/kg\text{-}day)^{-1}$	5.53E-11	2.30E-11
	DIBENZOFURAN	0.36	mg/kg	4.02E-12	1.67E-12	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

Table C2-2d
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INHALATION OF PARTICULATES AND VAPORS (CONTINUED)	3,3- DICHLOROBENZIDINE	0.012	mg/kg	1.34E-13	5.58E-14	mg/kg-day	4.50E-01	$(mg/kg\text{-}day)^{-1}$	6.03E-14	2.51E-14
	2,6- DINITROTOLUENE	0.37	mg/kg	4.13E-12	1.72E-12	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	FLUORANTHENE	0.370	mg/kg	4.13E-12	1.72E-12	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	FLUORENE	0.1	mg/kg	5.32E-09	2.22E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	INDENO(1,2,3-CD)PYRENE	0.16	mg/kg	1.79E-12	7.44E-13	mg/kg-day	3.90E-01	$(mg/kg\text{-}day)^{-1}$	6.96E-13	2.90E-13
	2- METHYLNAPHTHALENE	0.18	mg/kg	2.01E-12	8.37E-13	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	4- METHYLPHENOL	0.23	mg/kg	2.57E-12	1.07E-12	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	NAPHTHALENE	0.11	mg/kg	3.77E-08	1.57E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PENTACHLOROPHENOL	0.54	mg/kg	6.03E-12	2.51E-12	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PHENANTHRENE	0.20	mg/kg	2.23E-12	9.30E-13	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PHENOL	0.29	mg/kg	3.24E-12	1.35E-12	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PYRENE	0.420	mg/kg	1.63E-09	6.78E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TPH									
	TPH AS DIESEL	172	mg/kg	1.92E-09	8.00E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TPH AS GASOLINE	4.0	mg/kg	4.46E-11	1.86E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TPH AS MOTOR OIL	324	mg/kg	3.62E-09	1.51E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	VOCs									
	ACETONE	0.32	mg/kg	3.63E-07	1.51E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BENZENE	0.005	mg/kg	2.73E-08	1.14E-08	mg/kg-day	1.00E-01	$(mg/kg\text{-}day)^{-1}$	2.73E-09	1.14E-09
	CARBON DISULFIDE	0.025	mg/kg	3.07E-07	1.28E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CHLOROBENZENE	0.024	mg/kg	5.61E-08	2.34E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CIS-1,2-DICHLOROETHENE	0.005	mg/kg	2.54E-08	1.06E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ETHYLBENZENE	0.044	mg/kg	1.20E-07	5.00E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

Table C2-2d
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INHALATION OF PARTICULATES AND VAPORS (CONTINUED)	4- ISOPROPYLTOLUENE	0.007	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	METHYLENE CHLORIDE	0.3	mg/kg	1.77E-06	7.37E-07	mg/kg-day	3.50E-03	$(mg/kg\text{-}day)^{-1}$	6.19E-09	2.58E-09
	NAPHTHALENE	0.016	mg/kg	5.48E-09	2.28E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TOLUENE	0.03	mg/kg	1.10E-07	4.60E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TRANS-1,2-DICHLOROETHENE	0.023	mg/kg	1.47E-07	6.14E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TRICHLOROETHENE	0.007	mg/kg	3.12E-08	1.30E-08	mg/kg-day	7.00E-03	$(mg/kg\text{-}day)^{-1}$	2.19E-10	9.11E-11
	1,2,4- TRIMETHYLBENZENE	0.025	mg/kg	1.84E-08	7.67E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	1,3,5- TRIMETHYLBENZENE	0.009	mg/kg	1.71E-08	7.13E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	VINYL CHLORIDE	0.034	mg/kg	5.01E-07	2.09E-07	mg/kg-day	1.54E-02	$(mg/kg\text{-}day)^{-1}$	7.71E-09	3.21E-09
	XYLENE (TOTAL)	0.11	mg/kg	2.66E-07	1.11E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

Notes:
The cancer risk for chemicals that are italicized and underlined have been modified for post remediation residual risk.
CTE = Central Tendency Exposure
EPC = Exposure point concentration
HQ = Hazard Quotient
mg/kg = milligrams per kilogram
mg/kg-day = milligrams per kilogram per day
NA = Not Applicable
PCBs = Polychlorinated Biphenyls
RME = Reasonable Maximum Exposure
SVOCs = Semivolatile Organic Compounds
TPH = Total Petroleum Hydrocarbons
VOCs = Volatile Organic Compounds

Table C2-2e
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INGESTION	**INORGANICS**									
	ALUMINUM	30,140	mg/kg	1.39E-03	1.39E-03	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ANTIMONY	4.5	mg/kg	2.08E-07	2.08E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ARSENIC	21.5	mg/kg	9.92E-07	9.92E-07	mg/kg-day	9.45E+00	$(mg/kg\text{-}day)^{-1}$	9.37E-06	9.37E-06
	BARIUM	94.0	mg/kg	4.34E-06	4.34E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BERYLLIUM	0.65	mg/kg	3.00E-08	3.00E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CADMIUM	2.90	mg/kg	1.34E-07	1.34E-07	mg/kg-day	3.80E-01	$(mg/kg\text{-}day)^{-1}$	5.08E-08	5.08E-08
	CHROMIUM	213	mg/kg	9.83E-06	9.83E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	COBALT	18.7	mg/kg	8.63E-07	8.63E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	COPPER	197	mg/kg	9.09E-06	9.09E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	HEXAVALENT CHROMIUM	0.07	mg/kg	3.23E-09	3.23E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	LEAD	96	mg/kg	4.43E-06	4.43E-06	mg/kg-day	8.50E-03	$(mg/kg\text{-}day)^{-1}$	3.76E-08	3.76E-08
	MANGANESE	967	mg/kg	4.46E-05	4.46E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MERCURY	1.4	mg/kg	6.46E-08	6.46E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MOLYBDENUM	5.0	mg/kg	2.31E-07	2.31E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	NICKEL	114	mg/kg	5.26E-06	5.26E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	SELENIUM	1.2	mg/kg	5.54E-08	5.54E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	SILVER	2.7	mg/kg	1.25E-07	1.25E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	THALLIUM	0.46	mg/kg	2.12E-08	2.12E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TIN	16.2	mg/kg	7.47E-07	7.47E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	VANADIUM	117	mg/kg	5.40E-06	5.40E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ZINC	237	mg/kg	1.09E-05	1.09E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

Table C2-2e
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INGESTION	**PESTICIDES**									
(CONTINUED)	ALPHA-CHLORDANE	0.0082	mg/kg	3.78E-10	3.78E-10	mg/kg-day	1.30E+00	$(mg/kg\text{-}day)^{-1}$	4.92E-10	4.92E-10
	BETA BHC	0.001	mg/kg	4.61E-11	4.61E-11	mg/kg-day	1.80E+00	$(mg/kg\text{-}day)^{-1}$	8.30E-11	8.30E-11
	DELTA BHC	0.002	mg/kg	9.23E-11	9.23E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	2,4- DDD	0.029	mg/kg	1.34E-09	1.34E-09	mg/kg-day	2.40E-01	$(mg/kg\text{-}day)^{-1}$	3.21E-10	3.21E-10
	4,4- DDD	0.086	mg/kg	3.97E-09	3.97E-09	mg/kg-day	2.40E-01	$(mg/kg\text{-}day)^{-1}$	9.52E-10	9.52E-10
	4,4- DDE	0.017	mg/kg	7.84E-10	7.84E-10	mg/kg-day	3.40E-01	$(mg/kg\text{-}day)^{-1}$	2.67E-10	2.67E-10
	4,4- DDT	0.012	mg/kg	5.54E-10	5.54E-10	mg/kg-day	3.40E-01	$(mg/kg\text{-}day)^{-1}$	1.88E-10	1.88E-10
	DIELDRIN	0.0039	mg/kg	1.80E-10	1.80E-10	mg/kg-day	1.60E+01	$(mg/kg\text{-}day)^{-1}$	2.88E-09	2.88E-09
	ENDOSULFAN I	0.004	mg/kg	1.85E-10	1.85E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDOSULFAN SULFATE	0.003	mg/kg	1.38E-10	1.38E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN	0.02	mg/kg	9.23E-10	9.23E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN ALDEHYDE	0.006	mg/kg	2.77E-10	2.77E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN KETONE	0.003	mg/kg	1.38E-10	1.38E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	GAMMA-CHLORDANE	0.0085	mg/kg	3.92E-10	3.92E-10	mg/kg-day	1.30E+00	$(mg/kg\text{-}day)^{-1}$	5.10E-10	5.10E-10
	HEPTACHLOR	0.0002	mg/kg	9.23E-12	9.23E-12	mg/kg-day	4.50E+00	$(mg/kg\text{-}day)^{-1}$	4.15E-11	4.15E-11
	HEPTACHLOR EPOXIDE	0.0003	mg/kg	1.38E-11	1.38E-11	mg/kg-day	9.10E+00	$(mg/kg\text{-}day)^{-1}$	1.26E-10	1.26E-10
	HEXACHLOROBENZENE	0.0008	mg/kg	3.69E-11	3.69E-11	mg/kg-day	1.80E+00	$(mg/kg\text{-}day)^{-1}$	6.64E-11	6.64E-11
	METHOXYCHLOR	0.02	mg/kg	9.23E-10	9.23E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MIREX	0.004	mg/kg	1.85E-10	1.85E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TRANS-NONACHLOR	0.0024	mg/kg	1.11E-10	1.11E-10	mg/kg-day	1.30E+00	$(mg/kg\text{-}day)^{-1}$	1.44E-10	1.44E-10
	PCBs									
	PCBs (TOTAL)	0.20	mg/kg	9.23E-09	9.23E-09	mg/kg-day	5.00E+00	$(mg/kg\text{-}day)^{-1}$	4.61E-08	4.61E-08

Table C2-2e
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INGESTION	**SVOCs**									
(CONTINUED)	*ACENAPHTHENE*	0.13	mg/kg	6.00E-09	6.00E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ACENAPHTHYLENE	0.11	mg/kg	5.07E-09	5.07E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ANTHRACENE	0.13	mg/kg	6.00E-09	6.00E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BENZO(A)ANTHRACENE	0.27	mg/kg	1.25E-08	1.25E-08	mg/kg-day	1.20E+00	$(mg/kg\text{-}day)^{-1}$	1.49E-08	1.49E-08
	BENZO(A)PYRENE	0.23	mg/kg	1.06E-08	1.06E-08	mg/kg-day	1.20E+01	$(mg/kg\text{-}day)^{-1}$	1.27E-07	1.27E-07
	BENZO(B)FLUORANTHENE	0.23	mg/kg	1.06E-08	1.06E-08	mg/kg-day	1.20E+00	$(mg/kg\text{-}day)^{-1}$	1.27E-08	1.27E-08
	BENZO(G,H,I)PERYLENE	0.16	mg/kg	7.38E-09	7.38E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BENZO(K)FLUORANTHENE	0.23	mg/kg	1.06E-08	1.06E-08	mg/kg-day	1.20E+00	$(mg/kg\text{-}day)^{-1}$	1.27E-08	1.27E-08
	BENZOIC ACID	0.68	mg/kg	3.14E-08	3.14E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BIS(2-ETHYLHEXYL)PHTHALATE	1.1	mg/kg	5.07E-08	5.07E-08	mg/kg-day	1.40E-02	$(mg/kg\text{-}day)^{-1}$	7.10E-10	7.10E-10
	BUTYLBENZYLPHTHALATE	0.025	mg/kg	1.15E-09	1.15E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CARBAZOLE	0.55	mg/kg	2.54E-08	2.54E-08	mg/kg-day	2.00E-02	$(mg/kg\text{-}day)^{-1}$	5.07E-10	5.07E-10
	4- CHLOROANILINE	0.003	mg/kg	1.38E-10	1.38E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	2- CHLOROPHENOL	0.043	mg/kg	2.00E-09	2.00E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CHRYSENE	0.26	mg/kg	1.20E-08	1.20E-08	mg/kg-day	1.20E-01	$(mg/kg\text{-}day)^{-1}$	1.44E-09	1.44E-09
	DIBENZOFURAN	0.36	mg/kg	1.66E-08	1.66E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	3,3- DICHLOROBENZIDINE	0.012	mg/kg	5.54E-10	5.54E-10	mg/kg-day	4.50E-01	$(mg/kg\text{-}day)^{-1}$	2.49E-10	2.49E-10
	2,6- DINITROTOLUENE	0.37	mg/kg	1.71E-08	1.71E-08	mg/kg-day	6.10E-01	$(mg/kg\text{-}day)^{-1}$	1.04E-08	1.04E-08
	FLUORANTHENE	0.370	mg/kg	1.71E-08	1.71E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	FLUORENE	0.1	mg/kg	6.00E-09	6.00E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	INDENO(1,2,3-CD)PYRENE	0.16	mg/kg	7.38E-09	7.38E-09	mg/kg-day	1.20E+00	$(mg/kg\text{-}day)^{-1}$	8.86E-09	8.86E-09
	2- METHYLNAPHTHALENE	0.18	mg/kg	8.30E-09	8.30E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

Table C2-2e
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INGESTION (CONTINUED)	4- METHYLPHENOL	0.23	mg/kg	1.06E-08	1.06E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	NAPHTHALENE	0.11	mg/kg	5.07E-09	5.07E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PENTACHLOROPHENOL	0.54	mg/kg	2.49E-08	2.49E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PHENANTHRENE	0.20	mg/kg	9.23E-09	9.23E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PHENOL	0.29	mg/kg	1.34E-08	1.34E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PYRENE	0.420	mg/kg	1.94E-08	1.94E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TPH									
	TPH AS DIESEL	172	mg/kg	7.93E-06	7.93E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TPH AS GASOLINE	4.0	mg/kg	1.85E-07	1.85E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TPH AS MOTOR OIL	324	mg/kg	1.49E-05	1.49E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	VOCs									
	ACETONE	0.32	mg/kg	1.48E-08	1.48E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BENZENE	0.005	mg/kg	2.31E-10	2.31E-10	mg/kg-day	1.00E-01	$(mg/kg\text{-}day)^{-1}$	2.31E-11	2.31E-11
	CARBON DISULFIDE	0.025	mg/kg	1.15E-09	1.15E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CHLOROBENZENE	0.024	mg/kg	1.11E-09	1.11E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CIS-1,2-DICHLOROETHENE	0.005	mg/kg	2.31E-10	2.31E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ETHYLBENZENE	0.044	mg/kg	2.03E-09	2.03E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	4- ISOPROPYLTOLUENE	0.007	mg/kg	3.32E-10	3.32E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	METHYLENE CHLORIDE	0.3	mg/kg	1.38E-08	1.38E-08	mg/kg-day	1.40E-02	$(mg/kg\text{-}day)^{-1}$	1.94E-10	1.94E-10
	NAPHTHALENE	0.016	mg/kg	7.38E-10	7.38E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TOLUENE	0.03	mg/kg	1.38E-09	1.38E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TRANS-1,2-DICHLOROETHENE	0.023	mg/kg	1.06E-09	1.06E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TRICHLOROETHENE	0.007	mg/kg	3.23E-10	3.23E-10	mg/kg-day	4.10E-01	$(mg/kg\text{-}day)^{-1}$	1.32E-10	1.32E-10

Table C2-2e
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INGESTION (CONTINUED)	1,2,4- TRIMETHYLBENZENE	0.025	mg/kg	1.15E-09	1.15E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	1,3,5- TRIMETHYLBENZENE	0.009	mg/kg	4.29E-10	4.29E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	VINYL CHLORIDE	0.034	mg/kg	1.57E-09	1.57E-09	mg/kg-day	1.50E+00	$(mg/kg\text{-}day)^{-1}$	2.35E-09	2.35E-09
	XYLENE (TOTAL)	0.11	mg/kg	5.07E-09	5.07E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
DERMAL CONTACT	**INORGANICS**									
	ALUMINUM	30,140	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ANTIMONY	4.5	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ARSENIC	21.5	mg/kg	8.93E-08	8.93E-08	mg/kg-day	9.45E+00	$(mg/kg\text{-}day)^{-1}$	8.43E-07	8.43E-07
	BARIUM	94.0	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BERYLLIUM	0.65	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CADMIUM	2.90	mg/kg	4.01E-10	4.01E-10	mg/kg-day	1.52E+01	$(mg/kg\text{-}day)^{-1}$	6.10E-09	6.10E-09
	CHROMIUM	213	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	COBALT	18.7	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	COPPER	197	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	HEXAVALENT CHROMIUM	0.07	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	LEAD	96	mg/kg	NA	NA	mg/kg-day	8.50E-03	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MANGANESE	967	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MERCURY	1.4	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MOLYBDENUM	5.0	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	NICKEL	114	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	SELENIUM	1.2	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	SILVER	2.7	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	THALLIUM	0.46	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

Table C2-2e
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
DERMAL CONTACT (CONTINUED)	*TIN*	16.2	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	VANADIUM	117	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ZINC	237	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PESTICIDES									
	ALPHA-CHLORDANE	0.0082	mg/kg	4.54E-11	4.54E-11	mg/kg-day	1.30E+00	$(mg/kg\text{-}day)^{-1}$	5.90E-11	5.90E-11
	BETA BHC	0.001	mg/kg	5.54E-12	5.54E-12	mg/kg-day	1.80E+00	$(mg/kg\text{-}day)^{-1}$	9.96E-12	9.96E-12
	DELTA BHC	0.002	mg/kg	1.11E-11	1.11E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	2,4- DDD	0.029	mg/kg	1.20E-10	1.20E-10	mg/kg-day	2.40E-01	$(mg/kg\text{-}day)^{-1}$	2.89E-11	2.89E-11
	4,4- DDD	0.086	mg/kg	3.57E-10	3.57E-10	mg/kg-day	2.40E-01	$(mg/kg\text{-}day)^{-1}$	8.57E-11	8.57E-11
	4,4- DDE	0.017	mg/kg	7.06E-11	7.06E-11	mg/kg-day	3.40E-01	$(mg/kg\text{-}day)^{-1}$	2.40E-11	2.40E-11
	4,4- DDT	0.012	mg/kg	4.98E-11	4.98E-11	mg/kg-day	3.40E-01	$(mg/kg\text{-}day)^{-1}$	1.69E-11	1.69E-11
	DIELDRIN	0.0039	mg/kg	5.40E-11	5.40E-11	mg/kg-day	1.60E+01	$(mg/kg\text{-}day)^{-1}$	8.64E-10	8.64E-10
	ENDOSULFAN I	0.004	mg/kg	5.54E-11	5.54E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDOSULFAN SULFATE	0.003	mg/kg	4.15E-11	4.15E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN	0.02	mg/kg	2.77E-10	2.77E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN ALDEHYDE	0.006	mg/kg	8.30E-11	8.30E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN KETONE	0.003	mg/kg	4.15E-11	4.15E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	GAMMA-CHLORDANE	0.0085	mg/kg	4.71E-11	4.71E-11	mg/kg-day	1.30E+00	$(mg/kg\text{-}day)^{-1}$	6.12E-11	6.12E-11
	HEPTACHLOR	0.0002	mg/kg	2.77E-12	2.77E-12	mg/kg-day	4.50E+00	$(mg/kg\text{-}day)^{-1}$	1.25E-11	1.25E-11
	HEPTACHLOR EPOXIDE	0.0003	mg/kg	4.15E-12	4.15E-12	mg/kg-day	9.10E+00	$(mg/kg\text{-}day)^{-1}$	3.78E-11	3.78E-11
	HEXACHLOROBENZENE	0.0008	mg/kg	1.11E-11	1.11E-11	mg/kg-day	1.80E+00	$(mg/kg\text{-}day)^{-1}$	1.99E-11	1.99E-11
	METHOXYCHLOR	0.02	mg/kg	1.11E-10	1.11E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MIREX	0.004	mg/kg	5.54E-11	5.54E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

Table C2-2e
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
DERMAL CONTACT (CONTINUED)	TRANS-NONACHLOR	0.0024	mg/kg	1.33E-11	1.33E-11	mg/kg-day	1.30E+00	$(mg/kg\text{-}day)^{-1}$	1.73E-11	1.73E-11
	PCBs									
	PCBs (TOTAL)	0.20	mg/kg	3.87E-09	3.87E-09	mg/kg-day	5.00E+00	$(mg/kg\text{-}day)^{-1}$	1.94E-08	1.94E-08
	SVOCs									
	ACENAPHTHENE	0.13	mg/kg	2.34E-09	2.34E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ACENAPHTHYLENE	0.11	mg/kg	1.98E-09	1.98E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ANTHRACENE	0.13	mg/kg	2.34E-09	2.34E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BENZO(A)ANTHRACENE	0.27	mg/kg	4.86E-09	4.86E-09	mg/kg-day	1.20E+00	$(mg/kg\text{-}day)^{-1}$	5.83E-09	5.83E-09
	BENZO(A)PYRENE	0.23	mg/kg	4.14E-09	4.14E-09	mg/kg-day	1.20E+01	$(mg/kg\text{-}day)^{-1}$	4.97E-08	4.97E-08
	BENZO(B)FLUORANTHENE	0.23	mg/kg	4.14E-09	4.14E-09	mg/kg-day	1.20E+00	$(mg/kg\text{-}day)^{-1}$	4.97E-09	4.97E-09
	BENZO(G,H,I)PERYLENE	0.16	mg/kg	2.88E-09	2.88E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BENZO(K)FLUORANTHENE	0.23	mg/kg	4.14E-09	4.14E-09	mg/kg-day	1.20E+00	$(mg/kg\text{-}day)^{-1}$	4.97E-09	4.97E-09
	BENZOIC ACID	0.68	mg/kg	9.41E-09	9.41E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BIS(2-ETHYLHEXYL)PHTHALATE	1.1	mg/kg	1.52E-08	1.52E-08	mg/kg-day	1.40E-02	$(mg/kg\text{-}day)^{-1}$	2.13E-10	2.13E-10
	BUTYLBENZYLPHTHALATE	0.025	mg/kg	3.46E-10	3.46E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CARBAZOLE	0.55	mg/kg	7.61E-09	7.61E-09	mg/kg-day	2.00E-02	$(mg/kg\text{-}day)^{-1}$	1.52E-10	1.52E-10
	4- CHLOROANILINE	0.003	mg/kg	4.15E-11	4.15E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	2- CHLOROPHENOL	0.043	mg/kg	5.99E-10	5.99E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CHRYSENE	0.26	mg/kg	4.68E-09	4.68E-09	mg/kg-day	1.20E-01	$(mg/kg\text{-}day)^{-1}$	5.61E-10	5.61E-10
	DIBENZOFURAN	0.36	mg/kg	4.98E-09	4.98E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	3,3- DICHLOROBENZIDINE	0.012	mg/kg	1.66E-10	1.66E-10	mg/kg-day	4.50E-01	$(mg/kg\text{-}day)^{-1}$	7.47E-11	7.47E-11
	2,6- DINITROTOLUENE	0.37	mg/kg	5.12E-09	5.12E-09	mg/kg-day	6.10E-01	$(mg/kg\text{-}day)^{-1}$	3.12E-09	3.12E-09
	FLUORANTHENE	0.370	mg/kg	6.66E-09	6.66E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

Table C2-2e
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
DERMAL CONTACT (CONTINUED)	*FLUORENE*	0.1	mg/kg	2.34E-09	2.34E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	INDENO(1,2,3-CD)PYRENE	0.16	mg/kg	2.88E-09	2.88E-09	mg/kg-day	1.20E+00	$(mg/kg\text{-}day)^{-1}$	3.45E-09	3.45E-09
	2- METHYLNAPHTHALENE	0.18	mg/kg	2.49E-09	2.49E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	4- METHYLPHENOL	0.23	mg/kg	3.18E-09	3.18E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	NAPHTHALENE	0.11	mg/kg	1.98E-09	1.98E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PENTACHLOROPHENOL	0.54	mg/kg	7.47E-09	7.47E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PHENANTHRENE	0.20	mg/kg	3.60E-09	3.60E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PHENOL	0.29	mg/kg	4.01E-09	4.01E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PYRENE	0.420	mg/kg	7.56E-09	7.56E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TPH									
	TPH AS DIESEL	172	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TPH AS GASOLINE	4.0	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TPH AS MOTOR OIL	324	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	VOCs									
	ACETONE	0.32	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BENZENE	0.005	mg/kg	NA	NA	mg/kg-day	1.00E-01	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CARBON DISULFIDE	0.025	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CHLOROBENZENE	0.024	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CIS-1,2-DICHLOROETHENE	0.005	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ETHYLBENZENE	0.044	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	4- ISOPROPYLTOLUENE	0.007	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	METHYLENE CHLORIDE	0.3	mg/kg	NA	NA	mg/kg-day	1.40E-02	$(mg/kg\text{-}day)^{-1}$	NA	NA
	NAPHTHALENE	0.016	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

Table C2-2e
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
DERMAL CONTACT (CONTINUED)	TOLUENE	0.03	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TRANS-1,2-DICHLOROETHENE	0.023	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TRICHLOROETHENE	0.007	mg/kg	NA	NA	mg/kg-day	4.10E-01	$(mg/kg\text{-}day)^{-1}$	NA	NA
	1,2,4- TRIMETHYLBENZENE	0.025	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	1,3,5- TRIMETHYLBENZENE	0.009	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	VINYL CHLORIDE	0.034	mg/kg	NA	NA	mg/kg-day	1.50E+00	$(mg/kg\text{-}day)^{-1}$	NA	NA
	XYLENE (TOTAL)	0.11	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
INHALATION OF PARTICULATES AND VAPORS	**INORGANICS**									
	ALUMINUM	30,140	mg/kg	2.57E-06	1.34E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ANTIMONY	4.5	mg/kg	3.84E-10	1.99E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ARSENIC	21.5	mg/kg	1.83E-09	9.53E-10	mg/kg-day	1.20E+01	$(mg/kg\text{-}day)^{-1}$	2.20E-08	1.14E-08
	BARIUM	94.0	mg/kg	8.01E-09	4.17E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BERYLLIUM	0.65	mg/kg	5.54E-11	2.88E-11	mg/kg-day	8.40E+00	$(mg/kg\text{-}day)^{-1}$	4.65E-10	2.42E-10
	CADMIUM	2.90	mg/kg	2.47E-10	1.29E-10	mg/kg-day	1.50E+01	$(mg/kg\text{-}day)^{-1}$	3.71E-09	1.93E-09
	CHROMIUM	213	mg/kg	1.82E-08	9.44E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	COBALT	18.7	mg/kg	1.59E-09	8.29E-10	mg/kg-day	9.80E+00	$(mg/kg\text{-}day)^{-1}$	1.56E-08	8.12E-09
	COPPER	197	mg/kg	1.68E-08	8.73E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	HEXAVALENT CHROMIUM	0.07	mg/kg	5.97E-12	3.10E-12	mg/kg-day	5.10E+02	$(mg/kg\text{-}day)^{-1}$	3.04E-09	1.58E-09
	LEAD	96	mg/kg	8.18E-09	4.25E-09	mg/kg-day	4.20E-02	$(mg/kg\text{-}day)^{-1}$	3.44E-10	1.79E-10
	MANGANESE	967	mg/kg	8.24E-08	4.29E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MERCURY	1.4	mg/kg	1.19E-10	6.20E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MOLYBDENUM	5.0	mg/kg	4.26E-10	2.22E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	NICKEL	114	mg/kg	9.72E-09	5.05E-09	mg/kg-day	9.10E-01	$(mg/kg\text{-}day)^{-1}$	8.84E-09	4.60E-09

Table C2-2e
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INHALATION OF PARTICULATES AND VAPORS (CONTINUED)	*SELENIUM*	1.2	mg/kg	1.02E-10	5.32E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	SILVER	2.7	mg/kg	2.30E-10	1.20E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	THALLIUM	0.46	mg/kg	3.92E-11	2.04E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TIN	16.2	mg/kg	1.38E-09	7.18E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	VANADIUM	117	mg/kg	9.97E-09	5.19E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ZINC	237	mg/kg	2.02E-08	1.05E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PESTICIDES									
	ALPHA-CHLORDANE	0.0082	mg/kg	6.99E-13	3.63E-13	mg/kg-day	3.50E-01	$(mg/kg\text{-}day)^{-1}$	2.45E-13	1.27E-13
	BETA BHC	0.001	mg/kg	8.52E-14	4.43E-14	mg/kg-day	1.86E+00	$(mg/kg\text{-}day)^{-1}$	1.59E-13	8.24E-14
	DELTA BHC	0.002	mg/kg	1.70E-13	8.86E-14	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	2,4- DDD	0.029	mg/kg	2.47E-12	1.29E-12	mg/kg-day	2.40E-01	$(mg/kg\text{-}day)^{-1}$	5.93E-13	3.08E-13
	4,4- DDD	0.086	mg/kg	7.33E-12	3.81E-12	mg/kg-day	2.40E-01	$(mg/kg\text{-}day)^{-1}$	1.76E-12	9.15E-13
	4,4- DDE	0.017	mg/kg	1.45E-12	7.53E-13	mg/kg-day	3.40E-01	$(mg/kg\text{-}day)^{-1}$	4.93E-13	2.56E-13
	4,4- DDT	0.012	mg/kg	1.02E-12	5.32E-13	mg/kg-day	3.40E-01	$(mg/kg\text{-}day)^{-1}$	3.48E-13	1.81E-13
	DIELDRIN	0.0039	mg/kg	3.32E-13	1.73E-13	mg/kg-day	1.60E+01	$(mg/kg\text{-}day)^{-1}$	5.32E-12	2.77E-12
	ENDOSULFAN I	0.004	mg/kg	3.41E-13	1.77E-13	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDOSULFAN SULFATE	0.003	mg/kg	2.56E-13	1.33E-13	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN	0.02	mg/kg	1.70E-12	8.86E-13	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN ALDEHYDE	0.006	mg/kg	5.11E-13	2.66E-13	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN KETONE	0.003	mg/kg	2.56E-13	1.33E-13	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	GAMMA-CHLORDANE	0.0085	mg/kg	7.24E-13	3.77E-13	mg/kg-day	3.50E-01	$(mg/kg\text{-}day)^{-1}$	2.54E-13	1.32E-13
	HEPTACHLOR	0.0002	mg/kg	1.70E-14	8.86E-15	mg/kg-day	4.50E+00	$(mg/kg\text{-}day)^{-1}$	7.67E-14	3.99E-14
	HEPTACHLOR EPOXIDE	0.0003	mg/kg	2.56E-14	1.33E-14	mg/kg-day	9.10E+00	$(mg/kg\text{-}day)^{-1}$	2.33E-13	1.21E-13

Table C2-2e
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INHALATION OF PARTICULATES AND VAPORS (CONTINUED)	HEXACHLOROBENZENE	0.0008	mg/kg	6.82E-14	3.55E-14	mg/kg-day	1.80E+00	$(mg/kg\text{-}day)^{-1}$	1.23E-13	6.38E-14
	METHOXYCHLOR	0.02	mg/kg	1.70E-12	8.86E-13	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MIREX	0.004	mg/kg	3.41E-13	1.77E-13	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TRANS-NONACHLOR	0.0024	mg/kg	2.05E-13	1.06E-13	mg/kg-day	3.50E-01	$(mg/kg\text{-}day)^{-1}$	7.16E-14	3.72E-14
	PCBs									
	PCBs (TOTAL)	0.20	mg/kg	1.70E-11	8.86E-12	mg/kg-day	2.00E+00	$(mg/kg\text{-}day)^{-1}$	3.41E-11	1.77E-11
	SVOCs									
	ACENAPHTHENE	0.13	mg/kg	2.02E-09	1.05E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ACENAPHTHYLENE	0.11	mg/kg	9.38E-12	4.88E-12	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ANTHRACENE	0.13	mg/kg	5.19E-10	2.70E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BENZO(A)ANTHRACENE	0.27	mg/kg	2.30E-11	1.20E-11	mg/kg-day	3.90E-01	$(mg/kg\text{-}day)^{-1}$	8.98E-12	4.67E-12
	BENZO(A)PYRENE	0.23	mg/kg	1.96E-11	1.02E-11	mg/kg-day	3.90E+00	$(mg/kg\text{-}day)^{-1}$	7.65E-11	3.98E-11
	BENZO(B)FLUORANTHENE	0.23	mg/kg	1.96E-11	1.02E-11	mg/kg-day	3.90E-01	$(mg/kg\text{-}day)^{-1}$	7.65E-12	3.98E-12
	BENZO(G,H,I)PERYLENE	0.16	mg/kg	1.36E-11	7.09E-12	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BENZO(K)FLUORANTHENE	0.23	mg/kg	1.96E-11	1.02E-11	mg/kg-day	3.90E-01	$(mg/kg\text{-}day)^{-1}$	7.65E-12	3.98E-12
	BENZOIC ACID	0.68	mg/kg	5.80E-11	3.01E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BIS(2-ETHYLHEXYL)PHTHALATE	1.1	mg/kg	9.38E-11	4.88E-11	mg/kg-day	1.40E-02	$(mg/kg\text{-}day)^{-1}$	1.31E-12	6.83E-13
	BUTYLBENZYLPHTHALATE	0.025	mg/kg	2.13E-12	1.11E-12	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CARBAZOLE	0.55	mg/kg	4.69E-11	2.44E-11	mg/kg-day	2.00E-02	$(mg/kg\text{-}day)^{-1}$	9.38E-13	4.88E-13
	4- CHLOROANILINE	0.003	mg/kg	2.56E-13	1.33E-13	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	2- CHLOROPHENOL	0.043	mg/kg	3.69E-12	1.92E-12	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CHRYSENE	0.26	mg/kg	2.69E-10	1.40E-10	mg/kg-day	3.90E-02	$(mg/kg\text{-}day)^{-1}$	1.05E-11	5.46E-12
	DIBENZOFURAN	0.36	mg/kg	3.07E-11	1.60E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

Table C2-2e
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INHALATION OF PARTICULATES AND VAPORS (CONTINUED)	3,3- DICHLOROBENZIDINE	0.012	mg/kg	1.02E-12	5.32E-13	mg/kg-day	4.50E-01	$(mg/kg\text{-}day)^{-1}$	4.60E-13	2.39E-13
	2,6- DINITROTOLUENE	0.37	mg/kg	3.15E-11	1.64E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	FLUORANTHENE	0.370	mg/kg	3.15E-11	1.64E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	FLUORENE	0.1	mg/kg	1.01E-09	5.25E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	INDENO(1,2,3-CD)PYRENE	0.16	mg/kg	1.36E-11	7.09E-12	mg/kg-day	3.90E-01	$(mg/kg\text{-}day)^{-1}$	5.32E-12	2.77E-12
	2- METHYLNAPHTHALENE	0.18	mg/kg	1.53E-11	7.98E-12	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	4- METHYLPHENOL	0.23	mg/kg	1.96E-11	1.02E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	NAPHTHALENE	0.11	mg/kg	7.15E-09	3.72E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PENTACHLOROPHENOL	0.54	mg/kg	4.60E-11	2.39E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PHENANTHRENE	0.20	mg/kg	1.70E-11	8.86E-12	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PHENOL	0.29	mg/kg	2.47E-11	1.29E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PYRENE	0.420	mg/kg	3.09E-10	1.61E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TPH									
	TPH AS DIESEL	172	mg/kg	1.47E-08	7.62E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TPH AS GASOLINE	4.0	mg/kg	3.41E-10	1.77E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TPH AS MOTOR OIL	324	mg/kg	2.76E-08	1.44E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	VOCs									
	ACETONE	0.32	mg/kg	6.88E-08	3.58E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BENZENE	0.005	mg/kg	5.18E-09	2.69E-09	mg/kg-day	1.00E-01	$(mg/kg\text{-}day)^{-1}$	5.18E-10	2.69E-10
	CARBON DISULFIDE	0.025	mg/kg	5.82E-08	3.03E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CHLOROBENZENE	0.024	mg/kg	1.07E-08	5.54E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CIS-1,2-DICHLOROETHENE	0.005	mg/kg	4.82E-09	2.51E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ETHYLBENZENE	0.044	mg/kg	2.28E-08	1.18E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

Table C2-2e
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INHALATION OF PARTICULATES AND VAPORS (CONTINUED)	4- ISOPROPYLTOLUENE	0.007	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	METHYLENE CHLORIDE	0.3	mg/kg	3.35E-07	1.74E-07	mg/kg-day	3.50E-03	$(mg/kg\text{-}day)^{-1}$	1.17E-09	6.11E-10
	NAPHTHALENE	0.016	mg/kg	1.04E-09	5.41E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TOLUENE	0.03	mg/kg	2.10E-08	1.09E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TRANS-1,2-DICHLOROETHENE	0.023	mg/kg	2.80E-08	1.45E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TRICHLOROETHENE	0.007	mg/kg	5.93E-09	3.08E-09	mg/kg-day	7.00E-03	$(mg/kg\text{-}day)^{-1}$	4.15E-11	2.16E-11
	1,2,4- TRIMETHYLBENZENE	0.025	mg/kg	3.49E-09	1.82E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	1,3,5- TRIMETHYLBENZENE	0.009	mg/kg	3.25E-09	1.69E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	VINYL CHLORIDE	0.034	mg/kg	9.51E-08	4.94E-08	mg/kg-day	1.54E-02	$(mg/kg\text{-}day)^{-1}$	1.46E-09	7.61E-10
	XYLENE (TOTAL)	0.11	mg/kg	5.04E-08	2.62E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

Notes:
The cancer risk for chemicals that are italicized and underlined have been modified for post remediation residual risk.
CTE = Central Tendency Exposure
EPC = Exposure point concentration
HQ = Hazard Quotient
mg/kg = milligrams per kilogram
mg/kg-day = milligrams per kilogram per day
NA = Not Applicable
PCBs = Polychlorinated Biphenyls
RME = Reasonable Maximum Exposure
SVOCs = Semivolatile Organic Compounds
TPH = Total Petroleum Hydrocarbons
VOCs = Volatile Organic Compounds

Table C2-2f
Summary of Current Receptor RME Cancer Risks and Noncarcinogenic Hazard Indices
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Receptor Population:	Recreational User
Receptor Age:	Child (1 to 17 years)

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Primary Target Organ	Non-Carconogenic Hazard Index			
				Ingestion	Dermal	Inhalation (Outdoor)	Exposure Routes Total			Ingestion HQ	Dermal HQ	Inhalation (Outdoor) HQ	Total HI
Soil (0 to 10 feet)	Soil	On-Site Soil	**INORGANICS (mg/kg)**					**INORGANICS (mg/kg)**					
			ALUMINUM	NA	NA	NA	NA	ALUMINUM	Body Weight	3.29E-02	NA	9.89E-04	3.39E-02
			ANTIMONY	NA	NA	NA	NA	ANTIMONY	Blood; Whole Body	1.23E-02	NA	NA	1.23E-02
			ARSENIC	5.39E-05	7.43E-06	2.88E-09	6.14E-05	ARSENIC	Cardiovascular System; Fetal; Nervous System; Skin	7.83E-02	1.08E-02	1.15E-04	8.92E-02
			BARIUM	NA	NA	NA	NA	BARIUM	Cardiovascular System; Fetal; Kidney; NOEL	1.47E-03	NA	3.02E-05	1.50E-03
			BERYLLIUM	NA	NA	6.09E-11	6.09E-11	BERYLLIUM	GI System; Immune System; Respiratory	3.55E-04	NA	1.49E-05	3.70E-04
			CADMIUM	2.92E-07	5.37E-08	4.85E-10	3.47E-07	CADMIUM	Kidney; Respiratory	6.34E-03	1.16E-03	2.33E-05	7.53E-03
			CHROMIUM	NA	NA	NA	NA	CHROMIUM	NOEL	1.55E-04	NA	NA	1.55E-04
			COBALT	NA	NA	2.05E-09	2.05E-09	COBALT	Cardiovascular System; Respiratory	1.02E-03	NA	1.51E-04	1.17E-03
			COPPER	NA	NA	NA	NA	COPPER	GI System	5.38E-03	NA	NA	5.38E-03
			HEXAVALENT CHROMIUM	NA	NA	3.98E-10	3.98E-10	HEXAVALENT CHROMIUM	NOEL; Respiratory	2.55E-05	NA	1.12E-07	2.56E-05
			LEAD	2.17E-07	NA	4.50E-11	2.17E-07	LEAD	NA	NA	NA	NA	NA
			MANGANESE	NA	NA	NA	NA	MANGANESE	Nervous System	7.55E-03	NA	3.11E-03	1.07E-02
			MERCURY	NA	NA	NA	NA	MERCURY	Nervous System	5.10E-03	NA	2.50E-06	5.10E-03
			MOLYBDENUM	NA	NA	NA	NA	MOLYBDENUM	Kidney	1.09E-03	NA	NA	1.09E-03
			NICKEL	NA	NA	1.16E-09	1.16E-09	NICKEL	Body Weight; Respiratory	6.23E-03	NA	3.67E-04	6.60E-03
			SELENIUM	NA	NA	NA	NA	SELENIUM	Cardiovascular System; Liver; Nervous System; Skin	2.62E-04	NA	9.66E-09	2.62E-04
			SILVER	NA	NA	NA	NA	SILVER	Skin	5.90E-04	NA	NA	5.90E-04
			THALLIUM	NA	NA	NA	NA	THALLIUM	Blood; Liver	7.62E-03	NA	NA	7.62E-03
			TIN	NA	NA	NA	NA	TIN	Kidney; Liver	2.95E-05	NA	NA	2.95E-05
			VANADIUM	NA	NA	NA	NA	VANADIUM	NOEL	1.83E-02	NA	NA	1.83E-02
			ZINC	NA	NA	NA	NA	ZINC	Blood	8.63E-04	NA	NA	8.63E-04
			PESTICIDES (mg/kg)					**PESTICIDES (mg/kg)**					
			ALPHA-CHLORDANE	2.83E-09	5.19E-10	3.20E-14	3.35E-09	ALPHA-CHLORDANE	Liver	1.79E-05	3.29E-06	1.88E-09	2.12E-05
			BETA BHC	4.78E-10	8.77E-11	2.08E-14	5.65E-10	BETA BHC	Liver	5.46E-06	1.00E-06	2.30E-10	6.47E-06
			DELTA BHC	NA	NA	NA	NA	DELTA BHC	NA	NA	NA	NA	NA
			2,4- DDD	1.85E-09	2.54E-10	7.77E-14	2.10E-09	2,4 DDD	Liver	6.34E-05	8.73E-06	2.67E-09	7.21E-05
			4,4- DDD	5.48E-09	7.54E-10	2.30E-13	6.23E-09	4,4- DDD	Liver	1.88E-04	2.59E-05	7.90E-09	2.14E-04
			4,4- DDE	1.53E-09	2.11E-10	6.45E-14	1.75E-09	4,4- DDE	Liver	3.72E-05	5.12E-06	1.56E-09	4.23E-05
			4,4- DDT	1.08E-09	1.49E-10	4.55E-14	1.23E-09	4,4- DDT	Liver	2.62E-05	3.61E-06	1.10E-09	2.98E-05

Table C2-2f
Summary of Current Receptor RME Cancer Risks and Noncarcinogenic Hazard Indices
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Receptor Population:	Recreational User
Receptor Age:	Child (1 to 17 years)

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Primary Target Organ	Non-Carconogenic Hazard Index			
				Ingestion	Dermal	Inhalation (Outdoor)	Exposure Routes Total			Ingestion HQ	Dermal HQ	Inhalation (Outdoor) HQ	Total HI
			DIELDRIN	1.66E-08	7.60E-09	6.96E-13	2.42E-08	DIELDRIN	Liver	8.52E-05	3.91E-05	3.58E-09	1.24E-04
			ENDOSULFAN I	NA	NA	NA	NA	ENDOSULFAN I	Body Weight; Kidney; Nervous System	7.29E-07	3.34E-07	3.06E-11	1.06E-06
			ENDOSULFAN SULFATE	NA	NA	NA	NA	ENDOSULFAN SULFATE	Body Weight; Kidney; Nervous System	5.46E-07	2.51E-07	2.30E-11	7.97E-07
			ENDRIN	NA	NA	NA	NA	ENDRIN	Liver; Kidney; Nervous System	7.29E-05	3.34E-05	3.06E-09	1.06E-04
			ENDRIN ALDEHYDE	NA	NA	NA	NA	ENDRIN ALDEHYDE	Liver; Kidney; Nervous System	2.19E-05	1.00E-05	9.19E-10	3.19E-05
			ENDRIN KETONE	NA	NA	NA	NA	ENDRIN KETONE	Liver; Kidney; Nervous System	1.09E-05	5.02E-06	4.59E-10	1.59E-05
			GAMMA-CHLORDANE	2.93E-09	5.38E-10	3.32E-14	3.47E-09	GAMMA-CHLORDANE	Liver	1.86E-05	3.41E-06	1.95E-09	2.20E-05
			HEPTACHLOR	2.39E-10	1.10E-10	1.00E-14	3.49E-10	HEPTACHLOR	Liver	4.37E-07	2.01E-07	1.84E-11	6.38E-07
			HEPTACHLOR EPOXIDE	7.25E-10	3.33E-10	3.05E-14	1.06E-09	HEPTACHLOR EPOXIDE	Liver	2.52E-05	1.16E-05	1.06E-09	3.68E-05
			HEXACHLOROBENZENE	3.82E-10	1.75E-10	1.61E-14	5.58E-10	HEXACHLOROBENZENE	Liver	1.09E-06	5.02E-07	4.59E-11	1.59E-06
			METHOXYCHLOR	NA	NA	NA	NA	METHOXYCHLOR	Fetal	4.37E-06	8.03E-07	1.84E-10	5.17E-06
			MIREX	NA	NA	NA	NA	MIREX	Liver	2.19E-05	1.00E-05	9.19E-10	3.19E-05
			TRANS-NONACHLOR	8.28E-10	1.52E-10	9.37E-15	9.80E-10	TRANS-NONACHLOR	Liver	5.25E-06	9.63E-07	5.51E-10	6.21E-06
			PCBs (mg/kg)					**PCBs (mg/kg)**					
			PCBs (TOTAL)	2.65E-07	1.71E-07	4.46E-12	4.36E-07	PCBs (TOTAL)	Immune System	1.09E-02	7.02E-03	4.59E-07	1.80E-02
			SVOCs (mg/kg)					**SVOCs (mg/kg)**					
			ACENAPHTHENE	NA	NA	NA	NA	ACENAPHTHENE	Liver	2.37E-06	1.41E-06	7.30E-07	4.51E-06
			ACENAPHTHYLENE	NA	NA	NA	NA	ACENAPHTHYLENE	NA	NA	NA	NA	NA
			ANTHRACENE	NA	NA	NA	NA	ANTHRACENE	NOEL	4.74E-07	2.83E-07	3.75E-08	7.94E-07
			BENZO(A)ANTHRACENE	8.60E-08	5.13E-08	1.18E-12	1.37E-07	BENZO(A)ANTHRACENE	NA	NA	NA	NA	NA
			BENZO(A)PYRENE	7.33E-07	4.37E-07	1.00E-11	1.17E-06	BENZO(A)PYRENE	NA	NA	NA	NA	NA
			BENZO(B)FLUORANTHENE	7.33E-08	4.37E-08	1.00E-12	1.17E-07	BENZO(B)FLUORANTHENE	NA	NA	NA	NA	NA
			BENZO(G,H,I)PERYLENE	NA	NA	NA	NA	BENZO(G,H,I)PERYLENE	Kidney; Nervous System	4.37E-06	2.61E-06	1.84E-10	6.98E-06
			BENZO(K)FLUORANTHENE	7.33E-08	4.37E-08	1.00E-12	1.17E-07	BENZO(K)FLUORANTHENE	NA	NA	NA	NA	NA
			BENZOIC ACID	NA	NA	NA	NA	BENZOIC ACID	NOEL	1.86E-07	8.53E-08	NA	2.71E-07
			BIS(2-ETHYLHEXYL)PHTHALATE	4.09E-09	1.88E-09	1.72E-13	5.96E-09	BIS(2-ETHYLHEXYL)PHTHALATE	Liver	6.01E-05	2.76E-05	2.53E-09	8.77E-05
			BUTYLBENZYPHTHALATE	NA	NA	NA	NA	BUTYLBENZYPHTHALATE	Liver	1.37E-07	6.27E-08	5.74E-12	1.99E-07
			CABAZOLE	2.92E-09	1.34E-09	1.23E-13	4.26E-09	CABAZOLE	NA	NA	NA	NA	NA
			4- CHLOROANILINE	NA	NA	NA	NA	4- CHLOROANILINE	Spleen	8.20E-07	3.76E-07	3.45E-11	1.20E-06
			2- CHLOROPHENOL	NA	NA	NA	NA	2- CHLOROPHENOL	Reproductive	9.46E-06	4.34E-06	3.98E-10	1.38E-05
			CHRYSENE	8.28E-09	4.94E-09	5.53E-11	1.33E-08	CHRYSENE	NA	NA	NA	NA	NA
			DIBENZOFURAN	NA	NA	NA	NA	DIBENZOFURAN	NA	1.97E-04	9.03E-05	8.27E-09	2.87E-04

Table C2-2f
Summary of Current Receptor RME Cancer Risks and Noncarcinogenic Hazard Indices
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Receptor Population:	Recreational User
Receptor Age:	Child (1 to 17 years)

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Primary Target Organ	Non-Carconogenic Hazard Index			
				Ingestion	Dermal	Inhalation (Outdoor)	Exposure Routes Total			Ingestion HQ	Dermal HQ	Inhalation (Outdoor) HQ	Total HI
			3,3- DICHLOROBENZIDINE	1.43E-09	6.58E-10	6.03E-14	2.09E-09	3,3- DICHLOROBENZIDINE	NA	NA	NA	NA	NA
			2,6- DINITROTOLUENE	5.99E-08	2.75E-08	NA	8.74E-08	2,6- DINITROTOLUENE	NA	4.04E-04	1.86E-04	1.70E-08	5.90E-04
			FLUORANTHENE	NA	NA	NA	NA	FLUORANTHENE	Blood; Kidney; Liver	1.01E-05	6.03E-06	4.25E-10	1.61E-05
			FLUORENE	NA	NA	NA	NA	FLUORENE	Blood	3.55E-06	2.12E-06	5.48E-07	6.22E-06
			INDENO(1,2,3-CD)PYRENE	5.10E-08	3.04E-08	6.96E-13	8.14E-08	INDENO(1,2,3-CD)PYRENE	NA	NA	NA	NA	NA
			2- METHYLNAPHTHALENE	NA	NA	NA	NA	2- METHYLNAPHTHALENE	Body Weight; Respiratory	4.92E-05	2.26E-05	NA	7.18E-05
			4- METHYPHENOL	NA	NA	NA	NA	4- METHYLPHENOL	Nervous System; Respiratory	5.03E-05	2.31E-05	NA	7.33E-05
			NAPHTHALENE	NA	NA	NA	NA	NAPHTHALENE	Body Weight; Respiratory	6.01E-06	3.59E-06	1.81E-04	1.91E-04
			PENTACHLOROPHENOL	NA	NA	NA	NA	PENTACHLOROPHENOL	Liver; Kidney	1.97E-05	9.03E-06	8.27E-10	2.87E-05
			PHENANTHRENE	NA	NA	NA	NA	PHENANTHRENE	NOEL	7.29E-07	4.35E-07	3.06E-11	1.16E-06
			PHENOL	NA	NA	NA	NA	PHENOL	Cardiovascular System; Fetal; Kidney; Liver; Nervous System	5.28E-07	2.42E-07	2.33E-10	7.71E-07
			PYRENE	NA	NA	NA	NA	PYRENE	Kidney	1.53E-05	9.13E-06	2.23E-07	2.47E-05
			TPH (mg/kg)					**TPH (mg/kg)**					
			TPH AS DIESEL	NA	NA	NA	NA	TPH AS DIESEL	NA	NA	NA	NA	NA
			TPH AS GASOLINE	NA	NA	NA	NA	TPH AS GASOLINE	NA	NA	NA	NA	NA
			TPH AS MOTOR OIL	NA	NA	NA	NA	TPH AS MOTOR OIL	NA	NA	NA	NA	NA
			VOCs (mg/kg)					**VOCs (mg/kg)**					
			ACETONE	NA	NA	NA	NA	ACETONE	Kidney; Liver	3.89E-07	NA	1.66E-06	2.05E-06
			BENZENE	1.33E-10	NA	2.73E-09	2.86E-09	BENZENE	Immune System	1.37E-06	NA	1.31E-05	1.45E-05
			CARBON DISULFIDE	NA	NA	NA	NA	CARBON DISULFIDE	Fetal	2.73E-07	NA	6.32E-06	6.59E-06
			CHLOROBENZENE	NA	NA	NA	NA	CHLOROBENZENE	Kidney; Liver; Reproductive System	1.31E-06	NA	4.05E-05	4.18E-05
			CIS-1,2-DICHLOROETHENE	NA	NA	NA	NA	CIS-1,2-DICHLOROETHENE	Blood	5.46E-07	NA	1.05E-05	1.10E-05
			ETHYLBENZENE	NA	NA	NA	NA	ETHYLBENZENE	Fetal; Kidney; Liver	4.81E-07	NA	1.73E-06	2.21E-06
			4- ISOPROPYLTOLUENE	NA	NA	NA	NA	4- ISOPROPYLTOLUENE	NA	NA	NA	NA	NA
			METHYLENE CHLORIDE	1.11E-09	NA	6.19E-09	7.30E-09	METHYLENE CHLORIDE	Cardiovascular System; Liver; Nervous System	5.46E-06	NA	6.38E-05	6.93E-05
			NAPHTHALENE	NA	NA	NA	NA	NAPHTHALENE	Body Weight; Respiratory	8.74E-07	NA	2.63E-05	2.72E-05
			TOLUENE	NA	NA	NA	NA	TOLUENE	Fetal; Kidney; Liver; Nervous System; Respiratory	1.64E-07	NA	5.31E-06	5.47E-06
			TRANS-1,2-TRICHLOROETHENE	NA	NA	NA	NA	TRANS-1,2-TRICHLOROETHENE	Blood	1.26E-06	NA	3.03E-05	3.16E-05
			TRICHLOROETHENE	7.62E-10	NA	2.19E-10	9.80E-10	TRICHLOROETHENE	Eyes; Nervous System	2.55E-05	NA	1.29E-05	3.84E-05

Table C2-2f
Summary of Current Receptor RME Cancer Risks and Noncarcinogenic Hazard Indices
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Receptor Population:	Recreational User
Receptor Age:	Child (1 to 17 years)

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Primary Target Organ	Non-Carconogenic Hazard Index			
				Ingestion	Dermal	Inhalation (Outdoor)	Exposure Routes Total			Ingestion HQ	Dermal HQ	Inhalation (Outdoor) HQ	Total HI
			1,2,4- TRIMETHYLBENZENE	NA	NA	NA	NA	1,2,4- TRIMETHYLBENZENE	NA	5.46E-07	NA	4.46E-05	4.51E-05
			1,3,5- TRIMETHYLBENZENE	NA	NA	NA	NA	1,3,5- TRIMETHYLBENZENE	NA	2.03E-07	NA	4.15E-05	4.17E-05
			VINYL CHLORIDE	1.35E-08	NA	7.71E-09	2.12E-08	VINYL CHLORIDE	GI System; Liver; Nervous System	1.24E-05	NA	7.21E-05	8.45E-05
			XYLENE (TOTAL)	NA	NA	NA	NA	XYLENE (TOTAL)	Body Weight; Fetal; Nervous System; Respiratory	6.01E-07	NA	3.82E-05	3.88E-05
Groundwater	Shallow Groundwater	Vapors	**VOCs (ug/L)**					**VOCs (ug/L)**					
			ACETONE	NA	NA	NA	NA	ACETONE	Kidney; Liver	NA	NA	5.63E-04	5.63E-04
			BENZENE	NA	NA	9.57E-07	9.57E-07	BENZENE	Fetal; Immune System; Nervous System; Respiratory	NA	NA	4.60E-03	4.60E-03
			2- BUTANONE	NA	NA	NA	NA	2- BUTANONE	Fetal	NA	NA	3.82E-03	3.82E-03
			CARBON DISULFIDE	NA	NA	NA	NA	CARBON DISULFIDE	Fetal; Nervous System	NA	NA	3.55E-04	3.55E-04
			CHLOROBENZENE	NA	NA	NA	NA	CHLOROBENZENE	Kidney; Liver; Reproductive System	NA	NA	2.66E-03	2.66E-03
			CHLOROMETHANE	NA	NA	6.50E-08	6.50E-08	CHLOROMETHANE	NA	NA	NA	4.94E-04	4.94E-04
			CIS-1,2-DICHLOROETHENE	NA	NA	NA	NA	CIS-1,2-DICHLOROETHENE	Blood	NA	NA	6.98E-03	6.98E-03
			1,3- DICHLOROBENZENE			NA		1,3- DICHLOROBENZENE	NA	NA	NA	3.84E-04	3.84E-04
			1,2- DICHLOROETHENE (TOTAL)	NA	NA	NA	NA	1,2- DICHLOROETHENE (TOTAL)	Blood, Liver	NA	NA	3.28E-02	3.28E-02
			ETHYLBENZENE	NA	NA	NA	NA	ETHYLBENZENE	Fetal; Kidney; Liver	NA	NA	7.42E-05	7.42E-05
			TOLUENE	NA	NA	NA	NA	TOLUENE	Fetal; Kidney; Liver; Nervous System; Respiratory	NA	NA	2.12E-04	2.12E-04
			TRANS-1,2-DICHLOROETHENE	NA	NA	NA	NA	TRANS-1,2-DICHLOROETHENE	Blood; Liver	NA	NA	6.52E-04	6.52E-04
			1,2,4- TRIMETHYLBENZENE	NA	NA	NA	NA	1,2,4- TRIMETHYLBENZENE	NA	NA	NA	6.60E-03	6.60E-03
			1,3,5- TRIMETHYLBENZENE	NA	NA	NA	NA	1,3,5- TRIMETHYLBENZENE	NA	NA	NA	4.99E-03	4.99E-03
			VINYL CHLORIDE	NA	NA	9.07E-08	9.07E-08	VINYL CHLORIDE	GI System; Liver; Nervous System	NA	NA	8.48E-04	8.48E-04
			XYLENE (TOTAL)	NA	NA	NA	NA	XYLENE (TOTAL)	Body Weight; Fetal; Nervous System; Respiratory	NA	NA	1.49E-03	1.49E-03
Groundwater	Intermediate and Deep Groundwater	Vapors	**VOCs (ug/L)**					**VOCs (ug/L)**					
			ACETONE	NA	NA	NA	NA	ACETONE	Kidney; Liver	NA	NA	1.25E-04	1.25E-04
			BENZENE	NA	NA	1.40E-06	1.40E-06	BENZENE	Fetal; Immune System; Nervous System; Respiratory	NA	NA	6.73E-03	6.73E-03
			2- BUTANONE	NA	NA	NA	NA	2- BUTANONE	Fetal	NA	NA	5.83E-04	5.83E-04
			CARBON DISULFIDE	NA	NA	NA	NA	CARBON DISULFIDE	Fetal; Nervous System	NA	NA	5.61E-04	5.61E-04

Table C2-2f
Summary of Current Receptor RME Cancer Risks and Noncarcinogenic Hazard Indices
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Receptor Population:	Recreational User
Receptor Age:	Child (1 to 17 years)

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Primary Target Organ	Non-Carconogenic Hazard Index			
				Ingestion	Dermal	Inhalation (Outdoor)	Exposure Routes Total			Ingestion HQ	Dermal HQ	Inhalation (Outdoor) HQ	Total HI
			CHLOROBENZENE	NA	NA	NA	NA	CHLOROBENZENE	Kidney; Liver; Reproductive System	NA	NA	1.01E-02	1.01E-02
			4- METHYL-2-PENTANONE	NA	NA	NA	NA	4- METHYL-2-PENTANONE	Fetal; Kidney; Liver	NA	NA	2.12E-04	2.12E-04
Wetland	Surface	Surface	**INORGANICS (ug/L)**					**INORGANICS (ug/L)**					
Surface Water	Water	Water	ALUMINUM	NA	NA	NA	NA	ALUMINUM	Body Weight	2.34E-04	2.15E-05	NA	2.56E-04
			ANTIMONY	NA	NA	NA	NA	ANTIMONY	Blood; Whole Body	1.94E-04	1.18E-04	NA	3.12E-04
			ARSENIC	1.63E-05	1.50E-07	NA	1.65E-05	ARSENIC	Cardiovascular System; Fetal; Nervous System; Skin	2.37E-03	2.17E-04	NA	2.59E-03
			BARIUM	NA	NA	NA	NA	BARIUM	Cardiovascular System; Fetal; Kidney; NOEL	5.13E-05	6.72E-05	NA	1.18E-04
			CADMIUM	3.66E-08	6.71E-09	NA	4.33E-08	CADMIUM	Kidney; Respiratory	3.96E-05	7.27E-05	NA	1.12E-04
			CHROMIUM	NA	NA	NA	NA	CHROMIUM	NOEL	1.61E-07	1.14E-06	NA	1.30E-06
			COBALT	NA	NA	NA	NA	COBALT	Cardiovascular System; Respiratory	1.98E-05	7.27E-07	NA	2.05E-05
			COPPER	NA	NA	NA	NA	COPPER	GI System	3.75E-05	3.44E-06	NA	4.09E-05
			LEAD	2.07E-09	1.90E-12	NA	2.07E-09	LEAD	NA	NA	NA	NA	NA
			MANGANESE	NA	NA	NA	NA	MANGANESE	Nervous System	1.29E-03	2.95E-03	NA	4.23E-03
			MERCURY	NA	NA	NA	NA	MERCURY	Nervous System	3.79E-05	4.98E-05	NA	8.77E-05
			MOLYBDENUM	NA	NA	NA	NA	MOLYBDENUM	Kidney	5.46E-05	5.02E-06	NA	5.97E-05
			NICKEL	NA	NA	NA	NA	NICKEL	Body Weight; Respiratory	2.57E-04	1.18E-04	NA	3.75E-04
			SELENIUM	NA	NA	NA	NA	SELENIUM	Cardiovascular System; Liver; Nervous System; Skin	2.00E-04	1.84E-05	NA	2.19E-04
			SILVER	NA	NA	NA	NA	SILVER	Skin	1.55E-05	2.13E-05	NA	3.68E-05
			VANADIUM	NA	NA	NA	NA	VANADIUM	NOEL	1.01E-04	3.56E-04	NA	4.57E-04
			ZINC	NA	NA	NA	NA	ZINC	Blood	1.97E-06	1.09E-07	NA	2.08E-06
			PESTICIDES (ug/L)					**PESTICIDES (ug/L)**					
			ALPHA BHC	5.92E-09	NA	NA	5.92E-09	ALPHA BHC	Liver	7.74E-07	NA	NA	7.74E-07
			4,4- DDE	1.02E-10	8.40E-10	NA	9.41E-10	4,4- DDE	Liver	2.46E-07	2.03E-05	NA	2.06E-05
			4,4- DDT	3.20E-09	4.96E-08	NA	5.28E-08	4,4- DDT	Liver	7.74E-06	1.20E-03	NA	1.21E-03
			ENDOSULFAN SULFATE	NA	NA	NA	NA	ENDOSULFAN SULFATE	Body Weight; Kidney; Nervous System	4.86E-07	NA	NA	4.86E-07
			ENDRIN	NA	NA	NA	NA	ENDRIN	Liver; Kidney; Nervous System	2.12E-06	1.98E-05	NA	2.19E-05
			GAMMA-BHC	1.34E-09	NA	NA	1.34E-09	GAMMA-BHC	Kidney; Liver	1.67E-06	8.97E-06	NA	1.06E-05
			HEPTACHLOR	1.39E-09	8.86E-10	NA	2.28E-09	HEPTACHLOR	Liver	2.55E-07	1.62E-06	NA	1.88E-06

Table C2-2f
Summary of Current Receptor RME Cancer Risks and Noncarcinogenic Hazard Indices
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Receptor Population:	Recreational User
Receptor Age:	Child (1 to 17 years)

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Primary Target Organ	Non-Carconogenic Hazard Index			
				Ingestion	Dermal	Inhalation (Outdoor)	Exposure Routes Total			Ingestion HQ	Dermal HQ	Inhalation (Outdoor) HQ	Total HI
			PCBs (ug/L)					**PCBs (ug/L)**					
			PCBs (TOTAL)	8.29E-09	2.04E-07	NA	2.12E-07	PCBs (TOTAL)	Immune System	3.42E-05	8.39E-03	NA	8.43E-03
			SVOCs (ug/L)					**SVOCs (ug/L)**					
			BIS(2-ETHYLHEXYL)PHTHALATE	1.27E-08	2.63E-08	NA	3.90E-08	BIS(2-ETHYLHEXYL)PHTHALATE	Liver	1.87E-05	3.87E-04	NA	4.05E-04
			CHRYSENE	2.65E-09	4.51E-08	NA	4.78E-08	CHRYSENE	NA	NA	NA	NA	NA
			2,4 DIMETHYLPHENOL	NA	NA	NA	NA	2,4- DIMETHYLPHENOL	Blood; Nervous System	4.55E-07	9.17E-07	NA	1.37E-06
			DI-N-BUTYLPHTHALATE	NA	NA	NA	NA	DI-N-BUTYLPHTHALATE	Whole Body	2.37E-06	2.55E-05	NA	2.79E-05
			ISOPHORONE	NA	NA	NA	NA	ISOPHORONE	NOEL	2.28E-08	1.56E-08	NA	3.84E-08
			4- METHYLPHENOL	NA	NA	NA	NA	4- METHYLPHENOL	Nervous System; Respiratory	2.36E-04	3.02E-04	NA	5.38E-04
			TPH (mg/L)					**TPH (mg/L)**					
			TPH AS DIESEL	NA	NA	NA	NA	TPH AS DIESEL	NA	NA	NA	NA	NA
			TPH AS GASOLINE	NA	NA	NA	NA	TPH AS GASOLINE	NA	NA	NA	NA	NA
			TPH AS MOTOR OIL	NA	NA	NA	NA	TPH AS MOTOR OIL	NA	NA	NA	NA	NA

Cancer Risk Across Soil:	6.4E-05
Cancer Risk Across Groundwater:	2.5E-06
Cancer Risk Across Surface Water:	1.7E-05
Total Cancer Risk:	8.4E-05

HI Across Soil:	2.2E-01
HI Across Groundwater:	8.6E-02
HI Across Surface Water:	2.0E-02
Total HI:	3.3E-01
Total Blood HI:	6.2E-02
Total Body Weight HI:	4.3E-02
Total Cardiovascular System HI:	9.5E-02
Total Fetal/Reproductive System HI:	1.2E-01
Total GI System HI:	6.7E-03
Total Immune System HI:	3.8E-02
Total Kidney HI:	2.5E-02
Total Liver HI:	5.9E-02
Total Nervous System HI:	1.3E-01
Total NOEL HI:	2.1E-02
Total Respiratory HI:	3.0E-02
Total Skin HI:	9.3E-02
Total Whole Body HI:	1.3E-02

Notes:
EPC = Exposure point concentration
GI = Gastrointestinal
HQ = Hazard Quotient
HI = Hazard Index
mg/kg = milligrams per kilogram
mg/L = milligrams per liter
NA = Not Applicable
PCBs = Polychlorinated Biphenyls
RME = Reasonable Maximum Exposure
SVOCs = Semivolatile Organic Compounds
TPH = Total Petroleum Hydrocarbons
VOCs = Volatile Organic Compounds
ug/L = microgram per liter

Table C2-2g
Summary of Future Receptor RME Cancer Risks and Noncarcinogenic Hazard Indices
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Receptor Population:	Construction Worker
Receptor Age:	Adult

				Carcinogenic Risk						Non-Carconogenic Hazard Index			
Medium	**Exposure Medium**	**Exposure Point**	**Chemical**	**Ingestion**	**Dermal**	**Inhalation (Outdoor)**	**Exposure Routes Total**	**Chemical**	**Primary Target Organ**	**Ingestion HQ**	**Dermal HQ**	**Inhalation (Outdoor) HQ**	**Total HI**
Soil (0 to 10 feet)	Soil	On-Site Soil	**INORGANICS (mg/kg)**					**INORGANICS (mg/kg)**					
			ALUMINUM	NA	NA	NA	NA	ALUMINUM	Body Weight	9.73E-02	NA	1.28E-01	2.26E-01
			ANTIMONY	NA	NA	NA	NA	ANTIMONY	Blood; Whole Body	3.63E-02	NA	NA	3.63E-02
			ARSENIC	9.37E-06	8.43E-07	2.20E-08	1.02E-05	ARSENIC	Cardiovascular System; Fetal; Nervous System; Skin	2.31E-01	2.08E-02	1.50E-02	2.67E-01
			BARIUM	NA	NA	NA	NA	BARIUM	Cardiovascular System; Fetal; Kidney; NOEL	4.34E-03	NA	3.92E-03	8.26E-03
			BERYLLIUM	NA	NA	4.65E-10	4.65E-10	BERYLLIUM	GI System; Immune System; Respiratory	1.05E-03	NA	1.94E-03	2.99E-03
			CADMIUM	5.08E-08	6.10E-09	3.71E-09	6.06E-08	CADMIUM	Kidney; Respiratory	1.87E-02	2.25E-03	3.03E-03	2.40E-02
			CHROMIUM	NA	NA	NA	NA	CHROMIUM	NOEL	4.59E-04	NA	NA	4.59E-04
			COBALT	NA	NA	1.56E-08	1.56E-08	COBALT	Cardiovascular System; Respiratory	3.02E-03	NA	1.96E-02	2.26E-02
			COPPER	NA	NA	NA	NA	COPPER	GI System	1.59E-02	NA	NA	1.59E-02
			HEXAVALENT CHROMIUM	NA	NA	3.04E-09	3.04E-09	HEXAVALENT CHROMIUM	NOEL; Respiratory	7.53E-05	NA	1.46E-05	8.99E-05
			LEAD	3.76E-08	NA	3.44E-10	3.80E-08	LEAD	NA	NA	NA	NA	NA
			MANGANESE	NA	NA	NA	NA	MANGANESE	Nervous System	2.23E-02	NA	4.03E-01	4.26E-01
			MERCURY	NA	NA	NA	NA	MERCURY	Nervous System	1.51E-02	NA	3.25E-04	1.54E-02
			MOLYBDENUM	NA	NA	NA	NA	MOLYBDENUM	Kidney	3.23E-03	NA	NA	3.23E-03
			NICKEL	NA	NA	8.84E-09	8.84E-09	NICKEL	Body Weight; Respiratory	1.84E-02	NA	4.76E-02	6.61E-02
			SELENIUM	NA	NA	NA	NA	SELENIUM	Cardiovascular System; Liver; Nervous System; Skin	7.75E-04	NA	1.25E-06	7.76E-04
			SILVER	NA	NA	NA	NA	SILVER	Skin	1.74E-03	NA	NA	1.74E-03
			THALLIUM	NA	NA	NA	NA	THALLIUM	Blood; Liver	2.25E-02	NA	NA	2.25E-02
			TIN	NA	NA	NA	NA	TIN	Kidney; Liver	8.72E-05	NA	NA	8.72E-05
			VANADIUM	NA	NA	NA	NA	VANADIUM	NOEL	5.40E-02	NA	NA	5.40E-02
			ZINC	NA	NA	NA	NA	ZINC	Blood	2.55E-03	NA	NA	2.55E-03
			PESTICIDES (mg/kg)					**PESTICIDES (mg/kg)**					
			ALPHA-CHLORDANE	4.92E-10	5.90E-11	2.45E-13	5.51E-10	ALPHA-CHLORDANE	Liver	5.30E-05	6.35E-06	2.45E-07	5.96E-05
			BETA BHC	8.30E-11	9.96E-12	1.59E-13	9.32E-11	BETA BHC	Liver	1.61E-05	1.94E-06	2.98E-08	1.81E-05
			DELTA BHC	NA	NA	NA	NA	DELTA BHC	NA	NA	NA	NA	NA
			2,4- DDD	3.21E-10	2.89E-11	5.93E-13	3.51E-10	2,4 DDD	Liver	1.87E-04	1.69E-05	3.46E-07	2.04E-04
			4,4- DDD	9.52E-10	8.57E-11	1.76E-12	1.04E-09	4,4- DDD	Liver	5.55E-04	5.00E-05	1.03E-06	6.06E-04
			4,4- DDE	2.67E-10	2.40E-11	4.93E-13	2.91E-10	4,4- DDE	Liver	1.10E-04	9.88E-06	2.03E-07	1.20E-04
			4,4- DDT	1.88E-10	1.69E-11	3.48E-13	2.05E-10	4,4- DDT	Liver	7.75E-05	6.97E-06	1.43E-07	8.46E-05
			DIELDRIN	2.88E-09	8.64E-10	5.32E-12	3.75E-09	DIELDRIN	Liver	2.52E-04	7.56E-05	4.65E-07	3.28E-04

Table C2-2g
Summary of Future Receptor RME Cancer Risks and Noncarcinogenic Hazard Indices
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Receptor Population:	Construction Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Primary Target Organ	Non-Carconogenic Hazard Index			
				Ingestion	Dermal	Inhalation (Outdoor)	Exposure Routes Total			Ingestion HQ	Dermal HQ	Inhalation (Outdoor) HQ	Total HI
			ENDOSULFAN I	NA	NA	NA	NA	ENDOSULFAN I	Body Weight; Kidney; Nervous System	2.15E-06	6.46E-07	3.98E-09	2.80E-06
			ENDOSULFAN SULFATE	NA	NA	NA	NA	ENDOSULFAN SULFATE	Body Weight; Kidney; Nervous System	1.61E-06	4.84E-07	2.98E-09	2.10E-06
			ENDRIN	NA	NA	NA	NA	ENDRIN	Liver; Kidney; Nervous System	2.15E-04	6.46E-05	3.98E-07	2.80E-04
			ENDRIN ALDEHYDE	NA	NA	NA	NA	ENDRIN ALDEHYDE	Liver; Kidney; Nervous System	6.46E-05	1.94E-05	1.19E-07	8.41E-05
			ENDRIN KETONE	NA	NA	NA	NA	ENDRIN KETONE	Liver; Kidney; Nervous System	3.23E-05	9.69E-06	5.97E-08	4.20E-05
			GAMMA-CHLORDANE	5.10E-10	6.12E-11	2.54E-13	5.71E-10	GAMMA-CHLORDANE	Liver	5.49E-05	6.59E-06	2.54E-07	6.17E-05
			HEPTACHLOR	4.15E-11	1.25E-11	7.67E-14	5.40E-11	HEPTACHLOR	Liver	1.29E-06	3.87E-07	2.39E-09	1.68E-06
			HEPTACHLOR EPOXIDE	1.26E-10	3.78E-11	2.33E-13	1.64E-10	HEPTACHLOR EPOXIDE	Liver	7.45E-05	2.24E-05	1.38E-07	9.70E-05
			HEXACHLOROBENZENE	6.64E-11	1.99E-11	1.23E-13	8.65E-11	HEXACHLOROBENZENE	Liver	3.23E-06	9.69E-07	5.97E-09	4.20E-06
			METHOXYCHLOR	NA	NA	NA	NA	METHOXYCHLOR	Fetal	1.29E-05	1.55E-06	2.39E-08	1.45E-05
			MIREX	NA	NA	NA	NA	MIREX	Liver	6.46E-05	1.94E-05	1.19E-07	8.41E-05
			TRANS-NONACHLOR	1.44E-10	1.73E-11	7.16E-14	1.61E-10	TRANS-NONACHLOR	Liver	1.55E-05	1.86E-06	7.16E-08	1.74E-05
			PCBs (mg/kg)					**PCBs (mg/kg)**					
			PCBs (TOTAL)	4.61E-08	1.94E-08	3.41E-11	6.55E-08	PCBs (TOTAL)	Immune System	3.23E-02	1.36E-02	5.97E-05	4.59E-02
			SVOCs (mg/kg)					**SVOCs (mg/kg)**					
			ACENAPHTHENE	NA	NA	NA	NA	ACENAPHTHENE	Liver	7.00E-06	2.73E-06	2.36E-06	1.21E-05
			ACENAPHTHYLENE	NA	NA	NA	NA	ACENAPHTHYLENE	NA	NA	NA	NA	NA
			ANTHRACENE	NA	NA	NA	NA	ANTHRACENE	NOEL	1.40E-06	5.46E-07	1.21E-07	2.07E-06
			BENZO(A)ANTHRACENE	1.49E-08	5.83E-09	8.98E-12	2.08E-08	BENZO(A)ANTHRACENE	NA	NA	NA	NA	NA
			BENZO(A)PYRENE	1.27E-07	4.97E-08	7.65E-11	1.77E-07	BENZO(A)PYRENE	NA	NA	NA	NA	NA
			BENZO(B)FLUORANTHENE	1.27E-08	4.97E-09	7.65E-12	1.77E-08	BENZO(B)FLUORANTHENE	NA	NA	NA	NA	NA
			BENZO(G,H,I)PERYLENE	NA	NA	NA	NA	BENZO(G,H,I)PERYLENE	Kidney; Nervous System	1.29E-05	5.04E-06	2.39E-08	1.80E-05
			BENZO(K)FLUORANTHENE	1.27E-08	4.97E-09	7.65E-12	1.77E-08	BENZO(K)FLUORANTHENE	NA	NA	NA	NA	NA
			BENZOIC ACID	NA	NA	NA	NA	BENZOIC ACID	NOEL	5.49E-07	1.65E-07	1.01E-09	7.15E-07
			BIS(2-ETHYLHEXYL)PHTHALATE	7.10E-10	2.13E-10	1.31E-12	9.25E-10	BIS(2-ETHYLHEXYL)PHTHALATE	Liver	1.78E-04	5.33E-05	3.28E-07	2.31E-04
			BUTYLBENZYPHTHALATE	NA	NA	NA	NA	BUTYLBENZYPHTHALATE	Liver	4.04E-07	1.21E-07	7.46E-10	5.25E-07
			CABAZOLE	5.07E-10	1.52E-10	9.38E-13	6.61E-10	CABAZOLE	NA	NA	NA	NA	NA
			4- CHLOROANILINE	NA	NA	NA	NA	4- CHLOROANILINE	Spleen	2.42E-06	7.27E-07	4.47E-09	3.15E-06
			2- CHLOROPHENOL	NA	NA	NA	NA	2- CHLOROPHENOL	Reproductive	2.80E-05	8.39E-06	5.17E-08	3.64E-05
			CHRYSENE	1.44E-09	5.61E-10	1.05E-11	2.01E-09	CHRYSENE	NA	NA	NA	NA	NA
			DIBENZOFURAN	NA	NA	NA	NA	DIBENZOFURAN	NA	5.81E-04	1.74E-04	1.07E-06	7.57E-04
			3,3- DICHLOROBENZIDINE	2.49E-10	7.47E-11	4.60E-13	3.24E-10	3,3- DICHLOROBENZIDINE	NA	NA	NA	NA	NA

Table C2-2g
Summary of Future Receptor RME Cancer Risks and Noncarcinogenic Hazard Indices
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Receptor Population:	Construction Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Primary Target Organ	Non-Carconogenic Hazard Index			
				Ingestion	Dermal	Inhalation (Outdoor)	Exposure Routes Total			Ingestion HQ	Dermal HQ	Inhalation (Outdoor) HQ	Total HI
			2,6- DINITROTOLUENE	1.04E-08	3.12E-09	NA	1.35E-08	2,6- DINITROTOLUENE	NA	1.19E-03	3.58E-04	2.21E-06	1.56E-03
			FLUORANTHENE	NA	NA	NA	NA	FLUORANTHENE	Blood; Kidney; Liver	2.99E-05	1.16E-05	5.52E-08	4.16E-05
			FLUORENE	NA	NA	NA	NA	FLUORENE	Blood	1.05E-05	4.09E-06	1.77E-06	1.64E-05
			INDENO(1,2,3-CD)PYRENE	8.86E-09	3.45E-09	5.32E-12	1.23E-08	INDENO(1,2,3-CD)PYRENE	NA	NA	NA	NA	NA
			2- METHYLNAPHTHALENE	NA	NA	NA	NA	2- METHYLNAPHTHALENE	Body Weight; Respiratory	1.45E-04	4.36E-05	NA	1.89E-04
			4- METHYPHENOL	NA	NA	NA	NA	4- METHYLPHENOL	Nervous System; Respiratory	1.49E-04	4.46E-05	NA	1.93E-04
			NAPHTHALENE	NA	NA	NA	NA	NAPHTHALENE	Body Weight; Respiratory	1.78E-05	6.93E-06	5.84E-04	6.09E-04
			PENTACHLOROPHENOL	NA	NA	NA	NA	PENTACHLOROPHENOL	Liver; Kidney	5.81E-05	1.74E-05	1.07E-07	7.57E-05
			PHENANTHRENE	NA	NA	NA	NA	PHENANTHRENE	NOEL	2.15E-06	8.40E-07	3.98E-09	3.00E-06
			PHENOL	NA	NA	NA	NA	PHENOL	Cardiovascular System; Fetal; Kidney; Liver; Nervous System	1.56E-06	4.68E-07	3.03E-08	2.06E-06
			PYRENE	NA	NA	NA	NA	PYRENE	Kidney	4.52E-05	1.76E-05	7.21E-07	6.36E-05
			TPH (mg/kg)					**TPH (mg/kg)**					
			TPH AS DIESEL	NA	NA	NA	NA	TPH AS DIESEL	NA	NA	NA	NA	NA
			TPH AS GASOLINE	NA	NA	NA	NA	TPH AS GASOLINE	NA	NA	NA	NA	NA
			TPH AS MOTOR OIL	NA	NA	NA	NA	TPH AS MOTOR OIL	NA	NA	NA	NA	NA
			VOCs (mg/kg)					**VOCs (mg/kg)**					
			ACETONE	NA	NA	NA	NA	ACETONE	Kidney; Liver	1.15E-06	NA	5.35E-06	6.50E-06
			BENZENE	2.31E-11	NA	5.18E-10	5.41E-10	BENZENE	Immune System	4.04E-06	NA	4.23E-05	4.63E-05
			CARBON DISULFIDE	NA	NA	NA	NA	CARBON DISULFIDE	Fetal	8.07E-07	NA	2.04E-05	2.12E-05
			CHLOROBENZENE	NA	NA	NA	NA	CHLOROBENZENE	Kidney; Liver; Reproductive System	3.87E-06	NA	1.31E-04	1.34E-04
			CIS-1,2-DICHLOROETHENE	NA	NA	NA	NA	CIS-1,2-DICHLOROETHENE	Blood	1.61E-06	NA	3.37E-05	3.54E-05
			ETHYLBENZENE	NA	NA	NA	NA	ETHYLBENZENE	Fetal; Kidney; Liver	1.42E-06	NA	5.58E-06	7.00E-06
			4- ISOPROPYLTOLUENE	NA	NA	NA	NA	4- ISOPROPYLTOLUENE	NA	NA	NA	NA	NA
			METHYLENE CHLORIDE	1.94E-10	NA	1.17E-09	1.37E-09	METHYLENE CHLORIDE	Cardiovascular System; Liver; Nervous System	1.61E-05	NA	2.06E-04	2.22E-04
			NAPHTHALENE	NA	NA	NA	NA	NAPHTHALENE	Body Weight; Respiratory	2.58E-06	NA	8.50E-05	8.76E-05
			TOLUENE	NA	NA	NA	NA	TOLUENE	Fetal; Kidney; Liver; Nervous System; Respiratory	4.84E-07	NA	1.71E-05	1.76E-05
			TRANS-1,2-TRICHLOROETHENE	NA	NA	NA	NA	TRANS-1,2-TRICHLOROETHENE	Blood	3.71E-06	NA	9.78E-05	1.02E-04
			TRICHLOROETHENE	1.32E-10	NA	4.15E-11	1.74E-10	TRICHLOROETHENE	Eyes; Nervous System	7.53E-05	NA	4.15E-05	1.17E-04
			1,2,4- TRIMETHYLBENZENE	NA	NA	NA	NA	1,2,4- TRIMETHYLBENZENE	NA	1.61E-06	NA	1.44E-04	1.46E-04

Table C2-2g
Summary of Future Receptor RME Cancer Risks and Noncarcinogenic Hazard Indices
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Receptor Population:	Construction Worker
Receptor Age:	Adult

				Carcinogenic Risk						Non-Carconogenic Hazard Index			
Medium	**Exposure Medium**	**Exposure Point**	**Chemical**	**Ingestion**	**Dermal**	**Inhalation (Outdoor)**	**Exposure Routes Total**	**Chemical**	**Primary Target Organ**	**Ingestion HQ**	**Dermal HQ**	**Inhalation (Outdoor) HQ**	**Total HI**
			1,3,5- TRIMETHYLBENZENE	NA	NA	NA	NA	1,3,5- TRIMETHYLBENZENE	NA	6.01E-07	NA	1.34E-04	1.34E-04
			VINYL CHLORIDE	2.35E-09	NA	1.46E-09	3.82E-09	VINYL CHLORIDE	GI System; Liver; Nervous System	3.66E-05	NA	2.33E-04	2.69E-04
			XYLENE (TOTAL)	NA	NA	NA	NA	XYLENE (TOTAL)	Body Weight; Fetal; Nervous System; Respiratory	1.78E-06	NA	1.23E-04	1.25E-04
Groundwater	Shallow Groundwater	Vapors	**VOCs (ug/L)**					**VOCs (ug/L)**					
			ACETONE	NA	NA	NA	NA	ACETONE	Kidney; Liver	NA	NA	1.82E-03	1.82E-03
			BENZENE	NA	NA	1.82E-07	1.82E-07	BENZENE	Fetal; Immune System; Nervous System; Respiratory	NA	NA	1.49E-02	1.49E-02
			2- BUTANONE	NA	NA	NA	NA	2- BUTANONE	Fetal	NA	NA	1.23E-02	1.23E-02
			CARBON DISULFIDE	NA	NA	NA	NA	CARBON DISULFIDE	Fetal; Nervous System	NA	NA	1.14E-03	1.14E-03
			CHLOROBENZENE	NA	NA	NA	NA	CHLOROBENZENE	Kidney; Liver; Reproductive System	NA	NA	8.57E-03	8.57E-03
			CHLOROMETHANE	NA	NA	1.23E-08	1.23E-08	CHLOROMETHANE	NA	NA	NA	1.59E-03	1.59E-03
			CIS-1,2-DICHLOROETHENE	NA	NA	NA	NA	CIS-1,2-DICHLOROETHENE	Blood	NA	NA	2.25E-02	2.25E-02
			1,3- DICHLOROBENZENE			NA		1,3- DICHLOROBENZENE	NA	NA	NA	1.24E-03	1.24E-03
			1,2- DICHLOROETHENE (TOTAL)	NA	NA	NA	NA	1,2- DICHLOROETHENE (TOTAL)	Blood, Liver	NA	NA	1.06E-01	1.06E-01
			ETHYLBENZENE	NA	NA	NA	NA	ETHYLBENZENE	Fetal; Kidney; Liver	NA	NA	2.39E-04	2.39E-04
			TOLUENE	NA	NA	NA	NA	TOLUENE	Fetal; Kidney; Liver; Nervous System; Respiratory	NA	NA	6.85E-04	6.85E-04
			TRANS-1,2-DICHLOROETHENE	NA	NA	NA	NA	TRANS-1,2-DICHLOROETHENE	Blood; Liver	NA	NA	2.10E-03	2.10E-03
			1,2,4- TRIMETHYLBENZENE	NA	NA	NA	NA	1,2,4- TRIMETHYLBENZENE	NA	NA	NA	2.13E-02	2.13E-02
			1,3,5- TRIMETHYLBENZENE	NA	NA	NA	NA	1,3,5- TRIMETHYLBENZENE	NA	NA	NA	1.61E-02	1.61E-02
			VINYL CHLORIDE	NA	NA	1.72E-08	1.72E-08	VINYL CHLORIDE	GI System; Liver; Nervous System	NA	NA	2.74E-03	2.74E-03
			XYLENE (TOTAL)	NA	NA	NA	NA	XYLENE (TOTAL)	Body Weight; Fetal; Nervous System; Respiratory	NA	NA	4.80E-03	4.80E-03
Groundwater	Intermediate and Deep Groundwater	Vapors	**VOCs (ug/L)**					**VOCs (ug/L)**					
			ACETONE	NA	NA	NA	NA	ACETONE	Kidney; Liver	NA	NA	4.02E-04	4.02E-04
			BENZENE	NA	NA	2.66E-07	2.66E-07	BENZENE	Fetal; Immune System; Nervous System; Respiratory	NA	NA	2.17E-02	2.17E-02
			2- BUTANONE	NA	NA	NA	NA	2- BUTANONE	Fetal	NA	NA	1.88E-03	1.88E-03
			CARBON DISULFIDE	NA	NA	NA	NA	CARBON DISULFIDE	Fetal; Nervous System	NA	NA	1.81E-03	1.81E-03
			CHLOROBENZENE	NA	NA	NA	NA	CHLOROBENZENE	Kidney; Liver; Reproductive System	NA	NA	3.26E-02	3.26E-02

Table C2-2g
Summary of Future Receptor RME Cancer Risks and Noncarcinogenic Hazard Indices
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Receptor Population:	Construction Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk: Ingestion	Carcinogenic Risk: Dermal	Carcinogenic Risk: Inhalation (Outdoor)	Carcinogenic Risk: Exposure Routes Total	Chemical	Primary Target Organ	Non-Carcinogenic Hazard Index: Ingestion HQ	Non-Carcinogenic Hazard Index: Dermal HQ	Non-Carcinogenic Hazard Index: Inhalation (Outdoor) HQ	Non-Carcinogenic Hazard Index: Total HI
			4- METHYL-2-PENTANONE	NA	NA	NA	NA	4- METHYL-2-PENTANONE	Fetal; Kidney; Liver	NA	NA	6.85E-04	6.85E-04

Cancer Risk Across Soil:	1.1E-05
Cancer Risk Across Groundwater:	4.8E-07
Total Cancer Risk:	1.1E-05

HI Across Soil:	1.2E+00
HI Across Groundwater:	2.8E-01
Total HI:	1.5E+00
Total Blood HI:	1.9E-01
Total Body Weight HI:	3.0E-01
Total Cardiovascular System HI:	3.0E-01
Total Fetal/Reproductive System HI:	3.6E-01
Total GI System HI:	2.2E-02
Total Immune System HI:	8.6E-02
Total Kidney HI:	8.1E-02
Total Liver HI:	1.8E-01
Total Nervous System HI:	7.6E-01
Total NOEL HI:	6.3E-02
Total Respiratory HI:	1.6E-01
Total Skin HI:	2.7E-01
Total Whole Body HI:	3.6E-02

Notes:
EPC = Exposure point concentration
GI = Gastrointestinal
HQ = Hazard Quotient
HI = Hazard Index
mg/kg = milligrams per kilogram
mg/L = milligrams per liter
NA = Not Applicable
PCBs = Polychlorinated Biphenyls
RME = Reasonable Maximum Exposure
SVOCs = Semivolatile Organic Compounds
TPH = Total Petroleum Hydrocarbons
VOCs = Volatile Organic Compounds
ug/L = microgram per liter

Table C2-2h
Summary of Estimated Cancer Risks and Hazard Indices for Soil
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	RME Result			
	Baseline Cancer Risk*	**Baseline Hazard Index***	**Residual Cancer Risk**	**Residual Hazard Index**
Recreational User - Future				
Total Risk Across Soil	6.4E-05	2.5E-01	6.42E-05	2.23E-01
Total Risk Across Soil (without arsenic)	3.2E-06	1.6E-01	2.82E-06	1.34E-01
Construction Worker - Future				
Total Risk Across Soil	1.1E-05	1.3E+00	1.07E-05	1.25E+00
Total Risk Across Soil (without arsenic)	5.2E-07	1.0E+00	4.68E-07	9.82E-01

Notes:

RME = Reasonable Maximum Exposure

* - Baseline HHRA did not include full data set; outlier concentrations were excluded.

Table C2-2i
Comparison of EPCs, Cancer Risk Estimates, and Hazard Indices from Baseline Risk Assessment
Non-Tidal Wetland Areas Alternative 2
Soil (0 to 10 feet bgs)
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Baseline Risk Estimates					Alternative 2 Estimates				
		Recreational User		Construction Worker			Recreational User		Construction Worker	
Chemical of Potential Concern	Medium EPC Value	RME Carcinogenic Risk	RME Total HI	RME Carcinogenic Risk	RME Total HI	Medium EPC Value	RME Carcinogenic Risk	RME Total HI	RME Carcinogenic Risk	RME Total HI
INORGANICS (mg/kg)										
ALUMINUM	30,215	NA	3.40E-02	NA	2.26E-01	30,140	NA	3.39E-02	NA	2.26E-01
ANTIMONY	11.2	NA	3.06E-02	NA	9.04E-02	4.5	NA	1.23E-02	NA	3.63E-02
ARSENIC	21.3	6.08E-05	8.84E-02	1.01E-05	2.65E-01	21.5	6.14E-05	8.92E-02	1.02E-05	2.67E-01
BARIUM	90.1	NA	1.44E-03	NA	7.92E-03	94	NA	1.50E-03	NA	8.26E-03
BERYLLIUM	0.64	6.00E-11	3.64E-04	4.58E-10	2.94E-03	0.65	6.09E-11	3.70E-04	4.65E-10	2.99E-03
CADMIUM	2.97	3.55E-07	7.71E-03	6.21E-08	2.46E-02	2.9	3.47E-07	7.53E-03	6.06E-08	2.40E-02
CHROMIUM	137	NA	9.98E-05	NA	2.95E-04	213	NA	1.55E-04	NA	4.59E-04
COBALT	18.5	2.02E-09	1.16E-03	1.55E-08	2.24E-02	18.7	2.05E-09	1.17E-03	1.56E-08	2.26E-02
COPPER	108	NA	2.95E-03	NA	8.72E-03	197	NA	5.38E-03	NA	1.59E-02
HEXAVALENT CHROMIUM	0.07	3.98E-10	2.56E-05	3.04E-09	8.99E-05	0.07	3.98E-10	2.56E-05	3.04E-09	8.99E-05
LEAD	166	3.75E-07	NA	6.57E-08	NA	96	2.17E-07	NA	3.80E-08	NA
MANGANESE	900	NA	9.92E-03	NA	3.96E-01	967	NA	1.07E-02	NA	4.26E-01
MERCURY	1.2	NA	4.37E-03	NA	1.32E-02	1.4	NA	5.10E-03	NA	1.54E-02
MOLYBDENUM	9.5	NA	2.08E-03	NA	6.14E-03	5	NA	1.09E-03	NA	3.23E-03
NICKEL	107	1.09E-09	6.19E-03	8.30E-09	6.20E-02	114	1.16E-09	6.60E-03	8.84E-09	6.61E-02
SELENIUM	1.4	NA	3.06E-04	NA	9.06E-04	1.2	NA	2.62E-04	NA	7.76E-04
SILVER	2.7	NA	5.90E-04	NA	1.74E-03	2.7	NA	5.90E-04	NA	1.74E-03
THALLIUM	0.47	NA	7.78E-03	NA	2.30E-02	0.46	NA	7.62E-03	NA	2.25E-02
TIN	14.7	NA	2.68E-05	NA	7.91E-05	16.2	NA	2.95E-05	NA	8.72E-05
VANADIUM	115	NA	1.80E-02	NA	5.30E-02	117	NA	1.83E-02	NA	5.40E-02
ZINC	210	NA	7.65E-04	NA	2.26E-03	237	NA	8.63E-04	NA	2.55E-03
PCBs (mg/kg)										
PCBs (TOTAL)	0.36	7.85E-07	3.23E-02	1.18E-07	8.26E-02	0.2	4.36E-07	1.80E-02	6.55E-08	4.59E-02
SVOCs (mg/kg)										
ACENAPHTHENE	0.42	NA	1.46E-05	NA	3.90E-05	0.13	NA	4.51E-06	NA	1.21E-05
ACENAPHTHYLENE	0.12	NA	NA	NA	NA	0.11	NA	NA	NA	NA
ANTHRACENE	1.1	NA	6.72E-06	NA	1.75E-05	0.13	NA	7.94E-07	NA	2.07E-06
BENZO(A)ANTHRACENE	0.12	6.10E-08	NA	9.24E-09	NA	0.27	1.37E-07	NA	2.08E-08	NA
BENZO(A)PYRENE	0.11	5.59E-07	NA	8.47E-08	NA	0.23	1.17E-06	NA	1.77E-07	NA
BENZO(B)FLUORANTHENE	0.15	7.63E-08	NA	1.15E-08	NA	0.23	1.17E-07	NA	1.77E-08	NA
BENZO(G,H,I)PERYLENE	0.59	NA	2.57E-05	NA	6.63E-05	0.16	NA	6.98E-06	NA	1.80E-05
BENZO(K)FLUORANTHENE	1.38	7.02E-07	NA	1.06E-07	NA	0.23	1.17E-07	NA	1.77E-08	NA
CHRYSENE	0.11	5.62E-09	NA	8.51E-10	NA	0.26	1.33E-08	NA	2.01E-09	NA
FLUORANTHENE	0.091	NA	3.97E-06	NA	1.02E-05	0.37	NA	1.61E-05	NA	4.16E-05
FLUORENE	0.5	NA	2.39E-05	NA	6.29E-05	0.13	NA	6.22E-06	NA	1.64E-05
INDENO(1,2,3-CD)PYRENE	0.12	6.10E-08	NA	9.24E-09	NA	0.16	8.14E-08	NA	1.23E-08	NA
NAPHTHALENE	0.35	NA	6.07E-04	NA	1.94E-03	0.11	NA	1.91E-04	NA	6.09E-04
PHENANTHRENE	0.12	NA	6.98E-07	NA	1.80E-06	0.2	NA	1.16E-06	NA	3.00E-06
PYRENE	0.096	NA	5.63E-06	NA	1.45E-05	0.42	NA	2.47E-05	NA	6.36E-05

Table C2-2i
Comparison of EPCs, Cancer Risk Estimates, and Hazard Indices from Baseline Risk Assessment
Non-Tidal Wetland Areas Alternative 2
Soil (0 to 10 feet bgs)
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Baseline Risk Estimates					Alternative 2 Estimates				
		Recreational User		Construction Worker			Recreational User		Construction Worker	
Chemical of Potential Concern	Medium EPC Value	RME Carcinogenic Risk	RME Total HI	RME Carcinogenic Risk	RME Total HI	Medium EPC Value	RME Carcinogenic Risk	RME Total HI	RME Carcinogenic Risk	RME Total HI
TPH (mg/kg)										
TPH AS DIESEL	677	NA	NA	NA	NA	172	NA	NA	NA	NA
TPH AS GASOLINE	4.6	NA	NA	NA	NA	4	NA	NA	NA	NA
TPH AS MOTOR OIL	324	NA	NA	NA	NA	324	NA	NA	NA	NA
SOIL TOTALS:		**6.4E-05**	**2.5E-01**	**1.1E-05**	**1.3E+00**		**6.4E-05**	**2.2E-01**	**1.1E-05**	**1.2E+00**

Table C2-2j
Post-Remediation Gray Fox Risk Calculations (Wetland Sediment Residual Concentration)
Deep Soil (0 - 10 ft bgs) at Hazard Quotient of 10
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Concentrations				Intake (mg/kg BW-day)					Hazard Quotient (HQ) - Low					Hazard Quotient (HQ) - High			
COPEC[a]	Surface Water (mg/L)[b]	Sediment[c]	Small Mammal BAF[d]	Small Mammal Tissue[d]	Surface Water	Sediment	Small Mammal	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Small Mammal	Total Intake		High TRV (mg/kg BW-day)	Surface Water	Sediment	Small Mammal	Total Intake
Metals (mg/kg)																			
Aluminum	12.6	3.01E+04	1.11E-02	3.33E+02	2.72E-01	9.62E+00	3.80E+00	1.37E+01	1.93	1.4E-01	5.0E+00	2.0E+00	7.1E+00	>1	19.3	1.4E-02	5.0E-01	2.0E-01	7.1E-01
Antimony	0.003	4.50E+00	1.22E+00	5.48E+00	6.48E-05	1.44E-03	6.25E-02	6.40E-02	0.06	1.1E-03	2.4E-02	1.1E+00	1.1E+00		23.4	2.8E-06	6.1E-05	2.7E-03	2.7E-03
Arsenic	0.0436	2.15E+01	--	0	9.42E-04	6.87E-03	0.00E+00	7.81E-03	0.32	2.9E-03	2.1E-02	0	2.4E-02		4.7	2.0E-04	1.5E-03	0.0E+00	1.7E-03
Barium	0.24	9.40E+01	9.41E-02	8.85E+00	5.10E-03	3.00E-02	1.01E-01	1.36E-01	51.8	9.8E-05	5.8E-04	1.9E-03	2.6E-03		66.0	7.7E-05	4.5E-04	1.5E-03	2.1E-03
Beryllium		6.50E-01	--	0		2.08E-04	0.00E+00	2.08E-04	0.532		3.9E-04	0	3.9E-04		0.554		3.7E-04	0.0E+00	3.7E-04
Cadmium	0.0016	2.90E+00	--	0	3.46E-05	9.26E-04	0.00E+00	9.61E-04	0.06	5.8E-04	1.5E-02	0	1.6E-02		2.64	1.3E-05	3.5E-04	0.0E+00	3.6E-04
Chromium +3	0.0263	2.13E+02	2.60E-02	5.55E+00	5.68E-04	6.80E-02	6.33E-02	1.32E-01	2	2.4E-04	2.8E-02	2.6E-02	5.5E-02		23.1	2.5E-05	2.9E-03	2.7E-03	5.7E-03
Chromium +6	0.0263	7.00E-02	2.60E-02	1.82E-03	5.68E-04	2.24E-05	2.08E-05	6.12E-04	5.66	1.0E-04	3.9E-06	0	1.1E-04		35.1	1.6E-05	6.4E-07	5.9E-07	1.7E-05
Cobalt	0.0164	1.87E+01	--	0	3.54E-04	5.97E-03	0.00E+00	6.33E-03	1.2	3.0E-04	5.0E-03	0	5.3E-03		20	1.8E-05	3.0E-04	0.0E+00	3.2E-04
Copper	0.233	1.97E+02	3.45E-01	6.80E+01	5.04E-03	6.29E-02	7.76E-01	8.44E-01	2.67	1.9E-03	2.4E-02	2.9E-01	3.2E-01		632	8.0E-06	1.0E-04	1.2E-03	1.3E-03
Lead	0.0031	9.60E+01	6.10E-01	5.86E+01	6.70E-05	3.07E-02	6.68E-01	6.99E-01	1	6.7E-05	3.1E-02	6.7E-01	7.0E-01		241	2.8E-07	1.3E-04	2.8E-03	2.9E-03
Manganese	7.42	9.67E+02	--	0	1.60E-01	3.09E-01	0.00E+00	4.69E-01	13.7	1.2E-02	2.3E-02	0	3.4E-02		159.09	1.0E-03	1.9E-03	0.0E+00	2.9E-03
Mercury	0.00029	1.40E+00	--	0	6.27E-06	4.47E-04	0.00E+00	4.53E-04	0.027	2.3E-04	1.7E-02	0	1.7E-02		0.27	2.3E-05	1.7E-03	0.0E+00	1.7E-03
Molybdenum	0.0312	5.00E+00	--	0	6.74E-04	1.60E-03	0.00E+00	2.27E-03	0.26	2.6E-03	6.1E-03	0	8.7E-03		2.6	2.6E-04	6.1E-04	0.0E+00	8.7E-04
Nickel	0.166	1.14E+02	--	0	3.59E-03	3.64E-02	0.00E+00	4.00E-02	0.13	2.7E-02	2.7E-01	0	3.0E-01		31.6	1.1E-04	1.2E-03	0.0E+00	1.3E-03
Selenium	0.029	1.20E+00	6.12E+00	7.34E+00	6.27E-04	3.83E-04	8.37E-02	8.47E-02	0.05	1.3E-02	7.7E-03	1.7E+00	1.7E+00	>1	1.21	5.2E-04	3.2E-04	6.9E-02	7.0E-02
Silver	0.0019	2.70E+00	--	0	4.11E-05	8.62E-04	0.00E+00	9.03E-04	0.38	1.1E-04	2.3E-03	0	2.4E-03		3.75	1.1E-05	2.3E-04	0.0E+00	2.4E-04
Thallium		4.60E-01	1.01E+00	4.64E-01		1.47E-04	5.29E-03	5.44E-03	0.48		3.1E-04	1.1E-02	1.1E-02		1.43		1.0E-04	3.7E-03	3.8E-03
Tin		1.62E+01	--	0		5.17E-03	0.00E+00	5.17E-03	23.4		2.2E-04	0	2.2E-04		35		1.5E-04	0.0E+00	1.5E-04
Vanadium	0.05	1.17E+02	--	0	1.08E-03	3.74E-02	0.00E+00	3.84E-02	0.21	5.1E-03	1.8E-01	0	1.8E-01		2.1	5.1E-04	1.8E-02	0.0E+00	1.8E-02
Zinc	0.042	2.37E+02	1.11E+00	2.63E+02	9.08E-04	7.57E-02	2.99E+00	3.07E+00	9.6	9.5E-05	7.9E-03	3.1E-01	3.2E-01		411	2.2E-06	1.8E-04	7.3E-03	7.5E-03
Volatile Organics (mg/kg)																			
Acetone		3.20E-01	--	0		1.02E-04	0.00E+00	1.02E-04	10		1.0E-05	0	1.0E-05		50		2.0E-06	0.0E+00	2.0E-06
Benzene		5.00E-03	--	0		1.60E-06	0.00E+00	1.60E-06	26.4		6.0E-08	0	6.0E-08		263.6		6.1E-09	0.0E+00	6.1E-09
Carbon disulfide		2.50E-02	--	0		7.98E-06	0.00E+00	7.98E-06	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Chlorobenzene		2.40E-02	--	0		7.66E-06	0.00E+00	7.66E-06	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
cis-1,2-Dichlorobenzene		5.00E-03	--	0		1.60E-06	0.00E+00	1.60E-06	45.2		3.5E-08	0	3.5E-08		452		3.5E-09	0.0E+00	3.5E-09
Ethylbenzene		4.40E-02	--	0		1.41E-05	0.00E+00	1.41E-05	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
4-Isopropyltoluene		7.20E-03	--	0		2.30E-06	0.00E+00	2.30E-06	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Methylene chloride		3.00E-01	--	0		9.58E-05	0.00E+00	9.58E-05	5.9		1.6E-05	0	1.6E-05		50		1.9E-06	0.0E+00	1.9E-06
Naphthalene		1.60E-02	--	0		5.11E-06	0.00E+00	5.11E-06	50		1.0E-07	0	1.0E-07		150		3.4E-08	0.0E+00	3.4E-08
Toluene		3.00E-02	--	0		9.58E-06	0.00E+00	9.58E-06	26		3.7E-07	0	3.7E-07		260		3.7E-08	0.0E+00	3.7E-08
trans-1,2-Dichloroethene		2.30E-02	--	0		7.34E-06	0.00E+00	7.34E-06	45.2		1.6E-07	0	1.6E-07		452		1.6E-08	0.0E+00	1.6E-08
Trichloroethene		7.00E-03	--	0		2.24E-06	0.00E+00	2.24E-06	0.7		3.2E-06	0	3.2E-06		7		3.2E-07	0.0E+00	3.2E-07
1,2,4-Trimethylbenzene		2.50E-02	--	0		7.98E-06	0.00E+00	7.98E-06	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
1,3,5-Trimethylbenzene		9.30E-03	--	0		2.97E-06	0.00E+00	2.97E-06	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Vinyl chloride		3.40E-02	--	0		1.09E-05	0.00E+00	1.09E-05	0.17		6.4E-05	0	6.4E-05		2		6.4E-06	0.0E+00	6.4E-06
Xylenes		1.10E-01	--	0		3.51E-05	0.00E+00	3.51E-05	2.1		1.7E-05	0	1.7E-05		2.6		1.4E-05	0.0E+00	1.4E-05
Pesticides (mg/kg)																			
alpha-Chlordane		8.20E-03	--	0		2.62E-06	0.00E+00	2.62E-06	4.6		5.7E-07	0	5.7E-07		9.2		2.8E-07	0	2.8E-07
beta-BHC		1.00E-03	--	0		3.19E-07	0.00E+00	3.19E-07	1.6		2.0E-07	0	2.0E-07		3.2		1.0E-07	0	1.0E-07
delta-BHC		2.00E-03	--	0		6.39E-07	0.00E+00	6.39E-07	1.6		4.0E-07	0	4.0E-07		3.2		2.0E-07	0	2.0E-07
2,4-DDD		2.90E-02	1.04E+00	3.03E-02		9.26E-06	3.45E-04	3.55E-04	0.8		1.2E-05	4.3E-04	4.4E-04		16		5.8E-07	2.2E-05	2.2E-05
DDD		8.60E-02	1.04E+00	8.98E-02		2.75E-05	1.02E-03	1.05E-03	0.8		3.4E-05	1.3E-03	1.3E-03		16		1.7E-06	6.4E-05	6.6E-05
DDE	0.0000027	1.70E-02	1.04E+00	1.77E-02	5.84E-08	5.43E-06	2.02E-04	2.08E-04	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
DDTs	0.00014	1.20E-02	1.04E+00	1.25E-02	3.03E-06	3.83E-06	1.43E-04	1.50E-04	0.8	3.8E-06	4.8E-06	1.8E-04	1.9E-04		16	1.9E-07	2.4E-07	8.9E-06	9.4E-06
Dieldrin		3.90E-03	--	0		1.25E-06	0.00E+00	1.25E-06	0.015		8.3E-05	0	8.3E-05		1.7		7.3E-07	0	7.3E-07
Endosulfan I		4.00E-03	--	0		1.28E-06	0.00E+00	1.28E-06	0.15		8.5E-06	0	8.5E-06		1.5		8.5E-07	0	8.5E-07
Endosulfan sulfate	0.00012	3.00E-03	--	0	2.59E-06	9.58E-07	0.00E+00	3.55E-06	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV

Table C2-2j
Post-Remediation Gray Fox Risk Calculations (Wetland Sediment Residual Concentration)
Deep Soil (0 - 10 ft bgs) at Hazard Quotient of 10
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Concentrations				Intake (mg/kg BW-day)					Hazard Quotient (HQ) - Low					Hazard Quotient (HQ) - High			
COPEC[a]	Surface Water (mg/L)[b]	Sediment[c]	Small Mammal BAF[d]	Small Mammal Tissue[d]	Surface Water	Sediment	Small Mammal	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Small Mammal	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Sediment	Small Mammal	Total Intake
Endrin	0.000014	2.00E-02	--	0	3.03E-07	6.39E-06	0.00E+00	6.69E-06	0.09	3.3E-06	6.9E-05	0	7.3E-05	0.92	3.3E-07	6.9E-06	0	7.3E-06
Endrin aldehyde		6.00E-03	--	0		1.92E-06	0.00E+00	1.92E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Endrin Ketone		3.00E-03	--	0		9.58E-07	0.00E+00	9.58E-07	NTV	NTV	NTV	NTV	NTV	0.92		1.0E-06	0	1.0E-06
gamma-Chlordane		8.50E-03	--	0		2.71E-06	0.00E+00	2.71E-06	4.6		5.9E-07	0	5.9E-07	9.2		3.0E-07	0	3.0E-07
Heptachlor	0.0000028	2.00E-04	--	0	6.05E-08	6.39E-08	0.00E+00	1.24E-07	0.13	4.7E-07	4.9E-07	0.0	9.6E-07	6.8	8.9E-09	9.4E-09	0	1.8E-08
Heptachlor epoxide		3.00E-04	--	0		9.58E-08	0.00E+00	9.58E-08	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Hexachlorobenzene		8.00E-04	--	0		2.55E-07	0.00E+00	2.55E-07	1.6		1.6E-07	0	1.6E-07	16		1.6E-08	0	1.6E-08
Methoxychlor	0	2.00E-02	--	0		6.39E-06	0.00E+00	6.39E-06	2.5		2.6E-06	0	2.6E-06	50		1.3E-07	0	1.3E-07
Mirex		4.00E-03	--	0		1.28E-06	0.00E+00	1.28E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
trans-Nonachlor		2.40E-03	--	0		7.66E-07	0.00E+00	7.66E-07	4.6		1.7E-07	0	1.7E-07	9.2		8.3E-08	0	8.3E-08
SVOCs (mg/kg)																		
Acenaphthene		1.30E-01	--	0		4.15E-05	0.00E+00	4.15E-05	1.31		3.2E-05	0	3.2E-05	32.8		1.3E-06	0	1.3E-06
Acenaphthylene		1.10E-01	--	0		3.51E-05	0.00E+00	3.51E-05	1.31		2.7E-05	0	2.7E-05	32.8		1.1E-06	0	1.1E-06
Anthracene		1.30E-01	--	0		4.15E-05	0.00E+00	4.15E-05	1.31		3.2E-05	0	3.2E-05	32.8		1.3E-06	0	1.3E-06
Benzo(a)anthracene		2.70E-01	--	0		8.62E-05	0.00E+00	8.62E-05	1.31		6.6E-05	0	6.6E-05	32.8		2.6E-06	0	2.6E-06
Benzo(a)pyrene		2.30E-01	--	0		7.34E-05	0.00E+00	7.34E-05	1.31		5.6E-05	0	5.6E-05	32.8		2.2E-06	0	2.2E-06
Benzo(b)fluoranthene		2.30E-01	--	0		7.34E-05	0.00E+00	7.34E-05	1.31		5.6E-05	0	5.6E-05	32.8		2.2E-06	0	2.2E-06
Benzo(g,h,i)perylene		1.60E-01	--	0		5.11E-05	0.00E+00	5.11E-05	1.31		3.9E-05	0	3.9E-05	32.8		1.6E-06	0	1.6E-06
Benzo(k)fluoranthene		2.30E-01	--	0		7.34E-05	0.00E+00	7.34E-05	1.31		5.6E-05	0	5.6E-05	32.8		2.2E-06	0	2.2E-06
Benzoic acid		6.80E-01	--	0		2.17E-04	0.00E+00	2.17E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Bis(2-ethylhexyl)phthalate	0.027	1.10E+00	--	0	5.84E-04	3.51E-04	0.00E+00	9.35E-04	18.3	3.2E-05	1.9E-05	0	5.1E-05	183	3.2E-06	1.9E-06	0	5.1E-06
Butylbenzylphthalate		2.50E-02	--	0		7.98E-06	0.00E+00	7.98E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Carbazole		5.50E-01	--	0		1.76E-04	0.00E+00	1.76E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Chloroaniline		3.00E-03	--	0		9.58E-07	0.00E+00	9.58E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2-Chloropropane		4.33E-02	--	0		1.38E-05	0.00E+00	1.38E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chrysene	0.0002	2.60E-01	--	0	4.32E-06	8.30E-05	0.00E+00	8.73E-05	1.31	3.3E-06	6.3E-05	0	6.7E-05	32.8	1.3E-07	2.5E-06	0	2.7E-06
Dibenzofuran		3.60E-01	--	0		1.15E-04	0.00E+00	1.15E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
3,3-Dichlorobenzidine		1.20E-02	--	0		3.83E-06	0.00E+00	3.83E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2,6-Dinitrotoluene		3.70E-01	--	0		1.18E-04	0.00E+00	1.18E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Fluoranthene		3.70E-01	--	0		1.18E-04	0.00E+00	1.18E-04	1.31		9.0E-05	0	9.0E-05	32.8		3.6E-06	0	3.6E-06
Fluorene		1.30E-01	--	0		4.15E-05	0.00E+00	4.15E-05	1.31		3.2E-05	0	3.2E-05	32.8		1.3E-06	0	1.3E-06
Indeno(1,2,3-cd)pyrene		1.60E-01	--	0		5.11E-05	0.00E+00	5.11E-05	1.31		3.9E-05	0	3.9E-05	32.8		1.6E-06	0	1.6E-06
2-Methylnaphthalene		1.80E-01	--	0		5.75E-05	0.00E+00	5.75E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Methylphenol	0.12	2.30E-01	--	0	2.59E-03	7.34E-05	0.00E+00	2.67E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Naphthalene		1.10E-01	--	0		3.51E-05	0.00E+00	3.51E-05	50		7.0E-07	0	7.0E-07	150		2.3E-07	0	2.3E-07
Pentachlorophenol		5.40E-01	--	0		1.72E-04	0.00E+00	1.72E-04	8.42		2.0E-05	0	2.0E-05	27.4		6.3E-06	0	6.3E-06
Phenanthrene		2.00E-01	--	0		6.39E-05	0.00E+00	6.39E-05	1.31		4.9E-05	0	4.9E-05	32.8		1.9E-06	0	1.9E-06
Phenol		2.90E-01	--	0		9.26E-05	0.00E+00	9.26E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pyrene		4.20E-01	--	0		1.34E-04	0.00E+00	1.34E-04	1.31		1.0E-04	0	1.0E-04	32.8		4.1E-06	0	4.1E-06
PCBs (mg/kg)																		
PCBs (Total Congeners)	0.000016	2.00E-01	1.81E+01	3.62E+00	3.46E-07	6.39E-05	4.12E-02	4.13E-02	0.36	9.6E-07	1.8E-04	1.1E-01	1.1E-01	1.28	2.7E-07	5.0E-05	3.2E-02	3.2E-02

>1 = The calculated hazard quotient exceeds 1 (i.e., > 1.5)

Table C2-2j
Post-Remediation Gray Fox Risk Calculations (Wetland Sediment Residual Concentration)
Deep Soil (0 - 10 ft bgs) at Hazard Quotient of 10
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Concentrations				Intake (mg/kg BW-day)					Hazard Quotient (HQ) - Low					Hazard Quotient (HQ) - High			
COPEC[a]	Surface Water (mg/L)[b]	Sediment[c]	Small Mammal BAF[d]	Small Mammal Tissue[d]	Surface Water	Sediment	Small Mammal	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Small Mammal	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Sediment	Small Mammal	Total Intake

Exposure Assumptions and Equation:[e]

	Value	
Ingestion Rate (IR) prey(dry wt.) =	0.177	kg/day (dry weight)
IRmammal(dry wt.) =	0.177	kg/day (dry weight)
IRsediment (dry wt.)[f] =	0.00496	kg-day (dry weight)
IRsurface water[g] =	0.335	L/day
Cprey =	chem-specific	mg/kg or µg/kg
Csediment =	chem-specific	mg/kg or µg/kg
Csurface water =	chem-specific	mg/L or µg/L
Tissue Moisture (TMsmall mammal) =	68%	percent
Dietary Composition Factor (DCF)[h] =	100%	percent
Site Use Factor (SUF)[i] =	25%	percent
Body Weight (BW) =	3.88	kg

Intake Equation = [IRmammal(dry wt) x (Cprey(mammal, dry wt)/1-TM) x DCF x SUF]/BW] + [(IRsoil x Csoil x DCF x SUF)]/BW] + [(IRsurface water x Csurface water x DCF x SUF)]/BW]

Risk (hazard quotient) = Intake / TRV

Prey tissue(dry wt) = Prey tissue (wet wt.) / (1-Tissue Moisture)

NTV = No toxicity data available.

NA = Not applicable.

Blank cell indicates COPEC was not detected in this medium.

Notes:

a All chemicals detected in sediments are considered as constituents of potential ecological concern.

b All concentrations of constituents in surface water are based on the maximum concentration.

c All concentrations of constituents in sediment are based on the residual concentrations expressed in dry weight.

d Site-specific BAFs (dry weight basis). Calculated small mammal tissue concentrations (sediment concentration x BAF). Tissue concentrations are on a dry weight basis.

e Exposure parameters used to calculate risk are discussed in detail in Section 4.2 of the ERA..

f Ingestion rate of soil based on 2.8 percent of of the prey ingestion rate (dry weight); based on a red fox (Beyer et al. (1994).

g Based on equation for mammals: Water intake (L/day) = $0.099Wt(kg)^{0.90}$ (EPA 1993)

h Dietary composition factor was based on a conservative assumption of 100% dietary intake of small mammals from the site.

i Site use factor was based on a 25% use of the site for the fox's foraging range.

Table C2-2k
Post-Remediation Northern Harrier Risk Calculations (Wetland Sediment Residual Concentration)
Deep Soil (0 - 10 ft bgs) at Hazard Quotient of 10
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Concentrations				Intake (mg/kg BW-day)					Hazard Quotient (HQ) - Low					Hazard Quotient (HQ) - High			
COPEC[a]	Surface Water (mg/L)[b]	Sediment[c]	Small Mammal BAF[d]	Small Mammal Tissue[d]	Surface Water	Sediment	Small Mammal	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Small Mammal	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Sediment	Small Mammal	Total Intake
Metals (mg/kg)																		
Aluminum	12.6	3.01E+04	1.11E-02	333	2.43E-01	5.74E+00	9.07E+00	1.51E+01	109.7	2.2E-03	5.2E-02	8.3E-02	1.4E-01	1,097	2.2E-04	5.2E-03	8.3E-03	1.4E-02
Antimony	0.003	4.50E+00	1.22E+00	5	5.80E-05	8.57E-04	1.49E-01	1.50E-01	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Arsenic	0.0436	2.15E+01	--	0	8.43E-04	4.10E-03	0.00E+00	4.94E-03	5.5	1.5E-04	7.4E-04	0.0E+00	9.0E-04	22	3.8E-05	1.9E-04	0.0E+00	2.2E-04
Barium	0.24	9.40E+01	9.41E-02	9	4.56E-03	1.79E-02	2.41E-01	2.63E-01	20.8	2.2E-04	8.6E-04	1.2E-02	1.3E-02	41.7	1.1E-04	4.3E-04	5.8E-03	6.3E-03
Beryllium		6.50E-01		0		1.24E-04		1.24E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Cadmium	0.0016	2.90E+00	--	0	3.09E-05	5.52E-04	0.00E+00	5.83E-04	0.08	3.9E-04	6.9E-03	0.0E+00	7.3E-03	10.4	3.0E-06	5.3E-05	0.0E+00	5.6E-05
Chromium +3	0.0263	2.13E+02	2.60E-02	6	5.08E-04	4.06E-02	1.51E-01	1.92E-01	2.66	1.9E-04	1.5E-02	5.7E-02	7.2E-02	2.78	1.8E-04	1.5E-02	5.4E-02	6.9E-02
Chromium +6	0.0263	7.00E-02	2.60E-02	0	5.08E-04	1.33E-05	4.96E-05	5.71E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Cobalt	0.0164	1.87E+01	--	0	3.17E-04	3.56E-03	0.00E+00	3.88E-03	7.61	4.2E-05	4.7E-04	0.0E+00	5.1E-04	17	1.9E-05	2.1E-04	0.0E+00	2.3E-04
Copper	0.233	1.97E+02	3.45E-01	68	4.50E-03	3.75E-02	1.85E+00	1.89E+00	2.3	2.0E-03	1.6E-02	8.0E-01	8.2E-01	52.3	8.6E-05	7.2E-04	3.5E-02	3.6E-02
Lead	0.0031	9.60E+01	6.10E-01	59	5.99E-05	1.83E-02	1.59E+00	1.61E+00	0.014	4.3E-03	1.3E+00	1.1E+02	1.2E+02 >1	8.75	6.8E-06	2.1E-03	1.8E-01	1.8E-01
Manganese	7.42	9.67E+02	--	0	1.43E-01	1.84E-01	0.00E+00	3.28E-01	77.6	1.8E-03	2.4E-03	0.0E+00	4.2E-03	776	1.8E-04	2.4E-04	0.0E+00	4.2E-04
Mercury	0.00029	1.40E+00	--	0	5.60E-06	2.67E-04	0.00E+00	2.72E-04	0.039	1.4E-04	6.8E-03	0.0E+00	7.0E-03	0.18	3.1E-05	1.5E-03	0.0E+00	1.5E-03
Molybdenum	0.0312	5.00E+00	--	0	6.03E-04	9.52E-04	0.00E+00	1.56E-03	3.5	1.7E-04	2.7E-04	0.0E+00	4.4E-04	35.3	1.7E-05	2.7E-05	0.0E+00	4.4E-05
Nickel	0.166	1.14E+02	--	0	3.21E-03	2.17E-02	0.00E+00	2.49E-02	1.38	2.3E-03	1.6E-02	0.0E+00	1.8E-02	56.3	5.7E-05	3.9E-04	0.0E+00	4.4E-04
Selenium	0.029	1.20E+00	6.12E+00	7	5.60E-04	2.29E-04	2.00E-01	2.00E-01	0.23	2.4E-03	9.9E-04	8.7E-01	8.7E-01	0.93	6.0E-04	2.5E-04	2.1E-01	2.2E-01
Silver	0.0019	2.70E+00	--	0	3.67E-05	5.14E-04	0.00E+00	5.51E-04	178.00	2.1E-07	2.9E-06	0.0E+00	3.1E-06	NTV	NTV	NTV	NTV	NTV
Thallium		4.60E-01	1.01E+00	0		8.76E-05	1.26E-02	1.27E-02	0.35		2.5E-04	3.6E-02	3.6E-02	NTV	NTV	NTV	NTV	NTV
Tin		1.62E+01	--	0		3.09E-03	0.00E+00	3.09E-03	6.80		4.5E-04	0.0E+00	4.5E-04	16.9		1.8E-04	0.0E+00	1.8E-04
Vanadium	0.05	1.17E+02	--	0	9.66E-04	2.23E-02	0.00E+00	2.33E-02	11.4	8.5E-05	2.0E-03	0.0E+00	2.0E-03	114	8.5E-06	2.0E-04	0.0E+00	2.0E-04
Zinc	0.042	2.37E+02	1.11E+00	263	8.12E-04	4.51E-02	7.14E+00	7.19E+00	17.2	4.7E-05	2.6E-03	4.2E-01	4.2E-01	172	4.7E-06	2.6E-04	4.2E-02	4.2E-02
Volatile Organics (mg/kg)																		
Acetone		3.20E-01	--	0		6.10E-05	0.00E+00	6.10E-05	52		1.2E-06	0.0E+00	1.2E-06	520		1.2E-07	0.0E+00	1.2E-07
Benzene		5.00E-03	--	0		9.52E-07	0.00E+00	9.52E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Carbon disulfide		2.50E-02	--	0		4.76E-06	0.00E+00	4.76E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chlorobenzene		2.40E-02	--	0		4.57E-06	0.00E+00	4.57E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
cis-1,2-Dichlorobenzene		5.00E-03	--	0		9.52E-07	0.00E+00	9.52E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Ethylbenzene		4.40E-02	--	0		8.38E-06	0.00E+00	8.38E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Isopropyltoluene		7.20E-03	--	0		1.37E-06	0.00E+00	1.37E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Methylene chloride		3.00E-01	--	0		5.71E-05	0.00E+00	5.71E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Naphthalene		1.60E-02	--	0		3.05E-06	0.00E+00	3.05E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Toluene		3.00E-02	--	0		5.71E-06	0.00E+00	5.71E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
trans-1,2-Dichloroethene		2.30E-02	--	0		4.38E-06	0.00E+00	4.38E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Trichloroethene		7.00E-03	--	0		1.33E-06	0.00E+00	1.33E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
1,2,4-Trimethylbenzene		2.50E-02	--	0		4.76E-06	0.00E+00	4.76E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
1,3,5-Trimethylbenzene		9.30E-03	--	0		1.77E-06	0.00E+00	1.77E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Vinyl chloride		3.40E-02	--	0		6.48E-06	0.00E+00	6.48E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Xylenes		1.10E-01	--	0		2.10E-05	0.00E+00	2.10E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pesticides (mg/kg)																		
alpha-Chlordane		8.20E-03	--	0		1.56E-06	0.00E+00	1.56E-06	0.0014		1.1E-03	0.0E+00	1.1E-03	0.014		1.1E-04	0.0E+00	1.1E-04
beta-BHC		1.00E-03	--	0		1.90E-07	0.00E+00	1.90E-07	0.56		3.4E-07	0.0E+00	3.4E-07	2.25		8.5E-08	0.0E+00	8.5E-08
delta-BHC		2.00E-03	--	0		3.81E-07	0.00E+00	3.81E-07	0.56		6.8E-07	0.0E+00	6.8E-07	2.25		1.7E-07	0.0E+00	1.7E-07
2,4-DDD		2.90E-02	1.04E+00	0		5.52E-06	8.24E-04	8.29E-04	0.009		6.1E-04	9.2E-02	9.2E-02	1.5		3.7E-06	5.5E-04	5.5E-04
DDD		8.60E-02	1.04E+00	0		1.64E-05	2.44E-03	2.46E-03	0.009		1.8E-03	2.7E-01	2.7E-01	1.5		1.1E-05	1.6E-03	1.6E-03
DDE	0.0000027	1.70E-02	1.04E+00	0	5.22E-08	3.24E-06	4.83E-04	4.86E-04	NTV	NTV	NTV	NTV	NTV	0.6	8.7E-08	5.4E-06	8.0E-04	8.1E-04
DDTs	0.00014	1.20E-02	1.04E+00	0	2.71E-06	2.29E-06	3.41E-04	3.46E-04	0.009	3.0E-04	2.5E-04	3.8E-02	3.8E-02	1.5	1.8E-06	1.5E-06	2.3E-04	2.3E-04

Table C2-2k
Post-Remediation Northern Harrier Risk Calculations (Wetland Sediment Residual Concentration)
Deep Soil (0 - 10 ft bgs) at Hazard Quotient of 10
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Concentrations				Intake (mg/kg BW-day)					Hazard Quotient (HQ) - Low					Hazard Quotient (HQ) - High			
COPEC[a]	Surface Water (mg/L)[b]	Sediment[c]	Small Mammal BAF[d]	Small Mammal Tissue[d]	Surface Water	Sediment	Small Mammal	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Small Mammal	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Sediment	Small Mammal	Total Intake
Dieldrin		3.90E-03	--	0		7.43E-07	0.00E+00	7.43E-07	0.0709		1.0E-05	0.0E+00	1.0E-05	0.98		7.6E-07	0.0E+00	7.6E-07
Endosulfan I		4.00E-03	--	0		7.62E-07	0.00E+00	7.62E-07	10		7.6E-08	0.0E+00	7.6E-08	100		7.6E-09	0.0E+00	7.6E-09
Endosulfan sulfate	0.00012	3.00E-03	--	0	2.32E-06	5.71E-07	0.00E+00	2.89E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Endrin	0.000014	2.00E-02	--	0	2.71E-07	3.81E-06	0.00E+00	4.08E-06	0.3	9.0E-07	1.3E-05	0.0E+00	1.4E-05	3	9.0E-08	1.3E-06	0.0E+00	1.4E-06
Endrin aldehyde		6.00E-03	--	0		1.14E-06	0.00E+00	1.14E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Endrin Ketone		3.00E-03	--	0		5.71E-07	0.00E+00	5.71E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
gamma-Chlordane		8.50E-03	--	0		1.62E-06	0.00E+00	1.62E-06	0.0014		1.2E-03	0.0E+00	1.2E-03	0.014		1.2E-04	0.0E+00	1.2E-04
Heptachlor	0.0000028	2.00E-04	--	0	5.41E-08	3.81E-08	0.00E+00	9.22E-08	0.065	8.3E-07	5.9E-07	0.0E+00	1.4E-06	0.65	8.3E-08	5.9E-08	0.0E+00	1.4E-07
Heptachlor epoxide		3.00E-04	--	0		5.71E-08	0.00E+00	5.71E-08	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Hexachlorobenzene		8.00E-04	--	0		1.52E-07	0.00E+00	1.52E-07	0.23		6.6E-07	0.0E+00	6.6E-07	2.3		6.6E-08	0.0E+00	6.6E-08
Methoxychlor		2.00E-02	--	0		3.81E-06	0.00E+00	3.81E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Mirex		4.00E-03	--	0		7.62E-07	0.00E+00	7.62E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
trans-Nonachlor		2.40E-03	--	0		4.57E-07	0.00E+00	4.57E-07	0.0014		3.3E-04	0.0E+00	3.3E-04	0.014		3.3E-05	0.0E+00	3.3E-05
SVOCs (mg/kg)																		
Acenaphthene		1.30E-01	--	0		2.48E-05	0.00E+00	2.48E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Acenaphthylene		1.10E-01	--	0		2.10E-05	0.00E+00	2.10E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Anthracene		1.30E-01	--	0		2.48E-05	0.00E+00	2.48E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(a)anthracene		2.70E-01	--	0		5.14E-05	0.00E+00	5.14E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(a)pyrene		2.30E-01	--	0		4.38E-05	0.00E+00	4.38E-05	0.001		4.4E-02	0.0E+00	4.4E-02	0.01		4.4E-03	0.0E+00	4.4E-03
Benzo(b)fluoranthene		2.30E-01	--	0		4.38E-05	0.00E+00	4.38E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(g,h,i)perylene		1.60E-01	--	0		3.05E-05	0.00E+00	3.05E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(k)fluoranthene		2.30E-01	--	0		4.38E-05	0.00E+00	4.38E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzoic acid		6.80E-01	--	0		1.30E-04	0.00E+00	1.30E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Bis(2-ethylhexyl)phthalate	0.027	1.10E+00	--	0	5.22E-04	2.10E-04	0.00E+00	7.31E-04	1.1	4.7E-04	1.9E-04	0.0E+00	6.6E-04	11	4.7E-05	1.9E-05	0.0E+00	6.6E-05
Butylbenzylphthalate		2.50E-02	--	0		4.76E-06	0.00E+00	4.76E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Carbazole		5.50E-01	--	0		1.05E-04	0.00E+00	1.05E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Chloroaniline		3.00E-03	--	0		5.71E-07	0.00E+00	5.71E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2-Chloropropane		4.33E-02	--	0		8.25E-06	0.00E+00	8.25E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chrysene	0.0002	2.60E-01	--	0	3.87E-06	4.95E-05	0.00E+00	5.34E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Dibenzofuran		3.60E-01	--	0		6.86E-05	0.00E+00	6.86E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
3,3-Dichlorobenzidine		1.20E-02	--	0		2.29E-06	0.00E+00	2.29E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2,6-Dinitrotoluene		3.70E-01	--	0		7.05E-05	0.00E+00	7.05E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Fluoranthene		3.70E-01	--	0		7.05E-05	0.00E+00	7.05E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Fluorene		1.30E-01	--	0		2.48E-05	0.00E+00	2.48E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Indeno(1,2,3-cd)pyrene		1.60E-01	--	0		3.05E-05	0.00E+00	3.05E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2-Methylnaphthalene		1.80E-01	--	0		3.43E-05	0.00E+00	3.43E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Methylphenol	0.12	2.30E-01	--	0	2.32E-03	4.38E-05	0.00E+00	2.36E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Naphthalene		1.10E-01	--	0		2.10E-05	0.00E+00	2.10E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pentachlorophenol		5.40E-01	--	0		1.03E-04	0.00E+00	1.03E-04	6.7		1.5E-05	0.0E+00	1.5E-05	22.5		4.6E-06	0.0E+00	4.6E-06
Phenanthrene		2.00E-01	--	0		3.81E-05	0.00E+00	3.81E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Phenol		2.90E-01	--	0		5.52E-05	0.00E+00	5.52E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pyrene		4.20E-01	--	0		8.00E-05	0.00E+00	8.00E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
PCBs (mg/kg)																		
PCBs (Total Congeners)	0.000016	2.00E-01	1.81E+01	4	3.09E-07	3.81E-05	9.84E-02	9.84E-02	0.09	3.4E-06	4.2E-04	1.1E+00	1.1E+00	1.27	2.4E-07	3.0E-05	7.7E-02	7.8E-02

>1 = The calculated hazard quotient exceeds 1 (i.e., > 1.5)

Table C2-2k
Post-Remediation Northern Harrier Risk Calculations (Wetland Sediment Residual Concentration)
Deep Soil (0 - 10 ft bgs) at Hazard Quotient of 10
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Concentrations				Intake (mg/kg BW-day)					Hazard Quotient (HQ) - Low					Hazard Quotient (HQ) - High			
COPEC[a]	Surface Water (mg/L)[b]	Sediment[c]	Small Mammal BAF[d]	Small Mammal Tissue[d]	Surface Water	Sediment	Small Mammal	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Small Mammal	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Sediment	Small Mammal	Total Intake

Exposure Assumptions and Equation:[e]

		Value	
Ingestion Rate (IR) prey(dry wt.)	=	0.048	
IRsmall mammal (dry wt.)	=	0.048	kg/day (dry weight)
IRsoil (dry wt.)[f]	=	0.000336	kg-day (dry weight)
IRsurface water[g]	=	0.034	L/day
Cprey	=	chem-specific	mg/kg or µg/kg
Csoil	=	chem-specific	mg/kg or µg/kg
Csurface water	=	chem-specific	mg/L or µg/L
Tissue Moisture (TMsmall mammal)	=	68%	percent
Dietary Composition Factor (DCF)[h]	=	100%	percent
Site Use Factor (SUF)[i]	=	25%	percent
Body Weight (BW)	=	0.441	kg

Intake Equation = [IRmammal(dry wt) x (Cprey(mammal, dry wt)/1-TM) x DCF x SUF]/BW] + [(IRsoil x Csoil x DCF x SUF)]/BW] + [(IRsurface water x Csurface water x DCF x SUF)]/BW]

Risk (hazard quotient) = Intake / TRV

Prey tissue(dry wt) = Prey tissue (wet wt.) / (1-Tissue Moisture)

NTV = No toxicity data available.

NA = Not applicable.

Blank cell indicates COPEC was not detected in this medium.

Notes:

a All chemicals detected in sediments are considered as constituents of potential ecological concern.

b All concentrations of constituents in surface water are based on the maximum concentration.

c All concentrations of constituents in sediment are based on the residual concentrations expressed in dry weight.

d Site-specific BAFs (dry weight basis). Calculated small mammal tissue concentrations (sediment concentration x BAF). Tissue concentrations are on a dry weight basis.

e Exposure parameters used to calculate risk are discussed in detail in Section 4.2 of ERA.

f Ingestion rate of sedimentl based on 0.7 percent of of the prey ingestion rate (dry weight); based on rate for bald eagle in Pascoe et al. (1996).

g Based on equation for birds: Water intake (L/day) = $0.059Wt(kg)^{0.67}$ (EPA 1993)

h Dietary composition factor was based on a conservative assumption of 100% dietary intake of small mammals from the site.

i Site use factor was based on 25% use of the site for the harrier's foraging range.

Table C2-2l
Post-Remediation Mallard (Non-Breeding) Risk Calculations (Wetland Sediment Residual Concentration)
Deep Soil (0 - 10 ft bgs) at Hazard Quotient of 10
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Concentrations				Intake (mg/kg BW-day)					Hazard Quotient (HQ) - Low					Hazard Quotient (HQ) - High			
COPEC[a]	Surface Water (mg/L)[b]	Sediments[c]	Plant BAF[d]	Plant Tissue[d]	Surface Water	Sediment	Plant	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Plant	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Sediment	Plant	Total Intake
Metals (mg/kg)																		
Aluminum	12.6	3.01E+04	7.56E-03	2.28E+02	7.60E-02	9.74E+00	2.23E+00	1.21E+01	109.7	6.9E-04	8.9E-02	2.0E-02	1.1E-01	1,097	6.9E-05	8.9E-03	2.0E-03	1.1E-02
Antimony	0.003	4.50E+00	2.27E-01	1.02E+00	1.81E-05	1.45E-03	1.00E-02	1.15E-02	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Arsenic	0.0436	2.15E+01	1.15E-01	2.48E+00	2.63E-04	6.95E-03	2.43E-02	3.15E-02	5.5	4.8E-05	1.3E-03	4.4E-03	5.7E-03	22	1.2E-05	3.2E-04	1.1E-03	1.4E-03
Barium	0.24	9.40E+01	7.87E-02	7.40E+00	1.42E-03	3.04E-02	7.25E-02	1.04E-01	20.8	6.8E-05	1.5E-03	3.5E-03	5.0E-03	41.7	3.4E-05	7.3E-04	1.7E-03	2.5E-03
Beryllium		6.50E-01	--	0		2.10E-04	0	2.10E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Cadmium	0.0016	2.90E+00	1.40E+00	4.05E+00	9.65E-06	9.37E-04	3.97E-02	4.06E-02	0.08	1.2E-04	1.2E-02	5.0E-01	5.1E-01	10.40	9.3E-07	9.0E-05	3.8E-03	3.9E-03
Chromium +3	0.0263	2.13E+02	--	0	1.59E-04	6.89E-02	0	6.90E-02	2.66	6.0E-05	2.6E-02	0.0E+00	2.6E-02	2.78	5.7E-05	2.5E-02	0.0E+00	2.5E-02
Chromium +6	0.0263	7.00E-02	--	0	1.59E-04	2.26E-05	0	1.81E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Cobalt	0.0164	1.87E+01	--	0	9.89E-05	6.05E-03	0	6.14E-03	7.61	1.3E-05	7.9E-04	0.0E+00	8.1E-04	17	5.8E-06	3.6E-04	0.0E+00	3.6E-04
Copper	0.233	1.97E+02	5.68E-02	1.12E+01	1.40E-03	6.37E-02	1.10E-01	1.75E-01	2.3	6.1E-04	2.8E-02	4.8E-02	7.6E-02	52.3	2.7E-05	1.2E-03	2.1E-03	3.3E-03
Lead	0.0031	9.60E+01	7.51E-03	7.21E-01	1.87E-05	3.10E-02	7.06E-03	3.81E-02	0.014	1.3E-03	2.2E+00	5.0E-01	2.7E+00 >1	8.75	2.1E-06	3.5E-03	8.1E-04	4.4E-03
Manganese	7.42	9.67E+02	4.89E-01	4.73E+02	4.47E-02	3.13E-01	4.63E+00	4.99E+00	77.6	5.8E-04	4.0E-03	6.0E-02	6.4E-02	776	5.8E-05	4.0E-04	6.0E-03	6.4E-03
Mercury	0.00029	1.40E+00	--	0	1.75E-06	4.53E-04	0	4.54E-04	0.039	4.5E-05	1.2E-02	0.0E+00	1.2E-02	0.18	9.7E-06	2.5E-03	0.0E+00	2.5E-03
Molybdenum	0.0312	5.00E+00	--	0	1.88E-04	1.62E-03	0	1.80E-03	3.5	5.4E-05	4.6E-04	0.0E+00	5.2E-04	35.3	5.3E-06	4.6E-05	0.0E+00	5.1E-05
Nickel	0.166	1.14E+02	1.39E-02	1.58E+00	1.00E-03	3.69E-02	1.55E-02	5.34E-02	1.38	7.3E-04	2.7E-02	1.1E-02	3.9E-02	56.3	1.8E-05	6.5E-04	2.8E-04	9.5E-04
Selenium	0.029	1.20E+00	--	0	1.75E-04	3.88E-04	0	5.63E-04	0.23	7.6E-04	1.7E-03	0.0E+00	2.4E-03	0.93	1.9E-04	4.2E-04	0.0E+00	6.1E-04
Silver	0.0019	2.70E+00	--	0	1.15E-05	8.73E-04	0	8.84E-04	178.00	6.4E-08	4.9E-06	0.0E+00	5.0E-06	NTV	NTV	NTV	NTV	NTV
Thallium		4.60E-01	--	0		1.49E-04	0	1.49E-04	0.35		4.2E-04	0.0E+00	4.2E-04	NTV	NTV	NTV	NTV	NTV
Tin		1.62E+01	1.55E+00	2.52E+01		5.24E-03	2.47E-01	2.52E-01	6.80		7.7E-04	3.6E-02	3.7E-02	16.9		3.1E-04	1.5E-02	1.5E-02
Vanadium	0.05	1.17E+02	2.20E-02	2.58E+00	3.01E-04	3.78E-02	2.53E-02	6.34E-02	11.4	2.6E-05	3.3E-03	2.2E-03	5.6E-03	114	2.6E-06	3.3E-04	2.2E-04	5.6E-04
Zinc	0.042	2.37E+02	8.47E-02	2.01E+01	2.53E-04	7.66E-02	1.97E-01	2.73E-01	17.2	1.5E-05	4.5E-03	1.1E-02	1.6E-02	172	1.5E-06	4.5E-04	1.1E-03	1.6E-03
Volatile Organics (mg/kg)																		
Acetone		3.20E-01	--	0		1.03E-04	0	1.03E-04	52		2.0E-06	0.0E+00	2.0E-06	520		2.0E-07	0.0E+00	2.0E-07
Benzene		5.00E-03	--	0		1.62E-06	0	1.62E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Carbon disulfide		2.50E-02	--	0		8.08E-06	0	8.08E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chlorobenzene		2.40E-02	--	0		7.76E-06	0	7.76E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
cis-1,2-Dichlorobenzene		5.00E-03	--	0		1.62E-06	0	1.62E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Ethylbenzene		4.40E-02	--	0		1.42E-05	0	1.42E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Isopropyltoluene		7.20E-03	--	0		2.33E-06	0	2.33E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Methylene chloride		3.00E-01	--	0		9.70E-05	0	9.70E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Naphthalene		1.60E-02	--	0		5.17E-06	0	5.17E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Toluene		3.00E-02	--	0		9.70E-06	0	9.70E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
trans-1,2-Dichloroethene		2.30E-02	--	0		7.44E-06	0	7.44E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Trichloroethene		7.00E-03	--	0		2.26E-06	0	2.26E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
1,2,4-Trimethylbenzene		2.50E-02	--	0		8.08E-06	0	8.08E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
1,3,5-Trimethylbenzene		9.30E-03	--	0		3.01E-06	0	3.01E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Vinyl chloride		3.40E-02	--	0		1.10E-05	0	1.10E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Xylenes		1.10E-01	--	0		3.56E-05	0	3.56E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pesticides (mg/kg)																		
alpha-Chlordane		8.20E-03	--	0		2.65E-06	0	2.65E-06	0.0014		1.9E-03	0.0E+00	1.9E-03	0.014		1.9E-04	0.0E+00	1.9E-04
beta-BHC		1.00E-03	--	0		3.23E-07	0	3.23E-07	0.56		5.8E-07	0.0E+00	5.8E-07	2.25		1.4E-07	0.0E+00	1.4E-07
delta-BHC		2.00E-03	--	0		6.47E-07	0	6.47E-07	0.56		1.2E-06	0.0E+00	1.2E-06	2.25		2.9E-07	0.0E+00	2.9E-07
2,4-DDD		2.90E-02	--	0		9.37E-06	0	9.37E-06	0.009		1.0E-03	0.0E+00	1.0E-03	1.5		6.2E-06	0.0E+00	6.2E-06
4,4-DDD		8.60E-02	--	0		2.78E-05	0	2.78E-05	0.009		3.1E-03	0.0E+00	3.1E-03	1.5		1.9E-05	0.0E+00	1.9E-05
DDE	0.0000027	1.70E-02	--	0	1.63E-08	5.50E-06	0	5.51E-06	NTV	NTV	NTV	NTV	NTV	0.6	2.7E-08	9.2E-06	0.0E+00	9.2E-06
DDTs	0.00014	1.20E-02	--	0	8.44E-07	3.88E-06	0	4.72E-06	0.009	9.4E-05	4.3E-04	0.0E+00	5.2E-04	1.5	5.6E-07	2.6E-06	0.0E+00	3.1E-06
Dieldrin		3.90E-03	--	0		1.26E-06	0	1.26E-06	0.0709		1.8E-05	0.0E+00	1.8E-05	0.98		1.3E-06	0.0E+00	1.3E-06
Endosulfan I		4.00E-03	--	0		1.29E-06	0	1.29E-06	10		1.3E-07	0.0E+00	1.3E-07	100		1.3E-08	0.0E+00	1.3E-08
Endosulfan sulfate	0.00012	3.00E-03	--	0	7.24E-07	9.70E-07	0	1.69E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Endrin	0.000014	2.00E-02	--	0	8.44E-08	6.47E-06	0	6.55E-06	0.3	2.8E-07	2.2E-05	0.0E+00	2.2E-05	3	2.8E-08	2.2E-06	0.0E+00	2.2E-06
Endrin aldehyde		6.00E-03	--	0		1.94E-06	0	1.94E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Endrin Ketone		3.00E-03	--	0		9.70E-07	0	9.70E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
gamma Chlordane		8.50E-03	--	0		2.75E-06	0	2.75E-06	0.0014		2.0E-03	0.0E+00	2.0E-03	0.014		2.0E-04	0.0E+00	2.0E-04
Heptachlor	0.0000028	2.00E-04	--	0	1.69E-08	6.47E-08	0	8.15E-08	0.065	2.6E-07	9.9E-07	0.0E+00	1.3E-06	0.65	2.6E-08	9.9E-08	0.0E+00	1.3E-07
Heptachlor epoxide		3.00E-04	--	0		9.70E-08	0	9.70E-08	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Hexachlorobenzene		8.00E-04	--	0		2.59E-07	0	2.59E-07	0.23		1.1E-06	0.0E+00	1.1E-06	2.3		1.1E-07	0.0E+00	1.1E-07
Methoxychlor		2.00E-02	--	0		6.47E-06	0	6.47E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Mirex		4.00E-03	--	0		1.29E-06	0	1.29E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
trans-Nonachlor		2.40E-03	--	0		7.76E-07	0	7.76E-07	0.0014		5.5E-04	0.0E+00	5.5E-04	0.014		5.5E-05	0.0E+00	5.5E-05

Table C2-2l
Post-Remediation Mallard (Non-Breeding) Risk Calculations (Wetland Sediment Residual Concentration)
Deep Soil (0 - 10 ft bgs) at Hazard Quotient of 10
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Concentrations				Intake (mg/kg BW-day)					Hazard Quotient (HQ) - Low					Hazard Quotient (HQ) - High			
COPEC[a]	Surface Water (mg/L)[b]	Sediments[c]	Plant BAF[d]	Plant Tissue[d]	Surface Water	Sediment	Plant	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Plant	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Sediment	Plant	Total Intake
SVOCs (mg/kg)																		
Acenaphthene		1.30E-01	--	0		4.20E-05	0	4.20E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Acenaphthylene		1.10E-01	--	0		3.56E-05	0	3.56E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Anthracene		1.30E-01	1.89E+00	2.45E-01		4.20E-05	2.40E-03	2.45E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(a)anthracene		2.70E-01	--	0		8.73E-05	0	8.73E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(a)pyrene		2.30E-01	--	0		7.44E-05	0	7.44E-05	0.001		7.4E-02	0.0E+00	7.4E-02	0.01		7.4E-03	0.0E+00	7.4E-03
Benzo(b)fluoranthene		2.30E-01	--	0		7.44E-05	0	7.44E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(ghi)perylene		1.60E-01	--	0		5.17E-05	0	5.17E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(k)fluoranthene		2.30E-01	--	0		7.44E-05	0	7.44E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzoic acid		6.80E-01	--	0		2.20E-04	0	2.20E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Bis(2-ethylhexyl)phthalate	0.027	1.10E+00	--	0	1.63E-04	3.56E-04	0	5.18E-04	1.1	1.5E-04	3.2E-04	0.0E+00	4.7E-04	11	1.5E-05	3.2E-05	0.0E+00	4.7E-05
Butylbenzylphthalate		2.50E-02	--	0		8.08E-06	0	8.08E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Carbazole		5.50E-01	--	0		1.78E-04	0	1.78E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Chloroaniline		3.00E-03	--	0		9.70E-07	0	9.70E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2-Chloropropane		4.33E-02	--	0		1.40E-05	0	1.40E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chrysene	0.0002	2.60E-01	--	0	1.21E-06	8.40E-05	0	8.53E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Dibenzofuran		3.60E-01	--	0		1.16E-04	0	1.16E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
3,3-Dichlorobenzidine		1.20E-02	--	0		3.88E-06	0	3.88E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2,6-Dinitrotoluene		3.70E-01	--	0		1.20E-04	0	1.20E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Fluoranthene		3.70E-01	1.17E+00	4.34E-01		1.20E-04	4.25E-03	4.37E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Fluorene		1.30E-01	--	0		4.20E-05	0	4.20E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Indeno(123,cd)pyrene		1.60E-01	--	0		5.17E-05	0	5.17E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2-Methylnaphthalene		1.80E-01	--	0		5.82E-05	0	5.82E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Methylphenol	0.12	2.30E-01	--	0	7.24E-04	7.44E-05	0	7.98E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Naphthalene		1.10E-01	--	0		3.56E-05	0	3.56E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pentachlorophenol		5.40E-01	--	0		1.75E-04	0	1.75E-04	6.7		2.6E-05	0.0E+00	2.6E-05	22.5		7.8E-06	0.0E+00	7.8E-06
Phenanthrene		2.00E-01	1.64E+00	3.27E-01		6.47E-05	3.21E-03	3.27E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Phenol		2.90E-01	--	0		9.37E-05	0	9.37E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pyrene		4.20E-01	--	0		1.36E-04	0	1.36E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
PCBs (mg/kg)																		
PCBs (TOTAL)-congeners	0.000016	2.00E-01	1.09E-01	2.19E-02	9.65E-08	6.47E-05	2.14E-04	2.79E-04	0.09	1.1E-06	7.2E-04	2.4E-03	3.1E-03	1.27	7.6E-08	5.1E-05	1.7E-04	2.2E-04
																		>1 = The calculated hazard quotient exceeds 1 (i.e., > 1.5)

Exposure Assumptions and Equation:[e]

	Value	Units
Ingestion Rate (IR) prey(dry wt.) =	0.0917	kg/day (dry weight)
IRplant(dry wt.) =	0.0917	kg/day (dry weight)
IRsediment (dry wt.)[f] =	0.00303	kg/day (dry weight)
Cprey =	chem-specific	kg-day (dry weight)
Csediment =	chem-specific	kg-day (dry weight)
Tissue Moisture (TMplant) =	8.5%	percent
IRsurface water[g] =	0.056	L/day
Csurface water =	chem-specific	mg/L or µg/L
Dietary Composition Factor (DCF)[h] =	100%	percent
Site Use Factor (SUF)[i] =	10%	percent
Body Weight (BW) =	0.9361	kg

Intake Equation = [IRplant (dry wt) x [Cprey (plant, wet wt) /1-TM] x DCF x SUF]/BW + [IRsediment x Csediment x DCF x SUF)]/BW +[(IRsurface water x Csurface water x DCF x SUF)]/BW

Risk (hazard quotient) = Intake / TRV

NTV = Not toxicity data available.

Prey tissue(dry wt) = Prey tissue (wet wt.) / (1-Tissue Moisture)

NA = Not available.

Blank cell indicates COPEC was not detected in this medium.

Notes:

a All chemicals detected in sediments are considered as constituents of potential ecological concern.

b All concentrations of constituents in surface water are based on the maximum concentration.

c All concentrations of constituents in sediment are based on the residual concentrations expressed in dry weight.

d Site-specific BAFs (dry weight basis). Calculated plant tissue concentrations (sediment concentration x BAF). Tissue concentrations are on a dry weight basis.

e Exposure parameters used to calculate risk are discussed in detail in Section 4.2 of ERA.

f Ingestion rate of sediment based on 3.3 percent of of the prey ingestion rate (dry weight); based on mallard data from Beyer et al. (1994).

g Based on equation for birds: Water intake (L/day) = $0.059Wt(kg)^{0.67}$ (EPA 1993)

h Dietary composition factor was based on a conservative assumption of 100% dietary intake of plants from the site.

i Site use factor was based on 10% use of the site for the mallard's foraging range.

Table C2-2m
Post-Remediation Mallard (Breeding) Risk Calculations (Wetland Sediment Residual Concentration)
Deep Soil (0 - 10 ft bgs) at Hazard Quotient of 10
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Point Concentration						Intake (mg/kg BW-day)					Low TRV	Hazard Quotient (HQ) - Low					High TRV	Hazard Quotient (HQ) - High				
COPEC[a]	Surface Water (mg/L)[b]	Sediments[c]	Plant BAF[d]	Plant Tissue[d]	Invertebrate BAF[d]	Invertebrate Tissue[d]	Surface Water	Sediment	Plant	Invertebrate	Total Intake (mg/kg/day)	(mg/kg BW-day)	Surface Water	Sediment	Plant	Invertebrate	Total Intake	(mg/kg BW-day)	Surface Water	Sediment	Plant	Invertebrate	Total Intake
Metals (mg/kg)																							
Aluminum	12.6	3.01E+04	7.56E-03	2.28E+02	1.93E-01	5.81E+03	3.04E-01	3.90E+01	2.23E+00	1.71E+02	2.12E+02	109.7	2.8E-03	3.6E-01	2.0E-02	1.6E+00	1.9E+00 >1	1,097	2.8E-04	3.6E-02	2.0E-03	1.6E-01	1.9E-01
Antimony	0.003	4.50E+00	2.27E-01	1.02E+00	2.32E-01	1.04E+00	7.24E-05	5.82E-03	1.00E-02	3.06E-02	4.65E-02	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Arsenic	0.0436	2.15E+01	1.15E-01	2.48E+00	1.92E-01	4.12E+00	1.05E-03	2.78E-02	2.43E-02	1.21E-01	1.74E-01	5.5	1.9E-04	5.1E-03	4.4E-03	2.2E-02	3.2E-02	22	4.8E-05	1.3E-03	1.1E-03	5.5E-03	7.9E-03
Barium	0.24	9.40E+01	7.87E-02	7.40E+00	1.50E+00	1.41E+02	5.69E-03	1.22E-01	7.25E-02	4.14E+00	4.34E+00	20.8	2.7E-04	5.8E-03	3.5E-03	2.0E-01	2.1E-01	41.7	1.4E-04	2.9E-03	1.7E-03	9.9E-02	1.0E-01
Beryllium		6.50E-01	--	0	--	0		8.40E-04	0.00E+00	0.00E+00	8.40E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Cadmium	0.0016	2.90E+00	1.40E+00	4.05E+00	2.15E-01	6.24E-01	3.86E-05	3.75E-03	3.97E-02	1.83E-02	6.18E-02	0.08	4.8E-04	4.7E-02	5.0E-01	2.3E-01	7.7E-01	10.40	3.7E-06	3.6E-04	3.8E-03	1.8E-03	5.9E-03
Chromium +3	0.0263	2.13E+02	--	0	5.53E-01	1.18E+02	6.34E-04	2.75E-01	0.00E+00	3.46E+00	3.74E+00	2.66	2.4E-04	1.0E-01	0.0E+00	1.3E+00	1.4E+00	2.78	2.3E-04	9.9E-02	0.0E+00	1.2E+00	1.3E+00
Chromium +6	0.0263	7.00E-02	--	0	5.53E-01	3.87E-02	6.34E-04	9.05E-05	0.00E+00	1.14E-03	1.86E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Cobalt	0.0164	1.87E+01	--	0	--	0	3.96E-04	2.42E-02	0.00E+00	0.00E+00	2.46E-02	7.61	5.2E-05	3.2E-03	0.0E+00	0.0E+00	3.2E-03	17	2.3E-05	1.4E-03	0.0E+00	0.0E+00	1.4E-03
Copper	0.233	1.97E+02	5.68E-02	1.12E+01	6.67E-01	1.31E+02	5.62E-03	2.55E-01	1.10E-01	3.86E+00	4.23E+00	2.3	2.4E-03	1.1E-01	4.8E-02	1.7E+00	1.8E+00 >1	52.3	1.1E-04	4.9E-03	2.1E-03	7.4E-02	8.1E-02
Lead	0.0031	9.60E+01	7.51E-03	7.21E-01	5.07E-02	4.87E+00	7.48E-05	1.24E-01	7.06E-03	1.43E-01	2.74E-01	0.014	5.3E-03	8.9E+00	5.0E-01	1.0E+01	2.0E+01 >1	8.75	8.5E-06	1.4E-02	8.1E-04	1.6E-02	3.1E-02
Manganese	7.42	9.67E+02	4.89E-01	4.73E+02	5.29E+00	5.12E+03	1.79E-01	1.25E+00	4.63E+00	1.50E+02	1.57E+02	77.6	2.3E-03	1.6E-02	6.0E-02	1.9E+00	2.0E+00 >1	776	2.3E-04	1.6E-03	6.0E-03	1.9E-01	2.0E-01
Mercury	0.00029	1.40E+00	--	0	6.96E-01	9.75E-01	6.99E-06	1.81E-03	0.00E+00	2.86E-02	3.05E-02	0.039	1.8E-04	4.6E-02	0.0E+00	7.3E-01	7.8E-01	0.18	3.9E-05	1.0E-02	0.0E+00	1.6E-01	1.7E-01
Molybdenum	0.0312	5.00E+00	--	0	--	0	7.53E-04	6.47E-03	0.00E+00	0.00E+00	7.22E-03	3.5	2.2E-04	1.8E-03	0.0E+00	0.0E+00	2.1E-03	35.3	2.1E-05	1.8E-04	0.0E+00	0.0E+00	2.0E-04
Nickel	0.166	1.14E+02	1.39E-02	1.58E+00	3.65E-01	4.16E+01	4.00E-03	1.47E-01	1.55E-02	1.22E+00	1.39E+00	1.38	2.9E-03	1.1E-01	1.1E-02	8.9E-01	1.0E+00	56.3	7.1E-05	2.6E-03	2.8E-04	2.2E-02	2.5E-02
Selenium	0.029	1.20E+00	--	0	--	0	6.99E-04	1.55E-03	0.00E+00	0.00E+00	2.25E-03	0.23	3.0E-03	6.7E-03	0.0E+00	0.0E+00	9.8E-03	0.93	7.5E-04	1.7E-03	0.0E+00	0.0E+00	2.4E-03
Silver	0.0019	2.70E+00	--	0	--	0	4.58E-05	3.49E-03	0.00E+00	0.00E+00	3.54E-03	178.00	2.6E-07	2.0E-05	0.0E+00	0.0E+00	2.0E-05	NTV	NTV	NTV	NTV	NTV	NTV
Thallium		4.60E-01	--	0	--	0		5.95E-04	0.00E+00	0.00E+00	5.95E-04	0.35		1.7E-03	0.0E+00	0.0E+00	1.7E-03	NTV	NTV	NTV	NTV	NTV	NTV
Tin		1.62E+01	1.55E+00	2.52E+01	--	0		2.09E-02	2.47E-01	0.00E+00	2.68E-01	6.80		3.1E-03	3.6E-02	0.0E+00	3.9E-02	16.9		1.2E-03	1.5E-02	0.0E+00	1.6E-02
Vanadium	0.05	1.17E+02	2.20E-02	2.58E+00	2.96E-02	3.46E+00	1.21E-03	1.51E-01	2.53E-02	1.02E-01	2.79E-01	11.4	1.1E-04	1.3E-02	2.2E-03	8.9E-03	2.5E-02	114	1.1E-05	1.3E-03	2.2E-04	8.9E-04	2.5E-03
Zinc	0.042	2.37E+02	8.47E-02	2.01E+01	1.51E+00	3.58E+02	1.01E-03	3.06E-01	1.97E-01	1.05E+01	1.10E+01	17.2	5.9E-05	1.8E-02	1.1E-02	6.1E-01	6.4E-01	172	5.9E-06	1.8E-03	1.1E-03	6.1E-02	6.4E-02
Volatile Organics (mg/kg)																							
Acetone		3.20E-01	--	0	--	0		4.14E-04	0.00E+00	0.00E+00	4.14E-04	52		8.0E-06	0.0E+00	0.0E+00	8.0E-06	520		8.0E-07	0.0E+00	0.0E+00	8.0E-07
Benzene		5.00E-03	--	0	--	0		6.47E-06	0.00E+00	0.00E+00	6.47E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Carbon disulfide		2.50E-02	--	0	--	0		3.23E-05	0.00E+00	0.00E+00	3.23E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chlorobenzene		2.40E-02	--	0	--	0		3.10E-05	0.00E+00	0.00E+00	3.10E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
cis-1,2-Dichlorobenzene		5.00E-03	--	0	--	0		6.47E-06	0.00E+00	0.00E+00	6.47E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Ethylbenzene		4.40E-02	--	0	--	0		5.69E-05	0.00E+00	0.00E+00	5.69E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Isopropyltoluene		7.20E-03	--	0	--	0		9.31E-06	0.00E+00	0.00E+00	9.31E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Methylene chloride		3.00E-01	--	0	--	0		3.88E-04	0.00E+00	0.00E+00	3.88E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Naphthalene		1.60E-02	--	0	--	0		2.07E-05	0.00E+00	0.00E+00	2.07E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Toluene		3.00E-02	--	0	--	0		3.88E-05	0.00E+00	0.00E+00	3.88E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
trans-1,2-Dichloroethene		2.30E-02	--	0	--	0		2.97E-05	0.00E+00	0.00E+00	2.97E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Trichloroethene		7.00E-03	--	0	--	0		9.05E-06	0.00E+00	0.00E+00	9.05E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
1,2,4-Trimethylbenzene		2.50E-02	--	0	--	0		3.23E-05	0.00E+00	0.00E+00	3.23E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
1,3,5-Trimethylbenzene		9.30E-03	--	0	--	0		1.20E-05	0.00E+00	0.00E+00	1.20E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Vinyl chloride		3.40E-02	--	0	--	0		4.40E-05	0.00E+00	0.00E+00	4.40E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Xylenes		1.10E-01	--	0	--	0		1.42E-04	0.00E+00	0.00E+00	1.42E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pesticides (mg/kg)																							
alpha-Chlordane		8.20E-03	--	0	--	0		1.06E-05	0.00E+00	0.00E+00	1.06E-05	0.0014		7.6E-03	0.0E+00	0.0E+00	7.6E-03	0.014		7.6E-04	0.0E+00	0.0E+00	7.6E-04
beta-BHC		1.00E-03	--	0	--	0		1.29E-06	0.00E+00	0.00E+00	1.29E-06	0.56		2.3E-06	0.0E+00	0.0E+00	2.3E-06	2.25		5.7E-07	0.0E+00	0.0E+00	5.7E-07
delta-BHC		2.00E-03	--	0	--	0		2.59E-06	0.00E+00	0.00E+00	2.59E-06	0.56		4.6E-06	0.0E+00	0.0E+00	4.6E-06	2.25		1.1E-06	0.0E+00	0.0E+00	1.1E-06
2,4-DDD		2.90E-02	--	0	--	0		3.75E-05	0.00E+00	0.00E+00	3.75E-05	0.009		4.2E-03	0.0E+00	0.0E+00	4.2E-03	1.5		2.5E-05	0.0E+00	0.0E+00	2.5E-05
4,4-DDD		8.60E-02	--	0	--	0		1.11E-04	0.00E+00	0.00E+00	1.11E-04	0.009		1.2E-02	0.0E+00	0.0E+00	1.2E-02	1.5		7.4E-05	0.0E+00	0.0E+00	7.4E-05
DDE	0.0000027	1.70E-02	--	0	--	0	6.51E-08	2.20E-05	0.00E+00	0.00E+00	2.20E-05	NTV	NTV	NTV	NTV	NTV	NTV	0.6	1.1E-07	3.7E-05	0.0E+00	0.0E+00	3.7E-05
DDTs	0.00014	1.20E-02	--	0	--	0	3.38E-06	1.55E-05	0.00E+00	0.00E+00	1.89E-05	0.009	3.8E-04	1.7E-03	0.0E+00	0.0E+00	2.1E-03	1.5	2.3E-06	1.0E-05	0.0E+00	0.0E+00	1.3E-05
Dieldrin		3.90E-03	--	0	--	0		5.04E-06	0.00E+00	0.00E+00	5.04E-06	0.0709		7.1E-05	0.0E+00	0.0E+00	7.1E-05	0.98		5.1E-06	0.0E+00	0.0E+00	5.1E-06
Endosulfan I		4.00E-03	--	0	--	0		5.17E-06	0.00E+00	0.00E+00	5.17E-06	10		5.2E-07	0.0E+00	0.0E+00	5.2E-07	100		5.2E-08	0.0E+00	0.0E+00	5.2E-08
Endosulfan sulfate	0.00012	3.00E-03	--	0	--	0	2.89E-06	3.88E-06	0.00E+00	0.00E+00	6.77E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Endrin	0.000014	2.00E-02	--	0	--	0	3.38E-07	2.59E-05	0.00E+00	0.00E+00	2.62E-05	0.3	1.1E-06	8.6E-05	0.0E+00	0.0E+00	8.7E-05	3	1.1E-07	8.6E-06	0.0E+00	0.0E+00	8.7E-06
Endrin aldehyde		6.00E-03	--	0	--	0		7.76E-06	0.00E+00	0.00E+00	7.76E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Endrin Ketone		3.00E-03	--	0	--	0		3.88E-06	0.00E+00	0.00E+00	3.88E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
gamma-Chlordane		8.50E-03	--	0	--	0		1.10E-05	0.00E+00	0.00E+00	1.10E-05	0.0014		7.9E-03	0.0E+00	0.0E+00	7.9E-03	0.014		7.9E-04	0.0E+00	0.0E+00	7.9E-04
Heptachlor	0.0000028	2.00E-04	--	0	--	0	6.75E-08	2.59E-07	0.00E+00	0.00E+00	3.26E-07	0.065	1.0E-06	4.0E-06	0.0E+00	0.0E+00	5.0E-06	0.65	1.0E-07	4.0E-07	0.0E+00	0.0E+00	5.0E-07
Heptachlor epoxide		3.00E-04	--	0	--	0		3.88E-07	0.00E+00	0.00E+00	3.88E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Hexachlorobenzene		8.00E-04	--	0	--	0		1.03E-06	0.00E+00	0.00E+00	1.03E-06	0.23		4.5E-06	0.0E+00	0.0E+00	4.5E-06	2.3		4.5E-07	0.0E+00	0.0E+00	4.5E-07
Methoxychlor		2.00E-02	--	0	--	0		2.59E-05	0.00E+00	0.00E+00	2.59E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Mirex		4.00E-03	--	0	--	0		5.17E-06	0.00E+00	0.00E+00	5.17E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
trans-Nonachlor		2.40E-03	--	0	--	0		3.10E-06	0.00E+00	0.00E+00	3.10E-06	0.0014		2.2E-03	0.0E+00	0.0E+00	2.2E-03	0.014		2.2E-04	0.0E+00	0.0E+00	2.2E-04
SVOCs (mg/kg)																							
Acenaphthene		1.30E-01	--	0	--	0		1.68E-04	0.00E+00	0.00E+00	1.68E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Acenaphthylene		1.10E-01	--	0	--	0		1.42E-04	0.00E+00	0.00E+00	1.42E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Anthracene		1.30E-01	1.89E+00	2.45E-01	--	0		1.68E-04	2.40E-03	0.00E+00	2.57E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(a)anthracene		2.70E-01	--	0	--	0		3.49E-04	0.00E+00	0.00E+00	3.49E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(a)pyrene		2.30E-01	--	0	--	0		2.97E-04	0.00E+00	0.00E+00	2.97E-04	0.001		3.0E-01	0.0E+00	0.0E+00	3.0E-01	0.01		3.0E-02	0.0E+00	0.0E+00	3.0E-02
Benzo(b)fluoranthene		2.30E-01	--	0	--	0		2.97E-04	0.00E+00	0.00E+00	2.97E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(ghi)perylene		1.60E-01	--	0	--	0		2.07E-04	0.00E+00	0.00E+00	2.07E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(k)fluoranthene		2.30E-01	--	0	--	0		2.97E-04	0.00E+00	0.00E+00	2.97E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzoic acid		6.80E-01	--	0	--	0		8.79E-04	0.00E+00	0.00E+00	8.79E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Bis(2-ethylhexyl)phthalate	0.027	1.10E+00	--	0	--	0	6.51E-04	1.42E-03	0.00E+00	0.00E+00	2.07E-03	1.1	5.9E-04	1.3E-03	0.0E+00	0.0E+00	1.9E-03	11	5.9E-05	1.3E-04	0.0E+00	0.0E+00	1.9E-04
Butylbenzylphthalate		2.50E-02	--	0	--	0		3.23E-05	0.00E+00	0.00E+00	3.23E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Carbazole		5.50E-01	--	0	--	0		7.11E-04	0.00E+00	0.00E+00	7.11E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Chloroaniline		3.00E-03	--	0	--	0		3.88E-06	0.00E+00	0.00E+00	3.88E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2-Chloropropane		4.33E-02	--	0	--	0		5.60E-05	0.00E+00	0.00E+00	5.60E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chrysene	0.0002	2.60E-01	--	0	--	0	4.82E-06	3.36E-04	0.00E+00	0.00E+00	3.41E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Dibenzofuran		3.60E-01	--	0	--	0		4.66E-04	0.00E+00	0.00E+00	4.66E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
3,3-Dichlorobenzidine		1.20E-02	--	0	--	0		1.55E-05	0.00E+00	0.00E+00	1.55E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2,6-Dinitrotoluene		3.70E-01	--	0	--	0		4.78E-04	0.00E+00	0.00E+00	4.78E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Fluoranthene		3.70E-01	1.17E+00	4.34E-01	--	0		4.78E-04	4.25E-03	0.00E+00	4.73E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV

Table C2-2m
Post-Remediation Mallard (Breeding) Risk Calculations (Wetland Sediment Residual Concentration)
Deep Soil (0 - 10 ft bgs) at Hazard Quotient of 10
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Point Concentration						Intake (mg/kg BW-day)						Hazard Quotient (HQ) - Low						Hazard Quotient (HQ) - High					
COPEC[a]	Surface Water (mg/L)[b]	Sediments[c]	Plant BAF[d]	Plant Tissue[d]	Invertebrate BAF[d]	Invertebrate Tissue[d]	Surface Water	Sediment	Plant	Invertebrate	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Plant	Invertebrate	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Sediment	Plant	Invertebrate	Total Intake
Fluorene		1.30E-01	--	0	--	0		1.68E-04	0.00E+00	0.00E+00	1.68E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Indeno(123,cd)pyrene		1.60E-01	--	0	--	0		2.07E-04	0.00E+00	0.00E+00	2.07E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2-Methylnaphthalene		1.80E-01	--	0	--	0		2.33E-04	0.00E+00	0.00E+00	2.33E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Methylphenol	0.12	2.30E-01	--	0	--	0	2.89E-03	2.97E-04	0.00E+00	0.00E+00	3.19E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Naphthalene		1.10E-01	--	0	--	0		1.42E-04	0.00E+00	0.00E+00	1.42E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pentachlorophenol		5.40E-01	--	0	--	0		6.98E-04	0.00E+00	0.00E+00	6.98E-04	6.7		1.0E-04	0.0E+00	0.0E+00	1.0E-04	22.5		3.1E-05	0.0E+00	0.0E+00	3.1E-05
Phenanthrene		2.00E-01	1.64E+00	3.27E-01	2.51E+00	5.02E-01		2.59E-04	3.21E-03	1.48E-02	1.82E-02	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Phenol		2.90E-01	--	0	--	0		3.75E-04	0.00E+00	0.00E+00	3.75E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pyrene		4.20E-01	--	0	--	0		5.43E-04	0.00E+00	0.00E+00	5.43E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
PCBs (mg/kg)																								
PCBs (TOTAL)-congeners	0.000016	2.00E-01	1.09E-01	2.19E-02	1.16E+01	2.32E+00	3.86E-07	2.59E-04	2.14E-04	6.83E-02	6.87E-02	0.09	4.3E-06	2.9E-03	2.4E-03	7.6E-01	7.6E-01	1.27	3.0E-07	2.0E-04	1.7E-04	5.4E-02	5.4E-02

>1 = The calculated hazard quotient exceeds 1 (i.e., > 1.5)

Exposure Assumptions and Equation:[e]

	Value	Units
Ingestion Rate (IR) prey(dry wt.) =	0.0917	kg/day (dry weight)
IRplant(dry wt.)[f] =	0.0229	kg/day (dry weight)
IRinvertebrate(dry wt.)[f] =	0.0688	kg/day (dry weight)
IRsediment (dry wt.)[g] =	0.00303	kg-day (dry weight)
Cprey =	chem-specific	mg/kg or µg/kg
Csediment =	chem-specific	mg/kg or µg/kg
Tissue Moisture (TMplant) =	8.5%	percent
IRsurface water[h] =	0.056	L/day
Csurface water =	chem-specific	mg/L or µg/L
Dietary Composition Factor (DCF)[i] =	100%	percent
Site Use Factor (SUF)[j] =	40%	percent
Body Weight =	0.9361	kg

Intake Equation= [IRplant (dry wt) x [Cprey(plant, dry wt)/1-TM) x DCF x SUF]/BW] + [IRinvertebrate (dry wt) x Cprey(invertebrate, dry wt) x DCF x SUF)/BW] + [(IRsediment x Csediment x DCF x SUF))/BW +[(IRsurface water x Csurface water x DCF x SUF))/

Risk (hazard quotient) = Intake / TRV

Prey tissue(dry wt) = Prey tissue (wet wt.) / (1-Tissue Moisture)

NTV = Not toxicity data available.

Blank cell indicates COPEC was not detected in this medium.

Notes:

a All chemicals detected in sediments are considered as constituents of potential ecological concern.

b All concentrations of constituents in surface water are based on the maximum concentration.

c All concentrations of constituents in sediment are based on the residual concentrations expressed in dry weight.

d Site-specific BAFs (dry weight basis). Calculated plant and invertebrate tissue concentrations (sediment concentration x BAF). Tissue concentrations are on a dry weight basis.

e Exposure parameters used to calculate risk are discussed in detail in Section 4.2 of ERA.

f Based on dietary composition of 25% plant and 75% invertebrate.

g Ingestion rate of sediment based on 3.3 percent of of the prey ingestion rate (dry weight); based on mallards (Beyer et al. 1994).

h Based on equation for birds: Water intake (L/day) = $0.059Wt(kg)^{.67}$ (EPA 1993)

i Dietary composition factor was based on a conservative assumption of 100% dietary intake of plants and invertebrates from the site.

j Site use factor was based on 40% use of the site for the mallard's foraging range.

Table C2-2n
Post-Remediation Great Blue Heron Risk Calculations (Wetland Sediment Residual Concentration)
Shallow Soil (0 - 2 ft bgs) at Hazard Quotient of 10
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Point Concentration						Intake (mg/kg BW-day)						Hazard Quotient (HQ) - Low						Hazard Quotient (HQ) - High				
COPEC[a]	Surface Water (mg/L)[b]	Sediments[c]	Small Mammal BAF[d]	Small Mammal Tissue[d]	Amphibian BAF[d]	Amphibian Tissue[d]	Surface Water	Sediment	Small mammal	Amphibian	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Small mammal	Amphibian	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Sediment	Small mammal	Amphibian	Total Intake
Metals (mg/kg)																							
Aluminum	12.6	3.01E+04	1.11E-02	333	7.75E-03	234	5.65E-01	5.46E+01	9.15E+00	6.41E+00	7.07E+01	109.7	5.2E-03	5.0E-01	8.3E-02	5.8E-02	6.4E-01	1,097	5.2E-04	5.0E-02	8.3E-03	5.8E-03	6.4E-02
Antimony	0.003	4.50E+00	1.22E+00	5	--	0	1.35E-04	8.15E-03	1.50E-01	0	1.59E-01	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Arsenic	0.0436	2.15E+01	--	0	--	0	1.96E-03	3.90E-02	0	0	4.09E-02	5.5	3.6E-04	7.1E-03	0.0E+00	0.0E+00	7.4E-03	22	8.9E-05	1.8E-03	0.0E+00	0.0E+00	1.9E-03
Barium	0.24	9.40E+01	9.41E-02	9	--	0	1.06E-02	1.70E-01	2.43E-01	0	4.24E-01	20.8	5.1E-04	8.2E-03	1.2E-02	0.0E+00	2.0E-02	41.7	2.5E-04	4.1E-03	5.8E-03	0.0E+00	1.0E-02
Beryllium		6.50E-01	--	0	--	0		1.18E-03	0.00E+00	0	1.18E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Cadmium	0.0016	2.90E+00	--	0	--	0	7.18E-05	5.25E-03	0.00E+00	0	5.33E-03	0.08	9.0E-04	6.6E-02	0.0E+00	0.0E+00	6.7E-02	10.40	6.9E-06	5.1E-04	0.0E+00	0.0E+00	5.1E-04
Chromium +3	0.0263	2.13E+02	2.60E-02	6	2.45E-01	52	1.18E-03	3.86E-01	1.52E-01	1.43E+00	1.97E+00	2.66	4.4E-04	1.5E-01	5.7E-02	5.4E-01	7.4E-01	2.78	4.2E-04	1.4E-01	5.5E-02	5.2E-01	7.1E-01
Chromium +6	0.0263	7.00E-02	2.60E-02	0	2.45E-01	0	1.18E-03	1.27E-04	5.00E-05	4.71E-04	1.83E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Cobalt	0.0164	1.87E+01	--	0	--	0	7.36E-04	3.39E-02	0	0	3.46E-02	7.61	9.7E-05	4.5E-03	0.0E+00	0.0E+00	4.5E-03	17	4.3E-05	2.0E-03	0.0E+00	0.0E+00	2.0E-03
Copper	0.233	1.97E+02	3.45E-01	68	--	0	1.05E-02	3.57E-01	1.87E+00	0	2.24E+00	2.3	4.5E-03	1.6E-01	8.1E-01	0.0E+00	9.7E-01	52.3	2.0E-04	6.8E-03	3.6E-02	0.0E+00	4.3E-02
Lead	0.0031	9.60E+01	6.10E-01	59	--	0	1.39E-04	1.74E-01	1.61E+00	0	1.78E+00	0.014	9.9E-03	1.2E+01	1.1E+02	0.0E+00	1.3E+02	>1	8.75	1.6E-05	2.0E-02	1.8E-01	0.0E+00	2.0E-01
Manganese	7.42	9.67E+02	--	0	4.78E-02	46	3.33E-01	1.75E+00	0	1.27E+00	3.35E+00	77.6	4.3E-03	2.3E-02	0.0E+00	1.6E-02	4.3E-02	776	4.3E-04	2.3E-03	0.0E+00	1.6E-03	4.3E-03
Mercury	0.00029	1.40E+00	--	0	7.42E-01	1	1.30E-05	2.54E-03	0	2.85E-02	3.10E-02	0.039	3.3E-04	6.5E-02	0.0E+00	7.3E-01	8.0E-01	0.18	7.2E-05	1.4E-02	0.0E+00	1.6E-01	1.7E-01
Molybdenum	0.0312	5.00E+00	--	0	--	0	1.40E-03	9.06E-03	0	0	1.05E-02	3.5	4.0E-04	2.6E-03	0.0E+00	0.0E+00	3.0E-03	35.3	4.0E-05	2.6E-04	0.0E+00	0.0E+00	3.0E-04
Nickel	0.166	1.14E+02	--	0	--	0	7.45E-03	2.07E-01	0	0	2.14E-01	1.38	5.4E-03	1.5E-01	0.0E+00	0.0E+00	1.6E-01	56.3	1.3E-04	3.7E-03	0.0E+00	0.0E+00	3.8E-03
Selenium	0.029	1.20E+00	6.12E+00	7	5.77E+00	7	1.30E-03	2.17E-03	2.01E-01	1.90E-01	3.95E-01	0.23	5.7E-03	9.5E-03	8.8E-01	8.3E-01	1.7E+00	>1	0.93	1.4E-03	2.3E-03	2.2E-01	2.0E-01	4.2E-01
Silver	0.0019	2.70E+00	--	0	--	0	8.52E-05	4.89E-03	0	0	4.98E-03	178.00	4.8E-07	2.7E-05	0.0E+00	0.0E+00	2.8E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Thallium		4.60E-01	1.01E+00	0	--	0		8.33E-04	1.27E-02	0	1.36E-02	0.35		2.4E-03	3.6E-02	0.0E+00	3.9E-02	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Tin		1.62E+01	--	0	--	0		2.94E-02	0	0	2.94E-02	6.80		4.3E-03	0.0E+00	0.0E+00	4.3E-03	16.9		1.7E-03	0.0E+00	0.0E+00	1.7E-03
Vanadium	0.05	1.17E+02	--	0	--	0	2.24E-03	2.12E-01	0	0	2.14E-01	11.4	2.0E-04	1.9E-02	0.0E+00	0.0E+00	1.9E-02	114	2.0E-05	1.9E-03	0.0E+00	0.0E+00	1.9E-03
Zinc	0.042	2.37E+02	1.11E+00	263	7.87E-01	187	1.88E-03	4.29E-01	7.21E+00	5.12E+00	1.28E+01	17.2	1.1E-04	2.5E-02	4.2E-01	3.0E-01	7.4E-01	172	1.1E-05	2.5E-03	4.2E-02	3.0E-02	7.4E-02
Volatile Organics (mg/kg)																							
Acetone		3.20E-01	--	0	--	0		5.80E-04	0	0	5.80E-04	52		1.1E-05	0.0E+00	0.0E+00	1.1E-05	520		1.1E-06	0.0E+00	0.0E+00	1.1E-06
Benzene		5.00E-03	--	0	--	0		9.06E-06	0	0	9.06E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Carbon disulfide		2.50E-02	--	0	--	0		4.53E-05	0	0	4.53E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chlorobenzene		2.40E-02	--	0	--	0		4.35E-05	0	0	4.35E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
cis-1,2-Dichlorobenzene		5.00E-03	--	0	--	0		9.06E-06	0	0	9.06E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Ethylbenzene		4.40E-02	--	0	--	0		7.97E-05	0	0	7.97E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Isopropyltoluene		7.20E-03	--	0	--	0		1.30E-05	0	0	1.30E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Methylene chloride		3.00E-01	--	0	--	0		5.44E-04	0	0	5.44E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Naphthalene		1.60E-02	--	0	--	0		2.90E-05	0	0	2.90E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Toluene		3.00E-02	--	0	--	0		5.44E-05	0	0	5.44E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
trans-1,2-Dichloroethene		2.30E-02	--	0	--	0		4.17E-05	0	0	4.17E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Trichloroethene		7.00E-03	--	0	--	0		1.27E-05	0	0	1.27E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
1,2,4-Trimethylbenzene		2.50E-02	--	0	--	0		4.53E-05	0	0	4.53E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
1,3,5-Trimethylbenzene		9.30E-03	--	0	--	0		1.68E-05	0	0	1.68E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Vinyl chloride		3.40E-02	--	0	--	0		6.16E-05	0	0	6.16E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Xylenes		1.10E-01	--	0	--	0		1.99E-04	0	0	1.99E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pesticides (mg/kg)																							
alpha-Chlordane		8.20E-03	--	0	--	0		1.49E-05	0	0	1.49E-05	0.0014		1.1E-02	0.0E+00	0.0E+00	1.1E-02	0.014		1.1E-03	0.0E+00	0.0E+00	1.1E-03
beta-BHC		1.00E-03	--	0	--	0		1.81E-06	0	0	1.81E-06	0.56		3.2E-06	0.0E+00	0.0E+00	3.2E-06	2.25		8.1E-07	0.0E+00	0.0E+00	8.1E-07
delta-BHC		2.00E-03	--	0	--	0		3.62E-06	0	0	3.62E-06	0.56		6.5E-06	0.0E+00	0.0E+00	6.5E-06	2.25		1.6E-06	0.0E+00	0.0E+00	1.6E-06
2,4-DDD		2.90E-02	1.04E+00	0	--	0		5.25E-05	8.31E-04	0	8.84E-04	0.009		5.8E-03	9.2E-02	0.0E+00	9.8E-02	1.5		3.5E-05	5.5E-04	0.0E+00	5.9E-04
4,4-DDD		8.60E-02	1.04E+00	0	--	0		1.56E-04	2.46E-03	0	2.62E-03	0.009		1.7E-02	2.7E-01	0.0E+00	2.9E-01	1.5		1.0E-04	1.6E-03	0.0E+00	1.7E-03
DDE	0.0000027	1.70E-02	1.04E+00	0	--	0	1.21E-07	3.08E-05	4.87E-04	0	5.18E-04	NTV	NTV	NTV	NTV	NTV	NTV	0.6	2.0E-07	5.1E-05	8.1E-04	0.0E+00	8.6E-04
DDTs	0.00014	1.20E-02	1.04E+00	0	--	0	6.28E-06	2.17E-05	3.44E-04	0	3.72E-04	0.009	7.0E-04	2.4E-03	3.8E-02	0.0E+00	4.1E-02	1.5	4.2E-06	1.4E-05	2.3E-04	0.0E+00	2.5E-04
Dieldrin		3.90E-03	--	0	--	0		7.07E-06	0	0	7.07E-06	0.0709		1.0E-04	0.0E+00	0.0E+00	1.0E-04	0.98		7.2E-06	0.0E+00	0.0E+00	7.2E-06
Endosulfan I		4.00E-03	--	0	--	0		7.25E-06	0	0	7.25E-06	10		7.2E-07	0.0E+00	0.0E+00	7.2E-07	100		7.2E-08	0.0E+00	0.0E+00	7.2E-08
Endosulfan sulfate	0.00012	3.00E-03	--	0	--	0	5.38E-06	5.44E-06	0	0	1.08E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Endrin	0.000014	2.00E-02	--	0	--	0	6.28E-07	3.62E-05	0	0	3.69E-05	0.3	2.1E-06	1.2E-04	0.0E+00	0.0E+00	1.2E-04	3	2.1E-07	1.2E-05	0.0E+00	0.0E+00	1.2E-05
Endrin aldehyde		6.00E-03	--	0	--	0		1.09E-05	0	0	1.09E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Endrin Ketone		3.00E-03	--	0	--	0		5.44E-06	0	0	5.44E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
gamma-Chlordane		8.50E-03	--	0	--	0		1.54E-05	0	0	1.54E-05	0.0014		1.1E-02	0.0E+00	0.0E+00	1.1E-02	0.014		1.1E-03	0.0E+00	0.0E+00	1.1E-03
Heptachlor	0.0000028	2.00E-04	--	0	--	0	1.26E-07	3.62E-07	0	0	4.88E-07	0.065	1.9E-06	5.6E-06	0.0E+00	0.0E+00	7.5E-06	0.65	1.9E-07	5.6E-07	0.0E+00	0.0E+00	7.5E-07
Heptachlor epoxide		3.00E-04	--	0	--	0		5.44E-07	0	0	5.44E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Hexachlorobenzene		8.00E-04	--	0	--	0		1.45E-06	0	0	1.45E-06	0.23		6.3E-06	0.0E+00	0.0E+00	6.3E-06	2.3		6.3E-07	0.0E+00	0.0E+00	6.3E-07
Methoxychlor		2.00E-02	--	0	--	0		3.62E-05	0	0	3.62E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Mirex		4.00E-03	--	0	--	0		7.25E-06	0	0	7.25E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
trans-Nonachlor		2.40E-03	--	0	--	0		4.35E-06	0	0	4.35E-06	0.0014		3.1E-03	0.0E+00	0.0E+00	3.1E-03	0.014		3.1E-04	0.0E+00	0.0E+00	3.1E-04
SVOCs (mg/kg)																							
Acenaphthene		1.30E-01	--	0	--	0		2.36E-04	0	0	2.36E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Acenaphthylene		1.10E-01	--	0	--	0		1.99E-04	0	0	1.99E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Anthracene		1.30E-01	--	0	--	0		2.36E-04	0	0	2.36E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(a)anthracene		2.70E-01	--	0	--	0		4.89E-04	0	0	4.89E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(a)pyrene		2.30E-01	--	0	--	0		4.17E-04	0	0	4.17E-04	0.001		4.2E-01	0.0E+00	0.0E+00	4.2E-01	0.01		4.2E-02	0.0E+00	0.0E+00	4.2E-02
Benzo(b)fluoranthene		2.30E-01	--	0	--	0		4.17E-04	0	0	4.17E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(ghi)perylene		1.60E-01	--	0	--	0		2.90E-04	0	0	2.90E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(k)fluoranthene		2.30E-01	--	0	--	0		4.17E-04	0	0	4.17E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzoic acid		6.80E-01	--	0	--	0		1.23E-03	0	0	1.23E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Bis(2-ethylhexyl)phthalate	0.027	1.10E+00	--	0	--	0	1.21E-03	1.99E-03	0	0	3.20E-03	1.1	1.1E-03	1.8E-03	0.0E+00	0.0E+00	2.9E-03	11	1.1E-04	1.8E-04	0.0E+00	0.0E+00	2.9E-04
Butylbenzylphthalate		2.50E-02	--	0	--	0		4.53E-05	0	0	4.53E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Carbazole		5.50E-01	--	0	--	0		9.96E-04	0	0	9.96E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Chloroaniline		3.00E-03	--	0	--	0		5.44E-06	0	0	5.44E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2-Chloropropane		4.33E-02	--	0	--	0		7.84E-05	0	0	7.84E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chrysene	0.0002	2.60E-01	--	0	--	0	8.97E-06	4.71E-04	0	0	4.80E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Dibenzofuran		3.60E-01	--	0	--	0		6.52E-04	0	0	6.52E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
3,3-Dichlorobenzidine		1.20E-02	--	0	--	0		2.17E-05	0	0	2.17E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2,6-Dinitrotoluene		3.70E-01	--	0	--	0		6.70E-04	0	0	6.70E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Fluoranthene		3.70E-01	--	0	--	0		6.70E-04	0	0	6.70E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV

Table C2-2n
Post-Remediation Great Blue Heron Risk Calculations (Wetland Sediment Residual Concentration)
Shallow Soil (0 - 2 ft bgs) at Hazard Quotient of 10
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Point Concentration						Intake (mg/kg BW-day)						Hazard Quotient (HQ) - Low						Hazard Quotient (HQ) - High					
COPEC[a]	Surface Water (mg/L)[b]	Sediments[c]	Small Mammal BAF[d]	Small Mammal Tissue[d]	Amphibian BAF[d]	Amphibian Tissue[d]	Surface Water	Sediment	Small mammal	Amphibian	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Small mammal	Amphibian	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Sediment	Small mammal	Amphibian	Total Intake
Fluorene		1.30E-01	--	0	--	0		2.36E-04	0	0	2.36E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Indeno(123,cd)pyrene		1.60E-01	--	0	--	0		2.90E-04	0	0	2.90E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2-Methylnaphthalene		1.80E-01	--	0	--	0		3.26E-04	0	0	3.26E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Methylphenol	0.12	2.30E-01	--	0	--	0	5.38E-03	4.17E-04	0	0	5.80E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Naphthalene		1.10E-01	--	0	--	0		1.99E-04	0	0	1.99E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pentachlorophenol		5.40E-01	--	0	--	0		9.78E-04	0	0	9.78E-04	6.7		1.5E-04	0.0E+00	0.0E+00	1.5E-04	22.5		4.3E-05	0.0E+00	0.0E+00	4.3E-05
Phenanthrene		2.00E-01	--	0	--	0		3.62E-04	0	0	3.62E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Phenol		2.90E-01	--	0	--	0		5.25E-04	0	0	5.25E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pyrene		4.20E-01	--	0	--	0		7.61E-04	0	0	7.61E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
PCBs (mg/kg)																							
PCBs (TOTAL)-congeners	0.000016	2.00E-01	1.81E+01	4	1.03E+01	2	7.18E-07	3.62E-04	9.93E-02	2.83E-01	3.82E-01	0.09	8.0E-06	4.0E-03	1.1E+00	3.1E+00	4.2E+00	>1	1.27	5.7E-07	2.9E-04	7.8E-02	2.2E-01	3.0E-01

>1 = The calculated hazard quotient exceeds 1 (i.e., > 1.5)

Exposure Assumptions and Equation:[e]

	Value	Units
Ingestion Rate (IR) prey(dry wt.) =	0.126	kg/day (dry weight)
IRsmall mammal(dry wt.)[f] =	0.063	kg/day (dry weight)
IRamphibian (dry wt.)[f] =	0.063	kg/day (dry weight)
IRsediment (dry wt.)[g] =	0.00416	kg-day (dry weight)
Cprey =	chem-specific	mg/kg or µg/kg
Csediment =	chem-specific	mg/kg or µg/kg
Tissue Moisture (TMsmall mammal) =	68%	percent
Tissue Moisture (TMamphibian) =	85%	percent
IRsurface water[h] =	0.103	L/day
Csurface water =	chem-specific	mg/L or µg/L
Dietary Composition Factor (DCF)[i] =	100%	percent
Site Use Factor (SUF)[j] =	100%	percent
Body Weight (BW) =	2.295	kg

Intake Equation= [Irsmall mammal (dry wt) x (Cprey(small mammal, dry wt)/1-TM) x DCF x SUF]/BW] + [IRamphibian (dry wt) x Cprey(amphibians, dry wt) x DCF x SUF]/BW] + [(IRsediment x Csediment x DCF x SUF)]/BW + [(IRsurface water x Csurface water x DCF x

Risk (hazard quotient) = Intake / TRV

Prey tissue(dry wt) = Prey tissue (wet wt.) / (1-Tissue Moisture)

NTV = Not toxicity data available.

Blank cell indicates COPEC was not detected in this medium.

Notes:

a All chemicals detected in sediments are considered as constituents of potential ecological concern.

b All concentrations of constituents in surface water are based on the maximum concentration.

c All concentrations of constituents in sediment are based on the residual concentrations expressed in dry weight.

d Site-specific BAFs (dry weight basis). Calculated small mammal tissue and amphibian concentrations (sediment concentration x BAF). Tissue concentrations are on a dry weight basis.

e Exposure parameters used to calculate risk are discussed in detail in Section 4.2 of ERA.

f Based on dietary composition of 50% small mammal and 50% amphibians.

g Ingestion rate of sediment based on 3.3 percent of of the prey ingestion rate (dry weight); based on mallards (Beyer et al. 1994).

h Based on equation for birds: Water intake (L/day) = $0.059Wt(kg)^{0.67}$ (EPA 1993)

i Dietary composition factor was based on a conservative assumption of 100% dietary intake of small mammals and amphibians from the site.

j Site use factor was based on a conservative 100% use of the site for the heron's foraging range.

Table C2-2o
Post-Remediation Kildeer Risk Calculations (Wetland Sediment Residual Concentration)
Deep Soil (0 - 10 ft bgs) at Hazard Quotient of 10
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Concentrations				Intake (mg/kg BW-day)					Hazard Quotient (HQ) - Low					Hazard Quotient (HQ) - High			
COPEC[a]	Surface Water (mg/L)[b]	Sediments[c]	Invertebrate BAF[d]	Invertebrate Tissue[d]	Surface Water	Soils	Invertebrate	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Soils	Invertebrate	Total Intake		High TRV (mg/kg BW-day)	Surface Water	Soils	Invertebrate	Total Intake
Metals (mg/kg)																			
Aluminum	12.6	3.01E+04	1.93E-01	5.81E+03	1.78E+00	1.16E+03	1.24E+03	2.40E+03	109.7	1.6E-02	1.1E+01	1.1E+01	2.2E+01	>1	1,097	1.6E-03	1.1E+00	1.1E+00	2.2E+00 >1
Antimony	0.003	4.50E+00	2.32E-01	1.04E+00	4.24E-04	1.73E-01	2.23E-01	3.96E-01	NTV	NTV	NTV	NTV	NTV	>1	NTV	NTV	NTV	NTV	NTV
Arsenic	0.0436	2.15E+01	1.92E-01	4.12E+00	6.15E-03	8.27E-01	8.82E-01	1.72E+00	5.5	1.1E-03	1.5E-01	1.6E-01	3.1E-01		22	2.8E-04	3.8E-02	4.0E-02	7.8E-02
Barium	0.24	9.40E+01	1.50E+00	1.41E+02	3.33E-02	3.62E+00	3.01E+01	3.37E+01	20.8	1.6E-03	1.7E-01	1.4E+00	1.6E+00	>1	41.7	8.0E-04	8.7E-02	7.2E-01	8.1E-01
Beryllium		6.50E-01	--	0		2.50E-02	0.00E+00	2.50E-02	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Cadmium	0.0016	2.90E+00	2.15E-01	6.24E-01	2.26E-04	1.12E-01	1.33E-01	2.45E-01	0.08	2.8E-03	1.4E+00	1.7E+00	3.1E+00	>1	10.40	2.2E-05	1.1E-02	1.3E-02	2.4E-02
Chromium +3	0.0263	2.13E+02	5.53E-01	1.18E+02	3.71E-03	8.20E+00	2.52E+01	3.34E+01	2.66	1.4E-03	3.1E+00	9.5E+00	1.3E+01	>1	2.78	1.3E-03	2.9E+00	9.1E+00	1.2E+01 >1
Chromium +6	0.0263	7.00E-02	5.53E-01	0	3.71E-03	2.69E-03	8.28E-03	1.47E-02	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Cobalt	0.0164	1.87E+01	--	0	2.32E-03	7.20E-01	0.00E+00	7.22E-01	7.61	3.0E-04	9.5E-02	0.0E+00	9.5E-02		17	1.4E-04	4.2E-02	0.0E+00	4.2E-02
Copper	0.233	1.97E+02	6.67E-01	1.31E+02	3.29E-02	7.58E+00	2.81E+01	3.57E+01	2.3	1.4E-02	3.3E+00	1.2E+01	1.6E+01	>1	52.3	6.3E-04	1.4E-01	5.4E-01	6.8E-01
Lead	0.0031	9.60E+01	5.07E-02	4.87E+00	4.38E-04	3.69E+00	1.04E+00	4.74E+00	0.014	3.1E-02	2.6E+02	7.4E+01	3.4E+02	>1	8.75	5.0E-05	4.2E-01	1.2E-01	5.4E-01
Manganese	7.42	9.67E+02	5.29E+00	5.12E+03	1.05E+00	3.72E+01	1.09E+03	1.13E+03	77.6	1.3E-02	4.8E-01	1.4E+01	1.5E+01	>1	776	1.3E-03	4.8E-02	1.4E+00	1.5E+00
Mercury	0.00029	1.40E+00	6.96E-01	9.75E-01	4.09E-05	5.39E-02	2.08E-01	2.62E-01	0.039	1.0E-03	1.4E+00	5.3E+00	6.7E+00	>1	0.18	2.3E-04	3.0E-01	1.2E+00	1.5E+00
Molybdenum	0.0312	5.00E+00	--	0	4.40E-03	1.92E-01	0.00E+00	1.97E-01	3.5	1.3E-03	5.5E-02	0.0E+00	5.6E-02		35.3	1.2E-04	5.5E-03	0.0E+00	5.6E-03
Nickel	0.166	1.14E+02	3.65E-01	4.16E+01	2.34E-02	4.39E+00	8.89E+00	1.33E+01	1.38	1.7E-02	3.2E+00	6.4E+00	9.6E+00	>1	56.3	4.2E-04	7.8E-02	1.6E-01	2.4E-01
Selenium	0.029	1.20E+00	--	0	4.09E-03	4.62E-02	0.00E+00	5.03E-02	0.23	1.8E-02	2.0E-01	0.0E+00	2.2E-01		0.93	4.4E-03	5.0E-02	0.0E+00	5.4E-02
Silver	0.0019	2.70E+00	--	0	2.68E-04	1.04E-01	0.00E+00	1.04E-01	178.00	1.5E-06	5.8E-04	0.0E+00	5.9E-04		NTV	NTV	NTV	NTV	NTV
Thallium		4.60E-01	--	0		1.77E-02	0.00E+00	1.77E-02	0.35		5.1E-02	0.0E+00	5.1E-02		NTV	NTV	NTV	NTV	NTV
Tin		1.62E+01	--	0		6.23E-01	0.00E+00	6.23E-01	6.80		9.2E-02	0.0E+00	9.2E-02		16.9		3.7E-02	0.0E+00	3.7E-02
Vanadium	0.05	1.17E+02	2.96E-02	3.46E+00	7.06E-03	4.50E+00	7.39E-01	5.25E+00	11.4	6.2E-04	3.9E-01	6.5E-02	4.6E-01		114	6.2E-05	3.9E-02	6.5E-03	4.6E-02
Zinc	0.042	2.37E+02	1.51E+00	3.58E+02	5.93E-03	9.12E+00	7.66E+01	8.57E+01	17.2	3.4E-04	5.3E-01	4.5E+00	5.0E+00	>1	172	3.4E-05	5.3E-02	4.5E-01	5.0E-01
Volatile Organics (mg/kg)																			
Acetone		3.20E-01	--	0		1.23E-02	0.00E+00	1.23E-02	52		2.4E-04	0.0E+00	2.4E-04		520		2.4E-05	0.0E+00	2.4E-05
Benzene		5.00E-03	--	0		1.92E-04	0.00E+00	1.92E-04	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Carbon disulfide		2.50E-02	--	0		9.62E-04	0.00E+00	9.62E-04	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Chlorobenzene		2.40E-02	--	0		9.24E-04	0.00E+00	9.24E-04	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
cis-1,2-Dichlorobenzene		5.00E-03	--	0		1.92E-04	0.00E+00	1.92E-04	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Ethylbenzene		4.40E-02	--	0		1.69E-03	0.00E+00	1.69E-03	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
4-Isopropyltoluene		7.20E-03	--	0		2.77E-04	0.00E+00	2.77E-04	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Methylene chloride		3.00E-01	--	0		1.15E-02	0.00E+00	1.15E-02	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Naphthalene		1.60E-02	--	0		6.16E-04	0.00E+00	6.16E-04	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Toluene		3.00E-02	--	0		1.15E-03	0.00E+00	1.15E-03	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
trans-1,2-Dichloroethene		2.30E-02	--	0		8.85E-04	0.00E+00	8.85E-04	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Trichloroethene		7.00E-03	--	0		2.69E-04	0.00E+00	2.69E-04	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
1,2,4-Trimethylbenzene		2.50E-02	--	0		9.62E-04	0.00E+00	9.62E-04	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
1,3,5-Trimethylbenzene		9.30E-03	--	0		3.58E-04	0.00E+00	3.58E-04	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Vinyl chloride		3.40E-02	--	0		1.31E-03	0.00E+00	1.31E-03	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Xylenes		1.10E-01	--	0		4.23E-03	0.00E+00	4.23E-03	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Pesticides (mg/kg)																			
alpha-Chlordane		8.20E-03	--	0		3.16E-04	0.00E+00	3.16E-04	0.0014		2.3E-01	0.0E+00	2.3E-01		0.014		2.3E-02	0.0E+00	2.3E-02
beta-BHC		1.00E-03	--	0		3.85E-05	0.00E+00	3.85E-05	0.56		6.9E-05	0.0E+00	6.9E-05		2.25		1.7E-05	0.0E+00	1.7E-05
delta-BHC		2.00E-03	--	0		7.70E-05	0.00E+00	7.70E-05	0.56		1.4E-04	0.0E+00	1.4E-04		2.25		3.4E-05	0.0E+00	3.4E-05
2,4-DDD		2.90E-02	--	0		1.12E-03	0.00E+00	1.12E-03	0.009		1.2E-01	0.0E+00	1.2E-01		1.5		7.4E-04	0.0E+00	7.4E-04
4,4-DDD		8.60E-02	--	0		3.31E-03	0.00E+00	3.31E-03	0.009		3.7E-01	0.0E+00	3.7E-01		1.5		2.2E-03	0.0E+00	2.2E-03
DDE	0.0000027	1.70E-02	--	0	3.81E-07	6.54E-04	0.00E+00	6.55E-04	NTV	NTV	NTV	NTV	NTV		0.6	6.4E-07	1.1E-03	0.0E+00	1.1E-03
DDTs	0.00014	1.20E-02	--	0	1.98E-05	4.62E-04	0.00E+00	4.82E-04	0.009	2.2E-03	5.1E-02	0.0E+00	5.4E-02		1.5	1.3E-05	3.1E-04	0.0E+00	3.2E-04
Dieldrin		3.90E-03	--	0		1.50E-04	0.00E+00	1.50E-04	0.0709		2.1E-03	0.0E+00	2.1E-03		0.98		1.5E-04	0.0E+00	1.5E-04
Endosulfan I		4.00E-03	--	0		1.54E-04	0.00E+00	1.54E-04	10		1.5E-05	0.0E+00	1.5E-05		100		1.5E-06	0.0E+00	1.5E-06
Endosulfan sulfate	0.00012	3.00E-03	--	0	1.69E-05	1.15E-04	0.00E+00	1.32E-04	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Endrin	0.000014	2.00E-02	--	0	1.98E-06	7.70E-04	0.00E+00	7.72E-04	0.3	6.6E-06	2.6E-03	0.0E+00	2.6E-03		3	6.6E-07	2.6E-04	0.0E+00	2.6E-04
Endrin aldehyde		6.00E-03	--	0		2.31E-04	0.00E+00	2.31E-04	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Endrin Ketone		3.00E-03	--	0		1.15E-04	0.00E+00	1.15E-04	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Gamma-BHC	0.000011	8.50E-03	--	0	1.55E-06	3.27E-04	0.00E+00	3.29E-04	2	7.8E-07	1.6E-04	0.0E+00	1.6E-04		20	7.8E-08	1.6E-05	0.0E+00	1.6E-05
Heptachlor	0.0000028	2.00E-04	--	0	3.95E-07	7.70E-06	0.00E+00	8.09E-06	0.065	6.1E-06	1.2E-04	0.0E+00	1.2E-04		0.65	6.1E-07	1.2E-05	0.0E+00	1.2E-05
Heptachlor epoxide		3.00E-04	--	0		1.15E-05	0.00E+00	1.15E-05	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Hexachlorobenzene		8.00E-04	--	0		3.08E-05	0.00E+00	3.08E-05	0.23		1.3E-04	0.0E+00	1.3E-04		2.3		1.3E-05	0.0E+00	1.3E-05
Methoxychlor		2.00E-02	--	0		7.70E-04	0.00E+00	7.70E-04	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Mirex		4.00E-03	--	0		1.54E-04	0.00E+00	1.54E-04	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
trans-Nonachlor		2.40E-03	--	0		9.24E-05	0.00E+00	9.24E-05	0.0014		6.6E-02	0.0E+00	6.6E-02		0.014		6.6E-03	0.0E+00	6.6E-03

Table C2-2o
Post-Remediation Kildeer Risk Calculations (Wetland Sediment Residual Concentration)
Deep Soil (0 - 10 ft bgs) at Hazard Quotient of 10
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Concentrations				Intake (mg/kg BW-day)					Hazard Quotient (HQ) - Low					Hazard Quotient (HQ) - High			
COPEC[a]	Surface Water (mg/L)[b]	Sediments[c]	Invertebrate BAF[d]	Invertebrate Tissue[d]	Surface Water	Soils	Invertebrate	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Soils	Invertebrate	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Soils	Invertebrate	Total Intake
SVOCs (mg/kg)																		
Acenaphthene		1.30E-01	--	0		5.00E-03	0.00E+00	5.00E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Acenaphthylene		1.10E-01	--	0		4.23E-03	0.00E+00	4.23E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Anthracene		1.30E-01	--	0		5.00E-03	0.00E+00	5.00E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(a)anthracene		2.70E-01	--	0		1.04E-02	0.00E+00	1.04E-02	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(a)pyrene		2.30E-01	--	0		8.85E-03	0.00E+00	8.85E-03	0.001		8.9E+00	0.0E+00	8.9E+00 >1	0.01		8.9E-01	0.0E+00	8.9E-01
Benzo(b)fluoranthene		2.30E-01	--	0		8.85E-03	0.00E+00	8.85E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(ghi)perylene		1.60E-01	--	0		6.16E-03	0.00E+00	6.16E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(k)fluoranthene		2.30E-01	--	0		8.85E-03	0.00E+00	8.85E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzoic acid		6.80E-01	--	0		2.62E-02	0.00E+00	2.62E-02	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Bis(2-ethylhexyl)phthalate	0.027	1.10E+00	--	0	3.81E-03	4.23E-02	0.00E+00	4.61E-02	1.1	3.5E-03	3.8E-02	0.0E+00	4.2E-02	11	3.5E-04	3.8E-03	0.0E+00	4.2E-03
Butylbenzylphthalate		2.50E-02	--	0		9.62E-04	0.00E+00	9.62E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Carbazole		5.50E-01	--	0		2.12E-02	0.00E+00	2.12E-02	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Chloroaniline		3.00E-03	--	0		1.15E-04	0.00E+00	1.15E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2-Chloropropane		4.33E-02	--	0		1.67E-03	0.00E+00	1.67E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chrysene	0.0002	2.60E-01	--	0	2.82E-05	1.00E-02	0.00E+00	1.00E-02	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Dibenzofuran		3.60E-01	--	0		1.39E-02	0.00E+00	1.39E-02	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
3,3-Dichlorobenzidine		1.20E-02	--	0		4.62E-04	0.00E+00	4.62E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2,6-Dinitrotoluene		3.70E-01	--	0		1.42E-02	0.00E+00	1.42E-02	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Fluoranthene		3.70E-01	--	0		1.42E-02	0.00E+00	1.42E-02	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Fluorene		1.30E-01	--	0		5.00E-03	0.00E+00	5.00E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Indeno(123,cd)pyrene		1.60E-01	--	0		6.16E-03	0.00E+00	6.16E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2-Methylnaphthalene		1.80E-01	--	0		6.93E-03	0.00E+00	6.93E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Methylphenol	0.12	2.30E-01	--	0	1.69E-02	8.85E-03	0.00E+00	2.58E-02	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Naphthalene		1.10E-01	--	0		4.23E-03	0.00E+00	4.23E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pentachlorophenol		5.40E-01	--	0		2.08E-02	0.00E+00	2.08E-02	6.7		3.1E-03	0.0E+00	3.1E-03	22.5		9.2E-04	0.0E+00	9.2E-04
Phenanthrene		2.00E-01	2.51E+00	5.02E-01		7.70E-03	1.07E-01	1.15E-01	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Phenol		2.90E-01	--	0		1.12E-02	0.00E+00	1.12E-02	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pyrene		4.20E-01	--	0		1.62E-02	0.00E+00	1.62E-02	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
PCBs (mg/kg)																		
PCBs (TOTAL)-congeners	0.000016	2.00E-01	1.16E+01	2.32E+00	2.26E-06	7.70E-03	4.97E-01	5.04E-01	0.09	2.5E-05	8.6E-02	5.5E+00	5.6E+00 >1	1.27	1.8E-06	6.1E-03	3.9E-01	4.0E-01
>1 = The calculated hazard quotient exceeds 1 (i.e., > 1.5)																		

Exposure Assumptions and Equation[e]:

	Value	Units
Ingestion Rate (IR) prey(dry wt.) =	0.0152	kg/day (dry weight)
IRinvertebrate(dry wt.) =	0.0152	kg/day (dry weight)
IRsediment (dry wt.)[f] =	0.00274	kg-day (dry weight)
Cprey =	chem-specific	mg/kg or µg/kg
Csediment =	chem-specific	mg/kg or µg/kg
IRsurface water[g] =	0.010	L/day
Csurface water =	chem-specific	mg/L or µg/L
Dietary Composition Factor (DCF)[h] =	100%	percent
Site Use Factor (SUF)[i] =	100%	percent
Body Weight (BW) =	0.0711	kg

Intake Equation = [IRinvertebrate (dry wt) x Cprey(invertebrate, dry wt) x DCF x SUF]/BW] +{(IRsediment x Csediment x DCF x SUF)]/BW] + [(IRsurface water x Csurface water x DCF x SUF)]/BW]

Risk (hazard quotient) = Intake / TRV

Prey tissue(dry wt) = Prey tissue (wet wt.) / (1-Tissue Moisture)

NTV = Not toxicity data available.

NA = Not available.

Blank cell indicates COPEC was not detected in this medium.

Notes:

a All chemicals detected in sediments are considered as constituents of potential ecological concern.

b All concentrations of constituents in surface water are based on the maximum concentration.

c All concentrations of constituents in sediment are based on the residual concentrations expressed in dry weight.

d Site-specific BAFs (dry weight basis). Calculated invertebrate tissue concentrations (sediment concentration x BAF). Tissue concentrations are on a dry weight basis.

e Exposure parameters used to calculate risk are discussed in detail in Section 4.2 of ERA.

f Ingestion rate of sediment based on 18 percent of of the prey ingestion rate (dry weight); based on average of sandpiper data from Beyer et al. 1994).

g Based on equation for birds: Water intake (L/day) = $0.059Wt(kg)^{0.67}$ (EPA 1993)

h Dietary composition factor was based on a conservative assumption of 100% dietary intake of invertebrates from the site.

i Site use factor was based on a conservative 100% use of the site for the killdeer's foraging range.

Table C2-2p
Post-Remediation Salt Marsh Harvest Mouse Risk Calculations (Wetland Sediment Residual Concentration)
Deep Soil (0 - 10 ft bgs) at Hazard Quotient of 10
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Concentrations				Intake (mg/kg BW-day)					HQ - Low TRV					HQ - High TRV			
COPEC[a]	Surface Water (mg/L)[b]	Sediments[c]	Pickelweed BAF[d]	Pickleweed Tissue[d]	Surface Water	Sediment	Pickleweed	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Pickleweed	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Sediment	Pickleweed	Total Intake
Metals (mg/kg)																		
Aluminum	12.6	3.01E+04	3.64E-03	110	1.98E+00	2.21E+02	3.35E+01	2.57E+02	1.93	1.0E+00	1.1E+02	1.7E+01	1.3E+02 >1	19.3	1.0E-01	1.1E+01	1.7E+00	1.3E+01 >1
Antimony	0.003	4.50E+00	2.95E+00	13	4.71E-04	3.30E-02	4.06E+00	4.09E+00	0.06	8.0E-03	5.6E-01	6.9E+01	6.9E+01 >1	23.4	2.0E-05	1.4E-03	1.7E-01	1.7E-01
Arsenic	0.0436	2.15E+01	1.50E-01	3	6.84E-03	1.58E-01	9.88E-01	1.15E+00	0.32	2.1E-02	4.9E-01	3.1E+00	3.6E+00 >1	4.7	1.5E-03	3.4E-02	2.1E-01	2.5E-01
Barium	0.24	9.40E+01	5.56E-01	52	3.70E-02	6.90E-01	1.60E+01	1.67E+01	51.8	7.1E-04	1.3E-02	3.1E-01	3.2E-01	66.0	5.6E-04	1.0E-02	2.4E-01	2.5E-01
Beryllium		6.50E-01	--	0		4.77E-03	0	4.77E-03	0.532		9.0E-03	0.0E+00	9.0E-03	0.554		8.6E-03	0.0E+00	8.6E-03
Cadmium	0.0016	2.90E+00	6.76E-01	2	2.51E-04	2.13E-02	6.00E-01	6.22E-01	0.06	4.2E-03	3.5E-01	1.0E+01	1.0E+01 >1	2.64	9.5E-05	8.1E-03	2.3E-01	2.4E-01
Chromium +3	0.0263	2.13E+02	--	0	4.13E-03	1.56E+00	0	1.57E+00	2	1.7E-03	6.5E-01	0.0E+00	6.5E-01	23.1	1.8E-04	6.8E-02	0.0E+00	6.8E-02
Chromium +6	0.0263	7.00E-02	--	0	4.13E-03	5.14E-04	0	4.64E-03	5.66	7.3E-04	9.1E-05	0.0E+00	8.2E-04	35.1	1.2E-04	1.5E-05	0.0E+00	1.3E-04
Cobalt	0.0164	1.87E+01	--	0	2.57E-03	1.37E-01	0	1.40E-01	1.2	2.1E-03	1.1E-01	0.0E+00	1.2E-01	20	1.3E-04	6.9E-03	0.0E+00	7.0E-03
Copper	0.233	1.97E+02	1.82E-01	36	3.66E-02	1.45E+00	1.10E+01	1.24E+01	2.67	1.4E-02	5.4E-01	4.1E+00	4.7E+00 >1	632	5.8E-05	2.3E-03	1.7E-02	2.0E-02
Lead	0.0031	9.60E+01	7.92E-02	8	4.86E-04	7.05E-01	2.33E+00	3.03E+00	1	4.9E-04	7.1E-01	2.3E+00	3.0E+00 >1	241	2.0E-06	2.9E-03	9.7E-03	1.3E-02
Manganese	7.42	9.67E+02	1.75E+00	1695	1.16E+00	7.10E+00	5.19E+02	5.27E+02	13.7	8.5E-02	5.2E-01	3.8E+01	3.8E+01 >1	159.09	7.3E-03	4.5E-02	3.3E+00	3.3E+00 >1
Mercury	0.00029	1.40E+00	--	0	4.55E-05	1.03E-02	0	1.03E-02	0.027	1.7E-03	3.8E-01	0.0E+00	3.8E-01	0.27	1.7E-04	3.8E-02	0.0E+00	3.8E-02
Molybdenum	0.0312	5.00E+00	--	0	4.90E-03	3.67E-02	0	4.16E-02	0.26	1.9E-02	1.4E-01	0.0E+00	1.6E-01	2.6	1.9E-03	1.4E-02	0.0E+00	1.6E-02
Nickel	0.166	1.14E+02	1.14E-01	13	2.60E-02	8.37E-01	3.97E+00	4.83E+00	0.13	2.0E-01	6.3E+00	3.0E+01	3.6E+01 >1	31.6	8.2E-04	2.6E-02	1.3E-01	1.5E-01
Selenium	0.029	1.20E+00	--	0	4.55E-03	8.81E-03	0	1.34E-02	0.05	9.1E-02	1.8E-01	0.0E+00	2.7E-01	1.21	3.8E-03	7.3E-03	0.0E+00	1.1E-02
Silver	0.0019	2.70E+00	--	0	2.98E-04	1.98E-02	0	2.01E-02	0.38	7.9E-04	5.3E-02	0.0E+00	5.4E-02	3.75	7.9E-05	5.3E-03	0.0E+00	5.4E-03
Thallium		4.60E-01	--	0		3.38E-03	0	3.38E-03	0.48		7.0E-03	0.0E+00	7.0E-03	1.43		2.4E-03	0.0E+00	2.4E-03
Tin		1.62E+01	6.21E+00	101		1.19E-01	3.08E+01	3.09E+01	23.4		5.1E-03	1.3E+00	1.3E+00	35		3.4E-03	8.8E-01	8.8E-01
Vanadium	0.05	1.17E+02	--	0	7.85E-03	8.59E-01	0	8.67E-01	0.21	3.7E-02	4.1E+00	0.0E+00	4.1E+00 >1	2.1	3.7E-03	4.1E-01	0.0E+00	4.1E-01
Zinc	0.042	2.37E+02	3.77E-01	89	6.59E-03	1.74E+00	2.73E+01	2.91E+01	9.6	6.9E-04	1.8E-01	2.8E+00	3.0E+00 >1	411	1.6E-05	4.2E-03	6.6E-02	7.1E-02
Volatile Organics (mg/kg)																		
Acetone		3.20E-01	--	0		2.35E-03	0	2.35E-03	10	1.0E+01	2.4E-04	0.0E+00	2.4E-04	50		4.7E-05	0.0E+00	4.7E-05
Benzene		5.00E-03	--	0		3.67E-05	0	3.67E-05	26.4		1.4E-06	0.0E+00	1.4E-06	263.6		1.4E-07	0.0E+00	1.4E-07
Carbon disulfide		2.50E-02	--	0		1.84E-04	0	1.84E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chlorobenzene		2.40E-02	--	0		1.76E-04	0	1.76E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
cis-1,2-Dichlorobenzene		5.00E-03	--	0		3.67E-05	0	3.67E-05	45.2		8.1E-07	0.0E+00	8.1E-07	452		8.1E-08	0.0E+00	8.1E-08
Ethylbenzene		4.40E-02	--	0		3.23E-04	0	3.23E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Isopropyltoluene		7.20E-03	--	0		5.29E-05	0	5.29E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Methylene chloride		3.00E-01	--	0		2.20E-03	0	2.20E-03	5.9		3.7E-04	0.0E+00	3.7E-04	50		4.4E-05	0.0E+00	4.4E-05
Naphthalene		1.60E-02	--	0		1.18E-04	0	1.18E-04	50		2.4E-06	0.0E+00	2.4E-06	150		7.8E-07	0.0E+00	7.8E-07
Toluene		3.00E-02	--	0		2.20E-04	0	2.20E-04	26		8.5E-06	0.0E+00	8.5E-06	260		8.5E-07	0.0E+00	8.5E-07
trans-1,2-Dichloroethene		2.30E-02	--	0		1.69E-04	0	1.69E-04	45.2		3.7E-06	0.0E+00	3.7E-06	452		3.7E-07	0.0E+00	3.7E-07
Trichloroethene		7.00E-03	--	0		5.14E-05	0	5.14E-05	0.7		7.3E-05	0.0E+00	7.3E-05	7		7.3E-06	0.0E+00	7.3E-06
1,2,4-Trimethylbenzene		2.50E-02	--	0		1.84E-04	0	1.84E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
1,3,5-Trimethylbenzene		9.30E-03	--	0		6.83E-05	0	6.83E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Vinyl chloride		3.40E-02	--	0		2.50E-04	0	2.50E-04	0.17		1.5E-03	0.0E+00	1.5E-03	2		1.5E-04	0.0E+00	1.5E-04
Xylenes		1.10E-01	--	0		8.08E-04	0	8.08E-04	2.1		3.8E-04	0.0E+00	3.8E-04	2.6		3.1E-04	0.0E+00	3.1E-04
Pesticides (mg/kg)																		
alpha-Chlordane		8.20E-03	--	0		6.02E-05	0	6.02E-05	4.6		1.3E-05	0.0E+00	1.3E-05	9.2		6.5E-06	0.0E+00	6.5E-06
beta-BHC		1.00E-03	--	0		7.34E-06	0	7.34E-06	1.6		4.6E-06	0.0E+00	4.6E-06	3.2		2.3E-06	0.0E+00	2.3E-06
delta-BHC		2.00E-03	--	0		1.47E-05	0	1.47E-05	1.6		9.2E-06	0.0E+00	9.2E-06	3.2		4.6E-06	0.0E+00	4.6E-06
2,4-DDD		2.90E-02	--	0		2.13E-04	0	2.13E-04	0.8		2.7E-04	0.0E+00	2.7E-04	16		1.3E-05	0.0E+00	1.3E-05
4,4-DDD		8.60E-02	--	0		6.32E-04	0	6.32E-04	0.8		7.9E-04	0.0E+00	7.9E-04	16		3.9E-05	0.0E+00	3.9E-05
DDE	0.0000027	1.70E-02	--	0	4.24E-07	1.25E-04	0	1.25E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
DDTs	0.00014	1.20E-02	--	0	2.20E-05	8.81E-05	0	1.10E-04	0.8	2.7E-05	1.1E-04	0.0E+00	1.4E-04	16	1.4E-06	5.5E-06	0.0E+00	6.9E-06
Dieldrin		3.90E-03	--	0		2.86E-05	0	2.86E-05	0.015		1.9E-03	0.0E+00	1.9E-03	1.7		1.7E-05	0.0E+00	1.7E-05
Endosulfan I		4.00E-03	--	0		2.94E-05	0	2.94E-05	0.15		2.0E-04	0.0E+00	2.0E-04	1.5		2.0E-05	0.0E+00	2.0E-05
Endosulfan sulfate	0.00012	3.00E-03	--	0	1.88E-05	2.20E-05	0	4.09E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Endrin	0.000014	2.00E-02	--	0	2.20E-06	1.47E-04	0	1.49E-04	0.09	2.4E-05	1.6E-03	0.0E+00	1.6E-03	0.92	2.4E-06	1.6E-04	0.0E+00	1.6E-04
Endrin aldehyde		6.00E-03	--	0		4.41E-05	0	4.41E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Endrin Ketone		3.00E-03	--	0		2.20E-05	0	2.20E-05	NTV	NTV	NTV	NTV	NTV	0.92		2.4E-05	0.0E+00	2.4E-05
gamma-Chlordane		8.50E-03	--	0		6.24E-05	0	6.24E-05	4.6		1.4E-05	0.0E+00	1.4E-05	9.2		6.8E-06	0.0E+00	6.8E-06
Heptachlor	0.0000028	2.00E-04	--	0	4.39E-07	1.47E-06	0	1.91E-06	0.13	3.4E-06	1.1E-05	0.0E+00	1.5E-05	6.8	6.5E-08	2.2E-07	0.0E+00	2.8E-07
Heptachlor epoxide		3.00E-04	--	0		2.20E-06	0	2.20E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Hexachlorobenzene		8.00E-04	--	0		5.88E-06	0	5.88E-06	1.6		3.7E-06	0.0E+00	3.7E-06	16		3.7E-07	0.0E+00	3.7E-07
Methoxychlor		2.00E-02	--	0		1.47E-04	0	1.47E-04	2.5		5.9E-05	0.0E+00	5.9E-05	50		2.9E-06	0.0E+00	2.9E-06
Mirex		4.00E-03	--	0		2.94E-05	0	2.94E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV

Table C2-2p
Post-Remediation Salt Marsh Harvest Mouse Risk Calculations (Wetland Sediment Residual Concentration)
Deep Soil (0 - 10 ft bgs) at Hazard Quotient of 10
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Concentrations				Intake (mg/kg BW-day)					HQ - Low TRV					HQ - High TRV			
COPEC[a]	Surface Water (mg/L)[b]	Sediments[c]	Pickelweed BAF[d]	Pickleweed Tissue[d]	Surface Water	Sediment	Pickleweed	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Pickleweed	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Sediment	Pickleweed	Total Intake
trans-Nonachlor		2.40E-03	--	0		1.76E-05	0	1.76E-05	4.6		3.8E-06	0.0E+00	3.8E-06	9.2		1.9E-06	0.0E+00	1.9E-06
SVOCs (mg/kg)																		
Acenaphthene		1.30E-01	--	0		9.55E-04	0	9.55E-04	1.31		7.3E-04	0.0E+00	7.3E-04	32.8		2.9E-05	0.0E+00	2.9E-05
Acenaphthylene		1.10E-01	--	0		8.08E-04	0	8.08E-04	1.31		6.2E-04	0.0E+00	6.2E-04	32.8		2.5E-05	0.0E+00	2.5E-05
Anthracene		1.30E-01	--	0		9.55E-04	0	9.55E-04	1.31		7.3E-04	0.0E+00	7.3E-04	32.8		2.9E-05	0.0E+00	2.9E-05
Benzo(a)anthracene		2.70E-01	1.29E+00	0		1.98E-03	1.07E-01	1.09E-01	1.31		1.5E-03	8.2E-02	8.3E-02	32.8		6.0E-05	3.3E-03	3.3E-03
Benzo(a)pyrene		2.30E-01	2.31E+00	1		1.69E-03	1.63E-01	1.64E-01	1.31		1.3E-03	1.2E-01	1.3E-01	32.8		5.2E-05	5.0E-03	5.0E-03
Benzo(b)fluoranthene		2.30E-01	1.55E+00	0		1.69E-03	1.09E-01	1.11E-01	1.31		1.3E-03	8.3E-02	8.5E-02	32.8		5.2E-05	3.3E-03	3.4E-03
Benzo(ghi)perylene		1.60E-01	1.55E+00	0		1.18E-03	7.60E-02	7.72E-02	1.31		9.0E-04	5.8E-02	5.9E-02	32.8		3.6E-05	2.3E-03	2.4E-03
Benzo(k)fluoranthene		2.30E-01	1.55E+00	0		1.69E-03	1.09E-01	1.11E-01	1.31		1.3E-03	8.3E-02	8.5E-02	32.8		5.2E-05	3.3E-03	3.4E-03
Benzoic acid		6.80E-01	--	0		4.99E-03	0	4.99E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Bis(2-ethylhexyl)phthalate	0.027	1.10E+00	--	0	4.24E-03	8.08E-03	0	1.23E-02	18.3	2.3E-04	4.4E-04	0.0E+00	6.7E-04	183	2.3E-05	4.4E-05	0.0E+00	6.7E-05
Butylbenzylphthalate		2.50E-02	--	0		1.84E-04	0	1.84E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Carbazole		5.50E-01	--	0		4.04E-03	0	4.04E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Chloroaniline		3.00E-03	--	0			0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2-Chlorophenol		4.33E-02	--	0		3.18E-04	0	3.18E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chrysene	0.0002	2.60E-01	2.09E+00	1	3.14E-05	1.91E-03	1.66E-01	1.68E-01	1.31	2.4E-05	1.5E-03	1.3E-01	1.3E-01	32.8	9.6E-07	5.8E-05	5.1E-03	5.1E-03
Dibenzofuran		3.60E-01	--	0		2.64E-03	0	2.64E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
3,3-Dichlorobenzidine		1.20E-02	--	0		8.81E-05	0	8.81E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2,6-Dinitrotoluene		3.70E-01	--	0		2.72E-03	0	2.72E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Fluoranthene		3.70E-01	--	0		2.72E-03	0	2.72E-03	1.31		2.1E-03	0.0E+00	2.1E-03	32.8		8.3E-05	0.0E+00	8.3E-05
Fluorene		1.30E-01	--	0		9.55E-04	0	9.55E-04	1.31		7.3E-04	0.0E+00	7.3E-04	32.8		2.9E-05	0.0E+00	2.9E-05
Indeno(123,cd)pyrene		1.60E-01	3.17E+00	1		1.18E-03	1.55E-01	1.56E-01	1.31		9.0E-04	1.2E-01	1.2E-01	32.8		3.6E-05	4.7E-03	4.8E-03
2-Methylnaphthalene		1.80E-01	--	0		1.32E-03	0	1.32E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Methylphenol	0.12	2.30E-01	--	0	1.88E-02	1.69E-03	0	2.05E-02	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Naphthalene		1.10E-01	--	0		8.08E-04	0	8.08E-04	50		1.6E-05	0.0E+00	1.6E-05	150		5.4E-06	0.0E+00	5.4E-06
Pentachlorophenol		5.40E-01	--	0		3.97E-03	0	3.97E-03	8.42		4.7E-04	0.0E+00	4.7E-04	27.4		1.4E-04	0.0E+00	1.4E-04
Phenanthrene		2.00E-01	--	0		1.47E-03	0	1.47E-03	1.31		1.1E-03	0.0E+00	1.1E-03	32.8		4.5E-05	0.0E+00	4.5E-05
Phenol		2.90E-01	--	0		2.13E-03	0	2.13E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pyrene		4.20E-01	--	0		3.08E-03	0	3.08E-03	1.31		2.4E-03	0.0E+00	2.4E-03	32.8		9.4E-05	0.0E+00	9.4E-05
PCBs (mg/kg)																		
PCBs (TOTAL)-congeners	0.000016	2.00E-01	2.72E+00	1	2.51E-06	1.47E-03	1.66E-01	1.68E-01	0.36	7.0E-06	4.1E-03	4.6E-01	4.7E-01	1.28	2.0E-06	1.1E-03	1.3E-01	1.3E-01

>1 = The calculated hazard quotient exceeds 1 (i.e., > 1.5)

Exposure Assumptions and Equation:[e]

	Value	Units
Ingestion Rate (IR) prey(dry wt.) =	0.00306	kg/day (dry weight)
Irpickleweed (dry wt.) =	0.00306	kg/day (dry weight)
IRsediment (dry wt.)[f] =	0.0000734	kg-day (dry weight)
Cprey =	chem-specific	mg/kg or µg/kg
Csediment =	chem-specific	mg/kg or µg/kg
Tissue Moisture (pickleweed) =	81.6%	percent
IRsurface water[g] =	0.00157	L/day
Csurface water =	chem-specific	mg/L or µg/L
Dietary Composition Factor (DCF)[h] =	100%	percent
Site Use Factor (SUF)[i] =	100%	percent
Body Weight (BW) =	0.01	kg

Intake Equation = [Irpickleweed (dry wt) x (Cprey(pickleweed, dry wt)/1-TM) x DCF x SUF)/BW] + [(IRsediment x Csediment x DCF x SUF))/BW]+ [(Irsurface water x Csurface water x DCF x SUF)]/BW]

Risk (hazard quotient) = Intake / TRV

Prey tissue(dry wt) = Prey tissue (wet wt.) / (1-Tissue Moisture)

NTV = Not toxicity data available.

Blank cell indicates COPEC was not detected in this medium.

Notes:

a All chemicals detected in sediments are considered as constituents of potential ecological concern.

b All concentrations of constituents in surface water are based on the maximum concentration.

c All concentrations of constituents in sediment are based on the residual concentrations expressed in dry weight.

d Site-specific BAFs (dry weight basis). Calculated pickelweed tissue concentrations (sediment concentration x BAF). Tissue concentrations are on a dry weight basis.

e Exposure parameters used to calculate risk are discussed in detail in Section 4.2 of ERA.

f Ingestion rate of sediment based on 2.4 percent of of the prey ingestion rate (dry weight); based on a meadow vole (Beyer et al. (1994).

g Based on equation for mammals: Water intake (L/day) = $0.099Wt(kg)^{.90}$ (EPA 1993)

h Dietary composition factor was based on a conservative assumption of 100% dietary intake of pickleweed from the site.

i Site use factor was based on a conservative 100% use of the site for the harvest mouse's foraging range.

Table C2-2q
Summary of Residual Risk Estimates: Deep Soil (0 - 10 ft bgs)
Hazard Quotient = 10
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Fox		Harrier		Mallard (breeding)		Mallard (non-breeding)		Heron		Killdeer		Salt Marsh Harvest Mouse	
Chemical	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**
Hazard Quotient = 10														
Metals (mg/kg)														
Aluminum	7.1E+00 >1	7.1E-01	1.4E-01	1.4E-02	1.9E+00 >1	1.9E-01	1.1E-01	1.1E-02	6.4E-01	6.4E-02	2.2E+01 >1	2.2E+00 >1	1.3E+02 >1	1.3E+01 >1
Antimony	1.1E+00	2.7E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV >1	NTV	6.9E+01 >1	1.7E-01
Arsenic	2.4E-02	1.7E-03	9.0E-04	2.2E-04	3.2E-02	7.9E-03	5.7E-03	1.4E-03	7.4E-03	1.9E-03	3.1E-01	7.8E-02	3.6E+00 >1	2.5E-01
Barium	2.6E-03	2.1E-03	1.3E-02	6.3E-03	2.1E-01	1.0E-01	5.0E-03	2.5E-03	2.0E-02	1.0E-02	1.6E+00 >1	8.1E-01	3.2E-01	2.5E-01
Beryllium	3.9E-04	3.7E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	9.0E-03	8.6E-03
Cadmium	1.6E-02	3.6E-04	7.3E-03	5.6E-05	7.7E-01	5.9E-03	5.1E-01	3.9E-03	6.7E-02	5.1E-04	3.1E+00 >1	2.4E-02	1.0E+01 >1	2.4E-01
Chromium +3	5.5E-02	5.7E-03	7.2E-02	6.9E-02	1.4E+00	1.3E+00	2.6E-02	2.5E-02	7.4E-01	7.1E-01	1.3E+01 >1	1.2E+01 >1	6.5E-01	6.8E-02
Chromium +6	1.1E-04	1.7E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	8.2E-04	1.3E-04
Cobalt	5.3E-03	3.2E-04	5.1E-04	2.3E-04	3.2E-03	1.4E-03	8.1E-04	3.6E-04	4.5E-03	2.0E-03	9.5E-02	4.2E-02	1.2E-01	7.0E-03
Copper	3.2E-01	1.3E-03	8.2E-01	3.6E-02	1.8E+00 >1	8.1E-02	7.6E-02	3.3E-03	9.7E-01	4.3E-02	1.6E+01 >1	6.8E-01	4.7E+00 >1	2.0E-02
Lead	7.0E-01	2.9E-03	1.2E+02 >1	1.8E-01	2.0E+01 >1	3.1E-02	2.7E+00 >1	4.4E-03	1.3E+02 >1	2.0E-01	3.4E+02 >1	5.4E-01	3.0E+00 >1	1.3E-02
Manganese	3.4E-02	2.9E-03	4.2E-03	4.2E-04	2.0E+00 >1	2.0E-01	6.4E-02	6.4E-03	4.3E-02	4.3E-03	1.5E+01 >1	1.5E+00	3.8E+01 >1	3.3E+00 >1
Mercury	1.7E-02	1.7E-03	7.0E-03	1.5E-03	7.8E-01	1.7E-01	1.2E-02	2.5E-03	8.0E-01	1.7E-01	6.7E+00 >1	1.5E+00	3.8E-01	3.8E-02
Molybdenum	8.7E-03	8.7E-04	4.4E-04	4.4E-05	2.1E-03	2.0E-04	5.2E-04	5.1E-05	3.0E-03	3.0E-04	5.6E-02	5.6E-03	1.6E-01	1.6E-02
Nickel	3.0E-01	1.3E-03	1.8E-02	4.4E-04	1.0E+00	2.5E-02	3.9E-02	9.5E-04	1.6E-01	3.8E-03	9.6E+00 >1	2.4E-01	3.6E+01 >1	1.5E-01
Selenium	1.7E+00 >1	7.0E-02	8.7E-01	2.2E-01	9.8E-03	2.4E-03	2.4E-03	6.1E-04	1.7E+00 >1	4.2E-01	2.2E-01	5.4E-02	2.7E-01	1.1E-02
Silver	2.4E-03	2.4E-04	3.1E-06	NTV	2.0E-05	NTV	5.0E-06	NTV	2.8E-05	NTV	5.9E-04	NTV	5.4E-02	5.4E-03
Thallium	1.1E-02	3.8E-03	3.6E-02	NTV	1.7E-03	NTV	4.2E-04	NTV	3.9E-02	NTV	5.1E-02	NTV	7.0E-03	2.4E-03
Tin	2.2E-04	1.5E-04	4.5E-04	1.8E-04	3.9E-02	1.6E-02	3.7E-02	1.5E-02	4.3E-03	1.7E-03	9.2E-02	3.7E-02	1.3E+00	8.8E-01
Vanadium	1.8E-01	1.8E-02	2.0E-03	2.0E-04	2.5E-02	2.5E-03	5.6E-03	5.6E-04	1.9E-02	1.9E-03	4.6E-01	4.6E-02	4.1E+00 >1	4.1E-01
Zinc	3.2E-01	7.5E-03	4.2E-01	4.2E-02	6.4E-01	6.4E-02	1.6E-02	1.6E-03	7.4E-01	7.4E-02	5.0E+00 >1	5.0E-01	3.0E+00 >1	7.1E-02
Volatile Organics (mg/kg)														
Acetone	1.0E-05	2.0E-06	1.2E-06	1.2E-07	8.0E-06	8.0E-07	2.0E-06	2.0E-07	1.1E-05	1.1E-06	2.4E-04	2.4E-05	2.4E-04	4.7E-05
Benzene	6.0E-08	6.1E-09	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	1.4E-06	1.4E-07
Carbon disulfide	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chlorobenzene	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
cis-1,2-Dichlorobenzene	3.5E-08	3.5E-09	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	8.1E-07	8.1E-08
Ethylbenzene	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Isopropyltoluene	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Methylene chloride	1.6E-05	1.9E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	3.7E-04	4.4E-05
Naphthalene	1.0E-07	3.4E-08	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	2.4E-06	7.8E-07
Toluene	3.7E-07	3.7E-08	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	8.5E-06	8.5E-07
trans-1,2-Dichloroethene	1.6E-07	1.6E-08	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	3.7E-06	3.7E-07
Trichloroethene	3.2E-06	3.2E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	7.3E-05	7.3E-06
1,2,4-Trimethylbenzene	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
1,3,5-Trimethylbenzene	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Vinyl chloride	6.4E-05	6.4E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	1.5E-03	1.5E-04
Xylenes	1.7E-05	1.4E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	3.8E-04	3.1E-04

Table C2-2q
Summary of Residual Risk Estimates: Deep Soil (0 - 10 ft bgs)
Hazard Quotient = 10
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Fox		Harrier		Mallard (breeding)		Mallard (non-breeding)		Heron		Killdeer		Salt Marsh Harvest Mouse	
Chemical	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**
Pesticides (mg/kg)														
alpha-Chlordane	5.7E-07	2.8E-07	1.1E-03	1.1E-04	7.6E-03	7.6E-04	1.9E-03	0.000189342	1.1E-02	1.1E-03	2.3E-01	2.3E-02	1.3E-05	6.5E-06
beta-BHC	2.0E-07	1.0E-07	3.4E-07	8.5E-08	2.3E-06	5.7E-07	5.8E-07	1.4E-07	3.2E-06	8.1E-07	6.9E-05	1.7E-05	4.6E-06	2.3E-06
delta-BHC	4.0E-07	2.0E-07	6.8E-07	1.7E-07	4.6E-06	1.1E-06	1.2E-06	2.9E-07	6.5E-06	1.6E-06	1.4E-04	3.4E-05	9.2E-06	4.6E-06
2,4-DDD	4.4E-04	2.2E-05	9.2E-02	5.5E-04	4.2E-03	2.5E-05	1.0E-03	6.2E-06	9.8E-02	5.9E-04	1.2E-01	7.4E-04	2.7E-04	1.3E-05
DDD	1.3E-03	6.6E-05	2.7E-01	1.6E-03	1.2E-02	7.4E-05	3.1E-03	1.9E-05	2.9E-01	1.7E-03	3.7E-01	2.2E-03	7.9E-04	3.9E-05
DDE	NTV	NTV	NTV	8.1E-04	NTV	3.7E-05	NTV	9.2E-06	NTV	8.6E-04	NTV	1.1E-03	NTV	NTV
DDTs	1.9E-04	9.4E-06	3.8E-02	2.3E-04	2.1E-03	1.3E-05	5.2E-04	3.1E-06	4.1E-02	2.5E-04	5.4E-02	3.2E-04	1.4E-04	6.9E-06
Dieldrin	8.3E-05	7.3E-07	1.0E-05	7.6E-07	7.1E-05	5.1E-06	1.8E-05	1.3E-06	1.0E-04	7.2E-06	2.1E-03	1.5E-04	1.9E-03	1.7E-05
Endosulfan I	8.5E-06	8.5E-07	7.6E-08	7.6E-09	5.2E-07	5.2E-08	1.3E-07	1.3E-08	7.2E-07	7.2E-08	1.5E-05	1.5E-06	2.0E-04	2.0E-05
Endosulfan sulfate	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Endrin	7.3E-05	7.3E-06	1.4E-05	1.4E-06	8.7E-05	8.7E-06	2.2E-05	2.2E-06	1.2E-04	1.2E-05	2.6E-03	2.6E-04	1.6E-03	1.6E-04
Endrin aldehyde	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Endrin Ketone	NTV	1.0E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	2.4E-05
gamma-Chlordane	5.9E-07	3.0E-07	1.2E-03	1.2E-04	7.9E-03	7.9E-04	2.0E-03	2.0E-04	1.1E-02	1.1E-03	1.6E-04	1.6E-05	1.4E-05	6.8E-06
Heptachlor	9.6E-07	1.8E-08	1.4E-06	1.4E-07	5.0E-06	5.0E-07	1.3E-06	1.3E-07	7.5E-06	7.5E-07	1.2E-04	1.2E-05	1.5E-05	2.8E-07
Heptachlor epoxide	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Hexachlorobenzene	1.6E-07	1.6E-08	6.6E-07	6.6E-08	4.5E-06	4.5E-07	1.1E-06	1.1E-07	6.3E-06	6.3E-07	1.3E-04	1.3E-05	3.7E-06	3.7E-07
Methoxychlor	2.6E-06	1.3E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	5.9E-05	2.9E-06
Mirex	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
trans-Nonachlor	1.7E-07	8.3E-08	3.3E-04	3.3E-05	2.2E-03	2.2E-04	5.5E-04	5.5E-05	3.1E-03	3.1E-04	6.6E-02	6.6E-03	3.8E-06	1.9E-06
SVOCs (mg/kg)														
Acenaphthene	3.2E-05	1.3E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	7.3E-04	2.9E-05
Acenaphthylene	2.7E-05	1.1E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	6.2E-04	2.5E-05
Anthracene	3.2E-05	1.3E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	7.3E-04	2.9E-05
Benzo(a)anthracene	6.6E-05	2.6E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	8.3E-02	3.3E-03
Benzo(a)pyrene	5.6E-05	2.2E-06	4.4E-02	4.4E-03	3.0E-01	3.0E-02	7.4E-02	7.4E-03	4.2E-01	4.2E-02	8.9E+00 >1	8.9E-01	1.3E-01	5.0E-03
Benzo(b)fluoranthene	5.6E-05	2.2E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	8.5E-02	3.4E-03
Benzo(g,h,i)perylene	3.9E-05	1.6E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	5.9E-02	2.4E-03
Benzo(k)fluoranthene	5.6E-05	2.2E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	8.5E-02	3.4E-03
Benzoic acid	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Bis(2-ethylhexyl)phthalate	5.1E-05	5.1E-06	6.6E-04	6.6E-05	1.9E-03	1.9E-04	4.7E-04	4.7E-05	2.9E-03	2.9E-04	4.2E-02	4.2E-03	6.7E-04	6.7E-05
Butylbenzylphthalate	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Carbazole	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Chloroaniline	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2-Chloropropane	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chrysene	6.7E-05	2.7E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	1.3E-01	5.1E-03
Dibenzofuran	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
3,3-Dichlorobenzidine	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2,6-Dinitrotoluene	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Fluoranthene	9.0E-05	3.6E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	2.1E-03	8.3E-05
Fluorene	3.2E-05	1.3E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	7.3E-04	2.9E-05

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Hazard Quotient = 10
Non-Tidal Wetland Areas Alternative 2
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Fox		Harrier		Mallard (breeding)		Mallard (non-breeding)		Heron		Killdeer		Salt Marsh Harvest Mouse	
Chemical	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**
Indeno(1,2,3-cd)pyrene	3.9E-05	1.6E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	1.2E-01	4.8E-03
2-Methylnaphthalene	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Methylphenol	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Naphthalene	7.0E-07	2.3E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	1.6E-05	5.4E-06
Pentachlorophenol	2.0E-05	6.3E-06	1.5E-05	4.6E-06	1.0E-04	3.1E-05	2.6E-05	7.8E-06	1.5E-04	4.3E-05	3.1E-03	9.2E-04	4.7E-04	1.4E-04
Phenanthrene	4.9E-05	1.9E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	1.1E-03	4.5E-05
Phenol	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pyrene	1.0E-04	4.1E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	2.4E-03	9.4E-05
PCBs (mg/kg)														
PCBs (Total Congeners)	1.1E-01	3.2E-02	1.1E+00	7.8E-02	7.6E-01	5.4E-02	3.1E-03	2.2E-04	4.2E+00 >1	3.0E-01	5.6E+00 >1	4.0E-01	4.7E-01	1.3E-01

Table C2-3a
Medium-Specific Exposure Point Concentration Summary
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Medium:	Soil (0 to 2 feet bgs)
Exposure Medium:	Soil
Exposure Point:	On-Site Soil

Chemical of Potential Concern	Distribution[a]	Mean of Normal Data[b]	Mean of Lognormal Data[c]	Median	UCL[d]	Maximum Detected Concentration	Reasonable Maximum Exposure		Central Tendency Exposure	
							Medium EPC Value[e]	Medium EPC Statistic and Rationale[f]	Medium EPC Value[e]	Medium EPC Statistic and Rationale[f]
INORGANICS (mg/kg)										
ALUMINUM	Non-Par	25667	10.1	24850	26789	41400	26789	Student's-t UCL	26789	Student's-t UCL
ANTIMONY	Lognormal	2.2	0.48	1.8	2.6	8	2.6	H-UCL	2.6	H-UCL
ARSENIC	Normal	20.5	2.9	20.25	22	43.2	22	Student's-t UCL	22	Student's-t UCL
BARIUM	Non-Par	84	4.37	78.7	90	330	90	Student's-t UCL	90	Student's-t UCL
BERYLLIUM	Gamma	0.38	-1.47	0.225	0.44	2.5	0.44	Approximate Gamma UCL	0.44	Approximate Gamma UCL
CADMIUM	Non-Par	1.64	-0.13	0.94	2.6	7.5	2.6	97.5% Chebyshev UCL	2.6	97.5% Chebyshev UCL
CHROMIUM	Non-Par	107	4.6	94.9	113	257	113	Student's-t UCL	113	Student's-t UCL
COBALT	Non-Par	17.6	2.7	20	21	38.2	21	95% Chebyshev UCL	21	95% Chebyshev UCL
COPPER	Non-Par	113	4.6	94.6	126	755	126	Student's-t UCL	126	Student's-t UCL
LEAD	Non-Par	67	4	52.8	89	415	89	95% Chebyshev UCL	89	95% Chebyshev UCL
MANGANESE	Non-Par	874	6.7	834	934	3800	934	Student's-t UCL	934	Student's-t UCL
MERCURY	Gamma	1.06	-0.12	0.98	1.17	5.1	1.17	Approximate Gamma UCL	1.17	Approximate Gamma UCL
MOLYBDENUM	Non-Par	1.89	-1.1	0.1125	4.9	44.3	4.9	97.5% Chebyshev UCL	4.9	97.5% Chebyshev UCL
NICKEL	Non-Par	103	4.58	107	107	222	107	Student's-t UCL	107	Student's-t UCL
SELENIUM	Non-Par	0.73	-0.76	0.31	1.1	2.7	1.1	95% Chebyshev UCL	1.1	95% Chebyshev UCL
SILVER	Non-Par	1.24	-1.22	0.195	2.3	5	2.3	97.5% Chebyshev UCL	2.3	97.5% Chebyshev UCL
THALLIUM	Non-Par	0.24	-1.59	0.19	0.29	2.6	0.29	Student's-t UCL	0.29	Student's-t UCL
TIN	Non-Par	17.1	2.76	15.9	20	59.8	20	Student's-t UCL	20	Student's-t UCL
VANADIUM	Non-Par	97	4.5	86.8	102	192	102	Student's-t UCL	102	Student's-t UCL
ZINC	Non-Par	203	5.2	185	225	1790	225	Student's-t UCL	225	Student's-t UCL
PESTICIDES (mg/kg)										
ALPHA-CHLORDANE	Non-Par	0.0015	-7.9	0.0004	0.0048	0.051	0.0048	97.5% Chebyshev UCL	0.0048	97.5% Chebyshev UCL
BETA BHC	NA	NA	NA	NA	NA	0.001	0.001	Max Detected	0.001	Max Detected
DELTA BHC	NA	NA	NA	NA	NA	0.002	0.002	Max Detected	0.002	Max Detected
2,4- DDD	Non-Par	0.0064	-5.98	0.001	0.03	0.03	0.03	99% Chebyshev UCL	0.03	99% Chebyshev UCL
4,4- DDD	Non-Par	0.029	-5.69	0.003	0.092	0.8	0.092	97.5% Chebyshev UCL	0.092	97.5% Chebyshev UCL
4,4- DDE	Non-Par	0.0052	-6.94	0.001	0.018	0.2	0.018	97.5% Chebyshev UCL	0.018	97.5% Chebyshev UCL
4,4- DDT	Non-Par	0.0051	-6.6	0.002	0.012	0.08	0.012	97.5% Chebyshev UCL	0.012	97.5% Chebyshev UCL
DIELDRIN	Non-Par	0.0014	-7.55	0.00095	0.0029	0.015	0.0029	97.5% Chebyshev UCL	0.0029	97.5% Chebyshev UCL
ENDOSULFAN I	NA	NA	NA	NA	NA	0.004	0.004	Max Detected	0.004	Max Detected
ENDOSULFAN SULFATE	NA	NA	NA	NA	NA	0.003	0.003	Max Detected	0.003	Max Detected
ENDRIN	NA	NA	NA	NA	NA	0.02	0.02	Max Detected	0.02	Max Detected
ENDRIN ALDEHYDE	NA	NA	NA	NA	NA	0.006	0.006	Max Detected	0.006	Max Detected
ENDRIN KETONE	Non-Par	0.00099	-7.96	0.0004	0.0023	0.003	0.0023	97.5% Chebyshev UCL	0.0023	97.5% Chebyshev UCL
GAMMA-CHLORDANE	Non-Par	0.0015	-7.97	0.0004	0.0052	0.059	0.0052	97.5% Chebyshev UCL	0.0052	97.5% Chebyshev UCL

Table C2-3a
Medium-Specific Exposure Point Concentration Summary
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Medium:	Soil (0 to 2 feet bgs)
Exposure Medium:	Soil
Exposure Point:	On-Site Soil

Chemical of Potential Concern	Distribution[a]	Mean of Normal Data[b]	Mean of Lognormal Data[c]	Median	UCL[d]	Maximum Detected Concentration	Reasonable Maximum Exposure		Central Tendency Exposure	
							Medium EPC Value[e]	Medium EPC Statistic and Rationale[f]	Medium EPC Value[e]	Medium EPC Statistic and Rationale[f]
HEPTACHLOR	NA	NA	NA	NA	NA	0.0002	0.0002	Max Detected	0.0002	Max Detected
HEPTACHLOR EPOXIDE	NA	NA	NA	NA	NA	0.0003	0.0003	Max Detected	0.0003	Max Detected
HEXACHLOROBENZENE	Non-Par	0.00083	-8.13	0.0003	0.0023	0.0008	0.0008	Max Detected	0.0008	Max Detected
METHOXYCHLOR	Non-Par	0.0038	-7.3	0.00045	0.012	0.04	0.012	99% Chebyshev UCL	0.012	99% Chebyshev UCL
MIREX	NA	NA	NA	NA	NA	0.004	0.004	Max Detected	0.004	Max Detected
TRANS-NONACHLOR	Non-Par	0.00087	-8.2	0.000275	0.0024	0.005	0.0024	97.5% Chebyshev UCL	0.0024	97.5% Chebyshev UCL
PCBs (mg/kg)										
PCBs (TOTAL)	Lognormal	0.072	-4.39	0.0117	0.1	2	0.1	H-UCL	0.1	H-UCL
SVOCs (mg/kg)										
ACENAPHTHENE	Non-Par	0.067	-3.14	0.02525	0.097	0.0573	0.0573	Max Detected	0.0573	Max Detected
ACENAPHTHYLENE	Non-Par	0.061	-3.24	0.02525	0.091	0.0396	0.0396	Max Detected	0.0396	Max Detected
ANTHRACENE	Non-Par	0.055	-3.66	0.0235	0.098	0.0658	0.0658	Max Detected	0.0658	Max Detected
BENZO(A)ANTHRACENE	Non-Par	0.055	-3.52	0.0235	0.097	0.1028	0.097	97.5% Chebyshev UCL	0.097	97.5% Chebyshev UCL
BENZO(A)PYRENE	Non-Par	0.051	-3.68	0.019	0.093	0.1013	0.093	97.5% Chebyshev UCL	0.093	97.5% Chebyshev UCL
BENZO(B)FLUORANTHENE	Non-Par	0.056	-3.33	0.025	0.083	0.11	0.083	95% Chebyshev UCL	0.083	95% Chebyshev UCL
BENZO(G,H,I)PERYLENE	Non-Par	0.056	-3.37	0.0245	0.084	0.13	0.084	95% Chebyshev UCL	0.084	95% Chebyshev UCL
BENZO(K)FLUORANTHENE	Non-Par	0.057	-3.47	0.0235	0.1	0.067	0.067	Max Detected	0.067	Max Detected
BIS(2-ETHYLHEXYL)PHTHALATE	Non-Par	0.066	-3.53	0.01325	0.12	0.59	0.12	97.5% Chebyshev UCL	0.12	97.5% Chebyshev UCL
BUTYLBENZYLPHTHALATE	NA	NA	NA	NA	NA	0.025	0.025	Max Detected	0.025	Max Detected
CARBAZOLE	NA	NA	NA	NA	NA	0.141	0.141	Max Detected	0.141	Max Detected
4- CHLOROANILINE	NA	NA	NA	NA	NA	0.003	0.003	Max Detected	0.003	Max Detected
2- CHLOROPHENOL	NA	NA	NA	NA	NA	0.0433	0.0433	Max Detected	0.0433	Max Detected
CHRYSENE	Non-Par	0.047	-3.71	0.0185	0.086	0.20	0.086	97.5% Chebyshev UCL	0.086	97.5% Chebyshev UCL
DIBENZOFURAN	NA	NA	NA	NA	NA	0.0789	0.0789	Max Detected	0.0789	Max Detected
3,3- DICHLOROBENZIDINE	NA	NA	NA	NA	NA	0.012	0.012	Max Detected	0.012	Max Detected
FLUORANTHENE	Non-Par	0.054	-3.45	0.024	0.083	0.1345	0.083	95% Chebyshev UCL	0.083	95% Chebyshev UCL
FLUORENE	Non-Par	0.056	-3.46	0.0235	0.1	0.054	0.054	Max Detected	0.054	Max Detected
INDENO(1,2,3-CD)PYRENE	Non-Par	0.054	-3.68	0.0195	0.1	0.15	0.10	97.5% Chebyshev UCL	0.100	97.5% Chebyshev UCL
2- METHYLNAPHTHALENE	NA	NA	NA	NA	NA	0.0523	0.0523	Max Detected	0.0523	Max Detected
4- METHYLPHENOL	NA	NA	NA	NA	NA	0.0668	0.0668	Max Detected	0.0668	Max Detected
NAPHTHALENE	Non-Par	0.06	-3.27	0.025	0.088	0.1102	0.088	95% Chebyshev UCL	0.088	95% Chebyshev UCL
PENTACHLOROPHENOL	NA	NA	NA	NA	NA	0.0484	0.0484	Max Detected	0.0484	Max Detected
PHENANTHRENE	Non-Par	0.052	-3.69	0.01975	0.094	0.1	0.094	97.5% Chebyshev UCL	0.094	97.5% Chebyshev UCL
PHENOL	NA	NA	NA	NA	NA	0.14	0.14	Max Detected	0.14	Max Detected
PYRENE	Non-Par	0.052	-3.39	0.0295	0.077	0.16	0.077	95% Chebyshev UCL	0.077	95% Chebyshev UCL

Table C2-3a
Medium-Specific Exposure Point Concentration Summary
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Medium:	Soil (0 to 2 feet bgs)
Exposure Medium:	Soil
Exposure Point:	On-Site Soil

Chemical of Potential Concern	Distribution[a]	Mean of Normal Data[b]	Mean of Lognormal Data[c]	Median	UCL[d]	Maximum Detected Concentration	Reasonable Maximum Exposure		Central Tendency Exposure	
							Medium EPC Value[e]	Medium EPC Statistic and Rationale[f]	Medium EPC Value[e]	Medium EPC Statistic and Rationale[f]
TPH (mg/kg)										
TPH AS DIESEL	Non-Par	21.1	2.97	19.15	23	81	23	Student's-t UCL	23	Student's-t UCL
TPH AS GASOLINE	Non-Par	0.16	-3.85	0.0153	0.73	8	0.73	97.5% Chebyshev UCL	0.73	97.5% Chebyshev UCL
TPH AS MOTOR OIL	Non-Par	130	4.31	66.215	226	1690	226	95% Chebyshev UCL	226	95% Chebyshev UCL
VOCs (mg/kg)										
ACETONE	Non-Par	0.022	-4.53	0.005	0.1	0.1	0.1	99% Chebyshev UCL	0.1	99% Chebyshev UCL
CARBON DISULFIDE	NA	NA	NA	NA	NA	0.007	0.007	Max Detected	0.007	Max Detected
CHLOROBENZENE	NA	NA	NA	NA	NA	0.005	0.005	Max Detected	0.005	Max Detected
ETHYLBENZENE	NA	NA	NA	NA	NA	0.018	0.018	Max Detected	0.018	Max Detected
TOLUENE	NA	NA	NA	NA	NA	0.03	0.03	Max Detected	0.03	Max Detected
TRICHLOROETHENE	NA	NA	NA	NA	NA	0.007	0.007	Max Detected	0.007	Max Detected
XYLENE (TOTAL)	Non-Par	0.062	-3.54	0.1	0.15	0.167	0.15	99% Chebyshev UCL	0.15	99% Chebyshev UCL

The UCL for chemicals that are italicized and underlined have been modified for post remediation residual risk.

bgs Below Ground Surface.
EPC Exposure Point Concentration.
mg/kg Milligram per kilogram.
NA Not Applicable for small data sets.
PCBs Polychlorinated Biphenyls
SVOC Semivolatile Organic Compound
TPH Total Petroleum Hydrocarbon
UCL Upper confidence limit of the mean.
VOCs Volatile Organic Compounds

a Gamma = Data follow gamma distribution using chi-square approximation.
Normal = Data are normally distributed.
Lognormal = Data are lognormally distributed.
Non-par = Data are non-parametric.
Lilliefors Test was used to determine the distribution for sample sets greater than 50.
Shapiro and Wilk W-Test was used to determine the distribution for sample sets less than 50.

b The value presented is the arithmetic mean calculated using distribution-dependent formulas. One half the sample quantitation limit was used as a proxy concentration for non-detects to calculate the mean.

c The value presented is the mean of log-transformed data calculated using distribution-dependent formulas. One half the sample quantitation limit was used as a proxy concentration for non-detects to calculate the mean.

d The value presented is the UCL calculated using distribution-dependent formulas. One half the sample quantitation limit was used as a proxy concentration for non-detects to calculate the UCL.

e If the UCL value exceeds the maximum detected concentration, the maximum detected concentration is used for the medium EPC value.

f Recommended UCL statistic using United States Environmental Protection Agency ProUCL Version 3.0 software.

Table C2-3b
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil (0 to 2 feet)
Exposure Point:	Surface Soil (0 to 2 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
INGESTION	**INORGANICS**									
	ALUMINUM	26,789	mg/kg	2.93E-02	1.22E-02	mg/kg-day	1.00E+00	mg/kg-day	2.93E-02	1.22E-02
	ANTIMONY	2.6	mg/kg	2.84E-06	1.18E-06	mg/kg-day	4.00E-04	mg/kg-day	7.10E-03	2.96E-03
	ARSENIC	22.0	mg/kg	2.40E-05	1.00E-05	mg/kg-day	3.00E-04	mg/kg-day	8.01E-02	3.34E-02
	BARIUM	90.0	mg/kg	9.84E-05	4.10E-05	mg/kg-day	7.00E-02	mg/kg-day	1.41E-03	5.85E-04
	BERYLLIUM	0.4	mg/kg	4.81E-07	2.00E-07	mg/kg-day	2.00E-03	mg/kg-day	2.40E-04	1.00E-04
	CADMIUM	2.6	mg/kg	2.84E-06	1.18E-06	mg/kg-day	5.00E-04	mg/kg-day	5.68E-03	2.37E-03
	CHROMIUM	113	mg/kg	1.23E-04	5.15E-05	mg/kg-day	1.50E+00	mg/kg-day	8.23E-05	3.43E-05
	COBALT	21	mg/kg	2.29E-05	9.56E-06	mg/kg-day	2.00E-02	mg/kg-day	1.15E-03	4.78E-04
	COPPER	126	mg/kg	1.38E-04	5.74E-05	mg/kg-day	4.00E-02	mg/kg-day	3.44E-03	1.43E-03
	LEAD	89	mg/kg	9.73E-05	4.05E-05	mg/kg-day	NA	mg/kg-day	NA	NA
	MANGANESE	934	mg/kg	1.02E-03	4.25E-04	mg/kg-day	1.40E-01	mg/kg-day	7.29E-03	3.04E-03
	MERCURY	1.2	mg/kg	1.28E-06	5.33E-07	mg/kg-day	3.00E-04	mg/kg-day	4.26E-03	1.78E-03
	MOLYBDENUM	4.9	mg/kg	5.35E-06	2.23E-06	mg/kg-day	5.00E-03	mg/kg-day	1.07E-03	4.46E-04
	NICKEL	107	mg/kg	1.17E-04	4.87E-05	mg/kg-day	2.00E-02	mg/kg-day	5.85E-03	2.44E-03
	SELENIUM	1.1	mg/kg	1.20E-06	5.01E-07	mg/kg-day	5.00E-03	mg/kg-day	2.40E-04	1.00E-04
	SILVER	2.3	mg/kg	2.51E-06	1.05E-06	mg/kg-day	5.00E-03	mg/kg-day	5.03E-04	2.09E-04
	THALLIUM	0.29	mg/kg	3.17E-07	1.32E-07	mg/kg-day	6.60E-05	mg/kg-day	4.80E-03	2.00E-03
	TIN	20.0	mg/kg	2.19E-05	9.11E-06	mg/kg-day	6.00E-01	mg/kg-day	3.64E-05	1.52E-05
	VANADIUM	102	mg/kg	1.11E-04	4.64E-05	mg/kg-day	7.00E-03	mg/kg-day	1.59E-02	6.64E-03
	ZINC	225	mg/kg	2.46E-04	1.02E-04	mg/kg-day	3.00E-01	mg/kg-day	8.20E-04	3.42E-04
	PESTICIDES									
	ALPHA-CHLORDANE	0.0048	mg/kg	5.25E-09	2.19E-09	mg/kg-day	5.00E-04	mg/kg-day	1.05E-05	4.37E-06
	BETA BHC	0.001	mg/kg	1.09E-09	4.55E-10	mg/kg-day	2.00E-04	mg/kg-day	5.46E-06	2.28E-06
	DELTA BHC	0.002	mg/kg	2.19E-09	9.11E-10	mg/kg-day	NA	mg/kg-day	NA	NA
	2,4- DDD	0.03	mg/kg	3.28E-08	1.37E-08	mg/kg-day	5.00E-04	mg/kg-day	6.56E-05	2.73E-05
	4,4- DDD	0.092	mg/kg	1.01E-07	4.19E-08	mg/kg-day	5.00E-04	mg/kg-day	2.01E-04	8.38E-05
	4,4- DDE	0.018	mg/kg	1.97E-08	8.20E-09	mg/kg-day	5.00E-04	mg/kg-day	3.93E-05	1.64E-05
	4,4- DDT	0.012	mg/kg	1.31E-08	5.46E-09	mg/kg-day	5.00E-04	mg/kg-day	2.62E-05	1.09E-05
	DIELDRIN	0.0029	mg/kg	3.17E-09	1.32E-09	mg/kg-day	5.00E-05	mg/kg-day	6.34E-05	2.64E-05
	ENDOSULFAN I	0.004	mg/kg	4.37E-09	1.82E-09	mg/kg-day	6.00E-03	mg/kg-day	7.29E-07	3.04E-07

Table C2-3b
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil (0 to 2 feet)
Exposure Point:	Surface Soil (0 to 2 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
INGESTION (CONTINUED)	ENDOSULFAN SULFATE	0.003	mg/kg	3.28E-09	1.37E-09	mg/kg-day	6.00E-03	mg/kg-day	5.46E-07	2.28E-07
	ENDRIN	0.02	mg/kg	2.19E-08	9.11E-09	mg/kg-day	3.00E-04	mg/kg-day	7.29E-05	3.04E-05
	ENDRIN ALDEHYDE	0.006	mg/kg	6.56E-09	2.73E-09	mg/kg-day	3.00E-04	mg/kg-day	2.19E-05	9.11E-06
	ENDRIN KETONE	0.0023	mg/kg	2.51E-09	1.05E-09	mg/kg-day	3.00E-04	mg/kg-day	8.38E-06	3.49E-06
	GAMMA-CHLORDANE	0.0052	mg/kg	5.68E-09	2.37E-09	mg/kg-day	5.00E-04	mg/kg-day	1.14E-05	4.74E-06
	HEPTACHLOR	0.0002	mg/kg	2.19E-10	9.11E-11	mg/kg-day	5.00E-04	mg/kg-day	4.37E-07	1.82E-07
	HEPTACHLOR EPOXIDE	0.0003	mg/kg	3.28E-10	1.37E-10	mg/kg-day	1.30E-05	mg/kg-day	2.52E-05	1.05E-05
	HEXACHLOROBENZENE	0.0008	mg/kg	8.74E-10	3.64E-10	mg/kg-day	8.00E-04	mg/kg-day	1.09E-06	4.55E-07
	METHOXYCHLOR	0.012	mg/kg	1.31E-08	5.46E-09	mg/kg-day	5.00E-03	mg/kg-day	2.62E-06	1.09E-06
	MIREX	0.004	mg/kg	4.37E-09	1.82E-09	mg/kg-day	2.00E-04	mg/kg-day	2.19E-05	9.11E-06
	TRANS-NONACHLOR	0.0024	mg/kg	2.62E-09	1.09E-09	mg/kg-day	5.00E-04	mg/kg-day	5.25E-06	2.19E-06
	PCBs									
	PCBs (TOTAL)	0.10	mg/kg	1.09E-07	4.55E-08	mg/kg-day	2.00E-05	mg/kg-day	5.46E-03	2.28E-03
	SVOCs									
	ACENAPHTHENE	0.057	mg/kg	6.26E-08	2.61E-08	mg/kg-day	6.00E-02	mg/kg-day	1.04E-06	4.35E-07
	ACENAPHTHYLENE	0.04	mg/kg	4.33E-08	1.80E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	ANTHRACENE	0.0658	mg/kg	7.19E-08	3.00E-08	mg/kg-day	3.00E-01	mg/kg-day	2.40E-07	9.99E-08
	BENZO(A)ANTHRACENE	0.097	mg/kg	1.06E-07	4.42E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(A)PYRENE	0.093	mg/kg	1.02E-07	4.23E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(B)FLUORANTHENE	0.083	mg/kg	9.07E-08	3.78E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(G,H,I)PERYLENE	0.084	mg/kg	9.18E-08	3.82E-08	mg/kg-day	4.00E-02	mg/kg-day	2.29E-06	9.56E-07
	BENZO(K)FLUORANTHENE	0.07	mg/kg	7.32E-08	3.05E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	BIS(2-ETHYLHEXYL)PHTHAL	0.12	mg/kg	1.31E-07	5.46E-08	mg/kg-day	2.00E-02	mg/kg-day	6.56E-06	2.73E-06
	BUTYLBENZYLPHTHALATE	0.025	mg/kg	2.73E-08	1.14E-08	mg/kg-day	2.00E-01	mg/kg-day	1.37E-07	5.69E-08
	CARBAZOLE	0.14	mg/kg	1.54E-07	6.42E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	4- CHLOROANILINE	0.003	mg/kg	3.28E-09	1.37E-09	mg/kg-day	4.00E-03	mg/kg-day	8.20E-07	3.42E-07
	2- CHLOROPHENOL	0.043	mg/kg	4.73E-08	1.97E-08	mg/kg-day	5.00E-03	mg/kg-day	9.46E-06	3.94E-06
	CHRYSENE	0.086	mg/kg	9.40E-08	3.92E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	DIBENZOFURAN	0.079	mg/kg	8.62E-08	3.59E-08	mg/kg-day	2.00E-03	mg/kg-day	4.31E-05	1.80E-05
	3,3- DICHLOROBENZIDINE	0.012	mg/kg	1.31E-08	5.46E-09	mg/kg-day	NA	mg/kg-day	NA	NA
	FLUORANTHENE	0.083	mg/kg	9.07E-08	3.78E-08	mg/kg-day	4.00E-02	mg/kg-day	2.27E-06	9.45E-07

Table C2-3b
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil (0 to 2 feet)
Exposure Point:	Surface Soil (0 to 2 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
	FLUORENE	0.054	mg/kg	5.90E-08	2.46E-08	mg/kg-day	4.00E-02	mg/kg-day	1.48E-06	6.15E-07

Table C2-3b
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil (0 to 2 feet)
Exposure Point:	Surface Soil (0 to 2 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
INGESTION (CONTINUED)	*INDENO(1,2,3-CD)PYRENE*	0.10	mg/kg	1.09E-07	4.55E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	2- METHYLNAPHTHALENE	0.052	mg/kg	5.72E-08	2.38E-08	mg/kg-day	4.00E-03	mg/kg-day	1.43E-05	5.95E-06
	4- METHYLPHENOL	0.067	mg/kg	7.30E-08	3.04E-08	mg/kg-day	5.00E-03	mg/kg-day	1.46E-05	6.08E-06
	NAPHTHALENE	0.088	mg/kg	9.62E-08	4.01E-08	mg/kg-day	2.00E-02	mg/kg-day	4.81E-06	2.00E-06
	PENTACHLOROPHENOL	0.048	mg/kg	5.29E-08	2.20E-08	mg/kg-day	3.00E-02	mg/kg-day	1.76E-06	7.35E-07
	PHENANTHRENE	0.094	mg/kg	1.03E-07	4.28E-08	mg/kg-day	3.00E-01	mg/kg-day	3.42E-07	1.43E-07
	PHENOL	0.14	mg/kg	1.53E-07	6.37E-08	mg/kg-day	6.00E-01	mg/kg-day	2.55E-07	1.06E-07
	PYRENE	0.077	mg/kg	8.41E-08	3.51E-08	mg/kg-day	3.00E-02	mg/kg-day	2.80E-06	1.17E-06
	TPH									
	TPH AS DIESEL	23	mg/kg	2.51E-05	1.05E-05	mg/kg-day	NA	mg/kg-day	NA	NA
	TPH AS GASOLINE	0.7	mg/kg	7.98E-07	3.32E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	TPH AS MOTOR OIL	226	mg/kg	2.47E-04	1.03E-04	mg/kg-day	NA	mg/kg-day	NA	NA
	VOCs									
	ACETONE	0.10	mg/kg	1.09E-07	4.55E-08	mg/kg-day	9.00E-01	mg/kg-day	1.21E-07	5.06E-08
	CARBON DISULFIDE	0.007	mg/kg	7.65E-09	3.19E-09	mg/kg-day	1.00E-01	mg/kg-day	7.65E-08	3.19E-08
	CHLOROBENZENE	0.005	mg/kg	5.46E-09	2.28E-09	mg/kg-day	2.00E-02	mg/kg-day	2.73E-07	1.14E-07
	ETHYLBENZENE	0.018	mg/kg	1.97E-08	8.20E-09	mg/kg-day	1.00E-01	mg/kg-day	1.97E-07	8.20E-08
	TOLUENE	0.03	mg/kg	3.28E-08	1.37E-08	mg/kg-day	2.00E-01	mg/kg-day	1.64E-07	6.83E-08
	TRICHLOROETHENE	0.007	mg/kg	7.65E-09	3.19E-09	mg/kg-day	3.00E-04	mg/kg-day	2.55E-05	1.06E-05
	XYLENE (TOTAL)	0.15	mg/kg	1.64E-07	6.83E-08	mg/kg-day	2.00E-01	mg/kg-day	8.20E-07	3.42E-07
DERMAL CONTACT	**INORGANICS**									
	ALUMINUM	26,789	mg/kg	NA	NA	mg/kg-day	1.00E+00	mg/kg-day	NA	NA
	ANTIMONY	2.6	mg/kg	NA	NA	mg/kg-day	6.00E-05	mg/kg-day	NA	NA
	ARSENIC	22.0	mg/kg	3.31E-06	1.38E-06	mg/kg-day	3.00E-04	mg/kg-day	1.10E-02	4.60E-03
	BARIUM	90.0	mg/kg	NA	NA	mg/kg-day	4.90E-03	mg/kg-day	NA	NA
	BERYLLIUM	0.4	mg/kg	NA	NA	mg/kg-day	1.40E-05	mg/kg-day	NA	NA
	CADMIUM	2.6	mg/kg	1.30E-08	5.43E-09	mg/kg-day	1.25E-05	mg/kg-day	1.04E-03	4.35E-04
	CHROMIUM	113	mg/kg	NA	NA	mg/kg-day	1.95E-02	mg/kg-day	NA	NA
	COBALT	21	mg/kg	NA	NA	mg/kg-day	2.00E-02	mg/kg-day	NA	NA
	COPPER	126	mg/kg	NA	NA	mg/kg-day	4.00E-02	mg/kg-day	NA	NA
	LEAD	89	mg/kg	NA	NA	mg/kg-day	NA	mg/kg-day	NA	NA

Table C2-3b
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil (0 to 2 feet)
Exposure Point:	Surface Soil (0 to 2 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
DERMAL CONTACT (CONTINUED)	*MANGANESE*	934	mg/kg	NA	NA	mg/kg-day	5.60E-03	mg/kg-day	NA	NA
	MERCURY	1.2	mg/kg	NA	NA	mg/kg-day	2.10E-05	mg/kg-day	NA	NA
	MOLYBDENUM	4.9	mg/kg	NA	NA	mg/kg-day	5.00E-03	mg/kg-day	NA	NA
	NICKEL	107	mg/kg	NA	NA	mg/kg-day	8.00E-04	mg/kg-day	NA	NA
	SELENIUM	1.1	mg/kg	NA	NA	mg/kg-day	5.00E-03	mg/kg-day	NA	NA
	SILVER	2.3	mg/kg	NA	NA	mg/kg-day	2.00E-04	mg/kg-day	NA	NA
	THALLIUM	0.29	mg/kg	NA	NA	mg/kg-day	6.60E-05	mg/kg-day	NA	NA
	TIN	20.0	mg/kg	NA	NA	mg/kg-day	6.00E-01	mg/kg-day	NA	NA
	VANADIUM	102	mg/kg	NA	NA	mg/kg-day	1.82E-04	mg/kg-day	NA	NA
	ZINC	225	mg/kg	NA	NA	mg/kg-day	3.00E-01	mg/kg-day	NA	NA
	PESTICIDES									
	ALPHA-CHLORDANE	0.0048	mg/kg	9.63E-10	4.01E-10	mg/kg-day	5.00E-04	mg/kg-day	1.93E-06	8.03E-07
	BETA BHC	0.001	mg/kg	2.01E-10	8.36E-11	mg/kg-day	2.00E-04	mg/kg-day	1.00E-06	4.18E-07
	DELTA BHC	0.002	mg/kg	4.01E-10	1.67E-10	mg/kg-day	NA	mg/kg-day	NA	NA
	2,4- DDD	0.03	mg/kg	4.51E-09	1.88E-09	mg/kg-day	5.00E-04	mg/kg-day	9.03E-06	3.76E-06
	4,4- DDD	0.092	mg/kg	1.38E-08	5.77E-09	mg/kg-day	5.00E-04	mg/kg-day	2.77E-05	1.15E-05
	4,4- DDE	0.018	mg/kg	2.71E-09	1.13E-09	mg/kg-day	5.00E-04	mg/kg-day	5.42E-06	2.26E-06
	4,4- DDT	0.012	mg/kg	1.81E-09	7.52E-10	mg/kg-day	5.00E-04	mg/kg-day	3.61E-06	1.50E-06
	DIELDRIN	0.0029	mg/kg	1.45E-09	6.06E-10	mg/kg-day	5.00E-05	mg/kg-day	2.91E-05	1.21E-05
	ENDOSULFAN I	0.004	mg/kg	2.01E-09	8.36E-10	mg/kg-day	6.00E-03	mg/kg-day	3.34E-07	1.39E-07
	ENDOSULFAN SULFATE	0.003	mg/kg	1.50E-09	6.27E-10	mg/kg-day	6.00E-03	mg/kg-day	2.51E-07	1.05E-07
	ENDRIN	0.02	mg/kg	1.00E-08	4.18E-09	mg/kg-day	3.00E-04	mg/kg-day	3.34E-05	1.39E-05
	ENDRIN ALDEHYDE	0.006	mg/kg	3.01E-09	1.25E-09	mg/kg-day	3.00E-04	mg/kg-day	1.00E-05	4.18E-06
	ENDRIN KETONE	0.0023	mg/kg	1.15E-09	4.81E-10	mg/kg-day	3.00E-04	mg/kg-day	3.85E-06	1.60E-06
	GAMMA-CHLORDANE	0.0052	mg/kg	1.04E-09	4.35E-10	mg/kg-day	5.00E-04	mg/kg-day	2.09E-06	8.69E-07
	HEPTACHLOR	0.0002	mg/kg	1.00E-10	4.18E-11	mg/kg-day	5.00E-04	mg/kg-day	2.01E-07	8.36E-08
	HEPTACHLOR EPOXIDE	0.0003	mg/kg	1.50E-10	6.27E-11	mg/kg-day	1.30E-05	mg/kg-day	1.16E-05	4.82E-06
	HEXACHLOROBENZENE	0.0008	mg/kg	4.01E-10	1.67E-10	mg/kg-day	8.00E-04	mg/kg-day	5.02E-07	2.09E-07
	METHOXYCHLOR	0.012	mg/kg	2.41E-09	1.00E-09	mg/kg-day	5.00E-03	mg/kg-day	4.82E-07	2.01E-07
	MIREX	0.004	mg/kg	2.01E-09	8.36E-10	mg/kg-day	2.00E-04	mg/kg-day	1.00E-05	4.18E-06
	TRANS-NONACHLOR	0.0024	mg/kg	4.82E-10	2.01E-10	mg/kg-day	5.00E-04	mg/kg-day	9.63E-07	4.01E-07

Table C2-3b
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil (0 to 2 feet)
Exposure Point:	Surface Soil (0 to 2 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
DERMAL CONTACT (CONTINUED)	**PCBs**									
	PCBs (TOTAL)	0.10	mg/kg	7.02E-08	2.93E-08	mg/kg-day	2.00E-05	mg/kg-day	3.51E-03	1.46E-03
	SVOCs									
	ACENAPHTHENE	0.057	mg/kg	3.74E-08	1.56E-08	mg/kg-day	6.00E-02	mg/kg-day	6.23E-07	2.59E-07
	ACENAPHTHYLENE	0.04	mg/kg	2.58E-08	1.08E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	ANTHRACENE	0.0658	mg/kg	4.29E-08	1.79E-08	mg/kg-day	3.00E-01	mg/kg-day	1.43E-07	5.96E-08
	BENZO(A)ANTHRACENE	0.097	mg/kg	6.33E-08	2.64E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(A)PYRENE	0.093	mg/kg	6.06E-08	2.53E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(B)FLUORANTHENE	0.083	mg/kg	5.41E-08	2.26E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(G,H,I)PERYLENE	0.084	mg/kg	5.48E-08	2.28E-08	mg/kg-day	4.00E-02	mg/kg-day	1.37E-06	5.71E-07
	BENZO(K)FLUORANTHENE	0.07	mg/kg	4.37E-08	1.82E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	BIS(2-ETHYLHEXYL)PHTHAL	0.12	mg/kg	6.02E-08	2.51E-08	mg/kg-day	2.00E-02	mg/kg-day	3.01E-06	1.25E-06
	BUTYLBENZYLPHTHALATE	0.025	mg/kg	1.25E-08	5.23E-09	mg/kg-day	2.00E-01	mg/kg-day	6.27E-08	2.61E-08
	CARBAZOLE	0.14	mg/kg	7.07E-08	2.95E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	4- CHLOROANILINE	0.003	mg/kg	1.50E-09	6.27E-10	mg/kg-day	4.00E-03	mg/kg-day	3.76E-07	1.57E-07
	2- CHLOROPHENOL	0.043	mg/kg	2.17E-08	9.05E-09	mg/kg-day	5.00E-03	mg/kg-day	4.34E-06	1.81E-06
	CHRYSENE	0.086	mg/kg	5.61E-08	2.34E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	DIBENZOFURAN	0.079	mg/kg	3.96E-08	1.65E-08	mg/kg-day	2.00E-03	mg/kg-day	1.98E-05	8.25E-06
	3,3- DICHLOROBENZIDINE	0.012	mg/kg	6.02E-09	2.51E-09	mg/kg-day	NA	mg/kg-day	NA	NA
	FLUORANTHENE	0.083	mg/kg	5.41E-08	2.26E-08	mg/kg-day	4.00E-02	mg/kg-day	1.35E-06	5.64E-07
	FLUORENE	0.054	mg/kg	3.52E-08	1.47E-08	mg/kg-day	4.00E-02	mg/kg-day	8.80E-07	3.67E-07
	INDENO(1,2,3-CD)PYRENE	0.10	mg/kg	6.52E-08	2.72E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	2- METHYLNAPHTHALENE	0.052	mg/kg	2.62E-08	1.09E-08	mg/kg-day	4.00E-03	mg/kg-day	6.56E-06	2.73E-06
	4- METHYLPHENOL	0.067	mg/kg	3.35E-08	1.40E-08	mg/kg-day	5.00E-03	mg/kg-day	6.70E-06	2.79E-06
	NAPHTHALENE	0.088	mg/kg	5.74E-08	2.39E-08	mg/kg-day	2.00E-02	mg/kg-day	2.87E-06	1.20E-06
	PENTACHLOROPHENOL	0.048	mg/kg	2.43E-08	1.01E-08	mg/kg-day	3.00E-02	mg/kg-day	8.09E-07	3.37E-07
	PHENANTHRENE	0.094	mg/kg	6.13E-08	2.55E-08	mg/kg-day	3.00E-01	mg/kg-day	2.04E-07	8.51E-08
	PHENOL	0.14	mg/kg	7.02E-08	2.93E-08	mg/kg-day	6.00E-01	mg/kg-day	1.17E-07	4.88E-08
	PYRENE	0.077	mg/kg	5.02E-08	2.09E-08	mg/kg-day	3.00E-02	mg/kg-day	1.67E-06	6.97E-07
	TPH									
	TPH AS DIESEL	23	mg/kg	NA	NA	mg/kg-day	NA	mg/kg-day	NA	NA

Table C2-3b
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil (0 to 2 feet)
Exposure Point:	Surface Soil (0 to 2 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
DERMAL CONTACT (CONTINUED)	*TPH AS GASOLINE*	0.7	mg/kg	NA	NA	mg/kg-day	NA	mg/kg-day	NA	NA
	TPH AS MOTOR OIL	226	mg/kg	NA	NA	mg/kg-day	NA	mg/kg-day	NA	NA
	VOCs									
	ACETONE	0.10	mg/kg	NA	NA	mg/kg-day	9.00E-01	mg/kg-day	NA	NA
	CARBON DISULFIDE	0.007	mg/kg	NA	NA	mg/kg-day	1.00E-01	mg/kg-day	NA	NA
	CHLOROBENZENE	0.005	mg/kg	NA	NA	mg/kg-day	2.00E-02	mg/kg-day	NA	NA
	ETHYLBENZENE	0.018	mg/kg	NA	NA	mg/kg-day	1.00E-01	mg/kg-day	NA	NA
	TOLUENE	0.03	mg/kg	NA	NA	mg/kg-day	2.00E-01	mg/kg-day	NA	NA
	TRICHLOROETHENE	0.007	mg/kg	NA	NA	mg/kg-day	3.00E-04	mg/kg-day	NA	NA
	XYLENE (TOTAL)	0.15	mg/kg	NA	NA	mg/kg-day	2.00E-01	mg/kg-day	NA	NA
INHALATION OF PARTICULATES AND VAPORS	**INORGANICS**									
	ALUMINUM	26,789	mg/kg	1.23E-06	5.13E-07	mg/kg-day	1.40E-03	mg/kg-day	8.79E-04	3.66E-04
	ANTIMONY	2.6	mg/kg	1.19E-10	4.98E-11	mg/kg-day	NA	mg/kg-day	NA	NA
	ARSENIC	22.0	mg/kg	1.01E-09	4.21E-10	mg/kg-day	8.57E-06	mg/kg-day	1.18E-04	4.92E-05
	BARIUM	90.0	mg/kg	4.14E-09	1.72E-09	mg/kg-day	1.43E-04	mg/kg-day	2.89E-05	1.20E-05
	BERYLLIUM	0.4	mg/kg	2.02E-11	8.42E-12	mg/kg-day	2.00E-06	mg/kg-day	1.01E-05	4.22E-06
	CADMIUM	2.6	mg/kg	1.19E-10	4.98E-11	mg/kg-day	5.71E-06	mg/kg-day	2.09E-05	8.72E-06
	CHROMIUM	113	mg/kg	5.19E-09	2.16E-09	mg/kg-day	NA	mg/kg-day	NA	NA
	COBALT	21	mg/kg	9.65E-10	4.02E-10	mg/kg-day	5.70E-06	mg/kg-day	1.69E-04	7.05E-05
	COPPER	126	mg/kg	5.79E-09	2.41E-09	mg/kg-day	NA	mg/kg-day	NA	NA
	LEAD	89	mg/kg	4.09E-09	1.70E-09	mg/kg-day	NA	mg/kg-day	NA	NA
	MANGANESE	934	mg/kg	4.29E-08	1.79E-08	mg/kg-day	1.43E-05	mg/kg-day	3.00E-03	1.25E-03
	MERCURY	1.2	mg/kg	5.38E-11	2.24E-11	mg/kg-day	2.57E-05	mg/kg-day	2.09E-06	8.72E-07
	MOLYBDENUM	4.9	mg/kg	2.25E-10	9.38E-11	mg/kg-day	NA	mg/kg-day	NA	NA
	NICKEL	107	mg/kg	4.92E-09	2.05E-09	mg/kg-day	1.43E-05	mg/kg-day	3.44E-04	1.44E-04
	SELENIUM	1.1	mg/kg	5.05E-11	2.11E-11	mg/kg-day	5.71E-03	mg/kg-day	8.85E-09	3.69E-09
	SILVER	2.3	mg/kg	1.06E-10	4.40E-11	mg/kg-day	NA	mg/kg-day	NA	NA
	THALLIUM	0.29	mg/kg	1.33E-11	5.55E-12	mg/kg-day	NA	mg/kg-day	NA	NA
	TIN	20.0	mg/kg	9.19E-10	3.83E-10	mg/kg-day	NA	mg/kg-day	NA	NA
	VANADIUM	102	mg/kg	4.69E-09	1.95E-09	mg/kg-day	NA	mg/kg-day	NA	NA
	ZINC	225	mg/kg	1.03E-08	4.31E-09	mg/kg-day	NA	mg/kg-day	NA	NA

Table C2-3b
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil (0 to 2 feet)
Exposure Point:	Surface Soil (0 to 2 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
INHALATION OF PARTICULATES AND VAPORS (CONTINUED)	**PESTICIDES**									
	ALPHA-CHLORDANE	0.0048	mg/kg	2.21E-13	9.19E-14	mg/kg-day	2.00E-04	mg/kg-day	1.10E-09	4.59E-10
	BETA BHC	0.001	mg/kg	4.59E-14	1.91E-14	mg/kg-day	2.00E-04	mg/kg-day	2.30E-10	9.57E-11
	DELTA BHC	0.002	mg/kg	9.19E-14	3.83E-14	mg/kg-day	NA	mg/kg-day	NA	NA
	2,4- DDD	0.03	mg/kg	1.38E-12	5.74E-13	mg/kg-day	5.00E-04	mg/kg-day	2.76E-09	1.15E-09
	4,4- DDD	0.092	mg/kg	4.23E-12	1.76E-12	mg/kg-day	5.00E-04	mg/kg-day	8.45E-09	3.52E-09
	4,4- DDE	0.018	mg/kg	8.27E-13	3.45E-13	mg/kg-day	5.00E-04	mg/kg-day	1.65E-09	6.89E-10
	4,4- DDT	0.012	mg/kg	5.51E-13	2.30E-13	mg/kg-day	5.00E-04	mg/kg-day	1.10E-09	4.59E-10
	DIELDRIN	0.0029	mg/kg	1.33E-13	5.55E-14	mg/kg-day	5.00E-05	mg/kg-day	2.67E-09	1.11E-09
	ENDOSULFAN I	0.004	mg/kg	1.84E-13	7.66E-14	mg/kg-day	6.00E-03	mg/kg-day	3.06E-11	1.28E-11
	ENDOSULFAN SULFATE	0.003	mg/kg	1.38E-13	5.74E-14	mg/kg-day	6.00E-03	mg/kg-day	2.30E-11	9.57E-12
	ENDRIN	0.02	mg/kg	9.19E-13	3.83E-13	mg/kg-day	3.00E-04	mg/kg-day	3.06E-09	1.28E-09
	ENDRIN ALDEHYDE	0.006	mg/kg	2.76E-13	1.15E-13	mg/kg-day	3.00E-04	mg/kg-day	9.19E-10	3.83E-10
	ENDRIN KETONE	0.0023	mg/kg	1.06E-13	4.40E-14	mg/kg-day	3.00E-04	mg/kg-day	3.52E-10	1.47E-10
	GAMMA-CHLORDANE	0.0052	mg/kg	2.39E-13	9.96E-14	mg/kg-day	2.00E-04	mg/kg-day	1.19E-09	4.98E-10
	HEPTACHLOR	0.0002	mg/kg	9.19E-15	3.83E-15	mg/kg-day	5.00E-04	mg/kg-day	1.84E-11	7.66E-12
	HEPTACHLOR EPOXIDE	0.0003	mg/kg	1.38E-14	5.74E-15	mg/kg-day	1.30E-05	mg/kg-day	1.06E-09	4.42E-10
	HEXACHLOROBENZENE	0.0008	mg/kg	3.68E-14	1.53E-14	mg/kg-day	8.00E-04	mg/kg-day	4.59E-11	1.91E-11
	METHOXYCHLOR	0.012	mg/kg	5.51E-13	2.30E-13	mg/kg-day	5.00E-03	mg/kg-day	1.10E-10	4.59E-11
	MIREX	0.004	mg/kg	1.84E-13	7.66E-14	mg/kg-day	2.00E-04	mg/kg-day	9.19E-10	3.83E-10
	TRANS-NONACHLOR	0.0024	mg/kg	1.10E-13	4.59E-14	mg/kg-day	2.00E-04	mg/kg-day	5.51E-10	2.30E-10
	PCBs									
	PCBs (TOTAL)	0.10	mg/kg	4.59E-12	1.91E-12	mg/kg-day	2.00E-05	mg/kg-day	2.30E-07	9.57E-08
	SVOCs									
	ACENAPHTHENE	0.057	mg/kg	1.93E-08	8.05E-09	mg/kg-day	6.00E-02	mg/kg-day	3.22E-07	1.34E-07
	ACENAPHTHYLENE	0.04	mg/kg	1.82E-12	7.58E-13	mg/kg-day	NA	mg/kg-day	NA	NA
	ANTHRACENE	0.0658	mg/kg	5.70E-09	2.38E-09	mg/kg-day	3.00E-01	mg/kg-day	1.90E-08	7.92E-09
	BENZO(A)ANTHRACENE	0.097	mg/kg	4.46E-12	1.86E-12	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(A)PYRENE	0.093	mg/kg	4.27E-12	1.78E-12	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(B)FLUORANTHENE	0.083	mg/kg	3.81E-12	1.59E-12	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(G,H,I)PERYLENE	0.084	mg/kg	3.86E-12	1.61E-12	mg/kg-day	4.00E-02	mg/kg-day	9.65E-11	4.02E-11

Table C2-3b
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil (0 to 2 feet)
Exposure Point:	Surface Soil (0 to 2 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
INHALATION OF PARTICULATES AND VAPORS (CONTINUED)	*BENZO(K)FLUORANTHENE*	0.07	mg/kg	3.08E-12	1.28E-12	mg/kg-day	NA	mg/kg-day	NA	NA
	BIS(2-ETHYLHEXYL)PHTHAL	0.12	mg/kg	5.51E-12	2.30E-12	mg/kg-day	2.00E-02	mg/kg-day	2.76E-10	1.15E-10
	BUTYLBENZYLPHTHALATE	0.025	mg/kg	1.15E-12	4.79E-13	mg/kg-day	2.00E-01	mg/kg-day	5.74E-12	2.39E-12
	CARBAZOLE	0.14	mg/kg	6.48E-12	2.70E-12	mg/kg-day	NA	mg/kg-day	NA	NA
	4- CHLOROANILINE	0.003	mg/kg	1.38E-13	5.74E-14	mg/kg-day	4.00E-03	mg/kg-day	3.45E-11	1.44E-11
	2- CHLOROPHENOL	0.043	mg/kg	1.99E-12	8.29E-13	mg/kg-day	5.00E-03	mg/kg-day	3.98E-10	1.66E-10
	CHRYSENE	0.086	mg/kg	1.93E-09	8.05E-10	mg/kg-day	NA	mg/kg-day	NA	NA
	DIBENZOFURAN	0.079	mg/kg	3.63E-12	1.51E-12	mg/kg-day	2.00E-03	mg/kg-day	1.81E-09	7.55E-10
	3,3- DICHLOROBENZIDINE	0.012	mg/kg	5.51E-13	2.30E-13	mg/kg-day	NA	mg/kg-day	NA	NA
	FLUORANTHENE	0.083	mg/kg	3.81E-12	1.59E-12	mg/kg-day	4.00E-02	mg/kg-day	9.53E-11	3.97E-11
	FLUORENE	0.054	mg/kg	9.10E-09	3.79E-09	mg/kg-day	4.00E-02	mg/kg-day	2.27E-07	9.48E-08
	INDENO(1,2,3-CD)PYRENE	0.10	mg/kg	4.59E-12	1.91E-12	mg/kg-day	NA	mg/kg-day	NA	NA
	2- METHYLNAPHTHALENE	0.052	mg/kg	2.40E-12	1.00E-12	mg/kg-day	NA	mg/kg-day	NA	NA
	4- METHYLPHENOL	0.067	mg/kg	3.07E-12	1.28E-12	mg/kg-day	NA	mg/kg-day	NA	NA
	NAPHTHALENE	0.088	mg/kg	1.24E-07	5.17E-08	mg/kg-day	8.57E-04	mg/kg-day	1.45E-04	6.04E-05
	PENTACHLOROPHENOL	0.048	mg/kg	2.22E-12	9.27E-13	mg/kg-day	3.00E-02	mg/kg-day	7.41E-11	3.09E-11
	PHENANTHRENE	0.094	mg/kg	4.32E-12	1.80E-12	mg/kg-day	3.00E-01	mg/kg-day	1.44E-11	6.00E-12
	PHENOL	0.14	mg/kg	6.43E-12	2.68E-12	mg/kg-day	5.71E-02	mg/kg-day	1.13E-10	4.69E-11
	PYRENE	0.077	mg/kg	1.23E-09	5.12E-10	mg/kg-day	3.00E-02	mg/kg-day	4.10E-08	1.71E-08
	TPH									
	TPH AS DIESEL	23	mg/kg	1.06E-09	4.40E-10	mg/kg-day	NA	mg/kg-day	NA	NA
	TPH AS GASOLINE	0.7	mg/kg	3.35E-11	1.40E-11	mg/kg-day	NA	mg/kg-day	NA	NA
	TPH AS MOTOR OIL	226	mg/kg	1.04E-08	4.33E-09	mg/kg-day	NA	mg/kg-day	NA	NA
	VOCs									
	ACETONE	0.10	mg/kg	4.67E-07	1.94E-07	mg/kg-day	9.00E-01	mg/kg-day	5.18E-07	2.16E-07
	CARBON DISULFIDE	0.007	mg/kg	3.54E-07	1.47E-07	mg/kg-day	2.00E-01	mg/kg-day	1.77E-06	7.37E-07
	CHLOROBENZENE	0.005	mg/kg	4.81E-08	2.01E-08	mg/kg-day	5.71E-03	mg/kg-day	8.43E-06	3.51E-06
	ETHYLBENZENE	0.018	mg/kg	2.02E-07	8.42E-08	mg/kg-day	2.86E-01	mg/kg-day	7.07E-07	2.95E-07
	TOLUENE	0.03	mg/kg	4.55E-07	1.90E-07	mg/kg-day	8.57E-02	mg/kg-day	5.31E-06	2.21E-06
	TRICHLOROETHENE	0.007	mg/kg	1.29E-07	5.36E-08	mg/kg-day	1.00E-02	mg/kg-day	1.29E-05	5.36E-06

Table C2-3b
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil (0 to 2 feet)
Exposure Point:	Surface Soil (0 to 2 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
	XYLENE (TOTAL)	0.15	mg/kg	1.49E-06	6.21E-07	mg/kg-day	2.86E-02	mg/kg-day	5.21E-05	2.17E-05

Notes:
The HQ for chemicals that are italicized and underlined have been modified for post remediation residual risk.
CTE = Central Tendency Exposure
EPC = Exposure point concentration
HQ = Hazard Quotient
mg/kg = milligrams per kilogram
mg/kg-day = milligrams per kilogram per day
NA = Not Applicable
PCBs = Polychlorinated Biphenyls
RfD = Reference Dose
RME = Reasonable Maximum Exposure
SVOCs = Semivolatile Organic Compounds
TPH = Total Petroleum Hydrocarbons
VOCs = Volatile Organic Compounds

Table C2-3c
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil (0 to 2 feet)
Exposure Point:	Surface Soil (0 to 2 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INGESTION	**INORGANICS**									
	ALUMINUM	26,789	mg/kg	7.11E-03	2.96E-03	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ANTIMONY	2.6	mg/kg	6.90E-07	2.88E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ARSENIC	22.0	mg/kg	5.84E-06	2.43E-06	mg/kg-day	9.45E+00	$(mg/kg\text{-}day)^{-1}$	5.52E-05	2.30E-05
	BARIUM	90.0	mg/kg	2.39E-05	9.95E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BERYLLIUM	0.4	mg/kg	1.17E-07	4.87E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CADMIUM	2.6	mg/kg	6.90E-07	2.88E-07	mg/kg-day	3.80E-01	$(mg/kg\text{-}day)^{-1}$	2.62E-07	1.09E-07
	CHROMIUM	113	mg/kg	3.00E-05	1.25E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	COBALT	21	mg/kg	5.57E-06	2.32E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	COPPER	126	mg/kg	3.34E-05	1.39E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	LEAD	89	mg/kg	2.36E-05	9.84E-06	mg/kg-day	8.50E-03	$(mg/kg\text{-}day)^{-1}$	2.01E-07	8.37E-08
	MANGANESE	934	mg/kg	2.48E-04	1.03E-04	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MERCURY	1.2	mg/kg	3.11E-07	1.29E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MOLYBDENUM	4.9	mg/kg	1.30E-06	5.42E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	NICKEL	107	mg/kg	2.84E-05	1.18E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	SELENIUM	1.1	mg/kg	2.92E-07	1.22E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	SILVER	2.3	mg/kg	6.10E-07	2.54E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	THALLIUM	0.29	mg/kg	7.70E-08	3.21E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TIN	20.0	mg/kg	5.31E-06	2.21E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	VANADIUM	102	mg/kg	2.71E-05	1.13E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ZINC	225	mg/kg	5.97E-05	2.49E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PESTICIDES									
	ALPHA-CHLORDANE	0.0048	mg/kg	1.27E-09	5.31E-10	mg/kg-day	1.30E+00	$(mg/kg\text{-}day)^{-1}$	1.66E-09	6.90E-10
	BETA BHC	0.001	mg/kg	2.65E-10	1.11E-10	mg/kg-day	1.80E+00	$(mg/kg\text{-}day)^{-1}$	4.78E-10	1.99E-10

Table C2-3c
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil (0 to 2 feet)
Exposure Point:	Surface Soil (0 to 2 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INGESTION (CONTINUED)	DELTA BHC	0.002	mg/kg	5.31E-10	2.21E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	2,4- DDD	0.03	mg/kg	7.96E-09	3.32E-09	mg/kg-day	2.40E-01	$(mg/kg\text{-}day)^{-1}$	1.91E-09	7.96E-10
	4,4- DDD	0.092	mg/kg	2.44E-08	1.02E-08	mg/kg-day	2.40E-01	$(mg/kg\text{-}day)^{-1}$	5.86E-09	2.44E-09
	4,4- DDE	0.018	mg/kg	4.78E-09	1.99E-09	mg/kg-day	3.40E-01	$(mg/kg\text{-}day)^{-1}$	1.62E-09	6.77E-10
	4,4- DDT	0.012	mg/kg	3.18E-09	1.33E-09	mg/kg-day	3.40E-01	$(mg/kg\text{-}day)^{-1}$	1.08E-09	4.51E-10
	DIELDRIN	0.0029	mg/kg	7.70E-10	3.21E-10	mg/kg-day	1.60E+01	$(mg/kg\text{-}day)^{-1}$	1.23E-08	5.13E-09
	ENDOSULFAN I	0.004	mg/kg	1.06E-09	4.42E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDOSULFAN SULFATE	0.003	mg/kg	7.96E-10	3.32E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN	0.02	mg/kg	5.31E-09	2.21E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN ALDEHYDE	0.006	mg/kg	1.59E-09	6.64E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN KETONE	0.0023	mg/kg	6.10E-10	2.54E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	GAMMA-CHLORDANE	0.0052	mg/kg	1.38E-09	5.75E-10	mg/kg-day	1.30E+00	$(mg/kg\text{-}day)^{-1}$	1.79E-09	7.48E-10
	HEPTACHLOR	0.0002	mg/kg	5.31E-11	2.21E-11	mg/kg-day	4.50E+00	$(mg/kg\text{-}day)^{-1}$	2.39E-10	9.95E-11
	HEPTACHLOR EPOXIDE	0.0003	mg/kg	7.96E-11	3.32E-11	mg/kg-day	9.10E+00	$(mg/kg\text{-}day)^{-1}$	7.25E-10	3.02E-10
	HEXACHLOROBENZENE	0.0008	mg/kg	2.12E-10	8.85E-11	mg/kg-day	1.80E+00	$(mg/kg\text{-}day)^{-1}$	3.82E-10	1.59E-10
	METHOXYCHLOR	0.012	mg/kg	3.18E-09	1.33E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MIREX	0.004	mg/kg	1.06E-09	4.42E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TRANS-NONACHLOR	0.0024	mg/kg	6.37E-10	2.65E-10	mg/kg-day	1.30E+00	$(mg/kg\text{-}day)^{-1}$	8.28E-10	3.45E-10
	PCBs									
	PCBs (TOTAL)	0.10	mg/kg	2.65E-08	1.11E-08	mg/kg-day	5.00E+00	$(mg/kg\text{-}day)^{-1}$	1.33E-07	5.53E-08
	SVOCs									
	ACENAPHTHENE	0.057	mg/kg	1.52E-08	6.34E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ACENAPHTHYLENE	0.04	mg/kg	1.05E-08	4.38E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ANTHRACENE	0.0658	mg/kg	1.75E-08	7.28E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

Table C2-3c
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil (0 to 2 feet)
Exposure Point:	Surface Soil (0 to 2 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INGESTION (CONTINUED)	*BENZO(A)ANTHRACENE*	0.097	mg/kg	2.57E-08	1.07E-08	mg/kg-day	1.20E+00	$(mg/kg\text{-}day)^{-1}$	3.09E-08	1.29E-08
	BENZO(A)PYRENE	0.093	mg/kg	2.47E-08	1.03E-08	mg/kg-day	1.20E+01	$(mg/kg\text{-}day)^{-1}$	2.96E-07	1.23E-07
	BENZO(B)FLUORANTHENE	0.083	mg/kg	2.20E-08	9.18E-09	mg/kg-day	1.20E+00	$(mg/kg\text{-}day)^{-1}$	2.64E-08	1.10E-08
	BENZO(G,H,I)PERYLENE	0.084	mg/kg	2.23E-08	9.29E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BENZO(K)FLUORANTHENE	0.07	mg/kg	1.78E-08	7.41E-09	mg/kg-day	1.20E+00	$(mg/kg\text{-}day)^{-1}$	2.13E-08	8.89E-09
	BIS(2-ETHYLHEXYL)PHTHALATE	0.12	mg/kg	3.18E-08	1.33E-08	mg/kg-day	1.40E-02	$(mg/kg\text{-}day)^{-1}$	4.46E-10	1.86E-10
	BUTYLBENZYLPHTHALATE	0.025	mg/kg	6.64E-09	2.76E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CARBAZOLE	0.14	mg/kg	3.74E-08	1.56E-08	mg/kg-day	2.00E-02	$(mg/kg\text{-}day)^{-1}$	7.48E-10	3.12E-10
	4- CHLOROANILINE	0.003	mg/kg	7.96E-10	3.32E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	2- CHLOROPHENOL	0.043	mg/kg	1.15E-08	4.79E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CHRYSENE	0.086	mg/kg	2.28E-08	9.51E-09	mg/kg-day	1.20E-01	$(mg/kg\text{-}day)^{-1}$	2.74E-09	1.14E-09
	DIBENZOFURAN	0.079	mg/kg	2.09E-08	8.73E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	3,3- DICHLOROBENZIDINE	0.012	mg/kg	3.18E-09	1.33E-09	mg/kg-day	4.50E-01	$(mg/kg\text{-}day)^{-1}$	1.43E-09	5.97E-10
	FLUORANTHENE	0.083	mg/kg	2.20E-08	9.18E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	FLUORENE	0.054	mg/kg	1.43E-08	5.97E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	INDENO(1,2,3-CD)PYRENE	0.10	mg/kg	2.65E-08	1.11E-08	mg/kg-day	1.20E+00	$(mg/kg\text{-}day)^{-1}$	3.18E-08	1.33E-08
	2- METHYLNAPHTHALENE	0.052	mg/kg	1.39E-08	5.78E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	4- METHYLPHENOL	0.067	mg/kg	1.77E-08	7.39E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	NAPHTHALENE	0.088	mg/kg	2.34E-08	9.73E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PENTACHLOROPHENOL	0.048	mg/kg	1.28E-08	5.35E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PHENANTHRENE	0.094	mg/kg	2.49E-08	1.04E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PHENOL	0.14	mg/kg	3.72E-08	1.55E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PYRENE	0.077	mg/kg	2.04E-08	8.52E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

Table C2-3c
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil (0 to 2 feet)
Exposure Point:	Surface Soil (0 to 2 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INGESTION (CONTINUED)	**TPH**									
	TPH AS DIESEL	23	mg/kg	6.10E-06	2.54E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TPH AS GASOLINE	0.7	mg/kg	1.94E-07	8.07E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TPH AS MOTOR OIL	226	mg/kg	6.00E-05	2.50E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	VOCs									
	ACETONE	0.10	mg/kg	2.65E-08	1.11E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CARBON DISULFIDE	0.007	mg/kg	1.86E-09	7.74E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CHLOROBENZENE	0.005	mg/kg	1.33E-09	5.53E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ETHYLBENZENE	0.018	mg/kg	4.78E-09	1.99E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TOLUENE	0.03	mg/kg	7.96E-09	3.32E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TRICHLOROETHENE	0.007	mg/kg	1.86E-09	7.74E-10	mg/kg-day	4.10E-01	$(mg/kg\text{-}day)^{-1}$	7.62E-10	3.17E-10
	XYLENE (TOTAL)	0.15	mg/kg	3.98E-08	1.66E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
DERMAL CONTACT	**INORGANICS**									
	ALUMINUM	26,789	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ANTIMONY	2.6	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ARSENIC	22.0	mg/kg	8.04E-07	3.35E-07	mg/kg-day	9.45E+00	$(mg/kg\text{-}day)^{-1}$	7.60E-06	3.17E-06
	BARIUM	90.0	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BERYLLIUM	0.4	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CADMIUM	2.6	mg/kg	3.17E-09	1.32E-09	mg/kg-day	1.52E+01	$(mg/kg\text{-}day)^{-1}$	4.81E-08	2.01E-08
	CHROMIUM	113	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	COBALT	21	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	COPPER	126	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	LEAD	89	mg/kg	NA	NA	mg/kg-day	8.50E-03	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MANGANESE	934	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

Table C2-3c
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil (0 to 2 feet)
Exposure Point:	Surface Soil (0 to 2 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
DERMAL CONTACT (CONTINUED)	*MERCURY*	1.2	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MOLYBDENUM	4.9	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	NICKEL	107	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	SELENIUM	1.1	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	SILVER	2.3	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	THALLIUM	0.29	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TIN	20.0	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	VANADIUM	102	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ZINC	225	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PESTICIDES									
	ALPHA-CHLORDANE	0.0048	mg/kg	2.34E-10	9.75E-11	mg/kg-day	1.30E+00	$(mg/kg\text{-}day)^{-1}$	3.04E-10	1.27E-10
	BETA BHC	0.001	mg/kg	4.87E-11	2.03E-11	mg/kg-day	1.80E+00	$(mg/kg\text{-}day)^{-1}$	8.77E-11	3.65E-11
	DELTA BHC	0.002	mg/kg	9.75E-11	4.06E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	2,4- DDD	0.03	mg/kg	1.10E-09	4.57E-10	mg/kg-day	2.40E-01	$(mg/kg\text{-}day)^{-1}$	2.63E-10	1.10E-10
	4,4- DDD	0.092	mg/kg	3.36E-09	1.40E-09	mg/kg-day	2.40E-01	$(mg/kg\text{-}day)^{-1}$	8.07E-10	3.36E-10
	4,4- DDE	0.018	mg/kg	6.58E-10	2.74E-10	mg/kg-day	3.40E-01	$(mg/kg\text{-}day)^{-1}$	2.24E-10	9.32E-11
	4,4- DDT	0.012	mg/kg	4.39E-10	1.83E-10	mg/kg-day	3.40E-01	$(mg/kg\text{-}day)^{-1}$	1.49E-10	6.21E-11
	DIELDRIN	0.0029	mg/kg	3.53E-10	1.47E-10	mg/kg-day	1.60E+01	$(mg/kg\text{-}day)^{-1}$	5.65E-09	2.36E-09
	ENDOSULFAN I	0.004	mg/kg	4.87E-10	2.03E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDOSULFAN SULFATE	0.003	mg/kg	3.65E-10	1.52E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN	0.02	mg/kg	2.44E-09	1.02E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN ALDEHYDE	0.006	mg/kg	7.31E-10	3.05E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN KETONE	0.0023	mg/kg	2.80E-10	1.17E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	GAMMA-CHLORDANE	0.0052	mg/kg	2.53E-10	1.06E-10	mg/kg-day	1.30E+00	$(mg/kg\text{-}day)^{-1}$	3.29E-10	1.37E-10

Table C2-3c
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil (0 to 2 feet)
Exposure Point:	Surface Soil (0 to 2 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
DERMAL CONTACT (CONTINUED)	HEPTACHLOR	0.0002	mg/kg	2.44E-11	1.02E-11	mg/kg-day	4.50E+00	$(mg/kg\text{-}day)^{-1}$	1.10E-10	4.57E-11
	HEPTACHLOR EPOXIDE	0.0003	mg/kg	3.65E-11	1.52E-11	mg/kg-day	9.10E+00	$(mg/kg\text{-}day)^{-1}$	3.33E-10	1.39E-10
	HEXACHLOROBENZENE	0.0008	mg/kg	9.75E-11	4.06E-11	mg/kg-day	1.80E+00	$(mg/kg\text{-}day)^{-1}$	1.75E-10	7.31E-11
	METHOXYCHLOR	0.012	mg/kg	5.85E-10	2.44E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MIREX	0.004	mg/kg	4.87E-10	2.03E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TRANS-NONACHLOR	0.0024	mg/kg	1.17E-10	4.87E-11	mg/kg-day	1.30E+00	$(mg/kg\text{-}day)^{-1}$	1.52E-10	6.33E-11
	PCBs									
	PCBs (TOTAL)	0.10	mg/kg	1.71E-08	7.11E-09	mg/kg-day	5.00E+00	$(mg/kg\text{-}day)^{-1}$	8.53E-08	3.55E-08
	SVOCs									
	ACENAPHTHENE	0.057	mg/kg	9.07E-09	3.78E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ACENAPHTHYLENE	0.04	mg/kg	6.27E-09	2.61E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ANTHRACENE	0.0658	mg/kg	1.04E-08	4.34E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BENZO(A)ANTHRACENE	0.097	mg/kg	1.54E-08	6.40E-09	mg/kg-day	1.20E+00	$(mg/kg\text{-}day)^{-1}$	1.84E-08	7.68E-09
	BENZO(A)PYRENE	0.093	mg/kg	1.47E-08	6.14E-09	mg/kg-day	1.20E+01	$(mg/kg\text{-}day)^{-1}$	1.77E-07	7.36E-08
	BENZO(B)FLUORANTHENE	0.083	mg/kg	1.31E-08	5.48E-09	mg/kg-day	1.20E+00	$(mg/kg\text{-}day)^{-1}$	1.58E-08	6.57E-09
	BENZO(G,H,I)PERYLENE	0.084	mg/kg	1.33E-08	5.54E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BENZO(K)FLUORANTHENE	0.07	mg/kg	1.06E-08	4.42E-09	mg/kg-day	1.20E+00	$(mg/kg\text{-}day)^{-1}$	1.27E-08	5.31E-09
	BIS(2-ETHYLHEXYL)PHTHALATE	0.12	mg/kg	1.46E-08	6.09E-09	mg/kg-day	1.40E-02	$(mg/kg\text{-}day)^{-1}$	2.05E-10	8.53E-11
	BUTYLBENZYLPHTHALATE	0.025	mg/kg	3.05E-09	1.27E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CARBAZOLE	0.14	mg/kg	1.72E-08	7.16E-09	mg/kg-day	2.00E-02	$(mg/kg\text{-}day)^{-1}$	3.44E-10	1.43E-10
	4- CHLOROANILINE	0.003	mg/kg	3.65E-10	1.52E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	2- CHLOROPHENOL	0.043	mg/kg	5.27E-09	2.20E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CHRYSENE	0.086	mg/kg	1.36E-08	5.67E-09	mg/kg-day	1.20E-01	$(mg/kg\text{-}day)^{-1}$	1.63E-09	6.81E-10
	DIBENZOFURAN	0.079	mg/kg	9.61E-09	4.00E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

Table C2-3c
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil (0 to 2 feet)
Exposure Point:	Surface Soil (0 to 2 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
DERMAL CONTACT (CONTINUED)	3,3- DICHLOROBENZIDINE	0.012	mg/kg	1.46E-09	6.09E-10	mg/kg-day	4.50E-01	$(mg/kg\text{-}day)^{-1}$	6.58E-10	2.74E-10
	FLUORANTHENE	0.083	mg/kg	1.31E-08	5.48E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	FLUORENE	0.054	mg/kg	8.55E-09	3.56E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	INDENO(1,2,3-CD)PYRENE	0.10	mg/kg	1.58E-08	6.60E-09	mg/kg-day	1.20E+00	$(mg/kg\text{-}day)^{-1}$	1.90E-08	7.92E-09
	2- METHYLNAPHTHALENE	0.052	mg/kg	6.37E-09	2.65E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	4- METHYLPHENOL	0.067	mg/kg	8.14E-09	3.39E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	NAPHTHALENE	0.088	mg/kg	1.39E-08	5.81E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PENTACHLOROPHENOL	0.048	mg/kg	5.90E-09	2.46E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PHENANTHRENE	0.094	mg/kg	1.49E-08	6.20E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PHENOL	0.14	mg/kg	1.71E-08	7.11E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PYRENE	0.077	mg/kg	1.22E-08	5.08E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TPH									
	TPH AS DIESEL	23	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TPH AS GASOLINE	0.7	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TPH AS MOTOR OIL	226	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	VOCs									
	ACETONE	0.10	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CARBON DISULFIDE	0.007	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CHLOROBENZENE	0.005	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ETHYLBENZENE	0.018	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TOLUENE	0.03	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TRICHLOROETHENE	0.007	mg/kg	NA	NA	mg/kg-day	4.10E-01	$(mg/kg\text{-}day)^{-1}$	NA	NA
	XYLENE (TOTAL)	0.15	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

Table C2-3c
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil (0 to 2 feet)
Exposure Point:	Surface Soil (0 to 2 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INHALATION OF PARTICULATES AND VAPORS	**INORGANICS**									
	ALUMINUM	26,789	mg/kg	2.99E-07	1.25E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ANTIMONY	2.6	mg/kg	2.90E-11	1.21E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ARSENIC	22.0	mg/kg	2.46E-10	1.02E-10	mg/kg-day	1.20E+01	$(mg/kg\text{-}day)^{-1}$	2.95E-09	1.23E-09
	BARIUM	90.0	mg/kg	1.00E-09	4.18E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BERYLLIUM	0.4	mg/kg	4.91E-12	2.05E-12	mg/kg-day	8.40E+00	$(mg/kg\text{-}day)^{-1}$	4.12E-11	1.72E-11
	CADMIUM	2.6	mg/kg	2.90E-11	1.21E-11	mg/kg-day	1.50E+01	$(mg/kg\text{-}day)^{-1}$	4.35E-10	1.81E-10
	CHROMIUM	113	mg/kg	1.26E-09	5.25E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	COBALT	21	mg/kg	2.34E-10	9.76E-11	mg/kg-day	9.80E+00	$(mg/kg\text{-}day)^{-1}$	2.30E-09	9.57E-10
	COPPER	126	mg/kg	1.41E-09	5.86E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	LEAD	89	mg/kg	9.93E-10	4.14E-10	mg/kg-day	4.20E-02	$(mg/kg\text{-}day)^{-1}$	4.17E-11	1.74E-11
	MANGANESE	934	mg/kg	1.04E-08	4.34E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MERCURY	1.2	mg/kg	1.31E-11	5.44E-12	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MOLYBDENUM	4.9	mg/kg	5.47E-11	2.28E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	NICKEL	107	mg/kg	1.19E-09	4.98E-10	mg/kg-day	9.10E-01	$(mg/kg\text{-}day)^{-1}$	1.09E-09	4.53E-10
	SELENIUM	1.1	mg/kg	1.23E-11	5.11E-12	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	SILVER	2.3	mg/kg	2.57E-11	1.07E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	THALLIUM	0.29	mg/kg	3.24E-12	1.35E-12	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TIN	20.0	mg/kg	2.23E-10	9.30E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	VANADIUM	102	mg/kg	1.14E-09	4.74E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ZINC	225	mg/kg	2.51E-09	1.05E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PESTICIDES									
	ALPHA-CHLORDANE	0.0048	mg/kg	5.36E-14	2.23E-14	mg/kg-day	3.50E-01	$(mg/kg\text{-}day)^{-1}$	1.87E-14	7.81E-15
	BETA BHC	0.001	mg/kg	1.12E-14	4.65E-15	mg/kg-day	1.86E+00	$(mg/kg\text{-}day)^{-1}$	2.08E-14	8.65E-15

Table C2-3c
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil (0 to 2 feet)
Exposure Point:	Surface Soil (0 to 2 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INHALATION OF PARTICULATES AND VAPORS (CONTINUED)	DELTA BHC	0.002	mg/kg	2.23E-14	9.30E-15	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	2,4- DDD	0.03	mg/kg	3.35E-13	1.39E-13	mg/kg-day	2.40E-01	$(mg/kg\text{-}day)^{-1}$	8.03E-14	3.35E-14
	4,4- DDD	0.092	mg/kg	1.03E-12	4.28E-13	mg/kg-day	2.40E-01	$(mg/kg\text{-}day)^{-1}$	2.46E-13	1.03E-13
	4,4- DDE	0.018	mg/kg	2.01E-13	8.37E-14	mg/kg-day	3.40E-01	$(mg/kg\text{-}day)^{-1}$	6.83E-14	2.85E-14
	4,4- DDT	0.012	mg/kg	1.34E-13	5.58E-14	mg/kg-day	3.40E-01	$(mg/kg\text{-}day)^{-1}$	4.55E-14	1.90E-14
	DIELDRIN	0.0029	mg/kg	3.24E-14	1.35E-14	mg/kg-day	1.60E+01	$(mg/kg\text{-}day)^{-1}$	5.18E-13	2.16E-13
	ENDOSULFAN I	0.004	mg/kg	4.46E-14	1.86E-14	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDOSULFAN SULFATE	0.003	mg/kg	3.35E-14	1.39E-14	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN	0.02	mg/kg	2.23E-13	9.30E-14	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN ALDEHYDE	0.006	mg/kg	6.70E-14	2.79E-14	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN KETONE	0.0023	mg/kg	2.57E-14	1.07E-14	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	GAMMA-CHLORDANE	0.0052	mg/kg	5.80E-14	2.42E-14	mg/kg-day	3.50E-01	$(mg/kg\text{-}day)^{-1}$	2.03E-14	8.46E-15
	HEPTACHLOR	0.0002	mg/kg	2.23E-15	9.30E-16	mg/kg-day	4.50E+00	$(mg/kg\text{-}day)^{-1}$	1.00E-14	4.18E-15
	HEPTACHLOR EPOXIDE	0.0003	mg/kg	3.35E-15	1.39E-15	mg/kg-day	9.10E+00	$(mg/kg\text{-}day)^{-1}$	3.05E-14	1.27E-14
	HEXACHLOROBENZENE	0.0008	mg/kg	8.93E-15	3.72E-15	mg/kg-day	1.80E+00	$(mg/kg\text{-}day)^{-1}$	1.61E-14	6.70E-15
	METHOXYCHLOR	0.012	mg/kg	1.34E-13	5.58E-14	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MIREX	0.004	mg/kg	4.46E-14	1.86E-14	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TRANS-NONACHLOR	0.0024	mg/kg	2.68E-14	1.12E-14	mg/kg-day	3.50E-01	$(mg/kg\text{-}day)^{-1}$	9.37E-15	3.91E-15
	PCBs									
	PCBs (TOTAL)	0.10	mg/kg	1.12E-12	4.65E-13	mg/kg-day	2.00E+00	$(mg/kg\text{-}day)^{-1}$	2.23E-12	9.30E-13
	SVOCs									
	ACENAPHTHENE	0.057	mg/kg	4.69E-09	1.95E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ACENAPHTHYLENE	0.04	mg/kg	4.42E-13	1.84E-13	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ANTHRACENE	0.0658	mg/kg	1.38E-09	5.77E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

Table C2-3c
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil (0 to 2 feet)
Exposure Point:	Surface Soil (0 to 2 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INHALATION OF PARTICULATES AND VAPORS (CONTINUED)	*BENZO(A)ANTHRACENE*	0.097	mg/kg	1.08E-12	4.51E-13	mg/kg-day	3.90E-01	$(mg/kg\text{-}day)^{-1}$	4.22E-13	1.76E-13
	BENZO(A)PYRENE	0.093	mg/kg	1.04E-12	4.32E-13	mg/kg-day	3.90E+00	$(mg/kg\text{-}day)^{-1}$	4.05E-12	1.69E-12
	BENZO(B)FLUORANTHENE	0.083	mg/kg	9.26E-13	3.86E-13	mg/kg-day	3.90E-01	$(mg/kg\text{-}day)^{-1}$	3.61E-13	1.51E-13
	BENZO(G,H,I)PERYLENE	0.084	mg/kg	9.37E-13	3.91E-13	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BENZO(K)FLUORANTHENE	0.07	mg/kg	7.48E-13	3.12E-13	mg/kg-day	3.90E-01	$(mg/kg\text{-}day)^{-1}$	2.92E-13	1.21E-13
	BIS(2-ETHYLHEXYL)PHTHALATE	0.12	mg/kg	1.34E-12	5.58E-13	mg/kg-day	1.40E-02	$(mg/kg\text{-}day)^{-1}$	1.87E-14	7.81E-15
	BUTYLBENZYLPHTHALATE	0.025	mg/kg	2.79E-13	1.16E-13	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CARBAZOLE	0.14	mg/kg	1.57E-12	6.56E-13	mg/kg-day	2.00E-02	$(mg/kg\text{-}day)^{-1}$	3.15E-14	1.31E-14
	4- CHLOROANILINE	0.003	mg/kg	3.35E-14	1.39E-14	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	2- CHLOROPHENOL	0.043	mg/kg	4.83E-13	2.01E-13	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CHRYSENE	0.086	mg/kg	4.69E-10	1.95E-10	mg/kg-day	3.90E-02	$(mg/kg\text{-}day)^{-1}$	1.83E-11	7.62E-12
	DIBENZOFURAN	0.079	mg/kg	8.80E-13	3.67E-13	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	3,3- DICHLOROBENZIDINE	0.012	mg/kg	1.34E-13	5.58E-14	mg/kg-day	4.50E-01	$(mg/kg\text{-}day)^{-1}$	6.03E-14	2.51E-14
	FLUORANTHENE	0.083	mg/kg	9.26E-13	3.86E-13	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	FLUORENE	0.054	mg/kg	2.21E-09	9.21E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	INDENO(1,2,3-CD)PYRENE	0.10	mg/kg	1.12E-12	4.65E-13	mg/kg-day	3.90E-01	$(mg/kg\text{-}day)^{-1}$	4.35E-13	1.81E-13
	2- METHYLNAPHTHALENE	0.052	mg/kg	5.84E-13	2.43E-13	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	4- METHYLPHENOL	0.067	mg/kg	7.45E-13	3.11E-13	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	NAPHTHALENE	0.088	mg/kg	3.01E-08	1.26E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PENTACHLOROPHENOL	0.048	mg/kg	5.40E-13	2.25E-13	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PHENANTHRENE	0.094	mg/kg	1.05E-12	4.37E-13	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PHENOL	0.14	mg/kg	1.56E-12	6.51E-13	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PYRENE	0.077	mg/kg	2.98E-10	1.24E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

Table C2-3c
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil (0 to 2 feet)
Exposure Point:	Surface Soil (0 to 2 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INHALATION OF PARTICULATES AND VAPORS (CONTINUED)	**TPH**									
	TPH AS DIESEL	23	mg/kg	2.57E-10	1.07E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TPH AS GASOLINE	0.7	mg/kg	8.15E-12	3.39E-12	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TPH AS MOTOR OIL	226	mg/kg	2.52E-09	1.05E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	VOCs									
	ACETONE	0.10	mg/kg	1.13E-07	4.72E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CARBON DISULFIDE	0.007	mg/kg	8.59E-08	3.58E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CHLOROBENZENE	0.005	mg/kg	1.17E-08	4.87E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ETHYLBENZENE	0.018	mg/kg	4.91E-08	2.05E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TOLUENE	0.03	mg/kg	1.10E-07	4.60E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TRICHLOROETHENE	0.007	mg/kg	3.12E-08	1.30E-08	mg/kg-day	7.00E-03	$(mg/kg\text{-}day)^{-1}$	2.19E-10	9.11E-11
	XYLENE (TOTAL)	0.15	mg/kg	3.62E-07	1.51E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

Notes:
The cancer risk for chemicals that are italicized and underlined have been modified for post remediation residual risk.
CTE = Central Tendency Exposure
EPC = Exposure point concentration
HQ = Hazard Quotient
mg/kg = milligrams per kilogram
mg/kg-day = milligrams per kilogram per day
NA = Not Applicable
PCBs = Polychlorinated Biphenyls
RME = Reasonable Maximum Exposure
SVOCs = Semivolatile Organic Compounds
TPH = Total Petroleum Hydrocarbons
VOCs = Volatile Organic Compounds

Table C2-3d
Summary of Current Receptor RME Cancer Risks and Noncarcinogenic Hazard Indices
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Receptor Population:	Recreational User
Receptor Age:	Child (1 to 17 years)

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Primary Target Organ	Non-Carconogenic Hazard Index			
				Ingestion	Dermal	Inhalation (Outdoor)	Exposure Routes Total			Ingestion HQ	Dermal HQ	Inhalation (Outdoor) HQ	Total HI
Soil (0 to 2 feet)	Soil	On-Site Soil	**INORGANICS (mg/kg)**					**INORGANICS (mg/kg)**					
			ALUMINUM	NA	NA	NA	NA	ALUMINUM	Body Weight	2.93E-02	NA	8.79E-04	3.02E-02
			ANTIMONY	NA	NA	NA	NA	ANTIMONY	Blood; Whole Body	7.10E-03	NA	NA	7.10E-03
			ARSENIC	5.52E-05	7.60E-06	2.95E-09	6.28E-05	ARSENIC	Cardiovascular System; Fetal; Nervous System; Skin	8.01E-02	1.10E-02	1.18E-04	9.13E-02
			BARIUM	NA	NA	NA	NA	BARIUM	Cardiovascular System; Fetal; Kidney; NOEL	1.41E-03	NA	2.89E-05	1.43E-03
			BERYLLIUM	NA	NA	4.12E-11	4.12E-11	BERYLLIUM	GI System; Immune System; Respiratory	2.40E-04	NA	1.01E-05	2.51E-04
			CADMIUM	2.62E-07	4.81E-08	4.35E-10	3.11E-07	CADMIUM	Kidney; Respiratory	5.68E-03	1.04E-03	2.09E-05	6.75E-03
			CHROMIUM	NA	NA	NA	NA	CHROMIUM	NOEL	8.23E-05	NA	NA	8.23E-05
			COBALT	NA	NA	2.30E-09	2.30E-09	COBALT	Cardiovascular System; Respiratory	1.15E-03	NA	1.69E-04	1.32E-03
			COPPER	NA	NA	NA	NA	COPPER	GI System	3.44E-03	NA	NA	3.44E-03
			LEAD	2.01E-07	NA	4.17E-11	2.01E-07	LEAD	NA	NA	NA	NA	NA
			MANGANESE	NA	NA	NA	NA	MANGANESE	Nervous System	7.29E-03	NA	3.00E-03	1.03E-02
			MERCURY	NA	NA	NA	NA	MERCURY	Nervous System	4.26E-03	NA	2.09E-06	4.26E-03
			MOLYBDENUM	NA	NA	NA	NA	MOLYBDENUM	Kidney	1.07E-03	NA	NA	1.07E-03
			NICKEL	NA	NA	1.09E-09	1.09E-09	NICKEL	Body Weight; Respiratory	5.85E-03	NA	3.44E-04	6.19E-03
			SELENIUM	NA	NA	NA	NA	SELENIUM	Cardiovascular System; Liver; Nervous System; Skin	2.40E-04	NA	8.85E-09	2.40E-04
			SILVER	NA	NA	NA	NA	SILVER	Skin	5.03E-04	NA	NA	5.03E-04
			THALLIUM	NA	NA	NA	NA	THALLIUM	Blood; Liver	4.80E-03	NA	NA	4.80E-03
			TIN	NA	NA	NA	NA	TIN	Kidney; Liver	3.64E-05	NA	NA	3.64E-05
			VANADIUM	NA	NA	NA	NA	VANADIUM	NOEL	1.59E-02	NA	NA	1.59E-02
			ZINC	NA	NA	NA	NA	ZINC	Blood	8.20E-04	NA	NA	8.20E-04
			PESTICIDES (mg/kg)					**PESTICIDES (mg/kg)**					
			ALPHA-CHLORDANE	1.66E-09	3.04E-10	1.87E-14	1.96E-09	ALPHA-CHLORDANE	Liver	1.05E-05	1.93E-06	1.10E-09	1.24E-05
			BETA BHC	4.78E-10	8.77E-11	2.08E-14	5.65E-10	BETA BHC	Liver	5.46E-06	1.00E-06	2.30E-10	6.47E-06
			DELTA BHC	NA	NA	NA	NA	DELTA BHC	NA	NA	NA	NA	NA
			2,4- DDD	1.91E-09	2.63E-10	8.03E-14	2.17E-09	2,4 DDD	Liver	6.56E-05	9.03E-06	2.76E-09	7.46E-05
			4,4- DDD	5.86E-09	8.07E-10	2.46E-13	6.67E-09	4,4- DDD	Liver	2.01E-04	2.77E-05	8.45E-09	2.29E-04
			4,4- DDE	1.62E-09	2.24E-10	6.83E-14	1.85E-09	4,4- DDE	Liver	3.93E-05	5.42E-06	1.65E-09	4.48E-05
			4,4- DDT	1.08E-09	1.49E-10	4.55E-14	1.23E-09	4,4- DDT	Liver	2.62E-05	3.61E-06	1.10E-09	2.98E-05
			DIELDRIN	1.23E-08	5.65E-09	5.18E-13	1.80E-08	DIELDRIN	Liver	6.34E-05	2.91E-05	2.67E-09	9.25E-05

Table C2-3d
Summary of Current Receptor RME Cancer Risks and Noncarcinogenic Hazard Indices
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Receptor Population:	Recreational User
Receptor Age:	Child (1 to 17 years)

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Primary Target Organ	Non-Carconogenic Hazard Index			
				Ingestion	Dermal	Inhalation (Outdoor)	Exposure Routes Total			Ingestion HQ	Dermal HQ	Inhalation (Outdoor) HQ	Total HI
			ENDOSULFAN I	NA	NA	NA	NA	ENDOSULFAN I	Body Weight; Kidney; Nervous System	7.29E-07	3.34E-07	3.06E-11	1.06E-06
			ENDOSULFAN SULFATE	NA	NA	NA	NA	ENDOSULFAN SULFATE	Body Weight; Kidney; Nervous System	5.46E-07	2.51E-07	2.30E-11	7.97E-07
			ENDRIN	NA	NA	NA	NA	ENDRIN	Liver; Kidney; Nervous System	7.29E-05	3.34E-05	3.06E-09	1.06E-04
			ENDRIN ALDEHYDE	NA	NA	NA	NA	ENDRIN ALDEHYDE	Liver; Kidney; Nervous System	2.19E-05	1.00E-05	9.19E-10	3.19E-05
			ENDRIN KETONE	NA	NA	NA	NA	ENDRIN KETONE	Liver; Kidney; Nervous System	8.38E-06	3.85E-06	3.52E-10	1.22E-05
			GAMMA-CHLORDANE	1.79E-09	3.29E-10	2.03E-14	2.12E-09	GAMMA-CHLORDANE	Liver	1.14E-05	2.09E-06	1.19E-09	1.35E-05
			HEPTACHLOR	2.39E-10	1.10E-10	1.00E-14	3.49E-10	HEPTACHLOR	Liver	4.37E-07	2.01E-07	1.84E-11	6.38E-07
			HEPTACHLOR EPOXIDE	7.25E-10	3.33E-10	3.05E-14	1.06E-09	HEPTACHLOR EPOXIDE	Liver	2.52E-05	1.16E-05	1.06E-09	3.68E-05
			HEXACHLOROBENZENE	3.82E-10	1.75E-10	1.61E-14	5.58E-10	HEXACHLOROBENZENE	Liver	1.09E-06	5.02E-07	4.59E-11	1.59E-06
			METHOXYCHLOR	NA	NA	NA	NA	METHOXYCHLOR	Fetal	2.62E-06	4.82E-07	1.10E-10	3.10E-06
			MIREX	NA	NA	NA	NA	MIREX	Liver	2.19E-05	1.00E-05	9.19E-10	3.19E-05
			TRANS-NONACHLOR	8.28E-10	1.52E-10	9.37E-15	9.80E-10	TRANS-NONACHLOR	Liver	5.25E-06	9.63E-07	5.51E-10	6.21E-06
			PCBs (mg/kg)					**PCBs (mg/kg)**					
			PCBs (TOTAL)	1.33E-07	8.53E-08	2.23E-12	2.18E-07	PCBs (TOTAL)	Immune System	5.46E-03	3.51E-03	2.30E-07	8.98E-03
			SVOCs (mg/kg)					**SVOCs (mg/kg)**					
			ACENAPHTHENE	NA	NA	NA	NA	ACENAPHTHENE	Liver	1.04E-06	6.23E-07	3.22E-07	1.99E-06
			ACENAPHTHYLENE	NA	NA	NA	NA	ACENAPHTHYLENE	NA	NA	NA	NA	NA
			ANTHRACENE	NA	NA	NA	NA	ANTHRACENE	NOEL	2.40E-07	1.43E-07	1.90E-08	4.02E-07
			BENZO(A)ANTHRACENE	3.09E-08	1.84E-08	4.22E-13	4.93E-08	BENZO(A)ANTHRACENE	NA	NA	NA	NA	NA
			BENZO(A)PYRENE	2.96E-07	1.77E-07	4.05E-12	4.73E-07	BENZO(A)PYRENE	NA	NA	NA	NA	NA
			BENZO(B)FLUORANTHENE	2.64E-08	1.58E-08	3.61E-13	4.22E-08	BENZO(B)FLUORANTHENE	NA	NA	NA	NA	NA
			BENZO(G,H,I)PERYLENE	NA	NA	NA	NA	BENZO(G,H,I)PERYLENE	Kidney; Nervous System	2.29E-06	1.37E-06	9.65E-11	3.66E-06
			BENZO(K)FLUORANTHENE	2.13E-08	1.27E-08	2.92E-13	3.41E-08	BENZO(K)FLUORANTHENE	NA	NA	NA	NA	NA
			BIS(2-ETHYLHEXYL)PHTHALATE	4.46E-10	2.05E-10	1.87E-14	6.51E-10	BIS(2-ETHYLHEXYL)PHTHALATE	Liver	6.56E-06	3.01E-06	2.76E-10	9.57E-06
			BUTYLBENZYPHTHALATE	NA	NA	NA	NA	BUTYLBENZYPHTHALATE	Liver	1.37E-07	6.27E-08	5.74E-12	1.99E-07
			CABAZOLE	7.48E-10	3.44E-10	3.15E-14	1.09E-09	CABAZOLE	NA	NA	NA	NA	NA
			4- CHLOROANILINE	NA	NA	NA	NA	4- CHLOROANILINE	Spleen	8.20E-07	3.76E-07	3.45E-11	1.20E-06
			2- CHLOROPHENOL	NA	NA	NA	NA	2- CHLOROPHENOL	Reproductive	9.46E-06	4.34E-06	3.98E-10	1.38E-05
			CHRYSENE	2.74E-09	1.63E-09	1.83E-11	4.39E-09	CHRYSENE	NA	NA	NA	NA	NA
			DIBENZOFURAN	NA	NA	NA	NA	DIBENZOFURAN	NA	4.31E-05	1.98E-05	1.81E-09	6.29E-05
			3,3- DICHLOROBENZIDINE	1.43E-09	6.58E-10	6.03E-14	2.09E-09	3,3- DICHLOROBENZIDINE	NA	NA	NA	NA	NA
			FLUORANTHENE	NA	NA	NA	NA	FLUORANTHENE	Blood; Kidney; Liver	2.27E-06	1.35E-06	9.53E-11	3.62E-06

Table C2-3d
Summary of Current Receptor RME Cancer Risks and Noncarcinogenic Hazard Indices
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Receptor Population:	Recreational User
Receptor Age:	Child (1 to 17 years)

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Primary Target Organ	Non-Carconogenic Hazard Index			
				Ingestion	Dermal	Inhalation (Outdoor)	Exposure Routes Total			Ingestion HQ	Dermal HQ	Inhalation (Outdoor) HQ	Total HI
			FLUORENE	NA	NA	NA	NA	FLUORENE	Blood	1.48E-06	8.80E-07	2.27E-07	2.58E-06
			INDENO(1,2,3-CD)PYRENE	3.18E-08	1.90E-08	4.35E-13	5.09E-08	INDENO(1,2,3-CD)PYRENE	NA	NA	NA	NA	NA
			2- METHYLNAPHTHALENE	NA	NA	NA	NA	2- METHYLNAPHTHALENE	Body Weight; Respiratory	1.43E-05	6.56E-06	NA	2.08E-05
			4- METHYPHENOL	NA	NA	NA	NA	4- METHYLPHENOL	Nervous System; Respiratory	1.46E-05	6.70E-06	NA	2.13E-05
			NAPHTHALENE	NA	NA	NA	NA	NAPHTHALENE	Body Weight; Respiratory	4.81E-06	2.87E-06	1.45E-04	1.53E-04
			PENTACHLOROPHENOL	NA	NA	NA	NA	PENTACHLOROPHENOL	Liver; Kidney	1.76E-06	8.09E-07	7.41E-11	2.57E-06
			PHENANTHRENE	NA	NA	NA	NA	PHENANTHRENE	NOEL	3.42E-07	2.04E-07	1.44E-11	5.47E-07
			PHENOL	NA	NA	NA	NA	PHENOL	Cardiovascular System; Fetal; Kidney; Liver; Nervous System	2.55E-07	1.17E-07	1.13E-10	3.72E-07
			PYRENE	NA	NA	NA	NA	PYRENE	Kidney	2.80E-06	1.67E-06	4.10E-08	4.52E-06
			TPH (mg/kg)					**TPH (mg/kg)**					
			TPH AS DIESEL	NA	NA	NA	NA	TPH AS DIESEL	NA	NA	NA	NA	NA
			TPH AS GASOLINE	NA	NA	NA	NA	TPH AS GASOLINE	NA	NA	NA	NA	NA
			TPH AS MOTOR OIL	NA	NA	NA	NA	TPH AS MOTOR OIL	NA	NA	NA	NA	NA
			VOCs (mg/kg)					**VOCs (mg/kg)**					
			ACETONE	NA	NA	NA	NA	ACETONE	Kidney; Liver	1.21E-07	NA	5.18E-07	6.40E-07
			CARBON DISULFIDE	NA	NA	NA	NA	CARBON DISULFIDE	Fetal	7.65E-08	NA	1.77E-06	1.85E-06
			CHLOROBENZENE	NA	NA	NA	NA	CHLOROBENZENE	Kidney; Liver; Reproductive System	2.73E-07	NA	8.43E-06	8.70E-06
			ETHYLBENZENE	NA	NA	NA	NA	ETHYLBENZENE	Fetal; Kidney; Liver	1.97E-07	NA	7.07E-07	9.04E-07
			TOLUENE	NA	NA	NA	NA	TOLUENE	Fetal; Kidney; Liver; Nervous System; Respiratory	1.64E-07	NA	5.31E-06	5.47E-06
			TRICHLOROETHENE	7.62E-10	NA	2.19E-10	9.80E-10	TRICHLOROETHENE	Eyes; Nervous System	2.55E-05	NA	1.29E-05	3.84E-05
			XYLENE (TOTAL)	NA	NA	NA	NA	XYLENE (TOTAL)	Body Weight; Fetal; Nervous System; Respiratory	8.20E-07	NA	5.21E-05	5.30E-05
Groundwater	Shallow Groundwater	Vapors	**VOCs (ug/L)**					**VOCs (ug/L)**					
			ACETONE	NA	NA	NA	NA	ACETONE	Kidney; Liver	NA	NA	5.63E-04	5.63E-04
			BENZENE	NA	NA	9.57E-07	9.57E-07	BENZENE	Fetal; Immune System; Nervous System; Respiratory	NA	NA	4.60E-03	4.60E-03
			2- BUTANONE	NA	NA	NA	NA	2- BUTANONE	Fetal	NA	NA	3.82E-03	3.82E-03
			CARBON DISULFIDE	NA	NA	NA	NA	CARBON DISULFIDE	Fetal; Nervous System	NA	NA	3.55E-04	3.55E-04

Table C2-3d
Summary of Current Receptor RME Cancer Risks and Noncarcinogenic Hazard Indices
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Receptor Population:	Recreational User
Receptor Age:	Child (1 to 17 years)

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Primary Target Organ	Non-Carconogenic Hazard Index			
				Ingestion	Dermal	Inhalation (Outdoor)	Exposure Routes Total			Ingestion HQ	Dermal HQ	Inhalation (Outdoor) HQ	Total HI
			CHLOROBENZENE	NA	NA	NA	NA	CHLOROBENZENE	Kidney; Liver; Reproductive System	NA	NA	2.66E-03	2.66E-03
			CHLOROMETHANE	NA	NA	6.50E-08	6.50E-08	CHLOROMETHANE	NA	NA	NA	4.94E-04	4.94E-04
			CIS-1,2-DICHLOROETHENE	NA	NA	NA	NA	CIS-1,2-DICHLOROETHENE	Blood	NA	NA	6.98E-03	6.98E-03
			1,3- DICHLOROBENZENE			NA		1,3- DICHLOROBENZENE	NA	NA	NA	3.84E-04	3.84E-04
			1,2- DICHLOROETHENE (TOTAL)	NA	NA	NA	NA	1,2- DICHLOROETHENE (TOTAL)	Blood, Liver	NA	NA	3.28E-02	3.28E-02
			ETHYLBENZENE	NA	NA	NA	NA	ETHYLBENZENE	Fetal; Kidney; Liver	NA	NA	7.42E-05	7.42E-05
			TOLUENE	NA	NA	NA	NA	TOLUENE	Fetal; Kidney; Liver; Nervous System; Respiratory	NA	NA	2.12E-04	2.12E-04
			TRANS-1,2-DICHLOROETHENE	NA	NA	NA	NA	TRANS-1,2-DICHLOROETHENE	Blood; Liver	NA	NA	6.52E-04	6.52E-04
			1,2,4- TRIMETHYLBENZENE	NA	NA	NA	NA	1,2,4- TRIMETHYLBENZENE	NA	NA	NA	6.60E-03	6.60E-03
			1,3,5- TRIMETHYLBENZENE	NA	NA	NA	NA	1,3,5- TRIMETHYLBENZENE	NA	NA	NA	4.99E-03	4.99E-03
			VINYL CHLORIDE	NA	NA	9.07E-08	9.07E-08	VINYL CHLORIDE	GI System; Liver; Nervous System	NA	NA	8.48E-04	8.48E-04
			XYLENE (TOTAL)	NA	NA	NA	NA	XYLENE (TOTAL)	Body Weight; Fetal; Nervous System; Respiratory	NA	NA	1.49E-03	1.49E-03
Groundwater	Intermediate and Deep Groundwater	Vapors	**VOCs (ug/L)**					**VOCs (ug/L)**					
			ACETONE	NA	NA	NA	NA	ACETONE	Kidney; Liver	NA	NA	1.25E-04	1.25E-04
			BENZENE	NA	NA	1.40E-06	1.40E-06	BENZENE	Fetal; Immune System; Nervous System; Respiratory	NA	NA	6.73E-03	6.73E-03
			2- BUTANONE	NA	NA	NA	NA	2- BUTANONE	Fetal	NA	NA	5.83E-04	5.83E-04
			CARBON DISULFIDE	NA	NA	NA	NA	CARBON DISULFIDE	Fetal; Nervous System	NA	NA	5.61E-04	5.61E-04
			CHLOROBENZENE	NA	NA	NA	NA	CHLOROBENZENE	Kidney; Liver; Reproductive System	NA	NA	1.01E-02	1.01E-02
			4- METHYL-2-PENTANONE	NA	NA	NA	NA	4- METHYL-2-PENTANONE	Fetal; Kidney; Liver	NA	NA	2.12E-04	2.12E-04
Wetland Surface Water	Surface Water	Surface Water	**INORGANICS (ug/L)**					**INORGANICS (ug/L)**					
			ALUMINUM	NA	NA	NA	NA	ALUMINUM	Body Weight	2.34E-04	2.15E-05	NA	2.56E-04
			ANTIMONY	NA	NA	NA	NA	ANTIMONY	Blood; Whole Body	1.94E-04	1.18E-04	NA	3.12E-04
			ARSENIC	1.63E-05	1.50E-07	NA	1.65E-05	ARSENIC	Cardiovascular System; Fetal; Nervous System; Skin	2.37E-03	2.17E-04	NA	2.59E-03
			BARIUM	NA	NA	NA	NA	BARIUM	Cardiovascular System; Fetal; Kidney; NOEL	5.13E-05	6.72E-05	NA	1.18E-04
			CADMIUM	3.66E-08	6.71E-09	NA	4.33E-08	CADMIUM	Kidney; Respiratory	3.96E-05	7.27E-05	NA	1.12E-04
			CHROMIUM	NA	NA	NA	NA	CHROMIUM	NOEL	1.61E-07	1.14E-06	NA	1.30E-06

Table C2-3d
Summary of Current Receptor RME Cancer Risks and Noncarcinogenic Hazard Indices
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Receptor Population:	Recreational User
Receptor Age:	Child (1 to 17 years)

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Primary Target Organ	Non-Carconogenic Hazard Index			
				Ingestion	Dermal	Inhalation (Outdoor)	Exposure Routes Total			Ingestion HQ	Dermal HQ	Inhalation (Outdoor) HQ	Total HI
			COBALT	NA	NA	NA	NA	COBALT	Cardiovascular System; Respiratory	1.98E-05	7.27E-07	NA	2.05E-05
			COPPER	NA	NA	NA	NA	COPPER	GI System	3.75E-05	3.44E-06	NA	4.09E-05
			LEAD	2.07E-09	1.90E-12	NA	2.07E-09	LEAD	NA	NA	NA	NA	NA
			MANGANESE	NA	NA	NA	NA	MANGANESE	Nervous System	1.29E-03	2.95E-03	NA	4.23E-03
			MERCURY	NA	NA	NA	NA	MERCURY	Nervous System	3.79E-05	4.98E-05	NA	8.77E-05
			MOLYBDENUM	NA	NA	NA	NA	MOLYBDENUM	Kidney	5.46E-05	5.02E-06	NA	5.97E-05
			NICKEL	NA	NA	NA	NA	NICKEL	Body Weight; Respiratory	2.57E-04	1.18E-04	NA	3.75E-04
			SELENIUM	NA	NA	NA	NA	SELENIUM	Cardiovascular System; Liver; Nervous System; Skin	2.00E-04	1.84E-05	NA	2.19E-04
			SILVER	NA	NA	NA	NA	SILVER	Skin	1.55E-05	2.13E-05	NA	3.68E-05
			VANADIUM	NA	NA	NA	NA	VANADIUM	NOEL	1.01E-04	3.56E-04	NA	4.57E-04
			ZINC	NA	NA	NA	NA	ZINC	Blood	1.97E-06	1.09E-07	NA	2.08E-06
			PESTICIDES (ug/L)					**PESTICIDES (ug/L)**					
			ALPHA BHC	5.92E-09	NA	NA	5.92E-09	ALPHA BHC	Liver	7.74E-07	NA	NA	7.74E-07
			4,4- DDE	1.02E-10	8.40E-10	NA	9.41E-10	4,4- DDE	Liver	2.46E-07	2.03E-05	NA	2.06E-05
			4,4- DDT	3.20E-09	4.96E-08	NA	5.28E-08	4,4- DDT	Liver	7.74E-06	1.20E-03	NA	1.21E-03
			ENDOSULFAN SULFATE	NA	NA	NA	NA	ENDOSULFAN SULFATE	Body Weight; Kidney; Nervous System	4.86E-07	NA	NA	4.86E-07
			ENDRIN	NA	NA	NA	NA	ENDRIN	Liver; Kidney; Nervous System	2.12E-06	1.98E-05	NA	2.19E-05
			GAMMA-BHC	1.34E-09	NA	NA	1.34E-09	GAMMA-BHC	Kidney; Liver	1.67E-06	8.97E-06	NA	1.06E-05
			HEPTACHLOR	1.39E-09	8.86E-10	NA	2.28E-09	HEPTACHLOR	Liver	2.55E-07	1.62E-06	NA	1.88E-06
			PCBs (ug/L)					**PCBs (ug/L)**					
			PCBs (TOTAL)	8.29E-09	2.04E-07	NA	2.12E-07	PCBs (TOTAL)	Immune System	3.42E-05	8.39E-03	NA	8.43E-03
			SVOCs (ug/L)					**SVOCs (ug/L)**					
			BIS(2-ETHYLHEXYL)PHTHALATE	1.27E-08	2.63E-08	NA	3.90E-08	BIS(2-ETHYLHEXYL)PHTHALATE	Liver	1.87E-05	3.87E-04	NA	4.05E-04
			CHRYSENE	2.65E-09	4.51E-08	NA	4.78E-08	CHRYSENE	NA	NA	NA	NA	NA
			2,4 DIMETHYLPHENOL	NA	NA	NA	NA	2,4- DIMETHYLPHENOL	Blood; Nervous System	4.55E-07	9.17E-07	NA	1.37E-06
			DI-N-BUTYLPHTHALATE	NA	NA	NA	NA	DI-N-BUTYLPHTHALATE	Whole Body	2.37E-06	2.55E-05	NA	2.79E-05
			ISOPHORONE	NA	NA	NA	NA	ISOPHORONE	NOEL	2.28E-08	1.56E-08	NA	3.84E-08
			4- METHYLPHENOL	NA	NA	NA	NA	4- METHYLPHENOL	Nervous System; Respiratory	2.36E-04	3.02E-04	NA	5.38E-04
			TPH (mg/L)					**TPH (mg/L)**					
			TPH AS DIESEL	NA	NA	NA	NA	TPH AS DIESEL	NA	NA	NA	NA	NA

Table C2-3d
Summary of Current Receptor RME Cancer Risks and Noncarcinogenic Hazard Indices
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Receptor Population:	Recreational User
Receptor Age:	Child (1 to 17 years)

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk: Ingestion	Carcinogenic Risk: Dermal	Carcinogenic Risk: Inhalation (Outdoor)	Carcinogenic Risk: Exposure Routes Total	Chemical	Primary Target Organ	Non-Carconogenic Hazard Index: Ingestion HQ	Non-Carconogenic Hazard Index: Dermal HQ	Non-Carconogenic Hazard Index: Inhalation (Outdoor) HQ	Non-Carconogenic Hazard Index: Total HI
			TPH AS GASOLINE	NA	NA	NA	NA	TPH AS GASOLINE	NA	NA	NA	NA	NA
			TPH AS MOTOR OIL	NA	NA	NA	NA	TPH AS MOTOR OIL	NA	NA	NA	NA	NA

Cancer Risk Across Soil:	6.4E-05
Cancer Risk Across Groundwater:	2.5E-06
Cancer Risk Across Surface Water:	1.7E-05
Total Cancer Risk:	8.4E-05

HI Across Soil:	2.0E-01
HI Across Groundwater:	8.6E-02
HI Across Surface Water:	2.0E-02
Total HI:	3.0E-01
Total Blood HI:	5.3E-02
Total Body Weight HI:	3.8E-02
Total Cardiovascular System HI:	9.7E-02
Total Fetal/Reproductive System HI:	1.2E-01
Total GI System HI:	4.6E-03
Total Immune System HI:	2.9E-02
Total Kidney HI:	2.4E-02
Total Liver HI:	5.6E-02
Total Nervous System HI:	1.3E-01
Total NOEL HI:	1.8E-02
Total Respiratory HI:	2.9E-02
Total Skin HI:	9.5E-02
Total Whole Body HI:	7.4E-03

Notes:
EPC = Exposure point concentration
GI = Gastrointestinal
HQ = Hazard Quotient
HI = Hazard Index
mg/kg = milligrams per kilogram
mg/L = milligrams per liter
NA = Not Applicable
PCBs = Polychlorinated Biphenyls
RME = Reasonable Maximum Exposure
SVOCs = Semivolatile Organic Compounds
TPH = Total Petroleum Hydrocarbons
VOCs = Volatile Organic Compounds
ug/L = microgram per liter

Table C2-3e
Summary of Estimated Cancer Risks and Hazard Indices for Soil
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	RME Result			
	Baseline Cancer Risk*	**Baseline Hazard Index***	**Residual Cancer Risk**	**Residual Hazard Index**
Recreational User - Current				
Total Risk Across Soil	6.5E-05	2.0E-01	6.4E-05	2.0E-01
Total Risk Across Soil (without arsenic)	1.8E-06	1.1E-01	1.4E-06	1.0E-01

Notes:

RME = Reasonable Maximum Exposure

* - Baseline HHRA did not include full data set; outlier concentrations were excluded.

Table C2-3f
Comparison of EPCs, Cancer Risk Estimates, and Hazard Indices from Baseline Risk Assessment
Non-Tidal Wetland Areas Alternative 3
Soil (0 to 2 feet bgs)
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Chemical of Potential Concern	Baseline Risk Estimates			Alternative 3 Estimates		
		Recreational User			Recreational User	
	Medium EPC Value	RME Carcinogenic Risk	RME Total HI	Medium EPC Value	RME Carcinogenic Risk	RME Total HI
INORGANICS (mg/kg)						
ALUMINUM	26852	NA	3.02E-02	26789	NA	3.02E-02
ANTIMONY	2.9	NA	7.92E-03	2.6	NA	7.10E-03
ARSENIC	22.1	6.31E-05	9.17E-02	22	6.28E-05	9.13E-02
BARIUM	86.4	NA	1.38E-03	90	NA	1.43E-03
BERYLLIUM	0.6	5.62E-11	3.42E-04	0.44	4.12E-11	2.51E-04
CADMIUM	2.6	3.11E-07	6.75E-03	2.6	3.11E-07	6.75E-03
CHROMIUM	113	NA	8.23E-05	113	NA	8.23E-05
COBALT	21	2.30E-09	1.32E-03	21	2.30E-09	1.32E-03
COPPER	108	NA	2.95E-03	126	NA	3.44E-03
LEAD	184	4.15E-07	NA	89	2.01E-07	NA
MANGANESE	935	NA	1.03E-02	934	NA	1.03E-02
MERCURY	1.2	NA	4.37E-03	1.17	NA	4.26E-03
MOLYBDENUM	4.8	NA	1.05E-03	4.9	NA	1.07E-03
NICKEL	108	1.10E-09	6.25E-03	107	1.09E-09	6.19E-03
SELENIUM	1.1	NA	2.40E-04	1.1	NA	2.40E-04
SILVER	2.2	NA	4.81E-04	2.3	NA	5.03E-04
THALLIUM	0.29	NA	4.80E-03	0.29	NA	4.80E-03
TIN	16.6	NA	3.02E-05	20	NA	3.64E-05
VANADIUM	102	NA	1.59E-02	102	NA	1.59E-02
ZINC	200	NA	7.29E-04	225	NA	8.20E-04
PCBs (mg/kg)						
PCBs (TOTAL)	0.17	3.71E-07	1.53E-02	0.1	2.18E-07	8.98E-03
SVOCs (mg/kg)						
ACENAPHTHENE	0.099	NA	3.42E-06	0.0573	NA	1.99E-06
ACENAPHTHYLENE	0.127	NA	NA	0.0396	NA	NA
ANTHRACENE	0.14	NA	8.55E-07	0.0658	NA	4.02E-07
BENZO(A)ANTHRACENE	0.097	4.93E-08	NA	0.097	4.93E-08	NA
BENZO(A)PYRENE	0.094	4.78E-07	NA	0.093	4.73E-07	NA
BENZO(B)FLUORANTHENE	0.096	4.88E-08	NA	0.083	4.22E-08	NA

Table C2-3f
Comparison of EPCs, Cancer Risk Estimates, and Hazard Indices from Baseline Risk Assessment
Non-Tidal Wetland Areas Alternative 3
Soil (0 to 2 feet bgs)
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Chemical of Potential Concern	Baseline Risk Estimates			Alternative 3 Estimates		
		Recreational User			Recreational User	
	Medium EPC Value	RME Carcinogenic Risk	RME Total HI	Medium EPC Value	RME Carcinogenic Risk	RME Total HI
BENZO(G,H,I)PERYLENE	0.084	NA	3.66E-06	0.084	NA	3.66E-06
BENZO(K)FLUORANTHENE	0.11	5.59E-08	NA	0.067	3.41E-08	NA
CHRYSENE	0.087	4.44E-09	NA	0.086	4.39E-09	NA
FLUORANTHENE	0.083	NA	3.62E-06	0.083	NA	3.62E-06
FLUORENE	0.091	NA	4.37E-06	0.054	NA	2.58E-06
INDENO(1,2,3-CD)PYRENE	0.10	5.09E-08	NA	0.10	5.09E-08	NA
NAPHTHALENE	0.091	NA	1.58E-04	0.088	NA	1.53E-04
PHENANTHRENE	0.095	NA	5.53E-07	0.094	NA	5.47E-07
PYRENE	0.079	NA	4.64E-06	0.077	NA	4.52E-06
TPH (mg/kg)						
TPH AS DIESEL	26.2	NA	NA	23	NA	NA
TPH AS GASOLINE	0.7	NA	NA	0.73	NA	NA
TPH AS MOTOR OIL	243	NA	NA	226	NA	NA
SOIL TOTALS:		**6.5E-05**	**2.0E-01**		**6.4E-05**	**2.0E-01**

Table C2-3g
Post-Remediation Gray Fox Risk Calculations (Wetland Sediment Residual Concentration)
Shallow Soil (0 - 2 ft bgs) at Hazard Quotient of 5
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Concentrations				Intake (mg/kg BW-day)					Hazard Quotient (HQ) - Low					Hazard Quotient (HQ) - High			
COPEC[a]	Surface Water (mg/L)[b]	Sediment[c]	Small Mammal BAF[d]	Small Mammal Tissue[d]	Surface Water	Sediment	Small Mammal	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Small Mammal	Total Intake		High TRV (mg/kg BW-day)	Surface Water	Sediment	Small Mammal	Total Intake
Metals (mg/kg)																			
Aluminum	12.6	2.68E+04	1.11E-02	2.96E+02	2.72E-01	8.56E+00	3.38E+00	1.22E+01	1.93	1.4E-01	4.4E+00	1.8E+00	6.3E+00	>1	19.3	1.4E-02	4.4E-01	1.8E-01	6.3E-01
Antimony	0.003	2.60E+00	1.22E+00	3.17E+00	6.48E-05	8.30E-04	3.61E-02	3.70E-02	0.06	1.1E-03	1.4E-02	6.1E-01	6.3E-01		23.4	2.8E-06	3.5E-05	1.5E-03	1.6E-03
Arsenic	0.0436	2.18E+01	--	0	9.42E-04	6.96E-03	0.00E+00	7.90E-03	0.32	2.9E-03	2.2E-02	0	2.5E-02		4.7	2.0E-04	1.5E-03	0.0E+00	1.7E-03
Barium	0.24	9.00E+01	9.41E-02	8.47E+00	5.10E-03	2.87E-02	9.66E-02	1.30E-01	51.8	9.8E-05	5.5E-04	1.9E-03	2.5E-03		66.0	7.7E-05	4.4E-04	1.5E-03	2.0E-03
Beryllium		4.40E-01	--	0		1.41E-04	0.00E+00	1.41E-04	0.532		2.6E-04	0	2.6E-04		0.554		2.5E-04	0.0E+00	2.5E-04
Cadmium	0.0016	2.60E+00	--	0	3.46E-05	8.30E-04	0.00E+00	8.65E-04	0.06	5.8E-04	1.4E-02	0	1.4E-02		2.64	1.3E-05	3.1E-04	0.0E+00	3.3E-04
Chromium +3	0.0263	1.85E+01	2.60E-02	4.82E-01	5.68E-04	5.91E-03	5.49E-03	1.20E-02	2	2.4E-04	2.5E-03	2.3E-03	5.0E-03		23.1	2.5E-05	2.6E-04	2.4E-04	5.2E-04
Chromium +6	0.0263	9.25E+01	2.60E-02	2.41E+00	5.68E-04	2.95E-02	2.75E-02	5.76E-02	5.66	1.0E-04	5.2E-03	0	1.0E-02		35.1	1.6E-05	8.4E-04	7.8E-04	1.6E-03
Cobalt	0.0164	1.84E+01	--	0	3.54E-04	5.88E-03	0.00E+00	6.23E-03	1.2	3.0E-04	4.9E-03	0	5.2E-03		20	1.8E-05	2.9E-04	0.0E+00	3.1E-04
Copper	0.233	1.19E+02	3.45E-01	4.11E+01	5.04E-03	3.80E-02	4.69E-01	5.12E-01	2.67	1.9E-03	1.4E-02	1.8E-01	1.9E-01		632	8.0E-06	6.0E-05	7.4E-04	8.1E-04
Lead	0.0031	8.30E+01	6.10E-01	5.07E+01	6.70E-05	2.65E-02	5.78E-01	6.04E-01	1	6.7E-05	2.7E-02	5.8E-01	6.0E-01		241	2.8E-07	1.1E-04	2.4E-03	2.5E-03
Manganese	7.42	9.34E+02	--	0	1.60E-01	2.98E-01	0.00E+00	4.59E-01	13.7	1.2E-02	2.2E-02	0	3.3E-02		159.09	1.0E-03	1.9E-03	0.0E+00	2.9E-03
Mercury	0.00029	1.20E+00	--	0	6.27E-06	3.83E-04	0.00E+00	3.89E-04	0.027	2.3E-04	1.4E-02	0	1.4E-02		0.27	2.3E-05	1.4E-03	0.0E+00	1.4E-03
Molybdenum	0.0312	5.00E+00	--	0	6.74E-04	1.60E-03	0.00E+00	2.27E-03	0.26	2.6E-03	6.1E-03	0	8.7E-03		2.6	2.6E-04	6.1E-04	0.0E+00	8.7E-04
Nickel	0.166	1.06E+02	--	0	3.59E-03	3.38E-02	0.00E+00	3.74E-02	0.13	2.7E-02	2.5E-01	0	2.8E-01		31.6	1.1E-04	1.1E-03	0.0E+00	1.2E-03
Selenium	0.029	1.10E+00	6.12E+00	6.73E+00	6.27E-04	3.51E-04	7.67E-02	7.77E-02	0.05	1.3E-02	7.0E-03	1.5E+00	1.6E+00	>1	1.21	5.2E-04	2.9E-04	6.3E-02	6.4E-02
Silver	0.0019	2.30E+00	--	0	4.11E-05	7.34E-04	0.00E+00	7.76E-04	0.38	1.1E-04	2.0E-03	0	2.1E-03		3.75	1.1E-05	2.0E-04	0.0E+00	2.1E-04
Thallium		2.90E-01	1.01E+00	2.92E-01		9.26E-05	3.33E-03	3.43E-03	0.48		1.9E-04	6.9E-03	7.1E-03		1.43		6.5E-05	2.3E-03	2.4E-03
Tin		2.00E+01	--	0		6.39E-03	0.00E+00	6.39E-03	23.4		2.7E-04	0	2.7E-04		35		1.8E-04	0.0E+00	1.8E-04
Vanadium	0.05	1.03E+02	--	0	1.08E-03	3.29E-02	0.00E+00	3.40E-02	0.21	5.1E-03	1.6E-01	0	1.6E-01		2.1	5.1E-04	1.6E-02	0.0E+00	1.6E-02
Zinc	0.042	2.23E+02	1.11E+00	2.47E+02	9.08E-04	7.12E-02	2.82E+00	2.89E+00	9.6	9.5E-05	7.4E-03	2.9E-01	3.0E-01		411	2.2E-06	1.7E-04	6.8E-03	7.0E-03
Volatile Organics (mg/kg)																			
Acetone		1.00E-01	--	0		3.19E-05	0.00E+00	3.19E-05	10		3.2E-06	0	3.2E-06		50		6.4E-07	0.0E+00	6.4E-07
Benzene			--	0		0	0.00E+00	0.00E+00	26.4		0.0E+00	0	0.0E+00		263.6		0.0E+00	0.0E+00	0.0E+00
Carbon disulfide		7.00E-03	--	0		2.24E-06	0.00E+00	2.24E-06	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Chlorobenzene		5.00E-03	--	0		1.60E-06	0.00E+00	1.60E-06	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
cis-1,2-Dichlorobenzene			--	0		0	0.00E+00	0.00E+00	45.2		0.0E+00	0	0.0E+00		452		0.0E+00	0.0E+00	0.0E+00
Ethylbenzene		1.80E-02	--	0		5.75E-06	0.00E+00	5.75E-06	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
4-Isopropyltoluene			--	0		0	0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Methylene chloride			--	0		0	0.00E+00	0.00E+00	5.9		0.0E+00	0	0.0E+00		50		0.0E+00	0.0E+00	0.0E+00
Naphthalene			--	0		0	0.00E+00	0.00E+00	50		0.0E+00	0	0.0E+00		150		0.0E+00	0.0E+00	0.0E+00
Toluene		3.00E-02	--	0		9.58E-06	0.00E+00	9.58E-06	26		3.7E-07	0	3.7E-07		260		3.7E-08	0.0E+00	3.7E-08
trans-1,2-Dichloroethene			--	0		0	0.00E+00	0.00E+00	45.2		0.0E+00	0	0.0E+00		452		0.0E+00	0.0E+00	0.0E+00
Trichloroethene		7.00E-03	--	0		2.24E-06	0.00E+00	2.24E-06	0.7		3.2E-06	0	3.2E-06		7		3.2E-07	0.0E+00	3.2E-07
1,2,4-Trimethylbenzene			--	0		0	0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
1,3,5-Trimethylbenzene			--	0		0	0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Vinyl chloride			--	0		0	0.00E+00	0.00E+00	0.17		0.0E+00	0	0.0E+00		2		0.0E+00	0.0E+00	0.0E+00
Xylenes		1.50E-01	--	0		4.79E-05	0.00E+00	4.79E-05	2.1		2.3E-05	0	2.3E-05		2.6		1.8E-05	0.0E+00	1.8E-05
Pesticides (mg/kg)																			
alpha-Chlordane		4.80E-03	--	0		1.53E-06	0.00E+00	1.53E-06	4.6		3.3E-07	0	3.3E-07		9.2		1.7E-07	0	1.7E-07
beta-BHC		1.00E-03	--	0		3.19E-07	0.00E+00	3.19E-07	1.6		2.0E-07	0	2.0E-07		3.2		1.0E-07	0	1.0E-07
delta-BHC		2.00E-03	--	0		6.39E-07	0.00E+00	6.39E-07	1.6		4.0E-07	0	4.0E-07		3.2		2.0E-07	0	2.0E-07
2,4-DDD		3.00E-02	1.04E+00	3.13E-02		9.58E-06	3.57E-04	3.67E-04	0.8		1.2E-05	4.5E-04	4.6E-04		16		6.0E-07	2.2E-05	2.3E-05
DDD		9.20E-02	1.04E+00	9.60E-02		2.94E-05	1.10E-03	1.12E-03	0.8		3.7E-05	1.4E-03	1.4E-03		16		1.8E-06	6.8E-05	7.0E-05
DDE	0.0000027	1.80E-02	1.04E+00	1.88E-02	5.84E-08	5.75E-06	2.14E-04	2.20E-04	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
DDTs	0.00014	1.20E-02	1.04E+00	1.25E-02	3.03E-06	3.83E-06	1.43E-04	1.50E-04	0.8	3.8E-06	4.8E-06	1.8E-04	1.9E-04		16	1.9E-07	2.4E-07	8.9E-06	9.4E-06
Dieldrin		2.90E-03	--	0		9.26E-07	0.00E+00	9.26E-07	0.015		6.2E-05	0	6.2E-05		1.7		5.4E-07	0	5.4E-07
Endosulfan I		4.00E-03	--	0		1.28E-06	0.00E+00	1.28E-06	0.15		8.5E-06	0	8.5E-06		1.5		8.5E-07	0	8.5E-07
Endosulfan sulfate	0.00012	3.00E-03	--	0	2.59E-06	9.58E-07	0.00E+00	3.55E-06	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Endrin	0.000014	2.00E-02	--	0	3.03E-07	6.39E-06	0.00E+00	6.69E-06	0.09	3.3E-06	6.9E-05	0	7.3E-05		0.92	3.3E-07	6.9E-06	0	7.3E-06
Endrin aldehyde		6.00E-03	--	0		1.92E-06	0.00E+00	1.92E-06	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Endrin Ketone		2.30E-03	--	0		7.34E-07	0.00E+00	7.34E-07	NTV	NTV	NTV	NTV	NTV		0.92		8.0E-07	0	8.0E-07
gamma-Chlordane		5.20E-03	--	0		1.66E-06	0.00E+00	1.66E-06	4.6		3.6E-07	0	3.6E-07		9.2		1.8E-07	0	1.8E-07
Heptachlor	0.0000028	2.00E-04	--	0	6.05E-08	6.39E-08	0.00E+00	1.24E-07	0.13	4.7E-07	4.9E-07	0.0	9.6E-07		6.8	8.9E-09	9.4E-09	0	1.8E-08
Heptachlor epoxide		3.00E-04	--	0		9.58E-08	0.00E+00	9.58E-08	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Hexachlorobenzene		8.00E-04	--	0		2.55E-07	0.00E+00	2.55E-07	1.6		1.6E-07	0	1.6E-07		16		1.6E-08	0	1.6E-08
Methoxychlor	0	1.20E-02	--	0		3.83E-06	0.00E+00	3.83E-06	2.5		1.5E-06	0	1.5E-06		50		7.7E-08	0	7.7E-08
Mirex		4.00E-03	--	0		1.28E-06	0.00E+00	1.28E-06	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV

Table C2-3g
Post-Remediation Gray Fox Risk Calculations (Wetland Sediment Residual Concentration)
Shallow Soil (0 - 2 ft bgs) at Hazard Quotient of 5
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Concentrations				Intake (mg/kg BW-day)					Hazard Quotient (HQ) - Low					Hazard Quotient (HQ) - High			
COPEC[a]	Surface Water (mg/L)[b]	Sediment[c]	Small Mammal BAF[d]	Small Mammal Tissue[d]	Surface Water	Sediment	Small Mammal	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Small Mammal	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Sediment	Small Mammal	Total Intake
trans-Nonachlor		2.40E-03	--	0		7.66E-07	0.00E+00	7.66E-07	4.6		1.7E-07	0	1.7E-07	9.2		8.3E-08	0	8.3E-08
SVOCs (mg/kg)																		
Acenaphthene		5.73E-02	--	0		1.83E-05	0.00E+00	1.83E-05	1.31		1.4E-05	0	1.4E-05	32.8		5.6E-07	0	5.6E-07
Acenaphthylene		3.96E-02	--	0		1.26E-05	0.00E+00	1.26E-05	1.31		9.7E-06	0	9.7E-06	32.8		3.9E-07	0	3.9E-07
Anthracene		6.58E-02	--	0		2.10E-05	0.00E+00	2.10E-05	1.31		1.6E-05	0	1.6E-05	32.8		6.4E-07	0	6.4E-07
Benzo(a)anthracene		1.00E-01	--	0		3.19E-05	0.00E+00	3.19E-05	1.31		2.4E-05	0	2.4E-05	32.8		9.7E-07	0	9.7E-07
Benzo(a)pyrene		9.00E-02	--	0		2.87E-05	0.00E+00	2.87E-05	1.31		2.2E-05	0	2.2E-05	32.8		8.8E-07	0	8.8E-07
Benzo(b)fluoranthene		8.00E-02	--	0		2.55E-05	0.00E+00	2.55E-05	1.31		2.0E-05	0	2.0E-05	32.8		7.8E-07	0	7.8E-07
Benzo(g,h,i)perylene		8.00E-02	--	0		2.55E-05	0.00E+00	2.55E-05	1.31		2.0E-05	0	2.0E-05	32.8		7.8E-07	0	7.8E-07
Benzo(k)fluoranthene		6.70E-02	--	0		2.14E-05	0.00E+00	2.14E-05	1.31		1.6E-05	0	1.6E-05	32.8		6.5E-07	0	6.5E-07
Benzoic acid			--	0		0	0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Bis(2-ethylhexyl)phthalate	0.027	1.20E-01	--	0	5.84E-04	3.83E-05	0.00E+00	6.22E-04	18.3	3.2E-05	2.1E-06	0	3.4E-05	183	3.2E-06	2.1E-07	0	3.4E-06
Butylbenzylphthalate		2.50E-02	--	0		7.98E-06	0.00E+00	7.98E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Carbazole		1.41E-01	--	0		4.50E-05	0.00E+00	4.50E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Chloroaniline		3.00E-03	--	0		9.58E-07	0.00E+00	9.58E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2-Chloropropane		4.33E-02	--	0		1.38E-05	0.00E+00	1.38E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chrysene	0.0002	9.00E-02	--	0	4.32E-06	2.87E-05	0.00E+00	3.31E-05	1.31	3.3E-06	2.2E-05	0	2.5E-05	32.8	1.3E-07	8.8E-07	0	1.0E-06
Dibenzofuran		7.89E-02	--	0		2.52E-05	0.00E+00	2.52E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
3,3-Dichlorobenzidine		1.20E-02	--	0		3.83E-06	0.00E+00	3.83E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2,6-Dinitrotoluene			--	0		0	0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Fluoranthene		8.00E-02	--	0		2.55E-05	0.00E+00	2.55E-05	1.31		2.0E-05	0	2.0E-05	32.8		7.8E-07	0	7.8E-07
Fluorene		5.40E-02	--	0		1.72E-05	0.00E+00	1.72E-05	1.31		1.3E-05	0	1.3E-05	32.8		5.3E-07	0	5.3E-07
Indeno(1,2,3-cd)pyrene		1.00E-01	--	0		3.19E-05	0.00E+00	3.19E-05	1.31		2.4E-05	0	2.4E-05	32.8		9.7E-07	0	9.7E-07
2-Methylnaphthalene		5.23E-02	--	0		1.67E-05	0.00E+00	1.67E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Methylphenol	0.12	6.68E-02	--	0	2.59E-03	2.13E-05	0.00E+00	2.61E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Naphthalene		9.00E-02	--	0		2.87E-05	0.00E+00	2.87E-05	50		5.7E-07	0	5.7E-07	150		1.9E-07	0	1.9E-07
Pentachlorophenol		4.84E-02	--	0		1.55E-05	0.00E+00	1.55E-05	8.42		1.8E-06	0	1.8E-06	27.4		5.6E-07	0	5.6E-07
Phenanthrene		9.00E-02	--	0		2.87E-05	0.00E+00	2.87E-05	1.31		2.2E-05	0	2.2E-05	32.8		8.8E-07	0	8.8E-07
Phenol		1.40E-01	--	0		4.47E-05	0.00E+00	4.47E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pyrene		8.00E-02	--	0		2.55E-05	0.00E+00	2.55E-05	1.31		2.0E-05	0	2.0E-05	32.8		7.8E-07	0	7.8E-07
PCBs (mg/kg)																		
PCBs (Total Congeners)	0.000016	8.00E-02	1.81E+01	1.45E+00	3.46E-07	2.55E-05	1.65E-02	1.65E-02	0.36	9.6E-07	7.1E-05	4.6E-02	4.6E-02	1.28	2.7E-07	2.0E-05	1.3E-02	1.3E-02

>1 = The calculated hazard quotient exceeds 1 (i.e., > 1.5)

Table C2-3g
Post-Remediation Gray Fox Risk Calculations (Wetland Sediment Residual Concentration)
Shallow Soil (0 - 2 ft bgs) at Hazard Quotient of 5
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Concentrations				Intake (mg/kg BW-day)					Hazard Quotient (HQ) - Low					Hazard Quotient (HQ) - High			
COPEC[a]	Surface Water (mg/L)[b]	Sediment[c]	Small Mammal BAF[d]	Small Mammal Tissue[d]	Surface Water	Sediment	Small Mammal	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Small Mammal	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Sediment	Small Mammal	Total Intake

Exposure Assumptions and Equation:[e]

		Value	
Ingestion Rate (IR) prey(dry wt.)	=	0.177	kg/day (dry weight)
IRmammal(dry wt.)	=	0.177	kg/day (dry weight)
IRsediment (dry wt.)[f]	=	0.00496	kg-day (dry weight)
IRsurface water[g]	=	0.335	L/day
Cprey	=	chem-specific	mg/kg or µg/kg
Csediment	=	chem-specific	mg/kg or µg/kg
Csurface water	=	chem-specific	mg/L or µg/L
Tissue Moisture (TMsmall mammal)	=	68%	percent
Dietary Composition Factor (DCF)[h]	=	100%	percent
Site Use Factor (SUF)[i]	=	25%	percent
Body Weight (BW)	=	3.88	kg

Intake Equation = [IRmammal(dry wt) x (Cprey(mammal, dry wt)/1-TM) x DCF x SUF]/BW] + [(IRsoil x Csoil x DCF x SUF)]/BW] + [(IRsurface water x Csurface water x DCF x SUF)]/BW]

Risk (hazard quotient) = Intake / TRV

Prey tissue(dry wt) = Prey tissue (wet wt.) / (1-Tissue Moisture)

NTV = No toxicity data available.

NA = Not applicable.

Blank cell indicates COPEC was not detected in this medium.

Notes:

a All chemicals detected in sediments are considered as constituents of potential ecological concern.

b All concentrations of constituents in surface water are based on the maximum concentration.

c All concentrations of constituents in sediment are based on the residual concentrations expressed in dry weight.

d Site-specific BAFs (dry weight basis). Calculated small mammal tissue concentrations (sediment concentration x BAF). Tissue concentrations are on a dry weight basis.

e Exposure parameters used to calculate risk are discussed in detail in Section 4.2 of the ERA..

f Ingestion rate of soil based on 2.8 percent of of the prey ingestion rate (dry weight); based on a red fox (Beyer et al. (1994).

g Based on equation for mammals: Water intake (L/day) = $0.099Wt(kg)^{0.90}$ (EPA 1993)

h Dietary composition factor was based on a conservative assumption of 100% dietary intake of small mammals from the site.

i Site use factor was based on a 25% use of the site for the fox's foraging range.

Table C2-3h
Post-Remediation Northern Harrier Risk Calculations (Wetland Sediment Residual Concentration)
Shallow Soil (0 - 2 ft bgs) at Hazard Quotient of 5
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Concentrations				Intake (mg/kg BW-day)					Hazard Quotient (HQ) - Low					Hazard Quotient (HQ) - High			
COPEC[a]	Surface Water (mg/L)[b]	Sediment[c]	Small Mammal BAF[d]	Small Mammal Tissue[d]	Surface Water	Sediment	Small Mammal	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Small Mammal	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Sediment	Small Mammal	Total Intake
Metals (mg/kg)																		
Aluminum	12.6	2.68E+04	1.11E-02	296	2.43E-01	5.11E+00	8.07E+00	1.34E+01	109.7	2.2E-03	4.7E-02	7.4E-02	1.2E-01	1,097	2.2E-04	4.7E-03	7.4E-03	1.2E-02
Antimony	0.003	2.60E+00	1.22E+00	3	5.80E-05	4.95E-04	8.62E-02	8.67E-02	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Arsenic	0.0436	2.18E+01	--	0	8.43E-04	4.15E-03	0.00E+00	4.99E-03	5.5	1.5E-04	7.5E-04	0.0E+00	9.1E-04	22	3.8E-05	1.9E-04	0.0E+00	2.3E-04
Barium	0.24	9.00E+01	9.41E-02	8	4.56E-03	1.71E-02	2.31E-01	2.52E-01	20.8	2.2E-04	8.2E-04	1.1E-02	1.2E-02	41.7	1.1E-04	4.1E-04	5.5E-03	6.0E-03
Beryllium		4.40E-01		0		8.38E-05		8.38E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Cadmium	0.0016	2.60E+00	--	0	3.09E-05	4.95E-04	0.00E+00	5.26E-04	0.08	3.9E-04	6.2E-03	0.0E+00	6.6E-03	10.4	3.0E-06	4.8E-05	0.0E+00	5.1E-05
Chromium +3	0.0263	1.85E+01	2.60E-02	0	5.08E-04	3.52E-03	1.31E-02	1.71E-02	2.66	1.9E-04	1.3E-03	4.9E-03	6.4E-03	2.78	1.8E-04	1.3E-03	4.7E-03	6.2E-03
Chromium +6	0.0263	9.25E+01	2.60E-02	2	5.08E-04	1.76E-02	6.55E-02	8.37E-02	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Cobalt	0.0164	1.84E+01	--	0	3.17E-04	3.50E-03	0.00E+00	3.82E-03	7.61	4.2E-05	4.6E-04	0.0E+00	5.0E-04	17	1.9E-05	2.1E-04	0.0E+00	2.2E-04
Copper	0.233	1.19E+02	3.45E-01	41	4.50E-03	2.27E-02	1.12E+00	1.15E+00	2.3	2.0E-03	9.9E-03	4.9E-01	5.0E-01	52.3	8.6E-05	4.3E-04	2.1E-02	2.2E-02
Lead	0.0031	8.30E+01	6.10E-01	51	5.99E-05	1.58E-02	1.38E+00	1.39E+00	0.014	4.3E-03	1.1E+00	9.8E+01	1.0E+02 >1	8.75	6.8E-06	1.8E-03	1.6E-01	1.6E-01
Manganese	7.42	9.34E+02	--	0	1.43E-01	1.78E-01	0.00E+00	3.21E-01	77.6	1.8E-03	2.3E-03	0.0E+00	4.1E-03	776	1.8E-04	2.3E-04	0.0E+00	4.1E-04
Mercury	0.00029	1.20E+00	--	0	5.60E-06	2.29E-04	0.00E+00	2.34E-04	0.039	1.4E-04	5.9E-03	0.0E+00	6.0E-03	0.18	3.1E-05	1.3E-03	0.0E+00	1.3E-03
Molybdenum	0.0312	5.00E+00	--	0	6.03E-04	9.52E-04	0.00E+00	1.56E-03	3.5	1.7E-04	2.7E-04	0.0E+00	4.4E-04	35.3	1.7E-05	2.7E-05	0.0E+00	4.4E-05
Nickel	0.166	1.06E+02	--	0	3.21E-03	2.02E-02	0.00E+00	2.34E-02	1.38	2.3E-03	1.5E-02	0.0E+00	1.7E-02	56.3	5.7E-05	3.6E-04	0.0E+00	4.2E-04
Selenium	0.029	1.10E+00	6.12E+00	7	5.60E-04	2.10E-04	1.83E-01	1.84E-01	0.23	2.4E-03	9.1E-04	8.0E-01	8.0E-01	0.93	6.0E-04	2.3E-04	2.0E-01	2.0E-01
Silver	0.0019	2.30E+00	--	0	3.67E-05	4.38E-04	0.00E+00	4.75E-04	178.00	2.1E-07	2.5E-06	0.0E+00	2.7E-06	NTV	NTV	NTV	NTV	NTV
Thallium		2.90E-01	1.01E+00	0		5.52E-05	7.95E-03	8.01E-03	0.35		1.6E-04	2.3E-02	2.3E-02	NTV	NTV	NTV	NTV	NTV
Tin		2.00E+01	--	0		3.81E-03	0.00E+00	3.81E-03	6.80		5.6E-04	0.0E+00	5.6E-04	16.9		2.3E-04	0.0E+00	2.3E-04
Vanadium	0.05	1.03E+02	--	0	9.66E-04	1.96E-02	0.00E+00	2.06E-02	11.4	8.5E-05	1.7E-03	0.0E+00	1.8E-03	114	8.5E-06	1.7E-04	0.0E+00	1.8E-04
Zinc	0.042	2.23E+02	1.11E+00	247	8.12E-04	4.25E-02	6.72E+00	6.77E+00	17.2	4.7E-05	2.5E-03	3.9E-01	3.9E-01	172	4.7E-06	2.5E-04	3.9E-02	3.9E-02
Volatile Organics (mg/kg)																		
Acetone		1.00E-01	--	0		1.90E-05	0.00E+00	1.90E-05	52		3.7E-07	0.0E+00	3.7E-07	520		3.7E-08	0.0E+00	3.7E-08
Benzene			--	0			0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Carbon disulfide		7.00E-03	--	0		1.33E-06	0.00E+00	1.33E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chlorobenzene		5.00E-03	--	0		9.52E-07	0.00E+00	9.52E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
cis-1,2-Dichlorobenzene			--	0			0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Ethylbenzene		1.80E-02	--	0		3.43E-06	0.00E+00	3.43E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Isopropyltoluene			--	0			0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Methylene chloride			--	0			0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Naphthalene			--	0			0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Toluene		3.00E-02	--	0		5.71E-06	0.00E+00	5.71E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
trans-1,2-Dichloroethene			--	0			0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Trichloroethene		7.00E-03	--	0		1.33E-06	0.00E+00	1.33E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
1,2,4-Trimethylbenzene			--	0			0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
1,3,5-Trimethylbenzene			--	0			0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Vinyl chloride			--	0			0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Xylenes		1.50E-01	--	0		2.86E-05	0.00E+00	2.86E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pesticides (mg/kg)																		
alpha-Chlordane		4.80E-03	--	0		9.14E-07	0.00E+00	9.14E-07	0.0014		6.5E-04	0.0E+00	6.5E-04	0.014		6.5E-05	0.0E+00	6.5E-05
beta-BHC		1.00E-03	--	0		1.90E-07	0.00E+00	1.90E-07	0.56		3.4E-07	0.0E+00	3.4E-07	2.25		8.5E-08	0.0E+00	8.5E-08
delta-BHC		2.00E-03	--	0		3.81E-07	0.00E+00	3.81E-07	0.56		6.8E-07	0.0E+00	6.8E-07	2.25		1.7E-07	0.0E+00	1.7E-07
2,4-DDD		3.00E-02	1.04E+00	0		5.71E-06	8.52E-04	8.58E-04	0.009		6.3E-04	9.5E-02	9.5E-02	1.5		3.8E-06	5.7E-04	5.7E-04
DDD		9.20E-02	1.04E+00	0		1.75E-05	2.61E-03	2.63E-03	0.009		1.9E-03	2.9E-01	2.9E-01	1.5		1.2E-05	1.7E-03	1.8E-03
DDE	0.0000027	1.80E-02	1.04E+00	0	5.22E-08	3.43E-06	5.11E-04	5.15E-04	NTV	NTV	NTV	NTV	NTV	0.6	8.7E-08	5.7E-06	8.5E-04	8.6E-04
DDTs	0.00014	1.20E-02	1.04E+00	0	2.71E-06	2.29E-06	3.41E-04	3.46E-04	0.009	3.0E-04	2.5E-04	3.8E-02	3.8E-02	1.5	1.8E-06	1.5E-06	2.3E-04	2.3E-04

Table C2-3h
Post-Remediation Northern Harrier Risk Calculations (Wetland Sediment Residual Concentration)
Shallow Soil (0 - 2 ft bgs) at Hazard Quotient of 5
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Concentrations				Intake (mg/kg BW-day)					Hazard Quotient (HQ) - Low					Hazard Quotient (HQ) - High			
COPEC[a]	Surface Water (mg/L)[b]	Sediment[c]	Small Mammal BAF[d]	Small Mammal Tissue[d]	Surface Water	Sediment	Small Mammal	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Small Mammal	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Sediment	Small Mammal	Total Intake
Dieldrin		2.90E-03	--	0		5.52E-07	0.00E+00	5.52E-07	0.0709		7.8E-06	0.0E+00	7.8E-06	0.98		5.6E-07	0.0E+00	5.6E-07
Endosulfan I		4.00E-03	--	0		7.62E-07	0.00E+00	7.62E-07	10		7.6E-08	0.0E+00	7.6E-08	100		7.6E-09	0.0E+00	7.6E-09
Endosulfan sulfate	0.00012	3.00E-03	--	0	2.32E-06	5.71E-07	0.00E+00	2.89E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Endrin	0.000014	2.00E-02	--	0	2.71E-07	3.81E-06	0.00E+00	4.08E-06	0.3	9.0E-07	1.3E-05	0.0E+00	1.4E-05	3	9.0E-08	1.3E-06	0.0E+00	1.4E-06
Endrin aldehyde		6.00E-03	--	0		1.14E-06	0.00E+00	1.14E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Endrin Ketone		2.30E-03	--	0		4.38E-07	0.00E+00	4.38E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
gamma-Chlordane		5.20E-03	--	0		9.90E-07	0.00E+00	9.90E-07	0.0014		7.1E-04	0.0E+00	7.1E-04	0.014		7.1E-05	0.0E+00	7.1E-05
Heptachlor	0.0000028	2.00E-04	--	0	5.41E-08	3.81E-08	0.00E+00	9.22E-08	0.065	8.3E-07	5.9E-07	0.0E+00	1.4E-06	0.65	8.3E-08	5.9E-08	0.0E+00	1.4E-07
Heptachlor epoxide		3.00E-04	--	0		5.71E-08	0.00E+00	5.71E-08	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Hexachlorobenzene		8.00E-04	--	0		1.52E-07	0.00E+00	1.52E-07	0.23		6.6E-07	0.0E+00	6.6E-07	2.3		6.6E-08	0.0E+00	6.6E-08
Methoxychlor		1.20E-02	--	0		2.29E-06	0.00E+00	2.29E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Mirex		4.00E-03	--	0		7.62E-07	0.00E+00	7.62E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
trans-Nonachlor		2.40E-03	--	0		4.57E-07	0.00E+00	4.57E-07	0.0014		3.3E-04	0.0E+00	3.3E-04	0.014		3.3E-05	0.0E+00	3.3E-05
SVOCs (mg/kg)																		
Acenaphthene		5.73E-02	--	0		1.09E-05	0.00E+00	1.09E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Acenaphthylene		3.96E-02	--	0		7.54E-06	0.00E+00	7.54E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Anthracene		6.58E-02	--	0		1.25E-05	0.00E+00	1.25E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(a)anthracene		1.00E-01	--	0		1.90E-05	0.00E+00	1.90E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(a)pyrene		9.00E-02	--	0		1.71E-05	0.00E+00	1.71E-05	0.001		1.7E-02	0.0E+00	1.7E-02	0.01		1.7E-03	0.0E+00	1.7E-03
Benzo(b)fluoranthene		8.00E-02	--	0		1.52E-05	0.00E+00	1.52E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(g,h,i)perylene		8.00E-02	--	0		1.52E-05	0.00E+00	1.52E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(k)fluoranthene		6.70E-02	--	0		1.28E-05	0.00E+00	1.28E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzoic acid			--	0			0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Bis(2-ethylhexyl)phthalate	0.027	1.20E-01	--	0	5.22E-04	2.29E-05	0.00E+00	5.45E-04	1.1	4.7E-04	2.1E-05	0.0E+00	5.0E-04	11	4.7E-05	2.1E-06	0.0E+00	5.0E-05
Butylbenzylphthalate		2.50E-02	--	0		4.76E-06	0.00E+00	4.76E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Carbazole		1.41E-01	--	0		2.69E-05	0.00E+00	2.69E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Chloroaniline		3.00E-03	--	0		5.71E-07	0.00E+00	5.71E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2-Chloropropane		4.33E-02	--	0		8.25E-06	0.00E+00	8.25E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chrysene	0.0002	9.00E-02	--	0	3.87E-06	1.71E-05	0.00E+00	2.10E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Dibenzofuran		7.89E-02	--	0		1.50E-05	0.00E+00	1.50E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
3,3-Dichlorobenzidine		1.20E-02	--	0		2.29E-06	0.00E+00	2.29E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2,6-Dinitrotoluene			--	0			0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Fluoranthene		8.00E-02	--	0		1.52E-05	0.00E+00	1.52E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Fluorene		5.40E-02	--	0		1.03E-05	0.00E+00	1.03E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Indeno(1,2,3-cd)pyrene		1.00E-01	--	0		1.90E-05	0.00E+00	1.90E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2-Methylnaphthalene		5.23E-02	--	0		9.96E-06	0.00E+00	9.96E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Methylphenol	0.12	6.68E-02	--	0	2.32E-03	1.27E-05	0.00E+00	2.33E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Naphthalene		9.00E-02	--	0		1.71E-05	0.00E+00	1.71E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pentachlorophenol		4.84E-02	--	0		9.22E-06	0.00E+00	9.22E-06	6.7		1.4E-06	0.0E+00	1.4E-06	22.5		4.1E-07	0.0E+00	4.1E-07
Phenanthrene		9.00E-02	--	0		1.71E-05	0.00E+00	1.71E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Phenol		1.40E-01	--	0		2.67E-05	0.00E+00	2.67E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pyrene		8.00E-02	--	0		1.52E-05	0.00E+00	1.52E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
PCBs (mg/kg)																		
PCBs (Total Congeners)	0.000016	8.00E-02	1.81E+01	1	3.09E-07	1.52E-05	3.94E-02	3.94E-02	0.09	3.4E-06	1.7E-04	4.4E-01	4.4E-01	1.27	2.4E-07	1.2E-05	3.1E-02	3.1E-02

>1 = The calculated hazard quotient exceeds 1 (i.e., > 1.5)

Table C2-3h
Post-Remediation Northern Harrier Risk Calculations (Wetland Sediment Residual Concentration)
Shallow Soil (0 - 2 ft bgs) at Hazard Quotient of 5
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Concentrations				Intake (mg/kg BW-day)					Hazard Quotient (HQ) - Low					Hazard Quotient (HQ) - High			
COPEC[a]	Surface Water (mg/L)[b]	Sediment[c]	Small Mammal BAF[d]	Small Mammal Tissue[d]	Surface Water	Sediment	Small Mammal	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Small Mammal	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Sediment	Small Mammal	Total Intake

Exposure Assumptions and Equation:[e]

	Value	
Ingestion Rate (IR) prey(dry wt.) =	0.048	
IRsmall mammal (dry wt.) =	0.048	kg/day (dry weight)
IRsoil (dry wt.)[f] =	0.000336	kg-day (dry weight)
IRsurface water[g] =	0.034	L/day
Cprey =	chem-specific	mg/kg or µg/kg
Csoil =	chem-specific	mg/kg or µg/kg
Csurface water =	chem-specific	mg/L or µg/L
Tissue Moisture (TMsmall mammal) =	68%	percent
Dietary Composition Factor (DCF)[h] =	100%	percent
Site Use Factor (SUF)[i] =	25%	percent
Body Weight (BW) =	0.441	kg

Intake Equation = [IRmammal(dry wt) x (Cprey(mammal, dry wt)/1-TM) x DCF x SUF]/BW] + [(IRsoil x Csoil x DCF x SUF)]/BW] + [(IRsurface water x Csurface water x DCF x SUF)]/BW]

Risk (hazard quotient) = Intake / TRV

Prey tissue(dry wt) = Prey tissue (wet wt.) / (1-Tissue Moisture)

NTV = No toxicity data available.

NA = Not applicable.

Blank cell indicates COPEC was not detected in this medium.

Notes:

a All chemicals detected in sediments are considered as constituents of potential ecological concern.

b All concentrations of constituents in surface water are based on the maximum concentration.

c All concentrations of constituents in sediment are based on the residual concentrations expressed in dry weight.

d Site-specific BAFs (dry weight basis). Calculated small mammal tissue concentrations (sediment concentration x BAF). Tissue concentrations are on a dry weight basis.

e Exposure parameters used to calculate risk are discussed in detail in Section 4.2 of ERA.

f Ingestion rate of sedimentl based on 0.7 percent of of the prey ingestion rate (dry weight); based on rate for bald eagle in Pascoe et al. (1996).

g Based on equation for birds: Water intake (L/day) = $0.059Wt(kg)^{0.67}$ (EPA 1993)

h Dietary composition factor was based on a conservative assumption of 100% dietary intake of small mammals from the site.

i Site use factor was based on 25% use of the site for the harrier's foraging range.

Table C2-3i
Post-Remediation Mallard (Non-Breeding) Risk Calculations (Wetland Sediment Residual Concentration)
Shallow Soil (0 - 2 ft bgs) at Hazard Quotient of 5
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Concentrations				Intake (mg/kg BW-day)					Hazard Quotient (HQ) - Low					Hazard Quotient (HQ) - High			
COPEC[a]	Surface Water (mg/L)[b]	Sediments[c]	Plant BAF[d]	Plant Tissue[d]	Surface Water	Sediment	Plant	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Plant	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Sediment	Plant	Total Intake
Metals (mg/kg)																		
Aluminum	12.6	2.68E+04	7.56E-03	2.03E+02	7.60E-02	8.67E+00	1.99E+00	1.07E+01	109.7	6.9E-04	7.9E-02	1.8E-02	9.8E-02	1,097	6.9E-05	7.9E-03	1.8E-03	9.8E-03
Antimony	0.003	2.60E+00	2.27E-01	5.91E-01	1.81E-05	8.40E-04	5.79E-03	6.65E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Arsenic	0.0436	2.18E+01	1.15E-01	2.51E+00	2.63E-04	7.05E-03	2.46E-02	3.19E-02	5.5	4.8E-05	1.3E-03	4.5E-03	5.8E-03	22	1.2E-05	3.2E-04	1.1E-03	1.5E-03
Barium	0.24	9.00E+01	7.87E-02	7.08E+00	1.42E-03	2.91E-02	6.94E-02	9.99E-02	20.8	6.8E-05	1.4E-03	3.3E-03	4.8E-03	41.7	3.4E-05	7.0E-04	1.7E-03	2.4E-03
Beryllium		4.40E-01	--	0		1.42E-04	0	1.42E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Cadmium	0.0016	2.60E+00	1.40E+00	3.63E+00	9.65E-06	8.40E-04	3.56E-02	3.64E-02	0.08	1.2E-04	1.1E-02	4.4E-01	4.6E-01	10.40	9.3E-07	8.1E-05	3.4E-03	3.5E-03
Chromium +3	0.0263	1.85E+01	--	0	1.59E-04	5.98E-03	0	6.14E-03	2.66	6.0E-05	2.2E-03	0.0E+00	2.3E-03	2.78	5.7E-05	2.2E-03	0.0E+00	2.2E-03
Chromium +6	0.0263	9.25E+01	--	0	1.59E-04	2.99E-02	0	3.01E-02	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Cobalt	0.0164	1.84E+01	--	0	9.89E-05	5.95E-03	0	6.05E-03	7.61	1.3E-05	7.8E-04	0.0E+00	7.9E-04	17	5.8E-06	3.5E-04	0.0E+00	3.6E-04
Copper	0.233	1.19E+02	5.68E-02	6.76E+00	1.40E-03	3.85E-02	6.63E-02	1.06E-01	2.3	6.1E-04	1.7E-02	2.9E-02	4.6E-02	52.3	2.7E-05	7.4E-04	1.3E-03	2.0E-03
Lead	0.0031	8.30E+01	7.51E-03	6.23E-01	1.87E-05	2.68E-02	6.10E-03	3.30E-02	0.014	1.3E-03	1.9E+00	4.4E-01	2.4E+00 >1	8.75	2.1E-06	3.1E-03	7.0E-04	3.8E-03
Manganese	7.42	9.34E+02	4.89E-01	4.57E+02	4.47E-02	3.02E-01	4.47E+00	4.82E+00	77.6	5.8E-04	3.9E-03	5.8E-02	6.2E-02	776	5.8E-05	3.9E-04	5.8E-03	6.2E-03
Mercury	0.00029	1.20E+00	--	0	1.75E-06	3.88E-04	0	3.90E-04	0.039	4.5E-05	9.9E-03	0.0E+00	1.0E-02	0.18	9.7E-06	2.2E-03	0.0E+00	2.2E-03
Molybdenum	0.0312	5.00E+00	--	0	1.88E-04	1.62E-03	0	1.80E-03	3.5	5.4E-05	4.6E-04	0.0E+00	5.2E-04	35.3	5.3E-06	4.6E-05	0.0E+00	5.1E-05
Nickel	0.166	1.06E+02	1.39E-02	1.47E+00	1.00E-03	3.43E-02	1.44E-02	4.97E-02	1.38	7.3E-04	2.5E-02	1.0E-02	3.6E-02	56.3	1.8E-05	6.1E-04	2.6E-04	8.8E-04
Selenium	0.029	1.10E+00	--	0	1.75E-04	3.56E-04	0	5.30E-04	0.23	7.6E-04	1.5E-03	0.0E+00	2.3E-03	0.93	1.9E-04	3.8E-04	0.0E+00	5.7E-04
Silver	0.0019	2.30E+00	--	0	1.15E-05	7.44E-04	0	7.55E-04	178.00	6.4E-08	4.2E-06	0.0E+00	4.2E-06	NTV	NTV	NTV	NTV	NTV
Thallium		2.90E-01	--	0		9.37E-05	0	9.37E-05	0.35		2.7E-04	0.0E+00	2.7E-04	NTV	NTV	NTV	NTV	NTV
Tin		2.00E+01	1.55E+00	3.11E+01		6.47E-03	3.05E-01	3.11E-01	6.80		9.5E-04	4.5E-02	4.6E-02	16.9		3.8E-04	1.8E-02	1.8E-02
Vanadium	0.05	1.03E+02	2.20E-02	2.27E+00	3.01E-04	3.33E-02	2.22E-02	5.58E-02	11.4	2.6E-05	2.9E-03	2.0E-03	4.9E-03	114	2.6E-06	2.9E-04	2.0E-04	4.9E-04
Zinc	0.042	2.23E+02	8.47E-02	1.89E+01	2.53E-04	7.21E-02	1.85E-01	2.57E-01	17.2	1.5E-05	4.2E-03	1.1E-02	1.5E-02	172	1.5E-06	4.2E-04	1.1E-03	1.5E-03
Volatile Organics (mg/kg)																		
Acetone		1.00E-01	--	0		3.23E-05	0	3.23E-05	52		6.2E-07	0.0E+00	6.2E-07	520		6.2E-08	0.0E+00	6.2E-08
Benzene			--	0			0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Carbon disulfide		7.00E-03	--	0		2.26E-06	0	2.26E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chlorobenzene		5.00E-03	--	0		1.62E-06	0	1.62E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
cis-1,2-Dichlorobenzene			--	0			0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Ethylbenzene		1.80E-02	--	0		5.82E-06	0	5.82E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Isopropyltoluene			--	0			0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Methylene chloride			--	0			0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Naphthalene			--	0			0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Toluene		3.00E-02	--	0		9.70E-06	0	9.70E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
trans-1,2-Dichloroethene			--	0			0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Trichloroethene		7.00E-03	--	0		2.26E-06	0	2.26E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
1,2,4-Trimethylbenzene			--	0			0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
1,3,5-Trimethylbenzene			--	0			0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Vinyl chloride			--	0			0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Xylenes		1.50E-01	--	0		4.85E-05	0	4.85E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pesticides (mg/kg)																		
alpha-Chlordane		4.80E-03	--	0		1.55E-06	0	1.55E-06	0.0014		1.1E-03	0.0E+00	1.1E-03	0.014		1.1E-04	0.0E+00	1.1E-04
beta-BHC		1.00E-03	--	0		3.23E-07	0	3.23E-07	0.56		5.8E-07	0.0E+00	5.8E-07	2.25		1.4E-07	0.0E+00	1.4E-07
delta-BHC		2.00E-03	--	0		6.47E-07	0	6.47E-07	0.56		1.2E-06	0.0E+00	1.2E-06	2.25		2.9E-07	0.0E+00	2.9E-07
2,4-DDD		3.00E-02	--	0		9.70E-06	0	9.70E-06	0.009		1.1E-03	0.0E+00	1.1E-03	1.5		6.5E-06	0.0E+00	6.5E-06
4,4-DDD		9.20E-02	--	0		2.97E-05	0	2.97E-05	0.009		3.3E-03	0.0E+00	3.3E-03	1.5		2.0E-05	0.0E+00	2.0E-05
DDE	0.0000027	1.80E-02	--	0	1.63E-08	5.82E-06	0	5.84E-06	NTV	NTV	NTV	NTV	NTV	0.6	2.7E-08	9.7E-06	0.0E+00	9.7E-06
DDTs	0.00014	1.20E-02	--	0	8.44E-07	3.88E-06	0	4.72E-06	0.009	9.4E-05	4.3E-04	0.0E+00	5.2E-04	1.5	5.6E-07	2.6E-06	0.0E+00	3.1E-06
Dieldrin		2.90E-03	--	0		9.37E-07	0	9.37E-07	0.0709		1.3E-05	0.0E+00	1.3E-05	0.98		9.6E-07	0.0E+00	9.6E-07
Endosulfan I		4.00E-03	--	0		1.29E-06	0	1.29E-06	10		1.3E-07	0.0E+00	1.3E-07	100		1.3E-08	0.0E+00	1.3E-08
Endosulfan sulfate	0.00012	3.00E-03	--	0	7.24E-07	9.70E-07	0	1.69E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Endrin	0.000014	2.00E-02	--	0	8.44E-08	6.47E-06	0	6.55E-06	0.3	2.8E-07	2.2E-05	0.0E+00	2.2E-05	3	2.8E-08	2.2E-06	0.0E+00	2.2E-06
Endrin aldehyde		6.00E-03	--	0		1.94E-06	0	1.94E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Endrin Ketone		2.30E-03	--	0		7.44E-07	0	7.44E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
gamma Chlordane		5.20E-03	--	0		1.68E-06	0	1.68E-06	0.0014		1.2E-03	0.0E+00	1.2E-03	0.014		1.2E-04	0.0E+00	1.2E-04
Heptachlor	0.0000028	2.00E-04	--	0	1.69E-08	6.47E-08	0	8.15E-08	0.065	2.6E-07	9.9E-07	0.0E+00	1.3E-06	0.65	2.6E-08	9.9E-08	0.0E+00	1.3E-07
Heptachlor epoxide		3.00E-04	--	0		9.70E-08	0	9.70E-08	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Hexachlorobenzene		8.00E-04	--	0		2.59E-07	0	2.59E-07	0.23		1.1E-06	0.0E+00	1.1E-06	2.3		1.1E-07	0.0E+00	1.1E-07
Methoxychlor		1.20E-02	--	0		3.88E-06	0	3.88E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Mirex		4.00E-03	--	0		1.29E-06	0	1.29E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
trans-Nonachlor		2.40E-03	--	0		7.76E-07	0	7.76E-07	0.0014		5.5E-04	0.0E+00	5.5E-04	0.014		5.5E-05	0.0E+00	5.5E-05

Table C2-3i
Post-Remediation Mallard (Non-Breeding) Risk Calculations (Wetland Sediment Residual Concentration)
Shallow Soil (0 - 2 ft bgs) at Hazard Quotient of 5
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Concentrations				Intake (mg/kg BW-day)					Hazard Quotient (HQ) - Low					Hazard Quotient (HQ) - High			
COPEC[a]	Surface Water (mg/L)[b]	Sediments[c]	Plant BAF[d]	Plant Tissue[d]	Surface Water	Sediment	Plant	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Plant	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Sediment	Plant	Total Intake
SVOCs (mg/kg)																		
Acenaphthene		5.73E-02	--	0		1.85E-05	0	1.85E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Acenaphthylene		3.96E-02	--	0		1.28E-05	0	1.28E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Anthracene		6.58E-02	1.89E+00	1.24E-01		2.13E-05	1.22E-03	1.24E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(a)anthracene		1.00E-01	--	0		3.23E-05	0	3.23E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(a)pyrene		9.00E-02	--	0		2.91E-05	0	2.91E-05	0.001		2.9E-02	0.0E+00	2.9E-02	0.01		2.9E-03	0.0E+00	2.9E-03
Benzo(b)fluoranthene		8.00E-02	--	0		2.59E-05	0	2.59E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(ghi)perylene		8.00E-02	--	0		2.59E-05	0	2.59E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(k)fluoranthene		6.70E-02	--	0		2.17E-05	0	2.17E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzoic acid			--	0			0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Bis(2-ethylhexyl)phthalate	0.027	1.20E-01	--	0	1.63E-04	3.88E-05	0	2.02E-04	1.1	1.5E-04	3.5E-05	0.0E+00	1.8E-04	11	1.5E-05	3.5E-06	0.0E+00	1.8E-05
Butylbenzylphthalate		2.50E-02	--	0		8.08E-06	0	8.08E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Carbazole		1.41E-01	--	0		4.56E-05	0	4.56E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Chloroaniline		3.00E-03	--	0		9.70E-07	0	9.70E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2-Chloropropane		4.33E-02	--	0		1.40E-05	0	1.40E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chrysene	0.0002	9.00E-02	--	0	1.21E-06	2.91E-05	0	3.03E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Dibenzofuran		7.89E-02	--	0		2.55E-05	0	2.55E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
3,3-Dichlorobenzidine		1.20E-02	--	0		3.88E-06	0	3.88E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2,6-Dinitrotoluene			--	0			0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Fluoranthene		8.00E-02	1.17E+00	9.39E-02		2.59E-05	9.20E-04	9.45E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Fluorene		5.40E-02	--	0		1.75E-05	0	1.75E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Indeno(123,cd)pyrene		1.00E-01	--	0		3.23E-05	0	3.23E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2-Methylnaphthalene		5.23E-02	--	0		1.69E-05	0	1.69E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Methylphenol	0.12	6.68E-02	--	0	7.24E-04	2.16E-05	0	7.45E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Naphthalene		9.00E-02	--	0		2.91E-05	0	2.91E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pentachlorophenol		4.84E-02	--	0		1.56E-05	0	1.56E-05	6.7		2.3E-06	0.0E+00	2.3E-06	22.5		7.0E-07	0.0E+00	7.0E-07
Phenanthrene		9.00E-02	1.64E+00	1.47E-01		2.91E-05	1.44E-03	1.47E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Phenol		1.40E-01	--	0		4.53E-05	0	4.53E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pyrene		8.00E-02	--	0		2.59E-05	0	2.59E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
PCBs (mg/kg)																		
PCBs (TOTAL)-congeners	0.000016	8.00E-02	1.09E-01	8.74E-03	9.65E-08	2.59E-05	8.56E-05	1.12E-04	0.09	1.1E-06	2.9E-04	9.5E-04	1.2E-03	1.27	7.6E-08	2.0E-05	6.7E-05	8.8E-05

>1 = The calculated hazard quotient exceeds 1 (i.e., > 1.5)

Exposure Assumptions and Equation:[e]

	Value	Units
Ingestion Rate (IR) prey(dry wt.) =	0.0917	kg/day (dry weight)
IRplant(dry wt.) =	0.0917	kg/day (dry weight)
IRsediment (dry wt.)[f] =	0.00303	kg/day (dry weight)
Cprey =	chem-specific	kg-day (dry weight)
Csediment =	chem-specific	kg-day (dry weight)
Tissue Moisture (TMplant) =	8.5%	percent
IRsurface water[g] =	0.056	L/day
Csurface water =	chem-specific	mg/L or µg/L
Dietary Composition Factor (DCF)[h] =	100%	percent
Site Use Factor (SUF)[i] =	10%	percent
Body Weight (BW) =	0.9361	kg

Intake Equation = [IRplant (dry wt) x [Cprey (plant, wet wt) /1-TM] x DCF x SUF]/BW + [IRsediment x Csediment x DCF x SUF)]/BW +[(IRsurface water x Csurface water x DCF x SUF)]/BW

Risk (hazard quotient) = Intake / TRV

NTV = Not toxicity data available.

Prey tissue(dry wt) = Prey tissue (wet wt.) / (1-Tissue Moisture)

NA = Not available.

Blank cell indicates COPEC was not detected in this medium.

Notes:

a All chemicals detected in sediments are considered as constituents of potential ecological concern.

b All concentrations of constituents in surface water are based on the maximum concentration.

c All concentrations of constituents in sediment are based on the residual concentrations expressed in dry weight.

d Site-specific BAFs (dry weight basis). Calculated plant tissue concentrations (sediment concentration x BAF). Tissue concentrations are on a dry weight basis.

e Exposure parameters used to calculate risk are discussed in detail in Section 4.2 of ERA.

f Ingestion rate of sediment based on 3.3 percent of of the prey ingestion rate (dry weight); based on mallard data from Beyer et al. (1994).

g Based on equation for birds: Water intake (L/day) = $0.059Wt(kg)^{0.67}$ (EPA 1993)

h Dietary composition factor was based on a conservative assumption of 100% dietary intake of plants from the site.

i Site use factor was based on 10% use of the site for the mallard's foraging range.

Table C2-3j
Post-Remediation Mallard (Breeding) Risk Calculations (Wetland Sediment Residual Concentration)
Shallow Soil (0 - 2 ft bgs) at Hazard Quotient of 5
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Point Concentration						Intake (mg/kg BW-day)						Hazard Quotient (HQ) - Low						Hazard Quotient (HQ) - High					
COPEC[a]	Surface Water (mg/L)[b]	Sediments[c]	Plant BAF[d]	Plant Tissue[d]	Invertebrate BAF[d]	Invertebrate Tissue[d]	Surface Water	Sediment	Plant	Invertebrate	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Plant	Invertebrate	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Sediment	Plant	Invertebrate	Total Intake
Metals (mg/kg)																								
Aluminum	12.6	2.68E+04	7.56E-03	2.03E+02	1.93E-01	5.17E+03	3.04E-01	3.47E+01	1.99E+00	1.52E+02	1.89E+02	109.7	2.8E-03	3.2E-01	1.8E-02	1.4E+00	1.7E+00 >1	1,097	2.8E-04	3.2E-02	1.8E-03	1.4E-01	1.7E-01	
Antimony	0.003	2.60E+00	2.27E-01	5.91E-01	2.32E-01	6.02E-01	7.24E-05	3.36E-03	5.79E-03	1.77E-02	2.69E-02	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Arsenic	0.0436	2.18E+01	1.15E-01	2.51E+00	1.92E-01	4.18E+00	1.05E-03	2.82E-02	2.46E-02	1.23E-01	1.77E-01	5.5	1.9E-04	5.1E-03	4.5E-03	2.2E-02	3.2E-02	22	4.8E-05	1.3E-03	1.1E-03	5.6E-03	8.0E-03	
Barium	0.24	9.00E+01	7.87E-02	7.08E+00	1.50E+00	1.35E+02	5.69E-03	1.16E-01	6.94E-02	3.96E+00	4.15E+00	20.8	2.7E-04	5.6E-03	3.3E-03	1.9E-01	2.0E-01	41.7	1.4E-04	2.8E-03	1.7E-03	9.5E-02	1.0E-01	
Beryllium		4.40E-01	--	0	--	0		5.69E-04	0.00E+00	0.00E+00	5.69E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Cadmium	0.0016	2.60E+00	1.40E+00	3.63E+00	2.15E-01	5.59E-01	3.86E-05	3.36E-03	3.56E-02	1.64E-02	5.54E-02	0.08	4.8E-04	4.2E-02	4.4E-01	2.1E-01	6.9E-01	10.40	3.7E-06	3.2E-04	3.4E-03	1.6E-03	5.3E-03	
Chromium +3	0.0263	1.85E+01	--	0	5.53E-01	1.02E+01	6.34E-04	2.39E-02	0.00E+00	3.01E-01	3.25E-01	2.66	2.4E-04	9.0E-03	0.0E+00	1.1E-01	1.2E-01	2.78	2.3E-04	8.6E-03	0.0E+00	1.1E-01	1.2E-01	
Chromium +6	0.0263	9.25E+01	--	0	5.53E-01	5.12E+01	6.34E-04	1.20E-01	0.00E+00	1.50E+00	1.62E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Cobalt	0.0164	1.84E+01	--	0	--	0	3.96E-04	2.38E-02	0.00E+00	0.00E+00	2.42E-02	7.61	5.2E-05	3.1E-03	0.0E+00	0.0E+00	3.2E-03	17	2.3E-05	1.4E-03	0.0E+00	0.0E+00	1.4E-03	
Copper	0.233	1.19E+02	5.68E-02	6.76E+00	6.67E-01	7.94E+01	5.62E-03	1.54E-01	6.63E-02	2.33E+00	2.56E+00	2.3	2.4E-03	6.7E-02	2.9E-02	1.0E+00	1.1E+00	52.3	1.1E-04	2.9E-03	1.3E-03	4.5E-02	4.9E-02	
Lead	0.0031	8.30E+01	7.51E-03	6.23E-01	5.07E-02	4.21E+00	7.48E-05	1.07E-01	6.10E-03	1.24E-01	2.37E-01	0.014	5.3E-03	7.7E+00	4.4E-01	8.8E+00	1.7E+01 >1	8.75	8.5E-06	1.2E-02	7.0E-04	1.4E-02	2.7E-02	
Manganese	7.42	9.34E+02	4.89E-01	4.57E+02	5.29E+00	4.94E+03	1.79E-01	1.21E+00	4.47E+00	1.45E+02	1.51E+02	77.6	2.3E-03	1.6E-02	5.8E-02	1.9E+00	1.9E+00 >1	776	2.3E-04	1.6E-03	5.8E-03	1.9E-01	1.9E-01	
Mercury	0.00029	1.20E+00	--	0	6.96E-01	8.36E-01	6.99E-06	1.55E-03	0.00E+00	2.46E-02	2.61E-02	0.039	1.8E-04	4.0E-02	0.0E+00	6.3E-01	6.7E-01	0.18	3.9E-05	8.6E-03	0.0E+00	1.4E-01	1.5E-01	
Molybdenum	0.0312	5.00E+00	--	0	--	0	7.53E-04	6.47E-03	0.00E+00	0.00E+00	7.22E-03	3.5	2.2E-04	1.8E-03	0.0E+00	0.0E+00	2.1E-03	35.3	2.1E-05	1.8E-04	0.0E+00	0.0E+00	2.0E-04	
Nickel	0.166	1.06E+02	1.39E-02	1.47E+00	3.65E-01	3.86E+01	4.00E-03	1.37E-01	1.44E-02	1.14E+00	1.29E+00	1.38	2.9E-03	9.9E-02	1.0E-02	8.2E-01	9.4E-01	56.3	7.1E-05	2.4E-03	2.6E-04	2.0E-02	2.3E-02	
Selenium	0.029	1.10E+00	--	0	--	0	6.99E-04	1.42E-03	0.00E+00	0.00E+00	2.12E-03	0.23	3.0E-03	6.2E-03	0.0E+00	0.0E+00	9.2E-03	0.93	7.5E-04	1.5E-03	0.0E+00	0.0E+00	2.3E-03	
Silver	0.0019	2.30E+00	--	0	--	0	4.58E-05	2.97E-03	0.00E+00	0.00E+00	3.02E-03	178.00	2.6E-07	1.7E-05	0.0E+00	0.0E+00	1.7E-05	NTV	NTV	NTV	NTV	NTV	NTV	
Thallium		2.90E-01	--	0	--	0		3.75E-04	0.00E+00	0.00E+00	3.75E-04	0.35		1.1E-03	0.0E+00	0.0E+00	1.1E-03	NTV	NTV	NTV	NTV	NTV	NTV	
Tin		2.00E+01	1.55E+00	3.11E+01	--	0		2.59E-02	3.05E-01	0.00E+00	3.30E-01	6.80		3.8E-03	4.5E-02	0.0E+00	4.9E-02	16.9		1.5E-03	1.8E-02	0.0E+00	2.0E-02	
Vanadium	0.05	1.03E+02	2.20E-02	2.27E+00	2.96E-02	3.04E+00	1.21E-03	1.33E-01	2.22E-02	8.94E-02	2.46E-01	11.4	1.1E-04	1.2E-02	2.0E-03	7.8E-03	2.2E-02	114	1.1E-05	1.2E-03	2.0E-04	7.8E-04	2.2E-03	
Zinc	0.042	2.23E+02	8.47E-02	1.89E+01	1.51E+00	3.37E+02	1.01E-03	2.88E-01	1.85E-01	9.91E+00	1.04E+01	17.2	5.9E-05	1.7E-02	1.1E-02	5.8E-01	6.0E-01	172	5.9E-06	1.7E-03	1.1E-03	5.8E-02	6.0E-02	
Volatile Organics (mg/kg)																								
Acetone		1.00E-01	--	0	--	0		1.29E-04	0.00E+00	0.00E+00	1.29E-04	52		2.5E-06	0.0E+00	0.0E+00	2.5E-06	520		2.5E-07	0.0E+00	0.0E+00	2.5E-07	
Benzene			--	0	--	0			0.00E+00	0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Carbon disulfide		7.00E-03	--	0	--	0		9.05E-06	0.00E+00	0.00E+00	9.05E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Chlorobenzene		5.00E-03	--	0	--	0		6.47E-06	0.00E+00	0.00E+00	6.47E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
cis-1,2-Dichlorobenzene			--	0	--	0			0.00E+00	0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Ethylbenzene		1.80E-02	--	0	--	0		2.33E-05	0.00E+00	0.00E+00	2.33E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
4-Isopropyltoluene			--	0	--	0			0.00E+00	0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Methylene chloride			--	0	--	0			0.00E+00	0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Naphthalene			--	0	--	0			0.00E+00	0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Toluene		3.00E-02	--	0	--	0		3.88E-05	0.00E+00	0.00E+00	3.88E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
trans-1,2-Dichloroethene			--	0	--	0			0.00E+00	0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Trichloroethene		7.00E-03	--	0	--	0		9.05E-06	0.00E+00	0.00E+00	9.05E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
1,2,4-Trimethylbenzene			--	0	--	0			0.00E+00	0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
1,3,5-Trimethylbenzene			--	0	--	0			0.00E+00	0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Vinyl chloride			--	0	--	0			0.00E+00	0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Xylenes		1.50E-01	--	0	--	0		1.94E-04	0.00E+00	0.00E+00	1.94E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Pesticides (mg/kg)																								
alpha-Chlordane		4.80E-03	--	0	--	0		6.21E-06	0.00E+00	0.00E+00	6.21E-06	0.0014		4.4E-03	0.0E+00	0.0E+00	4.4E-03	0.014		4.4E-04	0.0E+00	0.0E+00	4.4E-04	
beta-BHC		1.00E-03	--	0	--	0		1.29E-06	0.00E+00	0.00E+00	1.29E-06	0.56		2.3E-06	0.0E+00	0.0E+00	2.3E-06	2.25		5.7E-07	0.0E+00	0.0E+00	5.7E-07	
delta-BHC		2.00E-03	--	0	--	0		2.59E-06	0.00E+00	0.00E+00	2.59E-06	0.56		4.6E-06	0.0E+00	0.0E+00	4.6E-06	2.25		1.1E-06	0.0E+00	0.0E+00	1.1E-06	
2,4-DDD		3.00E-02	--	0	--	0		3.88E-05	0.00E+00	0.00E+00	3.88E-05	0.009		4.3E-03	0.0E+00	0.0E+00	4.3E-03	1.5		2.6E-05	0.0E+00	0.0E+00	2.6E-05	
4,4-DDD		9.20E-02	--	0	--	0		1.19E-04	0.00E+00	0.00E+00	1.19E-04	0.009		1.3E-02	0.0E+00	0.0E+00	1.3E-02	1.5		7.9E-05	0.0E+00	0.0E+00	7.9E-05	
DDE	0.0000027	1.80E-02	--	0	--	0	6.51E-08	2.33E-05	0.00E+00	0.00E+00	2.33E-05	NTV	NTV	NTV	NTV	NTV	NTV	0.6	1.1E-07	3.9E-05	0.0E+00	0.0E+00	3.9E-05	
DDTs	0.00014	1.20E-02	--	0	--	0	3.38E-06	1.55E-05	0.00E+00	0.00E+00	1.89E-05	0.009	3.8E-04	1.7E-03	0.0E+00	0.0E+00	2.1E-03	1.5	2.3E-06	1.0E-05	0.0E+00	0.0E+00	1.3E-05	
Dieldrin		2.90E-03	--	0	--	0		3.75E-06	0.00E+00	0.00E+00	3.75E-06	0.0709		5.3E-05	0.0E+00	0.0E+00	5.3E-05	0.98		3.8E-06	0.0E+00	0.0E+00	3.8E-06	
Endosulfan I		4.00E-03	--	0	--	0		5.17E-06	0.00E+00	0.00E+00	5.17E-06	10		5.2E-07	0.0E+00	0.0E+00	5.2E-07	100		5.2E-08	0.0E+00	0.0E+00	5.2E-08	
Endosulfan sulfate	0.00012	3.00E-03	--	0	--	0	2.89E-06	3.88E-06	0.00E+00	0.00E+00	6.77E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Endrin	0.000014	2.00E-02	--	0	--	0	3.38E-07	2.59E-05	0.00E+00	0.00E+00	2.62E-05	0.3	1.1E-06	8.6E-05	0.0E+00	0.0E+00	8.7E-05	3	1.1E-07	8.6E-06	0.0E+00	0.0E+00	8.7E-06	
Endrin aldehyde		6.00E-03	--	0	--	0		7.76E-06	0.00E+00	0.00E+00	7.76E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Endrin Ketone		2.30E-03	--	0	--	0		2.97E-06	0.00E+00	0.00E+00	2.97E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
gamma-Chlordane		5.20E-03	--	0	--	0		6.72E-06	0.00E+00	0.00E+00	6.72E-06	0.0014		4.8E-03	0.0E+00	0.0E+00	4.8E-03	0.014		4.8E-04	0.0E+00	0.0E+00	4.8E-04	
Heptachlor	0.0000028	2.00E-04	--	0	--	0	6.75E-08	2.59E-07	0.00E+00	0.00E+00	3.26E-07	0.065	1.0E-06	4.0E-06	0.0E+00	0.0E+00	5.0E-06	0.65	1.0E-07	4.0E-07	0.0E+00	0.0E+00	5.0E-07	
Heptachlor epoxide		3.00E-04	--	0	--	0		3.88E-07	0.00E+00	0.00E+00	3.88E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Hexachlorobenzene		8.00E-04	--	0	--	0		1.03E-06	0.00E+00	0.00E+00	1.03E-06	0.23		4.5E-06	0.0E+00	0.0E+00	4.5E-06	2.3		4.5E-07	0.0E+00	0.0E+00	4.5E-07	
Methoxychlor		1.20E-02	--	0	--	0		1.55E-05	0.00E+00	0.00E+00	1.55E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Mirex		4.00E-03	--	0	--	0		5.17E-06	0.00E+00	0.00E+00	5.17E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
trans-Nonachlor		2.40E-03	--	0	--	0		3.10E-06	0.00E+00	0.00E+00	3.10E-06	0.0014		2.2E-03	0.0E+00	0.0E+00	2.2E-03	0.014		2.2E-04	0.0E+00	0.0E+00	2.2E-04	
SVOCs (mg/kg)																								
Acenaphthene		5.73E-02	--	0	--	0		7.41E-05	0.00E+00	0.00E+00	7.41E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Acenaphthylene		3.96E-02	--	0	--	0		5.12E-05	0.00E+00	0.00E+00	5.12E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Anthracene		6.58E-02	1.89E+00	1.24E-01	--	0		8.51E-05	1.22E-03	0.00E+00	1.30E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Benzo(a)anthracene		1.00E-01	--	0	--	0		1.29E-04	0.00E+00	0.00E+00	1.29E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Benzo(a)pyrene		9.00E-02	--	0	--	0		1.16E-04	0.00E+00	0.00E+00	1.16E-04	0.001		1.2E-01	0.0E+00	0.0E+00	1.2E-01	0.01		1.2E-02	0.0E+00	0.0E+00	1.2E-02	
Benzo(b)fluoranthene		8.00E-02	--	0	--	0		1.03E-04	0.00E+00	0.00E+00	1.03E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Benzo(ghi)perylene		8.00E-02	--	0	--	0		1.03E-04	0.00E+00	0.00E+00	1.03E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Benzo(k)fluoranthene		6.70E-02	--	0	--	0		8.66E-05	0.00E+00	0.00E+00	8.66E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Benzoic acid			--	0	--	0			0.00E+00	0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Bis(2-ethylhexyl)phthalate	0.027	1.20E-01	--	0	--	0	6.51E-04	1.55E-04	0.00E+00	0.00E+00	8.06E-04	1.1	5.9E-04	1.4E-04	0.0E+00	0.0E+00	7.3E-04	11	5.9E-05	1.4E-05	0.0E+00	0.0E+00	7.3E-05	
Butylbenzylphthalate		2.50E-02	--	0	--	0		3.23E-05	0.00E+00	0.00E+00	3.23E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Carbazole		1.41E-01	--	0	--	0		1.82E-04	0.00E+00	0.00E+00	1.82E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
4-Chloroaniline		3.00E-03	--	0	--	0		3.88E-06	0.00E+00	0.00E+00	3.88E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
2-Chloropropane		4.33E-02	--	0	--	0		5.60E-05	0.00E+00	0.00E+00	5.60E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Chrysene	0.0002	9.00E-02	--	0	--	0	4.82E-06	1.16E-04	0.00E+00	0.00E+00	1.21E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Dibenzofuran		7.89E-02	--	0	--	0		1.02E-04	0.00E+00	0.00E+00	1.02E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
3,3-Dichlorobenzidine		1.20E-02	--	0	--	0		1.55E-05	0.00E+00	0.00E+00	1.55E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
2,6-Dinitrotoluene			--	0	--	0			0.00E+00	0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Fluoranthene		8.00E-02	1.17E+00	9.39E-02	--	0		1.03E-04	9.20E-04	0.00E+00	1.02E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	

Table C2-3j
Post-Remediation Mallard (Breeding) Risk Calculations (Wetland Sediment Residual Concentration)
Shallow Soil (0 - 2 ft bgs) at Hazard Quotient of 5
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Point Concentration						Intake (mg/kg BW-day)						Hazard Quotient (HQ) - Low						Hazard Quotient (HQ) - High				
COPEC[a]	Surface Water (mg/L)[b]	Sediments[c]	Plant BAF[d]	Plant Tissue[d]	Invertebrate BAF[d]	Invertebrate Tissue[d]	Surface Water	Sediment	Plant	Invertebrate	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Plant	Invertebrate	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Sediment	Plant	Invertebrate	Total Intake
Fluorene		5.40E-02	--	0	--	0		6.98E-05	0.00E+00	0.00E+00	6.98E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Indeno(123,cd)pyrene		1.00E-01	--	0	--	0		1.29E-04	0.00E+00	0.00E+00	1.29E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2-Methylnaphthalene		5.23E-02	--	0	--	0		6.76E-05	0.00E+00	0.00E+00	6.76E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Methylphenol	0.12	6.68E-02	--	0	--	0	2.89E-03	8.64E-05	0.00E+00	0.00E+00	2.98E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Naphthalene		9.00E-02	--	0	--	0		1.16E-04	0.00E+00	0.00E+00	1.16E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pentachlorophenol		4.84E-02	--	0	--	0		6.26E-05	0.00E+00	0.00E+00	6.26E-05	6.7		9.3E-06	0.0E+00	0.0E+00	9.3E-06	22.5		2.8E-06	0.0E+00	0.0E+00	2.8E-06
Phenanthrene		9.00E-02	1.64E+00	1.47E-01	2.51E+00	2.26E-01		1.16E-04	1.44E-03	6.64E-03	8.20E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Phenol		1.40E-01	--	0	--	0		1.81E-04	0.00E+00	0.00E+00	1.81E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pyrene		8.00E-02	--	0	--	0		1.03E-04	0.00E+00	0.00E+00	1.03E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
PCBs (mg/kg)																							
PCBs (TOTAL)-congeners	0.000016	8.00E-02	1.09E-01	8.74E-03	1.16E+01	9.29E-01	3.86E-07	1.03E-04	8.56E-05	2.73E-02	2.75E-02	0.09	4.3E-06	1.1E-03	9.5E-04	3.0E-01	3.1E-01	1.27	3.0E-07	8.1E-05	6.7E-05	2.2E-02	2.2E-02

>1 = The calculated hazard quotient exceeds 1 (i.e., > 1.5)

Exposure Assumptions and Equation:[e]

		Value	Units
Ingestion Rate (IR) prey(dry wt.)	=	0.0917	kg/day (dry weight)
IRplant(dry wt.)[f]	=	0.0229	kg/day (dry weight)
IRinvertebrate(dry wt.)[f]	=	0.0688	kg/day (dry weight)
IRsediment (dry wt.)[g]	=	0.00303	kg-day (dry weight)
Cprey	=	chem-specific	mg/kg or µg/kg
Csediment	=	chem-specific	mg/kg or µg/kg
Tissue Moisture (TMplant)	=	8.5%	percent
IRsurface water[h]	=	0.056	L/day
Csurface water	=	chem-specific	mg/L or µg/L
Dietary Composition Factor (DCF)[i]	=	100%	percent
Site Use Factor (SUF)[j]	=	40%	percent
Body Weight	=	0.9361	kg

Intake Equation= [IRplant (dry wt) x [Cprey(plant, dry wt)/1-TM) x DCF x SUF]/BW] + [IRinvertebrate (dry wt) x Cprey(invertebrate, dry wt) x DCF x SUF)/BW] + [(IRsediment x Csediment x DCF x SUF))/BW +[(IRsurface water x Csurface water x DCF x SUF))/

Risk (hazard quotient) = Intake / TRV

Prey tissue(dry wt) = Prey tissue (wet wt.) / (1-Tissue Moisture)

NTV = Not toxicity data available.

Blank cell indicates COPEC was not detected in this medium.

Notes:

a All chemicals detected in sediments are considered as constituents of potential ecological concern.

b All concentrations of constituents in surface water are based on the maximum concentration.

c All concentrations of constituents in sediment are based on the residual concentrations expressed in dry weight.

d Site-specific BAFs (dry weight basis). Calculated plant and invertebrate tissue concentrations (sediment concentration x BAF). Tissue concentrations are on a dry weight basis.

e Exposure parameters used to calculate risk are discussed in detail in Section 4.2 of ERA.

f Based on dietary composition of 25% plant and 75% invertebrate.

g Ingestion rate of sediment based on 3.3 percent of of the prey ingestion rate (dry weight); based on mallards (Beyer et al. 1994).

h Based on equation for birds: Water intake (L/day) = $0.059Wt(kg)^{.67}$ (EPA 1993)

i Dietary composition factor was based on a conservative assumption of 100% dietary intake of plants and invertebrates from the site.

j Site use factor was based on 40% use of the site for the mallard's foraging range.

Table C2-k
Post-Remediation Great Blue Heron Risk Calculations (Wetland Sediment Residual Concentration)
Shallow Soil (0 - 2 ft bgs) at Hazard Quotient of 5
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Point Concentration						Intake (mg/kg BW-day)						Hazard Quotient (HQ) - Low						Hazard Quotient (HQ) - High				
COPEC[a]	Surface Water (mg/L)[b]	Sediments[c]	Small Mammal BAF[d]	Small Mammal Tissue[d]	Amphibian BAF[d]	Amphibian Tissue[d]	Surface Water	Sediment	Small mammal	Amphibian	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Small mammal	Amphibian	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Sediment	Small mammal	Amphibian	Total Intake
Metals (mg/kg)																							
Aluminum	12.6	2.68E+04	1.11E-02	296	7.75E-03	208	5.65E-01	4.86E+01	8.14E+00	5.70E+00	6.30E+01	109.7	5.2E-03	4.4E-01	7.4E-02	5.2E-02	5.7E-01	1,097	5.2E-04	4.4E-02	7.4E-03	5.2E-03	5.7E-02
Antimony	0.003	2.60E+00	1.22E+00	3	--	0	1.35E-04	4.71E-03	8.69E-02	0	9.18E-02	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Arsenic	0.0436	2.18E+01	--	0	--	0	1.96E-03	3.95E-02	0	0	4.15E-02	5.5	3.6E-04	7.2E-03	0.0E+00	0.0E+00	7.5E-03	22	8.9E-05	1.8E-03	0.0E+00	0.0E+00	1.9E-03
Barium	0.24	9.00E+01	9.41E-02	8	--	0	1.06E-02	1.63E-01	2.33E-01	0	4.06E-01	20.8	5.1E-04	7.8E-03	1.1E-02	0.0E+00	2.0E-02	41.7	2.5E-04	3.9E-03	5.6E-03	0.0E+00	9.7E-03
Beryllium		4.40E-01	--	0	--	0		7.97E-04	0.00E+00	0	7.97E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Cadmium	0.0016	2.60E+00	--	0	--	0	7.18E-05	4.71E-03	0.00E+00	0	4.78E-03	0.08	9.0E-04	5.9E-02	0.0E+00	0.0E+00	6.0E-02	10.40	6.9E-06	4.5E-04	0.0E+00	0.0E+00	4.6E-04
Chromium +3	0.0263	1.85E+01	2.60E-02	0	2.45E-01	5	1.18E-03	3.35E-02	1.32E-02	1.24E-01	1.72E-01	2.66	4.4E-04	1.3E-02	5.0E-03	4.7E-02	6.5E-02	2.78	4.2E-04	1.2E-02	4.8E-03	4.5E-02	6.2E-02
Chromium +6	0.0263	9.25E+01	2.60E-02	2	2.45E-01	23	1.18E-03	1.68E-01	6.61E-02	6.22E-01	8.57E-01	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Cobalt	0.0164	1.84E+01	--	0	--	0	7.36E-04	3.33E-02	0	0	3.41E-02	7.61	9.7E-05	4.4E-03	0.0E+00	0.0E+00	4.5E-03	17	4.3E-05	2.0E-03	0.0E+00	0.0E+00	2.0E-03
Copper	0.233	1.19E+02	3.45E-01	41	--	0	1.05E-02	2.16E-01	1.13E+00	0	1.35E+00	2.3	4.5E-03	9.4E-02	4.9E-01	0.0E+00	5.9E-01	52.3	2.0E-04	4.1E-03	2.2E-02	0.0E+00	2.6E-02
Lead	0.0031	8.30E+01	6.10E-01	51	--	0	1.39E-04	1.50E-01	1.39E+00	0	1.54E+00	0.014	9.9E-03	1.1E+01	9.9E+01	0.0E+00	1.1E+02	>1	8.75	1.6E-05	1.7E-02	1.6E-01	0.0E+00	1.8E-01
Manganese	7.42	9.34E+02	--	0	4.78E-02	45	3.33E-01	1.69E+00	0	1.23E+00	3.25E+00	77.6	4.3E-03	2.2E-02	0.0E+00	1.6E-02	4.2E-02	776	4.3E-04	2.2E-03	0.0E+00	1.6E-03	4.2E-03
Mercury	0.00029	1.20E+00	--	0	7.42E-01	1	1.30E-05	2.17E-03	0	2.44E-02	2.66E-02	0.039	3.3E-04	5.6E-02	0.0E+00	6.3E-01	6.8E-01	0.18	7.2E-05	1.2E-02	0.0E+00	1.4E-01	1.5E-01
Molybdenum	0.0312	5.00E+00	--	0	--	0	1.40E-03	9.06E-03	0	0	1.05E-02	3.5	4.0E-04	2.6E-03	0.0E+00	0.0E+00	3.0E-03	35.3	4.0E-05	2.6E-04	0.0E+00	0.0E+00	3.0E-04
Nickel	0.166	1.06E+02	--	0	--	0	7.45E-03	1.92E-01	0	0	1.99E-01	1.38	5.4E-03	1.4E-01	0.0E+00	0.0E+00	1.4E-01	56.3	1.3E-04	3.4E-03	0.0E+00	0.0E+00	3.5E-03
Selenium	0.029	1.10E+00	6.12E+00	7	5.77E+00	6	1.30E-03	1.99E-03	1.85E-01	1.74E-01	3.62E-01	0.23	5.7E-03	8.7E-03	8.0E-01	7.6E-01	1.6E+00	>1	0.93	1.4E-03	2.1E-03	2.0E-01	1.9E-01	3.9E-01
Silver	0.0019	2.30E+00	--	0	--	0	8.52E-05	4.17E-03	0	0	4.25E-03	178.00	4.8E-07	2.3E-05	0.0E+00	0.0E+00	2.4E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Thallium		2.90E-01	1.01E+00	0	--	0		5.25E-04	8.02E-03	0	8.55E-03	0.35		1.5E-03	2.3E-02	0.0E+00	2.4E-02	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Tin		2.00E+01	--	0	--	0		3.62E-02	0	0	3.62E-02	6.80		5.3E-03	0.0E+00	0.0E+00	5.3E-03	16.9		2.1E-03	0.0E+00	0.0E+00	2.1E-03	
Vanadium	0.05	1.03E+02	--	0	--	0	2.24E-03	1.87E-01	0	0	1.89E-01	11.4	2.0E-04	1.6E-02	0.0E+00	0.0E+00	1.7E-02	114	2.0E-05	1.6E-03	0.0E+00	0.0E+00	1.7E-03	
Zinc	0.042	2.23E+02	1.11E+00	247	7.87E-01	176	1.88E-03	4.04E-01	6.78E+00	4.82E+00	1.20E+01	17.2	1.1E-04	2.3E-02	3.9E-01	2.8E-01	7.0E-01	172	1.1E-05	2.3E-03	3.9E-02	2.8E-02	7.0E-02	
Volatile Organics (mg/kg)																								
Acetone		1.00E-01	--	0	--	0		1.81E-04	0	0	1.81E-04	52		3.5E-06	0.0E+00	0.0E+00	3.5E-06	520		3.5E-07	0.0E+00	0.0E+00	3.5E-07	
Benzene			--	0	--	0			0	0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Carbon disulfide		7.00E-03	--	0	--	0		1.27E-05	0	0	1.27E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Chlorobenzene		5.00E-03	--	0	--	0		9.06E-06	0	0	9.06E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
cis-1,2-Dichlorobenzene			--	0	--	0			0	0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Ethylbenzene		1.80E-02	--	0	--	0		3.26E-05	0	0	3.26E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
4-Isopropyltoluene			--	0	--	0			0	0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Methylene chloride			--	0	--	0			0	0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Naphthalene			--	0	--	0			0	0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Toluene		3.00E-02	--	0	--	0		5.44E-05	0	0	5.44E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
trans-1,2-Dichloroethene			--	0	--	0			0	0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Trichloroethene		7.00E-03	--	0	--	0		1.27E-05	0	0	1.27E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
1,2,4-Trimethylbenzene			--	0	--	0			0	0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
1,3,5-Trimethylbenzene			--	0	--	0			0	0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Vinyl chloride			--	0	--	0			0	0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Xylenes		1.50E-01	--	0	--	0		2.72E-04	0	0	2.72E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Pesticides (mg/kg)																								
alpha-Chlordane		4.80E-03	--	0	--	0		8.70E-06	0	0	8.70E-06	0.0014		6.2E-03	0.0E+00	0.0E+00	6.2E-03	0.014		6.2E-04	0.0E+00	0.0E+00	6.2E-04	
beta-BHC		1.00E-03	--	0	--	0		1.81E-06	0	0	1.81E-06	0.56		3.2E-06	0.0E+00	0.0E+00	3.2E-06	2.25		8.1E-07	0.0E+00	0.0E+00	8.1E-07	
delta-BHC		2.00E-03	--	0	--	0		3.62E-06	0	0	3.62E-06	0.56		6.5E-06	0.0E+00	0.0E+00	6.5E-06	2.25		1.6E-06	0.0E+00	0.0E+00	1.6E-06	
2,4-DDD		3.00E-02	1.04E+00	0	--	0		5.44E-05	8.60E-04	0	9.14E-04	0.009		6.0E-03	9.6E-02	0.0E+00	1.0E-01	1.5		3.6E-05	5.7E-04	0.0E+00	6.1E-04	
4,4-DDD		9.20E-02	1.04E+00	0	--	0		1.67E-04	2.64E-03	0	2.80E-03	0.009		1.9E-02	2.9E-01	0.0E+00	3.1E-01	1.5		1.1E-04	1.8E-03	0.0E+00	1.9E-03	
DDE	0.0000027	1.80E-02	1.04E+00	0	--	0	1.21E-07	3.26E-05	5.16E-04	0	5.49E-04	NTV	NTV	NTV	NTV	NTV	NTV	0.6	2.0E-07	5.4E-05	8.6E-04	0.0E+00	9.1E-04	
DDTs	0.00014	1.20E-02	1.04E+00	0	--	0	6.28E-06	2.17E-05	3.44E-04	0	3.72E-04	0.009	7.0E-04	2.4E-03	3.8E-02	0.0E+00	4.1E-02	1.5	4.2E-06	1.4E-05	2.3E-04	0.0E+00	2.5E-04	
Dieldrin		2.90E-03	--	0	--	0		5.25E-06	0	0	5.25E-06	0.0709		7.4E-05	0.0E+00	0.0E+00	7.4E-05	0.98		5.4E-06	0.0E+00	0.0E+00	5.4E-06	
Endosulfan I		4.00E-03	--	0	--	0		7.25E-06	0	0	7.25E-06	10		7.2E-07	0.0E+00	0.0E+00	7.2E-07	100		7.2E-08	0.0E+00	0.0E+00	7.2E-08	
Endosulfan sulfate	0.00012	3.00E-03	--	0	--	0	5.38E-06	5.44E-06	0	0	1.08E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Endrin	0.000014	2.00E-02	--	0	--	0	6.28E-07	3.62E-05	0	0	3.69E-05	0.3	2.1E-06	1.2E-04	0.0E+00	0.0E+00	1.2E-04	3	2.1E-07	1.2E-05	0.0E+00	0.0E+00	1.2E-05	
Endrin aldehyde		6.00E-03	--	0	--	0		1.09E-05	0	0	1.09E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Endrin Ketone		2.30E-03	--	0	--	0		4.17E-06	0	0	4.17E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
gamma-Chlordane		5.20E-03	--	0	--	0		9.42E-06	0	0	9.42E-06	0.0014		6.7E-03	0.0E+00	0.0E+00	6.7E-03	0.014		6.7E-04	0.0E+00	0.0E+00	6.7E-04	
Heptachlor	0.0000028	2.00E-04	--	0	--	0	1.26E-07	3.62E-07	0	0	4.88E-07	0.065	1.9E-06	5.6E-06	0.0E+00	0.0E+00	7.5E-06	0.65	1.9E-07	5.6E-07	0.0E+00	0.0E+00	7.5E-07	
Heptachlor epoxide		3.00E-04	--	0	--	0		5.44E-07	0	0	5.44E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Hexachlorobenzene		8.00E-04	--	0	--	0		1.45E-06	0	0	1.45E-06	0.23		6.3E-06	0.0E+00	0.0E+00	6.3E-06	2.3		6.3E-07	0.0E+00	0.0E+00	6.3E-07	
Methoxychlor		1.20E-02	--	0	--	0		2.17E-05	0	0	2.17E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Mirex		4.00E-03	--	0	--	0		7.25E-06	0	0	7.25E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
trans-Nonachlor		2.40E-03	--	0	--	0		4.35E-06	0	0	4.35E-06	0.0014		3.1E-03	0.0E+00	0.0E+00	3.1E-03	0.014		3.1E-04	0.0E+00	0.0E+00	3.1E-04	
SVOCs (mg/kg)																								
Acenaphthene		5.73E-02	--	0	--	0		1.04E-04	0	0	1.04E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Acenaphthylene		3.96E-02	--	0	--	0		7.17E-05	0	0	7.17E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Anthracene		6.58E-02	--	0	--	0		1.19E-04	0	0	1.19E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Benzo(a)anthracene		1.00E-01	--	0	--	0		1.81E-04	0	0	1.81E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Benzo(a)pyrene		9.00E-02	--	0	--	0		1.63E-04	0	0	1.63E-04	0.001		1.6E-01	0.0E+00	0.0E+00	1.6E-01	0.01		1.6E-02	0.0E+00	0.0E+00	1.6E-02	
Benzo(b)fluoranthene		8.00E-02	--	0	--	0		1.45E-04	0	0	1.45E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Benzo(ghi)perylene		8.00E-02	--	0	--	0		1.45E-04	0	0	1.45E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Benzo(k)fluoranthene		6.70E-02	--	0	--	0		1.21E-04	0	0	1.21E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Benzoic acid			--	0	--	0			0	0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Bis(2-ethylhexyl)phthalate	0.027	1.20E-01	--	0	--	0	1.21E-03	2.17E-04	0	0	1.43E-03	1.1	1.1E-03	2.0E-04	0.0E+00	0.0E+00	1.3E-03	11	1.1E-04	2.0E-05	0.0E+00	0.0E+00	1.3E-04	
Butylbenzylphthalate		2.50E-02	--	0	--	0		4.53E-05	0	0	4.53E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Carbazole		1.41E-01	--	0	--	0		2.55E-04	0	0	2.55E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
4-Chloroaniline		3.00E-03	--	0	--	0		5.44E-06	0	0	5.44E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
2-Chloropropane		4.33E-02	--	0	--	0		7.84E-05	0	0	7.84E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Chrysene	0.0002	9.00E-02	--	0	--	0	8.97E-06	1.63E-04	0	0	1.72E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Dibenzofuran		7.89E-02	--	0	--	0		1.43E-04	0	0	1.43E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
3,3-Dichlorobenzidine		1.20E-02	--	0	--	0		2.17E-05	0	0	2.17E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
2,6-Dinitrotoluene			--	0	--	0			0	0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Fluoranthene		8.00E-02	--	0	--	0		1.45E-04	0	0	1.45E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	

Table C2-k
Post-Remediation Great Blue Heron Risk Calculations (Wetland Sediment Residual Concentration)
Shallow Soil (0 - 2 ft bgs) at Hazard Quotient of 5
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Point Concentration						Intake (mg/kg BW-day)						Hazard Quotient (HQ) - Low						Hazard Quotient (HQ) - High					
COPEC[a]	**Surface Water (mg/L)[b]**	**Sediments[c]**	**Small Mammal BAF[d]**	**Small Mammal Tissue[d]**	**Amphibian BAF[d]**	**Amphibian Tissue[d]**	**Surface Water**	**Sediment**	**Small mammal**	**Amphibian**	**Total Intake (mg/kg/day)**	**Low TRV (mg/kg BW-day)**	**Surface Water**	**Sediment**	**Small mammal**	**Amphibian**	**Total Intake**	**High TRV (mg/kg BW-day)**	**Surface Water**	**Sediment**	**Small mammal**	**Amphibian**	**Total Intake**
Fluorene		5.40E-02	--	0	--	0		9.78E-05	0	0	9.78E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Indeno(123,cd)pyrene		1.00E-01	--	0	--	0		1.81E-04	0	0	1.81E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2-Methylnaphthalene		5.23E-02	--	0	--	0		9.48E-05	0	0	9.48E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Methylphenol	0.12	6.68E-02	--	0	--	0	5.38E-03	1.21E-04	0	0	5.50E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Naphthalene		9.00E-02	--	0	--	0		1.63E-04	0	0	1.63E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pentachlorophenol		4.84E-02	--	0	--	0		8.77E-05	0	0	8.77E-05	6.7		1.3E-05	0.0E+00	0.0E+00	1.3E-05	22.5		3.9E-06	0.0E+00	0.0E+00	3.9E-06
Phenanthrene		9.00E-02	--	0	--	0		1.63E-04	0	0	1.63E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Phenol		1.40E-01	--	0	--	0		2.54E-04	0	0	2.54E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pyrene		8.00E-02	--	0	--	0		1.45E-04	0	0	1.45E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
PCBs (mg/kg)																							
PCBs (TOTAL)-congeners	0.000016	8.00E-02	1.81E+01	1	1.03E+01	1	7.18E-07	1.45E-04	3.97E-02	2.83E-01	3.23E-01	0.09	8.0E-06	1.6E-03	4.4E-01	3.1E+00	3.6E+00 >1	1.27	5.7E-07	1.1E-04	3.1E-02	2.2E-01	2.5E-01
>1 = The calculated hazard quotient exceeds 1 (i.e., > 1.5)																							

Exposure Assumptions and Equation:[e]

	Value	Units
Ingestion Rate (IR) prey(dry wt.) =	0.126	kg/day (dry weight)
IRsmall mammal(dry wt.)[f] =	0.063	kg/day (dry weight)
IRamphibian (dry wt.)[f] =	0.063	kg/day (dry weight)
IRsediment (dry wt.)[g] =	0.00416	kg-day (dry weight)
Cprey =	chem-specific	mg/kg or µg/kg
Csediment =	chem-specific	mg/kg or µg/kg
Tissue Moisture (TMsmall mammal) =	68%	percent
Tissue Moisture (TMamphibian) =	85%	percent
IRsurface water[h] =	0.103	L/day
Csurface water =	chem-specific	mg/L or µg/L
Dietary Composition Factor (DCF)[i] =	100%	percent
Site Use Factor (SUF)[j] =	100%	percent
Body Weight (BW) =	2.295	kg

Intake Equation= [Irsmall mammal (dry wt) x (Cprey(small mammal, dry wt)/1-TM) x DCF x SUF]/BW] + [IRamphibian (dry wt) x Cprey(amphibians, dry wt) x DCF x SUF]/BW] + [(IRsediment x Csediment x DCF x SUF)]/BW + [(IRsurface water x Csurface water x DCF x

Risk (hazard quotient) = Intake / TRV

Prey tissue(dry wt) = Prey tissue (wet wt.) / (1-Tissue Moisture)

NTV = Not toxicity data available.

Blank cell indicates COPEC was not detected in this medium.

Notes:

a All chemicals detected in sediments are considered as constituents of potential ecological concern.

b All concentrations of constituents in surface water are based on the maximum concentration.

c All concentrations of constituents in sediment are based on the residual concentrations expressed in dry weight.

d Site-specific BAFs (dry weight basis). Calculated small mammal tissue and amphibian concentrations (sediment concentration x BAF). Tissue concentrations are on a dry weight basis.

e Exposure parameters used to calculate risk are discussed in detail in Section 4.2 of ERA.

f Based on dietary composition of 50% small mammal and 50% amphibians.

g Ingestion rate of sediment based on 3.3 percent of of the prey ingestion rate (dry weight); based on mallards (Beyer et al. 1994).

h Based on equation for birds: Water intake (L/day) = $0.059Wt(kg)^{0.67}$ (EPA 1993)

i Dietary composition factor was based on a conservative assumption of 100% dietary intake of small mammals and amphibians from the site.

j Site use factor was based on a conservative 100% use of the site for the heron's foraging range.

Table C2-3l
Post-Remediation Kildeer Risk Calculations (Wetland Sediment Residual Concentration)
Shallow Soil (0 - 2 ft bgs) at Hazard Quotient of 5
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Concentrations				Intake (mg/kg BW-day)					Hazard Quotient (HQ) - Low					Hazard Quotient (HQ) - High			
COPEC[a]	Surface Water (mg/L)[b]	Sediments[c]	Invertebrate BAF[d]	Invertebrate Tissue[d]	Surface Water	Soils	Invertebrate	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Soils	Invertebrate	Total Intake		High TRV (mg/kg BW-day)	Surface Water	Soils	Invertebrate	Total Intake
Metals (mg/kg)																			
Aluminum	12.6	2.68E+04	1.93E-01	5.17E+03	1.78E+00	1.03E+03	1.10E+03	2.14E+03	109.7	1.6E-02	9.4E+00	1.0E+01	1.9E+01	>1	1,097	1.6E-03	9.4E-01	1.0E+00	1.9E+00 >1
Antimony	0.003	2.60E+00	2.32E-01	6.02E-01	4.24E-04	1.00E-01	1.29E-01	2.29E-01	NTV	NTV	NTV	NTV	NTV	>1	NTV	NTV	NTV	NTV	NTV
Arsenic	0.0436	2.18E+01	1.92E-01	4.18E+00	6.15E-03	8.39E-01	8.94E-01	1.74E+00	5.5	1.1E-03	1.5E-01	1.6E-01	3.2E-01		22	2.8E-04	3.8E-02	4.1E-02	7.9E-02
Barium	0.24	9.00E+01	1.50E+00	1.35E+02	3.33E-02	3.46E+00	2.88E+01	3.23E+01	20.8	1.6E-03	1.7E-01	1.4E+00	1.6E+00	>1	41.7	8.0E-04	8.3E-02	6.9E-01	7.7E-01
Beryllium		4.40E-01	--	0		1.69E-02	0.00E+00	1.69E-02	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Cadmium	0.0016	2.60E+00	2.15E-01	5.59E-01	2.26E-04	1.00E-01	1.20E-01	2.20E-01	0.08	2.8E-03	1.3E+00	1.5E+00	2.7E+00	>1	10.40	2.2E-05	9.6E-03	1.1E-02	2.1E-02
Chromium +3	0.0263	1.85E+01	5.53E-01	1.02E+01	3.71E-03	7.12E-01	2.19E+00	2.90E+00	2.66	1.4E-03	2.7E-01	8.2E-01	1.1E+00		2.78	1.3E-03	2.6E-01	7.9E-01	1.0E+00
Chromium +6	0.0263	9.25E+01	5.53E-01	51	3.71E-03	3.56E+00	1.09E+01	1.45E+01	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Cobalt	0.0164	1.84E+01	--	0	2.32E-03	7.08E-01	0.00E+00	7.10E-01	7.61	3.0E-04	9.3E-02	0.0E+00	9.3E-02		17	1.4E-04	4.2E-02	0.0E+00	4.2E-02
Copper	0.233	1.19E+02	6.67E-01	7.94E+01	3.29E-02	4.58E+00	1.70E+01	2.16E+01	2.3	1.4E-02	2.0E+00	7.4E+00	9.4E+00	>1	52.3	6.3E-04	8.8E-02	3.2E-01	4.1E-01
Lead	0.0031	8.30E+01	5.07E-02	4.21E+00	4.38E-04	3.19E+00	9.00E-01	4.09E+00	0.014	3.1E-02	2.3E+02	6.4E+01	2.9E+02	>1	8.75	5.0E-05	3.7E-01	1.0E-01	4.7E-01
Manganese	7.42	9.34E+02	5.29E+00	4.94E+03	1.05E+00	3.59E+01	1.06E+03	1.09E+03	77.6	1.3E-02	4.6E-01	1.4E+01	1.4E+01	>1	776	1.3E-03	4.6E-02	1.4E+00	1.4E+00
Mercury	0.00029	1.20E+00	6.96E-01	8.36E-01	4.09E-05	4.62E-02	1.79E-01	2.25E-01	0.039	1.0E-03	1.2E+00	4.6E+00	5.8E+00	>1	0.18	2.3E-04	2.6E-01	9.9E-01	1.2E+00
Molybdenum	0.0312	5.00E+00	--	0	4.40E-03	1.92E-01	0.00E+00	1.97E-01	3.5	1.3E-03	5.5E-02	0.0E+00	5.6E-02		35.3	1.2E-04	5.5E-03	0.0E+00	5.6E-03
Nickel	0.166	1.06E+02	3.65E-01	3.86E+01	2.34E-02	4.08E+00	8.26E+00	1.24E+01	1.38	1.7E-02	3.0E+00	6.0E+00	9.0E+00	>1	56.3	4.2E-04	7.2E-02	1.5E-01	2.2E-01
Selenium	0.029	1.10E+00	--	0	4.09E-03	4.23E-02	0.00E+00	4.64E-02	0.23	1.8E-02	1.8E-01	0.0E+00	2.0E-01		0.93	4.4E-03	4.6E-02	0.0E+00	5.0E-02
Silver	0.0019	2.30E+00	--	0	2.68E-04	8.85E-02	0.00E+00	8.88E-02	178.00	1.5E-06	5.0E-04	0.0E+00	5.0E-04		NTV	NTV	NTV	NTV	NTV
Thallium		2.90E-01	--	0		1.12E-02	0.00E+00	1.12E-02	0.35		3.2E-02	0.0E+00	3.2E-02		NTV	NTV	NTV	NTV	NTV
Tin		2.00E+01	--	0		7.70E-01	0.00E+00	7.70E-01	6.80		1.1E-01	0.0E+00	1.1E-01		16.9		4.6E-02	0.0E+00	4.6E-02
Vanadium	0.05	1.03E+02	2.96E-02	3.04E+00	7.06E-03	3.96E+00	6.51E-01	4.62E+00	11.4	6.2E-04	3.5E-01	5.7E-02	4.1E-01		114	6.2E-05	3.5E-02	5.7E-03	4.1E-02
Zinc	0.042	2.23E+02	1.51E+00	3.37E+02	5.93E-03	8.58E+00	7.21E+01	8.07E+01	17.2	3.4E-04	5.0E-01	4.2E+00	4.7E+00	>1	172	3.4E-05	5.0E-02	4.2E-01	4.7E-01
Volatile Organics (mg/kg)																			
Acetone		1.00E-01	--	0		3.85E-03	0.00E+00	3.85E-03	52		7.4E-05	0.0E+00	7.4E-05		520		7.4E-06	0.0E+00	7.4E-06
Benzene			--	0			0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Carbon disulfide		7.00E-03	--	0		2.69E-04	0.00E+00	2.69E-04	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Chlorobenzene		5.00E-03	--	0		1.92E-04	0.00E+00	1.92E-04	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
cis-1,2-Dichlorobenzene			--	0			0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Ethylbenzene		1.80E-02	--	0		6.93E-04	0.00E+00	6.93E-04	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
4-Isopropyltoluene			--	0			0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Methylene chloride			--	0			0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Naphthalene			--	0			0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Toluene		3.00E-02	--	0		1.15E-03	0.00E+00	1.15E-03	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
trans-1,2-Dichloroethene			--	0			0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Trichloroethene		7.00E-03	--	0		2.69E-04	0.00E+00	2.69E-04	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
1,2,4-Trimethylbenzene			--	0			0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
1,3,5-Trimethylbenzene			--	0			0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Vinyl chloride			--	0			0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Xylenes		1.50E-01	--	0		5.77E-03	0.00E+00	5.77E-03	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Pesticides (mg/kg)																			
alpha-Chlordane		4.80E-03	--	0		1.85E-04	0.00E+00	1.85E-04	0.0014		1.3E-01	0.0E+00	1.3E-01		0.014		1.3E-02	0.0E+00	1.3E-02
beta-BHC		1.00E-03	--	0		3.85E-05	0.00E+00	3.85E-05	0.56		6.9E-05	0.0E+00	6.9E-05		2.25		1.7E-05	0.0E+00	1.7E-05
delta-BHC		2.00E-03	--	0		7.70E-05	0.00E+00	7.70E-05	0.56		1.4E-04	0.0E+00	1.4E-04		2.25		3.4E-05	0.0E+00	3.4E-05
2,4-DDD		3.00E-02	--	0		1.15E-03	0.00E+00	1.15E-03	0.009		1.3E-01	0.0E+00	1.3E-01		1.5		7.7E-04	0.0E+00	7.7E-04
4,4-DDD		9.20E-02	--	0		3.54E-03	0.00E+00	3.54E-03	0.009		3.9E-01	0.0E+00	3.9E-01		1.5		2.4E-03	0.0E+00	2.4E-03
DDE	0.0000027	1.80E-02	--	0	3.81E-07	6.93E-04	0.00E+00	6.93E-04	NTV	NTV	NTV	NTV	NTV		0.6	6.4E-07	1.2E-03	0.0E+00	1.2E-03
DDTs	0.00014	1.20E-02	--	0	1.98E-05	4.62E-04	0.00E+00	4.82E-04	0.009	2.2E-03	5.1E-02	0.0E+00	5.4E-02		1.5	1.3E-05	3.1E-04	0.0E+00	3.2E-04
Dieldrin		2.90E-03	--	0		1.12E-04	0.00E+00	1.12E-04	0.0709		1.6E-03	0.0E+00	1.6E-03		0.98		1.1E-04	0.0E+00	1.1E-04
Endosulfan I		4.00E-03	--	0		1.54E-04	0.00E+00	1.54E-04	10		1.5E-05	0.0E+00	1.5E-05		100		1.5E-06	0.0E+00	1.5E-06
Endosulfan sulfate	0.00012	3.00E-03	--	0	1.69E-05	1.15E-04	0.00E+00	1.32E-04	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Endrin	0.000014	2.00E-02	--	0	1.98E-06	7.70E-04	0.00E+00	7.72E-04	0.3	6.6E-06	2.6E-03	0.0E+00	2.6E-03		3	6.6E-07	2.6E-04	0.0E+00	2.6E-04
Endrin aldehyde		6.00E-03	--	0		2.31E-04	0.00E+00	2.31E-04	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Endrin Ketone		2.30E-03	--	0		8.85E-05	0.00E+00	8.85E-05	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Gamma-BHC	0.000011	5.20E-03	--	0	1.55E-06	2.00E-04	0.00E+00	2.02E-04	2	7.8E-07	1.0E-04	0.0E+00	1.0E-04		20	7.8E-08	1.0E-05	0.0E+00	1.0E-05
Heptachlor	0.0000028	2.00E-04	--	0	3.95E-07	7.70E-06	0.00E+00	8.09E-06	0.065	6.1E-06	1.2E-04	0.0E+00	1.2E-04		0.65	6.1E-07	1.2E-05	0.0E+00	1.2E-05
Heptachlor epoxide		3.00E-04	--	0		1.15E-05	0.00E+00	1.15E-05	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Hexachlorobenzene		8.00E-04	--	0		3.08E-05	0.00E+00	3.08E-05	0.23		1.3E-04	0.0E+00	1.3E-04		2.3		1.3E-05	0.0E+00	1.3E-05
Methoxychlor		1.20E-02	--	0		4.62E-04	0.00E+00	4.62E-04	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV

Table C2-3l
Post-Remediation Kildeer Risk Calculations (Wetland Sediment Residual Concentration)
Shallow Soil (0 - 2 ft bgs) at Hazard Quotient of 5
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Concentrations				Intake (mg/kg BW-day)					Hazard Quotient (HQ) - Low					Hazard Quotient (HQ) - High			
COPEC[a]	Surface Water (mg/L)[b]	Sediments[c]	Invertebrate BAF[d]	Invertebrate Tissue[d]	Surface Water	Soils	Invertebrate	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Soils	Invertebrate	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Soils	Invertebrate	Total Intake
Mirex		4.00E-03	--	0		1.54E-04	0.00E+00	1.54E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
trans-Nonachlor		2.40E-03	--	0		9.24E-05	0.00E+00	9.24E-05	0.0014		6.6E-02	0.0E+00	6.6E-02	0.014		6.6E-03	0.0E+00	6.6E-03
SVOCs (mg/kg)																		
Acenaphthene		5.73E-02	--	0		2.20E-03	0.00E+00	2.20E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Acenaphthylene		3.96E-02	--	0		1.52E-03	0.00E+00	1.52E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Anthracene		6.58E-02	--	0		2.53E-03	0.00E+00	2.53E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(a)anthracene		1.00E-01	--	0		3.85E-03	0.00E+00	3.85E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(a)pyrene		9.00E-02	--	0		3.46E-03	0.00E+00	3.46E-03	0.001		3.5E+00	0.0E+00	3.5E+00 >1	0.01		3.5E-01	0.0E+00	3.5E-01
Benzo(b)fluoranthene		8.00E-02	--	0		3.08E-03	0.00E+00	3.08E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(ghi)perylene		8.00E-02	--	0		3.08E-03	0.00E+00	3.08E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(k)fluoranthene		6.70E-02	--	0		2.58E-03	0.00E+00	2.58E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzoic acid			--	0			0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Bis(2-ethylhexyl)phthalate	0.027	1.20E-01	--	0	3.81E-03	4.62E-03	0.00E+00	8.43E-03	1.1	3.5E-03	4.2E-03	0.0E+00	7.7E-03	11	3.5E-04	4.2E-04	0.0E+00	7.7E-04
Butylbenzylphthalate		2.50E-02	--	0		9.62E-04	0.00E+00	9.62E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Carbazole		1.41E-01	--	0		5.43E-03	0.00E+00	5.43E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Chloroaniline		3.00E-03	--	0		1.15E-04	0.00E+00	1.15E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2-Chloropropane		4.33E-02	--	0		1.67E-03	0.00E+00	1.67E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chrysene	0.0002	9.00E-02	--	0	2.82E-05	3.46E-03	0.00E+00	3.49E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Dibenzofuran		7.89E-02	--	0		3.04E-03	0.00E+00	3.04E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
3,3-Dichlorobenzidine		1.20E-02	--	0		4.62E-04	0.00E+00	4.62E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2,6-Dinitrotoluene			--	0			0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Fluoranthene		8.00E-02	--	0		3.08E-03	0.00E+00	3.08E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Fluorene		5.40E-02	--	0		2.08E-03	0.00E+00	2.08E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Indeno(123,cd)pyrene		1.00E-01	--	0		3.85E-03	0.00E+00	3.85E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2-Methylnaphthalene		5.23E-02	--	0		2.01E-03	0.00E+00	2.01E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Methylphenol	0.12	6.68E-02	--	0	1.69E-02	2.57E-03	0.00E+00	1.95E-02	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Naphthalene		9.00E-02	--	0		3.46E-03	0.00E+00	3.46E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pentachlorophenol		4.84E-02	--	0		1.86E-03	0.00E+00	1.86E-03	6.7		2.8E-04	0.0E+00	2.8E-04	22.5		8.3E-05	0.0E+00	8.3E-05
Phenanthrene		9.00E-02	2.51E+00	2.26E-01		3.46E-03	4.83E-02	5.18E-02	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Phenol		1.40E-01	--	0		5.39E-03	0.00E+00	5.39E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pyrene		8.00E-02	--	0		3.08E-03	0.00E+00	3.08E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
PCBs (mg/kg)																		
PCBs (TOTAL)-congeners	0.000016	8.00E-02	1.16E+01	9.29E-01	2.26E-06	3.08E-03	1.99E-01	2.02E-01	0.09	2.5E-05	3.4E-02	2.2E+00	2.2E+00 >1	1.27	1.8E-06	2.4E-03	1.6E-01	1.6E-01
>1 = The calculated hazard quotient exceeds 1 (i.e., > 1.5)																		

Exposure Assumptions and Equation:[e]

	Value	Units
Ingestion Rate (IR) prey(dry wt.) =	0.0152	kg/day (dry weight)
IRinvertebrate(dry wt.) =	0.0152	kg/day (dry weight)
IRsediment (dry wt.)[f] =	0.00274	kg-day (dry weight)
Cprey =	chem-specific	mg/kg or µg/kg
Csediment =	chem-specific	mg/kg or µg/kg
IRsurface water[g] =	0.010	L/day
Csurface water =	chem-specific	mg/L or µg/L
Dietary Composition Factor (DCF)[h] =	100%	percent
Site Use Factor (SUF)[i] =	100%	percent
Body Weight (BW) =	0.0711	kg

Intake Equation = [IRinvertebrate (dry wt) x Cprey(invertebrate, dry wt) x DCF x SUF]/BW] +[(IRsediment x Csediment x DCF x SUF)]/BW] + [(IRsurface water x Csurface water x DCF x SUF)]/BW]

Risk (hazard quotient) = Intake / TRV

Prey tissue(dry wt) = Prey tissue (wet wt.) / (1-Tissue Moisture)

NTV = Not toxicity data available.

NA = Not available.

Blank cell indicates COPEC was not detected in this medium.

Notes:

a All chemicals detected in sediments are considered as constituents of potential ecological concern.

b All concentrations of constituents in surface water are based on the maximum concentration.

c All concentrations of constituents in sediment are based on the residual concentrations expressed in dry weight.

d Site-specific BAFs (dry weight basis). Calculated invertebrate tissue concentrations (sediment concentration x BAF). Tissue concentrations are on a dry weight basis.

e Exposure parameters used to calculate risk are discussed in detail in Section 4.2 of ERA.

f Ingestion rate of sediment based on 18 percent of of the prey ingestion rate (dry weight); based on average of sandpiper data from Beyer et al. 1994).

g Based on equation for birds: Water intake (L/day) = $0.059Wt(kg)^{0.67}$ (EPA 1993)

h Dietary composition factor was based on a conservative assumption of 100% dietary intake of invertebrates from the site.

i Site use factor was based on a conservative 100% use of the site for the killdeer's foraging range.

Table C2-3m
Post-Remediation Salt Marsh Harvest Mouse Risk Calculations (Wetland Sediment Residual Concentration)
Shallow Soil (0 - 2 ft bgs) at Hazard Quotient of 5
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Concentrations				Intake (mg/kg BW-day)					HQ - Low TRV					HQ - High TRV			
COPEC[a]	Surface Water (mg/L)[b]	Sediments[c]	Pickelweed BAF[d]	Pickleweed Tissue[d]	Surface Water	Sediment	Pickleweed	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Pickleweed	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Sediment	Pickleweed	Total Intake
Metals (mg/kg)																		
Aluminum	12.6	2.68E+04	3.64E-03	97	1.98E+00	1.97E+02	2.98E+01	2.29E+02	1.93	1.0E+00	1.0E+02	1.5E+01	1.2E+02 >1	19.3	1.0E-01	1.0E+01	1.5E+00	1.2E+01 >1
Antimony	0.003	2.60E+00	2.95E+00	8	4.71E-04	1.91E-02	2.35E+00	2.37E+00	0.06	8.0E-03	3.2E-01	4.0E+01	4.0E+01 >1	23.4	2.0E-05	8.2E-04	1.0E-01	1.0E-01
Arsenic	0.0436	2.18E+01	1.50E-01	3	6.84E-03	1.60E-01	1.00E+00	1.17E+00	0.32	2.1E-02	5.0E-01	3.1E+00	3.7E+00 >1	4.7	1.5E-03	3.4E-02	2.1E-01	2.5E-01
Barium	0.24	9.00E+01	5.56E-01	50	3.70E-02	6.61E-01	1.53E+01	1.60E+01	51.8	7.1E-04	1.3E-02	3.0E-01	3.1E-01	66.0	5.6E-04	1.0E-02	2.3E-01	2.4E-01
Beryllium		4.40E-01	--	0		3.23E-03	0	3.23E-03	0.532		6.1E-03	0.0E+00	6.1E-03	0.554		5.8E-03	0.0E+00	5.8E-03
Cadmium	0.0016	2.60E+00	6.76E-01	2	2.51E-04	1.91E-02	5.38E-01	5.58E-01	0.06	4.2E-03	3.2E-01	9.0E+00	9.3E+00 >1	2.64	9.5E-05	7.2E-03	2.0E-01	2.1E-01
Chromium +3	0.0263	1.85E+01	--	0	4.13E-03	1.36E-01	0	1.40E-01	2	1.7E-03	5.7E-02	0.0E+00	5.8E-02	23.1	1.8E-04	5.9E-03	0.0E+00	6.1E-03
Chromium +6	0.0263	9.25E+01	--	0	4.13E-03	6.79E-01	0	6.83E-01	5.66	7.3E-04	1.2E-01	0.0E+00	1.2E-01	35.1	1.2E-04	1.9E-02	0.0E+00	1.9E-02
Cobalt	0.0164	1.84E+01	--	0	2.57E-03	1.35E-01	0	1.38E-01	1.2	2.1E-03	1.1E-01	0.0E+00	1.1E-01	20	1.3E-04	6.8E-03	0.0E+00	6.9E-03
Copper	0.233	1.19E+02	1.82E-01	22	3.66E-02	8.74E-01	6.62E+00	7.53E+00	2.67	1.4E-02	3.3E-01	2.5E+00	2.8E+00 >1	632	5.8E-05	1.4E-03	1.0E-02	1.2E-02
Lead	0.0031	8.30E+01	7.92E-02	7	4.86E-04	6.10E-01	2.01E+00	2.62E+00	1	4.9E-04	6.1E-01	2.0E+00	2.6E+00 >1	241	2.0E-06	2.5E-03	8.4E-03	1.1E-02
Manganese	7.42	9.34E+02	1.75E+00	1637	1.16E+00	6.86E+00	5.01E+02	5.09E+02	13.7	8.5E-02	5.0E-01	3.7E+01	3.7E+01 >1	159.09	7.3E-03	4.3E-02	3.1E+00	3.2E+00 >1
Mercury	0.00029	1.20E+00	--	0	4.55E-05	8.81E-03	0	8.86E-03	0.027	1.7E-03	3.3E-01	0.0E+00	3.3E-01	0.27	1.7E-04	3.3E-02	0.0E+00	3.3E-02
Molybdenum	0.0312	5.00E+00	--	0	4.90E-03	3.67E-02	0	4.16E-02	0.26	1.9E-02	1.4E-01	0.0E+00	1.6E-01	2.6	1.9E-03	1.4E-02	0.0E+00	1.6E-02
Nickel	0.166	1.06E+02	1.14E-01	12	2.60E-02	7.78E-01	3.69E+00	4.50E+00	0.13	2.0E-01	5.9E+00	2.8E+01	3.4E+01 >1	31.6	8.2E-04	2.5E-02	1.2E-01	1.4E-01
Selenium	0.029	1.10E+00	--	0	4.55E-03	8.08E-03	0	1.26E-02	0.05	9.1E-02	1.6E-01	0.0E+00	2.5E-01	1.21	3.8E-03	6.7E-03	0.0E+00	1.0E-02
Silver	0.0019	2.30E+00	--	0	2.98E-04	1.69E-02	0	1.72E-02	0.38	7.9E-04	4.5E-02	0.0E+00	4.6E-02	3.75	7.9E-05	4.5E-03	0.0E+00	4.6E-03
Thallium		2.90E-01	--	0		2.13E-03	0	2.13E-03	0.48		4.4E-03	0.0E+00	4.4E-03	1.43		1.5E-03	0.0E+00	1.5E-03
Tin		2.00E+01	6.21E+00	124		1.47E-01	3.80E+01	3.82E+01	23.4		6.3E-03	1.6E+00	1.6E+00 >1	35		4.2E-03	1.1E+00	1.1E+00
Vanadium	0.05	1.03E+02	--	0	7.85E-03	7.56E-01	0	7.64E-01	0.21	3.7E-02	3.6E+00	0.0E+00	3.6E+00 >1	2.1	3.7E-03	3.6E-01	0.0E+00	3.6E-01
Zinc	0.042	2.23E+02	3.77E-01	84	6.59E-03	1.64E+00	2.57E+01	2.73E+01	9.6	6.9E-04	1.7E-01	2.7E+00	2.8E+00 >1	411	1.6E-05	4.0E-03	6.2E-02	6.6E-02
Volatile Organics (mg/kg)																		
Acetone		1.00E-01	--	0		7.34E-04	0	7.34E-04	10	1.0E+01	7.3E-05	0.0E+00	7.3E-05	50		1.5E-05	0.0E+00	1.5E-05
Benzene			--	0			0	0.00E+00	26.4			0.0E+00	0.0E+00	263.6			0.0E+00	0.0E+00
Carbon disulfide		7.00E-03	--	0		5.14E-05	0	5.14E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chlorobenzene		5.00E-03	--	0		3.67E-05	0	3.67E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
cis-1,2-Dichlorobenzene			--	0			0	0.00E+00	45.2			0.0E+00	0.0E+00	452			0.0E+00	0.0E+00
Ethylbenzene		1.80E-02	--	0		1.32E-04	0	1.32E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Isopropyltoluene			--	0			0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Methylene chloride			--	0			0	0.00E+00	5.9			0.0E+00	0.0E+00	50			0.0E+00	0.0E+00
Naphthalene			--	0			0	0.00E+00	50			0.0E+00	0.0E+00	150			0.0E+00	0.0E+00
Toluene		3.00E-02	--	0		2.20E-04	0	2.20E-04	26		8.5E-06	0.0E+00	8.5E-06	260		8.5E-07	0.0E+00	8.5E-07
trans-1,2-Dichloroethene			--	0			0	0.00E+00	45.2			0.0E+00	0.0E+00	452			0.0E+00	0.0E+00
Trichloroethene		7.00E-03	--	0		5.14E-05	0	5.14E-05	0.7		7.3E-05	0.0E+00	7.3E-05	7		7.3E-06	0.0E+00	7.3E-06
1,2,4-Trimethylbenzene			--	0			0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
1,3,5-Trimethylbenzene			--	0			0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Vinyl chloride			--	0			0	0.00E+00	0.17			0.0E+00	0.0E+00	2			0.0E+00	0.0E+00
Xylenes		1.50E-01	--	0		1.10E-03	0	1.10E-03	2.1		5.2E-04	0.0E+00	5.2E-04	2.6		4.2E-04	0.0E+00	4.2E-04
Pesticides (mg/kg)																		
alpha-Chlordane		4.80E-03	--	0		3.53E-05	0	3.53E-05	4.6		7.7E-06	0.0E+00	7.7E-06	9.2		3.8E-06	0.0E+00	3.8E-06
beta-BHC		1.00E-03	--	0		7.34E-06	0	7.34E-06	1.6		4.6E-06	0.0E+00	4.6E-06	3.2		2.3E-06	0.0E+00	2.3E-06
delta-BHC		2.00E-03	--	0		1.47E-05	0	1.47E-05	1.6		9.2E-06	0.0E+00	9.2E-06	3.2		4.6E-06	0.0E+00	4.6E-06
2,4-DDD		3.00E-02	--	0		2.20E-04	0	2.20E-04	0.8		2.8E-04	0.0E+00	2.8E-04	16		1.4E-05	0.0E+00	1.4E-05
4,4-DDD		9.20E-02	--	0		6.76E-04	0	6.76E-04	0.8		8.4E-04	0.0E+00	8.4E-04	16		4.2E-05	0.0E+00	4.2E-05
DDE	0.0000027	1.80E-02	--	0	4.24E-07	1.32E-04	0	1.33E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
DDTs	0.00014	1.20E-02	--	0	2.20E-05	8.81E-05	0	1.10E-04	0.8	2.7E-05	1.1E-04	0.0E+00	1.4E-04	16	1.4E-06	5.5E-06	0.0E+00	6.9E-06
Dieldrin		2.90E-03	--	0		2.13E-05	0	2.13E-05	0.015		1.4E-03	0.0E+00	1.4E-03	1.7		1.3E-05	0.0E+00	1.3E-05
Endosulfan I		4.00E-03	--	0		2.94E-05	0	2.94E-05	0.15		2.0E-04	0.0E+00	2.0E-04	1.5		2.0E-05	0.0E+00	2.0E-05
Endosulfan sulfate	0.00012	3.00E-03	--	0	1.88E-05	2.20E-05	0	4.09E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Endrin	0.000014	2.00E-02	--	0	2.20E-06	1.47E-04	0	1.49E-04	0.09	2.4E-05	1.6E-03	0.0E+00	1.6E-03	0.92	2.4E-06	1.6E-04	0.0E+00	1.6E-04
Endrin aldehyde		6.00E-03	--	0		4.41E-05	0	4.41E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Endrin Ketone		2.30E-03	--	0		1.69E-05	0	1.69E-05	NTV	NTV	NTV	NTV	NTV	0.92		1.8E-05	0.0E+00	1.8E-05
gamma-Chlordane		5.20E-03	--	0		3.82E-05	0	3.82E-05	4.6		8.3E-06	0.0E+00	8.3E-06	9.2		4.2E-06	0.0E+00	4.2E-06
Heptachlor	0.0000028	2.00E-04	--	0	4.39E-07	1.47E-06	0	1.91E-06	0.13	3.4E-06	1.1E-05	0.0E+00	1.5E-05	6.8	6.5E-08	2.2E-07	0.0E+00	2.8E-07
Heptachlor epoxide		3.00E-04	--	0		2.20E-06	0	2.20E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Hexachlorobenzene		8.00E-04	--	0		5.88E-06	0	5.88E-06	1.6		3.7E-06	0.0E+00	3.7E-06	16		3.7E-07	0.0E+00	3.7E-07
Methoxychlor		1.20E-02	--	0		8.81E-05	0	8.81E-05	2.5		3.5E-05	0.0E+00	3.5E-05	50		1.8E-06	0.0E+00	1.8E-06
Mirex		4.00E-03	--	0		2.94E-05	0	2.94E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
trans-Nonachlor		2.40E-03	--	0		1.76E-05	0	1.76E-05	4.6		3.8E-06	0.0E+00	3.8E-06	9.2		1.9E-06	0.0E+00	1.9E-06

Table C2-3m
Post-Remediation Salt Marsh Harvest Mouse Risk Calculations (Wetland Sediment Residual Concentration)
Shallow Soil (0 - 2 ft bgs) at Hazard Quotient of 5
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Concentrations				Intake (mg/kg BW-day)					HQ - Low TRV					HQ - High TRV			
COPEC[a]	Surface Water (mg/L)[b]	Sediments[c]	Pickelweed BAF[d]	Pickleweed Tissue[d]	Surface Water	Sediment	Pickleweed	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Pickleweed	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Sediment	Pickleweed	Total Intake
SVOCs (mg/kg)																		
Acenaphthene		5.73E-02	--	0		4.21E-04	0	4.21E-04	1.31		3.2E-04	0.0E+00	3.2E-04	32.8		1.3E-05	0.0E+00	1.3E-05
Acenaphthylene		3.96E-02	--	0		2.91E-04	0	2.91E-04	1.31		2.2E-04	0.0E+00	2.2E-04	32.8		8.9E-06	0.0E+00	8.9E-06
Anthracene		6.58E-02	--	0		4.83E-04	0	4.83E-04	1.31		3.7E-04	0.0E+00	3.7E-04	32.8		1.5E-05	0.0E+00	1.5E-05
Benzo(a)anthracene		1.00E-01	1.29E+00	0		7.34E-04	3.96E-02	4.03E-02	1.31		5.6E-04	3.0E-02	3.1E-02	32.8		2.2E-05	1.2E-03	1.2E-03
Benzo(a)pyrene		9.00E-02	2.31E+00	0		6.61E-04	6.37E-02	6.44E-02	1.31		5.0E-04	4.9E-02	4.9E-02	32.8		2.0E-05	1.9E-03	2.0E-03
Benzo(b)fluoranthene		8.00E-02	1.55E+00	0		5.88E-04	3.80E-02	3.86E-02	1.31		4.5E-04	2.9E-02	2.9E-02	32.8		1.8E-05	1.2E-03	1.2E-03
Benzo(ghi)perylene		8.00E-02	1.55E+00	0		5.88E-04	3.80E-02	3.86E-02	1.31		4.5E-04	2.9E-02	2.9E-02	32.8		1.8E-05	1.2E-03	1.2E-03
Benzo(k)fluoranthene		6.70E-02	1.55E+00	0		4.92E-04	3.18E-02	3.23E-02	1.31		3.8E-04	2.4E-02	2.5E-02	32.8		1.5E-05	9.7E-04	9.9E-04
Benzoic acid			--	0			0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Bis(2-ethylhexyl)phthalate	0.027	1.20E-01	--	0	4.24E-03	8.81E-04	0	5.12E-03	18.3	2.3E-04	4.8E-05	0.0E+00	2.8E-04	183	2.3E-05	4.8E-06	0.0E+00	2.8E-05
Butylbenzylphthalate		2.50E-02	--	0		1.84E-04	0	1.84E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Carbazole		1.41E-01	--	0		1.04E-03	0	1.04E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Chloroaniline		3.00E-03	--	0			0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2-Chlorophenol		4.33E-02	--	0		3.18E-04	0	3.18E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chrysene	0.0002	9.00E-02	2.09E+00	0	3.14E-05	6.61E-04	5.76E-02	5.83E-02	1.31	2.4E-05	5.0E-04	4.4E-02	4.4E-02	32.8	9.6E-07	2.0E-05	1.8E-03	1.8E-03
Dibenzofuran		7.89E-02	--	0		5.79E-04	0	5.79E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
3,3-Dichlorobenzidine		1.20E-02	--	0		8.81E-05	0	8.81E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2,6-Dinitrotoluene			--	0			0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Fluoranthene		8.00E-02	--	0		5.88E-04	0	5.88E-04	1.31		4.5E-04	0.0E+00	4.5E-04	32.8		1.8E-05	0.0E+00	1.8E-05
Fluorene		5.40E-02	--	0		3.97E-04	0	3.97E-04	1.31		3.0E-04	0.0E+00	3.0E-04	32.8		1.2E-05	0.0E+00	1.2E-05
Indeno(123,cd)pyrene		1.00E-01	3.17E+00	0		7.34E-04	9.70E-02	9.77E-02	1.31		5.6E-04	7.4E-02	7.5E-02	32.8		2.2E-05	3.0E-03	3.0E-03
2-Methylnaphthalene		5.23E-02	--	0		3.84E-04	0	3.84E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Methylphenol	0.12	6.68E-02	--	0	1.88E-02	4.91E-04	0	1.93E-02	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Naphthalene		9.00E-02	--	0		6.61E-04	0	6.61E-04	50		1.3E-05	0.0E+00	1.3E-05	150		4.4E-06	0.0E+00	4.4E-06
Pentachlorophenol		4.84E-02	--	0		3.55E-04	0	3.55E-04	8.42		4.2E-05	0.0E+00	4.2E-05	27.4		1.3E-05	0.0E+00	1.3E-05
Phenanthrene		9.00E-02	--	0		6.61E-04	0	6.61E-04	1.31		5.0E-04	0.0E+00	5.0E-04	32.8		2.0E-05	0.0E+00	2.0E-05
Phenol		1.40E-01	--	0		1.03E-03	0	1.03E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pyrene		8.00E-02	--	0		5.88E-04	0	5.88E-04	1.31		4.5E-04	0.0E+00	4.5E-04	32.8		1.8E-05	0.0E+00	1.8E-05
PCBs (mg/kg)																		
PCBs (TOTAL)-congeners	0.000016	8.00E-02	2.72E+00	0	2.51E-06	5.88E-04	6.65E-02	6.71E-02	0.36	7.0E-06	1.6E-03	1.8E-01	1.9E-01	1.28	2.0E-06	4.6E-04	5.2E-02	5.2E-02

>1 = The calculated hazard quotient exceeds 1 (i.e., > 1.5)

Exposure Assumptions and Equation:[e]

	Value	Units
Ingestion Rate (IR) prey(dry wt.) =	0.00306	kg/day (dry weight)
Irpickleweed (dry wt.) =	0.00306	kg/day (dry weight)
IRsediment (dry wt.)[f] =	0.0000734	kg-day (dry weight)
Cprey =	chem-specific	mg/kg or µg/kg
Csediment =	chem-specific	mg/kg or µg/kg
Tissue Moisture (pickleweed) =	81.6%	percent
IRsurface water[g] =	0.00157	L/day
Csurface water =	chem-specific	mg/L or µg/L
Dietary Composition Factor (DCF)[h] =	100%	percent
Site Use Factor (SUF)[i] =	100%	percent
Body Weight (BW) =	0.01	kg

Intake Equation = [Irpickleweed (dry wt) x (Cprey(pickleweed, dry wt)/1-TM) x DCF x SUF]/BW] + [(IRsediment x Csediment x DCF x SUF)]/BW]+ [(Irsurface water x Csurface water x DCF x SUF)]/BW]

Risk (hazard quotient) = Intake / TRV

Prey tissue(dry wt) = Prey tissue (wet wt.) / (1-Tissue Moisture)

NTV = Not toxicity data available.

Blank cell indicates COPEC was not detected in this medium.

Notes:

a All chemicals detected in sediments are considered as constituents of potential ecological concern.

b All concentrations of constituents in surface water are based on the maximum concentration.

c All concentrations of constituents in sediment are based on the residual concentrations expressed in dry weight.

d Site-specific BAFs (dry weight basis). Calculated pickelweed tissue concentrations (sediment concentration x BAF). Tissue concentrations are on a dry weight basis.

e Exposure parameters used to calculate risk are discussed in detail in Section 4.2 of ERA.

f Ingestion rate of sediment based on 2.4 percent of of the prey ingestion rate (dry weight); based on a meadow vole (Beyer et al. (1994).

g Based on equation for mammals: Water intake (L/day) = $0.099Wt(kg)^{0.90}$ (EPA 1993)

h Dietary composition factor was based on a conservative assumption of 100% dietary intake of pickleweed from the site.

i Site use factor was based on a conservative 100% use of the site for the harvest mouse's foraging range.

Table C2-3n
Summary of Residual Risk Estimates: Shallow Soil (0 - 2 ft bgs)
Hazard Quotient = 5
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Fox		Harrier		Mallard (breeding)		Mallard (non-breeding)		Heron		Killdeer		Salt Marsh Harvest Mouse	
Chemical	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**
Hazard Quotient = 5														
Metals (mg/kg)														
Aluminum	6.3E+00 >1	6.3E-01	1.2E-01	1.2E-02	1.7E+00 >1	1.7E-01	9.8E-02	9.8E-03	1.2E-01	1.2E-02	1.9E+01 >1	1.9E+00 >1	1.2E+02 >1	1.2E+01 >1
Antimony	6.3E-01	1.6E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV >1	NTV	4.0E+01 >1	1.0E-01
Arsenic	2.5E-02	1.7E-03	9.1E-04	2.3E-04	3.2E-02	8.0E-03	5.8E-03	1.5E-03	9.1E-04	2.3E-04	3.2E-01	7.9E-02	3.7E+00 >1	2.5E-01
Barium	2.5E-03	2.0E-03	1.2E-02	6.0E-03	2.0E-01	1.0E-01	4.8E-03	2.4E-03	1.2E-02	6.0E-03	1.6E+00 >1	7.7E-01	3.1E-01	2.4E-01
Beryllium	2.6E-04	2.5E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	6.1E-03	5.8E-03
Cadmium	1.4E-02	3.3E-04	6.6E-03	5.1E-05	6.9E-01	5.3E-03	4.6E-01	3.5E-03	6.6E-03	5.1E-05	2.7E+00 >1	2.1E-02	9.3E+00 >1	2.1E-01
Chromium +3	5.0E-03	5.2E-04	6.4E-03	6.2E-03	1.2E-01	1.2E-01	2.3E-03	2.2E-03	6.4E-03	6.2E-03	1.1E+00	1.0E+00	5.8E-02	6.1E-03
Chromium +6	1.0E-02	1.6E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	1.2E-01	1.9E-02
Cobalt	5.2E-03	3.1E-04	5.0E-04	2.2E-04	3.2E-03	1.4E-03	7.9E-04	3.6E-04	5.0E-04	2.2E-04	9.3E-02	4.2E-02	1.1E-01	6.9E-03
Copper	1.9E-01	8.1E-04	5.0E-01	2.2E-02	1.1E+00	4.9E-02	4.6E-02	2.0E-03	5.0E-01	2.2E-02	9.4E+00 >1	4.1E-01	2.8E+00 >1	1.2E-02
Lead	6.0E-01	2.5E-03	1.0E+02 >1	1.6E-01	1.7E+01 >1	2.7E-02	2.4E+00 >1	3.8E-03	1.0E+02 >1	1.6E-01	2.9E+02 >1	4.7E-01	2.6E+00 >1	1.1E-02
Manganese	3.3E-02	2.9E-03	4.1E-03	4.1E-04	1.9E+00 >1	1.9E-01	6.2E-02	6.2E-03	4.1E-03	4.1E-04	1.4E+01 >1	1.4E+00	3.7E+01 >1	3.2E+00 >1
Mercury	1.4E-02	1.4E-03	6.0E-03	1.3E-03	6.7E-01	1.5E-01	1.0E-02	2.2E-03	6.0E-03	1.3E-03	5.8E+00 >1	1.2E+00	3.3E-01	3.3E-02
Molybdenum	8.7E-03	8.7E-04	4.4E-04	4.4E-05	2.1E-03	2.0E-04	5.2E-04	5.1E-05	4.4E-04	4.4E-05	5.6E-02	5.6E-03	1.6E-01	1.6E-02
Nickel	2.8E-01	1.2E-03	1.7E-02	4.2E-04	9.4E-01	2.3E-02	3.6E-02	8.8E-04	1.7E-02	4.2E-04	9.0E+00 >1	2.2E-01	3.4E+01 >1	1.4E-01
Selenium	1.6E+00 >1	6.4E-02	8.0E-01	2.0E-01	9.2E-03	2.3E-03	2.3E-03	5.7E-04	8.0E-01	2.0E-01	2.0E-01	5.0E-02	2.5E-01	1.0E-02
Silver	2.1E-03	2.1E-04	2.7E-06	NTV	1.7E-05	NTV	4.2E-06	NTV	2.7E-06	NTV	5.0E-04	NTV	4.6E-02	4.6E-03
Thallium	7.1E-03	2.4E-03	2.3E-02	NTV	1.1E-03	NTV	2.7E-04	NTV	2.3E-02	NTV	3.2E-02	NTV	4.4E-03	1.5E-03
Tin	2.7E-04	1.8E-04	5.6E-04	2.3E-04	4.9E-02	2.0E-02	4.6E-02	1.8E-02	5.6E-04	2.3E-04	1.1E-01	4.6E-02	1.6E+00 >1	1.1E+00
Vanadium	1.6E-01	1.6E-02	1.8E-03	1.8E-04	2.2E-02	2.2E-03	4.9E-03	4.9E-04	1.8E-03	1.8E-04	4.1E-01	4.1E-02	3.6E+00 >1	3.6E-01
Zinc	3.0E-01	7.0E-03	3.9E-01	3.9E-02	6.0E-01	6.0E-02	1.5E-02	1.5E-03	3.9E-01	3.9E-02	4.7E+00 >1	4.7E-01	2.8E+00 >1	6.6E-02
Volatile Organics (mg/kg)														
Acetone	3.2E-06	6.4E-07	3.7E-07	3.7E-08	2.5E-06	2.5E-07	6.2E-07	6.2E-08	3.7E-07	3.7E-08	7.4E-05	7.4E-06	7.3E-05	1.5E-05
Benzene	0.0E+00	0.0E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	0.0E+00	0.0E+00
Carbon disulfide	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chlorobenzene	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
cis-1,2-Dichlorobenzene	0.0E+00	0.0E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	0.0E+00	0.0E+00
Ethylbenzene	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Isopropyltoluene	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Methylene chloride	0.0E+00	0.0E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	0.0E+00	0.0E+00
Naphthalene	0.0E+00	0.0E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	0.0E+00	0.0E+00
Toluene	3.7E-07	3.7E-08	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	8.5E-06	8.5E-07
trans-1,2-Dichloroethene	0.0E+00	0.0E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	0.0E+00	0.0E+00
Trichloroethene	3.2E-06	3.2E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	7.3E-05	7.3E-06
1,2,4-Trimethylbenzene	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
1,3,5-Trimethylbenzene	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Vinyl chloride	0.0E+00	0.0E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	0.0E+00	0.0E+00
Xylenes	2.3E-05	1.8E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	5.2E-04	4.2E-04

Table C2-3n
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Hazard Quotient = 5
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Fox		Harrier		Mallard (breeding)		Mallard (non-breeding)		Heron		Killdeer		Salt Marsh Harvest Mouse	
Chemical	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**
Pesticides (mg/kg)														
alpha-Chlordane	3.3E-07	1.7E-07	6.5E-04	6.5E-05	4.4E-03	4.4E-04	1.1E-03	0.000110834	6.5E-04	6.5E-05	1.3E-01	1.3E-02	7.7E-06	3.8E-06
beta-BHC	2.0E-07	1.0E-07	3.4E-07	8.5E-08	2.3E-06	5.7E-07	5.8E-07	1.4E-07	3.4E-07	8.5E-08	6.9E-05	1.7E-05	4.6E-06	2.3E-06
delta-BHC	4.0E-07	2.0E-07	6.8E-07	1.7E-07	4.6E-06	1.1E-06	1.2E-06	2.9E-07	6.8E-07	1.7E-07	1.4E-04	3.4E-05	9.2E-06	4.6E-06
2,4-DDD	4.6E-04	2.3E-05	9.5E-02	5.7E-04	4.3E-03	2.6E-05	1.1E-03	6.5E-06	9.5E-02	5.7E-04	1.3E-01	7.7E-04	2.8E-04	1.4E-05
DDD	1.4E-03	7.0E-05	2.9E-01	1.8E-03	1.3E-02	7.9E-05	3.3E-03	2.0E-05	2.9E-01	1.8E-03	3.9E-01	2.4E-03	8.4E-04	4.2E-05
DDE	NTV	NTV	NTV	8.6E-04	NTV	3.9E-05	NTV	9.7E-06	NTV	8.6E-04	NTV	1.2E-03	NTV	NTV
DDTs	1.9E-04	9.4E-06	3.8E-02	2.3E-04	2.1E-03	1.3E-05	5.2E-04	3.1E-06	3.8E-02	2.3E-04	5.4E-02	3.2E-04	1.4E-04	6.9E-06
Dieldrin	6.2E-05	5.4E-07	7.8E-06	5.6E-07	5.3E-05	3.8E-06	1.3E-05	9.6E-07	7.8E-06	5.6E-07	1.6E-03	1.1E-04	1.4E-03	1.3E-05
Endosulfan I	8.5E-06	8.5E-07	7.6E-08	7.6E-09	5.2E-07	5.2E-08	1.3E-07	1.3E-08	7.6E-08	7.6E-09	1.5E-05	1.5E-06	2.0E-04	2.0E-05
Endosulfan sulfate	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Endrin	7.3E-05	7.3E-06	1.4E-05	1.4E-06	8.7E-05	8.7E-06	2.2E-05	2.2E-06	1.4E-05	1.4E-06	2.6E-03	2.6E-04	1.6E-03	1.6E-04
Endrin aldehyde	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Endrin Ketone	NTV	8.0E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	1.8E-05
gamma-Chlordane	3.6E-07	1.8E-07	7.1E-04	7.1E-05	4.8E-03	4.8E-04	1.2E-03	1.2E-04	7.1E-04	7.1E-05	1.0E-04	1.0E-05	8.3E-06	4.2E-06
Heptachlor	9.6E-07	1.8E-08	1.4E-06	1.4E-07	5.0E-06	5.0E-07	1.3E-06	1.3E-07	1.4E-06	1.4E-07	1.2E-04	1.2E-05	1.5E-05	2.8E-07
Heptachlor epoxide	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Hexachlorobenzene	1.6E-07	1.6E-08	6.6E-07	6.6E-08	4.5E-06	4.5E-07	1.1E-06	1.1E-07	6.6E-07	6.6E-08	1.3E-04	1.3E-05	3.7E-06	3.7E-07
Methoxychlor	1.5E-06	7.7E-08	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	3.5E-05	1.8E-06
Mirex	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
trans-Nonachlor	1.7E-07	8.3E-08	3.3E-04	3.3E-05	2.2E-03	2.2E-04	5.5E-04	5.5E-05	3.3E-04	3.3E-05	6.6E-02	6.6E-03	3.8E-06	1.9E-06
SVOCs (mg/kg)														
Acenaphthene	1.4E-05	5.6E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	3.2E-04	1.3E-05
Acenaphthylene	9.7E-06	3.9E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	2.2E-04	8.9E-06
Anthracene	1.6E-05	6.4E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	3.7E-04	1.5E-05
Benzo(a)anthracene	2.4E-05	9.7E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	3.1E-02	1.2E-03
Benzo(a)pyrene	2.2E-05	8.8E-07	1.7E-02	1.7E-03	1.2E-01	1.2E-02	2.9E-02	2.9E-03	1.7E-02	1.7E-03	3.5E+00	>1	3.5E-01	4.9E-02	2.0E-03
Benzo(b)fluoranthene	2.0E-05	7.8E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	2.9E-02	1.2E-03
Benzo(g,h,i)perylene	2.0E-05	7.8E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	2.9E-02	1.2E-03
Benzo(k)fluoranthene	1.6E-05	6.5E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	2.5E-02	9.9E-04
Benzoic acid	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Bis(2-ethylhexyl)phthalate	3.4E-05	3.4E-06	5.0E-04	5.0E-05	7.3E-04	7.3E-05	1.8E-04	1.8E-05	5.0E-04	5.0E-05	7.7E-03	7.7E-04	2.8E-04	2.8E-05
Butylbenzylphthalate	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Carbazole	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Chloroaniline	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2-Chloropropane	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chrysene	2.5E-05	1.0E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	4.4E-02	1.8E-03
Dibenzofuran	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
3,3-Dichlorobenzidine	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2,6-Dinitrotoluene	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Fluoranthene	2.0E-05	7.8E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	4.5E-04	1.8E-05
Fluorene	1.3E-05	5.3E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	3.0E-04	1.2E-05
Indeno(1,2,3-cd)pyrene	2.4E-05	9.7E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	7.5E-02	3.0E-03

Table C2-3n
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Hazard Quotient = 5
Non-Tidal Wetland Areas Alternative 3
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Mare Island, Vallejo, California

	Fox		Harrier		Mallard (breeding)		Mallard (non-breeding)		Heron		Killdeer		Salt Marsh Harvest Mouse	
Chemical	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**
2-Methylnaphthalene	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Methylphenol	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Naphthalene	5.7E-07	1.9E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	1.3E-05	4.4E-06
Pentachlorophenol	1.8E-06	5.6E-07	1.4E-06	4.1E-07	9.3E-06	2.8E-06	2.3E-06	7.0E-07	1.4E-06	4.1E-07	2.8E-04	8.3E-05	4.2E-05	1.3E-05
Phenanthrene	2.2E-05	8.8E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	5.0E-04	2.0E-05
Phenol	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pyrene	2.0E-05	7.8E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	4.5E-04	1.8E-05
PCBs (mg/kg)														
PCBs (Total Congeners)	4.6E-02	1.3E-02	4.4E-01	3.1E-02	3.1E-01	2.2E-02	1.2E-03	8.8E-05	4.4E-01	3.1E-02	2.2E+00 >1	1.6E-01	1.9E-01	5.2E-02

Table C2-4a
Medium-Specific Exposure Point Concentration Summary
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil (0 to 10 feet bgs)
Exposure Medium:	Soil
Exposure Point:	On-Site Soil

Chemical of Potential Concern	Distribution[a]	Mean of Normal Data[b]	Mean of Lognormal Data[c]	Median	UCL[d]	Maximum Detected Concentration	Reasonable Maximum Exposure		Central Tendency Exposure	
							Medium EPC Value[e]	Medium EPC Statistic and Rationale[f]	Medium EPC Value[e]	Medium EPC Statistic and Rationale[f]
INORGANICS (mg/kg)										
ALUMINUM	Non-Par	25541	10.1	25000	26743	41400	26,743	Student's-t UCL	26,743	Student's-t UCL
ANTIMONY	Non-Par	3.17	0.75	2.1	4.5	49.9	4.5	95% Chebyshev UCL	4.5	95% Chebyshev UCL
ARSENIC	Normal	20	2.9	20.05	21	43.2	21	Student's-t UCL	21	Student's-t UCL
BARIUM	Non-Par	88	4.39	80.6	94	330	94	Student's-t UCL	94	Student's-t UCL
BERYLLIUM	Non-Par	0.44	-1.29	0.315	0.65	2.5	0.65	97.5% Chebyshev UCL	0.65	97.5% Chebyshev UCL
CADMIUM	Non-Par	2.02	0.063	1.1	2.9	7.5	2.9	97.5% Chebyshev UCL	2.9	97.5% Chebyshev UCL
CHROMIUM	Non-Par	139	4.7	102	216	3100	216	95% Chebyshev UCL	216	95% Chebyshev UCL
COBALT	Non-Par	15.5	2.5	18.4	18	38.2	18	95% Chebyshev UCL	18	95% Chebyshev UCL
COPPER	Non-Par	131	4.6	95.2	199	2600	199	95% Chebyshev UCL	199	95% Chebyshev UCL
HEXAVALENT CHROMIUM	Non-Par	0.34	-2.5	0.039	1.7	0.07	0.07	Max Detected	0.07	Max Detected
LEAD	Non-Par	72	4	53	97	651	97	95% Chebyshev UCL	97	95% Chebyshev UCL
MANGANESE	Non-Par	856	6.7	810	907	3800	907	Student's-t UCL	907	Student's-t UCL
MERCURY	Non-Par	1.1	-0.18	0.94	1.4	6	1.4	95% Chebyshev UCL	1.4	95% Chebyshev UCL
MOLYBDENUM	Non-Par	2.5	-0.65	0.25	5.1	44.3	5.1	97.5% Chebyshev UCL	5.1	97.5% Chebyshev UCL
NICKEL	Non-Par	108	4.6	107	114	493	114	Student's-t UCL	114	Student's-t UCL
SELENIUM	Non-Par	0.87	-0.62	0.55	1.2	4.5	1.2	95% Chebyshev UCL	1.2	95% Chebyshev UCL
SILVER	Non-Par	1.8	-0.75	0.28	2.8	5.2	2.8	97.5% Chebyshev UCL	2.8	97.5% Chebyshev UCL
THALLIUM	Non-Par	0.3	-1.52	0.19	0.47	2.6	0.47	95% Chebyshev UCL	0.47	95% Chebyshev UCL
TIN	Non-Par	15	2.6	14.1	16.3	59.8	16.3	Student's-t UCL	16.3	Student's-t UCL
VANADIUM	Non-Par	103	4.53	90.1	117	203	117	95% Chebyshev UCL	117	95% Chebyshev UCL
ZINC	Non-Par	217	5.3	190	237	1790	237	Student's-t UCL	237	Student's-t UCL
PESTICIDES (mg/kg)										
ALPHA-CHLORDANE	Non-Par	0.0029	-7.67	0.0004	0.0082	0.051	0.0082	97.5% Chebyshev UCL	0.0082	97.5% Chebyshev UCL
BETA BHC	NA	NA	NA	NA	NA	0.001	0.001	Max Detected	0.001	Max Detected
DELTA BHC	NA	NA	NA	NA	NA	0.002	0.002	Max Detected	0.002	Max Detected
2,4- DDD	Non-Par	0.0064	-5.98	0.001	0.029	0.03	0.029	99% Chebyshev UCL	0.029	99% Chebyshev UCL
4,4- DDD	Non-Par	0.028	-5.63	0.003	0.086	0.8	0.086	97.5% Chebyshev UCL	0.086	97.5% Chebyshev UCL
4,4- DDE	Non-Par	0.0054	-6.8	0.001	0.017	0.2	0.017	97.5% Chebyshev UCL	0.017	97.5% Chebyshev UCL
4,4- DDT	Non-Par	0.0053	-6.48	0.002	0.012	0.08	0.012	97.5% Chebyshev UCL	0.012	97.5% Chebyshev UCL
DIELDRIN	Non-Par	0.0019	-7.37	0.001	0.0039	0.005	0.0039	97.5% Chebyshev UCL	0.0039	97.5% Chebyshev UCL
ENDOSULFAN I	NA	NA	NA	NA	NA	0.004	0.004	Max Detected	0.004	Max Detected
ENDOSULFAN SULFATE	NA	NA	NA	NA	NA	0.003	0.003	Max Detected	0.003	Max Detected
ENDRIN	NA	NA	NA	NA	NA	0.02	0.02	Max Detected	0.02	Max Detected
ENDRIN ALDEHYDE	NA	NA	NA	NA	NA	0.006	0.006	Max Detected	0.006	Max Detected
ENDRIN KETONE	Non-Par	0.0013	-7.84	0.0004	0.003	0.003	0.003	97.5% Chebyshev UCL	0.003	97.5% Chebyshev UCL
GAMMA-CHLORDANE	Non-Par	0.0029	-7.75	0.0004	0.0085	0.059	0.0085	97.5% Chebyshev UCL	0.0085	97.5% Chebyshev UCL
HEPTACHLOR	NA	NA	NA	NA	NA	0.0002	0.0002	Max Detected	0.0002	Max Detected
HEPTACHLOR EPOXIDE	NA	NA	NA	NA	NA	0.0003	0.0003	Max Detected	0.0003	Max Detected

Table C2-4a
Medium-Specific Exposure Point Concentration Summary
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil (0 to 10 feet bgs)
Exposure Medium:	Soil
Exposure Point:	On-Site Soil

Chemical of Potential Concern	Distribution[a]	Mean of Normal Data[b]	Mean of Lognormal Data[c]	Median	UCL[d]	Maximum Detected Concentration	Reasonable Maximum Exposure		Central Tendency Exposure	
							Medium EPC Value[e]	Medium EPC Statistic and Rationale[f]	Medium EPC Value[e]	Medium EPC Statistic and Rationale[f]
HEXACHLOROBENZENE	Non-Par	0.00083	-8.13	0.0003	0.0023	0.0008	0.0008	Max Detected	0.0008	Max Detected
METHOXYCHLOR	Non-Par	0.0065	-7.02	0.00125	0.02	0.04	0.02	99% Chebyshev UCL	0.02	99% Chebyshev UCL
MIREX	NA	NA	NA	NA	NA	0.004	0.004	Max Detected	0.004	Max Detected
TRANS-NONACHLOR	Non-Par	0.00087	-8.17	0.000275	0.0024	0.005	0.0024	97.5% Chebyshev UCL	0.0024	97.5% Chebyshev UCL
PCBs (mg/kg)										
PCBs (TOTAL)	Lognormal	0.11	-4.07	0.014	0.2	2	0.2	H-UCL	0.2	H-UCL
SVOCs (mg/kg)										
ACENAPHTHENE	Non-Par	0.088	-2.97	0.042	0.13	1.0567	0.13	95% Chebyshev UCL	0.13	95% Chebyshev UCL
ACENAPHTHYLENE	Non-Par	0.081	-3.05	0.0335	0.12	0.4388	0.12	95% Chebyshev UCL	0.12	95% Chebyshev UCL
ANTHRACENE	Non-Par	0.074	-3.42	0.0245	0.13	0.678	0.13	97.5% Chebyshev UCL	0.13	97.5% Chebyshev UCL
BENZO(A)ANTHRACENE	Non-Par	0.099	-3.27	0.0245	0.28	3.6821	0.28	97.5% Chebyshev UCL	0.28	97.5% Chebyshev UCL
BENZO(A)PYRENE	Non-Par	0.089	-3.43	0.023	0.24	3.0884	0.24	97.5% Chebyshev UCL	0.24	97.5% Chebyshev UCL
BENZO(B)FLUORANTHENE	Non-Par	0.1	-3.04	0.031	0.24	2.755	0.24	97.5% Chebyshev UCL	0.24	97.5% Chebyshev UCL
BENZO(G,H,I)PERYLENE	Non-Par	0.081	-3.17	0.026	0.16	1.5074	0.16	97.5% Chebyshev UCL	0.16	97.5% Chebyshev UCL
BENZO(K)FLUORANTHENE	Non-Par	0.099	-3.2	0.02475	0.24	2.774	0.24	97.5% Chebyshev UCL	0.24	97.5% Chebyshev UCL
BENZOIC ACID	NA	NA	NA	NA	NA	0.68	0.68	Max Detected	0.68	Max Detected
BIS(2-ETHYLHEXYL)PHTHALATE	Non-Par	0.27	-3.17	0.04	1.1	15.4642	1.1	97.5% Chebyshev UCL	1.1	97.5% Chebyshev UCL
BUTYLBENZYLPHTHALATE	NA	NA	NA	NA	NA	0.025	0.025	Max Detected	0.025	Max Detected
CARBAZOLE	Non-Par	0.21	-2.67	0.026	0.55	4.0942	0.55	97.5% Chebyshev UCL	0.55	97.5% Chebyshev UCL
4- CHLOROANILINE	NA	NA	NA	NA	NA	0.003	0.003	Max Detected	0.003	Max Detected
2- CHLOROPHENOL	NA	NA	NA	NA	NA	0.0433	0.0433	Max Detected	0.0433	Max Detected
CHRYSENE	Non-Par	0.091	-3.44	0.024	0.27	3.742	0.27	97.5% Chebyshev UCL	0.27	97.5% Chebyshev UCL
DIBENZOFURAN	Non-Par	0.18	-2.52	0.1	0.36	2.8628	0.36	97.5% Chebyshev UCL	0.36	97.5% Chebyshev UCL
3,3- DICHLOROBENZIDINE	NA	NA	NA	NA	NA	0.012	0.012	Max Detected	0.012	Max Detected
2,6- DINITROTOLUENE	NA	NA	NA	NA	NA	0.37	0.37	Max Detected	0.37	Max Detected
FLUORANTHENE	Non-Par	0.11	-3.23	0.03	0.38	5.6279	0.38	97.5% Chebyshev UCL	0.38	97.5% Chebyshev UCL
FLUORENE	Non-Par	0.076	-3.24	0.0245	0.13	0.7256	0.13	97.5% Chebyshev UCL	0.13	97.5% Chebyshev UCL
INDENO(1,2,3-CD)PYRENE	Non-Par	0.08	-3.42	0.02275	0.16	1.4573	0.16	97.5% Chebyshev UCL	0.16	97.5% Chebyshev UCL
2- METHYLNAPHTHALENE	Non-Par	0.12	-2.76	0.0445	0.18	0.6251	0.18	97.5% Chebyshev UCL	0.18	97.5% Chebyshev UCL
4- METHYLPHENOL	Non-Par	0.15	-2.55	0.1	0.23	0.8757	0.23	97.5% Chebyshev UCL	0.23	97.5% Chebyshev UCL
NAPHTHALENE	Non-Par	0.075	-3.11	0.033	0.11	0.4723	0.11	95% Chebyshev UCL	0.11	95% Chebyshev UCL
PENTACHLOROPHENOL	Non-Par	0.36	-1.68	0.2375	0.54	0.7512	0.54	97.5% Chebyshev UCL	0.54	97.5% Chebyshev UCL
PHENANTHRENE	Non-Par	0.087	-3.4	0.023	0.2	2.2809	0.2	97.5% Chebyshev UCL	0.2	97.5% Chebyshev UCL
PHENOL	Non-Par	0.17	-2.52	0.1	0.29	1.7625	0.29	97.5% Chebyshev UCL	0.29	97.5% Chebyshev UCL
PYRENE	Non-Par	0.12	-3.13	0.036	0.43	6.3265	0.43	97.5% Chebyshev UCL	0.43	97.5% Chebyshev UCL
TPH (mg/kg)										
TPH AS DIESEL	Non-Par	75	3.4	19.15	177	1100	177	97.5% Chebyshev UCL	177	97.5% Chebyshev UCL
TPH AS GASOLINE	Non-Par	0.9	-3.41	0.0153	4.2	51	4.2	97.5% Chebyshev UCL	4.2	97.5% Chebyshev UCL
TPH AS MOTOR OIL	Non-Par	151	4.3	61	313	2700	313	97.5% Chebyshev UCL	313	97.5% Chebyshev UCL

Table C2-4a
Medium-Specific Exposure Point Concentration Summary
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil (0 to 10 feet bgs)
Exposure Medium:	Soil
Exposure Point:	On-Site Soil

Chemical of Potential Concern	Distribution[a]	Mean of Normal Data[b]	Mean of Lognormal Data[c]	Median	UCL[d]	Maximum Detected Concentration	Reasonable Maximum Exposure		Central Tendency Exposure	
							Medium EPC Value[e]	Medium EPC Statistic and Rationale[f]	Medium EPC Value[e]	Medium EPC Statistic and Rationale[f]
VOCs (mg/kg)										
ACETONE	Non-Par	0.087	-3.69	0.0175	0.32	0.4	0.32	99% Chebyshev UCL	0.32	99% Chebyshev UCL
BENZENE	NA	NA	NA	NA	NA	0.025	0.005	Max Detected	0.005	Max Detected
CARBON DISULFIDE	Non-Par	0.011	-5.02	0.005	0.025	0.04	0.025	95% Chebyshev UCL	0.025	95% Chebyshev UCL
CHLOROBENZENE	Non-Par	0.0099	-5.09	0.005	0.024	0.04	0.024	95% Chebyshev UCL	0.024	95% Chebyshev UCL
CIS-1,2-DICHLOROETHENE	NA	NA	NA	NA	NA	0.052	0.005	Max Detected	0.005	Max Detected
ETHYLBENZENE	Non-Par	0.025	-4.1	0.03	0.044	0.2	0.044	97.5% Chebyshev UCL	0.044	97.5% Chebyshev UCL
4- ISOPROPYLTOLUENE	NA	NA	NA	NA	NA	0.0072	0.0072	Max Detected	0.0072	Max Detected
METHYLENE CHLORIDE	NA	NA	NA	NA	NA	0.3	0.3	Max Detected	0.3	Max Detected
NAPHTHALENE	NA	NA	NA	NA	NA	0.016	0.016	Max Detected	0.016	Max Detected
TOLUENE	NA	NA	NA	NA	NA	0.03	0.03	Max Detected	0.03	Max Detected
TRANS-1,2-DICHLOROETHENE	NA	NA	NA	NA	NA	0.023	0.023	Max Detected	0.023	Max Detected
TRICHLOROETHENE	NA	NA	NA	NA	NA	0.007	0.007	Max Detected	0.007	Max Detected
1,2,4- TRIMETHYLBENZENE	NA	NA	NA	NA	NA	0.025	0.025	Max Detected	0.025	Max Detected
1,3,5- TRIMETHYLBENZENE	NA	NA	NA	NA	NA	0.0093	0.0093	Max Detected	0.0093	Max Detected
VINYL CHLORIDE	NA	NA	NA	NA	NA	0.034	0.034	Max Detected	0.034	Max Detected
XYLENE (TOTAL)	Non-Par	0.07	-3.37	0.1	0.11	0.2	0.11	97.5% Chebyshev UCL	0.11	97.5% Chebyshev UCL

The UCL for chemicals that are italicized and underlined have been modified for post remediation residual risk.

bgs Below Ground Surface.
EPC Exposure Point Concentration.
mg/kg Milligram per kilogram.
NA Not Applicable for small data sets.
PCBs Polychlorinated Biphenyls
SVOC Semivolatile Organic Compound
TPH Total Petroleum Hydrocarbon
UCL Upper confidence limit of the mean.
VOCs Volatile Organic Compounds

a Gamma = Data follow gamma distribution using chi-square approximation.
Normal = Data are normally distributed.
Lognormal = Data are lognormally distributed.
Non-par = Data are non-parametric.
Lilliefors Test was used to determine the distribution for sample sets greater than 50.
Shapiro and Wilk W-Test was used to determine the distribution for sample sets less than 50.

b The value presented is the arithmetic mean calculated using distribution-dependent formulas. One half the sample quantitation limit was used as a proxy concentration for non-detects to calculate the mean.

c The value presented is the mean of log-transformed data calculated using distribution-dependent formulas. One half the sample quantitation limit was used as a proxy concentration for non-detects to calculate the mean.

d The value presented is the UCL calculated using distribution-dependent formulas. One half the sample quantitation limit was used as a proxy concentration for non-detects to calculate the UCL.

e If the UCL value exceeds the maximum detected concentration, the maximum detected concentration is used for the medium EPC value.

f Recommended UCL statistic using United States Environmental Protection Agency ProUCL Version 3.0 software.

Table C2-4b
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
INGESTION	**INORGANICS**									
	ALUMINUM	26,743	mg/kg	2.92E-02	1.22E-02	mg/kg-day	1.00E+00	mg/kg-day	2.92E-02	1.22E-02
	ANTIMONY	4.5	mg/kg	4.92E-06	2.05E-06	mg/kg-day	4.00E-04	mg/kg-day	1.23E-02	5.12E-03
	ARSENIC	21.0	mg/kg	2.29E-05	9.56E-06	mg/kg-day	3.00E-04	mg/kg-day	7.65E-02	3.19E-02
	BARIUM	94.0	mg/kg	1.03E-04	4.28E-05	mg/kg-day	7.00E-02	mg/kg-day	1.47E-03	6.11E-04
	BERYLLIUM	0.65	mg/kg	7.10E-07	2.96E-07	mg/kg-day	2.00E-03	mg/kg-day	3.55E-04	1.48E-04
	CADMIUM	2.90	mg/kg	3.17E-06	1.32E-06	mg/kg-day	5.00E-04	mg/kg-day	6.34E-03	2.64E-03
	CHROMIUM	216	mg/kg	2.36E-04	9.84E-05	mg/kg-day	1.50E+00	mg/kg-day	1.57E-04	6.56E-05
	COBALT	18.0	mg/kg	1.97E-05	8.20E-06	mg/kg-day	2.00E-02	mg/kg-day	9.84E-04	4.10E-04
	COPPER	199	mg/kg	2.17E-04	9.06E-05	mg/kg-day	4.00E-02	mg/kg-day	5.44E-03	2.27E-03
	HEXAVALENT CHROMIUM	0.07	mg/kg	7.65E-08	3.19E-08	mg/kg-day	3.00E-03	mg/kg-day	2.55E-05	1.06E-05
	LEAD	97	mg/kg	1.06E-04	4.42E-05	mg/kg-day	NA	mg/kg-day	NA	NA
	MANGANESE	907	mg/kg	9.91E-04	4.13E-04	mg/kg-day	1.40E-01	mg/kg-day	7.08E-03	2.95E-03
	MERCURY	1.4	mg/kg	1.53E-06	6.37E-07	mg/kg-day	3.00E-04	mg/kg-day	5.10E-03	2.12E-03
	MOLYBDENUM	5.1	mg/kg	5.57E-06	2.32E-06	mg/kg-day	5.00E-03	mg/kg-day	1.11E-03	4.64E-04
	NICKEL	114	mg/kg	1.25E-04	5.19E-05	mg/kg-day	2.00E-02	mg/kg-day	6.23E-03	2.60E-03
	SELENIUM	1.2	mg/kg	1.31E-06	5.46E-07	mg/kg-day	5.00E-03	mg/kg-day	2.62E-04	1.09E-04
	SILVER	2.8	mg/kg	3.06E-06	1.27E-06	mg/kg-day	5.00E-03	mg/kg-day	6.12E-04	2.55E-04
	THALLIUM	0.47	mg/kg	5.14E-07	2.14E-07	mg/kg-day	6.60E-05	mg/kg-day	7.78E-03	3.24E-03
	TIN	16.3	mg/kg	1.78E-05	7.42E-06	mg/kg-day	6.00E-01	mg/kg-day	2.97E-05	1.24E-05
	VANADIUM	117	mg/kg	1.28E-04	5.33E-05	mg/kg-day	7.00E-03	mg/kg-day	1.83E-02	7.61E-03
	ZINC	237	mg/kg	2.59E-04	1.08E-04	mg/kg-day	3.00E-01	mg/kg-day	8.63E-04	3.60E-04
	PESTICIDES									
	ALPHA-CHLORDANE	0.0082	mg/kg	8.96E-09	3.73E-09	mg/kg-day	5.00E-04	mg/kg-day	1.79E-05	7.47E-06
	BETA BHC	0.001	mg/kg	1.09E-09	4.55E-10	mg/kg-day	2.00E-04	mg/kg-day	5.46E-06	2.28E-06
	DELTA BHC	0.002	mg/kg	2.19E-09	9.11E-10	mg/kg-day	NA	mg/kg-day	NA	NA
	2,4- DDD	0.029	mg/kg	3.17E-08	1.32E-08	mg/kg-day	5.00E-04	mg/kg-day	6.34E-05	2.64E-05
	4,4- DDD	0.086	mg/kg	9.40E-08	3.92E-08	mg/kg-day	5.00E-04	mg/kg-day	1.88E-04	7.83E-05

Table C2-4b
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
INGESTION (CONTINUED)	4,4- DDE	0.017	mg/kg	1.86E-08	7.74E-09	mg/kg-day	5.00E-04	mg/kg-day	3.72E-05	1.55E-05
	4,4- DDT	0.012	mg/kg	1.31E-08	5.46E-09	mg/kg-day	5.00E-04	mg/kg-day	2.62E-05	1.09E-05
	DIELDRIN	0.0039	mg/kg	4.26E-09	1.78E-09	mg/kg-day	5.00E-05	mg/kg-day	8.52E-05	3.55E-05
	ENDOSULFAN I	0.004	mg/kg	4.37E-09	1.82E-09	mg/kg-day	6.00E-03	mg/kg-day	7.29E-07	3.04E-07
	ENDOSULFAN SULFATE	0.003	mg/kg	3.28E-09	1.37E-09	mg/kg-day	6.00E-03	mg/kg-day	5.46E-07	2.28E-07
	ENDRIN	0.02	mg/kg	2.19E-08	9.11E-09	mg/kg-day	3.00E-04	mg/kg-day	7.29E-05	3.04E-05
	ENDRIN ALDEHYDE	0.006	mg/kg	6.56E-09	2.73E-09	mg/kg-day	3.00E-04	mg/kg-day	2.19E-05	9.11E-06
	ENDRIN KETONE	0.003	mg/kg	3.28E-09	1.37E-09	mg/kg-day	3.00E-04	mg/kg-day	1.09E-05	4.55E-06
	GAMMA-CHLORDANE	0.0085	mg/kg	9.29E-09	3.87E-09	mg/kg-day	5.00E-04	mg/kg-day	1.86E-05	7.74E-06
	HEPTACHLOR	0.0002	mg/kg	2.19E-10	9.11E-11	mg/kg-day	5.00E-04	mg/kg-day	4.37E-07	1.82E-07
	HEPTACHLOR EPOXIDE	0.0003	mg/kg	3.28E-10	1.37E-10	mg/kg-day	1.30E-05	mg/kg-day	2.52E-05	1.05E-05
	HEXACHLOROBENZENE	0.0008	mg/kg	8.74E-10	3.64E-10	mg/kg-day	8.00E-04	mg/kg-day	1.09E-06	4.55E-07
	METHOXYCHLOR	0.02	mg/kg	2.19E-08	9.11E-09	mg/kg-day	5.00E-03	mg/kg-day	4.37E-06	1.82E-06
	MIREX	0.004	mg/kg	4.37E-09	1.82E-09	mg/kg-day	2.00E-04	mg/kg-day	2.19E-05	9.11E-06
	TRANS-NONACHLOR	0.0024	mg/kg	2.62E-09	1.09E-09	mg/kg-day	5.00E-04	mg/kg-day	5.25E-06	2.19E-06
	PCBs									
	PCBs (TOTAL)	0.20	mg/kg	2.19E-07	9.11E-08	mg/kg-day	2.00E-05	mg/kg-day	1.09E-02	4.55E-03
	SVOCs									
	ACENAPHTHENE	0.13	mg/kg	1.42E-07	5.92E-08	mg/kg-day	6.00E-02	mg/kg-day	2.37E-06	9.87E-07
	ACENAPHTHYLENE	0.12	mg/kg	1.31E-07	5.46E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	ANTHRACENE	0.13	mg/kg	1.42E-07	5.92E-08	mg/kg-day	3.00E-01	mg/kg-day	4.74E-07	1.97E-07
	BENZO(A)ANTHRACENE	0.28	mg/kg	3.06E-07	1.27E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(A)PYRENE	0.24	mg/kg	2.62E-07	1.09E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(B)FLUORANTHENE	0.24	mg/kg	2.62E-07	1.09E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(G,H,I)PERYLENE	0.16	mg/kg	1.75E-07	7.29E-08	mg/kg-day	4.00E-02	mg/kg-day	4.37E-06	1.82E-06
	BENZO(K)FLUORANTHENE	0.24	mg/kg	2.62E-07	1.09E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZOIC ACID	0.68	mg/kg	7.43E-07	3.10E-07	mg/kg-day	4.00E+00	mg/kg-day	1.86E-07	7.74E-08
	BIS(2-ETHYLHEXYL)PHTHALA	1.1	mg/kg	1.20E-06	5.01E-07	mg/kg-day	2.00E-02	mg/kg-day	6.01E-05	2.50E-05

Table C2-4b
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
INGESTION (CONTINUED)	BUTYLBENZYLPHTHALATE	0.025	mg/kg	2.73E-08	1.14E-08	mg/kg-day	2.00E-01	mg/kg-day	1.37E-07	5.69E-08
	CARBAZOLE	0.55	mg/kg	6.01E-07	2.50E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	4- CHLOROANILINE	0.003	mg/kg	3.28E-09	1.37E-09	mg/kg-day	4.00E-03	mg/kg-day	8.20E-07	3.42E-07
	2- CHLOROPHENOL	0.043	mg/kg	4.73E-08	1.97E-08	mg/kg-day	5.00E-03	mg/kg-day	9.46E-06	3.94E-06
	CHRYSENE	0.27	mg/kg	2.95E-07	1.23E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	DIBENZOFURAN	0.36	mg/kg	3.93E-07	1.64E-07	mg/kg-day	2.00E-03	mg/kg-day	1.97E-04	8.20E-05
	3,3- DICHLOROBENZIDINE	0.012	mg/kg	1.31E-08	5.46E-09	mg/kg-day	NA	mg/kg-day	NA	NA
	2,6- DINITROTOLUENE	0.37	mg/kg	4.04E-07	1.68E-07	mg/kg-day	1.00E-03	mg/kg-day	4.04E-04	1.68E-04
	FLUORANTHENE	0.380	mg/kg	4.15E-07	1.73E-07	mg/kg-day	4.00E-02	mg/kg-day	1.04E-05	4.33E-06
	FLUORENE	0.1	mg/kg	1.42E-07	5.92E-08	mg/kg-day	4.00E-02	mg/kg-day	3.55E-06	1.48E-06
	INDENO(1,2,3-CD)PYRENE	0.16	mg/kg	1.75E-07	7.29E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	2- METHYLNAPHTHALENE	0.18	mg/kg	1.97E-07	8.20E-08	mg/kg-day	4.00E-03	mg/kg-day	4.92E-05	2.05E-05
	4- METHYLPHENOL	0.23	mg/kg	2.51E-07	1.05E-07	mg/kg-day	5.00E-03	mg/kg-day	5.03E-05	2.09E-05
	NAPHTHALENE	0.11	mg/kg	1.20E-07	5.01E-08	mg/kg-day	2.00E-02	mg/kg-day	6.01E-06	2.50E-06
	PENTACHLOROPHENOL	0.54	mg/kg	5.90E-07	2.46E-07	mg/kg-day	3.00E-02	mg/kg-day	1.97E-05	8.20E-06
	PHENANTHRENE	0.20	mg/kg	2.19E-07	9.11E-08	mg/kg-day	3.00E-01	mg/kg-day	7.29E-07	3.04E-07
	PHENOL	0.29	mg/kg	3.17E-07	1.32E-07	mg/kg-day	6.00E-01	mg/kg-day	5.28E-07	2.20E-07
	PYRENE	0.430	mg/kg	4.70E-07	1.96E-07	mg/kg-day	3.00E-02	mg/kg-day	1.57E-05	6.53E-06
	TPH									
	TPH AS DIESEL	177	mg/kg	1.93E-04	8.06E-05	mg/kg-day	NA	mg/kg-day	NA	NA
	TPH AS GASOLINE	4.2	mg/kg	4.59E-06	1.91E-06	mg/kg-day	NA	mg/kg-day	NA	NA
	TPH AS MOTOR OIL	313	mg/kg	3.42E-04	1.43E-04	mg/kg-day	NA	mg/kg-day	NA	NA
	VOCs									
	ACETONE	0.32	mg/kg	3.50E-07	1.46E-07	mg/kg-day	9.00E-01	mg/kg-day	3.89E-07	1.62E-07
	BENZENE	0.005	mg/kg	5.46E-09	2.28E-09	mg/kg-day	4.00E-03	mg/kg-day	1.37E-06	5.69E-07
	CARBON DISULFIDE	0.025	mg/kg	2.73E-08	1.14E-08	mg/kg-day	1.00E-01	mg/kg-day	2.73E-07	1.14E-07
	CHLOROBENZENE	0.024	mg/kg	2.62E-08	1.09E-08	mg/kg-day	2.00E-02	mg/kg-day	1.31E-06	5.46E-07
	CIS-1,2-DICHLOROETHENE	0.005	mg/kg	5.46E-09	2.28E-09	mg/kg-day	1.00E-02	mg/kg-day	5.46E-07	2.28E-07

Table C2-4b
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
INGESTION (CONTINUED)	ETHYLBENZENE	0.044	mg/kg	4.81E-08	2.00E-08	mg/kg-day	1.00E-01	mg/kg-day	4.81E-07	2.00E-07
	4- ISOPROPYLTOLUENE	0.007	mg/kg	7.87E-09	3.28E-09	mg/kg-day	NA	mg/kg-day	NA	NA
	METHYLENE CHLORIDE	0.3	mg/kg	3.28E-07	1.37E-07	mg/kg-day	6.00E-02	mg/kg-day	5.46E-06	2.28E-06
	NAPHTHALENE	0.016	mg/kg	1.75E-08	7.29E-09	mg/kg-day	2.00E-02	mg/kg-day	8.74E-07	3.64E-07
	TOLUENE	0.03	mg/kg	3.28E-08	1.37E-08	mg/kg-day	2.00E-01	mg/kg-day	1.64E-07	6.83E-08
	TRANS-1,2-DICHLOROETHENE	0.023	mg/kg	2.51E-08	1.05E-08	mg/kg-day	2.00E-02	mg/kg-day	1.26E-06	5.24E-07
	TRICHLOROETHENE	0.007	mg/kg	7.65E-09	3.19E-09	mg/kg-day	3.00E-04	mg/kg-day	2.55E-05	1.06E-05
	1,2,4- TRIMETHYLBENZENE	0.025	mg/kg	2.73E-08	1.14E-08	mg/kg-day	5.00E-02	mg/kg-day	5.46E-07	2.28E-07
	1,3,5- TRIMETHYLBENZENE	0.009	mg/kg	1.02E-08	4.23E-09	mg/kg-day	5.00E-02	mg/kg-day	2.03E-07	8.47E-08
	VINYL CHLORIDE	0.034	mg/kg	3.72E-08	1.55E-08	mg/kg-day	3.00E-03	mg/kg-day	1.24E-05	5.16E-06
	XYLENE (TOTAL)	0.11	mg/kg	1.20E-07	5.01E-08	mg/kg-day	2.00E-01	mg/kg-day	6.01E-07	2.50E-07
DERMAL CONTACT	**INORGANICS**									
	ALUMINUM	26,743	mg/kg	NA	NA	mg/kg-day	1.00E+00	mg/kg-day	NA	NA
	ANTIMONY	4.5	mg/kg	NA	NA	mg/kg-day	6.00E-05	mg/kg-day	NA	NA
	ARSENIC	21.0	mg/kg	3.16E-06	1.32E-06	mg/kg-day	3.00E-04	mg/kg-day	1.05E-02	4.39E-03
	BARIUM	94.0	mg/kg	NA	NA	mg/kg-day	4.90E-03	mg/kg-day	NA	NA
	BERYLLIUM	0.65	mg/kg	NA	NA	mg/kg-day	1.40E-05	mg/kg-day	NA	NA
	CADMIUM	2.90	mg/kg	1.45E-08	6.06E-09	mg/kg-day	1.25E-05	mg/kg-day	1.16E-03	4.85E-04
	CHROMIUM	216	mg/kg	NA	NA	mg/kg-day	1.95E-02	mg/kg-day	NA	NA
	COBALT	18.0	mg/kg	NA	NA	mg/kg-day	2.00E-02	mg/kg-day	NA	NA
	COPPER	199	mg/kg	NA	NA	mg/kg-day	4.00E-02	mg/kg-day	NA	NA
	HEXAVALENT CHROMIUM	0.07	mg/kg	NA	NA	mg/kg-day	7.50E-05	mg/kg-day	NA	NA
	LEAD	97	mg/kg	NA	NA	mg/kg-day	NA	mg/kg-day	NA	NA
	MANGANESE	907	mg/kg	NA	NA	mg/kg-day	5.60E-03	mg/kg-day	NA	NA
	MERCURY	1.4	mg/kg	NA	NA	mg/kg-day	2.10E-05	mg/kg-day	NA	NA
	MOLYBDENUM	5.1	mg/kg	NA	NA	mg/kg-day	5.00E-03	mg/kg-day	NA	NA
	NICKEL	114	mg/kg	NA	NA	mg/kg-day	8.00E-04	mg/kg-day	NA	NA
	SELENIUM	1.2	mg/kg	NA	NA	mg/kg-day	5.00E-03	mg/kg-day	NA	NA

Table C2-4b
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
DERMAL CONTACT (CONTINUED)	*SILVER*	2.8	mg/kg	NA	NA	mg/kg-day	2.00E-04	mg/kg-day	NA	NA
	THALLIUM	0.47	mg/kg	NA	NA	mg/kg-day	6.60E-05	mg/kg-day	NA	NA
	TIN	16.3	mg/kg	NA	NA	mg/kg-day	6.00E-01	mg/kg-day	NA	NA
	VANADIUM	117	mg/kg	NA	NA	mg/kg-day	1.82E-04	mg/kg-day	NA	NA
	ZINC	237	mg/kg	NA	NA	mg/kg-day	3.00E-01	mg/kg-day	NA	NA
	PESTICIDES									
	ALPHA-CHLORDANE	0.0082	mg/kg	1.65E-09	6.86E-10	mg/kg-day	5.00E-04	mg/kg-day	3.29E-06	1.37E-06
	BETA BHC	0.001	mg/kg	2.01E-10	8.36E-11	mg/kg-day	2.00E-04	mg/kg-day	1.00E-06	4.18E-07
	DELTA BHC	0.002	mg/kg	4.01E-10	1.67E-10	mg/kg-day	NA	mg/kg-day	NA	NA
	2,4- DDD	0.029	mg/kg	4.36E-09	1.82E-09	mg/kg-day	5.00E-04	mg/kg-day	8.73E-06	3.64E-06
	4,4- DDD	0.086	mg/kg	1.29E-08	5.39E-09	mg/kg-day	5.00E-04	mg/kg-day	2.59E-05	1.08E-05
	4,4- DDE	0.017	mg/kg	2.56E-09	1.07E-09	mg/kg-day	5.00E-04	mg/kg-day	5.12E-06	2.13E-06
	4,4- DDT	0.012	mg/kg	1.81E-09	7.52E-10	mg/kg-day	5.00E-04	mg/kg-day	3.61E-06	1.50E-06
	DIELDRIN	0.0039	mg/kg	1.96E-09	8.15E-10	mg/kg-day	5.00E-05	mg/kg-day	3.91E-05	1.63E-05
	ENDOSULFAN I	0.004	mg/kg	2.01E-09	8.36E-10	mg/kg-day	6.00E-03	mg/kg-day	3.34E-07	1.39E-07
	ENDOSULFAN SULFATE	0.003	mg/kg	1.50E-09	6.27E-10	mg/kg-day	6.00E-03	mg/kg-day	2.51E-07	1.05E-07
	ENDRIN	0.02	mg/kg	1.00E-08	4.18E-09	mg/kg-day	3.00E-04	mg/kg-day	3.34E-05	1.39E-05
	ENDRIN ALDEHYDE	0.006	mg/kg	3.01E-09	1.25E-09	mg/kg-day	3.00E-04	mg/kg-day	1.00E-05	4.18E-06
	ENDRIN KETONE	0.003	mg/kg	1.50E-09	6.27E-10	mg/kg-day	3.00E-04	mg/kg-day	5.02E-06	2.09E-06
	GAMMA-CHLORDANE	0.0085	mg/kg	1.71E-09	7.11E-10	mg/kg-day	5.00E-04	mg/kg-day	3.41E-06	1.42E-06
	HEPTACHLOR	0.0002	mg/kg	1.00E-10	4.18E-11	mg/kg-day	5.00E-04	mg/kg-day	2.01E-07	8.36E-08
	HEPTACHLOR EPOXIDE	0.0003	mg/kg	1.50E-10	6.27E-11	mg/kg-day	1.30E-05	mg/kg-day	1.16E-05	4.82E-06
	HEXACHLOROBENZENE	0.0008	mg/kg	4.01E-10	1.67E-10	mg/kg-day	8.00E-04	mg/kg-day	5.02E-07	2.09E-07
	METHOXYCHLOR	0.02	mg/kg	4.01E-09	1.67E-09	mg/kg-day	5.00E-03	mg/kg-day	8.03E-07	3.34E-07
	MIREX	0.004	mg/kg	2.01E-09	8.36E-10	mg/kg-day	2.00E-04	mg/kg-day	1.00E-05	4.18E-06
	TRANS-NONACHLOR	0.0024	mg/kg	4.82E-10	2.01E-10	mg/kg-day	5.00E-04	mg/kg-day	9.63E-07	4.01E-07
	PCBs									
	PCBs (TOTAL)	0.20	mg/kg	1.40E-07	5.85E-08	mg/kg-day	2.00E-05	mg/kg-day	7.02E-03	2.93E-03

Table C2-4b
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
DERMAL CONTACT (CONTINUED)	**SVOCs**									
	ACENAPHTHENE	0.13	mg/kg	8.48E-08	3.53E-08	mg/kg-day	6.00E-02	mg/kg-day	1.41E-06	5.89E-07
	ACENAPHTHYLENE	0.12	mg/kg	7.83E-08	3.26E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	ANTHRACENE	0.13	mg/kg	8.48E-08	3.53E-08	mg/kg-day	3.00E-01	mg/kg-day	2.83E-07	1.18E-07
	BENZO(A)ANTHRACENE	0.28	mg/kg	1.83E-07	7.61E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(A)PYRENE	0.24	mg/kg	1.57E-07	6.52E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(B)FLUORANTHENE	0.24	mg/kg	1.57E-07	6.52E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(G,H,I)PERYLENE	0.16	mg/kg	1.04E-07	4.35E-08	mg/kg-day	4.00E-02	mg/kg-day	2.61E-06	1.09E-06
	BENZO(K)FLUORANTHENE	0.24	mg/kg	1.57E-07	6.52E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZOIC ACID	0.68	mg/kg	3.41E-07	1.42E-07	mg/kg-day	4.00E+00	mg/kg-day	8.53E-08	3.55E-08
	BIS(2-ETHYLHEXYL)PHTHALA	1.1	mg/kg	5.52E-07	2.30E-07	mg/kg-day	2.00E-02	mg/kg-day	2.76E-05	1.15E-05
	BUTYLBENZYLPHTHALATE	0.025	mg/kg	1.25E-08	5.23E-09	mg/kg-day	2.00E-01	mg/kg-day	6.27E-08	2.61E-08
	CARBAZOLE	0.55	mg/kg	2.76E-07	1.15E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	4- CHLOROANILINE	0.003	mg/kg	1.50E-09	6.27E-10	mg/kg-day	4.00E-03	mg/kg-day	3.76E-07	1.57E-07
	2- CHLOROPHENOL	0.043	mg/kg	2.17E-08	9.05E-09	mg/kg-day	5.00E-03	mg/kg-day	4.34E-06	1.81E-06
	CHRYSENE	0.27	mg/kg	1.76E-07	7.34E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	DIBENZOFURAN	0.36	mg/kg	1.81E-07	7.52E-08	mg/kg-day	2.00E-03	mg/kg-day	9.03E-05	3.76E-05
	3,3- DICHLOROBENZIDINE	0.012	mg/kg	6.02E-09	2.51E-09	mg/kg-day	NA	mg/kg-day	NA	NA
	2,6- DINITROTOLUENE	0.37	mg/kg	1.86E-07	7.73E-08	mg/kg-day	1.00E-03	mg/kg-day	1.86E-04	7.73E-05
	FLUORANTHENE	0.380	mg/kg	2.48E-07	1.03E-07	mg/kg-day	4.00E-02	mg/kg-day	6.20E-06	2.58E-06
	FLUORENE	0.1	mg/kg	8.48E-08	3.53E-08	mg/kg-day	4.00E-02	mg/kg-day	2.12E-06	8.83E-07
	INDENO(1,2,3-CD)PYRENE	0.16	mg/kg	1.04E-07	4.35E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	2- METHYLNAPHTHALENE	0.18	mg/kg	9.03E-08	3.76E-08	mg/kg-day	4.00E-03	mg/kg-day	2.26E-05	9.41E-06
	4- METHYLPHENOL	0.23	mg/kg	1.15E-07	4.81E-08	mg/kg-day	5.00E-03	mg/kg-day	2.31E-05	9.61E-06
	NAPHTHALENE	0.11	mg/kg	7.17E-08	2.99E-08	mg/kg-day	2.00E-02	mg/kg-day	3.59E-06	1.49E-06
	PENTACHLOROPHENOL	0.54	mg/kg	2.71E-07	1.13E-07	mg/kg-day	3.00E-02	mg/kg-day	9.03E-06	3.76E-06
	PHENANTHRENE	0.20	mg/kg	1.30E-07	5.43E-08	mg/kg-day	3.00E-01	mg/kg-day	4.35E-07	1.81E-07
	PHENOL	0.29	mg/kg	1.45E-07	6.06E-08	mg/kg-day	6.00E-01	mg/kg-day	2.42E-07	1.01E-07

Table C2-4b
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
DERMAL CONTACT (CONTINUED)	*PYRENE*	0.430	mg/kg	2.80E-07	1.17E-07	mg/kg-day	3.00E-02	mg/kg-day	9.35E-06	3.89E-06
	TPH									
	TPH AS DIESEL	177	mg/kg	NA	NA	mg/kg-day	NA	mg/kg-day	NA	NA
	TPH AS GASOLINE	4.2	mg/kg	NA	NA	mg/kg-day	NA	mg/kg-day	NA	NA
	TPH AS MOTOR OIL	313	mg/kg	NA	NA	mg/kg-day	NA	mg/kg-day	NA	NA
	VOCs									
	ACETONE	0.32	mg/kg	NA	NA	mg/kg-day	9.00E-01	mg/kg-day	NA	NA
	BENZENE	0.005	mg/kg	NA	NA	mg/kg-day	4.00E-03	mg/kg-day	NA	NA
	CARBON DISULFIDE	0.025	mg/kg	NA	NA	mg/kg-day	1.00E-01	mg/kg-day	NA	NA
	CHLOROBENZENE	0.024	mg/kg	NA	NA	mg/kg-day	2.00E-02	mg/kg-day	NA	NA
	CIS-1,2-DICHLOROETHENE	0.005	mg/kg	NA	NA	mg/kg-day	1.00E-02	mg/kg-day	NA	NA
	ETHYLBENZENE	0.044	mg/kg	NA	NA	mg/kg-day	1.00E-01	mg/kg-day	NA	NA
	4- ISOPROPYLTOLUENE	0.007	mg/kg	NA	NA	mg/kg-day	NA	mg/kg-day	NA	NA
	METHYLENE CHLORIDE	0.3	mg/kg	NA	NA	mg/kg-day	6.00E-02	mg/kg-day	NA	NA
	NAPHTHALENE	0.016	mg/kg	NA	NA	mg/kg-day	2.00E-02	mg/kg-day	NA	NA
	TOLUENE	0.03	mg/kg	NA	NA	mg/kg-day	2.00E-01	mg/kg-day	NA	NA
	TRANS-1,2-DICHLOROETHENE	0.023	mg/kg	NA	NA	mg/kg-day	2.00E-02	mg/kg-day	NA	NA
	TRICHLOROETHENE	0.007	mg/kg	NA	NA	mg/kg-day	3.00E-04	mg/kg-day	NA	NA
	1,2,4- TRIMETHYLBENZENE	0.025	mg/kg	NA	NA	mg/kg-day	5.00E-02	mg/kg-day	NA	NA
	1,3,5- TRIMETHYLBENZENE	0.009	mg/kg	NA	NA	mg/kg-day	5.00E-02	mg/kg-day	NA	NA
	VINYL CHLORIDE	0.034	mg/kg	NA	NA	mg/kg-day	3.00E-03	mg/kg-day	NA	NA
	XYLENE (TOTAL)	0.11	mg/kg	NA	NA	mg/kg-day	2.00E-01	mg/kg-day	NA	NA
INHALATION OF PARTICULATES AND VAPORS	**INORGANICS**									
	ALUMINUM	26,743	mg/kg	1.23E-06	5.12E-07	mg/kg-day	1.40E-03	mg/kg-day	8.78E-04	3.66E-04
	ANTIMONY	4.5	mg/kg	2.07E-10	8.62E-11	mg/kg-day	NA	mg/kg-day	NA	NA
	ARSENIC	21.0	mg/kg	9.65E-10	4.02E-10	mg/kg-day	8.57E-06	mg/kg-day	1.13E-04	4.69E-05
	BARIUM	94.0	mg/kg	4.32E-09	1.80E-09	mg/kg-day	1.43E-04	mg/kg-day	3.02E-05	1.26E-05
	BERYLLIUM	0.65	mg/kg	2.99E-11	1.24E-11	mg/kg-day	2.00E-06	mg/kg-day	1.49E-05	6.23E-06

Table C2-4b
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
INHALATION OF PARTICULATES AND VAPORS (CONTINUED)	*CADMIUM*	2.90	mg/kg	1.33E-10	5.55E-11	mg/kg-day	5.71E-06	mg/kg-day	2.33E-05	9.72E-06
	CHROMIUM	216	mg/kg	9.93E-09	4.14E-09	mg/kg-day	NA	mg/kg-day	NA	NA
	COBALT	18.0	mg/kg	8.27E-10	3.45E-10	mg/kg-day	5.70E-06	mg/kg-day	1.45E-04	6.05E-05
	COPPER	199	mg/kg	9.14E-09	3.81E-09	mg/kg-day	NA	mg/kg-day	NA	NA
	HEXAVALENT CHROMIUM	0.07	mg/kg	3.22E-12	1.34E-12	mg/kg-day	2.86E-05	mg/kg-day	1.12E-07	4.69E-08
	LEAD	97	mg/kg	4.46E-09	1.86E-09	mg/kg-day	NA	mg/kg-day	NA	NA
	MANGANESE	907	mg/kg	4.17E-08	1.74E-08	mg/kg-day	1.43E-05	mg/kg-day	2.91E-03	1.21E-03
	MERCURY	1.4	mg/kg	6.43E-11	2.68E-11	mg/kg-day	2.57E-05	mg/kg-day	2.50E-06	1.04E-06
	MOLYBDENUM	5.1	mg/kg	2.34E-10	9.76E-11	mg/kg-day	NA	mg/kg-day	NA	NA
	NICKEL	114	mg/kg	5.24E-09	2.18E-09	mg/kg-day	1.43E-05	mg/kg-day	3.67E-04	1.53E-04
	SELENIUM	1.2	mg/kg	5.51E-11	2.30E-11	mg/kg-day	5.71E-03	mg/kg-day	9.66E-09	4.02E-09
	SILVER	2.8	mg/kg	1.29E-10	5.36E-11	mg/kg-day	NA	mg/kg-day	NA	NA
	THALLIUM	0.47	mg/kg	2.16E-11	9.00E-12	mg/kg-day	NA	mg/kg-day	NA	NA
	TIN	16.3	mg/kg	7.49E-10	3.12E-10	mg/kg-day	NA	mg/kg-day	NA	NA
	VANADIUM	117	mg/kg	5.38E-09	2.24E-09	mg/kg-day	NA	mg/kg-day	NA	NA
	ZINC	237	mg/kg	1.09E-08	4.54E-09	mg/kg-day	NA	mg/kg-day	NA	NA
	PESTICIDES									
	ALPHA-CHLORDANE	0.0082	mg/kg	3.77E-13	1.57E-13	mg/kg-day	2.00E-04	mg/kg-day	1.88E-09	7.85E-10
	BETA BHC	0.001	mg/kg	4.59E-14	1.91E-14	mg/kg-day	2.00E-04	mg/kg-day	2.30E-10	9.57E-11
	DELTA BHC	0.002	mg/kg	9.19E-14	3.83E-14	mg/kg-day	NA	mg/kg-day	NA	NA
	2,4- DDD	0.029	mg/kg	1.33E-12	5.55E-13	mg/kg-day	5.00E-04	mg/kg-day	2.67E-09	1.11E-09
	4,4- DDD	0.086	mg/kg	3.95E-12	1.65E-12	mg/kg-day	5.00E-04	mg/kg-day	7.90E-09	3.29E-09
	4,4- DDE	0.017	mg/kg	7.81E-13	3.25E-13	mg/kg-day	5.00E-04	mg/kg-day	1.56E-09	6.51E-10
	4,4- DDT	0.012	mg/kg	5.51E-13	2.30E-13	mg/kg-day	5.00E-04	mg/kg-day	1.10E-09	4.59E-10
	DIELDRIN	0.0039	mg/kg	1.79E-13	7.47E-14	mg/kg-day	5.00E-05	mg/kg-day	3.58E-09	1.49E-09
	ENDOSULFAN I	0.004	mg/kg	1.84E-13	7.66E-14	mg/kg-day	6.00E-03	mg/kg-day	3.06E-11	1.28E-11
	ENDOSULFAN SULFATE	0.003	mg/kg	1.38E-13	5.74E-14	mg/kg-day	6.00E-03	mg/kg-day	2.30E-11	9.57E-12
	ENDRIN	0.02	mg/kg	9.19E-13	3.83E-13	mg/kg-day	3.00E-04	mg/kg-day	3.06E-09	1.28E-09

Table C2-4b
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
INHALATION OF PARTICULATES AND VAPORS (CONTINUED)	ENDRIN ALDEHYDE	0.006	mg/kg	2.76E-13	1.15E-13	mg/kg-day	3.00E-04	mg/kg-day	9.19E-10	3.83E-10
	ENDRIN KETONE	0.003	mg/kg	1.38E-13	5.74E-14	mg/kg-day	3.00E-04	mg/kg-day	4.59E-10	1.91E-10
	GAMMA-CHLORDANE	0.0085	mg/kg	3.91E-13	1.63E-13	mg/kg-day	2.00E-04	mg/kg-day	1.95E-09	8.14E-10
	HEPTACHLOR	0.0002	mg/kg	9.19E-15	3.83E-15	mg/kg-day	5.00E-04	mg/kg-day	1.84E-11	7.66E-12
	HEPTACHLOR EPOXIDE	0.0003	mg/kg	1.38E-14	5.74E-15	mg/kg-day	1.30E-05	mg/kg-day	1.06E-09	4.42E-10
	HEXACHLOROBENZENE	0.0008	mg/kg	3.68E-14	1.53E-14	mg/kg-day	8.00E-04	mg/kg-day	4.59E-11	1.91E-11
	METHOXYCHLOR	0.02	mg/kg	9.19E-13	3.83E-13	mg/kg-day	5.00E-03	mg/kg-day	1.84E-10	7.66E-11
	MIREX	0.004	mg/kg	1.84E-13	7.66E-14	mg/kg-day	2.00E-04	mg/kg-day	9.19E-10	3.83E-10
	TRANS-NONACHLOR	0.0024	mg/kg	1.10E-13	4.59E-14	mg/kg-day	2.00E-04	mg/kg-day	5.51E-10	2.30E-10
	PCBs									
	PCBs (TOTAL)	0.20	mg/kg	9.19E-12	3.83E-12	mg/kg-day	2.00E-05	mg/kg-day	4.59E-07	1.91E-07
	SVOCs									
	ACENAPHTHENE	0.13	mg/kg	4.38E-08	1.83E-08	mg/kg-day	6.00E-02	mg/kg-day	7.30E-07	3.04E-07
	ACENAPHTHYLENE	0.12	mg/kg	5.51E-12	2.30E-12	mg/kg-day	NA	mg/kg-day	NA	NA
	ANTHRACENE	0.13	mg/kg	1.13E-08	4.69E-09	mg/kg-day	3.00E-01	mg/kg-day	3.75E-08	1.56E-08
	BENZO(A)ANTHRACENE	0.28	mg/kg	1.29E-11	5.36E-12	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(A)PYRENE	0.24	mg/kg	1.10E-11	4.59E-12	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(B)FLUORANTHENE	0.24	mg/kg	1.10E-11	4.59E-12	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(G,H,I)PERYLENE	0.16	mg/kg	7.35E-12	3.06E-12	mg/kg-day	4.00E-02	mg/kg-day	1.84E-10	7.66E-11
	BENZO(K)FLUORANTHENE	0.24	mg/kg	1.10E-11	4.59E-12	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZOIC ACID	0.68	mg/kg	3.12E-11	1.30E-11	mg/kg-day	4.00E+00	mg/kg-day	NA	NA
	BIS(2-ETHYLHEXYL)PHTHALA	1.1	mg/kg	5.05E-11	2.11E-11	mg/kg-day	2.00E-02	mg/kg-day	2.53E-09	1.05E-09
	BUTYLBENZYLPHTHALATE	0.025	mg/kg	1.15E-12	4.79E-13	mg/kg-day	2.00E-01	mg/kg-day	5.74E-12	2.39E-12
	CARBAZOLE	0.55	mg/kg	2.53E-11	1.05E-11	mg/kg-day	NA	mg/kg-day	NA	NA
	4- CHLOROANILINE	0.003	mg/kg	1.38E-13	5.74E-14	mg/kg-day	4.00E-03	mg/kg-day	3.45E-11	1.44E-11
	2- CHLOROPHENOL	0.043	mg/kg	1.99E-12	8.29E-13	mg/kg-day	5.00E-03	mg/kg-day	3.98E-10	1.66E-10
	CHRYSENE	0.27	mg/kg	6.07E-09	2.53E-09	mg/kg-day	NA	mg/kg-day	NA	NA
	DIBENZOFURAN	0.36	mg/kg	1.65E-11	6.89E-12	mg/kg-day	2.00E-03	mg/kg-day	8.27E-09	3.45E-09

Table C2-4b
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
INHALATION OF PARTICULATES AND VAPORS (CONTINUED)	3,3- DICHLOROBENZIDINE	0.012	mg/kg	5.51E-13	2.30E-13	mg/kg-day	NA	mg/kg-day	NA	NA
	2,6- DINITROTOLUENE	0.37	mg/kg	1.70E-11	7.08E-12	mg/kg-day	1.00E-03	mg/kg-day	1.70E-08	7.08E-09
	FLUORANTHENE	0.380	mg/kg	1.75E-11	7.28E-12	mg/kg-day	4.00E-02	mg/kg-day	4.37E-10	1.82E-10
	FLUORENE	0.1	mg/kg	2.19E-08	9.13E-09	mg/kg-day	4.00E-02	mg/kg-day	5.48E-07	2.28E-07
	INDENO(1,2,3-CD)PYRENE	0.16	mg/kg	7.35E-12	3.06E-12	mg/kg-day	NA	mg/kg-day	NA	NA
	2- METHYLNAPHTHALENE	0.18	mg/kg	8.27E-12	3.45E-12	mg/kg-day	NA	mg/kg-day	NA	NA
	4- METHYLPHENOL	0.23	mg/kg	1.06E-11	4.40E-12	mg/kg-day	NA	mg/kg-day	NA	NA
	NAPHTHALENE	0.11	mg/kg	1.55E-07	6.46E-08	mg/kg-day	8.57E-04	mg/kg-day	1.81E-04	7.54E-05
	PENTACHLOROPHENOL	0.54	mg/kg	2.48E-11	1.03E-11	mg/kg-day	3.00E-02	mg/kg-day	8.27E-10	3.45E-10
	PHENANTHRENE	0.20	mg/kg	9.19E-12	3.83E-12	mg/kg-day	3.00E-01	mg/kg-day	3.06E-11	1.28E-11
	PHENOL	0.29	mg/kg	1.33E-11	5.55E-12	mg/kg-day	5.71E-02	mg/kg-day	2.33E-10	9.72E-11
	PYRENE	0.430	mg/kg	6.86E-09	2.86E-09	mg/kg-day	3.00E-02	mg/kg-day	2.29E-07	9.53E-08
	TPH									
	TPH AS DIESEL	177	mg/kg	8.13E-09	3.39E-09	mg/kg-day	NA	mg/kg-day	NA	NA
	TPH AS GASOLINE	4.2	mg/kg	1.93E-10	8.04E-11	mg/kg-day	NA	mg/kg-day	NA	NA
	TPH AS MOTOR OIL	313	mg/kg	1.44E-08	5.99E-09	mg/kg-day	NA	mg/kg-day	NA	NA
	VOCs									
	ACETONE	0.32	mg/kg	1.49E-06	6.22E-07	mg/kg-day	9.00E-01	mg/kg-day	1.66E-06	6.91E-07
	BENZENE	0.005	mg/kg	1.12E-07	4.68E-08	mg/kg-day	8.57E-03	mg/kg-day	1.31E-05	5.46E-06
	CARBON DISULFIDE	0.025	mg/kg	1.26E-06	5.27E-07	mg/kg-day	2.00E-01	mg/kg-day	6.32E-06	2.63E-06
	CHLOROBENZENE	0.024	mg/kg	2.31E-07	9.63E-08	mg/kg-day	5.71E-03	mg/kg-day	4.05E-05	1.69E-05
	CIS-1,2-DICHLOROETHENE	0.005	mg/kg	1.05E-07	4.36E-08	mg/kg-day	1.00E-02	mg/kg-day	1.05E-05	4.36E-06
	ETHYLBENZENE	0.044	mg/kg	4.94E-07	2.06E-07	mg/kg-day	2.86E-01	mg/kg-day	1.73E-06	7.20E-07
	4- ISOPROPYLTOLUENE	0.007	mg/kg	NA	NA	mg/kg-day	NA	mg/kg-day	NA	NA
	METHYLENE CHLORIDE	0.3	mg/kg	7.28E-06	3.03E-06	mg/kg-day	1.14E-01	mg/kg-day	6.38E-05	2.66E-05
	NAPHTHALENE	0.016	mg/kg	2.26E-08	9.40E-09	mg/kg-day	8.57E-04	mg/kg-day	2.63E-05	1.10E-05
	TOLUENE	0.03	mg/kg	4.55E-07	1.90E-07	mg/kg-day	8.57E-02	mg/kg-day	5.31E-06	2.21E-06
	TRANS-1,2-DICHLOROETHENE	0.023	mg/kg	6.07E-07	2.53E-07	mg/kg-day	2.00E-02	mg/kg-day	3.03E-05	1.26E-05

Table C2-4b
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
INHALATION OF PARTICULATES AND VAPORS (CONTINUED)	TRICHLOROETHENE	0.007	mg/kg	1.29E-07	5.36E-08	mg/kg-day	1.00E-02	mg/kg-day	1.29E-05	5.36E-06
	1,2,4- TRIMETHYLBENZENE	0.025	mg/kg	7.58E-08	3.16E-08	mg/kg-day	1.70E-03	mg/kg-day	4.46E-05	1.86E-05
	1,3,5- TRIMETHYLBENZENE	0.009	mg/kg	7.05E-08	2.94E-08	mg/kg-day	1.70E-03	mg/kg-day	4.15E-05	1.73E-05
	VINYL CHLORIDE	0.034	mg/kg	2.06E-06	8.59E-07	mg/kg-day	2.86E-02	mg/kg-day	7.21E-05	3.00E-05
	XYLENE (TOTAL)	0.11	mg/kg	1.09E-06	4.56E-07	mg/kg-day	2.86E-02	mg/kg-day	3.82E-05	1.59E-05

Notes:
The HQ for chemicals that are italicized and underlined have been modified for post remediation residual risk.
CTE = Central Tendency Exposure
EPC = Exposure point concentration
HQ = Hazard Quotient
mg/kg = milligrams per kilogram
mg/kg-day = milligrams per kilogram per day
NA = Not Applicable
PCBs = Polychlorinated Biphenyls
RfD = Reference Dose
RME = Reasonable Maximum Exposure
SVOCs = Semivolatile Organic Compounds
TPH = Total Petroleum Hydrocarbons
VOCs = Volatile Organic Compounds

Table C2-4c
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
INGESTION	**INORGANICS**									
	ALUMINUM	26,743	mg/kg	8.64E-02	8.64E-02	mg/kg-day	1.00E+00	mg/kg-day	8.64E-02	8.64E-02
	ANTIMONY	4.5	mg/kg	1.45E-05	1.45E-05	mg/kg-day	4.00E-04	mg/kg-day	3.63E-02	3.63E-02
	ARSENIC	21.0	mg/kg	6.78E-05	6.78E-05	mg/kg-day	3.00E-04	mg/kg-day	2.26E-01	2.26E-01
	BARIUM	94.0	mg/kg	3.04E-04	3.04E-04	mg/kg-day	7.00E-02	mg/kg-day	4.34E-03	4.34E-03
	BERYLLIUM	0.65	mg/kg	2.10E-06	2.10E-06	mg/kg-day	2.00E-03	mg/kg-day	1.05E-03	1.05E-03
	CADMIUM	2.90	mg/kg	9.36E-06	9.36E-06	mg/kg-day	5.00E-04	mg/kg-day	1.87E-02	1.87E-02
	CHROMIUM	216	mg/kg	6.97E-04	6.97E-04	mg/kg-day	1.50E+00	mg/kg-day	4.65E-04	4.65E-04
	COBALT	18.0	mg/kg	5.81E-05	5.81E-05	mg/kg-day	2.00E-02	mg/kg-day	2.91E-03	2.91E-03
	COPPER	199	mg/kg	6.43E-04	6.43E-04	mg/kg-day	4.00E-02	mg/kg-day	1.61E-02	1.61E-02
	HEXAVALENT CHROMIUM	0.07	mg/kg	2.26E-07	2.26E-07	mg/kg-day	3.00E-03	mg/kg-day	7.53E-05	7.53E-05
	LEAD	97	mg/kg	3.13E-04	3.13E-04	mg/kg-day	NA	mg/kg-day	NA	NA
	MANGANESE	907	mg/kg	2.93E-03	2.93E-03	mg/kg-day	1.40E-01	mg/kg-day	2.09E-02	2.09E-02
	MERCURY	1.4	mg/kg	4.52E-06	4.52E-06	mg/kg-day	3.00E-04	mg/kg-day	1.51E-02	1.51E-02
	MOLYBDENUM	5.1	mg/kg	1.65E-05	1.65E-05	mg/kg-day	5.00E-03	mg/kg-day	3.29E-03	3.29E-03
	NICKEL	114	mg/kg	3.68E-04	3.68E-04	mg/kg-day	2.00E-02	mg/kg-day	1.84E-02	1.84E-02
	SELENIUM	1.2	mg/kg	3.87E-06	3.87E-06	mg/kg-day	5.00E-03	mg/kg-day	7.75E-04	7.75E-04
	SILVER	2.8	mg/kg	9.04E-06	9.04E-06	mg/kg-day	5.00E-03	mg/kg-day	1.81E-03	1.81E-03
	THALLIUM	0.47	mg/kg	1.52E-06	1.52E-06	mg/kg-day	6.60E-05	mg/kg-day	2.30E-02	2.30E-02
	TIN	16.3	mg/kg	5.26E-05	5.26E-05	mg/kg-day	6.00E-01	mg/kg-day	8.77E-05	8.77E-05
	VANADIUM	117	mg/kg	3.78E-04	3.78E-04	mg/kg-day	7.00E-03	mg/kg-day	5.40E-02	5.40E-02
	ZINC	237	mg/kg	7.65E-04	7.65E-04	mg/kg-day	3.00E-01	mg/kg-day	2.55E-03	2.55E-03
	PESTICIDES									
	ALPHA-CHLORDANE	0.0082	mg/kg	2.65E-08	2.65E-08	mg/kg-day	5.00E-04	mg/kg-day	5.30E-05	5.30E-05
	BETA BHC	0.001	mg/kg	3.23E-09	3.23E-09	mg/kg-day	2.00E-04	mg/kg-day	1.61E-05	1.61E-05
	DELTA BHC	0.002	mg/kg	6.46E-09	6.46E-09	mg/kg-day	NA	mg/kg-day	NA	NA
	2,4- DDD	0.029	mg/kg	9.36E-08	9.36E-08	mg/kg-day	5.00E-04	mg/kg-day	1.87E-04	1.87E-04
	4,4- DDD	0.086	mg/kg	2.78E-07	2.78E-07	mg/kg-day	5.00E-04	mg/kg-day	5.55E-04	5.55E-04

Table C2-4c
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
INGESTION (CONTINUED)	4,4- DDE	0.017	mg/kg	5.49E-08	5.49E-08	mg/kg-day	5.00E-04	mg/kg-day	1.10E-04	1.10E-04
	4,4- DDT	0.012	mg/kg	3.87E-08	3.87E-08	mg/kg-day	5.00E-04	mg/kg-day	7.75E-05	7.75E-05
	DIELDRIN	0.0039	mg/kg	1.26E-08	1.26E-08	mg/kg-day	5.00E-05	mg/kg-day	2.52E-04	2.52E-04
	ENDOSULFAN I	0.004	mg/kg	1.29E-08	1.29E-08	mg/kg-day	6.00E-03	mg/kg-day	2.15E-06	2.15E-06
	ENDOSULFAN SULFATE	0.003	mg/kg	9.69E-09	9.69E-09	mg/kg-day	6.00E-03	mg/kg-day	1.61E-06	1.61E-06
	ENDRIN	0.02	mg/kg	6.46E-08	6.46E-08	mg/kg-day	3.00E-04	mg/kg-day	2.15E-04	2.15E-04
	ENDRIN ALDEHYDE	0.006	mg/kg	1.94E-08	1.94E-08	mg/kg-day	3.00E-04	mg/kg-day	6.46E-05	6.46E-05
	ENDRIN KETONE	0.003	mg/kg	9.69E-09	9.69E-09	mg/kg-day	3.00E-04	mg/kg-day	3.23E-05	3.23E-05
	GAMMA-CHLORDANE	0.0085	mg/kg	2.74E-08	2.74E-08	mg/kg-day	5.00E-04	mg/kg-day	5.49E-05	5.49E-05
	HEPTACHLOR	0.0002	mg/kg	6.46E-10	6.46E-10	mg/kg-day	5.00E-04	mg/kg-day	1.29E-06	1.29E-06
	HEPTACHLOR EPOXIDE	0.0003	mg/kg	9.69E-10	9.69E-10	mg/kg-day	1.30E-05	mg/kg-day	7.45E-05	7.45E-05
	HEXACHLOROBENZENE	0.0008	mg/kg	2.58E-09	2.58E-09	mg/kg-day	8.00E-04	mg/kg-day	3.23E-06	3.23E-06
	METHOXYCHLOR	0.02	mg/kg	6.46E-08	6.46E-08	mg/kg-day	5.00E-03	mg/kg-day	1.29E-05	1.29E-05
	MIREX	0.004	mg/kg	1.29E-08	1.29E-08	mg/kg-day	2.00E-04	mg/kg-day	6.46E-05	6.46E-05
	TRANS-NONACHLOR	0.0024	mg/kg	7.75E-09	7.75E-09	mg/kg-day	5.00E-04	mg/kg-day	1.55E-05	1.55E-05
	PCBs									
	PCBs (TOTAL)	0.20	mg/kg	6.46E-07	6.46E-07	mg/kg-day	2.00E-05	mg/kg-day	3.23E-02	3.23E-02
	SVOCs									
	ACENAPHTHENE	0.13	mg/kg	4.20E-07	4.20E-07	mg/kg-day	6.00E-02	mg/kg-day	7.00E-06	7.00E-06
	ACENAPHTHYLENE	0.12	mg/kg	3.87E-07	3.87E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	ANTHRACENE	0.13	mg/kg	4.20E-07	4.20E-07	mg/kg-day	3.00E-01	mg/kg-day	1.40E-06	1.40E-06
	BENZO(A)ANTHRACENE	0.28	mg/kg	9.04E-07	9.04E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(A)PYRENE	0.24	mg/kg	7.75E-07	7.75E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(B)FLUORANTHENE	0.24	mg/kg	7.75E-07	7.75E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(G,H,I)PERYLENE	0.16	mg/kg	5.17E-07	5.17E-07	mg/kg-day	4.00E-02	mg/kg-day	1.29E-05	1.29E-05
	BENZO(K)FLUORANTHENE	0.24	mg/kg	7.75E-07	7.75E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZOIC ACID	0.68	mg/kg	2.20E-06	2.20E-06	mg/kg-day	4.00E+00	mg/kg-day	5.49E-07	5.49E-07
	BIS(2-ETHYLHEXYL)PHTHALATE	1.1	mg/kg	3.55E-06	3.55E-06	mg/kg-day	2.00E-02	mg/kg-day	1.78E-04	1.78E-04

Table C2-4c
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
INGESTION (CONTINUED)	BUTYLBENZYLPHTHALATE	0.025	mg/kg	8.07E-08	8.07E-08	mg/kg-day	2.00E-01	mg/kg-day	4.04E-07	4.04E-07
	CARBAZOLE	0.55	mg/kg	1.78E-06	1.78E-06	mg/kg-day	NA	mg/kg-day	NA	NA
	4- CHLOROANILINE	0.003	mg/kg	9.69E-09	9.69E-09	mg/kg-day	4.00E-03	mg/kg-day	2.42E-06	2.42E-06
	2- CHLOROPHENOL	0.043	mg/kg	1.40E-07	1.40E-07	mg/kg-day	5.00E-03	mg/kg-day	2.80E-05	2.80E-05
	CHRYSENE	0.27	mg/kg	8.72E-07	8.72E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	DIBENZOFURAN	0.36	mg/kg	1.16E-06	1.16E-06	mg/kg-day	2.00E-03	mg/kg-day	5.81E-04	5.81E-04
	3,3- DICHLOROBENZIDINE	0.012	mg/kg	3.87E-08	3.87E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	2,6- DINITROTOLUENE	0.37	mg/kg	1.19E-06	1.19E-06	mg/kg-day	1.00E-03	mg/kg-day	1.19E-03	1.19E-03
	FLUORANTHENE	0.380	mg/kg	1.23E-06	1.23E-06	mg/kg-day	4.00E-02	mg/kg-day	3.07E-05	3.07E-05
	FLUORENE	0.1	mg/kg	4.20E-07	4.20E-07	mg/kg-day	4.00E-02	mg/kg-day	1.05E-05	1.05E-05
	INDENO(1,2,3-CD)PYRENE	0.16	mg/kg	5.17E-07	5.17E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	2- METHYLNAPHTHALENE	0.18	mg/kg	5.81E-07	5.81E-07	mg/kg-day	4.00E-03	mg/kg-day	1.45E-04	1.45E-04
	4- METHYLPHENOL	0.23	mg/kg	7.43E-07	7.43E-07	mg/kg-day	5.00E-03	mg/kg-day	1.49E-04	1.49E-04
	NAPHTHALENE	0.11	mg/kg	3.55E-07	3.55E-07	mg/kg-day	2.00E-02	mg/kg-day	1.78E-05	1.78E-05
	PENTACHLOROPHENOL	0.54	mg/kg	1.74E-06	1.74E-06	mg/kg-day	3.00E-02	mg/kg-day	5.81E-05	5.81E-05
	PHENANTHRENE	0.20	mg/kg	6.46E-07	6.46E-07	mg/kg-day	3.00E-01	mg/kg-day	2.15E-06	2.15E-06
	PHENOL	0.29	mg/kg	9.36E-07	9.36E-07	mg/kg-day	6.00E-01	mg/kg-day	1.56E-06	1.56E-06
	PYRENE	0.430	mg/kg	1.39E-06	1.39E-06	mg/kg-day	3.00E-02	mg/kg-day	4.63E-05	4.63E-05
	TPH									
	TPH AS DIESEL	177	mg/kg	5.72E-04	5.72E-04	mg/kg-day	NA	mg/kg-day	NA	NA
	TPH AS GASOLINE	4.2	mg/kg	1.36E-05	1.36E-05	mg/kg-day	NA	mg/kg-day	NA	NA
	TPH AS MOTOR OIL	313	mg/kg	1.01E-03	1.01E-03	mg/kg-day	NA	mg/kg-day	NA	NA
	VOCs									
	ACETONE	0.32	mg/kg	1.03E-06	1.03E-06	mg/kg-day	9.00E-01	mg/kg-day	1.15E-06	1.15E-06
	BENZENE	0.005	mg/kg	1.61E-08	1.61E-08	mg/kg-day	4.00E-03	mg/kg-day	4.04E-06	4.04E-06
	CARBON DISULFIDE	0.025	mg/kg	8.07E-08	8.07E-08	mg/kg-day	1.00E-01	mg/kg-day	8.07E-07	8.07E-07
	CHLOROBENZENE	0.024	mg/kg	7.75E-08	7.75E-08	mg/kg-day	2.00E-02	mg/kg-day	3.87E-06	3.87E-06
	CIS-1,2-DICHLOROETHENE	0.005	mg/kg	1.61E-08	1.61E-08	mg/kg-day	1.00E-02	mg/kg-day	1.61E-06	1.61E-06

Table C2-4c
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
INGESTION (CONTINUED)	ETHYLBENZENE	0.044	mg/kg	1.42E-07	1.42E-07	mg/kg-day	1.00E-01	mg/kg-day	1.42E-06	1.42E-06
	4- ISOPROPYLTOLUENE	0.007	mg/kg	2.32E-08	2.32E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	METHYLENE CHLORIDE	0.3	mg/kg	9.69E-07	9.69E-07	mg/kg-day	6.00E-02	mg/kg-day	1.61E-05	1.61E-05
	NAPHTHALENE	0.016	mg/kg	5.17E-08	5.17E-08	mg/kg-day	2.00E-02	mg/kg-day	2.58E-06	2.58E-06
	TOLUENE	0.03	mg/kg	9.69E-08	9.69E-08	mg/kg-day	2.00E-01	mg/kg-day	4.84E-07	4.84E-07
	TRANS-1,2-DICHLOROETHENE	0.023	mg/kg	7.43E-08	7.43E-08	mg/kg-day	2.00E-02	mg/kg-day	3.71E-06	3.71E-06
	TRICHLOROETHENE	0.007	mg/kg	2.26E-08	2.26E-08	mg/kg-day	3.00E-04	mg/kg-day	7.53E-05	7.53E-05
	1,2,4- TRIMETHYLBENZENE	0.025	mg/kg	8.07E-08	8.07E-08	mg/kg-day	5.00E-02	mg/kg-day	1.61E-06	1.61E-06
	1,3,5- TRIMETHYLBENZENE	0.009	mg/kg	3.00E-08	3.00E-08	mg/kg-day	5.00E-02	mg/kg-day	6.01E-07	6.01E-07
	VINYL CHLORIDE	0.034	mg/kg	1.10E-07	1.10E-07	mg/kg-day	3.00E-03	mg/kg-day	3.66E-05	3.66E-05
	XYLENE (TOTAL)	0.11	mg/kg	3.55E-07	3.55E-07	mg/kg-day	2.00E-01	mg/kg-day	1.78E-06	1.78E-06
DERMAL CONTACT	**INORGANICS**									
	ALUMINUM	26,743	mg/kg	NA	NA	mg/kg-day	1.00E+00	mg/kg-day	NA	NA
	ANTIMONY	4.5	mg/kg	NA	NA	mg/kg-day	6.00E-05	mg/kg-day	NA	NA
	ARSENIC	21.0	mg/kg	6.10E-06	6.10E-06	mg/kg-day	3.00E-04	mg/kg-day	2.03E-02	2.03E-02
	BARIUM	94.0	mg/kg	NA	NA	mg/kg-day	4.90E-03	mg/kg-day	NA	NA
	BERYLLIUM	0.65	mg/kg	NA	NA	mg/kg-day	1.40E-05	mg/kg-day	NA	NA
	CADMIUM	2.90	mg/kg	2.81E-08	2.81E-08	mg/kg-day	1.25E-05	mg/kg-day	2.25E-03	2.25E-03
	CHROMIUM	216	mg/kg	NA	NA	mg/kg-day	1.95E-02	mg/kg-day	NA	NA
	COBALT	18.0	mg/kg	NA	NA	mg/kg-day	2.00E-02	mg/kg-day	NA	NA
	COPPER	199	mg/kg	NA	NA	mg/kg-day	4.00E-02	mg/kg-day	NA	NA
	HEXAVALENT CHROMIUM	0.07	mg/kg	NA	NA	mg/kg-day	7.50E-05	mg/kg-day	NA	NA
	LEAD	97	mg/kg	NA	NA	mg/kg-day	NA	mg/kg-day	NA	NA
	MANGANESE	907	mg/kg	NA	NA	mg/kg-day	5.60E-03	mg/kg-day	NA	NA
	MERCURY	1.4	mg/kg	NA	NA	mg/kg-day	2.10E-05	mg/kg-day	NA	NA
	MOLYBDENUM	5.1	mg/kg	NA	NA	mg/kg-day	5.00E-03	mg/kg-day	NA	NA
	NICKEL	114	mg/kg	NA	NA	mg/kg-day	8.00E-04	mg/kg-day	NA	NA
	SELENIUM	1.2	mg/kg	NA	NA	mg/kg-day	5.00E-03	mg/kg-day	NA	NA

Table C2-4c
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
DERMAL CONTACT (CONTINUED)	*SILVER*	2.8	mg/kg	NA	NA	mg/kg-day	2.00E-04	mg/kg-day	NA	NA
	THALLIUM	0.47	mg/kg	NA	NA	mg/kg-day	6.60E-05	mg/kg-day	NA	NA
	TIN	16.3	mg/kg	NA	NA	mg/kg-day	6.00E-01	mg/kg-day	NA	NA
	VANADIUM	117	mg/kg	NA	NA	mg/kg-day	1.82E-04	mg/kg-day	NA	NA
	ZINC	237	mg/kg	NA	NA	mg/kg-day	3.00E-01	mg/kg-day	NA	NA
	PESTICIDES									
	ALPHA-CHLORDANE	0.0082	mg/kg	3.18E-09	3.18E-09	mg/kg-day	5.00E-04	mg/kg-day	6.35E-06	6.35E-06
	BETA BHC	0.001	mg/kg	3.87E-10	3.87E-10	mg/kg-day	2.00E-04	mg/kg-day	1.94E-06	1.94E-06
	DELTA BHC	0.002	mg/kg	7.75E-10	7.75E-10	mg/kg-day	NA	mg/kg-day	NA	NA
	2,4- DDD	0.029	mg/kg	8.43E-09	8.43E-09	mg/kg-day	5.00E-04	mg/kg-day	1.69E-05	1.69E-05
	4,4- DDD	0.086	mg/kg	2.50E-08	2.50E-08	mg/kg-day	5.00E-04	mg/kg-day	5.00E-05	5.00E-05
	4,4- DDE	0.017	mg/kg	4.94E-09	4.94E-09	mg/kg-day	5.00E-04	mg/kg-day	9.88E-06	9.88E-06
	4,4- DDT	0.012	mg/kg	3.49E-09	3.49E-09	mg/kg-day	5.00E-04	mg/kg-day	6.97E-06	6.97E-06
	DIELDRIN	0.0039	mg/kg	3.78E-09	3.78E-09	mg/kg-day	5.00E-05	mg/kg-day	7.56E-05	7.56E-05
	ENDOSULFAN I	0.004	mg/kg	3.87E-09	3.87E-09	mg/kg-day	6.00E-03	mg/kg-day	6.46E-07	6.46E-07
	ENDOSULFAN SULFATE	0.003	mg/kg	2.91E-09	2.91E-09	mg/kg-day	6.00E-03	mg/kg-day	4.84E-07	4.84E-07
	ENDRIN	0.02	mg/kg	1.94E-08	1.94E-08	mg/kg-day	3.00E-04	mg/kg-day	6.46E-05	6.46E-05
	ENDRIN ALDEHYDE	0.006	mg/kg	5.81E-09	5.81E-09	mg/kg-day	3.00E-04	mg/kg-day	1.94E-05	1.94E-05
	ENDRIN KETONE	0.003	mg/kg	2.91E-09	2.91E-09	mg/kg-day	3.00E-04	mg/kg-day	9.69E-06	9.69E-06
	GAMMA-CHLORDANE	0.0085	mg/kg	3.29E-09	3.29E-09	mg/kg-day	5.00E-04	mg/kg-day	6.59E-06	6.59E-06
	HEPTACHLOR	0.0002	mg/kg	1.94E-10	1.94E-10	mg/kg-day	5.00E-04	mg/kg-day	3.87E-07	3.87E-07
	HEPTACHLOR EPOXIDE	0.0003	mg/kg	2.91E-10	2.91E-10	mg/kg-day	1.30E-05	mg/kg-day	2.24E-05	2.24E-05
	HEXACHLOROBENZENE	0.0008	mg/kg	7.75E-10	7.75E-10	mg/kg-day	8.00E-04	mg/kg-day	9.69E-07	9.69E-07
	METHOXYCHLOR	0.02	mg/kg	7.75E-09	7.75E-09	mg/kg-day	5.00E-03	mg/kg-day	1.55E-06	1.55E-06
	MIREX	0.004	mg/kg	3.87E-09	3.87E-09	mg/kg-day	2.00E-04	mg/kg-day	1.94E-05	1.94E-05
	TRANS-NONACHLOR	0.0024	mg/kg	9.30E-10	9.30E-10	mg/kg-day	5.00E-04	mg/kg-day	1.86E-06	1.86E-06
	PCBs									
	PCBs (TOTAL)	0.20	mg/kg	2.71E-07	2.71E-07	mg/kg-day	2.00E-05	mg/kg-day	1.36E-02	1.36E-02

Table C2-4c
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
DERMAL CONTACT (CONTINUED)	**SVOCs**									
	ACENAPHTHENE	0.13	mg/kg	1.64E-07	1.64E-07	mg/kg-day	6.00E-02	mg/kg-day	2.73E-06	2.73E-06
	ACENAPHTHYLENE	0.12	mg/kg	1.51E-07	1.51E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	ANTHRACENE	0.13	mg/kg	1.64E-07	1.64E-07	mg/kg-day	3.00E-01	mg/kg-day	5.46E-07	5.46E-07
	BENZO(A)ANTHRACENE	0.28	mg/kg	3.53E-07	3.53E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(A)PYRENE	0.24	mg/kg	3.02E-07	3.02E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(B)FLUORANTHENE	0.24	mg/kg	3.02E-07	3.02E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(G,H,I)PERYLENE	0.16	mg/kg	2.01E-07	2.01E-07	mg/kg-day	4.00E-02	mg/kg-day	5.04E-06	5.04E-06
	BENZO(K)FLUORANTHENE	0.24	mg/kg	3.02E-07	3.02E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZOIC ACID	0.68	mg/kg	6.59E-07	6.59E-07	mg/kg-day	4.00E+00	mg/kg-day	1.65E-07	1.65E-07
	BIS(2-ETHYLHEXYL)PHTHALATE	1.1	mg/kg	1.07E-06	1.07E-06	mg/kg-day	2.00E-02	mg/kg-day	5.33E-05	5.33E-05
	BUTYLBENZYLPHTHALATE	0.025	mg/kg	2.42E-08	2.42E-08	mg/kg-day	2.00E-01	mg/kg-day	1.21E-07	1.21E-07
	CARBAZOLE	0.55	mg/kg	5.33E-07	5.33E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	4- CHLOROANILINE	0.003	mg/kg	2.91E-09	2.91E-09	mg/kg-day	4.00E-03	mg/kg-day	7.27E-07	7.27E-07
	2- CHLOROPHENOL	0.043	mg/kg	4.19E-08	4.19E-08	mg/kg-day	5.00E-03	mg/kg-day	8.39E-06	8.39E-06
	CHRYSENE	0.27	mg/kg	3.40E-07	3.40E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	DIBENZOFURAN	0.36	mg/kg	3.49E-07	3.49E-07	mg/kg-day	2.00E-03	mg/kg-day	1.74E-04	1.74E-04
	3,3- DICHLOROBENZIDINE	0.012	mg/kg	1.16E-08	1.16E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	2,6- DINITROTOLUENE	0.37	mg/kg	3.58E-07	3.58E-07	mg/kg-day	1.00E-03	mg/kg-day	3.58E-04	3.58E-04
	FLUORANTHENE	0.380	mg/kg	4.79E-07	4.79E-07	mg/kg-day	4.00E-02	mg/kg-day	1.20E-05	1.20E-05
	FLUORENE	0.1	mg/kg	1.64E-07	1.64E-07	mg/kg-day	4.00E-02	mg/kg-day	4.09E-06	4.09E-06
	INDENO(1,2,3-CD)PYRENE	0.16	mg/kg	2.01E-07	2.01E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	2- METHYLNAPHTHALENE	0.18	mg/kg	1.74E-07	1.74E-07	mg/kg-day	4.00E-03	mg/kg-day	4.36E-05	4.36E-05
	4- METHYLPHENOL	0.23	mg/kg	2.23E-07	2.23E-07	mg/kg-day	5.00E-03	mg/kg-day	4.46E-05	4.46E-05
	NAPHTHALENE	0.11	mg/kg	1.39E-07	1.39E-07	mg/kg-day	2.00E-02	mg/kg-day	6.93E-06	6.93E-06
	PENTACHLOROPHENOL	0.54	mg/kg	5.23E-07	5.23E-07	mg/kg-day	3.00E-02	mg/kg-day	1.74E-05	1.74E-05
	PHENANTHRENE	0.20	mg/kg	2.52E-07	2.52E-07	mg/kg-day	3.00E-01	mg/kg-day	8.40E-07	8.40E-07
	PHENOL	0.29	mg/kg	2.81E-07	2.81E-07	mg/kg-day	6.00E-01	mg/kg-day	4.68E-07	4.68E-07

Table C2-4c
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
DERMAL CONTACT (CONTINUED)	*PYRENE*	0.430	mg/kg	5.41E-07	5.41E-07	mg/kg-day	3.00E-02	mg/kg-day	1.80E-05	1.80E-05
	TPH									
	TPH AS DIESEL	177	mg/kg	NA	NA	mg/kg-day	NA	mg/kg-day	NA	NA
	TPH AS GASOLINE	4.2	mg/kg	NA	NA	mg/kg-day	NA	mg/kg-day	NA	NA
	TPH AS MOTOR OIL	313	mg/kg	NA	NA	mg/kg-day	NA	mg/kg-day	NA	NA
	VOCs									
	ACETONE	0.32	mg/kg	NA	NA	mg/kg-day	9.00E-01	mg/kg-day	NA	NA
	BENZENE	0.005	mg/kg	NA	NA	mg/kg-day	4.00E-03	mg/kg-day	NA	NA
	CARBON DISULFIDE	0.025	mg/kg	NA	NA	mg/kg-day	1.00E-01	mg/kg-day	NA	NA
	CHLOROBENZENE	0.024	mg/kg	NA	NA	mg/kg-day	2.00E-02	mg/kg-day	NA	NA
	CIS-1,2-DICHLOROETHENE	0.005	mg/kg	NA	NA	mg/kg-day	1.00E-02	mg/kg-day	NA	NA
	ETHYLBENZENE	0.044	mg/kg	NA	NA	mg/kg-day	1.00E-01	mg/kg-day	NA	NA
	4- ISOPROPYLTOLUENE	0.007	mg/kg	NA	NA	mg/kg-day	NA	mg/kg-day	NA	NA
	METHYLENE CHLORIDE	0.3	mg/kg	NA	NA	mg/kg-day	6.00E-02	mg/kg-day	NA	NA
	NAPHTHALENE	0.016	mg/kg	NA	NA	mg/kg-day	2.00E-02	mg/kg-day	NA	NA
	TOLUENE	0.03	mg/kg	NA	NA	mg/kg-day	2.00E-01	mg/kg-day	NA	NA
	TRANS-1,2-DICHLOROETHENE	0.023	mg/kg	NA	NA	mg/kg-day	2.00E-02	mg/kg-day	NA	NA
	TRICHLOROETHENE	0.007	mg/kg	NA	NA	mg/kg-day	3.00E-04	mg/kg-day	NA	NA
	1,2,4- TRIMETHYLBENZENE	0.025	mg/kg	NA	NA	mg/kg-day	5.00E-02	mg/kg-day	NA	NA
	1,3,5- TRIMETHYLBENZENE	0.009	mg/kg	NA	NA	mg/kg-day	5.00E-02	mg/kg-day	NA	NA
	VINYL CHLORIDE	0.034	mg/kg	NA	NA	mg/kg-day	3.00E-03	mg/kg-day	NA	NA
	XYLENE (TOTAL)	0.11	mg/kg	NA	NA	mg/kg-day	2.00E-01	mg/kg-day	NA	NA
INHALATION OF PARTICULATES AND VAPORS	**INORGANICS**									
	ALUMINUM	26,743	mg/kg	1.60E-04	8.30E-05	mg/kg-day	1.40E-03	mg/kg-day	1.14E-01	5.93E-02
	ANTIMONY	4.5	mg/kg	2.68E-08	1.40E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	ARSENIC	21.0	mg/kg	1.25E-07	6.52E-08	mg/kg-day	8.57E-06	mg/kg-day	1.46E-02	7.61E-03
	BARIUM	94.0	mg/kg	5.61E-07	2.92E-07	mg/kg-day	1.43E-04	mg/kg-day	3.92E-03	2.04E-03
	BERYLLIUM	0.65	mg/kg	3.88E-09	2.02E-09	mg/kg-day	2.00E-06	mg/kg-day	1.94E-03	1.01E-03

Table C2-4c
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
INHALATION OF PARTICULATES AND VAPORS (CONTINUED)	*CADMIUM*	2.90	mg/kg	1.73E-08	9.00E-09	mg/kg-day	5.71E-06	mg/kg-day	3.03E-03	1.58E-03
	CHROMIUM	216	mg/kg	1.29E-06	6.70E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	COBALT	18.0	mg/kg	1.07E-07	5.58E-08	mg/kg-day	5.70E-06	mg/kg-day	1.88E-02	9.80E-03
	COPPER	199	mg/kg	1.19E-06	6.17E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	HEXAVALENT CHROMIUM	0.07	mg/kg	4.18E-10	2.17E-10	mg/kg-day	2.86E-05	mg/kg-day	1.46E-05	7.59E-06
	LEAD	97	mg/kg	5.79E-07	3.01E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	MANGANESE	907	mg/kg	5.41E-06	2.81E-06	mg/kg-day	1.43E-05	mg/kg-day	3.78E-01	1.97E-01
	MERCURY	1.4	mg/kg	8.35E-09	4.34E-09	mg/kg-day	2.57E-05	mg/kg-day	3.25E-04	1.69E-04
	MOLYBDENUM	5.1	mg/kg	3.04E-08	1.58E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	NICKEL	114	mg/kg	6.80E-07	3.54E-07	mg/kg-day	1.43E-05	mg/kg-day	4.76E-02	2.48E-02
	SELENIUM	1.2	mg/kg	7.16E-09	3.72E-09	mg/kg-day	5.71E-03	mg/kg-day	1.25E-06	6.52E-07
	SILVER	2.8	mg/kg	1.67E-08	8.69E-09	mg/kg-day	NA	mg/kg-day	NA	NA
	THALLIUM	0.47	mg/kg	2.80E-09	1.46E-09	mg/kg-day	NA	mg/kg-day	NA	NA
	TIN	16.3	mg/kg	9.73E-08	5.06E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	VANADIUM	117	mg/kg	6.98E-07	3.63E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	ZINC	237	mg/kg	1.41E-06	7.35E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	PESTICIDES									
	ALPHA-CHLORDANE	0.0082	mg/kg	4.89E-11	2.54E-11	mg/kg-day	2.00E-04	mg/kg-day	2.45E-07	1.27E-07
	BETA BHC	0.001	mg/kg	5.97E-12	3.10E-12	mg/kg-day	2.00E-04	mg/kg-day	2.98E-08	1.55E-08
	DELTA BHC	0.002	mg/kg	1.19E-11	6.20E-12	mg/kg-day	NA	mg/kg-day	NA	NA
	2,4- DDD	0.029	mg/kg	1.73E-10	9.00E-11	mg/kg-day	5.00E-04	mg/kg-day	3.46E-07	1.80E-07
	4,4- DDD	0.086	mg/kg	5.13E-10	2.67E-10	mg/kg-day	5.00E-04	mg/kg-day	1.03E-06	5.34E-07
	4,4- DDE	0.017	mg/kg	1.01E-10	5.27E-11	mg/kg-day	5.00E-04	mg/kg-day	2.03E-07	1.05E-07
	4,4- DDT	0.012	mg/kg	7.16E-11	3.72E-11	mg/kg-day	5.00E-04	mg/kg-day	1.43E-07	7.45E-08
	DIELDRIN	0.0039	mg/kg	2.33E-11	1.21E-11	mg/kg-day	5.00E-05	mg/kg-day	4.65E-07	2.42E-07
	ENDOSULFAN I	0.004	mg/kg	2.39E-11	1.24E-11	mg/kg-day	6.00E-03	mg/kg-day	3.98E-09	2.07E-09
	ENDOSULFAN SULFATE	0.003	mg/kg	1.79E-11	9.31E-12	mg/kg-day	6.00E-03	mg/kg-day	2.98E-09	1.55E-09
	ENDRIN	0.02	mg/kg	1.19E-10	6.20E-11	mg/kg-day	3.00E-04	mg/kg-day	3.98E-07	2.07E-07

Table C2-4c
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
INHALATION OF PARTICULATES AND VAPORS (CONTINUED)	ENDRIN ALDEHYDE	0.006	mg/kg	3.58E-11	1.86E-11	mg/kg-day	3.00E-04	mg/kg-day	1.19E-07	6.20E-08
	ENDRIN KETONE	0.003	mg/kg	1.79E-11	9.31E-12	mg/kg-day	3.00E-04	mg/kg-day	5.97E-08	3.10E-08
	GAMMA-CHLORDANE	0.0085	mg/kg	5.07E-11	2.64E-11	mg/kg-day	2.00E-04	mg/kg-day	2.54E-07	1.32E-07
	HEPTACHLOR	0.0002	mg/kg	1.19E-12	6.20E-13	mg/kg-day	5.00E-04	mg/kg-day	2.39E-09	1.24E-09
	HEPTACHLOR EPOXIDE	0.0003	mg/kg	1.79E-12	9.31E-13	mg/kg-day	1.30E-05	mg/kg-day	1.38E-07	7.16E-08
	HEXACHLOROBENZENE	0.0008	mg/kg	4.77E-12	2.48E-12	mg/kg-day	8.00E-04	mg/kg-day	5.97E-09	3.10E-09
	METHOXYCHLOR	0.02	mg/kg	1.19E-10	6.20E-11	mg/kg-day	5.00E-03	mg/kg-day	2.39E-08	1.24E-08
	MIREX	0.004	mg/kg	2.39E-11	1.24E-11	mg/kg-day	2.00E-04	mg/kg-day	1.19E-07	6.20E-08
	TRANS-NONACHLOR	0.0024	mg/kg	1.43E-11	7.45E-12	mg/kg-day	2.00E-04	mg/kg-day	7.16E-08	3.72E-08
	PCBs									
	PCBs (TOTAL)	0.20	mg/kg	1.19E-09	6.20E-10	mg/kg-day	2.00E-05	mg/kg-day	5.97E-05	3.10E-05
	SVOCs									
	ACENAPHTHENE	0.13	mg/kg	1.41E-07	7.35E-08	mg/kg-day	6.00E-02	mg/kg-day	2.36E-06	1.22E-06
	ACENAPHTHYLENE	0.12	mg/kg	7.16E-10	3.72E-10	mg/kg-day	NA	mg/kg-day	NA	NA
	ANTHRACENE	0.13	mg/kg	3.63E-08	1.89E-08	mg/kg-day	3.00E-01	mg/kg-day	1.21E-07	6.30E-08
	BENZO(A)ANTHRACENE	0.28	mg/kg	1.67E-09	8.69E-10	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(A)PYRENE	0.24	mg/kg	1.43E-09	7.45E-10	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(B)FLUORANTHENE	0.24	mg/kg	1.43E-09	7.45E-10	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(G,H,I)PERYLENE	0.16	mg/kg	9.55E-10	4.96E-10	mg/kg-day	4.00E-02	mg/kg-day	2.39E-08	1.24E-08
	BENZO(K)FLUORANTHENE	0.24	mg/kg	1.43E-09	7.45E-10	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZOIC ACID	0.68	mg/kg	4.06E-09	2.11E-09	mg/kg-day	4.00E+00	mg/kg-day	1.01E-09	5.27E-10
	BIS(2-ETHYLHEXYL)PHTHALATE	1.1	mg/kg	6.56E-09	3.41E-09	mg/kg-day	2.00E-02	mg/kg-day	3.28E-07	1.71E-07
	BUTYLBENZYLPHTHALATE	0.025	mg/kg	1.49E-10	7.76E-11	mg/kg-day	2.00E-01	mg/kg-day	7.46E-10	3.88E-10
	CARBAZOLE	0.55	mg/kg	3.28E-09	1.71E-09	mg/kg-day	NA	mg/kg-day	NA	NA
	4- CHLOROANILINE	0.003	mg/kg	1.79E-11	9.31E-12	mg/kg-day	4.00E-03	mg/kg-day	4.47E-09	2.33E-09
	2- CHLOROPHENOL	0.043	mg/kg	2.58E-10	1.34E-10	mg/kg-day	5.00E-03	mg/kg-day	5.17E-08	2.69E-08
	CHRYSENE	0.27	mg/kg	1.96E-08	1.02E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	DIBENZOFURAN	0.36	mg/kg	2.15E-09	1.12E-09	mg/kg-day	2.00E-03	mg/kg-day	1.07E-06	5.58E-07

Table C2-4c
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
INHALATION OF PARTICULATES AND VAPORS (CONTINUED)	3,3- DICHLOROBENZIDINE	0.012	mg/kg	7.16E-11	3.72E-11	mg/kg-day	NA	mg/kg-day	NA	NA
	2,6- DINITROTOLUENE	0.37	mg/kg	2.21E-09	1.15E-09	mg/kg-day	1.00E-03	mg/kg-day	2.21E-06	1.15E-06
	FLUORANTHENE	0.380	mg/kg	2.27E-09	1.18E-09	mg/kg-day	4.00E-02	mg/kg-day	5.67E-08	2.95E-08
	FLUORENE	0.1	mg/kg	7.07E-08	3.67E-08	mg/kg-day	4.00E-02	mg/kg-day	1.77E-06	9.19E-07
	INDENO(1,2,3-CD)PYRENE	0.16	mg/kg	9.55E-10	4.96E-10	mg/kg-day	NA	mg/kg-day	NA	NA
	2- METHYLNAPHTHALENE	0.18	mg/kg	1.07E-09	5.58E-10	mg/kg-day	NA	mg/kg-day	NA	NA
	4- METHYLPHENOL	0.23	mg/kg	1.37E-09	7.14E-10	mg/kg-day	NA	mg/kg-day	NA	NA
	NAPHTHALENE	0.11	mg/kg	5.01E-07	2.60E-07	mg/kg-day	8.57E-04	mg/kg-day	5.84E-04	3.04E-04
	PENTACHLOROPHENOL	0.54	mg/kg	3.22E-09	1.68E-09	mg/kg-day	3.00E-02	mg/kg-day	1.07E-07	5.58E-08
	PHENANTHRENE	0.20	mg/kg	1.19E-09	6.20E-10	mg/kg-day	3.00E-01	mg/kg-day	3.98E-09	2.07E-09
	PHENOL	0.29	mg/kg	1.73E-09	9.00E-10	mg/kg-day	5.71E-02	mg/kg-day	3.03E-08	1.58E-08
	PYRENE	0.430	mg/kg	2.21E-08	1.15E-08	mg/kg-day	3.00E-02	mg/kg-day	7.38E-07	3.84E-07
	TPH									
	TPH AS DIESEL	177	mg/kg	1.06E-06	5.49E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	TPH AS GASOLINE	4.2	mg/kg	2.51E-08	1.30E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	TPH AS MOTOR OIL	313	mg/kg	1.87E-06	9.71E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	VOCs									
	ACETONE	0.32	mg/kg	4.82E-06	2.50E-06	mg/kg-day	9.00E-01	mg/kg-day	5.35E-06	2.78E-06
	BENZENE	0.005	mg/kg	3.62E-07	1.88E-07	mg/kg-day	8.57E-03	mg/kg-day	4.23E-05	2.20E-05
	CARBON DISULFIDE	0.025	mg/kg	4.08E-06	2.12E-06	mg/kg-day	2.00E-01	mg/kg-day	2.04E-05	1.06E-05
	CHLOROBENZENE	0.024	mg/kg	7.46E-07	3.88E-07	mg/kg-day	5.71E-03	mg/kg-day	1.31E-04	6.79E-05
	CIS-1,2-DICHLOROETHENE	0.005	mg/kg	3.37E-07	1.75E-07	mg/kg-day	1.00E-02	mg/kg-day	3.37E-05	1.75E-05
	ETHYLBENZENE	0.044	mg/kg	1.59E-06	8.29E-07	mg/kg-day	2.86E-01	mg/kg-day	5.58E-06	2.90E-06
	4- ISOPROPYLTOLUENE	0.007	mg/kg	NA	NA	mg/kg-day	NA	mg/kg-day	NA	NA
	METHYLENE CHLORIDE	0.3	mg/kg	2.35E-05	1.22E-05	mg/kg-day	1.14E-01	mg/kg-day	2.06E-04	1.07E-04
	NAPHTHALENE	0.016	mg/kg	7.28E-08	3.79E-08	mg/kg-day	8.57E-04	mg/kg-day	8.50E-05	4.42E-05
	TOLUENE	0.03	mg/kg	1.47E-06	7.63E-07	mg/kg-day	8.57E-02	mg/kg-day	1.71E-05	8.91E-06
	TRANS-1,2-DICHLOROETHENE	0.023	mg/kg	1.96E-06	1.02E-06	mg/kg-day	2.00E-02	mg/kg-day	9.78E-05	5.09E-05

Table C2-4c
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
INHALATION OF PARTICULATES AND VAPORS (CONTINUED)	TRICHLOROETHENE	0.007	mg/kg	4.15E-07	2.16E-07	mg/kg-day	1.00E-02	mg/kg-day	4.15E-05	2.16E-05
	1,2,4- TRIMETHYLBENZENE	0.025	mg/kg	2.45E-07	1.27E-07	mg/kg-day	1.70E-03	mg/kg-day	1.44E-04	7.48E-05
	1,3,5- TRIMETHYLBENZENE	0.009	mg/kg	2.27E-07	1.18E-07	mg/kg-day	1.70E-03	mg/kg-day	1.34E-04	6.96E-05
	VINYL CHLORIDE	0.034	mg/kg	6.65E-06	3.46E-06	mg/kg-day	2.86E-02	mg/kg-day	2.33E-04	1.21E-04
	XYLENE (TOTAL)	0.11	mg/kg	3.53E-06	1.84E-06	mg/kg-day	2.86E-02	mg/kg-day	1.23E-04	6.42E-05

Notes:
The HQ for chemicals that are italicized and underlined have been modified for post remediation residual risk.
CTE = Central Tendency Exposure
EPC = Exposure point concentration
HQ = Hazard Quotient
mg/kg = milligrams per kilogram
mg/kg-day = milligrams per kilogram per day
NA = Not Applicable
PCBs = Polychlorinated Biphenyls
RfD = Reference Dose
RME = Reasonable Maximum Exposure
SVOCs = Semivolatile Organic Compounds
TPH = Total Petroleum Hydrocarbons
VOCs = Volatile Organic Compounds

Table C2-4d
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INGESTION	**INORGANICS**									
	ALUMINUM	26,743	mg/kg	7.10E-03	2.96E-03	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ANTIMONY	4.5	mg/kg	1.19E-06	4.98E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ARSENIC	21.0	mg/kg	5.57E-06	2.32E-06	mg/kg-day	9.45E+00	$(mg/kg\text{-}day)^{-1}$	5.27E-05	2.19E-05
	BARIUM	94.0	mg/kg	2.49E-05	1.04E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BERYLLIUM	0.65	mg/kg	1.73E-07	7.19E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CADMIUM	2.90	mg/kg	7.70E-07	3.21E-07	mg/kg-day	3.80E-01	$(mg/kg\text{-}day)^{-1}$	2.92E-07	1.22E-07
	CHROMIUM	216	mg/kg	5.73E-05	2.39E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	COBALT	18.0	mg/kg	4.78E-06	1.99E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	COPPER	199	mg/kg	5.28E-05	2.20E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	HEXAVALENT CHROMIUM	0.07	mg/kg	1.86E-08	7.74E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	LEAD	97	mg/kg	2.57E-05	1.07E-05	mg/kg-day	8.50E-03	$(mg/kg\text{-}day)^{-1}$	2.19E-07	9.12E-08
	MANGANESE	907	mg/kg	2.41E-04	1.00E-04	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MERCURY	1.4	mg/kg	3.72E-07	1.55E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MOLYBDENUM	5.1	mg/kg	1.35E-06	5.64E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	NICKEL	114	mg/kg	3.03E-05	1.26E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	SELENIUM	1.2	mg/kg	3.18E-07	1.33E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	SILVER	2.8	mg/kg	7.43E-07	3.10E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	THALLIUM	0.47	mg/kg	1.25E-07	5.20E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TIN	16.3	mg/kg	4.33E-06	1.80E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	VANADIUM	117	mg/kg	3.11E-05	1.29E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ZINC	237	mg/kg	6.29E-05	2.62E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

Table C2-4d
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INGESTION (CONTINUED)	**PESTICIDES**									
	ALPHA-CHLORDANE	0.0082	mg/kg	2.18E-09	9.07E-10	mg/kg-day	1.30E+00	$(mg/kg\text{-}day)^{-1}$	2.83E-09	1.18E-09
	BETA BHC	0.001	mg/kg	2.65E-10	1.11E-10	mg/kg-day	1.80E+00	$(mg/kg\text{-}day)^{-1}$	4.78E-10	1.99E-10
	DELTA BHC	0.002	mg/kg	5.31E-10	2.21E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	2,4- DDD	0.029	mg/kg	7.70E-09	3.21E-09	mg/kg-day	2.40E-01	$(mg/kg\text{-}day)^{-1}$	1.85E-09	7.70E-10
	4,4- DDD	0.086	mg/kg	2.28E-08	9.51E-09	mg/kg-day	2.40E-01	$(mg/kg\text{-}day)^{-1}$	5.48E-09	2.28E-09
	4,4- DDE	0.017	mg/kg	4.51E-09	1.88E-09	mg/kg-day	3.40E-01	$(mg/kg\text{-}day)^{-1}$	1.53E-09	6.39E-10
	4,4- DDT	0.012	mg/kg	3.18E-09	1.33E-09	mg/kg-day	3.40E-01	$(mg/kg\text{-}day)^{-1}$	1.08E-09	4.51E-10
	DIELDRIN	0.0039	mg/kg	1.04E-09	4.31E-10	mg/kg-day	1.60E+01	$(mg/kg\text{-}day)^{-1}$	1.66E-08	6.90E-09
	ENDOSULFAN I	0.004	mg/kg	1.06E-09	4.42E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDOSULFAN SULFATE	0.003	mg/kg	7.96E-10	3.32E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN	0.02	mg/kg	5.31E-09	2.21E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN ALDEHYDE	0.006	mg/kg	1.59E-09	6.64E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN KETONE	0.003	mg/kg	7.96E-10	3.32E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	GAMMA-CHLORDANE	0.0085	mg/kg	2.26E-09	9.40E-10	mg/kg-day	1.30E+00	$(mg/kg\text{-}day)^{-1}$	2.93E-09	1.22E-09
	HEPTACHLOR	0.0002	mg/kg	5.31E-11	2.21E-11	mg/kg-day	4.50E+00	$(mg/kg\text{-}day)^{-1}$	2.39E-10	9.95E-11
	HEPTACHLOR EPOXIDE	0.0003	mg/kg	7.96E-11	3.32E-11	mg/kg-day	9.10E+00	$(mg/kg\text{-}day)^{-1}$	7.25E-10	3.02E-10
	HEXACHLOROBENZENE	0.0008	mg/kg	2.12E-10	8.85E-11	mg/kg-day	1.80E+00	$(mg/kg\text{-}day)^{-1}$	3.82E-10	1.59E-10
	METHOXYCHLOR	0.02	mg/kg	5.31E-09	2.21E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MIREX	0.004	mg/kg	1.06E-09	4.42E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TRANS-NONACHLOR	0.0024	mg/kg	6.37E-10	2.65E-10	mg/kg-day	1.30E+00	$(mg/kg\text{-}day)^{-1}$	8.28E-10	3.45E-10
	PCBs									
	PCBs (TOTAL)	0.20	mg/kg	5.31E-08	2.21E-08	mg/kg-day	5.00E+00	$(mg/kg\text{-}day)^{-1}$	2.65E-07	1.11E-07

Table C2-4d
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INGESTION	**SVOCs**									
(CONTINUED)	*ACENAPHTHENE*	0.13	mg/kg	3.45E-08	1.44E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ACENAPHTHYLENE	0.12	mg/kg	3.18E-08	1.33E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ANTHRACENE	0.13	mg/kg	3.45E-08	1.44E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BENZO(A)ANTHRACENE	0.28	mg/kg	7.43E-08	3.10E-08	mg/kg-day	1.20E+00	$(mg/kg\text{-}day)^{-1}$	8.92E-08	3.72E-08
	BENZO(A)PYRENE	0.24	mg/kg	6.37E-08	2.65E-08	mg/kg-day	1.20E+01	$(mg/kg\text{-}day)^{-1}$	7.64E-07	3.18E-07
	BENZO(B)FLUORANTHENE	0.24	mg/kg	6.37E-08	2.65E-08	mg/kg-day	1.20E+00	$(mg/kg\text{-}day)^{-1}$	7.64E-08	3.18E-08
	BENZO(G,H,I)PERYLENE	0.16	mg/kg	4.25E-08	1.77E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BENZO(K)FLUORANTHENE	0.24	mg/kg	6.37E-08	2.65E-08	mg/kg-day	1.20E+00	$(mg/kg\text{-}day)^{-1}$	7.64E-08	3.18E-08
	BENZOIC ACID	0.68	mg/kg	1.80E-07	7.52E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BIS(2-ETHYLHEXYL)PHTHALATE	1.1	mg/kg	2.92E-07	1.22E-07	mg/kg-day	1.40E-02	$(mg/kg\text{-}day)^{-1}$	4.09E-09	1.70E-09
	BUTYLBENZYLPHTHALATE	0.025	mg/kg	6.64E-09	2.76E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CARBAZOLE	0.55	mg/kg	1.46E-07	6.08E-08	mg/kg-day	2.00E-02	$(mg/kg\text{-}day)^{-1}$	2.92E-09	1.22E-09
	4- CHLOROANILINE	0.003	mg/kg	7.96E-10	3.32E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	2- CHLOROPHENOL	0.043	mg/kg	1.15E-08	4.79E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CHRYSENE	0.27	mg/kg	7.17E-08	2.99E-08	mg/kg-day	1.20E-01	$(mg/kg\text{-}day)^{-1}$	8.60E-09	3.58E-09
	DIBENZOFURAN	0.36	mg/kg	9.55E-08	3.98E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	3,3- DICHLOROBENZIDINE	0.012	mg/kg	3.18E-09	1.33E-09	mg/kg-day	4.50E-01	$(mg/kg\text{-}day)^{-1}$	1.43E-09	5.97E-10
	2,6- DINITROTOLUENE	0.37	mg/kg	9.82E-08	4.09E-08	mg/kg-day	6.10E-01	$(mg/kg\text{-}day)^{-1}$	5.99E-08	2.50E-08
	FLUORANTHENE	0.380	mg/kg	1.01E-07	4.20E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	FLUORENE	0.1	mg/kg	3.45E-08	1.44E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	INDENO(1,2,3-CD)PYRENE	0.16	mg/kg	4.25E-08	1.77E-08	mg/kg-day	1.20E+00	$(mg/kg\text{-}day)^{-1}$	5.10E-08	2.12E-08
	2- METHYLNAPHTHALENE	0.18	mg/kg	4.78E-08	1.99E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

Table C2-4d
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INGESTION (CONTINUED)	4- METHYLPHENOL	0.23	mg/kg	6.10E-08	2.54E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	NAPHTHALENE	0.11	mg/kg	2.92E-08	1.22E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PENTACHLOROPHENOL	0.54	mg/kg	1.43E-07	5.97E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PHENANTHRENE	0.20	mg/kg	5.31E-08	2.21E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PHENOL	0.29	mg/kg	7.70E-08	3.21E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PYRENE	0.430	mg/kg	1.14E-07	4.76E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TPH									
	TPH AS DIESEL	177	mg/kg	4.70E-05	1.96E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TPH AS GASOLINE	4.2	mg/kg	1.11E-06	4.64E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TPH AS MOTOR OIL	313	mg/kg	8.31E-05	3.46E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	VOCs									
	ACETONE	0.32	mg/kg	8.49E-08	3.54E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BENZENE	0.005	mg/kg	1.33E-09	5.53E-10	mg/kg-day	1.00E-01	$(mg/kg\text{-}day)^{-1}$	1.33E-10	5.53E-11
	CARBON DISULFIDE	0.025	mg/kg	6.64E-09	2.76E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CHLOROBENZENE	0.024	mg/kg	6.37E-09	2.65E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CIS-1,2-DICHLOROETHENE	0.005	mg/kg	1.33E-09	5.53E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ETHYLBENZENE	0.044	mg/kg	1.17E-08	4.87E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	4- ISOPROPYLTOLUENE	0.007	mg/kg	1.91E-09	7.96E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	METHYLENE CHLORIDE	0.3	mg/kg	7.96E-08	3.32E-08	mg/kg-day	1.40E-02	$(mg/kg\text{-}day)^{-1}$	1.11E-09	4.64E-10
	NAPHTHALENE	0.016	mg/kg	4.25E-09	1.77E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TOLUENE	0.03	mg/kg	7.96E-09	3.32E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TRANS-1,2-DICHLOROETHENE	0.023	mg/kg	6.10E-09	2.54E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TRICHLOROETHENE	0.007	mg/kg	1.86E-09	7.74E-10	mg/kg-day	4.10E-01	$(mg/kg\text{-}day)^{-1}$	7.62E-10	3.17E-10

Table C2-4d
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INGESTION (CONTINUED)	1,2,4- TRIMETHYLBENZENE	0.025	mg/kg	6.64E-09	2.76E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	1,3,5- TRIMETHYLBENZENE	0.009	mg/kg	2.47E-09	1.03E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	VINYL CHLORIDE	0.034	mg/kg	9.02E-09	3.76E-09	mg/kg-day	1.50E+00	$(mg/kg\text{-}day)^{-1}$	1.35E-08	5.64E-09
	XYLENE (TOTAL)	0.11	mg/kg	2.92E-08	1.22E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
DERMAL CONTACT	**INORGANICS**									
	ALUMINUM	26,743	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ANTIMONY	4.5	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ARSENIC	21.0	mg/kg	7.67E-07	3.20E-07	mg/kg-day	9.45E+00	$(mg/kg\text{-}day)^{-1}$	7.25E-06	3.02E-06
	BARIUM	94.0	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BERYLLIUM	0.65	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CADMIUM	2.90	mg/kg	3.53E-09	1.47E-09	mg/kg-day	1.52E+01	$(mg/kg\text{-}day)^{-1}$	5.37E-08	2.24E-08
	CHROMIUM	216	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	COBALT	18.0	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	COPPER	199	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	HEXAVALENT CHROMIUM	0.07	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	LEAD	97	mg/kg	NA	NA	mg/kg-day	8.50E-03	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MANGANESE	907	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MERCURY	1.4	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MOLYBDENUM	5.1	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	NICKEL	114	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	SELENIUM	1.2	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	SILVER	2.8	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	THALLIUM	0.47	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

Table C2-4d
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
DERMAL CONTACT (CONTINUED)	*TIN*	16.3	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	VANADIUM	117	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ZINC	237	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PESTICIDES									
	ALPHA-CHLORDANE	0.0082	mg/kg	4.00E-10	1.66E-10	mg/kg-day	1.30E+00	$(mg/kg\text{-}day)^{-1}$	5.19E-10	2.16E-10
	BETA BHC	0.001	mg/kg	4.87E-11	2.03E-11	mg/kg-day	1.80E+00	$(mg/kg\text{-}day)^{-1}$	8.77E-11	3.65E-11
	DELTA BHC	0.002	mg/kg	9.75E-11	4.06E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	2,4- DDD	0.029	mg/kg	1.06E-09	4.42E-10	mg/kg-day	2.40E-01	$(mg/kg\text{-}day)^{-1}$	2.54E-10	1.06E-10
	4,4- DDD	0.086	mg/kg	3.14E-09	1.31E-09	mg/kg-day	2.40E-01	$(mg/kg\text{-}day)^{-1}$	7.54E-10	3.14E-10
	4,4- DDE	0.017	mg/kg	6.21E-10	2.59E-10	mg/kg-day	3.40E-01	$(mg/kg\text{-}day)^{-1}$	2.11E-10	8.80E-11
	4,4- DDT	0.012	mg/kg	4.39E-10	1.83E-10	mg/kg-day	3.40E-01	$(mg/kg\text{-}day)^{-1}$	1.49E-10	6.21E-11
	DIELDRIN	0.0039	mg/kg	4.75E-10	1.98E-10	mg/kg-day	1.60E+01	$(mg/kg\text{-}day)^{-1}$	7.60E-09	3.17E-09
	ENDOSULFAN I	0.004	mg/kg	4.87E-10	2.03E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDOSULFAN SULFATE	0.003	mg/kg	3.65E-10	1.52E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN	0.02	mg/kg	2.44E-09	1.02E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN ALDEHYDE	0.006	mg/kg	7.31E-10	3.05E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN KETONE	0.003	mg/kg	3.65E-10	1.52E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	GAMMA-CHLORDANE	0.0085	mg/kg	4.14E-10	1.73E-10	mg/kg-day	1.30E+00	$(mg/kg\text{-}day)^{-1}$	5.38E-10	2.24E-10
	HEPTACHLOR	0.0002	mg/kg	2.44E-11	1.02E-11	mg/kg-day	4.50E+00	$(mg/kg\text{-}day)^{-1}$	1.10E-10	4.57E-11
	HEPTACHLOR EPOXIDE	0.0003	mg/kg	3.65E-11	1.52E-11	mg/kg-day	9.10E+00	$(mg/kg\text{-}day)^{-1}$	3.33E-10	1.39E-10
	HEXACHLOROBENZENE	0.0008	mg/kg	9.75E-11	4.06E-11	mg/kg-day	1.80E+00	$(mg/kg\text{-}day)^{-1}$	1.75E-10	7.31E-11
	METHOXYCHLOR	0.02	mg/kg	9.75E-10	4.06E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MIREX	0.004	mg/kg	4.87E-10	2.03E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

Table C2-4d
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
DERMAL CONTACT (CONTINUED)	TRANS-NONACHLOR	0.0024	mg/kg	1.17E-10	4.87E-11	mg/kg-day	1.30E+00	$(mg/kg\text{-}day)^{-1}$	1.52E-10	6.33E-11
	PCBs									
	PCBs (TOTAL)	0.20	mg/kg	3.41E-08	1.42E-08	mg/kg-day	5.00E+00	$(mg/kg\text{-}day)^{-1}$	1.71E-07	7.11E-08
	SVOCs									
	ACENAPHTHENE	0.13	mg/kg	2.06E-08	8.58E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ACENAPHTHYLENE	0.12	mg/kg	1.90E-08	7.92E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ANTHRACENE	0.13	mg/kg	2.06E-08	8.58E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BENZO(A)ANTHRACENE	0.28	mg/kg	4.43E-08	1.85E-08	mg/kg-day	1.20E+00	$(mg/kg\text{-}day)^{-1}$	5.32E-08	2.22E-08
	BENZO(A)PYRENE	0.24	mg/kg	3.80E-08	1.58E-08	mg/kg-day	1.20E+01	$(mg/kg\text{-}day)^{-1}$	4.56E-07	1.90E-07
	BENZO(B)FLUORANTHENE	0.24	mg/kg	3.80E-08	1.58E-08	mg/kg-day	1.20E+00	$(mg/kg\text{-}day)^{-1}$	4.56E-08	1.90E-08
	BENZO(G,H,I)PERYLENE	0.16	mg/kg	2.53E-08	1.06E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BENZO(K)FLUORANTHENE	0.24	mg/kg	3.80E-08	1.58E-08	mg/kg-day	1.20E+00	$(mg/kg\text{-}day)^{-1}$	4.56E-08	1.90E-08
	BENZOIC ACID	0.68	mg/kg	8.28E-08	3.45E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BIS(2-ETHYLHEXYL)PHTHALATE	1.1	mg/kg	1.34E-07	5.58E-08	mg/kg-day	1.40E-02	$(mg/kg\text{-}day)^{-1}$	1.88E-09	7.82E-10
	BUTYLBENZYLPHTHALATE	0.025	mg/kg	3.05E-09	1.27E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CARBAZOLE	0.55	mg/kg	6.70E-08	2.79E-08	mg/kg-day	2.00E-02	$(mg/kg\text{-}day)^{-1}$	1.34E-09	5.58E-10
	4- CHLOROANILINE	0.003	mg/kg	3.65E-10	1.52E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	2- CHLOROPHENOL	0.043	mg/kg	5.27E-09	2.20E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CHRYSENE	0.27	mg/kg	4.28E-08	1.78E-08	mg/kg-day	1.20E-01	$(mg/kg\text{-}day)^{-1}$	5.13E-09	2.14E-09
	DIBENZOFURAN	0.36	mg/kg	4.39E-08	1.83E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	3,3- DICHLOROBENZIDINE	0.012	mg/kg	1.46E-09	6.09E-10	mg/kg-day	4.50E-01	$(mg/kg\text{-}day)^{-1}$	6.58E-10	2.74E-10
	2,6- DINITROTOLUENE	0.37	mg/kg	4.51E-08	1.88E-08	mg/kg-day	6.10E-01	$(mg/kg\text{-}day)^{-1}$	2.75E-08	1.15E-08
	FLUORANTHENE	0.380	mg/kg	6.02E-08	2.51E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

Table C2-4d
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
DERMAL CONTACT (CONTINUED)	*FLUORENE*	0.1	mg/kg	2.06E-08	8.58E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	INDENO(1,2,3-CD)PYRENE	0.16	mg/kg	2.53E-08	1.06E-08	mg/kg-day	1.20E+00	$(mg/kg\text{-}day)^{-1}$	3.04E-08	1.27E-08
	2- METHYLNAPHTHALENE	0.18	mg/kg	2.19E-08	9.14E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	4- METHYLPHENOL	0.23	mg/kg	2.80E-08	1.17E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	NAPHTHALENE	0.11	mg/kg	1.74E-08	7.26E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PENTACHLOROPHENOL	0.54	mg/kg	6.58E-08	2.74E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PHENANTHRENE	0.20	mg/kg	3.17E-08	1.32E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PHENOL	0.29	mg/kg	3.53E-08	1.47E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PYRENE	0.430	mg/kg	6.81E-08	2.84E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TPH									
	TPH AS DIESEL	177	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TPH AS GASOLINE	4.2	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TPH AS MOTOR OIL	313	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	VOCs									
	ACETONE	0.32	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BENZENE	0.005	mg/kg	NA	NA	mg/kg-day	1.00E-01	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CARBON DISULFIDE	0.025	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CHLOROBENZENE	0.024	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CIS-1,2-DICHLOROETHENE	0.005	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ETHYLBENZENE	0.044	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	4- ISOPROPYLTOLUENE	0.007	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	METHYLENE CHLORIDE	0.3	mg/kg	NA	NA	mg/kg-day	1.40E-02	$(mg/kg\text{-}day)^{-1}$	NA	NA
	NAPHTHALENE	0.016	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

Table C2-4d
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
DERMAL CONTACT (CONTINUED)	TOLUENE	0.03	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TRANS-1,2-DICHLOROETHENE	0.023	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TRICHLOROETHENE	0.007	mg/kg	NA	NA	mg/kg-day	4.10E-01	$(mg/kg\text{-}day)^{-1}$	NA	NA
	1,2,4- TRIMETHYLBENZENE	0.025	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	1,3,5- TRIMETHYLBENZENE	0.009	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	VINYL CHLORIDE	0.034	mg/kg	NA	NA	mg/kg-day	1.50E+00	$(mg/kg\text{-}day)^{-1}$	NA	NA
	XYLENE (TOTAL)	0.11	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
INHALATION OF PARTICULATES AND VAPORS	**INORGANICS**									
	ALUMINUM	26,743	mg/kg	2.98E-07	1.24E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ANTIMONY	4.5	mg/kg	5.02E-11	2.09E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ARSENIC	21.0	mg/kg	2.34E-10	9.76E-11	mg/kg-day	1.20E+01	$(mg/kg\text{-}day)^{-1}$	2.81E-09	1.17E-09
	BARIUM	94.0	mg/kg	1.05E-09	4.37E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BERYLLIUM	0.65	mg/kg	7.25E-12	3.02E-12	mg/kg-day	8.40E+00	$(mg/kg\text{-}day)^{-1}$	6.09E-11	2.54E-11
	CADMIUM	2.90	mg/kg	3.24E-11	1.35E-11	mg/kg-day	1.50E+01	$(mg/kg\text{-}day)^{-1}$	4.85E-10	2.02E-10
	CHROMIUM	216	mg/kg	2.41E-09	1.00E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	COBALT	18.0	mg/kg	2.01E-10	8.37E-11	mg/kg-day	9.80E+00	$(mg/kg\text{-}day)^{-1}$	1.97E-09	8.20E-10
	COPPER	199	mg/kg	2.22E-09	9.25E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	HEXAVALENT CHROMIUM	0.07	mg/kg	7.81E-13	3.25E-13	mg/kg-day	5.10E+02	$(mg/kg\text{-}day)^{-1}$	3.98E-10	1.66E-10
	LEAD	97	mg/kg	1.08E-09	4.51E-10	mg/kg-day	4.20E-02	$(mg/kg\text{-}day)^{-1}$	4.55E-11	1.89E-11
	MANGANESE	907	mg/kg	1.01E-08	4.22E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MERCURY	1.4	mg/kg	1.56E-11	6.51E-12	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MOLYBDENUM	5.1	mg/kg	5.69E-11	2.37E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	NICKEL	114	mg/kg	1.27E-09	5.30E-10	mg/kg-day	9.10E-01	$(mg/kg\text{-}day)^{-1}$	1.16E-09	4.82E-10

Table C2-4d
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INHALATION OF PARTICULATES AND VAPORS (CONTINUED)	*SELENIUM*	1.2	mg/kg	1.34E-11	5.58E-12	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	SILVER	2.8	mg/kg	3.12E-11	1.30E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	THALLIUM	0.47	mg/kg	5.24E-12	2.19E-12	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TIN	16.3	mg/kg	1.82E-10	7.58E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	VANADIUM	117	mg/kg	1.31E-09	5.44E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ZINC	237	mg/kg	2.64E-09	1.10E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PESTICIDES									
	ALPHA-CHLORDANE	0.0082	mg/kg	9.15E-14	3.81E-14	mg/kg-day	3.50E-01	$(mg/kg\text{-}day)^{-1}$	3.20E-14	1.33E-14
	BETA BHC	0.001	mg/kg	1.12E-14	4.65E-15	mg/kg-day	1.86E+00	$(mg/kg\text{-}day)^{-1}$	2.08E-14	8.65E-15
	DELTA BHC	0.002	mg/kg	2.23E-14	9.30E-15	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	2,4- DDD	0.029	mg/kg	3.24E-13	1.35E-13	mg/kg-day	2.40E-01	$(mg/kg\text{-}day)^{-1}$	7.77E-14	3.24E-14
	4,4- DDD	0.086	mg/kg	9.60E-13	4.00E-13	mg/kg-day	2.40E-01	$(mg/kg\text{-}day)^{-1}$	2.30E-13	9.60E-14
	4,4- DDE	0.017	mg/kg	1.90E-13	7.90E-14	mg/kg-day	3.40E-01	$(mg/kg\text{-}day)^{-1}$	6.45E-14	2.69E-14
	4,4- DDT	0.012	mg/kg	1.34E-13	5.58E-14	mg/kg-day	3.40E-01	$(mg/kg\text{-}day)^{-1}$	4.55E-14	1.90E-14
	DIELDRIN	0.0039	mg/kg	4.35E-14	1.81E-14	mg/kg-day	1.60E+01	$(mg/kg\text{-}day)^{-1}$	6.96E-13	2.90E-13
	ENDOSULFAN I	0.004	mg/kg	4.46E-14	1.86E-14	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDOSULFAN SULFATE	0.003	mg/kg	3.35E-14	1.39E-14	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN	0.02	mg/kg	2.23E-13	9.30E-14	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN ALDEHYDE	0.006	mg/kg	6.70E-14	2.79E-14	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN KETONE	0.003	mg/kg	3.35E-14	1.39E-14	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	GAMMA-CHLORDANE	0.0085	mg/kg	9.49E-14	3.95E-14	mg/kg-day	3.50E-01	$(mg/kg\text{-}day)^{-1}$	3.32E-14	1.38E-14
	HEPTACHLOR	0.0002	mg/kg	2.23E-15	9.30E-16	mg/kg-day	4.50E+00	$(mg/kg\text{-}day)^{-1}$	1.00E-14	4.18E-15
	HEPTACHLOR EPOXIDE	0.0003	mg/kg	3.35E-15	1.39E-15	mg/kg-day	9.10E+00	$(mg/kg\text{-}day)^{-1}$	3.05E-14	1.27E-14

Table C2-4d
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INHALATION OF PARTICULATES AND VAPORS (CONTINUED)	HEXACHLOROBENZENE	0.0008	mg/kg	8.93E-15	3.72E-15	mg/kg-day	1.80E+00	$(mg/kg\text{-}day)^{-1}$	1.61E-14	6.70E-15
	METHOXYCHLOR	0.02	mg/kg	2.23E-13	9.30E-14	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MIREX	0.004	mg/kg	4.46E-14	1.86E-14	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TRANS-NONACHLOR	0.0024	mg/kg	2.68E-14	1.12E-14	mg/kg-day	3.50E-01	$(mg/kg\text{-}day)^{-1}$	9.37E-15	3.91E-15
	PCBs									
	PCBs (TOTAL)	0.20	mg/kg	2.23E-12	9.30E-13	mg/kg-day	2.00E+00	$(mg/kg\text{-}day)^{-1}$	4.46E-12	1.86E-12
	SVOCs									
	ACENAPHTHENE	0.13	mg/kg	1.06E-08	4.43E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ACENAPHTHYLENE	0.12	mg/kg	1.34E-12	5.58E-13	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ANTHRACENE	0.13	mg/kg	2.74E-09	1.14E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BENZO(A)ANTHRACENE	0.28	mg/kg	3.12E-12	1.30E-12	mg/kg-day	3.90E-01	$(mg/kg\text{-}day)^{-1}$	1.22E-12	5.08E-13
	BENZO(A)PYRENE	0.24	mg/kg	2.68E-12	1.12E-12	mg/kg-day	3.90E+00	$(mg/kg\text{-}day)^{-1}$	1.04E-11	4.35E-12
	BENZO(B)FLUORANTHENE	0.24	mg/kg	2.68E-12	1.12E-12	mg/kg-day	3.90E-01	$(mg/kg\text{-}day)^{-1}$	1.04E-12	4.35E-13
	BENZO(G,H,I)PERYLENE	0.16	mg/kg	1.79E-12	7.44E-13	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BENZO(K)FLUORANTHENE	0.24	mg/kg	2.68E-12	1.12E-12	mg/kg-day	3.90E-01	$(mg/kg\text{-}day)^{-1}$	1.04E-12	4.35E-13
	BENZOIC ACID	0.68	mg/kg	7.59E-12	3.16E-12	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BIS(2-ETHYLHEXYL)PHTHALATE	1.1	mg/kg	1.23E-11	5.11E-12	mg/kg-day	1.40E-02	$(mg/kg\text{-}day)^{-1}$	1.72E-13	7.16E-14
	BUTYLBENZYLPHTHALATE	0.025	mg/kg	2.79E-13	1.16E-13	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CARBAZOLE	0.55	mg/kg	6.14E-12	2.56E-12	mg/kg-day	2.00E-02	$(mg/kg\text{-}day)^{-1}$	1.23E-13	5.11E-14
	4- CHLOROANILINE	0.003	mg/kg	3.35E-14	1.39E-14	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	2- CHLOROPHENOL	0.043	mg/kg	4.83E-13	2.01E-13	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CHRYSENE	0.27	mg/kg	1.47E-09	6.14E-10	mg/kg-day	3.90E-02	$(mg/kg\text{-}day)^{-1}$	5.74E-11	2.39E-11
	DIBENZOFURAN	0.36	mg/kg	4.02E-12	1.67E-12	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

Table C2-4d
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INHALATION OF PARTICULATES AND VAPORS (CONTINUED)	3,3- DICHLOROBENZIDINE	0.012	mg/kg	1.34E-13	5.58E-14	mg/kg-day	4.50E-01	$(mg/kg\text{-}day)^{-1}$	6.03E-14	2.51E-14
	2,6- DINITROTOLUENE	0.37	mg/kg	4.13E-12	1.72E-12	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	FLUORANTHENE	0.380	mg/kg	4.24E-12	1.77E-12	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	FLUORENE	0.1	mg/kg	5.32E-09	2.22E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	INDENO(1,2,3-CD)PYRENE	0.16	mg/kg	1.79E-12	7.44E-13	mg/kg-day	3.90E-01	$(mg/kg\text{-}day)^{-1}$	6.96E-13	2.90E-13
	2- METHYLNAPHTHALENE	0.18	mg/kg	2.01E-12	8.37E-13	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	4- METHYLPHENOL	0.23	mg/kg	2.57E-12	1.07E-12	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	NAPHTHALENE	0.11	mg/kg	3.77E-08	1.57E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PENTACHLOROPHENOL	0.54	mg/kg	6.03E-12	2.51E-12	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PHENANTHRENE	0.20	mg/kg	2.23E-12	9.30E-13	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PHENOL	0.29	mg/kg	3.24E-12	1.35E-12	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PYRENE	0.430	mg/kg	1.67E-09	6.95E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TPH									
	TPH AS DIESEL	177	mg/kg	1.98E-09	8.23E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TPH AS GASOLINE	4.2	mg/kg	4.69E-11	1.95E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TPH AS MOTOR OIL	313	mg/kg	3.49E-09	1.46E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	VOCs									
	ACETONE	0.32	mg/kg	3.63E-07	1.51E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BENZENE	0.005	mg/kg	2.73E-08	1.14E-08	mg/kg-day	1.00E-01	$(mg/kg\text{-}day)^{-1}$	2.73E-09	1.14E-09
	CARBON DISULFIDE	0.025	mg/kg	3.07E-07	1.28E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CHLOROBENZENE	0.024	mg/kg	5.61E-08	2.34E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CIS-1,2-DICHLOROETHENE	0.005	mg/kg	2.54E-08	1.06E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ETHYLBENZENE	0.044	mg/kg	1.20E-07	5.00E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

Table C2-4d
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INHALATION OF PARTICULATES AND VAPORS (CONTINUED)	4- ISOPROPYLTOLUENE	0.007	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	METHYLENE CHLORIDE	0.3	mg/kg	1.77E-06	7.37E-07	mg/kg-day	3.50E-03	$(mg/kg\text{-}day)^{-1}$	6.19E-09	2.58E-09
	NAPHTHALENE	0.016	mg/kg	5.48E-09	2.28E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TOLUENE	0.03	mg/kg	1.10E-07	4.60E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TRANS-1,2-DICHLOROETHENE	0.023	mg/kg	1.47E-07	6.14E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TRICHLOROETHENE	0.007	mg/kg	3.12E-08	1.30E-08	mg/kg-day	7.00E-03	$(mg/kg\text{-}day)^{-1}$	2.19E-10	9.11E-11
	1,2,4- TRIMETHYLBENZENE	0.025	mg/kg	1.84E-08	7.67E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	1,3,5- TRIMETHYLBENZENE	0.009	mg/kg	1.71E-08	7.13E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	VINYL CHLORIDE	0.034	mg/kg	5.01E-07	2.09E-07	mg/kg-day	1.54E-02	$(mg/kg\text{-}day)^{-1}$	7.71E-09	3.21E-09
	XYLENE (TOTAL)	0.11	mg/kg	2.66E-07	1.11E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

Notes:
The cancer risk for chemicals that are italicized and underlined have been modified for post remediation residual risk.
CTE = Central Tendency Exposure
EPC = Exposure point concentration
HQ = Hazard Quotient
mg/kg = milligrams per kilogram
mg/kg-day = milligrams per kilogram per day
NA = Not Applicable
PCBs = Polychlorinated Biphenyls
RME = Reasonable Maximum Exposure
SVOCs = Semivolatile Organic Compounds
TPH = Total Petroleum Hydrocarbons
VOCs = Volatile Organic Compounds

Table C2-4e
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INGESTION	**INORGANICS**									
	ALUMINUM	26,743	mg/kg	1.23E-03	1.23E-03	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ANTIMONY	4.5	mg/kg	2.08E-07	2.08E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ARSENIC	21.0	mg/kg	9.69E-07	9.69E-07	mg/kg-day	9.45E+00	$(mg/kg\text{-}day)^{-1}$	9.15E-06	9.15E-06
	BARIUM	94.0	mg/kg	4.34E-06	4.34E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BERYLLIUM	0.65	mg/kg	3.00E-08	3.00E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CADMIUM	2.90	mg/kg	1.34E-07	1.34E-07	mg/kg-day	3.80E-01	$(mg/kg\text{-}day)^{-1}$	5.08E-08	5.08E-08
	CHROMIUM	216	mg/kg	9.96E-06	9.96E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	COBALT	18.0	mg/kg	8.30E-07	8.30E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	COPPER	199	mg/kg	9.18E-06	9.18E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	HEXAVALENT CHROMIUM	0.07	mg/kg	3.23E-09	3.23E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	LEAD	97	mg/kg	4.47E-06	4.47E-06	mg/kg-day	8.50E-03	$(mg/kg\text{-}day)^{-1}$	3.80E-08	3.80E-08
	MANGANESE	907	mg/kg	4.18E-05	4.18E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MERCURY	1.4	mg/kg	6.46E-08	6.46E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MOLYBDENUM	5.1	mg/kg	2.35E-07	2.35E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	NICKEL	114	mg/kg	5.26E-06	5.26E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	SELENIUM	1.2	mg/kg	5.54E-08	5.54E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	SILVER	2.8	mg/kg	1.29E-07	1.29E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	THALLIUM	0.47	mg/kg	2.17E-08	2.17E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TIN	16.3	mg/kg	7.52E-07	7.52E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	VANADIUM	117	mg/kg	5.40E-06	5.40E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ZINC	237	mg/kg	1.09E-05	1.09E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

Table C2-4e
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INGESTION	**PESTICIDES**									
(CONTINUED)	ALPHA-CHLORDANE	0.0082	mg/kg	3.78E-10	3.78E-10	mg/kg-day	1.30E+00	$(mg/kg\text{-}day)^{-1}$	4.92E-10	4.92E-10
	BETA BHC	0.001	mg/kg	4.61E-11	4.61E-11	mg/kg-day	1.80E+00	$(mg/kg\text{-}day)^{-1}$	8.30E-11	8.30E-11
	DELTA BHC	0.002	mg/kg	9.23E-11	9.23E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	2,4- DDD	0.029	mg/kg	1.34E-09	1.34E-09	mg/kg-day	2.40E-01	$(mg/kg\text{-}day)^{-1}$	3.21E-10	3.21E-10
	4,4- DDD	0.086	mg/kg	3.97E-09	3.97E-09	mg/kg-day	2.40E-01	$(mg/kg\text{-}day)^{-1}$	9.52E-10	9.52E-10
	4,4- DDE	0.017	mg/kg	7.84E-10	7.84E-10	mg/kg-day	3.40E-01	$(mg/kg\text{-}day)^{-1}$	2.67E-10	2.67E-10
	4,4- DDT	0.012	mg/kg	5.54E-10	5.54E-10	mg/kg-day	3.40E-01	$(mg/kg\text{-}day)^{-1}$	1.88E-10	1.88E-10
	DIELDRIN	0.0039	mg/kg	1.80E-10	1.80E-10	mg/kg-day	1.60E+01	$(mg/kg\text{-}day)^{-1}$	2.88E-09	2.88E-09
	ENDOSULFAN I	0.004	mg/kg	1.85E-10	1.85E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDOSULFAN SULFATE	0.003	mg/kg	1.38E-10	1.38E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN	0.02	mg/kg	9.23E-10	9.23E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN ALDEHYDE	0.006	mg/kg	2.77E-10	2.77E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN KETONE	0.003	mg/kg	1.38E-10	1.38E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	GAMMA-CHLORDANE	0.0085	mg/kg	3.92E-10	3.92E-10	mg/kg-day	1.30E+00	$(mg/kg\text{-}day)^{-1}$	5.10E-10	5.10E-10
	HEPTACHLOR	0.0002	mg/kg	9.23E-12	9.23E-12	mg/kg-day	4.50E+00	$(mg/kg\text{-}day)^{-1}$	4.15E-11	4.15E-11
	HEPTACHLOR EPOXIDE	0.0003	mg/kg	1.38E-11	1.38E-11	mg/kg-day	9.10E+00	$(mg/kg\text{-}day)^{-1}$	1.26E-10	1.26E-10
	HEXACHLOROBENZENE	0.0008	mg/kg	3.69E-11	3.69E-11	mg/kg-day	1.80E+00	$(mg/kg\text{-}day)^{-1}$	6.64E-11	6.64E-11
	METHOXYCHLOR	0.02	mg/kg	9.23E-10	9.23E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MIREX	0.004	mg/kg	1.85E-10	1.85E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TRANS-NONACHLOR	0.0024	mg/kg	1.11E-10	1.11E-10	mg/kg-day	1.30E+00	$(mg/kg\text{-}day)^{-1}$	1.44E-10	1.44E-10
	PCBs									
	PCBs (TOTAL)	0.20	mg/kg	9.23E-09	9.23E-09	mg/kg-day	5.00E+00	$(mg/kg\text{-}day)^{-1}$	4.61E-08	4.61E-08

Table C2-4e
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INGESTION	**SVOCs**									
(CONTINUED)	*ACENAPHTHENE*	0.13	mg/kg	6.00E-09	6.00E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ACENAPHTHYLENE	0.12	mg/kg	5.54E-09	5.54E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ANTHRACENE	0.13	mg/kg	6.00E-09	6.00E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BENZO(A)ANTHRACENE	0.28	mg/kg	1.29E-08	1.29E-08	mg/kg-day	1.20E+00	$(mg/kg\text{-}day)^{-1}$	1.55E-08	1.55E-08
	BENZO(A)PYRENE	0.24	mg/kg	1.11E-08	1.11E-08	mg/kg-day	1.20E+01	$(mg/kg\text{-}day)^{-1}$	1.33E-07	1.33E-07
	BENZO(B)FLUORANTHENE	0.24	mg/kg	1.11E-08	1.11E-08	mg/kg-day	1.20E+00	$(mg/kg\text{-}day)^{-1}$	1.33E-08	1.33E-08
	BENZO(G,H,I)PERYLENE	0.16	mg/kg	7.38E-09	7.38E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BENZO(K)FLUORANTHENE	0.24	mg/kg	1.11E-08	1.11E-08	mg/kg-day	1.20E+00	$(mg/kg\text{-}day)^{-1}$	1.33E-08	1.33E-08
	BENZOIC ACID	0.68	mg/kg	3.14E-08	3.14E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BIS(2-ETHYLHEXYL)PHTHALATE	1.1	mg/kg	5.07E-08	5.07E-08	mg/kg-day	1.40E-02	$(mg/kg\text{-}day)^{-1}$	7.10E-10	7.10E-10
	BUTYLBENZYLPHTHALATE	0.025	mg/kg	1.15E-09	1.15E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CARBAZOLE	0.55	mg/kg	2.54E-08	2.54E-08	mg/kg-day	2.00E-02	$(mg/kg\text{-}day)^{-1}$	5.07E-10	5.07E-10
	4- CHLOROANILINE	0.003	mg/kg	1.38E-10	1.38E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	2- CHLOROPHENOL	0.043	mg/kg	2.00E-09	2.00E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CHRYSENE	0.27	mg/kg	1.25E-08	1.25E-08	mg/kg-day	1.20E-01	$(mg/kg\text{-}day)^{-1}$	1.49E-09	1.49E-09
	DIBENZOFURAN	0.36	mg/kg	1.66E-08	1.66E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	3,3- DICHLOROBENZIDINE	0.012	mg/kg	5.54E-10	5.54E-10	mg/kg-day	4.50E-01	$(mg/kg\text{-}day)^{-1}$	2.49E-10	2.49E-10
	2,6- DINITROTOLUENE	0.37	mg/kg	1.71E-08	1.71E-08	mg/kg-day	6.10E-01	$(mg/kg\text{-}day)^{-1}$	1.04E-08	1.04E-08
	FLUORANTHENE	0.380	mg/kg	1.75E-08	1.75E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	FLUORENE	0.1	mg/kg	6.00E-09	6.00E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	INDENO(1,2,3-CD)PYRENE	0.16	mg/kg	7.38E-09	7.38E-09	mg/kg-day	1.20E+00	$(mg/kg\text{-}day)^{-1}$	8.86E-09	8.86E-09
	2- METHYLNAPHTHALENE	0.18	mg/kg	8.30E-09	8.30E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

Table C2-4e
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INGESTION (CONTINUED)	4- METHYLPHENOL	0.23	mg/kg	1.06E-08	1.06E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	NAPHTHALENE	0.11	mg/kg	5.07E-09	5.07E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PENTACHLOROPHENOL	0.54	mg/kg	2.49E-08	2.49E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PHENANTHRENE	0.20	mg/kg	9.23E-09	9.23E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PHENOL	0.29	mg/kg	1.34E-08	1.34E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PYRENE	0.430	mg/kg	1.98E-08	1.98E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TPH									
	TPH AS DIESEL	177	mg/kg	8.16E-06	8.16E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TPH AS GASOLINE	4.2	mg/kg	1.94E-07	1.94E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TPH AS MOTOR OIL	313	mg/kg	1.44E-05	1.44E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	VOCs									
	ACETONE	0.32	mg/kg	1.48E-08	1.48E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BENZENE	0.005	mg/kg	2.31E-10	2.31E-10	mg/kg-day	1.00E-01	$(mg/kg\text{-}day)^{-1}$	2.31E-11	2.31E-11
	CARBON DISULFIDE	0.025	mg/kg	1.15E-09	1.15E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CHLOROBENZENE	0.024	mg/kg	1.11E-09	1.11E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CIS-1,2-DICHLOROETHENE	0.005	mg/kg	2.31E-10	2.31E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ETHYLBENZENE	0.044	mg/kg	2.03E-09	2.03E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	4- ISOPROPYLTOLUENE	0.007	mg/kg	3.32E-10	3.32E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	METHYLENE CHLORIDE	0.3	mg/kg	1.38E-08	1.38E-08	mg/kg-day	1.40E-02	$(mg/kg\text{-}day)^{-1}$	1.94E-10	1.94E-10
	NAPHTHALENE	0.016	mg/kg	7.38E-10	7.38E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TOLUENE	0.03	mg/kg	1.38E-09	1.38E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TRANS-1,2-DICHLOROETHENE	0.023	mg/kg	1.06E-09	1.06E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TRICHLOROETHENE	0.007	mg/kg	3.23E-10	3.23E-10	mg/kg-day	4.10E-01	$(mg/kg\text{-}day)^{-1}$	1.32E-10	1.32E-10

Table C2-4e
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INGESTION (CONTINUED)	1,2,4- TRIMETHYLBENZENE	0.025	mg/kg	1.15E-09	1.15E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	1,3,5- TRIMETHYLBENZENE	0.009	mg/kg	4.29E-10	4.29E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	VINYL CHLORIDE	0.034	mg/kg	1.57E-09	1.57E-09	mg/kg-day	1.50E+00	$(mg/kg\text{-}day)^{-1}$	2.35E-09	2.35E-09
	XYLENE (TOTAL)	0.11	mg/kg	5.07E-09	5.07E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
DERMAL CONTACT	**INORGANICS**									
	ALUMINUM	26,743	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ANTIMONY	4.5	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ARSENIC	21.0	mg/kg	8.72E-08	8.72E-08	mg/kg-day	9.45E+00	$(mg/kg\text{-}day)^{-1}$	8.24E-07	8.24E-07
	BARIUM	94.0	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BERYLLIUM	0.65	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CADMIUM	2.90	mg/kg	4.01E-10	4.01E-10	mg/kg-day	1.52E+01	$(mg/kg\text{-}day)^{-1}$	6.10E-09	6.10E-09
	CHROMIUM	216	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	COBALT	18.0	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	COPPER	199	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	HEXAVALENT CHROMIUM	0.07	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	LEAD	97	mg/kg	NA	NA	mg/kg-day	8.50E-03	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MANGANESE	907	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MERCURY	1.4	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MOLYBDENUM	5.1	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	NICKEL	114	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	SELENIUM	1.2	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	SILVER	2.8	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	THALLIUM	0.47	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

Table C2-4e
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
DERMAL CONTACT (CONTINUED)	*TIN*	16.3	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	VANADIUM	117	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ZINC	237	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PESTICIDES									
	ALPHA-CHLORDANE	0.0082	mg/kg	4.54E-11	4.54E-11	mg/kg-day	1.30E+00	$(mg/kg\text{-}day)^{-1}$	5.90E-11	5.90E-11
	BETA BHC	0.001	mg/kg	5.54E-12	5.54E-12	mg/kg-day	1.80E+00	$(mg/kg\text{-}day)^{-1}$	9.96E-12	9.96E-12
	DELTA BHC	0.002	mg/kg	1.11E-11	1.11E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	2,4- DDD	0.029	mg/kg	1.20E-10	1.20E-10	mg/kg-day	2.40E-01	$(mg/kg\text{-}day)^{-1}$	2.89E-11	2.89E-11
	4,4- DDD	0.086	mg/kg	3.57E-10	3.57E-10	mg/kg-day	2.40E-01	$(mg/kg\text{-}day)^{-1}$	8.57E-11	8.57E-11
	4,4- DDE	0.017	mg/kg	7.06E-11	7.06E-11	mg/kg-day	3.40E-01	$(mg/kg\text{-}day)^{-1}$	2.40E-11	2.40E-11
	4,4- DDT	0.012	mg/kg	4.98E-11	4.98E-11	mg/kg-day	3.40E-01	$(mg/kg\text{-}day)^{-1}$	1.69E-11	1.69E-11
	DIELDRIN	0.0039	mg/kg	5.40E-11	5.40E-11	mg/kg-day	1.60E+01	$(mg/kg\text{-}day)^{-1}$	8.64E-10	8.64E-10
	ENDOSULFAN I	0.004	mg/kg	5.54E-11	5.54E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDOSULFAN SULFATE	0.003	mg/kg	4.15E-11	4.15E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN	0.02	mg/kg	2.77E-10	2.77E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN ALDEHYDE	0.006	mg/kg	8.30E-11	8.30E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN KETONE	0.003	mg/kg	4.15E-11	4.15E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	GAMMA-CHLORDANE	0.0085	mg/kg	4.71E-11	4.71E-11	mg/kg-day	1.30E+00	$(mg/kg\text{-}day)^{-1}$	6.12E-11	6.12E-11
	HEPTACHLOR	0.0002	mg/kg	2.77E-12	2.77E-12	mg/kg-day	4.50E+00	$(mg/kg\text{-}day)^{-1}$	1.25E-11	1.25E-11
	HEPTACHLOR EPOXIDE	0.0003	mg/kg	4.15E-12	4.15E-12	mg/kg-day	9.10E+00	$(mg/kg\text{-}day)^{-1}$	3.78E-11	3.78E-11
	HEXACHLOROBENZENE	0.0008	mg/kg	1.11E-11	1.11E-11	mg/kg-day	1.80E+00	$(mg/kg\text{-}day)^{-1}$	1.99E-11	1.99E-11
	METHOXYCHLOR	0.02	mg/kg	1.11E-10	1.11E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MIREX	0.004	mg/kg	5.54E-11	5.54E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

Table C2-4e
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
DERMAL CONTACT (CONTINUED)	TRANS-NONACHLOR	0.0024	mg/kg	1.33E-11	1.33E-11	mg/kg-day	1.30E+00	$(mg/kg\text{-}day)^{-1}$	1.73E-11	1.73E-11
	PCBs									
	PCBs (TOTAL)	0.20	mg/kg	3.87E-09	3.87E-09	mg/kg-day	5.00E+00	$(mg/kg\text{-}day)^{-1}$	1.94E-08	1.94E-08
	SVOCs									
	ACENAPHTHENE	0.13	mg/kg	2.34E-09	2.34E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ACENAPHTHYLENE	0.12	mg/kg	2.16E-09	2.16E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ANTHRACENE	0.13	mg/kg	2.34E-09	2.34E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BENZO(A)ANTHRACENE	0.28	mg/kg	5.04E-09	5.04E-09	mg/kg-day	1.20E+00	$(mg/kg\text{-}day)^{-1}$	6.04E-09	6.04E-09
	BENZO(A)PYRENE	0.24	mg/kg	4.32E-09	4.32E-09	mg/kg-day	1.20E+01	$(mg/kg\text{-}day)^{-1}$	5.18E-08	5.18E-08
	BENZO(B)FLUORANTHENE	0.24	mg/kg	4.32E-09	4.32E-09	mg/kg-day	1.20E+00	$(mg/kg\text{-}day)^{-1}$	5.18E-09	5.18E-09
	BENZO(G,H,I)PERYLENE	0.16	mg/kg	2.88E-09	2.88E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BENZO(K)FLUORANTHENE	0.24	mg/kg	4.32E-09	4.32E-09	mg/kg-day	1.20E+00	$(mg/kg\text{-}day)^{-1}$	5.18E-09	5.18E-09
	BENZOIC ACID	0.68	mg/kg	9.41E-09	9.41E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BIS(2-ETHYLHEXYL)PHTHALATE	1.1	mg/kg	1.52E-08	1.52E-08	mg/kg-day	1.40E-02	$(mg/kg\text{-}day)^{-1}$	2.13E-10	2.13E-10
	BUTYLBENZYLPHTHALATE	0.025	mg/kg	3.46E-10	3.46E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CARBAZOLE	0.55	mg/kg	7.61E-09	7.61E-09	mg/kg-day	2.00E-02	$(mg/kg\text{-}day)^{-1}$	1.52E-10	1.52E-10
	4- CHLOROANILINE	0.003	mg/kg	4.15E-11	4.15E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	2- CHLOROPHENOL	0.043	mg/kg	5.99E-10	5.99E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CHRYSENE	0.27	mg/kg	4.86E-09	4.86E-09	mg/kg-day	1.20E-01	$(mg/kg\text{-}day)^{-1}$	5.83E-10	5.83E-10
	DIBENZOFURAN	0.36	mg/kg	4.98E-09	4.98E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	3,3- DICHLOROBENZIDINE	0.012	mg/kg	1.66E-10	1.66E-10	mg/kg-day	4.50E-01	$(mg/kg\text{-}day)^{-1}$	7.47E-11	7.47E-11
	2,6- DINITROTOLUENE	0.37	mg/kg	5.12E-09	5.12E-09	mg/kg-day	6.10E-01	$(mg/kg\text{-}day)^{-1}$	3.12E-09	3.12E-09
	FLUORANTHENE	0.380	mg/kg	6.84E-09	6.84E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

Table C2-4e
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
DERMAL CONTACT (CONTINUED)	*FLUORENE*	0.1	mg/kg	2.34E-09	2.34E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	INDENO(1,2,3-CD)PYRENE	0.16	mg/kg	2.88E-09	2.88E-09	mg/kg-day	1.20E+00	$(mg/kg\text{-}day)^{-1}$	3.45E-09	3.45E-09
	2- METHYLNAPHTHALENE	0.18	mg/kg	2.49E-09	2.49E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	4- METHYLPHENOL	0.23	mg/kg	3.18E-09	3.18E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	NAPHTHALENE	0.11	mg/kg	1.98E-09	1.98E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PENTACHLOROPHENOL	0.54	mg/kg	7.47E-09	7.47E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PHENANTHRENE	0.20	mg/kg	3.60E-09	3.60E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PHENOL	0.29	mg/kg	4.01E-09	4.01E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PYRENE	0.430	mg/kg	7.74E-09	7.74E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TPH									
	TPH AS DIESEL	177	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TPH AS GASOLINE	4.2	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TPH AS MOTOR OIL	313	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	VOCs									
	ACETONE	0.32	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BENZENE	0.005	mg/kg	NA	NA	mg/kg-day	1.00E-01	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CARBON DISULFIDE	0.025	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CHLOROBENZENE	0.024	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CIS-1,2-DICHLOROETHENE	0.005	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ETHYLBENZENE	0.044	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	4- ISOPROPYLTOLUENE	0.007	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	METHYLENE CHLORIDE	0.3	mg/kg	NA	NA	mg/kg-day	1.40E-02	$(mg/kg\text{-}day)^{-1}$	NA	NA
	NAPHTHALENE	0.016	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

Table C2-4e
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
DERMAL CONTACT (CONTINUED)	TOLUENE	0.03	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TRANS-1,2-DICHLOROETHENE	0.023	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TRICHLOROETHENE	0.007	mg/kg	NA	NA	mg/kg-day	4.10E-01	$(mg/kg\text{-}day)^{-1}$	NA	NA
	1,2,4- TRIMETHYLBENZENE	0.025	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	1,3,5- TRIMETHYLBENZENE	0.009	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	VINYL CHLORIDE	0.034	mg/kg	NA	NA	mg/kg-day	1.50E+00	$(mg/kg\text{-}day)^{-1}$	NA	NA
	XYLENE (TOTAL)	0.11	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
INHALATION OF PARTICULATES AND VAPORS	**INORGANICS**									
	ALUMINUM	26,743	mg/kg	2.28E-06	1.19E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ANTIMONY	4.5	mg/kg	3.84E-10	1.99E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ARSENIC	21.0	mg/kg	1.79E-09	9.31E-10	mg/kg-day	1.20E+01	$(mg/kg\text{-}day)^{-1}$	2.15E-08	1.12E-08
	BARIUM	94.0	mg/kg	8.01E-09	4.17E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BERYLLIUM	0.65	mg/kg	5.54E-11	2.88E-11	mg/kg-day	8.40E+00	$(mg/kg\text{-}day)^{-1}$	4.65E-10	2.42E-10
	CADMIUM	2.90	mg/kg	2.47E-10	1.29E-10	mg/kg-day	1.50E+01	$(mg/kg\text{-}day)^{-1}$	3.71E-09	1.93E-09
	CHROMIUM	216	mg/kg	1.84E-08	9.57E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	COBALT	18.0	mg/kg	1.53E-09	7.98E-10	mg/kg-day	9.80E+00	$(mg/kg\text{-}day)^{-1}$	1.50E-08	7.82E-09
	COPPER	199	mg/kg	1.70E-08	8.82E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	HEXAVALENT CHROMIUM	0.07	mg/kg	5.97E-12	3.10E-12	mg/kg-day	5.10E+02	$(mg/kg\text{-}day)^{-1}$	3.04E-09	1.58E-09
	LEAD	97	mg/kg	8.27E-09	4.30E-09	mg/kg-day	4.20E-02	$(mg/kg\text{-}day)^{-1}$	3.47E-10	1.81E-10
	MANGANESE	907	mg/kg	7.73E-08	4.02E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MERCURY	1.4	mg/kg	1.19E-10	6.20E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MOLYBDENUM	5.1	mg/kg	4.35E-10	2.26E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	NICKEL	114	mg/kg	9.72E-09	5.05E-09	mg/kg-day	9.10E-01	$(mg/kg\text{-}day)^{-1}$	8.84E-09	4.60E-09

Table C2-4e
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INHALATION OF PARTICULATES AND VAPORS (CONTINUED)	*SELENIUM*	1.2	mg/kg	1.02E-10	5.32E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	SILVER	2.8	mg/kg	2.39E-10	1.24E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	THALLIUM	0.47	mg/kg	4.01E-11	2.08E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TIN	16.3	mg/kg	1.39E-09	7.22E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	VANADIUM	117	mg/kg	9.97E-09	5.19E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ZINC	237	mg/kg	2.02E-08	1.05E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PESTICIDES									
	ALPHA-CHLORDANE	0.0082	mg/kg	6.99E-13	3.63E-13	mg/kg-day	3.50E-01	$(mg/kg\text{-}day)^{-1}$	2.45E-13	1.27E-13
	BETA BHC	0.001	mg/kg	8.52E-14	4.43E-14	mg/kg-day	1.86E+00	$(mg/kg\text{-}day)^{-1}$	1.59E-13	8.24E-14
	DELTA BHC	0.002	mg/kg	1.70E-13	8.86E-14	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	2,4- DDD	0.029	mg/kg	2.47E-12	1.29E-12	mg/kg-day	2.40E-01	$(mg/kg\text{-}day)^{-1}$	5.93E-13	3.08E-13
	4,4- DDD	0.086	mg/kg	7.33E-12	3.81E-12	mg/kg-day	2.40E-01	$(mg/kg\text{-}day)^{-1}$	1.76E-12	9.15E-13
	4,4- DDE	0.017	mg/kg	1.45E-12	7.53E-13	mg/kg-day	3.40E-01	$(mg/kg\text{-}day)^{-1}$	4.93E-13	2.56E-13
	4,4- DDT	0.012	mg/kg	1.02E-12	5.32E-13	mg/kg-day	3.40E-01	$(mg/kg\text{-}day)^{-1}$	3.48E-13	1.81E-13
	DIELDRIN	0.0039	mg/kg	3.32E-13	1.73E-13	mg/kg-day	1.60E+01	$(mg/kg\text{-}day)^{-1}$	5.32E-12	2.77E-12
	ENDOSULFAN I	0.004	mg/kg	3.41E-13	1.77E-13	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDOSULFAN SULFATE	0.003	mg/kg	2.56E-13	1.33E-13	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN	0.02	mg/kg	1.70E-12	8.86E-13	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN ALDEHYDE	0.006	mg/kg	5.11E-13	2.66E-13	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN KETONE	0.003	mg/kg	2.56E-13	1.33E-13	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	GAMMA-CHLORDANE	0.0085	mg/kg	7.24E-13	3.77E-13	mg/kg-day	3.50E-01	$(mg/kg\text{-}day)^{-1}$	2.54E-13	1.32E-13
	HEPTACHLOR	0.0002	mg/kg	1.70E-14	8.86E-15	mg/kg-day	4.50E+00	$(mg/kg\text{-}day)^{-1}$	7.67E-14	3.99E-14
	HEPTACHLOR EPOXIDE	0.0003	mg/kg	2.56E-14	1.33E-14	mg/kg-day	9.10E+00	$(mg/kg\text{-}day)^{-1}$	2.33E-13	1.21E-13

Table C2-4e
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INHALATION OF PARTICULATES AND VAPORS (CONTINUED)	HEXACHLOROBENZENE	0.0008	mg/kg	6.82E-14	3.55E-14	mg/kg-day	1.80E+00	$(mg/kg\text{-}day)^{-1}$	1.23E-13	6.38E-14
	METHOXYCHLOR	0.02	mg/kg	1.70E-12	8.86E-13	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MIREX	0.004	mg/kg	3.41E-13	1.77E-13	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TRANS-NONACHLOR	0.0024	mg/kg	2.05E-13	1.06E-13	mg/kg-day	3.50E-01	$(mg/kg\text{-}day)^{-1}$	7.16E-14	3.72E-14
	PCBs									
	PCBs (TOTAL)	0.20	mg/kg	1.70E-11	8.86E-12	mg/kg-day	2.00E+00	$(mg/kg\text{-}day)^{-1}$	3.41E-11	1.77E-11
	SVOCs									
	ACENAPHTHENE	0.13	mg/kg	2.02E-09	1.05E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ACENAPHTHYLENE	0.12	mg/kg	1.02E-11	5.32E-12	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ANTHRACENE	0.13	mg/kg	5.19E-10	2.70E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BENZO(A)ANTHRACENE	0.28	mg/kg	2.39E-11	1.24E-11	mg/kg-day	3.90E-01	$(mg/kg\text{-}day)^{-1}$	9.31E-12	4.84E-12
	BENZO(A)PYRENE	0.24	mg/kg	2.05E-11	1.06E-11	mg/kg-day	3.90E+00	$(mg/kg\text{-}day)^{-1}$	7.98E-11	4.15E-11
	BENZO(B)FLUORANTHENE	0.24	mg/kg	2.05E-11	1.06E-11	mg/kg-day	3.90E-01	$(mg/kg\text{-}day)^{-1}$	7.98E-12	4.15E-12
	BENZO(G,H,I)PERYLENE	0.16	mg/kg	1.36E-11	7.09E-12	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BENZO(K)FLUORANTHENE	0.24	mg/kg	2.05E-11	1.06E-11	mg/kg-day	3.90E-01	$(mg/kg\text{-}day)^{-1}$	7.98E-12	4.15E-12
	BENZOIC ACID	0.68	mg/kg	5.80E-11	3.01E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BIS(2-ETHYLHEXYL)PHTHALATE	1.1	mg/kg	9.38E-11	4.88E-11	mg/kg-day	1.40E-02	$(mg/kg\text{-}day)^{-1}$	1.31E-12	6.83E-13
	BUTYLBENZYLPHTHALATE	0.025	mg/kg	2.13E-12	1.11E-12	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CARBAZOLE	0.55	mg/kg	4.69E-11	2.44E-11	mg/kg-day	2.00E-02	$(mg/kg\text{-}day)^{-1}$	9.38E-13	4.88E-13
	4- CHLOROANILINE	0.003	mg/kg	2.56E-13	1.33E-13	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	2- CHLOROPHENOL	0.043	mg/kg	3.69E-12	1.92E-12	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CHRYSENE	0.27	mg/kg	2.80E-10	1.45E-10	mg/kg-day	3.90E-02	$(mg/kg\text{-}day)^{-1}$	1.09E-11	5.67E-12
	DIBENZOFURAN	0.36	mg/kg	3.07E-11	1.60E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

Table C2-4e
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INHALATION OF PARTICULATES AND VAPORS (CONTINUED)	3,3- DICHLOROBENZIDINE	0.012	mg/kg	1.02E-12	5.32E-13	mg/kg-day	4.50E-01	$(mg/kg\text{-}day)^{-1}$	4.60E-13	2.39E-13
	2,6- DINITROTOLUENE	0.37	mg/kg	3.15E-11	1.64E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	FLUORANTHENE	0.380	mg/kg	3.24E-11	1.68E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	FLUORENE	0.1	mg/kg	1.01E-09	5.25E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	INDENO(1,2,3-CD)PYRENE	0.16	mg/kg	1.36E-11	7.09E-12	mg/kg-day	3.90E-01	$(mg/kg\text{-}day)^{-1}$	5.32E-12	2.77E-12
	2- METHYLNAPHTHALENE	0.18	mg/kg	1.53E-11	7.98E-12	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	4- METHYLPHENOL	0.23	mg/kg	1.96E-11	1.02E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	NAPHTHALENE	0.11	mg/kg	7.15E-09	3.72E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PENTACHLOROPHENOL	0.54	mg/kg	4.60E-11	2.39E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PHENANTHRENE	0.20	mg/kg	1.70E-11	8.86E-12	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PHENOL	0.29	mg/kg	2.47E-11	1.29E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PYRENE	0.430	mg/kg	3.16E-10	1.65E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TPH									
	TPH AS DIESEL	177	mg/kg	1.51E-08	7.84E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TPH AS GASOLINE	4.2	mg/kg	3.58E-10	1.86E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TPH AS MOTOR OIL	313	mg/kg	2.67E-08	1.39E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	VOCs									
	ACETONE	0.32	mg/kg	6.88E-08	3.58E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BENZENE	0.005	mg/kg	5.18E-09	2.69E-09	mg/kg-day	1.00E-01	$(mg/kg\text{-}day)^{-1}$	5.18E-10	2.69E-10
	CARBON DISULFIDE	0.025	mg/kg	5.82E-08	3.03E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CHLOROBENZENE	0.024	mg/kg	1.07E-08	5.54E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CIS-1,2-DICHLOROETHENE	0.005	mg/kg	4.82E-09	2.51E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ETHYLBENZENE	0.044	mg/kg	2.28E-08	1.18E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

Table C2-4e
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INHALATION OF PARTICULATES AND VAPORS (CONTINUED)	4- ISOPROPYLTOLUENE	0.007	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	METHYLENE CHLORIDE	0.3	mg/kg	3.35E-07	1.74E-07	mg/kg-day	3.50E-03	$(mg/kg\text{-}day)^{-1}$	1.17E-09	6.11E-10
	NAPHTHALENE	0.016	mg/kg	1.04E-09	5.41E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TOLUENE	0.03	mg/kg	2.10E-08	1.09E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TRANS-1,2-DICHLOROETHENE	0.023	mg/kg	2.80E-08	1.45E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TRICHLOROETHENE	0.007	mg/kg	5.93E-09	3.08E-09	mg/kg-day	7.00E-03	$(mg/kg\text{-}day)^{-1}$	4.15E-11	2.16E-11
	1,2,4- TRIMETHYLBENZENE	0.025	mg/kg	3.49E-09	1.82E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	1,3,5- TRIMETHYLBENZENE	0.009	mg/kg	3.25E-09	1.69E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	VINYL CHLORIDE	0.034	mg/kg	9.51E-08	4.94E-08	mg/kg-day	1.54E-02	$(mg/kg\text{-}day)^{-1}$	1.46E-09	7.61E-10
	XYLENE (TOTAL)	0.11	mg/kg	5.04E-08	2.62E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

Notes:
The cancer risk for chemicals that are italicized and underlined have been modified for post remediation residual risk.
CTE = Central Tendency Exposure
EPC = Exposure point concentration
HQ = Hazard Quotient
mg/kg = milligrams per kilogram
mg/kg-day = milligrams per kilogram per day
NA = Not Applicable
PCBs = Polychlorinated Biphenyls
RME = Reasonable Maximum Exposure
SVOCs = Semivolatile Organic Compounds
TPH = Total Petroleum Hydrocarbons
VOCs = Volatile Organic Compounds

Table C2-4f
Summary of Current Receptor RME Cancer Risks and Noncarcinogenic Hazard Indices
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Receptor Population:	Recreational User
Receptor Age:	Child (1 to 17 years)

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Primary Target Organ	Non-Carconogenic Hazard Index			
				Ingestion	Dermal	Inhalation (Outdoor)	Exposure Routes Total			Ingestion HQ	Dermal HQ	Inhalation (Outdoor) HQ	Total HI
Soil (0 to 10 feet)	Soil	On-Site Soil	**INORGANICS (mg/kg)**					**INORGANICS (mg/kg)**					
			ALUMINUM	NA	NA	NA	NA	ALUMINUM	Body Weight	2.92E-02	NA	8.78E-04	3.01E-02
			ANTIMONY	NA	NA	NA	NA	ANTIMONY	Blood; Whole Body	1.23E-02	NA	NA	1.23E-02
			ARSENIC	5.27E-05	7.25E-06	2.81E-09	5.99E-05	ARSENIC	Cardiovascular System; Fetal; Nervous System; Skin	7.65E-02	1.05E-02	1.13E-04	8.71E-02
			BARIUM	NA	NA	NA	NA	BARIUM	Cardiovascular System; Fetal; Kidney; NOEL	1.47E-03	NA	3.02E-05	1.50E-03
			BERYLLIUM	NA	NA	6.09E-11	6.09E-11	BERYLLIUM	GI System; Immune System; Respiratory	3.55E-04	NA	1.49E-05	3.70E-04
			CADMIUM	2.92E-07	5.37E-08	4.85E-10	3.47E-07	CADMIUM	Kidney; Respiratory	6.34E-03	1.16E-03	2.33E-05	7.53E-03
			CHROMIUM	NA	NA	NA	NA	CHROMIUM	NOEL	1.57E-04	NA	NA	1.57E-04
			COBALT	NA	NA	1.97E-09	1.97E-09	COBALT	Cardiovascular System; Respiratory	9.84E-04	NA	1.45E-04	1.13E-03
			COPPER	NA	NA	NA	NA	COPPER	GI System	5.44E-03	NA	NA	5.44E-03
			HEXAVALENT CHROMIUM	NA	NA	3.98E-10	3.98E-10	HEXAVALENT CHROMIUM	NOEL; Respiratory	2.55E-05	NA	1.12E-07	2.56E-05
			LEAD	2.19E-07	NA	4.55E-11	2.19E-07	LEAD	NA	NA	NA	NA	NA
			MANGANESE	NA	NA	NA	NA	MANGANESE	Nervous System	7.08E-03	NA	2.91E-03	9.99E-03
			MERCURY	NA	NA	NA	NA	MERCURY	Nervous System	5.10E-03	NA	2.50E-06	5.10E-03
			MOLYBDENUM	NA	NA	NA	NA	MOLYBDENUM	Kidney	1.11E-03	NA	NA	1.11E-03
			NICKEL	NA	NA	1.16E-09	1.16E-09	NICKEL	Body Weight; Respiratory	6.23E-03	NA	3.67E-04	6.60E-03
			SELENIUM	NA	NA	NA	NA	SELENIUM	Cardiovascular System; Liver; Nervous System; Skin	2.62E-04	NA	9.66E-09	2.62E-04
			SILVER	NA	NA	NA	NA	SILVER	Skin	6.12E-04	NA	NA	6.12E-04
			THALLIUM	NA	NA	NA	NA	THALLIUM	Blood; Liver	7.78E-03	NA	NA	7.78E-03
			TIN	NA	NA	NA	NA	TIN	Kidney; Liver	2.97E-05	NA	NA	2.97E-05
			VANADIUM	NA	NA	NA	NA	VANADIUM	NOEL	1.83E-02	NA	NA	1.83E-02
			ZINC	NA	NA	NA	NA	ZINC	Blood	8.63E-04	NA	NA	8.63E-04
			PESTICIDES (mg/kg)					**PESTICIDES (mg/kg)**					
			ALPHA-CHLORDANE	2.83E-09	5.19E-10	3.20E-14	3.35E-09	ALPHA-CHLORDANE	Liver	1.79E-05	3.29E-06	1.88E-09	2.12E-05
			BETA BHC	4.78E-10	8.77E-11	2.08E-14	5.65E-10	BETA BHC	Liver	5.46E-06	1.00E-06	2.30E-10	6.47E-06
			DELTA BHC	NA	NA	NA	NA	DELTA BHC	NA	NA	NA	NA	NA
			2,4- DDD	1.85E-09	2.54E-10	7.77E-14	2.10E-09	2,4 DDD	Liver	6.34E-05	8.73E-06	2.67E-09	7.21E-05
			4,4- DDD	5.48E-09	7.54E-10	2.30E-13	6.23E-09	4,4- DDD	Liver	1.88E-04	2.59E-05	7.90E-09	2.14E-04
			4,4- DDE	1.53E-09	2.11E-10	6.45E-14	1.75E-09	4,4- DDE	Liver	3.72E-05	5.12E-06	1.56E-09	4.23E-05
			4,4- DDT	1.08E-09	1.49E-10	4.55E-14	1.23E-09	4,4- DDT	Liver	2.62E-05	3.61E-06	1.10E-09	2.98E-05

Table C2-4f
Summary of Current Receptor RME Cancer Risks and Noncarcinogenic Hazard Indices
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Receptor Population:	Recreational User
Receptor Age:	Child (1 to 17 years)

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Primary Target Organ	Non-Carconogenic Hazard Index			
				Ingestion	Dermal	Inhalation (Outdoor)	Exposure Routes Total			Ingestion HQ	Dermal HQ	Inhalation (Outdoor) HQ	Total HI
			DIELDRIN	1.66E-08	7.60E-09	6.96E-13	2.42E-08	DIELDRIN	Liver	8.52E-05	3.91E-05	3.58E-09	1.24E-04
			ENDOSULFAN I	NA	NA	NA	NA	ENDOSULFAN I	Body Weight; Kidney; Nervous System	7.29E-07	3.34E-07	3.06E-11	1.06E-06
			ENDOSULFAN SULFATE	NA	NA	NA	NA	ENDOSULFAN SULFATE	Body Weight; Kidney; Nervous System	5.46E-07	2.51E-07	2.30E-11	7.97E-07
			ENDRIN	NA	NA	NA	NA	ENDRIN	Liver; Kidney; Nervous System	7.29E-05	3.34E-05	3.06E-09	1.06E-04
			ENDRIN ALDEHYDE	NA	NA	NA	NA	ENDRIN ALDEHYDE	Liver; Kidney; Nervous System	2.19E-05	1.00E-05	9.19E-10	3.19E-05
			ENDRIN KETONE	NA	NA	NA	NA	ENDRIN KETONE	Liver; Kidney; Nervous System	1.09E-05	5.02E-06	4.59E-10	1.59E-05
			GAMMA-CHLORDANE	2.93E-09	5.38E-10	3.32E-14	3.47E-09	GAMMA-CHLORDANE	Liver	1.86E-05	3.41E-06	1.95E-09	2.20E-05
			HEPTACHLOR	2.39E-10	1.10E-10	1.00E-14	3.49E-10	HEPTACHLOR	Liver	4.37E-07	2.01E-07	1.84E-11	6.38E-07
			HEPTACHLOR EPOXIDE	7.25E-10	3.33E-10	3.05E-14	1.06E-09	HEPTACHLOR EPOXIDE	Liver	2.52E-05	1.16E-05	1.06E-09	3.68E-05
			HEXACHLOROBENZENE	3.82E-10	1.75E-10	1.61E-14	5.58E-10	HEXACHLOROBENZENE	Liver	1.09E-06	5.02E-07	4.59E-11	1.59E-06
			METHOXYCHLOR	NA	NA	NA	NA	METHOXYCHLOR	Fetal	4.37E-06	8.03E-07	1.84E-10	5.17E-06
			MIREX	NA	NA	NA	NA	MIREX	Liver	2.19E-05	1.00E-05	9.19E-10	3.19E-05
			TRANS-NONACHLOR	8.28E-10	1.52E-10	9.37E-15	9.80E-10	TRANS-NONACHLOR	Liver	5.25E-06	9.63E-07	5.51E-10	6.21E-06
			PCBs (mg/kg)					**PCBs (mg/kg)**					
			PCBs (TOTAL)	2.65E-07	1.71E-07	4.46E-12	4.36E-07	PCBs (TOTAL)	Immune System	1.09E-02	7.02E-03	4.59E-07	1.80E-02
			SVOCs (mg/kg)					**SVOCs (mg/kg)**					
			ACENAPHTHENE	NA	NA	NA	NA	ACENAPHTHENE	Liver	2.37E-06	1.41E-06	7.30E-07	4.51E-06
			ACENAPHTHYLENE	NA	NA	NA	NA	ACENAPHTHYLENE	NA	NA	NA	NA	NA
			ANTHRACENE	NA	NA	NA	NA	ANTHRACENE	NOEL	4.74E-07	2.83E-07	3.75E-08	7.94E-07
			BENZO(A)ANTHRACENE	8.92E-08	5.32E-08	1.22E-12	1.42E-07	BENZO(A)ANTHRACENE	NA	NA	NA	NA	NA
			BENZO(A)PYRENE	7.64E-07	4.56E-07	1.04E-11	1.22E-06	BENZO(A)PYRENE	NA	NA	NA	NA	NA
			BENZO(B)FLUORANTHENE	7.64E-08	4.56E-08	1.04E-12	1.22E-07	BENZO(B)FLUORANTHENE	NA	NA	NA	NA	NA
			BENZO(G,H,I)PERYLENE	NA	NA	NA	NA	BENZO(G,H,I)PERYLENE	Kidney; Nervous System	4.37E-06	2.61E-06	1.84E-10	6.98E-06
			BENZO(K)FLUORANTHENE	7.64E-08	4.56E-08	1.04E-12	1.22E-07	BENZO(K)FLUORANTHENE	NA	NA	NA	NA	NA
			BENZOIC ACID	NA	NA	NA	NA	BENZOIC ACID	NOEL	1.86E-07	8.53E-08	NA	2.71E-07
			BIS(2-ETHYLHEXYL)PHTHALATE	4.09E-09	1.88E-09	1.72E-13	5.96E-09	BIS(2-ETHYLHEXYL)PHTHALATE	Liver	6.01E-05	2.76E-05	2.53E-09	8.77E-05
			BUTYLBENZYPHTHALATE	NA	NA	NA	NA	BUTYLBENZYPHTHALATE	Liver	1.37E-07	6.27E-08	5.74E-12	1.99E-07
			CABAZOLE	2.92E-09	1.34E-09	1.23E-13	4.26E-09	CABAZOLE	NA	NA	NA	NA	NA
			4- CHLOROANILINE	NA	NA	NA	NA	4- CHLOROANILINE	Spleen	8.20E-07	3.76E-07	3.45E-11	1.20E-06
			2- CHLOROPHENOL	NA	NA	NA	NA	2- CHLOROPHENOL	Reproductive	9.46E-06	4.34E-06	3.98E-10	1.38E-05
			CHRYSENE	8.60E-09	5.13E-09	5.74E-11	1.38E-08	CHRYSENE	NA	NA	NA	NA	NA
			DIBENZOFURAN	NA	NA	NA	NA	DIBENZOFURAN	NA	1.97E-04	9.03E-05	8.27E-09	2.87E-04

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Mare Island, Vallejo, California

Scenario Timeframe:	Future
Receptor Population:	Recreational User
Receptor Age:	Child (1 to 17 years)

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Primary Target Organ	Non-Carconogenic Hazard Index			
				Ingestion	Dermal	Inhalation (Outdoor)	Exposure Routes Total			Ingestion HQ	Dermal HQ	Inhalation (Outdoor) HQ	Total HI
			3,3- DICHLOROBENZIDINE	1.43E-09	6.58E-10	6.03E-14	2.09E-09	3,3- DICHLOROBENZIDINE	NA	NA	NA	NA	NA
			2,6- DINITROTOLUENE	5.99E-08	2.75E-08	NA	8.74E-08	2,6- DINITROTOLUENE	NA	4.04E-04	1.86E-04	1.70E-08	5.90E-04
			FLUORANTHENE	NA	NA	NA	NA	FLUORANTHENE	Blood; Kidney; Liver	1.04E-05	6.20E-06	4.37E-10	1.66E-05
			FLUORENE	NA	NA	NA	NA	FLUORENE	Blood	3.55E-06	2.12E-06	5.48E-07	6.22E-06
			INDENO(1,2,3-CD)PYRENE	5.10E-08	3.04E-08	6.96E-13	8.14E-08	INDENO(1,2,3-CD)PYRENE	NA	NA	NA	NA	NA
			2- METHYLNAPHTHALENE	NA	NA	NA	NA	2- METHYLNAPHTHALENE	Body Weight; Respiratory	4.92E-05	2.26E-05	NA	7.18E-05
			4- METHYPHENOL	NA	NA	NA	NA	4- METHYLPHENOL	Nervous System; Respiratory	5.03E-05	2.31E-05	NA	7.33E-05
			NAPHTHALENE	NA	NA	NA	NA	NAPHTHALENE	Body Weight; Respiratory	6.01E-06	3.59E-06	1.81E-04	1.91E-04
			PENTACHLOROPHENOL	NA	NA	NA	NA	PENTACHLOROPHENOL	Liver; Kidney	1.97E-05	9.03E-06	8.27E-10	2.87E-05
			PHENANTHRENE	NA	NA	NA	NA	PHENANTHRENE	NOEL	7.29E-07	4.35E-07	3.06E-11	1.16E-06
			PHENOL	NA	NA	NA	NA	PHENOL	Cardiovascular System; Fetal; Kidney; Liver; Nervous System	5.28E-07	2.42E-07	2.33E-10	7.71E-07
			PYRENE	NA	NA	NA	NA	PYRENE	Kidney	1.57E-05	9.35E-06	2.29E-07	2.52E-05
			TPH (mg/kg)					**TPH (mg/kg)**					
			TPH AS DIESEL	NA	NA	NA	NA	TPH AS DIESEL	NA	NA	NA	NA	NA
			TPH AS GASOLINE	NA	NA	NA	NA	TPH AS GASOLINE	NA	NA	NA	NA	NA
			TPH AS MOTOR OIL	NA	NA	NA	NA	TPH AS MOTOR OIL	NA	NA	NA	NA	NA
			VOCs (mg/kg)					**VOCs (mg/kg)**					
			ACETONE	NA	NA	NA	NA	ACETONE	Kidney; Liver	3.89E-07	NA	1.66E-06	2.05E-06
			BENZENE	1.33E-10	NA	2.73E-09	2.86E-09	BENZENE	Immune System	1.37E-06	NA	1.31E-05	1.45E-05
			CARBON DISULFIDE	NA	NA	NA	NA	CARBON DISULFIDE	Fetal	2.73E-07	NA	6.32E-06	6.59E-06
			CHLOROBENZENE	NA	NA	NA	NA	CHLOROBENZENE	Kidney; Liver; Reproductive System	1.31E-06	NA	4.05E-05	4.18E-05
			CIS-1,2-DICHLOROETHENE	NA	NA	NA	NA	CIS-1,2-DICHLOROETHENE	Blood	5.46E-07	NA	1.05E-05	1.10E-05
			ETHYLBENZENE	NA	NA	NA	NA	ETHYLBENZENE	Fetal; Kidney; Liver	4.81E-07	NA	1.73E-06	2.21E-06
			4- ISOPROPYLTOLUENE	NA	NA	NA	NA	4- ISOPROPYLTOLUENE	NA	NA	NA	NA	NA
			METHYLENE CHLORIDE	1.11E-09	NA	6.19E-09	7.30E-09	METHYLENE CHLORIDE	Cardiovascular System; Liver; Nervous System	5.46E-06	NA	6.38E-05	6.93E-05
			NAPHTHALENE	NA	NA	NA	NA	NAPHTHALENE	Body Weight; Respiratory	8.74E-07	NA	2.63E-05	2.72E-05
			TOLUENE	NA	NA	NA	NA	TOLUENE	Fetal; Kidney; Liver; Nervous System; Respiratory	1.64E-07	NA	5.31E-06	5.47E-06
			TRANS-1,2-TRICHLOROETHENE	NA	NA	NA	NA	TRANS-1,2-TRICHLOROETHENE	Blood	1.26E-06	NA	3.03E-05	3.16E-05
			TRICHLOROETHENE	7.62E-10	NA	2.19E-10	9.80E-10	TRICHLOROETHENE	Eyes; Nervous System	2.55E-05	NA	1.29E-05	3.84E-05

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Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Receptor Population:	Recreational User
Receptor Age:	Child (1 to 17 years)

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Primary Target Organ	Non-Carconogenic Hazard Index			
				Ingestion	Dermal	Inhalation (Outdoor)	Exposure Routes Total			Ingestion HQ	Dermal HQ	Inhalation (Outdoor) HQ	Total HI
			1,2,4- TRIMETHYLBENZENE	NA	NA	NA	NA	1,2,4- TRIMETHYLBENZENE	NA	5.46E-07	NA	4.46E-05	4.51E-05
			1,3,5- TRIMETHYLBENZENE	NA	NA	NA	NA	1,3,5- TRIMETHYLBENZENE	NA	2.03E-07	NA	4.15E-05	4.17E-05
			VINYL CHLORIDE	1.35E-08	NA	7.71E-09	2.12E-08	VINYL CHLORIDE	GI System; Liver; Nervous System	1.24E-05	NA	7.21E-05	8.45E-05
			XYLENE (TOTAL)	NA	NA	NA	NA	XYLENE (TOTAL)	Body Weight; Fetal; Nervous System; Respiratory	6.01E-07	NA	3.82E-05	3.88E-05
Groundwater	Shallow Groundwater	Vapors	**VOCs (ug/L)**					**VOCs (ug/L)**					
			ACETONE	NA	NA	NA	NA	ACETONE	Kidney; Liver	NA	NA	5.63E-04	5.63E-04
			BENZENE	NA	NA	9.57E-07	9.57E-07	BENZENE	Fetal; Immune System; Nervous System; Respiratory	NA	NA	4.60E-03	4.60E-03
			2- BUTANONE	NA	NA	NA	NA	2- BUTANONE	Fetal	NA	NA	3.82E-03	3.82E-03
			CARBON DISULFIDE	NA	NA	NA	NA	CARBON DISULFIDE	Fetal; Nervous System	NA	NA	3.55E-04	3.55E-04
			CHLOROBENZENE	NA	NA	NA	NA	CHLOROBENZENE	Kidney; Liver; Reproductive System	NA	NA	2.66E-03	2.66E-03
			CHLOROMETHANE	NA	NA	6.50E-08	6.50E-08	CHLOROMETHANE	NA	NA	NA	4.94E-04	4.94E-04
			CIS-1,2-DICHLOROETHENE	NA	NA	NA	NA	CIS-1,2-DICHLOROETHENE	Blood	NA	NA	6.98E-03	6.98E-03
			1,3- DICHLOROBENZENE			NA		1,3- DICHLOROBENZENE	NA	NA	NA	3.84E-04	3.84E-04
			1,2- DICHLOROETHENE (TOTAL)	NA	NA	NA	NA	1,2- DICHLOROETHENE (TOTAL)	Blood, Liver	NA	NA	3.28E-02	3.28E-02
			ETHYLBENZENE	NA	NA	NA	NA	ETHYLBENZENE	Fetal; Kidney; Liver	NA	NA	7.42E-05	7.42E-05
			TOLUENE	NA	NA	NA	NA	TOLUENE	Fetal; Kidney; Liver; Nervous System; Respiratory	NA	NA	2.12E-04	2.12E-04
			TRANS-1,2-DICHLOROETHENE	NA	NA	NA	NA	TRANS-1,2-DICHLOROETHENE	Blood; Liver	NA	NA	6.52E-04	6.52E-04
			1,2,4- TRIMETHYLBENZENE	NA	NA	NA	NA	1,2,4- TRIMETHYLBENZENE	NA	NA	NA	6.60E-03	6.60E-03
			1,3,5- TRIMETHYLBENZENE	NA	NA	NA	NA	1,3,5- TRIMETHYLBENZENE	NA	NA	NA	4.99E-03	4.99E-03
			VINYL CHLORIDE	NA	NA	9.07E-08	9.07E-08	VINYL CHLORIDE	GI System; Liver; Nervous System	NA	NA	8.48E-04	8.48E-04
			XYLENE (TOTAL)	NA	NA	NA	NA	XYLENE (TOTAL)	Body Weight; Fetal; Nervous System; Respiratory	NA	NA	1.49E-03	1.49E-03
Groundwater	Intermediate and Deep Groundwater	Vapors	**VOCs (ug/L)**					**VOCs (ug/L)**					
			ACETONE	NA	NA	NA	NA	ACETONE	Kidney; Liver	NA	NA	1.25E-04	1.25E-04
			BENZENE	NA	NA	1.40E-06	1.40E-06	BENZENE	Fetal; Immune System; Nervous System; Respiratory	NA	NA	6.73E-03	6.73E-03
			2- BUTANONE	NA	NA	NA	NA	2- BUTANONE	Fetal	NA	NA	5.83E-04	5.83E-04
			CARBON DISULFIDE	NA	NA	NA	NA	CARBON DISULFIDE	Fetal; Nervous System	NA	NA	5.61E-04	5.61E-04

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Mare Island, Vallejo, California

Scenario Timeframe:	Future
Receptor Population:	Recreational User
Receptor Age:	Child (1 to 17 years)

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Primary Target Organ	Non-Carconogenic Hazard Index			
				Ingestion	Dermal	Inhalation (Outdoor)	Exposure Routes Total			Ingestion HQ	Dermal HQ	Inhalation (Outdoor) HQ	Total HI
			CHLOROBENZENE	NA	NA	NA	NA	CHLOROBENZENE	Kidney; Liver; Reproductive System	NA	NA	1.01E-02	1.01E-02
			4- METHYL-2-PENTANONE	NA	NA	NA	NA	4- METHYL-2-PENTANONE	Fetal; Kidney; Liver	NA	NA	2.12E-04	2.12E-04
Wetland	Surface	Surface	**INORGANICS (ug/L)**					**INORGANICS (ug/L)**					
Surface Water	Water	Water	ALUMINUM	NA	NA	NA	NA	ALUMINUM	Body Weight	2.34E-04	2.15E-05	NA	2.56E-04
			ANTIMONY	NA	NA	NA	NA	ANTIMONY	Blood; Whole Body	1.94E-04	1.18E-04	NA	3.12E-04
			ARSENIC	1.63E-05	1.50E-07	NA	1.65E-05	ARSENIC	Cardiovascular System; Fetal; Nervous System; Skin	2.37E-03	2.17E-04	NA	2.59E-03
			BARIUM	NA	NA	NA	NA	BARIUM	Cardiovascular System; Fetal; Kidney; NOEL	5.13E-05	6.72E-05	NA	1.18E-04
			CADMIUM	3.66E-08	6.71E-09	NA	4.33E-08	CADMIUM	Kidney; Respiratory	3.96E-05	7.27E-05	NA	1.12E-04
			CHROMIUM	NA	NA	NA	NA	CHROMIUM	NOEL	1.61E-07	1.14E-06	NA	1.30E-06
			COBALT	NA	NA	NA	NA	COBALT	Cardiovascular System; Respiratory	1.98E-05	7.27E-07	NA	2.05E-05
			COPPER	NA	NA	NA	NA	COPPER	GI System	3.75E-05	3.44E-06	NA	4.09E-05
			LEAD	2.07E-09	1.90E-12	NA	2.07E-09	LEAD	NA	NA	NA	NA	NA
			MANGANESE	NA	NA	NA	NA	MANGANESE	Nervous System	1.29E-03	2.95E-03	NA	4.23E-03
			MERCURY	NA	NA	NA	NA	MERCURY	Nervous System	3.79E-05	4.98E-05	NA	8.77E-05
			MOLYBDENUM	NA	NA	NA	NA	MOLYBDENUM	Kidney	5.46E-05	5.02E-06	NA	5.97E-05
			NICKEL	NA	NA	NA	NA	NICKEL	Body Weight; Respiratory	2.57E-04	1.18E-04	NA	3.75E-04
			SELENIUM	NA	NA	NA	NA	SELENIUM	Cardiovascular System; Liver; Nervous System; Skin	2.00E-04	1.84E-05	NA	2.19E-04
			SILVER	NA	NA	NA	NA	SILVER	Skin	1.55E-05	2.13E-05	NA	3.68E-05
			VANADIUM	NA	NA	NA	NA	VANADIUM	NOEL	1.01E-04	3.56E-04	NA	4.57E-04
			ZINC	NA	NA	NA	NA	ZINC	Blood	1.97E-06	1.09E-07	NA	2.08E-06
			PESTICIDES (ug/L)					**PESTICIDES (ug/L)**					
			ALPHA BHC	5.92E-09	NA	NA	5.92E-09	ALPHA BHC	Liver	7.74E-07	NA	NA	7.74E-07
			4,4- DDE	1.02E-10	8.40E-10	NA	9.41E-10	4,4- DDE	Liver	2.46E-07	2.03E-05	NA	2.06E-05
			4,4- DDT	3.20E-09	4.96E-08	NA	5.28E-08	4,4- DDT	Liver	7.74E-06	1.20E-03	NA	1.21E-03
			ENDOSULFAN SULFATE	NA	NA	NA	NA	ENDOSULFAN SULFATE	Body Weight; Kidney; Nervous System	4.86E-07	NA	NA	4.86E-07
			ENDRIN	NA	NA	NA	NA	ENDRIN	Liver; Kidney; Nervous System	2.12E-06	1.98E-05	NA	2.19E-05
			GAMMA-BHC	1.34E-09	NA	NA	1.34E-09	GAMMA-BHC	Kidney; Liver	1.67E-06	8.97E-06	NA	1.06E-05
			HEPTACHLOR	1.39E-09	8.86E-10	NA	2.28E-09	HEPTACHLOR	Liver	2.55E-07	1.62E-06	NA	1.88E-06

Table C2-4f
Summary of Current Receptor RME Cancer Risks and Noncarcinogenic Hazard Indices
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Receptor Population:	Recreational User
Receptor Age:	Child (1 to 17 years)

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk: Ingestion	Dermal	Inhalation (Outdoor)	Exposure Routes Total	Chemical	Primary Target Organ	Non-Carcinogenic Hazard Index: Ingestion HQ	Dermal HQ	Inhalation (Outdoor) HQ	Total HI
			PCBs (ug/L)					**PCBs (ug/L)**					
			PCBs (TOTAL)	8.29E-09	2.04E-07	NA	2.12E-07	PCBs (TOTAL)	Immune System	3.42E-05	8.39E-03	NA	8.43E-03
			SVOCs (ug/L)					**SVOCs (ug/L)**					
			BIS(2-ETHYLHEXYL)PHTHALATE	1.27E-08	2.63E-08	NA	3.90E-08	BIS(2-ETHYLHEXYL)PHTHALATE	Liver	1.87E-05	3.87E-04	NA	4.05E-04
			CHRYSENE	2.65E-09	4.51E-08	NA	4.78E-08	CHRYSENE	NA	NA	NA	NA	NA
			2,4 DIMETHYLPHENOL	NA	NA	NA	NA	2,4- DIMETHYLPHENOL	Blood; Nervous System	4.55E-07	9.17E-07	NA	1.37E-06
			DI-N-BUTYLPHTHALATE	NA	NA	NA	NA	DI-N-BUTYLPHTHALATE	Whole Body	2.37E-06	2.55E-05	NA	2.79E-05
			ISOPHORONE	NA	NA	NA	NA	ISOPHORONE	NOEL	2.28E-08	1.56E-08	NA	3.84E-08
			4- METHYLPHENOL	NA	NA	NA	NA	4- METHYLPHENOL	Nervous System; Respiratory	2.36E-04	3.02E-04	NA	5.38E-04
			TPH (mg/L)					**TPH (mg/L)**					
			TPH AS DIESEL	NA	NA	NA	NA	TPH AS DIESEL	NA	NA	NA	NA	NA
			TPH AS GASOLINE	NA	NA	NA	NA	TPH AS GASOLINE	NA	NA	NA	NA	NA
			TPH AS MOTOR OIL	NA	NA	NA	NA	TPH AS MOTOR OIL	NA	NA	NA	NA	NA

Cancer Risk Across Soil:	6.3E-05
Cancer Risk Across Groundwater:	2.5E-06
Cancer Risk Across Surface Water:	1.7E-05
Total Cancer Risk:	8.2E-05

HI Across Soil:	2.2E-01
HI Across Groundwater:	8.6E-02
HI Across Surface Water:	2.0E-02
Total HI:	3.2E-01
Total Blood HI:	6.2E-02
Total Body Weight HI:	3.9E-02
Total Cardiovascular System HI:	9.3E-02
Total Fetal/Reproductive System HI:	1.2E-01
Total GI System HI:	6.8E-03
Total Immune System HI:	3.8E-02
Total Kidney HI:	2.5E-02
Total Liver HI:	5.9E-02
Total Nervous System HI:	1.3E-01
Total NOEL HI:	2.1E-02
Total Respiratory HI:	3.0E-02
Total Skin HI:	9.1E-02
Total Whole Body HI:	1.3E-02

Notes:
EPC = Exposure point concentration
GI = Gastrointestinal
HQ = Hazard Quotient
HI = Hazard Index
mg/kg = milligrams per kilogram
mg/L = milligrams per liter
NA = Not Applicable
PCBs = Polychlorinated Biphenyls
RME = Reasonable Maximum Exposure
SVOCs = Semivolatile Organic Compounds
TPH = Total Petroleum Hydrocarbons
VOCs = Volatile Organic Compounds
ug/L = microgram per liter

Table C2-4g
Summary of Future Receptor RME Cancer Risks and Noncarcinogenic Hazard Indices
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Receptor Population:	Construction Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Primary Target Organ	Non-Carconogenic Hazard Index			
				Ingestion	Dermal	Inhalation (Outdoor)	Exposure Routes Total			Ingestion HQ	Dermal HQ	Inhalation (Outdoor) HQ	Total HI
Soil (0 to 10 feet)	Soil	On-Site Soil	**INORGANICS (mg/kg)**					**INORGANICS (mg/kg)**					
			ALUMINUM	NA	NA	NA	NA	ALUMINUM	Body Weight	8.64E-02	NA	1.14E-01	2.00E-01
			ANTIMONY	NA	NA	NA	NA	ANTIMONY	Blood; Whole Body	3.63E-02	NA	NA	3.63E-02
			ARSENIC	9.15E-06	8.24E-07	2.15E-08	1.00E-05	ARSENIC	Cardiovascular System; Fetal; Nervous System; Skin	2.26E-01	2.03E-02	1.46E-02	2.61E-01
			BARIUM	NA	NA	NA	NA	BARIUM	Cardiovascular System; Fetal; Kidney; NOEL	4.34E-03	NA	3.92E-03	8.26E-03
			BERYLLIUM	NA	NA	4.65E-10	4.65E-10	BERYLLIUM	GI System; Immune System; Respiratory	1.05E-03	NA	1.94E-03	2.99E-03
			CADMIUM	5.08E-08	6.10E-09	3.71E-09	6.06E-08	CADMIUM	Kidney; Respiratory	1.87E-02	2.25E-03	3.03E-03	2.40E-02
			CHROMIUM	NA	NA	NA	NA	CHROMIUM	NOEL	4.65E-04	NA	NA	4.65E-04
			COBALT	NA	NA	1.50E-08	1.50E-08	COBALT	Cardiovascular System; Respiratory	2.91E-03	NA	1.88E-02	2.17E-02
			COPPER	NA	NA	NA	NA	COPPER	GI System	1.61E-02	NA	NA	1.61E-02
			HEXAVALENT CHROMIUM	NA	NA	3.04E-09	3.04E-09	HEXAVALENT CHROMIUM	NOEL; Respiratory	7.53E-05	NA	1.46E-05	8.99E-05
			LEAD	3.80E-08	NA	3.47E-10	3.84E-08	LEAD	NA	NA	NA	NA	NA
			MANGANESE	NA	NA	NA	NA	MANGANESE	Nervous System	2.09E-02	NA	3.78E-01	3.99E-01
			MERCURY	NA	NA	NA	NA	MERCURY	Nervous System	1.51E-02	NA	3.25E-04	1.54E-02
			MOLYBDENUM	NA	NA	NA	NA	MOLYBDENUM	Kidney	3.29E-03	NA	NA	3.29E-03
			NICKEL	NA	NA	8.84E-09	8.84E-09	NICKEL	Body Weight; Respiratory	1.84E-02	NA	4.76E-02	6.61E-02
			SELENIUM	NA	NA	NA	NA	SELENIUM	Cardiovascular System; Liver; Nervous System; Skin	7.75E-04	NA	1.25E-06	7.76E-04
			SILVER	NA	NA	NA	NA	SILVER	Skin	1.81E-03	NA	NA	1.81E-03
			THALLIUM	NA	NA	NA	NA	THALLIUM	Blood; Liver	2.30E-02	NA	NA	2.30E-02
			TIN	NA	NA	NA	NA	TIN	Kidney; Liver	8.77E-05	NA	NA	8.77E-05
			VANADIUM	NA	NA	NA	NA	VANADIUM	NOEL	5.40E-02	NA	NA	5.40E-02
			ZINC	NA	NA	NA	NA	ZINC	Blood	2.55E-03	NA	NA	2.55E-03
			PESTICIDES (mg/kg)					**PESTICIDES (mg/kg)**					
			ALPHA-CHLORDANE	4.92E-10	5.90E-11	2.45E-13	5.51E-10	ALPHA-CHLORDANE	Liver	5.30E-05	6.35E-06	2.45E-07	5.96E-05
			BETA BHC	8.30E-11	9.96E-12	1.59E-13	9.32E-11	BETA BHC	Liver	1.61E-05	1.94E-06	2.98E-08	1.81E-05
			DELTA BHC	NA	NA	NA	NA	DELTA BHC	NA	NA	NA	NA	NA
			2,4- DDD	3.21E-10	2.89E-11	5.93E-13	3.51E-10	2,4 DDD	Liver	1.87E-04	1.69E-05	3.46E-07	2.04E-04
			4,4- DDD	9.52E-10	8.57E-11	1.76E-12	1.04E-09	4,4- DDD	Liver	5.55E-04	5.00E-05	1.03E-06	6.06E-04
			4,4- DDE	2.67E-10	2.40E-11	4.93E-13	2.91E-10	4,4- DDE	Liver	1.10E-04	9.88E-06	2.03E-07	1.20E-04
			4,4- DDT	1.88E-10	1.69E-11	3.48E-13	2.05E-10	4,4- DDT	Liver	7.75E-05	6.97E-06	1.43E-07	8.46E-05
			DIELDRIN	2.88E-09	8.64E-10	5.32E-12	3.75E-09	DIELDRIN	Liver	2.52E-04	7.56E-05	4.65E-07	3.28E-04

Table C2-4g
Summary of Future Receptor RME Cancer Risks and Noncarcinogenic Hazard Indices
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Receptor Population:	Construction Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Primary Target Organ	Non-Carconogenic Hazard Index			
				Ingestion	Dermal	Inhalation (Outdoor)	Exposure Routes Total			Ingestion HQ	Dermal HQ	Inhalation (Outdoor) HQ	Total HI
			ENDOSULFAN I	NA	NA	NA	NA	ENDOSULFAN I	Body Weight; Kidney; Nervous System	2.15E-06	6.46E-07	3.98E-09	2.80E-06
			ENDOSULFAN SULFATE	NA	NA	NA	NA	ENDOSULFAN SULFATE	Body Weight; Kidney; Nervous System	1.61E-06	4.84E-07	2.98E-09	2.10E-06
			ENDRIN	NA	NA	NA	NA	ENDRIN	Liver; Kidney; Nervous System	2.15E-04	6.46E-05	3.98E-07	2.80E-04
			ENDRIN ALDEHYDE	NA	NA	NA	NA	ENDRIN ALDEHYDE	Liver; Kidney; Nervous System	6.46E-05	1.94E-05	1.19E-07	8.41E-05
			ENDRIN KETONE	NA	NA	NA	NA	ENDRIN KETONE	Liver; Kidney; Nervous System	3.23E-05	9.69E-06	5.97E-08	4.20E-05
			GAMMA-CHLORDANE	5.10E-10	6.12E-11	2.54E-13	5.71E-10	GAMMA-CHLORDANE	Liver	5.49E-05	6.59E-06	2.54E-07	6.17E-05
			HEPTACHLOR	4.15E-11	1.25E-11	7.67E-14	5.40E-11	HEPTACHLOR	Liver	1.29E-06	3.87E-07	2.39E-09	1.68E-06
			HEPTACHLOR EPOXIDE	1.26E-10	3.78E-11	2.33E-13	1.64E-10	HEPTACHLOR EPOXIDE	Liver	7.45E-05	2.24E-05	1.38E-07	9.70E-05
			HEXACHLOROBENZENE	6.64E-11	1.99E-11	1.23E-13	8.65E-11	HEXACHLOROBENZENE	Liver	3.23E-06	9.69E-07	5.97E-09	4.20E-06
			METHOXYCHLOR	NA	NA	NA	NA	METHOXYCHLOR	Fetal	1.29E-05	1.55E-06	2.39E-08	1.45E-05
			MIREX	NA	NA	NA	NA	MIREX	Liver	6.46E-05	1.94E-05	1.19E-07	8.41E-05
			TRANS-NONACHLOR	1.44E-10	1.73E-11	7.16E-14	1.61E-10	TRANS-NONACHLOR	Liver	1.55E-05	1.86E-06	7.16E-08	1.74E-05
			PCBs (mg/kg)					**PCBs (mg/kg)**					
			PCBs (TOTAL)	4.61E-08	1.94E-08	3.41E-11	6.55E-08	PCBs (TOTAL)	Immune System	3.23E-02	1.36E-02	5.97E-05	4.59E-02
			SVOCs (mg/kg)					**SVOCs (mg/kg)**					
			ACENAPHTHENE	NA	NA	NA	NA	ACENAPHTHENE	Liver	7.00E-06	2.73E-06	2.36E-06	1.21E-05
			ACENAPHTHYLENE	NA	NA	NA	NA	ACENAPHTHYLENE	NA	NA	NA	NA	NA
			ANTHRACENE	NA	NA	NA	NA	ANTHRACENE	NOEL	1.40E-06	5.46E-07	1.21E-07	2.07E-06
			BENZO(A)ANTHRACENE	1.55E-08	6.04E-09	9.31E-12	2.16E-08	BENZO(A)ANTHRACENE	NA	NA	NA	NA	NA
			BENZO(A)PYRENE	1.33E-07	5.18E-08	7.98E-11	1.85E-07	BENZO(A)PYRENE	NA	NA	NA	NA	NA
			BENZO(B)FLUORANTHENE	1.33E-08	5.18E-09	7.98E-12	1.85E-08	BENZO(B)FLUORANTHENE	NA	NA	NA	NA	NA
			BENZO(G,H,I)PERYLENE	NA	NA	NA	NA	BENZO(G,H,I)PERYLENE	Kidney; Nervous System	1.29E-05	5.04E-06	2.39E-08	1.80E-05
			BENZO(K)FLUORANTHENE	1.33E-08	5.18E-09	7.98E-12	1.85E-08	BENZO(K)FLUORANTHENE	NA	NA	NA	NA	NA
			BENZOIC ACID	NA	NA	NA	NA	BENZOIC ACID	NOEL	5.49E-07	1.65E-07	1.01E-09	7.15E-07
			BIS(2-ETHYLHEXYL)PHTHALATE	7.10E-10	2.13E-10	1.31E-12	9.25E-10	BIS(2-ETHYLHEXYL)PHTHALATE	Liver	1.78E-04	5.33E-05	3.28E-07	2.31E-04
			BUTYLBENZYPHTHALATE	NA	NA	NA	NA	BUTYLBENZYPHTHALATE	Liver	4.04E-07	1.21E-07	7.46E-10	5.25E-07
			CABAZOLE	5.07E-10	1.52E-10	9.38E-13	6.61E-10	CABAZOLE	NA	NA	NA	NA	NA
			4- CHLOROANILINE	NA	NA	NA	NA	4- CHLOROANILINE	Spleen	2.42E-06	7.27E-07	4.47E-09	3.15E-06
			2- CHLOROPHENOL	NA	NA	NA	NA	2- CHLOROPHENOL	Reproductive	2.80E-05	8.39E-06	5.17E-08	3.64E-05
			CHRYSENE	1.49E-09	5.83E-10	1.09E-11	2.09E-09	CHRYSENE	NA	NA	NA	NA	NA
			DIBENZOFURAN	NA	NA	NA	NA	DIBENZOFURAN	NA	5.81E-04	1.74E-04	1.07E-06	7.57E-04
			3,3- DICHLOROBENZIDINE	2.49E-10	7.47E-11	4.60E-13	3.24E-10	3,3- DICHLOROBENZIDINE	NA	NA	NA	NA	NA

Table C2-4g
Summary of Future Receptor RME Cancer Risks and Noncarcinogenic Hazard Indices
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Receptor Population:	Construction Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Primary Target Organ	Non-Carconogenic Hazard Index			
				Ingestion	Dermal	Inhalation (Outdoor)	Exposure Routes Total			Ingestion HQ	Dermal HQ	Inhalation (Outdoor) HQ	Total HI
			2,6- DINITROTOLUENE	1.04E-08	3.12E-09	NA	1.35E-08	2,6- DINITROTOLUENE	NA	1.19E-03	3.58E-04	2.21E-06	1.56E-03
			FLUORANTHENE	NA	NA	NA	NA	FLUORANTHENE	Blood; Kidney; Liver	3.07E-05	1.20E-05	5.67E-08	4.27E-05
			FLUORENE	NA	NA	NA	NA	FLUORENE	Blood	1.05E-05	4.09E-06	1.77E-06	1.64E-05
			INDENO(1,2,3-CD)PYRENE	8.86E-09	3.45E-09	5.32E-12	1.23E-08	INDENO(1,2,3-CD)PYRENE	NA	NA	NA	NA	NA
			2- METHYLNAPHTHALENE	NA	NA	NA	NA	2- METHYLNAPHTHALENE	Body Weight; Respiratory	1.45E-04	4.36E-05	NA	1.89E-04
			4- METHYPHENOL	NA	NA	NA	NA	4- METHYLPHENOL	Nervous System; Respiratory	1.49E-04	4.46E-05	NA	1.93E-04
			NAPHTHALENE	NA	NA	NA	NA	NAPHTHALENE	Body Weight; Respiratory	1.78E-05	6.93E-06	5.84E-04	6.09E-04
			PENTACHLOROPHENOL	NA	NA	NA	NA	PENTACHLOROPHENOL	Liver; Kidney	5.81E-05	1.74E-05	1.07E-07	7.57E-05
			PHENANTHRENE	NA	NA	NA	NA	PHENANTHRENE	NOEL	2.15E-06	8.40E-07	3.98E-09	3.00E-06
			PHENOL	NA	NA	NA	NA	PHENOL	Cardiovascular System; Fetal; Kidney; Liver; Nervous System	1.56E-06	4.68E-07	3.03E-08	2.06E-06
			PYRENE	NA	NA	NA	NA	PYRENE	Kidney	4.63E-05	1.80E-05	7.38E-07	6.51E-05
			TPH (mg/kg)					**TPH (mg/kg)**					
			TPH AS DIESEL	NA	NA	NA	NA	TPH AS DIESEL	NA	NA	NA	NA	NA
			TPH AS GASOLINE	NA	NA	NA	NA	TPH AS GASOLINE	NA	NA	NA	NA	NA
			TPH AS MOTOR OIL	NA	NA	NA	NA	TPH AS MOTOR OIL	NA	NA	NA	NA	NA
			VOCs (mg/kg)					**VOCs (mg/kg)**					
			ACETONE	NA	NA	NA	NA	ACETONE	Kidney; Liver	1.15E-06	NA	5.35E-06	6.50E-06
			BENZENE	2.31E-11	NA	5.18E-10	5.41E-10	BENZENE	Immune System	4.04E-06	NA	4.23E-05	4.63E-05
			CARBON DISULFIDE	NA	NA	NA	NA	CARBON DISULFIDE	Fetal	8.07E-07	NA	2.04E-05	2.12E-05
			CHLOROBENZENE	NA	NA	NA	NA	CHLOROBENZENE	Kidney; Liver; Reproductive System	3.87E-06	NA	1.31E-04	1.34E-04
			CIS-1,2-DICHLOROETHENE	NA	NA	NA	NA	CIS-1,2-DICHLOROETHENE	Blood	1.61E-06	NA	3.37E-05	3.54E-05
			ETHYLBENZENE	NA	NA	NA	NA	ETHYLBENZENE	Fetal; Kidney; Liver	1.42E-06	NA	5.58E-06	7.00E-06
			4- ISOPROPYLTOLUENE	NA	NA	NA	NA	4- ISOPROPYLTOLUENE	NA	NA	NA	NA	NA
			METHYLENE CHLORIDE	1.94E-10	NA	1.17E-09	1.37E-09	METHYLENE CHLORIDE	Cardiovascular System; Liver; Nervous System	1.61E-05	NA	2.06E-04	2.22E-04
			NAPHTHALENE	NA	NA	NA	NA	NAPHTHALENE	Body Weight; Respiratory	2.58E-06	NA	8.50E-05	8.76E-05
			TOLUENE	NA	NA	NA	NA	TOLUENE	Fetal; Kidney; Liver; Nervous System; Respiratory	4.84E-07	NA	1.71E-05	1.76E-05
			TRANS-1,2-TRICHLOROETHENE	NA	NA	NA	NA	TRANS-1,2-TRICHLOROETHENE	Blood	3.71E-06	NA	9.78E-05	1.02E-04
			TRICHLOROETHENE	1.32E-10	NA	4.15E-11	1.74E-10	TRICHLOROETHENE	Eyes; Nervous System	7.53E-05	NA	4.15E-05	1.17E-04
			1,2,4- TRIMETHYLBENZENE	NA	NA	NA	NA	1,2,4- TRIMETHYLBENZENE	NA	1.61E-06	NA	1.44E-04	1.46E-04

Table C2-4g
Summary of Future Receptor RME Cancer Risks and Noncarcinogenic Hazard Indices
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Receptor Population:	Construction Worker
Receptor Age:	Adult

				Carcinogenic Risk						Non-Carconogenic Hazard Index			
Medium	**Exposure Medium**	**Exposure Point**	**Chemical**	**Ingestion**	**Dermal**	**Inhalation (Outdoor)**	**Exposure Routes Total**	**Chemical**	**Primary Target Organ**	**Ingestion HQ**	**Dermal HQ**	**Inhalation (Outdoor) HQ**	**Total HI**
			1,3,5- TRIMETHYLBENZENE	NA	NA	NA	NA	1,3,5- TRIMETHYLBENZENE	NA	6.01E-07	NA	1.34E-04	1.34E-04
			VINYL CHLORIDE	2.35E-09	NA	1.46E-09	3.82E-09	VINYL CHLORIDE	GI System; Liver; Nervous System	3.66E-05	NA	2.33E-04	2.69E-04
			XYLENE (TOTAL)	NA	NA	NA	NA	XYLENE (TOTAL)	Body Weight; Fetal; Nervous System; Respiratory	1.78E-06	NA	1.23E-04	1.25E-04
Groundwater	Shallow Groundwater	Vapors	**VOCs (ug/L)**					**VOCs (ug/L)**					
			ACETONE	NA	NA	NA	NA	ACETONE	Kidney; Liver	NA	NA	1.82E-03	1.82E-03
			BENZENE	NA	NA	1.82E-07	1.82E-07	BENZENE	Fetal; Immune System; Nervous System; Respiratory	NA	NA	1.49E-02	1.49E-02
			2- BUTANONE	NA	NA	NA	NA	2- BUTANONE	Fetal	NA	NA	1.23E-02	1.23E-02
			CARBON DISULFIDE	NA	NA	NA	NA	CARBON DISULFIDE	Fetal; Nervous System	NA	NA	1.14E-03	1.14E-03
			CHLOROBENZENE	NA	NA	NA	NA	CHLOROBENZENE	Kidney; Liver; Reproductive System	NA	NA	8.57E-03	8.57E-03
			CHLOROMETHANE	NA	NA	1.23E-08	1.23E-08	CHLOROMETHANE	NA	NA	NA	1.59E-03	1.59E-03
			CIS-1,2-DICHLOROETHENE	NA	NA	NA	NA	CIS-1,2-DICHLOROETHENE	Blood	NA	NA	2.25E-02	2.25E-02
			1,3- DICHLOROBENZENE			NA		1,3- DICHLOROBENZENE	NA	NA	NA	1.24E-03	1.24E-03
			1,2- DICHLOROETHENE (TOTAL)	NA	NA	NA	NA	1,2- DICHLOROETHENE (TOTAL)	Blood, Liver	NA	NA	1.06E-01	1.06E-01
			ETHYLBENZENE	NA	NA	NA	NA	ETHYLBENZENE	Fetal; Kidney; Liver	NA	NA	2.39E-04	2.39E-04
			TOLUENE	NA	NA	NA	NA	TOLUENE	Fetal; Kidney; Liver; Nervous System; Respiratory	NA	NA	6.85E-04	6.85E-04
			TRANS-1,2-DICHLOROETHENE	NA	NA	NA	NA	TRANS-1,2-DICHLOROETHENE	Blood; Liver	NA	NA	2.10E-03	2.10E-03
			1,2,4- TRIMETHYLBENZENE	NA	NA	NA	NA	1,2,4- TRIMETHYLBENZENE	NA	NA	NA	2.13E-02	2.13E-02
			1,3,5- TRIMETHYLBENZENE	NA	NA	NA	NA	1,3,5- TRIMETHYLBENZENE	NA	NA	NA	1.61E-02	1.61E-02
			VINYL CHLORIDE	NA	NA	1.72E-08	1.72E-08	VINYL CHLORIDE	GI System; Liver; Nervous System	NA	NA	2.74E-03	2.74E-03
			XYLENE (TOTAL)	NA	NA	NA	NA	XYLENE (TOTAL)	Body Weight; Fetal; Nervous System; Respiratory	NA	NA	4.80E-03	4.80E-03
Groundwater	Intermediate and Deep Groundwater	Vapors	**VOCs (ug/L)**					**VOCs (ug/L)**					
			ACETONE	NA	NA	NA	NA	ACETONE	Kidney; Liver	NA	NA	4.02E-04	4.02E-04
			BENZENE	NA	NA	2.66E-07	2.66E-07	BENZENE	Fetal; Immune System; Nervous System; Respiratory	NA	NA	2.17E-02	2.17E-02
			2- BUTANONE	NA	NA	NA	NA	2- BUTANONE	Fetal	NA	NA	1.88E-03	1.88E-03
			CARBON DISULFIDE	NA	NA	NA	NA	CARBON DISULFIDE	Fetal; Nervous System	NA	NA	1.81E-03	1.81E-03
			CHLOROBENZENE	NA	NA	NA	NA	CHLOROBENZENE	Kidney; Liver; Reproductive System	NA	NA	3.26E-02	3.26E-02

Table C2-4g
Summary of Future Receptor RME Cancer Risks and Noncarcinogenic Hazard Indices
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Receptor Population:	Construction Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Primary Target Organ	Non-Carconogenic Hazard Index			
				Ingestion	Dermal	Inhalation (Outdoor)	Exposure Routes Total			Ingestion HQ	Dermal HQ	Inhalation (Outdoor) HQ	Total HI
			4- METHYL-2-PENTANONE	NA	NA	NA	NA	4- METHYL-2-PENTANONE	Fetal; Kidney; Liver	NA	NA	6.85E-04	6.85E-04

Cancer Risk Across Soil:	1.0E-05
Cancer Risk Across Groundwater:	4.8E-07
Total Cancer Risk:	1.1E-05

HI Across Soil:	1.2E+00
HI Across Groundwater:	2.8E-01
Total HI:	1.5E+00
Total Blood HI:	1.9E-01
Total Body Weight HI:	2.7E-01
Total Cardiovascular System HI:	2.9E-01
Total Fetal/Reproductive System HI:	3.6E-01
Total GI System HI:	2.2E-02
Total Immune System HI:	8.6E-02
Total Kidney HI:	8.1E-02
Total Liver HI:	1.8E-01
Total Nervous System HI:	7.3E-01
Total NOEL HI:	6.3E-02
Total Respiratory HI:	1.6E-01
Total Skin HI:	2.6E-01
Total Whole Body HI:	3.6E-02

Notes:
EPC = Exposure point concentration
GI = Gastrointestinal
HQ = Hazard Quotient
HI = Hazard Index
mg/kg = milligrams per kilogram
mg/L = milligrams per liter
NA = Not Applicable
PCBs = Polychlorinated Biphenyls
RME = Reasonable Maximum Exposure
SVOCs = Semivolatile Organic Compounds
TPH = Total Petroleum Hydrocarbons
VOCs = Volatile Organic Compounds
ug/L = microgram per liter

Table C2-4h
Summary of Estimated Cancer Risks and Hazard Indices for Soil
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	RME Result			
	Baseline Cancer Risk*	**Baseline Hazard Index***	**Residual Cancer Risk**	**Residual Hazard Index**
Recreational User - Future				
Total Risk Across Soil	6.4E-05	2.5E-01	6.3E-05	2.2E-01
Total Risk Across Soil (without arsenic)	3.2E-06	1.6E-01	2.9E-06	1.3E-01
Construction Worker - Future				
Total Risk Across Soil	1.1E-05	1.3E+00	1.0E-05	1.2E+00
Total Risk Across Soil (without arsenic)	5.2E-07	1.0E+00	4.8E-07	9.3E-01

Notes:

RME = Reasonable Maximum Exposure

* - Baseline HHRA did not include full data set; outlier concentrations were excluded.

Table C2-4i
Comparison of EPCs, Cancer Risk Estimates, and Hazard Indices from Baseline Risk Assessment
Non-Tidal Wetland Areas Alternative 3
Soil (0 to 10 feet bgs)
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Baseline Risk Estimates					Alternative 3 Estimates				
		Recreational User		Construction Worker			Recreational User		Construction Worker	
Chemical of Potential Concern	Medium EPC Value	RME Carcinogenic Risk	RME Total HI	RME Carcinogenic Risk	RME Total HI	Medium EPC Value	RME Carcinogenic Risk	RME Total HI	RME Carcinogenic Risk	RME Total HI
INORGANICS (mg/kg)										
ALUMINUM	30,215	NA	3.40E-02	NA	2.26E-01	26,743	NA	3.01E-02	NA	2.00E-01
ANTIMONY	11.2	NA	3.06E-02	NA	9.04E-02	4.5	NA	1.23E-02	NA	3.63E-02
ARSENIC	21.3	6.08E-05	8.84E-02	1.01E-05	2.65E-01	21	5.99E-05	8.71E-02	1.00E-05	2.61E-01
BARIUM	90.1	NA	1.44E-03	NA	7.92E-03	94	NA	1.50E-03	NA	8.26E-03
BERYLLIUM	0.64	6.00E-11	3.64E-04	4.58E-10	2.94E-03	0.65	6.09E-11	3.70E-04	4.65E-10	2.99E-03
CADMIUM	2.97	3.55E-07	7.71E-03	6.21E-08	2.46E-02	2.9	3.47E-07	7.53E-03	6.06E-08	2.40E-02
CHROMIUM	137	NA	9.98E-05	NA	2.95E-04	216	NA	1.57E-04	NA	4.65E-04
COBALT	18.5	2.02E-09	1.16E-03	1.55E-08	2.24E-02	18	1.97E-09	1.13E-03	1.50E-08	2.17E-02
COPPER	108	NA	2.95E-03	NA	8.72E-03	199	NA	5.44E-03	NA	1.61E-02
HEXAVALENT CHROMIUM	0.07	3.98E-10	2.56E-05	3.04E-09	8.99E-05	0.07	3.98E-10	2.56E-05	3.04E-09	8.99E-05
LEAD	166	3.75E-07	NA	6.57E-08	NA	97	2.19E-07	NA	3.84E-08	NA
MANGANESE	900	NA	9.92E-03	NA	3.96E-01	907	NA	9.99E-03	NA	3.99E-01
MERCURY	1.2	NA	4.37E-03	NA	1.32E-02	1.4	NA	5.10E-03	NA	1.54E-02
MOLYBDENUM	9.5	NA	2.08E-03	NA	6.14E-03	5.1	NA	1.11E-03	NA	3.29E-03
NICKEL	107	1.09E-09	6.19E-03	8.30E-09	6.20E-02	114	1.16E-09	6.60E-03	8.84E-09	6.61E-02
SELENIUM	1.4	NA	3.06E-04	NA	9.06E-04	1.2	NA	2.62E-04	NA	7.76E-04
SILVER	2.7	NA	5.90E-04	NA	1.74E-03	2.8	NA	6.12E-04	NA	1.81E-03
THALLIUM	0.47	NA	7.78E-03	NA	2.30E-02	0.47	NA	7.78E-03	NA	2.30E-02
TIN	14.7	NA	2.68E-05	NA	7.91E-05	16.3	NA	2.97E-05	NA	8.77E-05
VANADIUM	115	NA	1.80E-02	NA	5.30E-02	117	NA	1.83E-02	NA	5.40E-02
ZINC	210	NA	7.65E-04	NA	2.26E-03	237	NA	8.63E-04	NA	2.55E-03
PCBs (mg/kg)										
PCBs (TOTAL)	0.36	7.85E-07	3.23E-02	1.18E-07	8.26E-02	0.2	4.36E-07	1.80E-02	6.55E-08	4.59E-02
SVOCs (mg/kg)										
ACENAPHTHENE	0.42	NA	1.46E-05	NA	3.90E-05	0.13	NA	4.51E-06	NA	1.21E-05
ACENAPHTHYLENE	0.12	NA	NA	NA	NA	0.12	NA	NA	NA	NA
ANTHRACENE	1.1	NA	6.72E-06	NA	1.75E-05	0.13	NA	7.94E-07	NA	2.07E-06
BENZO(A)ANTHRACENE	0.12	6.10E-08	NA	9.24E-09	NA	0.28	1.42E-07	NA	2.16E-08	NA
BENZO(A)PYRENE	0.11	5.59E-07	NA	8.47E-08	NA	0.24	1.22E-06	NA	1.85E-07	NA
BENZO(B)FLUORANTHENE	0.15	7.63E-08	NA	1.15E-08	NA	0.24	1.22E-07	NA	1.85E-08	NA
BENZO(G,H,I)PERYLENE	0.59	NA	2.57E-05	NA	6.63E-05	0.16	NA	6.98E-06	NA	1.80E-05
BENZO(K)FLUORANTHENE	1.38	7.02E-07	NA	1.06E-07	NA	0.24	1.22E-07	NA	1.85E-08	NA
CHRYSENE	0.11	5.62E-09	NA	8.51E-10	NA	0.27	1.38E-08	NA	2.09E-09	NA
FLUORANTHENE	0.091	NA	3.97E-06	NA	1.02E-05	0.38	NA	1.66E-05	NA	4.27E-05
FLUORENE	0.5	NA	2.39E-05	NA	6.29E-05	0.13	NA	6.22E-06	NA	1.64E-05
INDENO(1,2,3-CD)PYRENE	0.12	6.10E-08	NA	9.24E-09	NA	0.16	8.14E-08	NA	1.23E-08	NA
NAPHTHALENE	0.35	NA	6.07E-04	NA	1.94E-03	0.11	NA	1.91E-04	NA	6.09E-04
PHENANTHRENE	0.12	NA	6.98E-07	NA	1.80E-06	0.2	NA	1.16E-06	NA	3.00E-06
PYRENE	0.096	NA	5.63E-06	NA	1.45E-05	0.43	NA	2.52E-05	NA	6.51E-05
TPH (mg/kg)										
TPH AS DIESEL	677	NA	NA	NA	NA	177	NA	NA	NA	NA
TPH AS GASOLINE	4.6	NA	NA	NA	NA	4.2	NA	NA	NA	NA
TPH AS MOTOR OIL	324	NA	NA	NA	NA	313	NA	NA	NA	NA
SOIL TOTALS:		**6.4E-05**	**2.5E-01**	**1.1E-05**	**1.3E+00**		**6.3E-05**	**2.1E-01**	**1.0E-05**	**1.2E+00**

Table C2-4j
Post-Remediation Gray Fox Risk Calculations (Wetland Sediment Residual Concentration)
Deep Soil (0 - 10 ft bgs) at Hazard Quotient of 5
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Concentrations				Intake (mg/kg BW-day)					Hazard Quotient (HQ) - Low					Hazard Quotient (HQ) - High			
COPEC[a]	Surface Water (mg/L)[b]	Sediment[c]	Small Mammal BAF[d]	Small Mammal Tissue[d]	Surface Water	Sediment	Small Mammal	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Small Mammal	Total Intake		High TRV (mg/kg BW-day)	Surface Water	Sediment	Small Mammal	Total Intake
Metals (mg/kg)																			
Aluminum	12.6	2.67E+04	1.11E-02	2.96E+02	2.72E-01	8.54E+00	3.37E+00	1.22E+01	1.93	1.4E-01	4.4E+00	1.7E+00	6.3E+00	>1	19.3	1.4E-02	4.4E-01	1.7E-01	6.3E-01
Antimony	0.003	4.50E+00	1.22E+00	5.48E+00	6.48E-05	1.44E-03	6.25E-02	6.40E-02	0.06	1.1E-03	2.4E-02	1.1E+00	1.1E+00		23.4	2.8E-06	6.1E-05	2.7E-03	2.7E-03
Arsenic	0.0436	2.10E+01	--	0	9.42E-04	6.71E-03	0.00E+00	7.65E-03	0.32	2.9E-03	2.1E-02	0	2.4E-02		4.7	2.0E-04	1.4E-03	0.0E+00	1.6E-03
Barium	0.24	9.40E+01	9.41E-02	8.85E+00	5.10E-03	3.00E-02	1.01E-01	1.36E-01	51.8	9.8E-05	5.8E-04	1.9E-03	2.6E-03		66.0	7.7E-05	4.5E-04	1.5E-03	2.1E-03
Beryllium		6.50E-01	--	0		2.08E-04	0.00E+00	2.08E-04	0.532		3.9E-04	0	3.9E-04		0.554		3.7E-04	0.0E+00	3.7E-04
Cadmium	0.0016	2.90E+00	--	0	3.46E-05	9.26E-04	0.00E+00	9.61E-04	0.06	5.8E-04	1.5E-02	0	1.6E-02		2.64	1.3E-05	3.5E-04	0.0E+00	3.6E-04
Chromium +3	0.0263	2.16E+02	2.60E-02	5.62E+00	5.68E-04	6.90E-02	6.42E-02	1.34E-01	2	2.4E-04	2.9E-02	2.7E-02	5.6E-02		23.1	2.5E-05	3.0E-03	2.8E-03	5.8E-03
Chromium +6	0.0263	7.00E-02	2.60E-02	1.82E-03	5.68E-04	2.24E-05	2.08E-05	6.12E-04	5.66	1.0E-04	3.9E-06	0	1.1E-04		35.1	1.6E-05	6.4E-07	5.9E-07	1.7E-05
Cobalt	0.0164	1.80E+01	--	0	3.54E-04	5.75E-03	0.00E+00	6.10E-03	1.2	3.0E-04	4.8E-03	0	5.1E-03		20	1.8E-05	2.9E-04	0.0E+00	3.1E-04
Copper	0.233	1.99E+02	3.45E-01	6.87E+01	5.04E-03	6.35E-02	7.84E-01	8.52E-01	2.67	1.9E-03	2.4E-02	2.9E-01	3.2E-01		632	8.0E-06	1.0E-04	1.2E-03	1.3E-03
Lead	0.0031	9.70E+01	6.10E-01	5.92E+01	6.70E-05	3.10E-02	6.75E-01	7.06E-01	1	6.7E-05	3.1E-02	6.8E-01	7.1E-01		241	2.8E-07	1.3E-04	2.8E-03	2.9E-03
Manganese	7.42	9.07E+02	--	0	1.60E-01	2.90E-01	0.00E+00	4.50E-01	13.7	1.2E-02	2.1E-02	0	3.3E-02		159.09	1.0E-03	1.8E-03	0.0E+00	2.8E-03
Mercury	0.00029	1.40E+00	--	0	6.27E-06	4.47E-04	0.00E+00	4.53E-04	0.027	2.3E-04	1.7E-02	0	1.7E-02		0.27	2.3E-05	1.7E-03	0.0E+00	1.7E-03
Molybdenum	0.0312	5.10E+00	--	0	6.74E-04	1.63E-03	0.00E+00	2.30E-03	0.26	2.6E-03	6.3E-03	0	8.9E-03		2.6	2.6E-04	6.3E-04	0.0E+00	8.9E-04
Nickel	0.166	1.14E+02	--	0	3.59E-03	3.64E-02	0.00E+00	4.00E-02	0.13	2.7E-02	2.7E-01	0	3.0E-01		31.6	1.1E-04	1.2E-03	0.0E+00	1.3E-03
Selenium	0.029	1.20E+00	6.12E+00	7.34E+00	6.27E-04	3.83E-04	8.37E-02	8.47E-02	0.05	1.3E-02	7.7E-03	1.7E+00	1.7E+00	>1	1.21	5.2E-04	3.2E-04	6.9E-02	7.0E-02
Silver	0.0019	2.80E+00	--	0	4.11E-05	8.94E-04	0.00E+00	9.35E-04	0.38	1.1E-04	2.4E-03	0	2.5E-03		3.75	1.1E-05	2.4E-04	0.0E+00	2.5E-04
Thallium		4.70E-01	1.01E+00	4.74E-01		1.50E-04	5.40E-03	5.55E-03	0.48		3.1E-04	1.1E-02	1.2E-02		1.43		1.0E-04	3.8E-03	3.9E-03
Tin		1.63E+01	--	0		5.21E-03	0.00E+00	5.21E-03	23.4		2.2E-04	0	2.2E-04		35		1.5E-04	0.0E+00	1.5E-04
Vanadium	0.05	1.17E+02	--	0	1.08E-03	3.74E-02	0.00E+00	3.84E-02	0.21	5.1E-03	1.8E-01	0	1.8E-01		2.1	5.1E-04	1.8E-02	0.0E+00	1.8E-02
Zinc	0.042	2.37E+02	1.11E+00	2.63E+02	9.08E-04	7.57E-02	2.99E+00	3.07E+00	9.6	9.5E-05	7.9E-03	3.1E-01	3.2E-01		411	2.2E-06	1.8E-04	7.3E-03	7.5E-03
Volatile Organics (mg/kg)																			
Acetone		3.20E-01	--	0		1.02E-04	0.00E+00	1.02E-04	10		1.0E-05	0	1.0E-05		50		2.0E-06	0.0E+00	2.0E-06
Benzene		5.00E-03	--	0		1.60E-06	0.00E+00	1.60E-06	26.4		6.0E-08	0	6.0E-08		263.6		6.1E-09	0.0E+00	6.1E-09
Carbon disulfide		2.50E-02	--	0		7.98E-06	0.00E+00	7.98E-06	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Chlorobenzene		2.40E-02	--	0		7.66E-06	0.00E+00	7.66E-06	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
cis-1,2-Dichlorobenzene		5.00E-03	--	0		1.60E-06	0.00E+00	1.60E-06	45.2		3.5E-08	0	3.5E-08		452		3.5E-09	0.0E+00	3.5E-09
Ethylbenzene		4.40E-02	--	0		1.41E-05	0.00E+00	1.41E-05	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
4-Isopropyltoluene		7.20E-03	--	0		2.30E-06	0.00E+00	2.30E-06	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Methylene chloride		3.00E-01	--	0		9.58E-05	0.00E+00	9.58E-05	5.9		1.6E-05	0	1.6E-05		50		1.9E-06	0.0E+00	1.9E-06
Naphthalene		1.60E-02	--	0		5.11E-06	0.00E+00	5.11E-06	50		1.0E-07	0	1.0E-07		150		3.4E-08	0.0E+00	3.4E-08
Toluene		3.00E-02	--	0		9.58E-06	0.00E+00	9.58E-06	26		3.7E-07	0	3.7E-07		260		3.7E-08	0.0E+00	3.7E-08
trans-1,2-Dichloroethene		2.30E-02	--	0		7.34E-06	0.00E+00	7.34E-06	45.2		1.6E-07	0	1.6E-07		452		1.6E-08	0.0E+00	1.6E-08
Trichloroethene		7.00E-03	--	0		2.24E-06	0.00E+00	2.24E-06	0.7		3.2E-06	0	3.2E-06		7		3.2E-07	0.0E+00	3.2E-07
1,2,4-Trimethylbenzene		2.50E-02	--	0		7.98E-06	0.00E+00	7.98E-06	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
1,3,5-Trimethylbenzene		9.30E-03	--	0		2.97E-06	0.00E+00	2.97E-06	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Vinyl chloride		3.40E-02	--	0		1.09E-05	0.00E+00	1.09E-05	0.17		6.4E-05	0	6.4E-05		2		6.4E-06	0.0E+00	6.4E-06
Xylenes		1.10E-01	--	0		3.51E-05	0.00E+00	3.51E-05	2.1		1.7E-05	0	1.7E-05		2.6		1.4E-05	0.0E+00	1.4E-05
Pesticides (mg/kg)																			
alpha-Chlordane		8.20E-03	--	0		2.62E-06	0.00E+00	2.62E-06	4.6		5.7E-07	0	5.7E-07		9.2		2.8E-07	0	2.8E-07
beta-BHC		1.00E-03	--	0		3.19E-07	0.00E+00	3.19E-07	1.6		2.0E-07	0	2.0E-07		3.2		1.0E-07	0	1.0E-07
delta-BHC		2.00E-03	--	0		6.39E-07	0.00E+00	6.39E-07	1.6		4.0E-07	0	4.0E-07		3.2		2.0E-07	0	2.0E-07
2,4-DDD		2.90E-02	1.04E+00	3.03E-02		9.26E-06	3.45E-04	3.55E-04	0.8		1.2E-05	4.3E-04	4.4E-04		16		5.8E-07	2.2E-05	2.2E-05
DDD		8.60E-02	1.04E+00	8.98E-02		2.75E-05	1.02E-03	1.05E-03	0.8		3.4E-05	1.3E-03	1.3E-03		16		1.7E-06	6.4E-05	6.6E-05
DDE	0.0000027	1.70E-02	1.04E+00	1.77E-02	5.84E-08	5.43E-06	2.02E-04	2.08E-04	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
DDTs	0.00014	1.20E-02	1.04E+00	1.25E-02	3.03E-06	3.83E-06	1.43E-04	1.50E-04	0.8	3.8E-06	4.8E-06	1.8E-04	1.9E-04		16	1.9E-07	2.4E-07	8.9E-06	9.4E-06
Dieldrin		3.90E-03	--	0		1.25E-06	0.00E+00	1.25E-06	0.015		8.3E-05	0	8.3E-05		1.7		7.3E-07	0	7.3E-07
Endosulfan I		4.00E-03	--	0		1.28E-06	0.00E+00	1.28E-06	0.15		8.5E-06	0	8.5E-06		1.5		8.5E-07	0	8.5E-07
Endosulfan sulfate	0.00012	3.00E-03	--	0	2.59E-06	9.58E-07	0.00E+00	3.55E-06	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV

Table C2-4j
Post-Remediation Gray Fox Risk Calculations (Wetland Sediment Residual Concentration)
Deep Soil (0 - 10 ft bgs) at Hazard Quotient of 5
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Concentrations				Intake (mg/kg BW-day)					Hazard Quotient (HQ) - Low					Hazard Quotient (HQ) - High			
COPEC[a]	Surface Water (mg/L)[b]	Sediment[c]	Small Mammal BAF[d]	Small Mammal Tissue[d]	Surface Water	Sediment	Small Mammal	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Small Mammal	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Sediment	Small Mammal	Total Intake
Endrin	0.000014	2.00E-02	--	0	3.03E-07	6.39E-06	0.00E+00	6.69E-06	0.09	3.3E-06	6.9E-05	0	7.3E-05	0.92	3.3E-07	6.9E-06	0	7.3E-06
Endrin aldehyde		6.00E-03	--	0		1.92E-06	0.00E+00	1.92E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Endrin Ketone		3.00E-03	--	0		9.58E-07	0.00E+00	9.58E-07	NTV	NTV	NTV	NTV	NTV	0.92		1.0E-06	0	1.0E-06
gamma-Chlordane		8.50E-03	--	0		2.71E-06	0.00E+00	2.71E-06	4.6		5.9E-07	0	5.9E-07	9.2		3.0E-07	0	3.0E-07
Heptachlor	0.0000028	2.00E-04	--	0	6.05E-08	6.39E-08	0.00E+00	1.24E-07	0.13	4.7E-07	4.9E-07	0.0	9.6E-07	6.8	8.9E-09	9.4E-09	0	1.8E-08
Heptachlor epoxide		3.00E-04	--	0		9.58E-08	0.00E+00	9.58E-08	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Hexachlorobenzene		8.00E-04	--	0		2.55E-07	0.00E+00	2.55E-07	1.6		1.6E-07	0	1.6E-07	16		1.6E-08	0	1.6E-08
Methoxychlor	0	2.00E-02	--	0		6.39E-06	0.00E+00	6.39E-06	2.5		2.6E-06	0	2.6E-06	50		1.3E-07	0	1.3E-07
Mirex		4.00E-03	--	0		1.28E-06	0.00E+00	1.28E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
trans-Nonachlor		2.40E-03	--	0		7.66E-07	0.00E+00	7.66E-07	4.6		1.7E-07	0	1.7E-07	9.2		8.3E-08	0	8.3E-08
SVOCs (mg/kg)																		
Acenaphthene		1.30E-01	--	0		4.15E-05	0.00E+00	4.15E-05	1.31		3.2E-05	0	3.2E-05	32.8		1.3E-06	0	1.3E-06
Acenaphthylene		1.20E-01	--	0		3.83E-05	0.00E+00	3.83E-05	1.31		2.9E-05	0	2.9E-05	32.8		1.2E-06	0	1.2E-06
Anthracene		1.30E-01	--	0		4.15E-05	0.00E+00	4.15E-05	1.31		3.2E-05	0	3.2E-05	32.8		1.3E-06	0	1.3E-06
Benzo(a)anthracene		2.80E-01	--	0		8.94E-05	0.00E+00	8.94E-05	1.31		6.8E-05	0	6.8E-05	32.8		2.7E-06	0	2.7E-06
Benzo(a)pyrene		2.40E-01	--	0		7.66E-05	0.00E+00	7.66E-05	1.31		5.9E-05	0	5.9E-05	32.8		2.3E-06	0	2.3E-06
Benzo(b)fluoranthene		2.40E-01	--	0		7.66E-05	0.00E+00	7.66E-05	1.31		5.9E-05	0	5.9E-05	32.8		2.3E-06	0	2.3E-06
Benzo(g,h,i)perylene		1.60E-01	--	0		5.11E-05	0.00E+00	5.11E-05	1.31		3.9E-05	0	3.9E-05	32.8		1.6E-06	0	1.6E-06
Benzo(k)fluoranthene		2.40E-01	--	0		7.66E-05	0.00E+00	7.66E-05	1.31		5.9E-05	0	5.9E-05	32.8		2.3E-06	0	2.3E-06
Benzoic acid		6.80E-01	--	0		2.17E-04	0.00E+00	2.17E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Bis(2-ethylhexyl)phthalate	0.027	1.10E+00	--	0	5.84E-04	3.51E-04	0.00E+00	9.35E-04	18.3	3.2E-05	1.9E-05	0	5.1E-05	183	3.2E-06	1.9E-06	0	5.1E-06
Butylbenzylphthalate		2.50E-02	--	0		7.98E-06	0.00E+00	7.98E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Carbazole		5.50E-01	--	0		1.76E-04	0.00E+00	1.76E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Chloroaniline		3.00E-03	--	0		9.58E-07	0.00E+00	9.58E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2-Chloropropane		4.33E-02	--	0		1.38E-05	0.00E+00	1.38E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chrysene	0.0002	2.70E-01	--	0	4.32E-06	8.62E-05	0.00E+00	9.05E-05	1.31	3.3E-06	6.6E-05	0	6.9E-05	32.8	1.3E-07	2.6E-06	0	2.8E-06
Dibenzofuran		3.60E-01	--	0		1.15E-04	0.00E+00	1.15E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
3,3-Dichlorobenzidine		1.20E-02	--	0		3.83E-06	0.00E+00	3.83E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2,6-Dinitrotoluene		3.70E-01	--	0		1.18E-04	0.00E+00	1.18E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Fluoranthene		3.80E-01	--	0		1.21E-04	0.00E+00	1.21E-04	1.31		9.3E-05	0	9.3E-05	32.8		3.7E-06	0	3.7E-06
Fluorene		1.30E-01	--	0		4.15E-05	0.00E+00	4.15E-05	1.31		3.2E-05	0	3.2E-05	32.8		1.3E-06	0	1.3E-06
Indeno(1,2,3-cd)pyrene		1.60E-01	--	0		5.11E-05	0.00E+00	5.11E-05	1.31		3.9E-05	0	3.9E-05	32.8		1.6E-06	0	1.6E-06
2-Methylnaphthalene		1.80E-01	--	0		5.75E-05	0.00E+00	5.75E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Methylphenol	0.12	2.30E-01	--	0	2.59E-03	7.34E-05	0.00E+00	2.67E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Naphthalene		1.10E-01	--	0		3.51E-05	0.00E+00	3.51E-05	50		7.0E-07	0	7.0E-07	150		2.3E-07	0	2.3E-07
Pentachlorophenol		5.40E-01	--	0		1.72E-04	0.00E+00	1.72E-04	8.42		2.0E-05	0	2.0E-05	27.4		6.3E-06	0	6.3E-06
Phenanthrene		2.00E-01	--	0		6.39E-05	0.00E+00	6.39E-05	1.31		4.9E-05	0	4.9E-05	32.8		1.9E-06	0	1.9E-06
Phenol		2.90E-01	--	0		9.26E-05	0.00E+00	9.26E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pyrene		4.30E-01	--	0		1.37E-04	0.00E+00	1.37E-04	1.31		1.0E-04	0	1.0E-04	32.8		4.2E-06	0	4.2E-06
PCBs (mg/kg)																		
PCBs (Total Congeners)	0.000016	2.00E-01	1.81E+01	3.62E+00	3.46E-07	6.39E-05	4.12E-02	4.13E-02	0.36	9.6E-07	1.8E-04	1.1E-01	1.1E-01	1.28	2.7E-07	5.0E-05	3.2E-02	3.2E-02

>1 = The calculated hazard quotient exceeds 1 (i.e., > 1.5)

Table C2-4j
Post-Remediation Gray Fox Risk Calculations (Wetland Sediment Residual Concentration)
Deep Soil (0 - 10 ft bgs) at Hazard Quotient of 5
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Concentrations				Intake (mg/kg BW-day)					Hazard Quotient (HQ) - Low					Hazard Quotient (HQ) - High			
COPEC[a]	Surface Water (mg/L)[b]	Sediment[c]	Small Mammal BAF[d]	Small Mammal Tissue[d]	Surface Water	Sediment	Small Mammal	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Small Mammal	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Sediment	Small Mammal	Total Intake

Exposure Assumptions and Equation:[e]

	Value	
Ingestion Rate (IR) prey(dry wt.) =	0.177	kg/day (dry weight)
IRmammal(dry wt.) =	0.177	kg/day (dry weight)
IRsediment (dry wt.)[f] =	0.00496	kg-day (dry weight)
IRsurface water[g] =	0.335	L/day
Cprey =	chem-specific	mg/kg or µg/kg
Csediment =	chem-specific	mg/kg or µg/kg
Csurface water =	chem-specific	mg/L or µg/L
Tissue Moisture (TMsmall mammal) =	68%	percent
Dietary Composition Factor (DCF)[h] =	100%	percent
Site Use Factor (SUF)[i] =	25%	percent
Body Weight (BW) =	3.88	kg

Intake Equation = [IRmammal(dry wt) x (Cprey(mammal, dry wt)/1-TM) x DCF x SUF]/BW] + [(IRsoil x Csoil x DCF x SUF)]/BW] + [(IRsurface water x Csurface water x DCF x SUF)]/BW]

Risk (hazard quotient) = Intake / TRV

Prey tissue(dry wt) = Prey tissue (wet wt.) / (1-Tissue Moisture)

NTV = No toxicity data available.

NA = Not applicable.

Blank cell indicates COPEC was not detected in this medium.

Notes:

a All chemicals detected in sediments are considered as constituents of potential ecological concern.

b All concentrations of constituents in surface water are based on the maximum concentration.

c All concentrations of constituents in sediment are based on the residual concentrations expressed in dry weight.

d Site-specific BAFs (dry weight basis). Calculated small mammal tissue concentrations (sediment concentration x BAF). Tissue concentrations are on a dry weight basis.

e Exposure parameters used to calculate risk are discussed in detail in Section 4.2 of the ERA..

f Ingestion rate of soil based on 2.8 percent of of the prey ingestion rate (dry weight); based on a red fox (Beyer et al. (1994).

g Based on equation for mammals: Water intake (L/day) = $0.099Wt(kg)^{0.90}$ (EPA 1993)

h Dietary composition factor was based on a conservative assumption of 100% dietary intake of small mammals from the site.

i Site use factor was based on a 25% use of the site for the fox's foraging range.

Table C2-4k
Post-Remediation Northern Harrier Risk Calculations (Wetland Sediment Residual Concentration)
Deep Soil (0 - 10 ft bgs) at Hazard Quotient of 5
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Concentrations				Intake (mg/kg BW-day)					Hazard Quotient (HQ) - Low					Hazard Quotient (HQ) - High			
COPEC[a]	Surface Water (mg/L)[b]	Sediment[c]	Small Mammal BAF[d]	Small Mammal Tissue[d]	Surface Water	Sediment	Small Mammal	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Small Mammal	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Sediment	Small Mammal	Total Intake
Metals (mg/kg)																		
Aluminum	12.6	2.67E+04	1.11E-02	296	2.43E-01	5.09E+00	8.05E+00	1.34E+01	109.7	2.2E-03	4.6E-02	7.3E-02	1.2E-01	1,097	2.2E-04	4.6E-03	7.3E-03	1.2E-02
Antimony	0.003	4.50E+00	1.22E+00	5	5.80E-05	8.57E-04	1.49E-01	1.50E-01	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Arsenic	0.0436	2.10E+01	--	0	8.43E-04	4.00E-03	0.00E+00	4.84E-03	5.5	1.5E-04	7.3E-04	0.0E+00	8.8E-04	22	3.8E-05	1.8E-04	0.0E+00	2.2E-04
Barium	0.24	9.40E+01	9.41E-02	9	4.56E-03	1.79E-02	2.41E-01	2.63E-01	20.8	2.2E-04	8.6E-04	1.2E-02	1.3E-02	41.7	1.1E-04	4.3E-04	5.8E-03	6.3E-03
Beryllium		6.50E-01		0		1.24E-04		1.24E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Cadmium	0.0016	2.90E+00	--	0	3.09E-05	5.52E-04	0.00E+00	5.83E-04	0.08	3.9E-04	6.9E-03	0.0E+00	7.3E-03	10.4	3.0E-06	5.3E-05	0.0E+00	5.6E-05
Chromium +3	0.0263	2.16E+02	2.60E-02	6	5.08E-04	4.11E-02	1.53E-01	1.95E-01	2.66	1.9E-04	1.5E-02	5.8E-02	7.3E-02	2.78	1.8E-04	1.5E-02	5.5E-02	7.0E-02
Chromium +6	0.0263	7.00E-02	2.60E-02	0	5.08E-04	1.33E-05	4.96E-05	5.71E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Cobalt	0.0164	1.80E+01	--	0	3.17E-04	3.43E-03	0.00E+00	3.75E-03	7.61	4.2E-05	4.5E-04	0.0E+00	4.9E-04	17	1.9E-05	2.0E-04	0.0E+00	2.2E-04
Copper	0.233	1.99E+02	3.45E-01	69	4.50E-03	3.79E-02	1.87E+00	1.91E+00	2.3	2.0E-03	1.6E-02	8.1E-01	8.3E-01	52.3	8.6E-05	7.2E-04	3.6E-02	3.7E-02
Lead	0.0031	9.70E+01	6.10E-01	59	5.99E-05	1.85E-02	1.61E+00	1.63E+00	0.014	4.3E-03	1.3E+00	1.2E+02	1.2E+02 >1	8.75	6.8E-06	2.1E-03	1.8E-01	1.9E-01
Manganese	7.42	9.07E+02	--	0	1.43E-01	1.73E-01	0.00E+00	3.16E-01	77.6	1.8E-03	2.2E-03	0.0E+00	4.1E-03	776	1.8E-04	2.2E-04	0.0E+00	4.1E-04
Mercury	0.00029	1.40E+00	--	0	5.60E-06	2.67E-04	0.00E+00	2.72E-04	0.039	1.4E-04	6.8E-03	0.0E+00	7.0E-03	0.18	3.1E-05	1.5E-03	0.0E+00	1.5E-03
Molybdenum	0.0312	5.10E+00	--	0	6.03E-04	9.71E-04	0.00E+00	1.57E-03	3.5	1.7E-04	2.8E-04	0.0E+00	4.5E-04	35.3	1.7E-05	2.8E-05	0.0E+00	4.5E-05
Nickel	0.166	1.14E+02	--	0	3.21E-03	2.17E-02	0.00E+00	2.49E-02	1.38	2.3E-03	1.6E-02	0.0E+00	1.8E-02	56.3	5.7E-05	3.9E-04	0.0E+00	4.4E-04
Selenium	0.029	1.20E+00	6.12E+00	7	5.60E-04	2.29E-04	2.00E-01	2.00E-01	0.23	2.4E-03	9.9E-04	8.7E-01	8.7E-01	0.93	6.0E-04	2.5E-04	2.1E-01	2.2E-01
Silver	0.0019	2.80E+00	--	0	3.67E-05	5.33E-04	0.00E+00	5.70E-04	178.00	2.1E-07	3.0E-06	0.0E+00	3.2E-06	NTV	NTV	NTV	NTV	NTV
Thallium		4.70E-01	1.01E+00	0		8.95E-05	1.29E-02	1.30E-02	0.35		2.6E-04	3.7E-02	3.7E-02	NTV	NTV	NTV	NTV	NTV
Tin		1.63E+01	--	0		3.10E-03	0.00E+00	3.10E-03	6.80		4.6E-04	0.0E+00	4.6E-04	16.9		1.8E-04	0.0E+00	1.8E-04
Vanadium	0.05	1.17E+02	--	0	9.66E-04	2.23E-02	0.00E+00	2.33E-02	11.4	8.5E-05	2.0E-03	0.0E+00	2.0E-03	114	8.5E-06	2.0E-04	0.0E+00	2.0E-04
Zinc	0.042	2.37E+02	1.11E+00	263	8.12E-04	4.51E-02	7.14E+00	7.19E+00	17.2	4.7E-05	2.6E-03	4.2E-01	4.2E-01	172	4.7E-06	2.6E-04	4.2E-02	4.2E-02
Volatile Organics (mg/kg)																		
Acetone		3.20E-01	--	0		6.10E-05	0.00E+00	6.10E-05	52		1.2E-06	0.0E+00	1.2E-06	520		1.2E-07	0.0E+00	1.2E-07
Benzene		5.00E-03	--	0		9.52E-07	0.00E+00	9.52E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Carbon disulfide		2.50E-02	--	0		4.76E-06	0.00E+00	4.76E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chlorobenzene		2.40E-02	--	0		4.57E-06	0.00E+00	4.57E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
cis-1,2-Dichlorobenzene		5.00E-03	--	0		9.52E-07	0.00E+00	9.52E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Ethylbenzene		4.40E-02	--	0		8.38E-06	0.00E+00	8.38E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Isopropyltoluene		7.20E-03	--	0		1.37E-06	0.00E+00	1.37E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Methylene chloride		3.00E-01	--	0		5.71E-05	0.00E+00	5.71E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Naphthalene		1.60E-02	--	0		3.05E-06	0.00E+00	3.05E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Toluene		3.00E-02	--	0		5.71E-06	0.00E+00	5.71E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
trans-1,2-Dichloroethene		2.30E-02	--	0		4.38E-06	0.00E+00	4.38E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Trichloroethene		7.00E-03	--	0		1.33E-06	0.00E+00	1.33E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
1,2,4-Trimethylbenzene		2.50E-02	--	0		4.76E-06	0.00E+00	4.76E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
1,3,5-Trimethylbenzene		9.30E-03	--	0		1.77E-06	0.00E+00	1.77E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Vinyl chloride		3.40E-02	--	0		6.48E-06	0.00E+00	6.48E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Xylenes		1.10E-01	--	0		2.10E-05	0.00E+00	2.10E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pesticides (mg/kg)																		
alpha-Chlordane		8.20E-03	--	0		1.56E-06	0.00E+00	1.56E-06	0.0014		1.1E-03	0.0E+00	1.1E-03	0.014		1.1E-04	0.0E+00	1.1E-04
beta-BHC		1.00E-03	--	0		1.90E-07	0.00E+00	1.90E-07	0.56		3.4E-07	0.0E+00	3.4E-07	2.25		8.5E-08	0.0E+00	8.5E-08
delta-BHC		2.00E-03	--	0		3.81E-07	0.00E+00	3.81E-07	0.56		6.8E-07	0.0E+00	6.8E-07	2.25		1.7E-07	0.0E+00	1.7E-07
2,4-DDD		2.90E-02	1.04E+00	0		5.52E-06	8.24E-04	8.29E-04	0.009		6.1E-04	9.2E-02	9.2E-02	1.5		3.7E-06	5.5E-04	5.5E-04
DDD		8.60E-02	1.04E+00	0		1.64E-05	2.44E-03	2.46E-03	0.009		1.8E-03	2.7E-01	2.7E-01	1.5		1.1E-05	1.6E-03	1.6E-03
DDE	0.0000027	1.70E-02	1.04E+00	0	5.22E-08	3.24E-06	4.83E-04	4.86E-04	NTV	NTV	NTV	NTV	NTV	0.6	8.7E-08	5.4E-06	8.0E-04	8.1E-04
DDTs	0.00014	1.20E-02	1.04E+00	0	2.71E-06	2.29E-06	3.41E-04	3.46E-04	0.009	3.0E-04	2.5E-04	3.8E-02	3.8E-02	1.5	1.8E-06	1.5E-06	2.3E-04	2.3E-04

Table C2-4k
Post-Remediation Northern Harrier Risk Calculations (Wetland Sediment Residual Concentration)
Deep Soil (0 - 10 ft bgs) at Hazard Quotient of 5
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Concentrations				Intake (mg/kg BW-day)					Hazard Quotient (HQ) - Low					Hazard Quotient (HQ) - High			
COPEC[a]	Surface Water (mg/L)[b]	Sediment[c]	Small Mammal BAF[d]	Small Mammal Tissue[d]	Surface Water	Sediment	Small Mammal	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Small Mammal	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Sediment	Small Mammal	Total Intake
Dieldrin		3.90E-03	--	0		7.43E-07	0.00E+00	7.43E-07	0.0709		1.0E-05	0.0E+00	1.0E-05	0.98		7.6E-07	0.0E+00	7.6E-07
Endosulfan I		4.00E-03	--	0		7.62E-07	0.00E+00	7.62E-07	10		7.6E-08	0.0E+00	7.6E-08	100		7.6E-09	0.0E+00	7.6E-09
Endosulfan sulfate	0.00012	3.00E-03	--	0	2.32E-06	5.71E-07	0.00E+00	2.89E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Endrin	0.000014	2.00E-02	--	0	2.71E-07	3.81E-06	0.00E+00	4.08E-06	0.3	9.0E-07	1.3E-05	0.0E+00	1.4E-05	3	9.0E-08	1.3E-06	0.0E+00	1.4E-06
Endrin aldehyde		6.00E-03	--	0		1.14E-06	0.00E+00	1.14E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Endrin Ketone		3.00E-03	--	0		5.71E-07	0.00E+00	5.71E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
gamma-Chlordane		8.50E-03	--	0		1.62E-06	0.00E+00	1.62E-06	0.0014		1.2E-03	0.0E+00	1.2E-03	0.014		1.2E-04	0.0E+00	1.2E-04
Heptachlor	0.0000028	2.00E-04	--	0	5.41E-08	3.81E-08	0.00E+00	9.22E-08	0.065	8.3E-07	5.9E-07	0.0E+00	1.4E-06	0.65	8.3E-08	5.9E-08	0.0E+00	1.4E-07
Heptachlor epoxide		3.00E-04	--	0		5.71E-08	0.00E+00	5.71E-08	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Hexachlorobenzene		8.00E-04	--	0		1.52E-07	0.00E+00	1.52E-07	0.23		6.6E-07	0.0E+00	6.6E-07	2.3		6.6E-08	0.0E+00	6.6E-08
Methoxychlor		2.00E-02	--	0		3.81E-06	0.00E+00	3.81E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Mirex		4.00E-03	--	0		7.62E-07	0.00E+00	7.62E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
trans-Nonachlor		2.40E-03	--	0		4.57E-07	0.00E+00	4.57E-07	0.0014		3.3E-04	0.0E+00	3.3E-04	0.014		3.3E-05	0.0E+00	3.3E-05
SVOCs (mg/kg)																		
Acenaphthene		1.30E-01	--	0		2.48E-05	0.00E+00	2.48E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Acenaphthylene		1.20E-01	--	0		2.29E-05	0.00E+00	2.29E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Anthracene		1.30E-01	--	0		2.48E-05	0.00E+00	2.48E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(a)anthracene		2.80E-01	--	0		5.33E-05	0.00E+00	5.33E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(a)pyrene		2.40E-01	--	0		4.57E-05	0.00E+00	4.57E-05	0.001		4.6E-02	0.0E+00	4.6E-02	0.01		4.6E-03	0.0E+00	4.6E-03
Benzo(b)fluoranthene		2.40E-01	--	0		4.57E-05	0.00E+00	4.57E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(g,h,i)perylene		1.60E-01	--	0		3.05E-05	0.00E+00	3.05E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(k)fluoranthene		2.40E-01	--	0		4.57E-05	0.00E+00	4.57E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzoic acid		6.80E-01	--	0		1.30E-04	0.00E+00	1.30E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Bis(2-ethylhexyl)phthalate	0.027	1.10E+00	--	0	5.22E-04	2.10E-04	0.00E+00	7.31E-04	1.1	4.7E-04	1.9E-04	0.0E+00	6.6E-04	11	4.7E-05	1.9E-05	0.0E+00	6.6E-05
Butylbenzylphthalate		2.50E-02	--	0		4.76E-06	0.00E+00	4.76E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Carbazole		5.50E-01	--	0		1.05E-04	0.00E+00	1.05E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Chloroaniline		3.00E-03	--	0		5.71E-07	0.00E+00	5.71E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2-Chloropropane		4.33E-02	--	0		8.25E-06	0.00E+00	8.25E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chrysene	0.0002	2.70E-01	--	0	3.87E-06	5.14E-05	0.00E+00	5.53E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Dibenzofuran		3.60E-01	--	0		6.86E-05	0.00E+00	6.86E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
3,3-Dichlorobenzidine		1.20E-02	--	0		2.29E-06	0.00E+00	2.29E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2,6-Dinitrotoluene		3.70E-01	--	0		7.05E-05	0.00E+00	7.05E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Fluoranthene		3.80E-01	--	0		7.24E-05	0.00E+00	7.24E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Fluorene		1.30E-01	--	0		2.48E-05	0.00E+00	2.48E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Indeno(1,2,3-cd)pyrene		1.60E-01	--	0		3.05E-05	0.00E+00	3.05E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2-Methylnaphthalene		1.80E-01	--	0		3.43E-05	0.00E+00	3.43E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Methylphenol	0.12	2.30E-01	--	0	2.32E-03	4.38E-05	0.00E+00	2.36E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Naphthalene		1.10E-01	--	0		2.10E-05	0.00E+00	2.10E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pentachlorophenol		5.40E-01	--	0		1.03E-04	0.00E+00	1.03E-04	6.7		1.5E-05	0.0E+00	1.5E-05	22.5		4.6E-06	0.0E+00	4.6E-06
Phenanthrene		2.00E-01	--	0		3.81E-05	0.00E+00	3.81E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Phenol		2.90E-01	--	0		5.52E-05	0.00E+00	5.52E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pyrene		4.30E-01	--	0		8.19E-05	0.00E+00	8.19E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
PCBs (mg/kg)																		
PCBs (Total Congeners)	0.000016	2.00E-01	1.81E+01	4	3.09E-07	3.81E-05	9.84E-02	9.84E-02	0.09	3.4E-06	4.2E-04	1.1E+00	1.1E+00	1.27	2.4E-07	3.0E-05	7.7E-02	7.8E-02

>1 = The calculated hazard quotient exceeds 1 (i.e., > 1.5)

Table C2-4k
Post-Remediation Northern Harrier Risk Calculations (Wetland Sediment Residual Concentration)
Deep Soil (0 - 10 ft bgs) at Hazard Quotient of 5
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Concentrations				Intake (mg/kg BW-day)					Hazard Quotient (HQ) - Low					Hazard Quotient (HQ) - High			
COPEC[a]	Surface Water (mg/L)[b]	Sediment[c]	Small Mammal BAF[d]	Small Mammal Tissue[d]	Surface Water	Sediment	Small Mammal	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Small Mammal	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Sediment	Small Mammal	Total Intake

Exposure Assumptions and Equation:[e]

		Value	
Ingestion Rate (IR) prey(dry wt.)	=	0.048	
IRsmall mammal (dry wt.)	=	0.048	kg/day (dry weight)
IRsoil (dry wt.)[f]	=	0.000336	kg-day (dry weight)
IRsurface water[g]	=	0.034	L/day
Cprey	=	chem-specific	mg/kg or µg/kg
Csoil	=	chem-specific	mg/kg or µg/kg
Csurface water	=	chem-specific	mg/L or µg/L
Tissue Moisture (TMsmall mammal)	=	68%	percent
Dietary Composition Factor (DCF)[h]	=	100%	percent
Site Use Factor (SUF)[i]	=	25%	percent
Body Weight (BW)	=	0.441	kg

Intake Equation = [IRmammal(dry wt) x (Cprey(mammal, dry wt)/1-TM) x DCF x SUF]/BW] + [(IRsoil x Csoil x DCF x SUF)]/BW] + [(IRsurface water x Csurface water x DCF x SUF)]/BW]

Risk (hazard quotient) = Intake / TRV

Prey tissue(dry wt) = Prey tissue (wet wt.) / (1-Tissue Moisture)

NTV = No toxicity data available.

NA = Not applicable.

Blank cell indicates COPEC was not detected in this medium.

Notes:

a All chemicals detected in sediments are considered as constituents of potential ecological concern.

b All concentrations of constituents in surface water are based on the maximum concentration.

c All concentrations of constituents in sediment are based on the residual concentrations expressed in dry weight.

d Site-specific BAFs (dry weight basis). Calculated small mammal tissue concentrations (sediment concentration x BAF). Tissue concentrations are on a dry weight basis.

e Exposure parameters used to calculate risk are discussed in detail in Section 4.2 of ERA.

f Ingestion rate of sedimentl based on 0.7 percent of of the prey ingestion rate (dry weight); based on rate for bald eagle in Pascoe et al. (1996).

g Based on equation for birds: Water intake (L/day) = $0.059Wt(kg)^{0.67}$ (EPA 1993)

h Dietary composition factor was based on a conservative assumption of 100% dietary intake of small mammals from the site.

i Site use factor was based on 25% use of the site for the harrier's foraging range.

Table C2-4l
Post-Remediation Mallard (Non-Breeding) Risk Calculations (Wetland Sediment Residual Concentration)
Deep Soil (0 - 10 ft bgs) at Hazard Quotient of 5
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Concentrations				Intake (mg/kg BW-day)					Hazard Quotient (HQ) - Low					Hazard Quotient (HQ) - High			
COPEC[a]	Surface Water (mg/L)[b]	Sediments[c]	Plant BAF[d]	Plant Tissue[d]	Surface Water	Sediment	Plant	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Plant	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Sediment	Plant	Total Intake
Metals (mg/kg)																		
Aluminum	12.6	2.67E+04	7.56E-03	2.02E+02	7.60E-02	8.65E+00	1.98E+00	1.07E+01	109.7	6.9E-04	7.9E-02	1.8E-02	9.8E-02	1,097	6.9E-05	7.9E-03	1.8E-03	9.8E-03
Antimony	0.003	4.50E+00	2.27E-01	1.02E+00	1.81E-05	1.45E-03	1.00E-02	1.15E-02	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Arsenic	0.0436	2.10E+01	1.15E-01	2.42E+00	2.63E-04	6.79E-03	2.37E-02	3.08E-02	5.5	4.8E-05	1.2E-03	4.3E-03	5.6E-03	22	1.2E-05	3.1E-04	1.1E-03	1.4E-03
Barium	0.24	9.40E+01	7.87E-02	7.40E+00	1.42E-03	3.04E-02	7.25E-02	1.04E-01	20.8	6.8E-05	1.5E-03	3.5E-03	5.0E-03	41.7	3.4E-05	7.3E-04	1.7E-03	2.5E-03
Beryllium		6.50E-01	--	0		2.10E-04	0	2.10E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Cadmium	0.0016	2.90E+00	1.40E+00	4.05E+00	9.65E-06	9.37E-04	3.97E-02	4.06E-02	0.08	1.2E-04	1.2E-02	5.0E-01	5.1E-01	10.40	9.3E-07	9.0E-05	3.8E-03	3.9E-03
Chromium +3	0.0263	2.16E+02	--	0	1.59E-04	6.98E-02	0	7.00E-02	2.66	6.0E-05	2.6E-02	0.0E+00	2.6E-02	2.78	5.7E-05	2.5E-02	0.0E+00	2.5E-02
Chromium +6	0.0263	7.00E-02	--	0	1.59E-04	2.26E-05	0	1.81E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Cobalt	0.0164	1.80E+01	--	0	9.89E-05	5.82E-03	0	5.92E-03	7.61	1.3E-05	7.6E-04	0.0E+00	7.8E-04	17	5.8E-06	3.4E-04	0.0E+00	3.5E-04
Copper	0.233	1.99E+02	5.68E-02	1.13E+01	1.40E-03	6.43E-02	1.11E-01	1.77E-01	2.3	6.1E-04	2.8E-02	4.8E-02	7.7E-02	52.3	2.7E-05	1.2E-03	2.1E-03	3.4E-03
Lead	0.0031	9.70E+01	7.51E-03	7.28E-01	1.87E-05	3.14E-02	7.13E-03	3.85E-02	0.014	1.3E-03	2.2E+00	5.1E-01	2.8E+00 >1	8.75	2.1E-06	3.6E-03	8.2E-04	4.4E-03
Manganese	7.42	9.07E+02	4.89E-01	4.44E+02	4.47E-02	2.93E-01	4.34E+00	4.68E+00	77.6	5.8E-04	3.8E-03	5.6E-02	6.0E-02	776	5.8E-05	3.8E-04	5.6E-03	6.0E-03
Mercury	0.00029	1.40E+00	--	0	1.75E-06	4.53E-04	0	4.54E-04	0.039	4.5E-05	1.2E-02	0.0E+00	1.2E-02	0.18	9.7E-06	2.5E-03	0.0E+00	2.5E-03
Molybdenum	0.0312	5.10E+00	--	0	1.88E-04	1.65E-03	0	1.84E-03	3.5	5.4E-05	4.7E-04	0.0E+00	5.2E-04	35.3	5.3E-06	4.7E-05	0.0E+00	5.2E-05
Nickel	0.166	1.14E+02	1.39E-02	1.58E+00	1.00E-03	3.69E-02	1.55E-02	5.34E-02	1.38	7.3E-04	2.7E-02	1.1E-02	3.9E-02	56.3	1.8E-05	6.5E-04	2.8E-04	9.5E-04
Selenium	0.029	1.20E+00	--	0	1.75E-04	3.88E-04	0	5.63E-04	0.23	7.6E-04	1.7E-03	0.0E+00	2.4E-03	0.93	1.9E-04	4.2E-04	0.0E+00	6.1E-04
Silver	0.0019	2.80E+00	--	0	1.15E-05	9.05E-04	0	9.17E-04	178.00	6.4E-08	5.1E-06	0.0E+00	5.1E-06	NTV	NTV	NTV	NTV	NTV
Thallium		4.70E-01	--	0		1.52E-04	0	1.52E-04	0.35		4.3E-04	0.0E+00	4.3E-04	NTV	NTV	NTV	NTV	NTV
Tin		1.63E+01	1.55E+00	2.53E+01		5.27E-03	2.48E-01	2.53E-01	6.80		7.7E-04	3.6E-02	3.7E-02	16.9		3.1E-04	1.5E-02	1.5E-02
Vanadium	0.05	1.17E+02	2.20E-02	2.58E+00	3.01E-04	3.78E-02	2.53E-02	6.34E-02	11.4	2.6E-05	3.3E-03	2.2E-03	5.6E-03	114	2.6E-06	3.3E-04	2.2E-04	5.6E-04
Zinc	0.042	2.37E+02	8.47E-02	2.01E+01	2.53E-04	7.66E-02	1.97E-01	2.73E-01	17.2	1.5E-05	4.5E-03	1.1E-02	1.6E-02	172	1.5E-06	4.5E-04	1.1E-03	1.6E-03
Volatile Organics (mg/kg)																		
Acetone		3.20E-01	--	0		1.03E-04	0	1.03E-04	52		2.0E-06	0.0E+00	2.0E-06	520		2.0E-07	0.0E+00	2.0E-07
Benzene		5.00E-03	--	0		1.62E-06	0	1.62E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Carbon disulfide		2.50E-02	--	0		8.08E-06	0	8.08E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chlorobenzene		2.40E-02	--	0		7.76E-06	0	7.76E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
cis-1,2-Dichlorobenzene		5.00E-03	--	0		1.62E-06	0	1.62E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Ethylbenzene		4.40E-02	--	0		1.42E-05	0	1.42E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Isopropyltoluene		7.20E-03	--	0		2.33E-06	0	2.33E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Methylene chloride		3.00E-01	--	0		9.70E-05	0	9.70E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Naphthalene		1.60E-02	--	0		5.17E-06	0	5.17E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Toluene		3.00E-02	--	0		9.70E-06	0	9.70E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
trans-1,2-Dichloroethene		2.30E-02	--	0		7.44E-06	0	7.44E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Trichloroethene		7.00E-03	--	0		2.26E-06	0	2.26E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
1,2,4-Trimethylbenzene		2.50E-02	--	0		8.08E-06	0	8.08E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
1,3,5-Trimethylbenzene		9.30E-03	--	0		3.01E-06	0	3.01E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Vinyl chloride		3.40E-02	--	0		1.10E-05	0	1.10E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Xylenes		1.10E-01	--	0		3.56E-05	0	3.56E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pesticides (mg/kg)																		
alpha-Chlordane		8.20E-03	--	0		2.65E-06	0	2.65E-06	0.0014		1.9E-03	0.0E+00	1.9E-03	0.014		1.9E-04	0.0E+00	1.9E-04
beta-BHC		1.00E-03	--	0		3.23E-07	0	3.23E-07	0.56		5.8E-07	0.0E+00	5.8E-07	2.25		1.4E-07	0.0E+00	1.4E-07
delta-BHC		2.00E-03	--	0		6.47E-07	0	6.47E-07	0.56		1.2E-06	0.0E+00	1.2E-06	2.25		2.9E-07	0.0E+00	2.9E-07
2,4-DDD		2.90E-02	--	0		9.37E-06	0	9.37E-06	0.009		1.0E-03	0.0E+00	1.0E-03	1.5		6.2E-06	0.0E+00	6.2E-06
4,4-DDD		8.60E-02	--	0		2.78E-05	0	2.78E-05	0.009		3.1E-03	0.0E+00	3.1E-03	1.5		1.9E-05	0.0E+00	1.9E-05
DDE	0.0000027	1.70E-02	--	0	1.63E-08	5.50E-06	0	5.51E-06	NTV	NTV	NTV	NTV	NTV	0.6	2.7E-08	9.2E-06	0.0E+00	9.2E-06
DDTs	0.00014	1.20E-02	--	0	8.44E-07	3.88E-06	0	4.72E-06	0.009	9.4E-05	4.3E-04	0.0E+00	5.2E-04	1.5	5.6E-07	2.6E-06	0.0E+00	3.1E-06
Dieldrin		3.90E-03	--	0		1.26E-06	0	1.26E-06	0.0709		1.8E-05	0.0E+00	1.8E-05	0.98		1.3E-06	0.0E+00	1.3E-06
Endosulfan I		4.00E-03	--	0		1.29E-06	0	1.29E-06	10		1.3E-07	0.0E+00	1.3E-07	100		1.3E-08	0.0E+00	1.3E-08
Endosulfan sulfate	0.00012	3.00E-03	--	0	7.24E-07	9.70E-07	0	1.69E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Endrin	0.000014	2.00E-02	--	0	8.44E-08	6.47E-06	0	6.55E-06	0.3	2.8E-07	2.2E-05	0.0E+00	2.2E-05	3	2.8E-08	2.2E-06	0.0E+00	2.2E-06
Endrin aldehyde		6.00E-03	--	0		1.94E-06	0	1.94E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Endrin Ketone		3.00E-03	--	0		9.70E-07	0	9.70E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
gamma Chlordane		8.50E-03	--	0		2.75E-06	0	2.75E-06	0.0014		2.0E-03	0.0E+00	2.0E-03	0.014		2.0E-04	0.0E+00	2.0E-04
Heptachlor	0.0000028	2.00E-04	--	0	1.69E-08	6.47E-08	0	8.15E-08	0.065	2.6E-07	9.9E-07	0.0E+00	1.3E-06	0.65	2.6E-08	9.9E-08	0.0E+00	1.3E-07
Heptachlor epoxide		3.00E-04	--	0		9.70E-08	0	9.70E-08	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Hexachlorobenzene		8.00E-04	--	0		2.59E-07	0	2.59E-07	0.23		1.1E-06	0.0E+00	1.1E-06	2.3		1.1E-07	0.0E+00	1.1E-07
Methoxychlor		2.00E-02	--	0		6.47E-06	0	6.47E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV

Table C2-4l
Post-Remediation Mallard (Non-Breeding) Risk Calculations (Wetland Sediment Residual Concentration)
Deep Soil (0 - 10 ft bgs) at Hazard Quotient of 5
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Concentrations				Intake (mg/kg BW-day)					Hazard Quotient (HQ) - Low					Hazard Quotient (HQ) - High			
COPEC[a]	Surface Water (mg/L)[b]	Sediments[c]	Plant BAF[d]	Plant Tissue[d]	Surface Water	Sediment	Plant	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Plant	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Sediment	Plant	Total Intake
Mirex		4.00E-03	--	0		1.29E-06	0	1.29E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
trans-Nonachlor		2.40E-03	--	0		7.76E-07	0	7.76E-07	0.0014		5.5E-04	0.0E+00	5.5E-04	0.014		5.5E-05	0.0E+00	5.5E-05
SVOCs (mg/kg)																		
Acenaphthene		1.30E-01	--	0		4.20E-05	0	4.20E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Acenaphthylene		1.20E-01	--	0		3.88E-05	0	3.88E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Anthracene		1.30E-01	1.89E+00	2.45E-01		4.20E-05	2.40E-03	2.45E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(a)anthracene		2.80E-01	--	0		9.05E-05	0	9.05E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(a)pyrene		2.40E-01	--	0		7.76E-05	0	7.76E-05	0.001		7.8E-02	0.0E+00	7.8E-02	0.01		7.8E-03	0.0E+00	7.8E-03
Benzo(b)fluoranthene		2.40E-01	--	0		7.76E-05	0	7.76E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(ghi)perylene		1.60E-01	--	0		5.17E-05	0	5.17E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(k)fluoranthene		2.40E-01	--	0		7.76E-05	0	7.76E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzoic acid		6.80E-01	--	0		2.20E-04	0	2.20E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Bis(2-ethylhexyl)phthalate	0.027	1.10E+00	--	0	1.63E-04	3.56E-04	0	5.18E-04	1.1	1.5E-04	3.2E-04	0.0E+00	4.7E-04	11	1.5E-05	3.2E-05	0.0E+00	4.7E-05
Butylbenzylphthalate		2.50E-02	--	0		8.08E-06	0	8.08E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Carbazole		5.50E-01	--	0		1.78E-04	0	1.78E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Chloroaniline		3.00E-03	--	0		9.70E-07	0	9.70E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2-Chloropropane		4.33E-02	--	0		1.40E-05	0	1.40E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chrysene	0.0002	2.70E-01	--	0	1.21E-06	8.73E-05	0	8.85E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Dibenzofuran		3.60E-01	--	0		1.16E-04	0	1.16E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
3,3-Dichlorobenzidine		1.20E-02	--	0		3.88E-06	0	3.88E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2,6-Dinitrotoluene		3.70E-01	--	0		1.20E-04	0	1.20E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Fluoranthene		3.80E-01	1.17E+00	4.46E-01		1.23E-04	4.37E-03	4.49E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Fluorene		1.30E-01	--	0		4.20E-05	0	4.20E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Indeno(123,cd)pyrene		1.60E-01	--	0		5.17E-05	0	5.17E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2-Methylnaphthalene		1.80E-01	--	0		5.82E-05	0	5.82E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Methylphenol	0.12	2.30E-01	--	0	7.24E-04	7.44E-05	0	7.98E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Naphthalene		1.10E-01	--	0		3.56E-05	0	3.56E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pentachlorophenol		5.40E-01	--	0		1.75E-04	0	1.75E-04	6.7		2.6E-05	0.0E+00	2.6E-05	22.5		7.8E-06	0.0E+00	7.8E-06
Phenanthrene		2.00E-01	1.64E+00	3.27E-01		6.47E-05	3.21E-03	3.27E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Phenol		2.90E-01	--	0		9.37E-05	0	9.37E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pyrene		4.30E-01	--	0		1.39E-04	0	1.39E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
PCBs (mg/kg)																		
PCBs (TOTAL)-congeners	0.000016	2.00E-01	1.09E-01	2.19E-02	9.65E-08	6.47E-05	2.14E-04	2.79E-04	0.09	1.1E-06	7.2E-04	2.4E-03	3.1E-03	1.27	7.6E-08	5.1E-05	1.7E-04	2.2E-04

>1 = The calculated hazard quotient exceeds 1 (i.e., > 1.5)

Exposure Assumptions and Equation:[e]

		Value	Units
Ingestion Rate (IR) prey(dry wt.)	=	0.0917	kg/day (dry weight)
IRplant(dry wt.)	=	0.0917	kg/day (dry weight)
IRsediment (dry wt.)[f]	=	0.00303	kg/day (dry weight)
Cprey	=	chem-specific	kg-day (dry weight)
Csediment	=	chem-specific	kg-day (dry weight)
Tissue Moisture (TMplant)	=	8.5%	percent
IRsurface water[g]	=	0.056	L/day
Csurface water	=	chem-specific	mg/L or µg/L
Dietary Composition Factor (DCF)[h]	=	100%	percent
Site Use Factor (SUF)[i]	=	10%	percent
Body Weight (BW)	=	0.9361	kg

Intake Equation = [IRplant (dry wt) x [Cprey (plant, wet wt) /1-TM] x DCF x SUF]/BW + [IRsediment x Csediment x DCF x SUF)]/BW +[(IRsurface water x Csurface water x DCF x SUF)]/BW

Risk (hazard quotient) = Intake / TRV

NTV = Not toxicity data available.

Prey tissue(dry wt) = Prey tissue (wet wt.) / (1-Tissue Moisture)

NA = Not available.

Blank cell indicates COPEC was not detected in this medium.

Notes:

a All chemicals detected in sediments are considered as constituents of potential ecological concern.

b All concentrations of constituents in surface water are based on the maximum concentration.

c All concentrations of constituents in sediment are based on the residual concentrations expressed in dry weight.

d Site-specific BAFs (dry weight basis). Calculated plant tissue concentrations (sediment concentration x BAF). Tissue concentrations are on a dry weight basis.

e Exposure parameters used to calculate risk are discussed in detail in Section 4.2 of ERA.

f Ingestion rate of sediment based on 3.3 percent of of the prey ingestion rate (dry weight); based on mallard data from Beyer et al. (1994).

Table C2-4l
Post-Remediation Mallard (Non-Breeding) Risk Calculations (Wetland Sediment Residual Concentration)
Deep Soil (0 - 10 ft bgs) at Hazard Quotient of 5
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Concentrations				Intake (mg/kg BW-day)					Hazard Quotient (HQ) - Low					Hazard Quotient (HQ) - High			
COPEC[a]	Surface Water (mg/L)[b]	Sediments[c]	Plant BAF[d]	Plant Tissue[d]	Surface Water	Sediment	Plant	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Plant	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Sediment	Plant	Total Intake

g Based on equation for birds: Water intake (L/day) = $0.059Wt(kg)^{.67}$ (EPA 1993)

h Dietary composition factor was based on a conservative assumption of 100% dietary intake of plants from the site.

i Site use factor was based on 10% use of the site for the mallard's foraging range.

Table C2-4m
Post-Remediation Mallard (Breeding) Risk Calculations (Wetland Sediment Residual Concentration)
Deep Soil (0 - 10 ft bgs) at Hazard Quotient of 5
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Point Concentration						Intake (mg/kg BW-day)					Low TRV	Hazard Quotient (HQ) - Low					High TRV	Hazard Quotient (HQ) - High				
COPEC[a]	Surface Water (mg/L)[b]	Sediments[c]	Plant BAF[d]	Plant Tissue[d]	Invertebrate BAF[d]	Invertebrate Tissue[d]	Surface Water	Sediment	Plant	Invertebrate	Total Intake (mg/kg/day)	(mg/kg BW-day)	Surface Water	Sediment	Plant	Invertebrate	Total Intake	(mg/kg BW-day)	Surface Water	Sediment	Plant	Invertebrate	Total Intake
Metals (mg/kg)																							
Aluminum	12.6	2.67E+04	7.56E-03	2.02E+02	1.93E-01	5.16E+03	3.04E-01	3.46E+01	1.98E+00	1.52E+02	1.88E+02	109.7	2.8E-03	3.2E-01	1.8E-02	1.4E+00	1.7E+00 >1	1,097	2.8E-04	3.2E-02	1.8E-03	1.4E-01	1.7E-01
Antimony	0.003	4.50E+00	2.27E-01	1.02E+00	2.32E-01	1.04E+00	7.24E-05	5.82E-03	1.00E-02	3.06E-02	4.65E-02	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Arsenic	0.0436	2.10E+01	1.15E-01	2.42E+00	1.92E-01	4.03E+00	1.05E-03	2.72E-02	2.37E-02	1.18E-01	1.70E-01	5.5	1.9E-04	4.9E-03	4.3E-03	2.2E-02	3.1E-02	22	4.8E-05	1.2E-03	1.1E-03	5.4E-03	7.7E-03
Barium	0.24	9.40E+01	7.87E-02	7.40E+00	1.50E+00	1.41E+02	5.69E-03	1.22E-01	7.25E-02	4.14E+00	4.34E+00	20.8	2.7E-04	5.8E-03	3.5E-03	2.0E-01	2.1E-01	41.7	1.4E-04	2.9E-03	1.7E-03	9.9E-02	1.0E-01
Beryllium		6.50E-01	--	0	--	0		8.40E-04	0.00E+00	0.00E+00	8.40E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Cadmium	0.0016	2.90E+00	1.40E+00	4.05E+00	2.15E-01	6.24E-01	3.86E-05	3.75E-03	3.97E-02	1.83E-02	6.18E-02	0.08	4.8E-04	4.7E-02	5.0E-01	2.3E-01	7.7E-01	10.40	3.7E-06	3.6E-04	3.8E-03	1.8E-03	5.9E-03
Chromium +3	0.0263	2.16E+02	--	0	5.53E-01	1.20E+02	6.34E-04	2.79E-01	0.00E+00	3.51E+00	3.79E+00	2.66	2.4E-04	1.1E-01	0.0E+00	1.3E+00	1.4E+00	2.78	2.3E-04	1.0E-01	0.0E+00	1.3E+00	1.4E+00
Chromium +6	0.0263	7.00E-02	--	0	5.53E-01	3.87E-02	6.34E-04	9.05E-05	0.00E+00	1.14E-03	1.86E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Cobalt	0.0164	1.80E+01	--	0	--	0	3.96E-04	2.33E-02	0.00E+00	0.00E+00	2.37E-02	7.61	5.2E-05	3.1E-03	0.0E+00	0.0E+00	3.1E-03	17	2.3E-05	1.4E-03	0.0E+00	0.0E+00	1.4E-03
Copper	0.233	1.99E+02	5.68E-02	1.13E+01	6.67E-01	1.33E+02	5.62E-03	2.57E-01	1.11E-01	3.90E+00	4.27E+00	2.3	2.4E-03	1.1E-01	4.8E-02	1.7E+00	1.9E+00 >1	52.3	1.1E-04	4.9E-03	2.1E-03	7.5E-02	8.2E-02
Lead	0.0031	9.70E+01	7.51E-03	7.28E-01	5.07E-02	4.92E+00	7.48E-05	1.25E-01	7.13E-03	1.45E-01	2.77E-01	0.014	5.3E-03	9.0E+00	5.1E-01	1.0E+01	2.0E+01 >1	8.75	8.5E-06	1.4E-02	8.2E-04	1.7E-02	3.2E-02
Manganese	7.42	9.07E+02	4.89E-01	4.44E+02	5.29E+00	4.80E+03	1.79E-01	1.17E+00	4.34E+00	1.41E+02	1.47E+02	77.6	2.3E-03	1.5E-02	5.6E-02	1.8E+00	1.9E+00 >1	776	2.3E-04	1.5E-03	5.6E-03	1.8E-01	1.9E-01
Mercury	0.00029	1.40E+00	--	0	6.96E-01	9.75E-01	6.99E-06	1.81E-03	0.00E+00	2.86E-02	3.05E-02	0.039	1.8E-04	4.6E-02	0.0E+00	7.3E-01	7.8E-01	0.18	3.9E-05	1.0E-02	0.0E+00	1.6E-01	1.7E-01
Molybdenum	0.0312	5.10E+00	--	0	--	0	7.53E-04	6.59E-03	0.00E+00	0.00E+00	7.35E-03	3.5	2.2E-04	1.9E-03	0.0E+00	0.0E+00	2.1E-03	35.3	2.1E-05	1.9E-04	0.0E+00	0.0E+00	2.1E-04
Nickel	0.166	1.14E+02	1.39E-02	1.58E+00	3.65E-01	4.16E+01	4.00E-03	1.47E-01	1.55E-02	1.22E+00	1.39E+00	1.38	2.9E-03	1.1E-01	1.1E-02	8.9E-01	1.0E+00	56.3	7.1E-05	2.6E-03	2.8E-04	2.2E-02	2.5E-02
Selenium	0.029	1.20E+00	--	0	--	0	6.99E-04	1.55E-03	0.00E+00	0.00E+00	2.25E-03	0.23	3.0E-03	6.7E-03	0.0E+00	0.0E+00	9.8E-03	0.93	7.5E-04	1.7E-03	0.0E+00	0.0E+00	2.4E-03
Silver	0.0019	2.80E+00	--	0	--	0	4.58E-05	3.62E-03	0.00E+00	0.00E+00	3.67E-03	178.00	2.6E-07	2.0E-05	0.0E+00	0.0E+00	2.1E-05	NTV	NTV	NTV	NTV	NTV	NTV
Thallium		4.70E-01	--	0	--	0		6.08E-04	0.00E+00	0.00E+00	6.08E-04	0.35		1.7E-03	0.0E+00	0.0E+00	1.7E-03	NTV	NTV	NTV	NTV	NTV	NTV
Tin		1.63E+01	1.55E+00	2.53E+01	--	0		2.11E-02	2.48E-01	0.00E+00	2.69E-01	6.80		3.1E-03	3.6E-02	0.0E+00	4.0E-02	16.9		1.2E-03	1.5E-02	0.0E+00	1.6E-02
Vanadium	0.05	1.17E+02	2.20E-02	2.58E+00	2.96E-02	3.46E+00	1.21E-03	1.51E-01	2.53E-02	1.02E-01	2.79E-01	11.4	1.1E-04	1.3E-02	2.2E-03	8.9E-03	2.5E-02	114	1.1E-05	1.3E-03	2.2E-04	8.9E-04	2.5E-03
Zinc	0.042	2.37E+02	8.47E-02	2.01E+01	1.51E+00	3.58E+02	1.01E-03	3.06E-01	1.97E-01	1.05E+01	1.10E+01	17.2	5.9E-05	1.8E-02	1.1E-02	6.1E-01	6.4E-01	172	5.9E-06	1.8E-03	1.1E-03	6.1E-02	6.4E-02
Volatile Organics (mg/kg)																							
Acetone		3.20E-01	--	0	--	0		4.14E-04	0.00E+00	0.00E+00	4.14E-04	52		8.0E-06	0.0E+00	0.0E+00	8.0E-06	520		8.0E-07	0.0E+00	0.0E+00	8.0E-07
Benzene		5.00E-03	--	0	--	0		6.47E-06	0.00E+00	0.00E+00	6.47E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Carbon disulfide		2.50E-02	--	0	--	0		3.23E-05	0.00E+00	0.00E+00	3.23E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chlorobenzene		2.40E-02	--	0	--	0		3.10E-05	0.00E+00	0.00E+00	3.10E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
cis-1,2-Dichlorobenzene		5.00E-03	--	0	--	0		6.47E-06	0.00E+00	0.00E+00	6.47E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Ethylbenzene		4.40E-02	--	0	--	0		5.69E-05	0.00E+00	0.00E+00	5.69E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Isopropyltoluene		7.20E-03	--	0	--	0		9.31E-06	0.00E+00	0.00E+00	9.31E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Methylene chloride		3.00E-01	--	0	--	0		3.88E-04	0.00E+00	0.00E+00	3.88E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Naphthalene		1.60E-02	--	0	--	0		2.07E-05	0.00E+00	0.00E+00	2.07E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Toluene		3.00E-02	--	0	--	0		3.88E-05	0.00E+00	0.00E+00	3.88E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
trans-1,2-Dichloroethene		2.30E-02	--	0	--	0		2.97E-05	0.00E+00	0.00E+00	2.97E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Trichloroethene		7.00E-03	--	0	--	0		9.05E-06	0.00E+00	0.00E+00	9.05E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
1,2,4-Trimethylbenzene		2.50E-02	--	0	--	0		3.23E-05	0.00E+00	0.00E+00	3.23E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
1,3,5-Trimethylbenzene		9.30E-03	--	0	--	0		1.20E-05	0.00E+00	0.00E+00	1.20E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Vinyl chloride		3.40E-02	--	0	--	0		4.40E-05	0.00E+00	0.00E+00	4.40E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Xylenes		1.10E-01	--	0	--	0		1.42E-04	0.00E+00	0.00E+00	1.42E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pesticides (mg/kg)																							
alpha-Chlordane		8.20E-03	--	0	--	0		1.06E-05	0.00E+00	0.00E+00	1.06E-05	0.0014		7.6E-03	0.0E+00	0.0E+00	7.6E-03	0.014		7.6E-04	0.0E+00	0.0E+00	7.6E-04
beta-BHC		1.00E-03	--	0	--	0		1.29E-06	0.00E+00	0.00E+00	1.29E-06	0.56		2.3E-06	0.0E+00	0.0E+00	2.3E-06	2.25		5.7E-07	0.0E+00	0.0E+00	5.7E-07
delta-BHC		2.00E-03	--	0	--	0		2.59E-06	0.00E+00	0.00E+00	2.59E-06	0.56		4.6E-06	0.0E+00	0.0E+00	4.6E-06	2.25		1.1E-06	0.0E+00	0.0E+00	1.1E-06
2,4-DDD		2.90E-02	--	0	--	0		3.75E-05	0.00E+00	0.00E+00	3.75E-05	0.009		4.2E-03	0.0E+00	0.0E+00	4.2E-03	1.5		2.5E-05	0.0E+00	0.0E+00	2.5E-05
4,4-DDD		8.60E-02	--	0	--	0		1.11E-04	0.00E+00	0.00E+00	1.11E-04	0.009		1.2E-02	0.0E+00	0.0E+00	1.2E-02	1.5		7.4E-05	0.0E+00	0.0E+00	7.4E-05
DDE	0.0000027	1.70E-02	--	0	--	0	6.51E-08	2.20E-05	0.00E+00	0.00E+00	2.20E-05	NTV	NTV	NTV	NTV	NTV	NTV	0.6	1.1E-07	3.7E-05	0.0E+00	0.0E+00	3.7E-05
DDTs	0.00014	1.20E-02	--	0	--	0	3.38E-06	1.55E-05	0.00E+00	0.00E+00	1.89E-05	0.009	3.8E-04	1.7E-03	0.0E+00	0.0E+00	2.1E-03	1.5	2.3E-06	1.0E-05	0.0E+00	0.0E+00	1.3E-05
Dieldrin		3.90E-03	--	0	--	0		5.04E-06	0.00E+00	0.00E+00	5.04E-06	0.0709		7.1E-05	0.0E+00	0.0E+00	7.1E-05	0.98		5.1E-06	0.0E+00	0.0E+00	5.1E-06
Endosulfan I		4.00E-03	--	0	--	0		5.17E-06	0.00E+00	0.00E+00	5.17E-06	10		5.2E-07	0.0E+00	0.0E+00	5.2E-07	100		5.2E-08	0.0E+00	0.0E+00	5.2E-08
Endosulfan sulfate	0.00012	3.00E-03	--	0	--	0	2.89E-06	3.88E-06	0.00E+00	0.00E+00	6.77E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Endrin	0.000014	2.00E-02	--	0	--	0	3.38E-07	2.59E-05	0.00E+00	0.00E+00	2.62E-05	0.3	1.1E-06	8.6E-05	0.0E+00	0.0E+00	8.7E-05	3	1.1E-07	8.6E-06	0.0E+00	0.0E+00	8.7E-06
Endrin aldehyde		6.00E-03	--	0	--	0		7.76E-06	0.00E+00	0.00E+00	7.76E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Endrin Ketone		3.00E-03	--	0	--	0		3.88E-06	0.00E+00	0.00E+00	3.88E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
gamma-Chlordane		8.50E-03	--	0	--	0		1.10E-05	0.00E+00	0.00E+00	1.10E-05	0.0014		7.9E-03	0.0E+00	0.0E+00	7.9E-03	0.014		7.9E-04	0.0E+00	0.0E+00	7.9E-04
Heptachlor	0.0000028	2.00E-04	--	0	--	0	6.75E-08	2.59E-07	0.00E+00	0.00E+00	3.26E-07	0.065	1.0E-06	4.0E-06	0.0E+00	0.0E+00	5.0E-06	0.65	1.0E-07	4.0E-07	0.0E+00	0.0E+00	5.0E-07
Heptachlor epoxide		3.00E-04	--	0	--	0		3.88E-07	0.00E+00	0.00E+00	3.88E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Hexachlorobenzene		8.00E-04	--	0	--	0		1.03E-06	0.00E+00	0.00E+00	1.03E-06	0.23		4.5E-06	0.0E+00	0.0E+00	4.5E-06	2.3		4.5E-07	0.0E+00	0.0E+00	4.5E-07
Methoxychlor		2.00E-02	--	0	--	0		2.59E-05	0.00E+00	0.00E+00	2.59E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Mirex		4.00E-03	--	0	--	0		5.17E-06	0.00E+00	0.00E+00	5.17E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
trans-Nonachlor		2.40E-03	--	0	--	0		3.10E-06	0.00E+00	0.00E+00	3.10E-06	0.0014		2.2E-03	0.0E+00	0.0E+00	2.2E-03	0.014		2.2E-04	0.0E+00	0.0E+00	2.2E-04
SVOCs (mg/kg)																							
Acenaphthene		1.30E-01	--	0	--	0		1.68E-04	0.00E+00	0.00E+00	1.68E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Acenaphthylene		1.20E-01	--	0	--	0		1.55E-04	0.00E+00	0.00E+00	1.55E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Anthracene		1.30E-01	1.89E+00	2.45E-01	--	0		1.68E-04	2.40E-03	0.00E+00	2.57E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(a)anthracene		2.80E-01	--	0	--	0		3.62E-04	0.00E+00	0.00E+00	3.62E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(a)pyrene		2.40E-01	--	0	--	0		3.10E-04	0.00E+00	0.00E+00	3.10E-04	0.001		3.1E-01	0.0E+00	0.0E+00	3.1E-01	0.01		3.1E-02	0.0E+00	0.0E+00	3.1E-02
Benzo(b)fluoranthene		2.40E-01	--	0	--	0		3.10E-04	0.00E+00	0.00E+00	3.10E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(ghi)perylene		1.60E-01	--	0	--	0		2.07E-04	0.00E+00	0.00E+00	2.07E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(k)fluoranthene		2.40E-01	--	0	--	0		3.10E-04	0.00E+00	0.00E+00	3.10E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzoic acid		6.80E-01	--	0	--	0		8.79E-04	0.00E+00	0.00E+00	8.79E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Bis(2-ethylhexyl)phthalate	0.027	1.10E+00	--	0	--	0	6.51E-04	1.42E-03	0.00E+00	0.00E+00	2.07E-03	1.1	5.9E-04	1.3E-03	0.0E+00	0.0E+00	1.9E-03	11	5.9E-05	1.3E-04	0.0E+00	0.0E+00	1.9E-04
Butylbenzylphthalate		2.50E-02	--	0	--	0		3.23E-05	0.00E+00	0.00E+00	3.23E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Carbazole		5.50E-01	--	0	--	0		7.11E-04	0.00E+00	0.00E+00	7.11E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Chloroaniline		3.00E-03	--	0	--	0		3.88E-06	0.00E+00	0.00E+00	3.88E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2-Chloropropane		4.33E-02	--	0	--	0		5.60E-05	0.00E+00	0.00E+00	5.60E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chrysene	0.0002	2.70E-01	--	0	--	0	4.82E-06	3.49E-04	0.00E+00	0.00E+00	3.54E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Dibenzofuran		3.60E-01	--	0	--	0		4.66E-04	0.00E+00	0.00E+00	4.66E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
3,3-Dichlorobenzidine		1.20E-02	--	0	--	0		1.55E-05	0.00E+00	0.00E+00	1.55E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2,6-Dinitrotoluene		3.70E-01	--	0	--	0		4.78E-04	0.00E+00	0.00E+00	4.78E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Fluoranthene		3.80E-01	1.17E+00	4.46E-01	--	0		4.91E-04	4.37E-03	0.00E+00	4.86E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV

Table C2-4m
Post-Remediation Mallard (Breeding) Risk Calculations (Wetland Sediment Residual Concentration)
Deep Soil (0 - 10 ft bgs) at Hazard Quotient of 5
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Point Concentration						Intake (mg/kg BW-day)						Hazard Quotient (HQ) - Low						Hazard Quotient (HQ) - High					
COPEC[a]	Surface Water (mg/L)[b]	Sediments[c]	Plant BAF[d]	Plant Tissue[d]	Invertebrate BAF[d]	Invertebrate Tissue[d]	Surface Water	Sediment	Plant	Invertebrate	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Plant	Invertebrate	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Sediment	Plant	Invertebrate	Total Intake
Fluorene		1.30E-01	--	0	--	0		1.68E-04	0.00E+00	0.00E+00	1.68E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Indeno(123,cd)pyrene		1.60E-01	--	0	--	0		2.07E-04	0.00E+00	0.00E+00	2.07E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2-Methylnaphthalene		1.80E-01	--	0	--	0		2.33E-04	0.00E+00	0.00E+00	2.33E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Methylphenol	0.12	2.30E-01	--	0	--	0	2.89E-03	2.97E-04	0.00E+00	0.00E+00	3.19E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Naphthalene		1.10E-01	--	0	--	0		1.42E-04	0.00E+00	0.00E+00	1.42E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pentachlorophenol		5.40E-01	--	0	--	0		6.98E-04	0.00E+00	0.00E+00	6.98E-04	6.7		1.0E-04	0.0E+00	0.0E+00	1.0E-04	22.5		3.1E-05	0.0E+00	0.0E+00	3.1E-05
Phenanthrene		2.00E-01	1.64E+00	3.27E-01	2.51E+00	5.02E-01		2.59E-04	3.21E-03	1.48E-02	1.82E-02	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Phenol		2.90E-01	--	0	--	0		3.75E-04	0.00E+00	0.00E+00	3.75E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pyrene		4.30E-01	--	0	--	0		5.56E-04	0.00E+00	0.00E+00	5.56E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
PCBs (mg/kg)																							
PCBs (TOTAL)-congeners	0.000016	2.00E-01	1.09E-01	2.19E-02	1.16E+01	2.32E+00	3.86E-07	2.59E-04	2.14E-04	6.83E-02	6.87E-02	0.09	4.3E-06	2.9E-03	2.4E-03	7.6E-01	7.6E-01	1.27	3.0E-07	2.0E-04	1.7E-04	5.4E-02	5.4E-02

>1 = The calculated hazard quotient exceeds 1 (i.e., > 1.5)

Exposure Assumptions and Equation:[e]

		Value	Units
Ingestion Rate (IR) prey(dry wt.)	=	0.0917	kg/day (dry weight)
IRplant(dry wt.)[f]	=	0.0229	kg/day (dry weight)
IRinvertebrate(dry wt.)[f]	=	0.0688	kg/day (dry weight)
IRsediment (dry wt.)[g]	=	0.00303	kg-day (dry weight)
Cprey	=	chem-specific	mg/kg or µg/kg
Csediment	=	chem-specific	mg/kg or µg/kg
Tissue Moisture (TMplant)	=	8.5%	percent
IRsurface water[h]	=	0.056	L/day
Csurface water	=	chem-specific	mg/L or µg/L
Dietary Composition Factor (DCF)[i]	=	100%	percent
Site Use Factor (SUF)[j]	=	40%	percent
Body Weight	=	0.9361	kg

Intake Equation= [IRplant (dry wt) x [Cprey(plant, dry wt)/1-TM) x DCF x SUF]/BW] + [IRinvertebrate (dry wt) x Cprey(invertebrate, dry wt) x DCF x SUF)/BW] + [(IRsediment x Csediment x DCF x SUF))/BW +[(IRsurface water x Csurface water x DCF x SUF))/

Risk (hazard quotient) = Intake / TRV

Prey tissue(dry wt) = Prey tissue (wet wt.) / (1-Tissue Moisture)

NTV = Not toxicity data available.

Blank cell indicates COPEC was not detected in this medium.

Notes:

a All chemicals detected in sediments are considered as constituents of potential ecological concern.

b All concentrations of constituents in surface water are based on the maximum concentration.

c All concentrations of constituents in sediment are based on the residual concentrations expressed in dry weight.

d Site-specific BAFs (dry weight basis). Calculated plant and invertebrate tissue concentrations (sediment concentration x BAF). Tissue concentrations are on a dry weight basis.

e Exposure parameters used to calculate risk are discussed in detail in Section 4.2 of ERA.

f Based on dietary composition of 25% plant and 75% invertebrate.

g Ingestion rate of sediment based on 3.3 percent of of the prey ingestion rate (dry weight); based on mallards (Beyer et al. 1994).

h Based on equation for birds: Water intake (L/day) = $0.059Wt(kg)^{.67}$ (EPA 1993)

i Dietary composition factor was based on a conservative assumption of 100% dietary intake of plants and invertebrates from the site.

j Site use factor was based on 40% use of the site for the mallard's foraging range.

Table C2-4n
Post-Remediation Great Blue Heron Risk Calculations (Wetland Sediment Residual Concentration)
Shallow Soil (0 - 2 ft bgs) at Hazard Quotient of 5
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Point Concentration						Intake (mg/kg BW-day)						Hazard Quotient (HQ) - Low						Hazard Quotient (HQ) - High				
COPEC[a]	Surface Water (mg/L)[b]	Sediments[c]	Small Mammal BAF[d]	Small Mammal Tissue[d]	Amphibian BAF[d]	Amphibian Tissue[d]	Surface Water	Sediment	Small mammal	Amphibian	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Small mammal	Amphibian	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Sediment	Small mammal	Amphibian	Total Intake
Metals (mg/kg)																							
Aluminum	12.6	2.67E+04	1.11E-02	296	7.75E-03	207	5.65E-01	4.85E+01	8.12E+00	5.69E+00	6.28E+01	109.7	5.2E-03	4.4E-01	7.4E-02	5.2E-02	5.7E-01	1,097	5.2E-04	4.4E-02	7.4E-03	5.2E-03	5.7E-02
Antimony	0.003	4.50E+00	1.22E+00	5	--	0	1.35E-04	8.15E-03	1.50E-01	0	1.59E-01	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Arsenic	0.0436	2.10E+01	--	0	--	0	1.96E-03	3.80E-02	0	0	4.00E-02	5.5	3.6E-04	6.9E-03	0.0E+00	0.0E+00	7.3E-03	22	8.9E-05	1.7E-03	0.0E+00	0.0E+00	1.8E-03
Barium	0.24	9.40E+01	9.41E-02	9	--	0	1.06E-02	1.70E-01	2.43E-01	0	4.24E-01	20.8	5.1E-04	8.2E-03	1.2E-02	0.0E+00	2.0E-02	41.7	2.5E-04	4.1E-03	5.8E-03	0.0E+00	1.0E-02
Beryllium		6.50E-01	--	0	--	0		1.18E-03	0.00E+00	0	1.18E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Cadmium	0.0016	2.90E+00	--	0	--	0	7.18E-05	5.25E-03	0.00E+00	0	5.33E-03	0.08	9.0E-04	6.6E-02	0.0E+00	0.0E+00	6.7E-02	10.40	6.9E-06	5.1E-04	0.0E+00	0.0E+00	5.1E-04
Chromium +3	0.0263	2.16E+02	2.60E-02	6	2.45E-01	53	1.18E-03	3.91E-01	1.54E-01	1.45E+00	2.00E+00	2.66	4.4E-04	1.5E-01	5.8E-02	5.5E-01	7.5E-01	2.78	4.2E-04	1.4E-01	5.6E-02	5.2E-01	7.2E-01
Chromium +6	0.0263	7.00E-02	2.60E-02	0	2.45E-01	0	1.18E-03	1.27E-04	5.00E-05	4.71E-04	1.83E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Cobalt	0.0164	1.80E+01	--	0	--	0	7.36E-04	3.26E-02	0	0	3.33E-02	7.61	9.7E-05	4.3E-03	0.0E+00	0.0E+00	4.4E-03	17	4.3E-05	1.9E-03	0.0E+00	0.0E+00	2.0E-03
Copper	0.233	1.99E+02	3.45E-01	69	--	0	1.05E-02	3.61E-01	1.89E+00	0	2.26E+00	2.3	4.5E-03	1.6E-01	8.2E-01	0.0E+00	9.8E-01	52.3	2.0E-04	6.9E-03	3.6E-02	0.0E+00	4.3E-02
Lead	0.0031	9.70E+01	6.10E-01	59	--	0	1.39E-04	1.76E-01	1.63E+00	0	1.80E+00	0.014	9.9E-03	1.3E+01	1.2E+02	0.0E+00	1.3E+02 >1	8.75	1.6E-05	2.0E-02	1.9E-01	0.0E+00	2.1E-01
Manganese	7.42	9.07E+02	--	0	4.78E-02	43	3.33E-01	1.64E+00	0	1.19E+00	3.17E+00	77.6	4.3E-03	2.1E-02	0.0E+00	1.5E-02	4.1E-02	776	4.3E-04	2.1E-03	0.0E+00	1.5E-03	4.1E-03
Mercury	0.00029	1.40E+00	--	0	7.42E-01	1	1.30E-05	2.54E-03	0	2.85E-02	3.10E-02	0.039	3.3E-04	6.5E-02	0.0E+00	7.3E-01	8.0E-01	0.18	7.2E-05	1.4E-02	0.0E+00	1.6E-01	1.7E-01
Molybdenum	0.0312	5.10E+00	--	0	--	0	1.40E-03	9.24E-03	0	0	1.06E-02	3.5	4.0E-04	2.6E-03	0.0E+00	0.0E+00	3.0E-03	35.3	4.0E-05	2.6E-04	0.0E+00	0.0E+00	3.0E-04
Nickel	0.166	1.14E+02	--	0	--	0	7.45E-03	2.07E-01	0	0	2.14E-01	1.38	5.4E-03	1.5E-01	0.0E+00	0.0E+00	1.6E-01	56.3	1.3E-04	3.7E-03	0.0E+00	0.0E+00	3.8E-03
Selenium	0.029	1.20E+00	6.12E+00	7	5.77E+00	7	1.30E-03	2.17E-03	2.01E-01	1.90E-01	3.95E-01	0.23	5.7E-03	9.5E-03	8.8E-01	8.3E-01	1.7E+00 >1	0.93	1.4E-03	2.3E-03	2.2E-01	2.0E-01	4.2E-01
Silver	0.0019	2.80E+00	--	0	--	0	8.52E-05	5.07E-03	0	0	5.16E-03	178.00	4.8E-07	2.8E-05	0.0E+00	0.0E+00	2.9E-05	NTV	NTV	NTV	NTV	NTV	NTV
Thallium		4.70E-01	1.01E+00	0	--	0		8.52E-04	1.30E-02	0	1.39E-02	0.35		2.4E-03	3.7E-02	0.0E+00	4.0E-02	NTV	NTV	NTV	NTV	NTV	NTV
Tin		1.63E+01	--	0	--	0		2.95E-02	0	0	2.95E-02	6.80		4.3E-03	0.0E+00	0.0E+00	4.3E-03	16.9		1.7E-03	0.0E+00	0.0E+00	1.7E-03
Vanadium	0.05	1.17E+02	--	0	--	0	2.24E-03	2.12E-01	0	0	2.14E-01	11.4	2.0E-04	1.9E-02	0.0E+00	0.0E+00	1.9E-02	114	2.0E-05	1.9E-03	0.0E+00	0.0E+00	1.9E-03
Zinc	0.042	2.37E+02	1.11E+00	263	7.87E-01	187	1.88E-03	4.29E-01	7.21E+00	5.12E+00	1.28E+01	17.2	1.1E-04	2.5E-02	4.2E-01	3.0E-01	7.4E-01	172	1.1E-05	2.5E-03	4.2E-02	3.0E-02	7.4E-02
Volatile Organics (mg/kg)																							
Acetone		3.20E-01	--	0	--	0		5.80E-04	0	0	5.80E-04	52		1.1E-05	0.0E+00	0.0E+00	1.1E-05	520		1.1E-06	0.0E+00	0.0E+00	1.1E-06
Benzene		5.00E-03	--	0	--	0		9.06E-06	0	0	9.06E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Carbon disulfide		2.50E-02	--	0	--	0		4.53E-05	0	0	4.53E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chlorobenzene		2.40E-02	--	0	--	0		4.35E-05	0	0	4.35E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
cis-1,2-Dichlorobenzene		5.00E-03	--	0	--	0		9.06E-06	0	0	9.06E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Ethylbenzene		4.40E-02	--	0	--	0		7.97E-05	0	0	7.97E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Isopropyltoluene		7.20E-03	--	0	--	0		1.30E-05	0	0	1.30E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Methylene chloride		3.00E-01	--	0	--	0		5.44E-04	0	0	5.44E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Naphthalene		1.60E-02	--	0	--	0		2.90E-05	0	0	2.90E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Toluene		3.00E-02	--	0	--	0		5.44E-05	0	0	5.44E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
trans-1,2-Dichloroethene		2.30E-02	--	0	--	0		4.17E-05	0	0	4.17E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Trichloroethene		7.00E-03	--	0	--	0		1.27E-05	0	0	1.27E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
1,2,4-Trimethylbenzene		2.50E-02	--	0	--	0		4.53E-05	0	0	4.53E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
1,3,5-Trimethylbenzene		9.30E-03	--	0	--	0		1.68E-05	0	0	1.68E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Vinyl chloride		3.40E-02	--	0	--	0		6.16E-05	0	0	6.16E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Xylenes		1.10E-01	--	0	--	0		1.99E-04	0	0	1.99E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pesticides (mg/kg)																							
alpha-Chlordane		8.20E-03	--	0	--	0		1.49E-05	0	0	1.49E-05	0.0014		1.1E-02	0.0E+00	0.0E+00	1.1E-02	0.014		1.1E-03	0.0E+00	0.0E+00	1.1E-03
beta-BHC		1.00E-03	--	0	--	0		1.81E-06	0	0	1.81E-06	0.56		3.2E-06	0.0E+00	0.0E+00	3.2E-06	2.25		8.1E-07	0.0E+00	0.0E+00	8.1E-07
delta-BHC		2.00E-03	--	0	--	0		3.62E-06	0	0	3.62E-06	0.56		6.5E-06	0.0E+00	0.0E+00	6.5E-06	2.25		1.6E-06	0.0E+00	0.0E+00	1.6E-06
2,4-DDD		2.90E-02	1.04E+00	0	--	0		5.25E-05	8.31E-04	0	8.84E-04	0.009		5.8E-03	9.2E-02	0.0E+00	9.8E-02	1.5		3.5E-05	5.5E-04	0.0E+00	5.9E-04
4,4-DDD		8.60E-02	1.04E+00	0	--	0		1.56E-04	2.46E-03	0	2.62E-03	0.009		1.7E-02	2.7E-01	0.0E+00	2.9E-01	1.5		1.0E-04	1.6E-03	0.0E+00	1.7E-03
DDE	0.0000027	1.70E-02	1.04E+00	0	--	0	1.21E-07	3.08E-05	4.87E-04	0	5.18E-04	NTV	NTV	NTV	NTV	NTV	NTV	0.6	2.0E-07	5.1E-05	8.1E-04	0.0E+00	8.6E-04
DDTs	0.00014	1.20E-02	1.04E+00	0	--	0	6.28E-06	2.17E-05	3.44E-04	0	3.72E-04	0.009	7.0E-04	2.4E-03	3.8E-02	0.0E+00	4.1E-02	1.5	4.2E-06	1.4E-05	2.3E-04	0.0E+00	2.5E-04
Dieldrin		3.90E-03	--	0	--	0		7.07E-06	0	0	7.07E-06	0.0709		1.0E-04	0.0E+00	0.0E+00	1.0E-04	0.98		7.2E-06	0.0E+00	0.0E+00	7.2E-06
Endosulfan I		4.00E-03	--	0	--	0		7.25E-06	0	0	7.25E-06	10		7.2E-07	0.0E+00	0.0E+00	7.2E-07	100		7.2E-08	0.0E+00	0.0E+00	7.2E-08
Endosulfan sulfate	0.00012	3.00E-03	--	0	--	0	5.38E-06	5.44E-06	0	0	1.08E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Endrin	0.000014	2.00E-02	--	0	--	0	6.28E-07	3.62E-05	0	0	3.69E-05	0.3	2.1E-06	1.2E-04	0.0E+00	0.0E+00	1.2E-04	3	2.1E-07	1.2E-05	0.0E+00	0.0E+00	1.2E-05
Endrin aldehyde		6.00E-03	--	0	--	0		1.09E-05	0	0	1.09E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Endrin Ketone		3.00E-03	--	0	--	0		5.44E-06	0	0	5.44E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
gamma-Chlordane		8.50E-03	--	0	--	0		1.54E-05	0	0	1.54E-05	0.0014		1.1E-02	0.0E+00	0.0E+00	1.1E-02	0.014		1.1E-03	0.0E+00	0.0E+00	1.1E-03
Heptachlor	0.0000028	2.00E-04	--	0	--	0	1.26E-07	3.62E-07	0	0	4.88E-07	0.065	1.9E-06	5.6E-06	0.0E+00	0.0E+00	7.5E-06	0.65	1.9E-07	5.6E-07	0.0E+00	0.0E+00	7.5E-07
Heptachlor epoxide		3.00E-04	--	0	--	0		5.44E-07	0	0	5.44E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Hexachlorobenzene		8.00E-04	--	0	--	0		1.45E-06	0	0	1.45E-06	0.23		6.3E-06	0.0E+00	0.0E+00	6.3E-06	2.3		6.3E-07	0.0E+00	0.0E+00	6.3E-07
Methoxychlor		2.00E-02	--	0	--	0		3.62E-05	0	0	3.62E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Mirex		4.00E-03	--	0	--	0		7.25E-06	0	0	7.25E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
trans-Nonachlor		2.40E-03	--	0	--	0		4.35E-06	0	0	4.35E-06	0.0014		3.1E-03	0.0E+00	0.0E+00	3.1E-03	0.014		3.1E-04	0.0E+00	0.0E+00	3.1E-04
SVOCs (mg/kg)																							
Acenaphthene		1.30E-01	--	0	--	0		2.36E-04	0	0	2.36E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Acenaphthylene		1.20E-01	--	0	--	0		2.17E-04	0	0	2.17E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Anthracene		1.30E-01	--	0	--	0		2.36E-04	0	0	2.36E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(a)anthracene		2.80E-01	--	0	--	0		5.07E-04	0	0	5.07E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(a)pyrene		2.40E-01	--	0	--	0		4.35E-04	0	0	4.35E-04	0.001		4.3E-01	0.0E+00	0.0E+00	4.3E-01	0.01		4.3E-02	0.0E+00	0.0E+00	4.3E-02
Benzo(b)fluoranthene		2.40E-01	--	0	--	0		4.35E-04	0	0	4.35E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(ghi)perylene		1.60E-01	--	0	--	0		2.90E-04	0	0	2.90E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(k)fluoranthene		2.40E-01	--	0	--	0		4.35E-04	0	0	4.35E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzoic acid		6.80E-01	--	0	--	0		1.23E-03	0	0	1.23E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Bis(2-ethylhexyl)phthalate	0.027	1.10E+00	--	0	--	0	1.21E-03	1.99E-03	0	0	3.20E-03	1.1	1.1E-03	1.8E-03	0.0E+00	0.0E+00	2.9E-03	11	1.1E-04	1.8E-04	0.0E+00	0.0E+00	2.9E-04
Butylbenzylphthalate		2.50E-02	--	0	--	0		4.53E-05	0	0	4.53E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Carbazole		5.50E-01	--	0	--	0		9.96E-04	0	0	9.96E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Chloroaniline		3.00E-03	--	0	--	0		5.44E-06	0	0	5.44E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2-Chloropropane		4.33E-02	--	0	--	0		7.84E-05	0	0	7.84E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chrysene	0.0002	2.70E-01	--	0	--	0	8.97E-06	4.89E-04	0	0	4.98E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Dibenzofuran		3.60E-01	--	0	--	0		6.52E-04	0	0	6.52E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
3,3-Dichlorobenzidine		1.20E-02	--	0	--	0		2.17E-05	0	0	2.17E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2,6-Dinitrotoluene		3.70E-01	--	0	--	0		6.70E-04	0	0	6.70E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Fluoranthene		3.80E-01	--	0	--	0		6.88E-04	0	0	6.88E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV

Table C2-4n
Post-Remediation Great Blue Heron Risk Calculations (Wetland Sediment Residual Concentration)
Shallow Soil (0 - 2 ft bgs) at Hazard Quotient of 5
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Point Concentration						Intake (mg/kg BW-day)						Hazard Quotient (HQ) - Low						Hazard Quotient (HQ) - High				
COPEC[a]	Surface Water (mg/L)[b]	Sediments[c]	Small Mammal BAF[d]	Small Mammal Tissue[d]	Amphibian BAF[d]	Amphibian Tissue[d]	Surface Water	Sediment	Small mammal	Amphibian	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Small mammal	Amphibian	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Sediment	Small mammal	Amphibian	Total Intake
Fluorene		1.30E-01	--	0	--	0		2.36E-04	0	0	2.36E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Indeno(123,cd)pyrene		1.60E-01	--	0	--	0		2.90E-04	0	0	2.90E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2-Methylnaphthalene		1.80E-01	--	0	--	0		3.26E-04	0	0	3.26E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Methylphenol	0.12	2.30E-01	--	0	--	0	5.38E-03	4.17E-04	0	0	5.80E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Naphthalene		1.10E-01	--	0	--	0		1.99E-04	0	0	1.99E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pentachlorophenol		5.40E-01	--	0	--	0		9.78E-04	0	0	9.78E-04	6.7		1.5E-04	0.0E+00	0.0E+00	1.5E-04	22.5		4.3E-05	0.0E+00	0.0E+00	4.3E-05
Phenanthrene		2.00E-01	--	0	--	0		3.62E-04	0	0	3.62E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Phenol		2.90E-01	--	0	--	0		5.25E-04	0	0	5.25E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pyrene		4.30E-01	--	0	--	0		7.79E-04	0	0	7.79E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
PCBs (mg/kg)																							
PCBs (TOTAL)-congeners	0.000016	2.00E-01	1.81E+01	4	1.03E+01	2	7.18E-07	3.62E-04	9.93E-02	2.83E-01	3.82E-01	0.09	8.0E-06	4.0E-03	1.1E+00	3.1E+00	4.2E+00 >1	1.27	5.7E-07	2.9E-04	7.8E-02	2.2E-01	3.0E-01

>1 = The calculated hazard quotient exceeds 1 (i.e., > 1.5)

Exposure Assumptions and Equation:[e]

	Value	Units
Ingestion Rate (IR) prey(dry wt.) =	0.126	kg/day (dry weight)
IRsmall mammal(dry wt.)[f] =	0.063	kg/day (dry weight)
IRamphibian (dry wt.)[f] =	0.063	kg/day (dry weight)
IRsediment (dry wt.)[g] =	0.00416	kg-day (dry weight)
Cprey =	chem-specific	mg/kg or µg/kg
Csediment =	chem-specific	mg/kg or µg/kg
Tissue Moisture (TMsmall mammal) =	68%	percent
Tissue Moisture (TMamphibian) =	85%	percent
IRsurface water[h] =	0.103	L/day
Csurface water =	chem-specific	mg/L or µg/L
Dietary Composition Factor (DCF)[i] =	100%	percent
Site Use Factor (SUF)[j] =	100%	percent
Body Weight (BW) =	2.295	kg

Intake Equation= [Irsmall mammal (dry wt) x (Cprey(small mammal, dry wt)/1-TM) x DCF x SUF]/BW] + [IRamphibian (dry wt) x Cprey(amphibians, dry wt) x DCF x SUF]/BW] + [(IRsediment x Csediment x DCF x SUF))/BW + [(IRsurface water x Csurface water x DCF x

Risk (hazard quotient) = Intake / TRV

Prey tissue(dry wt) = Prey tissue (wet wt.) / (1-Tissue Moisture)

NTV = Not toxicity data available.

Blank cell indicates COPEC was not detected in this medium.

Notes:

a All chemicals detected in sediments are considered as constituents of potential ecological concern.

b All concentrations of constituents in surface water are based on the maximum concentration.

c All concentrations of constituents in sediment are based on the residual concentrations expressed in dry weight.

d Site-specific BAFs (dry weight basis). Calculated small mammal tissue and amphibian concentrations (sediment concentration x BAF). Tissue concentrations are on a dry weight basis.

e Exposure parameters used to calculate risk are discussed in detail in Section 4.2 of ERA.

f Based on dietary composition of 50% small mammal and 50% amphibians.

g Ingestion rate of sediment based on 3.3 percent of of the prey ingestion rate (dry weight); based on mallards (Beyer et al. 1994).

h Based on equation for birds: Water intake (L/day) = $0.059Wt(kg)^{0.67}$ (EPA 1993)

i Dietary composition factor was based on a conservative assumption of 100% dietary intake of small mammals and amphibians from the site.

j Site use factor was based on a conservative 100% use of the site for the heron's foraging range.

Table C2-4o
Post-Remediation Kildeer Risk Calculations (Wetland Sediment Residual Concentration)
Deep Soil (0 - 10 ft bgs) at Hazard Quotient of 5
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Concentrations				Intake (mg/kg BW-day)					Hazard Quotient (HQ) - Low					Hazard Quotient (HQ) - High			
COPEC[a]	Surface Water (mg/L)[b]	Sediments[c]	Invertebrate BAF[d]	Invertebrate Tissue[a]	Surface Water	Soils	Invertebrate	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Soils	Invertebrate	Total Intake		High TRV (mg/kg BW-day)	Surface Water	Soils	Invertebrate	Total Intake
Metals (mg/kg)																			
Aluminum	12.6	2.67E+04	1.93E-01	5.16E+03	1.78E+00	1.03E+03	1.10E+03	2.13E+03	109.7	1.6E-02	9.4E+00	1.0E+01	1.9E+01	>1	1,097	1.6E-03	9.4E-01	1.0E+00	1.9E+00 >1
Antimony	0.003	4.50E+00	2.32E-01	1.04E+00	4.24E-04	1.73E-01	2.23E-01	3.96E-01	NTV	NTV	NTV	NTV	NTV	>1	NTV	NTV	NTV	NTV	NTV
Arsenic	0.0436	2.10E+01	1.92E-01	4.03E+00	6.15E-03	8.08E-01	8.61E-01	1.68E+00	5.5	1.1E-03	1.5E-01	1.6E-01	3.0E-01		22	2.8E-04	3.7E-02	3.9E-02	7.6E-02
Barium	0.24	9.40E+01	1.50E+00	1.41E+02	3.33E-02	3.62E+00	3.01E+01	3.37E+01	20.8	1.6E-03	1.7E-01	1.4E+00	1.6E+00	>1	41.7	8.0E-04	8.7E-02	7.2E-01	8.1E-01
Beryllium		6.50E-01	--	0		2.50E-02	0.00E+00	2.50E-02	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Cadmium	0.0016	2.90E+00	2.15E-01	6.24E-01	2.26E-04	1.12E-01	1.33E-01	2.45E-01	0.08	2.8E-03	1.4E+00	1.7E+00	3.1E+00	>1	10.40	2.2E-05	1.1E-02	1.3E-02	2.4E-02
Chromium +3	0.0263	2.16E+02	5.53E-01	1.20E+02	3.71E-03	8.31E+00	2.56E+01	3.39E+01	2.66	1.4E-03	3.1E+00	9.6E+00	1.3E+01	>1	2.78	1.3E-03	3.0E+00	9.2E+00	1.2E+01 >1
Chromium +6	0.0263	7.00E-02	5.53E-01	0	3.71E-03	2.69E-03	8.28E-03	1.47E-02	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Cobalt	0.0164	1.80E+01	--	0	2.32E-03	6.93E-01	0.00E+00	6.95E-01	7.61	3.0E-04	9.1E-02	0.0E+00	9.1E-02		17	1.4E-04	4.1E-02	0.0E+00	4.1E-02
Copper	0.233	1.99E+02	6.67E-01	1.33E+02	3.29E-02	7.66E+00	2.84E+01	3.61E+01	2.3	1.4E-02	3.3E+00	1.2E+01	1.6E+01	>1	52.3	6.3E-04	1.5E-01	5.4E-01	6.9E-01
Lead	0.0031	9.70E+01	5.07E-02	4.92E+00	4.38E-04	3.73E+00	1.05E+00	4.79E+00	0.014	3.1E-02	2.7E+02	7.5E+01	3.4E+02	>1	8.75	5.0E-05	4.3E-01	1.2E-01	5.5E-01
Manganese	7.42	9.07E+02	5.29E+00	4.80E+03	1.05E+00	3.49E+01	1.03E+03	1.06E+03	77.6	1.3E-02	4.5E-01	1.3E+01	1.4E+01	>1	776	1.3E-03	4.5E-02	1.3E+00	1.4E+00
Mercury	0.00029	1.40E+00	6.96E-01	9.75E-01	4.09E-05	5.39E-02	2.08E-01	2.62E-01	0.039	1.0E-03	1.4E+00	5.3E+00	6.7E+00	>1	0.18	2.3E-04	3.0E-01	1.2E+00	1.5E+00
Molybdenum	0.0312	5.10E+00	--	0	4.40E-03	1.96E-01	0.00E+00	2.01E-01	3.5	1.3E-03	5.6E-02	0.0E+00	5.7E-02		35.3	1.2E-04	5.6E-03	0.0E+00	5.7E-03
Nickel	0.166	1.14E+02	3.65E-01	4.16E+01	2.34E-02	4.39E+00	8.89E+00	1.33E+01	1.38	1.7E-02	3.2E+00	6.4E+00	9.6E+00	>1	56.3	4.2E-04	7.8E-02	1.6E-01	2.4E-01
Selenium	0.029	1.20E+00	--	0	4.09E-03	4.62E-02	0.00E+00	5.03E-02	0.23	1.8E-02	2.0E-01	0.0E+00	2.2E-01		0.93	4.4E-03	5.0E-02	0.0E+00	5.4E-02
Silver	0.0019	2.80E+00	--	0	2.68E-04	1.08E-01	0.00E+00	1.08E-01	178.00	1.5E-06	6.1E-04	0.0E+00	6.1E-04		NTV	NTV	NTV	NTV	NTV
Thallium		4.70E-01	--	0		1.81E-02	0.00E+00	1.81E-02	0.35		5.2E-02	0.0E+00	5.2E-02		NTV	NTV	NTV	NTV	NTV
Tin		1.63E+01	--	0		6.27E-01	0.00E+00	6.27E-01	6.80		9.2E-02	0.0E+00	9.2E-02		16.9		3.7E-02	0.0E+00	3.7E-02
Vanadium	0.05	1.17E+02	2.96E-02	3.46E+00	7.06E-03	4.50E+00	7.39E-01	5.25E+00	11.4	6.2E-04	3.9E-01	6.5E-02	4.6E-01		114	6.2E-05	3.9E-02	6.5E-03	4.6E-02
Zinc	0.042	2.37E+02	1.51E+00	3.58E+02	5.93E-03	9.12E+00	7.66E+01	8.57E+01	17.2	3.4E-04	5.3E-01	4.5E+00	5.0E+00	>1	172	3.4E-05	5.3E-02	4.5E-01	5.0E-01
Volatile Organics (mg/kg)																			
Acetone		3.20E-01	--	0		1.23E-02	0.00E+00	1.23E-02	52		2.4E-04	0.0E+00	2.4E-04		520		2.4E-05	0.0E+00	2.4E-05
Benzene		5.00E-03	--	0		1.92E-04	0.00E+00	1.92E-04	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Carbon disulfide		2.50E-02	--	0		9.62E-04	0.00E+00	9.62E-04	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Chlorobenzene		2.40E-02	--	0		9.24E-04	0.00E+00	9.24E-04	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
cis-1,2-Dichlorobenzene		5.00E-03	--	0		1.92E-04	0.00E+00	1.92E-04	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Ethylbenzene		4.40E-02	--	0		1.69E-03	0.00E+00	1.69E-03	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
4-Isopropyltoluene		7.20E-03	--	0		2.77E-04	0.00E+00	2.77E-04	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Methylene chloride		3.00E-01	--	0		1.15E-02	0.00E+00	1.15E-02	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Naphthalene		1.60E-02	--	0		6.16E-04	0.00E+00	6.16E-04	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Toluene		3.00E-02	--	0		1.15E-03	0.00E+00	1.15E-03	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
trans-1,2-Dichloroethene		2.30E-02	--	0		8.85E-04	0.00E+00	8.85E-04	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Trichloroethene		7.00E-03	--	0		2.69E-04	0.00E+00	2.69E-04	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
1,2,4-Trimethylbenzene		2.50E-02	--	0		9.62E-04	0.00E+00	9.62E-04	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
1,3,5-Trimethylbenzene		9.30E-03	--	0		3.58E-04	0.00E+00	3.58E-04	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Vinyl chloride		3.40E-02	--	0		1.31E-03	0.00E+00	1.31E-03	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Xylenes		1.10E-01	--	0		4.23E-03	0.00E+00	4.23E-03	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Pesticides (mg/kg)																			
alpha-Chlordane		8.20E-03	--	0		3.16E-04	0.00E+00	3.16E-04	0.0014		2.3E-01	0.0E+00	2.3E-01		0.014		2.3E-02	0.0E+00	2.3E-02
beta-BHC		1.00E-03	--	0		3.85E-05	0.00E+00	3.85E-05	0.56		6.9E-05	0.0E+00	6.9E-05		2.25		1.7E-05	0.0E+00	1.7E-05
delta-BHC		2.00E-03	--	0		7.70E-05	0.00E+00	7.70E-05	0.56		1.4E-04	0.0E+00	1.4E-04		2.25		3.4E-05	0.0E+00	3.4E-05
2,4-DDD		2.90E-02	--	0		1.12E-03	0.00E+00	1.12E-03	0.009		1.2E-01	0.0E+00	1.2E-01		1.5		7.4E-04	0.0E+00	7.4E-04
4,4-DDD		8.60E-02	--	0		3.31E-03	0.00E+00	3.31E-03	0.009		3.7E-01	0.0E+00	3.7E-01		1.5		2.2E-03	0.0E+00	2.2E-03
DDE	0.0000027	1.70E-02	--	0	3.81E-07	6.54E-04	0.00E+00	6.55E-04	NTV	NTV	NTV	NTV	NTV		0.6	6.4E-07	1.1E-03	0.0E+00	1.1E-03
DDTs	0.00014	1.20E-02	--	0	1.98E-05	4.62E-04	0.00E+00	4.82E-04	0.009	2.2E-03	5.1E-02	0.0E+00	5.4E-02		1.5	1.3E-05	3.1E-04	0.0E+00	3.2E-04
Dieldrin		3.90E-03	--	0		1.50E-04	0.00E+00	1.50E-04	0.0709		2.1E-03	0.0E+00	2.1E-03		0.98		1.5E-04	0.0E+00	1.5E-04
Endosulfan I		4.00E-03	--	0		1.54E-04	0.00E+00	1.54E-04	10		1.5E-05	0.0E+00	1.5E-05		100		1.5E-06	0.0E+00	1.5E-06
Endosulfan sulfate	0.00012	3.00E-03	--	0	1.69E-05	1.15E-04	0.00E+00	1.32E-04	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Endrin	0.000014	2.00E-02	--	0	1.98E-06	7.70E-04	0.00E+00	7.72E-04	0.3	6.6E-06	2.6E-03	0.0E+00	2.6E-03		3	6.6E-07	2.6E-04	0.0E+00	2.6E-04
Endrin aldehyde		6.00E-03	--	0		2.31E-04	0.00E+00	2.31E-04	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Endrin Ketone		3.00E-03	--	0		1.15E-04	0.00E+00	1.15E-04	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Gamma-BHC	0.000011	8.50E-03	--	0	1.55E-06	3.27E-04	0.00E+00	3.29E-04	2	7.8E-07	1.6E-04	0.0E+00	1.6E-04		20	7.8E-08	1.6E-05	0.0E+00	1.6E-05
Heptachlor	0.0000028	2.00E-04	--	0	3.95E-07	7.70E-06	0.00E+00	8.09E-06	0.065	6.1E-06	1.2E-04	0.0E+00	1.2E-04		0.65	6.1E-07	1.2E-05	0.0E+00	1.2E-05
Heptachlor epoxide		3.00E-04	--	0		1.15E-05	0.00E+00	1.15E-05	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Hexachlorobenzene		8.00E-04	--	0		3.08E-05	0.00E+00	3.08E-05	0.23		1.3E-04	0.0E+00	1.3E-04		2.3		1.3E-05	0.0E+00	1.3E-05
Methoxychlor		2.00E-02	--	0		7.70E-04	0.00E+00	7.70E-04	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV

Table C2-4o
Post-Remediation Kildeer Risk Calculations (Wetland Sediment Residual Concentration)
Deep Soil (0 - 10 ft bgs) at Hazard Quotient of 5
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Concentrations				Intake (mg/kg BW-day)					Hazard Quotient (HQ) - Low					Hazard Quotient (HQ) - High			
COPEC[a]	Surface Water (mg/L)[b]	Sediments[c]	Invertebrate BAF[d]	Invertebrate Tissue[a]	Surface Water	Soils	Invertebrate	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Soils	Invertebrate	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Soils	Invertebrate	Total Intake
Mirex		4.00E-03	--	0		1.54E-04	0.00E+00	1.54E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
trans-Nonachlor		2.40E-03	--	0		9.24E-05	0.00E+00	9.24E-05	0.0014		6.6E-02	0.0E+00	6.6E-02	0.014		6.6E-03	0.0E+00	6.6E-03

Table C2-4o
Post-Remediation Kildeer Risk Calculations (Wetland Sediment Residual Concentration)
Deep Soil (0 - 10 ft bgs) at Hazard Quotient of 5
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Concentrations				Intake (mg/kg BW-day)					Hazard Quotient (HQ) - Low					Hazard Quotient (HQ) - High			
COPEC[a]	Surface Water (mg/L)[b]	Sediments[c]	Invertebrate BAF[d]	Invertebrate Tissue[d]	Surface Water	Soils	Invertebrate	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Soils	Invertebrate	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Soils	Invertebrate	Total Intake
SVOCs (mg/kg)																		
Acenaphthene		1.30E-01	--	0		5.00E-03	0.00E+00	5.00E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Acenaphthylene		1.20E-01	--	0		4.62E-03	0.00E+00	4.62E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Anthracene		1.30E-01	--	0		5.00E-03	0.00E+00	5.00E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(a)anthracene		2.80E-01	--	0		1.08E-02	0.00E+00	1.08E-02	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(a)pyrene		2.40E-01	--	0		9.24E-03	0.00E+00	9.24E-03	0.001		9.2E+00	0.0E+00	9.2E+00 >1	0.01		9.2E-01	0.0E+00	9.2E-01
Benzo(b)fluoranthene		2.40E-01	--	0		9.24E-03	0.00E+00	9.24E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(ghi)perylene		1.60E-01	--	0		6.16E-03	0.00E+00	6.16E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(k)fluoranthene		2.40E-01	--	0		9.24E-03	0.00E+00	9.24E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzoic acid		6.80E-01	--	0		2.62E-02	0.00E+00	2.62E-02	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Bis(2-ethylhexyl)phthalate	0.027	1.10E+00	--	0	3.81E-03	4.23E-02	0.00E+00	4.61E-02	1.1	3.5E-03	3.8E-02	0.0E+00	4.2E-02	11	3.5E-04	3.8E-03	0.0E+00	4.2E-03
Butylbenzylphthalate		2.50E-02	--	0		9.62E-04	0.00E+00	9.62E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Carbazole		5.50E-01	--	0		2.12E-02	0.00E+00	2.12E-02	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Chloroaniline		3.00E-03	--	0		1.15E-04	0.00E+00	1.15E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2-Chloropropane		4.33E-02	--	0		1.67E-03	0.00E+00	1.67E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chrysene	0.0002	2.70E-01	--	0	2.82E-05	1.04E-02	0.00E+00	1.04E-02	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Dibenzofuran		3.60E-01	--	0		1.39E-02	0.00E+00	1.39E-02	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
3,3-Dichlorobenzidine		1.20E-02	--	0		4.62E-04	0.00E+00	4.62E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2,6-Dinitrotoluene		3.70E-01	--	0		1.42E-02	0.00E+00	1.42E-02	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Fluoranthene		3.80E-01	--	0		1.46E-02	0.00E+00	1.46E-02	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Fluorene		1.30E-01	--	0		5.00E-03	0.00E+00	5.00E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Indeno(123,cd)pyrene		1.60E-01	--	0		6.16E-03	0.00E+00	6.16E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2-Methylnaphthalene		1.80E-01	--	0		6.93E-03	0.00E+00	6.93E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Methylphenol	0.12	2.30E-01	--	0	1.69E-02	8.85E-03	0.00E+00	2.58E-02	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Naphthalene		1.10E-01	--	0		4.23E-03	0.00E+00	4.23E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pentachlorophenol		5.40E-01	--	0		2.08E-02	0.00E+00	2.08E-02	6.7		3.1E-03	0.0E+00	3.1E-03	22.5		9.2E-04	0.0E+00	9.2E-04
Phenanthrene		2.00E-01	2.51E+00	5.02E-01		7.70E-03	1.07E-01	1.15E-01	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Phenol		2.90E-01	--	0		1.12E-02	0.00E+00	1.12E-02	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pyrene		4.30E-01	--	0		1.65E-02	0.00E+00	1.65E-02	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
PCBs (mg/kg)																		
PCBs (TOTAL)-congeners	0.000016	2.00E-01	1.16E+01	2.32E+00	2.26E-06	7.70E-03	4.97E-01	5.04E-01	0.09	2.5E-05	8.6E-02	5.5E+00	5.6E+00 >1	1.27	1.8E-06	6.1E-03	3.9E-01	4.0E-01
>1 = The calculated hazard quotient exceeds 1 (i.e., > 1.5)																		

Exposure Assumptions and Equation:[e]

	Value	Units
Ingestion Rate (IR) prey(dry wt.) =	0.0152	kg/day (dry weight)
IRinvertebrate(dry wt.) =	0.0152	kg/day (dry weight)
IRsediment (dry wt.)[f] =	0.00274	kg-day (dry weight)
Cprey =	chem-specific	mg/kg or µg/kg
Csediment =	chem-specific	mg/kg or µg/kg
IRsurface water[g] =	0.010	L/day
Csurface water =	chem-specific	mg/L or µg/L
Dietary Composition Factor (DCF)[h] =	100%	percent
Site Use Factor (SUF)[i] =	100%	percent
Body Weight (BW) =	0.0711	kg

Intake Equation = [IRinvertebrate (dry wt) x Cprey(invertebrate, dry wt) x DCF x SUF]/BW] +[(IRsediment x Csediment x DCF x SUF)]/BW] + [(IRsurface water x Csurface water x DCF x SUF)]/BW]

Risk (hazard quotient) = Intake / TRV

Prey tissue(dry wt) = Prey tissue (wet wt.) / (1-Tissue Moisture)

NTV = Not toxicity data available.

NA = Not available.

Blank cell indicates COPEC was not detected in this medium.

Notes:

a All chemicals detected in sediments are considered as constituents of potential ecological concern.

b All concentrations of constituents in surface water are based on the maximum concentration.

c All concentrations of constituents in sediment are based on the residual concentrations expressed in dry weight.

d Site-specific BAFs (dry weight basis). Calculated invertebrate tissue concentrations (sediment concentration x BAF). Tissue concentrations are on a dry weight basis.

e Exposure parameters used to calculate risk are discussed in detail in Section 4.2 of ERA.

f Ingestion rate of sediment based on 18 percent of of the prey ingestion rate (dry weight); based on average of sandpiper data from Beyer et al. 1994).

g Based on equation for birds: Water intake (L/day) = $0.059Wt(kg)^{.67}$ (EPA 1993)

h Dietary composition factor was based on a conservative assumption of 100% dietary intake of invertebrates from the site.

i Site use factor was based on a conservative 100% use of the site for the killdeer's foraging range.

Table C2-4p
Post-Remediation Salt Marsh Harvest Mouse Risk Calculations (Wetland Sediment Residual Concentration)
Deep Soil (0 - 10 ft bgs) at Hazard Quotient of 5
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Concentrations				Intake (mg/kg BW-day)					HQ - Low TRV					HQ - High TRV				
COPEC[a]	Surface Water (mg/L)[b]	Sediments[c]	Pickelweed BAF[d]	Pickleweed Tissue[d]	Surface Water	Sediment	Pickleweed	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Pickleweed	Total Intake		High TRV (mg/kg BW-day)	Surface Water	Sediment	Pickleweed	Total Intake	
Metals (mg/kg)																				
Aluminum	12.6	2.67E+04	3.64E-03	97	1.98E+00	1.96E+02	2.97E+01	2.28E+02	1.93	1.0E+00	1.0E+02	1.5E+01	1.2E+02	>1	19.3	1.0E-01	1.0E+01	1.5E+00	1.2E+01	>1
Antimony	0.003	4.50E+00	2.95E+00	13	4.71E-04	3.30E-02	4.06E+00	4.09E+00	0.06	8.0E-03	5.6E-01	6.9E+01	6.9E+01	>1	23.4	2.0E-05	1.4E-03	1.7E-01	1.7E-01	
Arsenic	0.0436	2.10E+01	1.50E-01	3	6.84E-03	1.54E-01	9.65E-01	1.13E+00	0.32	2.1E-02	4.8E-01	3.0E+00	3.5E+00	>1	4.7	1.5E-03	3.3E-02	2.1E-01	2.4E-01	
Barium	0.24	9.40E+01	5.56E-01	52	3.70E-02	6.90E-01	1.60E+01	1.67E+01	51.8	7.1E-04	1.3E-02	3.1E-01	3.2E-01		66.0	5.6E-04	1.0E-02	2.4E-01	2.5E-01	
Beryllium		6.50E-01	--	0		4.77E-03	0	4.77E-03	0.532		9.0E-03	0.0E+00	9.0E-03		0.554		8.6E-03	0.0E+00	8.6E-03	
Cadmium	0.0016	2.90E+00	6.76E-01	2	2.51E-04	2.13E-02	6.00E-01	6.22E-01	0.06	4.2E-03	3.5E-01	1.0E+01	1.0E+01	>1	2.64	9.5E-05	8.1E-03	2.3E-01	2.4E-01	
Chromium +3	0.0263	2.16E+02	--	0	4.13E-03	1.59E+00	0	1.59E+00	2	1.7E-03	6.6E-01	0.0E+00	6.6E-01		23.1	1.8E-04	6.9E-02	0.0E+00	6.9E-02	
Chromium +6	0.0263	7.00E-02	--	0	4.13E-03	5.14E-04	0	4.64E-03	5.66	7.3E-04	9.1E-05	0.0E+00	8.2E-04		35.1	1.2E-04	1.5E-05	0.0E+00	1.3E-04	
Cobalt	0.0164	1.80E+01	--	0	2.57E-03	1.32E-01	0	1.35E-01	1.2	2.1E-03	1.1E-01	0.0E+00	1.1E-01		20	1.3E-04	6.6E-03	0.0E+00	6.7E-03	
Copper	0.233	1.99E+02	1.82E-01	36	3.66E-02	1.46E+00	1.11E+01	1.26E+01	2.67	1.4E-02	5.5E-01	4.1E+00	4.7E+00	>1	632	5.8E-05	2.3E-03	1.8E-02	2.0E-02	
Lead	0.0031	9.70E+01	7.92E-02	8	4.86E-04	7.12E-01	2.35E+00	3.06E+00	1	4.9E-04	7.1E-01	2.3E+00	3.1E+00	>1	241	2.0E-06	3.0E-03	9.8E-03	1.3E-02	
Manganese	7.42	9.07E+02	1.75E+00	1589	1.16E+00	6.66E+00	4.86E+02	4.94E+02	13.7	8.5E-02	4.9E-01	3.6E+01	3.6E+01	>1	159.09	7.3E-03	4.2E-02	3.1E+00	3.1E+00	>1
Mercury	0.00029	1.40E+00	--	0	4.55E-05	1.03E-02	0	1.03E-02	0.027	1.7E-03	3.8E-01	0.0E+00	3.8E-01		0.27	1.7E-04	3.8E-02	0.0E+00	3.8E-02	
Molybdenum	0.0312	5.10E+00	--	0	4.90E-03	3.75E-02	0	4.23E-02	0.26	1.9E-02	1.4E-01	0.0E+00	1.6E-01		2.6	1.9E-03	1.4E-02	0.0E+00	1.6E-02	
Nickel	0.166	1.14E+02	1.14E-01	13	2.60E-02	8.37E-01	3.97E+00	4.83E+00	0.13	2.0E-01	6.3E+00	3.0E+01	3.6E+01	>1	31.6	8.2E-04	2.6E-02	1.3E-01	1.5E-01	
Selenium	0.029	1.20E+00	--	0	4.55E-03	8.81E-03	0	1.34E-02	0.05	9.1E-02	1.8E-01	0.0E+00	2.7E-01		1.21	3.8E-03	7.3E-03	0.0E+00	1.1E-02	
Silver	0.0019	2.80E+00	--	0	2.98E-04	2.06E-02	0	2.09E-02	0.38	7.9E-04	5.5E-02	0.0E+00	5.6E-02		3.75	7.9E-05	5.5E-03	0.0E+00	5.6E-03	
Thallium		4.70E-01	--	0		3.45E-03	0	3.45E-03	0.48		7.2E-03	0.0E+00	7.2E-03		1.43		2.4E-03	0.0E+00	2.4E-03	
Tin		1.63E+01	6.21E+00	101		1.20E-01	3.10E+01	3.11E+01	23.4		5.1E-03	1.3E+00	1.3E+00		35		3.4E-03	8.9E-01	8.9E-01	
Vanadium	0.05	1.17E+02	--	0	7.85E-03	8.59E-01	0	8.67E-01	0.21	3.7E-02	4.1E+00	0.0E+00	4.1E+00	>1	2.1	3.7E-03	4.1E-01	0.0E+00	4.1E-01	
Zinc	0.042	2.37E+02	3.77E-01	89	6.59E-03	1.74E+00	2.73E+01	2.91E+01	9.6	6.9E-04	1.8E-01	2.8E+00	3.0E+00	>1	411	1.6E-05	4.2E-03	6.6E-02	7.1E-02	
Volatile Organics (mg/kg)																				
Acetone		3.20E-01	--	0		2.35E-03	0	2.35E-03	10	1.0E+01	2.4E-04	0.0E+00	2.4E-04		50		4.7E-05	0.0E+00	4.7E-05	
Benzene		5.00E-03	--	0		3.67E-05	0	3.67E-05	26.4		1.4E-06	0.0E+00	1.4E-06		263.6		1.4E-07	0.0E+00	1.4E-07	
Carbon disulfide		2.50E-02	--	0		1.84E-04	0	1.84E-04	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV	
Chlorobenzene		2.40E-02	--	0		1.76E-04	0	1.76E-04	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV	
cis-1,2-Dichlorobenzene		5.00E-03	--	0		3.67E-05	0	3.67E-05	45.2		8.1E-07	0.0E+00	8.1E-07		452		8.1E-08	0.0E+00	8.1E-08	
Ethylbenzene		4.40E-02	--	0		3.23E-04	0	3.23E-04	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV	
4-Isopropyltoluene		7.20E-03	--	0		5.29E-05	0	5.29E-05	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV	
Methylene chloride		3.00E-01	--	0		2.20E-03	0	2.20E-03	5.9		3.7E-04	0.0E+00	3.7E-04		50		4.4E-05	0.0E+00	4.4E-05	
Naphthalene		1.60E-02	--	0		1.18E-04	0	1.18E-04	50		2.4E-06	0.0E+00	2.4E-06		150		7.8E-07	0.0E+00	7.8E-07	
Toluene		3.00E-02	--	0		2.20E-04	0	2.20E-04	26		8.5E-06	0.0E+00	8.5E-06		260		8.5E-07	0.0E+00	8.5E-07	
trans-1,2-Dichloroethene		2.30E-02	--	0		1.69E-04	0	1.69E-04	45.2		3.7E-06	0.0E+00	3.7E-06		452		3.7E-07	0.0E+00	3.7E-07	
Trichloroethene		7.00E-03	--	0		5.14E-05	0	5.14E-05	0.7		7.3E-05	0.0E+00	7.3E-05		7		7.3E-06	0.0E+00	7.3E-06	
1,2,4-Trimethylbenzene		2.50E-02	--	0		1.84E-04	0	1.84E-04	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV	
1,3,5-Trimethylbenzene		9.30E-03	--	0		6.83E-05	0	6.83E-05	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV	
Vinyl chloride		3.40E-02	--	0		2.50E-04	0	2.50E-04	0.17		1.5E-03	0.0E+00	1.5E-03		2		1.5E-04	0.0E+00	1.5E-04	
Xylenes		1.10E-01	--	0		8.08E-04	0	8.08E-04	2.1		3.8E-04	0.0E+00	3.8E-04		2.6		3.1E-04	0.0E+00	3.1E-04	
Pesticides (mg/kg)																				
alpha-Chlordane		8.20E-03	--	0		6.02E-05	0	6.02E-05	4.6		1.3E-05	0.0E+00	1.3E-05		9.2		6.5E-06	0.0E+00	6.5E-06	
beta-BHC		1.00E-03	--	0		7.34E-06	0	7.34E-06	1.6		4.6E-06	0.0E+00	4.6E-06		3.2		2.3E-06	0.0E+00	2.3E-06	
delta-BHC		2.00E-03	--	0		1.47E-05	0	1.47E-05	1.6		9.2E-06	0.0E+00	9.2E-06		3.2		4.6E-06	0.0E+00	4.6E-06	
2,4-DDD		2.90E-02	--	0		2.13E-04	0	2.13E-04	0.8		2.7E-04	0.0E+00	2.7E-04		16		1.3E-05	0.0E+00	1.3E-05	
4,4-DDD		8.60E-02	--	0		6.32E-04	0	6.32E-04	0.8		7.9E-04	0.0E+00	7.9E-04		16		3.9E-05	0.0E+00	3.9E-05	
DDE	0.0000027	1.70E-02	--	0	4.24E-07	1.25E-04	0	1.25E-04	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV	
DDTs	0.00014	1.20E-02	--	0	2.20E-05	8.81E-05	0	1.10E-04	0.8	2.7E-05	1.1E-04	0.0E+00	1.4E-04		16	1.4E-06	5.5E-06	0.0E+00	6.9E-06	
Dieldrin		3.90E-03	--	0		2.86E-05	0	2.86E-05	0.015		1.9E-03	0.0E+00	1.9E-03		1.7		1.7E-05	0.0E+00	1.7E-05	
Endosulfan I		4.00E-03	--	0		2.94E-05	0	2.94E-05	0.15		2.0E-04	0.0E+00	2.0E-04		1.5		2.0E-05	0.0E+00	2.0E-05	
Endosulfan sulfate	0.00012	3.00E-03	--	0	1.88E-05	2.20E-05	0	4.09E-05	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV	
Endrin	0.000014	2.00E-02	--	0	2.20E-06	1.47E-04	0	1.49E-04	0.09	2.4E-05	1.6E-03	0.0E+00	1.6E-03		0.92	2.4E-06	1.6E-04	0.0E+00	1.6E-04	
Endrin aldehyde		6.00E-03	--	0		4.41E-05	0	4.41E-05	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV	
Endrin Ketone		3.00E-03	--	0		2.20E-05	0	2.20E-05	NTV	NTV	NTV	NTV	NTV		0.92		2.4E-05	0.0E+00	2.4E-05	
gamma-Chlordane		8.50E-03	--	0		6.24E-05	0	6.24E-05	4.6		1.4E-05	0.0E+00	1.4E-05		9.2		6.8E-06	0.0E+00	6.8E-06	
Heptachlor	0.0000028	2.00E-04	--	0	4.39E-07	1.47E-06	0	1.91E-06	0.13	3.4E-06	1.1E-05	0.0E+00	1.5E-05		6.8	6.5E-08	2.2E-07	0.0E+00	2.8E-07	
Heptachlor epoxide		3.00E-04	--	0		2.20E-06	0	2.20E-06	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV	
Hexachlorobenzene		8.00E-04	--	0		5.88E-06	0	5.88E-06	1.6		3.7E-06	0.0E+00	3.7E-06		16		3.7E-07	0.0E+00	3.7E-07	
Methoxychlor		2.00E-02	--	0		1.47E-04	0	1.47E-04	2.5		5.9E-05	0.0E+00	5.9E-05		50		2.9E-06	0.0E+00	2.9E-06	

Table C2-4p
Post-Remediation Salt Marsh Harvest Mouse Risk Calculations (Wetland Sediment Residual Concentration)
Deep Soil (0 - 10 ft bgs) at Hazard Quotient of 5
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Concentrations				Intake (mg/kg BW-day)					HQ - Low TRV					HQ - High TRV			
COPEC[a]	Surface Water (mg/L)[b]	Sediments[c]	Pickelweed BAF[d]	Pickleweed Tissue[d]	Surface Water	Sediment	Pickleweed	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Pickleweed	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Sediment	Pickleweed	Total Intake
Mirex		4.00E-03	--	0		2.94E-05	0	2.94E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
trans-Nonachlor		2.40E-03	--	0		1.76E-05	0	1.76E-05	4.6		3.8E-06	0.0E+00	3.8E-06	9.2		1.9E-06	0.0E+00	1.9E-06
SVOCs (mg/kg)																		
Acenaphthene		1.30E-01	--	0		9.55E-04	0	9.55E-04	1.31		7.3E-04	0.0E+00	7.3E-04	32.8		2.9E-05	0.0E+00	2.9E-05
Acenaphthylene		1.20E-01	--	0		8.81E-04	0	8.81E-04	1.31		6.7E-04	0.0E+00	6.7E-04	32.8		2.7E-05	0.0E+00	2.7E-05
Anthracene		1.30E-01	--	0		9.55E-04	0	9.55E-04	1.31		7.3E-04	0.0E+00	7.3E-04	32.8		2.9E-05	0.0E+00	2.9E-05
Benzo(a)anthracene		2.80E-01	1.29E+00	0		2.06E-03	1.11E-01	1.13E-01	1.31		1.6E-03	8.5E-02	8.6E-02	32.8		6.3E-05	3.4E-03	3.4E-03
Benzo(a)pyrene		2.40E-01	2.31E+00	1		1.76E-03	1.70E-01	1.72E-01	1.31		1.3E-03	1.3E-01	1.3E-01	32.8		5.4E-05	5.2E-03	5.2E-03
Benzo(b)fluoranthene		2.40E-01	1.55E+00	0		1.76E-03	1.14E-01	1.16E-01	1.31		1.3E-03	8.7E-02	8.8E-02	32.8		5.4E-05	3.5E-03	3.5E-03
Benzo(ghi)perylene		1.60E-01	1.55E+00	0		1.18E-03	7.60E-02	7.72E-02	1.31		9.0E-04	5.8E-02	5.9E-02	32.8		3.6E-05	2.3E-03	2.4E-03
Benzo(k)fluoranthene		2.40E-01	1.55E+00	0		1.76E-03	1.14E-01	1.16E-01	1.31		1.3E-03	8.7E-02	8.8E-02	32.8		5.4E-05	3.5E-03	3.5E-03
Benzoic acid		6.80E-01	--	0		4.99E-03	0	4.99E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Bis(2-ethylhexyl)phthalate	0.027	1.10E+00	--	0	4.24E-03	8.08E-03	0	1.23E-02	18.3	2.3E-04	4.4E-04	0.0E+00	6.7E-04	183	2.3E-05	4.4E-05	0.0E+00	6.7E-05
Butylbenzylphthalate		2.50E-02	--	0		1.84E-04	0	1.84E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Carbazole		5.50E-01	--	0		4.04E-03	0	4.04E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Chloroaniline		3.00E-03	--	0			0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2-Chlorophenol		4.33E-02	--	0		3.18E-04	0	3.18E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chrysene	0.0002	2.70E-01	2.09E+00	1	3.14E-05	1.98E-03	1.73E-01	1.75E-01	1.31	2.4E-05	1.5E-03	1.3E-01	1.3E-01	32.8	9.6E-07	6.0E-05	5.3E-03	5.3E-03
Dibenzofuran		3.60E-01	--	0		2.64E-03	0	2.64E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
3,3-Dichlorobenzidine		1.20E-02	--	0		8.81E-05	0	8.81E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2,6-Dinitrotoluene		3.70E-01	--	0		2.72E-03	0	2.72E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Fluoranthene		3.80E-01	--	0		2.79E-03	0	2.79E-03	1.31		2.1E-03	0.0E+00	2.1E-03	32.8		8.5E-05	0.0E+00	8.5E-05
Fluorene		1.30E-01	--	0		9.55E-04	0	9.55E-04	1.31		7.3E-04	0.0E+00	7.3E-04	32.8		2.9E-05	0.0E+00	2.9E-05
Indeno(123,cd)pyrene		1.60E-01	3.17E+00	1		1.18E-03	1.55E-01	1.56E-01	1.31		9.0E-04	1.2E-01	1.2E-01	32.8		3.6E-05	4.7E-03	4.8E-03
2-Methylnaphthalene		1.80E-01	--	0		1.32E-03	0	1.32E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Methylphenol	0.12	2.30E-01	--	0	1.88E-02	1.69E-03	0	2.05E-02	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Naphthalene		1.10E-01	--	0		8.08E-04	0	8.08E-04	50		1.6E-05	0.0E+00	1.6E-05	150		5.4E-06	0.0E+00	5.4E-06
Pentachlorophenol		5.40E-01	--	0		3.97E-03	0	3.97E-03	8.42		4.7E-04	0.0E+00	4.7E-04	27.4		1.4E-04	0.0E+00	1.4E-04
Phenanthrene		2.00E-01	--	0		1.47E-03	0	1.47E-03	1.31		1.1E-03	0.0E+00	1.1E-03	32.8		4.5E-05	0.0E+00	4.5E-05
Phenol		2.90E-01	--	0		2.13E-03	0	2.13E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pyrene		4.30E-01	--	0		3.16E-03	0	3.16E-03	1.31		2.4E-03	0.0E+00	2.4E-03	32.8		9.6E-05	0.0E+00	9.6E-05
PCBs (mg/kg)																		
PCBs (TOTAL)-congeners	0.000016	2.00E-01	2.72E+00	1	2.51E-06	1.47E-03	1.66E-01	1.68E-01	0.36	7.0E-06	4.1E-03	4.6E-01	4.7E-01	1.28	2.0E-06	1.1E-03	1.3E-01	1.3E-01

>1 = The calculated hazard quotient exceeds 1 (i.e., > 1.5)

Exposure Assumptions and Equation:[e]

	Value	Units
Ingestion Rate (IR) prey(dry wt.) =	0.00306	kg/day (dry weight)
Irpickleweed (dry wt.) =	0.00306	kg/day (dry weight)
IRsediment (dry wt.)[f] =	0.0000734	kg-day (dry weight)
Cprey =	chem-specific	mg/kg or µg/kg
Csediment =	chem-specific	mg/kg or µg/kg
Tissue Moisture (pickleweed) =	81.6%	percent
IRsurface water[g] =	0.00157	L/day
Csurface water =	chem-specific	mg/L or µg/L
Dietary Composition Factor (DCF)[h] =	100%	percent
Site Use Factor (SUF)[i] =	100%	percent
Body Weight (BW) =	0.01	kg

Intake Equation = [Irpickleweed (dry wt) x (Cprey(pickleweed, dry wt)/1-TM) x DCF x SUF]/BW] + [(IRsediment x Csediment x DCF x SUF)]/BW]+ [(Irsurface water x Csurface water x DCF x SUF)]/BW]

Risk (hazard quotient) = Intake / TRV

Prey tissue(dry wt) = Prey tissue (wet wt.) / (1-Tissue Moisture)

NTV = Not toxicity data available.

Blank cell indicates COPEC was not detected in this medium.

Notes:

a All chemicals detected in sediments are considered as constituents of potential ecological concern.

b All concentrations of constituents in surface water are based on the maximum concentration.

c All concentrations of constituents in sediment are based on the residual concentrations expressed in dry weight.

d Site-specific BAFs (dry weight basis). Calculated pickelweed tissue concentrations (sediment concentration x BAF). Tissue concentrations are on a dry weight basis.

e Exposure parameters used to calculate risk are discussed in detail in Section 4.2 of ERA.

f Ingestion rate of sediment based on 2.4 percent of of the prey ingestion rate (dry weight); based on a meadow vole (Beyer et al. (1994).

g Based on equation for mammals: Water intake (L/day) = $0.099Wt(kg)^{.90}$ (EPA 1993)

Table C2-4p
Post-Remediation Salt Marsh Harvest Mouse Risk Calculations (Wetland Sediment Residual Concentration)
Deep Soil (0 - 10 ft bgs) at Hazard Quotient of 5
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Concentrations				Intake (mg/kg BW-day)					HQ - Low TRV					HQ - High TRV			
COPEC[a]	Surface Water (mg/L)[b]	Sediments[c]	Pickelweed BAF[d]	Pickleweed Tissue[d]	Surface Water	Sediment	Pickleweed	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Pickleweed	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Sediment	Pickleweed	Total Intake

h Dietary composition factor was based on a conservative assumption of 100% dietary intake of pickleweed from the site.

i Site use factor was based on a conservative 100% use of the site for the harvest mouse's foraging range.

Table C2-4q
Summary of Residual Risk Estimates: Deep Soil (0 - 10 ft bgs)
Hazard Quotient = 5
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Fox		Harrier		Mallard (breeding)		Mallard (non-breeding)		Heron		Killdeer		Salt Marsh Harvest Mouse	
Chemical	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**
Hazard Quotient = 10														
Metals (mg/kg)														
Aluminum	6.3E+00 **>1**	6.3E-01	1.2E-01	1.2E-02	1.7E+00 **>1**	1.7E-01	9.8E-02	9.8E-03	5.7E-01	5.7E-02	1.9E+01 **>1**	1.9E+00 **>1**	1.2E+02 **>1**	1.2E+01 **>1**
Antimony	1.1E+00	2.7E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV **>1**	NTV	6.9E+01 **>1**	1.7E-01
Arsenic	2.4E-02	1.6E-03	8.8E-04	2.2E-04	3.1E-02	7.7E-03	5.6E-03	1.4E-03	7.3E-03	1.8E-03	3.0E-01	7.6E-02	3.5E+00 **>1**	2.4E-01
Barium	2.6E-03	2.1E-03	1.3E-02	6.3E-03	2.1E-01	1.0E-01	5.0E-03	2.5E-03	2.0E-02	1.0E-02	1.6E+00 **>1**	8.1E-01	3.2E-01	2.5E-01
Beryllium	3.9E-04	3.7E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	9.0E-03	8.6E-03
Cadmium	1.6E-02	3.6E-04	7.3E-03	5.6E-05	7.7E-01	5.9E-03	5.1E-01	3.9E-03	6.7E-02	5.1E-04	3.1E+00 **>1**	2.4E-02	1.0E+01 **>1**	2.4E-01
Chromium +3	5.6E-02	5.8E-03	7.3E-02	7.0E-02	1.4E+00	1.4E+00	2.6E-02	2.5E-02	7.5E-01	7.2E-01	1.3E+01 **>1**	1.2E+01 **>1**	6.6E-01	6.9E-02
Chromium +6	1.1E-04	1.7E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	8.2E-04	1.3E-04
Cobalt	5.1E-03	3.1E-04	4.9E-04	2.2E-04	3.1E-03	1.4E-03	7.8E-04	3.5E-04	4.4E-03	2.0E-03	9.1E-02	4.1E-02	1.1E-01	6.7E-03
Copper	3.2E-01	1.3E-03	8.3E-01	3.7E-02	1.9E+00 **>1**	8.2E-02	7.7E-02	3.4E-03	9.8E-01	4.3E-02	1.6E+01 **>1**	6.9E-01	4.7E+00 **>1**	2.0E-02
Lead	7.1E-01	2.9E-03	1.2E+02 **>1**	1.9E-01	2.0E+01 **>1**	3.2E-02	2.8E+00 **>1**	4.4E-03	1.3E+02 **>1**	2.1E-01	3.4E+02 **>1**	5.5E-01	3.1E+00 **>1**	1.3E-02
Manganese	3.3E-02	2.8E-03	4.1E-03	4.1E-04	1.9E+00 **>1**	1.9E-01	6.0E-02	6.0E-03	4.1E-02	4.1E-03	1.4E+01 **>1**	1.4E+00	3.6E+01 **>1**	3.1E+00 **>1**
Mercury	1.7E-02	1.7E-03	7.0E-03	1.5E-03	7.8E-01	1.7E-01	1.2E-02	2.5E-03	8.0E-01	1.7E-01	6.7E+00 **>1**	1.5E+00	3.8E-01	3.8E-02
Molybdenum	8.9E-03	8.9E-04	4.5E-04	4.5E-05	2.1E-03	2.1E-04	5.2E-04	5.2E-05	3.0E-03	3.0E-04	5.7E-02	5.7E-03	1.6E-01	1.6E-02
Nickel	3.0E-01	1.3E-03	1.8E-02	4.4E-04	1.0E+00	2.5E-02	3.9E-02	9.5E-04	1.6E-01	3.8E-03	9.6E+00 **>1**	2.4E-01	3.6E+01 **>1**	1.5E-01
Selenium	1.7E+00 **>1**	7.0E-02	8.7E-01	2.2E-01	9.8E-03	2.4E-03	2.4E-03	6.1E-04	1.7E+00 **>1**	4.2E-01	2.2E-01	5.4E-02	2.7E-01	1.1E-02
Silver	2.5E-03	2.5E-04	3.2E-06	NTV	2.1E-05	NTV	5.1E-06	NTV	2.9E-05	NTV	6.1E-04	NTV	5.6E-02	5.6E-03
Thallium	1.2E-02	3.9E-03	3.7E-02	NTV	1.7E-03	NTV	4.3E-04	NTV	4.0E-02	NTV	5.2E-02	NTV	7.2E-03	2.4E-03
Tin	2.2E-04	1.5E-04	4.6E-04	1.8E-04	4.0E-02	1.6E-02	3.7E-02	1.5E-02	4.3E-03	1.7E-03	9.2E-02	3.7E-02	1.3E+00	8.9E-01
Vanadium	1.8E-01	1.8E-02	2.0E-03	2.0E-04	2.5E-02	2.5E-03	5.6E-03	5.6E-04	1.9E-02	1.9E-03	4.6E-01	4.6E-02	4.1E+00 **>1**	4.1E-01
Zinc	3.2E-01	7.5E-03	4.2E-01	4.2E-02	6.4E-01	6.4E-02	1.6E-02	1.6E-03	7.4E-01	7.4E-02	5.0E+00 **>1**	5.0E-01	3.0E+00 **>1**	7.1E-02
Volatile Organics (mg/kg)														
Acetone	1.0E-05	2.0E-06	1.2E-06	1.2E-07	8.0E-06	8.0E-07	2.0E-06	2.0E-07	1.1E-05	1.1E-06	2.4E-04	2.4E-05	2.4E-04	4.7E-05
Benzene	6.0E-08	6.1E-09	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	1.4E-06	1.4E-07
Carbon disulfide	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chlorobenzene	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
cis-1,2-Dichlorobenzene	3.5E-08	3.5E-09	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	8.1E-07	8.1E-08
Ethylbenzene	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Isopropyltoluene	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Methylene chloride	1.6E-05	1.9E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	3.7E-04	4.4E-05
Naphthalene	1.0E-07	3.4E-08	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	2.4E-06	7.8E-07
Toluene	3.7E-07	3.7E-08	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	8.5E-06	8.5E-07
trans-1,2-Dichloroethene	1.6E-07	1.6E-08	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	3.7E-06	3.7E-07
Trichloroethene	3.2E-06	3.2E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	7.3E-05	7.3E-06
1,2,4-Trimethylbenzene	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
1,3,5-Trimethylbenzene	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Vinyl chloride	6.4E-05	6.4E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	1.5E-03	1.5E-04
Xylenes	1.7E-05	1.4E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	3.8E-04	3.1E-04

Table C2-4q
Summary of Residual Risk Estimates: Deep Soil (0 - 10 ft bgs)
Hazard Quotient = 5
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Fox		Harrier		Mallard (breeding)		Mallard (non-breeding)		Heron		Killdeer		Salt Marsh Harvest Mouse	
Chemical	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**
Pesticides (mg/kg)														
alpha-Chlordane	5.7E-07	2.8E-07	1.1E-03	1.1E-04	7.6E-03	7.6E-04	1.9E-03	0.000189342	1.1E-02	1.1E-03	2.3E-01	2.3E-02	1.3E-05	6.5E-06
beta-BHC	2.0E-07	1.0E-07	3.4E-07	8.5E-08	2.3E-06	5.7E-07	5.8E-07	1.4E-07	3.2E-06	8.1E-07	6.9E-05	1.7E-05	4.6E-06	2.3E-06
delta-BHC	4.0E-07	2.0E-07	6.8E-07	1.7E-07	4.6E-06	1.1E-06	1.2E-06	2.9E-07	6.5E-06	1.6E-06	1.4E-04	3.4E-05	9.2E-06	4.6E-06
2,4-DDD	4.4E-04	2.2E-05	9.2E-02	5.5E-04	4.2E-03	2.5E-05	1.0E-03	6.2E-06	9.8E-02	5.9E-04	1.2E-01	7.4E-04	2.7E-04	1.3E-05
DDD	1.3E-03	6.6E-05	2.7E-01	1.6E-03	1.2E-02	7.4E-05	3.1E-03	1.9E-05	2.9E-01	1.7E-03	3.7E-01	2.2E-03	7.9E-04	3.9E-05
DDE	NTV	NTV	NTV	8.1E-04	NTV	3.7E-05	NTV	9.2E-06	NTV	8.6E-04	NTV	1.1E-03	NTV	NTV
DDTs	1.9E-04	9.4E-06	3.8E-02	2.3E-04	2.1E-03	1.3E-05	5.2E-04	3.1E-06	4.1E-02	2.5E-04	5.4E-02	3.2E-04	1.4E-04	6.9E-06
Dieldrin	8.3E-05	7.3E-07	1.0E-05	7.6E-07	7.1E-05	5.1E-06	1.8E-05	1.3E-06	1.0E-04	7.2E-06	2.1E-03	1.5E-04	1.9E-03	1.7E-05
Endosulfan I	8.5E-06	8.5E-07	7.6E-08	7.6E-09	5.2E-07	5.2E-08	1.3E-07	1.3E-08	7.2E-07	7.2E-08	1.5E-05	1.5E-06	2.0E-04	2.0E-05
Endosulfan sulfate	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Endrin	7.3E-05	7.3E-06	1.4E-05	1.4E-06	8.7E-05	8.7E-06	2.2E-05	2.2E-06	1.2E-04	1.2E-05	2.6E-03	2.6E-04	1.6E-03	1.6E-04
Endrin aldehyde	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Endrin Ketone	NTV	1.0E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	2.4E-05
gamma-Chlordane	5.9E-07	3.0E-07	1.2E-03	1.2E-04	7.9E-03	7.9E-04	2.0E-03	2.0E-04	1.1E-02	1.1E-03	1.6E-04	1.6E-05	1.4E-05	6.8E-06
Heptachlor	9.6E-07	1.8E-08	1.4E-06	1.4E-07	5.0E-06	5.0E-07	1.3E-06	1.3E-07	7.5E-06	7.5E-07	1.2E-04	1.2E-05	1.5E-05	2.8E-07
Heptachlor epoxide	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Hexachlorobenzene	1.6E-07	1.6E-08	6.6E-07	6.6E-08	4.5E-06	4.5E-07	1.1E-06	1.1E-07	6.3E-06	6.3E-07	1.3E-04	1.3E-05	3.7E-06	3.7E-07
Methoxychlor	2.6E-06	1.3E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	5.9E-05	2.9E-06
Mirex	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
trans-Nonachlor	1.7E-07	8.3E-08	3.3E-04	3.3E-05	2.2E-03	2.2E-04	5.5E-04	5.5E-05	3.1E-03	3.1E-04	6.6E-02	6.6E-03	3.8E-06	1.9E-06
SVOCs (mg/kg)														
Acenaphthene	3.2E-05	1.3E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	7.3E-04	2.9E-05
Acenaphthylene	2.9E-05	1.2E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	6.7E-04	2.7E-05
Anthracene	3.2E-05	1.3E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	7.3E-04	2.9E-05
Benzo(a)anthracene	6.8E-05	2.7E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	8.6E-02	3.4E-03
Benzo(a)pyrene	5.9E-05	2.3E-06	4.6E-02	4.6E-03	3.1E-01	3.1E-02	7.8E-02	7.8E-03	4.3E-01	4.3E-02	9.2E+00	**>1**	9.2E-01	1.3E-01	5.2E-03
Benzo(b)fluoranthene	5.9E-05	2.3E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	8.8E-02	3.5E-03
Benzo(g,h,i)perylene	3.9E-05	1.6E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	5.9E-02	2.4E-03
Benzo(k)fluoranthene	5.9E-05	2.3E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	8.8E-02	3.5E-03
Benzoic acid	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Bis(2-ethylhexyl)phthalate	5.1E-05	5.1E-06	6.6E-04	6.6E-05	1.9E-03	1.9E-04	4.7E-04	4.7E-05	2.9E-03	2.9E-04	4.2E-02	4.2E-03	6.7E-04	6.7E-05
Butylbenzylphthalate	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Carbazole	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Chloroaniline	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2-Chloropropane	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chrysene	6.9E-05	2.8E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	1.3E-01	5.3E-03
Dibenzofuran	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
3,3-Dichlorobenzidine	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2,6-Dinitrotoluene	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Fluoranthene	9.3E-05	3.7E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	2.1E-03	8.5E-05
Fluorene	3.2E-05	1.3E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	7.3E-04	2.9E-05

Table C2-4q
Summary of Residual Risk Estimates: Deep Soil (0 - 10 ft bgs)
Hazard Quotient = 5
Non-Tidal Wetland Areas Alternative 3
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Fox		Harrier		Mallard (breeding)		Mallard (non-breeding)		Heron		Killdeer		Salt Marsh Harvest Mouse	
Chemical	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**
Indeno(1,2,3-cd)pyrene	3.9E-05	1.6E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	1.2E-01	4.8E-03
2-Methylnaphthalene	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Methylphenol	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Naphthalene	7.0E-07	2.3E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	1.6E-05	5.4E-06
Pentachlorophenol	2.0E-05	6.3E-06	1.5E-05	4.6E-06	1.0E-04	3.1E-05	2.6E-05	7.8E-06	1.5E-04	4.3E-05	3.1E-03	9.2E-04	4.7E-04	1.4E-04
Phenanthrene	4.9E-05	1.9E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	1.1E-03	4.5E-05
Phenol	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pyrene	1.0E-04	4.2E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	2.4E-03	9.6E-05
PCBs (mg/kg)														
PCBs (Total Congeners)	1.1E-01	3.2E-02	1.1E+00	7.8E-02	7.6E-01	5.4E-02	3.1E-03	2.2E-04	4.2E+00 **>1**	3.0E-01	5.6E+00 **>1**	4.0E-01	4.7E-01	1.3E-01

Table C2-5a
Medium-Specific Exposure Point Concentration Summary
Non-Tidal Wetland Areas Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Medium:	Soil (0 to 2 feet bgs)
Exposure Medium:	Soil
Exposure Point:	On-Site Soil

Chemical of Potential Concern	Distribution[a]	Mean of Normal Data[b]	Mean of Lognormal Data[c]	Median	UCL[d]	Maximum Detected Concentration	Reasonable Maximum Exposure		Central Tendency Exposure	
							Medium EPC Value[e]	Medium EPC Statistic and Rationale[f]	Medium EPC Value[e]	Medium EPC Statistic and Rationale[f]
INORGANICS (mg/kg)										
ALUMINUM	Non-Par	25,674	10.1	24,800	26,807	41400	26807	Student's-t UCL	26807	Student's-t UCL
ANTIMONY	Lognormal	2.16	0.47	1.63	2.6	8	2.6	H-UCL	2.6	H-UCL
ARSENIC	Normal	20.6	2.95	20.4	21.8	43.2	21.8	Student's-t UCL	21.8	Student's-t UCL
BARIUM	Non-Par	84	4.36	78.4	90	330	90	Student's-t UCL	90	Student's-t UCL
BERYLLIUM	Gamma	0.37	-1.48	0.22	0.44	2.5	0.44	Approximate Gamma UCL	0.44	Approximate Gamma UCL
CADMIUM	Non-Par	1.64	-0.13	0.93	2.6	7.5	2.6	97.5% Chebyshev UCL	2.6	97.5% Chebyshev UCL
CHROMIUM	Non-Par	106	4.61	94.55	111	196	111	Student's-t UCL	111	Student's-t UCL
COBALT	Non-Par	15.5	2.5	18.3	18.4	38.2	18.4	95% Chebyshev UCL	18.4	95% Chebyshev UCL
COPPER	Non-Par	109	4.6	94.45	119	629	119	Student's-t UCL	119	Student's-t UCL
LEAD	Non-Par	64.3	3.9	52.6	83	399	83	95% Chebyshev UCL	83	95% Chebyshev UCL
MANGANESE	Non-Par	874	6.68	833	934	3800	934	Student's-t UCL	934	Student's-t UCL
MERCURY	Gamma	1.05	-0.12	0.98	1.2	5.1	1.2	Approximate Gamma UCL	1.2	Approximate Gamma UCL
MOLYBDENUM	Non-Par	1.89	-1.11	0.11	5	44.3	5	97.5% Chebyshev UCL	5	97.5% Chebyshev UCL
NICKEL	Non-Par	102	4.58	107	106	177	106	Student's-t UCL	106	Student's-t UCL
SELENIUM	Non-Par	0.73	-0.77	0.25	1.1	2.7	1.1	95% Chebyshev UCL	1.1	95% Chebyshev UCL
SILVER	Non-Par	1.24	-1.23	0.1925	2.3	5.2	2.3	97.5% Chebyshev UCL	2.3	97.5% Chebyshev UCL
THALLIUM	Non-Par	0.24	-1.6	0.19	0.29	2.6	0.29	Student's-t UCL	0.29	Student's-t UCL
TIN	Non-Par	17.1	2.76	15.9	20	59.8	20	Student's-t UCL	20	Student's-t UCL
VANADIUM	Non-Par	97.4	4.5	86.8	103	192	103	Student's-t UCL	103	Student's-t UCL
ZINC	Non-Par	201	5.22	185	223	1790	223	Student's-t UCL	223	Student's-t UCL
PESTICIDES (mg/kg)										
ALPHA-CHLORDANE	Non-Par	0.0015	-7.9	0.0004	0.0048	0.051	0.0048	97.5% Chebyshev UCL	0.0048	97.5% Chebyshev UCL
BETA BHC	NA	NA	NA	NA	NA	0.001	0.001	Max Detected	0.001	Max Detected
DELTA BHC	NA	NA	NA	NA	NA	0.002	0.002	Max Detected	0.002	Max Detected
2,4- DDD	Non-Par	0.0064	-5.98	0.001	0.03	0.03	0.03	99% Chebyshev UCL	0.03	99% Chebyshev UCL
4,4- DDD	Non-Par	0.029	-5.69	0.003	0.092	0.8	0.092	97.5% Chebyshev UCL	0.092	97.5% Chebyshev UCL
4,4- DDE	Non-Par	0.0052	-6.94	0.001	0.018	0.2	0.018	97.5% Chebyshev UCL	0.018	97.5% Chebyshev UCL
4,4- DDT	Non-Par	0.0051	-6.6	0.002	0.012	0.08	0.012	97.5% Chebyshev UCL	0.012	97.5% Chebyshev UCL
DIELDRIN	Non-Par	0.0014	-7.55	0.00095	0.0029	0.015	0.0029	97.5% Chebyshev UCL	0.0029	97.5% Chebyshev UCL
ENDOSULFAN I	NA	NA	NA	NA	NA	0.004	0.004	Max Detected	0.004	Max Detected
ENDOSULFAN SULFATE	NA	NA	NA	NA	NA	0.003	0.003	Max Detected	0.003	Max Detected
ENDRIN	NA	NA	NA	NA	NA	0.02	0.02	Max Detected	0.02	Max Detected
ENDRIN ALDEHYDE	NA	NA	NA	NA	NA	0.006	0.006	Max Detected	0.006	Max Detected
ENDRIN KETONE	Non-Par	0.00099	-7.96	0.0004	0.0023	0.003	0.0023	97.5% Chebyshev UCL	0.0023	97.5% Chebyshev UCL
GAMMA-CHLORDANE	Non-Par	0.0015	-7.97	0.0004	0.0052	0.059	0.0052	97.5% Chebyshev UCL	0.0052	97.5% Chebyshev UCL

Table C2-5a
Medium-Specific Exposure Point Concentration Summary
Non-Tidal Wetland Areas Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Medium:	Soil (0 to 2 feet bgs)
Exposure Medium:	Soil
Exposure Point:	On-Site Soil

Chemical of Potential Concern	Distribution[a]	Mean of Normal Data[b]	Mean of Lognormal Data[c]	Median	UCL[d]	Maximum Detected Concentration	Reasonable Maximum Exposure		Central Tendency Exposure	
							Medium EPC Value[e]	Medium EPC Statistic and Rationale[f]	Medium EPC Value[e]	Medium EPC Statistic and Rationale[f]
HEPTACHLOR	NA	NA	NA	NA	NA	0.0002	0.0002	Max Detected	0.0002	Max Detected
HEPTACHLOR EPOXIDE	NA	NA	NA	NA	NA	0.0003	0.0003	Max Detected	0.0003	Max Detected
HEXACHLOROBENZENE	Non-Par	0.00083	-8.13	0.0003	0.0023	0.0008	0.0008	Max Detected	0.0008	Max Detected
METHOXYCHLOR	Non-Par	0.0038	-7.3	0.00045	0.012	0.04	0.012	99% Chebyshev UCL	0.012	99% Chebyshev UCL
MIREX	NA	NA	NA	NA	NA	0.004	0.004	Max Detected	0.004	Max Detected
TRANS-NONACHLOR	Non-Par	0.00087	-8.2	0.000275	0.0024	0.005	0.0024	97.5% Chebyshev UCL	0.0024	97.5% Chebyshev UCL
PCBs (mg/kg)										
PCBs (TOTAL)	Lognormal	0.05	-4.45	0.0116	0.08	0.7	0.08	H-UCL	0.08	H-UCL
SVOCs (mg/kg)										
ACENAPHTHENE	Non-Par	0.06	-3.15	0.025	0.1	0.0573	0.0573	Max Detected	0.0573	Max Detected
ACENAPHTHYLENE	Non-Par	0.06	-3.25	0.025	0.09	0.0396	0.0396	Max Detected	0.0396	Max Detected
ANTHRACENE	Non-Par	0.05	-3.7	0.0235	0.1	0.0658	0.0658	Max Detected	0.0658	Max Detected
BENZO(A)ANTHRACENE	Non-Par	0.05	-3.51	0.0235	0.1	0.1028	0.1	97.5% Chebyshev UCL	0.1	97.5% Chebyshev UCL
BENZO(A)PYRENE	Non-Par	0.05	-3.7	0.019	0.09	0.1013	0.09	97.5% Chebyshev UCL	0.09	97.5% Chebyshev UCL
BENZO(B)FLUORANTHENE	Non-Par	0.05	-3.35	0.025	0.08	0.11	0.08	95% Chebyshev UCL	0.08	95% Chebyshev UCL
BENZO(G,H,I)PERYLENE	Non-Par	0.05	-3.4	0.0245	0.08	0.13	0.08	95% Chebyshev UCL	0.08	95% Chebyshev UCL
BENZO(K)FLUORANTHENE	Non-Par	0.06	-3.5	0.0235	0.1	0.067	0.067	Max Detected	0.067	Max Detected
BIS(2-ETHYLHEXYL)PHTHALATE	Non-Par	0.066	-3.53	0.01325	0.12	0.59	0.12	97.5% Chebyshev UCL	0.12	97.5% Chebyshev UCL
BUTYLBENZYLPHTHALATE	NA	NA	NA	NA	NA	0.025	0.025	Max Detected	0.025	Max Detected
CARBAZOLE	NA	NA	NA	NA	NA	0.141	0.141	Max Detected	0.141	Max Detected
4- CHLOROANILINE	NA	NA	NA	NA	NA	0.003	0.003	Max Detected	0.003	Max Detected
2- CHLOROPHENOL	NA	NA	NA	NA	NA	0.0433	0.0433	Max Detected	0.0433	Max Detected
CHRYSENE	Non-Par	0.05	-3.72	0.018	0.09	0.20	0.09	97.5% Chebyshev UCL	0.09	97.5% Chebyshev UCL
DIBENZOFURAN	NA	NA	NA	NA	NA	0.0789	0.0789	Max Detected	0.0789	Max Detected
3,3- DICHLOROBENZIDINE	NA	NA	NA	NA	NA	0.012	0.012	Max Detected	0.012	Max Detected
FLUORANTHENE	Non-Par	0.05	-3.45	0.023	0.08	0.1345	0.08	95% Chebyshev UCL	0.08	95% Chebyshev UCL
FLUORENE	Non-Par	0.05	-3.5	0.0235	0.1	0.054	0.054	Max Detected	0.054	Max Detected
INDENO(1,2,3-CD)PYRENE	Non-Par	0.05	-3.7	0.01925	0.1	0.15	0.10	97.5% Chebyshev UCL	0.10	97.5% Chebyshev UCL
2- METHYLNAPHTHALENE	NA	NA	NA	NA	NA	0.0523	0.0523	Max Detected	0.0523	Max Detected
4- METHYLPHENOL	NA	NA	NA	NA	NA	0.0668	0.0668	Max Detected	0.0668	Max Detected
NAPHTHALENE	Non-Par	0.06	-3.3	0.025	0.09	0.1102	0.09	95% Chebyshev UCL	0.09	95% Chebyshev UCL
PENTACHLOROPHENOL	NA	NA	NA	NA	NA	0.0484	0.0484	Max Detected	0.0484	Max Detected
PHENANTHRENE	Non-Par	0.05	-3.7	0.0195	0.09	0.1	0.09	97.5% Chebyshev UCL	0.09	97.5% Chebyshev UCL
PHENOL	NA	NA	NA	NA	NA	0.14	0.14	Max Detected	0.14	Max Detected
PYRENE	Non-Par	0.05	-3.4	0.029	0.08	0.16	0.08	95% Chebyshev UCL	0.08	95% Chebyshev UCL

Table C2-5a
Medium-Specific Exposure Point Concentration Summary
Non-Tidal Wetland Areas Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Medium:	Soil (0 to 2 feet bgs)
Exposure Medium:	Soil
Exposure Point:	On-Site Soil

Chemical of Potential Concern	Distribution[a]	Mean of Normal Data[b]	Mean of Lognormal Data[c]	Median	UCL[d]	Maximum Detected Concentration	Reasonable Maximum Exposure		Central Tendency Exposure	
							Medium EPC Value[e]	Medium EPC Statistic and Rationale[f]	Medium EPC Value[e]	Medium EPC Statistic and Rationale[f]
TPH (mg/kg)										
TPH AS DIESEL	Non-Par	21.1	2.98	19.15	23	81	23	Student's-t UCL	23	Student's-t UCL
TPH AS GASOLINE	Non-Par	0.16	-3.85	0.0153	0.73	8	0.73	97.5% Chebyshev UCL	0.73	97.5% Chebyshev UCL
TPH AS MOTOR OIL	Non-Par	130	4.3	66.215	226	1690	226	95% Chebyshev UCL	226	95% Chebyshev UCL
VOCs (mg/kg)										
ACETONE	Non-Par	0.022	-4.53	0.005	0.1	0.1	0.1	99% Chebyshev UCL	0.1	99% Chebyshev UCL
CARBON DISULFIDE	NA	NA	NA	NA	NA	0.007	0.007	Max Detected	0.007	Max Detected
CHLOROBENZENE	NA	NA	NA	NA	NA	0.005	0.005	Max Detected	0.005	Max Detected
ETHYLBENZENE	NA	NA	NA	NA	NA	0.018	0.018	Max Detected	0.018	Max Detected
TOLUENE	NA	NA	NA	NA	NA	0.03	0.03	Max Detected	0.03	Max Detected
TRICHLOROETHENE	NA	NA	NA	NA	NA	0.007	0.007	Max Detected	0.007	Max Detected
XYLENE (TOTAL)	Non-Par	0.062	-3.54	0.1	0.15	0.167	0.15	99% Chebyshev UCL	0.15	99% Chebyshev UCL

The UCL for chemicals that are italicized and underlined have been modified for post remediation residual risk.

bgs Below Ground Surface.
EPC Exposure Point Concentration.
mg/kg Milligram per kilogram.
NA Not Applicable for small data sets.
PCBs Polychlorinated Biphenyls
SVOC Semivolatile Organic Compound
TPH Total Petroleum Hydrocarbon
UCL Upper confidence limit of the mean.
VOCs Volatile Organic Compounds

a Gamma = Data follow gamma distribution using chi-square approximation.
Normal = Data are normally distributed.
Lognormal = Data are lognormally distributed.
Non-par = Data are non-parametric.
Lilliefors Test was used to determine the distribution for sample sets greater than 50.
Shapiro and Wilk W-Test was used to determine the distribution for sample sets less than 50.

b The value presented is the arithmetic mean calculated using distribution-dependent formulas. One half the sample quantitation limit was used as a proxy concentration for non-detects to calculate the mean.

c The value presented is the mean of log-transformed data calculated using distribution-dependent formulas. One half the sample quantitation limit was used as a proxy concentration for non-detects to calculate the mean.

d The value presented is the UCL calculated using distribution-dependent formulas. One half the sample quantitation limit was used as a proxy concentration for non-detects to calculate the UCL.

e If the UCL value exceeds the maximum detected concentration, the maximum detected concentration is used for the medium EPC value.

f Recommended UCL statistic using United States Environmental Protection Agency ProUCL Version 3.0 software.

Table C2-5b
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil (0 to 2 feet)
Exposure Point:	Surface Soil (0 to 2 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
INGESTION	**INORGANICS**									
	ALUMINUM	26,807	mg/kg	2.93E-02	1.22E-02	mg/kg-day	1.00E+00	mg/kg-day	2.93E-02	1.22E-02
	ANTIMONY	2.6	mg/kg	2.84E-06	1.18E-06	mg/kg-day	4.00E-04	mg/kg-day	7.10E-03	2.96E-03
	ARSENIC	21.8	mg/kg	2.38E-05	9.93E-06	mg/kg-day	3.00E-04	mg/kg-day	7.94E-02	3.31E-02
	BARIUM	90.0	mg/kg	9.84E-05	4.10E-05	mg/kg-day	7.00E-02	mg/kg-day	1.41E-03	5.85E-04
	BERYLLIUM	0.4	mg/kg	4.81E-07	2.00E-07	mg/kg-day	2.00E-03	mg/kg-day	2.40E-04	1.00E-04
	CADMIUM	2.6	mg/kg	2.84E-06	1.18E-06	mg/kg-day	5.00E-04	mg/kg-day	5.68E-03	2.37E-03
	CHROMIUM	111	mg/kg	1.21E-04	5.05E-05	mg/kg-day	1.50E+00	mg/kg-day	8.09E-05	3.37E-05
	COBALT	18	mg/kg	2.01E-05	8.38E-06	mg/kg-day	2.00E-02	mg/kg-day	1.01E-03	4.19E-04
	COPPER	119	mg/kg	1.30E-04	5.42E-05	mg/kg-day	4.00E-02	mg/kg-day	3.25E-03	1.35E-03
	LEAD	83	mg/kg	9.07E-05	3.78E-05	mg/kg-day	NA	mg/kg-day	NA	NA
	MANGANESE	934	mg/kg	1.02E-03	4.25E-04	mg/kg-day	1.40E-01	mg/kg-day	7.29E-03	3.04E-03
	MERCURY	1.2	mg/kg	1.31E-06	5.46E-07	mg/kg-day	3.00E-04	mg/kg-day	4.37E-03	1.82E-03
	MOLYBDENUM	5.0	mg/kg	5.46E-06	2.28E-06	mg/kg-day	5.00E-03	mg/kg-day	1.09E-03	4.55E-04
	NICKEL	106	mg/kg	1.16E-04	4.83E-05	mg/kg-day	2.00E-02	mg/kg-day	5.79E-03	2.41E-03
	SELENIUM	1.1	mg/kg	1.20E-06	5.01E-07	mg/kg-day	5.00E-03	mg/kg-day	2.40E-04	1.00E-04
	SILVER	2.3	mg/kg	2.51E-06	1.05E-06	mg/kg-day	5.00E-03	mg/kg-day	5.03E-04	2.09E-04
	THALLIUM	0.29	mg/kg	3.17E-07	1.32E-07	mg/kg-day	6.60E-05	mg/kg-day	4.80E-03	2.00E-03
	TIN	20.0	mg/kg	2.19E-05	9.11E-06	mg/kg-day	6.00E-01	mg/kg-day	3.64E-05	1.52E-05
	VANADIUM	103	mg/kg	1.13E-04	4.69E-05	mg/kg-day	7.00E-03	mg/kg-day	1.61E-02	6.70E-03
	ZINC	223	mg/kg	2.44E-04	1.02E-04	mg/kg-day	3.00E-01	mg/kg-day	8.12E-04	3.38E-04
	PESTICIDES									
	ALPHA-CHLORDANE	0.0048	mg/kg	5.25E-09	2.19E-09	mg/kg-day	5.00E-04	mg/kg-day	1.05E-05	4.37E-06
	BETA BHC	0.001	mg/kg	1.09E-09	4.55E-10	mg/kg-day	2.00E-04	mg/kg-day	5.46E-06	2.28E-06
	DELTA BHC	0.002	mg/kg	2.19E-09	9.11E-10	mg/kg-day	NA	mg/kg-day	NA	NA
	2,4- DDD	0.03	mg/kg	3.28E-08	1.37E-08	mg/kg-day	5.00E-04	mg/kg-day	6.56E-05	2.73E-05
	4,4- DDD	0.092	mg/kg	1.01E-07	4.19E-08	mg/kg-day	5.00E-04	mg/kg-day	2.01E-04	8.38E-05
	4,4- DDE	0.018	mg/kg	1.97E-08	8.20E-09	mg/kg-day	5.00E-04	mg/kg-day	3.93E-05	1.64E-05
	4,4- DDT	0.012	mg/kg	1.31E-08	5.46E-09	mg/kg-day	5.00E-04	mg/kg-day	2.62E-05	1.09E-05
	DIELDRIN	0.0029	mg/kg	3.17E-09	1.32E-09	mg/kg-day	5.00E-05	mg/kg-day	6.34E-05	2.64E-05
	ENDOSULFAN I	0.004	mg/kg	4.37E-09	1.82E-09	mg/kg-day	6.00E-03	mg/kg-day	7.29E-07	3.04E-07

Table C2-5b
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil (0 to 2 feet)
Exposure Point:	Surface Soil (0 to 2 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
INGESTION (CONTINUED)	ENDOSULFAN SULFATE	0.003	mg/kg	3.28E-09	1.37E-09	mg/kg-day	6.00E-03	mg/kg-day	5.46E-07	2.28E-07
	ENDRIN	0.02	mg/kg	2.19E-08	9.11E-09	mg/kg-day	3.00E-04	mg/kg-day	7.29E-05	3.04E-05
	ENDRIN ALDEHYDE	0.006	mg/kg	6.56E-09	2.73E-09	mg/kg-day	3.00E-04	mg/kg-day	2.19E-05	9.11E-06
	ENDRIN KETONE	0.0023	mg/kg	2.51E-09	1.05E-09	mg/kg-day	3.00E-04	mg/kg-day	8.38E-06	3.49E-06
	GAMMA-CHLORDANE	0.0052	mg/kg	5.68E-09	2.37E-09	mg/kg-day	5.00E-04	mg/kg-day	1.14E-05	4.74E-06
	HEPTACHLOR	0.0002	mg/kg	2.19E-10	9.11E-11	mg/kg-day	5.00E-04	mg/kg-day	4.37E-07	1.82E-07
	HEPTACHLOR EPOXIDE	0.0003	mg/kg	3.28E-10	1.37E-10	mg/kg-day	1.30E-05	mg/kg-day	2.52E-05	1.05E-05
	HEXACHLOROBENZENE	0.0008	mg/kg	8.74E-10	3.64E-10	mg/kg-day	8.00E-04	mg/kg-day	1.09E-06	4.55E-07
	METHOXYCHLOR	0.012	mg/kg	1.31E-08	5.46E-09	mg/kg-day	5.00E-03	mg/kg-day	2.62E-06	1.09E-06
	MIREX	0.004	mg/kg	4.37E-09	1.82E-09	mg/kg-day	2.00E-04	mg/kg-day	2.19E-05	9.11E-06
	TRANS-NONACHLOR	0.0024	mg/kg	2.62E-09	1.09E-09	mg/kg-day	5.00E-04	mg/kg-day	5.25E-06	2.19E-06
	PCBs									
	PCBs (TOTAL)	0.08	mg/kg	8.74E-08	3.64E-08	mg/kg-day	2.00E-05	mg/kg-day	4.37E-03	1.82E-03
	SVOCs									
	ACENAPHTHENE	0.057	mg/kg	6.26E-08	2.61E-08	mg/kg-day	6.00E-02	mg/kg-day	1.04E-06	4.35E-07
	ACENAPHTHYLENE	0.04	mg/kg	4.33E-08	1.80E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	ANTHRACENE	0.0658	mg/kg	7.19E-08	3.00E-08	mg/kg-day	3.00E-01	mg/kg-day	2.40E-07	9.99E-08
	BENZO(A)ANTHRACENE	0.100	mg/kg	1.09E-07	4.55E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(A)PYRENE	0.090	mg/kg	9.84E-08	4.10E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(B)FLUORANTHENE	0.080	mg/kg	8.74E-08	3.64E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(G,H,I)PERYLENE	0.080	mg/kg	8.74E-08	3.64E-08	mg/kg-day	4.00E-02	mg/kg-day	2.19E-06	9.11E-07
	BENZO(K)FLUORANTHENE	0.07	mg/kg	7.32E-08	3.05E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	BIS(2-ETHYLHEXYL)PHTHAL	0.12	mg/kg	1.31E-07	5.46E-08	mg/kg-day	2.00E-02	mg/kg-day	6.56E-06	2.73E-06
	BUTYLBENZYLPHTHALATE	0.025	mg/kg	2.73E-08	1.14E-08	mg/kg-day	2.00E-01	mg/kg-day	1.37E-07	5.69E-08
	CARBAZOLE	0.14	mg/kg	1.54E-07	6.42E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	4- CHLOROANILINE	0.003	mg/kg	3.28E-09	1.37E-09	mg/kg-day	4.00E-03	mg/kg-day	8.20E-07	3.42E-07
	2- CHLOROPHENOL	0.043	mg/kg	4.73E-08	1.97E-08	mg/kg-day	5.00E-03	mg/kg-day	9.46E-06	3.94E-06
	CHRYSENE	0.090	mg/kg	9.84E-08	4.10E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	DIBENZOFURAN	0.079	mg/kg	8.62E-08	3.59E-08	mg/kg-day	2.00E-03	mg/kg-day	4.31E-05	1.80E-05
	3,3- DICHLOROBENZIDINE	0.012	mg/kg	1.31E-08	5.46E-09	mg/kg-day	NA	mg/kg-day	NA	NA
	FLUORANTHENE	0.080	mg/kg	8.74E-08	3.64E-08	mg/kg-day	4.00E-02	mg/kg-day	2.19E-06	9.11E-07

Table C2-5b
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil (0 to 2 feet)
Exposure Point:	Surface Soil (0 to 2 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
	FLUORENE	0.054	mg/kg	5.90E-08	2.46E-08	mg/kg-day	4.00E-02	mg/kg-day	1.48E-06	6.15E-07

Table C2-5b
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil (0 to 2 feet)
Exposure Point:	Surface Soil (0 to 2 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
INGESTION (CONTINUED)	*INDENO(1,2,3-CD)PYRENE*	0.10	mg/kg	1.09E-07	4.55E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	2- METHYLNAPHTHALENE	0.052	mg/kg	5.72E-08	2.38E-08	mg/kg-day	4.00E-03	mg/kg-day	1.43E-05	5.95E-06
	4- METHYLPHENOL	0.067	mg/kg	7.30E-08	3.04E-08	mg/kg-day	5.00E-03	mg/kg-day	1.46E-05	6.08E-06
	NAPHTHALENE	0.090	mg/kg	9.84E-08	4.10E-08	mg/kg-day	2.00E-02	mg/kg-day	4.92E-06	2.05E-06
	PENTACHLOROPHENOL	0.048	mg/kg	5.29E-08	2.20E-08	mg/kg-day	3.00E-02	mg/kg-day	1.76E-06	7.35E-07
	PHENANTHRENE	0.090	mg/kg	9.84E-08	4.10E-08	mg/kg-day	3.00E-01	mg/kg-day	3.28E-07	1.37E-07
	PHENOL	0.14	mg/kg	1.53E-07	6.37E-08	mg/kg-day	6.00E-01	mg/kg-day	2.55E-07	1.06E-07
	PYRENE	0.080	mg/kg	8.74E-08	3.64E-08	mg/kg-day	3.00E-02	mg/kg-day	2.91E-06	1.21E-06
	TPH									
	TPH AS DIESEL	23	mg/kg	2.51E-05	1.05E-05	mg/kg-day	NA	mg/kg-day	NA	NA
	TPH AS GASOLINE	0.7	mg/kg	7.98E-07	3.32E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	TPH AS MOTOR OIL	226	mg/kg	2.47E-04	1.03E-04	mg/kg-day	NA	mg/kg-day	NA	NA
	VOCs									
	ACETONE	0.10	mg/kg	1.09E-07	4.55E-08	mg/kg-day	9.00E-01	mg/kg-day	1.21E-07	5.06E-08
	CARBON DISULFIDE	0.007	mg/kg	7.65E-09	3.19E-09	mg/kg-day	1.00E-01	mg/kg-day	7.65E-08	3.19E-08
	CHLOROBENZENE	0.005	mg/kg	5.46E-09	2.28E-09	mg/kg-day	2.00E-02	mg/kg-day	2.73E-07	1.14E-07
	ETHYLBENZENE	0.018	mg/kg	1.97E-08	8.20E-09	mg/kg-day	1.00E-01	mg/kg-day	1.97E-07	8.20E-08
	TOLUENE	0.03	mg/kg	3.28E-08	1.37E-08	mg/kg-day	2.00E-01	mg/kg-day	1.64E-07	6.83E-08
	TRICHLOROETHENE	0.007	mg/kg	7.65E-09	3.19E-09	mg/kg-day	3.00E-04	mg/kg-day	2.55E-05	1.06E-05
	XYLENE (TOTAL)	0.15	mg/kg	1.64E-07	6.83E-08	mg/kg-day	2.00E-01	mg/kg-day	8.20E-07	3.42E-07
DERMAL CONTACT	**INORGANICS**									
	ALUMINUM	26,807	mg/kg	NA	NA	mg/kg-day	1.00E+00	mg/kg-day	NA	NA
	ANTIMONY	2.6	mg/kg	NA	NA	mg/kg-day	6.00E-05	mg/kg-day	NA	NA
	ARSENIC	21.8	mg/kg	3.28E-06	1.37E-06	mg/kg-day	3.00E-04	mg/kg-day	1.09E-02	4.56E-03
	BARIUM	90.0	mg/kg	NA	NA	mg/kg-day	4.90E-03	mg/kg-day	NA	NA
	BERYLLIUM	0.4	mg/kg	NA	NA	mg/kg-day	1.40E-05	mg/kg-day	NA	NA
	CADMIUM	2.6	mg/kg	1.30E-08	5.43E-09	mg/kg-day	1.25E-05	mg/kg-day	1.04E-03	4.35E-04
	CHROMIUM	111	mg/kg	NA	NA	mg/kg-day	1.95E-02	mg/kg-day	NA	NA
	COBALT	18	mg/kg	NA	NA	mg/kg-day	2.00E-02	mg/kg-day	NA	NA
	COPPER	119	mg/kg	NA	NA	mg/kg-day	4.00E-02	mg/kg-day	NA	NA
	LEAD	83	mg/kg	NA	NA	mg/kg-day	NA	mg/kg-day	NA	NA

Table C2-5b
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil (0 to 2 feet)
Exposure Point:	Surface Soil (0 to 2 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
DERMAL CONTACT (CONTINUED)	*MANGANESE*	934	mg/kg	NA	NA	mg/kg-day	5.60E-03	mg/kg-day	NA	NA
	MERCURY	1.2	mg/kg	NA	NA	mg/kg-day	2.10E-05	mg/kg-day	NA	NA
	MOLYBDENUM	5.0	mg/kg	NA	NA	mg/kg-day	5.00E-03	mg/kg-day	NA	NA
	NICKEL	106	mg/kg	NA	NA	mg/kg-day	8.00E-04	mg/kg-day	NA	NA
	SELENIUM	1.1	mg/kg	NA	NA	mg/kg-day	5.00E-03	mg/kg-day	NA	NA
	SILVER	2.3	mg/kg	NA	NA	mg/kg-day	2.00E-04	mg/kg-day	NA	NA
	THALLIUM	0.29	mg/kg	NA	NA	mg/kg-day	6.60E-05	mg/kg-day	NA	NA
	TIN	20.0	mg/kg	NA	NA	mg/kg-day	6.00E-01	mg/kg-day	NA	NA
	VANADIUM	103	mg/kg	NA	NA	mg/kg-day	1.82E-04	mg/kg-day	NA	NA
	ZINC	223	mg/kg	NA	NA	mg/kg-day	3.00E-01	mg/kg-day	NA	NA
	PESTICIDES									
	ALPHA-CHLORDANE	0.0048	mg/kg	9.63E-10	4.01E-10	mg/kg-day	5.00E-04	mg/kg-day	1.93E-06	8.03E-07
	BETA BHC	0.001	mg/kg	2.01E-10	8.36E-11	mg/kg-day	2.00E-04	mg/kg-day	1.00E-06	4.18E-07
	DELTA BHC	0.002	mg/kg	4.01E-10	1.67E-10	mg/kg-day	NA	mg/kg-day	NA	NA
	2,4- DDD	0.03	mg/kg	4.51E-09	1.88E-09	mg/kg-day	5.00E-04	mg/kg-day	9.03E-06	3.76E-06
	4,4- DDD	0.092	mg/kg	1.38E-08	5.77E-09	mg/kg-day	5.00E-04	mg/kg-day	2.77E-05	1.15E-05
	4,4- DDE	0.018	mg/kg	2.71E-09	1.13E-09	mg/kg-day	5.00E-04	mg/kg-day	5.42E-06	2.26E-06
	4,4- DDT	0.012	mg/kg	1.81E-09	7.52E-10	mg/kg-day	5.00E-04	mg/kg-day	3.61E-06	1.50E-06
	DIELDRIN	0.0029	mg/kg	1.45E-09	6.06E-10	mg/kg-day	5.00E-05	mg/kg-day	2.91E-05	1.21E-05
	ENDOSULFAN I	0.004	mg/kg	2.01E-09	8.36E-10	mg/kg-day	6.00E-03	mg/kg-day	3.34E-07	1.39E-07
	ENDOSULFAN SULFATE	0.003	mg/kg	1.50E-09	6.27E-10	mg/kg-day	6.00E-03	mg/kg-day	2.51E-07	1.05E-07
	ENDRIN	0.02	mg/kg	1.00E-08	4.18E-09	mg/kg-day	3.00E-04	mg/kg-day	3.34E-05	1.39E-05
	ENDRIN ALDEHYDE	0.006	mg/kg	3.01E-09	1.25E-09	mg/kg-day	3.00E-04	mg/kg-day	1.00E-05	4.18E-06
	ENDRIN KETONE	0.0023	mg/kg	1.15E-09	4.81E-10	mg/kg-day	3.00E-04	mg/kg-day	3.85E-06	1.60E-06
	GAMMA-CHLORDANE	0.0052	mg/kg	1.04E-09	4.35E-10	mg/kg-day	5.00E-04	mg/kg-day	2.09E-06	8.69E-07
	HEPTACHLOR	0.0002	mg/kg	1.00E-10	4.18E-11	mg/kg-day	5.00E-04	mg/kg-day	2.01E-07	8.36E-08
	HEPTACHLOR EPOXIDE	0.0003	mg/kg	1.50E-10	6.27E-11	mg/kg-day	1.30E-05	mg/kg-day	1.16E-05	4.82E-06
	HEXACHLOROBENZENE	0.0008	mg/kg	4.01E-10	1.67E-10	mg/kg-day	8.00E-04	mg/kg-day	5.02E-07	2.09E-07
	METHOXYCHLOR	0.012	mg/kg	2.41E-09	1.00E-09	mg/kg-day	5.00E-03	mg/kg-day	4.82E-07	2.01E-07
	MIREX	0.004	mg/kg	2.01E-09	8.36E-10	mg/kg-day	2.00E-04	mg/kg-day	1.00E-05	4.18E-06
	TRANS-NONACHLOR	0.0024	mg/kg	4.82E-10	2.01E-10	mg/kg-day	5.00E-04	mg/kg-day	9.63E-07	4.01E-07

Table C2-5b
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil (0 to 2 feet)
Exposure Point:	Surface Soil (0 to 2 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
DERMAL CONTACT (CONTINUED)	**PCBs**									
	PCBs (TOTAL)	0.08	mg/kg	5.62E-08	2.34E-08	mg/kg-day	2.00E-05	mg/kg-day	2.81E-03	1.17E-03
	SVOCs									
	ACENAPHTHENE	0.057	mg/kg	3.74E-08	1.56E-08	mg/kg-day	6.00E-02	mg/kg-day	6.23E-07	2.59E-07
	ACENAPHTHYLENE	0.04	mg/kg	2.58E-08	1.08E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	ANTHRACENE	0.0658	mg/kg	4.29E-08	1.79E-08	mg/kg-day	3.00E-01	mg/kg-day	1.43E-07	5.96E-08
	BENZO(A)ANTHRACENE	0.100	mg/kg	6.52E-08	2.72E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(A)PYRENE	0.090	mg/kg	5.87E-08	2.45E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(B)FLUORANTHENE	0.080	mg/kg	5.22E-08	2.17E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(G,H,I)PERYLENE	0.080	mg/kg	5.22E-08	2.17E-08	mg/kg-day	4.00E-02	mg/kg-day	1.30E-06	5.43E-07
	BENZO(K)FLUORANTHENE	0.07	mg/kg	4.37E-08	1.82E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	BIS(2-ETHYLHEXYL)PHTHAL	0.12	mg/kg	6.02E-08	2.51E-08	mg/kg-day	2.00E-02	mg/kg-day	3.01E-06	1.25E-06
	BUTYLBENZYLPHTHALATE	0.025	mg/kg	1.25E-08	5.23E-09	mg/kg-day	2.00E-01	mg/kg-day	6.27E-08	2.61E-08
	CARBAZOLE	0.14	mg/kg	7.07E-08	2.95E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	4- CHLOROANILINE	0.003	mg/kg	1.50E-09	6.27E-10	mg/kg-day	4.00E-03	mg/kg-day	3.76E-07	1.57E-07
	2- CHLOROPHENOL	0.043	mg/kg	2.17E-08	9.05E-09	mg/kg-day	5.00E-03	mg/kg-day	4.34E-06	1.81E-06
	CHRYSENE	0.090	mg/kg	5.87E-08	2.45E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	DIBENZOFURAN	0.079	mg/kg	3.96E-08	1.65E-08	mg/kg-day	2.00E-03	mg/kg-day	1.98E-05	8.25E-06
	3,3- DICHLOROBENZIDINE	0.012	mg/kg	6.02E-09	2.51E-09	mg/kg-day	NA	mg/kg-day	NA	NA
	FLUORANTHENE	0.080	mg/kg	5.22E-08	2.17E-08	mg/kg-day	4.00E-02	mg/kg-day	1.30E-06	5.43E-07
	FLUORENE	0.054	mg/kg	3.52E-08	1.47E-08	mg/kg-day	4.00E-02	mg/kg-day	8.80E-07	3.67E-07
	INDENO(1,2,3-CD)PYRENE	0.10	mg/kg	6.52E-08	2.72E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	2- METHYLNAPHTHALENE	0.052	mg/kg	2.62E-08	1.09E-08	mg/kg-day	4.00E-03	mg/kg-day	6.56E-06	2.73E-06
	4- METHYLPHENOL	0.067	mg/kg	3.35E-08	1.40E-08	mg/kg-day	5.00E-03	mg/kg-day	6.70E-06	2.79E-06
	NAPHTHALENE	0.090	mg/kg	5.87E-08	2.45E-08	mg/kg-day	2.00E-02	mg/kg-day	2.93E-06	1.22E-06
	PENTACHLOROPHENOL	0.048	mg/kg	2.43E-08	1.01E-08	mg/kg-day	3.00E-02	mg/kg-day	8.09E-07	3.37E-07
	PHENANTHRENE	0.090	mg/kg	5.87E-08	2.45E-08	mg/kg-day	3.00E-01	mg/kg-day	1.96E-07	8.15E-08
	PHENOL	0.14	mg/kg	7.02E-08	2.93E-08	mg/kg-day	6.00E-01	mg/kg-day	1.17E-07	4.88E-08
	PYRENE	0.080	mg/kg	5.22E-08	2.17E-08	mg/kg-day	3.00E-02	mg/kg-day	1.74E-06	7.25E-07
	TPH									
	TPH AS DIESEL	23	mg/kg	NA	NA	mg/kg-day	NA	mg/kg-day	NA	NA

Table C2-5b
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil (0 to 2 feet)
Exposure Point:	Surface Soil (0 to 2 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
DERMAL CONTACT (CONTINUED)	*TPH AS GASOLINE*	0.7	mg/kg	NA	NA	mg/kg-day	NA	mg/kg-day	NA	NA
	TPH AS MOTOR OIL	226	mg/kg	NA	NA	mg/kg-day	NA	mg/kg-day	NA	NA
	VOCs									
	ACETONE	0.10	mg/kg	NA	NA	mg/kg-day	9.00E-01	mg/kg-day	NA	NA
	CARBON DISULFIDE	0.007	mg/kg	NA	NA	mg/kg-day	1.00E-01	mg/kg-day	NA	NA
	CHLOROBENZENE	0.005	mg/kg	NA	NA	mg/kg-day	2.00E-02	mg/kg-day	NA	NA
	ETHYLBENZENE	0.018	mg/kg	NA	NA	mg/kg-day	1.00E-01	mg/kg-day	NA	NA
	TOLUENE	0.03	mg/kg	NA	NA	mg/kg-day	2.00E-01	mg/kg-day	NA	NA
	TRICHLOROETHENE	0.007	mg/kg	NA	NA	mg/kg-day	3.00E-04	mg/kg-day	NA	NA
	XYLENE (TOTAL)	0.15	mg/kg	NA	NA	mg/kg-day	2.00E-01	mg/kg-day	NA	NA
INHALATION OF PARTICULATES AND VAPORS	**INORGANICS**									
	ALUMINUM	26,807	mg/kg	1.23E-06	5.13E-07	mg/kg-day	1.40E-03	mg/kg-day	8.80E-04	3.67E-04
	ANTIMONY	2.6	mg/kg	1.19E-10	4.98E-11	mg/kg-day	NA	mg/kg-day	NA	NA
	ARSENIC	21.8	mg/kg	1.00E-09	4.17E-10	mg/kg-day	8.57E-06	mg/kg-day	1.17E-04	4.87E-05
	BARIUM	90.0	mg/kg	4.14E-09	1.72E-09	mg/kg-day	1.43E-04	mg/kg-day	2.89E-05	1.20E-05
	BERYLLIUM	0.4	mg/kg	2.02E-11	8.42E-12	mg/kg-day	2.00E-06	mg/kg-day	1.01E-05	4.22E-06
	CADMIUM	2.6	mg/kg	1.19E-10	4.98E-11	mg/kg-day	5.71E-06	mg/kg-day	2.09E-05	8.72E-06
	CHROMIUM	111	mg/kg	5.10E-09	2.13E-09	mg/kg-day	NA	mg/kg-day	NA	NA
	COBALT	18	mg/kg	8.45E-10	3.52E-10	mg/kg-day	5.70E-06	mg/kg-day	1.48E-04	6.18E-05
	COPPER	119	mg/kg	5.47E-09	2.28E-09	mg/kg-day	NA	mg/kg-day	NA	NA
	LEAD	83	mg/kg	3.81E-09	1.59E-09	mg/kg-day	NA	mg/kg-day	NA	NA
	MANGANESE	934	mg/kg	4.29E-08	1.79E-08	mg/kg-day	1.43E-05	mg/kg-day	3.00E-03	1.25E-03
	MERCURY	1.2	mg/kg	5.51E-11	2.30E-11	mg/kg-day	2.57E-05	mg/kg-day	2.15E-06	8.94E-07
	MOLYBDENUM	5.0	mg/kg	2.30E-10	9.57E-11	mg/kg-day	NA	mg/kg-day	NA	NA
	NICKEL	106	mg/kg	4.87E-09	2.03E-09	mg/kg-day	1.43E-05	mg/kg-day	3.41E-04	1.42E-04
	SELENIUM	1.1	mg/kg	5.05E-11	2.11E-11	mg/kg-day	5.71E-03	mg/kg-day	8.85E-09	3.69E-09
	SILVER	2.3	mg/kg	1.06E-10	4.40E-11	mg/kg-day	NA	mg/kg-day	NA	NA
	THALLIUM	0.29	mg/kg	1.33E-11	5.55E-12	mg/kg-day	NA	mg/kg-day	NA	NA
	TIN	20.0	mg/kg	9.19E-10	3.83E-10	mg/kg-day	NA	mg/kg-day	NA	NA
	VANADIUM	103	mg/kg	4.73E-09	1.97E-09	mg/kg-day	NA	mg/kg-day	NA	NA
	ZINC	223	mg/kg	1.02E-08	4.27E-09	mg/kg-day	NA	mg/kg-day	NA	NA

Table C2-5b
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil (0 to 2 feet)
Exposure Point:	Surface Soil (0 to 2 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
INHALATION OF PARTICULATES AND VAPORS (CONTINUED)	**PESTICIDES**									
	ALPHA-CHLORDANE	0.0048	mg/kg	2.21E-13	9.19E-14	mg/kg-day	2.00E-04	mg/kg-day	1.10E-09	4.59E-10
	BETA BHC	0.001	mg/kg	4.59E-14	1.91E-14	mg/kg-day	2.00E-04	mg/kg-day	2.30E-10	9.57E-11
	DELTA BHC	0.002	mg/kg	9.19E-14	3.83E-14	mg/kg-day	NA	mg/kg-day	NA	NA
	2,4- DDD	0.03	mg/kg	1.38E-12	5.74E-13	mg/kg-day	5.00E-04	mg/kg-day	2.76E-09	1.15E-09
	4,4- DDD	0.092	mg/kg	4.23E-12	1.76E-12	mg/kg-day	5.00E-04	mg/kg-day	8.45E-09	3.52E-09
	4,4- DDE	0.018	mg/kg	8.27E-13	3.45E-13	mg/kg-day	5.00E-04	mg/kg-day	1.65E-09	6.89E-10
	4,4- DDT	0.012	mg/kg	5.51E-13	2.30E-13	mg/kg-day	5.00E-04	mg/kg-day	1.10E-09	4.59E-10
	DIELDRIN	0.0029	mg/kg	1.33E-13	5.55E-14	mg/kg-day	5.00E-05	mg/kg-day	2.67E-09	1.11E-09
	ENDOSULFAN I	0.004	mg/kg	1.84E-13	7.66E-14	mg/kg-day	6.00E-03	mg/kg-day	3.06E-11	1.28E-11
	ENDOSULFAN SULFATE	0.003	mg/kg	1.38E-13	5.74E-14	mg/kg-day	6.00E-03	mg/kg-day	2.30E-11	9.57E-12
	ENDRIN	0.02	mg/kg	9.19E-13	3.83E-13	mg/kg-day	3.00E-04	mg/kg-day	3.06E-09	1.28E-09
	ENDRIN ALDEHYDE	0.006	mg/kg	2.76E-13	1.15E-13	mg/kg-day	3.00E-04	mg/kg-day	9.19E-10	3.83E-10
	ENDRIN KETONE	0.0023	mg/kg	1.06E-13	4.40E-14	mg/kg-day	3.00E-04	mg/kg-day	3.52E-10	1.47E-10
	GAMMA-CHLORDANE	0.0052	mg/kg	2.39E-13	9.96E-14	mg/kg-day	2.00E-04	mg/kg-day	1.19E-09	4.98E-10
	HEPTACHLOR	0.0002	mg/kg	9.19E-15	3.83E-15	mg/kg-day	5.00E-04	mg/kg-day	1.84E-11	7.66E-12
	HEPTACHLOR EPOXIDE	0.0003	mg/kg	1.38E-14	5.74E-15	mg/kg-day	1.30E-05	mg/kg-day	1.06E-09	4.42E-10
	HEXACHLOROBENZENE	0.0008	mg/kg	3.68E-14	1.53E-14	mg/kg-day	8.00E-04	mg/kg-day	4.59E-11	1.91E-11
	METHOXYCHLOR	0.012	mg/kg	5.51E-13	2.30E-13	mg/kg-day	5.00E-03	mg/kg-day	1.10E-10	4.59E-11
	MIREX	0.004	mg/kg	1.84E-13	7.66E-14	mg/kg-day	2.00E-04	mg/kg-day	9.19E-10	3.83E-10
	TRANS-NONACHLOR	0.0024	mg/kg	1.10E-13	4.59E-14	mg/kg-day	2.00E-04	mg/kg-day	5.51E-10	2.30E-10
	PCBs									
	PCBs (TOTAL)	0.08	mg/kg	3.68E-12	1.53E-12	mg/kg-day	2.00E-05	mg/kg-day	1.84E-07	7.66E-08
	SVOCs									
	ACENAPHTHENE	0.057	mg/kg	1.93E-08	8.05E-09	mg/kg-day	6.00E-02	mg/kg-day	3.22E-07	1.34E-07
	ACENAPHTHYLENE	0.04	mg/kg	1.82E-12	7.58E-13	mg/kg-day	NA	mg/kg-day	NA	NA
	ANTHRACENE	0.0658	mg/kg	5.70E-09	2.38E-09	mg/kg-day	3.00E-01	mg/kg-day	1.90E-08	7.92E-09
	BENZO(A)ANTHRACENE	0.100	mg/kg	4.59E-12	1.91E-12	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(A)PYRENE	0.090	mg/kg	4.14E-12	1.72E-12	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(B)FLUORANTHENE	0.080	mg/kg	3.68E-12	1.53E-12	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(G,H,I)PERYLENE	0.080	mg/kg	3.68E-12	1.53E-12	mg/kg-day	4.00E-02	mg/kg-day	9.19E-11	3.83E-11

Table C2-5b
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil (0 to 2 feet)
Exposure Point:	Surface Soil (0 to 2 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
INHALATION OF PARTICULATES AND VAPORS (CONTINUED)	*BENZO(K)FLUORANTHENE*	0.07	mg/kg	3.08E-12	1.28E-12	mg/kg-day	NA	mg/kg-day	NA	NA
	BIS(2-ETHYLHEXYL)PHTHAL	0.12	mg/kg	5.51E-12	2.30E-12	mg/kg-day	2.00E-02	mg/kg-day	2.76E-10	1.15E-10
	BUTYLBENZYLPHTHALATE	0.025	mg/kg	1.15E-12	4.79E-13	mg/kg-day	2.00E-01	mg/kg-day	5.74E-12	2.39E-12
	CARBAZOLE	0.14	mg/kg	6.48E-12	2.70E-12	mg/kg-day	NA	mg/kg-day	NA	NA
	4- CHLOROANILINE	0.003	mg/kg	1.38E-13	5.74E-14	mg/kg-day	4.00E-03	mg/kg-day	3.45E-11	1.44E-11
	2- CHLOROPHENOL	0.043	mg/kg	1.99E-12	8.29E-13	mg/kg-day	5.00E-03	mg/kg-day	3.98E-10	1.66E-10
	CHRYSENE	0.090	mg/kg	2.02E-09	8.42E-10	mg/kg-day	NA	mg/kg-day	NA	NA
	DIBENZOFURAN	0.079	mg/kg	3.63E-12	1.51E-12	mg/kg-day	2.00E-03	mg/kg-day	1.81E-09	7.55E-10
	3,3- DICHLOROBENZIDINE	0.012	mg/kg	5.51E-13	2.30E-13	mg/kg-day	NA	mg/kg-day	NA	NA
	FLUORANTHENE	0.080	mg/kg	3.68E-12	1.53E-12	mg/kg-day	4.00E-02	mg/kg-day	9.19E-11	3.83E-11
	FLUORENE	0.054	mg/kg	9.10E-09	3.79E-09	mg/kg-day	4.00E-02	mg/kg-day	2.27E-07	9.48E-08
	INDENO(1,2,3-CD)PYRENE	0.10	mg/kg	4.59E-12	1.91E-12	mg/kg-day	NA	mg/kg-day	NA	NA
	2- METHYLNAPHTHALENE	0.052	mg/kg	2.40E-12	1.00E-12	mg/kg-day	NA	mg/kg-day	NA	NA
	4- METHYLPHENOL	0.067	mg/kg	3.07E-12	1.28E-12	mg/kg-day	NA	mg/kg-day	NA	NA
	NAPHTHALENE	0.090	mg/kg	1.27E-07	5.29E-08	mg/kg-day	8.57E-04	mg/kg-day	1.48E-04	6.17E-05
	PENTACHLOROPHENOL	0.048	mg/kg	2.22E-12	9.27E-13	mg/kg-day	3.00E-02	mg/kg-day	7.41E-11	3.09E-11
	PHENANTHRENE	0.090	mg/kg	4.14E-12	1.72E-12	mg/kg-day	3.00E-01	mg/kg-day	1.38E-11	5.74E-12
	PHENOL	0.14	mg/kg	6.43E-12	2.68E-12	mg/kg-day	5.71E-02	mg/kg-day	1.13E-10	4.69E-11
	PYRENE	0.080	mg/kg	1.28E-09	5.32E-10	mg/kg-day	3.00E-02	mg/kg-day	4.26E-08	1.77E-08
	TPH									
	TPH AS DIESEL	23	mg/kg	1.06E-09	4.40E-10	mg/kg-day	NA	mg/kg-day	NA	NA
	TPH AS GASOLINE	0.7	mg/kg	3.35E-11	1.40E-11	mg/kg-day	NA	mg/kg-day	NA	NA
	TPH AS MOTOR OIL	226	mg/kg	1.04E-08	4.33E-09	mg/kg-day	NA	mg/kg-day	NA	NA
	VOCs									
	ACETONE	0.10	mg/kg	4.67E-07	1.94E-07	mg/kg-day	9.00E-01	mg/kg-day	5.18E-07	2.16E-07
	CARBON DISULFIDE	0.007	mg/kg	3.54E-07	1.47E-07	mg/kg-day	2.00E-01	mg/kg-day	1.77E-06	7.37E-07
	CHLOROBENZENE	0.005	mg/kg	4.81E-08	2.01E-08	mg/kg-day	5.71E-03	mg/kg-day	8.43E-06	3.51E-06
	ETHYLBENZENE	0.018	mg/kg	2.02E-07	8.42E-08	mg/kg-day	2.86E-01	mg/kg-day	7.07E-07	2.95E-07
	TOLUENE	0.03	mg/kg	4.55E-07	1.90E-07	mg/kg-day	8.57E-02	mg/kg-day	5.31E-06	2.21E-06
	TRICHLOROETHENE	0.007	mg/kg	1.29E-07	5.36E-08	mg/kg-day	1.00E-02	mg/kg-day	1.29E-05	5.36E-06

Table C2-5b
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil (0 to 2 feet)
Exposure Point:	Surface Soil (0 to 2 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
	XYLENE (TOTAL)	0.15	mg/kg	1.49E-06	6.21E-07	mg/kg-day	2.86E-02	mg/kg-day	5.21E-05	2.17E-05

Notes:
The HQ for chemicals that are italicized and underlined have been modified for post remediation residual risk.
CTE = Central Tendency Exposure
EPC = Exposure point concentration
HQ = Hazard Quotient
mg/kg = milligrams per kilogram
mg/kg-day = milligrams per kilogram per day
NA = Not Applicable
PCBs = Polychlorinated Biphenyls
RfD = Reference Dose
RME = Reasonable Maximum Exposure
SVOCs = Semivolatile Organic Compounds
TPH = Total Petroleum Hydrocarbons
VOCs = Volatile Organic Compounds

Table C2-5c
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil (0 to 2 feet)
Exposure Point:	Surface Soil (0 to 2 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INGESTION	**INORGANICS**									
	ALUMINUM	26,807	mg/kg	7.11E-03	2.96E-03	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ANTIMONY	2.6	mg/kg	6.90E-07	2.88E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ARSENIC	21.8	mg/kg	5.79E-06	2.41E-06	mg/kg-day	9.45E+00	$(mg/kg\text{-}day)^{-1}$	5.47E-05	2.28E-05
	BARIUM	90.0	mg/kg	2.39E-05	9.95E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BERYLLIUM	0.4	mg/kg	1.17E-07	4.87E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CADMIUM	2.6	mg/kg	6.90E-07	2.88E-07	mg/kg-day	3.80E-01	$(mg/kg\text{-}day)^{-1}$	2.62E-07	1.09E-07
	CHROMIUM	111	mg/kg	2.95E-05	1.23E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	COBALT	18	mg/kg	4.88E-06	2.03E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	COPPER	119	mg/kg	3.16E-05	1.32E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	LEAD	83	mg/kg	2.20E-05	9.18E-06	mg/kg-day	8.50E-03	$(mg/kg\text{-}day)^{-1}$	1.87E-07	7.80E-08
	MANGANESE	934	mg/kg	2.48E-04	1.03E-04	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MERCURY	1.2	mg/kg	3.18E-07	1.33E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MOLYBDENUM	5.0	mg/kg	1.33E-06	5.53E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	NICKEL	106	mg/kg	2.81E-05	1.17E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	SELENIUM	1.1	mg/kg	2.92E-07	1.22E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	SILVER	2.3	mg/kg	6.10E-07	2.54E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	THALLIUM	0.29	mg/kg	7.70E-08	3.21E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TIN	20.0	mg/kg	5.31E-06	2.21E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	VANADIUM	103	mg/kg	2.73E-05	1.14E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ZINC	223	mg/kg	5.92E-05	2.47E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PESTICIDES									
	ALPHA-CHLORDANE	0.0048	mg/kg	1.27E-09	5.31E-10	mg/kg-day	1.30E+00	$(mg/kg\text{-}day)^{-1}$	1.66E-09	6.90E-10
	BETA BHC	0.001	mg/kg	2.65E-10	1.11E-10	mg/kg-day	1.80E+00	$(mg/kg\text{-}day)^{-1}$	4.78E-10	1.99E-10

Table C2-5c
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil (0 to 2 feet)
Exposure Point:	Surface Soil (0 to 2 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INGESTION (CONTINUED)	DELTA BHC	0.002	mg/kg	5.31E-10	2.21E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	2,4- DDD	0.03	mg/kg	7.96E-09	3.32E-09	mg/kg-day	2.40E-01	$(mg/kg\text{-}day)^{-1}$	1.91E-09	7.96E-10
	4,4- DDD	0.092	mg/kg	2.44E-08	1.02E-08	mg/kg-day	2.40E-01	$(mg/kg\text{-}day)^{-1}$	5.86E-09	2.44E-09
	4,4- DDE	0.018	mg/kg	4.78E-09	1.99E-09	mg/kg-day	3.40E-01	$(mg/kg\text{-}day)^{-1}$	1.62E-09	6.77E-10
	4,4- DDT	0.012	mg/kg	3.18E-09	1.33E-09	mg/kg-day	3.40E-01	$(mg/kg\text{-}day)^{-1}$	1.08E-09	4.51E-10
	DIELDRIN	0.0029	mg/kg	7.70E-10	3.21E-10	mg/kg-day	1.60E+01	$(mg/kg\text{-}day)^{-1}$	1.23E-08	5.13E-09
	ENDOSULFAN I	0.004	mg/kg	1.06E-09	4.42E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDOSULFAN SULFATE	0.003	mg/kg	7.96E-10	3.32E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN	0.02	mg/kg	5.31E-09	2.21E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN ALDEHYDE	0.006	mg/kg	1.59E-09	6.64E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN KETONE	0.0023	mg/kg	6.10E-10	2.54E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	GAMMA-CHLORDANE	0.0052	mg/kg	1.38E-09	5.75E-10	mg/kg-day	1.30E+00	$(mg/kg\text{-}day)^{-1}$	1.79E-09	7.48E-10
	HEPTACHLOR	0.0002	mg/kg	5.31E-11	2.21E-11	mg/kg-day	4.50E+00	$(mg/kg\text{-}day)^{-1}$	2.39E-10	9.95E-11
	HEPTACHLOR EPOXIDE	0.0003	mg/kg	7.96E-11	3.32E-11	mg/kg-day	9.10E+00	$(mg/kg\text{-}day)^{-1}$	7.25E-10	3.02E-10
	HEXACHLOROBENZENE	0.0008	mg/kg	2.12E-10	8.85E-11	mg/kg-day	1.80E+00	$(mg/kg\text{-}day)^{-1}$	3.82E-10	1.59E-10
	METHOXYCHLOR	0.012	mg/kg	3.18E-09	1.33E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MIREX	0.004	mg/kg	1.06E-09	4.42E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TRANS-NONACHLOR	0.0024	mg/kg	6.37E-10	2.65E-10	mg/kg-day	1.30E+00	$(mg/kg\text{-}day)^{-1}$	8.28E-10	3.45E-10
	PCBs									
	PCBs (TOTAL)	0.08	mg/kg	2.12E-08	8.85E-09	mg/kg-day	5.00E+00	$(mg/kg\text{-}day)^{-1}$	1.06E-07	4.42E-08
	SVOCs									
	ACENAPHTHENE	0.057	mg/kg	1.52E-08	6.34E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ACENAPHTHYLENE	0.04	mg/kg	1.05E-08	4.38E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ANTHRACENE	0.0658	mg/kg	1.75E-08	7.28E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

Table C2-5c
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil (0 to 2 feet)
Exposure Point:	Surface Soil (0 to 2 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INGESTION (CONTINUED)	*BENZO(A)ANTHRACENE*	0.100	mg/kg	2.65E-08	1.11E-08	mg/kg-day	1.20E+00	$(mg/kg\text{-}day)^{-1}$	3.18E-08	1.33E-08
	BENZO(A)PYRENE	0.090	mg/kg	2.39E-08	9.95E-09	mg/kg-day	1.20E+01	$(mg/kg\text{-}day)^{-1}$	2.87E-07	1.19E-07
	BENZO(B)FLUORANTHENE	0.080	mg/kg	2.12E-08	8.85E-09	mg/kg-day	1.20E+00	$(mg/kg\text{-}day)^{-1}$	2.55E-08	1.06E-08
	BENZO(G,H,I)PERYLENE	0.080	mg/kg	2.12E-08	8.85E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BENZO(K)FLUORANTHENE	0.07	mg/kg	1.78E-08	7.41E-09	mg/kg-day	1.20E+00	$(mg/kg\text{-}day)^{-1}$	2.13E-08	8.89E-09
	BIS(2-ETHYLHEXYL)PHTHALATE	0.12	mg/kg	3.18E-08	1.33E-08	mg/kg-day	1.40E-02	$(mg/kg\text{-}day)^{-1}$	4.46E-10	1.86E-10
	BUTYLBENZYLPHTHALATE	0.025	mg/kg	6.64E-09	2.76E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CARBAZOLE	0.14	mg/kg	3.74E-08	1.56E-08	mg/kg-day	2.00E-02	$(mg/kg\text{-}day)^{-1}$	7.48E-10	3.12E-10
	4- CHLOROANILINE	0.003	mg/kg	7.96E-10	3.32E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	2- CHLOROPHENOL	0.043	mg/kg	1.15E-08	4.79E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CHRYSENE	0.090	mg/kg	2.39E-08	9.95E-09	mg/kg-day	1.20E-01	$(mg/kg\text{-}day)^{-1}$	2.87E-09	1.19E-09
	DIBENZOFURAN	0.079	mg/kg	2.09E-08	8.73E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	3,3- DICHLOROBENZIDINE	0.012	mg/kg	3.18E-09	1.33E-09	mg/kg-day	4.50E-01	$(mg/kg\text{-}day)^{-1}$	1.43E-09	5.97E-10
	FLUORANTHENE	0.080	mg/kg	2.12E-08	8.85E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	FLUORENE	0.054	mg/kg	1.43E-08	5.97E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	INDENO(1,2,3-CD)PYRENE	0.10	mg/kg	2.65E-08	1.11E-08	mg/kg-day	1.20E+00	$(mg/kg\text{-}day)^{-1}$	3.18E-08	1.33E-08
	2- METHYLNAPHTHALENE	0.052	mg/kg	1.39E-08	5.78E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	4- METHYLPHENOL	0.067	mg/kg	1.77E-08	7.39E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	NAPHTHALENE	0.090	mg/kg	2.39E-08	9.95E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PENTACHLOROPHENOL	0.048	mg/kg	1.28E-08	5.35E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PHENANTHRENE	0.090	mg/kg	2.39E-08	9.95E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PHENOL	0.14	mg/kg	3.72E-08	1.55E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PYRENE	0.080	mg/kg	2.12E-08	8.85E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

Table C2-5c
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil (0 to 2 feet)
Exposure Point:	Surface Soil (0 to 2 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INGESTION (CONTINUED)	**TPH**									
	TPH AS DIESEL	23	mg/kg	6.10E-06	2.54E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TPH AS GASOLINE	0.7	mg/kg	1.94E-07	8.07E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TPH AS MOTOR OIL	226	mg/kg	6.00E-05	2.50E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	VOCs									
	ACETONE	0.10	mg/kg	2.65E-08	1.11E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CARBON DISULFIDE	0.007	mg/kg	1.86E-09	7.74E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CHLOROBENZENE	0.005	mg/kg	1.33E-09	5.53E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ETHYLBENZENE	0.018	mg/kg	4.78E-09	1.99E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TOLUENE	0.03	mg/kg	7.96E-09	3.32E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TRICHLOROETHENE	0.007	mg/kg	1.86E-09	7.74E-10	mg/kg-day	4.10E-01	$(mg/kg\text{-}day)^{-1}$	7.62E-10	3.17E-10
	XYLENE (TOTAL)	0.15	mg/kg	3.98E-08	1.66E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
DERMAL CONTACT	**INORGANICS**									
	ALUMINUM	26,807	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ANTIMONY	2.6	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ARSENIC	21.8	mg/kg	7.97E-07	3.32E-07	mg/kg-day	9.45E+00	$(mg/kg\text{-}day)^{-1}$	7.53E-06	3.14E-06
	BARIUM	90.0	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BERYLLIUM	0.4	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CADMIUM	2.6	mg/kg	3.17E-09	1.32E-09	mg/kg-day	1.52E+01	$(mg/kg\text{-}day)^{-1}$	4.81E-08	2.01E-08
	CHROMIUM	111	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	COBALT	18	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	COPPER	119	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	LEAD	83	mg/kg	NA	NA	mg/kg-day	8.50E-03	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MANGANESE	934	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

Table C2-5c
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil (0 to 2 feet)
Exposure Point:	Surface Soil (0 to 2 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
DERMAL CONTACT (CONTINUED)	*MERCURY*	1.2	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MOLYBDENUM	5.0	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	NICKEL	106	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	SELENIUM	1.1	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	SILVER	2.3	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	THALLIUM	0.29	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TIN	20.0	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	VANADIUM	103	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ZINC	223	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PESTICIDES									
	ALPHA-CHLORDANE	0.0048	mg/kg	2.34E-10	9.75E-11	mg/kg-day	1.30E+00	$(mg/kg\text{-}day)^{-1}$	3.04E-10	1.27E-10
	BETA BHC	0.001	mg/kg	4.87E-11	2.03E-11	mg/kg-day	1.80E+00	$(mg/kg\text{-}day)^{-1}$	8.77E-11	3.65E-11
	DELTA BHC	0.002	mg/kg	9.75E-11	4.06E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	2,4- DDD	0.03	mg/kg	1.10E-09	4.57E-10	mg/kg-day	2.40E-01	$(mg/kg\text{-}day)^{-1}$	2.63E-10	1.10E-10
	4,4- DDD	0.092	mg/kg	3.36E-09	1.40E-09	mg/kg-day	2.40E-01	$(mg/kg\text{-}day)^{-1}$	8.07E-10	3.36E-10
	4,4- DDE	0.018	mg/kg	6.58E-10	2.74E-10	mg/kg-day	3.40E-01	$(mg/kg\text{-}day)^{-1}$	2.24E-10	9.32E-11
	4,4- DDT	0.012	mg/kg	4.39E-10	1.83E-10	mg/kg-day	3.40E-01	$(mg/kg\text{-}day)^{-1}$	1.49E-10	6.21E-11
	DIELDRIN	0.0029	mg/kg	3.53E-10	1.47E-10	mg/kg-day	1.60E+01	$(mg/kg\text{-}day)^{-1}$	5.65E-09	2.36E-09
	ENDOSULFAN I	0.004	mg/kg	4.87E-10	2.03E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDOSULFAN SULFATE	0.003	mg/kg	3.65E-10	1.52E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN	0.02	mg/kg	2.44E-09	1.02E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN ALDEHYDE	0.006	mg/kg	7.31E-10	3.05E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN KETONE	0.0023	mg/kg	2.80E-10	1.17E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	GAMMA-CHLORDANE	0.0052	mg/kg	2.53E-10	1.06E-10	mg/kg-day	1.30E+00	$(mg/kg\text{-}day)^{-1}$	3.29E-10	1.37E-10

Table C2-5c
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil (0 to 2 feet)
Exposure Point:	Surface Soil (0 to 2 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
DERMAL CONTACT (CONTINUED)	HEPTACHLOR	0.0002	mg/kg	2.44E-11	1.02E-11	mg/kg-day	4.50E+00	$(mg/kg\text{-}day)^{-1}$	1.10E-10	4.57E-11
	HEPTACHLOR EPOXIDE	0.0003	mg/kg	3.65E-11	1.52E-11	mg/kg-day	9.10E+00	$(mg/kg\text{-}day)^{-1}$	3.33E-10	1.39E-10
	HEXACHLOROBENZENE	0.0008	mg/kg	9.75E-11	4.06E-11	mg/kg-day	1.80E+00	$(mg/kg\text{-}day)^{-1}$	1.75E-10	7.31E-11
	METHOXYCHLOR	0.012	mg/kg	5.85E-10	2.44E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MIREX	0.004	mg/kg	4.87E-10	2.03E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TRANS-NONACHLOR	0.0024	mg/kg	1.17E-10	4.87E-11	mg/kg-day	1.30E+00	$(mg/kg\text{-}day)^{-1}$	1.52E-10	6.33E-11
	PCBs									
	PCBs (TOTAL)	0.08	mg/kg	1.36E-08	5.69E-09	mg/kg-day	5.00E+00	$(mg/kg\text{-}day)^{-1}$	6.82E-08	2.84E-08
	SVOCs									
	ACENAPHTHENE	0.057	mg/kg	9.07E-09	3.78E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ACENAPHTHYLENE	0.04	mg/kg	6.27E-09	2.61E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ANTHRACENE	0.0658	mg/kg	1.04E-08	4.34E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BENZO(A)ANTHRACENE	0.100	mg/kg	1.58E-08	6.60E-09	mg/kg-day	1.20E+00	$(mg/kg\text{-}day)^{-1}$	1.90E-08	7.92E-09
	BENZO(A)PYRENE	0.090	mg/kg	1.43E-08	5.94E-09	mg/kg-day	1.20E+01	$(mg/kg\text{-}day)^{-1}$	1.71E-07	7.13E-08
	BENZO(B)FLUORANTHENE	0.080	mg/kg	1.27E-08	5.28E-09	mg/kg-day	1.20E+00	$(mg/kg\text{-}day)^{-1}$	1.52E-08	6.33E-09
	BENZO(G,H,I)PERYLENE	0.080	mg/kg	1.27E-08	5.28E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BENZO(K)FLUORANTHENE	0.07	mg/kg	1.06E-08	4.42E-09	mg/kg-day	1.20E+00	$(mg/kg\text{-}day)^{-1}$	1.27E-08	5.31E-09
	BIS(2-ETHYLHEXYL)PHTHALATE	0.12	mg/kg	1.46E-08	6.09E-09	mg/kg-day	1.40E-02	$(mg/kg\text{-}day)^{-1}$	2.05E-10	8.53E-11
	BUTYLBENZYLPHTHALATE	0.025	mg/kg	3.05E-09	1.27E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CARBAZOLE	0.14	mg/kg	1.72E-08	7.16E-09	mg/kg-day	2.00E-02	$(mg/kg\text{-}day)^{-1}$	3.44E-10	1.43E-10
	4- CHLOROANILINE	0.003	mg/kg	3.65E-10	1.52E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	2- CHLOROPHENOL	0.043	mg/kg	5.27E-09	2.20E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CHRYSENE	0.090	mg/kg	1.43E-08	5.94E-09	mg/kg-day	1.20E-01	$(mg/kg\text{-}day)^{-1}$	1.71E-09	7.13E-10
	DIBENZOFURAN	0.079	mg/kg	9.61E-09	4.00E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

Table C2-5c
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil (0 to 2 feet)
Exposure Point:	Surface Soil (0 to 2 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
DERMAL CONTACT (CONTINUED)	3,3- DICHLOROBENZIDINE	0.012	mg/kg	1.46E-09	6.09E-10	mg/kg-day	4.50E-01	$(mg/kg\text{-}day)^{-1}$	6.58E-10	2.74E-10
	FLUORANTHENE	0.080	mg/kg	1.27E-08	5.28E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	FLUORENE	0.054	mg/kg	8.55E-09	3.56E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	INDENO(1,2,3-CD)PYRENE	0.10	mg/kg	1.58E-08	6.60E-09	mg/kg-day	1.20E+00	$(mg/kg\text{-}day)^{-1}$	1.90E-08	7.92E-09
	2- METHYLNAPHTHALENE	0.052	mg/kg	6.37E-09	2.65E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	4- METHYLPHENOL	0.067	mg/kg	8.14E-09	3.39E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	NAPHTHALENE	0.090	mg/kg	1.43E-08	5.94E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PENTACHLOROPHENOL	0.048	mg/kg	5.90E-09	2.46E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PHENANTHRENE	0.090	mg/kg	1.43E-08	5.94E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PHENOL	0.14	mg/kg	1.71E-08	7.11E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PYRENE	0.080	mg/kg	1.27E-08	5.28E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TPH									
	TPH AS DIESEL	23	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TPH AS GASOLINE	0.7	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TPH AS MOTOR OIL	226	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	VOCs									
	ACETONE	0.10	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CARBON DISULFIDE	0.007	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CHLOROBENZENE	0.005	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ETHYLBENZENE	0.018	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TOLUENE	0.03	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TRICHLOROETHENE	0.007	mg/kg	NA	NA	mg/kg-day	4.10E-01	$(mg/kg\text{-}day)^{-1}$	NA	NA
	XYLENE (TOTAL)	0.15	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

Table C2-5c
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil (0 to 2 feet)
Exposure Point:	Surface Soil (0 to 2 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INHALATION OF PARTICULATES AND VAPORS	**INORGANICS**									
	ALUMINUM	26,807	mg/kg	2.99E-07	1.25E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ANTIMONY	2.6	mg/kg	2.90E-11	1.21E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ARSENIC	21.8	mg/kg	2.43E-10	1.01E-10	mg/kg-day	1.20E+01	$(mg/kg\text{-}day)^{-1}$	2.92E-09	1.22E-09
	BARIUM	90.0	mg/kg	1.00E-09	4.18E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BERYLLIUM	0.4	mg/kg	4.91E-12	2.05E-12	mg/kg-day	8.40E+00	$(mg/kg\text{-}day)^{-1}$	4.12E-11	1.72E-11
	CADMIUM	2.6	mg/kg	2.90E-11	1.21E-11	mg/kg-day	1.50E+01	$(mg/kg\text{-}day)^{-1}$	4.35E-10	1.81E-10
	CHROMIUM	111	mg/kg	1.24E-09	5.16E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	COBALT	18	mg/kg	2.05E-10	8.56E-11	mg/kg-day	9.80E+00	$(mg/kg\text{-}day)^{-1}$	2.01E-09	8.38E-10
	COPPER	119	mg/kg	1.33E-09	5.53E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	LEAD	83	mg/kg	9.26E-10	3.86E-10	mg/kg-day	4.20E-02	$(mg/kg\text{-}day)^{-1}$	3.89E-11	1.62E-11
	MANGANESE	934	mg/kg	1.04E-08	4.34E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MERCURY	1.2	mg/kg	1.34E-11	5.58E-12	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MOLYBDENUM	5.0	mg/kg	5.58E-11	2.32E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	NICKEL	106	mg/kg	1.18E-09	4.93E-10	mg/kg-day	9.10E-01	$(mg/kg\text{-}day)^{-1}$	1.08E-09	4.49E-10
	SELENIUM	1.1	mg/kg	1.23E-11	5.11E-12	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	SILVER	2.3	mg/kg	2.57E-11	1.07E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	THALLIUM	0.29	mg/kg	3.24E-12	1.35E-12	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TIN	20.0	mg/kg	2.23E-10	9.30E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	VANADIUM	103	mg/kg	1.15E-09	4.79E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ZINC	223	mg/kg	2.49E-09	1.04E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PESTICIDES									
	ALPHA-CHLORDANE	0.0048	mg/kg	5.36E-14	2.23E-14	mg/kg-day	3.50E-01	$(mg/kg\text{-}day)^{-1}$	1.87E-14	7.81E-15
	BETA BHC	0.001	mg/kg	1.12E-14	4.65E-15	mg/kg-day	1.86E+00	$(mg/kg\text{-}day)^{-1}$	2.08E-14	8.65E-15

Table C2-5c
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil (0 to 2 feet)
Exposure Point:	Surface Soil (0 to 2 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INHALATION OF PARTICULATES AND VAPORS (CONTINUED)	DELTA BHC	0.002	mg/kg	2.23E-14	9.30E-15	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	2,4- DDD	0.03	mg/kg	3.35E-13	1.39E-13	mg/kg-day	2.40E-01	$(mg/kg\text{-}day)^{-1}$	8.03E-14	3.35E-14
	4,4- DDD	0.092	mg/kg	1.03E-12	4.28E-13	mg/kg-day	2.40E-01	$(mg/kg\text{-}day)^{-1}$	2.46E-13	1.03E-13
	4,4- DDE	0.018	mg/kg	2.01E-13	8.37E-14	mg/kg-day	3.40E-01	$(mg/kg\text{-}day)^{-1}$	6.83E-14	2.85E-14
	4,4- DDT	0.012	mg/kg	1.34E-13	5.58E-14	mg/kg-day	3.40E-01	$(mg/kg\text{-}day)^{-1}$	4.55E-14	1.90E-14
	DIELDRIN	0.0029	mg/kg	3.24E-14	1.35E-14	mg/kg-day	1.60E+01	$(mg/kg\text{-}day)^{-1}$	5.18E-13	2.16E-13
	ENDOSULFAN I	0.004	mg/kg	4.46E-14	1.86E-14	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDOSULFAN SULFATE	0.003	mg/kg	3.35E-14	1.39E-14	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN	0.02	mg/kg	2.23E-13	9.30E-14	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN ALDEHYDE	0.006	mg/kg	6.70E-14	2.79E-14	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN KETONE	0.0023	mg/kg	2.57E-14	1.07E-14	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	GAMMA-CHLORDANE	0.0052	mg/kg	5.80E-14	2.42E-14	mg/kg-day	3.50E-01	$(mg/kg\text{-}day)^{-1}$	2.03E-14	8.46E-15
	HEPTACHLOR	0.0002	mg/kg	2.23E-15	9.30E-16	mg/kg-day	4.50E+00	$(mg/kg\text{-}day)^{-1}$	1.00E-14	4.18E-15
	HEPTACHLOR EPOXIDE	0.0003	mg/kg	3.35E-15	1.39E-15	mg/kg-day	9.10E+00	$(mg/kg\text{-}day)^{-1}$	3.05E-14	1.27E-14
	HEXACHLOROBENZENE	0.0008	mg/kg	8.93E-15	3.72E-15	mg/kg-day	1.80E+00	$(mg/kg\text{-}day)^{-1}$	1.61E-14	6.70E-15
	METHOXYCHLOR	0.012	mg/kg	1.34E-13	5.58E-14	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MIREX	0.004	mg/kg	4.46E-14	1.86E-14	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TRANS-NONACHLOR	0.0024	mg/kg	2.68E-14	1.12E-14	mg/kg-day	3.50E-01	$(mg/kg\text{-}day)^{-1}$	9.37E-15	3.91E-15
	PCBs									
	PCBs (TOTAL)	0.08	mg/kg	8.93E-13	3.72E-13	mg/kg-day	2.00E+00	$(mg/kg\text{-}day)^{-1}$	1.79E-12	7.44E-13
	SVOCs									
	ACENAPHTHENE	0.057	mg/kg	4.69E-09	1.95E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ACENAPHTHYLENE	0.04	mg/kg	4.42E-13	1.84E-13	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ANTHRACENE	0.0658	mg/kg	1.38E-09	5.77E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

Table C2-5c
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil (0 to 2 feet)
Exposure Point:	Surface Soil (0 to 2 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INHALATION OF PARTICULATES AND VAPORS (CONTINUED)	*BENZO(A)ANTHRACENE*	0.100	mg/kg	1.12E-12	4.65E-13	mg/kg-day	3.90E-01	$(mg/kg\text{-}day)^{-1}$	4.35E-13	1.81E-13
	BENZO(A)PYRENE	0.090	mg/kg	1.00E-12	4.18E-13	mg/kg-day	3.90E+00	$(mg/kg\text{-}day)^{-1}$	3.92E-12	1.63E-12
	BENZO(B)FLUORANTHENE	0.080	mg/kg	8.93E-13	3.72E-13	mg/kg-day	3.90E-01	$(mg/kg\text{-}day)^{-1}$	3.48E-13	1.45E-13
	BENZO(G,H,I)PERYLENE	0.080	mg/kg	8.93E-13	3.72E-13	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BENZO(K)FLUORANTHENE	0.07	mg/kg	7.48E-13	3.12E-13	mg/kg-day	3.90E-01	$(mg/kg\text{-}day)^{-1}$	2.92E-13	1.21E-13
	BIS(2-ETHYLHEXYL)PHTHALATE	0.12	mg/kg	1.34E-12	5.58E-13	mg/kg-day	1.40E-02	$(mg/kg\text{-}day)^{-1}$	1.87E-14	7.81E-15
	BUTYLBENZYLPHTHALATE	0.025	mg/kg	2.79E-13	1.16E-13	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CARBAZOLE	0.14	mg/kg	1.57E-12	6.56E-13	mg/kg-day	2.00E-02	$(mg/kg\text{-}day)^{-1}$	3.15E-14	1.31E-14
	4- CHLOROANILINE	0.003	mg/kg	3.35E-14	1.39E-14	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	2- CHLOROPHENOL	0.043	mg/kg	4.83E-13	2.01E-13	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CHRYSENE	0.090	mg/kg	4.91E-10	2.05E-10	mg/kg-day	3.90E-02	$(mg/kg\text{-}day)^{-1}$	1.91E-11	7.98E-12
	DIBENZOFURAN	0.079	mg/kg	8.80E-13	3.67E-13	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	3,3- DICHLOROBENZIDINE	0.012	mg/kg	1.34E-13	5.58E-14	mg/kg-day	4.50E-01	$(mg/kg\text{-}day)^{-1}$	6.03E-14	2.51E-14
	FLUORANTHENE	0.080	mg/kg	8.93E-13	3.72E-13	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	FLUORENE	0.054	mg/kg	2.21E-09	9.21E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	INDENO(1,2,3-CD)PYRENE	0.10	mg/kg	1.12E-12	4.65E-13	mg/kg-day	3.90E-01	$(mg/kg\text{-}day)^{-1}$	4.35E-13	1.81E-13
	2- METHYLNAPHTHALENE	0.052	mg/kg	5.84E-13	2.43E-13	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	4- METHYLPHENOL	0.067	mg/kg	7.45E-13	3.11E-13	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	NAPHTHALENE	0.090	mg/kg	3.08E-08	1.28E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PENTACHLOROPHENOL	0.048	mg/kg	5.40E-13	2.25E-13	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PHENANTHRENE	0.090	mg/kg	1.00E-12	4.18E-13	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PHENOL	0.14	mg/kg	1.56E-12	6.51E-13	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PYRENE	0.080	mg/kg	3.10E-10	1.29E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

Table C2-5c
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil (0 to 2 feet)
Exposure Point:	Surface Soil (0 to 2 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INHALATION OF PARTICULATES AND VAPORS (CONTINUED)	**TPH**									
	TPH AS DIESEL	23	mg/kg	2.57E-10	1.07E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TPH AS GASOLINE	0.7	mg/kg	8.15E-12	3.39E-12	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TPH AS MOTOR OIL	226	mg/kg	2.52E-09	1.05E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	VOCs									
	ACETONE	0.10	mg/kg	1.13E-07	4.72E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CARBON DISULFIDE	0.007	mg/kg	8.59E-08	3.58E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CHLOROBENZENE	0.005	mg/kg	1.17E-08	4.87E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ETHYLBENZENE	0.018	mg/kg	4.91E-08	2.05E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TOLUENE	0.03	mg/kg	1.10E-07	4.60E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TRICHLOROETHENE	0.007	mg/kg	3.12E-08	1.30E-08	mg/kg-day	7.00E-03	$(mg/kg\text{-}day)^{-1}$	2.19E-10	9.11E-11
	XYLENE (TOTAL)	0.15	mg/kg	3.62E-07	1.51E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

Notes:
The cancer risk for chemicals that are italicized and underlined have been modified for post remediation residual risk.
CTE = Central Tendency Exposure
EPC = Exposure point concentration
HQ = Hazard Quotient
mg/kg = milligrams per kilogram
mg/kg-day = milligrams per kilogram per day
NA = Not Applicable
PCBs = Polychlorinated Biphenyls
RME = Reasonable Maximum Exposure
SVOCs = Semivolatile Organic Compounds
TPH = Total Petroleum Hydrocarbons
VOCs = Volatile Organic Compounds

Table C2-5d
Summary of Current Receptor RME Cancer Risks and Noncarcinogenic Hazard Indices
Non-Tidal Wetland Areas Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Receptor Population:	Recreational User
Receptor Age:	Child (1 to 17 years)

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Primary Target Organ	Non-Carconogenic Hazard Index			
				Ingestion	Dermal	Inhalation (Outdoor)	Exposure Routes Total			Ingestion HQ	Dermal HQ	Inhalation (Outdoor) HQ	Total HI
Soil (0 to 2 feet)	Soil	On-Site Soil	**INORGANICS (mg/kg)**					**INORGANICS (mg/kg)**					
			ALUMINUM	NA	NA	NA	NA	ALUMINUM	Body Weight	2.93E-02	NA	8.80E-04	3.02E-02
			ANTIMONY	NA	NA	NA	NA	ANTIMONY	Blood; Whole Body	7.10E-03	NA	NA	7.10E-03
			ARSENIC	5.47E-05	7.53E-06	2.92E-09	6.22E-05	ARSENIC	Cardiovascular System; Fetal; Nervous System; Skin	7.94E-02	1.09E-02	1.17E-04	9.05E-02
			BARIUM	NA	NA	NA	NA	BARIUM	Cardiovascular System; Fetal; Kidney; NOEL	1.41E-03	NA	2.89E-05	1.43E-03
			BERYLLIUM	NA	NA	4.12E-11	4.12E-11	BERYLLIUM	GI System; Immune System; Respiratory	2.40E-04	NA	1.01E-05	2.51E-04
			CADMIUM	2.62E-07	4.81E-08	4.35E-10	3.11E-07	CADMIUM	Kidney; Respiratory	5.68E-03	1.04E-03	2.09E-05	6.75E-03
			CHROMIUM	NA	NA	NA	NA	CHROMIUM	NOEL	8.09E-05	NA	NA	8.09E-05
			COBALT	NA	NA	2.01E-09	2.01E-09	COBALT	Cardiovascular System; Respiratory	1.01E-03	NA	1.48E-04	1.15E-03
			COPPER	NA	NA	NA	NA	COPPER	GI System	3.25E-03	NA	NA	3.25E-03
			LEAD	1.87E-07	NA	3.89E-11	1.87E-07	LEAD	NA	NA	NA	NA	NA
			MANGANESE	NA	NA	NA	NA	MANGANESE	Nervous System	7.29E-03	NA	3.00E-03	1.03E-02
			MERCURY	NA	NA	NA	NA	MERCURY	Nervous System	4.37E-03	NA	2.15E-06	4.37E-03
			MOLYBDENUM	NA	NA	NA	NA	MOLYBDENUM	Kidney	1.09E-03	NA	NA	1.09E-03
			NICKEL	NA	NA	1.08E-09	1.08E-09	NICKEL	Body Weight; Respiratory	5.79E-03	NA	3.41E-04	6.13E-03
			SELENIUM	NA	NA	NA	NA	SELENIUM	Cardiovascular System; Liver; Nervous System; Skin	2.40E-04	NA	8.85E-09	2.40E-04
			SILVER	NA	NA	NA	NA	SILVER	Skin	5.03E-04	NA	NA	5.03E-04
			THALLIUM	NA	NA	NA	NA	THALLIUM	Blood; Liver	4.80E-03	NA	NA	4.80E-03
			TIN	NA	NA	NA	NA	TIN	Kidney; Liver	3.64E-05	NA	NA	3.64E-05
			VANADIUM	NA	NA	NA	NA	VANADIUM	NOEL	1.61E-02	NA	NA	1.61E-02
			ZINC	NA	NA	NA	NA	ZINC	Blood	8.12E-04	NA	NA	8.12E-04
			PESTICIDES (mg/kg)					**PESTICIDES (mg/kg)**					
			ALPHA-CHLORDANE	1.66E-09	3.04E-10	1.87E-14	1.96E-09	ALPHA-CHLORDANE	Liver	1.05E-05	1.93E-06	1.10E-09	1.24E-05
			BETA BHC	4.78E-10	8.77E-11	2.08E-14	5.65E-10	BETA BHC	Liver	5.46E-06	1.00E-06	2.30E-10	6.47E-06
			DELTA BHC	NA	NA	NA	NA	DELTA BHC	NA	NA	NA	NA	NA
			2,4- DDD	1.91E-09	2.63E-10	8.03E-14	2.17E-09	2,4 DDD	Liver	6.56E-05	9.03E-06	2.76E-09	7.46E-05
			4,4- DDD	5.86E-09	8.07E-10	2.46E-13	6.67E-09	4,4- DDD	Liver	2.01E-04	2.77E-05	8.45E-09	2.29E-04
			4,4- DDE	1.62E-09	2.24E-10	6.83E-14	1.85E-09	4,4- DDE	Liver	3.93E-05	5.42E-06	1.65E-09	4.48E-05
			4,4- DDT	1.08E-09	1.49E-10	4.55E-14	1.23E-09	4,4- DDT	Liver	2.62E-05	3.61E-06	1.10E-09	2.98E-05
			DIELDRIN	1.23E-08	5.65E-09	5.18E-13	1.80E-08	DIELDRIN	Liver	6.34E-05	2.91E-05	2.67E-09	9.25E-05

Table C2-5d
Summary of Current Receptor RME Cancer Risks and Noncarcinogenic Hazard Indices
Non-Tidal Wetland Areas Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Receptor Population:	Recreational User
Receptor Age:	Child (1 to 17 years)

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Primary Target Organ	Non-Carconogenic Hazard Index			
				Ingestion	Dermal	Inhalation (Outdoor)	Exposure Routes Total			Ingestion HQ	Dermal HQ	Inhalation (Outdoor) HQ	Total HI
			ENDOSULFAN I	NA	NA	NA	NA	ENDOSULFAN I	Body Weight; Kidney; Nervous System	7.29E-07	3.34E-07	3.06E-11	1.06E-06
			ENDOSULFAN SULFATE	NA	NA	NA	NA	ENDOSULFAN SULFATE	Body Weight; Kidney; Nervous System	5.46E-07	2.51E-07	2.30E-11	7.97E-07
			ENDRIN	NA	NA	NA	NA	ENDRIN	Liver; Kidney; Nervous System	7.29E-05	3.34E-05	3.06E-09	1.06E-04
			ENDRIN ALDEHYDE	NA	NA	NA	NA	ENDRIN ALDEHYDE	Liver; Kidney; Nervous System	2.19E-05	1.00E-05	9.19E-10	3.19E-05
			ENDRIN KETONE	NA	NA	NA	NA	ENDRIN KETONE	Liver; Kidney; Nervous System	8.38E-06	3.85E-06	3.52E-10	1.22E-05
			GAMMA-CHLORDANE	1.79E-09	3.29E-10	2.03E-14	2.12E-09	GAMMA-CHLORDANE	Liver	1.14E-05	2.09E-06	1.19E-09	1.35E-05
			HEPTACHLOR	2.39E-10	1.10E-10	1.00E-14	3.49E-10	HEPTACHLOR	Liver	4.37E-07	2.01E-07	1.84E-11	6.38E-07
			HEPTACHLOR EPOXIDE	7.25E-10	3.33E-10	3.05E-14	1.06E-09	HEPTACHLOR EPOXIDE	Liver	2.52E-05	1.16E-05	1.06E-09	3.68E-05
			HEXACHLOROBENZENE	3.82E-10	1.75E-10	1.61E-14	5.58E-10	HEXACHLOROBENZENE	Liver	1.09E-06	5.02E-07	4.59E-11	1.59E-06
			METHOXYCHLOR	NA	NA	NA	NA	METHOXYCHLOR	Fetal	2.62E-06	4.82E-07	1.10E-10	3.10E-06
			MIREX	NA	NA	NA	NA	MIREX	Liver	2.19E-05	1.00E-05	9.19E-10	3.19E-05
			TRANS-NONACHLOR	8.28E-10	1.52E-10	9.37E-15	9.80E-10	TRANS-NONACHLOR	Liver	5.25E-06	9.63E-07	5.51E-10	6.21E-06
			PCBs (mg/kg)					**PCBs (mg/kg)**					
			PCBs (TOTAL)	1.06E-07	6.82E-08	1.79E-12	1.74E-07	PCBs (TOTAL)	Immune System	4.37E-03	2.81E-03	1.84E-07	7.18E-03
			SVOCs (mg/kg)					**SVOCs (mg/kg)**					
			ACENAPHTHENE	NA	NA	NA	NA	ACENAPHTHENE	Liver	1.04E-06	6.23E-07	3.22E-07	1.99E-06
			ACENAPHTHYLENE	NA	NA	NA	NA	ACENAPHTHYLENE	NA	NA	NA	NA	NA
			ANTHRACENE	NA	NA	NA	NA	ANTHRACENE	NOEL	2.40E-07	1.43E-07	1.90E-08	4.02E-07
			BENZO(A)ANTHRACENE	3.18E-08	1.90E-08	4.35E-13	5.09E-08	BENZO(A)ANTHRACENE	NA	NA	NA	NA	NA
			BENZO(A)PYRENE	2.87E-07	1.71E-07	3.92E-12	4.58E-07	BENZO(A)PYRENE	NA	NA	NA	NA	NA
			BENZO(B)FLUORANTHENE	2.55E-08	1.52E-08	3.48E-13	4.07E-08	BENZO(B)FLUORANTHENE	NA	NA	NA	NA	NA
			BENZO(G,H,I)PERYLENE	NA	NA	NA	NA	BENZO(G,H,I)PERYLENE	Kidney; Nervous System	2.19E-06	1.30E-06	9.19E-11	3.49E-06
			BENZO(K)FLUORANTHENE	2.13E-08	1.27E-08	2.92E-13	3.41E-08	BENZO(K)FLUORANTHENE	NA	NA	NA	NA	NA
			BIS(2-ETHYLHEXYL)PHTHALATE	4.46E-10	2.05E-10	1.87E-14	6.51E-10	BIS(2-ETHYLHEXYL)PHTHALATE	Liver	6.56E-06	3.01E-06	2.76E-10	9.57E-06
			BUTYLBENZYPHTHALATE	NA	NA	NA	NA	BUTYLBENZYPHTHALATE	Liver	1.37E-07	6.27E-08	5.74E-12	1.99E-07
			CABAZOLE	7.48E-10	3.44E-10	3.15E-14	1.09E-09	CABAZOLE	NA	NA	NA	NA	NA
			4- CHLOROANILINE	NA	NA	NA	NA	4- CHLOROANILINE	Spleen	8.20E-07	3.76E-07	3.45E-11	1.20E-06
			2- CHLOROPHENOL	NA	NA	NA	NA	2- CHLOROPHENOL	Reproductive	9.46E-06	4.34E-06	3.98E-10	1.38E-05
			CHRYSENE	2.87E-09	1.71E-09	1.91E-11	4.60E-09	CHRYSENE	NA	NA	NA	NA	NA
			DIBENZOFURAN	NA	NA	NA	NA	DIBENZOFURAN	NA	4.31E-05	1.98E-05	1.81E-09	6.29E-05
			3,3- DICHLOROBENZIDINE	1.43E-09	6.58E-10	6.03E-14	2.09E-09	3,3- DICHLOROBENZIDINE	NA	NA	NA	NA	NA
			FLUORANTHENE	NA	NA	NA	NA	FLUORANTHENE	Blood; Kidney; Liver	2.19E-06	1.30E-06	9.19E-11	3.49E-06

Table C2-5d
Summary of Current Receptor RME Cancer Risks and Noncarcinogenic Hazard Indices
Non-Tidal Wetland Areas Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Receptor Population:	Recreational User
Receptor Age:	Child (1 to 17 years)

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Primary Target Organ	Non-Carconogenic Hazard Index			
				Ingestion	Dermal	Inhalation (Outdoor)	Exposure Routes Total			Ingestion HQ	Dermal HQ	Inhalation (Outdoor) HQ	Total HI
			FLUORENE	NA	NA	NA	NA	FLUORENE	Blood	1.48E-06	8.80E-07	2.27E-07	2.58E-06
			INDENO(1,2,3-CD)PYRENE	3.18E-08	1.90E-08	4.35E-13	5.09E-08	INDENO(1,2,3-CD)PYRENE	NA	NA	NA	NA	NA
			2- METHYLNAPHTHALENE	NA	NA	NA	NA	2- METHYLNAPHTHALENE	Body Weight; Respiratory	1.43E-05	6.56E-06	NA	2.08E-05
			4- METHYPHENOL	NA	NA	NA	NA	4- METHYLPHENOL	Nervous System; Respiratory	1.46E-05	6.70E-06	NA	2.13E-05
			NAPHTHALENE	NA	NA	NA	NA	NAPHTHALENE	Body Weight; Respiratory	4.92E-06	2.93E-06	1.48E-04	1.56E-04
			PENTACHLOROPHENOL	NA	NA	NA	NA	PENTACHLOROPHENOL	Liver; Kidney	1.76E-06	8.09E-07	7.41E-11	2.57E-06
			PHENANTHRENE	NA	NA	NA	NA	PHENANTHRENE	NOEL	3.28E-07	1.96E-07	1.38E-11	5.24E-07
			PHENOL	NA	NA	NA	NA	PHENOL	Cardiovascular System; Fetal; Kidney; Liver; Nervous System	2.55E-07	1.17E-07	1.13E-10	3.72E-07
			PYRENE	NA	NA	NA	NA	PYRENE	Kidney	2.91E-06	1.74E-06	4.26E-08	4.70E-06
			TPH (mg/kg)					**TPH (mg/kg)**					
			TPH AS DIESEL	NA	NA	NA	NA	TPH AS DIESEL	NA	NA	NA	NA	NA
			TPH AS GASOLINE	NA	NA	NA	NA	TPH AS GASOLINE	NA	NA	NA	NA	NA
			TPH AS MOTOR OIL	NA	NA	NA	NA	TPH AS MOTOR OIL	NA	NA	NA	NA	NA
			VOCs (mg/kg)					**VOCs (mg/kg)**					
			ACETONE	NA	NA	NA	NA	ACETONE	Kidney; Liver	1.21E-07	NA	5.18E-07	6.40E-07
			CARBON DISULFIDE	NA	NA	NA	NA	CARBON DISULFIDE	Fetal	7.65E-08	NA	1.77E-06	1.85E-06
			CHLOROBENZENE	NA	NA	NA	NA	CHLOROBENZENE	Kidney; Liver; Reproductive System	2.73E-07	NA	8.43E-06	8.70E-06
			ETHYLBENZENE	NA	NA	NA	NA	ETHYLBENZENE	Fetal; Kidney; Liver	1.97E-07	NA	7.07E-07	9.04E-07
			TOLUENE	NA	NA	NA	NA	TOLUENE	Fetal; Kidney; Liver; Nervous System; Respiratory	1.64E-07	NA	5.31E-06	5.47E-06
			TRICHLOROETHENE	7.62E-10	NA	2.19E-10	9.80E-10	TRICHLOROETHENE	Eyes; Nervous System	2.55E-05	NA	1.29E-05	3.84E-05
			XYLENE (TOTAL)	NA	NA	NA	NA	XYLENE (TOTAL)	Body Weight; Fetal; Nervous System; Respiratory	8.20E-07	NA	5.21E-05	5.30E-05
Groundwater	Shallow Groundwater	Vapors	**VOCs (ug/L)**					**VOCs (ug/L)**					
			ACETONE	NA	NA	NA	NA	ACETONE	Kidney; Liver	NA	NA	5.63E-04	5.63E-04
			BENZENE	NA	NA	9.57E-07	9.57E-07	BENZENE	Fetal; Immune System; Nervous System; Respiratory	NA	NA	4.60E-03	4.60E-03
			2- BUTANONE	NA	NA	NA	NA	2- BUTANONE	Fetal	NA	NA	3.82E-03	3.82E-03
			CARBON DISULFIDE	NA	NA	NA	NA	CARBON DISULFIDE	Fetal; Nervous System	NA	NA	3.55E-04	3.55E-04

Table C2-5d
Summary of Current Receptor RME Cancer Risks and Noncarcinogenic Hazard Indices
Non-Tidal Wetland Areas Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Receptor Population:	Recreational User
Receptor Age:	Child (1 to 17 years)

				Carcinogenic Risk						Non-Carconogenic Hazard Index			
Medium	**Exposure Medium**	**Exposure Point**	**Chemical**	**Ingestion**	**Dermal**	**Inhalation (Outdoor)**	**Exposure Routes Total**	**Chemical**	**Primary Target Organ**	**Ingestion HQ**	**Dermal HQ**	**Inhalation (Outdoor) HQ**	**Total HI**
			CHLOROBENZENE	NA	NA	NA	NA	CHLOROBENZENE	Kidney; Liver; Reproductive System	NA	NA	2.66E-03	2.66E-03
			CHLOROMETHANE	NA	NA	6.50E-08	6.50E-08	CHLOROMETHANE	NA	NA	NA	4.94E-04	4.94E-04
			CIS-1,2-DICHLOROETHENE	NA	NA	NA	NA	CIS-1,2-DICHLOROETHENE	Blood	NA	NA	6.98E-03	6.98E-03
			1,3- DICHLOROBENZENE			NA		1,3- DICHLOROBENZENE	NA	NA	NA	3.84E-04	3.84E-04
			1,2- DICHLOROETHENE (TOTAL)	NA	NA	NA	NA	1,2- DICHLOROETHENE (TOTAL)	Blood, Liver	NA	NA	3.28E-02	3.28E-02
			ETHYLBENZENE	NA	NA	NA	NA	ETHYLBENZENE	Fetal; Kidney; Liver	NA	NA	7.42E-05	7.42E-05
			TOLUENE	NA	NA	NA	NA	TOLUENE	Fetal; Kidney; Liver; Nervous System; Respiratory	NA	NA	2.12E-04	2.12E-04
			TRANS-1,2-DICHLOROETHENE	NA	NA	NA	NA	TRANS-1,2-DICHLOROETHENE	Blood; Liver	NA	NA	6.52E-04	6.52E-04
			1,2,4- TRIMETHYLBENZENE	NA	NA	NA	NA	1,2,4- TRIMETHYLBENZENE	NA	NA	NA	6.60E-03	6.60E-03
			1,3,5- TRIMETHYLBENZENE	NA	NA	NA	NA	1,3,5- TRIMETHYLBENZENE	NA	NA	NA	4.99E-03	4.99E-03
			VINYL CHLORIDE	NA	NA	9.07E-08	9.07E-08	VINYL CHLORIDE	GI System; Liver; Nervous System	NA	NA	8.48E-04	8.48E-04
			XYLENE (TOTAL)	NA	NA	NA	NA	XYLENE (TOTAL)	Body Weight; Fetal; Nervous System; Respiratory	NA	NA	1.49E-03	1.49E-03
Groundwater	Intermediate and Deep Groundwater	Vapors	**VOCs (ug/L)**					**VOCs (ug/L)**					
			ACETONE	NA	NA	NA	NA	ACETONE	Kidney; Liver	NA	NA	1.25E-04	1.25E-04
			BENZENE	NA	NA	1.40E-06	1.40E-06	BENZENE	Fetal; Immune System; Nervous System; Respiratory	NA	NA	6.73E-03	6.73E-03
			2- BUTANONE	NA	NA	NA	NA	2- BUTANONE	Fetal	NA	NA	5.83E-04	5.83E-04
			CARBON DISULFIDE	NA	NA	NA	NA	CARBON DISULFIDE	Fetal; Nervous System	NA	NA	5.61E-04	5.61E-04
			CHLOROBENZENE	NA	NA	NA	NA	CHLOROBENZENE	Kidney; Liver; Reproductive System	NA	NA	1.01E-02	1.01E-02
			4- METHYL-2-PENTANONE	NA	NA	NA	NA	4- METHYL-2-PENTANONE	Fetal; Kidney; Liver	NA	NA	2.12E-04	2.12E-04
Wetland Surface Water	Surface Water	Surface Water	**INORGANICS (ug/L)**					**INORGANICS (ug/L)**					
			ALUMINUM	NA	NA	NA	NA	ALUMINUM	Body Weight	2.34E-04	2.15E-05	NA	2.56E-04
			ANTIMONY	NA	NA	NA	NA	ANTIMONY	Blood; Whole Body	1.94E-04	1.18E-04	NA	3.12E-04
			ARSENIC	1.63E-05	1.50E-07	NA	1.65E-05	ARSENIC	Cardiovascular System; Fetal; Nervous System; Skin	2.37E-03	2.17E-04	NA	2.59E-03
			BARIUM	NA	NA	NA	NA	BARIUM	Cardiovascular System; Fetal; Kidney; NOEL	5.13E-05	6.72E-05	NA	1.18E-04
			CADMIUM	3.66E-08	6.71E-09	NA	4.33E-08	CADMIUM	Kidney; Respiratory	3.96E-05	7.27E-05	NA	1.12E-04
			CHROMIUM	NA	NA	NA	NA	CHROMIUM	NOEL	1.61E-07	1.14E-06	NA	1.30E-06

Table C2-5d
Summary of Current Receptor RME Cancer Risks and Noncarcinogenic Hazard Indices
Non-Tidal Wetland Areas Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Receptor Population:	Recreational User
Receptor Age:	Child (1 to 17 years)

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Primary Target Organ	Non-Carconogenic Hazard Index			
				Ingestion	Dermal	Inhalation (Outdoor)	Exposure Routes Total			Ingestion HQ	Dermal HQ	Inhalation (Outdoor) HQ	Total HI
			COBALT	NA	NA	NA	NA	COBALT	Cardiovascular System; Respiratory	1.98E-05	7.27E-07	NA	2.05E-05
			COPPER	NA	NA	NA	NA	COPPER	GI System	3.75E-05	3.44E-06	NA	4.09E-05
			LEAD	2.07E-09	1.90E-12	NA	2.07E-09	LEAD	NA	NA	NA	NA	NA
			MANGANESE	NA	NA	NA	NA	MANGANESE	Nervous System	1.29E-03	2.95E-03	NA	4.23E-03
			MERCURY	NA	NA	NA	NA	MERCURY	Nervous System	3.79E-05	4.98E-05	NA	8.77E-05
			MOLYBDENUM	NA	NA	NA	NA	MOLYBDENUM	Kidney	5.46E-05	5.02E-06	NA	5.97E-05
			NICKEL	NA	NA	NA	NA	NICKEL	Body Weight; Respiratory	2.57E-04	1.18E-04	NA	3.75E-04
			SELENIUM	NA	NA	NA	NA	SELENIUM	Cardiovascular System; Liver; Nervous System; Skin	2.00E-04	1.84E-05	NA	2.19E-04
			SILVER	NA	NA	NA	NA	SILVER	Skin	1.55E-05	2.13E-05	NA	3.68E-05
			VANADIUM	NA	NA	NA	NA	VANADIUM	NOEL	1.01E-04	3.56E-04	NA	4.57E-04
			ZINC	NA	NA	NA	NA	ZINC	Blood	1.97E-06	1.09E-07	NA	2.08E-06
			PESTICIDES (ug/L)					**PESTICIDES (ug/L)**					
			ALPHA BHC	5.92E-09	NA	NA	5.92E-09	ALPHA BHC	Liver	7.74E-07	NA	NA	7.74E-07
			4,4- DDE	1.02E-10	8.40E-10	NA	9.41E-10	4,4- DDE	Liver	2.46E-07	2.03E-05	NA	2.06E-05
			4,4- DDT	3.20E-09	4.96E-08	NA	5.28E-08	4,4- DDT	Liver	7.74E-06	1.20E-03	NA	1.21E-03
			ENDOSULFAN SULFATE	NA	NA	NA	NA	ENDOSULFAN SULFATE	Body Weight; Kidney; Nervous System	4.86E-07	NA	NA	4.86E-07
			ENDRIN	NA	NA	NA	NA	ENDRIN	Liver; Kidney; Nervous System	2.12E-06	1.98E-05	NA	2.19E-05
			GAMMA-BHC	1.34E-09	NA	NA	1.34E-09	GAMMA-BHC	Kidney; Liver	1.67E-06	8.97E-06	NA	1.06E-05
			HEPTACHLOR	1.39E-09	8.86E-10	NA	2.28E-09	HEPTACHLOR	Liver	2.55E-07	1.62E-06	NA	1.88E-06
			PCBs (ug/L)					**PCBs (ug/L)**					
			PCBs (TOTAL)	8.29E-09	2.04E-07	NA	2.12E-07	PCBs (TOTAL)	Immune System	3.42E-05	8.39E-03	NA	8.43E-03
			SVOCs (ug/L)					**SVOCs (ug/L)**					
			BIS(2-ETHYLHEXYL)PHTHALATE	1.27E-08	2.63E-08	NA	3.90E-08	BIS(2-ETHYLHEXYL)PHTHALATE	Liver	1.87E-05	3.87E-04	NA	4.05E-04
			CHRYSENE	2.65E-09	4.51E-08	NA	4.78E-08	CHRYSENE	NA	NA	NA	NA	NA
			2,4 DIMETHYLPHENOL	NA	NA	NA	NA	2,4- DIMETHYLPHENOL	Blood; Nervous System	4.55E-07	9.17E-07	NA	1.37E-06
			DI-N-BUTYLPHTHALATE	NA	NA	NA	NA	DI-N-BUTYLPHTHALATE	Whole Body	2.37E-06	2.55E-05	NA	2.79E-05
			ISOPHORONE	NA	NA	NA	NA	ISOPHORONE	NOEL	2.28E-08	1.56E-08	NA	3.84E-08
			4- METHYLPHENOL	NA	NA	NA	NA	4- METHYLPHENOL	Nervous System; Respiratory	2.36E-04	3.02E-04	NA	5.38E-04
			TPH (mg/L)					**TPH (mg/L)**					
			TPH AS DIESEL	NA	NA	NA	NA	TPH AS DIESEL	NA	NA	NA	NA	NA

Table C2-5d
Summary of Current Receptor RME Cancer Risks and Noncarcinogenic Hazard Indices
Non-Tidal Wetland Areas Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Receptor Population:	Recreational User
Receptor Age:	Child (1 to 17 years)

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Primary Target Organ	Non-Carconogenic Hazard Index			
				Ingestion	Dermal	Inhalation (Outdoor)	Exposure Routes Total			Ingestion HQ	Dermal HQ	Inhalation (Outdoor) HQ	Total HI
			TPH AS GASOLINE	NA	NA	NA	NA	TPH AS GASOLINE	NA	NA	NA	NA	NA
			TPH AS MOTOR OIL	NA	NA	NA	NA	TPH AS MOTOR OIL	NA	NA	NA	NA	NA

Cancer Risk Across Soil:	6.4E-05
Cancer Risk Across Groundwater:	2.5E-06
Cancer Risk Across Surface Water:	1.7E-05
Total Cancer Risk:	8.3E-05

HI Across Soil:	1.9E-01
HI Across Groundwater:	8.6E-02
HI Across Surface Water:	2.0E-02
Total HI:	3.0E-01
Total Blood HI:	5.3E-02
Total Body Weight HI:	3.8E-02
Total Cardiovascular System HI:	9.6E-02
Total Fetal/Reproductive System HI:	1.2E-01
Total GI System HI:	4.4E-03
Total Immune System HI:	2.7E-02
Total Kidney HI:	2.4E-02
Total Liver HI:	5.6E-02
Total Nervous System HI:	1.3E-01
Total NOEL HI:	1.8E-02
Total Respiratory HI:	2.9E-02
Total Skin HI:	9.4E-02
Total Whole Body HI:	7.4E-03

Notes:
EPC = Exposure point concentration
GI = Gastrointestinal
HQ = Hazard Quotient
HI = Hazard Index
mg/kg = milligrams per kilogram
mg/L = milligrams per liter
NA = Not Applicable
PCBs = Polychlorinated Biphenyls
RME = Reasonable Maximum Exposure
SVOCs = Semivolatile Organic Compounds
TPH = Total Petroleum Hydrocarbons
VOCs = Volatile Organic Compounds
ug/L = microgram per liter

Table C2-5e
Summary of Estimated Cancer Risks and Hazard Indices for Soil
Non-Tidal Wetland Area Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	RME Result			
	Baseline Cancer Risk*	**Baseline Hazard Index***	**Residual Cancer Risk**	**Residual Hazard Index**
Recreational User - Current				
Total Risk Across Soil	6.5E-05	2.0E-01	6.4E-05	1.9E-01
Total Risk Across Soil (without arsenic)	1.8E-06	1.1E-01	1.4E-06	1.0E-01

Notes:

RME = Reasonable Maximum Exposure

* - Baseline HHRA did not include full data set; outlier concentrations were excluded.

Table C2-5f
Comparison of EPCs, Cancer Risk Estimates, and Hazard Indices from Baseline Risk Assessment
Non-Tidal Wetland Area Alternative 4
Soil (0 to 2 feet bgs)
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Chemical of Potential Concern	Baseline Risk Estimates			Alternative 4 Estimates		
		Recreational User			Recreational User	
	Medium EPC Value	RME Carcinogenic Risk	RME Total HI	Medium EPC Value	RME Carcinogenic Risk	RME Total HI
INORGANICS (mg/kg)						
ALUMINUM	26852	NA	3.02E-02	26807	NA	3.02E-02
ANTIMONY	2.9	NA	7.92E-03	2.6	NA	7.10E-03
ARSENIC	22.1	6.31E-05	9.17E-02	21.8	6.22E-05	9.05E-02
BARIUM	86.4	NA	1.38E-03	90	NA	1.43E-03
BERYLLIUM	0.6	5.62E-11	3.42E-04	0.44	4.12E-11	2.51E-04
CADMIUM	2.6	3.11E-07	6.75E-03	2.6	3.11E-07	6.75E-03
CHROMIUM	113	NA	8.23E-05	111	NA	8.09E-05
COBALT	21	2.30E-09	1.32E-03	18.4	2.01E-09	1.15E-03
COPPER	108	NA	2.95E-03	119	NA	3.25E-03
LEAD	184	4.15E-07	NA	83	1.87E-07	NA
MANGANESE	935	NA	1.03E-02	934	NA	1.03E-02
MERCURY	1.2	NA	4.37E-03	1.2	NA	4.37E-03
MOLYBDENUM	4.8	NA	1.05E-03	5	NA	1.09E-03
NICKEL	108	1.10E-09	6.25E-03	106	1.08E-09	6.13E-03
SELENIUM	1.1	NA	2.40E-04	1.1	NA	2.40E-04
SILVER	2.2	NA	4.81E-04	2.3	NA	5.03E-04
THALLIUM	0.29	NA	4.80E-03	0.29	NA	4.80E-03
TIN	16.6	NA	3.02E-05	20	NA	3.64E-05
VANADIUM	102	NA	1.59E-02	103	NA	1.61E-02
ZINC	200	NA	7.29E-04	223	NA	8.12E-04
PCBs (mg/kg)						
PCBs (TOTAL)	0.17	3.71E-07	1.53E-02	0.08	1.74E-07	7.18E-03
SVOCs (mg/kg)						
ACENAPHTHENE	0.099	NA	3.42E-06	0.0573	NA	1.99E-06
ACENAPHTHYLENE	0.127	NA	NA	0.0396	NA	NA
ANTHRACENE	0.14	NA	8.55E-07	0.0658	NA	4.02E-07
BENZO(A)ANTHRACENE	0.097	4.93E-08	NA	0.1	5.09E-08	NA
BENZO(A)PYRENE	0.094	4.78E-07	NA	0.09	4.58E-07	NA
BENZO(B)FLUORANTHENE	0.096	4.88E-08	NA	0.08	4.07E-08	NA

Table C2-5f
Comparison of EPCs, Cancer Risk Estimates, and Hazard Indices from Baseline Risk Assessment
Non-Tidal Wetland Area Alternative 4
Soil (0 to 2 feet bgs)
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Chemical of Potential Concern	Baseline Risk Estimates			Alternative 4 Estimates		
		Recreational User			Recreational User	
	Medium EPC Value	RME Carcinogenic Risk	RME Total HI	Medium EPC Value	RME Carcinogenic Risk	RME Total HI
BENZO(G,H,I)PERYLENE	0.084	NA	3.66E-06	0.08	NA	3.49E-06
BENZO(K)FLUORANTHENE	0.11	5.59E-08	NA	0.067	3.41E-08	NA
CHRYSENE	0.087	4.44E-09	NA	0.09	4.60E-09	NA
FLUORANTHENE	0.083	NA	3.62E-06	0.08	NA	3.49E-06
FLUORENE	0.091	NA	4.37E-06	0.054	NA	2.58E-06
INDENO(1,2,3-CD)PYRENE	0.10	5.09E-08	NA	0.10	5.09E-08	NA
NAPHTHALENE	0.091	NA	1.58E-04	0.09	NA	1.56E-04
PHENANTHRENE	0.095	NA	5.53E-07	0.09	NA	5.24E-07
PYRENE	0.079	NA	4.64E-06	0.08	NA	4.70E-06
TPH (mg/kg)						
TPH AS DIESEL	26.2	NA	NA	23	NA	NA
TPH AS GASOLINE	0.7	NA	NA	0.73	NA	NA
TPH AS MOTOR OIL	243	NA	NA	226	NA	NA
SOIL TOTALS:		**6.5E-05**	**2.0E-01**		**6.4E-05**	**1.9E-01**

Table C2-5g
Post-Remediation Gray Fox Risk Calculations (Wetland Sediment Residual Concentration)
Shallow Soil (0 - 2 ft bgs) at Hazard Quotient Equals Three
Non-Tidal Wetland Area Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Concentrations				Intake (mg/kg BW-day)					Hazard Quotient (HQ) - Low					Hazard Quotient (HQ) - High			
COPEC[a]	Surface Water (mg/L)[b]	Sediment[c]	Small Mammal BAF[d]	Small Mammal Tissue[d]	Surface Water	Sediment	Small Mammal	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Small Mammal	Total Intake		High TRV (mg/kg BW-day)	Surface Water	Sediment	Small Mammal	Total Intake
Metals (mg/kg)																			
Aluminum	12.6	2.68E+04	1.11E-02	2.96E+02	2.72E-01	8.56E+00	3.38E+00	1.22E+01	1.93	1.4E-01	4.4E+00	1.8E+00	6.3E+00	>1	19.3	1.4E-02	4.4E-01	1.8E-01	6.3E-01
Antimony	0.003	2.60E+00	1.22E+00	3.17E+00	6.48E-05	8.30E-04	3.61E-02	3.70E-02	0.06	1.1E-03	1.4E-02	6.1E-01	6.3E-01		23.4	2.8E-06	3.5E-05	1.5E-03	1.6E-03
Arsenic	0.0436	2.18E+01	--	0	9.42E-04	6.96E-03	0.00E+00	7.90E-03	0.32	2.9E-03	2.2E-02	0	2.5E-02		4.7	2.0E-04	1.5E-03	0.0E+00	1.7E-03
Barium	0.24	9.00E+01	9.41E-02	8.47E+00	5.10E-03	2.87E-02	9.66E-02	1.30E-01	51.8	9.8E-05	5.5E-04	1.9E-03	2.5E-03		66.0	7.7E-05	4.4E-04	1.5E-03	2.0E-03
Beryllium		4.40E-01	--	0		1.41E-04	0.00E+00	1.41E-04	0.532		2.6E-04	0	2.6E-04		0.554		2.5E-04	0.0E+00	2.5E-04
Cadmium	0.0016	2.60E+00	--	0	3.46E-05	8.30E-04	0.00E+00	8.65E-04	0.06	5.8E-04	1.4E-02	0	1.4E-02		2.64	1.3E-05	3.1E-04	0.0E+00	3.3E-04
Chromium +3	0.0263	9.25E+01	2.60E-02	2.41E+00	5.68E-04	2.95E-02	2.75E-02	5.76E-02	2	2.4E-04	1.2E-02	1.1E-02	2.4E-02		23.1	2.5E-05	1.3E-03	1.2E-03	2.5E-03
Chromium +6	0.0263	1.85E+01	2.60E-02	4.82E-01	5.68E-04	5.91E-03	5.49E-03	1.20E-02	5.66	1.0E-04	1.0E-03	0	2.1E-03		35.1	1.6E-05	1.7E-04	1.6E-04	3.4E-04
Cobalt	0.0164	1.84E+01	--	0	3.54E-04	5.88E-03	0.00E+00	6.23E-03	1.2	3.0E-04	4.9E-03	0	5.2E-03		20	1.8E-05	2.9E-04	0.0E+00	3.1E-04
Copper	0.233	1.19E+02	3.45E-01	4.11E+01	5.04E-03	3.80E-02	4.69E-01	5.12E-01	2.67	1.9E-03	1.4E-02	1.8E-01	1.9E-01		632	8.0E-06	6.0E-05	7.4E-04	8.1E-04
Lead	0.0031	8.30E+01	6.10E-01	5.07E+01	6.70E-05	2.65E-02	5.78E-01	6.04E-01	1	6.7E-05	2.7E-02	5.8E-01	6.0E-01		241	2.8E-07	1.1E-04	2.4E-03	2.5E-03
Manganese	7.42	9.34E+02	--	0	1.60E-01	2.98E-01	0.00E+00	4.59E-01	13.7	1.2E-02	2.2E-02	0	3.3E-02		159.09	1.0E-03	1.9E-03	0.0E+00	2.9E-03
Mercury	0.00029	1.20E+00	--	0	6.27E-06	3.83E-04	0.00E+00	3.89E-04	0.027	2.3E-04	1.4E-02	0	1.4E-02		0.27	2.3E-05	1.4E-03	0.0E+00	1.4E-03
Molybdenum	0.0312	5.00E+00	--	0	6.74E-04	1.60E-03	0.00E+00	2.27E-03	0.26	2.6E-03	6.1E-03	0	8.7E-03		2.6	2.6E-04	6.1E-04	0.0E+00	8.7E-04
Nickel	0.166	1.06E+02	--	0	3.59E-03	3.38E-02	0.00E+00	3.74E-02	0.13	2.7E-02	2.5E-01	0	2.8E-01		31.6	1.1E-04	1.1E-03	0.0E+00	1.2E-03
Selenium	0.029	1.10E+00	6.12E+00	6.73E+00	6.27E-04	3.51E-04	7.67E-02	7.77E-02	0.05	1.3E-02	7.0E-03	1.5E+00	1.6E+00	>1	1.21	5.2E-04	2.9E-04	6.3E-02	6.4E-02
Silver	0.0019	2.30E+00	--	0	4.11E-05	7.34E-04	0.00E+00	7.76E-04	0.38	1.1E-04	2.0E-03	0	2.1E-03		3.75	1.1E-05	2.0E-04	0.0E+00	2.1E-04
Thallium		2.90E-01	1.01E+00	2.92E-01		9.26E-05	3.33E-03	3.43E-03	0.48		1.9E-04	6.9E-03	7.1E-03		1.43		6.5E-05	2.3E-03	2.4E-03
Tin		2.00E+01	--	0		6.39E-03	0.00E+00	6.39E-03	23.4		2.7E-04	0	2.7E-04		35		1.8E-04	0.0E+00	1.8E-04
Vanadium	0.05	1.03E+02	--	0	1.08E-03	3.29E-02	0.00E+00	3.40E-02	0.21	5.1E-03	1.6E-01	0	1.6E-01		2.1	5.1E-04	1.6E-02	0.0E+00	1.6E-02
Zinc	0.042	2.23E+02	1.11E+00	2.47E+02	9.08E-04	7.12E-02	2.82E+00	2.89E+00	9.6	9.5E-05	7.4E-03	2.9E-01	3.0E-01		411	2.2E-06	1.7E-04	6.8E-03	7.0E-03
Volatile Organics (mg/kg)																			
Acetone		1.00E-01	--	0		3.19E-05	0.00E+00	3.19E-05	10		3.2E-06	0	3.2E-06		50		6.4E-07	0.0E+00	6.4E-07
Benzene			--	0		0	0.00E+00	0.00E+00	26.4		0.0E+00	0	0.0E+00		263.6		0.0E+00	0.0E+00	0.0E+00
Carbon disulfide		7.00E-03	--	0		2.24E-06	0.00E+00	2.24E-06	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Chlorobenzene		5.00E-03	--	0		1.60E-06	0.00E+00	1.60E-06	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
cis-1,2-Dichlorobenzene			--	0		0	0.00E+00	0.00E+00	45.2		0.0E+00	0	0.0E+00		452		0.0E+00	0.0E+00	0.0E+00
Ethylbenzene		1.80E-02	--	0		5.75E-06	0.00E+00	5.75E-06	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
4-Isopropyltoluene			--	0		0	0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Methylene chloride			--	0		0	0.00E+00	0.00E+00	5.9		0.0E+00	0	0.0E+00		50		0.0E+00	0.0E+00	0.0E+00
Naphthalene			--	0		0	0.00E+00	0.00E+00	50		0.0E+00	0	0.0E+00		150		0.0E+00	0.0E+00	0.0E+00
Toluene		3.00E-02	--	0		9.58E-06	0.00E+00	9.58E-06	26		3.7E-07	0	3.7E-07		260		3.7E-08	0.0E+00	3.7E-08
trans-1,2-Dichloroethene			--	0		0	0.00E+00	0.00E+00	45.2		0.0E+00	0	0.0E+00		452		0.0E+00	0.0E+00	0.0E+00
Trichloroethene		7.00E-03	--	0		2.24E-06	0.00E+00	2.24E-06	0.7		3.2E-06	0	3.2E-06		7		3.2E-07	0.0E+00	3.2E-07
1,2,4-Trimethylbenzene			--	0		0	0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
1,3,5-Trimethylbenzene			--	0		0	0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Vinyl chloride			--	0		0	0.00E+00	0.00E+00	0.17		0.0E+00	0	0.0E+00		2		0.0E+00	0.0E+00	0.0E+00
Xylenes		1.50E-01	--	0		4.79E-05	0.00E+00	4.79E-05	2.1		2.3E-05	0	2.3E-05		2.6		1.8E-05	0.0E+00	1.8E-05
Pesticides (mg/kg)																			
alpha-Chlordane		4.80E-03	--	0		1.53E-06	0.00E+00	1.53E-06	4.6		3.3E-07	0	3.3E-07		9.2		1.7E-07	0	1.7E-07
beta-BHC		1.00E-03	--	0		3.19E-07	0.00E+00	3.19E-07	1.6		2.0E-07	0	2.0E-07		3.2		1.0E-07	0	1.0E-07
delta-BHC		2.00E-03	--	0		6.39E-07	0.00E+00	6.39E-07	1.6		4.0E-07	0	4.0E-07		3.2		2.0E-07	0	2.0E-07
2,4-DDD		3.00E-02	1.04E+00	3.13E-02		9.58E-06	3.57E-04	3.67E-04	0.8		1.2E-05	4.5E-04	4.6E-04		16		6.0E-07	2.2E-05	2.3E-05
DDD		9.20E-02	1.04E+00	9.60E-02		2.94E-05	1.10E-03	1.12E-03	0.8		3.7E-05	1.4E-03	1.4E-03		16		1.8E-06	6.8E-05	7.0E-05
DDE	0.0000027	1.80E-02	1.04E+00	1.88E-02	5.84E-08	5.75E-06	2.14E-04	2.20E-04	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
DDTs	0.00014	1.20E-02	1.04E+00	1.25E-02	3.03E-06	3.83E-06	1.43E-04	1.50E-04	0.8	3.8E-06	4.8E-06	1.8E-04	1.9E-04		16	1.9E-07	2.4E-07	8.9E-06	9.4E-06
Dieldrin		2.90E-03	--	0		9.26E-07	0.00E+00	9.26E-07	0.015		6.2E-05	0	6.2E-05		1.7		5.4E-07	0	5.4E-07
Endosulfan I		4.00E-03	--	0		1.28E-06	0.00E+00	1.28E-06	0.15		8.5E-06	0	8.5E-06		1.5		8.5E-07	0	8.5E-07
Endosulfan sulfate	0.00012	3.00E-03	--	0	2.59E-06	9.58E-07	0.00E+00	3.55E-06	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV

Table C2-5g
Post-Remediation Gray Fox Risk Calculations (Wetland Sediment Residual Concentration)
Shallow Soil (0 - 2 ft bgs) at Hazard Quotient Equals Three
Non-Tidal Wetland Area Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Concentrations				Intake (mg/kg BW-day)					Hazard Quotient (HQ) - Low					Hazard Quotient (HQ) - High			
COPEC[a]	Surface Water (mg/L)[b]	Sediment[c]	Small Mammal BAF[d]	Small Mammal Tissue[d]	Surface Water	Sediment	Small Mammal	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Small Mammal	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Sediment	Small Mammal	Total Intake
Endrin	0.000014	2.00E-02	--	0	3.03E-07	6.39E-06	0.00E+00	6.69E-06	0.09	3.3E-06	6.9E-05	0	7.3E-05	0.92	3.3E-07	6.9E-06	0	7.3E-06
Endrin aldehyde		6.00E-03	--	0		1.92E-06	0.00E+00	1.92E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Endrin Ketone		2.30E-03	--	0		7.34E-07	0.00E+00	7.34E-07	NTV	NTV	NTV	NTV	NTV	0.92		8.0E-07	0	8.0E-07
gamma-Chlordane		5.20E-03	--	0		1.66E-06	0.00E+00	1.66E-06	4.6		3.6E-07	0	3.6E-07	9.2		1.8E-07	0	1.8E-07
Heptachlor	0.0000028	2.00E-04	--	0	6.05E-08	6.39E-08	0.00E+00	1.24E-07	0.13	4.7E-07	4.9E-07	0.0	9.6E-07	6.8	8.9E-09	9.4E-09	0	1.8E-08
Heptachlor epoxide		3.00E-04	--	0		9.58E-08	0.00E+00	9.58E-08	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Hexachlorobenzene		8.00E-04	--	0		2.55E-07	0.00E+00	2.55E-07	1.6		1.6E-07	0	1.6E-07	16		1.6E-08	0	1.6E-08
Methoxychlor	0	1.20E-02	--	0		3.83E-06	0.00E+00	3.83E-06	2.5		1.5E-06	0	1.5E-06	50		7.7E-08	0	7.7E-08
Mirex		4.00E-03	--	0		1.28E-06	0.00E+00	1.28E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
trans-Nonachlor		2.40E-03	--	0		7.66E-07	0.00E+00	7.66E-07	4.6		1.7E-07	0	1.7E-07	9.2		8.3E-08	0	8.3E-08
SVOCs (mg/kg)																		
Acenaphthene		5.73E-02	--	0		1.83E-05	0.00E+00	1.83E-05	1.31		1.4E-05	0	1.4E-05	32.8		5.6E-07	0	5.6E-07
Acenaphthylene		3.96E-02	--	0		1.26E-05	0.00E+00	1.26E-05	1.31		9.7E-06	0	9.7E-06	32.8		3.9E-07	0	3.9E-07
Anthracene		6.58E-02	--	0		2.10E-05	0.00E+00	2.10E-05	1.31		1.6E-05	0	1.6E-05	32.8		6.4E-07	0	6.4E-07
Benzo(a)anthracene		1.00E-01	--	0		3.19E-05	0.00E+00	3.19E-05	1.31		2.4E-05	0	2.4E-05	32.8		9.7E-07	0	9.7E-07
Benzo(a)pyrene		9.00E-02	--	0		2.87E-05	0.00E+00	2.87E-05	1.31		2.2E-05	0	2.2E-05	32.8		8.8E-07	0	8.8E-07
Benzo(b)fluoranthene		8.00E-02	--	0		2.55E-05	0.00E+00	2.55E-05	1.31		2.0E-05	0	2.0E-05	32.8		7.8E-07	0	7.8E-07
Benzo(g,h,i)perylene		8.00E-02	--	0		2.55E-05	0.00E+00	2.55E-05	1.31		2.0E-05	0	2.0E-05	32.8		7.8E-07	0	7.8E-07
Benzo(k)fluoranthene		6.70E-02	--	0		2.14E-05	0.00E+00	2.14E-05	1.31		1.6E-05	0	1.6E-05	32.8		6.5E-07	0	6.5E-07
Benzoic acid			--	0		0	0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Bis(2-ethylhexyl)phthalate	0.027	1.20E-01	--	0	5.84E-04	3.83E-05	0.00E+00	6.22E-04	18.3	3.2E-05	2.1E-06	0	3.4E-05	183	3.2E-06	2.1E-07	0	3.4E-06
Butylbenzylphthalate		2.50E-02	--	0		7.98E-06	0.00E+00	7.98E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Carbazole		1.41E-01	--	0		4.50E-05	0.00E+00	4.50E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Chloroaniline		3.00E-03	--	0		9.58E-07	0.00E+00	9.58E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2-Chloropropane		4.33E-02	--	0		1.38E-05	0.00E+00	1.38E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chrysene	0.0002	9.00E-02	--	0	4.32E-06	2.87E-05	0.00E+00	3.31E-05	1.31	3.3E-06	2.2E-05	0	2.5E-05	32.8	1.3E-07	8.8E-07	0	1.0E-06
Dibenzofuran		7.89E-02	--	0		2.52E-05	0.00E+00	2.52E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
3,3-Dichlorobenzidine		1.20E-02	--	0		3.83E-06	0.00E+00	3.83E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2,6-Dinitrotoluene			--	0		0	0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Fluoranthene		8.00E-02	--	0		2.55E-05	0.00E+00	2.55E-05	1.31		2.0E-05	0	2.0E-05	32.8		7.8E-07	0	7.8E-07
Fluorene		5.40E-02	--	0		1.72E-05	0.00E+00	1.72E-05	1.31		1.3E-05	0	1.3E-05	32.8		5.3E-07	0	5.3E-07
Indeno(1,2,3-cd)pyrene		1.00E-01	--	0		3.19E-05	0.00E+00	3.19E-05	1.31		2.4E-05	0	2.4E-05	32.8		9.7E-07	0	9.7E-07
2-Methylnaphthalene		5.23E-02	--	0		1.67E-05	0.00E+00	1.67E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Methylphenol	0.12	6.68E-02	--	0	2.59E-03	2.13E-05	0.00E+00	2.61E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Naphthalene		9.00E-02	--	0		2.87E-05	0.00E+00	2.87E-05	50		5.7E-07	0	5.7E-07	150		1.9E-07	0	1.9E-07
Pentachlorophenol		4.84E-02	--	0		1.55E-05	0.00E+00	1.55E-05	8.42		1.8E-06	0	1.8E-06	27.4		5.6E-07	0	5.6E-07
Phenanthrene		9.00E-02	--	0		2.87E-05	0.00E+00	2.87E-05	1.31		2.2E-05	0	2.2E-05	32.8		8.8E-07	0	8.8E-07
Phenol		1.40E-01	--	0		4.47E-05	0.00E+00	4.47E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pyrene		8.00E-02	--	0		2.55E-05	0.00E+00	2.55E-05	1.31		2.0E-05	0	2.0E-05	32.8		7.8E-07	0	7.8E-07
PCBs (mg/kg)																		
PCBs (Total Congeners)	0.000016	8.00E-02	1.81E+01	1.45E+00	3.46E-07	2.55E-05	1.65E-02	1.65E-02	0.36	9.6E-07	7.1E-05	4.6E-02	4.6E-02	1.28	2.7E-07	2.0E-05	1.3E-02	1.3E-02

>1 = The calculated hazard quotient exceeds 1 (i.e., > 1.5)

Table C2-5g
Post-Remediation Gray Fox Risk Calculations (Wetland Sediment Residual Concentration)
Shallow Soil (0 - 2 ft bgs) at Hazard Quotient Equals Three
Non-Tidal Wetland Area Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Concentrations				Intake (mg/kg BW-day)					Hazard Quotient (HQ) - Low					Hazard Quotient (HQ) - High			
COPEC[a]	Surface Water (mg/L)[b]	Sediment[c]	Small Mammal BAF[d]	Small Mammal Tissue[d]	Surface Water	Sediment	Small Mammal	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Small Mammal	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Sediment	Small Mammal	Total Intake

Exposure Assumptions and Equation:[e]

	Value	
Ingestion Rate (IR) prey(dry wt.) =	0.177	kg/day (dry weight)
IRmammal(dry wt.) =	0.177	kg/day (dry weight)
IRsediment (dry wt.)[f] =	0.00496	kg-day (dry weight)
IRsurface water[g] =	0.335	L/day
Cprey =	chem-specific	mg/kg or µg/kg
Csediment =	chem-specific	mg/kg or µg/kg
Csurface water =	chem-specific	mg/L or µg/L
Tissue Moisture (TMsmall mammal) =	68%	percent
Dietary Composition Factor (DCF)[h] =	100%	percent
Site Use Factor (SUF)[i] =	25%	percent
Body Weight (BW) =	3.88	kg

Intake Equation = [IRmammal(dry wt) x (Cprey(mammal, dry wt)/1-TM) x DCF x SUF]/BW] + [(IRsoil x Csoil x DCF x SUF)]/BW] + [(IRsurface water x Csurface water x DCF x SUF)]/BW]

Risk (hazard quotient) = Intake / TRV

Prey tissue(dry wt) = Prey tissue (wet wt.) / (1-Tissue Moisture)

NTV = No toxicity data available.

NA = Not applicable.

Blank cell indicates COPEC was not detected in this medium.

Notes:

a All chemicals detected in sediments are considered as constituents of potential ecological concern.

b All concentrations of constituents in surface water are based on the maximum concentration.

c All concentrations of constituents in sediment are based on the residual concentrations expressed in dry weight.

d Site-specific BAFs (dry weight basis). Calculated small mammal tissue concentrations (sediment concentration x BAF). Tissue concentrations are on a dry weight basis.

e Exposure parameters used to calculate risk are discussed in detail in Section 4.2 of the ERA..

f Ingestion rate of soil based on 2.8 percent of of the prey ingestion rate (dry weight); based on a red fox (Beyer et al. (1994).

g Based on equation for mammals: Water intake (L/day) = $0.099Wt(kg)^{0.90}$ (EPA 1993)

h Dietary composition factor was based on a conservative assumption of 100% dietary intake of small mammals from the site.

i Site use factor was based on a 25% use of the site for the fox's foraging range.

Table C2-5h
Post-Remediation Northern Harrier Risk Calculations (Wetland Sediment Residual Concentration)
Shallow Soil (0 - 2 ft bgs) at Hazard Quotient Equals Three
Non-Tidal Wetland Area Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Concentrations				Intake (mg/kg BW-day)					Hazard Quotient (HQ) - Low					Hazard Quotient (HQ) - High			
COPEC[a]	Surface Water (mg/L)[b]	Sediment[c]	Small Mammal BAF[d]	Small Mammal Tissue[d]	Surface Water	Sediment	Small Mammal	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Small Mammal	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Sediment	Small Mammal	Total Intake
Metals (mg/kg)																		
Aluminum	12.6	2.68E+04	1.11E-02	296	2.43E-01	5.11E+00	8.07E+00	1.34E+01	109.7	2.2E-03	4.7E-02	7.4E-02	1.2E-01	1,097	2.2E-04	4.7E-03	7.4E-03	1.2E-02
Antimony	0.003	2.60E+00	1.22E+00	3	5.80E-05	4.95E-04	8.62E-02	8.67E-02	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Arsenic	0.0436	2.18E+01	--	0	8.43E-04	4.15E-03	0.00E+00	4.99E-03	5.5	1.5E-04	7.5E-04	0.0E+00	9.1E-04	22	3.8E-05	1.9E-04	0.0E+00	2.3E-04
Barium	0.24	9.00E+01	9.41E-02	8	4.56E-03	1.71E-02	2.31E-01	2.52E-01	20.8	2.2E-04	8.2E-04	1.1E-02	1.2E-02	41.7	1.1E-04	4.1E-04	5.5E-03	6.0E-03
Beryllium		4.40E-01		0		8.38E-05		8.38E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Cadmium	0.0016	2.60E+00	--	0	3.09E-05	4.95E-04	0.00E+00	5.26E-04	0.08	3.9E-04	6.2E-03	0.0E+00	6.6E-03	10.4	3.0E-06	4.8E-05	0.0E+00	5.1E-05
Chromium +3	0.0263	9.25E+01	2.60E-02	2	5.08E-04	1.76E-02	6.55E-02	8.37E-02	2.66	1.9E-04	6.6E-03	2.5E-02	3.1E-02	2.78	1.8E-04	6.3E-03	2.4E-02	3.0E-02
Chromium +6	0.0263	1.85E+01	2.60E-02	0	5.08E-04	3.52E-03	1.31E-02	1.71E-02	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Cobalt	0.0164	1.84E+01	--	0	3.17E-04	3.50E-03	0.00E+00	3.82E-03	7.61	4.2E-05	4.6E-04	0.0E+00	5.0E-04	17	1.9E-05	2.1E-04	0.0E+00	2.2E-04
Copper	0.233	1.19E+02	3.45E-01	41	4.50E-03	2.27E-02	1.12E+00	1.15E+00	2.3	2.0E-03	9.9E-03	4.9E-01	5.0E-01	52.3	8.6E-05	4.3E-04	2.1E-02	2.2E-02
Lead	0.0031	8.30E+01	6.10E-01	51	5.99E-05	1.58E-02	1.38E+00	1.39E+00	0.014	4.3E-03	1.1E+00	9.8E+01	1.0E+02	>1	8.75	6.8E-06	1.8E-03	1.6E-01	1.6E-01
Manganese	7.42	9.34E+02	--	0	1.43E-01	1.78E-01	0.00E+00	3.21E-01	77.6	1.8E-03	2.3E-03	0.0E+00	4.1E-03	776	1.8E-04	2.3E-04	0.0E+00	4.1E-04
Mercury	0.00029	1.20E+00	--	0	5.60E-06	2.29E-04	0.00E+00	2.34E-04	0.039	1.4E-04	5.9E-03	0.0E+00	6.0E-03	0.18	3.1E-05	1.3E-03	0.0E+00	1.3E-03
Molybdenum	0.0312	5.00E+00	--	0	6.03E-04	9.52E-04	0.00E+00	1.56E-03	3.5	1.7E-04	2.7E-04	0.0E+00	4.4E-04	35.3	1.7E-05	2.7E-05	0.0E+00	4.4E-05
Nickel	0.166	1.06E+02	--	0	3.21E-03	2.02E-02	0.00E+00	2.34E-02	1.38	2.3E-03	1.5E-02	0.0E+00	1.7E-02	56.3	5.7E-05	3.6E-04	0.0E+00	4.2E-04
Selenium	0.029	1.10E+00	6.12E+00	7	5.60E-04	2.10E-04	1.83E-01	1.84E-01	0.23	2.4E-03	9.1E-04	8.0E-01	8.0E-01	0.93	6.0E-04	2.3E-04	2.0E-01	2.0E-01
Silver	0.0019	2.30E+00	--	0	3.67E-05	4.38E-04	0.00E+00	4.75E-04	178.00	2.1E-07	2.5E-06	0.0E+00	2.7E-06	NTV	NTV	NTV	NTV	NTV
Thallium		2.90E-01	1.01E+00	0		5.52E-05	7.95E-03	8.01E-03	0.35		1.6E-04	2.3E-02	2.3E-02	NTV	NTV	NTV	NTV	NTV
Tin		2.00E+01	--	0		3.81E-03	0.00E+00	3.81E-03	6.80		5.6E-04	0.0E+00	5.6E-04	16.9		2.3E-04	0.0E+00	2.3E-04
Vanadium	0.05	1.03E+02	--	0	9.66E-04	1.96E-02	0.00E+00	2.06E-02	11.4	8.5E-05	1.7E-03	0.0E+00	1.8E-03	114	8.5E-06	1.7E-04	0.0E+00	1.8E-04
Zinc	0.042	2.23E+02	1.11E+00	247	8.12E-04	4.25E-02	6.72E+00	6.77E+00	17.2	4.7E-05	2.5E-03	3.9E-01	3.9E-01	172	4.7E-06	2.5E-04	3.9E-02	3.9E-02
Volatile Organics (mg/kg)																		
Acetone		1.00E-01	--	0		1.90E-05	0.00E+00	1.90E-05	52		3.7E-07	0.0E+00	3.7E-07	520		3.7E-08	0.0E+00	3.7E-08
Benzene			--	0			0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Carbon disulfide		7.00E-03	--	0		1.33E-06	0.00E+00	1.33E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chlorobenzene		5.00E-03	--	0		9.52E-07	0.00E+00	9.52E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
cis-1,2-Dichlorobenzene			--	0			0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Ethylbenzene		1.80E-02	--	0		3.43E-06	0.00E+00	3.43E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Isopropyltoluene			--	0			0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Methylene chloride			--	0			0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Naphthalene			--	0			0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Toluene		3.00E-02	--	0		5.71E-06	0.00E+00	5.71E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
trans-1,2-Dichloroethene			--	0			0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Trichloroethene		7.00E-03	--	0		1.33E-06	0.00E+00	1.33E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
1,2,4-Trimethylbenzene			--	0			0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
1,3,5-Trimethylbenzene			--	0			0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Vinyl chloride			--	0			0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Xylenes		1.50E-01	--	0		2.86E-05	0.00E+00	2.86E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pesticides (mg/kg)																		
alpha-Chlordane		4.80E-03	--	0		9.14E-07	0.00E+00	9.14E-07	0.0014		6.5E-04	0.0E+00	6.5E-04	0.014		6.5E-05	0.0E+00	6.5E-05
beta-BHC		1.00E-03	--	0		1.90E-07	0.00E+00	1.90E-07	0.56		3.4E-07	0.0E+00	3.4E-07	2.25		8.5E-08	0.0E+00	8.5E-08
delta-BHC		2.00E-03	--	0		3.81E-07	0.00E+00	3.81E-07	0.56		6.8E-07	0.0E+00	6.8E-07	2.25		1.7E-07	0.0E+00	1.7E-07
2,4-DDD		3.00E-02	1.04E+00	0		5.71E-06	8.52E-04	8.58E-04	0.009		6.3E-04	9.5E-02	9.5E-02	1.5		3.8E-06	5.7E-04	5.7E-04
DDD		9.20E-02	1.04E+00	0		1.75E-05	2.61E-03	2.63E-03	0.009		1.9E-03	2.9E-01	2.9E-01	1.5		1.2E-05	1.7E-03	1.8E-03
DDE	0.0000027	1.80E-02	1.04E+00	0	5.22E-08	3.43E-06	5.11E-04	5.15E-04	NTV	NTV	NTV	NTV	NTV	0.6	8.7E-08	5.7E-06	8.5E-04	8.6E-04
DDTs	0.00014	1.20E-02	1.04E+00	0	2.71E-06	2.29E-06	3.41E-04	3.46E-04	0.009	3.0E-04	2.5E-04	3.8E-02	3.8E-02	1.5	1.8E-06	1.5E-06	2.3E-04	2.3E-04

Table C2-5h
Post-Remediation Northern Harrier Risk Calculations (Wetland Sediment Residual Concentration)
Shallow Soil (0 - 2 ft bgs) at Hazard Quotient Equals Three
Non-Tidal Wetland Area Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Concentrations				Intake (mg/kg BW-day)					Hazard Quotient (HQ) - Low					Hazard Quotient (HQ) - High			
COPEC[a]	Surface Water (mg/L)[b]	Sediment[c]	Small Mammal BAF[d]	Small Mammal Tissue[d]	Surface Water	Sediment	Small Mammal	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Small Mammal	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Sediment	Small Mammal	Total Intake
Dieldrin		2.90E-03	--	0		5.52E-07	0.00E+00	5.52E-07	0.0709		7.8E-06	0.0E+00	7.8E-06	0.98		5.6E-07	0.0E+00	5.6E-07
Endosulfan I		4.00E-03	--	0		7.62E-07	0.00E+00	7.62E-07	10		7.6E-08	0.0E+00	7.6E-08	100		7.6E-09	0.0E+00	7.6E-09
Endosulfan sulfate	0.00012	3.00E-03	--	0	2.32E-06	5.71E-07	0.00E+00	2.89E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Endrin	0.000014	2.00E-02	--	0	2.71E-07	3.81E-06	0.00E+00	4.08E-06	0.3	9.0E-07	1.3E-05	0.0E+00	1.4E-05	3	9.0E-08	1.3E-06	0.0E+00	1.4E-06
Endrin aldehyde		6.00E-03	--	0		1.14E-06	0.00E+00	1.14E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Endrin Ketone		2.30E-03	--	0		4.38E-07	0.00E+00	4.38E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
gamma-Chlordane		5.20E-03	--	0		9.90E-07	0.00E+00	9.90E-07	0.0014		7.1E-04	0.0E+00	7.1E-04	0.014		7.1E-05	0.0E+00	7.1E-05
Heptachlor	0.0000028	2.00E-04	--	0	5.41E-08	3.81E-08	0.00E+00	9.22E-08	0.065	8.3E-07	5.9E-07	0.0E+00	1.4E-06	0.65	8.3E-08	5.9E-08	0.0E+00	1.4E-07
Heptachlor epoxide		3.00E-04	--	0		5.71E-08	0.00E+00	5.71E-08	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Hexachlorobenzene		8.00E-04	--	0		1.52E-07	0.00E+00	1.52E-07	0.23		6.6E-07	0.0E+00	6.6E-07	2.3		6.6E-08	0.0E+00	6.6E-08
Methoxychlor		1.20E-02	--	0		2.29E-06	0.00E+00	2.29E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Mirex		4.00E-03	--	0		7.62E-07	0.00E+00	7.62E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
trans-Nonachlor		2.40E-03	--	0		4.57E-07	0.00E+00	4.57E-07	0.0014		3.3E-04	0.0E+00	3.3E-04	0.014		3.3E-05	0.0E+00	3.3E-05
SVOCs (mg/kg)																		
Acenaphthene		5.73E-02	--	0		1.09E-05	0.00E+00	1.09E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Acenaphthylene		3.96E-02	--	0		7.54E-06	0.00E+00	7.54E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Anthracene		6.58E-02	--	0		1.25E-05	0.00E+00	1.25E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(a)anthracene		1.00E-01	--	0		1.90E-05	0.00E+00	1.90E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(a)pyrene		9.00E-02	--	0		1.71E-05	0.00E+00	1.71E-05	0.001		1.7E-02	0.0E+00	1.7E-02	0.01		1.7E-03	0.0E+00	1.7E-03
Benzo(b)fluoranthene		8.00E-02	--	0		1.52E-05	0.00E+00	1.52E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(g,h,i)perylene		8.00E-02	--	0		1.52E-05	0.00E+00	1.52E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(k)fluoranthene		6.70E-02	--	0		1.28E-05	0.00E+00	1.28E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzoic acid			--	0			0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Bis(2-ethylhexyl)phthalate	0.027	1.20E-01	--	0	5.22E-04	2.29E-05	0.00E+00	5.45E-04	1.1	4.7E-04	2.1E-05	0.0E+00	5.0E-04	11	4.7E-05	2.1E-06	0.0E+00	5.0E-05
Butylbenzylphthalate		2.50E-02	--	0		4.76E-06	0.00E+00	4.76E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Carbazole		1.41E-01	--	0		2.69E-05	0.00E+00	2.69E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Chloroaniline		3.00E-03	--	0		5.71E-07	0.00E+00	5.71E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2-Chloropropane		4.33E-02	--	0		8.25E-06	0.00E+00	8.25E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chrysene	0.0002	9.00E-02	--	0	3.87E-06	1.71E-05	0.00E+00	2.10E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Dibenzofuran		7.89E-02	--	0		1.50E-05	0.00E+00	1.50E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
3,3-Dichlorobenzidine		1.20E-02	--	0		2.29E-06	0.00E+00	2.29E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2,6-Dinitrotoluene			--	0			0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Fluoranthene		8.00E-02	--	0		1.52E-05	0.00E+00	1.52E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Fluorene		5.40E-02	--	0		1.03E-05	0.00E+00	1.03E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Indeno(1,2,3-cd)pyrene		1.00E-01	--	0		1.90E-05	0.00E+00	1.90E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2-Methylnaphthalene		5.23E-02	--	0		9.96E-06	0.00E+00	9.96E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Methylphenol	0.12	6.68E-02	--	0	2.32E-03	1.27E-05	0.00E+00	2.33E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Naphthalene		9.00E-02	--	0		1.71E-05	0.00E+00	1.71E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pentachlorophenol		4.84E-02	--	0		9.22E-06	0.00E+00	9.22E-06	6.7		1.4E-06	0.0E+00	1.4E-06	22.5		4.1E-07	0.0E+00	4.1E-07
Phenanthrene		9.00E-02	--	0		1.71E-05	0.00E+00	1.71E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Phenol		1.40E-01	--	0		2.67E-05	0.00E+00	2.67E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pyrene		8.00E-02	--	0		1.52E-05	0.00E+00	1.52E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
PCBs (mg/kg)																		
PCBs (Total Congeners)	0.000016	8.00E-02	1.81E+01	1	3.09E-07	1.52E-05	3.94E-02	3.94E-02	0.09	3.4E-06	1.7E-04	4.4E-01	4.4E-01	1.27	2.4E-07	1.2E-05	3.1E-02	3.1E-02

>1 = The calculated hazard quotient exceeds 1 (i.e., > 1.5)

Table C2-5h
Post-Remediation Northern Harrier Risk Calculations (Wetland Sediment Residual Concentration)
Shallow Soil (0 - 2 ft bgs) at Hazard Quotient Equals Three
Non-Tidal Wetland Area Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Concentrations				Intake (mg/kg BW-day)					Hazard Quotient (HQ) - Low					Hazard Quotient (HQ) - High			
COPEC[a]	Surface Water (mg/L)[b]	Sediment[c]	Small Mammal BAF[d]	Small Mammal Tissue[d]	Surface Water	Sediment	Small Mammal	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Small Mammal	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Sediment	Small Mammal	Total Intake

Exposure Assumptions and Equation:[e]

	Value	
Ingestion Rate (IR) prey(dry wt.) =	0.048	
IRsmall mammal (dry wt.) =	0.048	kg/day (dry weight)
IRsoil (dry wt.)[f] =	0.000336	kg-day (dry weight)
IRsurface water[g] =	0.034	L/day
Cprey =	chem-specific	mg/kg or µg/kg
Csoil =	chem-specific	mg/kg or µg/kg
Csurface water =	chem-specific	mg/L or µg/L
Tissue Moisture (TMsmall mammal) =	68%	percent
Dietary Composition Factor (DCF)[h] =	100%	percent
Site Use Factor (SUF)[i] =	25%	percent
Body Weight (BW) =	0.441	kg

Intake Equation = [IRmammal(dry wt) x (Cprey(mammal, dry wt)/1-TM) x DCF x SUF]/BW] + [(IRsoil x Csoil x DCF x SUF)]/BW] + [(IRsurface water x Csurface water x DCF x SUF)]/BW]

Risk (hazard quotient) = Intake / TRV

Prey tissue(dry wt) = Prey tissue (wet wt.) / (1-Tissue Moisture)

NTV = No toxicity data available.

NA = Not applicable.

Blank cell indicates COPEC was not detected in this medium.

Notes:

a All chemicals detected in sediments are considered as constituents of potential ecological concern.

b All concentrations of constituents in surface water are based on the maximum concentration.

c All concentrations of constituents in sediment are based on the residual concentrations expressed in dry weight.

d Site-specific BAFs (dry weight basis). Calculated small mammal tissue concentrations (sediment concentration x BAF). Tissue concentrations are on a dry weight basis.

e Exposure parameters used to calculate risk are discussed in detail in Section 4.2 of ERA.

f Ingestion rate of sedimentl based on 0.7 percent of of the prey ingestion rate (dry weight); based on rate for bald eagle in Pascoe et al. (1996).

g Based on equation for birds: Water intake (L/day) = $0.059Wt(kg)^{0.67}$ (EPA 1993)

h Dietary composition factor was based on a conservative assumption of 100% dietary intake of small mammals from the site.

i Site use factor was based on 25% use of the site for the harrier's foraging range.

Table C2-5i
Post-Remediation Mallard (Non-Breeding) Risk Calculations (Wetland Sediment Residual Concentration)
Shallow Soil (0 - 2 ft bgs) at Hazard Quotient Equals Three
Non-Tidal Wetland Area Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Concentrations				Intake (mg/kg BW-day)					Hazard Quotient (HQ) - Low					Hazard Quotient (HQ) - High			
COPEC[a]	Surface Water (mg/L)[b]	Sediments[c]	Plant BAF[d]	Plant Tissue[d]	Surface Water	Sediment	Plant	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Plant	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Sediment	Plant	Total Intake
Metals (mg/kg)																		
Aluminum	12.6	2.68E+04	7.56E-03	2.03E+02	7.60E-02	8.67E+00	1.99E+00	1.07E+01	109.7	6.9E-04	7.9E-02	1.8E-02	9.8E-02	1,097	6.9E-05	7.9E-03	1.8E-03	9.8E-03
Antimony	0.003	2.60E+00	2.27E-01	5.91E-01	1.81E-05	8.40E-04	5.79E-03	6.65E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Arsenic	0.0436	2.18E+01	1.15E-01	2.51E+00	2.63E-04	7.05E-03	2.46E-02	3.19E-02	5.5	4.8E-05	1.3E-03	4.5E-03	5.8E-03	22	1.2E-05	3.2E-04	1.1E-03	1.5E-03
Barium	0.24	9.00E+01	7.87E-02	7.08E+00	1.42E-03	2.91E-02	6.94E-02	9.99E-02	20.8	6.8E-05	1.4E-03	3.3E-03	4.8E-03	41.7	3.4E-05	7.0E-04	1.7E-03	2.4E-03
Beryllium		4.40E-01	--	0		1.42E-04	0	1.42E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Cadmium	0.0016	2.60E+00	1.40E+00	3.63E+00	9.65E-06	8.40E-04	3.56E-02	3.64E-02	0.08	1.2E-04	1.1E-02	4.4E-01	4.6E-01	10.40	9.3E-07	8.1E-05	3.4E-03	3.5E-03
Chromium +3	0.0263	9.25E+01	--	0	1.59E-04	2.99E-02	0	3.01E-02	2.66	6.0E-05	1.1E-02	0.0E+00	1.1E-02	2.78	5.7E-05	1.1E-02	0.0E+00	1.1E-02
Chromium +6	0.0263	1.85E+01	--	0	1.59E-04	5.98E-03	0	6.14E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Cobalt	0.0164	1.84E+01	--	0	9.89E-05	5.95E-03	0	6.05E-03	7.61	1.3E-05	7.8E-04	0.0E+00	7.9E-04	17	5.8E-06	3.5E-04	0.0E+00	3.6E-04
Copper	0.233	1.19E+02	5.68E-02	6.76E+00	1.40E-03	3.85E-02	6.63E-02	1.06E-01	2.3	6.1E-04	1.7E-02	2.9E-02	4.6E-02	52.3	2.7E-05	7.4E-04	1.3E-03	2.0E-03
Lead	0.0031	8.30E+01	7.51E-03	6.23E-01	1.87E-05	2.68E-02	6.10E-03	3.30E-02	0.014	1.3E-03	1.9E+00	4.4E-01	2.4E+00 >1	8.75	2.1E-06	3.1E-03	7.0E-04	3.8E-03
Manganese	7.42	9.34E+02	4.89E-01	4.57E+02	4.47E-02	3.02E-01	4.47E+00	4.82E+00	77.6	5.8E-04	3.9E-03	5.8E-02	6.2E-02	776	5.8E-05	3.9E-04	5.8E-03	6.2E-03
Mercury	0.00029	1.20E+00	--	0	1.75E-06	3.88E-04	0	3.90E-04	0.039	4.5E-05	9.9E-03	0.0E+00	1.0E-02	0.18	9.7E-06	2.2E-03	0.0E+00	2.2E-03
Molybdenum	0.0312	5.00E+00	--	0	1.88E-04	1.62E-03	0	1.80E-03	3.5	5.4E-05	4.6E-04	0.0E+00	5.2E-04	35.3	5.3E-06	4.6E-05	0.0E+00	5.1E-05
Nickel	0.166	1.06E+02	1.39E-02	1.47E+00	1.00E-03	3.43E-02	1.44E-02	4.97E-02	1.38	7.3E-04	2.5E-02	1.0E-02	3.6E-02	56.3	1.8E-05	6.1E-04	2.6E-04	8.8E-04
Selenium	0.029	1.10E+00	--	0	1.75E-04	3.56E-04	0	5.30E-04	0.23	7.6E-04	1.5E-03	0.0E+00	2.3E-03	0.93	1.9E-04	3.8E-04	0.0E+00	5.7E-04
Silver	0.0019	2.30E+00	--	0	1.15E-05	7.44E-04	0	7.55E-04	178.00	6.4E-08	4.2E-06	0.0E+00	4.2E-06	NTV	NTV	NTV	NTV	NTV
Thallium		2.90E-01	--	0		9.37E-05	0	9.37E-05	0.35		2.7E-04	0.0E+00	2.7E-04	NTV	NTV	NTV	NTV	NTV
Tin		2.00E+01	1.55E+00	3.11E+01		6.47E-03	3.05E-01	3.11E-01	6.80		9.5E-04	4.5E-02	4.6E-02	16.9		3.8E-04	1.8E-02	1.8E-02
Vanadium	0.05	1.03E+02	2.20E-02	2.27E+00	3.01E-04	3.33E-02	2.22E-02	5.58E-02	11.4	2.6E-05	2.9E-03	2.0E-03	4.9E-03	114	2.6E-06	2.9E-04	2.0E-04	4.9E-04
Zinc	0.042	2.23E+02	8.47E-02	1.89E+01	2.53E-04	7.21E-02	1.85E-01	2.57E-01	17.2	1.5E-05	4.2E-03	1.1E-02	1.5E-02	172	1.5E-06	4.2E-04	1.1E-03	1.5E-03
Volatile Organics (mg/kg)																		
Acetone		1.00E-01	--	0		3.23E-05	0	3.23E-05	52		6.2E-07	0.0E+00	6.2E-07	520		6.2E-08	0.0E+00	6.2E-08
Benzene			--	0			0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Carbon disulfide		7.00E-03	--	0		2.26E-06	0	2.26E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chlorobenzene		5.00E-03	--	0		1.62E-06	0	1.62E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
cis-1,2-Dichlorobenzene			--	0			0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Ethylbenzene		1.80E-02	--	0		5.82E-06	0	5.82E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Isopropyltoluene			--	0			0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Methylene chloride			--	0			0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Naphthalene			--	0			0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Toluene		3.00E-02	--	0		9.70E-06	0	9.70E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
trans-1,2-Dichloroethene			--	0			0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Trichloroethene		7.00E-03	--	0		2.26E-06	0	2.26E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
1,2,4-Trimethylbenzene			--	0			0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
1,3,5-Trimethylbenzene			--	0			0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Vinyl chloride			--	0			0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Xylenes		1.50E-01	--	0		4.85E-05	0	4.85E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pesticides (mg/kg)																		
alpha-Chlordane		4.80E-03	--	0		1.55E-06	0	1.55E-06	0.0014		1.1E-03	0.0E+00	1.1E-03	0.014		1.1E-04	0.0E+00	1.1E-04
beta-BHC		1.00E-03	--	0		3.23E-07	0	3.23E-07	0.56		5.8E-07	0.0E+00	5.8E-07	2.25		1.4E-07	0.0E+00	1.4E-07
delta-BHC		2.00E-03	--	0		6.47E-07	0	6.47E-07	0.56		1.2E-06	0.0E+00	1.2E-06	2.25		2.9E-07	0.0E+00	2.9E-07
2,4-DDD		3.00E-02	--	0		9.70E-06	0	9.70E-06	0.009		1.1E-03	0.0E+00	1.1E-03	1.5		6.5E-06	0.0E+00	6.5E-06
4,4-DDD		9.20E-02	--	0		2.97E-05	0	2.97E-05	0.009		3.3E-03	0.0E+00	3.3E-03	1.5		2.0E-05	0.0E+00	2.0E-05
DDE	0.0000027	1.80E-02	--	0	1.63E-08	5.82E-06	0	5.84E-06	NTV	NTV	NTV	NTV	NTV	0.6	2.7E-08	9.7E-06	0.0E+00	9.7E-06
DDTs	0.00014	1.20E-02	--	0	8.44E-07	3.88E-06	0	4.72E-06	0.009	9.4E-05	4.3E-04	0.0E+00	5.2E-04	1.5	5.6E-07	2.6E-06	0.0E+00	3.1E-06
Dieldrin		2.90E-03	--	0		9.37E-07	0	9.37E-07	0.0709		1.3E-05	0.0E+00	1.3E-05	0.98		9.6E-07	0.0E+00	9.6E-07
Endosulfan I		4.00E-03	--	0		1.29E-06	0	1.29E-06	10		1.3E-07	0.0E+00	1.3E-07	100		1.3E-08	0.0E+00	1.3E-08
Endosulfan sulfate	0.00012	3.00E-03	--	0	7.24E-07	9.70E-07	0	1.69E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Endrin	0.000014	2.00E-02	--	0	8.44E-08	6.47E-06	0	6.55E-06	0.3	2.8E-07	2.2E-05	0.0E+00	2.2E-05	3	2.8E-08	2.2E-06	0.0E+00	2.2E-06
Endrin aldehyde		6.00E-03	--	0		1.94E-06	0	1.94E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Endrin Ketone		2.30E-03	--	0		7.44E-07	0	7.44E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
gamma Chlordane		5.20E-03	--	0		1.68E-06	0	1.68E-06	0.0014		1.2E-03	0.0E+00	1.2E-03	0.014		1.2E-04	0.0E+00	1.2E-04
Heptachlor	0.0000028	2.00E-04	--	0	1.69E-08	6.47E-08	0	8.15E-08	0.065	2.6E-07	9.9E-07	0.0E+00	1.3E-06	0.65	2.6E-08	9.9E-08	0.0E+00	1.3E-07
Heptachlor epoxide		3.00E-04	--	0		9.70E-08	0	9.70E-08	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Hexachlorobenzene		8.00E-04	--	0		2.59E-07	0	2.59E-07	0.23		1.1E-06	0.0E+00	1.1E-06	2.3		1.1E-07	0.0E+00	1.1E-07
Methoxychlor		1.20E-02	--	0		3.88E-06	0	3.88E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Mirex		4.00E-03	--	0		1.29E-06	0	1.29E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
trans-Nonachlor		2.40E-03	--	0		7.76E-07	0	7.76E-07	0.0014		5.5E-04	0.0E+00	5.5E-04	0.014		5.5E-05	0.0E+00	5.5E-05

Table C2-5i
Post-Remediation Mallard (Non-Breeding) Risk Calculations (Wetland Sediment Residual Concentration)
Shallow Soil (0 - 2 ft bgs) at Hazard Quotient Equals Three
Non-Tidal Wetland Area Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Concentrations				Intake (mg/kg BW-day)					Hazard Quotient (HQ) - Low					Hazard Quotient (HQ) - High			
COPEC[a]	Surface Water (mg/L)[b]	Sediments[c]	Plant BAF[d]	Plant Tissue[d]	Surface Water	Sediment	Plant	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Plant	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Sediment	Plant	Total Intake
SVOCs (mg/kg)																		
Acenaphthene		5.73E-02	--	0		1.85E-05	0	1.85E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Acenaphthylene		3.96E-02	--	0		1.28E-05	0	1.28E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Anthracene		6.58E-02	1.89E+00	1.24E-01		2.13E-05	1.22E-03	1.24E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(a)anthracene		1.00E-01	--	0		3.23E-05	0	3.23E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(a)pyrene		9.00E-02	--	0		2.91E-05	0	2.91E-05	0.001		2.9E-02	0.0E+00	2.9E-02	0.01		2.9E-03	0.0E+00	2.9E-03
Benzo(b)fluoranthene		8.00E-02	--	0		2.59E-05	0	2.59E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(ghi)perylene		8.00E-02	--	0		2.59E-05	0	2.59E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(k)fluoranthene		6.70E-02	--	0		2.17E-05	0	2.17E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzoic acid			--	0			0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Bis(2-ethylhexyl)phthalate	0.027	1.20E-01	--	0	1.63E-04	3.88E-05	0	2.02E-04	1.1	1.5E-04	3.5E-05	0.0E+00	1.8E-04	11	1.5E-05	3.5E-06	0.0E+00	1.8E-05
Butylbenzylphthalate		2.50E-02	--	0		8.08E-06	0	8.08E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Carbazole		1.41E-01	--	0		4.56E-05	0	4.56E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Chloroaniline		3.00E-03	--	0		9.70E-07	0	9.70E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2-Chloropropane		4.33E-02	--	0		1.40E-05	0	1.40E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chrysene	0.0002	9.00E-02	--	0	1.21E-06	2.91E-05	0	3.03E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Dibenzofuran		7.89E-02	--	0		2.55E-05	0	2.55E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
3,3-Dichlorobenzidine		1.20E-02	--	0		3.88E-06	0	3.88E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2,6-Dinitrotoluene			--	0			0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Fluoranthene		8.00E-02	1.17E+00	9.39E-02		2.59E-05	9.20E-04	9.45E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Fluorene		5.40E-02	--	0		1.75E-05	0	1.75E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Indeno(123,cd)pyrene		1.00E-01	--	0		3.23E-05	0	3.23E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2-Methylnaphthalene		5.23E-02	--	0		1.69E-05	0	1.69E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Methylphenol	0.12	6.68E-02	--	0	7.24E-04	2.16E-05	0	7.45E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Naphthalene		9.00E-02	--	0		2.91E-05	0	2.91E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pentachlorophenol		4.84E-02	--	0		1.56E-05	0	1.56E-05	6.7		2.3E-06	0.0E+00	2.3E-06	22.5		7.0E-07	0.0E+00	7.0E-07
Phenanthrene		9.00E-02	1.64E+00	1.47E-01		2.91E-05	1.44E-03	1.47E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Phenol		1.40E-01	--	0		4.53E-05	0	4.53E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pyrene		8.00E-02	--	0		2.59E-05	0	2.59E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
PCBs (mg/kg)																		
PCBs (TOTAL)-congeners	0.000016	8.00E-02	1.09E-01	8.74E-03	9.65E-08	2.59E-05	8.56E-05	1.12E-04	0.09	1.1E-06	2.9E-04	9.5E-04	1.2E-03	1.27	7.6E-08	2.0E-05	6.7E-05	8.8E-05

>1 = The calculated hazard quotient exceeds 1 (i.e., > 1.5)

Exposure Assumptions and Equation:[e]

	Value	Units
Ingestion Rate (IR) prey(dry wt.) =	0.0917	kg/day (dry weight)
IRplant(dry wt.) =	0.0917	kg/day (dry weight)
IRsediment (dry wt.)[f] =	0.00303	kg/day (dry weight)
Cprey =	chem-specific	kg-day (dry weight)
Csediment =	chem-specific	kg-day (dry weight)
Tissue Moisture (TMplant) =	8.5%	percent
IRsurface water[g] =	0.056	L/day
Csurface water =	chem-specific	mg/L or µg/L
Dietary Composition Factor (DCF)[h] =	100%	percent
Site Use Factor (SUF)[i] =	10%	percent
Body Weight (BW) =	0.9361	kg

Intake Equation = [IRplant (dry wt) x [Cprey (plant, wet wt) /1-TM] x DCF x SUF]/BW + [IRsediment x Csediment x DCF x SUF)]/BW +[(IRsurface water x Csurface water x DCF x SUF))]/BW

Risk (hazard quotient) = Intake / TRV

NTV = Not toxicity data available.

Prey tissue(dry wt) = Prey tissue (wet wt.) / (1-Tissue Moisture)

NA = Not available.

Blank cell indicates COPEC was not detected in this medium.

Notes:

a All chemicals detected in sediments are considered as constituents of potential ecological concern.

b All concentrations of constituents in surface water are based on the maximum concentration.

c All concentrations of constituents in sediment are based on the residual concentrations expressed in dry weight.

d Site-specific BAFs (dry weight basis). Calculated plant tissue concentrations (sediment concentration x BAF). Tissue concentrations are on a dry weight basis.

e Exposure parameters used to calculate risk are discussed in detail in Section 4.2 of ERA.

f Ingestion rate of sediment based on 3.3 percent of of the prey ingestion rate (dry weight); based on mallard data from Beyer et al. (1994).

g Based on equation for birds: Water intake (L/day) = $0.059Wt(kg)^{0.67}$ (EPA 1993)

h Dietary composition factor was based on a conservative assumption of 100% dietary intake of plants from the site.

i Site use factor was based on 10% use of the site for the mallard's foraging range.

Table C2-5j
Post-Remediation Mallard (Breeding) Risk Calculations (Wetland Sediment Residual Concentration)
Shallow Soil (0 - 2 ft bgs) at Hazard Quotient Equals Three
Non-Tidal Wetland Area Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Point Concentration						Intake (mg/kg BW-day)						Hazard Quotient (HQ) - Low						Hazard Quotient (HQ) - High					
COPEC[a]	Surface Water (mg/L)[b]	Sediments[c]	Plant BAF[d]	Plant Tissue[d]	Invertebrate BAF[d]	Invertebrate Tissue[d]	Surface Water	Sediment	Plant	Invertebrate	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Plant	Invertebrate	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Sediment	Plant	Invertebrate	Total Intake
Metals (mg/kg)																								
Aluminum	12.6	2.68E+04	7.56E-03	2.03E+02	1.93E-01	5.17E+03	3.04E-01	3.47E+01	1.99E+00	1.52E+02	1.89E+02	109.7	2.8E-03	3.2E-01	1.8E-02	1.4E+00	1.7E+00 >1	1,097	2.8E-04	3.2E-02	1.8E-03	1.4E-01	1.7E-01	
Antimony	0.003	2.60E+00	2.27E-01	5.91E-01	2.32E-01	6.02E-01	7.24E-05	3.36E-03	5.79E-03	1.77E-02	2.69E-02	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Arsenic	0.0436	2.18E+01	1.15E-01	2.51E+00	1.92E-01	4.18E+00	1.05E-03	2.82E-02	2.46E-02	1.23E-01	1.77E-01	5.5	1.9E-04	5.1E-03	4.5E-03	2.2E-02	3.2E-02	22	4.8E-05	1.3E-03	1.1E-03	5.6E-03	8.0E-03	
Barium	0.24	9.00E+01	7.87E-02	7.08E+00	1.50E+00	1.35E+02	5.69E-03	1.16E-01	6.94E-02	3.96E+00	4.15E+00	20.8	2.7E-04	5.6E-03	3.3E-03	1.9E-01	2.0E-01	41.7	1.4E-04	2.8E-03	1.7E-03	9.5E-02	1.0E-01	
Beryllium		4.40E-01	--	0	--	0		5.69E-04	0.00E+00	0.00E+00	5.69E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Cadmium	0.0016	2.60E+00	1.40E+00	3.63E+00	2.15E-01	5.59E-01	3.86E-05	3.36E-03	3.56E-02	1.64E-02	5.54E-02	0.08	4.8E-04	4.2E-02	4.4E-01	2.1E-01	6.9E-01	10.40	3.7E-06	3.2E-04	3.4E-03	1.6E-03	5.3E-03	
Chromium +3	0.0263	9.25E+01	--	0	5.53E-01	5.12E+01	6.34E-04	1.20E-01	0.00E+00	1.50E+00	1.62E+00	2.66	2.4E-04	4.5E-02	0.0E+00	5.7E-01	6.1E-01	2.78	2.3E-04	4.3E-02	0.0E+00	5.4E-01	5.8E-01	
Chromium +6	0.0263	1.85E+01	--	0	5.53E-01	1.02E+01	6.34E-04	2.39E-02	0.00E+00	3.01E-01	3.25E-01	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Cobalt	0.0164	1.84E+01	--	0	--	0	3.96E-04	2.38E-02	0.00E+00	0.00E+00	2.42E-02	7.61	5.2E-05	3.1E-03	0.0E+00	0.0E+00	3.2E-03	17	2.3E-05	1.4E-03	0.0E+00	0.0E+00	1.4E-03	
Copper	0.233	1.19E+02	5.68E-02	6.76E+00	6.67E-01	7.94E+01	5.62E-03	1.54E-01	6.63E-02	2.33E+00	2.56E+00	2.3	2.4E-03	6.7E-02	2.9E-02	1.0E+00	1.1E+00	52.3	1.1E-04	2.9E-03	1.3E-03	4.5E-02	4.9E-02	
Lead	0.0031	8.30E+01	7.51E-03	6.23E-01	5.07E-02	4.21E+00	7.48E-05	1.07E-01	6.10E-03	1.24E-01	2.37E-01	0.014	5.3E-03	7.7E+00	4.4E-01	8.8E+00	1.7E+01 >1	8.75	8.5E-06	1.2E-02	7.0E-04	1.4E-02	2.7E-02	
Manganese	7.42	9.34E+02	4.89E-01	4.57E+02	5.29E+00	4.94E+03	1.79E-01	1.21E+00	4.47E+00	1.45E+02	1.51E+02	77.6	2.3E-03	1.6E-02	5.8E-02	1.9E+00	1.9E+00 >1	776	2.3E-04	1.6E-03	5.8E-03	1.9E-01	1.9E-01	
Mercury	0.00029	1.20E+00	--	0	6.96E-01	8.36E-01	6.99E-06	1.55E-03	0.00E+00	2.46E-02	2.61E-02	0.039	1.8E-04	4.0E-02	0.0E+00	6.3E-01	6.7E-01	0.18	3.9E-05	8.6E-03	0.0E+00	1.4E-01	1.5E-01	
Molybdenum	0.0312	5.00E+00	--	0	--	0	7.53E-04	6.47E-03	0.00E+00	0.00E+00	7.22E-03	3.5	2.2E-04	1.8E-03	0.0E+00	0.0E+00	2.1E-03	35.3	2.1E-05	1.8E-04	0.0E+00	0.0E+00	2.0E-04	
Nickel	0.166	1.06E+02	1.39E-02	1.47E+00	3.65E-01	3.86E+01	4.00E-03	1.37E-01	1.44E-02	1.14E+00	1.29E+00	1.38	2.9E-03	9.9E-02	1.0E-02	8.2E-01	9.4E-01	56.3	7.1E-05	2.4E-03	2.6E-04	2.0E-02	2.3E-02	
Selenium	0.029	1.10E+00	--	0	--	0	6.99E-04	1.42E-03	0.00E+00	0.00E+00	2.12E-03	0.23	3.0E-03	6.2E-03	0.0E+00	0.0E+00	9.2E-03	0.93	7.5E-04	1.5E-03	0.0E+00	0.0E+00	2.3E-03	
Silver	0.0019	2.30E+00	--	0	--	0	4.58E-05	2.97E-03	0.00E+00	0.00E+00	3.02E-03	178.00	2.6E-07	1.7E-05	0.0E+00	0.0E+00	1.7E-05	NTV	NTV	NTV	NTV	NTV	NTV	
Thallium		2.90E-01	--	0	--	0		3.75E-04	0.00E+00	0.00E+00	3.75E-04	0.35		1.1E-03	0.0E+00	0.0E+00	1.1E-03	NTV	NTV	NTV	NTV	NTV	NTV	
Tin		2.00E+01	1.55E+00	3.11E+01	--	0		2.59E-02	3.05E-01	0.00E+00	3.30E-01	6.80		3.8E-03	4.5E-02	0.0E+00	4.9E-02	16.9		1.5E-03	1.8E-02	0.0E+00	2.0E-02	
Vanadium	0.05	1.03E+02	2.20E-02	2.27E+00	2.96E-02	3.04E+00	1.21E-03	1.33E-01	2.22E-02	8.94E-02	2.46E-01	11.4	1.1E-04	1.2E-02	2.0E-03	7.8E-03	2.2E-02	114	1.1E-05	1.2E-03	2.0E-04	7.8E-04	2.2E-03	
Zinc	0.042	2.23E+02	8.47E-02	1.89E+01	1.51E+00	3.37E+02	1.01E-03	2.88E-01	1.85E-01	9.91E+00	1.04E+01	17.2	5.9E-05	1.7E-02	1.1E-02	5.8E-01	6.0E-01	172	5.9E-06	1.7E-03	1.1E-03	5.8E-02	6.0E-02	
Volatile Organics (mg/kg)																								
Acetone		1.00E-01	--	0	--	0		1.29E-04	0.00E+00	0.00E+00	1.29E-04	52		2.5E-06	0.0E+00	0.0E+00	2.5E-06	520		2.5E-07	0.0E+00	0.0E+00	2.5E-07	
Benzene			--	0	--	0			0.00E+00	0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Carbon disulfide		7.00E-03	--	0	--	0		9.05E-06	0.00E+00	0.00E+00	9.05E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Chlorobenzene		5.00E-03	--	0	--	0		6.47E-06	0.00E+00	0.00E+00	6.47E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
cis-1,2-Dichlorobenzene			--	0	--	0			0.00E+00	0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Ethylbenzene		1.80E-02	--	0	--	0		2.33E-05	0.00E+00	0.00E+00	2.33E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
4-Isopropyltoluene			--	0	--	0			0.00E+00	0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Methylene chloride			--	0	--	0			0.00E+00	0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Naphthalene			--	0	--	0			0.00E+00	0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Toluene		3.00E-02	--	0	--	0		3.88E-05	0.00E+00	0.00E+00	3.88E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
trans-1,2-Dichloroethene			--	0	--	0			0.00E+00	0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Trichloroethene		7.00E-03	--	0	--	0		9.05E-06	0.00E+00	0.00E+00	9.05E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
1,2,4-Trimethylbenzene			--	0	--	0			0.00E+00	0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
1,3,5-Trimethylbenzene			--	0	--	0			0.00E+00	0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Vinyl chloride			--	0	--	0			0.00E+00	0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Xylenes		1.50E-01	--	0	--	0		1.94E-04	0.00E+00	0.00E+00	1.94E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Pesticides (mg/kg)																								
alpha-Chlordane		4.80E-03	--	0	--	0		6.21E-06	0.00E+00	0.00E+00	6.21E-06	0.0014		4.4E-03	0.0E+00	0.0E+00	4.4E-03	0.014		4.4E-04	0.0E+00	0.0E+00	4.4E-04	
beta-BHC		1.00E-03	--	0	--	0		1.29E-06	0.00E+00	0.00E+00	1.29E-06	0.56		2.3E-06	0.0E+00	0.0E+00	2.3E-06	2.25		5.7E-07	0.0E+00	0.0E+00	5.7E-07	
delta-BHC		2.00E-03	--	0	--	0		2.59E-06	0.00E+00	0.00E+00	2.59E-06	0.56		4.6E-06	0.0E+00	0.0E+00	4.6E-06	2.25		1.1E-06	0.0E+00	0.0E+00	1.1E-06	
2,4-DDD		3.00E-02	--	0	--	0		3.88E-05	0.00E+00	0.00E+00	3.88E-05	0.009		4.3E-03	0.0E+00	0.0E+00	4.3E-03	1.5		2.6E-05	0.0E+00	0.0E+00	2.6E-05	
4,4-DDD		9.20E-02	--	0	--	0		1.19E-04	0.00E+00	0.00E+00	1.19E-04	0.009		1.3E-02	0.0E+00	0.0E+00	1.3E-02	1.5		7.9E-05	0.0E+00	0.0E+00	7.9E-05	
DDE	0.0000027	1.80E-02	--	0	--	0	6.51E-08	2.33E-05	0.00E+00	0.00E+00	2.33E-05	NTV	NTV	NTV	NTV	NTV	NTV	0.6	1.1E-07	3.9E-05	0.0E+00	0.0E+00	3.9E-05	
DDTs	0.00014	1.20E-02	--	0	--	0	3.38E-06	1.55E-05	0.00E+00	0.00E+00	1.89E-05	0.009	3.8E-04	1.7E-03	0.0E+00	0.0E+00	2.1E-03	1.5	2.3E-06	1.0E-05	0.0E+00	0.0E+00	1.3E-05	
Dieldrin		2.90E-03	--	0	--	0		3.75E-06	0.00E+00	0.00E+00	3.75E-06	0.0709		5.3E-05	0.0E+00	0.0E+00	5.3E-05	0.98		3.8E-06	0.0E+00	0.0E+00	3.8E-06	
Endosulfan I		4.00E-03	--	0	--	0		5.17E-06	0.00E+00	0.00E+00	5.17E-06	10		5.2E-07	0.0E+00	0.0E+00	5.2E-07	100		5.2E-08	0.0E+00	0.0E+00	5.2E-08	
Endosulfan sulfate	0.00012	3.00E-03	--	0	--	0	2.89E-06	3.88E-06	0.00E+00	0.00E+00	6.77E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Endrin	0.000014	2.00E-02	--	0	--	0	3.38E-07	2.59E-05	0.00E+00	0.00E+00	2.62E-05	0.3	1.1E-06	8.6E-05	0.0E+00	0.0E+00	8.7E-05	3	1.1E-07	8.6E-06	0.0E+00	0.0E+00	8.7E-06	
Endrin aldehyde		6.00E-03	--	0	--	0		7.76E-06	0.00E+00	0.00E+00	7.76E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Endrin Ketone		2.30E-03	--	0	--	0		2.97E-06	0.00E+00	0.00E+00	2.97E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
gamma-Chlordane		5.20E-03	--	0	--	0		6.72E-06	0.00E+00	0.00E+00	6.72E-06	0.0014		4.8E-03	0.0E+00	0.0E+00	4.8E-03	0.014		4.8E-04	0.0E+00	0.0E+00	4.8E-04	
Heptachlor	0.0000028	2.00E-04	--	0	--	0	6.75E-08	2.59E-07	0.00E+00	0.00E+00	3.26E-07	0.065	1.0E-06	4.0E-06	0.0E+00	0.0E+00	5.0E-06	0.65	1.0E-07	4.0E-07	0.0E+00	0.0E+00	5.0E-07	
Heptachlor epoxide		3.00E-04	--	0	--	0		3.88E-07	0.00E+00	0.00E+00	3.88E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Hexachlorobenzene		8.00E-04	--	0	--	0		1.03E-06	0.00E+00	0.00E+00	1.03E-06	0.23		4.5E-06	0.0E+00	0.0E+00	4.5E-06	2.3		4.5E-07	0.0E+00	0.0E+00	4.5E-07	
Methoxychlor		1.20E-02	--	0	--	0		1.55E-05	0.00E+00	0.00E+00	1.55E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Mirex		4.00E-03	--	0	--	0		5.17E-06	0.00E+00	0.00E+00	5.17E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
trans-Nonachlor		2.40E-03	--	0	--	0		3.10E-06	0.00E+00	0.00E+00	3.10E-06	0.0014		2.2E-03	0.0E+00	0.0E+00	2.2E-03	0.014		2.2E-04	0.0E+00	0.0E+00	2.2E-04	
SVOCs (mg/kg)																								
Acenaphthene		5.73E-02	--	0	--	0		7.41E-05	0.00E+00	0.00E+00	7.41E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Acenaphthylene		3.96E-02	--	0	--	0		5.12E-05	0.00E+00	0.00E+00	5.12E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Anthracene		6.58E-02	1.89E+00	1.24E-01	--	0		8.51E-05	1.22E-03	0.00E+00	1.30E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Benzo(a)anthracene		1.00E-01	--	0	--	0		1.29E-04	0.00E+00	0.00E+00	1.29E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Benzo(a)pyrene		9.00E-02	--	0	--	0		1.16E-04	0.00E+00	0.00E+00	1.16E-04	0.001		1.2E-01	0.0E+00	0.0E+00	1.2E-01	0.01		1.2E-02	0.0E+00	0.0E+00	1.2E-02	
Benzo(b)fluoranthene		8.00E-02	--	0	--	0		1.03E-04	0.00E+00	0.00E+00	1.03E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Benzo(ghi)perylene		8.00E-02	--	0	--	0		1.03E-04	0.00E+00	0.00E+00	1.03E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Benzo(k)fluoranthene		6.70E-02	--	0	--	0		8.66E-05	0.00E+00	0.00E+00	8.66E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Benzoic acid			--	0	--	0			0.00E+00	0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Bis(2-ethylhexyl)phthalate	0.027	1.20E-01	--	0	--	0	6.51E-04	1.55E-04	0.00E+00	0.00E+00	8.06E-04	1.1	5.9E-04	1.4E-04	0.0E+00	0.0E+00	7.3E-04	11	5.9E-05	1.4E-05	0.0E+00	0.0E+00	7.3E-05	
Butylbenzylphthalate		2.50E-02	--	0	--	0		3.23E-05	0.00E+00	0.00E+00	3.23E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Carbazole		1.41E-01	--	0	--	0		1.82E-04	0.00E+00	0.00E+00	1.82E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
4-Chloroaniline		3.00E-03	--	0	--	0		3.88E-06	0.00E+00	0.00E+00	3.88E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
2-Chloropropane		4.33E-02	--	0	--	0		5.60E-05	0.00E+00	0.00E+00	5.60E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Chrysene	0.0002	9.00E-02	--	0	--	0	4.82E-06	1.16E-04	0.00E+00	0.00E+00	1.21E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Dibenzofuran		7.89E-02	--	0	--	0		1.02E-04	0.00E+00	0.00E+00	1.02E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
3,3-Dichlorobenzidine		1.20E-02	--	0	--	0		1.55E-05	0.00E+00	0.00E+00	1.55E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
2,6-Dinitrotoluene			--	0	--	0			0.00E+00	0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	
Fluoranthene		8.00E-02	1.17E+00	9.39E-02	--	0		1.03E-04	9.20E-04	0.00E+00	1.02E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	

Table C2-5j
Post-Remediation Mallard (Breeding) Risk Calculations (Wetland Sediment Residual Concentration)
Shallow Soil (0 - 2 ft bgs) at Hazard Quotient Equals Three
Non-Tidal Wetland Area Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Point Concentration						Intake (mg/kg BW-day)						Hazard Quotient (HQ) - Low						Hazard Quotient (HQ) - High					
COPEC[a]	Surface Water (mg/L)[b]	Sediments[c]	Plant BAF[d]	Plant Tissue[d]	Invertebrate BAF[d]	Invertebrate Tissue[d]	Surface Water	Sediment	Plant	Invertebrate	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Plant	Invertebrate	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Sediment	Plant	Invertebrate	Total Intake
Fluorene		5.40E-02	--	0	--	0		6.98E-05	0.00E+00	0.00E+00	6.98E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Indeno(123,cd)pyrene		1.00E-01	--	0	--	0		1.29E-04	0.00E+00	0.00E+00	1.29E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2-Methylnaphthalene		5.23E-02	--	0	--	0		6.76E-05	0.00E+00	0.00E+00	6.76E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Methylphenol	0.12	6.68E-02	--	0	--	0	2.89E-03	8.64E-05	0.00E+00	0.00E+00	2.98E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Naphthalene		9.00E-02	--	0	--	0		1.16E-04	0.00E+00	0.00E+00	1.16E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pentachlorophenol		4.84E-02	--	0	--	0		6.26E-05	0.00E+00	0.00E+00	6.26E-05	6.7		9.3E-06	0.0E+00	0.0E+00	9.3E-06	22.5		2.8E-06	0.0E+00	0.0E+00	2.8E-06
Phenanthrene		9.00E-02	1.64E+00	1.47E-01	2.51E+00	2.26E-01		1.16E-04	1.44E-03	6.64E-03	8.20E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Phenol		1.40E-01	--	0	--	0		1.81E-04	0.00E+00	0.00E+00	1.81E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pyrene		8.00E-02	--	0	--	0		1.03E-04	0.00E+00	0.00E+00	1.03E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
PCBs (mg/kg)																								
PCBs (TOTAL)-congeners	0.000016	8.00E-02	1.09E-01	8.74E-03	1.16E+01	9.29E-01	3.86E-07	1.03E-04	8.56E-05	2.73E-02	2.75E-02	0.09	4.3E-06	1.1E-03	9.5E-04	3.0E-01	3.1E-01	1.27	3.0E-07	8.1E-05	6.7E-05	2.2E-02	2.2E-02

>1 = The calculated hazard quotient exceeds 1 (i.e., > 1.5)

Exposure Assumptions and Equation:[e]

		Value	Units
Ingestion Rate (IR) prey(dry wt.)	=	0.0917	kg/day (dry weight)
IRplant(dry wt.)[f]	=	0.0229	kg/day (dry weight)
IRinvertebrate(dry wt.)[f]	=	0.0688	kg/day (dry weight)
IRsediment (dry wt.)[g]	=	0.00303	kg-day (dry weight)
Cprey	=	chem-specific	mg/kg or µg/kg
Csediment	=	chem-specific	mg/kg or µg/kg
Tissue Moisture (TMplant)	=	8.5%	percent
IRsurface water[h]	=	0.056	L/day
Csurface water	=	chem-specific	mg/L or µg/L
Dietary Composition Factor (DCF)[i]	=	100%	percent
Site Use Factor (SUF)[j]	=	40%	percent
Body Weight	=	0.9361	kg

Intake Equation= [IRplant (dry wt) x [Cprey(plant, dry wt)/1-TM) x DCF x SUF]/BW] + [IRinvertebrate (dry wt) x Cprey(invertebrate, dry wt) x DCF x SUF)/BW] + [(IRsediment x Csediment x DCF x SUF))/BW +[(IRsurface water x Csurface water x DCF x SUF))/BW]

Risk (hazard quotient) = Intake / TRV

Prey tissue(dry wt) = Prey tissue (wet wt.) / (1-Tissue Moisture)

NTV = Not toxicity data available.

Blank cell indicates COPEC was not detected in this medium.

Notes:

a All chemicals detected in sediments are considered as constituents of potential ecological concern.

b All concentrations of constituents in surface water are based on the maximum concentration.

c All concentrations of constituents in sediment are based on the residual concentrations expressed in dry weight.

d Site-specific BAFs (dry weight basis). Calculated plant and invertebrate tissue concentrations (sediment concentration x BAF). Tissue concentrations are on a dry weight basis.

e Exposure parameters used to calculate risk are discussed in detail in Section 4.2 of ERA.

f Based on dietary composition of 25% plant and 75% invertebrate.

g Ingestion rate of sediment based on 3.3 percent of of the prey ingestion rate (dry weight); based on mallards (Beyer et al. 1994).

h Based on equation for birds: Water intake (L/day) = $0.059Wt(kg)^{.67}$ (EPA 1993)

i Dietary composition factor was based on a conservative assumption of 100% dietary intake of plants and invertebrates from the site.

j Site use factor was based on 40% use of the site for the mallard's foraging range.

Table C2-5k
Post-Remediation Great Blue Heron Risk Calculations (Wetland Sediment Residual Concentration)
Shallow Soil (0 - 2 ft bgs) at Hazard Quotient Equals Three
Non-Tidal Wetland Area Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Point Concentration						Intake (mg/kg BW-day)						Hazard Quotient (HQ) - Low						Hazard Quotient (HQ) - High				
COPEC[a]	Surface Water (mg/L)[b]	Sediments[c]	Small Mammal BAF[d]	Small Mammal Tissue[d]	Amphibian BAF[d]	Amphibian Tissue[d]	Surface Water	Sediment	Small mammal	Amphibian	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Small mammal	Amphibian	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Sediment	Small mammal	Amphibian	Total Intake
Metals (mg/kg)																							
Aluminum	12.6	2.68E+04	1.11E-02	296	7.75E-03	208	5.65E-01	4.86E+01	8.14E+00	5.70E+00	6.30E+01	109.7	5.2E-03	4.4E-01	7.4E-02	5.2E-02	5.7E-01	1,097	5.2E-04	4.4E-02	7.4E-03	5.2E-03	5.7E-02
Antimony	0.003	2.60E+00	1.22E+00	3	--	0	1.35E-04	4.71E-03	8.69E-02	0	9.18E-02	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Arsenic	0.0436	2.18E+01	--	0	--	0	1.96E-03	3.95E-02	0	0	4.15E-02	5.5	3.6E-04	7.2E-03	0.0E+00	0.0E+00	7.5E-03	22	8.9E-05	1.8E-03	0.0E+00	0.0E+00	1.9E-03
Barium	0.24	9.00E+01	9.41E-02	8	--	0	1.06E-02	1.63E-01	2.33E-01	0	4.06E-01	20.8	5.1E-04	7.8E-03	1.1E-02	0.0E+00	2.0E-02	41.7	2.5E-04	3.9E-03	5.6E-03	0.0E+00	9.7E-03
Beryllium		4.40E-01	--	0	--	0		7.97E-04	0.00E+00	0	7.97E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Cadmium	0.0016	2.60E+00	--	0	--	0	7.18E-05	4.71E-03	0.00E+00	0	4.78E-03	0.08	9.0E-04	5.9E-02	0.0E+00	0.0E+00	6.0E-02	10.40	6.9E-06	4.5E-04	0.0E+00	0.0E+00	4.6E-04
Chromium +3	0.0263	9.25E+01	2.60E-02	2	2.45E-01	23	1.18E-03	1.68E-01	6.61E-02	6.22E-01	8.57E-01	2.66	4.4E-04	6.3E-02	2.5E-02	2.3E-01	3.2E-01	2.78	4.2E-04	6.0E-02	2.4E-02	2.2E-01	3.1E-01
Chromium +6	0.0263	1.85E+01	2.60E-02	0	2.45E-01	5	1.18E-03	3.35E-02	1.32E-02	1.24E-01	1.72E-01	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Cobalt	0.0164	1.84E+01	--	0	--	0	7.36E-04	3.33E-02	0	0	3.41E-02	7.61	9.7E-05	4.4E-03	0.0E+00	0.0E+00	4.5E-03	17	4.3E-05	2.0E-03	0.0E+00	0.0E+00	2.0E-03
Copper	0.233	1.19E+02	3.45E-01	41	--	0	1.05E-02	2.16E-01	1.13E+00	0	1.35E+00	2.3	4.5E-03	9.4E-02	4.9E-01	0.0E+00	5.9E-01	52.3	2.0E-04	4.1E-03	2.2E-02	0.0E+00	2.6E-02
Lead	0.0031	8.30E+01	6.10E-01	51	--	0	1.39E-04	1.50E-01	1.39E+00	0	1.54E+00	0.014	9.9E-03	1.1E+01	9.9E+01	0.0E+00	1.1E+02	>1	8.75	1.6E-05	1.7E-02	1.6E-01	0.0E+00	1.8E-01
Manganese	7.42	9.34E+02	--	0	4.78E-02	45	3.33E-01	1.69E+00	0	1.23E+00	3.25E+00	77.6	4.3E-03	2.2E-02	0.0E+00	1.6E-02	4.2E-02	776	4.3E-04	2.2E-03	0.0E+00	1.6E-03	4.2E-03
Mercury	0.00029	1.20E+00	--	0	7.42E-01	1	1.30E-05	2.17E-03	0	2.44E-02	2.66E-02	0.039	3.3E-04	5.6E-02	0.0E+00	6.3E-01	6.8E-01	0.18	7.2E-05	1.2E-02	0.0E+00	1.4E-01	1.5E-01
Molybdenum	0.0312	5.00E+00	--	0	--	0	1.40E-03	9.06E-03	0	0	1.05E-02	3.5	4.0E-04	2.6E-03	0.0E+00	0.0E+00	3.0E-03	35.3	4.0E-05	2.6E-04	0.0E+00	0.0E+00	3.0E-04
Nickel	0.166	1.06E+02	--	0	--	0	7.45E-03	1.92E-01	0	0	1.99E-01	1.38	5.4E-03	1.4E-01	0.0E+00	0.0E+00	1.4E-01	56.3	1.3E-04	3.4E-03	0.0E+00	0.0E+00	3.5E-03
Selenium	0.029	1.10E+00	6.12E+00	7	5.77E+00	6	1.30E-03	1.99E-03	1.85E-01	1.74E-01	3.62E-01	0.23	5.7E-03	8.7E-03	8.0E-01	7.6E-01	1.6E+00	>1	0.93	1.4E-03	2.1E-03	2.0E-01	1.9E-01	3.9E-01
Silver	0.0019	2.30E+00	--	0	--	0	8.52E-05	4.17E-03	0	0	4.25E-03	178.00	4.8E-07	2.3E-05	0.0E+00	0.0E+00	2.4E-05	NTV	NTV	NTV	NTV	NTV	NTV
Thallium		2.90E-01	1.01E+00	0	--	0		5.25E-04	8.02E-03	0	8.55E-03	0.35		1.5E-03	2.3E-02	0.0E+00	2.4E-02	NTV	NTV	NTV	NTV	NTV	NTV
Tin		2.00E+01	--	0	--	0		3.62E-02	0	0	3.62E-02	6.80		5.3E-03	0.0E+00	0.0E+00	5.3E-03	16.9		2.1E-03	0.0E+00	0.0E+00	2.1E-03
Vanadium	0.05	1.03E+02	--	0	--	0	2.24E-03	1.87E-01	0	0	1.89E-01	11.4	2.0E-04	1.6E-02	0.0E+00	0.0E+00	1.7E-02	114	2.0E-05	1.6E-03	0.0E+00	0.0E+00	1.7E-03
Zinc	0.042	2.23E+02	1.11E+00	247	7.87E-01	176	1.88E-03	4.04E-01	6.78E+00	4.82E+00	1.20E+01	17.2	1.1E-04	2.3E-02	3.9E-01	2.8E-01	7.0E-01	172	1.1E-05	2.3E-03	3.9E-02	2.8E-02	7.0E-02
Volatile Organics (mg/kg)																							
Acetone		1.00E-01	--	0	--	0		1.81E-04	0	0	1.81E-04	52		3.5E-06	0.0E+00	0.0E+00	3.5E-06	520		3.5E-07	0.0E+00	0.0E+00	3.5E-07
Benzene			--	0	--	0			0	0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Carbon disulfide		7.00E-03	--	0	--	0		1.27E-05	0	0	1.27E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chlorobenzene		5.00E-03	--	0	--	0		9.06E-06	0	0	9.06E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
cis-1,2-Dichlorobenzene			--	0	--	0			0	0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Ethylbenzene		1.80E-02	--	0	--	0		3.26E-05	0	0	3.26E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Isopropyltoluene			--	0	--	0			0	0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Methylene chloride			--	0	--	0			0	0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Naphthalene			--	0	--	0			0	0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Toluene		3.00E-02	--	0	--	0		5.44E-05	0	0	5.44E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
trans-1,2-Dichloroethene			--	0	--	0			0	0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Trichloroethene		7.00E-03	--	0	--	0		1.27E-05	0	0	1.27E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
1,2,4-Trimethylbenzene			--	0	--	0			0	0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
1,3,5-Trimethylbenzene			--	0	--	0			0	0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Vinyl chloride			--	0	--	0			0	0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Xylenes		1.50E-01	--	0	--	0		2.72E-04	0	0	2.72E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pesticides (mg/kg)																							
alpha-Chlordane		4.80E-03	--	0	--	0		8.70E-06	0	0	8.70E-06	0.0014		6.2E-03	0.0E+00	0.0E+00	6.2E-03	0.014		6.2E-04	0.0E+00	0.0E+00	6.2E-04
beta-BHC		1.00E-03	--	0	--	0		1.81E-06	0	0	1.81E-06	0.56		3.2E-06	0.0E+00	0.0E+00	3.2E-06	2.25		8.1E-07	0.0E+00	0.0E+00	8.1E-07
delta-BHC		2.00E-03	--	0	--	0		3.62E-06	0	0	3.62E-06	0.56		6.5E-06	0.0E+00	0.0E+00	6.5E-06	2.25		1.6E-06	0.0E+00	0.0E+00	1.6E-06
2,4-DDD		3.00E-02	1.04E+00	0	--	0		5.44E-05	8.60E-04	0	9.14E-04	0.009		6.0E-03	9.6E-02	0.0E+00	1.0E-01	1.5		3.6E-05	5.7E-04	0.0E+00	6.1E-04
4,4-DDD		9.20E-02	1.04E+00	0	--	0		1.67E-04	2.64E-03	0	2.80E-03	0.009		1.9E-02	2.9E-01	0.0E+00	3.1E-01	1.5		1.1E-04	1.8E-03	0.0E+00	1.9E-03
DDE	0.0000027	1.80E-02	1.04E+00	0	--	0	1.21E-07	3.26E-05	5.16E-04	0	5.49E-04	NTV	NTV	NTV	NTV	NTV	NTV	0.6	2.0E-07	5.4E-05	8.6E-04	0.0E+00	9.1E-04
DDTs	0.00014	1.20E-02	1.04E+00	0	--	0	6.28E-06	2.17E-05	3.44E-04	0	3.72E-04	0.009	7.0E-04	2.4E-03	3.8E-02	0.0E+00	4.1E-02	1.5	4.2E-06	1.4E-05	2.3E-04	0.0E+00	2.5E-04
Dieldrin		2.90E-03	--	0	--	0		5.25E-06	0	0	5.25E-06	0.0709		7.4E-05	0.0E+00	0.0E+00	7.4E-05	0.98		5.4E-06	0.0E+00	0.0E+00	5.4E-06
Endosulfan I		4.00E-03	--	0	--	0		7.25E-06	0	0	7.25E-06	10		7.2E-07	0.0E+00	0.0E+00	7.2E-07	100		7.2E-08	0.0E+00	0.0E+00	7.2E-08
Endosulfan sulfate	0.00012	3.00E-03	--	0	--	0	5.38E-06	5.44E-06	0	0	1.08E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Endrin	0.000014	2.00E-02	--	0	--	0	6.28E-07	3.62E-05	0	0	3.69E-05	0.3	2.1E-06	1.2E-04	0.0E+00	0.0E+00	1.2E-04	3	2.1E-07	1.2E-05	0.0E+00	0.0E+00	1.2E-05
Endrin aldehyde		6.00E-03	--	0	--	0		1.09E-05	0	0	1.09E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Endrin Ketone		2.30E-03	--	0	--	0		4.17E-06	0	0	4.17E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
gamma-Chlordane		5.20E-03	--	0	--	0		9.42E-06	0	0	9.42E-06	0.0014		6.7E-03	0.0E+00	0.0E+00	6.7E-03	0.014		6.7E-04	0.0E+00	0.0E+00	6.7E-04
Heptachlor	0.0000028	2.00E-04	--	0	--	0	1.26E-07	3.62E-07	0	0	4.88E-07	0.065	1.9E-06	5.6E-06	0.0E+00	0.0E+00	7.5E-06	0.65	1.9E-07	5.6E-07	0.0E+00	0.0E+00	7.5E-07
Heptachlor epoxide		3.00E-04	--	0	--	0		5.44E-07	0	0	5.44E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Hexachlorobenzene		8.00E-04	--	0	--	0		1.45E-06	0	0	1.45E-06	0.23		6.3E-06	0.0E+00	0.0E+00	6.3E-06	2.3		6.3E-07	0.0E+00	0.0E+00	6.3E-07
Methoxychlor		1.20E-02	--	0	--	0		2.17E-05	0	0	2.17E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Mirex		4.00E-03	--	0	--	0		7.25E-06	0	0	7.25E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
trans-Nonachlor		2.40E-03	--	0	--	0		4.35E-06	0	0	4.35E-06	0.0014		3.1E-03	0.0E+00	0.0E+00	3.1E-03	0.014		3.1E-04	0.0E+00	0.0E+00	3.1E-04
SVOCs (mg/kg)																							
Acenaphthene		5.73E-02	--	0	--	0		1.04E-04	0	0	1.04E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Acenaphthylene		3.96E-02	--	0	--	0		7.17E-05	0	0	7.17E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Anthracene		6.58E-02	--	0	--	0		1.19E-04	0	0	1.19E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(a)anthracene		1.00E-01	--	0	--	0		1.81E-04	0	0	1.81E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(a)pyrene		9.00E-02	--	0	--	0		1.63E-04	0	0	1.63E-04	0.001		1.6E-01	0.0E+00	0.0E+00	1.6E-01	0.01		1.6E-02	0.0E+00	0.0E+00	1.6E-02
Benzo(b)fluoranthene		8.00E-02	--	0	--	0		1.45E-04	0	0	1.45E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(ghi)perylene		8.00E-02	--	0	--	0		1.45E-04	0	0	1.45E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(k)fluoranthene		6.70E-02	--	0	--	0		1.21E-04	0	0	1.21E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzoic acid			--	0	--	0			0	0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Bis(2-ethylhexyl)phthalate	0.027	1.20E-01	--	0	--	0	1.21E-03	2.17E-04	0	0	1.43E-03	1.1	1.1E-03	2.0E-04	0.0E+00	0.0E+00	1.3E-03	11	1.1E-04	2.0E-05	0.0E+00	0.0E+00	1.3E-04
Butylbenzylphthalate		2.50E-02	--	0	--	0		4.53E-05	0	0	4.53E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Carbazole		1.41E-01	--	0	--	0		2.55E-04	0	0	2.55E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Chloroaniline		3.00E-03	--	0	--	0		5.44E-06	0	0	5.44E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2-Chloropropane		4.33E-02	--	0	--	0		7.84E-05	0	0	7.84E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chrysene	0.0002	9.00E-02	--	0	--	0	8.97E-06	1.63E-04	0	0	1.72E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Dibenzofuran		7.89E-02	--	0	--	0		1.43E-04	0	0	1.43E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
3,3-Dichlorobenzidine		1.20E-02	--	0	--	0		2.17E-05	0	0	2.17E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2,6-Dinitrotoluene			--	0	--	0			0	0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Fluoranthene		8.00E-02	--	0	--	0		1.45E-04	0	0	1.45E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV

Table C2-5k
Post-Remediation Great Blue Heron Risk Calculations (Wetland Sediment Residual Concentration)
Shallow Soil (0 - 2 ft bgs) at Hazard Quotient Equals Three
Non-Tidal Wetland Area Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Point Concentration						Intake (mg/kg BW-day)						Hazard Quotient (HQ) - Low						Hazard Quotient (HQ) - High				
COPEC[a]	Surface Water (mg/L)[b]	Sediments[c]	Small Mammal BAF[d]	Small Mammal Tissue[d]	Amphibian BAF[d]	Amphibian Tissue[d]	Surface Water	Sediment	Small mammal	Amphibian	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Small mammal	Amphibian	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Sediment	Small mammal	Amphibian	Total Intake
Fluorene		5.40E-02	--	0	--	0		9.78E-05	0	0	9.78E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Indeno(123,cd)pyrene		1.00E-01	--	0	--	0		1.81E-04	0	0	1.81E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2-Methylnaphthalene		5.23E-02	--	0	--	0		9.48E-05	0	0	9.48E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Methylphenol	0.12	6.68E-02	--	0	--	0	5.38E-03	1.21E-04	0	0	5.50E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Naphthalene		9.00E-02	--	0	--	0		1.63E-04	0	0	1.63E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pentachlorophenol		4.84E-02	--	0	--	0		8.77E-05	0	0	8.77E-05	6.7		1.3E-05	0.0E+00	0.0E+00	1.3E-05	22.5		3.9E-06	0.0E+00	0.0E+00	3.9E-06
Phenanthrene		9.00E-02	--	0	--	0		1.63E-04	0	0	1.63E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Phenol		1.40E-01	--	0	--	0		2.54E-04	0	0	2.54E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pyrene		8.00E-02	--	0	--	0		1.45E-04	0	0	1.45E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
PCBs (mg/kg)																							
PCBs (TOTAL)-congeners	0.000016	8.00E-02	1.81E+01	1	1.03E+01	1	7.18E-07	1.45E-04	3.97E-02	2.83E-01	3.23E-01	0.09	8.0E-06	1.6E-03	4.4E-01	3.1E+00	3.6E+00 >1	1.27	5.7E-07	1.1E-04	3.1E-02	2.2E-01	2.5E-01
>1 = The calculated hazard quotient exceeds 1 (i.e., > 1.5)																							

Exposure Assumptions and Equation:[e]

	Value	Units
Ingestion Rate (IR) prey(dry wt.) =	0.126	kg/day (dry weight)
IRsmall mammal(dry wt.)[f] =	0.063	kg/day (dry weight)
IRamphibian (dry wt.)[f] =	0.063	kg/day (dry weight)
IRsediment (dry wt.)[g] =	0.00416	kg-day (dry weight)
Cprey =	chem-specific	mg/kg or µg/kg
Csediment =	chem-specific	mg/kg or µg/kg
Tissue Moisture (TMsmall mammal) =	68%	percent
Tissue Moisture (TMamphibian) =	85%	percent
IRsurface water[h] =	0.103	L/day
Csurface water =	chem-specific	mg/L or µg/L
Dietary Composition Factor (DCF)[i] =	100%	percent
Site Use Factor (SUF)[j] =	100%	percent
Body Weight (BW) =	2.295	kg

Intake Equation= [Irsmall mammal (dry wt) x (Cprey(small mammal, dry wt)/1-TM) x DCF x SUF]/BW] + [IRamphibian (dry wt) x Cprey(amphibians, dry wt) x DCF x SUF]/BW] + [(IRsediment x Csediment x DCF x SUF))/BW + [(IRsurface water x Csurface water x DCF x SUF)]/BW]

Risk (hazard quotient) = Intake / TRV

Prey tissue(dry wt) = Prey tissue (wet wt.) / (1-Tissue Moisture)

NTV = Not toxicity data available.

Blank cell indicates COPEC was not detected in this medium.

Notes:

a All chemicals detected in sediments are considered as constituents of potential ecological concern.

b All concentrations of constituents in surface water are based on the maximum concentration.

c All concentrations of constituents in sediment are based on the residual concentrations expressed in dry weight.

d Site-specific BAFs (dry weight basis). Calculated small mammal tissue and amphibian concentrations (sediment concentration x BAF). Tissue concentrations are on a dry weight basis.

e Exposure parameters used to calculate risk are discussed in detail in Section 4.2 of ERA.

f Based on dietary composition of 50% small mammal and 50% amphibians.

g Ingestion rate of sediment based on 3.3 percent of of the prey ingestion rate (dry weight); based on mallards (Beyer et al. 1994).

h Based on equation for birds: Water intake (L/day) = $0.059Wt(kg)^{0.67}$ (EPA 1993)

i Dietary composition factor was based on a conservative assumption of 100% dietary intake of small mammals and amphibians from the site.

j Site use factor was based on a conservative 100% use of the site for the heron's foraging range.

Table C2-5l
Post-Remediation Kildeer Risk Calculations (Wetland Sediment Residual Concentration)
Shallow Soil (0 - 2 ft bgs) at Hazard Quotient Equals Three
Non-Tidal Wetland Area Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Concentrations				Intake (mg/kg BW-day)					Hazard Quotient (HQ) - Low					Hazard Quotient (HQ) - High			
COPEC[a]	Surface Water (mg/L)[b]	Sediments[c]	Invertebrate BAF[d]	Invertebrate Tissue[d]	Surface Water	Soils	Invertebrate	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Soils	Invertebrate	Total Intake		High TRV (mg/kg BW-day)	Surface Water	Soils	Invertebrate	Total Intake
Metals (mg/kg)																			
Aluminum	12.6	2.68E+04	1.93E-01	5.17E+03	1.78E+00	1.03E+03	1.10E+03	2.14E+03	109.7	1.6E-02	9.4E+00	1.0E+01	1.9E+01	>1	1,097	1.6E-03	9.4E-01	1.0E+00	1.9E+00 >1
Antimony	0.003	2.60E+00	2.32E-01	6.02E-01	4.24E-04	1.00E-01	1.29E-01	2.29E-01	NTV	NTV	NTV	NTV	NTV	>1	NTV	NTV	NTV	NTV	NTV
Arsenic	0.0436	2.18E+01	1.92E-01	4.18E+00	6.15E-03	8.39E-01	8.94E-01	1.74E+00	5.5	1.1E-03	1.5E-01	1.6E-01	3.2E-01		22	2.8E-04	3.8E-02	4.1E-02	7.9E-02
Barium	0.24	9.00E+01	1.50E+00	1.35E+02	3.33E-02	3.46E+00	2.88E+01	3.23E+01	20.8	1.6E-03	1.7E-01	1.4E+00	1.6E+00	>1	41.7	8.0E-04	8.3E-02	6.9E-01	7.7E-01
Beryllium		4.40E-01	--	0		1.69E-02	0.00E+00	1.69E-02	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Cadmium	0.0016	2.60E+00	2.15E-01	5.59E-01	2.26E-04	1.00E-01	1.20E-01	2.20E-01	0.08	2.8E-03	1.3E+00	1.5E+00	2.7E+00	>1	10.40	2.2E-05	9.6E-03	1.1E-02	2.1E-02
Chromium +3	0.0263	9.25E+01	5.53E-01	5.12E+01	3.71E-03	3.56E+00	1.09E+01	1.45E+01	2.66	1.4E-03	1.3E+00	4.1E+00	5.5E+00	>1	2.78	1.3E-03	1.3E+00	3.9E+00	5.2E+00 >1
Chromium +6	0.0263	1.85E+01	5.53E-01	10	3.71E-03	7.12E-01	2.19E+00	2.90E+00	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Cobalt	0.0164	1.84E+01	--	0	2.32E-03	7.08E-01	0.00E+00	7.10E-01	7.61	3.0E-04	9.3E-02	0.0E+00	9.3E-02		17	1.4E-04	4.2E-02	0.0E+00	4.2E-02
Copper	0.233	1.19E+02	6.67E-01	7.94E+01	3.29E-02	4.58E+00	1.70E+01	2.16E+01	2.3	1.4E-02	2.0E+00	7.4E+00	9.4E+00	>1	52.3	6.3E-04	8.8E-02	3.2E-01	4.1E-01
Lead	0.0031	8.30E+01	5.07E-02	4.21E+00	4.38E-04	3.19E+00	9.00E-01	4.09E+00	0.014	3.1E-02	2.3E+02	6.4E+01	2.9E+02	>1	8.75	5.0E-05	3.7E-01	1.0E-01	4.7E-01
Manganese	7.42	9.34E+02	5.29E+00	4.94E+03	1.05E+00	3.59E+01	1.06E+03	1.09E+03	77.6	1.3E-02	4.6E-01	1.4E+01	1.4E+01	>1	776	1.3E-03	4.6E-02	1.4E+00	1.4E+00
Mercury	0.00029	1.20E+00	6.96E-01	8.36E-01	4.09E-05	4.62E-02	1.79E-01	2.25E-01	0.039	1.0E-03	1.2E+00	4.6E+00	5.8E+00	>1	0.18	2.3E-04	2.6E-01	9.9E-01	1.2E+00
Molybdenum	0.0312	5.00E+00	--	0	4.40E-03	1.92E-01	0.00E+00	1.97E-01	3.5	1.3E-03	5.5E-02	0.0E+00	5.6E-02		35.3	1.2E-04	5.5E-03	0.0E+00	5.6E-03
Nickel	0.166	1.06E+02	3.65E-01	3.86E+01	2.34E-02	4.08E+00	8.26E+00	1.24E+01	1.38	1.7E-02	3.0E+00	6.0E+00	9.0E+00	>1	56.3	4.2E-04	7.2E-02	1.5E-01	2.2E-01
Selenium	0.029	1.10E+00	--	0	4.09E-03	4.23E-02	0.00E+00	4.64E-02	0.23	1.8E-02	1.8E-01	0.0E+00	2.0E-01		0.93	4.4E-03	4.6E-02	0.0E+00	5.0E-02
Silver	0.0019	2.30E+00	--	0	2.68E-04	8.85E-02	0.00E+00	8.88E-02	178.00	1.5E-06	5.0E-04	0.0E+00	5.0E-04		NTV	NTV	NTV	NTV	NTV
Thallium		2.90E-01	--	0		1.12E-02	0.00E+00	1.12E-02	0.35		3.2E-02	0.0E+00	3.2E-02		NTV	NTV	NTV	NTV	NTV
Tin		2.00E+01	--	0		7.70E-01	0.00E+00	7.70E-01	6.80		1.1E-01	0.0E+00	1.1E-01		16.9		4.6E-02	0.0E+00	4.6E-02
Vanadium	0.05	1.03E+02	2.96E-02	3.04E+00	7.06E-03	3.96E+00	6.51E-01	4.62E+00	11.4	6.2E-04	3.5E-01	5.7E-02	4.1E-01		114	6.2E-05	3.5E-02	5.7E-03	4.1E-02
Zinc	0.042	2.23E+02	1.51E+00	3.37E+02	5.93E-03	8.58E+00	7.21E+01	8.07E+01	17.2	3.4E-04	5.0E-01	4.2E+00	4.7E+00	>1	172	3.4E-05	5.0E-02	4.2E-01	4.7E-01
Volatile Organics (mg/kg)																			
Acetone		1.00E-01	--	0		3.85E-03	0.00E+00	3.85E-03	52		7.4E-05	0.0E+00	7.4E-05		520		7.4E-06	0.0E+00	7.4E-06
Benzene			--	0			0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Carbon disulfide		7.00E-03	--	0		2.69E-04	0.00E+00	2.69E-04	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Chlorobenzene		5.00E-03	--	0		1.92E-04	0.00E+00	1.92E-04	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
cis-1,2-Dichlorobenzene			--	0			0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Ethylbenzene		1.80E-02	--	0		6.93E-04	0.00E+00	6.93E-04	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
4-Isopropyltoluene			--	0			0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Methylene chloride			--	0			0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Naphthalene			--	0			0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Toluene		3.00E-02	--	0		1.15E-03	0.00E+00	1.15E-03	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
trans-1,2-Dichloroethene			--	0			0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Trichloroethene		7.00E-03	--	0		2.69E-04	0.00E+00	2.69E-04	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
1,2,4-Trimethylbenzene			--	0			0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
1,3,5-Trimethylbenzene			--	0			0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Vinyl chloride			--	0			0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Xylenes		1.50E-01	--	0		5.77E-03	0.00E+00	5.77E-03	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Pesticides (mg/kg)																			
alpha-Chlordane		4.80E-03	--	0		1.85E-04	0.00E+00	1.85E-04	0.0014		1.3E-01	0.0E+00	1.3E-01		0.014		1.3E-02	0.0E+00	1.3E-02
beta-BHC		1.00E-03	--	0		3.85E-05	0.00E+00	3.85E-05	0.56		6.9E-05	0.0E+00	6.9E-05		2.25		1.7E-05	0.0E+00	1.7E-05
delta-BHC		2.00E-03	--	0		7.70E-05	0.00E+00	7.70E-05	0.56		1.4E-04	0.0E+00	1.4E-04		2.25		3.4E-05	0.0E+00	3.4E-05
2,4-DDD		3.00E-02	--	0		1.15E-03	0.00E+00	1.15E-03	0.009		1.3E-01	0.0E+00	1.3E-01		1.5		7.7E-04	0.0E+00	7.7E-04
4,4-DDD		9.20E-02	--	0		3.54E-03	0.00E+00	3.54E-03	0.009		3.9E-01	0.0E+00	3.9E-01		1.5		2.4E-03	0.0E+00	2.4E-03
DDE	0.0000027	1.80E-02	--	0	3.81E-07	6.93E-04	0.00E+00	6.93E-04	NTV	NTV	NTV	NTV	NTV		0.6	6.4E-07	1.2E-03	0.0E+00	1.2E-03
DDTs	0.00014	1.20E-02	--	0	1.98E-05	4.62E-04	0.00E+00	4.82E-04	0.009	2.2E-03	5.1E-02	0.0E+00	5.4E-02		1.5	1.3E-05	3.1E-04	0.0E+00	3.2E-04
Dieldrin		2.90E-03	--	0		1.12E-04	0.00E+00	1.12E-04	0.0709		1.6E-03	0.0E+00	1.6E-03		0.98		1.1E-04	0.0E+00	1.1E-04
Endosulfan I		4.00E-03	--	0		1.54E-04	0.00E+00	1.54E-04	10		1.5E-05	0.0E+00	1.5E-05		100		1.5E-06	0.0E+00	1.5E-06
Endosulfan sulfate	0.00012	3.00E-03	--	0	1.69E-05	1.15E-04	0.00E+00	1.32E-04	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Endrin	0.000014	2.00E-02	--	0	1.98E-06	7.70E-04	0.00E+00	7.72E-04	0.3	6.6E-06	2.6E-03	0.0E+00	2.6E-03		3	6.6E-07	2.6E-04	0.0E+00	2.6E-04
Endrin aldehyde		6.00E-03	--	0		2.31E-04	0.00E+00	2.31E-04	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Endrin Ketone		2.30E-03	--	0		8.85E-05	0.00E+00	8.85E-05	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Gamma-BHC	0.000011	5.20E-03	--	0	1.55E-06	2.00E-04	0.00E+00	2.02E-04	2	7.8E-07	1.0E-04	0.0E+00	1.0E-04		20	7.8E-08	1.0E-05	0.0E+00	1.0E-05
Heptachlor	0.0000028	2.00E-04	--	0	3.95E-07	7.70E-06	0.00E+00	8.09E-06	0.065	6.1E-06	1.2E-04	0.0E+00	1.2E-04		0.65	6.1E-07	1.2E-05	0.0E+00	1.2E-05
Heptachlor epoxide		3.00E-04	--	0		1.15E-05	0.00E+00	1.15E-05	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Hexachlorobenzene		8.00E-04	--	0		3.08E-05	0.00E+00	3.08E-05	0.23		1.3E-04	0.0E+00	1.3E-04		2.3		1.3E-05	0.0E+00	1.3E-05
Methoxychlor		1.20E-02	--	0		4.62E-04	0.00E+00	4.62E-04	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Mirex		4.00E-03	--	0		1.54E-04	0.00E+00	1.54E-04	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
trans-Nonachlor		2.40E-03	--	0		9.24E-05	0.00E+00	9.24E-05	0.0014		6.6E-02	0.0E+00	6.6E-02		0.014		6.6E-03	0.0E+00	6.6E-03

Table C2-5l
Post-Remediation Kildeer Risk Calculations (Wetland Sediment Residual Concentration)
Shallow Soil (0 - 2 ft bgs) at Hazard Quotient Equals Three
Non-Tidal Wetland Area Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Concentrations				Intake (mg/kg BW-day)					Hazard Quotient (HQ) - Low					Hazard Quotient (HQ) - High			
COPEC[a]	Surface Water (mg/L)[b]	Sediments[c]	Invertebrate BAF[d]	Invertebrate Tissue[d]	Surface Water	Soils	Invertebrate	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Soils	Invertebrate	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Soils	Invertebrate	Total Intake
SVOCs (mg/kg)																		
Acenaphthene		5.73E-02	--	0		2.20E-03	0.00E+00	2.20E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Acenaphthylene		3.96E-02	--	0		1.52E-03	0.00E+00	1.52E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Anthracene		6.58E-02	--	0		2.53E-03	0.00E+00	2.53E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(a)anthracene		1.00E-01	--	0		3.85E-03	0.00E+00	3.85E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(a)pyrene		9.00E-02	--	0		3.46E-03	0.00E+00	3.46E-03	0.001		3.5E+00	0.0E+00	3.5E+00 >1	0.01		3.5E-01	0.0E+00	3.5E-01
Benzo(b)fluoranthene		8.00E-02	--	0		3.08E-03	0.00E+00	3.08E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(ghi)perylene		8.00E-02	--	0		3.08E-03	0.00E+00	3.08E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(k)fluoranthene		6.70E-02	--	0		2.58E-03	0.00E+00	2.58E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzoic acid			--	0			0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Bis(2-ethylhexyl)phthalate	0.027	1.20E-01	--	0	3.81E-03	4.62E-03	0.00E+00	8.43E-03	1.1	3.5E-03	4.2E-03	0.0E+00	7.7E-03	11	3.5E-04	4.2E-04	0.0E+00	7.7E-04
Butylbenzylphthalate		2.50E-02	--	0		9.62E-04	0.00E+00	9.62E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Carbazole		1.41E-01	--	0		5.43E-03	0.00E+00	5.43E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Chloroaniline		3.00E-03	--	0		1.15E-04	0.00E+00	1.15E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2-Chloropropane		4.33E-02	--	0		1.67E-03	0.00E+00	1.67E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chrysene	0.0002	9.00E-02	--	0	2.82E-05	3.46E-03	0.00E+00	3.49E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Dibenzofuran		7.89E-02	--	0		3.04E-03	0.00E+00	3.04E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
3,3-Dichlorobenzidine		1.20E-02	--	0		4.62E-04	0.00E+00	4.62E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2,6-Dinitrotoluene			--	0			0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Fluoranthene		8.00E-02	--	0		3.08E-03	0.00E+00	3.08E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Fluorene		5.40E-02	--	0		2.08E-03	0.00E+00	2.08E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Indeno(123,cd)pyrene		1.00E-01	--	0		3.85E-03	0.00E+00	3.85E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2-Methylnaphthalene		5.23E-02	--	0		2.01E-03	0.00E+00	2.01E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Methylphenol	0.12	6.68E-02	--	0	1.69E-02	2.57E-03	0.00E+00	1.95E-02	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Naphthalene		9.00E-02	--	0		3.46E-03	0.00E+00	3.46E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pentachlorophenol		4.84E-02	--	0		1.86E-03	0.00E+00	1.86E-03	6.7		2.8E-04	0.0E+00	2.8E-04	22.5		8.3E-05	0.0E+00	8.3E-05
Phenanthrene		9.00E-02	2.51E+00	2.26E-01		3.46E-03	4.83E-02	5.18E-02	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Phenol		1.40E-01	--	0		5.39E-03	0.00E+00	5.39E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pyrene		8.00E-02	--	0		3.08E-03	0.00E+00	3.08E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
PCBs (mg/kg)																		
PCBs (TOTAL)-congeners	0.000016	8.00E-02	1.16E+01	9.29E-01	2.26E-06	3.08E-03	1.99E-01	2.02E-01	0.09	2.5E-05	3.4E-02	2.2E+00	2.2E+00 >1	1.27	1.8E-06	2.4E-03	1.6E-01	1.6E-01
>1 = The calculated hazard quotient exceeds 1 (i.e., > 1.5)																		

Exposure Assumptions and Equation[e]:

	Value	Units
Ingestion Rate (IR) prey(dry wt.) =	0.0152	kg/day (dry weight)
IRinvertebrate(dry wt.) =	0.0152	kg/day (dry weight)
IRsediment (dry wt.)[f] =	0.00274	kg-day (dry weight)
Cprey =	chem-specific	mg/kg or µg/kg
Csediment =	chem-specific	mg/kg or µg/kg
IRsurface water[g] =	0.010	L/day
Csurface water =	chem-specific	mg/L or µg/L
Dietary Composition Factor (DCF)[h] =	100%	percent
Site Use Factor (SUF)[i] =	100%	percent
Body Weight (BW) =	0.0711	kg

Intake Equation = [IRinvertebrate (dry wt) x Cprey(invertebrate, dry wt) x DCF x SUF]/BW] +{(IRsediment x Csediment x DCF x SUF)]/BW] + [(IRsurface water x Csurface water x DCF x SUF)]/BW]

Risk (hazard quotient) = Intake / TRV

Prey tissue(dry wt) = Prey tissue (wet wt.) / (1-Tissue Moisture)

NTV = Not toxicity data available.

NA = Not available.

Blank cell indicates COPEC was not detected in this medium.

Notes:

a All chemicals detected in sediments are considered as constituents of potential ecological concern.

b All concentrations of constituents in surface water are based on the maximum concentration.

c All concentrations of constituents in sediment are based on the residual concentrations expressed in dry weight.

d Site-specific BAFs (dry weight basis). Calculated invertebrate tissue concentrations (sediment concentration x BAF). Tissue concentrations are on a dry weight basis.

e Exposure parameters used to calculate risk are discussed in detail in Section 4.2 of ERA.

f Ingestion rate of sediment based on 18 percent of of the prey ingestion rate (dry weight); based on average of sandpiper data from Beyer et al. 1994).

g Based on equation for birds: Water intake (L/day) = $0.059Wt(kg)^{0.67}$ (EPA 1993)

h Dietary composition factor was based on a conservative assumption of 100% dietary intake of invertebrates from the site.

i Site use factor was based on a conservative 100% use of the site for the killdeer's foraging range.

Table C2-5m
Post-Remediation Salt Marsh Harvest Mouse Risk Calculations (Wetland Sediment Residual Concentration)
Shallow Soil (0 - 2 ft bgs) at Hazard Quotient Equals Three
Non-Tidal Wetland Area Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Concentrations				Intake (mg/kg BW-day)					HQ - Low TRV					HQ - High TRV			
COPEC[a]	Surface Water (mg/L)[b]	Sediments[c]	Pickelweed BAF[d]	Pickleweed Tissue[d]	Surface Water	Sediment	Pickleweed	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Pickleweed	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Sediment	Pickleweed	Total Intake
Metals (mg/kg)																		
Aluminum	12.6	2.68E+04	3.64E-03	97	1.98E+00	1.97E+02	2.98E+01	2.29E+02	1.93	1.0E+00	1.0E+02	1.5E+01	1.2E+02 >1	19.3	1.0E-01	1.0E+01	1.5E+00	1.2E+01 >1
Antimony	0.003	2.60E+00	2.95E+00	8	4.71E-04	1.91E-02	2.35E+00	2.37E+00	0.06	8.0E-03	3.2E-01	4.0E+01	4.0E+01 >1	23.4	2.0E-05	8.2E-04	1.0E-01	1.0E-01
Arsenic	0.0436	2.18E+01	1.50E-01	3	6.84E-03	1.60E-01	1.00E+00	1.17E+00	0.32	2.1E-02	5.0E-01	3.1E+00	3.7E+00 >1	4.7	1.5E-03	3.4E-02	2.1E-01	2.5E-01
Barium	0.24	9.00E+01	5.56E-01	50	3.70E-02	6.61E-01	1.53E+01	1.60E+01	51.8	7.1E-04	1.3E-02	3.0E-01	3.1E-01	66.0	5.6E-04	1.0E-02	2.3E-01	2.4E-01
Beryllium		4.40E-01	--	0		3.23E-03	0	3.23E-03	0.532		6.1E-03	0.0E+00	6.1E-03	0.554		5.8E-03	0.0E+00	5.8E-03
Cadmium	0.0016	2.60E+00	6.76E-01	2	2.51E-04	1.91E-02	5.38E-01	5.58E-01	0.06	4.2E-03	3.2E-01	9.0E+00	9.3E+00 >1	2.64	9.5E-05	7.2E-03	2.0E-01	2.1E-01
Chromium +3	0.0263	9.25E+01	--	0	4.13E-03	6.79E-01	0	6.83E-01	2	1.7E-03	2.8E-01	0.0E+00	2.8E-01	23.1	1.8E-04	2.9E-02	0.0E+00	3.0E-02
Chromium +6	0.0263	1.85E+01	--	0	4.13E-03	1.36E-01	0	1.40E-01	5.66	7.3E-04	2.4E-02	0.0E+00	2.5E-02	35.1	1.2E-04	3.9E-03	0.0E+00	4.0E-03
Cobalt	0.0164	1.84E+01	--	0	2.57E-03	1.35E-01	0	1.38E-01	1.2	2.1E-03	1.1E-01	0.0E+00	1.1E-01	20	1.3E-04	6.8E-03	0.0E+00	6.9E-03
Copper	0.233	1.19E+02	1.82E-01	22	3.66E-02	8.74E-01	6.62E+00	7.53E+00	2.67	1.4E-02	3.3E-01	2.5E+00	2.8E+00 >1	632	5.8E-05	1.4E-03	1.0E-02	1.2E-02
Lead	0.0031	8.30E+01	7.92E-02	7	4.86E-04	6.10E-01	2.01E+00	2.62E+00	1	4.9E-04	6.1E-01	2.0E+00	2.6E+00 >1	241	2.0E-06	2.5E-03	8.4E-03	1.1E-02
Manganese	7.42	9.34E+02	1.75E+00	1637	1.16E+00	6.86E+00	5.01E+02	5.09E+02	13.7	8.5E-02	5.0E-01	3.7E+01	3.7E+01 >1	159.09	7.3E-03	4.3E-02	3.1E+00	3.2E+00 >1
Mercury	0.00029	1.20E+00	--	0	4.55E-05	8.81E-03	0	8.86E-03	0.027	1.7E-03	3.3E-01	0.0E+00	3.3E-01	0.27	1.7E-04	3.3E-02	0.0E+00	3.3E-02
Molybdenum	0.0312	5.00E+00	--	0	4.90E-03	3.67E-02	0	4.16E-02	0.26	1.9E-02	1.4E-01	0.0E+00	1.6E-01	2.6	1.9E-03	1.4E-02	0.0E+00	1.6E-02
Nickel	0.166	1.06E+02	1.14E-01	12	2.60E-02	7.78E-01	3.69E+00	4.50E+00	0.13	2.0E-01	5.9E+00	2.8E+01	3.4E+01 >1	31.6	8.2E-04	2.5E-02	1.2E-01	1.4E-01
Selenium	0.029	1.10E+00	--	0	4.55E-03	8.08E-03	0	1.26E-02	0.05	9.1E-02	1.6E-01	0.0E+00	2.5E-01	1.21	3.8E-03	6.7E-03	0.0E+00	1.0E-02
Silver	0.0019	2.30E+00	--	0	2.98E-04	1.69E-02	0	1.72E-02	0.38	7.9E-04	4.5E-02	0.0E+00	4.6E-02	3.75	7.9E-05	4.5E-03	0.0E+00	4.6E-03
Thallium		2.90E-01	--	0		2.13E-03	0	2.13E-03	0.48		4.4E-03	0.0E+00	4.4E-03	1.43		1.5E-03	0.0E+00	1.5E-03
Tin		2.00E+01	6.21E+00	124		1.47E-01	3.80E+01	3.82E+01	23.4		6.3E-03	1.6E+00	1.6E+00 >1	35		4.2E-03	1.1E+00	1.1E+00
Vanadium	0.05	1.03E+02	--	0	7.85E-03	7.56E-01	0	7.64E-01	0.21	3.7E-02	3.6E+00	0.0E+00	3.6E+00 >1	2.1	3.7E-03	3.6E-01	0.0E+00	3.6E-01
Zinc	0.042	2.23E+02	3.77E-01	84	6.59E-03	1.64E+00	2.57E+01	2.73E+01	9.6	6.9E-04	1.7E-01	2.7E+00	2.8E+00 >1	411	1.6E-05	4.0E-03	6.2E-02	6.6E-02
Volatile Organics (mg/kg)																		
Acetone		1.00E-01	--	0		7.34E-04	0	7.34E-04	10	1.0E+01	7.3E-05	0.0E+00	7.3E-05	50		1.5E-05	0.0E+00	1.5E-05
Benzene			--	0			0	0.00E+00	26.4			0.0E+00	0.0E+00	263.6			0.0E+00	0.0E+00
Carbon disulfide		7.00E-03	--	0		5.14E-05	0	5.14E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chlorobenzene		5.00E-03	--	0		3.67E-05	0	3.67E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
cis-1,2-Dichlorobenzene			--	0			0	0.00E+00	45.2			0.0E+00	0.0E+00	452			0.0E+00	0.0E+00
Ethylbenzene		1.80E-02	--	0		1.32E-04	0	1.32E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Isopropyltoluene			--	0			0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Methylene chloride			--	0			0	0.00E+00	5.9			0.0E+00	0.0E+00	50			0.0E+00	0.0E+00
Naphthalene			--	0			0	0.00E+00	50			0.0E+00	0.0E+00	150			0.0E+00	0.0E+00
Toluene		3.00E-02	--	0		2.20E-04	0	2.20E-04	26		8.5E-06	0.0E+00	8.5E-06	260		8.5E-07	0.0E+00	8.5E-07
trans-1,2-Dichloroethene			--	0			0	0.00E+00	45.2			0.0E+00	0.0E+00	452			0.0E+00	0.0E+00
Trichloroethene		7.00E-03	--	0		5.14E-05	0	5.14E-05	0.7		7.3E-05	0.0E+00	7.3E-05	7		7.3E-06	0.0E+00	7.3E-06
1,2,4-Trimethylbenzene			--	0			0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
1,3,5-Trimethylbenzene			--	0			0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Vinyl chloride			--	0			0	0.00E+00	0.17			0.0E+00	0.0E+00	2			0.0E+00	0.0E+00
Xylenes		1.50E-01	--	0		1.10E-03	0	1.10E-03	2.1		5.2E-04	0.0E+00	5.2E-04	2.6		4.2E-04	0.0E+00	4.2E-04
Pesticides (mg/kg)																		
alpha-Chlordane		4.80E-03	--	0		3.53E-05	0	3.53E-05	4.6		7.7E-06	0.0E+00	7.7E-06	9.2		3.8E-06	0.0E+00	3.8E-06
beta-BHC		1.00E-03	--	0		7.34E-06	0	7.34E-06	1.6		4.6E-06	0.0E+00	4.6E-06	3.2		2.3E-06	0.0E+00	2.3E-06
delta-BHC		2.00E-03	--	0		1.47E-05	0	1.47E-05	1.6		9.2E-06	0.0E+00	9.2E-06	3.2		4.6E-06	0.0E+00	4.6E-06
2,4-DDD		3.00E-02	--	0		2.20E-04	0	2.20E-04	0.8		2.8E-04	0.0E+00	2.8E-04	16		1.4E-05	0.0E+00	1.4E-05
4,4-DDD		9.20E-02	--	0		6.76E-04	0	6.76E-04	0.8		8.4E-04	0.0E+00	8.4E-04	16		4.2E-05	0.0E+00	4.2E-05
DDE	0.0000027	1.80E-02	--	0	4.24E-07	1.32E-04	0	1.33E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
DDTs	0.00014	1.20E-02	--	0	2.20E-05	8.81E-05	0	1.10E-04	0.8	2.7E-05	1.1E-04	0.0E+00	1.4E-04	16	1.4E-06	5.5E-06	0.0E+00	6.9E-06
Dieldrin		2.90E-03	--	0		2.13E-05	0	2.13E-05	0.015		1.4E-03	0.0E+00	1.4E-03	1.7		1.3E-05	0.0E+00	1.3E-05
Endosulfan I		4.00E-03	--	0		2.94E-05	0	2.94E-05	0.15		2.0E-04	0.0E+00	2.0E-04	1.5		2.0E-05	0.0E+00	2.0E-05
Endosulfan sulfate	0.00012	3.00E-03	--	0	1.88E-05	2.20E-05	0	4.09E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Endrin	0.000014	2.00E-02	--	0	2.20E-06	1.47E-04	0	1.49E-04	0.09	2.4E-05	1.6E-03	0.0E+00	1.6E-03	0.92	2.4E-06	1.6E-04	0.0E+00	1.6E-04
Endrin aldehyde		6.00E-03	--	0		4.41E-05	0	4.41E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Endrin Ketone		2.30E-03	--	0		1.69E-05	0	1.69E-05	NTV	NTV	NTV	NTV	NTV	0.92		1.8E-05	0.0E+00	1.8E-05
gamma-Chlordane		5.20E-03	--	0		3.82E-05	0	3.82E-05	4.6		8.3E-06	0.0E+00	8.3E-06	9.2		4.2E-06	0.0E+00	4.2E-06
Heptachlor	0.0000028	2.00E-04	--	0	4.39E-07	1.47E-06	0	1.91E-06	0.13	3.4E-06	1.1E-05	0.0E+00	1.5E-05	6.8	6.5E-08	2.2E-07	0.0E+00	2.8E-07
Heptachlor epoxide		3.00E-04	--	0		2.20E-06	0	2.20E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Hexachlorobenzene		8.00E-04	--	0		5.88E-06	0	5.88E-06	1.6		3.7E-06	0.0E+00	3.7E-06	16		3.7E-07	0.0E+00	3.7E-07
Methoxychlor		1.20E-02	--	0		8.81E-05	0	8.81E-05	2.5		3.5E-05	0.0E+00	3.5E-05	50		1.8E-06	0.0E+00	1.8E-06
Mirex		4.00E-03	--	0		2.94E-05	0	2.94E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV

Table C2-5m
Post-Remediation Salt Marsh Harvest Mouse Risk Calculations (Wetland Sediment Residual Concentration)
Shallow Soil (0 - 2 ft bgs) at Hazard Quotient Equals Three
Non-Tidal Wetland Area Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Concentrations				Intake (mg/kg BW-day)					HQ - Low TRV					HQ - High TRV			
COPEC[a]	Surface Water (mg/L)[b]	Sediments[c]	Pickelweed BAF[d]	Pickleweed Tissue[d]	Surface Water	Sediment	Pickleweed	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Pickleweed	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Sediment	Pickleweed	Total Intake
trans-Nonachlor		2.40E-03	--	0		1.76E-05	0	1.76E-05	4.6		3.8E-06	0.0E+00	3.8E-06	9.2		1.9E-06	0.0E+00	1.9E-06
SVOCs (mg/kg)																		
Acenaphthene		5.73E-02	--	0		4.21E-04	0	4.21E-04	1.31		3.2E-04	0.0E+00	3.2E-04	32.8		1.3E-05	0.0E+00	1.3E-05
Acenaphthylene		3.96E-02	--	0		2.91E-04	0	2.91E-04	1.31		2.2E-04	0.0E+00	2.2E-04	32.8		8.9E-06	0.0E+00	8.9E-06
Anthracene		6.58E-02	--	0		4.83E-04	0	4.83E-04	1.31		3.7E-04	0.0E+00	3.7E-04	32.8		1.5E-05	0.0E+00	1.5E-05
Benzo(a)anthracene		1.00E-01	1.29E+00	0		7.34E-04	3.96E-02	4.03E-02	1.31		5.6E-04	3.0E-02	3.1E-02	32.8		2.2E-05	1.2E-03	1.2E-03
Benzo(a)pyrene		9.00E-02	2.31E+00	0		6.61E-04	6.37E-02	6.44E-02	1.31		5.0E-04	4.9E-02	4.9E-02	32.8		2.0E-05	1.9E-03	2.0E-03
Benzo(b)fluoranthene		8.00E-02	1.55E+00	0		5.88E-04	3.80E-02	3.86E-02	1.31		4.5E-04	2.9E-02	2.9E-02	32.8		1.8E-05	1.2E-03	1.2E-03
Benzo(ghi)perylene		8.00E-02	1.55E+00	0		5.88E-04	3.80E-02	3.86E-02	1.31		4.5E-04	2.9E-02	2.9E-02	32.8		1.8E-05	1.2E-03	1.2E-03
Benzo(k)fluoranthene		6.70E-02	1.55E+00	0		4.92E-04	3.18E-02	3.23E-02	1.31		3.8E-04	2.4E-02	2.5E-02	32.8		1.5E-05	9.7E-04	9.9E-04
Benzoic acid			--	0			0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Bis(2-ethylhexyl)phthalate	0.027	1.20E-01	--	0	4.24E-03	8.81E-04	0	5.12E-03	18.3	2.3E-04	4.8E-05	0.0E+00	2.8E-04	183	2.3E-05	4.8E-06	0.0E+00	2.8E-05
Butylbenzylphthalate		2.50E-02	--	0		1.84E-04	0	1.84E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Carbazole		1.41E-01	--	0		1.04E-03	0	1.04E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Chloroaniline		3.00E-03	--	0			0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2-Chlorophenol		4.33E-02	--	0		3.18E-04	0	3.18E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chrysene	0.0002	9.00E-02	2.09E+00	0	3.14E-05	6.61E-04	5.76E-02	5.83E-02	1.31	2.4E-05	5.0E-04	4.4E-02	4.4E-02	32.8	9.6E-07	2.0E-05	1.8E-03	1.8E-03
Dibenzofuran		7.89E-02	--	0		5.79E-04	0	5.79E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
3,3-Dichlorobenzidine		1.20E-02	--	0		8.81E-05	0	8.81E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2,6-Dinitrotoluene			--	0			0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Fluoranthene		8.00E-02	--	0		5.88E-04	0	5.88E-04	1.31		4.5E-04	0.0E+00	4.5E-04	32.8		1.8E-05	0.0E+00	1.8E-05
Fluorene		5.40E-02	--	0		3.97E-04	0	3.97E-04	1.31		3.0E-04	0.0E+00	3.0E-04	32.8		1.2E-05	0.0E+00	1.2E-05
Indeno(123,cd)pyrene		1.00E-01	3.17E+00	0		7.34E-04	9.70E-02	9.77E-02	1.31		5.6E-04	7.4E-02	7.5E-02	32.8		2.2E-05	3.0E-03	3.0E-03
2-Methylnaphthalene		5.23E-02	--	0		3.84E-04	0	3.84E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Methylphenol	0.12	6.68E-02	--	0	1.88E-02	4.91E-04	0	1.93E-02	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Naphthalene		9.00E-02	--	0		6.61E-04	0	6.61E-04	50		1.3E-05	0.0E+00	1.3E-05	150		4.4E-06	0.0E+00	4.4E-06
Pentachlorophenol		4.84E-02	--	0		3.55E-04	0	3.55E-04	8.42		4.2E-05	0.0E+00	4.2E-05	27.4		1.3E-05	0.0E+00	1.3E-05
Phenanthrene		9.00E-02	--	0		6.61E-04	0	6.61E-04	1.31		5.0E-04	0.0E+00	5.0E-04	32.8		2.0E-05	0.0E+00	2.0E-05
Phenol		1.40E-01	--	0		1.03E-03	0	1.03E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pyrene		8.00E-02	--	0		5.88E-04	0	5.88E-04	1.31		4.5E-04	0.0E+00	4.5E-04	32.8		1.8E-05	0.0E+00	1.8E-05
PCBs (mg/kg)																		
PCBs (TOTAL)-congeners	0.000016	8.00E-02	2.72E+00	0	2.51E-06	5.88E-04	6.65E-02	6.71E-02	0.36	7.0E-06	1.6E-03	1.8E-01	1.9E-01	1.28	2.0E-06	4.6E-04	5.2E-02	5.2E-02

>1 = The calculated hazard quotient exceeds 1 (i.e., > 1.5)

Exposure Assumptions and Equation:[e]

	Value	Units
Ingestion Rate (IR) prey(dry wt.) =	0.00306	kg/day (dry weight)
Irpickleweed (dry wt.) =	0.00306	kg/day (dry weight)
IRsediment (dry wt.)[f] =	0.0000734	kg-day (dry weight)
Cprey =	chem-specific	mg/kg or µg/kg
Csediment =	chem-specific	mg/kg or µg/kg
Tissue Moisture (pickleweed) =	81.6%	percent
IRsurface water[g] =	0.00157	L/day
Csurface water =	chem-specific	mg/L or µg/L
Dietary Composition Factor (DCF)[h] =	100%	percent
Site Use Factor (SUF)[i] =	100%	percent
Body Weight (BW) =	0.01	kg

Intake Equation = [Irpickleweed (dry wt) x (Cprey(pickleweed, dry wt)/1-TM) x DCF x SUF]/BW] + [(IRsediment x Csediment x DCF x SUF)]/BW]+ [(Irsurface water x Csurface water x DCF x SUF)]/BW]

Risk (hazard quotient) = Intake / TRV

Prey tissue(dry wt) = Prey tissue (wet wt.) / (1-Tissue Moisture)

NTV = Not toxicity data available.

Blank cell indicates COPEC was not detected in this medium.

Notes:

a All chemicals detected in sediments are considered as constituents of potential ecological concern.

b All concentrations of constituents in surface water are based on the maximum concentration.

c All concentrations of constituents in sediment are based on the residual concentrations expressed in dry weight.

d Site-specific BAFs (dry weight basis). Calculated pickelweed tissue concentrations (sediment concentration x BAF). Tissue concentrations are on a dry weight basis.

e Exposure parameters used to calculate risk are discussed in detail in Section 4.2 of ERA.

f Ingestion rate of sediment based on 2.4 percent of of the prey ingestion rate (dry weight); based on a meadow vole (Beyer et al. (1994).

g Based on equation for mammals: Water intake (L/day) = $0.099Wt(kg)^{90}$ (EPA 1993)

h Dietary composition factor was based on a conservative assumption of 100% dietary intake of pickleweed from the site.

i Site use factor was based on a conservative 100% use of the site for the harvest mouse's foraging range.

Table C2-5n
Summary of Residual Risk Estimates: Shallow Soil (0 - 2 ft bgs)
Hazard Quotient = 3
Non-Tidal Wetland Area Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Fox		Harrier		Mallard (breeding)		Mallard (non-breeding)		Heron		Killdeer		Salt Marsh Harvest Mouse	
Chemical	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**
Hazard Quotient = 3														
Metals (mg/kg)														
Aluminum	6.3E+00 >1	6.3E-01	1.2E-01	1.2E-02	1.7E+00 >1	1.7E-01	9.8E-02	9.8E-03	5.7E-01	5.7E-02	1.9E+01 >1	1.9E+00 >1	1.2E+02 >1	1.2E+01 >1
Antimony	6.3E-01	1.6E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV >1	NTV	4.0E+01 >1	1.0E-01
Arsenic	2.5E-02	1.7E-03	9.1E-04	2.3E-04	3.2E-02	8.0E-03	5.8E-03	1.5E-03	7.5E-03	1.9E-03	3.2E-01	7.9E-02	3.7E+00 >1	2.5E-01
Barium	2.5E-03	2.0E-03	1.2E-02	6.0E-03	2.0E-01	1.0E-01	4.8E-03	2.4E-03	2.0E-02	9.7E-03	1.6E+00 >1	7.7E-01	3.1E-01	2.4E-01
Beryllium	2.6E-04	2.5E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	6.1E-03	5.8E-03
Cadmium	1.4E-02	3.3E-04	6.6E-03	5.1E-05	6.9E-01	5.3E-03	4.6E-01	3.5E-03	6.0E-02	4.6E-04	2.7E+00 >1	2.1E-02	9.3E+00 >1	2.1E-01
Chromium +3	2.4E-02	2.5E-03	3.1E-02	3.0E-02	6.1E-01	5.8E-01	1.1E-02	1.1E-02	3.2E-01	3.1E-01	5.5E+00 >1	5.2E+00 >1	2.8E-01	3.0E-02
Chromium +6	2.1E-03	3.4E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	2.5E-02	4.0E-03
Cobalt	5.2E-03	3.1E-04	5.0E-04	2.2E-04	3.2E-03	1.4E-03	7.9E-04	3.6E-04	4.5E-03	2.0E-03	9.3E-02	4.2E-02	1.1E-01	6.9E-03
Copper	1.9E-01	8.1E-04	5.0E-01	2.2E-02	1.1E+00	4.9E-02	4.6E-02	2.0E-03	5.9E-01	2.6E-02	9.4E+00 >1	4.1E-01	2.8E+00 >1	1.2E-02
Lead	6.0E-01	2.5E-03	1.0E+02 >1	1.6E-01	1.7E+01 >1	2.7E-02	2.4E+00 >1	3.8E-03	1.1E+02 >1	1.8E-01	2.9E+02 >1	4.7E-01	2.6E+00 >1	1.1E-02
Manganese	3.3E-02	2.9E-03	4.1E-03	4.1E-04	1.9E+00 >1	1.9E-01	6.2E-02	6.2E-03	4.2E-02	4.2E-03	1.4E+01 >1	1.4E+00	3.7E+01 >1	3.2E+00 >1
Mercury	1.4E-02	1.4E-03	6.0E-03	1.3E-03	6.7E-01	1.5E-01	1.0E-02	2.2E-03	6.8E-01	1.5E-01	5.8E+00 >1	1.2E+00	3.3E-01	3.3E-02
Molybdenum	8.7E-03	8.7E-04	4.4E-04	4.4E-05	2.1E-03	2.0E-04	5.2E-04	5.1E-05	3.0E-03	3.0E-04	5.6E-02	5.6E-03	1.6E-01	1.6E-02
Nickel	2.8E-01	1.2E-03	1.7E-02	4.2E-04	9.4E-01	2.3E-02	3.6E-02	8.8E-04	1.4E-01	3.5E-03	9.0E+00 >1	2.2E-01	3.4E+01 >1	1.4E-01
Selenium	1.6E+00 >1	6.4E-02	8.0E-01	2.0E-01	9.2E-03	2.3E-03	2.3E-03	5.7E-04	1.6E+00 >1	3.9E-01	2.0E-01	5.0E-02	2.5E-01	1.0E-02
Silver	2.1E-03	2.1E-04	2.7E-06	NTV	1.7E-05	NTV	4.2E-06	NTV	2.4E-05	NTV	5.0E-04	NTV	4.6E-02	4.6E-03
Thallium	7.1E-03	2.4E-03	2.3E-02	NTV	1.1E-03	NTV	2.7E-04	NTV	2.4E-02	NTV	3.2E-02	NTV	4.4E-03	1.5E-03
Tin	2.7E-04	1.8E-04	5.6E-04	2.3E-04	4.9E-02	2.0E-02	4.6E-02	1.8E-02	5.3E-03	2.1E-03	1.1E-01	4.6E-02	1.6E+00 >1	1.1E+00
Vanadium	1.6E-01	1.6E-02	1.8E-03	1.8E-04	2.2E-02	2.2E-03	4.9E-03	4.9E-04	1.7E-02	1.7E-03	4.1E-01	4.1E-02	3.6E+00 >1	3.6E-01
Zinc	3.0E-01	7.0E-03	3.9E-01	3.9E-02	6.0E-01	6.0E-02	1.5E-02	1.5E-03	7.0E-01	7.0E-02	4.7E+00 >1	4.7E-01	2.8E+00 >1	6.6E-02
Volatile Organics (mg/kg)														
Acetone	3.2E-06	6.4E-07	3.7E-07	3.7E-08	2.5E-06	2.5E-07	6.2E-07	6.2E-08	3.5E-06	3.5E-07	7.4E-05	7.4E-06	7.3E-05	1.5E-05
Benzene	0.0E+00	0.0E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	0.0E+00	0.0E+00
Carbon disulfide	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chlorobenzene	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
cis-1,2-Dichlorobenzene	0.0E+00	0.0E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	0.0E+00	0.0E+00
Ethylbenzene	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Isopropyltoluene	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Methylene chloride	0.0E+00	0.0E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	0.0E+00	0.0E+00
Naphthalene	0.0E+00	0.0E+00	NTV	NTV	NTV	NTV	NTV	NTV	***NTV***	NTV	NTV	NTV	0.0E+00	0.0E+00
Toluene	3.7E-07	3.7E-08	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	8.5E-06	8.5E-07
trans-1,2-Dichloroethene	0.0E+00	0.0E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	0.0E+00	0.0E+00
Trichloroethene	3.2E-06	3.2E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	7.3E-05	7.3E-06
1,2,4-Trimethylbenzene	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
1,3,5-Trimethylbenzene	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	***NTV***	NTV	NTV	NTV	NTV	NTV
Vinyl chloride	0.0E+00	0.0E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	0.0E+00	0.0E+00
Xylenes	2.3E-05	1.8E-05	NTV	NTV	NTV	NTV	NTV	**NTV**	NTV	NTV	NTV	NTV	5.2E-04	4.2E-04

Table C2-5n
Summary of Residual Risk Estimates: Shallow Soil (0 - 2 ft bgs)
Hazard Quotient = 3
Non-Tidal Wetland Area Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Fox		Harrier		Mallard (breeding)		Mallard (non-breeding)		Heron		Killdeer		Salt Marsh Harvest Mouse	
Chemical	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**
Pesticides (mg/kg)														
alpha-Chlordane	3.3E-07	1.7E-07	6.5E-04	6.5E-05	4.4E-03	4.4E-04	1.1E-03	0.000110834	6.2E-03	6.2E-04	1.3E-01	1.3E-02	7.7E-06	3.8E-06
beta-BHC	2.0E-07	1.0E-07	3.4E-07	8.5E-08	2.3E-06	5.7E-07	5.8E-07	1.4E-07	3.2E-06	8.1E-07	6.9E-05	1.7E-05	4.6E-06	2.3E-06
delta-BHC	4.0E-07	2.0E-07	6.8E-07	1.7E-07	4.6E-06	1.1E-06	1.2E-06	2.9E-07	6.5E-06	1.6E-06	1.4E-04	3.4E-05	9.2E-06	4.6E-06
2,4-DDD	4.6E-04	2.3E-05	9.5E-02	5.7E-04	4.3E-03	2.6E-05	1.1E-03	6.5E-06	1.0E-01	6.1E-04	1.3E-01	7.7E-04	2.8E-04	1.4E-05
DDD	1.4E-03	7.0E-05	2.9E-01	1.8E-03	1.3E-02	7.9E-05	3.3E-03	2.0E-05	3.1E-01	1.9E-03	3.9E-01	2.4E-03	8.4E-04	4.2E-05
DDE	NTV	NTV	NTV	8.6E-04	NTV	3.9E-05	NTV	9.7E-06	NTV	9.1E-04	NTV	1.2E-03	NTV	NTV
DDTs	1.9E-04	9.4E-06	3.8E-02	2.3E-04	2.1E-03	1.3E-05	5.2E-04	3.1E-06	4.1E-02	2.5E-04	5.4E-02	3.2E-04	1.4E-04	6.9E-06
Dieldrin	6.2E-05	5.4E-07	7.8E-06	5.6E-07	5.3E-05	3.8E-06	1.3E-05	9.6E-07	7.4E-05	5.4E-06	1.6E-03	1.1E-04	1.4E-03	1.3E-05
Endosulfan I	8.5E-06	8.5E-07	7.6E-08	7.6E-09	5.2E-07	5.2E-08	1.3E-07	1.3E-08	7.2E-07	7.2E-08	1.5E-05	1.5E-06	2.0E-04	2.0E-05
Endosulfan sulfate	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Endrin	7.3E-05	7.3E-06	1.4E-05	1.4E-06	8.7E-05	8.7E-06	2.2E-05	2.2E-06	1.2E-04	1.2E-05	2.6E-03	2.6E-04	1.6E-03	1.6E-04
Endrin aldehyde	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Endrin Ketone	NTV	8.0E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	1.8E-05
gamma-Chlordane	3.6E-07	1.8E-07	7.1E-04	7.1E-05	4.8E-03	4.8E-04	1.2E-03	1.2E-04	6.7E-03	6.7E-04	1.0E-04	1.0E-05	8.3E-06	4.2E-06
Heptachlor	9.6E-07	1.8E-08	1.4E-06	1.4E-07	5.0E-06	5.0E-07	1.3E-06	1.3E-07	7.5E-06	7.5E-07	1.2E-04	1.2E-05	1.5E-05	2.8E-07
Heptachlor epoxide	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Hexachlorobenzene	1.6E-07	1.6E-08	6.6E-07	6.6E-08	4.5E-06	4.5E-07	1.1E-06	1.1E-07	6.3E-06	6.3E-07	1.3E-04	1.3E-05	3.7E-06	3.7E-07
Methoxychlor	1.5E-06	7.7E-08	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	3.5E-05	1.8E-06
Mirex	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
trans-Nonachlor	1.7E-07	8.3E-08	3.3E-04	3.3E-05	2.2E-03	2.2E-04	5.5E-04	5.5E-05	3.1E-03	3.1E-04	6.6E-02	6.6E-03	3.8E-06	1.9E-06
SVOCs (mg/kg)														
Acenaphthene	1.4E-05	5.6E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	3.2E-04	1.3E-05
Acenaphthylene	9.7E-06	3.9E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	2.2E-04	8.9E-06
Anthracene	1.6E-05	6.4E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	3.7E-04	1.5E-05
Benzo(a)anthracene	2.4E-05	9.7E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	3.1E-02	1.2E-03
Benzo(a)pyrene	2.2E-05	8.8E-07	1.7E-02	1.7E-03	1.2E-01	1.2E-02	2.9E-02	2.9E-03	1.6E-01	1.6E-02	3.5E+00	>1	3.5E-01	4.9E-02	2.0E-03
Benzo(b)fluoranthene	2.0E-05	7.8E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	2.9E-02	1.2E-03
Benzo(g,h,i)perylene	2.0E-05	7.8E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	2.9E-02	1.2E-03
Benzo(k)fluoranthene	1.6E-05	6.5E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	2.5E-02	9.9E-04
Benzoic acid	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Bis(2-ethylhexyl)phthalate	3.4E-05	3.4E-06	5.0E-04	5.0E-05	7.3E-04	7.3E-05	1.8E-04	1.8E-05	1.3E-03	1.3E-04	7.7E-03	7.7E-04	2.8E-04	2.8E-05
Butylbenzylphthalate	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Carbazole	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Chloroaniline	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2-Chloropropane	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chrysene	2.5E-05	1.0E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	4.4E-02	1.8E-03
Dibenzofuran	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
3,3-Dichlorobenzidine	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2,6-Dinitrotoluene	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Fluoranthene	2.0E-05	7.8E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	4.5E-04	1.8E-05
Fluorene	1.3E-05	5.3E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	3.0E-04	1.2E-05
Indeno(1,2,3-cd)pyrene	2.4E-05	9.7E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	7.5E-02	3.0E-03

Table C2-5n
Summary of Residual Risk Estimates: Shallow Soil (0 - 2 ft bgs)
Hazard Quotient = 3
Non-Tidal Wetland Area Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Fox		Harrier		Mallard (breeding)		Mallard (non-breeding)		Heron		Killdeer		Salt Marsh Harvest Mouse	
Chemical	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**
2-Methylnaphthalene	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Methylphenol	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Naphthalene	5.7E-07	1.9E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	1.3E-05	4.4E-06
Pentachlorophenol	1.8E-06	5.6E-07	1.4E-06	4.1E-07	9.3E-06	2.8E-06	2.3E-06	7.0E-07	1.3E-05	3.9E-06	2.8E-04	8.3E-05	4.2E-05	1.3E-05
Phenanthrene	2.2E-05	8.8E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	5.0E-04	2.0E-05
Phenol	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pyrene	2.0E-05	7.8E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	4.5E-04	1.8E-05
PCBs (mg/kg)														
PCBs (Total Congeners)	4.6E-02	1.3E-02	4.4E-01	3.1E-02	3.1E-01	2.2E-02	1.2E-03	8.8E-05	3.6E+00 >1	2.5E-01	2.2E+00 >1	1.6E-01	1.9E-01	5.2E-02

Table C2-6a
Medium-Specific Exposure Point Concentration Summary
Non-Tidal Wetland Areas Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil (0 to 10 feet bgs)
Exposure Medium:	Soil
Exposure Point:	On-Site Soil

Chemical of Potential Concern	Distribution[a]	Mean of Normal Data[b]	Mean of Lognormal Data[c]	Median	UCL[d]	Maximum Detected Concentration	Reasonable Maximum Exposure		Central Tendency Exposure	
							Medium EPC Value[e]	Medium EPC Statistic and Rationale[f]	Medium EPC Value[e]	Medium EPC Statistic and Rationale[f]
INORGANICS (mg/kg)										
ALUMINUM	Non-Par	25,546	10.1	24,950	26,758	41400	26,758	Student's-t UCL	26,758	Student's-t UCL
ANTIMONY	Non-Par	3.14	0.74	2.1	4.5	49.9	4.5	95% Chebyshev UCL	4.5	95% Chebyshev UCL
ARSENIC	Normal	20.1	2.9	20.1	21.3	43.2	21.3	Student's-t UCL	21.3	Student's-t UCL
BARIUM	Non-Par	87.7	4.4	80.4	93.6	330	93.6	Student's-t UCL	93.6	Student's-t UCL
BERYLLIUM	Non-Par	0.43	-1.3	0.31	0.65	2.5	0.65	97.5% Chebyshev UCL	0.65	97.5% Chebyshev UCL
CADMIUM	Non-Par	2.02	0.06	1.1	2.9	7.5	2.9	97.5% Chebyshev UCL	2.9	97.5% Chebyshev UCL
CHROMIUM	Non-Par	139	4.7	102	215	3100	215	95% Chebyshev UCL	215	95% Chebyshev UCL
COBALT	Non-Par	15.5	2.51	18.3	18.4	38.2	18.4	95% Chebyshev UCL	18.4	95% Chebyshev UCL
COPPER	Non-Par	128	4.62	95.1	194	2600	194	95% Chebyshev UCL	194	95% Chebyshev UCL
HEXAVALENT CHROMIUM	Non-Par	0.34	-2.5	0.039	1.7	0.07	0.07	Max Detected	0.07	Max Detected
LEAD	Non-Par	69.9	4	52.9	94	651	94	95% Chebyshev UCL	94	95% Chebyshev UCL
MANGANESE	Non-Par	856	6.65	810	907	3800	907	Student's-t UCL	907	Student's-t UCL
MERCURY	Non-Par	1.07	-0.19	0.94	1.4	6	1.4	95% Chebyshev UCL	1.4	95% Chebyshev UCL
MOLYBDENUM	Non-Par	2.47	-0.65	0.23	5.1	44.3	5.1	97.5% Chebyshev UCL	5.1	97.5% Chebyshev UCL
NICKEL	Non-Par	107	4.56	107	113	493	113	Student's-t UCL	113	Student's-t UCL
SELENIUM	Non-Par	0.86	-0.62	0.55	1.2	4.5	1.2	95% Chebyshev UCL	1.2	95% Chebyshev UCL
SILVER	Non-Par	1.76	-0.76	0.28	2.8	5.2	2.8	97.5% Chebyshev UCL	2.8	97.5% Chebyshev UCL
THALLIUM	Non-Par	0.29	-1.53	0.19	0.47	2.6	0.47	95% Chebyshev UCL	0.47	95% Chebyshev UCL
TIN	Non-Par	14.8	2.63	14.1	16.3	59.8	16.3	Student's-t UCL	16.3	Student's-t UCL
VANADIUM	Non-Par	103	4.53	90.25	117	203	117	95% Chebyshev UCL	117	95% Chebyshev UCL
ZINC	Non-Par	216	5.3	190	235	1790	235	Student's-t UCL	235	Student's-t UCL
PESTICIDES (mg/kg)										
ALPHA-CHLORDANE	Non-Par	0.0029	-7.67	0.0004	0.0082	0.051	0.0082	97.5% Chebyshev UCL	0.0082	97.5% Chebyshev UCL
BETA BHC	NA	NA	NA	NA	NA	0.001	0.001	Max Detected	0.001	Max Detected
DELTA BHC	NA	NA	NA	NA	NA	0.002	0.002	Max Detected	0.002	Max Detected
2,4- DDD	Non-Par	0.0064	-5.98	0.001	0.029	0.03	0.029	99% Chebyshev UCL	0.029	99% Chebyshev UCL
4,4- DDD	Non-Par	0.028	-5.63	0.003	0.086	0.8	0.086	97.5% Chebyshev UCL	0.086	97.5% Chebyshev UCL
4,4- DDE	Non-Par	0.0054	-6.8	0.001	0.017	0.2	0.017	97.5% Chebyshev UCL	0.017	97.5% Chebyshev UCL
4,4- DDT	Non-Par	0.0053	-6.48	0.002	0.012	0.08	0.012	97.5% Chebyshev UCL	0.012	97.5% Chebyshev UCL
DIELDRIN	Non-Par	0.0019	-7.37	0.001	0.0039	0.005	0.0039	97.5% Chebyshev UCL	0.0039	97.5% Chebyshev UCL
ENDOSULFAN I	NA	NA	NA	NA	NA	0.004	0.004	Max Detected	0.004	Max Detected
ENDOSULFAN SULFATE	NA	NA	NA	NA	NA	0.003	0.003	Max Detected	0.003	Max Detected
ENDRIN	NA	NA	NA	NA	NA	0.02	0.02	Max Detected	0.02	Max Detected
ENDRIN ALDEHYDE	NA	NA	NA	NA	NA	0.006	0.006	Max Detected	0.006	Max Detected
ENDRIN KETONE	Non-Par	0.0013	-7.84	0.0004	0.003	0.003	0.003	97.5% Chebyshev UCL	0.003	97.5% Chebyshev UCL
GAMMA-CHLORDANE	Non-Par	0.0029	-7.75	0.0004	0.0085	0.059	0.0085	97.5% Chebyshev UCL	0.0085	97.5% Chebyshev UCL
HEPTACHLOR	NA	NA	NA	NA	NA	0.0002	0.0002	Max Detected	0.0002	Max Detected
HEPTACHLOR EPOXIDE	NA	NA	NA	NA	NA	0.0003	0.0003	Max Detected	0.0003	Max Detected

Table C2-6a
Medium-Specific Exposure Point Concentration Summary
Non-Tidal Wetland Areas Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil (0 to 10 feet bgs)
Exposure Medium:	Soil
Exposure Point:	On-Site Soil

Chemical of Potential Concern	Distribution[a]	Mean of Normal Data[b]	Mean of Lognormal Data[c]	Median	UCL[d]	Maximum Detected Concentration	Reasonable Maximum Exposure		Central Tendency Exposure	
							Medium EPC Value[e]	Medium EPC Statistic and Rationale[f]	Medium EPC Value[e]	Medium EPC Statistic and Rationale[f]
HEXACHLOROBENZENE	Non-Par	0.00083	-8.13	0.0003	0.0023	0.0008	0.0008	Max Detected	0.0008	Max Detected
METHOXYCHLOR	Non-Par	0.0065	-7.02	0.00125	0.02	0.04	0.02	99% Chebyshev UCL	0.02	99% Chebyshev UCL
MIREX	NA	NA	NA	NA	NA	0.004	0.004	Max Detected	0.004	Max Detected
TRANS-NONACHLOR	Non-Par	0.00087	-8.17	0.000275	0.0024	0.005	0.0024	97.5% Chebyshev UCL	0.0024	97.5% Chebyshev UCL
PCBs (mg/kg)										
PCBs (TOTAL)	Lognormal	0.09	-4.12	0.014	0.16	2	0.16	H-UCL	0.16	H-UCL
SVOCs (mg/kg)										
ACENAPHTHENE	Non-Par	0.09	-3	0.04125	0.13	1.0567	0.13	95% Chebyshev UCL	0.13	95% Chebyshev UCL
ACENAPHTHYLENE	Non-Par	0.08	-3.1	0.03325	0.12	0.4388	0.12	95% Chebyshev UCL	0.12	95% Chebyshev UCL
ANTHRACENE	Non-Par	0.07	-3.43	0.0245	0.13	0.678	0.13	97.5% Chebyshev UCL	0.13	97.5% Chebyshev UCL
BENZO(A)ANTHRACENE	Non-Par	0.1	-3.3	0.0245	0.28	3.6821	0.28	97.5% Chebyshev UCL	0.28	97.5% Chebyshev UCL
BENZO(A)PYRENE	Non-Par	0.09	-3.43	0.02275	0.24	3.0884	0.24	97.5% Chebyshev UCL	0.24	97.5% Chebyshev UCL
BENZO(B)FLUORANTHENE	Non-Par	0.1	-3.05	0.0305	0.24	2.755	0.24	97.5% Chebyshev UCL	0.24	97.5% Chebyshev UCL
BENZO(G,H,I)PERYLENE	Non-Par	0.08	-3.18	0.026	0.16	1.5074	0.16	97.5% Chebyshev UCL	0.16	97.5% Chebyshev UCL
BENZO(K)FLUORANTHENE	Non-Par	0.1	-3.21	0.0245	0.24	2.774	0.24	97.5% Chebyshev UCL	0.24	97.5% Chebyshev UCL
BENZOIC ACID	NA	NA	NA	NA	NA	0.68	0.68	Max Detected	0.68	Max Detected
BIS(2-ETHYLHEXYL)PHTHALATE	Non-Par	0.27	-3.17	0.04	1.1	15.4642	1.1	97.5% Chebyshev UCL	1.1	97.5% Chebyshev UCL
BUTYLBENZYLPHTHALATE	NA	NA	NA	NA	NA	0.025	0.025	Max Detected	0.025	Max Detected
CARBAZOLE	Non-Par	0.21	-2.67	0.026	0.55	4.0942	0.55	97.5% Chebyshev UCL	0.55	97.5% Chebyshev UCL
4- CHLOROANILINE	NA	NA	NA	NA	NA	0.003	0.003	Max Detected	0.003	Max Detected
2- CHLOROPHENOL	NA	NA	NA	NA	NA	0.0433	0.0433	Max Detected	0.0433	Max Detected
CHRYSENE	Non-Par	0.09	-3.44	0.0235	0.27	3.742	0.27	97.5% Chebyshev UCL	0.27	97.5% Chebyshev UCL
DIBENZOFURAN	Non-Par	0.18	-2.52	0.1	0.36	2.8628	0.36	97.5% Chebyshev UCL	0.36	97.5% Chebyshev UCL
3,3- DICHLOROBENZIDINE	NA	NA	NA	NA	NA	0.012	0.012	Max Detected	0.012	Max Detected
2,6- DINITROTOLUENE	NA	NA	NA	NA	NA	0.37	0.37	Max Detected	0.37	Max Detected
FLUORANTHENE	Non-Par	0.11	-3.24	0.0295	0.38	5.6279	0.38	97.5% Chebyshev UCL	0.38	97.5% Chebyshev UCL
FLUORENE	Non-Par	0.08	-3.25	0.0245	0.13	0.7256	0.13	97.5% Chebyshev UCL	0.13	97.5% Chebyshev UCL
INDENO(1,2,3-CD)PYRENE	Non-Par	0.08	-3.43	0.0225	1.16	1.4573	0.16	97.5% Chebyshev UCL	0.16	97.5% Chebyshev UCL
2- METHYLNAPHTHALENE	Non-Par	0.12	-2.76	0.0445	0.18	0.6251	0.18	97.5% Chebyshev UCL	0.18	97.5% Chebyshev UCL
4- METHYLPHENOL	Non-Par	0.15	-2.55	0.1	0.23	0.8757	0.23	97.5% Chebyshev UCL	0.23	97.5% Chebyshev UCL
NAPHTHALENE	Non-Par	0.07	-3.12	0.03275	0.11	0.4723	0.11	95% Chebyshev UCL	0.11	95% Chebyshev UCL
PENTACHLOROPHENOL	Non-Par	0.36	-1.68	0.2375	0.54	0.7512	0.54	97.5% Chebyshev UCL	0.54	97.5% Chebyshev UCL
PHENANTHRENE	Non-Par	0.09	-3.42	0.023	0.2	2.2809	0.2	97.5% Chebyshev UCL	0.2	97.5% Chebyshev UCL
PHENOL	Non-Par	0.17	-2.52	0.1	0.29	1.7625	0.29	97.5% Chebyshev UCL	0.29	97.5% Chebyshev UCL
PYRENE	Non-Par	0.12	-3.14	0.0358	0.43	6.3265	0.43	97.5% Chebyshev UCL	0.43	97.5% Chebyshev UCL
TPH (mg/kg)										
TPH AS DIESEL	Non-Par	75	3.4	19.15	177	1100	177	97.5% Chebyshev UCL	177	97.5% Chebyshev UCL
TPH AS GASOLINE	Non-Par	0.9	-3.41	0.0153	4.2	51	4.2	97.5% Chebyshev UCL	4.2	97.5% Chebyshev UCL
TPH AS MOTOR OIL	Non-Par	151	4.3	61	313	2700	313	97.5% Chebyshev UCL	313	97.5% Chebyshev UCL

Table C2-6a
Medium-Specific Exposure Point Concentration Summary
Non-Tidal Wetland Areas Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil (0 to 10 feet bgs)
Exposure Medium:	Soil
Exposure Point:	On-Site Soil

Chemical of Potential Concern	Distribution[a]	Mean of Normal Data[b]	Mean of Lognormal Data[c]	Median	UCL[d]	Maximum Detected Concentration	Reasonable Maximum Exposure		Central Tendency Exposure	
							Medium EPC Value[e]	Medium EPC Statistic and Rationale[f]	Medium EPC Value[e]	Medium EPC Statistic and Rationale[f]
VOCs (mg/kg)										
ACETONE	Non-Par	0.087	-3.69	0.0175	0.32	0.4	0.32	99% Chebyshev UCL	0.32	99% Chebyshev UCL
BENZENE	NA	NA	NA	NA	NA	0.025	0.005	Max Detected	0.005	Max Detected
CARBON DISULFIDE	Non-Par	0.011	-5.02	0.005	0.025	0.04	0.025	95% Chebyshev UCL	0.025	95% Chebyshev UCL
CHLOROBENZENE	Non-Par	0.0099	-5.09	0.005	0.024	0.04	0.024	95% Chebyshev UCL	0.024	95% Chebyshev UCL
CIS-1,2-DICHLOROETHENE	NA	NA	NA	NA	NA	0.052	0.052	Max Detected	0.052	Max Detected
ETHYLBENZENE	Non-Par	0.025	-4.1	0.03	0.044	0.2	0.044	97.5% Chebyshev UCL	0.044	97.5% Chebyshev UCL
4- ISOPROPYLTOLUENE	NA	NA	NA	NA	NA	0.0072	0.0072	Max Detected	0.0072	Max Detected
METHYLENE CHLORIDE	NA	NA	NA	NA	NA	0.3	0.3	Max Detected	0.3	Max Detected
NAPHTHALENE	NA	NA	NA	NA	NA	0.016	0.016	Max Detected	0.016	Max Detected
TOLUENE	NA	NA	NA	NA	NA	0.03	0.03	Max Detected	0.03	Max Detected
TRANS-1,2-DICHLOROETHENE	NA	NA	NA	NA	NA	0.023	0.023	Max Detected	0.023	Max Detected
TRICHLOROETHENE	NA	NA	NA	NA	NA	0.007	0.007	Max Detected	0.007	Max Detected
1,2,4- TRIMETHYLBENZENE	NA	NA	NA	NA	NA	0.025	0.025	Max Detected	0.025	Max Detected
1,3,5- TRIMETHYLBENZENE	NA	NA	NA	NA	NA	0.0093	0.0093	Max Detected	0.0093	Max Detected
VINYL CHLORIDE	NA	NA	NA	NA	NA	0.034	0.034	Max Detected	0.034	Max Detected
XYLENE (TOTAL)	Non-Par	0.07	-3.37	0.1	0.11	0.2	0.11	97.5% Chebyshev UCL	0.11	97.5% Chebyshev UCL

The UCL for chemicals that are italicized and underlined have been modified for post remediation residual risk.

bgs Below Ground Surface.
EPC Exposure Point Concentration.
mg/kg Milligram per kilogram.
NA Not Applicable for small data sets.
PCBs Polychlorinated Biphenyls
SVOC Semivolatile Organic Compound
TPH Total Petroleum Hydrocarbon
UCL Upper confidence limit of the mean.
VOCs Volatile Organic Compounds

a Gamma = Data follow gamma distribution using chi-square approximation.
Normal = Data are normally distributed.
Lognormal = Data are lognormally distributed.
Non-par = Data are non-parametric.
Lilliefors Test was used to determine the distribution for sample sets greater than 50.
Shapiro and Wilk W-Test was used to determine the distribution for sample sets less than 50.

b The value presented is the arithmetic mean calculated using distribution-dependent formulas. One half the sample quantitation limit was used as a proxy concentration for non-detects to calculate the mean.

c The value presented is the mean of log-transformed data calculated using distribution-dependent formulas. One half the sample quantitation limit was used as a proxy concentration for non-detects to calculate the mean.

d The value presented is the UCL calculated using distribution-dependent formulas. One half the sample quantitation limit was used as a proxy concentration for non-detects to calculate the UCL.

e If the UCL value exceeds the maximum detected concentration, the maximum detected concentration is used for the medium EPC value.

f Recommended UCL statistic using United States Environmental Protection Agency ProUCL Version 3.0 software.

Table C2-6b
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
INGESTION	**INORGANICS**									
	ALUMINUM	26,758	mg/kg	2.92E-02	1.22E-02	mg/kg-day	1.00E+00	mg/kg-day	2.92E-02	1.22E-02
	ANTIMONY	4.5	mg/kg	4.92E-06	2.05E-06	mg/kg-day	4.00E-04	mg/kg-day	1.23E-02	5.12E-03
	ARSENIC	21.3	mg/kg	2.33E-05	9.70E-06	mg/kg-day	3.00E-04	mg/kg-day	7.76E-02	3.23E-02
	BARIUM	93.6	mg/kg	1.02E-04	4.26E-05	mg/kg-day	7.00E-02	mg/kg-day	1.46E-03	6.09E-04
	BERYLLIUM	0.65	mg/kg	7.10E-07	2.96E-07	mg/kg-day	2.00E-03	mg/kg-day	3.55E-04	1.48E-04
	CADMIUM	2.90	mg/kg	3.17E-06	1.32E-06	mg/kg-day	5.00E-04	mg/kg-day	6.34E-03	2.64E-03
	CHROMIUM	215	mg/kg	2.35E-04	9.79E-05	mg/kg-day	1.50E+00	mg/kg-day	1.57E-04	6.53E-05
	COBALT	18.4	mg/kg	2.01E-05	8.38E-06	mg/kg-day	2.00E-02	mg/kg-day	1.01E-03	4.19E-04
	COPPER	194	mg/kg	2.12E-04	8.83E-05	mg/kg-day	4.00E-02	mg/kg-day	5.30E-03	2.21E-03
	HEXAVALENT CHROMIUM	0.07	mg/kg	7.65E-08	3.19E-08	mg/kg-day	3.00E-03	mg/kg-day	2.55E-05	1.06E-05
	LEAD	94	mg/kg	1.03E-04	4.28E-05	mg/kg-day	NA	mg/kg-day	NA	NA
	MANGANESE	907	mg/kg	9.91E-04	4.13E-04	mg/kg-day	1.40E-01	mg/kg-day	7.08E-03	2.95E-03
	MERCURY	1.4	mg/kg	1.53E-06	6.37E-07	mg/kg-day	3.00E-04	mg/kg-day	5.10E-03	2.12E-03
	MOLYBDENUM	5.1	mg/kg	5.57E-06	2.32E-06	mg/kg-day	5.00E-03	mg/kg-day	1.11E-03	4.64E-04
	NICKEL	113	mg/kg	1.23E-04	5.15E-05	mg/kg-day	2.00E-02	mg/kg-day	6.17E-03	2.57E-03
	SELENIUM	1.2	mg/kg	1.31E-06	5.46E-07	mg/kg-day	5.00E-03	mg/kg-day	2.62E-04	1.09E-04
	SILVER	2.8	mg/kg	3.06E-06	1.27E-06	mg/kg-day	5.00E-03	mg/kg-day	6.12E-04	2.55E-04
	THALLIUM	0.47	mg/kg	5.14E-07	2.14E-07	mg/kg-day	6.60E-05	mg/kg-day	7.78E-03	3.24E-03
	TIN	16.3	mg/kg	1.78E-05	7.42E-06	mg/kg-day	6.00E-01	mg/kg-day	2.97E-05	1.24E-05
	VANADIUM	117	mg/kg	1.28E-04	5.33E-05	mg/kg-day	7.00E-03	mg/kg-day	1.83E-02	7.61E-03
	ZINC	235	mg/kg	2.57E-04	1.07E-04	mg/kg-day	3.00E-01	mg/kg-day	8.56E-04	3.57E-04
	PESTICIDES									
	ALPHA-CHLORDANE	0.0082	mg/kg	8.96E-09	3.73E-09	mg/kg-day	5.00E-04	mg/kg-day	1.79E-05	7.47E-06
	BETA BHC	0.001	mg/kg	1.09E-09	4.55E-10	mg/kg-day	2.00E-04	mg/kg-day	5.46E-06	2.28E-06
	DELTA BHC	0.002	mg/kg	2.19E-09	9.11E-10	mg/kg-day	NA	mg/kg-day	NA	NA
	2,4- DDD	0.029	mg/kg	3.17E-08	1.32E-08	mg/kg-day	5.00E-04	mg/kg-day	6.34E-05	2.64E-05
	4,4- DDD	0.086	mg/kg	9.40E-08	3.92E-08	mg/kg-day	5.00E-04	mg/kg-day	1.88E-04	7.83E-05

Table C2-6b
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
INGESTION (CONTINUED)	4,4- DDE	0.017	mg/kg	1.86E-08	7.74E-09	mg/kg-day	5.00E-04	mg/kg-day	3.72E-05	1.55E-05
	4,4- DDT	0.012	mg/kg	1.31E-08	5.46E-09	mg/kg-day	5.00E-04	mg/kg-day	2.62E-05	1.09E-05
	DIELDRIN	0.0039	mg/kg	4.26E-09	1.78E-09	mg/kg-day	5.00E-05	mg/kg-day	8.52E-05	3.55E-05
	ENDOSULFAN I	0.004	mg/kg	4.37E-09	1.82E-09	mg/kg-day	6.00E-03	mg/kg-day	7.29E-07	3.04E-07
	ENDOSULFAN SULFATE	0.003	mg/kg	3.28E-09	1.37E-09	mg/kg-day	6.00E-03	mg/kg-day	5.46E-07	2.28E-07
	ENDRIN	0.02	mg/kg	2.19E-08	9.11E-09	mg/kg-day	3.00E-04	mg/kg-day	7.29E-05	3.04E-05
	ENDRIN ALDEHYDE	0.006	mg/kg	6.56E-09	2.73E-09	mg/kg-day	3.00E-04	mg/kg-day	2.19E-05	9.11E-06
	ENDRIN KETONE	0.003	mg/kg	3.28E-09	1.37E-09	mg/kg-day	3.00E-04	mg/kg-day	1.09E-05	4.55E-06
	GAMMA-CHLORDANE	0.0085	mg/kg	9.29E-09	3.87E-09	mg/kg-day	5.00E-04	mg/kg-day	1.86E-05	7.74E-06
	HEPTACHLOR	0.0002	mg/kg	2.19E-10	9.11E-11	mg/kg-day	5.00E-04	mg/kg-day	4.37E-07	1.82E-07
	HEPTACHLOR EPOXIDE	0.0003	mg/kg	3.28E-10	1.37E-10	mg/kg-day	1.30E-05	mg/kg-day	2.52E-05	1.05E-05
	HEXACHLOROBENZENE	0.0008	mg/kg	8.74E-10	3.64E-10	mg/kg-day	8.00E-04	mg/kg-day	1.09E-06	4.55E-07
	METHOXYCHLOR	0.02	mg/kg	2.19E-08	9.11E-09	mg/kg-day	5.00E-03	mg/kg-day	4.37E-06	1.82E-06
	MIREX	0.004	mg/kg	4.37E-09	1.82E-09	mg/kg-day	2.00E-04	mg/kg-day	2.19E-05	9.11E-06
	TRANS-NONACHLOR	0.0024	mg/kg	2.62E-09	1.09E-09	mg/kg-day	5.00E-04	mg/kg-day	5.25E-06	2.19E-06
	PCBs									
	PCBs (TOTAL)	0.16	mg/kg	1.75E-07	7.29E-08	mg/kg-day	2.00E-05	mg/kg-day	8.74E-03	3.64E-03
	SVOCs									
	ACENAPHTHENE	0.13	mg/kg	1.42E-07	5.92E-08	mg/kg-day	6.00E-02	mg/kg-day	2.37E-06	9.87E-07
	ACENAPHTHYLENE	0.12	mg/kg	1.31E-07	5.46E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	ANTHRACENE	0.13	mg/kg	1.42E-07	5.92E-08	mg/kg-day	3.00E-01	mg/kg-day	4.74E-07	1.97E-07
	BENZO(A)ANTHRACENE	0.28	mg/kg	3.06E-07	1.27E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(A)PYRENE	0.24	mg/kg	2.62E-07	1.09E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(B)FLUORANTHENE	0.24	mg/kg	2.62E-07	1.09E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(G,H,I)PERYLENE	0.16	mg/kg	1.75E-07	7.29E-08	mg/kg-day	4.00E-02	mg/kg-day	4.37E-06	1.82E-06
	BENZO(K)FLUORANTHENE	0.24	mg/kg	2.62E-07	1.09E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZOIC ACID	0.68	mg/kg	7.43E-07	3.10E-07	mg/kg-day	4.00E+00	mg/kg-day	1.86E-07	7.74E-08
	BIS(2-ETHYLHEXYL)PHTHAL	1.1	mg/kg	1.20E-06	5.01E-07	mg/kg-day	2.00E-02	mg/kg-day	6.01E-05	2.50E-05

Table C2-6b
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
INGESTION (CONTINUED)	BUTYLBENZYLPHTHALATE	0.025	mg/kg	2.73E-08	1.14E-08	mg/kg-day	2.00E-01	mg/kg-day	1.37E-07	5.69E-08
	CARBAZOLE	0.55	mg/kg	6.01E-07	2.50E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	4- CHLOROANILINE	0.003	mg/kg	3.28E-09	1.37E-09	mg/kg-day	4.00E-03	mg/kg-day	8.20E-07	3.42E-07
	2- CHLOROPHENOL	0.043	mg/kg	4.73E-08	1.97E-08	mg/kg-day	5.00E-03	mg/kg-day	9.46E-06	3.94E-06
	CHRYSENE	0.27	mg/kg	2.95E-07	1.23E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	DIBENZOFURAN	0.36	mg/kg	3.93E-07	1.64E-07	mg/kg-day	2.00E-03	mg/kg-day	1.97E-04	8.20E-05
	3,3- DICHLOROBENZIDINE	0.012	mg/kg	1.31E-08	5.46E-09	mg/kg-day	NA	mg/kg-day	NA	NA
	2,6- DINITROTOLUENE	0.37	mg/kg	4.04E-07	1.68E-07	mg/kg-day	1.00E-03	mg/kg-day	4.04E-04	1.68E-04
	FLUORANTHENE	0.380	mg/kg	4.15E-07	1.73E-07	mg/kg-day	4.00E-02	mg/kg-day	1.04E-05	4.33E-06
	FLUORENE	0.1	mg/kg	1.42E-07	5.92E-08	mg/kg-day	4.00E-02	mg/kg-day	3.55E-06	1.48E-06
	INDENO(1,2,3-CD)PYRENE	0.16	mg/kg	1.75E-07	7.29E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	2- METHYLNAPHTHALENE	0.18	mg/kg	1.97E-07	8.20E-08	mg/kg-day	4.00E-03	mg/kg-day	4.92E-05	2.05E-05
	4- METHYLPHENOL	0.23	mg/kg	2.51E-07	1.05E-07	mg/kg-day	5.00E-03	mg/kg-day	5.03E-05	2.09E-05
	NAPHTHALENE	0.11	mg/kg	1.20E-07	5.01E-08	mg/kg-day	2.00E-02	mg/kg-day	6.01E-06	2.50E-06
	PENTACHLOROPHENOL	0.54	mg/kg	5.90E-07	2.46E-07	mg/kg-day	3.00E-02	mg/kg-day	1.97E-05	8.20E-06
	PHENANTHRENE	0.20	mg/kg	2.19E-07	9.11E-08	mg/kg-day	3.00E-01	mg/kg-day	7.29E-07	3.04E-07
	PHENOL	0.29	mg/kg	3.17E-07	1.32E-07	mg/kg-day	6.00E-01	mg/kg-day	5.28E-07	2.20E-07
	PYRENE	0.430	mg/kg	4.70E-07	1.96E-07	mg/kg-day	3.00E-02	mg/kg-day	1.57E-05	6.53E-06
	TPH									
	TPH AS DIESEL	177	mg/kg	1.93E-04	8.06E-05	mg/kg-day	NA	mg/kg-day	NA	NA
	TPH AS GASOLINE	4.2	mg/kg	4.59E-06	1.91E-06	mg/kg-day	NA	mg/kg-day	NA	NA
	TPH AS MOTOR OIL	313	mg/kg	3.42E-04	1.43E-04	mg/kg-day	NA	mg/kg-day	NA	NA
	VOCs									
	ACETONE	0.32	mg/kg	3.50E-07	1.46E-07	mg/kg-day	9.00E-01	mg/kg-day	3.89E-07	1.62E-07
	BENZENE	0.005	mg/kg	5.46E-09	2.28E-09	mg/kg-day	4.00E-03	mg/kg-day	1.37E-06	5.69E-07
	CARBON DISULFIDE	0.025	mg/kg	2.73E-08	1.14E-08	mg/kg-day	1.00E-01	mg/kg-day	2.73E-07	1.14E-07
	CHLOROBENZENE	0.024	mg/kg	2.62E-08	1.09E-08	mg/kg-day	2.00E-02	mg/kg-day	1.31E-06	5.46E-07
	CIS-1,2-DICHLOROETHENE	0.052	mg/kg	5.68E-08	2.37E-08	mg/kg-day	1.00E-02	mg/kg-day	5.68E-06	2.37E-06

Table C2-6b
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
INGESTION (CONTINUED)	ETHYLBENZENE	0.044	mg/kg	4.81E-08	2.00E-08	mg/kg-day	1.00E-01	mg/kg-day	4.81E-07	2.00E-07
	4- ISOPROPYLTOLUENE	0.007	mg/kg	7.87E-09	3.28E-09	mg/kg-day	NA	mg/kg-day	NA	NA
	METHYLENE CHLORIDE	0.3	mg/kg	3.28E-07	1.37E-07	mg/kg-day	6.00E-02	mg/kg-day	5.46E-06	2.28E-06
	NAPHTHALENE	0.016	mg/kg	1.75E-08	7.29E-09	mg/kg-day	2.00E-02	mg/kg-day	8.74E-07	3.64E-07
	TOLUENE	0.03	mg/kg	3.28E-08	1.37E-08	mg/kg-day	2.00E-01	mg/kg-day	1.64E-07	6.83E-08
	TRANS-1,2-DICHLOROETHEN	0.023	mg/kg	2.51E-08	1.05E-08	mg/kg-day	2.00E-02	mg/kg-day	1.26E-06	5.24E-07
	TRICHLOROETHENE	0.007	mg/kg	7.65E-09	3.19E-09	mg/kg-day	3.00E-04	mg/kg-day	2.55E-05	1.06E-05
	1,2,4- TRIMETHYLBENZENE	0.025	mg/kg	2.73E-08	1.14E-08	mg/kg-day	5.00E-02	mg/kg-day	5.46E-07	2.28E-07
	1,3,5- TRIMETHYLBENZENE	0.009	mg/kg	1.02E-08	4.23E-09	mg/kg-day	5.00E-02	mg/kg-day	2.03E-07	8.47E-08
	VINYL CHLORIDE	0.034	mg/kg	3.72E-08	1.55E-08	mg/kg-day	3.00E-03	mg/kg-day	1.24E-05	5.16E-06
	XYLENE (TOTAL)	0.11	mg/kg	1.20E-07	5.01E-08	mg/kg-day	2.00E-01	mg/kg-day	6.01E-07	2.50E-07
DERMAL CONTACT	**INORGANICS**									
	ALUMINUM	26,758	mg/kg	NA	NA	mg/kg-day	1.00E+00	mg/kg-day	NA	NA
	ANTIMONY	4.5	mg/kg	NA	NA	mg/kg-day	6.00E-05	mg/kg-day	NA	NA
	ARSENIC	21.3	mg/kg	3.21E-06	1.34E-06	mg/kg-day	3.00E-04	mg/kg-day	1.07E-02	4.45E-03
	BARIUM	93.6	mg/kg	NA	NA	mg/kg-day	4.90E-03	mg/kg-day	NA	NA
	BERYLLIUM	0.65	mg/kg	NA	NA	mg/kg-day	1.40E-05	mg/kg-day	NA	NA
	CADMIUM	2.90	mg/kg	1.45E-08	6.06E-09	mg/kg-day	1.25E-05	mg/kg-day	1.16E-03	4.85E-04
	CHROMIUM	215	mg/kg	NA	NA	mg/kg-day	1.95E-02	mg/kg-day	NA	NA
	COBALT	18.4	mg/kg	NA	NA	mg/kg-day	2.00E-02	mg/kg-day	NA	NA
	COPPER	194	mg/kg	NA	NA	mg/kg-day	4.00E-02	mg/kg-day	NA	NA
	HEXAVALENT CHROMIUM	0.07	mg/kg	NA	NA	mg/kg-day	7.50E-05	mg/kg-day	NA	NA
	LEAD	94	mg/kg	NA	NA	mg/kg-day	NA	mg/kg-day	NA	NA
	MANGANESE	907	mg/kg	NA	NA	mg/kg-day	5.60E-03	mg/kg-day	NA	NA
	MERCURY	1.4	mg/kg	NA	NA	mg/kg-day	2.10E-05	mg/kg-day	NA	NA
	MOLYBDENUM	5.1	mg/kg	NA	NA	mg/kg-day	5.00E-03	mg/kg-day	NA	NA
	NICKEL	113	mg/kg	NA	NA	mg/kg-day	8.00E-04	mg/kg-day	NA	NA
	SELENIUM	1.2	mg/kg	NA	NA	mg/kg-day	5.00E-03	mg/kg-day	NA	NA

Table C2-6b
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
DERMAL CONTACT (CONTINUED)	*SILVER*	2.8	mg/kg	NA	NA	mg/kg-day	2.00E-04	mg/kg-day	NA	NA
	THALLIUM	0.47	mg/kg	NA	NA	mg/kg-day	6.60E-05	mg/kg-day	NA	NA
	TIN	16.3	mg/kg	NA	NA	mg/kg-day	6.00E-01	mg/kg-day	NA	NA
	VANADIUM	117	mg/kg	NA	NA	mg/kg-day	1.82E-04	mg/kg-day	NA	NA
	ZINC	235	mg/kg	NA	NA	mg/kg-day	3.00E-01	mg/kg-day	NA	NA
	PESTICIDES									
	ALPHA-CHLORDANE	0.0082	mg/kg	1.65E-09	6.86E-10	mg/kg-day	5.00E-04	mg/kg-day	3.29E-06	1.37E-06
	BETA BHC	0.001	mg/kg	2.01E-10	8.36E-11	mg/kg-day	2.00E-04	mg/kg-day	1.00E-06	4.18E-07
	DELTA BHC	0.002	mg/kg	4.01E-10	1.67E-10	mg/kg-day	NA	mg/kg-day	NA	NA
	2,4- DDD	0.029	mg/kg	4.36E-09	1.82E-09	mg/kg-day	5.00E-04	mg/kg-day	8.73E-06	3.64E-06
	4,4- DDD	0.086	mg/kg	1.29E-08	5.39E-09	mg/kg-day	5.00E-04	mg/kg-day	2.59E-05	1.08E-05
	4,4- DDE	0.017	mg/kg	2.56E-09	1.07E-09	mg/kg-day	5.00E-04	mg/kg-day	5.12E-06	2.13E-06
	4,4- DDT	0.012	mg/kg	1.81E-09	7.52E-10	mg/kg-day	5.00E-04	mg/kg-day	3.61E-06	1.50E-06
	DIELDRIN	0.0039	mg/kg	1.96E-09	8.15E-10	mg/kg-day	5.00E-05	mg/kg-day	3.91E-05	1.63E-05
	ENDOSULFAN I	0.004	mg/kg	2.01E-09	8.36E-10	mg/kg-day	6.00E-03	mg/kg-day	3.34E-07	1.39E-07
	ENDOSULFAN SULFATE	0.003	mg/kg	1.50E-09	6.27E-10	mg/kg-day	6.00E-03	mg/kg-day	2.51E-07	1.05E-07
	ENDRIN	0.02	mg/kg	1.00E-08	4.18E-09	mg/kg-day	3.00E-04	mg/kg-day	3.34E-05	1.39E-05
	ENDRIN ALDEHYDE	0.006	mg/kg	3.01E-09	1.25E-09	mg/kg-day	3.00E-04	mg/kg-day	1.00E-05	4.18E-06
	ENDRIN KETONE	0.003	mg/kg	1.50E-09	6.27E-10	mg/kg-day	3.00E-04	mg/kg-day	5.02E-06	2.09E-06
	GAMMA-CHLORDANE	0.0085	mg/kg	1.71E-09	7.11E-10	mg/kg-day	5.00E-04	mg/kg-day	3.41E-06	1.42E-06
	HEPTACHLOR	0.0002	mg/kg	1.00E-10	4.18E-11	mg/kg-day	5.00E-04	mg/kg-day	2.01E-07	8.36E-08
	HEPTACHLOR EPOXIDE	0.0003	mg/kg	1.50E-10	6.27E-11	mg/kg-day	1.30E-05	mg/kg-day	1.16E-05	4.82E-06
	HEXACHLOROBENZENE	0.0008	mg/kg	4.01E-10	1.67E-10	mg/kg-day	8.00E-04	mg/kg-day	5.02E-07	2.09E-07
	METHOXYCHLOR	0.02	mg/kg	4.01E-09	1.67E-09	mg/kg-day	5.00E-03	mg/kg-day	8.03E-07	3.34E-07
	MIREX	0.004	mg/kg	2.01E-09	8.36E-10	mg/kg-day	2.00E-04	mg/kg-day	1.00E-05	4.18E-06
	TRANS-NONACHLOR	0.0024	mg/kg	4.82E-10	2.01E-10	mg/kg-day	5.00E-04	mg/kg-day	9.63E-07	4.01E-07
	PCBs									

Table C2-6b
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
	PCBs (TOTAL)	0.16	mg/kg	1.12E-07	4.68E-08	mg/kg-day	2.00E-05	mg/kg-day	5.62E-03	2.34E-03

Table C2-6b
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
DERMAL CONTACT (CONTINUED)	**SVOCs**									
	ACENAPHTHENE	0.13	mg/kg	8.48E-08	3.53E-08	mg/kg-day	6.00E-02	mg/kg-day	1.41E-06	5.89E-07
	ACENAPHTHYLENE	0.12	mg/kg	7.83E-08	3.26E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	ANTHRACENE	0.13	mg/kg	8.48E-08	3.53E-08	mg/kg-day	3.00E-01	mg/kg-day	2.83E-07	1.18E-07
	BENZO(A)ANTHRACENE	0.28	mg/kg	1.83E-07	7.61E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(A)PYRENE	0.24	mg/kg	1.57E-07	6.52E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(B)FLUORANTHENE	0.24	mg/kg	1.57E-07	6.52E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(G,H,I)PERYLENE	0.16	mg/kg	1.04E-07	4.35E-08	mg/kg-day	4.00E-02	mg/kg-day	2.61E-06	1.09E-06
	BENZO(K)FLUORANTHENE	0.24	mg/kg	1.57E-07	6.52E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZOIC ACID	0.68	mg/kg	3.41E-07	1.42E-07	mg/kg-day	4.00E+00	mg/kg-day	8.53E-08	3.55E-08
	BIS(2-ETHYLHEXYL)PHTHAL	1.1	mg/kg	5.52E-07	2.30E-07	mg/kg-day	2.00E-02	mg/kg-day	2.76E-05	1.15E-05
	BUTYLBENZYLPHTHALATE	0.025	mg/kg	1.25E-08	5.23E-09	mg/kg-day	2.00E-01	mg/kg-day	6.27E-08	2.61E-08
	CARBAZOLE	0.55	mg/kg	2.76E-07	1.15E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	4- CHLOROANILINE	0.003	mg/kg	1.50E-09	6.27E-10	mg/kg-day	4.00E-03	mg/kg-day	3.76E-07	1.57E-07
	2- CHLOROPHENOL	0.043	mg/kg	2.17E-08	9.05E-09	mg/kg-day	5.00E-03	mg/kg-day	4.34E-06	1.81E-06
	CHRYSENE	0.27	mg/kg	1.76E-07	7.34E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	DIBENZOFURAN	0.36	mg/kg	1.81E-07	7.52E-08	mg/kg-day	2.00E-03	mg/kg-day	9.03E-05	3.76E-05
	3,3- DICHLOROBENZIDINE	0.012	mg/kg	6.02E-09	2.51E-09	mg/kg-day	NA	mg/kg-day	NA	NA
	2,6- DINITROTOLUENE	0.37	mg/kg	1.86E-07	7.73E-08	mg/kg-day	1.00E-03	mg/kg-day	1.86E-04	7.73E-05
	FLUORANTHENE	0.380	mg/kg	2.48E-07	1.03E-07	mg/kg-day	4.00E-02	mg/kg-day	6.20E-06	2.58E-06
	FLUORENE	0.1	mg/kg	8.48E-08	3.53E-08	mg/kg-day	4.00E-02	mg/kg-day	2.12E-06	8.83E-07
	INDENO(1,2,3-CD)PYRENE	0.16	mg/kg	1.04E-07	4.35E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	2- METHYLNAPHTHALENE	0.18	mg/kg	9.03E-08	3.76E-08	mg/kg-day	4.00E-03	mg/kg-day	2.26E-05	9.41E-06
	4- METHYLPHENOL	0.23	mg/kg	1.15E-07	4.81E-08	mg/kg-day	5.00E-03	mg/kg-day	2.31E-05	9.61E-06
	NAPHTHALENE	0.11	mg/kg	7.17E-08	2.99E-08	mg/kg-day	2.00E-02	mg/kg-day	3.59E-06	1.49E-06
	PENTACHLOROPHENOL	0.54	mg/kg	2.71E-07	1.13E-07	mg/kg-day	3.00E-02	mg/kg-day	9.03E-06	3.76E-06
	PHENANTHRENE	0.20	mg/kg	1.30E-07	5.43E-08	mg/kg-day	3.00E-01	mg/kg-day	4.35E-07	1.81E-07
	PHENOL	0.29	mg/kg	1.45E-07	6.06E-08	mg/kg-day	6.00E-01	mg/kg-day	2.42E-07	1.01E-07

Table C2-6b
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
DERMAL CONTACT (CONTINUED)	*PYRENE*	0.430	mg/kg	2.80E-07	1.17E-07	mg/kg-day	3.00E-02	mg/kg-day	9.35E-06	3.89E-06
	TPH									
	TPH AS DIESEL	177	mg/kg	NA	NA	mg/kg-day	NA	mg/kg-day	NA	NA
	TPH AS GASOLINE	4.2	mg/kg	NA	NA	mg/kg-day	NA	mg/kg-day	NA	NA
	TPH AS MOTOR OIL	313	mg/kg	NA	NA	mg/kg-day	NA	mg/kg-day	NA	NA
	VOCs									
	ACETONE	0.32	mg/kg	NA	NA	mg/kg-day	9.00E-01	mg/kg-day	NA	NA
	BENZENE	0.005	mg/kg	NA	NA	mg/kg-day	4.00E-03	mg/kg-day	NA	NA
	CARBON DISULFIDE	0.025	mg/kg	NA	NA	mg/kg-day	1.00E-01	mg/kg-day	NA	NA
	CHLOROBENZENE	0.024	mg/kg	NA	NA	mg/kg-day	2.00E-02	mg/kg-day	NA	NA
	CIS-1,2-DICHLOROETHENE	0.052	mg/kg	NA	NA	mg/kg-day	1.00E-02	mg/kg-day	NA	NA
	ETHYLBENZENE	0.044	mg/kg	NA	NA	mg/kg-day	1.00E-01	mg/kg-day	NA	NA
	4- ISOPROPYLTOLUENE	0.007	mg/kg	NA	NA	mg/kg-day	NA	mg/kg-day	NA	NA
	METHYLENE CHLORIDE	0.3	mg/kg	NA	NA	mg/kg-day	6.00E-02	mg/kg-day	NA	NA
	NAPHTHALENE	0.016	mg/kg	NA	NA	mg/kg-day	2.00E-02	mg/kg-day	NA	NA
	TOLUENE	0.03	mg/kg	NA	NA	mg/kg-day	2.00E-01	mg/kg-day	NA	NA
	TRANS-1,2-DICHLOROETHENI	0.023	mg/kg	NA	NA	mg/kg-day	2.00E-02	mg/kg-day	NA	NA
	TRICHLOROETHENE	0.007	mg/kg	NA	NA	mg/kg-day	3.00E-04	mg/kg-day	NA	NA
	1,2,4- TRIMETHYLBENZENE	0.025	mg/kg	NA	NA	mg/kg-day	5.00E-02	mg/kg-day	NA	NA
	1,3,5- TRIMETHYLBENZENE	0.009	mg/kg	NA	NA	mg/kg-day	5.00E-02	mg/kg-day	NA	NA
	VINYL CHLORIDE	0.034	mg/kg	NA	NA	mg/kg-day	3.00E-03	mg/kg-day	NA	NA
	XYLENE (TOTAL)	0.11	mg/kg	NA	NA	mg/kg-day	2.00E-01	mg/kg-day	NA	NA
INHALATION OF PARTICULATES AND VAPORS	**INORGANICS**									
	ALUMINUM	26,758	mg/kg	1.23E-06	5.12E-07	mg/kg-day	1.40E-03	mg/kg-day	8.78E-04	3.66E-04
	ANTIMONY	4.5	mg/kg	2.07E-10	8.62E-11	mg/kg-day	NA	mg/kg-day	NA	NA
	ARSENIC	21.3	mg/kg	9.79E-10	4.08E-10	mg/kg-day	8.57E-06	mg/kg-day	1.14E-04	4.76E-05
	BARIUM	93.6	mg/kg	4.30E-09	1.79E-09	mg/kg-day	1.43E-04	mg/kg-day	3.01E-05	1.25E-05
	BERYLLIUM	0.65	mg/kg	2.99E-11	1.24E-11	mg/kg-day	2.00E-06	mg/kg-day	1.49E-05	6.23E-06

Table C2-6b
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
INHALATION OF PARTICULATES AND VAPORS (CONTINUED)	*CADMIUM*	2.90	mg/kg	1.33E-10	5.55E-11	mg/kg-day	5.71E-06	mg/kg-day	2.33E-05	9.72E-06
	CHROMIUM	215	mg/kg	9.88E-09	4.12E-09	mg/kg-day	NA	mg/kg-day	NA	NA
	COBALT	18.4	mg/kg	8.45E-10	3.52E-10	mg/kg-day	5.70E-06	mg/kg-day	1.48E-04	6.18E-05
	COPPER	194	mg/kg	8.91E-09	3.71E-09	mg/kg-day	NA	mg/kg-day	NA	NA
	HEXAVALENT CHROMIUM	0.07	mg/kg	3.22E-12	1.34E-12	mg/kg-day	2.86E-05	mg/kg-day	1.12E-07	4.69E-08
	LEAD	94	mg/kg	4.32E-09	1.80E-09	mg/kg-day	NA	mg/kg-day	NA	NA
	MANGANESE	907	mg/kg	4.17E-08	1.74E-08	mg/kg-day	1.43E-05	mg/kg-day	2.91E-03	1.21E-03
	MERCURY	1.4	mg/kg	6.43E-11	2.68E-11	mg/kg-day	2.57E-05	mg/kg-day	2.50E-06	1.04E-06
	MOLYBDENUM	5.1	mg/kg	2.34E-10	9.76E-11	mg/kg-day	NA	mg/kg-day	NA	NA
	NICKEL	113	mg/kg	5.19E-09	2.16E-09	mg/kg-day	1.43E-05	mg/kg-day	3.64E-04	1.52E-04
	SELENIUM	1.2	mg/kg	5.51E-11	2.30E-11	mg/kg-day	5.71E-03	mg/kg-day	9.66E-09	4.02E-09
	SILVER	2.8	mg/kg	1.29E-10	5.36E-11	mg/kg-day	NA	mg/kg-day	NA	NA
	THALLIUM	0.47	mg/kg	2.16E-11	9.00E-12	mg/kg-day	NA	mg/kg-day	NA	NA
	TIN	16.3	mg/kg	7.49E-10	3.12E-10	mg/kg-day	NA	mg/kg-day	NA	NA
	VANADIUM	117	mg/kg	5.38E-09	2.24E-09	mg/kg-day	NA	mg/kg-day	NA	NA
	ZINC	235	mg/kg	1.08E-08	4.50E-09	mg/kg-day	NA	mg/kg-day	NA	NA
	PESTICIDES									
	ALPHA-CHLORDANE	0.0082	mg/kg	3.77E-13	1.57E-13	mg/kg-day	2.00E-04	mg/kg-day	1.88E-09	7.85E-10
	BETA BHC	0.001	mg/kg	4.59E-14	1.91E-14	mg/kg-day	2.00E-04	mg/kg-day	2.30E-10	9.57E-11
	DELTA BHC	0.002	mg/kg	9.19E-14	3.83E-14	mg/kg-day	NA	mg/kg-day	NA	NA
	2,4- DDD	0.029	mg/kg	1.33E-12	5.55E-13	mg/kg-day	5.00E-04	mg/kg-day	2.67E-09	1.11E-09
	4,4- DDD	0.086	mg/kg	3.95E-12	1.65E-12	mg/kg-day	5.00E-04	mg/kg-day	7.90E-09	3.29E-09
	4,4- DDE	0.017	mg/kg	7.81E-13	3.25E-13	mg/kg-day	5.00E-04	mg/kg-day	1.56E-09	6.51E-10
	4,4- DDT	0.012	mg/kg	5.51E-13	2.30E-13	mg/kg-day	5.00E-04	mg/kg-day	1.10E-09	4.59E-10
	DIELDRIN	0.0039	mg/kg	1.79E-13	7.47E-14	mg/kg-day	5.00E-05	mg/kg-day	3.58E-09	1.49E-09
	ENDOSULFAN I	0.004	mg/kg	1.84E-13	7.66E-14	mg/kg-day	6.00E-03	mg/kg-day	3.06E-11	1.28E-11
	ENDOSULFAN SULFATE	0.003	mg/kg	1.38E-13	5.74E-14	mg/kg-day	6.00E-03	mg/kg-day	2.30E-11	9.57E-12
	ENDRIN	0.02	mg/kg	9.19E-13	3.83E-13	mg/kg-day	3.00E-04	mg/kg-day	3.06E-09	1.28E-09

Table C2-6b
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
INHALATION OF PARTICULATES AND VAPORS (CONTINUED)	ENDRIN ALDEHYDE	0.006	mg/kg	2.76E-13	1.15E-13	mg/kg-day	3.00E-04	mg/kg-day	9.19E-10	3.83E-10
	ENDRIN KETONE	0.003	mg/kg	1.38E-13	5.74E-14	mg/kg-day	3.00E-04	mg/kg-day	4.59E-10	1.91E-10
	GAMMA-CHLORDANE	0.0085	mg/kg	3.91E-13	1.63E-13	mg/kg-day	2.00E-04	mg/kg-day	1.95E-09	8.14E-10
	HEPTACHLOR	0.0002	mg/kg	9.19E-15	3.83E-15	mg/kg-day	5.00E-04	mg/kg-day	1.84E-11	7.66E-12
	HEPTACHLOR EPOXIDE	0.0003	mg/kg	1.38E-14	5.74E-15	mg/kg-day	1.30E-05	mg/kg-day	1.06E-09	4.42E-10
	HEXACHLOROBENZENE	0.0008	mg/kg	3.68E-14	1.53E-14	mg/kg-day	8.00E-04	mg/kg-day	4.59E-11	1.91E-11
	METHOXYCHLOR	0.02	mg/kg	9.19E-13	3.83E-13	mg/kg-day	5.00E-03	mg/kg-day	1.84E-10	7.66E-11
	MIREX	0.004	mg/kg	1.84E-13	7.66E-14	mg/kg-day	2.00E-04	mg/kg-day	9.19E-10	3.83E-10
	TRANS-NONACHLOR	0.0024	mg/kg	1.10E-13	4.59E-14	mg/kg-day	2.00E-04	mg/kg-day	5.51E-10	2.30E-10
	PCBs									
	PCBs (TOTAL)	0.16	mg/kg	7.35E-12	3.06E-12	mg/kg-day	2.00E-05	mg/kg-day	3.68E-07	1.53E-07
	SVOCs									
	ACENAPHTHENE	0.13	mg/kg	4.38E-08	1.83E-08	mg/kg-day	6.00E-02	mg/kg-day	7.30E-07	3.04E-07
	ACENAPHTHYLENE	0.12	mg/kg	5.51E-12	2.30E-12	mg/kg-day	NA	mg/kg-day	NA	NA
	ANTHRACENE	0.13	mg/kg	1.13E-08	4.69E-09	mg/kg-day	3.00E-01	mg/kg-day	3.75E-08	1.56E-08
	BENZO(A)ANTHRACENE	0.28	mg/kg	1.29E-11	5.36E-12	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(A)PYRENE	0.24	mg/kg	1.10E-11	4.59E-12	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(B)FLUORANTHENE	0.24	mg/kg	1.10E-11	4.59E-12	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(G,H,I)PERYLENE	0.16	mg/kg	7.35E-12	3.06E-12	mg/kg-day	4.00E-02	mg/kg-day	1.84E-10	7.66E-11
	BENZO(K)FLUORANTHENE	0.24	mg/kg	1.10E-11	4.59E-12	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZOIC ACID	0.68	mg/kg	3.12E-11	1.30E-11	mg/kg-day	4.00E+00	mg/kg-day	NA	NA
	BIS(2-ETHYLHEXYL)PHTHAL	1.1	mg/kg	5.05E-11	2.11E-11	mg/kg-day	2.00E-02	mg/kg-day	2.53E-09	1.05E-09
	BUTYLBENZYLPHTHALATE	0.025	mg/kg	1.15E-12	4.79E-13	mg/kg-day	2.00E-01	mg/kg-day	5.74E-12	2.39E-12
	CARBAZOLE	0.55	mg/kg	2.53E-11	1.05E-11	mg/kg-day	NA	mg/kg-day	NA	NA
	4- CHLOROANILINE	0.003	mg/kg	1.38E-13	5.74E-14	mg/kg-day	4.00E-03	mg/kg-day	3.45E-11	1.44E-11
	2- CHLOROPHENOL	0.043	mg/kg	1.99E-12	8.29E-13	mg/kg-day	5.00E-03	mg/kg-day	3.98E-10	1.66E-10
	CHRYSENE	0.27	mg/kg	6.07E-09	2.53E-09	mg/kg-day	NA	mg/kg-day	NA	NA
	DIBENZOFURAN	0.36	mg/kg	1.65E-11	6.89E-12	mg/kg-day	2.00E-03	mg/kg-day	8.27E-09	3.45E-09

Table C2-6b
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
INHALATION OF PARTICULATES AND VAPORS (CONTINUED)	3,3- DICHLOROBENZIDINE	0.012	mg/kg	5.51E-13	2.30E-13	mg/kg-day	NA	mg/kg-day	NA	NA
	2,6- DINITROTOLUENE	0.37	mg/kg	1.70E-11	7.08E-12	mg/kg-day	1.00E-03	mg/kg-day	1.70E-08	7.08E-09
	FLUORANTHENE	0.380	mg/kg	1.75E-11	7.28E-12	mg/kg-day	4.00E-02	mg/kg-day	4.37E-10	1.82E-10
	FLUORENE	0.1	mg/kg	2.19E-08	9.13E-09	mg/kg-day	4.00E-02	mg/kg-day	5.48E-07	2.28E-07
	INDENO(1,2,3-CD)PYRENE	0.16	mg/kg	7.35E-12	3.06E-12	mg/kg-day	NA	mg/kg-day	NA	NA
	2- METHYLNAPHTHALENE	0.18	mg/kg	8.27E-12	3.45E-12	mg/kg-day	NA	mg/kg-day	NA	NA
	4- METHYLPHENOL	0.23	mg/kg	1.06E-11	4.40E-12	mg/kg-day	NA	mg/kg-day	NA	NA
	NAPHTHALENE	0.11	mg/kg	1.55E-07	6.46E-08	mg/kg-day	8.57E-04	mg/kg-day	1.81E-04	7.54E-05
	PENTACHLOROPHENOL	0.54	mg/kg	2.48E-11	1.03E-11	mg/kg-day	3.00E-02	mg/kg-day	8.27E-10	3.45E-10
	PHENANTHRENE	0.20	mg/kg	9.19E-12	3.83E-12	mg/kg-day	3.00E-01	mg/kg-day	3.06E-11	1.28E-11
	PHENOL	0.29	mg/kg	1.33E-11	5.55E-12	mg/kg-day	5.71E-02	mg/kg-day	2.33E-10	9.72E-11
	PYRENE	0.430	mg/kg	6.86E-09	2.86E-09	mg/kg-day	3.00E-02	mg/kg-day	2.29E-07	9.53E-08
	TPH									
	TPH AS DIESEL	177	mg/kg	8.13E-09	3.39E-09	mg/kg-day	NA	mg/kg-day	NA	NA
	TPH AS GASOLINE	4.2	mg/kg	1.93E-10	8.04E-11	mg/kg-day	NA	mg/kg-day	NA	NA
	TPH AS MOTOR OIL	313	mg/kg	1.44E-08	5.99E-09	mg/kg-day	NA	mg/kg-day	NA	NA
	VOCs									
	ACETONE	0.32	mg/kg	1.49E-06	6.22E-07	mg/kg-day	9.00E-01	mg/kg-day	1.66E-06	6.91E-07
	BENZENE	0.005	mg/kg	1.12E-07	4.68E-08	mg/kg-day	8.57E-03	mg/kg-day	1.31E-05	5.46E-06
	CARBON DISULFIDE	0.025	mg/kg	1.26E-06	5.27E-07	mg/kg-day	2.00E-01	mg/kg-day	6.32E-06	2.63E-06
	CHLOROBENZENE	0.024	mg/kg	2.31E-07	9.63E-08	mg/kg-day	5.71E-03	mg/kg-day	4.05E-05	1.69E-05
	CIS-1,2-DICHLOROETHENE	0.052	mg/kg	1.09E-06	4.53E-07	mg/kg-day	1.00E-02	mg/kg-day	1.09E-04	4.53E-05
	ETHYLBENZENE	0.044	mg/kg	4.94E-07	2.06E-07	mg/kg-day	2.86E-01	mg/kg-day	1.73E-06	7.20E-07
	4- ISOPROPYLTOLUENE	0.007	mg/kg	NA	NA	mg/kg-day	NA	mg/kg-day	NA	NA
	METHYLENE CHLORIDE	0.3	mg/kg	7.28E-06	3.03E-06	mg/kg-day	1.14E-01	mg/kg-day	6.38E-05	2.66E-05
	NAPHTHALENE	0.016	mg/kg	2.26E-08	9.40E-09	mg/kg-day	8.57E-04	mg/kg-day	2.63E-05	1.10E-05
	TOLUENE	0.03	mg/kg	4.55E-07	1.90E-07	mg/kg-day	8.57E-02	mg/kg-day	5.31E-06	2.21E-06
	TRANS-1,2-DICHLOROETHEN	0.023	mg/kg	6.07E-07	2.53E-07	mg/kg-day	2.00E-02	mg/kg-day	3.03E-05	1.26E-05

Table C2-6b
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
INHALATION OF PARTICULATES AND VAPORS (CONTINUED)	TRICHLOROETHENE	0.007	mg/kg	1.29E-07	5.36E-08	mg/kg-day	1.00E-02	mg/kg-day	1.29E-05	5.36E-06
	1,2,4- TRIMETHYLBENZENE	0.025	mg/kg	7.58E-08	3.16E-08	mg/kg-day	1.70E-03	mg/kg-day	4.46E-05	1.86E-05
	1,3,5- TRIMETHYLBENZENE	0.009	mg/kg	7.05E-08	2.94E-08	mg/kg-day	1.70E-03	mg/kg-day	4.15E-05	1.73E-05
	VINYL CHLORIDE	0.034	mg/kg	2.06E-06	8.59E-07	mg/kg-day	2.86E-02	mg/kg-day	7.21E-05	3.00E-05
	XYLENE (TOTAL)	0.11	mg/kg	1.09E-06	4.56E-07	mg/kg-day	2.86E-02	mg/kg-day	3.82E-05	1.59E-05

Notes:
The HQ for chemicals that are italicized and underlined have been modified for post remediation residual risk.
CTE = Central Tendency Exposure
EPC = Exposure point concentration
HQ = Hazard Quotient
mg/kg = milligrams per kilogram
mg/kg-day = milligrams per kilogram per day
NA = Not Applicable
PCBs = Polychlorinated Biphenyls
RfD = Reference Dose
RME = Reasonable Maximum Exposure
SVOCs = Semivolatile Organic Compounds
TPH = Total Petroleum Hydrocarbons
VOCs = Volatile Organic Compounds

Table C2-6c
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
INGESTION	**INORGANICS**									
	ALUMINUM	26,758	mg/kg	8.64E-02	8.64E-02	mg/kg-day	1.00E+00	mg/kg-day	8.64E-02	8.64E-02
	ANTIMONY	4.5	mg/kg	1.45E-05	1.45E-05	mg/kg-day	4.00E-04	mg/kg-day	3.63E-02	3.63E-02
	ARSENIC	21.3	mg/kg	6.88E-05	6.88E-05	mg/kg-day	3.00E-04	mg/kg-day	2.29E-01	2.29E-01
	BARIUM	93.6	mg/kg	3.02E-04	3.02E-04	mg/kg-day	7.00E-02	mg/kg-day	4.32E-03	4.32E-03
	BERYLLIUM	0.65	mg/kg	2.10E-06	2.10E-06	mg/kg-day	2.00E-03	mg/kg-day	1.05E-03	1.05E-03
	CADMIUM	2.90	mg/kg	9.36E-06	9.36E-06	mg/kg-day	5.00E-04	mg/kg-day	1.87E-02	1.87E-02
	CHROMIUM	215	mg/kg	6.94E-04	6.94E-04	mg/kg-day	1.50E+00	mg/kg-day	4.63E-04	4.63E-04
	COBALT	18.4	mg/kg	5.94E-05	5.94E-05	mg/kg-day	2.00E-02	mg/kg-day	2.97E-03	2.97E-03
	COPPER	194	mg/kg	6.26E-04	6.26E-04	mg/kg-day	4.00E-02	mg/kg-day	1.57E-02	1.57E-02
	HEXAVALENT CHROMIUM	0.07	mg/kg	2.26E-07	2.26E-07	mg/kg-day	3.00E-03	mg/kg-day	7.53E-05	7.53E-05
	LEAD	94	mg/kg	3.04E-04	3.04E-04	mg/kg-day	NA	mg/kg-day	NA	NA
	MANGANESE	907	mg/kg	2.93E-03	2.93E-03	mg/kg-day	1.40E-01	mg/kg-day	2.09E-02	2.09E-02
	MERCURY	1.4	mg/kg	4.52E-06	4.52E-06	mg/kg-day	3.00E-04	mg/kg-day	1.51E-02	1.51E-02
	MOLYBDENUM	5.1	mg/kg	1.65E-05	1.65E-05	mg/kg-day	5.00E-03	mg/kg-day	3.29E-03	3.29E-03
	NICKEL	113	mg/kg	3.65E-04	3.65E-04	mg/kg-day	2.00E-02	mg/kg-day	1.82E-02	1.82E-02
	SELENIUM	1.2	mg/kg	3.87E-06	3.87E-06	mg/kg-day	5.00E-03	mg/kg-day	7.75E-04	7.75E-04
	SILVER	2.8	mg/kg	9.04E-06	9.04E-06	mg/kg-day	5.00E-03	mg/kg-day	1.81E-03	1.81E-03
	THALLIUM	0.47	mg/kg	1.52E-06	1.52E-06	mg/kg-day	6.60E-05	mg/kg-day	2.30E-02	2.30E-02
	TIN	16.3	mg/kg	5.26E-05	5.26E-05	mg/kg-day	6.00E-01	mg/kg-day	8.77E-05	8.77E-05
	VANADIUM	117	mg/kg	3.78E-04	3.78E-04	mg/kg-day	7.00E-03	mg/kg-day	5.40E-02	5.40E-02
	ZINC	235	mg/kg	7.59E-04	7.59E-04	mg/kg-day	3.00E-01	mg/kg-day	2.53E-03	2.53E-03
	PESTICIDES									
	ALPHA-CHLORDANE	0.0082	mg/kg	2.65E-08	2.65E-08	mg/kg-day	5.00E-04	mg/kg-day	5.30E-05	5.30E-05
	BETA BHC	0.001	mg/kg	3.23E-09	3.23E-09	mg/kg-day	2.00E-04	mg/kg-day	1.61E-05	1.61E-05
	DELTA BHC	0.002	mg/kg	6.46E-09	6.46E-09	mg/kg-day	NA	mg/kg-day	NA	NA
	2,4- DDD	0.029	mg/kg	9.36E-08	9.36E-08	mg/kg-day	5.00E-04	mg/kg-day	1.87E-04	1.87E-04
	4,4- DDD	0.086	mg/kg	2.78E-07	2.78E-07	mg/kg-day	5.00E-04	mg/kg-day	5.55E-04	5.55E-04

Table C2-6c
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
INGESTION (CONTINUED)	4,4- DDE	0.017	mg/kg	5.49E-08	5.49E-08	mg/kg-day	5.00E-04	mg/kg-day	1.10E-04	1.10E-04
	4,4- DDT	0.012	mg/kg	3.87E-08	3.87E-08	mg/kg-day	5.00E-04	mg/kg-day	7.75E-05	7.75E-05
	DIELDRIN	0.0039	mg/kg	1.26E-08	1.26E-08	mg/kg-day	5.00E-05	mg/kg-day	2.52E-04	2.52E-04
	ENDOSULFAN I	0.004	mg/kg	1.29E-08	1.29E-08	mg/kg-day	6.00E-03	mg/kg-day	2.15E-06	2.15E-06
	ENDOSULFAN SULFATE	0.003	mg/kg	9.69E-09	9.69E-09	mg/kg-day	6.00E-03	mg/kg-day	1.61E-06	1.61E-06
	ENDRIN	0.02	mg/kg	6.46E-08	6.46E-08	mg/kg-day	3.00E-04	mg/kg-day	2.15E-04	2.15E-04
	ENDRIN ALDEHYDE	0.006	mg/kg	1.94E-08	1.94E-08	mg/kg-day	3.00E-04	mg/kg-day	6.46E-05	6.46E-05
	ENDRIN KETONE	0.003	mg/kg	9.69E-09	9.69E-09	mg/kg-day	3.00E-04	mg/kg-day	3.23E-05	3.23E-05
	GAMMA-CHLORDANE	0.0085	mg/kg	2.74E-08	2.74E-08	mg/kg-day	5.00E-04	mg/kg-day	5.49E-05	5.49E-05
	HEPTACHLOR	0.0002	mg/kg	6.46E-10	6.46E-10	mg/kg-day	5.00E-04	mg/kg-day	1.29E-06	1.29E-06
	HEPTACHLOR EPOXIDE	0.0003	mg/kg	9.69E-10	9.69E-10	mg/kg-day	1.30E-05	mg/kg-day	7.45E-05	7.45E-05
	HEXACHLOROBENZENE	0.0008	mg/kg	2.58E-09	2.58E-09	mg/kg-day	8.00E-04	mg/kg-day	3.23E-06	3.23E-06
	METHOXYCHLOR	0.02	mg/kg	6.46E-08	6.46E-08	mg/kg-day	5.00E-03	mg/kg-day	1.29E-05	1.29E-05
	MIREX	0.004	mg/kg	1.29E-08	1.29E-08	mg/kg-day	2.00E-04	mg/kg-day	6.46E-05	6.46E-05
	TRANS-NONACHLOR	0.0024	mg/kg	7.75E-09	7.75E-09	mg/kg-day	5.00E-04	mg/kg-day	1.55E-05	1.55E-05
	PCBs									
	PCBs (TOTAL)	0.16	mg/kg	5.17E-07	5.17E-07	mg/kg-day	2.00E-05	mg/kg-day	2.58E-02	2.58E-02
	SVOCs									
	ACENAPHTHENE	0.13	mg/kg	4.20E-07	4.20E-07	mg/kg-day	6.00E-02	mg/kg-day	7.00E-06	7.00E-06
	ACENAPHTHYLENE	0.12	mg/kg	3.87E-07	3.87E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	ANTHRACENE	0.13	mg/kg	4.20E-07	4.20E-07	mg/kg-day	3.00E-01	mg/kg-day	1.40E-06	1.40E-06
	BENZO(A)ANTHRACENE	0.28	mg/kg	9.04E-07	9.04E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(A)PYRENE	0.24	mg/kg	7.75E-07	7.75E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(B)FLUORANTHENE	0.24	mg/kg	7.75E-07	7.75E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(G,H,I)PERYLENE	0.16	mg/kg	5.17E-07	5.17E-07	mg/kg-day	4.00E-02	mg/kg-day	1.29E-05	1.29E-05
	BENZO(K)FLUORANTHENE	0.24	mg/kg	7.75E-07	7.75E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZOIC ACID	0.68	mg/kg	2.20E-06	2.20E-06	mg/kg-day	4.00E+00	mg/kg-day	5.49E-07	5.49E-07
	BIS(2-ETHYLHEXYL)PHTHALATE	1.1	mg/kg	3.55E-06	3.55E-06	mg/kg-day	2.00E-02	mg/kg-day	1.78E-04	1.78E-04

Table C2-6c
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
INGESTION (CONTINUED)	BUTYLBENZYLPHTHALATE	0.025	mg/kg	8.07E-08	8.07E-08	mg/kg-day	2.00E-01	mg/kg-day	4.04E-07	4.04E-07
	CARBAZOLE	0.55	mg/kg	1.78E-06	1.78E-06	mg/kg-day	NA	mg/kg-day	NA	NA
	4- CHLOROANILINE	0.003	mg/kg	9.69E-09	9.69E-09	mg/kg-day	4.00E-03	mg/kg-day	2.42E-06	2.42E-06
	2- CHLOROPHENOL	0.043	mg/kg	1.40E-07	1.40E-07	mg/kg-day	5.00E-03	mg/kg-day	2.80E-05	2.80E-05
	CHRYSENE	0.27	mg/kg	8.72E-07	8.72E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	DIBENZOFURAN	0.36	mg/kg	1.16E-06	1.16E-06	mg/kg-day	2.00E-03	mg/kg-day	5.81E-04	5.81E-04
	3,3- DICHLOROBENZIDINE	0.012	mg/kg	3.87E-08	3.87E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	2,6- DINITROTOLUENE	0.37	mg/kg	1.19E-06	1.19E-06	mg/kg-day	1.00E-03	mg/kg-day	1.19E-03	1.19E-03
	FLUORANTHENE	0.380	mg/kg	1.23E-06	1.23E-06	mg/kg-day	4.00E-02	mg/kg-day	3.07E-05	3.07E-05
	FLUORENE	0.1	mg/kg	4.20E-07	4.20E-07	mg/kg-day	4.00E-02	mg/kg-day	1.05E-05	1.05E-05
	INDENO(1,2,3-CD)PYRENE	0.16	mg/kg	5.17E-07	5.17E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	2- METHYLNAPHTHALENE	0.18	mg/kg	5.81E-07	5.81E-07	mg/kg-day	4.00E-03	mg/kg-day	1.45E-04	1.45E-04
	4- METHYLPHENOL	0.23	mg/kg	7.43E-07	7.43E-07	mg/kg-day	5.00E-03	mg/kg-day	1.49E-04	1.49E-04
	NAPHTHALENE	0.11	mg/kg	3.55E-07	3.55E-07	mg/kg-day	2.00E-02	mg/kg-day	1.78E-05	1.78E-05
	PENTACHLOROPHENOL	0.54	mg/kg	1.74E-06	1.74E-06	mg/kg-day	3.00E-02	mg/kg-day	5.81E-05	5.81E-05
	PHENANTHRENE	0.20	mg/kg	6.46E-07	6.46E-07	mg/kg-day	3.00E-01	mg/kg-day	2.15E-06	2.15E-06
	PHENOL	0.29	mg/kg	9.36E-07	9.36E-07	mg/kg-day	6.00E-01	mg/kg-day	1.56E-06	1.56E-06
	PYRENE	0.430	mg/kg	1.39E-06	1.39E-06	mg/kg-day	3.00E-02	mg/kg-day	4.63E-05	4.63E-05
	TPH									
	TPH AS DIESEL	177	mg/kg	5.72E-04	5.72E-04	mg/kg-day	NA	mg/kg-day	NA	NA
	TPH AS GASOLINE	4.2	mg/kg	1.36E-05	1.36E-05	mg/kg-day	NA	mg/kg-day	NA	NA
	TPH AS MOTOR OIL	313	mg/kg	1.01E-03	1.01E-03	mg/kg-day	NA	mg/kg-day	NA	NA
	VOCs									
	ACETONE	0.32	mg/kg	1.03E-06	1.03E-06	mg/kg-day	9.00E-01	mg/kg-day	1.15E-06	1.15E-06
	BENZENE	0.005	mg/kg	1.61E-08	1.61E-08	mg/kg-day	4.00E-03	mg/kg-day	4.04E-06	4.04E-06
	CARBON DISULFIDE	0.025	mg/kg	8.07E-08	8.07E-08	mg/kg-day	1.00E-01	mg/kg-day	8.07E-07	8.07E-07
	CHLOROBENZENE	0.024	mg/kg	7.75E-08	7.75E-08	mg/kg-day	2.00E-02	mg/kg-day	3.87E-06	3.87E-06
	CIS-1,2-DICHLOROETHENE	0.052	mg/kg	1.68E-07	1.68E-07	mg/kg-day	1.00E-02	mg/kg-day	1.68E-05	1.68E-05

Table C2-6c
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
INGESTION (CONTINUED)	ETHYLBENZENE	0.044	mg/kg	1.42E-07	1.42E-07	mg/kg-day	1.00E-01	mg/kg-day	1.42E-06	1.42E-06
	4- ISOPROPYLTOLUENE	0.007	mg/kg	2.32E-08	2.32E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	METHYLENE CHLORIDE	0.3	mg/kg	9.69E-07	9.69E-07	mg/kg-day	6.00E-02	mg/kg-day	1.61E-05	1.61E-05
	NAPHTHALENE	0.016	mg/kg	5.17E-08	5.17E-08	mg/kg-day	2.00E-02	mg/kg-day	2.58E-06	2.58E-06
	TOLUENE	0.03	mg/kg	9.69E-08	9.69E-08	mg/kg-day	2.00E-01	mg/kg-day	4.84E-07	4.84E-07
	TRANS-1,2-DICHLOROETHENE	0.023	mg/kg	7.43E-08	7.43E-08	mg/kg-day	2.00E-02	mg/kg-day	3.71E-06	3.71E-06
	TRICHLOROETHENE	0.007	mg/kg	2.26E-08	2.26E-08	mg/kg-day	3.00E-04	mg/kg-day	7.53E-05	7.53E-05
	1,2,4- TRIMETHYLBENZENE	0.025	mg/kg	8.07E-08	8.07E-08	mg/kg-day	5.00E-02	mg/kg-day	1.61E-06	1.61E-06
	1,3,5- TRIMETHYLBENZENE	0.009	mg/kg	3.00E-08	3.00E-08	mg/kg-day	5.00E-02	mg/kg-day	6.01E-07	6.01E-07
	VINYL CHLORIDE	0.034	mg/kg	1.10E-07	1.10E-07	mg/kg-day	3.00E-03	mg/kg-day	3.66E-05	3.66E-05
	XYLENE (TOTAL)	0.11	mg/kg	3.55E-07	3.55E-07	mg/kg-day	2.00E-01	mg/kg-day	1.78E-06	1.78E-06
DERMAL CONTACT	**INORGANICS**									
	ALUMINUM	26,758	mg/kg	NA	NA	mg/kg-day	1.00E+00	mg/kg-day	NA	NA
	ANTIMONY	4.5	mg/kg	NA	NA	mg/kg-day	6.00E-05	mg/kg-day	NA	NA
	ARSENIC	21.3	mg/kg	6.19E-06	6.19E-06	mg/kg-day	3.00E-04	mg/kg-day	2.06E-02	2.06E-02
	BARIUM	93.6	mg/kg	NA	NA	mg/kg-day	4.90E-03	mg/kg-day	NA	NA
	BERYLLIUM	0.65	mg/kg	NA	NA	mg/kg-day	1.40E-05	mg/kg-day	NA	NA
	CADMIUM	2.90	mg/kg	2.81E-08	2.81E-08	mg/kg-day	1.25E-05	mg/kg-day	2.25E-03	2.25E-03
	CHROMIUM	215	mg/kg	NA	NA	mg/kg-day	1.95E-02	mg/kg-day	NA	NA
	COBALT	18.4	mg/kg	NA	NA	mg/kg-day	2.00E-02	mg/kg-day	NA	NA
	COPPER	194	mg/kg	NA	NA	mg/kg-day	4.00E-02	mg/kg-day	NA	NA
	HEXAVALENT CHROMIUM	0.07	mg/kg	NA	NA	mg/kg-day	7.50E-05	mg/kg-day	NA	NA
	LEAD	94	mg/kg	NA	NA	mg/kg-day	NA	mg/kg-day	NA	NA
	MANGANESE	907	mg/kg	NA	NA	mg/kg-day	5.60E-03	mg/kg-day	NA	NA
	MERCURY	1.4	mg/kg	NA	NA	mg/kg-day	2.10E-05	mg/kg-day	NA	NA
	MOLYBDENUM	5.1	mg/kg	NA	NA	mg/kg-day	5.00E-03	mg/kg-day	NA	NA
	NICKEL	113	mg/kg	NA	NA	mg/kg-day	8.00E-04	mg/kg-day	NA	NA
	SELENIUM	1.2	mg/kg	NA	NA	mg/kg-day	5.00E-03	mg/kg-day	NA	NA

Table C2-6c
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
DERMAL CONTACT (CONTINUED)	*SILVER*	2.8	mg/kg	NA	NA	mg/kg-day	2.00E-04	mg/kg-day	NA	NA
	THALLIUM	0.47	mg/kg	NA	NA	mg/kg-day	6.60E-05	mg/kg-day	NA	NA
	TIN	16.3	mg/kg	NA	NA	mg/kg-day	6.00E-01	mg/kg-day	NA	NA
	VANADIUM	117	mg/kg	NA	NA	mg/kg-day	1.82E-04	mg/kg-day	NA	NA
	ZINC	235	mg/kg	NA	NA	mg/kg-day	3.00E-01	mg/kg-day	NA	NA
	PESTICIDES									
	ALPHA-CHLORDANE	0.0082	mg/kg	3.18E-09	3.18E-09	mg/kg-day	5.00E-04	mg/kg-day	6.35E-06	6.35E-06
	BETA BHC	0.001	mg/kg	3.87E-10	3.87E-10	mg/kg-day	2.00E-04	mg/kg-day	1.94E-06	1.94E-06
	DELTA BHC	0.002	mg/kg	7.75E-10	7.75E-10	mg/kg-day	NA	mg/kg-day	NA	NA
	2,4- DDD	0.029	mg/kg	8.43E-09	8.43E-09	mg/kg-day	5.00E-04	mg/kg-day	1.69E-05	1.69E-05
	4,4- DDD	0.086	mg/kg	2.50E-08	2.50E-08	mg/kg-day	5.00E-04	mg/kg-day	5.00E-05	5.00E-05
	4,4- DDE	0.017	mg/kg	4.94E-09	4.94E-09	mg/kg-day	5.00E-04	mg/kg-day	9.88E-06	9.88E-06
	4,4- DDT	0.012	mg/kg	3.49E-09	3.49E-09	mg/kg-day	5.00E-04	mg/kg-day	6.97E-06	6.97E-06
	DIELDRIN	0.0039	mg/kg	3.78E-09	3.78E-09	mg/kg-day	5.00E-05	mg/kg-day	7.56E-05	7.56E-05
	ENDOSULFAN I	0.004	mg/kg	3.87E-09	3.87E-09	mg/kg-day	6.00E-03	mg/kg-day	6.46E-07	6.46E-07
	ENDOSULFAN SULFATE	0.003	mg/kg	2.91E-09	2.91E-09	mg/kg-day	6.00E-03	mg/kg-day	4.84E-07	4.84E-07
	ENDRIN	0.02	mg/kg	1.94E-08	1.94E-08	mg/kg-day	3.00E-04	mg/kg-day	6.46E-05	6.46E-05
	ENDRIN ALDEHYDE	0.006	mg/kg	5.81E-09	5.81E-09	mg/kg-day	3.00E-04	mg/kg-day	1.94E-05	1.94E-05
	ENDRIN KETONE	0.003	mg/kg	2.91E-09	2.91E-09	mg/kg-day	3.00E-04	mg/kg-day	9.69E-06	9.69E-06
	GAMMA-CHLORDANE	0.0085	mg/kg	3.29E-09	3.29E-09	mg/kg-day	5.00E-04	mg/kg-day	6.59E-06	6.59E-06
	HEPTACHLOR	0.0002	mg/kg	1.94E-10	1.94E-10	mg/kg-day	5.00E-04	mg/kg-day	3.87E-07	3.87E-07
	HEPTACHLOR EPOXIDE	0.0003	mg/kg	2.91E-10	2.91E-10	mg/kg-day	1.30E-05	mg/kg-day	2.24E-05	2.24E-05
	HEXACHLOROBENZENE	0.0008	mg/kg	7.75E-10	7.75E-10	mg/kg-day	8.00E-04	mg/kg-day	9.69E-07	9.69E-07
	METHOXYCHLOR	0.02	mg/kg	7.75E-09	7.75E-09	mg/kg-day	5.00E-03	mg/kg-day	1.55E-06	1.55E-06
	MIREX	0.004	mg/kg	3.87E-09	3.87E-09	mg/kg-day	2.00E-04	mg/kg-day	1.94E-05	1.94E-05
	TRANS-NONACHLOR	0.0024	mg/kg	9.30E-10	9.30E-10	mg/kg-day	5.00E-04	mg/kg-day	1.86E-06	1.86E-06
	PCBs									
	PCBs (TOTAL)	0.16	mg/kg	2.17E-07	2.17E-07	mg/kg-day	2.00E-05	mg/kg-day	1.08E-02	1.08E-02

Table C2-6c
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
DERMAL CONTACT (CONTINUED)	**SVOCs**									
	ACENAPHTHENE	0.13	mg/kg	1.64E-07	1.64E-07	mg/kg-day	6.00E-02	mg/kg-day	2.73E-06	2.73E-06
	ACENAPHTHYLENE	0.12	mg/kg	1.51E-07	1.51E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	ANTHRACENE	0.13	mg/kg	1.64E-07	1.64E-07	mg/kg-day	3.00E-01	mg/kg-day	5.46E-07	5.46E-07
	BENZO(A)ANTHRACENE	0.28	mg/kg	3.53E-07	3.53E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(A)PYRENE	0.24	mg/kg	3.02E-07	3.02E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(B)FLUORANTHENE	0.24	mg/kg	3.02E-07	3.02E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(G,H,I)PERYLENE	0.16	mg/kg	2.01E-07	2.01E-07	mg/kg-day	4.00E-02	mg/kg-day	5.04E-06	5.04E-06
	BENZO(K)FLUORANTHENE	0.24	mg/kg	3.02E-07	3.02E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZOIC ACID	0.68	mg/kg	6.59E-07	6.59E-07	mg/kg-day	4.00E+00	mg/kg-day	1.65E-07	1.65E-07
	BIS(2-ETHYLHEXYL)PHTHALATE	1.1	mg/kg	1.07E-06	1.07E-06	mg/kg-day	2.00E-02	mg/kg-day	5.33E-05	5.33E-05
	BUTYLBENZYLPHTHALATE	0.025	mg/kg	2.42E-08	2.42E-08	mg/kg-day	2.00E-01	mg/kg-day	1.21E-07	1.21E-07
	CARBAZOLE	0.55	mg/kg	5.33E-07	5.33E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	4- CHLOROANILINE	0.003	mg/kg	2.91E-09	2.91E-09	mg/kg-day	4.00E-03	mg/kg-day	7.27E-07	7.27E-07
	2- CHLOROPHENOL	0.043	mg/kg	4.19E-08	4.19E-08	mg/kg-day	5.00E-03	mg/kg-day	8.39E-06	8.39E-06
	CHRYSENE	0.27	mg/kg	3.40E-07	3.40E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	DIBENZOFURAN	0.36	mg/kg	3.49E-07	3.49E-07	mg/kg-day	2.00E-03	mg/kg-day	1.74E-04	1.74E-04
	3,3- DICHLOROBENZIDINE	0.012	mg/kg	1.16E-08	1.16E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	2,6- DINITROTOLUENE	0.37	mg/kg	3.58E-07	3.58E-07	mg/kg-day	1.00E-03	mg/kg-day	3.58E-04	3.58E-04
	FLUORANTHENE	0.380	mg/kg	4.79E-07	4.79E-07	mg/kg-day	4.00E-02	mg/kg-day	1.20E-05	1.20E-05
	FLUORENE	0.1	mg/kg	1.64E-07	1.64E-07	mg/kg-day	4.00E-02	mg/kg-day	4.09E-06	4.09E-06
	INDENO(1,2,3-CD)PYRENE	0.16	mg/kg	2.01E-07	2.01E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	2- METHYLNAPHTHALENE	0.18	mg/kg	1.74E-07	1.74E-07	mg/kg-day	4.00E-03	mg/kg-day	4.36E-05	4.36E-05
	4- METHYLPHENOL	0.23	mg/kg	2.23E-07	2.23E-07	mg/kg-day	5.00E-03	mg/kg-day	4.46E-05	4.46E-05
	NAPHTHALENE	0.11	mg/kg	1.39E-07	1.39E-07	mg/kg-day	2.00E-02	mg/kg-day	6.93E-06	6.93E-06
	PENTACHLOROPHENOL	0.54	mg/kg	5.23E-07	5.23E-07	mg/kg-day	3.00E-02	mg/kg-day	1.74E-05	1.74E-05
	PHENANTHRENE	0.20	mg/kg	2.52E-07	2.52E-07	mg/kg-day	3.00E-01	mg/kg-day	8.40E-07	8.40E-07
	PHENOL	0.29	mg/kg	2.81E-07	2.81E-07	mg/kg-day	6.00E-01	mg/kg-day	4.68E-07	4.68E-07

Table C2-6c
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
DERMAL CONTACT (CONTINUED)	*PYRENE*	0.430	mg/kg	5.41E-07	5.41E-07	mg/kg-day	3.00E-02	mg/kg-day	1.80E-05	1.80E-05
	TPH									
	TPH AS DIESEL	177	mg/kg	NA	NA	mg/kg-day	NA	mg/kg-day	NA	NA
	TPH AS GASOLINE	4.2	mg/kg	NA	NA	mg/kg-day	NA	mg/kg-day	NA	NA
	TPH AS MOTOR OIL	313	mg/kg	NA	NA	mg/kg-day	NA	mg/kg-day	NA	NA
	VOCs									
	ACETONE	0.32	mg/kg	NA	NA	mg/kg-day	9.00E-01	mg/kg-day	NA	NA
	BENZENE	0.005	mg/kg	NA	NA	mg/kg-day	4.00E-03	mg/kg-day	NA	NA
	CARBON DISULFIDE	0.025	mg/kg	NA	NA	mg/kg-day	1.00E-01	mg/kg-day	NA	NA
	CHLOROBENZENE	0.024	mg/kg	NA	NA	mg/kg-day	2.00E-02	mg/kg-day	NA	NA
	CIS-1,2-DICHLOROETHENE	0.052	mg/kg	NA	NA	mg/kg-day	1.00E-02	mg/kg-day	NA	NA
	ETHYLBENZENE	0.044	mg/kg	NA	NA	mg/kg-day	1.00E-01	mg/kg-day	NA	NA
	4- ISOPROPYLTOLUENE	0.007	mg/kg	NA	NA	mg/kg-day	NA	mg/kg-day	NA	NA
	METHYLENE CHLORIDE	0.3	mg/kg	NA	NA	mg/kg-day	6.00E-02	mg/kg-day	NA	NA
	NAPHTHALENE	0.016	mg/kg	NA	NA	mg/kg-day	2.00E-02	mg/kg-day	NA	NA
	TOLUENE	0.03	mg/kg	NA	NA	mg/kg-day	2.00E-01	mg/kg-day	NA	NA
	TRANS-1,2-DICHLOROETHENE	0.023	mg/kg	NA	NA	mg/kg-day	2.00E-02	mg/kg-day	NA	NA
	TRICHLOROETHENE	0.007	mg/kg	NA	NA	mg/kg-day	3.00E-04	mg/kg-day	NA	NA
	1,2,4- TRIMETHYLBENZENE	0.025	mg/kg	NA	NA	mg/kg-day	5.00E-02	mg/kg-day	NA	NA
	1,3,5- TRIMETHYLBENZENE	0.009	mg/kg	NA	NA	mg/kg-day	5.00E-02	mg/kg-day	NA	NA
	VINYL CHLORIDE	0.034	mg/kg	NA	NA	mg/kg-day	3.00E-03	mg/kg-day	NA	NA
	XYLENE (TOTAL)	0.11	mg/kg	NA	NA	mg/kg-day	2.00E-01	mg/kg-day	NA	NA
INHALATION OF PARTICULATES AND VAPORS	**INORGANICS**									
	ALUMINUM	26,758	mg/kg	1.60E-04	8.30E-05	mg/kg-day	1.40E-03	mg/kg-day	1.14E-01	5.93E-02
	ANTIMONY	4.5	mg/kg	2.68E-08	1.40E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	ARSENIC	21.3	mg/kg	1.27E-07	6.61E-08	mg/kg-day	8.57E-06	mg/kg-day	1.48E-02	7.72E-03
	BARIUM	93.6	mg/kg	5.58E-07	2.90E-07	mg/kg-day	1.43E-04	mg/kg-day	3.91E-03	2.03E-03
	BERYLLIUM	0.65	mg/kg	3.88E-09	2.02E-09	mg/kg-day	2.00E-06	mg/kg-day	1.94E-03	1.01E-03

Table C2-6c
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
INHALATION OF PARTICULATES AND VAPORS (CONTINUED)	*CADMIUM*	2.90	mg/kg	1.73E-08	9.00E-09	mg/kg-day	5.71E-06	mg/kg-day	3.03E-03	1.58E-03
	CHROMIUM	215	mg/kg	1.28E-06	6.67E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	COBALT	18.4	mg/kg	1.10E-07	5.71E-08	mg/kg-day	5.70E-06	mg/kg-day	1.93E-02	1.00E-02
	COPPER	194	mg/kg	1.16E-06	6.02E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	HEXAVALENT CHROMIUM	0.07	mg/kg	4.18E-10	2.17E-10	mg/kg-day	2.86E-05	mg/kg-day	1.46E-05	7.59E-06
	LEAD	94	mg/kg	5.61E-07	2.92E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	MANGANESE	907	mg/kg	5.41E-06	2.81E-06	mg/kg-day	1.43E-05	mg/kg-day	3.78E-01	1.97E-01
	MERCURY	1.4	mg/kg	8.35E-09	4.34E-09	mg/kg-day	2.57E-05	mg/kg-day	3.25E-04	1.69E-04
	MOLYBDENUM	5.1	mg/kg	3.04E-08	1.58E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	NICKEL	113	mg/kg	6.74E-07	3.51E-07	mg/kg-day	1.43E-05	mg/kg-day	4.72E-02	2.46E-02
	SELENIUM	1.2	mg/kg	7.16E-09	3.72E-09	mg/kg-day	5.71E-03	mg/kg-day	1.25E-06	6.52E-07
	SILVER	2.8	mg/kg	1.67E-08	8.69E-09	mg/kg-day	NA	mg/kg-day	NA	NA
	THALLIUM	0.47	mg/kg	2.80E-09	1.46E-09	mg/kg-day	NA	mg/kg-day	NA	NA
	TIN	16.3	mg/kg	9.73E-08	5.06E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	VANADIUM	117	mg/kg	6.98E-07	3.63E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	ZINC	235	mg/kg	1.40E-06	7.29E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	PESTICIDES									
	ALPHA-CHLORDANE	0.0082	mg/kg	4.89E-11	2.54E-11	mg/kg-day	2.00E-04	mg/kg-day	2.45E-07	1.27E-07
	BETA BHC	0.001	mg/kg	5.97E-12	3.10E-12	mg/kg-day	2.00E-04	mg/kg-day	2.98E-08	1.55E-08
	DELTA BHC	0.002	mg/kg	1.19E-11	6.20E-12	mg/kg-day	NA	mg/kg-day	NA	NA
	2,4- DDD	0.029	mg/kg	1.73E-10	9.00E-11	mg/kg-day	5.00E-04	mg/kg-day	3.46E-07	1.80E-07
	4,4- DDD	0.086	mg/kg	5.13E-10	2.67E-10	mg/kg-day	5.00E-04	mg/kg-day	1.03E-06	5.34E-07
	4,4- DDE	0.017	mg/kg	1.01E-10	5.27E-11	mg/kg-day	5.00E-04	mg/kg-day	2.03E-07	1.05E-07
	4,4- DDT	0.012	mg/kg	7.16E-11	3.72E-11	mg/kg-day	5.00E-04	mg/kg-day	1.43E-07	7.45E-08
	DIELDRIN	0.0039	mg/kg	2.33E-11	1.21E-11	mg/kg-day	5.00E-05	mg/kg-day	4.65E-07	2.42E-07
	ENDOSULFAN I	0.004	mg/kg	2.39E-11	1.24E-11	mg/kg-day	6.00E-03	mg/kg-day	3.98E-09	2.07E-09
	ENDOSULFAN SULFATE	0.003	mg/kg	1.79E-11	9.31E-12	mg/kg-day	6.00E-03	mg/kg-day	2.98E-09	1.55E-09
	ENDRIN	0.02	mg/kg	1.19E-10	6.20E-11	mg/kg-day	3.00E-04	mg/kg-day	3.98E-07	2.07E-07

Table C2-6c
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
INHALATION OF PARTICULATES AND VAPORS (CONTINUED)	ENDRIN ALDEHYDE	0.006	mg/kg	3.58E-11	1.86E-11	mg/kg-day	3.00E-04	mg/kg-day	1.19E-07	6.20E-08
	ENDRIN KETONE	0.003	mg/kg	1.79E-11	9.31E-12	mg/kg-day	3.00E-04	mg/kg-day	5.97E-08	3.10E-08
	GAMMA-CHLORDANE	0.0085	mg/kg	5.07E-11	2.64E-11	mg/kg-day	2.00E-04	mg/kg-day	2.54E-07	1.32E-07
	HEPTACHLOR	0.0002	mg/kg	1.19E-12	6.20E-13	mg/kg-day	5.00E-04	mg/kg-day	2.39E-09	1.24E-09
	HEPTACHLOR EPOXIDE	0.0003	mg/kg	1.79E-12	9.31E-13	mg/kg-day	1.30E-05	mg/kg-day	1.38E-07	7.16E-08
	HEXACHLOROBENZENE	0.0008	mg/kg	4.77E-12	2.48E-12	mg/kg-day	8.00E-04	mg/kg-day	5.97E-09	3.10E-09
	METHOXYCHLOR	0.02	mg/kg	1.19E-10	6.20E-11	mg/kg-day	5.00E-03	mg/kg-day	2.39E-08	1.24E-08
	MIREX	0.004	mg/kg	2.39E-11	1.24E-11	mg/kg-day	2.00E-04	mg/kg-day	1.19E-07	6.20E-08
	TRANS-NONACHLOR	0.0024	mg/kg	1.43E-11	7.45E-12	mg/kg-day	2.00E-04	mg/kg-day	7.16E-08	3.72E-08
	PCBs									
	PCBs (TOTAL)	0.16	mg/kg	9.55E-10	4.96E-10	mg/kg-day	2.00E-05	mg/kg-day	4.77E-05	2.48E-05
	SVOCs									
	ACENAPHTHENE	0.13	mg/kg	1.41E-07	7.35E-08	mg/kg-day	6.00E-02	mg/kg-day	2.36E-06	1.22E-06
	ACENAPHTHYLENE	0.12	mg/kg	7.16E-10	3.72E-10	mg/kg-day	NA	mg/kg-day	NA	NA
	ANTHRACENE	0.13	mg/kg	3.63E-08	1.89E-08	mg/kg-day	3.00E-01	mg/kg-day	1.21E-07	6.30E-08
	BENZO(A)ANTHRACENE	0.28	mg/kg	1.67E-09	8.69E-10	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(A)PYRENE	0.24	mg/kg	1.43E-09	7.45E-10	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(B)FLUORANTHENE	0.24	mg/kg	1.43E-09	7.45E-10	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(G,H,I)PERYLENE	0.16	mg/kg	9.55E-10	4.96E-10	mg/kg-day	4.00E-02	mg/kg-day	2.39E-08	1.24E-08
	BENZO(K)FLUORANTHENE	0.24	mg/kg	1.43E-09	7.45E-10	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZOIC ACID	0.68	mg/kg	4.06E-09	2.11E-09	mg/kg-day	4.00E+00	mg/kg-day	1.01E-09	5.27E-10
	BIS(2-ETHYLHEXYL)PHTHALATE	1.1	mg/kg	6.56E-09	3.41E-09	mg/kg-day	2.00E-02	mg/kg-day	3.28E-07	1.71E-07
	BUTYLBENZYLPHTHALATE	0.025	mg/kg	1.49E-10	7.76E-11	mg/kg-day	2.00E-01	mg/kg-day	7.46E-10	3.88E-10
	CARBAZOLE	0.55	mg/kg	3.28E-09	1.71E-09	mg/kg-day	NA	mg/kg-day	NA	NA
	4- CHLOROANILINE	0.003	mg/kg	1.79E-11	9.31E-12	mg/kg-day	4.00E-03	mg/kg-day	4.47E-09	2.33E-09
	2- CHLOROPHENOL	0.043	mg/kg	2.58E-10	1.34E-10	mg/kg-day	5.00E-03	mg/kg-day	5.17E-08	2.69E-08
	CHRYSENE	0.27	mg/kg	1.96E-08	1.02E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	DIBENZOFURAN	0.36	mg/kg	2.15E-09	1.12E-09	mg/kg-day	2.00E-03	mg/kg-day	1.07E-06	5.58E-07

Table C2-6c
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
INHALATION OF PARTICULATES AND VAPORS (CONTINUED)	3,3- DICHLOROBENZIDINE	0.012	mg/kg	7.16E-11	3.72E-11	mg/kg-day	NA	mg/kg-day	NA	NA
	2,6- DINITROTOLUENE	0.37	mg/kg	2.21E-09	1.15E-09	mg/kg-day	1.00E-03	mg/kg-day	2.21E-06	1.15E-06
	FLUORANTHENE	0.380	mg/kg	2.27E-09	1.18E-09	mg/kg-day	4.00E-02	mg/kg-day	5.67E-08	2.95E-08
	FLUORENE	0.1	mg/kg	7.07E-08	3.67E-08	mg/kg-day	4.00E-02	mg/kg-day	1.77E-06	9.19E-07
	INDENO(1,2,3-CD)PYRENE	0.16	mg/kg	9.55E-10	4.96E-10	mg/kg-day	NA	mg/kg-day	NA	NA
	2- METHYLNAPHTHALENE	0.18	mg/kg	1.07E-09	5.58E-10	mg/kg-day	NA	mg/kg-day	NA	NA
	4- METHYLPHENOL	0.23	mg/kg	1.37E-09	7.14E-10	mg/kg-day	NA	mg/kg-day	NA	NA
	NAPHTHALENE	0.11	mg/kg	5.01E-07	2.60E-07	mg/kg-day	8.57E-04	mg/kg-day	5.84E-04	3.04E-04
	PENTACHLOROPHENOL	0.54	mg/kg	3.22E-09	1.68E-09	mg/kg-day	3.00E-02	mg/kg-day	1.07E-07	5.58E-08
	PHENANTHRENE	0.20	mg/kg	1.19E-09	6.20E-10	mg/kg-day	3.00E-01	mg/kg-day	3.98E-09	2.07E-09
	PHENOL	0.29	mg/kg	1.73E-09	9.00E-10	mg/kg-day	5.71E-02	mg/kg-day	3.03E-08	1.58E-08
	PYRENE	0.430	mg/kg	2.21E-08	1.15E-08	mg/kg-day	3.00E-02	mg/kg-day	7.38E-07	3.84E-07
	TPH									
	TPH AS DIESEL	177	mg/kg	1.06E-06	5.49E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	TPH AS GASOLINE	4.2	mg/kg	2.51E-08	1.30E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	TPH AS MOTOR OIL	313	mg/kg	1.87E-06	9.71E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	VOCs									
	ACETONE	0.32	mg/kg	4.82E-06	2.50E-06	mg/kg-day	9.00E-01	mg/kg-day	5.35E-06	2.78E-06
	BENZENE	0.005	mg/kg	3.62E-07	1.88E-07	mg/kg-day	8.57E-03	mg/kg-day	4.23E-05	2.20E-05
	CARBON DISULFIDE	0.025	mg/kg	4.08E-06	2.12E-06	mg/kg-day	2.00E-01	mg/kg-day	2.04E-05	1.06E-05
	CHLOROBENZENE	0.024	mg/kg	7.46E-07	3.88E-07	mg/kg-day	5.71E-03	mg/kg-day	1.31E-04	6.79E-05
	CIS-1,2-DICHLOROETHENE	0.052	mg/kg	3.51E-06	1.82E-06	mg/kg-day	1.00E-02	mg/kg-day	3.51E-04	1.82E-04
	ETHYLBENZENE	0.044	mg/kg	1.59E-06	8.29E-07	mg/kg-day	2.86E-01	mg/kg-day	5.58E-06	2.90E-06
	4- ISOPROPYLTOLUENE	0.007	mg/kg	NA	NA	mg/kg-day	NA	mg/kg-day	NA	NA
	METHYLENE CHLORIDE	0.3	mg/kg	2.35E-05	1.22E-05	mg/kg-day	1.14E-01	mg/kg-day	2.06E-04	1.07E-04
	NAPHTHALENE	0.016	mg/kg	7.28E-08	3.79E-08	mg/kg-day	8.57E-04	mg/kg-day	8.50E-05	4.42E-05
	TOLUENE	0.03	mg/kg	1.47E-06	7.63E-07	mg/kg-day	8.57E-02	mg/kg-day	1.71E-05	8.91E-06
	TRANS-1,2-DICHLOROETHENE	0.023	mg/kg	1.96E-06	1.02E-06	mg/kg-day	2.00E-02	mg/kg-day	9.78E-05	5.09E-05

Table C2-6c
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
INHALATION OF PARTICULATES AND VAPORS (CONTINUED)	TRICHLOROETHENE	0.007	mg/kg	4.15E-07	2.16E-07	mg/kg-day	1.00E-02	mg/kg-day	4.15E-05	2.16E-05
	1,2,4- TRIMETHYLBENZENE	0.025	mg/kg	2.45E-07	1.27E-07	mg/kg-day	1.70E-03	mg/kg-day	1.44E-04	7.48E-05
	1,3,5- TRIMETHYLBENZENE	0.009	mg/kg	2.27E-07	1.18E-07	mg/kg-day	1.70E-03	mg/kg-day	1.34E-04	6.96E-05
	VINYL CHLORIDE	0.034	mg/kg	6.65E-06	3.46E-06	mg/kg-day	2.86E-02	mg/kg-day	2.33E-04	1.21E-04
	XYLENE (TOTAL)	0.11	mg/kg	3.53E-06	1.84E-06	mg/kg-day	2.86E-02	mg/kg-day	1.23E-04	6.42E-05

Notes:
The HQ for chemicals that are italicized and underlined have been modified for post remediation residual risk.
CTE = Central Tendency Exposure
EPC = Exposure point concentration
HQ = Hazard Quotient
mg/kg = milligrams per kilogram
mg/kg-day = milligrams per kilogram per day
NA = Not Applicable
PCBs = Polychlorinated Biphenyls
RfD = Reference Dose
RME = Reasonable Maximum Exposure
SVOCs = Semivolatile Organic Compounds
TPH = Total Petroleum Hydrocarbons
VOCs = Volatile Organic Compounds

Table C2-6d
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INGESTION	**INORGANICS**									
	ALUMINUM	26,758	mg/kg	7.10E-03	2.96E-03	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ANTIMONY	4.5	mg/kg	1.19E-06	4.98E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ARSENIC	21.3	mg/kg	5.65E-06	2.36E-06	mg/kg-day	9.45E+00	$(mg/kg\text{-}day)^{-1}$	5.34E-05	2.23E-05
	BARIUM	93.6	mg/kg	2.48E-05	1.04E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BERYLLIUM	0.65	mg/kg	1.73E-07	7.19E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CADMIUM	2.90	mg/kg	7.70E-07	3.21E-07	mg/kg-day	3.80E-01	$(mg/kg\text{-}day)^{-1}$	2.92E-07	1.22E-07
	CHROMIUM	215	mg/kg	5.71E-05	2.38E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	COBALT	18.4	mg/kg	4.88E-06	2.03E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	COPPER	194	mg/kg	5.15E-05	2.15E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	HEXAVALENT CHROMIUM	0.07	mg/kg	1.86E-08	7.74E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	LEAD	94	mg/kg	2.49E-05	1.04E-05	mg/kg-day	8.50E-03	$(mg/kg\text{-}day)^{-1}$	2.12E-07	8.84E-08
	MANGANESE	907	mg/kg	2.41E-04	1.00E-04	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MERCURY	1.4	mg/kg	3.72E-07	1.55E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MOLYBDENUM	5.1	mg/kg	1.35E-06	5.64E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	NICKEL	113	mg/kg	3.00E-05	1.25E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	SELENIUM	1.2	mg/kg	3.18E-07	1.33E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	SILVER	2.8	mg/kg	7.43E-07	3.10E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	THALLIUM	0.47	mg/kg	1.25E-07	5.20E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TIN	16.3	mg/kg	4.33E-06	1.80E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	VANADIUM	117	mg/kg	3.11E-05	1.29E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ZINC	235	mg/kg	6.24E-05	2.60E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

Table C2-6d
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INGESTION (CONTINUED)	**PESTICIDES**									
	ALPHA-CHLORDANE	0.0082	mg/kg	2.18E-09	9.07E-10	mg/kg-day	1.30E+00	$(mg/kg\text{-}day)^{-1}$	2.83E-09	1.18E-09
	BETA BHC	0.001	mg/kg	2.65E-10	1.11E-10	mg/kg-day	1.80E+00	$(mg/kg\text{-}day)^{-1}$	4.78E-10	1.99E-10
	DELTA BHC	0.002	mg/kg	5.31E-10	2.21E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	2,4- DDD	0.029	mg/kg	7.70E-09	3.21E-09	mg/kg-day	2.40E-01	$(mg/kg\text{-}day)^{-1}$	1.85E-09	7.70E-10
	4,4- DDD	0.086	mg/kg	2.28E-08	9.51E-09	mg/kg-day	2.40E-01	$(mg/kg\text{-}day)^{-1}$	5.48E-09	2.28E-09
	4,4- DDE	0.017	mg/kg	4.51E-09	1.88E-09	mg/kg-day	3.40E-01	$(mg/kg\text{-}day)^{-1}$	1.53E-09	6.39E-10
	4,4- DDT	0.012	mg/kg	3.18E-09	1.33E-09	mg/kg-day	3.40E-01	$(mg/kg\text{-}day)^{-1}$	1.08E-09	4.51E-10
	DIELDRIN	0.0039	mg/kg	1.04E-09	4.31E-10	mg/kg-day	1.60E+01	$(mg/kg\text{-}day)^{-1}$	1.66E-08	6.90E-09
	ENDOSULFAN I	0.004	mg/kg	1.06E-09	4.42E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDOSULFAN SULFATE	0.003	mg/kg	7.96E-10	3.32E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN	0.02	mg/kg	5.31E-09	2.21E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN ALDEHYDE	0.006	mg/kg	1.59E-09	6.64E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN KETONE	0.003	mg/kg	7.96E-10	3.32E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	GAMMA-CHLORDANE	0.0085	mg/kg	2.26E-09	9.40E-10	mg/kg-day	1.30E+00	$(mg/kg\text{-}day)^{-1}$	2.93E-09	1.22E-09
	HEPTACHLOR	0.0002	mg/kg	5.31E-11	2.21E-11	mg/kg-day	4.50E+00	$(mg/kg\text{-}day)^{-1}$	2.39E-10	9.95E-11
	HEPTACHLOR EPOXIDE	0.0003	mg/kg	7.96E-11	3.32E-11	mg/kg-day	9.10E+00	$(mg/kg\text{-}day)^{-1}$	7.25E-10	3.02E-10
	HEXACHLOROBENZENE	0.0008	mg/kg	2.12E-10	8.85E-11	mg/kg-day	1.80E+00	$(mg/kg\text{-}day)^{-1}$	3.82E-10	1.59E-10
	METHOXYCHLOR	0.02	mg/kg	5.31E-09	2.21E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MIREX	0.004	mg/kg	1.06E-09	4.42E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TRANS-NONACHLOR	0.0024	mg/kg	6.37E-10	2.65E-10	mg/kg-day	1.30E+00	$(mg/kg\text{-}day)^{-1}$	8.28E-10	3.45E-10
	PCBs									
	PCBs (TOTAL)	0.16	mg/kg	4.25E-08	1.77E-08	mg/kg-day	5.00E+00	$(mg/kg\text{-}day)^{-1}$	2.12E-07	8.85E-08

Table C2-6d
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INGESTION (CONTINUED)	**SVOCs**									
	ACENAPHTHENE	0.13	mg/kg	3.45E-08	1.44E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ACENAPHTHYLENE	0.12	mg/kg	3.18E-08	1.33E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ANTHRACENE	0.13	mg/kg	3.45E-08	1.44E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BENZO(A)ANTHRACENE	0.28	mg/kg	7.43E-08	3.10E-08	mg/kg-day	1.20E+00	$(mg/kg\text{-}day)^{-1}$	8.92E-08	3.72E-08
	BENZO(A)PYRENE	0.24	mg/kg	6.37E-08	2.65E-08	mg/kg-day	1.20E+01	$(mg/kg\text{-}day)^{-1}$	7.64E-07	3.18E-07
	BENZO(B)FLUORANTHENE	0.24	mg/kg	6.37E-08	2.65E-08	mg/kg-day	1.20E+00	$(mg/kg\text{-}day)^{-1}$	7.64E-08	3.18E-08
	BENZO(G,H,I)PERYLENE	0.16	mg/kg	4.25E-08	1.77E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BENZO(K)FLUORANTHENE	0.24	mg/kg	6.37E-08	2.65E-08	mg/kg-day	1.20E+00	$(mg/kg\text{-}day)^{-1}$	7.64E-08	3.18E-08
	BENZOIC ACID	0.68	mg/kg	1.80E-07	7.52E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BIS(2-ETHYLHEXYL)PHTHALATE	1.1	mg/kg	2.92E-07	1.22E-07	mg/kg-day	1.40E-02	$(mg/kg\text{-}day)^{-1}$	4.09E-09	1.70E-09
	BUTYLBENZYLPHTHALATE	0.025	mg/kg	6.64E-09	2.76E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CARBAZOLE	0.55	mg/kg	1.46E-07	6.08E-08	mg/kg-day	2.00E-02	$(mg/kg\text{-}day)^{-1}$	2.92E-09	1.22E-09
	4- CHLOROANILINE	0.003	mg/kg	7.96E-10	3.32E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	2- CHLOROPHENOL	0.043	mg/kg	1.15E-08	4.79E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CHRYSENE	0.27	mg/kg	7.17E-08	2.99E-08	mg/kg-day	1.20E-01	$(mg/kg\text{-}day)^{-1}$	8.60E-09	3.58E-09
	DIBENZOFURAN	0.36	mg/kg	9.55E-08	3.98E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	3,3- DICHLOROBENZIDINE	0.012	mg/kg	3.18E-09	1.33E-09	mg/kg-day	4.50E-01	$(mg/kg\text{-}day)^{-1}$	1.43E-09	5.97E-10
	2,6- DINITROTOLUENE	0.37	mg/kg	9.82E-08	4.09E-08	mg/kg-day	6.10E-01	$(mg/kg\text{-}day)^{-1}$	5.99E-08	2.50E-08
	FLUORANTHENE	0.380	mg/kg	1.01E-07	4.20E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	FLUORENE	0.1	mg/kg	3.45E-08	1.44E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	INDENO(1,2,3-CD)PYRENE	0.16	mg/kg	4.25E-08	1.77E-08	mg/kg-day	1.20E+00	$(mg/kg\text{-}day)^{-1}$	5.10E-08	2.12E-08
	2- METHYLNAPHTHALENE	0.18	mg/kg	4.78E-08	1.99E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

Table C2-6d
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INGESTION (CONTINUED)	4- METHYLPHENOL	0.23	mg/kg	6.10E-08	2.54E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	NAPHTHALENE	0.11	mg/kg	2.92E-08	1.22E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PENTACHLOROPHENOL	0.54	mg/kg	1.43E-07	5.97E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PHENANTHRENE	0.20	mg/kg	5.31E-08	2.21E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PHENOL	0.29	mg/kg	7.70E-08	3.21E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PYRENE	0.430	mg/kg	1.14E-07	4.76E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TPH									
	TPH AS DIESEL	177	mg/kg	4.70E-05	1.96E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TPH AS GASOLINE	4.2	mg/kg	1.11E-06	4.64E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TPH AS MOTOR OIL	313	mg/kg	8.31E-05	3.46E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	VOCs									
	ACETONE	0.32	mg/kg	8.49E-08	3.54E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BENZENE	0.005	mg/kg	1.33E-09	5.53E-10	mg/kg-day	1.00E-01	$(mg/kg\text{-}day)^{-1}$	1.33E-10	5.53E-11
	CARBON DISULFIDE	0.025	mg/kg	6.64E-09	2.76E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CHLOROBENZENE	0.024	mg/kg	6.37E-09	2.65E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CIS-1,2-DICHLOROETHENE	0.052	mg/kg	1.38E-08	5.75E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ETHYLBENZENE	0.044	mg/kg	1.17E-08	4.87E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	4- ISOPROPYLTOLUENE	0.007	mg/kg	1.91E-09	7.96E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	METHYLENE CHLORIDE	0.3	mg/kg	7.96E-08	3.32E-08	mg/kg-day	1.40E-02	$(mg/kg\text{-}day)^{-1}$	1.11E-09	4.64E-10
	NAPHTHALENE	0.016	mg/kg	4.25E-09	1.77E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TOLUENE	0.03	mg/kg	7.96E-09	3.32E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TRANS-1,2-DICHLOROETHENE	0.023	mg/kg	6.10E-09	2.54E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TRICHLOROETHENE	0.007	mg/kg	1.86E-09	7.74E-10	mg/kg-day	4.10E-01	$(mg/kg\text{-}day)^{-1}$	7.62E-10	3.17E-10

Table C2-6d
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INGESTION (CONTINUED)	1,2,4- TRIMETHYLBENZENE	0.025	mg/kg	6.64E-09	2.76E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	1,3,5- TRIMETHYLBENZENE	0.009	mg/kg	2.47E-09	1.03E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	VINYL CHLORIDE	0.034	mg/kg	9.02E-09	3.76E-09	mg/kg-day	1.50E+00	$(mg/kg\text{-}day)^{-1}$	1.35E-08	5.64E-09
	XYLENE (TOTAL)	0.11	mg/kg	2.92E-08	1.22E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
DERMAL CONTACT	**INORGANICS**									
	ALUMINUM	26,758	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ANTIMONY	4.5	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ARSENIC	21.3	mg/kg	7.78E-07	3.24E-07	mg/kg-day	9.45E+00	$(mg/kg\text{-}day)^{-1}$	7.36E-06	3.07E-06
	BARIUM	93.6	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BERYLLIUM	0.65	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CADMIUM	2.90	mg/kg	3.53E-09	1.47E-09	mg/kg-day	1.52E+01	$(mg/kg\text{-}day)^{-1}$	5.37E-08	2.24E-08
	CHROMIUM	215	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	COBALT	18.4	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	COPPER	194	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	HEXAVALENT CHROMIUM	0.07	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	LEAD	94	mg/kg	NA	NA	mg/kg-day	8.50E-03	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MANGANESE	907	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MERCURY	1.4	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MOLYBDENUM	5.1	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	NICKEL	113	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	SELENIUM	1.2	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	SILVER	2.8	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	THALLIUM	0.47	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

Table C2-6d
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
DERMAL CONTACT (CONTINUED)	*TIN*	16.3	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	VANADIUM	117	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ZINC	235	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PESTICIDES									
	ALPHA-CHLORDANE	0.0082	mg/kg	4.00E-10	1.66E-10	mg/kg-day	1.30E+00	$(mg/kg\text{-}day)^{-1}$	5.19E-10	2.16E-10
	BETA BHC	0.001	mg/kg	4.87E-11	2.03E-11	mg/kg-day	1.80E+00	$(mg/kg\text{-}day)^{-1}$	8.77E-11	3.65E-11
	DELTA BHC	0.002	mg/kg	9.75E-11	4.06E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	2,4- DDD	0.029	mg/kg	1.06E-09	4.42E-10	mg/kg-day	2.40E-01	$(mg/kg\text{-}day)^{-1}$	2.54E-10	1.06E-10
	4,4- DDD	0.086	mg/kg	3.14E-09	1.31E-09	mg/kg-day	2.40E-01	$(mg/kg\text{-}day)^{-1}$	7.54E-10	3.14E-10
	4,4- DDE	0.017	mg/kg	6.21E-10	2.59E-10	mg/kg-day	3.40E-01	$(mg/kg\text{-}day)^{-1}$	2.11E-10	8.80E-11
	4,4- DDT	0.012	mg/kg	4.39E-10	1.83E-10	mg/kg-day	3.40E-01	$(mg/kg\text{-}day)^{-1}$	1.49E-10	6.21E-11
	DIELDRIN	0.0039	mg/kg	4.75E-10	1.98E-10	mg/kg-day	1.60E+01	$(mg/kg\text{-}day)^{-1}$	7.60E-09	3.17E-09
	ENDOSULFAN I	0.004	mg/kg	4.87E-10	2.03E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDOSULFAN SULFATE	0.003	mg/kg	3.65E-10	1.52E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN	0.02	mg/kg	2.44E-09	1.02E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN ALDEHYDE	0.006	mg/kg	7.31E-10	3.05E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN KETONE	0.003	mg/kg	3.65E-10	1.52E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	GAMMA-CHLORDANE	0.0085	mg/kg	4.14E-10	1.73E-10	mg/kg-day	1.30E+00	$(mg/kg\text{-}day)^{-1}$	5.38E-10	2.24E-10
	HEPTACHLOR	0.0002	mg/kg	2.44E-11	1.02E-11	mg/kg-day	4.50E+00	$(mg/kg\text{-}day)^{-1}$	1.10E-10	4.57E-11
	HEPTACHLOR EPOXIDE	0.0003	mg/kg	3.65E-11	1.52E-11	mg/kg-day	9.10E+00	$(mg/kg\text{-}day)^{-1}$	3.33E-10	1.39E-10
	HEXACHLOROBENZENE	0.0008	mg/kg	9.75E-11	4.06E-11	mg/kg-day	1.80E+00	$(mg/kg\text{-}day)^{-1}$	1.75E-10	7.31E-11
	METHOXYCHLOR	0.02	mg/kg	9.75E-10	4.06E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MIREX	0.004	mg/kg	4.87E-10	2.03E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

Table C2-6d
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
DERMAL CONTACT (CONTINUED)	TRANS-NONACHLOR	0.0024	mg/kg	1.17E-10	4.87E-11	mg/kg-day	1.30E+00	$(mg/kg\text{-}day)^{-1}$	1.52E-10	6.33E-11
	PCBs									
	PCBs (TOTAL)	0.16	mg/kg	2.73E-08	1.14E-08	mg/kg-day	5.00E+00	$(mg/kg\text{-}day)^{-1}$	1.36E-07	5.69E-08
	SVOCs									
	ACENAPHTHENE	0.13	mg/kg	2.06E-08	8.58E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ACENAPHTHYLENE	0.12	mg/kg	1.90E-08	7.92E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ANTHRACENE	0.13	mg/kg	2.06E-08	8.58E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BENZO(A)ANTHRACENE	0.28	mg/kg	4.43E-08	1.85E-08	mg/kg-day	1.20E+00	$(mg/kg\text{-}day)^{-1}$	5.32E-08	2.22E-08
	BENZO(A)PYRENE	0.24	mg/kg	3.80E-08	1.58E-08	mg/kg-day	1.20E+01	$(mg/kg\text{-}day)^{-1}$	4.56E-07	1.90E-07
	BENZO(B)FLUORANTHENE	0.24	mg/kg	3.80E-08	1.58E-08	mg/kg-day	1.20E+00	$(mg/kg\text{-}day)^{-1}$	4.56E-08	1.90E-08
	BENZO(G,H,I)PERYLENE	0.16	mg/kg	2.53E-08	1.06E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BENZO(K)FLUORANTHENE	0.24	mg/kg	3.80E-08	1.58E-08	mg/kg-day	1.20E+00	$(mg/kg\text{-}day)^{-1}$	4.56E-08	1.90E-08
	BENZOIC ACID	0.68	mg/kg	8.28E-08	3.45E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BIS(2-ETHYLHEXYL)PHTHALATE	1.1	mg/kg	1.34E-07	5.58E-08	mg/kg-day	1.40E-02	$(mg/kg\text{-}day)^{-1}$	1.88E-09	7.82E-10
	BUTYLBENZYLPHTHALATE	0.025	mg/kg	3.05E-09	1.27E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CARBAZOLE	0.55	mg/kg	6.70E-08	2.79E-08	mg/kg-day	2.00E-02	$(mg/kg\text{-}day)^{-1}$	1.34E-09	5.58E-10
	4- CHLOROANILINE	0.003	mg/kg	3.65E-10	1.52E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	2- CHLOROPHENOL	0.043	mg/kg	5.27E-09	2.20E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CHRYSENE	0.27	mg/kg	4.28E-08	1.78E-08	mg/kg-day	1.20E-01	$(mg/kg\text{-}day)^{-1}$	5.13E-09	2.14E-09
	DIBENZOFURAN	0.36	mg/kg	4.39E-08	1.83E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	3,3- DICHLOROBENZIDINE	0.012	mg/kg	1.46E-09	6.09E-10	mg/kg-day	4.50E-01	$(mg/kg\text{-}day)^{-1}$	6.58E-10	2.74E-10
	2,6- DINITROTOLUENE	0.37	mg/kg	4.51E-08	1.88E-08	mg/kg-day	6.10E-01	$(mg/kg\text{-}day)^{-1}$	2.75E-08	1.15E-08
	FLUORANTHENE	0.380	mg/kg	6.02E-08	2.51E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

Table C2-6d
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
DERMAL CONTACT (CONTINUED)	*FLUORENE*	0.1	mg/kg	2.06E-08	8.58E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	INDENO(1,2,3-CD)PYRENE	0.16	mg/kg	2.53E-08	1.06E-08	mg/kg-day	1.20E+00	$(mg/kg\text{-}day)^{-1}$	3.04E-08	1.27E-08
	2- METHYLNAPHTHALENE	0.18	mg/kg	2.19E-08	9.14E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	4- METHYLPHENOL	0.23	mg/kg	2.80E-08	1.17E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	NAPHTHALENE	0.11	mg/kg	1.74E-08	7.26E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PENTACHLOROPHENOL	0.54	mg/kg	6.58E-08	2.74E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PHENANTHRENE	0.20	mg/kg	3.17E-08	1.32E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PHENOL	0.29	mg/kg	3.53E-08	1.47E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PYRENE	0.430	mg/kg	6.81E-08	2.84E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TPH									
	TPH AS DIESEL	177	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TPH AS GASOLINE	4.2	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TPH AS MOTOR OIL	313	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	VOCs									
	ACETONE	0.32	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BENZENE	0.005	mg/kg	NA	NA	mg/kg-day	1.00E-01	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CARBON DISULFIDE	0.025	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CHLOROBENZENE	0.024	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CIS-1,2-DICHLOROETHENE	0.052	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ETHYLBENZENE	0.044	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	4- ISOPROPYLTOLUENE	0.007	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	METHYLENE CHLORIDE	0.3	mg/kg	NA	NA	mg/kg-day	1.40E-02	$(mg/kg\text{-}day)^{-1}$	NA	NA
	NAPHTHALENE	0.016	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

Table C2-6d
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
DERMAL CONTACT (CONTINUED)	TOLUENE	0.03	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TRANS-1,2-DICHLOROETHENE	0.023	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TRICHLOROETHENE	0.007	mg/kg	NA	NA	mg/kg-day	4.10E-01	$(mg/kg\text{-}day)^{-1}$	NA	NA
	1,2,4- TRIMETHYLBENZENE	0.025	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	1,3,5- TRIMETHYLBENZENE	0.009	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	VINYL CHLORIDE	0.034	mg/kg	NA	NA	mg/kg-day	1.50E+00	$(mg/kg\text{-}day)^{-1}$	NA	NA
	XYLENE (TOTAL)	0.11	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
INHALATION OF PARTICULATES AND VAPORS	**INORGANICS**									
	ALUMINUM	26,758	mg/kg	2.99E-07	1.24E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ANTIMONY	4.5	mg/kg	5.02E-11	2.09E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ARSENIC	21.3	mg/kg	2.38E-10	9.90E-11	mg/kg-day	1.20E+01	$(mg/kg\text{-}day)^{-1}$	2.85E-09	1.19E-09
	BARIUM	93.6	mg/kg	1.04E-09	4.35E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BERYLLIUM	0.65	mg/kg	7.25E-12	3.02E-12	mg/kg-day	8.40E+00	$(mg/kg\text{-}day)^{-1}$	6.09E-11	2.54E-11
	CADMIUM	2.90	mg/kg	3.24E-11	1.35E-11	mg/kg-day	1.50E+01	$(mg/kg\text{-}day)^{-1}$	4.85E-10	2.02E-10
	CHROMIUM	215	mg/kg	2.40E-09	1.00E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	COBALT	18.4	mg/kg	2.05E-10	8.56E-11	mg/kg-day	9.80E+00	$(mg/kg\text{-}day)^{-1}$	2.01E-09	8.38E-10
	COPPER	194	mg/kg	2.16E-09	9.02E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	HEXAVALENT CHROMIUM	0.07	mg/kg	7.81E-13	3.25E-13	mg/kg-day	5.10E+02	$(mg/kg\text{-}day)^{-1}$	3.98E-10	1.66E-10
	LEAD	94	mg/kg	1.05E-09	4.37E-10	mg/kg-day	4.20E-02	$(mg/kg\text{-}day)^{-1}$	4.41E-11	1.84E-11
	MANGANESE	907	mg/kg	1.01E-08	4.22E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MERCURY	1.4	mg/kg	1.56E-11	6.51E-12	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MOLYBDENUM	5.1	mg/kg	5.69E-11	2.37E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	NICKEL	113	mg/kg	1.26E-09	5.25E-10	mg/kg-day	9.10E-01	$(mg/kg\text{-}day)^{-1}$	1.15E-09	4.78E-10

Table C2-6d
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INHALATION OF PARTICULATES AND VAPORS (CONTINUED)	*SELENIUM*	1.2	mg/kg	1.34E-11	5.58E-12	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	SILVER	2.8	mg/kg	3.12E-11	1.30E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	THALLIUM	0.47	mg/kg	5.24E-12	2.19E-12	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TIN	16.3	mg/kg	1.82E-10	7.58E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	VANADIUM	117	mg/kg	1.31E-09	5.44E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ZINC	235	mg/kg	2.62E-09	1.09E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PESTICIDES									
	ALPHA-CHLORDANE	0.0082	mg/kg	9.15E-14	3.81E-14	mg/kg-day	3.50E-01	$(mg/kg\text{-}day)^{-1}$	3.20E-14	1.33E-14
	BETA BHC	0.001	mg/kg	1.12E-14	4.65E-15	mg/kg-day	1.86E+00	$(mg/kg\text{-}day)^{-1}$	2.08E-14	8.65E-15
	DELTA BHC	0.002	mg/kg	2.23E-14	9.30E-15	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	2,4- DDD	0.029	mg/kg	3.24E-13	1.35E-13	mg/kg-day	2.40E-01	$(mg/kg\text{-}day)^{-1}$	7.77E-14	3.24E-14
	4,4- DDD	0.086	mg/kg	9.60E-13	4.00E-13	mg/kg-day	2.40E-01	$(mg/kg\text{-}day)^{-1}$	2.30E-13	9.60E-14
	4,4- DDE	0.017	mg/kg	1.90E-13	7.90E-14	mg/kg-day	3.40E-01	$(mg/kg\text{-}day)^{-1}$	6.45E-14	2.69E-14
	4,4- DDT	0.012	mg/kg	1.34E-13	5.58E-14	mg/kg-day	3.40E-01	$(mg/kg\text{-}day)^{-1}$	4.55E-14	1.90E-14
	DIELDRIN	0.0039	mg/kg	4.35E-14	1.81E-14	mg/kg-day	1.60E+01	$(mg/kg\text{-}day)^{-1}$	6.96E-13	2.90E-13
	ENDOSULFAN I	0.004	mg/kg	4.46E-14	1.86E-14	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDOSULFAN SULFATE	0.003	mg/kg	3.35E-14	1.39E-14	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN	0.02	mg/kg	2.23E-13	9.30E-14	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN ALDEHYDE	0.006	mg/kg	6.70E-14	2.79E-14	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN KETONE	0.003	mg/kg	3.35E-14	1.39E-14	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	GAMMA-CHLORDANE	0.0085	mg/kg	9.49E-14	3.95E-14	mg/kg-day	3.50E-01	$(mg/kg\text{-}day)^{-1}$	3.32E-14	1.38E-14
	HEPTACHLOR	0.0002	mg/kg	2.23E-15	9.30E-16	mg/kg-day	4.50E+00	$(mg/kg\text{-}day)^{-1}$	1.00E-14	4.18E-15
	HEPTACHLOR EPOXIDE	0.0003	mg/kg	3.35E-15	1.39E-15	mg/kg-day	9.10E+00	$(mg/kg\text{-}day)^{-1}$	3.05E-14	1.27E-14

Table C2-6d
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INHALATION OF PARTICULATES AND VAPORS (CONTINUED)	HEXACHLOROBENZENE	0.0008	mg/kg	8.93E-15	3.72E-15	mg/kg-day	1.80E+00	$(mg/kg\text{-}day)^{-1}$	1.61E-14	6.70E-15
	METHOXYCHLOR	0.02	mg/kg	2.23E-13	9.30E-14	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MIREX	0.004	mg/kg	4.46E-14	1.86E-14	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TRANS-NONACHLOR	0.0024	mg/kg	2.68E-14	1.12E-14	mg/kg-day	3.50E-01	$(mg/kg\text{-}day)^{-1}$	9.37E-15	3.91E-15
	PCBs									
	PCBs (TOTAL)	0.16	mg/kg	1.79E-12	7.44E-13	mg/kg-day	2.00E+00	$(mg/kg\text{-}day)^{-1}$	3.57E-12	1.49E-12
	SVOCs									
	ACENAPHTHENE	0.13	mg/kg	1.06E-08	4.43E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ACENAPHTHYLENE	0.12	mg/kg	1.34E-12	5.58E-13	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ANTHRACENE	0.13	mg/kg	2.74E-09	1.14E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BENZO(A)ANTHRACENE	0.28	mg/kg	3.12E-12	1.30E-12	mg/kg-day	3.90E-01	$(mg/kg\text{-}day)^{-1}$	1.22E-12	5.08E-13
	BENZO(A)PYRENE	0.24	mg/kg	2.68E-12	1.12E-12	mg/kg-day	3.90E+00	$(mg/kg\text{-}day)^{-1}$	1.04E-11	4.35E-12
	BENZO(B)FLUORANTHENE	0.24	mg/kg	2.68E-12	1.12E-12	mg/kg-day	3.90E-01	$(mg/kg\text{-}day)^{-1}$	1.04E-12	4.35E-13
	BENZO(G,H,I)PERYLENE	0.16	mg/kg	1.79E-12	7.44E-13	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BENZO(K)FLUORANTHENE	0.24	mg/kg	2.68E-12	1.12E-12	mg/kg-day	3.90E-01	$(mg/kg\text{-}day)^{-1}$	1.04E-12	4.35E-13
	BENZOIC ACID	0.68	mg/kg	7.59E-12	3.16E-12	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BIS(2-ETHYLHEXYL)PHTHALATE	1.1	mg/kg	1.23E-11	5.11E-12	mg/kg-day	1.40E-02	$(mg/kg\text{-}day)^{-1}$	1.72E-13	7.16E-14
	BUTYLBENZYLPHTHALATE	0.025	mg/kg	2.79E-13	1.16E-13	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CARBAZOLE	0.55	mg/kg	6.14E-12	2.56E-12	mg/kg-day	2.00E-02	$(mg/kg\text{-}day)^{-1}$	1.23E-13	5.11E-14
	4- CHLOROANILINE	0.003	mg/kg	3.35E-14	1.39E-14	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	2- CHLOROPHENOL	0.043	mg/kg	4.83E-13	2.01E-13	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CHRYSENE	0.27	mg/kg	1.47E-09	6.14E-10	mg/kg-day	3.90E-02	$(mg/kg\text{-}day)^{-1}$	5.74E-11	2.39E-11
	DIBENZOFURAN	0.36	mg/kg	4.02E-12	1.67E-12	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

Table C2-6d
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INHALATION OF PARTICULATES AND VAPORS (CONTINUED)	3,3- DICHLOROBENZIDINE	0.012	mg/kg	1.34E-13	5.58E-14	mg/kg-day	4.50E-01	$(mg/kg\text{-}day)^{-1}$	6.03E-14	2.51E-14
	2,6- DINITROTOLUENE	0.37	mg/kg	4.13E-12	1.72E-12	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	FLUORANTHENE	0.380	mg/kg	4.24E-12	1.77E-12	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	FLUORENE	0.1	mg/kg	5.32E-09	2.22E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	INDENO(1,2,3-CD)PYRENE	0.16	mg/kg	1.79E-12	7.44E-13	mg/kg-day	3.90E-01	$(mg/kg\text{-}day)^{-1}$	6.96E-13	2.90E-13
	2- METHYLNAPHTHALENE	0.18	mg/kg	2.01E-12	8.37E-13	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	4- METHYLPHENOL	0.23	mg/kg	2.57E-12	1.07E-12	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	NAPHTHALENE	0.11	mg/kg	3.77E-08	1.57E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PENTACHLOROPHENOL	0.54	mg/kg	6.03E-12	2.51E-12	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PHENANTHRENE	0.20	mg/kg	2.23E-12	9.30E-13	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PHENOL	0.29	mg/kg	3.24E-12	1.35E-12	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PYRENE	0.430	mg/kg	1.67E-09	6.95E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TPH									
	TPH AS DIESEL	177	mg/kg	1.98E-09	8.23E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TPH AS GASOLINE	4.2	mg/kg	4.69E-11	1.95E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TPH AS MOTOR OIL	313	mg/kg	3.49E-09	1.46E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	VOCs									
	ACETONE	0.32	mg/kg	3.63E-07	1.51E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BENZENE	0.005	mg/kg	2.73E-08	1.14E-08	mg/kg-day	1.00E-01	$(mg/kg\text{-}day)^{-1}$	2.73E-09	1.14E-09
	CARBON DISULFIDE	0.025	mg/kg	3.07E-07	1.28E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CHLOROBENZENE	0.024	mg/kg	5.61E-08	2.34E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CIS-1,2-DICHLOROETHENE	0.052	mg/kg	2.64E-07	1.10E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ETHYLBENZENE	0.044	mg/kg	1.20E-07	5.00E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

Table C2-6d
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INHALATION OF PARTICULATES AND VAPORS (CONTINUED)	4- ISOPROPYLTOLUENE	0.007	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	METHYLENE CHLORIDE	0.3	mg/kg	1.77E-06	7.37E-07	mg/kg-day	3.50E-03	$(mg/kg\text{-}day)^{-1}$	6.19E-09	2.58E-09
	NAPHTHALENE	0.016	mg/kg	5.48E-09	2.28E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TOLUENE	0.03	mg/kg	1.10E-07	4.60E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TRANS-1,2-DICHLOROETHENE	0.023	mg/kg	1.47E-07	6.14E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TRICHLOROETHENE	0.007	mg/kg	3.12E-08	1.30E-08	mg/kg-day	7.00E-03	$(mg/kg\text{-}day)^{-1}$	2.19E-10	9.11E-11
	1,2,4- TRIMETHYLBENZENE	0.025	mg/kg	1.84E-08	7.67E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	1,3,5- TRIMETHYLBENZENE	0.009	mg/kg	1.71E-08	7.13E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	VINYL CHLORIDE	0.034	mg/kg	5.01E-07	2.09E-07	mg/kg-day	1.54E-02	$(mg/kg\text{-}day)^{-1}$	7.71E-09	3.21E-09
	XYLENE (TOTAL)	0.11	mg/kg	2.66E-07	1.11E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

Notes:
The cancer risk for chemicals that are italicized and underlined have been modified for post remediation residual risk.
CTE = Central Tendency Exposure
EPC = Exposure point concentration
HQ = Hazard Quotient
mg/kg = milligrams per kilogram
mg/kg-day = milligrams per kilogram per day
NA = Not Applicable
PCBs = Polychlorinated Biphenyls
RME = Reasonable Maximum Exposure
SVOCs = Semivolatile Organic Compounds
TPH = Total Petroleum Hydrocarbons
VOCs = Volatile Organic Compounds

Table C2-6e
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INGESTION	**INORGANICS**									
	ALUMINUM	26,758	mg/kg	1.23E-03	1.23E-03	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ANTIMONY	4.5	mg/kg	2.08E-07	2.08E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ARSENIC	21.3	mg/kg	9.83E-07	9.83E-07	mg/kg-day	9.45E+00	$(mg/kg\text{-}day)^{-1}$	9.28E-06	9.28E-06
	BARIUM	93.6	mg/kg	4.32E-06	4.32E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BERYLLIUM	0.65	mg/kg	3.00E-08	3.00E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CADMIUM	2.90	mg/kg	1.34E-07	1.34E-07	mg/kg-day	3.80E-01	$(mg/kg\text{-}day)^{-1}$	5.08E-08	5.08E-08
	CHROMIUM	215	mg/kg	9.92E-06	9.92E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	COBALT	18.4	mg/kg	8.49E-07	8.49E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	COPPER	194	mg/kg	8.95E-06	8.95E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	HEXAVALENT CHROMIUM	0.07	mg/kg	3.23E-09	3.23E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	LEAD	94	mg/kg	4.34E-06	4.34E-06	mg/kg-day	8.50E-03	$(mg/kg\text{-}day)^{-1}$	3.69E-08	3.69E-08
	MANGANESE	907	mg/kg	4.18E-05	4.18E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MERCURY	1.4	mg/kg	6.46E-08	6.46E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MOLYBDENUM	5.1	mg/kg	2.35E-07	2.35E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	NICKEL	113	mg/kg	5.21E-06	5.21E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	SELENIUM	1.2	mg/kg	5.54E-08	5.54E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	SILVER	2.8	mg/kg	1.29E-07	1.29E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	THALLIUM	0.47	mg/kg	2.17E-08	2.17E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TIN	16.3	mg/kg	7.52E-07	7.52E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	VANADIUM	117	mg/kg	5.40E-06	5.40E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ZINC	235	mg/kg	1.08E-05	1.08E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

Table C2-6e
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INGESTION	**PESTICIDES**									
(CONTINUED)	ALPHA-CHLORDANE	0.0082	mg/kg	3.78E-10	3.78E-10	mg/kg-day	1.30E+00	$(mg/kg\text{-}day)^{-1}$	4.92E-10	4.92E-10
	BETA BHC	0.001	mg/kg	4.61E-11	4.61E-11	mg/kg-day	1.80E+00	$(mg/kg\text{-}day)^{-1}$	8.30E-11	8.30E-11
	DELTA BHC	0.002	mg/kg	9.23E-11	9.23E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	2,4- DDD	0.029	mg/kg	1.34E-09	1.34E-09	mg/kg-day	2.40E-01	$(mg/kg\text{-}day)^{-1}$	3.21E-10	3.21E-10
	4,4- DDD	0.086	mg/kg	3.97E-09	3.97E-09	mg/kg-day	2.40E-01	$(mg/kg\text{-}day)^{-1}$	9.52E-10	9.52E-10
	4,4- DDE	0.017	mg/kg	7.84E-10	7.84E-10	mg/kg-day	3.40E-01	$(mg/kg\text{-}day)^{-1}$	2.67E-10	2.67E-10
	4,4- DDT	0.012	mg/kg	5.54E-10	5.54E-10	mg/kg-day	3.40E-01	$(mg/kg\text{-}day)^{-1}$	1.88E-10	1.88E-10
	DIELDRIN	0.0039	mg/kg	1.80E-10	1.80E-10	mg/kg-day	1.60E+01	$(mg/kg\text{-}day)^{-1}$	2.88E-09	2.88E-09
	ENDOSULFAN I	0.004	mg/kg	1.85E-10	1.85E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDOSULFAN SULFATE	0.003	mg/kg	1.38E-10	1.38E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN	0.02	mg/kg	9.23E-10	9.23E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN ALDEHYDE	0.006	mg/kg	2.77E-10	2.77E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN KETONE	0.003	mg/kg	1.38E-10	1.38E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	GAMMA-CHLORDANE	0.0085	mg/kg	3.92E-10	3.92E-10	mg/kg-day	1.30E+00	$(mg/kg\text{-}day)^{-1}$	5.10E-10	5.10E-10
	HEPTACHLOR	0.0002	mg/kg	9.23E-12	9.23E-12	mg/kg-day	4.50E+00	$(mg/kg\text{-}day)^{-1}$	4.15E-11	4.15E-11
	HEPTACHLOR EPOXIDE	0.0003	mg/kg	1.38E-11	1.38E-11	mg/kg-day	9.10E+00	$(mg/kg\text{-}day)^{-1}$	1.26E-10	1.26E-10
	HEXACHLOROBENZENE	0.0008	mg/kg	3.69E-11	3.69E-11	mg/kg-day	1.80E+00	$(mg/kg\text{-}day)^{-1}$	6.64E-11	6.64E-11
	METHOXYCHLOR	0.02	mg/kg	9.23E-10	9.23E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MIREX	0.004	mg/kg	1.85E-10	1.85E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TRANS-NONACHLOR	0.0024	mg/kg	1.11E-10	1.11E-10	mg/kg-day	1.30E+00	$(mg/kg\text{-}day)^{-1}$	1.44E-10	1.44E-10
	PCBs									
	PCBs (TOTAL)	0.16	mg/kg	7.38E-09	7.38E-09	mg/kg-day	5.00E+00	$(mg/kg\text{-}day)^{-1}$	3.69E-08	3.69E-08

Table C2-6e
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INGESTION	**SVOCs**									
(CONTINUED)	*ACENAPHTHENE*	0.13	mg/kg	6.00E-09	6.00E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ACENAPHTHYLENE	0.12	mg/kg	5.54E-09	5.54E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ANTHRACENE	0.13	mg/kg	6.00E-09	6.00E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BENZO(A)ANTHRACENE	0.28	mg/kg	1.29E-08	1.29E-08	mg/kg-day	1.20E+00	$(mg/kg\text{-}day)^{-1}$	1.55E-08	1.55E-08
	BENZO(A)PYRENE	0.24	mg/kg	1.11E-08	1.11E-08	mg/kg-day	1.20E+01	$(mg/kg\text{-}day)^{-1}$	1.33E-07	1.33E-07
	BENZO(B)FLUORANTHENE	0.24	mg/kg	1.11E-08	1.11E-08	mg/kg-day	1.20E+00	$(mg/kg\text{-}day)^{-1}$	1.33E-08	1.33E-08
	BENZO(G,H,I)PERYLENE	0.16	mg/kg	7.38E-09	7.38E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BENZO(K)FLUORANTHENE	0.24	mg/kg	1.11E-08	1.11E-08	mg/kg-day	1.20E+00	$(mg/kg\text{-}day)^{-1}$	1.33E-08	1.33E-08
	BENZOIC ACID	0.68	mg/kg	3.14E-08	3.14E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BIS(2-ETHYLHEXYL)PHTHALATE	1.1	mg/kg	5.07E-08	5.07E-08	mg/kg-day	1.40E-02	$(mg/kg\text{-}day)^{-1}$	7.10E-10	7.10E-10
	BUTYLBENZYLPHTHALATE	0.025	mg/kg	1.15E-09	1.15E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CARBAZOLE	0.55	mg/kg	2.54E-08	2.54E-08	mg/kg-day	2.00E-02	$(mg/kg\text{-}day)^{-1}$	5.07E-10	5.07E-10
	4- CHLOROANILINE	0.003	mg/kg	1.38E-10	1.38E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	2- CHLOROPHENOL	0.043	mg/kg	2.00E-09	2.00E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CHRYSENE	0.27	mg/kg	1.25E-08	1.25E-08	mg/kg-day	1.20E-01	$(mg/kg\text{-}day)^{-1}$	1.49E-09	1.49E-09
	DIBENZOFURAN	0.36	mg/kg	1.66E-08	1.66E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	3,3- DICHLOROBENZIDINE	0.012	mg/kg	5.54E-10	5.54E-10	mg/kg-day	4.50E-01	$(mg/kg\text{-}day)^{-1}$	2.49E-10	2.49E-10
	2,6- DINITROTOLUENE	0.37	mg/kg	1.71E-08	1.71E-08	mg/kg-day	6.10E-01	$(mg/kg\text{-}day)^{-1}$	1.04E-08	1.04E-08
	FLUORANTHENE	0.380	mg/kg	1.75E-08	1.75E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	FLUORENE	0.1	mg/kg	6.00E-09	6.00E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	INDENO(1,2,3-CD)PYRENE	0.16	mg/kg	7.38E-09	7.38E-09	mg/kg-day	1.20E+00	$(mg/kg\text{-}day)^{-1}$	8.86E-09	8.86E-09
	2- METHYLNAPHTHALENE	0.18	mg/kg	8.30E-09	8.30E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

Table C2-6e
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INGESTION (CONTINUED)	4- METHYLPHENOL	0.23	mg/kg	1.06E-08	1.06E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	NAPHTHALENE	0.11	mg/kg	5.07E-09	5.07E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PENTACHLOROPHENOL	0.54	mg/kg	2.49E-08	2.49E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PHENANTHRENE	0.20	mg/kg	9.23E-09	9.23E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PHENOL	0.29	mg/kg	1.34E-08	1.34E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PYRENE	0.430	mg/kg	1.98E-08	1.98E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TPH									
	TPH AS DIESEL	177	mg/kg	8.16E-06	8.16E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TPH AS GASOLINE	4.2	mg/kg	1.94E-07	1.94E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TPH AS MOTOR OIL	313	mg/kg	1.44E-05	1.44E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	VOCs									
	ACETONE	0.32	mg/kg	1.48E-08	1.48E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BENZENE	0.005	mg/kg	2.31E-10	2.31E-10	mg/kg-day	1.00E-01	$(mg/kg\text{-}day)^{-1}$	2.31E-11	2.31E-11
	CARBON DISULFIDE	0.025	mg/kg	1.15E-09	1.15E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CHLOROBENZENE	0.024	mg/kg	1.11E-09	1.11E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CIS-1,2-DICHLOROETHENE	0.052	mg/kg	2.40E-09	2.40E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ETHYLBENZENE	0.044	mg/kg	2.03E-09	2.03E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	4- ISOPROPYLTOLUENE	0.007	mg/kg	3.32E-10	3.32E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	METHYLENE CHLORIDE	0.3	mg/kg	1.38E-08	1.38E-08	mg/kg-day	1.40E-02	$(mg/kg\text{-}day)^{-1}$	1.94E-10	1.94E-10
	NAPHTHALENE	0.016	mg/kg	7.38E-10	7.38E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TOLUENE	0.03	mg/kg	1.38E-09	1.38E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TRANS-1,2-DICHLOROETHENE	0.023	mg/kg	1.06E-09	1.06E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TRICHLOROETHENE	0.007	mg/kg	3.23E-10	3.23E-10	mg/kg-day	4.10E-01	$(mg/kg\text{-}day)^{-1}$	1.32E-10	1.32E-10

Table C2-6e
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INGESTION (CONTINUED)	1,2,4- TRIMETHYLBENZENE	0.025	mg/kg	1.15E-09	1.15E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	1,3,5- TRIMETHYLBENZENE	0.009	mg/kg	4.29E-10	4.29E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	VINYL CHLORIDE	0.034	mg/kg	1.57E-09	1.57E-09	mg/kg-day	1.50E+00	$(mg/kg\text{-}day)^{-1}$	2.35E-09	2.35E-09
	XYLENE (TOTAL)	0.11	mg/kg	5.07E-09	5.07E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
DERMAL CONTACT	**INORGANICS**									
	ALUMINUM	26,758	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ANTIMONY	4.5	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ARSENIC	21.3	mg/kg	8.84E-08	8.84E-08	mg/kg-day	9.45E+00	$(mg/kg\text{-}day)^{-1}$	8.36E-07	8.36E-07
	BARIUM	93.6	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BERYLLIUM	0.65	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CADMIUM	2.90	mg/kg	4.01E-10	4.01E-10	mg/kg-day	1.52E+01	$(mg/kg\text{-}day)^{-1}$	6.10E-09	6.10E-09
	CHROMIUM	215	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	COBALT	18.4	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	COPPER	194	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	HEXAVALENT CHROMIUM	0.07	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	LEAD	94	mg/kg	NA	NA	mg/kg-day	8.50E-03	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MANGANESE	907	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MERCURY	1.4	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MOLYBDENUM	5.1	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	NICKEL	113	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	SELENIUM	1.2	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	SILVER	2.8	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	THALLIUM	0.47	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

Table C2-6e
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
DERMAL CONTACT (CONTINUED)	*TIN*	16.3	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	VANADIUM	117	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ZINC	235	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PESTICIDES									
	ALPHA-CHLORDANE	0.0082	mg/kg	4.54E-11	4.54E-11	mg/kg-day	1.30E+00	$(mg/kg\text{-}day)^{-1}$	5.90E-11	5.90E-11
	BETA BHC	0.001	mg/kg	5.54E-12	5.54E-12	mg/kg-day	1.80E+00	$(mg/kg\text{-}day)^{-1}$	9.96E-12	9.96E-12
	DELTA BHC	0.002	mg/kg	1.11E-11	1.11E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	2,4- DDD	0.029	mg/kg	1.20E-10	1.20E-10	mg/kg-day	2.40E-01	$(mg/kg\text{-}day)^{-1}$	2.89E-11	2.89E-11
	4,4- DDD	0.086	mg/kg	3.57E-10	3.57E-10	mg/kg-day	2.40E-01	$(mg/kg\text{-}day)^{-1}$	8.57E-11	8.57E-11
	4,4- DDE	0.017	mg/kg	7.06E-11	7.06E-11	mg/kg-day	3.40E-01	$(mg/kg\text{-}day)^{-1}$	2.40E-11	2.40E-11
	4,4- DDT	0.012	mg/kg	4.98E-11	4.98E-11	mg/kg-day	3.40E-01	$(mg/kg\text{-}day)^{-1}$	1.69E-11	1.69E-11
	DIELDRIN	0.0039	mg/kg	5.40E-11	5.40E-11	mg/kg-day	1.60E+01	$(mg/kg\text{-}day)^{-1}$	8.64E-10	8.64E-10
	ENDOSULFAN I	0.004	mg/kg	5.54E-11	5.54E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDOSULFAN SULFATE	0.003	mg/kg	4.15E-11	4.15E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN	0.02	mg/kg	2.77E-10	2.77E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN ALDEHYDE	0.006	mg/kg	8.30E-11	8.30E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN KETONE	0.003	mg/kg	4.15E-11	4.15E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	GAMMA-CHLORDANE	0.0085	mg/kg	4.71E-11	4.71E-11	mg/kg-day	1.30E+00	$(mg/kg\text{-}day)^{-1}$	6.12E-11	6.12E-11
	HEPTACHLOR	0.0002	mg/kg	2.77E-12	2.77E-12	mg/kg-day	4.50E+00	$(mg/kg\text{-}day)^{-1}$	1.25E-11	1.25E-11
	HEPTACHLOR EPOXIDE	0.0003	mg/kg	4.15E-12	4.15E-12	mg/kg-day	9.10E+00	$(mg/kg\text{-}day)^{-1}$	3.78E-11	3.78E-11
	HEXACHLOROBENZENE	0.0008	mg/kg	1.11E-11	1.11E-11	mg/kg-day	1.80E+00	$(mg/kg\text{-}day)^{-1}$	1.99E-11	1.99E-11
	METHOXYCHLOR	0.02	mg/kg	1.11E-10	1.11E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MIREX	0.004	mg/kg	5.54E-11	5.54E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

Table C2-6e
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
DERMAL CONTACT (CONTINUED)	TRANS-NONACHLOR	0.0024	mg/kg	1.33E-11	1.33E-11	mg/kg-day	1.30E+00	$(mg/kg\text{-}day)^{-1}$	1.73E-11	1.73E-11
	PCBs									
	PCBs (TOTAL)	0.16	mg/kg	3.10E-09	3.10E-09	mg/kg-day	5.00E+00	$(mg/kg\text{-}day)^{-1}$	1.55E-08	1.55E-08
	SVOCs									
	ACENAPHTHENE	0.13	mg/kg	2.34E-09	2.34E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ACENAPHTHYLENE	0.12	mg/kg	2.16E-09	2.16E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ANTHRACENE	0.13	mg/kg	2.34E-09	2.34E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BENZO(A)ANTHRACENE	0.28	mg/kg	5.04E-09	5.04E-09	mg/kg-day	1.20E+00	$(mg/kg\text{-}day)^{-1}$	6.04E-09	6.04E-09
	BENZO(A)PYRENE	0.24	mg/kg	4.32E-09	4.32E-09	mg/kg-day	1.20E+01	$(mg/kg\text{-}day)^{-1}$	5.18E-08	5.18E-08
	BENZO(B)FLUORANTHENE	0.24	mg/kg	4.32E-09	4.32E-09	mg/kg-day	1.20E+00	$(mg/kg\text{-}day)^{-1}$	5.18E-09	5.18E-09
	BENZO(G,H,I)PERYLENE	0.16	mg/kg	2.88E-09	2.88E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BENZO(K)FLUORANTHENE	0.24	mg/kg	4.32E-09	4.32E-09	mg/kg-day	1.20E+00	$(mg/kg\text{-}day)^{-1}$	5.18E-09	5.18E-09
	BENZOIC ACID	0.68	mg/kg	9.41E-09	9.41E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BIS(2-ETHYLHEXYL)PHTHALATE	1.1	mg/kg	1.52E-08	1.52E-08	mg/kg-day	1.40E-02	$(mg/kg\text{-}day)^{-1}$	2.13E-10	2.13E-10
	BUTYLBENZYLPHTHALATE	0.025	mg/kg	3.46E-10	3.46E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CARBAZOLE	0.55	mg/kg	7.61E-09	7.61E-09	mg/kg-day	2.00E-02	$(mg/kg\text{-}day)^{-1}$	1.52E-10	1.52E-10
	4- CHLOROANILINE	0.003	mg/kg	4.15E-11	4.15E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	2- CHLOROPHENOL	0.043	mg/kg	5.99E-10	5.99E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CHRYSENE	0.27	mg/kg	4.86E-09	4.86E-09	mg/kg-day	1.20E-01	$(mg/kg\text{-}day)^{-1}$	5.83E-10	5.83E-10
	DIBENZOFURAN	0.36	mg/kg	4.98E-09	4.98E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	3,3- DICHLOROBENZIDINE	0.012	mg/kg	1.66E-10	1.66E-10	mg/kg-day	4.50E-01	$(mg/kg\text{-}day)^{-1}$	7.47E-11	7.47E-11
	2,6- DINITROTOLUENE	0.37	mg/kg	5.12E-09	5.12E-09	mg/kg-day	6.10E-01	$(mg/kg\text{-}day)^{-1}$	3.12E-09	3.12E-09
	FLUORANTHENE	0.380	mg/kg	6.84E-09	6.84E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

Table C2-6e
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
DERMAL CONTACT (CONTINUED)	*FLUORENE*	0.1	mg/kg	2.34E-09	2.34E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	INDENO(1,2,3-CD)PYRENE	0.16	mg/kg	2.88E-09	2.88E-09	mg/kg-day	1.20E+00	$(mg/kg\text{-}day)^{-1}$	3.45E-09	3.45E-09
	2- METHYLNAPHTHALENE	0.18	mg/kg	2.49E-09	2.49E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	4- METHYLPHENOL	0.23	mg/kg	3.18E-09	3.18E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	NAPHTHALENE	0.11	mg/kg	1.98E-09	1.98E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PENTACHLOROPHENOL	0.54	mg/kg	7.47E-09	7.47E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PHENANTHRENE	0.20	mg/kg	3.60E-09	3.60E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PHENOL	0.29	mg/kg	4.01E-09	4.01E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PYRENE	0.430	mg/kg	7.74E-09	7.74E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TPH									
	TPH AS DIESEL	177	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TPH AS GASOLINE	4.2	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TPH AS MOTOR OIL	313	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	VOCs									
	ACETONE	0.32	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BENZENE	0.005	mg/kg	NA	NA	mg/kg-day	1.00E-01	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CARBON DISULFIDE	0.025	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CHLOROBENZENE	0.024	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CIS-1,2-DICHLOROETHENE	0.052	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ETHYLBENZENE	0.044	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	4- ISOPROPYLTOLUENE	0.007	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	METHYLENE CHLORIDE	0.3	mg/kg	NA	NA	mg/kg-day	1.40E-02	$(mg/kg\text{-}day)^{-1}$	NA	NA
	NAPHTHALENE	0.016	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

Table C2-6e
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
DERMAL CONTACT (CONTINUED)	TOLUENE	0.03	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TRANS-1,2-DICHLOROETHENE	0.023	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TRICHLOROETHENE	0.007	mg/kg	NA	NA	mg/kg-day	4.10E-01	$(mg/kg\text{-}day)^{-1}$	NA	NA
	1,2,4- TRIMETHYLBENZENE	0.025	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	1,3,5- TRIMETHYLBENZENE	0.009	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	VINYL CHLORIDE	0.034	mg/kg	NA	NA	mg/kg-day	1.50E+00	$(mg/kg\text{-}day)^{-1}$	NA	NA
	XYLENE (TOTAL)	0.11	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
INHALATION OF PARTICULATES AND VAPORS	**INORGANICS**									
	ALUMINUM	26,758	mg/kg	2.28E-06	1.19E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ANTIMONY	4.5	mg/kg	3.84E-10	1.99E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ARSENIC	21.3	mg/kg	1.82E-09	9.44E-10	mg/kg-day	1.20E+01	$(mg/kg\text{-}day)^{-1}$	2.18E-08	1.13E-08
	BARIUM	93.6	mg/kg	7.98E-09	4.15E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BERYLLIUM	0.65	mg/kg	5.54E-11	2.88E-11	mg/kg-day	8.40E+00	$(mg/kg\text{-}day)^{-1}$	4.65E-10	2.42E-10
	CADMIUM	2.90	mg/kg	2.47E-10	1.29E-10	mg/kg-day	1.50E+01	$(mg/kg\text{-}day)^{-1}$	3.71E-09	1.93E-09
	CHROMIUM	215	mg/kg	1.83E-08	9.53E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	COBALT	18.4	mg/kg	1.57E-09	8.16E-10	mg/kg-day	9.80E+00	$(mg/kg\text{-}day)^{-1}$	1.54E-08	7.99E-09
	COPPER	194	mg/kg	1.65E-08	8.60E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	HEXAVALENT CHROMIUM	0.07	mg/kg	5.97E-12	3.10E-12	mg/kg-day	5.10E+02	$(mg/kg\text{-}day)^{-1}$	3.04E-09	1.58E-09
	LEAD	94	mg/kg	8.01E-09	4.17E-09	mg/kg-day	4.20E-02	$(mg/kg\text{-}day)^{-1}$	3.36E-10	1.75E-10
	MANGANESE	907	mg/kg	7.73E-08	4.02E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MERCURY	1.4	mg/kg	1.19E-10	6.20E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MOLYBDENUM	5.1	mg/kg	4.35E-10	2.26E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	NICKEL	113	mg/kg	9.63E-09	5.01E-09	mg/kg-day	9.10E-01	$(mg/kg\text{-}day)^{-1}$	8.76E-09	4.56E-09

Table C2-6e
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INHALATION OF PARTICULATES AND VAPORS (CONTINUED)	*SELENIUM*	1.2	mg/kg	1.02E-10	5.32E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	SILVER	2.8	mg/kg	2.39E-10	1.24E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	THALLIUM	0.47	mg/kg	4.01E-11	2.08E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TIN	16.3	mg/kg	1.39E-09	7.22E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	VANADIUM	117	mg/kg	9.97E-09	5.19E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ZINC	235	mg/kg	2.00E-08	1.04E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PESTICIDES									
	ALPHA-CHLORDANE	0.0082	mg/kg	6.99E-13	3.63E-13	mg/kg-day	3.50E-01	$(mg/kg\text{-}day)^{-1}$	2.45E-13	1.27E-13
	BETA BHC	0.001	mg/kg	8.52E-14	4.43E-14	mg/kg-day	1.86E+00	$(mg/kg\text{-}day)^{-1}$	1.59E-13	8.24E-14
	DELTA BHC	0.002	mg/kg	1.70E-13	8.86E-14	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	2,4- DDD	0.029	mg/kg	2.47E-12	1.29E-12	mg/kg-day	2.40E-01	$(mg/kg\text{-}day)^{-1}$	5.93E-13	3.08E-13
	4,4- DDD	0.086	mg/kg	7.33E-12	3.81E-12	mg/kg-day	2.40E-01	$(mg/kg\text{-}day)^{-1}$	1.76E-12	9.15E-13
	4,4- DDE	0.017	mg/kg	1.45E-12	7.53E-13	mg/kg-day	3.40E-01	$(mg/kg\text{-}day)^{-1}$	4.93E-13	2.56E-13
	4,4- DDT	0.012	mg/kg	1.02E-12	5.32E-13	mg/kg-day	3.40E-01	$(mg/kg\text{-}day)^{-1}$	3.48E-13	1.81E-13
	DIELDRIN	0.0039	mg/kg	3.32E-13	1.73E-13	mg/kg-day	1.60E+01	$(mg/kg\text{-}day)^{-1}$	5.32E-12	2.77E-12
	ENDOSULFAN I	0.004	mg/kg	3.41E-13	1.77E-13	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDOSULFAN SULFATE	0.003	mg/kg	2.56E-13	1.33E-13	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN	0.02	mg/kg	1.70E-12	8.86E-13	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN ALDEHYDE	0.006	mg/kg	5.11E-13	2.66E-13	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN KETONE	0.003	mg/kg	2.56E-13	1.33E-13	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	GAMMA-CHLORDANE	0.0085	mg/kg	7.24E-13	3.77E-13	mg/kg-day	3.50E-01	$(mg/kg\text{-}day)^{-1}$	2.54E-13	1.32E-13
	HEPTACHLOR	0.0002	mg/kg	1.70E-14	8.86E-15	mg/kg-day	4.50E+00	$(mg/kg\text{-}day)^{-1}$	7.67E-14	3.99E-14
	HEPTACHLOR EPOXIDE	0.0003	mg/kg	2.56E-14	1.33E-14	mg/kg-day	9.10E+00	$(mg/kg\text{-}day)^{-1}$	2.33E-13	1.21E-13

Table C2-6e
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INHALATION OF PARTICULATES AND VAPORS (CONTINUED)	HEXACHLOROBENZENE	0.0008	mg/kg	6.82E-14	3.55E-14	mg/kg-day	1.80E+00	$(mg/kg\text{-}day)^{-1}$	1.23E-13	6.38E-14
	METHOXYCHLOR	0.02	mg/kg	1.70E-12	8.86E-13	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MIREX	0.004	mg/kg	3.41E-13	1.77E-13	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TRANS-NONACHLOR	0.0024	mg/kg	2.05E-13	1.06E-13	mg/kg-day	3.50E-01	$(mg/kg\text{-}day)^{-1}$	7.16E-14	3.72E-14
	PCBs									
	PCBs (TOTAL)	0.16	mg/kg	1.36E-11	7.09E-12	mg/kg-day	2.00E+00	$(mg/kg\text{-}day)^{-1}$	2.73E-11	1.42E-11
	SVOCs									
	ACENAPHTHENE	0.13	mg/kg	2.02E-09	1.05E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ACENAPHTHYLENE	0.12	mg/kg	1.02E-11	5.32E-12	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ANTHRACENE	0.13	mg/kg	5.19E-10	2.70E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BENZO(A)ANTHRACENE	0.28	mg/kg	2.39E-11	1.24E-11	mg/kg-day	3.90E-01	$(mg/kg\text{-}day)^{-1}$	9.31E-12	4.84E-12
	BENZO(A)PYRENE	0.24	mg/kg	2.05E-11	1.06E-11	mg/kg-day	3.90E+00	$(mg/kg\text{-}day)^{-1}$	7.98E-11	4.15E-11
	BENZO(B)FLUORANTHENE	0.24	mg/kg	2.05E-11	1.06E-11	mg/kg-day	3.90E-01	$(mg/kg\text{-}day)^{-1}$	7.98E-12	4.15E-12
	BENZO(G,H,I)PERYLENE	0.16	mg/kg	1.36E-11	7.09E-12	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BENZO(K)FLUORANTHENE	0.24	mg/kg	2.05E-11	1.06E-11	mg/kg-day	3.90E-01	$(mg/kg\text{-}day)^{-1}$	7.98E-12	4.15E-12
	BENZOIC ACID	0.68	mg/kg	5.80E-11	3.01E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BIS(2-ETHYLHEXYL)PHTHALATE	1.1	mg/kg	9.38E-11	4.88E-11	mg/kg-day	1.40E-02	$(mg/kg\text{-}day)^{-1}$	1.31E-12	6.83E-13
	BUTYLBENZYLPHTHALATE	0.025	mg/kg	2.13E-12	1.11E-12	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CARBAZOLE	0.55	mg/kg	4.69E-11	2.44E-11	mg/kg-day	2.00E-02	$(mg/kg\text{-}day)^{-1}$	9.38E-13	4.88E-13
	4- CHLOROANILINE	0.003	mg/kg	2.56E-13	1.33E-13	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	2- CHLOROPHENOL	0.043	mg/kg	3.69E-12	1.92E-12	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CHRYSENE	0.27	mg/kg	2.80E-10	1.45E-10	mg/kg-day	3.90E-02	$(mg/kg\text{-}day)^{-1}$	1.09E-11	5.67E-12
	DIBENZOFURAN	0.36	mg/kg	3.07E-11	1.60E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

Table C2-6e
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INHALATION OF PARTICULATES AND VAPORS (CONTINUED)	3,3- DICHLOROBENZIDINE	0.012	mg/kg	1.02E-12	5.32E-13	mg/kg-day	4.50E-01	$(mg/kg\text{-}day)^{-1}$	4.60E-13	2.39E-13
	2,6- DINITROTOLUENE	0.37	mg/kg	3.15E-11	1.64E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	FLUORANTHENE	0.380	mg/kg	3.24E-11	1.68E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	FLUORENE	0.1	mg/kg	1.01E-09	5.25E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	INDENO(1,2,3-CD)PYRENE	0.16	mg/kg	1.36E-11	7.09E-12	mg/kg-day	3.90E-01	$(mg/kg\text{-}day)^{-1}$	5.32E-12	2.77E-12
	2- METHYLNAPHTHALENE	0.18	mg/kg	1.53E-11	7.98E-12	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	4- METHYLPHENOL	0.23	mg/kg	1.96E-11	1.02E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	NAPHTHALENE	0.11	mg/kg	7.15E-09	3.72E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PENTACHLOROPHENOL	0.54	mg/kg	4.60E-11	2.39E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PHENANTHRENE	0.20	mg/kg	1.70E-11	8.86E-12	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PHENOL	0.29	mg/kg	2.47E-11	1.29E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PYRENE	0.430	mg/kg	3.16E-10	1.65E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TPH									
	TPH AS DIESEL	177	mg/kg	1.51E-08	7.84E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TPH AS GASOLINE	4.2	mg/kg	3.58E-10	1.86E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TPH AS MOTOR OIL	313	mg/kg	2.67E-08	1.39E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	VOCs									
	ACETONE	0.32	mg/kg	6.88E-08	3.58E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BENZENE	0.005	mg/kg	5.18E-09	2.69E-09	mg/kg-day	1.00E-01	$(mg/kg\text{-}day)^{-1}$	5.18E-10	2.69E-10
	CARBON DISULFIDE	0.025	mg/kg	5.82E-08	3.03E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CHLOROBENZENE	0.024	mg/kg	1.07E-08	5.54E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CIS-1,2-DICHLOROETHENE	0.052	mg/kg	5.01E-08	2.61E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ETHYLBENZENE	0.044	mg/kg	2.28E-08	1.18E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

Table C2-6e
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INHALATION OF PARTICULATES AND VAPORS (CONTINUED)	4- ISOPROPYLTOLUENE	0.007	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	METHYLENE CHLORIDE	0.3	mg/kg	3.35E-07	1.74E-07	mg/kg-day	3.50E-03	$(mg/kg\text{-}day)^{-1}$	1.17E-09	6.11E-10
	NAPHTHALENE	0.016	mg/kg	1.04E-09	5.41E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TOLUENE	0.03	mg/kg	2.10E-08	1.09E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TRANS-1,2-DICHLOROETHENE	0.023	mg/kg	2.80E-08	1.45E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TRICHLOROETHENE	0.007	mg/kg	5.93E-09	3.08E-09	mg/kg-day	7.00E-03	$(mg/kg\text{-}day)^{-1}$	4.15E-11	2.16E-11
	1,2,4- TRIMETHYLBENZENE	0.025	mg/kg	3.49E-09	1.82E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	1,3,5- TRIMETHYLBENZENE	0.009	mg/kg	3.25E-09	1.69E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	VINYL CHLORIDE	0.034	mg/kg	9.51E-08	4.94E-08	mg/kg-day	1.54E-02	$(mg/kg\text{-}day)^{-1}$	1.46E-09	7.61E-10
	XYLENE (TOTAL)	0.11	mg/kg	5.04E-08	2.62E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

Notes:
The cancer risk for chemicals that are italicized and underlined have been modified for post remediation residual risk.
CTE = Central Tendency Exposure
EPC = Exposure point concentration
HQ = Hazard Quotient
mg/kg = milligrams per kilogram
mg/kg-day = milligrams per kilogram per day
NA = Not Applicable
PCBs = Polychlorinated Biphenyls
RME = Reasonable Maximum Exposure
SVOCs = Semivolatile Organic Compounds
TPH = Total Petroleum Hydrocarbons
VOCs = Volatile Organic Compounds

Table C2-6f
Summary of Current Receptor RME Cancer Risks and Noncarcinogenic Hazard Indices
Non-Tidal Wetland Areas Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Receptor Population:	Recreational User
Receptor Age:	Child (1 to 17 years)

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Primary Target Organ	Non-Carconogenic Hazard Index			
				Ingestion	Dermal	Inhalation (Outdoor)	Exposure Routes Total			Ingestion HQ	Dermal HQ	Inhalation (Outdoor) HQ	Total HI
Soil (0 to 10 feet)	Soil	On-Site Soil	**INORGANICS (mg/kg)**					**INORGANICS (mg/kg)**					
			ALUMINUM	NA	NA	NA	NA	ALUMINUM	Body Weight	2.92E-02	NA	8.78E-04	3.01E-02
			ANTIMONY	NA	NA	NA	NA	ANTIMONY	Blood; Whole Body	1.23E-02	NA	NA	1.23E-02
			ARSENIC	5.34E-05	7.36E-06	2.85E-09	6.08E-05	ARSENIC	Cardiovascular System; Fetal; Nervous System; Skin	7.76E-02	1.07E-02	1.14E-04	8.84E-02
			BARIUM	NA	NA	NA	NA	BARIUM	Cardiovascular System; Fetal; Kidney; NOEL	1.46E-03	NA	3.01E-05	1.49E-03
			BERYLLIUM	NA	NA	6.09E-11	6.09E-11	BERYLLIUM	GI System; Immune System; Respiratory	3.55E-04	NA	1.49E-05	3.70E-04
			CADMIUM	2.92E-07	5.37E-08	4.85E-10	3.47E-07	CADMIUM	Kidney; Respiratory	6.34E-03	1.16E-03	2.33E-05	7.53E-03
			CHROMIUM	NA	NA	NA	NA	CHROMIUM	NOEL	1.57E-04	NA	NA	1.57E-04
			COBALT	NA	NA	2.01E-09	2.01E-09	COBALT	Cardiovascular System; Respiratory	1.01E-03	NA	1.48E-04	1.15E-03
			COPPER	NA	NA	NA	NA	COPPER	GI System	5.30E-03	NA	NA	5.30E-03
			HEXAVALENT CHROMIUM	NA	NA	3.98E-10	3.98E-10	HEXAVALENT CHROMIUM	NOEL; Respiratory	2.55E-05	NA	1.12E-07	2.56E-05
			LEAD	2.12E-07	NA	4.41E-11	2.12E-07	LEAD	NA	NA	NA	NA	NA
			MANGANESE	NA	NA	NA	NA	MANGANESE	Nervous System	7.08E-03	NA	2.91E-03	9.99E-03
			MERCURY	NA	NA	NA	NA	MERCURY	Nervous System	5.10E-03	NA	2.50E-06	5.10E-03
			MOLYBDENUM	NA	NA	NA	NA	MOLYBDENUM	Kidney	1.11E-03	NA	NA	1.11E-03
			NICKEL	NA	NA	1.15E-09	1.15E-09	NICKEL	Body Weight; Respiratory	6.17E-03	NA	3.64E-04	6.54E-03
			SELENIUM	NA	NA	NA	NA	SELENIUM	Cardiovascular System; Liver; Nervous System; Skin	2.62E-04	NA	9.66E-09	2.62E-04
			SILVER	NA	NA	NA	NA	SILVER	Skin	6.12E-04	NA	NA	6.12E-04
			THALLIUM	NA	NA	NA	NA	THALLIUM	Blood; Liver	7.78E-03	NA	NA	7.78E-03
			TIN	NA	NA	NA	NA	TIN	Kidney; Liver	2.97E-05	NA	NA	2.97E-05
			VANADIUM	NA	NA	NA	NA	VANADIUM	NOEL	1.83E-02	NA	NA	1.83E-02
			ZINC	NA	NA	NA	NA	ZINC	Blood	8.56E-04	NA	NA	8.56E-04
			PESTICIDES (mg/kg)					**PESTICIDES (mg/kg)**					
			ALPHA-CHLORDANE	2.83E-09	5.19E-10	3.20E-14	3.35E-09	ALPHA-CHLORDANE	Liver	1.79E-05	3.29E-06	1.88E-09	2.12E-05
			BETA BHC	4.78E-10	8.77E-11	2.08E-14	5.65E-10	BETA BHC	Liver	5.46E-06	1.00E-06	2.30E-10	6.47E-06
			DELTA BHC	NA	NA	NA	NA	DELTA BHC	NA	NA	NA	NA	NA
			2,4- DDD	1.85E-09	2.54E-10	7.77E-14	2.10E-09	2,4 DDD	Liver	6.34E-05	8.73E-06	2.67E-09	7.21E-05
			4,4- DDD	5.48E-09	7.54E-10	2.30E-13	6.23E-09	4,4- DDD	Liver	1.88E-04	2.59E-05	7.90E-09	2.14E-04
			4,4- DDE	1.53E-09	2.11E-10	6.45E-14	1.75E-09	4,4- DDE	Liver	3.72E-05	5.12E-06	1.56E-09	4.23E-05
			4,4- DDT	1.08E-09	1.49E-10	4.55E-14	1.23E-09	4,4- DDT	Liver	2.62E-05	3.61E-06	1.10E-09	2.98E-05

Table C2-6f
Summary of Current Receptor RME Cancer Risks and Noncarcinogenic Hazard Indices
Non-Tidal Wetland Areas Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Receptor Population:	Recreational User
Receptor Age:	Child (1 to 17 years)

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Primary Target Organ	Non-Carconogenic Hazard Index			
				Ingestion	Dermal	Inhalation (Outdoor)	Exposure Routes Total			Ingestion HQ	Dermal HQ	Inhalation (Outdoor) HQ	Total HI
			DIELDRIN	1.66E-08	7.60E-09	6.96E-13	2.42E-08	DIELDRIN	Liver	8.52E-05	3.91E-05	3.58E-09	1.24E-04
			ENDOSULFAN I	NA	NA	NA	NA	ENDOSULFAN I	Body Weight; Kidney; Nervous System	7.29E-07	3.34E-07	3.06E-11	1.06E-06
			ENDOSULFAN SULFATE	NA	NA	NA	NA	ENDOSULFAN SULFATE	Body Weight; Kidney; Nervous System	5.46E-07	2.51E-07	2.30E-11	7.97E-07
			ENDRIN	NA	NA	NA	NA	ENDRIN	Liver; Kidney; Nervous System	7.29E-05	3.34E-05	3.06E-09	1.06E-04
			ENDRIN ALDEHYDE	NA	NA	NA	NA	ENDRIN ALDEHYDE	Liver; Kidney; Nervous System	2.19E-05	1.00E-05	9.19E-10	3.19E-05
			ENDRIN KETONE	NA	NA	NA	NA	ENDRIN KETONE	Liver; Kidney; Nervous System	1.09E-05	5.02E-06	4.59E-10	1.59E-05
			GAMMA-CHLORDANE	2.93E-09	5.38E-10	3.32E-14	3.47E-09	GAMMA-CHLORDANE	Liver	1.86E-05	3.41E-06	1.95E-09	2.20E-05
			HEPTACHLOR	2.39E-10	1.10E-10	1.00E-14	3.49E-10	HEPTACHLOR	Liver	4.37E-07	2.01E-07	1.84E-11	6.38E-07
			HEPTACHLOR EPOXIDE	7.25E-10	3.33E-10	3.05E-14	1.06E-09	HEPTACHLOR EPOXIDE	Liver	2.52E-05	1.16E-05	1.06E-09	3.68E-05
			HEXACHLOROBENZENE	3.82E-10	1.75E-10	1.61E-14	5.58E-10	HEXACHLOROBENZENE	Liver	1.09E-06	5.02E-07	4.59E-11	1.59E-06
			METHOXYCHLOR	NA	NA	NA	NA	METHOXYCHLOR	Fetal	4.37E-06	8.03E-07	1.84E-10	5.17E-06
			MIREX	NA	NA	NA	NA	MIREX	Liver	2.19E-05	1.00E-05	9.19E-10	3.19E-05
			TRANS-NONACHLOR	8.28E-10	1.52E-10	9.37E-15	9.80E-10	TRANS-NONACHLOR	Liver	5.25E-06	9.63E-07	5.51E-10	6.21E-06
			PCBs (mg/kg)					**PCBs (mg/kg)**					
			PCBs (TOTAL)	2.12E-07	1.36E-07	3.57E-12	3.49E-07	PCBs (TOTAL)	Immune System	8.74E-03	5.62E-03	3.68E-07	1.44E-02
			SVOCs (mg/kg)					**SVOCs (mg/kg)**					
			ACENAPHTHENE	NA	NA	NA	NA	ACENAPHTHENE	Liver	2.37E-06	1.41E-06	7.30E-07	4.51E-06
			ACENAPHTHYLENE	NA	NA	NA	NA	ACENAPHTHYLENE	NA	NA	NA	NA	NA
			ANTHRACENE	NA	NA	NA	NA	ANTHRACENE	NOEL	4.74E-07	2.83E-07	3.75E-08	7.94E-07
			BENZO(A)ANTHRACENE	8.92E-08	5.32E-08	1.22E-12	1.42E-07	BENZO(A)ANTHRACENE	NA	NA	NA	NA	NA
			BENZO(A)PYRENE	7.64E-07	4.56E-07	1.04E-11	1.22E-06	BENZO(A)PYRENE	NA	NA	NA	NA	NA
			BENZO(B)FLUORANTHENE	7.64E-08	4.56E-08	1.04E-12	1.22E-07	BENZO(B)FLUORANTHENE	NA	NA	NA	NA	NA
			BENZO(G,H,I)PERYLENE	NA	NA	NA	NA	BENZO(G,H,I)PERYLENE	Kidney; Nervous System	4.37E-06	2.61E-06	1.84E-10	6.98E-06
			BENZO(K)FLUORANTHENE	7.64E-08	4.56E-08	1.04E-12	1.22E-07	BENZO(K)FLUORANTHENE	NA	NA	NA	NA	NA
			BENZOIC ACID	NA	NA	NA	NA	BENZOIC ACID	NOEL	1.86E-07	8.53E-08	NA	2.71E-07
			BIS(2-ETHYLHEXYL)PHTHALATE	4.09E-09	1.88E-09	1.72E-13	5.96E-09	BIS(2-ETHYLHEXYL)PHTHALATE	Liver	6.01E-05	2.76E-05	2.53E-09	8.77E-05
			BUTYLBENZYPHTHALATE	NA	NA	NA	NA	BUTYLBENZYPHTHALATE	Liver	1.37E-07	6.27E-08	5.74E-12	1.99E-07
			CABAZOLE	2.92E-09	1.34E-09	1.23E-13	4.26E-09	CABAZOLE	NA	NA	NA	NA	NA
			4- CHLOROANILINE	NA	NA	NA	NA	4- CHLOROANILINE	Spleen	8.20E-07	3.76E-07	3.45E-11	1.20E-06
			2- CHLOROPHENOL	NA	NA	NA	NA	2- CHLOROPHENOL	Reproductive	9.46E-06	4.34E-06	3.98E-10	1.38E-05
			CHRYSENE	8.60E-09	5.13E-09	5.74E-11	1.38E-08	CHRYSENE	NA	NA	NA	NA	NA
			DIBENZOFURAN	NA	NA	NA	NA	DIBENZOFURAN	NA	1.97E-04	9.03E-05	8.27E-09	2.87E-04

Table C2-6f
Summary of Current Receptor RME Cancer Risks and Noncarcinogenic Hazard Indices
Non-Tidal Wetland Areas Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Receptor Population:	Recreational User
Receptor Age:	Child (1 to 17 years)

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Primary Target Organ	Non-Carconogenic Hazard Index			
				Ingestion	Dermal	Inhalation (Outdoor)	Exposure Routes Total			Ingestion HQ	Dermal HQ	Inhalation (Outdoor) HQ	Total HI
			3,3- DICHLOROBENZIDINE	1.43E-09	6.58E-10	6.03E-14	2.09E-09	3,3- DICHLOROBENZIDINE	NA	NA	NA	NA	NA
			2,6- DINITROTOLUENE	5.99E-08	2.75E-08	NA	8.74E-08	2,6- DINITROTOLUENE	NA	4.04E-04	1.86E-04	1.70E-08	5.90E-04
			FLUORANTHENE	NA	NA	NA	NA	FLUORANTHENE	Blood; Kidney; Liver	1.04E-05	6.20E-06	4.37E-10	1.66E-05
			FLUORENE	NA	NA	NA	NA	FLUORENE	Blood	3.55E-06	2.12E-06	5.48E-07	6.22E-06
			INDENO(1,2,3-CD)PYRENE	5.10E-08	3.04E-08	6.96E-13	8.14E-08	INDENO(1,2,3-CD)PYRENE	NA	NA	NA	NA	NA
			2- METHYLNAPHTHALENE	NA	NA	NA	NA	2- METHYLNAPHTHALENE	Body Weight; Respiratory	4.92E-05	2.26E-05	NA	7.18E-05
			4- METHYPHENOL	NA	NA	NA	NA	4- METHYLPHENOL	Nervous System; Respiratory	5.03E-05	2.31E-05	NA	7.33E-05
			NAPHTHALENE	NA	NA	NA	NA	NAPHTHALENE	Body Weight; Respiratory	6.01E-06	3.59E-06	1.81E-04	1.91E-04
			PENTACHLOROPHENOL	NA	NA	NA	NA	PENTACHLOROPHENOL	Liver; Kidney	1.97E-05	9.03E-06	8.27E-10	2.87E-05
			PHENANTHRENE	NA	NA	NA	NA	PHENANTHRENE	NOEL	7.29E-07	4.35E-07	3.06E-11	1.16E-06
			PHENOL	NA	NA	NA	NA	PHENOL	Cardiovascular System; Fetal; Kidney; Liver; Nervous System	5.28E-07	2.42E-07	2.33E-10	7.71E-07
			PYRENE	NA	NA	NA	NA	PYRENE	Kidney	1.57E-05	9.35E-06	2.29E-07	2.52E-05
			TPH (mg/kg)					**TPH (mg/kg)**					
			TPH AS DIESEL	NA	NA	NA	NA	TPH AS DIESEL	NA	NA	NA	NA	NA
			TPH AS GASOLINE	NA	NA	NA	NA	TPH AS GASOLINE	NA	NA	NA	NA	NA
			TPH AS MOTOR OIL	NA	NA	NA	NA	TPH AS MOTOR OIL	NA	NA	NA	NA	NA
			VOCs (mg/kg)					**VOCs (mg/kg)**					
			ACETONE	NA	NA	NA	NA	ACETONE	Kidney; Liver	3.89E-07	NA	1.66E-06	2.05E-06
			BENZENE	1.33E-10	NA	2.73E-09	2.86E-09	BENZENE	Immune System	1.37E-06	NA	1.31E-05	1.45E-05
			CARBON DISULFIDE	NA	NA	NA	NA	CARBON DISULFIDE	Fetal	2.73E-07	NA	6.32E-06	6.59E-06
			CHLOROBENZENE	NA	NA	NA	NA	CHLOROBENZENE	Kidney; Liver; Reproductive System	1.31E-06	NA	4.05E-05	4.18E-05
			CIS-1,2-DICHLOROETHENE	NA	NA	NA	NA	CIS-1,2-DICHLOROETHENE	Blood	5.68E-06	NA	1.09E-04	1.14E-04
			ETHYLBENZENE	NA	NA	NA	NA	ETHYLBENZENE	Fetal; Kidney; Liver	4.81E-07	NA	1.73E-06	2.21E-06
			4- ISOPROPYLTOLUENE	NA	NA	NA	NA	4- ISOPROPYLTOLUENE	NA	NA	NA	NA	NA
			METHYLENE CHLORIDE	1.11E-09	NA	6.19E-09	7.30E-09	METHYLENE CHLORIDE	Cardiovascular System; Liver; Nervous System	5.46E-06	NA	6.38E-05	6.93E-05
			NAPHTHALENE	NA	NA	NA	NA	NAPHTHALENE	Body Weight; Respiratory	8.74E-07	NA	2.63E-05	2.72E-05
			TOLUENE	NA	NA	NA	NA	TOLUENE	Fetal; Kidney; Liver; Nervous System; Respiratory	1.64E-07	NA	5.31E-06	5.47E-06
			TRANS-1,2-TRICHLOROETHENE	NA	NA	NA	NA	TRANS-1,2-TRICHLOROETHENE	Blood	1.26E-06	NA	3.03E-05	3.16E-05
			TRICHLOROETHENE	7.62E-10	NA	2.19E-10	9.80E-10	TRICHLOROETHENE	Eyes; Nervous System	2.55E-05	NA	1.29E-05	3.84E-05

Table C2-6f
Summary of Current Receptor RME Cancer Risks and Noncarcinogenic Hazard Indices
Non-Tidal Wetland Areas Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Receptor Population:	Recreational User
Receptor Age:	Child (1 to 17 years)

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Primary Target Organ	Non-Carconogenic Hazard Index			
				Ingestion	Dermal	Inhalation (Outdoor)	Exposure Routes Total			Ingestion HQ	Dermal HQ	Inhalation (Outdoor) HQ	Total HI
			1,2,4- TRIMETHYLBENZENE	NA	NA	NA	NA	1,2,4- TRIMETHYLBENZENE	NA	5.46E-07	NA	4.46E-05	4.51E-05
			1,3,5- TRIMETHYLBENZENE	NA	NA	NA	NA	1,3,5- TRIMETHYLBENZENE	NA	2.03E-07	NA	4.15E-05	4.17E-05
			VINYL CHLORIDE	1.35E-08	NA	7.71E-09	2.12E-08	VINYL CHLORIDE	GI System; Liver; Nervous System	1.24E-05	NA	7.21E-05	8.45E-05
			XYLENE (TOTAL)	NA	NA	NA	NA	XYLENE (TOTAL)	Body Weight; Fetal; Nervous System; Respiratory	6.01E-07	NA	3.82E-05	3.88E-05
Groundwater	Shallow Groundwater	Vapors	**VOCs (ug/L)**					**VOCs (ug/L)**					
			ACETONE	NA	NA	NA	NA	ACETONE	Kidney; Liver	NA	NA	5.63E-04	5.63E-04
			BENZENE	NA	NA	9.57E-07	9.57E-07	BENZENE	Fetal; Immune System; Nervous System; Respiratory	NA	NA	4.60E-03	4.60E-03
			2- BUTANONE	NA	NA	NA	NA	2- BUTANONE	Fetal	NA	NA	3.82E-03	3.82E-03
			CARBON DISULFIDE	NA	NA	NA	NA	CARBON DISULFIDE	Fetal; Nervous System	NA	NA	3.55E-04	3.55E-04
			CHLOROBENZENE	NA	NA	NA	NA	CHLOROBENZENE	Kidney; Liver; Reproductive System	NA	NA	2.66E-03	2.66E-03
			CHLOROMETHANE	NA	NA	6.50E-08	6.50E-08	CHLOROMETHANE	NA	NA	NA	4.94E-04	4.94E-04
			CIS-1,2-DICHLOROETHENE	NA	NA	NA	NA	CIS-1,2-DICHLOROETHENE	Blood	NA	NA	6.98E-03	6.98E-03
			1,3- DICHLOROBENZENE			NA		1,3- DICHLOROBENZENE	NA	NA	NA	3.84E-04	3.84E-04
			1,2- DICHLOROETHENE (TOTAL)	NA	NA	NA	NA	1,2- DICHLOROETHENE (TOTAL)	Blood, Liver	NA	NA	3.28E-02	3.28E-02
			ETHYLBENZENE	NA	NA	NA	NA	ETHYLBENZENE	Fetal; Kidney; Liver	NA	NA	7.42E-05	7.42E-05
			TOLUENE	NA	NA	NA	NA	TOLUENE	Fetal; Kidney; Liver; Nervous System; Respiratory	NA	NA	2.12E-04	2.12E-04
			TRANS-1,2-DICHLOROETHENE	NA	NA	NA	NA	TRANS-1,2-DICHLOROETHENE	Blood; Liver	NA	NA	6.52E-04	6.52E-04
			1,2,4- TRIMETHYLBENZENE	NA	NA	NA	NA	1,2,4- TRIMETHYLBENZENE	NA	NA	NA	6.60E-03	6.60E-03
			1,3,5- TRIMETHYLBENZENE	NA	NA	NA	NA	1,3,5- TRIMETHYLBENZENE	NA	NA	NA	4.99E-03	4.99E-03
			VINYL CHLORIDE	NA	NA	9.07E-08	9.07E-08	VINYL CHLORIDE	GI System; Liver; Nervous System	NA	NA	8.48E-04	8.48E-04
			XYLENE (TOTAL)	NA	NA	NA	NA	XYLENE (TOTAL)	Body Weight; Fetal; Nervous System; Respiratory	NA	NA	1.49E-03	1.49E-03
Groundwater	Intermediate and Deep Groundwater	Vapors	**VOCs (ug/L)**					**VOCs (ug/L)**					
			ACETONE	NA	NA	NA	NA	ACETONE	Kidney; Liver	NA	NA	1.25E-04	1.25E-04
			BENZENE	NA	NA	1.40E-06	1.40E-06	BENZENE	Fetal; Immune System; Nervous System; Respiratory	NA	NA	6.73E-03	6.73E-03
			2- BUTANONE	NA	NA	NA	NA	2- BUTANONE	Fetal	NA	NA	5.83E-04	5.83E-04
			CARBON DISULFIDE	NA	NA	NA	NA	CARBON DISULFIDE	Fetal; Nervous System	NA	NA	5.61E-04	5.61E-04

Table C2-6f
Summary of Current Receptor RME Cancer Risks and Noncarcinogenic Hazard Indices
Non-Tidal Wetland Areas Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Receptor Population:	Recreational User
Receptor Age:	Child (1 to 17 years)

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Primary Target Organ	Non-Carconogenic Hazard Index			
				Ingestion	Dermal	Inhalation (Outdoor)	Exposure Routes Total			Ingestion HQ	Dermal HQ	Inhalation (Outdoor) HQ	Total HI
			CHLOROBENZENE	NA	NA	NA	NA	CHLOROBENZENE	Kidney; Liver; Reproductive System	NA	NA	1.01E-02	1.01E-02
			4- METHYL-2-PENTANONE	NA	NA	NA	NA	4- METHYL-2-PENTANONE	Fetal; Kidney; Liver	NA	NA	2.12E-04	2.12E-04
Wetland	Surface	Surface	**INORGANICS (ug/L)**					**INORGANICS (ug/L)**					
Surface Water	Water	Water	ALUMINUM	NA	NA	NA	NA	ALUMINUM	Body Weight	2.34E-04	2.15E-05	NA	2.56E-04
			ANTIMONY	NA	NA	NA	NA	ANTIMONY	Blood; Whole Body	1.94E-04	1.18E-04	NA	3.12E-04
			ARSENIC	1.63E-05	1.50E-07	NA	1.65E-05	ARSENIC	Cardiovascular System; Fetal; Nervous System; Skin	2.37E-03	2.17E-04	NA	2.59E-03
			BARIUM	NA	NA	NA	NA	BARIUM	Cardiovascular System; Fetal; Kidney; NOEL	5.13E-05	6.72E-05	NA	1.18E-04
			CADMIUM	3.66E-08	6.71E-09	NA	4.33E-08	CADMIUM	Kidney; Respiratory	3.96E-05	7.27E-05	NA	1.12E-04
			CHROMIUM	NA	NA	NA	NA	CHROMIUM	NOEL	1.61E-07	1.14E-06	NA	1.30E-06
			COBALT	NA	NA	NA	NA	COBALT	Cardiovascular System; Respiratory	1.98E-05	7.27E-07	NA	2.05E-05
			COPPER	NA	NA	NA	NA	COPPER	GI System	3.75E-05	3.44E-06	NA	4.09E-05
			LEAD	2.07E-09	1.90E-12	NA	2.07E-09	LEAD	NA	NA	NA	NA	NA
			MANGANESE	NA	NA	NA	NA	MANGANESE	Nervous System	1.29E-03	2.95E-03	NA	4.23E-03
			MERCURY	NA	NA	NA	NA	MERCURY	Nervous System	3.79E-05	4.98E-05	NA	8.77E-05
			MOLYBDENUM	NA	NA	NA	NA	MOLYBDENUM	Kidney	5.46E-05	5.02E-06	NA	5.97E-05
			NICKEL	NA	NA	NA	NA	NICKEL	Body Weight; Respiratory	2.57E-04	1.18E-04	NA	3.75E-04
			SELENIUM	NA	NA	NA	NA	SELENIUM	Cardiovascular System; Liver; Nervous System; Skin	2.00E-04	1.84E-05	NA	2.19E-04
			SILVER	NA	NA	NA	NA	SILVER	Skin	1.55E-05	2.13E-05	NA	3.68E-05
			VANADIUM	NA	NA	NA	NA	VANADIUM	NOEL	1.01E-04	3.56E-04	NA	4.57E-04
			ZINC	NA	NA	NA	NA	ZINC	Blood	1.97E-06	1.09E-07	NA	2.08E-06
			PESTICIDES (ug/L)					**PESTICIDES (ug/L)**					
			ALPHA BHC	5.92E-09	NA	NA	5.92E-09	ALPHA BHC	Liver	7.74E-07	NA	NA	7.74E-07
			4,4- DDE	1.02E-10	8.40E-10	NA	9.41E-10	4,4- DDE	Liver	2.46E-07	2.03E-05	NA	2.06E-05
			4,4- DDT	3.20E-09	4.96E-08	NA	5.28E-08	4,4- DDT	Liver	7.74E-06	1.20E-03	NA	1.21E-03
			ENDOSULFAN SULFATE	NA	NA	NA	NA	ENDOSULFAN SULFATE	Body Weight; Kidney; Nervous System	4.86E-07	NA	NA	4.86E-07
			ENDRIN	NA	NA	NA	NA	ENDRIN	Liver; Kidney; Nervous System	2.12E-06	1.98E-05	NA	2.19E-05
			GAMMA-BHC	1.34E-09	NA	NA	1.34E-09	GAMMA-BHC	Kidney; Liver	1.67E-06	8.97E-06	NA	1.06E-05
			HEPTACHLOR	1.39E-09	8.86E-10	NA	2.28E-09	HEPTACHLOR	Liver	2.55E-07	1.62E-06	NA	1.88E-06

Table C2-6f
Summary of Current Receptor RME Cancer Risks and Noncarcinogenic Hazard Indices
Non-Tidal Wetland Areas Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Receptor Population:	Recreational User
Receptor Age:	Child (1 to 17 years)

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Primary Target Organ	Non-Carconogenic Hazard Index			
				Ingestion	Dermal	Inhalation (Outdoor)	Exposure Routes Total			Ingestion HQ	Dermal HQ	Inhalation (Outdoor) HQ	Total HI
			PCBs (ug/L)					**PCBs (ug/L)**					
			PCBs (TOTAL)	8.29E-09	2.04E-07	NA	2.12E-07	PCBs (TOTAL)	Immune System	3.42E-05	8.39E-03	NA	8.43E-03
			SVOCs (ug/L)					**SVOCs (ug/L)**					
			BIS(2-ETHYLHEXYL)PHTHALATE	1.27E-08	2.63E-08	NA	3.90E-08	BIS(2-ETHYLHEXYL)PHTHALATE	Liver	1.87E-05	3.87E-04	NA	4.05E-04
			CHRYSENE	2.65E-09	4.51E-08	NA	4.78E-08	CHRYSENE	NA	NA	NA	NA	NA
			2,4 DIMETHYLPHENOL	NA	NA	NA	NA	2,4- DIMETHYLPHENOL	Blood; Nervous System	4.55E-07	9.17E-07	NA	1.37E-06
			DI-N-BUTYLPHTHALATE	NA	NA	NA	NA	DI-N-BUTYLPHTHALATE	Whole Body	2.37E-06	2.55E-05	NA	2.79E-05
			ISOPHORONE	NA	NA	NA	NA	ISOPHORONE	NOEL	2.28E-08	1.56E-08	NA	3.84E-08
			4- METHYLPHENOL	NA	NA	NA	NA	4- METHYLPHENOL	Nervous System; Respiratory	2.36E-04	3.02E-04	NA	5.38E-04
			TPH (mg/L)					**TPH (mg/L)**					
			TPH AS DIESEL	NA	NA	NA	NA	TPH AS DIESEL	NA	NA	NA	NA	NA
			TPH AS GASOLINE	NA	NA	NA	NA	TPH AS GASOLINE	NA	NA	NA	NA	NA
			TPH AS MOTOR OIL	NA	NA	NA	NA	TPH AS MOTOR OIL	NA	NA	NA	NA	NA

Cancer Risk Across Soil:	6.4E-05
Cancer Risk Across Groundwater:	2.5E-06
Cancer Risk Across Surface Water:	1.7E-05
Total Cancer Risk:	8.3E-05

HI Across Soil:	2.1E-01
HI Across Groundwater:	8.6E-02
HI Across Surface Water:	2.0E-02
Total HI:	3.2E-01
Total Blood HI:	6.2E-02
Total Body Weight HI:	3.9E-02
Total Cardiovascular System HI:	9.4E-02
Total Fetal/Reproductive System HI:	1.2E-01
Total GI System HI:	6.6E-03
Total Immune System HI:	3.5E-02
Total Kidney HI:	2.5E-02
Total Liver HI:	5.9E-02
Total Nervous System HI:	1.3E-01
Total NOEL HI:	2.1E-02
Total Respiratory HI:	3.0E-02
Total Skin HI:	9.2E-02
Total Whole Body HI:	1.3E-02

Notes:
EPC = Exposure point concentration
GI = Gastrointestinal
HQ = Hazard Quotient
HI = Hazard Index
mg/kg = milligrams per kilogram
mg/L = milligrams per liter
NA = Not Applicable
PCBs = Polychlorinated Biphenyls
RME = Reasonable Maximum Exposure
SVOCs = Semivolatile Organic Compounds
TPH = Total Petroleum Hydrocarbons
VOCs = Volatile Organic Compounds
ug/L = microgram per liter

Table C2-6g
Summary of Future Receptor RME Cancer Risks and Noncarcinogenic Hazard Indices
Non-Tidal Wetland Areas Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Receptor Population:	Construction Worker
Receptor Age:	Adult

				Carcinogenic Risk						Non-Carconogenic Hazard Index			
Medium	**Exposure Medium**	**Exposure Point**	**Chemical**	**Ingestion**	**Dermal**	**Inhalation (Outdoor)**	**Exposure Routes Total**	**Chemical**	**Primary Target Organ**	**Ingestion HQ**	**Dermal HQ**	**Inhalation (Outdoor) HQ**	**Total HI**
Soil (0 to 10 feet)	Soil	On-Site Soil	**INORGANICS (mg/kg)**					**INORGANICS (mg/kg)**					
			ALUMINUM	NA	NA	NA	NA	ALUMINUM	Body Weight	8.64E-02	NA	1.14E-01	2.00E-01
			ANTIMONY	NA	NA	NA	NA	ANTIMONY	Blood; Whole Body	3.63E-02	NA	NA	3.63E-02
			ARSENIC	9.28E-06	8.36E-07	2.18E-08	1.01E-05	ARSENIC	Cardiovascular System; Fetal; Nervous System; Skin	2.29E-01	2.06E-02	1.48E-02	2.65E-01
			BARIUM	NA	NA	NA	NA	BARIUM	Cardiovascular System; Fetal; Kidney; NOEL	4.32E-03	NA	3.91E-03	8.22E-03
			BERYLLIUM	NA	NA	4.65E-10	4.65E-10	BERYLLIUM	GI System; Immune System; Respiratory	1.05E-03	NA	1.94E-03	2.99E-03
			CADMIUM	5.08E-08	6.10E-09	3.71E-09	6.06E-08	CADMIUM	Kidney; Respiratory	1.87E-02	2.25E-03	3.03E-03	2.40E-02
			CHROMIUM	NA	NA	NA	NA	CHROMIUM	NOEL	4.63E-04	NA	NA	4.63E-04
			COBALT	NA	NA	1.54E-08	1.54E-08	COBALT	Cardiovascular System; Respiratory	2.97E-03	NA	1.93E-02	2.22E-02
			COPPER	NA	NA	NA	NA	COPPER	GI System	1.57E-02	NA	NA	1.57E-02
			HEXAVALENT CHROMIUM	NA	NA	3.04E-09	3.04E-09	HEXAVALENT CHROMIUM	NOEL; Respiratory	7.53E-05	NA	1.46E-05	8.99E-05
			LEAD	3.69E-08	NA	3.36E-10	3.72E-08	LEAD	NA	NA	NA	NA	NA
			MANGANESE	NA	NA	NA	NA	MANGANESE	Nervous System	2.09E-02	NA	3.78E-01	3.99E-01
			MERCURY	NA	NA	NA	NA	MERCURY	Nervous System	1.51E-02	NA	3.25E-04	1.54E-02
			MOLYBDENUM	NA	NA	NA	NA	MOLYBDENUM	Kidney	3.29E-03	NA	NA	3.29E-03
			NICKEL	NA	NA	8.76E-09	8.76E-09	NICKEL	Body Weight; Respiratory	1.82E-02	NA	4.72E-02	6.55E-02
			SELENIUM	NA	NA	NA	NA	SELENIUM	Cardiovascular System; Liver; Nervous System; Skin	7.75E-04	NA	1.25E-06	7.76E-04
			SILVER	NA	NA	NA	NA	SILVER	Skin	1.81E-03	NA	NA	1.81E-03
			THALLIUM	NA	NA	NA	NA	THALLIUM	Blood; Liver	2.30E-02	NA	NA	2.30E-02
			TIN	NA	NA	NA	NA	TIN	Kidney; Liver	8.77E-05	NA	NA	8.77E-05
			VANADIUM	NA	NA	NA	NA	VANADIUM	NOEL	5.40E-02	NA	NA	5.40E-02
			ZINC	NA	NA	NA	NA	ZINC	Blood	2.53E-03	NA	NA	2.53E-03
			PESTICIDES (mg/kg)					**PESTICIDES (mg/kg)**					
			ALPHA-CHLORDANE	4.92E-10	5.90E-11	2.45E-13	5.51E-10	ALPHA-CHLORDANE	Liver	5.30E-05	6.35E-06	2.45E-07	5.96E-05
			BETA BHC	8.30E-11	9.96E-12	1.59E-13	9.32E-11	BETA BHC	Liver	1.61E-05	1.94E-06	2.98E-08	1.81E-05
			DELTA BHC	NA	NA	NA	NA	DELTA BHC	NA	NA	NA	NA	NA
			2,4- DDD	3.21E-10	2.89E-11	5.93E-13	3.51E-10	2,4 DDD	Liver	1.87E-04	1.69E-05	3.46E-07	2.04E-04
			4,4- DDD	9.52E-10	8.57E-11	1.76E-12	1.04E-09	4,4- DDD	Liver	5.55E-04	5.00E-05	1.03E-06	6.06E-04
			4,4- DDE	2.67E-10	2.40E-11	4.93E-13	2.91E-10	4,4- DDE	Liver	1.10E-04	9.88E-06	2.03E-07	1.20E-04
			4,4- DDT	1.88E-10	1.69E-11	3.48E-13	2.05E-10	4,4- DDT	Liver	7.75E-05	6.97E-06	1.43E-07	8.46E-05
			DIELDRIN	2.88E-09	8.64E-10	5.32E-12	3.75E-09	DIELDRIN	Liver	2.52E-04	7.56E-05	4.65E-07	3.28E-04

Table C2-6g
Summary of Future Receptor RME Cancer Risks and Noncarcinogenic Hazard Indices
Non-Tidal Wetland Areas Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Receptor Population:	Construction Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Primary Target Organ	Non-Carconogenic Hazard Index			
				Ingestion	Dermal	Inhalation (Outdoor)	Exposure Routes Total			Ingestion HQ	Dermal HQ	Inhalation (Outdoor) HQ	Total HI
			ENDOSULFAN I	NA	NA	NA	NA	ENDOSULFAN I	Body Weight; Kidney; Nervous System	2.15E-06	6.46E-07	3.98E-09	2.80E-06
			ENDOSULFAN SULFATE	NA	NA	NA	NA	ENDOSULFAN SULFATE	Body Weight; Kidney; Nervous System	1.61E-06	4.84E-07	2.98E-09	2.10E-06
			ENDRIN	NA	NA	NA	NA	ENDRIN	Liver; Kidney; Nervous System	2.15E-04	6.46E-05	3.98E-07	2.80E-04
			ENDRIN ALDEHYDE	NA	NA	NA	NA	ENDRIN ALDEHYDE	Liver; Kidney; Nervous System	6.46E-05	1.94E-05	1.19E-07	8.41E-05
			ENDRIN KETONE	NA	NA	NA	NA	ENDRIN KETONE	Liver; Kidney; Nervous System	3.23E-05	9.69E-06	5.97E-08	4.20E-05
			GAMMA-CHLORDANE	5.10E-10	6.12E-11	2.54E-13	5.71E-10	GAMMA-CHLORDANE	Liver	5.49E-05	6.59E-06	2.54E-07	6.17E-05
			HEPTACHLOR	4.15E-11	1.25E-11	7.67E-14	5.40E-11	HEPTACHLOR	Liver	1.29E-06	3.87E-07	2.39E-09	1.68E-06
			HEPTACHLOR EPOXIDE	1.26E-10	3.78E-11	2.33E-13	1.64E-10	HEPTACHLOR EPOXIDE	Liver	7.45E-05	2.24E-05	1.38E-07	9.70E-05
			HEXACHLOROBENZENE	6.64E-11	1.99E-11	1.23E-13	8.65E-11	HEXACHLOROBENZENE	Liver	3.23E-06	9.69E-07	5.97E-09	4.20E-06
			METHOXYCHLOR	NA	NA	NA	NA	METHOXYCHLOR	Fetal	1.29E-05	1.55E-06	2.39E-08	1.45E-05
			MIREX	NA	NA	NA	NA	MIREX	Liver	6.46E-05	1.94E-05	1.19E-07	8.41E-05
			TRANS-NONACHLOR	1.44E-10	1.73E-11	7.16E-14	1.61E-10	TRANS-NONACHLOR	Liver	1.55E-05	1.86E-06	7.16E-08	1.74E-05
			PCBs (mg/kg)					**PCBs (mg/kg)**					
			PCBs (TOTAL)	3.69E-08	1.55E-08	2.73E-11	5.24E-08	PCBs (TOTAL)	Immune System	2.58E-02	1.08E-02	4.77E-05	3.67E-02
			SVOCs (mg/kg)					**SVOCs (mg/kg)**					
			ACENAPHTHENE	NA	NA	NA	NA	ACENAPHTHENE	Liver	7.00E-06	2.73E-06	2.36E-06	1.21E-05
			ACENAPHTHYLENE	NA	NA	NA	NA	ACENAPHTHYLENE	NA	NA	NA	NA	NA
			ANTHRACENE	NA	NA	NA	NA	ANTHRACENE	NOEL	1.40E-06	5.46E-07	1.21E-07	2.07E-06
			BENZO(A)ANTHRACENE	1.55E-08	6.04E-09	9.31E-12	2.16E-08	BENZO(A)ANTHRACENE	NA	NA	NA	NA	NA
			BENZO(A)PYRENE	1.33E-07	5.18E-08	7.98E-11	1.85E-07	BENZO(A)PYRENE	NA	NA	NA	NA	NA
			BENZO(B)FLUORANTHENE	1.33E-08	5.18E-09	7.98E-12	1.85E-08	BENZO(B)FLUORANTHENE	NA	NA	NA	NA	NA
			BENZO(G,H,I)PERYLENE	NA	NA	NA	NA	BENZO(G,H,I)PERYLENE	Kidney; Nervous System	1.29E-05	5.04E-06	2.39E-08	1.80E-05
			BENZO(K)FLUORANTHENE	1.33E-08	5.18E-09	7.98E-12	1.85E-08	BENZO(K)FLUORANTHENE	NA	NA	NA	NA	NA
			BENZOIC ACID	NA	NA	NA	NA	BENZOIC ACID	NOEL	5.49E-07	1.65E-07	1.01E-09	7.15E-07
			BIS(2-ETHYLHEXYL)PHTHALATE	7.10E-10	2.13E-10	1.31E-12	9.25E-10	BIS(2-ETHYLHEXYL)PHTHALATE	Liver	1.78E-04	5.33E-05	3.28E-07	2.31E-04
			BUTYLBENZYPHTHALATE	NA	NA	NA	NA	BUTYLBENZYPHTHALATE	Liver	4.04E-07	1.21E-07	7.46E-10	5.25E-07
			CABAZOLE	5.07E-10	1.52E-10	9.38E-13	6.61E-10	CABAZOLE	NA	NA	NA	NA	NA
			4- CHLOROANILINE	NA	NA	NA	NA	4- CHLOROANILINE	Spleen	2.42E-06	7.27E-07	4.47E-09	3.15E-06
			2- CHLOROPHENOL	NA	NA	NA	NA	2- CHLOROPHENOL	Reproductive	2.80E-05	8.39E-06	5.17E-08	3.64E-05
			CHRYSENE	1.49E-09	5.83E-10	1.09E-11	2.09E-09	CHRYSENE	NA	NA	NA	NA	NA
			DIBENZOFURAN	NA	NA	NA	NA	DIBENZOFURAN	NA	5.81E-04	1.74E-04	1.07E-06	7.57E-04
			3,3- DICHLOROBENZIDINE	2.49E-10	7.47E-11	4.60E-13	3.24E-10	3,3- DICHLOROBENZIDINE	NA	NA	NA	NA	NA

Table C2-6g
Summary of Future Receptor RME Cancer Risks and Noncarcinogenic Hazard Indices
Non-Tidal Wetland Areas Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Receptor Population:	Construction Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Primary Target Organ	Non-Carconogenic Hazard Index			
				Ingestion	Dermal	Inhalation (Outdoor)	Exposure Routes Total			Ingestion HQ	Dermal HQ	Inhalation (Outdoor) HQ	Total HI
			2,6- DINITROTOLUENE	1.04E-08	3.12E-09	NA	1.35E-08	2,6- DINITROTOLUENE	NA	1.19E-03	3.58E-04	2.21E-06	1.56E-03
			FLUORANTHENE	NA	NA	NA	NA	FLUORANTHENE	Blood; Kidney; Liver	3.07E-05	1.20E-05	5.67E-08	4.27E-05
			FLUORENE	NA	NA	NA	NA	FLUORENE	Blood	1.05E-05	4.09E-06	1.77E-06	1.64E-05
			INDENO(1,2,3-CD)PYRENE	8.86E-09	3.45E-09	5.32E-12	1.23E-08	INDENO(1,2,3-CD)PYRENE	NA	NA	NA	NA	NA
			2- METHYLNAPHTHALENE	NA	NA	NA	NA	2- METHYLNAPHTHALENE	Body Weight; Respiratory	1.45E-04	4.36E-05	NA	1.89E-04
			4- METHYPHENOL	NA	NA	NA	NA	4- METHYLPHENOL	Nervous System; Respiratory	1.49E-04	4.46E-05	NA	1.93E-04
			NAPHTHALENE	NA	NA	NA	NA	NAPHTHALENE	Body Weight; Respiratory	1.78E-05	6.93E-06	5.84E-04	6.09E-04
			PENTACHLOROPHENOL	NA	NA	NA	NA	PENTACHLOROPHENOL	Liver; Kidney	5.81E-05	1.74E-05	1.07E-07	7.57E-05
			PHENANTHRENE	NA	NA	NA	NA	PHENANTHRENE	NOEL	2.15E-06	8.40E-07	3.98E-09	3.00E-06
			PHENOL	NA	NA	NA	NA	PHENOL	Cardiovascular System; Fetal; Kidney; Liver; Nervous System	1.56E-06	4.68E-07	3.03E-08	2.06E-06
			PYRENE	NA	NA	NA	NA	PYRENE	Kidney	4.63E-05	1.80E-05	7.38E-07	6.51E-05
			TPH (mg/kg)					**TPH (mg/kg)**					
			TPH AS DIESEL	NA	NA	NA	NA	TPH AS DIESEL	NA	NA	NA	NA	NA
			TPH AS GASOLINE	NA	NA	NA	NA	TPH AS GASOLINE	NA	NA	NA	NA	NA
			TPH AS MOTOR OIL	NA	NA	NA	NA	TPH AS MOTOR OIL	NA	NA	NA	NA	NA
			VOCs (mg/kg)					**VOCs (mg/kg)**					
			ACETONE	NA	NA	NA	NA	ACETONE	Kidney; Liver	1.15E-06	NA	5.35E-06	6.50E-06
			BENZENE	2.31E-11	NA	5.18E-10	5.41E-10	BENZENE	Immune System	4.04E-06	NA	4.23E-05	4.63E-05
			CARBON DISULFIDE	NA	NA	NA	NA	CARBON DISULFIDE	Fetal	8.07E-07	NA	2.04E-05	2.12E-05
			CHLOROBENZENE	NA	NA	NA	NA	CHLOROBENZENE	Kidney; Liver; Reproductive System	3.87E-06	NA	1.31E-04	1.34E-04
			CIS-1,2-DICHLOROETHENE	NA	NA	NA	NA	CIS-1,2-DICHLOROETHENE	Blood	1.68E-05	NA	3.51E-04	3.68E-04
			ETHYLBENZENE	NA	NA	NA	NA	ETHYLBENZENE	Fetal; Kidney; Liver	1.42E-06	NA	5.58E-06	7.00E-06
			4- ISOPROPYLTOLUENE	NA	NA	NA	NA	4- ISOPROPYLTOLUENE	NA	NA	NA	NA	NA
			METHYLENE CHLORIDE	1.94E-10	NA	1.17E-09	1.37E-09	METHYLENE CHLORIDE	Cardiovascular System; Liver; Nervous System	1.61E-05	NA	2.06E-04	2.22E-04
			NAPHTHALENE	NA	NA	NA	NA	NAPHTHALENE	Body Weight; Respiratory	2.58E-06	NA	8.50E-05	8.76E-05
			TOLUENE	NA	NA	NA	NA	TOLUENE	Fetal; Kidney; Liver; Nervous System; Respiratory	4.84E-07	NA	1.71E-05	1.76E-05
			TRANS-1,2-TRICHLOROETHENE	NA	NA	NA	NA	TRANS-1,2-TRICHLOROETHENE	Blood	3.71E-06	NA	9.78E-05	1.02E-04
			TRICHLOROETHENE	1.32E-10	NA	4.15E-11	1.74E-10	TRICHLOROETHENE	Eyes; Nervous System	7.53E-05	NA	4.15E-05	1.17E-04
			1,2,4- TRIMETHYLBENZENE	NA	NA	NA	NA	1,2,4- TRIMETHYLBENZENE	NA	1.61E-06	NA	1.44E-04	1.46E-04

Table C2-6g
Summary of Future Receptor RME Cancer Risks and Noncarcinogenic Hazard Indices
Non-Tidal Wetland Areas Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Receptor Population:	Construction Worker
Receptor Age:	Adult

				Carcinogenic Risk						Non-Carconogenic Hazard Index			
Medium	**Exposure Medium**	**Exposure Point**	**Chemical**	**Ingestion**	**Dermal**	**Inhalation (Outdoor)**	**Exposure Routes Total**	**Chemical**	**Primary Target Organ**	**Ingestion HQ**	**Dermal HQ**	**Inhalation (Outdoor) HQ**	**Total HI**
			1,3,5- TRIMETHYLBENZENE	NA	NA	NA	NA	1,3,5- TRIMETHYLBENZENE	NA	6.01E-07	NA	1.34E-04	1.34E-04
			VINYL CHLORIDE	2.35E-09	NA	1.46E-09	3.82E-09	VINYL CHLORIDE	GI System; Liver; Nervous System	3.66E-05	NA	2.33E-04	2.69E-04
			XYLENE (TOTAL)	NA	NA	NA	NA	XYLENE (TOTAL)	Body Weight; Fetal; Nervous System; Respiratory	1.78E-06	NA	1.23E-04	1.25E-04
Groundwater	Shallow Groundwater	Vapors	**VOCs (ug/L)**					**VOCs (ug/L)**					
			ACETONE	NA	NA	NA	NA	ACETONE	Kidney; Liver	NA	NA	1.82E-03	1.82E-03
			BENZENE	NA	NA	1.82E-07	1.82E-07	BENZENE	Fetal; Immune System; Nervous System; Respiratory	NA	NA	1.49E-02	1.49E-02
			2- BUTANONE	NA	NA	NA	NA	2- BUTANONE	Fetal	NA	NA	1.23E-02	1.23E-02
			CARBON DISULFIDE	NA	NA	NA	NA	CARBON DISULFIDE	Fetal; Nervous System	NA	NA	1.14E-03	1.14E-03
			CHLOROBENZENE	NA	NA	NA	NA	CHLOROBENZENE	Kidney; Liver; Reproductive System	NA	NA	8.57E-03	8.57E-03
			CHLOROMETHANE	NA	NA	1.23E-08	1.23E-08	CHLOROMETHANE	NA	NA	NA	1.59E-03	1.59E-03
			CIS-1,2-DICHLOROETHENE	NA	NA	NA	NA	CIS-1,2-DICHLOROETHENE	Blood	NA	NA	2.25E-02	2.25E-02
			1,3- DICHLOROBENZENE			NA		1,3- DICHLOROBENZENE	NA	NA	NA	1.24E-03	1.24E-03
			1,2- DICHLOROETHENE (TOTAL)	NA	NA	NA	NA	1,2- DICHLOROETHENE (TOTAL)	Blood, Liver	NA	NA	1.06E-01	1.06E-01
			ETHYLBENZENE	NA	NA	NA	NA	ETHYLBENZENE	Fetal; Kidney; Liver	NA	NA	2.39E-04	2.39E-04
			TOLUENE	NA	NA	NA	NA	TOLUENE	Fetal; Kidney; Liver; Nervous System; Respiratory	NA	NA	6.85E-04	6.85E-04
			TRANS-1,2-DICHLOROETHENE	NA	NA	NA	NA	TRANS-1,2-DICHLOROETHENE	Blood; Liver	NA	NA	2.10E-03	2.10E-03
			1,2,4- TRIMETHYLBENZENE	NA	NA	NA	NA	1,2,4- TRIMETHYLBENZENE	NA	NA	NA	2.13E-02	2.13E-02
			1,3,5- TRIMETHYLBENZENE	NA	NA	NA	NA	1,3,5- TRIMETHYLBENZENE	NA	NA	NA	1.61E-02	1.61E-02
			VINYL CHLORIDE	NA	NA	1.72E-08	1.72E-08	VINYL CHLORIDE	GI System; Liver; Nervous System	NA	NA	2.74E-03	2.74E-03
			XYLENE (TOTAL)	NA	NA	NA	NA	XYLENE (TOTAL)	Body Weight; Fetal; Nervous System; Respiratory	NA	NA	4.80E-03	4.80E-03
Groundwater	Intermediate and Deep Groundwater	Vapors	**VOCs (ug/L)**					**VOCs (ug/L)**					
			ACETONE	NA	NA	NA	NA	ACETONE	Kidney; Liver	NA	NA	4.02E-04	4.02E-04
			BENZENE	NA	NA	2.66E-07	2.66E-07	BENZENE	Fetal; Immune System; Nervous System; Respiratory	NA	NA	2.17E-02	2.17E-02
			2- BUTANONE	NA	NA	NA	NA	2- BUTANONE	Fetal	NA	NA	1.88E-03	1.88E-03
			CARBON DISULFIDE	NA	NA	NA	NA	CARBON DISULFIDE	Fetal; Nervous System	NA	NA	1.81E-03	1.81E-03
			CHLOROBENZENE	NA	NA	NA	NA	CHLOROBENZENE	Kidney; Liver; Reproductive System	NA	NA	3.26E-02	3.26E-02

Table C2-6g
Summary of Future Receptor RME Cancer Risks and Noncarcinogenic Hazard Indices
Non-Tidal Wetland Areas Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Receptor Population:	Construction Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk: Ingestion	Carcinogenic Risk: Dermal	Carcinogenic Risk: Inhalation (Outdoor)	Carcinogenic Risk: Exposure Routes Total	Chemical	Primary Target Organ	Non-Carcinogenic Hazard Index: Ingestion HQ	Non-Carcinogenic Hazard Index: Dermal HQ	Non-Carcinogenic Hazard Index: Inhalation (Outdoor) HQ	Non-Carcinogenic Hazard Index: Total HI
			4- METHYL-2-PENTANONE	NA	NA	NA	NA	4- METHYL-2-PENTANONE	Fetal; Kidney; Liver	NA	NA	6.85E-04	6.85E-04

Cancer Risk Across Soil:	1.1E-05
Cancer Risk Across Groundwater:	4.8E-07
Total Cancer Risk:	1.1E-05

HI Across Soil:	1.2E+00
HI Across Groundwater:	2.8E-01
Total HI:	1.5E+00
Total Blood HI:	1.9E-01
Total Body Weight HI:	2.7E-01
Total Cardiovascular System HI:	3.0E-01
Total Fetal/Reproductive System HI:	3.6E-01
Total GI System HI:	2.2E-02
Total Immune System HI:	7.6E-02
Total Kidney HI:	8.1E-02
Total Liver HI:	1.8E-01
Total Nervous System HI:	7.3E-01
Total NOEL HI:	6.3E-02
Total Respiratory HI:	1.6E-01
Total Skin HI:	2.7E-01
Total Whole Body HI:	3.6E-02

Notes:
EPC = Exposure point concentration
GI = Gastrointestinal
HQ = Hazard Quotient
HI = Hazard Index
mg/kg = milligrams per kilogram
mg/L = milligrams per liter
NA = Not Applicable
PCBs = Polychlorinated Biphenyls
RME = Reasonable Maximum Exposure
SVOCs = Semivolatile Organic Compounds
TPH = Total Petroleum Hydrocarbons
VOCs = Volatile Organic Compounds
ug/L = microgram per liter

Table C2-6h
Summary of Estimated Cancer Risks and Hazard Indices for Soil
Non-Tidal Wetland Area Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	RME Result			
	Baseline Cancer Risk*	**Baseline Hazard Index***	**Residual Cancer Risk**	**Residual Hazard Index**
Recreational User - Future				
Total Risk Across Soil	6.4E-05	2.5E-01	6.4E-05	2.1E-01
Total Risk Across Soil (without arsenic)	3.2E-06	1.6E-01	2.8E-06	1.3E-01
Construction Worker - Future				
Total Risk Across Soil	1.1E-05	1.3E+00	1.1E-05	1.2E+00
Total Risk Across Soil (without arsenic)	5.2E-07	1.0E+00	4.6E-07	9.2E-01

Notes:

RME = Reasonable Maximum Exposure

* - Baseline HHRA did not include full data set; outlier concentrations were excluded.

Table C2-6i
Comparison of EPCs, Cancer Risk Estimates, and Hazard Indices from Baseline Risk Assessment
Non-Tidal Wetland Area Alternative 4
Soil (0 to 10 feet bgs)
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Baseline Risk Estimates					Alternative 4 Estimates				
		Recreational User		Construction Worker			Recreational User		Construction Worker	
Chemical of Potential Concern	Medium EPC Value	RME Carcinogenic Risk	RME Total HI	RME Carcinogenic Risk	RME Total HI	Medium EPC Value	RME Carcinogenic Risk	RME Total HI	RME Carcinogenic Risk	RME Total HI
INORGANICS (mg/kg)										
ALUMINUM	30,215	NA	3.40E-02	NA	2.26E-01	26,758	NA	3.01E-02	NA	2.00E-01
ANTIMONY	11.2	NA	3.06E-02	NA	9.04E-02	4.5	NA	1.23E-02	NA	3.63E-02
ARSENIC	21.3	6.08E-05	8.84E-02	1.01E-05	2.65E-01	21.3	6.08E-05	8.84E-02	1.01E-05	2.65E-01
BARIUM	90.1	NA	1.44E-03	NA	7.92E-03	93.6	NA	1.49E-03	NA	8.22E-03
BERYLLIUM	0.64	6.00E-11	3.64E-04	4.58E-10	2.94E-03	0.65	6.09E-11	3.70E-04	4.65E-10	2.99E-03
CADMIUM	2.97	3.55E-07	7.71E-03	6.21E-08	2.46E-02	2.9	3.47E-07	7.53E-03	6.06E-08	2.40E-02
CHROMIUM	137	NA	9.98E-05	NA	2.95E-04	215	NA	1.57E-04	NA	4.63E-04
COBALT	18.5	2.02E-09	1.16E-03	1.55E-08	2.24E-02	18.4	2.01E-09	1.15E-03	1.54E-08	2.22E-02
COPPER	108	NA	2.95E-03	NA	8.72E-03	194	NA	5.30E-03	NA	1.57E-02
HEXAVALENT CHROMIUM	0.07	3.98E-10	2.56E-05	3.04E-09	8.99E-05	0.07	3.98E-10	2.56E-05	3.04E-09	8.99E-05
LEAD	166	3.75E-07	NA	6.57E-08	NA	94	2.12E-07	NA	3.72E-08	NA
MANGANESE	900	NA	9.92E-03	NA	3.96E-01	907	NA	9.99E-03	NA	3.99E-01
MERCURY	1.2	NA	4.37E-03	NA	1.32E-02	1.4	NA	5.10E-03	NA	1.54E-02
MOLYBDENUM	9.5	NA	2.08E-03	NA	6.14E-03	5.1	NA	1.11E-03	NA	3.29E-03
NICKEL	107	1.09E-09	6.19E-03	8.30E-09	6.20E-02	113	1.15E-09	6.54E-03	8.76E-09	6.55E-02
SELENIUM	1.4	NA	3.06E-04	NA	9.06E-04	1.2	NA	2.62E-04	NA	7.76E-04
SILVER	2.7	NA	5.90E-04	NA	1.74E-03	2.8	NA	6.12E-04	NA	1.81E-03
THALLIUM	0.47	NA	7.78E-03	NA	2.30E-02	0.47	NA	7.78E-03	NA	2.30E-02
TIN	14.7	NA	2.68E-05	NA	7.91E-05	16.3	NA	2.97E-05	NA	8.77E-05
VANADIUM	115	NA	1.80E-02	NA	5.30E-02	117	NA	1.83E-02	NA	5.40E-02
ZINC	210	NA	7.65E-04	NA	2.26E-03	235	NA	8.56E-04	NA	2.53E-03
PCBs (mg/kg)										
PCBs (TOTAL)	0.36	7.85E-07	3.23E-02	1.18E-07	8.26E-02	0.16	3.49E-07	1.44E-02	5.24E-08	3.67E-02
SVOCs (mg/kg)										
ACENAPHTHENE	0.42	NA	1.46E-05	NA	3.90E-05	0.13	NA	4.51E-06	NA	1.21E-05
ACENAPHTHYLENE	0.12	NA	NA	NA	NA	0.12	NA	NA	NA	NA
ANTHRACENE	1.1	NA	6.72E-06	NA	1.75E-05	0.13	NA	7.94E-07	NA	2.07E-06
BENZO(A)ANTHRACENE	0.12	6.10E-08	NA	9.24E-09	NA	0.28	1.42E-07	NA	2.16E-08	NA
BENZO(A)PYRENE	0.11	5.59E-07	NA	8.47E-08	NA	0.24	1.22E-06	NA	1.85E-07	NA
BENZO(B)FLUORANTHENE	0.15	7.63E-08	NA	1.15E-08	NA	0.24	1.22E-07	NA	1.85E-08	NA
BENZO(G,H,I)PERYLENE	0.59	NA	2.57E-05	NA	6.63E-05	0.16	NA	6.98E-06	NA	1.80E-05
BENZO(K)FLUORANTHENE	1.38	7.02E-07	NA	1.06E-07	NA	0.24	1.22E-07	NA	1.85E-08	NA
CHRYSENE	0.11	5.62E-09	NA	8.51E-10	NA	0.27	1.38E-08	NA	2.09E-09	NA
FLUORANTHENE	0.091	NA	3.97E-06	NA	1.02E-05	0.38	NA	1.66E-05	NA	4.27E-05
FLUORENE	0.5	NA	2.39E-05	NA	6.29E-05	0.13	NA	6.22E-06	NA	1.64E-05
INDENO(1,2,3-CD)PYRENE	0.12	6.10E-08	NA	9.24E-09	NA	0.16	8.14E-08	NA	1.23E-08	NA
NAPHTHALENE	0.35	NA	6.07E-04	NA	1.94E-03	0.11	NA	1.91E-04	NA	6.09E-04
PHENANTHRENE	0.12	NA	6.98E-07	NA	1.80E-06	0.2	NA	1.16E-06	NA	3.00E-06
PYRENE	0.096	NA	5.63E-06	NA	1.45E-05	0.43	NA	2.52E-05	NA	6.51E-05

Table C2-6i
Comparison of EPCs, Cancer Risk Estimates, and Hazard Indices from Baseline Risk Assessment
Non-Tidal Wetland Area Alternative 4
Soil (0 to 10 feet bgs)
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Baseline Risk Estimates					Alternative 4 Estimates				
		Recreational User		Construction Worker			Recreational User		Construction Worker	
Chemical of Potential Concern	Medium EPC Value	RME Carcinogenic Risk	RME Total HI	RME Carcinogenic Risk	RME Total HI	Medium EPC Value	RME Carcinogenic Risk	RME Total HI	RME Carcinogenic Risk	RME Total HI
TPH (mg/kg)										
TPH AS DIESEL	677	NA	NA	NA	NA	177	NA	NA	NA	NA
TPH AS GASOLINE	4.6	NA	NA	NA	NA	4.2	NA	NA	NA	NA
TPH AS MOTOR OIL	324	NA	NA	NA	NA	313	NA	NA	NA	NA
SOIL TOTALS:		**6.4E-05**	**2.5E-01**	**1.1E-05**	**1.3E+00**		**6.3E-05**	**2.1E-01**	**1.1E-05**	**1.2E+00**

Table C2-6j
Post-Remediation Gray Fox Risk Calculations (Wetland Sediment Residual Concentration)
Deep Soil (0 - 10 ft bgs) at Hazard Quotient Equals Three
Non-Tidal Wetland Area Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Concentrations				Intake (mg/kg BW-day)					Hazard Quotient (HQ) - Low					Hazard Quotient (HQ) - High			
COPEC[a]	Surface Water (mg/L)[b]	Sediment[c]	Small Mammal BAF[d]	Small Mammal Tissue[d]	Surface Water	Sediment	Small Mammal	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Small Mammal	Total Intake		High TRV (mg/kg BW-day)	Surface Water	Sediment	Small Mammal	Total Intake
Metals (mg/kg)																			
Aluminum	12.6	2.68E+04	1.11E-02	2.96E+02	2.72E-01	8.54E+00	3.37E+00	1.22E+01	1.93	1.4E-01	4.4E+00	1.7E+00	6.3E+00	>1	19.3	1.4E-02	4.4E-01	1.7E-01	6.3E-01
Antimony	0.003	4.50E+00	1.22E+00	5.48E+00	6.48E-05	1.44E-03	6.25E-02	6.40E-02	0.06	1.1E-03	2.4E-02	1.1E+00	1.1E+00		23.4	2.8E-06	6.1E-05	2.7E-03	2.7E-03
Arsenic	0.0436	2.13E+01	--	0	9.42E-04	6.80E-03	0.00E+00	7.74E-03	0.32	2.9E-03	2.1E-02	0	2.4E-02		4.7	2.0E-04	1.4E-03	0.0E+00	1.6E-03
Barium	0.24	9.36E+01	9.41E-02	8.81E+00	5.10E-03	2.99E-02	1.00E-01	1.35E-01	51.8	9.8E-05	5.8E-04	1.9E-03	2.6E-03		66.0	7.7E-05	4.5E-04	1.5E-03	2.1E-03
Beryllium		6.50E-01	--	0		2.08E-04	0.00E+00	2.08E-04	0.532		3.9E-04	0	3.9E-04		0.554		3.7E-04	0.0E+00	3.7E-04
Cadmium	0.0016	2.90E+00	--	0	3.46E-05	9.26E-04	0.00E+00	9.61E-04	0.06	5.8E-04	1.5E-02	0	1.6E-02		2.64	1.3E-05	3.5E-04	0.0E+00	3.6E-04
Chromium +3	0.0263	2.15E+02	2.60E-02	5.60E+00	5.68E-04	6.87E-02	6.39E-02	1.33E-01	2	2.4E-04	2.9E-02	2.7E-02	5.5E-02		23.1	2.5E-05	3.0E-03	2.8E-03	5.8E-03
Chromium +6	0.0263	7.00E-02	2.60E-02	1.82E-03	5.68E-04	2.24E-05	2.08E-05	6.12E-04	5.66	1.0E-04	3.9E-06	0	1.1E-04		35.1	1.6E-05	6.4E-07	5.9E-07	1.7E-05
Cobalt	0.0164	1.84E+01	--	0	3.54E-04	5.88E-03	0.00E+00	6.23E-03	1.2	3.0E-04	4.9E-03	0	5.2E-03		20	1.8E-05	2.9E-04	0.0E+00	3.1E-04
Copper	0.233	1.94E+02	3.45E-01	6.70E+01	5.04E-03	6.20E-02	7.64E-01	8.31E-01	2.67	1.9E-03	2.3E-02	2.9E-01	3.1E-01		632	8.0E-06	9.8E-05	1.2E-03	1.3E-03
Lead	0.0031	9.40E+01	6.10E-01	5.74E+01	6.70E-05	3.00E-02	6.54E-01	6.85E-01	1	6.7E-05	3.0E-02	6.5E-01	6.8E-01		241	2.8E-07	1.2E-04	2.7E-03	2.8E-03
Manganese	7.42	9.07E+02	--	0	1.60E-01	2.90E-01	0.00E+00	4.50E-01	13.7	1.2E-02	2.1E-02	0	3.3E-02		159.09	1.0E-03	1.8E-03	0.0E+00	2.8E-03
Mercury	0.00029	1.40E+00	--	0	6.27E-06	4.47E-04	0.00E+00	4.53E-04	0.027	2.3E-04	1.7E-02	0	1.7E-02		0.27	2.3E-05	1.7E-03	0.0E+00	1.7E-03
Molybdenum	0.0312	5.10E+00	--	0	6.74E-04	1.63E-03	0.00E+00	2.30E-03	0.26	2.6E-03	6.3E-03	0	8.9E-03		2.6	2.6E-04	6.3E-04	0.0E+00	8.9E-04
Nickel	0.166	1.13E+02	--	0	3.59E-03	3.61E-02	0.00E+00	3.97E-02	0.13	2.7E-02	2.7E-01	0	3.0E-01		31.6	1.1E-04	1.1E-03	0.0E+00	1.3E-03
Selenium	0.029	1.20E+00	6.12E+00	7.34E+00	6.27E-04	3.83E-04	8.37E-02	8.47E-02	0.05	1.3E-02	7.7E-03	1.7E+00	1.7E+00	>1	1.21	5.2E-04	3.2E-04	6.9E-02	7.0E-02
Silver	0.0019	2.80E+00	--	0	4.11E-05	8.94E-04	0.00E+00	9.35E-04	0.38	1.1E-04	2.4E-03	0	2.5E-03		3.75	1.1E-05	2.4E-04	0.0E+00	2.5E-04
Thallium		4.70E-01	1.01E+00	4.74E-01		1.50E-04	5.40E-03	5.55E-03	0.48		3.1E-04	1.1E-02	1.2E-02		1.43		1.0E-04	3.8E-03	3.9E-03
Tin		1.63E+01	--	0		5.21E-03	0.00E+00	5.21E-03	23.4		2.2E-04	0	2.2E-04		35		1.5E-04	0.0E+00	1.5E-04
Vanadium	0.05	1.17E+02	--	0	1.08E-03	3.74E-02	0.00E+00	3.84E-02	0.21	5.1E-03	1.8E-01	0	1.8E-01		2.1	5.1E-04	1.8E-02	0.0E+00	1.8E-02
Zinc	0.042	2.35E+02	1.11E+00	2.60E+02	9.08E-04	7.50E-02	2.97E+00	3.04E+00	9.6	9.5E-05	7.8E-03	3.1E-01	3.2E-01		411	2.2E-06	1.8E-04	7.2E-03	7.4E-03
Volatile Organics (mg/kg)																			
Acetone		3.20E-01	--	0		1.02E-04	0.00E+00	1.02E-04	10		1.0E-05	0	1.0E-05		50		2.0E-06	0.0E+00	2.0E-06
Benzene		5.00E-03	--	0		1.60E-06	0.00E+00	1.60E-06	26.4		6.0E-08	0	6.0E-08		263.6		6.1E-09	0.0E+00	6.1E-09
Carbon disulfide		2.50E-02	--	0		7.98E-06	0.00E+00	7.98E-06	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Chlorobenzene		2.40E-02	--	0		7.66E-06	0.00E+00	7.66E-06	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
cis-1,2-Dichlorobenzene		5.20E-02	--	0		1.66E-05	0.00E+00	1.66E-05	45.2		3.7E-07	0	3.7E-07		452		3.7E-08	0.0E+00	3.7E-08
Ethylbenzene		4.40E-02	--	0		1.41E-05	0.00E+00	1.41E-05	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
4-Isopropyltoluene		7.20E-03	--	0		2.30E-06	0.00E+00	2.30E-06	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Methylene chloride		3.00E-01	--	0		9.58E-05	0.00E+00	9.58E-05	5.9		1.6E-05	0	1.6E-05		50		1.9E-06	0.0E+00	1.9E-06
Naphthalene		1.60E-02	--	0		5.11E-06	0.00E+00	5.11E-06	50		1.0E-07	0	1.0E-07		150		3.4E-08	0.0E+00	3.4E-08
Toluene		3.00E-02	--	0		9.58E-06	0.00E+00	9.58E-06	26		3.7E-07	0	3.7E-07		260		3.7E-08	0.0E+00	3.7E-08
trans-1,2-Dichloroethene		2.30E-02	--	0		7.34E-06	0.00E+00	7.34E-06	45.2		1.6E-07	0	1.6E-07		452		1.6E-08	0.0E+00	1.6E-08
Trichloroethene		7.00E-03	--	0		2.24E-06	0.00E+00	2.24E-06	0.7		3.2E-06	0	3.2E-06		7		3.2E-07	0.0E+00	3.2E-07
1,2,4-Trimethylbenzene		2.50E-02	--	0		7.98E-06	0.00E+00	7.98E-06	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
1,3,5-Trimethylbenzene		9.30E-03	--	0		2.97E-06	0.00E+00	2.97E-06	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Vinyl chloride		3.40E-02	--	0		1.09E-05	0.00E+00	1.09E-05	0.17		6.4E-05	0	6.4E-05		2		6.4E-06	0.0E+00	6.4E-06
Xylenes		1.10E-01	--	0		3.51E-05	0.00E+00	3.51E-05	2.1		1.7E-05	0	1.7E-05		2.6		1.4E-05	0.0E+00	1.4E-05
Pesticides (mg/kg)																			
alpha-Chlordane		8.20E-03	--	0		2.62E-06	0.00E+00	2.62E-06	4.6		5.7E-07	0	5.7E-07		9.2		2.8E-07	0	2.8E-07
beta-BHC		1.00E-03	--	0		3.19E-07	0.00E+00	3.19E-07	1.6		2.0E-07	0	2.0E-07		3.2		1.0E-07	0	1.0E-07
delta-BHC		2.00E-03	--	0		6.39E-07	0.00E+00	6.39E-07	1.6		4.0E-07	0	4.0E-07		3.2		2.0E-07	0	2.0E-07
2,4-DDD		2.90E-02	1.04E+00	3.03E-02		9.26E-06	3.45E-04	3.55E-04	0.8		1.2E-05	4.3E-04	4.4E-04		16		5.8E-07	2.2E-05	2.2E-05
DDD		8.60E-02	1.04E+00	8.98E-02		2.75E-05	1.02E-03	1.05E-03	0.8		3.4E-05	1.3E-03	1.3E-03		16		1.7E-06	6.4E-05	6.6E-05
DDE	0.0000027	1.70E-02	1.04E+00	1.77E-02	5.84E-08	5.43E-06	2.02E-04	2.08E-04	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
DDTs	0.00014	1.20E-02	1.04E+00	1.25E-02	3.03E-06	3.83E-06	1.43E-04	1.50E-04	0.8	3.8E-06	4.8E-06	1.8E-04	1.9E-04		16	1.9E-07	2.4E-07	8.9E-06	9.4E-06
Dieldrin		3.90E-03	--	0		1.25E-06	0.00E+00	1.25E-06	0.015		8.3E-05	0	8.3E-05		1.7		7.3E-07	0	7.3E-07
Endosulfan I		4.00E-03	--	0		1.28E-06	0.00E+00	1.28E-06	0.15		8.5E-06	0	8.5E-06		1.5		8.5E-07	0	8.5E-07
Endosulfan sulfate	0.00012	3.00E-03	--	0	2.59E-06	9.58E-07	0.00E+00	3.55E-06	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV

Table C2-6j
Post-Remediation Gray Fox Risk Calculations (Wetland Sediment Residual Concentration)
Deep Soil (0 - 10 ft bgs) at Hazard Quotient Equals Three
Non-Tidal Wetland Area Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Concentrations				Intake (mg/kg BW-day)					Hazard Quotient (HQ) - Low					Hazard Quotient (HQ) - High			
COPEC[a]	Surface Water (mg/L)[b]	Sediment[c]	Small Mammal BAF[d]	Small Mammal Tissue[d]	Surface Water	Sediment	Small Mammal	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Small Mammal	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Sediment	Small Mammal	Total Intake
Endrin	0.000014	2.00E-02	--	0	3.03E-07	6.39E-06	0.00E+00	6.69E-06	0.09	3.3E-06	6.9E-05	0	7.3E-05	0.92	3.3E-07	6.9E-06	0	7.3E-06
Endrin aldehyde		6.00E-03	--	0		1.92E-06	0.00E+00	1.92E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Endrin Ketone		3.00E-03	--	0		9.58E-07	0.00E+00	9.58E-07	NTV	NTV	NTV	NTV	NTV	0.92		1.0E-06	0	1.0E-06
gamma-Chlordane		8.50E-03	--	0		2.71E-06	0.00E+00	2.71E-06	4.6		5.9E-07	0	5.9E-07	9.2		3.0E-07	0	3.0E-07
Heptachlor	0.0000028	2.00E-04	--	0	6.05E-08	6.39E-08	0.00E+00	1.24E-07	0.13	4.7E-07	4.9E-07	0.0	9.6E-07	6.8	8.9E-09	9.4E-09	0	1.8E-08
Heptachlor epoxide		3.00E-04	--	0		9.58E-08	0.00E+00	9.58E-08	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Hexachlorobenzene		8.00E-04	--	0		2.55E-07	0.00E+00	2.55E-07	1.6		1.6E-07	0	1.6E-07	16		1.6E-08	0	1.6E-08
Methoxychlor	0	2.00E-02	--	0		6.39E-06	0.00E+00	6.39E-06	2.5		2.6E-06	0	2.6E-06	50		1.3E-07	0	1.3E-07
Mirex		4.00E-03	--	0		1.28E-06	0.00E+00	1.28E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
trans-Nonachlor		2.40E-03	--	0		7.66E-07	0.00E+00	7.66E-07	4.6		1.7E-07	0	1.7E-07	9.2		8.3E-08	0	8.3E-08
SVOCs (mg/kg)																		
Acenaphthene		1.30E-01	--	0		4.15E-05	0.00E+00	4.15E-05	1.31		3.2E-05	0	3.2E-05	32.8		1.3E-06	0	1.3E-06
Acenaphthylene		1.20E-01	--	0		3.83E-05	0.00E+00	3.83E-05	1.31		2.9E-05	0	2.9E-05	32.8		1.2E-06	0	1.2E-06
Anthracene		1.30E-01	--	0		4.15E-05	0.00E+00	4.15E-05	1.31		3.2E-05	0	3.2E-05	32.8		1.3E-06	0	1.3E-06
Benzo(a)anthracene		2.80E-01	--	0		8.94E-05	0.00E+00	8.94E-05	1.31		6.8E-05	0	6.8E-05	32.8		2.7E-06	0	2.7E-06
Benzo(a)pyrene		2.40E-01	--	0		7.66E-05	0.00E+00	7.66E-05	1.31		5.9E-05	0	5.9E-05	32.8		2.3E-06	0	2.3E-06
Benzo(b)fluoranthene		2.40E-01	--	0		7.66E-05	0.00E+00	7.66E-05	1.31		5.9E-05	0	5.9E-05	32.8		2.3E-06	0	2.3E-06
Benzo(g,h,i)perylene		1.60E-01	--	0		5.11E-05	0.00E+00	5.11E-05	1.31		3.9E-05	0	3.9E-05	32.8		1.6E-06	0	1.6E-06
Benzo(k)fluoranthene		2.40E-01	--	0		7.66E-05	0.00E+00	7.66E-05	1.31		5.9E-05	0	5.9E-05	32.8		2.3E-06	0	2.3E-06
Benzoic acid		6.80E-01	--	0		2.17E-04	0.00E+00	2.17E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Bis(2-ethylhexyl)phthalate	0.027	1.10E+00	--	0	5.84E-04	3.51E-04	0.00E+00	9.35E-04	18.3	3.2E-05	1.9E-05	0	5.1E-05	183	3.2E-06	1.9E-06	0	5.1E-06
Butylbenzylphthalate		2.50E-02	--	0		7.98E-06	0.00E+00	7.98E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Carbazole		5.50E-01	--	0		1.76E-04	0.00E+00	1.76E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Chloroaniline		3.00E-03	--	0		9.58E-07	0.00E+00	9.58E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2-Chloropropane		4.33E-02	--	0		1.38E-05	0.00E+00	1.38E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chrysene	0.0002	2.70E-01	--	0	4.32E-06	8.62E-05	0.00E+00	9.05E-05	1.31	3.3E-06	6.6E-05	0	6.9E-05	32.8	1.3E-07	2.6E-06	0	2.8E-06
Dibenzofuran		3.60E-01	--	0		1.15E-04	0.00E+00	1.15E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
3,3-Dichlorobenzidine		1.20E-02	--	0		3.83E-06	0.00E+00	3.83E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2,6-Dinitrotoluene		3.70E-01	--	0		1.18E-04	0.00E+00	1.18E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Fluoranthene		3.80E-01	--	0		1.21E-04	0.00E+00	1.21E-04	1.31		9.3E-05	0	9.3E-05	32.8		3.7E-06	0	3.7E-06
Fluorene		1.30E-01	--	0		4.15E-05	0.00E+00	4.15E-05	1.31		3.2E-05	0	3.2E-05	32.8		1.3E-06	0	1.3E-06
Indeno(1,2,3-cd)pyrene		1.16E+00	--	0		3.70E-04	0.00E+00	3.70E-04	1.31		2.8E-04	0	2.8E-04	32.8		1.1E-05	0	1.1E-05
2-Methylnaphthalene		1.80E-01	--	0		5.75E-05	0.00E+00	5.75E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Methylphenol	0.12	2.30E-01	--	0	2.59E-03	7.34E-05	0.00E+00	2.67E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Naphthalene		1.10E-01	--	0		3.51E-05	0.00E+00	3.51E-05	50		7.0E-07	0	7.0E-07	150		2.3E-07	0	2.3E-07
Pentachlorophenol		5.40E-01	--	0		1.72E-04	0.00E+00	1.72E-04	8.42		2.0E-05	0	2.0E-05	27.4		6.3E-06	0	6.3E-06
Phenanthrene		2.00E-01	--	0		6.39E-05	0.00E+00	6.39E-05	1.31		4.9E-05	0	4.9E-05	32.8		1.9E-06	0	1.9E-06
Phenol		2.90E-01	--	0		9.26E-05	0.00E+00	9.26E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pyrene		4.30E-01	--	0		1.37E-04	0.00E+00	1.37E-04	1.31		1.0E-04	0	1.0E-04	32.8		4.2E-06	0	4.2E-06
PCBs (mg/kg)																		
PCBs (Total Congeners)	0.000016	1.60E-01	1.81E+01	2.89E+00	3.46E-07	5.11E-05	3.30E-02	3.30E-02	0.36	9.6E-07	1.4E-04	9.2E-02	9.2E-02	1.28	2.7E-07	4.0E-05	2.6E-02	2.6E-02

>1 = The calculated hazard quotient exceeds 1 (i.e., > 1.5)

Table C2-6j
Post-Remediation Gray Fox Risk Calculations (Wetland Sediment Residual Concentration)
Deep Soil (0 - 10 ft bgs) at Hazard Quotient Equals Three
Non-Tidal Wetland Area Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Concentrations				Intake (mg/kg BW-day)					Hazard Quotient (HQ) - Low					Hazard Quotient (HQ) - High			
COPEC[a]	Surface Water (mg/L)[b]	Sediment[c]	Small Mammal BAF[d]	Small Mammal Tissue[d]	Surface Water	Sediment	Small Mammal	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Small Mammal	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Sediment	Small Mammal	Total Intake

Exposure Assumptions and Equation:[e]

	Value	
Ingestion Rate (IR) prey(dry wt.) =	0.177	kg/day (dry weight)
IRmammal(dry wt.) =	0.177	kg/day (dry weight)
IRsediment (dry wt.)[f] =	0.00496	kg-day (dry weight)
IRsurface water[g] =	0.335	L/day
Cprey =	chem-specific	mg/kg or µg/kg
Csediment =	chem-specific	mg/kg or µg/kg
Csurface water =	chem-specific	mg/L or µg/L
Tissue Moisture (TMsmall mammal) =	68%	percent
Dietary Composition Factor (DCF)[h] =	100%	percent
Site Use Factor (SUF)[i] =	25%	percent
Body Weight (BW) =	3.88	kg

Intake Equation = [IRmammal(dry wt) x (Cprey(mammal, dry wt)/1-TM) x DCF x SUF]/BW] + [(IRsoil x Csoil x DCF x SUF)]/BW] + [(IRsurface water x Csurface water x DCF x SUF)]/BW]

Risk (hazard quotient) = Intake / TRV

Prey tissue(dry wt) = Prey tissue (wet wt.) / (1-Tissue Moisture)

NTV = No toxicity data available.

NA = Not applicable.

Blank cell indicates COPEC was not detected in this medium.

Notes:

a All chemicals detected in sediments are considered as constituents of potential ecological concern.

b All concentrations of constituents in surface water are based on the maximum concentration.

c All concentrations of constituents in sediment are based on the residual concentrations expressed in dry weight.

d Site-specific BAFs (dry weight basis). Calculated small mammal tissue concentrations (sediment concentration x BAF). Tissue concentrations are on a dry weight basis.

e Exposure parameters used to calculate risk are discussed in detail in Section 4.2 of the ERA..

f Ingestion rate of soil based on 2.8 percent of of the prey ingestion rate (dry weight); based on a red fox (Beyer et al. (1994).

g Based on equation for mammals: Water intake (L/day) = $0.099Wt(kg)^{0.90}$ (EPA 1993)

h Dietary composition factor was based on a conservative assumption of 100% dietary intake of small mammals from the site.

i Site use factor was based on a 25% use of the site for the fox's foraging range.

Table C2-6k
Post-Remediation Northern Harrier Risk Calculations (Wetland Sediment Residual Concentration)
Deep Soil (0 - 10 ft bgs) at Hazard Quotient Equals Three
Non-Tidal Wetland Area Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Concentrations				Intake (mg/kg BW-day)					Hazard Quotient (HQ) - Low					Hazard Quotient (HQ) - High			
COPEC[a]	Surface Water (mg/L)[b]	Sediment[c]	Small Mammal BAF[d]	Small Mammal Tissue[d]	Surface Water	Sediment	Small Mammal	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Small Mammal	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Sediment	Small Mammal	Total Intake
Metals (mg/kg)																		
Aluminum	12.6	2.68E+04	1.11E-02	296	2.43E-01	5.10E+00	8.05E+00	1.34E+01	109.7	2.2E-03	4.6E-02	7.3E-02	1.2E-01	1,097	2.2E-04	4.6E-03	7.3E-03	1.2E-02
Antimony	0.003	4.50E+00	1.22E+00	5	5.80E-05	8.57E-04	1.49E-01	1.50E-01	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Arsenic	0.0436	2.13E+01	--	0	8.43E-04	4.06E-03	0.00E+00	4.90E-03	5.5	1.5E-04	7.4E-04	0.0E+00	8.9E-04	22	3.8E-05	1.8E-04	0.0E+00	2.2E-04
Barium	0.24	9.36E+01	9.41E-02	9	4.56E-03	1.78E-02	2.40E-01	2.62E-01	20.8	2.2E-04	8.6E-04	1.2E-02	1.3E-02	41.7	1.1E-04	4.3E-04	5.8E-03	6.3E-03
Beryllium		6.50E-01		0		1.24E-04		1.24E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Cadmium	0.0016	2.90E+00	--	0	3.09E-05	5.52E-04	0.00E+00	5.83E-04	0.08	3.9E-04	6.9E-03	0.0E+00	7.3E-03	10.4	3.0E-06	5.3E-05	0.0E+00	5.6E-05
Chromium +3	0.0263	2.15E+02	2.60E-02	6	5.08E-04	4.10E-02	1.52E-01	1.94E-01	2.66	1.9E-04	1.5E-02	5.7E-02	7.3E-02	2.78	1.8E-04	1.5E-02	5.5E-02	7.0E-02
Chromium +6	0.0263	7.00E-02	2.60E-02	0	5.08E-04	1.33E-05	4.96E-05	5.71E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Cobalt	0.0164	1.84E+01	--	0	3.17E-04	3.50E-03	0.00E+00	3.82E-03	7.61	4.2E-05	4.6E-04	0.0E+00	5.0E-04	17	1.9E-05	2.1E-04	0.0E+00	2.2E-04
Copper	0.233	1.94E+02	3.45E-01	67	4.50E-03	3.70E-02	1.82E+00	1.86E+00	2.3	2.0E-03	1.6E-02	7.9E-01	8.1E-01	52.3	8.6E-05	7.1E-04	3.5E-02	3.6E-02
Lead	0.0031	9.40E+01	6.10E-01	57	5.99E-05	1.79E-02	1.56E+00	1.58E+00	0.014	4.3E-03	1.3E+00	1.1E+02	1.1E+02 >1	8.75	6.8E-06	2.0E-03	1.8E-01	1.8E-01
Manganese	7.42	9.07E+02	--	0	1.43E-01	1.73E-01	0.00E+00	3.16E-01	77.6	1.8E-03	2.2E-03	0.0E+00	4.1E-03	776	1.8E-04	2.2E-04	0.0E+00	4.1E-04
Mercury	0.00029	1.40E+00	--	0	5.60E-06	2.67E-04	0.00E+00	2.72E-04	0.039	1.4E-04	6.8E-03	0.0E+00	7.0E-03	0.18	3.1E-05	1.5E-03	0.0E+00	1.5E-03
Molybdenum	0.0312	5.10E+00	--	0	6.03E-04	9.71E-04	0.00E+00	1.57E-03	3.5	1.7E-04	2.8E-04	0.0E+00	4.5E-04	35.3	1.7E-05	2.8E-05	0.0E+00	4.5E-05
Nickel	0.166	1.13E+02	--	0	3.21E-03	2.15E-02	0.00E+00	2.47E-02	1.38	2.3E-03	1.6E-02	0.0E+00	1.8E-02	56.3	5.7E-05	3.8E-04	0.0E+00	4.4E-04
Selenium	0.029	1.20E+00	6.12E+00	7	5.60E-04	2.29E-04	2.00E-01	2.00E-01	0.23	2.4E-03	9.9E-04	8.7E-01	8.7E-01	0.93	6.0E-04	2.5E-04	2.1E-01	2.2E-01
Silver	0.0019	2.80E+00	--	0	3.67E-05	5.33E-04	0.00E+00	5.70E-04	178.00	2.1E-07	3.0E-06	0.0E+00	3.2E-06	NTV	NTV	NTV	NTV	NTV
Thallium		4.70E-01	1.01E+00	0		8.95E-05	1.29E-02	1.30E-02	0.35		2.6E-04	3.7E-02	3.7E-02	NTV	NTV	NTV	NTV	NTV
Tin		1.63E+01	--	0		3.10E-03	0.00E+00	3.10E-03	6.80		4.6E-04	0.0E+00	4.6E-04	16.9		1.8E-04	0.0E+00	1.8E-04
Vanadium	0.05	1.17E+02	--	0	9.66E-04	2.23E-02	0.00E+00	2.33E-02	11.4	8.5E-05	2.0E-03	0.0E+00	2.0E-03	114	8.5E-06	2.0E-04	0.0E+00	2.0E-04
Zinc	0.042	2.35E+02	1.11E+00	260	8.12E-04	4.48E-02	7.08E+00	7.13E+00	17.2	4.7E-05	2.6E-03	4.1E-01	4.1E-01	172	4.7E-06	2.6E-04	4.1E-02	4.1E-02
Volatile Organics (mg/kg)																		
Acetone		3.20E-01	--	0		6.10E-05	0.00E+00	6.10E-05	52		1.2E-06	0.0E+00	1.2E-06	520		1.2E-07	0.0E+00	1.2E-07
Benzene		5.00E-03	--	0		9.52E-07	0.00E+00	9.52E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Carbon disulfide		2.50E-02	--	0		4.76E-06	0.00E+00	4.76E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chlorobenzene		2.40E-02	--	0		4.57E-06	0.00E+00	4.57E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
cis-1,2-Dichlorobenzene		5.20E-02	--	0		9.90E-06	0.00E+00	9.90E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Ethylbenzene		4.40E-02	--	0		8.38E-06	0.00E+00	8.38E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Isopropyltoluene		7.20E-03	--	0		1.37E-06	0.00E+00	1.37E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Methylene chloride		3.00E-01	--	0		5.71E-05	0.00E+00	5.71E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Naphthalene		1.60E-02	--	0		3.05E-06	0.00E+00	3.05E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Toluene		3.00E-02	--	0		5.71E-06	0.00E+00	5.71E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
trans-1,2-Dichloroethene		2.30E-02	--	0		4.38E-06	0.00E+00	4.38E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Trichloroethene		7.00E-03	--	0		1.33E-06	0.00E+00	1.33E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
1,2,4-Trimethylbenzene		2.50E-02	--	0		4.76E-06	0.00E+00	4.76E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
1,3,5-Trimethylbenzene		9.30E-03	--	0		1.77E-06	0.00E+00	1.77E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Vinyl chloride		3.40E-02	--	0		6.48E-06	0.00E+00	6.48E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Xylenes		1.10E-01	--	0		2.10E-05	0.00E+00	2.10E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pesticides (mg/kg)																		
alpha-Chlordane		8.20E-03	--	0		1.56E-06	0.00E+00	1.56E-06	0.0014		1.1E-03	0.0E+00	1.1E-03	0.014		1.1E-04	0.0E+00	1.1E-04
beta-BHC		1.00E-03	--	0		1.90E-07	0.00E+00	1.90E-07	0.56		3.4E-07	0.0E+00	3.4E-07	2.25		8.5E-08	0.0E+00	8.5E-08
delta-BHC		2.00E-03	--	0		3.81E-07	0.00E+00	3.81E-07	0.56		6.8E-07	0.0E+00	6.8E-07	2.25		1.7E-07	0.0E+00	1.7E-07
2,4-DDD		2.90E-02	1.04E+00	0		5.52E-06	8.24E-04	8.29E-04	0.009		6.1E-04	9.2E-02	9.2E-02	1.5		3.7E-06	5.5E-04	5.5E-04
DDD		8.60E-02	1.04E+00	0		1.64E-05	2.44E-03	2.46E-03	0.009		1.8E-03	2.7E-01	2.7E-01	1.5		1.1E-05	1.6E-03	1.6E-03
DDE	0.0000027	1.70E-02	1.04E+00	0	5.22E-08	3.24E-06	4.83E-04	4.86E-04	NTV	NTV	NTV	NTV	NTV	0.6	8.7E-08	5.4E-06	8.0E-04	8.1E-04
DDTs	0.00014	1.20E-02	1.04E+00	0	2.71E-06	2.29E-06	3.41E-04	3.46E-04	0.009	3.0E-04	2.5E-04	3.8E-02	3.8E-02	1.5	1.8E-06	1.5E-06	2.3E-04	2.3E-04

Table C2-6k
Post-Remediation Northern Harrier Risk Calculations (Wetland Sediment Residual Concentration)
Deep Soil (0 - 10 ft bgs) at Hazard Quotient Equals Three
Non-Tidal Wetland Area Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Concentrations				Intake (mg/kg BW-day)					Hazard Quotient (HQ) - Low					Hazard Quotient (HQ) - High			
COPEC[a]	Surface Water (mg/L)[b]	Sediment[c]	Small Mammal BAF[d]	Small Mammal Tissue[d]	Surface Water	Sediment	Small Mammal	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Small Mammal	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Sediment	Small Mammal	Total Intake
Dieldrin		3.90E-03	--	0		7.43E-07	0.00E+00	7.43E-07	0.0709		1.0E-05	0.0E+00	1.0E-05	0.98		7.6E-07	0.0E+00	7.6E-07
Endosulfan I		4.00E-03	--	0		7.62E-07	0.00E+00	7.62E-07	10		7.6E-08	0.0E+00	7.6E-08	100		7.6E-09	0.0E+00	7.6E-09
Endosulfan sulfate	0.00012	3.00E-03	--	0	2.32E-06	5.71E-07	0.00E+00	2.89E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Endrin	0.000014	2.00E-02	--	0	2.71E-07	3.81E-06	0.00E+00	4.08E-06	0.3	9.0E-07	1.3E-05	0.0E+00	1.4E-05	3	9.0E-08	1.3E-06	0.0E+00	1.4E-06
Endrin aldehyde		6.00E-03	--	0		1.14E-06	0.00E+00	1.14E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Endrin Ketone		3.00E-03	--	0		5.71E-07	0.00E+00	5.71E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
gamma-Chlordane		8.50E-03	--	0		1.62E-06	0.00E+00	1.62E-06	0.0014		1.2E-03	0.0E+00	1.2E-03	0.014		1.2E-04	0.0E+00	1.2E-04
Heptachlor	0.0000028	2.00E-04	--	0	5.41E-08	3.81E-08	0.00E+00	9.22E-08	0.065	8.3E-07	5.9E-07	0.0E+00	1.4E-06	0.65	8.3E-08	5.9E-08	0.0E+00	1.4E-07
Heptachlor epoxide		3.00E-04	--	0		5.71E-08	0.00E+00	5.71E-08	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Hexachlorobenzene		8.00E-04	--	0		1.52E-07	0.00E+00	1.52E-07	0.23		6.6E-07	0.0E+00	6.6E-07	2.3		6.6E-08	0.0E+00	6.6E-08
Methoxychlor		2.00E-02	--	0		3.81E-06	0.00E+00	3.81E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Mirex		4.00E-03	--	0		7.62E-07	0.00E+00	7.62E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
trans-Nonachlor		2.40E-03	--	0		4.57E-07	0.00E+00	4.57E-07	0.0014		3.3E-04	0.0E+00	3.3E-04	0.014		3.3E-05	0.0E+00	3.3E-05
SVOCs (mg/kg)																		
Acenaphthene		1.30E-01	--	0		2.48E-05	0.00E+00	2.48E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Acenaphthylene		1.20E-01	--	0		2.29E-05	0.00E+00	2.29E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Anthracene		1.30E-01	--	0		2.48E-05	0.00E+00	2.48E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(a)anthracene		2.80E-01	--	0		5.33E-05	0.00E+00	5.33E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(a)pyrene		2.40E-01	--	0		4.57E-05	0.00E+00	4.57E-05	0.001		4.6E-02	0.0E+00	4.6E-02	0.01		4.6E-03	0.0E+00	4.6E-03
Benzo(b)fluoranthene		2.40E-01	--	0		4.57E-05	0.00E+00	4.57E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(g,h,i)perylene		1.60E-01	--	0		3.05E-05	0.00E+00	3.05E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(k)fluoranthene		2.40E-01	--	0		4.57E-05	0.00E+00	4.57E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzoic acid		6.80E-01	--	0		1.30E-04	0.00E+00	1.30E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Bis(2-ethylhexyl)phthalate	0.027	1.10E+00	--	0	5.22E-04	2.10E-04	0.00E+00	7.31E-04	1.1	4.7E-04	1.9E-04	0.0E+00	6.6E-04	11	4.7E-05	1.9E-05	0.0E+00	6.6E-05
Butylbenzylphthalate		2.50E-02	--	0		4.76E-06	0.00E+00	4.76E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Carbazole		5.50E-01	--	0		1.05E-04	0.00E+00	1.05E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Chloroaniline		3.00E-03	--	0		5.71E-07	0.00E+00	5.71E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2-Chloropropane		4.33E-02	--	0		8.25E-06	0.00E+00	8.25E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chrysene	0.0002	2.70E-01	--	0	3.87E-06	5.14E-05	0.00E+00	5.53E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Dibenzofuran		3.60E-01	--	0		6.86E-05	0.00E+00	6.86E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
3,3-Dichlorobenzidine		1.20E-02	--	0		2.29E-06	0.00E+00	2.29E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2,6-Dinitrotoluene		3.70E-01	--	0		7.05E-05	0.00E+00	7.05E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Fluoranthene		3.80E-01	--	0		7.24E-05	0.00E+00	7.24E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Fluorene		1.30E-01	--	0		2.48E-05	0.00E+00	2.48E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Indeno(1,2,3-cd)pyrene		1.16E+00	--	0		2.21E-04	0.00E+00	2.21E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2-Methylnaphthalene		1.80E-01	--	0		3.43E-05	0.00E+00	3.43E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Methylphenol	0.12	2.30E-01	--	0	2.32E-03	4.38E-05	0.00E+00	2.36E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Naphthalene		1.10E-01	--	0		2.10E-05	0.00E+00	2.10E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pentachlorophenol		5.40E-01	--	0		1.03E-04	0.00E+00	1.03E-04	6.7		1.5E-05	0.0E+00	1.5E-05	22.5		4.6E-06	0.0E+00	4.6E-06
Phenanthrene		2.00E-01	--	0		3.81E-05	0.00E+00	3.81E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Phenol		2.90E-01	--	0		5.52E-05	0.00E+00	5.52E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pyrene		4.30E-01	--	0		8.19E-05	0.00E+00	8.19E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
PCBs (mg/kg)																		
PCBs (Total Congeners)	0.000016	1.60E-01	1.81E+01	3	3.09E-07	3.05E-05	7.87E-02	7.87E-02	0.09	3.4E-06	3.4E-04	8.7E-01	8.7E-01	1.27	2.4E-07	2.4E-05	6.2E-02	6.2E-02

>1 = The calculated hazard quotient exceeds 1 (i.e., > 1.5)

Table C2-6k
Post-Remediation Northern Harrier Risk Calculations (Wetland Sediment Residual Concentration)
Deep Soil (0 - 10 ft bgs) at Hazard Quotient Equals Three
Non-Tidal Wetland Area Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Concentrations				Intake (mg/kg BW-day)					Hazard Quotient (HQ) - Low					Hazard Quotient (HQ) - High			
COPEC[a]	Surface Water (mg/L)[b]	Sediment[c]	Small Mammal BAF[d]	Small Mammal Tissue[d]	Surface Water	Sediment	Small Mammal	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Small Mammal	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Sediment	Small Mammal	Total Intake

Exposure Assumptions and Equation:[e]

		Value	
Ingestion Rate (IR) prey(dry wt.)	=	0.048	
IRsmall mammal (dry wt.)	=	0.048	kg/day (dry weight)
IRsoil (dry wt.)[f]	=	0.000336	kg-day (dry weight)
IRsurface water[g]	=	0.034	L/day
Cprey	=	chem-specific	mg/kg or µg/kg
Csoil	=	chem-specific	mg/kg or µg/kg
Csurface water	=	chem-specific	mg/L or µg/L
Tissue Moisture (TMsmall mammal)	=	68%	percent
Dietary Composition Factor (DCF)[h]	=	100%	percent
Site Use Factor (SUF)[i]	=	25%	percent
Body Weight (BW)	=	0.441	kg

Intake Equation = [IRmammal(dry wt) x (Cprey(mammal, dry wt)/1-TM) x DCF x SUF]/BW] + [(IRsoil x Csoil x DCF x SUF)]/BW] + [(IRsurface water x Csurface water x DCF x SUF)]/BW]

Risk (hazard quotient) = Intake / TRV

Prey tissue(dry wt) = Prey tissue (wet wt.) / (1-Tissue Moisture)

NTV = No toxicity data available.

NA = Not applicable.

Blank cell indicates COPEC was not detected in this medium.

Notes:

a All chemicals detected in sediments are considered as constituents of potential ecological concern.

b All concentrations of constituents in surface water are based on the maximum concentration.

c All concentrations of constituents in sediment are based on the residual concentrations expressed in dry weight.

d Site-specific BAFs (dry weight basis). Calculated small mammal tissue concentrations (sediment concentration x BAF). Tissue concentrations are on a dry weight basis.

e Exposure parameters used to calculate risk are discussed in detail in Section 4.2 of ERA.

f Ingestion rate of sedimentl based on 0.7 percent of of the prey ingestion rate (dry weight); based on rate for bald eagle in Pascoe et al. (1996).

g Based on equation for birds: Water intake (L/day) = $0.059Wt(kg)^{0.67}$ (EPA 1993)

h Dietary composition factor was based on a conservative assumption of 100% dietary intake of small mammals from the site.

i Site use factor was based on 25% use of the site for the harrier's foraging range.

Table C2-6l
Post-Remediation Mallard (Non-Breeding) Risk Calculations (Wetland Sediment Residual Concentration)
Deep Soil (0 - 10 ft bgs) at Hazard Quotient Equals Three
Non-Tidal Wetland Area Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Concentrations				Intake (mg/kg BW-day)					Hazard Quotient (HQ) - Low					Hazard Quotient (HQ) - High			
COPEC[a]	Surface Water (mg/L)[b]	Sediments[c]	Plant BAF[d]	Plant Tissue[d]	Surface Water	Sediment	Plant	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Plant	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Sediment	Plant	Total Intake
Metals (mg/kg)																		
Aluminum	12.6	2.68E+04	7.56E-03	2.02E+02	7.60E-02	8.65E+00	1.98E+00	1.07E+01	109.7	6.9E-04	7.9E-02	1.8E-02	9.8E-02	1,097	6.9E-05	7.9E-03	1.8E-03	9.8E-03
Antimony	0.003	4.50E+00	2.27E-01	1.02E+00	1.81E-05	1.45E-03	1.00E-02	1.15E-02	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Arsenic	0.0436	2.13E+01	1.15E-01	2.46E+00	2.63E-04	6.89E-03	2.41E-02	3.12E-02	5.5	4.8E-05	1.3E-03	4.4E-03	5.7E-03	22	1.2E-05	3.1E-04	1.1E-03	1.4E-03
Barium	0.24	9.36E+01	7.87E-02	7.37E+00	1.42E-03	3.03E-02	7.22E-02	1.04E-01	20.8	6.8E-05	1.5E-03	3.5E-03	5.0E-03	41.7	3.4E-05	7.3E-04	1.7E-03	2.5E-03
Beryllium		6.50E-01	--	0		2.10E-04	0	2.10E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Cadmium	0.0016	2.90E+00	1.40E+00	4.05E+00	9.65E-06	9.37E-04	3.97E-02	4.06E-02	0.08	1.2E-04	1.2E-02	5.0E-01	5.1E-01	10.40	9.3E-07	9.0E-05	3.8E-03	3.9E-03
Chromium +3	0.0263	2.15E+02	--	0	1.59E-04	6.95E-02	0	6.97E-02	2.66	6.0E-05	2.6E-02	0.0E+00	2.6E-02	2.78	5.7E-05	2.5E-02	0.0E+00	2.5E-02
Chromium +6	0.0263	7.00E-02	--	0	1.59E-04	2.26E-05	0	1.81E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Cobalt	0.0164	1.84E+01	--	0	9.89E-05	5.95E-03	0	6.05E-03	7.61	1.3E-05	7.8E-04	0.0E+00	7.9E-04	17	5.8E-06	3.5E-04	0.0E+00	3.6E-04
Copper	0.233	1.94E+02	5.68E-02	1.10E+01	1.40E-03	6.27E-02	1.08E-01	1.72E-01	2.3	6.1E-04	2.7E-02	4.7E-02	7.5E-02	52.3	2.7E-05	1.2E-03	2.1E-03	3.3E-03
Lead	0.0031	9.40E+01	7.51E-03	7.06E-01	1.87E-05	3.04E-02	6.91E-03	3.73E-02	0.014	1.3E-03	2.2E+00	4.9E-01	2.7E+00 >1	8.75	2.1E-06	3.5E-03	7.9E-04	4.3E-03
Manganese	7.42	9.07E+02	4.89E-01	4.44E+02	4.47E-02	2.93E-01	4.34E+00	4.68E+00	77.6	5.8E-04	3.8E-03	5.6E-02	6.0E-02	776	5.8E-05	3.8E-04	5.6E-03	6.0E-03
Mercury	0.00029	1.40E+00	--	0	1.75E-06	4.53E-04	0	4.54E-04	0.039	4.5E-05	1.2E-02	0.0E+00	1.2E-02	0.18	9.7E-06	2.5E-03	0.0E+00	2.5E-03
Molybdenum	0.0312	5.10E+00	--	0	1.88E-04	1.65E-03	0	1.84E-03	3.5	5.4E-05	4.7E-04	0.0E+00	5.2E-04	35.3	5.3E-06	4.7E-05	0.0E+00	5.2E-05
Nickel	0.166	1.13E+02	1.39E-02	1.57E+00	1.00E-03	3.65E-02	1.54E-02	5.29E-02	1.38	7.3E-04	2.6E-02	1.1E-02	3.8E-02	56.3	1.8E-05	6.5E-04	2.7E-04	9.4E-04
Selenium	0.029	1.20E+00	--	0	1.75E-04	3.88E-04	0	5.63E-04	0.23	7.6E-04	1.7E-03	0.0E+00	2.4E-03	0.93	1.9E-04	4.2E-04	0.0E+00	6.1E-04
Silver	0.0019	2.80E+00	--	0	1.15E-05	9.05E-04	0	9.17E-04	178.00	6.4E-08	5.1E-06	0.0E+00	5.1E-06	NTV	NTV	NTV	NTV	NTV
Thallium		4.70E-01	--	0		1.52E-04	0	1.52E-04	0.35		4.3E-04	0.0E+00	4.3E-04	NTV	NTV	NTV	NTV	NTV
Tin		1.63E+01	1.55E+00	2.53E+01		5.27E-03	2.48E-01	2.53E-01	6.80		7.7E-04	3.6E-02	3.7E-02	16.9		3.1E-04	1.5E-02	1.5E-02
Vanadium	0.05	1.17E+02	2.20E-02	2.58E+00	3.01E-04	3.78E-02	2.53E-02	6.34E-02	11.4	2.6E-05	3.3E-03	2.2E-03	5.6E-03	114	2.6E-06	3.3E-04	2.2E-04	5.6E-04
Zinc	0.042	2.35E+02	8.47E-02	1.99E+01	2.53E-04	7.60E-02	1.95E-01	2.71E-01	17.2	1.5E-05	4.4E-03	1.1E-02	1.6E-02	172	1.5E-06	4.4E-04	1.1E-03	1.6E-03
Volatile Organics (mg/kg)																		
Acetone		3.20E-01	--	0		1.03E-04	0	1.03E-04	52		2.0E-06	0.0E+00	2.0E-06	520		2.0E-07	0.0E+00	2.0E-07
Benzene		5.00E-03	--	0		1.62E-06	0	1.62E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Carbon disulfide		2.50E-02	--	0		8.08E-06	0	8.08E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chlorobenzene		2.40E-02	--	0		7.76E-06	0	7.76E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
cis-1,2-Dichlorobenzene		5.20E-02	--	0		1.68E-05	0	1.68E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Ethylbenzene		4.40E-02	--	0		1.42E-05	0	1.42E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Isopropyltoluene		7.20E-03	--	0		2.33E-06	0	2.33E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Methylene chloride		3.00E-01	--	0		9.70E-05	0	9.70E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Naphthalene		1.60E-02	--	0		5.17E-06	0	5.17E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Toluene		3.00E-02	--	0		9.70E-06	0	9.70E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
trans-1,2-Dichloroethene		2.30E-02	--	0		7.44E-06	0	7.44E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Trichloroethene		7.00E-03	--	0		2.26E-06	0	2.26E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
1,2,4-Trimethylbenzene		2.50E-02	--	0		8.08E-06	0	8.08E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
1,3,5-Trimethylbenzene		9.30E-03	--	0		3.01E-06	0	3.01E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Vinyl chloride		3.40E-02	--	0		1.10E-05	0	1.10E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Xylenes		1.10E-01	--	0		3.56E-05	0	3.56E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pesticides (mg/kg)																		
alpha-Chlordane		8.20E-03	--	0		2.65E-06	0	2.65E-06	0.0014		1.9E-03	0.0E+00	1.9E-03	0.014		1.9E-04	0.0E+00	1.9E-04
beta-BHC		1.00E-03	--	0		3.23E-07	0	3.23E-07	0.56		5.8E-07	0.0E+00	5.8E-07	2.25		1.4E-07	0.0E+00	1.4E-07
delta-BHC		2.00E-03	--	0		6.47E-07	0	6.47E-07	0.56		1.2E-06	0.0E+00	1.2E-06	2.25		2.9E-07	0.0E+00	2.9E-07
2,4-DDD		2.90E-02	--	0		9.37E-06	0	9.37E-06	0.009		1.0E-03	0.0E+00	1.0E-03	1.5		6.2E-06	0.0E+00	6.2E-06
4,4-DDD		8.60E-02	--	0		2.78E-05	0	2.78E-05	0.009		3.1E-03	0.0E+00	3.1E-03	1.5		1.9E-05	0.0E+00	1.9E-05
DDE	0.0000027	1.70E-02	--	0	1.63E-08	5.50E-06	0	5.51E-06	NTV	NTV	NTV	NTV	NTV	0.6	2.7E-08	9.2E-06	0.0E+00	9.2E-06
DDTs	0.00014	1.20E-02	--	0	8.44E-07	3.88E-06	0	4.72E-06	0.009	9.4E-05	4.3E-04	0.0E+00	5.2E-04	1.5	5.6E-07	2.6E-06	0.0E+00	3.1E-06
Dieldrin		3.90E-03	--	0		1.26E-06	0	1.26E-06	0.0709		1.8E-05	0.0E+00	1.8E-05	0.98		1.3E-06	0.0E+00	1.3E-06
Endosulfan I		4.00E-03	--	0		1.29E-06	0	1.29E-06	10		1.3E-07	0.0E+00	1.3E-07	100		1.3E-08	0.0E+00	1.3E-08
Endosulfan sulfate	0.00012	3.00E-03	--	0	7.24E-07	9.70E-07	0	1.69E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Endrin	0.000014	2.00E-02	--	0	8.44E-08	6.47E-06	0	6.55E-06	0.3	2.8E-07	2.2E-05	0.0E+00	2.2E-05	3	2.8E-08	2.2E-06	0.0E+00	2.2E-06
Endrin aldehyde		6.00E-03	--	0		1.94E-06	0	1.94E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Endrin Ketone		3.00E-03	--	0		9.70E-07	0	9.70E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
gamma Chlordane		8.50E-03	--	0		2.75E-06	0	2.75E-06	0.0014		2.0E-03	0.0E+00	2.0E-03	0.014		2.0E-04	0.0E+00	2.0E-04
Heptachlor	0.0000028	2.00E-04	--	0	1.69E-08	6.47E-08	0	8.15E-08	0.065	2.6E-07	9.9E-07	0.0E+00	1.3E-06	0.65	2.6E-08	9.9E-08	0.0E+00	1.3E-07
Heptachlor epoxide		3.00E-04	--	0		9.70E-08	0	9.70E-08	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Hexachlorobenzene		8.00E-04	--	0		2.59E-07	0	2.59E-07	0.23		1.1E-06	0.0E+00	1.1E-06	2.3		1.1E-07	0.0E+00	1.1E-07
Methoxychlor		2.00E-02	--	0		6.47E-06	0	6.47E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Mirex		4.00E-03	--	0		1.29E-06	0	1.29E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
trans-Nonachlor		2.40E-03	--	0		7.76E-07	0	7.76E-07	0.0014		5.5E-04	0.0E+00	5.5E-04	0.014		5.5E-05	0.0E+00	5.5E-05

Table C2-6l
Post-Remediation Mallard (Non-Breeding) Risk Calculations (Wetland Sediment Residual Concentration)
Deep Soil (0 - 10 ft bgs) at Hazard Quotient Equals Three
Non-Tidal Wetland Area Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Concentrations				Intake (mg/kg BW-day)					Hazard Quotient (HQ) - Low					Hazard Quotient (HQ) - High			
COPEC[a]	Surface Water (mg/L)[b]	Sediments[c]	Plant BAF[d]	Plant Tissue[d]	Surface Water	Sediment	Plant	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Plant	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Sediment	Plant	Total Intake
SVOCs (mg/kg)																		
Acenaphthene		1.30E-01	--	0		4.20E-05	0	4.20E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Acenaphthylene		1.20E-01	--	0		3.88E-05	0	3.88E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Anthracene		1.30E-01	1.89E+00	2.45E-01		4.20E-05	2.40E-03	2.45E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(a)anthracene		2.80E-01	--	0		9.05E-05	0	9.05E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(a)pyrene		2.40E-01	--	0		7.76E-05	0	7.76E-05	0.001		7.8E-02	0.0E+00	7.8E-02	0.01		7.8E-03	0.0E+00	7.8E-03
Benzo(b)fluoranthene		2.40E-01	--	0		7.76E-05	0	7.76E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(ghi)perylene		1.60E-01	--	0		5.17E-05	0	5.17E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(k)fluoranthene		2.40E-01	--	0		7.76E-05	0	7.76E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzoic acid		6.80E-01	--	0		2.20E-04	0	2.20E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Bis(2-ethylhexyl)phthalate	0.027	1.10E+00	--	0	1.63E-04	3.56E-04	0	5.18E-04	1.1	1.5E-04	3.2E-04	0.0E+00	4.7E-04	11	1.5E-05	3.2E-05	0.0E+00	4.7E-05
Butylbenzylphthalate		2.50E-02	--	0		8.08E-06	0	8.08E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Carbazole		5.50E-01	--	0		1.78E-04	0	1.78E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Chloroaniline		3.00E-03	--	0		9.70E-07	0	9.70E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2-Chloropropane		4.33E-02	--	0		1.40E-05	0	1.40E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chrysene	0.0002	2.70E-01	--	0	1.21E-06	8.73E-05	0	8.85E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Dibenzofuran		3.60E-01	--	0		1.16E-04	0	1.16E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
3,3-Dichlorobenzidine		1.20E-02	--	0		3.88E-06	0	3.88E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2,6-Dinitrotoluene		3.70E-01	--	0		1.20E-04	0	1.20E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Fluoranthene		3.80E-01	1.17E+00	4.46E-01		1.23E-04	4.37E-03	4.49E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Fluorene		1.30E-01	--	0		4.20E-05	0	4.20E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Indeno(123,cd)pyrene		1.16E+00	--	0		3.75E-04	0	3.75E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2-Methylnaphthalene		1.80E-01	--	0		5.82E-05	0	5.82E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Methylphenol	0.12	2.30E-01	--	0	7.24E-04	7.44E-05	0	7.98E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Naphthalene		1.10E-01	--	0		3.56E-05	0	3.56E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pentachlorophenol		5.40E-01	--	0		1.75E-04	0	1.75E-04	6.7		2.6E-05	0.0E+00	2.6E-05	22.5		7.8E-06	0.0E+00	7.8E-06
Phenanthrene		2.00E-01	1.64E+00	3.27E-01		6.47E-05	3.21E-03	3.27E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Phenol		2.90E-01	--	0		9.37E-05	0	9.37E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pyrene		4.30E-01	--	0		1.39E-04	0	1.39E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
PCBs (mg/kg)																		
PCBs (TOTAL)-congeners	0.000016	1.60E-01	1.09E-01	1.75E-02	9.65E-08	5.17E-05	1.71E-04	2.23E-04	0.09	1.1E-06	5.7E-04	1.9E-03	2.5E-03	1.27	7.6E-08	4.1E-05	1.3E-04	1.8E-04

>1 = The calculated hazard quotient exceeds 1 (i.e., >

Exposure Assumptions and Equation:[e]

	Value	Units
Ingestion Rate (IR) prey(dry wt.) =	0.0917	kg/day (dry weight)
IRplant(dry wt.) =	0.0917	kg/day (dry weight)
IRsediment (dry wt.)[f] =	0.00303	kg/day (dry weight)
Cprey =	chem-specific	kg-day (dry weight)
Csediment =	chem-specific	kg-day (dry weight)
Tissue Moisture (TMplant) =	8.5%	percent
IRsurface water[g] =	0.056	L/day
Csurface water =	chem-specific	mg/L or µg/L
Dietary Composition Factor (DCF)[h] =	100%	percent
Site Use Factor (SUF)[i] =	10%	percent
Body Weight (BW) =	0.9361	kg

Intake Equation = [IRplant (dry wt) x [Cprey (plant, wet wt) /1-TM] x DCF x SUF]/BW + [IRsediment x Csediment x DCF x SUF)]/BW +[(IRsurface water x Csurface water x DCF x SUF)]/BW

Risk (hazard quotient) = Intake / TRV

NTV = Not toxicity data available.

Prey tissue(dry wt) = Prey tissue (wet wt.) / (1-Tissue Moisture)

NA = Not available.

Blank cell indicates COPEC was not detected in this medium.

Notes:

a All chemicals detected in sediments are considered as constituents of potential ecological concern.

b All concentrations of constituents in surface water are based on the maximum concentration.

c All concentrations of constituents in sediment are based on the residual concentrations expressed in dry weight.

d Site-specific BAFs (dry weight basis). Calculated plant tissue concentrations (sediment concentration x BAF). Tissue concentrations are on a dry weight basis.

e Exposure parameters used to calculate risk are discussed in detail in Section 4.2 of ERA.

f Ingestion rate of sediment based on 3.3 percent of of the prey ingestion rate (dry weight); based on mallard data from Beyer et al. (1994).

g Based on equation for birds: Water intake (L/day) = $0.059Wt(kg)^{0.67}$ (EPA 1993)

h Dietary composition factor was based on a conservative assumption of 100% dietary intake of plants from the site.

i Site use factor was based on 10% use of the site for the mallard's foraging range.

Table C2-6m
Post-Remediation Mallard (Breeding) Risk Calculations (Wetland Sediment Residual Concentration)
Deep Soil (0 - 10 ft bgs) at Hazard Quotient Equals Three
Non-Tidal Wetland Area Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Point Concentration						Intake (mg/kg BW-day)					Low TRV	Hazard Quotient (HQ) - Low					High TRV	Hazard Quotient (HQ) - High				
COPEC[a]	Surface Water (mg/L)[b]	Sediments[c]	Plant BAF[d]	Plant Tissue[d]	Invertebrate BAF[d]	Invertebrate Tissue[d]	Surface Water	Sediment	Plant	Invertebrate	Total Intake	(mg/kg BW-day)	Surface Water	Sediment	Plant	Invertebrate	Total Intake	(mg/kg BW-day)	Surface Water	Sediment	Plant	Invertebrate	Total Intake
Metals (mg/kg)																							
Aluminum	12.6	2.68E+04	7.56E-03	2.02E+02	1.93E-01	5.16E+03	3.04E-01	3.46E+01	1.98E+00	1.52E+02	1.89E+02	109.7	2.8E-03	3.2E-01	1.8E-02	1.4E+00	1.7E+00 >1	1,097	2.8E-04	3.2E-02	1.8E-03	1.4E-01	1.7E-01
Antimony	0.003	4.50E+00	2.27E-01	1.02E+00	2.32E-01	1.04E+00	7.24E-05	5.82E-03	1.00E-02	3.06E-02	4.65E-02	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Arsenic	0.0436	2.13E+01	1.15E-01	2.46E+00	1.92E-01	4.09E+00	1.05E-03	2.75E-02	2.41E-02	1.20E-01	1.73E-01	5.5	1.9E-04	5.0E-03	4.4E-03	2.2E-02	3.1E-02	22	4.8E-05	1.3E-03	1.1E-03	5.5E-03	7.9E-03
Barium	0.24	9.36E+01	7.87E-02	7.37E+00	1.50E+00	1.40E+02	5.69E-03	1.21E-01	7.22E-02	4.12E+00	4.32E+00	20.8	2.7E-04	5.8E-03	3.5E-03	2.0E-01	2.1E-01	41.7	1.4E-04	2.9E-03	1.7E-03	9.9E-02	1.0E-01
Beryllium		6.50E-01	--	0	--	0		8.40E-04	0.00E+00	0.00E+00	8.40E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Cadmium	0.0016	2.90E+00	1.40E+00	4.05E+00	2.15E-01	6.24E-01	3.86E-05	3.75E-03	3.97E-02	1.83E-02	6.18E-02	0.08	4.8E-04	4.7E-02	5.0E-01	2.3E-01	7.7E-01	10.40	3.7E-06	3.6E-04	3.8E-03	1.8E-03	5.9E-03
Chromium +3	0.0263	2.15E+02	--	0	5.53E-01	1.19E+02	6.34E-04	2.78E-01	0.00E+00	3.50E+00	3.78E+00	2.66	2.4E-04	1.0E-01	0.0E+00	1.3E+00	1.4E+00	2.78	2.3E-04	1.0E-01	0.0E+00	1.3E+00	1.4E+00
Chromium +6	0.0263	7.00E-02	--	0	5.53E-01	3.87E-02	6.34E-04	9.05E-05	0.00E+00	1.14E-03	1.86E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Cobalt	0.0164	1.84E+01	--	0	--	0	3.96E-04	2.38E-02	0.00E+00	0.00E+00	2.42E-02	7.61	5.2E-05	3.1E-03	0.0E+00	0.0E+00	3.2E-03	17	2.3E-05	1.4E-03	0.0E+00	0.0E+00	1.4E-03
Copper	0.233	1.94E+02	5.68E-02	1.10E+01	6.67E-01	1.29E+02	5.62E-03	2.51E-01	1.08E-01	3.80E+00	4.17E+00	2.3	2.4E-03	1.1E-01	4.7E-02	1.7E+00	1.8E+00 >1	52.3	1.1E-04	4.8E-03	2.1E-03	7.3E-02	8.0E-02
Lead	0.0031	9.40E+01	7.51E-03	7.06E-01	5.07E-02	4.77E+00	7.48E-05	1.22E-01	6.91E-03	1.40E-01	2.69E-01	0.014	5.3E-03	8.7E+00	4.9E-01	1.0E+01	1.9E+01 >1	8.75	8.5E-06	1.4E-02	7.9E-04	1.6E-02	3.1E-02
Manganese	7.42	9.07E+02	4.89E-01	4.44E+02	5.29E+00	4.80E+03	1.79E-01	1.17E+00	4.34E+00	1.41E+02	1.47E+02	77.6	2.3E-03	1.5E-02	5.6E-02	1.8E+00	1.9E+00 >1	776	2.3E-04	1.5E-03	5.6E-03	1.8E-01	1.9E-01
Mercury	0.00029	1.40E+00	--	0	6.96E-01	9.75E-01	6.99E-06	1.81E-03	0.00E+00	2.86E-02	3.05E-02	0.039	1.8E-04	4.6E-02	0.0E+00	7.3E-01	7.8E-01	0.18	3.9E-05	1.0E-02	0.0E+00	1.6E-01	1.7E-01
Molybdenum	0.0312	5.10E+00	--	0	--	0	7.53E-04	6.59E-03	0.00E+00	0.00E+00	7.35E-03	3.5	2.2E-04	1.9E-03	0.0E+00	0.0E+00	2.1E-03	35.3	2.1E-05	1.9E-04	0.0E+00	0.0E+00	2.1E-04
Nickel	0.166	1.13E+02	1.39E-02	1.57E+00	3.65E-01	4.12E+01	4.00E-03	1.46E-01	1.54E-02	1.21E+00	1.38E+00	1.38	2.9E-03	1.1E-01	1.1E-02	8.8E-01	1.0E+00	56.3	7.1E-05	2.6E-03	2.7E-04	2.2E-02	2.4E-02
Selenium	0.029	1.20E+00	--	0	--	0	6.99E-04	1.55E-03	0.00E+00	0.00E+00	2.25E-03	0.23	3.0E-03	6.7E-03	0.0E+00	0.0E+00	9.8E-03	0.93	7.5E-04	1.7E-03	0.0E+00	0.0E+00	2.4E-03
Silver	0.0019	2.80E+00	--	0	--	0	4.58E-05	3.62E-03	0.00E+00	0.00E+00	3.67E-03	178.00	2.6E-07	2.0E-05	0.0E+00	0.0E+00	2.1E-05	NTV	NTV	NTV	NTV	NTV	NTV
Thallium		4.70E-01	--	0	--	0		6.08E-04	0.00E+00	0.00E+00	6.08E-04	0.35		1.7E-03	0.0E+00	0.0E+00	1.7E-03	NTV	NTV	NTV	NTV	NTV	NTV
Tin		1.63E+01	1.55E+00	2.53E+01	--	0		2.11E-02	2.48E-01	0.00E+00	2.69E-01	6.80		3.1E-03	3.6E-02	0.0E+00	4.0E-02	16.9		1.2E-03	1.5E-02	0.0E+00	1.6E-02
Vanadium	0.05	1.17E+02	2.20E-02	2.58E+00	2.96E-02	3.46E+00	1.21E-03	1.51E-01	2.53E-02	1.02E-01	2.79E-01	11.4	1.1E-04	1.3E-02	2.2E-03	8.9E-03	2.5E-02	114	1.1E-05	1.3E-03	2.2E-04	8.9E-04	2.5E-03
Zinc	0.042	2.35E+02	8.47E-02	1.99E+01	1.51E+00	3.55E+02	1.01E-03	3.04E-01	1.95E-01	1.04E+01	1.09E+01	17.2	5.9E-05	1.8E-02	1.1E-02	6.1E-01	6.4E-01	172	5.9E-06	1.8E-03	1.1E-03	6.1E-02	6.4E-02
Volatile Organics (mg/kg)																							
Acetone		3.20E-01	--	0	--	0		4.14E-04	0.00E+00	0.00E+00	4.14E-04	52		8.0E-06	0.0E+00	0.0E+00	8.0E-06	520		8.0E-07	0.0E+00	0.0E+00	8.0E-07
Benzene		5.00E-03	--	0	--	0		6.47E-06	0.00E+00	0.00E+00	6.47E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Carbon disulfide		2.50E-02	--	0	--	0		3.23E-05	0.00E+00	0.00E+00	3.23E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chlorobenzene		2.40E-02	--	0	--	0		3.10E-05	0.00E+00	0.00E+00	3.10E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
cis-1,2-Dichlorobenzene		5.20E-02	--	0	--	0		6.72E-05	0.00E+00	0.00E+00	6.72E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Ethylbenzene		4.40E-02	--	0	--	0		5.69E-05	0.00E+00	0.00E+00	5.69E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Isopropyltoluene		7.20E-03	--	0	--	0		9.31E-06	0.00E+00	0.00E+00	9.31E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Methylene chloride		3.00E-01	--	0	--	0		3.88E-04	0.00E+00	0.00E+00	3.88E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Naphthalene		1.60E-02	--	0	--	0		2.07E-05	0.00E+00	0.00E+00	2.07E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Toluene		3.00E-02	--	0	--	0		3.88E-05	0.00E+00	0.00E+00	3.88E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
trans-1,2-Dichloroethene		2.30E-02	--	0	--	0		2.97E-05	0.00E+00	0.00E+00	2.97E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Trichloroethene		7.00E-03	--	0	--	0		9.05E-06	0.00E+00	0.00E+00	9.05E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
1,2,4-Trimethylbenzene		2.50E-02	--	0	--	0		3.23E-05	0.00E+00	0.00E+00	3.23E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
1,3,5-Trimethylbenzene		9.30E-03	--	0	--	0		1.20E-05	0.00E+00	0.00E+00	1.20E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Vinyl chloride		3.40E-02	--	0	--	0		4.40E-05	0.00E+00	0.00E+00	4.40E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Xylenes		1.10E-01	--	0	--	0		1.42E-04	0.00E+00	0.00E+00	1.42E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pesticides (mg/kg)																							
alpha-Chlordane		8.20E-03	--	0	--	0		1.06E-05	0.00E+00	0.00E+00	1.06E-05	0.0014		7.6E-03	0.0E+00	0.0E+00	7.6E-03	0.014		7.6E-04	0.0E+00	0.0E+00	7.6E-04
beta-BHC		1.00E-03	--	0	--	0		1.29E-06	0.00E+00	0.00E+00	1.29E-06	0.56		2.3E-06	0.0E+00	0.0E+00	2.3E-06	2.25		5.7E-07	0.0E+00	0.0E+00	5.7E-07
delta-BHC		2.00E-03	--	0	--	0		2.59E-06	0.00E+00	0.00E+00	2.59E-06	0.56		4.6E-06	0.0E+00	0.0E+00	4.6E-06	2.25		1.1E-06	0.0E+00	0.0E+00	1.1E-06
2,4-DDD		2.90E-02	--	0	--	0		3.75E-05	0.00E+00	0.00E+00	3.75E-05	0.009		4.2E-03	0.0E+00	0.0E+00	4.2E-03	1.5		2.5E-05	0.0E+00	0.0E+00	2.5E-05
4,4-DDD		8.60E-02	--	0	--	0		1.11E-04	0.00E+00	0.00E+00	1.11E-04	0.009		1.2E-02	0.0E+00	0.0E+00	1.2E-02	1.5		7.4E-05	0.0E+00	0.0E+00	7.4E-05
DDE	0.0000027	1.70E-02	--	0	--	0	6.51E-08	2.20E-05	0.00E+00	0.00E+00	2.20E-05	NTV	NTV	NTV	NTV	NTV	NTV	0.6	1.1E-07	3.7E-05	0.0E+00	0.0E+00	3.7E-05
DDTs	0.00014	1.20E-02	--	0	--	0	3.38E-06	1.55E-05	0.00E+00	0.00E+00	1.89E-05	0.009	3.8E-04	1.7E-03	0.0E+00	0.0E+00	2.1E-03	1.5	2.3E-06	1.0E-05	0.0E+00	0.0E+00	1.3E-05
Dieldrin		3.90E-03	--	0	--	0		5.04E-06	0.00E+00	0.00E+00	5.04E-06	0.0709		7.1E-05	0.0E+00	0.0E+00	7.1E-05	0.98		5.1E-06	0.0E+00	0.0E+00	5.1E-06
Endosulfan I		4.00E-03	--	0	--	0		5.17E-06	0.00E+00	0.00E+00	5.17E-06	10		5.2E-07	0.0E+00	0.0E+00	5.2E-07	100		5.2E-08	0.0E+00	0.0E+00	5.2E-08
Endosulfan sulfate	0.00012	3.00E-03	--	0	--	0	2.89E-06	3.88E-06	0.00E+00	0.00E+00	6.77E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Endrin	0.000014	2.00E-02	--	0	--	0	3.38E-07	2.59E-05	0.00E+00	0.00E+00	2.62E-05	0.3	1.1E-06	8.6E-05	0.0E+00	0.0E+00	8.7E-05	3	1.1E-07	8.6E-06	0.0E+00	0.0E+00	8.7E-06
Endrin aldehyde		6.00E-03	--	0	--	0		7.76E-06	0.00E+00	0.00E+00	7.76E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Endrin Ketone		3.00E-03	--	0	--	0		3.88E-06	0.00E+00	0.00E+00	3.88E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
gamma-Chlordane		8.50E-03	--	0	--	0		1.10E-05	0.00E+00	0.00E+00	1.10E-05	0.0014		7.9E-03	0.0E+00	0.0E+00	7.9E-03	0.014		7.9E-04	0.0E+00	0.0E+00	7.9E-04
Heptachlor	0.0000028	2.00E-04	--	0	--	0	6.75E-08	2.59E-07	0.00E+00	0.00E+00	3.26E-07	0.065	1.0E-06	4.0E-06	0.0E+00	0.0E+00	5.0E-06	0.65	1.0E-07	4.0E-07	0.0E+00	0.0E+00	5.0E-07
Heptachlor epoxide		3.00E-04	--	0	--	0		3.88E-07	0.00E+00	0.00E+00	3.88E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Hexachlorobenzene		8.00E-04	--	0	--	0		1.03E-06	0.00E+00	0.00E+00	1.03E-06	0.23		4.5E-06	0.0E+00	0.0E+00	4.5E-06	2.3		4.5E-07	0.0E+00	0.0E+00	4.5E-07
Methoxychlor		2.00E-02	--	0	--	0		2.59E-05	0.00E+00	0.00E+00	2.59E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Mirex		4.00E-03	--	0	--	0		5.17E-06	0.00E+00	0.00E+00	5.17E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
trans-Nonachlor		2.40E-03	--	0	--	0		3.10E-06	0.00E+00	0.00E+00	3.10E-06	0.0014		2.2E-03	0.0E+00	0.0E+00	2.2E-03	0.014		2.2E-04	0.0E+00	0.0E+00	2.2E-04
SVOCs (mg/kg)																							
Acenaphthene		1.30E-01	--	0	--	0		1.68E-04	0.00E+00	0.00E+00	1.68E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Acenaphthylene		1.20E-01	--	0	--	0		1.55E-04	0.00E+00	0.00E+00	1.55E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Anthracene		1.30E-01	1.89E+00	2.45E-01	--	0		1.68E-04	2.40E-03	0.00E+00	2.57E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(a)anthracene		2.80E-01	--	0	--	0		3.62E-04	0.00E+00	0.00E+00	3.62E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(a)pyrene		2.40E-01	--	0	--	0		3.10E-04	0.00E+00	0.00E+00	3.10E-04	0.001		3.1E-01	0.0E+00	0.0E+00	3.1E-01	0.01		3.1E-02	0.0E+00	0.0E+00	3.1E-02
Benzo(b)fluoranthene		2.40E-01	--	0	--	0		3.10E-04	0.00E+00	0.00E+00	3.10E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(ghi)perylene		1.60E-01	--	0	--	0		2.07E-04	0.00E+00	0.00E+00	2.07E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(k)fluoranthene		2.40E-01	--	0	--	0		3.10E-04	0.00E+00	0.00E+00	3.10E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzoic acid		6.80E-01	--	0	--	0		8.79E-04	0.00E+00	0.00E+00	8.79E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Bis(2-ethylhexyl)phthalate	0.027	1.10E+00	--	0	--	0	6.51E-04	1.42E-03	0.00E+00	0.00E+00	2.07E-03	1.1	5.9E-04	1.3E-03	0.0E+00	0.0E+00	1.9E-03	11	5.9E-05	1.3E-04	0.0E+00	0.0E+00	1.9E-04
Butylbenzylphthalate		2.50E-02	--	0	--	0		3.23E-05	0.00E+00	0.00E+00	3.23E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Carbazole		5.50E-01	--	0	--	0		7.11E-04	0.00E+00	0.00E+00	7.11E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Chloroaniline		3.00E-03	--	0	--	0		3.88E-06	0.00E+00	0.00E+00	3.88E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2-Chloropropane		4.33E-02	--	0	--	0		5.60E-05	0.00E+00	0.00E+00	5.60E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chrysene	0.0002	2.70E-01	--	0	--	0	4.82E-06	3.49E-04	0.00E+00	0.00E+00	3.54E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Dibenzofuran		3.60E-01	--	0	--	0		4.66E-04	0.00E+00	0.00E+00	4.66E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
3,3-Dichlorobenzidine		1.20E-02	--	0	--	0		1.55E-05	0.00E+00	0.00E+00	1.55E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2,6-Dinitrotoluene		3.70E-01	--	0	--	0		4.78E-04	0.00E+00	0.00E+00	4.78E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Fluoranthene		3.80E-01	1.17E+00	4.46E-01	--	0		4.91E-04	4.37E-03	0.00E+00	4.86E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV

Table C2-6m
Post-Remediation Mallard (Breeding) Risk Calculations (Wetland Sediment Residual Concentration)
Deep Soil (0 - 10 ft bgs) at Hazard Quotient Equals Three
Non-Tidal Wetland Area Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Point Concentration						Intake (mg/kg BW-day)						Hazard Quotient (HQ) - Low						Hazard Quotient (HQ) - High					
COPEC[a]	Surface Water (mg/L)[b]	Sediments[c]	Plant BAF[d]	Plant Tissue[d]	Invertebrate BAF[d]	Invertebrate Tissue[d]	Surface Water	Sediment	Plant	Invertebrate	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Plant	Invertebrate	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Sediment	Plant	Invertebrate	Total Intake
Fluorene		1.30E-01	--	0	--	0		1.68E-04	0.00E+00	0.00E+00	1.68E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Indeno(123,cd)pyrene		1.16E+00	--	0	--	0		1.50E-03	0.00E+00	0.00E+00	1.50E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2-Methylnaphthalene		1.80E-01	--	0	--	0		2.33E-04	0.00E+00	0.00E+00	2.33E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Methylphenol	0.12	2.30E-01	--	0	--	0	2.89E-03	2.97E-04	0.00E+00	0.00E+00	3.19E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Naphthalene		1.10E-01	--	0	--	0		1.42E-04	0.00E+00	0.00E+00	1.42E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pentachlorophenol		5.40E-01	--	0	--	0		6.98E-04	0.00E+00	0.00E+00	6.98E-04	6.7		1.0E-04	0.0E+00	0.0E+00	1.0E-04	22.5		3.1E-05	0.0E+00	0.0E+00	3.1E-05
Phenanthrene		2.00E-01	1.64E+00	3.27E-01	2.51E+00	5.02E-01		2.59E-04	3.21E-03	1.48E-02	1.82E-02	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Phenol		2.90E-01	--	0	--	0		3.75E-04	0.00E+00	0.00E+00	3.75E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pyrene		4.30E-01	--	0	--	0		5.56E-04	0.00E+00	0.00E+00	5.56E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
PCBs (mg/kg)																							
PCBs (TOTAL)-congeners	0.000016	1.60E-01	1.09E-01	1.75E-02	1.16E+01	1.86E+00	3.86E-07	2.07E-04	1.71E-04	5.46E-02	5.50E-02	0.09	4.3E-06	2.3E-03	1.9E-03	6.1E-01	6.1E-01	1.27	3.0E-07	1.6E-04	1.3E-04	4.3E-02	4.3E-02

>1 = The calculated hazard quotient exceeds 1 (i.e., > 1.5)

Exposure Assumptions and Equation:[e]

	Value	Units
Ingestion Rate (IR) prey(dry wt.) =	0.0917	kg/day (dry weight)
IRplant(dry wt.)[f] =	0.0229	kg/day (dry weight)
IRinvertebrate(dry wt.)[f] =	0.0688	kg/day (dry weight)
IRsediment (dry wt.)[g] =	0.00303	kg-day (dry weight)
Cprey =	chem-specific	mg/kg or µg/kg
Csediment =	chem-specific	mg/kg or µg/kg
Tissue Moisture (TMplant) =	8.5%	percent
IRsurface water[h] =	0.056	L/day
Csurface water =	chem-specific	mg/L or µg/L
Dietary Composition Factor (DCF)[i] =	100%	percent
Site Use Factor (SUF)[j] =	40%	percent
Body Weight =	0.9361	kg

Intake Equation= [IRplant (dry wt) x [Cprey(plant, dry wt)/1-TM) x DCF x SUF]/BW] + [IRinvertebrate (dry wt) x Cprey(invertebrate, dry wt) x DCF x SUF)/BW] + [(IRsediment x Csediment x DCF x SUF))/BW +[(IRsurface water x Csurface water x DCF x SUF))/

Risk (hazard quotient) = Intake / TRV

Prey tissue(dry wt) = Prey tissue (wet wt.) / (1-Tissue Moisture)

NTV = Not toxicity data available.

Blank cell indicates COPEC was not detected in this medium.

Notes:

a All chemicals detected in sediments are considered as constituents of potential ecological concern.

b All concentrations of constituents in surface water are based on the maximum concentration.

c All concentrations of constituents in sediment are based on the residual concentrations expressed in dry weight.

d Site-specific BAFs (dry weight basis). Calculated plant and invertebrate tissue concentrations (sediment concentration x BAF). Tissue concentrations are on a dry weight basis.

e Exposure parameters used to calculate risk are discussed in detail in Section 4.2 of ERA.

f Based on dietary composition of 25% plant and 75% invertebrate.

g Ingestion rate of sediment based on 3.3 percent of of the prey ingestion rate (dry weight); based on mallards (Beyer et al. 1994).

h Based on equation for birds: Water intake (L/day) = $0.059Wt(kg)^{.67}$ (EPA 1993)

i Dietary composition factor was based on a conservative assumption of 100% dietary intake of plants and invertebrates from the site.

j Site use factor was based on 40% use of the site for the mallard's foraging range.

Table C2-6n
Post-Remediation Great Blue Heron Risk Calculations (Wetland Sediment Residual Concentration)
Shallow Soil (0 - 2 ft bgs) at Hazard Quotient Equals Three
Non-Tidal Wetland Area Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Point Concentration						Intake (mg/kg BW-day)						Hazard Quotient (HQ) - Low						Hazard Quotient (HQ) - High				
COPEC[a]	Surface Water (mg/L)[b]	Sediments[c]	Small Mammal BAF[d]	Small Mammal Tissue[d]	Amphibian BAF[d]	Amphibian Tissue[d]	Surface Water	Sediment	Small mammal	Amphibian	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Small mammal	Amphibian	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Sediment	Small mammal	Amphibian	Total Intake
Metals (mg/kg)																							
Aluminum	12.6	2.68E+04	1.11E-02	296	7.75E-03	207	5.65E-01	4.85E+01	8.12E+00	5.69E+00	6.29E+01	109.7	5.2E-03	4.4E-01	7.4E-02	5.2E-02	5.7E-01	1,097	5.2E-04	4.4E-02	7.4E-03	5.2E-03	5.7E-02
Antimony	0.003	4.50E+00	1.22E+00	5	--	0	1.35E-04	8.15E-03	1.50E-01	0	1.59E-01	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Arsenic	0.0436	2.13E+01	--	0	--	0	1.96E-03	3.86E-02	0	0	4.05E-02	5.5	3.6E-04	7.0E-03	0.0E+00	0.0E+00	7.4E-03	22	8.9E-05	1.8E-03	0.0E+00	0.0E+00	1.8E-03
Barium	0.24	9.36E+01	9.41E-02	9	--	0	1.06E-02	1.70E-01	2.42E-01	0	4.22E-01	20.8	5.1E-04	8.2E-03	1.2E-02	0.0E+00	2.0E-02	41.7	2.5E-04	4.1E-03	5.8E-03	0.0E+00	1.0E-02
Beryllium		6.50E-01	--	0	--	0		1.18E-03	0.00E+00	0	1.18E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Cadmium	0.0016	2.90E+00	--	0	--	0	7.18E-05	5.25E-03	0.00E+00	0	5.33E-03	0.08	9.0E-04	6.6E-02	0.0E+00	0.0E+00	6.7E-02	10.40	6.9E-06	5.1E-04	0.0E+00	0.0E+00	5.1E-04
Chromium +3	0.0263	2.15E+02	2.60E-02	6	2.45E-01	53	1.18E-03	3.90E-01	1.54E-01	1.45E+00	1.99E+00	2.66	4.4E-04	1.5E-01	5.8E-02	5.4E-01	7.5E-01	2.78	4.2E-04	1.4E-01	5.5E-02	5.2E-01	7.2E-01
Chromium +6	0.0263	7.00E-02	2.60E-02	0	2.45E-01	0	1.18E-03	1.27E-04	5.00E-05	4.71E-04	1.83E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Cobalt	0.0164	1.84E+01	--	0	--	0	7.36E-04	3.33E-02	0	0	3.41E-02	7.61	9.7E-05	4.4E-03	0.0E+00	0.0E+00	4.5E-03	17	4.3E-05	2.0E-03	0.0E+00	0.0E+00	2.0E-03
Copper	0.233	1.94E+02	3.45E-01	67	--	0	1.05E-02	3.51E-01	1.84E+00	0	2.20E+00	2.3	4.5E-03	1.5E-01	8.0E-01	0.0E+00	9.6E-01	52.3	2.0E-04	6.7E-03	3.5E-02	0.0E+00	4.2E-02
Lead	0.0031	9.40E+01	6.10E-01	57	--	0	1.39E-04	1.70E-01	1.58E+00	0	1.75E+00	0.014	9.9E-03	1.2E+01	1.1E+02	0.0E+00	1.2E+02	>1	8.75	1.6E-05	1.9E-02	1.8E-01	0.0E+00	2.0E-01
Manganese	7.42	9.07E+02	--	0	4.78E-02	43	3.33E-01	1.64E+00	0	1.19E+00	3.17E+00	77.6	4.3E-03	2.1E-02	0.0E+00	1.5E-02	4.1E-02	776	4.3E-04	2.1E-03	0.0E+00	1.5E-03	4.1E-03
Mercury	0.00029	1.40E+00	--	0	7.42E-01	1	1.30E-05	2.54E-03	0	2.85E-02	3.10E-02	0.039	3.3E-04	6.5E-02	0.0E+00	7.3E-01	8.0E-01	0.18	7.2E-05	1.4E-02	0.0E+00	1.6E-01	1.7E-01
Molybdenum	0.0312	5.10E+00	--	0	--	0	1.40E-03	9.24E-03	0	0	1.06E-02	3.5	4.0E-04	2.6E-03	0.0E+00	0.0E+00	3.0E-03	35.3	4.0E-05	2.6E-04	0.0E+00	0.0E+00	3.0E-04
Nickel	0.166	1.13E+02	--	0	--	0	7.45E-03	2.05E-01	0	0	2.12E-01	1.38	5.4E-03	1.5E-01	0.0E+00	0.0E+00	1.5E-01	56.3	1.3E-04	3.6E-03	0.0E+00	0.0E+00	3.8E-03
Selenium	0.029	1.20E+00	6.12E+00	7	5.77E+00	7	1.30E-03	2.17E-03	2.01E-01	1.90E-01	3.95E-01	0.23	5.7E-03	9.5E-03	8.8E-01	8.3E-01	1.7E+00	>1	0.93	1.4E-03	2.3E-03	2.2E-01	2.0E-01	4.2E-01
Silver	0.0019	2.80E+00	--	0	--	0	8.52E-05	5.07E-03	0	0	5.16E-03	178.00	4.8E-07	2.8E-05	0.0E+00	0.0E+00	2.9E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Thallium		4.70E-01	1.01E+00	0	--	0		8.52E-04	1.30E-02	0	1.39E-02	0.35		2.4E-03	3.7E-02	0.0E+00	4.0E-02	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Tin		1.63E+01	--	0	--	0		2.95E-02	0	0	2.95E-02	6.80		4.3E-03	0.0E+00	0.0E+00	4.3E-03	16.9		1.7E-03	0.0E+00	0.0E+00	1.7E-03
Vanadium	0.05	1.17E+02	--	0	--	0	2.24E-03	2.12E-01	0	0	2.14E-01	11.4	2.0E-04	1.9E-02	0.0E+00	0.0E+00	1.9E-02	114	2.0E-05	1.9E-03	0.0E+00	0.0E+00	1.9E-03
Zinc	0.042	2.35E+02	1.11E+00	260	7.87E-01	185	1.88E-03	4.26E-01	7.15E+00	5.08E+00	1.27E+01	17.2	1.1E-04	2.5E-02	4.2E-01	3.0E-01	7.4E-01	172	1.1E-05	2.5E-03	4.2E-02	3.0E-02	7.4E-02
Volatile Organics (mg/kg)																							
Acetone		3.20E-01	--	0	--	0		5.80E-04	0	0	5.80E-04	52		1.1E-05	0.0E+00	0.0E+00	1.1E-05	520		1.1E-06	0.0E+00	0.0E+00	1.1E-06
Benzene		5.00E-03	--	0	--	0		9.06E-06	0	0	9.06E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Carbon disulfide		2.50E-02	--	0	--	0		4.53E-05	0	0	4.53E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chlorobenzene		2.40E-02	--	0	--	0		4.35E-05	0	0	4.35E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
cis-1,2-Dichlorobenzene		5.20E-02	--	0	--	0		9.42E-05	0	0	9.42E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Ethylbenzene		4.40E-02	--	0	--	0		7.97E-05	0	0	7.97E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Isopropyltoluene		7.20E-03	--	0	--	0		1.30E-05	0	0	1.30E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Methylene chloride		3.00E-01	--	0	--	0		5.44E-04	0	0	5.44E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Naphthalene		1.60E-02	--	0	--	0		2.90E-05	0	0	2.90E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Toluene		3.00E-02	--	0	--	0		5.44E-05	0	0	5.44E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
trans-1,2-Dichloroethene		2.30E-02	--	0	--	0		4.17E-05	0	0	4.17E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Trichloroethene		7.00E-03	--	0	--	0		1.27E-05	0	0	1.27E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
1,2,4-Trimethylbenzene		2.50E-02	--	0	--	0		4.53E-05	0	0	4.53E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
1,3,5-Trimethylbenzene		9.30E-03	--	0	--	0		1.68E-05	0	0	1.68E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Vinyl chloride		3.40E-02	--	0	--	0		6.16E-05	0	0	6.16E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Xylenes		1.10E-01	--	0	--	0		1.99E-04	0	0	1.99E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pesticides (mg/kg)																							
alpha-Chlordane		8.20E-03	--	0	--	0		1.49E-05	0	0	1.49E-05	0.0014		1.1E-02	0.0E+00	0.0E+00	1.1E-02	0.014		1.1E-03	0.0E+00	0.0E+00	1.1E-03
beta-BHC		1.00E-03	--	0	--	0		1.81E-06	0	0	1.81E-06	0.56		3.2E-06	0.0E+00	0.0E+00	3.2E-06	2.25		8.1E-07	0.0E+00	0.0E+00	8.1E-07
delta-BHC		2.00E-03	--	0	--	0		3.62E-06	0	0	3.62E-06	0.56		6.5E-06	0.0E+00	0.0E+00	6.5E-06	2.25		1.6E-06	0.0E+00	0.0E+00	1.6E-06
2,4-DDD		2.90E-02	1.04E+00	0	--	0		5.25E-05	8.31E-04	0	8.84E-04	0.009		5.8E-03	9.2E-02	0.0E+00	9.8E-02	1.5		3.5E-05	5.5E-04	0.0E+00	5.9E-04
4,4-DDD		8.60E-02	1.04E+00	0	--	0		1.56E-04	2.46E-03	0	2.62E-03	0.009		1.7E-02	2.7E-01	0.0E+00	2.9E-01	1.5		1.0E-04	1.6E-03	0.0E+00	1.7E-03
DDE	0.0000027	1.70E-02	1.04E+00	0	--	0	1.21E-07	3.08E-05	4.87E-04	0	5.18E-04	NTV	NTV	NTV	NTV	NTV	NTV	0.6	2.0E-07	5.1E-05	8.1E-04	0.0E+00	8.6E-04
DDTs	0.00014	1.20E-02	1.04E+00	0	--	0	6.28E-06	2.17E-05	3.44E-04	0	3.72E-04	0.009	7.0E-04	2.4E-03	3.8E-02	0.0E+00	4.1E-02	1.5	4.2E-06	1.4E-05	2.3E-04	0.0E+00	2.5E-04
Dieldrin		3.90E-03	--	0	--	0		7.07E-06	0	0	7.07E-06	0.0709		1.0E-04	0.0E+00	0.0E+00	1.0E-04	0.98		7.2E-06	0.0E+00	0.0E+00	7.2E-06
Endosulfan I		4.00E-03	--	0	--	0		7.25E-06	0	0	7.25E-06	10		7.2E-07	0.0E+00	0.0E+00	7.2E-07	100		7.2E-08	0.0E+00	0.0E+00	7.2E-08
Endosulfan sulfate	0.00012	3.00E-03	--	0	--	0	5.38E-06	5.44E-06	0	0	1.08E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Endrin	0.000014	2.00E-02	--	0	--	0	6.28E-07	3.62E-05	0	0	3.69E-05	0.3	2.1E-06	1.2E-04	0.0E+00	0.0E+00	1.2E-04	3	2.1E-07	1.2E-05	0.0E+00	0.0E+00	1.2E-05
Endrin aldehyde		6.00E-03	--	0	--	0		1.09E-05	0	0	1.09E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Endrin Ketone		3.00E-03	--	0	--	0		5.44E-06	0	0	5.44E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
gamma-Chlordane		8.50E-03	--	0	--	0		1.54E-05	0	0	1.54E-05	0.0014		1.1E-02	0.0E+00	0.0E+00	1.1E-02	0.014		1.1E-03	0.0E+00	0.0E+00	1.1E-03
Heptachlor	0.0000028	2.00E-04	--	0	--	0	1.26E-07	3.62E-07	0	0	4.88E-07	0.065	1.9E-06	5.6E-06	0.0E+00	0.0E+00	7.5E-06	0.65	1.9E-07	5.6E-07	0.0E+00	0.0E+00	7.5E-07
Heptachlor epoxide		3.00E-04	--	0	--	0		5.44E-07	0	0	5.44E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Hexachlorobenzene		8.00E-04	--	0	--	0		1.45E-06	0	0	1.45E-06	0.23		6.3E-06	0.0E+00	0.0E+00	6.3E-06	2.3		6.3E-07	0.0E+00	0.0E+00	6.3E-07
Methoxychlor		2.00E-02	--	0	--	0		3.62E-05	0	0	3.62E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Mirex		4.00E-03	--	0	--	0		7.25E-06	0	0	7.25E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
trans-Nonachlor		2.40E-03	--	0	--	0		4.35E-06	0	0	4.35E-06	0.0014		3.1E-03	0.0E+00	0.0E+00	3.1E-03	0.014		3.1E-04	0.0E+00	0.0E+00	3.1E-04
SVOCs (mg/kg)																							
Acenaphthene		1.30E-01	--	0	--	0		2.36E-04	0	0	2.36E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Acenaphthylene		1.20E-01	--	0	--	0		2.17E-04	0	0	2.17E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Anthracene		1.30E-01	--	0	--	0		2.36E-04	0	0	2.36E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(a)anthracene		2.80E-01	--	0	--	0		5.07E-04	0	0	5.07E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(a)pyrene		2.40E-01	--	0	--	0		4.35E-04	0	0	4.35E-04	0.001		4.3E-01	0.0E+00	0.0E+00	4.3E-01	0.01		4.3E-02	0.0E+00	0.0E+00	4.3E-02
Benzo(b)fluoranthene		2.40E-01	--	0	--	0		4.35E-04	0	0	4.35E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(ghi)perylene		1.60E-01	--	0	--	0		2.90E-04	0	0	2.90E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(k)fluoranthene		2.40E-01	--	0	--	0		4.35E-04	0	0	4.35E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzoic acid		6.80E-01	--	0	--	0		1.23E-03	0	0	1.23E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Bis(2-ethylhexyl)phthalate	0.027	1.10E+00	--	0	--	0	1.21E-03	1.99E-03	0	0	3.20E-03	1.1	1.1E-03	1.8E-03	0.0E+00	0.0E+00	2.9E-03	11	1.1E-04	1.8E-04	0.0E+00	0.0E+00	2.9E-04
Butylbenzylphthalate		2.50E-02	--	0	--	0		4.53E-05	0	0	4.53E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Carbazole		5.50E-01	--	0	--	0		9.96E-04	0	0	9.96E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Chloroaniline		3.00E-03	--	0	--	0		5.44E-06	0	0	5.44E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2-Chloropropane		4.33E-02	--	0	--	0		7.84E-05	0	0	7.84E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chrysene	0.0002	2.70E-01	--	0	--	0	8.97E-06	4.89E-04	0	0	4.98E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Dibenzofuran		3.60E-01	--	0	--	0		6.52E-04	0	0	6.52E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
3,3-Dichlorobenzidine		1.20E-02	--	0	--	0		2.17E-05	0	0	2.17E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2,6-Dinitrotoluene		3.70E-01	--	0	--	0		6.70E-04	0	0	6.70E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Fluoranthene		3.80E-01	--	0	--	0		6.88E-04	0	0	6.88E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV

Table C2-6n
Post-Remediation Great Blue Heron Risk Calculations (Wetland Sediment Residual Concentration)
Shallow Soil (0 - 2 ft bgs) at Hazard Quotient Equals Three
Non-Tidal Wetland Area Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Point Concentration						Intake (mg/kg BW-day)						Hazard Quotient (HQ) - Low						Hazard Quotient (HQ) - High				
COPEC[a]	Surface Water (mg/L)[b]	Sediments[c]	Small Mammal BAF[d]	Small Mammal Tissue[d]	Amphibian BAF[d]	Amphibian Tissue[d]	Surface Water	Sediment	Small mammal	Amphibian	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Small mammal	Amphibian	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Sediment	Small mammal	Amphibian	Total Intake
Fluorene		1.30E-01	--	0	--	0		2.36E-04	0	0	2.36E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Indeno(123,cd)pyrene		1.16E+00	--	0	--	0		2.10E-03	0	0	2.10E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2-Methylnaphthalene		1.80E-01	--	0	--	0		3.26E-04	0	0	3.26E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Methylphenol	0.12	2.30E-01	--	0	--	0	5.38E-03	4.17E-04	0	0	5.80E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Naphthalene		1.10E-01	--	0	--	0		1.99E-04	0	0	1.99E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pentachlorophenol		5.40E-01	--	0	--	0		9.78E-04	0	0	9.78E-04	6.7		1.5E-04	0.0E+00	0.0E+00	1.5E-04	22.5		4.3E-05	0.0E+00	0.0E+00	4.3E-05
Phenanthrene		2.00E-01	--	0	--	0		3.62E-04	0	0	3.62E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Phenol		2.90E-01	--	0	--	0		5.25E-04	0	0	5.25E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pyrene		4.30E-01	--	0	--	0		7.79E-04	0	0	7.79E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
PCBs (mg/kg)																							
PCBs (TOTAL)-congeners	0.000016	1.60E-01	1.81E+01	3	1.03E+01	2	7.18E-07	2.90E-04	7.94E-02	2.83E-01	3.62E-01	0.09	8.0E-06	3.2E-03	8.8E-01	3.1E+00	4.0E+00	>1	1.27	5.7E-07	2.3E-04	6.3E-02	2.2E-01	2.9E-01

>1 = The calculated hazard quotient exceeds 1 (i.e., > 1.5)

Exposure Assumptions and Equation:[e]

	Value	Units
Ingestion Rate (IR) prey(dry wt.) =	0.126	kg/day (dry weight)
IRsmall mammal(dry wt.)[f] =	0.063	kg/day (dry weight)
IRamphibian (dry wt.)[f] =	0.063	kg/day (dry weight)
IRsediment (dry wt.)[g] =	0.00416	kg-day (dry weight)
Cprey =	chem-specific	mg/kg or µg/kg
Csediment =	chem-specific	mg/kg or µg/kg
Tissue Moisture (TMsmall mammal) =	68%	percent
Tissue Moisture (TMamphibian) =	85%	percent
IRsurface water[h] =	0.103	L/day
Csurface water =	chem-specific	mg/L or µg/L
Dietary Composition Factor (DCF)[i] =	100%	percent
Site Use Factor (SUF)[j] =	100%	percent
Body Weight (BW) =	2.295	kg

Intake Equation= [Irsmall mammal (dry wt) x (Cprey(small mammal, dry wt)/1-TM) x DCF x SUF]/BW] + [IRamphibian (dry wt) x Cprey(amphibians, dry wt) x DCF x SUF]/BW] + [(IRsediment x Csediment x DCF x SUF))/BW + [(IRsurface water x Csurface water x DCF x

Risk (hazard quotient) = Intake / TRV

Prey tissue(dry wt) = Prey tissue (wet wt.) / (1-Tissue Moisture)

NTV = Not toxicity data available.

Blank cell indicates COPEC was not detected in this medium.

Notes:

a All chemicals detected in sediments are considered as constituents of potential ecological concern.

b All concentrations of constituents in surface water are based on the maximum concentration.

c All concentrations of constituents in sediment are based on the residual concentrations expressed in dry weight.

d Site-specific BAFs (dry weight basis). Calculated small mammal tissue and amphibian concentrations (sediment concentration x BAF). Tissue concentrations are on a dry weight basis.

e Exposure parameters used to calculate risk are discussed in detail in Section 4.2 of ERA.

f Based on dietary composition of 50% small mammal and 50% amphibians.

g Ingestion rate of sediment based on 3.3 percent of of the prey ingestion rate (dry weight); based on mallards (Beyer et al. 1994).

h Based on equation for birds: Water intake (L/day) = $0.059Wt(kg)^{0.67}$ (EPA 1993)

i Dietary composition factor was based on a conservative assumption of 100% dietary intake of small mammals and amphibians from the site.

j Site use factor was based on a conservative 100% use of the site for the heron's foraging range.

Table C2-6o
Post-Remediation Kildeer Risk Calculations (Wetland Sediment Residual Concentration)
Deep Soil (0 - 10 ft bgs) at Hazard Quotient Equals Three
Non-Tidal Wetland Area Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Concentrations				Intake (mg/kg BW-day)					Hazard Quotient (HQ) - Low					Hazard Quotient (HQ) - High			
COPEC[a]	Surface Water (mg/L)[b]	Sediments[c]	Invertebrate BAF[d]	Invertebrate Tissue[d]	Surface Water	Soils	Invertebrate	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Soils	Invertebrate	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Soils	Invertebrate	Total Intake
Metals (mg/kg)																		
Aluminum	12.6	2.68E+04	1.93E-01	5.16E+03	1.78E+00	1.03E+03	1.10E+03	2.13E+03	109.7	1.6E-02	9.4E+00	1.0E+01	1.9E+01 >1	1,097	1.6E-03	9.4E-01	1.0E+00	1.9E+00 >1
Antimony	0.003	4.50E+00	2.32E-01	1.04E+00	4.24E-04	1.73E-01	2.23E-01	3.96E-01	NTV	NTV	NTV	NTV	NTV >1	NTV	NTV	NTV	NTV	NTV
Arsenic	0.0436	2.13E+01	1.92E-01	4.09E+00	6.15E-03	8.20E-01	8.73E-01	1.70E+00	5.5	1.1E-03	1.5E-01	1.6E-01	3.1E-01	22	2.8E-04	3.7E-02	4.0E-02	7.7E-02
Barium	0.24	9.36E+01	1.50E+00	1.40E+02	3.33E-02	3.60E+00	3.00E+01	3.36E+01	20.8	1.6E-03	1.7E-01	1.4E+00	1.6E+00 >1	41.7	8.0E-04	8.6E-02	7.2E-01	8.1E-01
Beryllium		6.50E-01	--	0		2.50E-02	0.00E+00	2.50E-02	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Cadmium	0.0016	2.90E+00	2.15E-01	6.24E-01	2.26E-04	1.12E-01	1.33E-01	2.45E-01	0.08	2.8E-03	1.4E+00	1.7E+00	3.1E+00 >1	10.40	2.2E-05	1.1E-02	1.3E-02	2.4E-02
Chromium +3	0.0263	2.15E+02	5.53E-01	1.19E+02	3.71E-03	8.27E+00	2.54E+01	3.37E+01	2.66	1.4E-03	3.1E+00	9.6E+00	1.3E+01 >1	2.78	1.3E-03	3.0E+00	9.2E+00	1.2E+01 >1
Chromium +6	0.0263	7.00E-02	5.53E-01	0	3.71E-03	2.69E-03	8.28E-03	1.47E-02	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Cobalt	0.0164	1.84E+01	--	0	2.32E-03	7.08E-01	0.00E+00	7.10E-01	7.61	3.0E-04	9.3E-02	0.0E+00	9.3E-02	17	1.4E-04	4.2E-02	0.0E+00	4.2E-02
Copper	0.233	1.94E+02	6.67E-01	1.29E+02	3.29E-02	7.47E+00	2.77E+01	3.52E+01	2.3	1.4E-02	3.2E+00	1.2E+01	1.5E+01 >1	52.3	6.3E-04	1.4E-01	5.3E-01	6.7E-01
Lead	0.0031	9.40E+01	5.07E-02	4.77E+00	4.38E-04	3.62E+00	1.02E+00	4.64E+00	0.014	3.1E-02	2.6E+02	7.3E+01	3.3E+02 >1	8.75	5.0E-05	4.1E-01	1.2E-01	5.3E-01
Manganese	7.42	9.07E+02	5.29E+00	4.80E+03	1.05E+00	3.49E+01	1.03E+03	1.06E+03	77.6	1.3E-02	4.5E-01	1.3E+01	1.4E+01 >1	776	1.3E-03	4.5E-02	1.3E+00	1.4E+00
Mercury	0.00029	1.40E+00	6.96E-01	9.75E-01	4.09E-05	5.39E-02	2.08E-01	2.62E-01	0.039	1.0E-03	1.4E+00	5.3E+00	6.7E+00 >1	0.18	2.3E-04	3.0E-01	1.2E+00	1.5E+00
Molybdenum	0.0312	5.10E+00	--	0	4.40E-03	1.96E-01	0.00E+00	2.01E-01	3.5	1.3E-03	5.6E-02	0.0E+00	5.7E-02	35.3	1.2E-04	5.6E-03	0.0E+00	5.7E-03
Nickel	0.166	1.13E+02	3.65E-01	4.12E+01	2.34E-02	4.35E+00	8.81E+00	1.32E+01	1.38	1.7E-02	3.2E+00	6.4E+00	9.6E+00 >1	56.3	4.2E-04	7.7E-02	1.6E-01	2.3E-01
Selenium	0.029	1.20E+00	--	0	4.09E-03	4.62E-02	0.00E+00	5.03E-02	0.23	1.8E-02	2.0E-01	0.0E+00	2.2E-01	0.93	4.4E-03	5.0E-02	0.0E+00	5.4E-02
Silver	0.0019	2.80E+00	--	0	2.68E-04	1.08E-01	0.00E+00	1.08E-01	178.00	1.5E-06	6.1E-04	0.0E+00	6.1E-04	NTV	NTV	NTV	NTV	NTV
Thallium		4.70E-01	--	0		1.81E-02	0.00E+00	1.81E-02	0.35		5.2E-02	0.0E+00	5.2E-02	NTV	NTV	NTV	NTV	NTV
Tin		1.63E+01	--	0		6.27E-01	0.00E+00	6.27E-01	6.80		9.2E-02	0.0E+00	9.2E-02	16.9		3.7E-02	0.0E+00	3.7E-02
Vanadium	0.05	1.17E+02	2.96E-02	3.46E+00	7.06E-03	4.50E+00	7.39E-01	5.25E+00	11.4	6.2E-04	3.9E-01	6.5E-02	4.6E-01	114	6.2E-05	3.9E-02	6.5E-03	4.6E-02
Zinc	0.042	2.35E+02	1.51E+00	3.55E+02	5.93E-03	9.04E+00	7.60E+01	8.50E+01	17.2	3.4E-04	5.3E-01	4.4E+00	4.9E+00 >1	172	3.4E-05	5.3E-02	4.4E-01	4.9E-01
Volatile Organics (mg/kg)																		
Acetone		3.20E-01	--	0		1.23E-02	0.00E+00	1.23E-02	52		2.4E-04	0.0E+00	2.4E-04	520		2.4E-05	0.0E+00	2.4E-05
Benzene		5.00E-03	--	0		1.92E-04	0.00E+00	1.92E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Carbon disulfide		2.50E-02	--	0		9.62E-04	0.00E+00	9.62E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chlorobenzene		2.40E-02	--	0		9.24E-04	0.00E+00	9.24E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
cis-1,2-Dichlorobenzene		5.20E-02	--	0		2.00E-03	0.00E+00	2.00E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Ethylbenzene		4.40E-02	--	0		1.69E-03	0.00E+00	1.69E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Isopropyltoluene		7.20E-03	--	0		2.77E-04	0.00E+00	2.77E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Methylene chloride		3.00E-01	--	0		1.15E-02	0.00E+00	1.15E-02	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Naphthalene		1.60E-02	--	0		6.16E-04	0.00E+00	6.16E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Toluene		3.00E-02	--	0		1.15E-03	0.00E+00	1.15E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
trans-1,2-Dichloroethene		2.30E-02	--	0		8.85E-04	0.00E+00	8.85E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Trichloroethene		7.00E-03	--	0		2.69E-04	0.00E+00	2.69E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
1,2,4-Trimethylbenzene		2.50E-02	--	0		9.62E-04	0.00E+00	9.62E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
1,3,5-Trimethylbenzene		9.30E-03	--	0		3.58E-04	0.00E+00	3.58E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Vinyl chloride		3.40E-02	--	0		1.31E-03	0.00E+00	1.31E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Xylenes		1.10E-01	--	0		4.23E-03	0.00E+00	4.23E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pesticides (mg/kg)																		
alpha-Chlordane		8.20E-03	--	0		3.16E-04	0.00E+00	3.16E-04	0.0014		2.3E-01	0.0E+00	2.3E-01	0.014		2.3E-02	0.0E+00	2.3E-02
beta-BHC		1.00E-03	--	0		3.85E-05	0.00E+00	3.85E-05	0.56		6.9E-05	0.0E+00	6.9E-05	2.25		1.7E-05	0.0E+00	1.7E-05
delta-BHC		2.00E-03	--	0		7.70E-05	0.00E+00	7.70E-05	0.56		1.4E-04	0.0E+00	1.4E-04	2.25		3.4E-05	0.0E+00	3.4E-05
2,4-DDD		2.90E-02	--	0		1.12E-03	0.00E+00	1.12E-03	0.009		1.2E-01	0.0E+00	1.2E-01	1.5		7.4E-04	0.0E+00	7.4E-04
4,4-DDD		8.60E-02	--	0		3.31E-03	0.00E+00	3.31E-03	0.009		3.7E-01	0.0E+00	3.7E-01	1.5		2.2E-03	0.0E+00	2.2E-03
DDE	0.0000027	1.70E-02	--	0	3.81E-07	6.54E-04	0.00E+00	6.55E-04	NTV	NTV	NTV	NTV	NTV	0.6	6.4E-07	1.1E-03	0.0E+00	1.1E-03
DDTs	0.00014	1.20E-02	--	0	1.98E-05	4.62E-04	0.00E+00	4.82E-04	0.009	2.2E-03	5.1E-02	0.0E+00	5.4E-02	1.5	1.3E-05	3.1E-04	0.0E+00	3.2E-04
Dieldrin		3.90E-03	--	0		1.50E-04	0.00E+00	1.50E-04	0.0709		2.1E-03	0.0E+00	2.1E-03	0.98		1.5E-04	0.0E+00	1.5E-04
Endosulfan I		4.00E-03	--	0		1.54E-04	0.00E+00	1.54E-04	10		1.5E-05	0.0E+00	1.5E-05	100		1.5E-06	0.0E+00	1.5E-06
Endosulfan sulfate	0.00012	3.00E-03	--	0	1.69E-05	1.15E-04	0.00E+00	1.32E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Endrin	0.000014	2.00E-02	--	0	1.98E-06	7.70E-04	0.00E+00	7.72E-04	0.3	6.6E-06	2.6E-03	0.0E+00	2.6E-03	3	6.6E-07	2.6E-04	0.0E+00	2.6E-04
Endrin aldehyde		6.00E-03	--	0		2.31E-04	0.00E+00	2.31E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Endrin Ketone		3.00E-03	--	0		1.15E-04	0.00E+00	1.15E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Gamma-BHC	0.000011	8.50E-03	--	0	1.55E-06	3.27E-04	0.00E+00	3.29E-04	2	7.8E-07	1.6E-04	0.0E+00	1.6E-04	20	7.8E-08	1.6E-05	0.0E+00	1.6E-05
Heptachlor	0.0000028	2.00E-04	--	0	3.95E-07	7.70E-06	0.00E+00	8.09E-06	0.065	6.1E-06	1.2E-04	0.0E+00	1.2E-04	0.65	6.1E-07	1.2E-05	0.0E+00	1.2E-05
Heptachlor epoxide		3.00E-04	--	0		1.15E-05	0.00E+00	1.15E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Hexachlorobenzene		8.00E-04	--	0		3.08E-05	0.00E+00	3.08E-05	0.23		1.3E-04	0.0E+00	1.3E-04	2.3		1.3E-05	0.0E+00	1.3E-05
Methoxychlor		2.00E-02	--	0		7.70E-04	0.00E+00	7.70E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Mirex		4.00E-03	--	0		1.54E-04	0.00E+00	1.54E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
trans-Nonachlor		2.40E-03	--	0		9.24E-05	0.00E+00	9.24E-05	0.0014		6.6E-02	0.0E+00	6.6E-02	0.014		6.6E-03	0.0E+00	6.6E-03

Table C2-6o
Post-Remediation Kildeer Risk Calculations (Wetland Sediment Residual Concentration)
Deep Soil (0 - 10 ft bgs) at Hazard Quotient Equals Three
Non-Tidal Wetland Area Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Concentrations				Intake (mg/kg BW-day)					Hazard Quotient (HQ) - Low					Hazard Quotient (HQ) - High			
COPEC[a]	Surface Water (mg/L)[b]	Sediments[c]	Invertebrate BAF[d]	Invertebrate Tissue[d]	Surface Water	Soils	Invertebrate	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Soils	Invertebrate	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Soils	Invertebrate	Total Intake
SVOCs (mg/kg)																		
Acenaphthene		1.30E-01	--	0		5.00E-03	0.00E+00	5.00E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Acenaphthylene		1.20E-01	--	0		4.62E-03	0.00E+00	4.62E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Anthracene		1.30E-01	--	0		5.00E-03	0.00E+00	5.00E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(a)anthracene		2.80E-01	--	0		1.08E-02	0.00E+00	1.08E-02	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(a)pyrene		2.40E-01	--	0		9.24E-03	0.00E+00	9.24E-03	0.001		9.2E+00	0.0E+00	9.2E+00 >1	0.01		9.2E-01	0.0E+00	9.2E-01
Benzo(b)fluoranthene		2.40E-01	--	0		9.24E-03	0.00E+00	9.24E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(ghi)perylene		1.60E-01	--	0		6.16E-03	0.00E+00	6.16E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(k)fluoranthene		2.40E-01	--	0		9.24E-03	0.00E+00	9.24E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzoic acid		6.80E-01	--	0		2.62E-02	0.00E+00	2.62E-02	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Bis(2-ethylhexyl)phthalate	0.027	1.10E+00	--	0	3.81E-03	4.23E-02	0.00E+00	4.61E-02	1.1	3.5E-03	3.8E-02	0.0E+00	4.2E-02	11	3.5E-04	3.8E-03	0.0E+00	4.2E-03
Butylbenzylphthalate		2.50E-02	--	0		9.62E-04	0.00E+00	9.62E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Carbazole		5.50E-01	--	0		2.12E-02	0.00E+00	2.12E-02	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Chloroaniline		3.00E-03	--	0		1.15E-04	0.00E+00	1.15E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2-Chloropropane		4.33E-02	--	0		1.67E-03	0.00E+00	1.67E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chrysene	0.0002	2.70E-01	--	0	2.82E-05	1.04E-02	0.00E+00	1.04E-02	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Dibenzofuran		3.60E-01	--	0		1.39E-02	0.00E+00	1.39E-02	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
3,3-Dichlorobenzidine		1.20E-02	--	0		4.62E-04	0.00E+00	4.62E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2,6-Dinitrotoluene		3.70E-01	--	0		1.42E-02	0.00E+00	1.42E-02	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Fluoranthene		3.80E-01	--	0		1.46E-02	0.00E+00	1.46E-02	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Fluorene		1.30E-01	--	0		5.00E-03	0.00E+00	5.00E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Indeno(123,cd)pyrene		1.16E+00	--	0		4.46E-02	0.00E+00	4.46E-02	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2-Methylnaphthalene		1.80E-01	--	0		6.93E-03	0.00E+00	6.93E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Methylphenol	0.12	2.30E-01	--	0	1.69E-02	8.85E-03	0.00E+00	2.58E-02	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Naphthalene		1.10E-01	--	0		4.23E-03	0.00E+00	4.23E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pentachlorophenol		5.40E-01	--	0		2.08E-02	0.00E+00	2.08E-02	6.7		3.1E-03	0.0E+00	3.1E-03	22.5		9.2E-04	0.0E+00	9.2E-04
Phenanthrene		2.00E-01	2.51E+00	5.02E-01		7.70E-03	1.07E-01	1.15E-01	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Phenol		2.90E-01	--	0		1.12E-02	0.00E+00	1.12E-02	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pyrene		4.30E-01	--	0		1.65E-02	0.00E+00	1.65E-02	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
PCBs (mg/kg)																		
PCBs (TOTAL)-congeners	0.000016	1.60E-01	1.16E+01	1.86E+00	2.26E-06	6.16E-03	3.97E-01	4.03E-01	0.09	2.5E-05	6.8E-02	4.4E+00	4.5E+00 >1	1.27	1.8E-06	4.8E-03	3.1E-01	3.2E-01
>1 = The calculated hazard quotient exceeds 1 (i.e., > 1.5)																		

Exposure Assumptions and Equation[e]:

	Value	Units
Ingestion Rate (IR) prey(dry wt.) =	0.0152	kg/day (dry weight)
IRinvertebrate(dry wt.) =	0.0152	kg/day (dry weight)
IRsediment (dry wt.)[f] =	0.00274	kg-day (dry weight)
Cprey =	chem-specific	mg/kg or µg/kg
Csediment =	chem-specific	mg/kg or µg/kg
IRsurface water[g] =	0.010	L/day
Csurface water =	chem-specific	mg/L or µg/L
Dietary Composition Factor (DCF)[h] =	100%	percent
Site Use Factor (SUF)[i] =	100%	percent
Body Weight (BW) =	0.0711	kg

Intake Equation = [IRinvertebrate (dry wt) x Cprey(invertebrate, dry wt) x DCF x SUF]/BW] +{(IRsediment x Csediment x DCF x SUF)]/BW] + [(IRsurface water x Csurface water x DCF x SUF)]/BW]

Risk (hazard quotient) = Intake / TRV

Prey tissue(dry wt) = Prey tissue (wet wt.) / (1-Tissue Moisture)

NTV = Not toxicity data available.

NA = Not available.

Blank cell indicates COPEC was not detected in this medium.

Notes:

a All chemicals detected in sediments are considered as constituents of potential ecological concern.

b All concentrations of constituents in surface water are based on the maximum concentration.

c All concentrations of constituents in sediment are based on the residual concentrations expressed in dry weight.

d Site-specific BAFs (dry weight basis). Calculated invertebrate tissue concentrations (sediment concentration x BAF). Tissue concentrations are on a dry weight basis.

e Exposure parameters used to calculate risk are discussed in detail in Section 4.2 of ERA.

f Ingestion rate of sediment based on 18 percent of of the prey ingestion rate (dry weight); based on average of sandpiper data from Beyer et al. 1994).

g Based on equation for birds: Water intake (L/day) = $0.059Wt(kg)^{0.67}$ (EPA 1993)

h Dietary composition factor was based on a conservative assumption of 100% dietary intake of invertebrates from the site.

i Site use factor was based on a conservative 100% use of the site for the killdeer's foraging range.

Table C2-6p
Post-Remediation Salt Marsh Harvest Mouse Risk Calculations (Wetland Sediment Residual Concentration)
Deep Soil (0 - 10 ft bgs) at Hazard Quotient Equals Three
Non-Tidal Wetland Area Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Concentrations				Intake (mg/kg BW-day)					HQ - Low TRV					HQ - High TRV			
COPEC[a]	Surface Water (mg/L)[b]	Sediments[c]	Pickelweed BAF[d]	Pickleweed Tissue[d]	Surface Water	Sediment	Pickleweed	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Pickleweed	Total Intake		High TRV (mg/kg BW-day)	Surface Water	Sediment	Pickleweed	Total Intake	
Metals (mg/kg)																				
Aluminum	12.6	2.68E+04	3.64E-03	97	1.98E+00	1.97E+02	2.98E+01	2.28E+02	1.93	1.0E+00	1.0E+02	1.5E+01	1.2E+02	>1	19.3	1.0E-01	1.0E+01	1.5E+00	1.2E+01	>1
Antimony	0.003	4.50E+00	2.95E+00	13	4.71E-04	3.30E-02	4.06E+00	4.09E+00	0.06	8.0E-03	5.6E-01	6.9E+01	6.9E+01	>1	23.4	2.0E-05	1.4E-03	1.7E-01	1.7E-01	
Arsenic	0.0436	2.13E+01	1.50E-01	3	6.84E-03	1.56E-01	9.79E-01	1.14E+00	0.32	2.1E-02	4.9E-01	3.1E+00	3.6E+00	>1	4.7	1.5E-03	3.3E-02	2.1E-01	2.4E-01	
Barium	0.24	9.36E+01	5.56E-01	52	3.70E-02	6.87E-01	1.59E+01	1.66E+01	51.8	7.1E-04	1.3E-02	3.1E-01	3.2E-01		66.0	5.6E-04	1.0E-02	2.4E-01	2.5E-01	
Beryllium		6.50E-01	--	0		4.77E-03	0	4.77E-03	0.532		9.0E-03	0.0E+00	9.0E-03		0.554		8.6E-03	0.0E+00	8.6E-03	
Cadmium	0.0016	2.90E+00	6.76E-01	2	2.51E-04	2.13E-02	6.00E-01	6.22E-01	0.06	4.2E-03	3.5E-01	1.0E+01	1.0E+01	>1	2.64	9.5E-05	8.1E-03	2.3E-01	2.4E-01	
Chromium +3	0.0263	2.15E+02	--	0	4.13E-03	1.58E+00	0	1.58E+00	2	1.7E-03	6.6E-01	0.0E+00	6.6E-01		23.1	1.8E-04	6.8E-02	0.0E+00	6.9E-02	
Chromium +6	0.0263	7.00E-02	--	0	4.13E-03	5.14E-04	0	4.64E-03	5.66	7.3E-04	9.1E-05	0.0E+00	8.2E-04		35.1	1.2E-04	1.5E-05	0.0E+00	1.3E-04	
Cobalt	0.0164	1.84E+01	--	0	2.57E-03	1.35E-01	0	1.38E-01	1.2	2.1E-03	1.1E-01	0.0E+00	1.1E-01		20	1.3E-04	6.8E-03	0.0E+00	6.9E-03	
Copper	0.233	1.94E+02	1.82E-01	35	3.66E-02	1.42E+00	1.08E+01	1.22E+01	2.67	1.4E-02	5.3E-01	4.0E+00	4.6E+00	>1	632	5.8E-05	2.3E-03	1.7E-02	1.9E-02	
Lead	0.0031	9.40E+01	7.92E-02	7	4.86E-04	6.90E-01	2.28E+00	2.97E+00	1	4.9E-04	6.9E-01	2.3E+00	3.0E+00	>1	241	2.0E-06	2.9E-03	9.5E-03	1.2E-02	
Manganese	7.42	9.07E+02	1.75E+00	1589	1.16E+00	6.66E+00	4.86E+02	4.94E+02	13.7	8.5E-02	4.9E-01	3.6E+01	3.6E+01	>1	159.09	7.3E-03	4.2E-02	3.1E+00	3.1E+00	>1
Mercury	0.00029	1.40E+00	--	0	4.55E-05	1.03E-02	0	1.03E-02	0.027	1.7E-03	3.8E-01	0.0E+00	3.8E-01		0.27	1.7E-04	3.8E-02	0.0E+00	3.8E-02	
Molybdenum	0.0312	5.10E+00	--	0	4.90E-03	3.75E-02	0	4.23E-02	0.26	1.9E-02	1.4E-01	0.0E+00	1.6E-01		2.6	1.9E-03	1.4E-02	0.0E+00	1.6E-02	
Nickel	0.166	1.13E+02	1.14E-01	13	2.60E-02	8.30E-01	3.94E+00	4.79E+00	0.13	2.0E-01	6.2E+00	3.0E+01	3.6E+01	>1	31.6	8.2E-04	2.6E-02	1.2E-01	1.5E-01	
Selenium	0.029	1.20E+00	--	0	4.55E-03	8.81E-03	0	1.34E-02	0.05	9.1E-02	1.8E-01	0.0E+00	2.7E-01		1.21	3.8E-03	7.3E-03	0.0E+00	1.1E-02	
Silver	0.0019	2.80E+00	--	0	2.98E-04	2.06E-02	0	2.09E-02	0.38	7.9E-04	5.5E-02	0.0E+00	5.6E-02		3.75	7.9E-05	5.5E-03	0.0E+00	5.6E-03	
Thallium		4.70E-01	--	0		3.45E-03	0	3.45E-03	0.48		7.2E-03	0.0E+00	7.2E-03		1.43		2.4E-03	0.0E+00	2.4E-03	
Tin		1.63E+01	6.21E+00	101		1.20E-01	3.10E+01	3.11E+01	23.4		5.1E-03	1.3E+00	1.3E+00		35		3.4E-03	8.9E-01	8.9E-01	
Vanadium	0.05	1.17E+02	--	0	7.85E-03	8.59E-01	0	8.67E-01	0.21	3.7E-02	4.1E+00	0.0E+00	4.1E+00	>1	2.1	3.7E-03	4.1E-01	0.0E+00	4.1E-01	
Zinc	0.042	2.35E+02	3.77E-01	88	6.59E-03	1.73E+00	2.71E+01	2.88E+01	9.6	6.9E-04	1.8E-01	2.8E+00	3.0E+00	>1	411	1.6E-05	4.2E-03	6.6E-02	7.0E-02	
Volatile Organics (mg/kg)																				
Acetone		3.20E-01	--	0		2.35E-03	0	2.35E-03	10	1.0E+01	2.4E-04	0.0E+00	2.4E-04		50		4.7E-05	0.0E+00	4.7E-05	
Benzene		5.00E-03	--	0		3.67E-05	0	3.67E-05	26.4		1.4E-06	0.0E+00	1.4E-06		263.6		1.4E-07	0.0E+00	1.4E-07	
Carbon disulfide		2.50E-02	--	0		1.84E-04	0	1.84E-04	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV	
Chlorobenzene		2.40E-02	--	0		1.76E-04	0	1.76E-04	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV	
cis-1,2-Dichlorobenzene		5.20E-02	--	0		3.82E-04	0	3.82E-04	45.2		8.4E-06	0.0E+00	8.4E-06		452		8.4E-07	0.0E+00	8.4E-07	
Ethylbenzene		4.40E-02	--	0		3.23E-04	0	3.23E-04	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV	
4-Isopropyltoluene		7.20E-03	--	0		5.29E-05	0	5.29E-05	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV	
Methylene chloride		3.00E-01	--	0		2.20E-03	0	2.20E-03	5.9		3.7E-04	0.0E+00	3.7E-04		50		4.4E-05	0.0E+00	4.4E-05	
Naphthalene		1.60E-02	--	0		1.18E-04	0	1.18E-04	50		2.4E-06	0.0E+00	2.4E-06		150		7.8E-07	0.0E+00	7.8E-07	
Toluene		3.00E-02	--	0		2.20E-04	0	2.20E-04	26		8.5E-06	0.0E+00	8.5E-06		260		8.5E-07	0.0E+00	8.5E-07	
trans-1,2-Dichloroethene		2.30E-02	--	0		1.69E-04	0	1.69E-04	45.2		3.7E-06	0.0E+00	3.7E-06		452		3.7E-07	0.0E+00	3.7E-07	
Trichloroethene		7.00E-03	--	0		5.14E-05	0	5.14E-05	0.7		7.3E-05	0.0E+00	7.3E-05		7		7.3E-06	0.0E+00	7.3E-06	
1,2,4-Trimethylbenzene		2.50E-02	--	0		1.84E-04	0	1.84E-04	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV	
1,3,5-Trimethylbenzene		9.30E-03	--	0		6.83E-05	0	6.83E-05	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV	
Vinyl chloride		3.40E-02	--	0		2.50E-04	0	2.50E-04	0.17		1.5E-03	0.0E+00	1.5E-03		2		1.5E-04	0.0E+00	1.5E-04	
Xylenes		1.10E-01	--	0		8.08E-04	0	8.08E-04	2.1		3.8E-04	0.0E+00	3.8E-04		2.6		3.1E-04	0.0E+00	3.1E-04	
Pesticides (mg/kg)																				
alpha-Chlordane		8.20E-03	--	0		6.02E-05	0	6.02E-05	4.6		1.3E-05	0.0E+00	1.3E-05		9.2		6.5E-06	0.0E+00	6.5E-06	
beta-BHC		1.00E-03	--	0		7.34E-06	0	7.34E-06	1.6		4.6E-06	0.0E+00	4.6E-06		3.2		2.3E-06	0.0E+00	2.3E-06	
delta-BHC		2.00E-03	--	0		1.47E-05	0	1.47E-05	1.6		9.2E-06	0.0E+00	9.2E-06		3.2		4.6E-06	0.0E+00	4.6E-06	
2,4-DDD		2.90E-02	--	0		2.13E-04	0	2.13E-04	0.8		2.7E-04	0.0E+00	2.7E-04		16		1.3E-05	0.0E+00	1.3E-05	
4,4-DDD		8.60E-02	--	0		6.32E-04	0	6.32E-04	0.8		7.9E-04	0.0E+00	7.9E-04		16		3.9E-05	0.0E+00	3.9E-05	
DDE	0.0000027	1.70E-02	--	0	4.24E-07	1.25E-04	0	1.25E-04	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV	
DDTs	0.00014	1.20E-02	--	0	2.20E-05	8.81E-05	0	1.10E-04	0.8	2.7E-05	1.1E-04	0.0E+00	1.4E-04		16	1.4E-06	5.5E-06	0.0E+00	6.9E-06	
Dieldrin		3.90E-03	--	0		2.86E-05	0	2.86E-05	0.015		1.9E-03	0.0E+00	1.9E-03		1.7		1.7E-05	0.0E+00	1.7E-05	
Endosulfan I		4.00E-03	--	0		2.94E-05	0	2.94E-05	0.15		2.0E-04	0.0E+00	2.0E-04		1.5		2.0E-05	0.0E+00	2.0E-05	
Endosulfan sulfate	0.00012	3.00E-03	--	0	1.88E-05	2.20E-05	0	4.09E-05	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV	
Endrin	0.000014	2.00E-02	--	0	2.20E-06	1.47E-04	0	1.49E-04	0.09	2.4E-05	1.6E-03	0.0E+00	1.6E-03		0.92	2.4E-06	1.6E-04	0.0E+00	1.6E-04	
Endrin aldehyde		6.00E-03	--	0		4.41E-05	0	4.41E-05	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV	
Endrin Ketone		3.00E-03	--	0		2.20E-05	0	2.20E-05	NTV	NTV	NTV	NTV	NTV		0.92		2.4E-05	0.0E+00	2.4E-05	
gamma-Chlordane		8.50E-03	--	0		6.24E-05	0	6.24E-05	4.6		1.4E-05	0.0E+00	1.4E-05		9.2		6.8E-06	0.0E+00	6.8E-06	
Heptachlor	0.0000028	2.00E-04	--	0	4.39E-07	1.47E-06	0	1.91E-06	0.13	3.4E-06	1.1E-05	0.0E+00	1.5E-05		6.8	6.5E-08	2.2E-07	0.0E+00	2.8E-07	
Heptachlor epoxide		3.00E-04	--	0		2.20E-06	0	2.20E-06	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV	
Hexachlorobenzene		8.00E-04	--	0		5.88E-06	0	5.88E-06	1.6		3.7E-06	0.0E+00	3.7E-06		16		3.7E-07	0.0E+00	3.7E-07	
Methoxychlor		2.00E-02	--	0		1.47E-04	0	1.47E-04	2.5		5.9E-05	0.0E+00	5.9E-05		50		2.9E-06	0.0E+00	2.9E-06	
Mirex		4.00E-03	--	0		2.94E-05	0	2.94E-05	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV	
trans-Nonachlor		2.40E-03	--	0		1.76E-05	0	1.76E-05	4.6		3.8E-06	0.0E+00	3.8E-06		9.2		1.9E-06	0.0E+00	1.9E-06	

Table C2-6p
Post-Remediation Salt Marsh Harvest Mouse Risk Calculations (Wetland Sediment Residual Concentration)
Deep Soil (0 - 10 ft bgs) at Hazard Quotient Equals Three
Non-Tidal Wetland Area Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Concentrations				Intake (mg/kg BW-day)					HQ - Low TRV					HQ - High TRV			
COPEC[a]	Surface Water (mg/L)[b]	Sediments[c]	Pickelweed BAF[d]	Pickleweed Tissue[d]	Surface Water	Sediment	Pickleweed	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Pickleweed	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Sediment	Pickleweed	Total Intake
SVOCs (mg/kg)																		
Acenaphthene		1.30E-01	--	0		9.55E-04	0	9.55E-04	1.31		7.3E-04	0.0E+00	7.3E-04	32.8		2.9E-05	0.0E+00	2.9E-05
Acenaphthylene		1.20E-01	--	0		8.81E-04	0	8.81E-04	1.31		6.7E-04	0.0E+00	6.7E-04	32.8		2.7E-05	0.0E+00	2.7E-05
Anthracene		1.30E-01	--	0		9.55E-04	0	9.55E-04	1.31		7.3E-04	0.0E+00	7.3E-04	32.8		2.9E-05	0.0E+00	2.9E-05
Benzo(a)anthracene		2.80E-01	1.29E+00	0		2.06E-03	1.11E-01	1.13E-01	1.31		1.6E-03	8.5E-02	8.6E-02	32.8		6.3E-05	3.4E-03	3.4E-03
Benzo(a)pyrene		2.40E-01	2.31E+00	1		1.76E-03	1.70E-01	1.72E-01	1.31		1.3E-03	1.3E-01	1.3E-01	32.8		5.4E-05	5.2E-03	5.2E-03
Benzo(b)fluoranthene		2.40E-01	1.55E+00	0		1.76E-03	1.14E-01	1.16E-01	1.31		1.3E-03	8.7E-02	8.8E-02	32.8		5.4E-05	3.5E-03	3.5E-03
Benzo(ghi)perylene		1.60E-01	1.55E+00	0		1.18E-03	7.60E-02	7.72E-02	1.31		9.0E-04	5.8E-02	5.9E-02	32.8		3.6E-05	2.3E-03	2.4E-03
Benzo(k)fluoranthene		2.40E-01	1.55E+00	0		1.76E-03	1.14E-01	1.16E-01	1.31		1.3E-03	8.7E-02	8.8E-02	32.8		5.4E-05	3.5E-03	3.5E-03
Benzoic acid		6.80E-01	--	0		4.99E-03	0	4.99E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Bis(2-ethylhexyl)phthalate	0.027	1.10E+00	--	0	4.24E-03	8.08E-03	0	1.23E-02	18.3	2.3E-04	4.4E-04	0.0E+00	6.7E-04	183	2.3E-05	4.4E-05	0.0E+00	6.7E-05
Butylbenzylphthalate		2.50E-02	--	0		1.84E-04	0	1.84E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Carbazole		5.50E-01	--	0		4.04E-03	0	4.04E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Chloroaniline		3.00E-03	--	0			0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2-Chlorophenol		4.33E-02	--	0		3.18E-04	0	3.18E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chrysene	0.0002	2.70E-01	2.09E+00	1	3.14E-05	1.98E-03	1.73E-01	1.75E-01	1.31	2.4E-05	1.5E-03	1.3E-01	1.3E-01	32.8	9.6E-07	6.0E-05	5.3E-03	5.3E-03
Dibenzofuran		3.60E-01	--	0		2.64E-03	0	2.64E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
3,3-Dichlorobenzidine		1.20E-02	--	0		8.81E-05	0	8.81E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2,6-Dinitrotoluene		3.70E-01	--	0		2.72E-03	0	2.72E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Fluoranthene		3.80E-01	--	0		2.79E-03	0	2.79E-03	1.31		2.1E-03	0.0E+00	2.1E-03	32.8		8.5E-05	0.0E+00	8.5E-05
Fluorene		1.30E-01	--	0		9.55E-04	0	9.55E-04	1.31		7.3E-04	0.0E+00	7.3E-04	32.8		2.9E-05	0.0E+00	2.9E-05
Indeno(123,cd)pyrene		1.16E+00	3.17E+00	4		8.52E-03	1.13E+00	1.13E+00	1.31		6.5E-03	8.6E-01	8.7E-01	32.8		2.6E-04	3.4E-02	3.5E-02
2-Methylnaphthalene		1.80E-01	--	0		1.32E-03	0	1.32E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Methylphenol	0.12	2.30E-01	--	0	1.88E-02	1.69E-03	0	2.05E-02	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Naphthalene		1.10E-01	--	0		8.08E-04	0	8.08E-04	50		1.6E-05	0.0E+00	1.6E-05	150		5.4E-06	0.0E+00	5.4E-06
Pentachlorophenol		5.40E-01	--	0		3.97E-03	0	3.97E-03	8.42		4.7E-04	0.0E+00	4.7E-04	27.4		1.4E-04	0.0E+00	1.4E-04
Phenanthrene		2.00E-01	--	0		1.47E-03	0	1.47E-03	1.31		1.1E-03	0.0E+00	1.1E-03	32.8		4.5E-05	0.0E+00	4.5E-05
Phenol		2.90E-01	--	0		2.13E-03	0	2.13E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pyrene		4.30E-01	--	0		3.16E-03	0	3.16E-03	1.31		2.4E-03	0.0E+00	2.4E-03	32.8		9.6E-05	0.0E+00	9.6E-05
PCBs (mg/kg)																		
PCBs (TOTAL)-congeners	0.000016	1.60E-01	2.72E+00	0	2.51E-06	1.18E-03	1.33E-01	1.34E-01	0.36	7.0E-06	3.3E-03	3.7E-01	3.7E-01	1.28	2.0E-06	9.2E-04	1.0E-01	1.0E-01
																		>1 = The calculated hazard quotient exceeds 1 (i.e., > 1.5)

Exposure Assumptions and Equation:[e]

	Value	Units
Ingestion Rate (IR) prey(dry wt.) =	0.00306	kg/day (dry weight)
Irpickleweed (dry wt.) =	0.00306	kg/day (dry weight)
IRsediment (dry wt.)[f] =	0.0000734	kg-day (dry weight)
Cprey =	chem-specific	mg/kg or µg/kg
Csediment =	chem-specific	mg/kg or µg/kg
Tissue Moisture (pickleweed) =	81.6%	percent
IRsurface water[g] =	0.00157	L/day
Csurface water =	chem-specific	mg/L or µg/L
Dietary Composition Factor (DCF)[h] =	100%	percent
Site Use Factor (SUF)[i] =	100%	percent
Body Weight (BW) =	0.01	kg

Intake Equation = [Irpickleweed (dry wt) x (Cprey(pickleweed, dry wt)/1-TM) x DCF x SUF)/BW] + [(IRsediment x Csediment x DCF x SUF)/BW]+ [(Irsurface water x Csurface water x DCF x SUF)]/BW]

Risk (hazard quotient) = Intake / TRV

Prey tissue(dry wt) = Prey tissue (wet wt.) / (1-Tissue Moisture)

NTV = Not toxicity data available.

Blank cell indicates COPEC was not detected in this medium.

Notes:

a All chemicals detected in sediments are considered as constituents of potential ecological concern.

b All concentrations of constituents in surface water are based on the maximum concentration.

c All concentrations of constituents in sediment are based on the residual concentrations expressed in dry weight.

d Site-specific BAFs (dry weight basis). Calculated pickelweed tissue concentrations (sediment concentration x BAF). Tissue concentrations are on a dry weight basis.

e Exposure parameters used to calculate risk are discussed in detail in Section 4.2 of ERA.

f Ingestion rate of sediment based on 2.4 percent of of the prey ingestion rate (dry weight); based on a meadow vole (Beyer et al. (1994).

g Based on equation for mammals: Water intake (L/day) = $0.099Wt(kg)^{.90}$ (EPA 1993)

h Dietary composition factor was based on a conservative assumption of 100% dietary intake of pickleweed from the site.

i Site use factor was based on a conservative 100% use of the site for the harvest mouse's foraging range.

Table C2-6q
Summary of Residual Risk Estimates: Deep Soil (0 - 10 ft bgs)
Hazard Quotient = 3
Non-Tidal Wetland Area Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Fox		Harrier		Mallard (breeding)		Mallard (non-breeding)		Heron		Killdeer		Salt Marsh Harvest Mouse	
Chemical	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**
Hazard Quotient = 3														
Metals (mg/kg)														
Aluminum	6.3E+00 **>1**	6.3E-01	1.2E-01	1.2E-02	1.7E+00 **>1**	1.7E-01	9.8E-02	9.8E-03	5.7E-01	5.7E-02	1.9E+01 **>1**	1.9E+00 **>1**	1.2E+02 **>1**	1.2E+01 **>1**
Antimony	1.1E+00	2.7E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV **>1**	NTV	6.9E+01 **>1**	1.7E-01
Arsenic	2.4E-02	1.6E-03	8.9E-04	2.2E-04	3.1E-02	7.9E-03	5.7E-03	1.4E-03	7.4E-03	1.8E-03	3.1E-01	7.7E-02	3.6E+00 **>1**	2.4E-01
Barium	2.6E-03	2.1E-03	1.3E-02	6.3E-03	2.1E-01	1.0E-01	5.0E-03	2.5E-03	2.0E-02	1.0E-02	1.6E+00 **>1**	8.1E-01	3.2E-01	2.5E-01
Beryllium	3.9E-04	3.7E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	9.0E-03	8.6E-03
Cadmium	1.6E-02	3.6E-04	7.3E-03	5.6E-05	7.7E-01	5.9E-03	5.1E-01	3.9E-03	6.7E-02	5.1E-04	3.1E+00 **>1**	2.4E-02	1.0E+01 **>1**	2.4E-01
Chromium +3	5.5E-02	5.8E-03	7.3E-02	7.0E-02	1.4E+00	1.4E+00	2.6E-02	2.5E-02	7.5E-01	7.2E-01	1.3E+01 **>1**	1.2E+01 **>1**	6.6E-01	6.9E-02
Chromium +6	1.1E-04	1.7E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	8.2E-04	1.3E-04
Cobalt	5.2E-03	3.1E-04	5.0E-04	2.2E-04	3.2E-03	1.4E-03	7.9E-04	3.6E-04	4.5E-03	2.0E-03	9.3E-02	4.2E-02	1.1E-01	6.9E-03
Copper	3.1E-01	1.3E-03	8.1E-01	3.6E-02	1.8E+00 **>1**	8.0E-02	7.5E-02	3.3E-03	9.6E-01	4.2E-02	1.5E+01 **>1**	6.7E-01	4.6E+00 **>1**	1.9E-02
Lead	6.8E-01	2.8E-03	1.1E+02 **>1**	1.8E-01	1.9E+01 **>1**	3.1E-02	2.7E+00 **>1**	4.3E-03	1.2E+02 **>1**	2.0E-01	3.3E+02 **>1**	5.3E-01	3.0E+00 **>1**	1.2E-02
Manganese	3.3E-02	2.8E-03	4.1E-03	4.1E-04	1.9E+00 **>1**	1.9E-01	6.0E-02	6.0E-03	4.1E-02	4.1E-03	1.4E+01 **>1**	1.4E+00	3.6E+01 **>1**	3.1E+00 **>1**
Mercury	1.7E-02	1.7E-03	7.0E-03	1.5E-03	7.8E-01	1.7E-01	1.2E-02	2.5E-03	8.0E-01	1.7E-01	6.7E+00 **>1**	1.5E+00	3.8E-01	3.8E-02
Molybdenum	8.9E-03	8.9E-04	4.5E-04	4.5E-05	2.1E-03	2.1E-04	5.2E-04	5.2E-05	3.0E-03	3.0E-04	5.7E-02	5.7E-03	1.6E-01	1.6E-02
Nickel	3.0E-01	1.3E-03	1.8E-02	4.4E-04	1.0E+00	2.4E-02	3.8E-02	9.4E-04	1.5E-01	3.8E-03	9.6E+00 **>1**	2.3E-01	3.6E+01 **>1**	1.5E-01
Selenium	1.7E+00 **>1**	7.0E-02	8.7E-01	2.2E-01	9.8E-03	2.4E-03	2.4E-03	6.1E-04	1.7E+00 **>1**	4.2E-01	2.2E-01	5.4E-02	2.7E-01	1.1E-02
Silver	2.5E-03	2.5E-04	3.2E-06	NTV	2.1E-05	NTV	5.1E-06	NTV	2.9E-05	NTV	6.1E-04	NTV	5.6E-02	5.6E-03
Thallium	1.2E-02	3.9E-03	3.7E-02	NTV	1.7E-03	NTV	4.3E-04	NTV	4.0E-02	NTV	5.2E-02	NTV	7.2E-03	2.4E-03
Tin	2.2E-04	1.5E-04	4.6E-04	1.8E-04	4.0E-02	1.6E-02	3.7E-02	1.5E-02	4.3E-03	1.7E-03	9.2E-02	3.7E-02	1.3E+00	8.9E-01
Vanadium	1.8E-01	1.8E-02	2.0E-03	2.0E-04	2.5E-02	2.5E-03	5.6E-03	5.6E-04	1.9E-02	1.9E-03	4.6E-01	4.6E-02	4.1E+00 **>1**	4.1E-01
Zinc	3.2E-01	7.4E-03	4.1E-01	4.1E-02	6.4E-01	6.4E-02	1.6E-02	1.6E-03	7.4E-01	7.4E-02	4.9E+00 **>1**	4.9E-01	3.0E+00 **>1**	7.0E-02
Volatile Organics (mg/kg)														
Acetone	1.0E-05	2.0E-06	1.2E-06	1.2E-07	8.0E-06	8.0E-07	2.0E-06	2.0E-07	1.1E-05	1.1E-06	2.4E-04	2.4E-05	2.4E-04	4.7E-05
Benzene	6.0E-08	6.1E-09	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	1.4E-06	1.4E-07
Carbon disulfide	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chlorobenzene	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
cis-1,2-Dichlorobenzene	3.7E-07	3.7E-08	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	8.4E-06	8.4E-07
Ethylbenzene	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Isopropyltoluene	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Methylene chloride	1.6E-05	1.9E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	3.7E-04	4.4E-05
Naphthalene	1.0E-07	3.4E-08	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	2.4E-06	7.8E-07
Toluene	3.7E-07	3.7E-08	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	8.5E-06	8.5E-07
trans-1,2-Dichloroethene	1.6E-07	1.6E-08	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	3.7E-06	3.7E-07
Trichloroethene	3.2E-06	3.2E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	7.3E-05	7.3E-06
1,2,4-Trimethylbenzene	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
1,3,5-Trimethylbenzene	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Vinyl chloride	6.4E-05	6.4E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	1.5E-03	1.5E-04
Xylenes	1.7E-05	1.4E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	3.8E-04	3.1E-04

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Hazard Quotient = 3
Non-Tidal Wetland Area Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Fox		Harrier		Mallard (breeding)		Mallard (non-breeding)		Heron		Killdeer		Salt Marsh Harvest Mouse	
Chemical	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**
Pesticides (mg/kg)														
alpha-Chlordane	5.7E-07	2.8E-07	1.1E-03	1.1E-04	7.6E-03	7.6E-04	1.9E-03	0.000189342	1.1E-02	1.1E-03	2.3E-01	2.3E-02	1.3E-05	6.5E-06
beta-BHC	2.0E-07	1.0E-07	3.4E-07	8.5E-08	2.3E-06	5.7E-07	5.8E-07	1.4E-07	3.2E-06	8.1E-07	6.9E-05	1.7E-05	4.6E-06	2.3E-06
delta-BHC	4.0E-07	2.0E-07	6.8E-07	1.7E-07	4.6E-06	1.1E-06	1.2E-06	2.9E-07	6.5E-06	1.6E-06	1.4E-04	3.4E-05	9.2E-06	4.6E-06
2,4-DDD	4.4E-04	2.2E-05	9.2E-02	5.5E-04	4.2E-03	2.5E-05	1.0E-03	6.2E-06	9.8E-02	5.9E-04	1.2E-01	7.4E-04	2.7E-04	1.3E-05
DDD	1.3E-03	6.6E-05	2.7E-01	1.6E-03	1.2E-02	7.4E-05	3.1E-03	1.9E-05	2.9E-01	1.7E-03	3.7E-01	2.2E-03	7.9E-04	3.9E-05
DDE	NTV	NTV	NTV	8.1E-04	NTV	3.7E-05	NTV	9.2E-06	NTV	8.6E-04	NTV	1.1E-03	NTV	NTV
DDTs	1.9E-04	9.4E-06	3.8E-02	2.3E-04	2.1E-03	1.3E-05	5.2E-04	3.1E-06	4.1E-02	2.5E-04	5.4E-02	3.2E-04	1.4E-04	6.9E-06
Dieldrin	8.3E-05	7.3E-07	1.0E-05	7.6E-07	7.1E-05	5.1E-06	1.8E-05	1.3E-06	1.0E-04	7.2E-06	2.1E-03	1.5E-04	1.9E-03	1.7E-05
Endosulfan I	8.5E-06	8.5E-07	7.6E-08	7.6E-09	5.2E-07	5.2E-08	1.3E-07	1.3E-08	7.2E-07	7.2E-08	1.5E-05	1.5E-06	2.0E-04	2.0E-05
Endosulfan sulfate	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Endrin	7.3E-05	7.3E-06	1.4E-05	1.4E-06	8.7E-05	8.7E-06	2.2E-05	2.2E-06	1.2E-04	1.2E-05	2.6E-03	2.6E-04	1.6E-03	1.6E-04
Endrin aldehyde	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Endrin Ketone	NTV	1.0E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	2.4E-05
gamma-Chlordane	5.9E-07	3.0E-07	1.2E-03	1.2E-04	7.9E-03	7.9E-04	2.0E-03	2.0E-04	1.1E-02	1.1E-03	1.6E-04	1.6E-05	1.4E-05	6.8E-06
Heptachlor	9.6E-07	1.8E-08	1.4E-06	1.4E-07	5.0E-06	5.0E-07	1.3E-06	1.3E-07	7.5E-06	7.5E-07	1.2E-04	1.2E-05	1.5E-05	2.8E-07
Heptachlor epoxide	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Hexachlorobenzene	1.6E-07	1.6E-08	6.6E-07	6.6E-08	4.5E-06	4.5E-07	1.1E-06	1.1E-07	6.3E-06	6.3E-07	1.3E-04	1.3E-05	3.7E-06	3.7E-07
Methoxychlor	2.6E-06	1.3E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	5.9E-05	2.9E-06
Mirex	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
trans-Nonachlor	1.7E-07	8.3E-08	3.3E-04	3.3E-05	2.2E-03	2.2E-04	5.5E-04	5.5E-05	3.1E-03	3.1E-04	6.6E-02	6.6E-03	3.8E-06	1.9E-06
SVOCs (mg/kg)														
Acenaphthene	3.2E-05	1.3E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	7.3E-04	2.9E-05
Acenaphthylene	2.9E-05	1.2E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	6.7E-04	2.7E-05
Anthracene	3.2E-05	1.3E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	7.3E-04	2.9E-05
Benzo(a)anthracene	6.8E-05	2.7E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	8.6E-02	3.4E-03
Benzo(a)pyrene	5.9E-05	2.3E-06	4.6E-02	4.6E-03	3.1E-01	3.1E-02	7.8E-02	7.8E-03	4.3E-01	4.3E-02	9.2E+00	**>1**	9.2E-01	1.3E-01	5.2E-03
Benzo(b)fluoranthene	5.9E-05	2.3E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	8.8E-02	3.5E-03
Benzo(g,h,i)perylene	3.9E-05	1.6E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	5.9E-02	2.4E-03
Benzo(k)fluoranthene	5.9E-05	2.3E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	8.8E-02	3.5E-03
Benzoic acid	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Bis(2-ethylhexyl)phthalate	5.1E-05	5.1E-06	6.6E-04	6.6E-05	1.9E-03	1.9E-04	4.7E-04	4.7E-05	2.9E-03	2.9E-04	4.2E-02	4.2E-03	6.7E-04	6.7E-05
Butylbenzylphthalate	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Carbazole	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Chloroaniline	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2-Chloropropane	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chrysene	6.9E-05	2.8E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	1.3E-01	5.3E-03
Dibenzofuran	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
3,3-Dichlorobenzidine	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2,6-Dinitrotoluene	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Fluoranthene	9.3E-05	3.7E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	2.1E-03	8.5E-05
Fluorene	3.2E-05	1.3E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	7.3E-04	2.9E-05

Table C2-6q
Summary of Residual Risk Estimates: Deep Soil (0 - 10 ft bgs)
Hazard Quotient = 3
Non-Tidal Wetland Area Alternative 4
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Fox		Harrier		Mallard (breeding)		Mallard (non-breeding)		Heron		Killdeer		Salt Marsh Harvest Mouse	
Chemical	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**
Indeno(1,2,3-cd)pyrene	2.8E-04	1.1E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	8.7E-01	3.5E-02
2-Methylnaphthalene	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Methylphenol	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Naphthalene	7.0E-07	2.3E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	1.6E-05	5.4E-06
Pentachlorophenol	2.0E-05	6.3E-06	1.5E-05	4.6E-06	1.0E-04	3.1E-05	2.6E-05	7.8E-06	1.5E-04	4.3E-05	3.1E-03	9.2E-04	4.7E-04	1.4E-04
Phenanthrene	4.9E-05	1.9E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	1.1E-03	4.5E-05
Phenol	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pyrene	1.0E-04	4.2E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	2.4E-03	9.6E-05
PCBs (mg/kg)														
PCBs (Total Congeners)	9.2E-02	2.6E-02	8.7E-01	6.2E-02	6.1E-01	4.3E-02	2.5E-03	1.8E-04	4.0E+00 **>1**	2.9E-01	4.5E+00 **>1**	3.2E-01	3.7E-01	1.0E-01

Table C2-7a
Medium-Specific Exposure Point Concentration Summary
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Medium:	Soil (0 to 2 feet bgs)
Exposure Medium:	Soil
Exposure Point:	On-Site Soil

Chemical of Potential Concern	Distribution[a]	Mean of Normal Data[b]	Mean of Lognormal Data[c]	Median	UCL[d]	Maximum Detected Concentration	Reasonable Maximum Exposure		Central Tendency Exposure	
							Medium EPC Value[e]	Medium EPC Statistic and Rationale[f]	Medium EPC Value[e]	Medium EPC Statistic and Rationale[f]
INORGANICS (mg/kg)										
ALUMINUM	Non-Par	25795	10.1	25,000	26902	41400	26902	Student's-t UCL	26902	Student's-t UCL
ANTIMONY	Gamma	2.0	0.42	1.7	2.3	5.7	2.3	Approximate Gamma UCL	2.3	Approximate Gamma UCL
ARSENIC	Normal	20.5	3.0	20.1	21.7	43.2	21.7	Student's-t UCL	21.7	Student's-t UCL
BARIUM	Non-Par	83.0	4.4	76.2	89.1	330	89.1	Student's-t UCL	89.1	Student's-t UCL
BERYLLIUM	Gamma	0.37	-1.44	0.24	0.44	2.5	0.44	Approximate Gamma UCL	0.44	Approximate Gamma UCL
CADMIUM	Non-Par	1.56	-0.14	0.93	2.5	3.9	2.53	97.5% Chebyshev UCL	2.53	97.5% Chebyshev UCL
CHROMIUM	Non-Par	104	4.6	93.9	110	196	109.6	Student's-t UCL	109.6	Student's-t UCL
COBALT	Non-Par	18.0	2.75	20.5	21.2	37.8	21.2	95% Chebyshev UCL	21.2	95% Chebyshev UCL
COPPER	Non-Par	98.5	4.53	93.2	105	268	105	Student's-t UCL	105	Student's-t UCL
LEAD	Non-Par	52.8	3.88	51	56.2	133	56.2	95% Chebyshev UCL	56.2	95% Chebyshev UCL
MANGANESE	Non-Par	868	6.7	836	930	3800	930	Student's-t UCL	930	Student's-t UCL
MERCURY	Non-Par	1.01	-0.15	0.97	1.1	2.6	1.1	Approximate Gamma UCL	1.1	Approximate Gamma UCL
MOLYBDENUM	Non-Par	1.83	-1.22	0.11	5.3	44.3	5.3	97.5% Chebyshev UCL	5.3	97.5% Chebyshev UCL
NICKEL	Non-Par	102	4.57	107	106	155	106	Student's-t UCL	106	Student's-t UCL
SELENIUM	Non-Par	0.74	-0.74	0.39	1.1	2.7	1.1	95% Chebyshev UCL	1.1	95% Chebyshev UCL
SILVER	Non-Par	1.15	-1.29	0.18	2.3	5.2	2.3	97.5% Chebyshev UCL	2.3	97.5% Chebyshev UCL
THALLIUM	Non-Par	0.24	-1.62	0.185	0.29	2.6	0.29	Student's-t UCL	0.29	Student's-t UCL
TIN	Non-Par	14.7	2.66	14.8	15.9	18.4	15.9	Student's-t UCL	15.9	Student's-t UCL
VANADIUM	Non-Par	96.2	4.51	86.6	102	192	102	Student's-t UCL	102	Student's-t UCL
ZINC	Gamma	186	5.2	181	194	400	194	Approximate Gamma UCL	194	Approximate Gamma UCL
PESTICIDES (mg/kg)										
ALPHA-CHLORDANE	Non-Par	0.0015	-7.9	0.0004	0.0048	0.051	0.0048	97.5% Chebyshev UCL	0.0048	97.5% Chebyshev UCL
BETA BHC	NA	NA	NA	NA	NA	0.001	0.001	Max Detected	0.001	Max Detected
DELTA BHC	NA	NA	NA	NA	NA	0.002	0.002	Max Detected	0.002	Max Detected
2,4- DDD	Non-Par	0.0064	-5.98	0.001	0.03	0.03	0.03	99% Chebyshev UCL	0.03	99% Chebyshev UCL
4,4- DDD	Non-Par	0.029	-5.69	0.003	0.092	0.8	0.092	97.5% Chebyshev UCL	0.092	97.5% Chebyshev UCL
4,4- DDE	Non-Par	0.0052	-6.94	0.001	0.018	0.2	0.018	97.5% Chebyshev UCL	0.018	97.5% Chebyshev UCL
4,4- DDT	Non-Par	0.0051	-6.6	0.002	0.012	0.08	0.012	97.5% Chebyshev UCL	0.012	97.5% Chebyshev UCL
DIELDRIN	Non-Par	0.0014	-7.55	0.00095	0.0029	0.015	0.0029	97.5% Chebyshev UCL	0.0029	97.5% Chebyshev UCL
ENDOSULFAN I	NA	NA	NA	NA	NA	0.004	0.004	Max Detected	0.004	Max Detected
ENDOSULFAN SULFATE	NA	NA	NA	NA	NA	0.003	0.003	Max Detected	0.003	Max Detected
ENDRIN	NA	NA	NA	NA	NA	0.02	0.02	Max Detected	0.02	Max Detected
ENDRIN ALDEHYDE	NA	NA	NA	NA	NA	0.006	0.006	Max Detected	0.006	Max Detected
ENDRIN KETONE	Non-Par	0.00099	-7.96	0.0004	0.0023	0.003	0.0023	97.5% Chebyshev UCL	0.0023	97.5% Chebyshev UCL
GAMMA-CHLORDANE	Non-Par	0.0015	-7.97	0.0004	0.0052	0.059	0.0052	97.5% Chebyshev UCL	0.0052	97.5% Chebyshev UCL

Table C2-7a
Medium-Specific Exposure Point Concentration Summary
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Medium:	Soil (0 to 2 feet bgs)
Exposure Medium:	Soil
Exposure Point:	On-Site Soil

Chemical of Potential Concern	Distribution[a]	Mean of Normal Data[b]	Mean of Lognormal Data[c]	Median	UCL[d]	Maximum Detected Concentration	Reasonable Maximum Exposure		Central Tendency Exposure	
							Medium EPC Value[e]	Medium EPC Statistic and Rationale[f]	Medium EPC Value[e]	Medium EPC Statistic and Rationale[f]
HEPTACHLOR	NA	NA	NA	NA	NA	0.0002	0.0002	Max Detected	0.0002	Max Detected
HEPTACHLOR EPOXIDE	NA	NA	NA	NA	NA	0.0003	0.0003	Max Detected	0.0003	Max Detected
HEXACHLOROBENZENE	Non-Par	0.00083	-8.13	0.0003	0.0023	0.0008	0.0008	Max Detected	0.0008	Max Detected
METHOXYCHLOR	Non-Par	0.0038	-7.3	0.00045	0.012	0.04	0.012	99% Chebyshev UCL	0.012	99% Chebyshev UCL
MIREX	NA	NA	NA	NA	NA	0.004	0.004	Max Detected	0.004	Max Detected
TRANS-NONACHLOR	Non-Par	0.00087	-8.2	0.000275	0.0024	0.005	0.0024	97.5% Chebyshev UCL	0.0024	97.5% Chebyshev UCL
PCBs (mg/kg)										
PCBs (TOTAL)	Lognormal	0.028	-4.67	0.0092	0.05	0.48	0.051	H-UCL	0.051	H-UCL
SVOCs (mg/kg)										
ACENAPHTHENE	Non-Par	0.063	-3.20	0.0245	0.09	0.0573	0.0573	Max Detected	0.0573	Max Detected
ACENAPHTHYLENE	Non-Par	0.058	-3.30	0.0245	0.09	0.0396	0.0396	Max Detected	0.0396	Max Detected
ANTHRACENE	Non-Par	0.053	-3.70	0.0235	0.10	0.0658	0.0658	Max Detected	0.0658	Max Detected
BENZO(A)ANTHRACENE	Non-Par	0.053	-3.56	0.0225	0.10	0.1028	0.10	97.5% Chebyshev UCL	0.10	97.5% Chebyshev UCL
BENZO(A)PYRENE	Non-Par	0.045	-3.72	0.018	0.10	0.1013	0.096	97.5% Chebyshev UCL	0.096	97.5% Chebyshev UCL
BENZO(B)FLUORANTHENE	Non-Par	0.050	-3.35	0.025	0.08	0.11	0.083	95% Chebyshev UCL	0.083	95% Chebyshev UCL
BENZO(G,H,I)PERYLENE	Non-Par	0.053	-3.42	0.024	0.08	0.13	0.082	95% Chebyshev UCL	0.082	95% Chebyshev UCL
BENZO(K)FLUORANTHENE	Non-Par	0.055	-3.50	0.0235	0.10	0.067	0.067	Max Detected	0.067	Max Detected
BIS(2-ETHYLHEXYL)PHTHALATE	Non-Par	0.066	-3.53	0.01325	0.12	0.59	0.12	97.5% Chebyshev UCL	0.12	97.5% Chebyshev UCL
BUTYLBENZYLPHTHALATE	NA	NA	NA	NA	NA	0.025	0.025	Max Detected	0.025	Max Detected
CARBAZOLE	NA	NA	NA	NA	NA	0.141	0.141	Max Detected	0.141	Max Detected
4- CHLOROANILINE	NA	NA	NA	NA	NA	0.003	0.003	Max Detected	0.003	Max Detected
2- CHLOROPHENOL	NA	NA	NA	NA	NA	0.0433	0.0433	Max Detected	0.0433	Max Detected
CHRYSENE	Non-Par	0.05	-3.73	0.018	0.09	0.0984	0.09	97.5% Chebyshev UCL	0.09	97.5% Chebyshev UCL
DIBENZOFURAN	NA	NA	NA	NA	NA	0.0789	0.0789	Max Detected	0.0789	Max Detected
3,3- DICHLOROBENZIDINE	NA	NA	NA	NA	NA	0.012	0.012	Max Detected	0.012	Max Detected
FLUORANTHENE	Non-Par	0.05	-3.50	0.023	0.08	0.1345	0.084	95% Chebyshev UCL	0.08	95% Chebyshev UCL
FLUORENE	Non-Par	0.05	-3.52	0.0235	0.10	0.054	0.054	Max Detected	0.054	Max Detected
INDENO(1,2,3-CD)PYRENE	Non-Par	0.05	-3.75	0.01825	0.10	0.15	0.10	97.5% Chebyshev UCL	0.10	97.5% Chebyshev UCL
2- METHYLNAPHTHALENE	NA	NA	NA	NA	NA	0.0523	0.0523	Max Detected	0.0523	Max Detected
4- METHYLPHENOL	NA	NA	NA	NA	NA	0.0668	0.0668	Max Detected	0.0668	Max Detected
NAPHTHALENE	Non-Par	0.06	-3.35	0.0245	0.09	0.1102	0.085	95% Chebyshev UCL	0.09	95% Chebyshev UCL
PENTACHLOROPHENOL	NA	NA	NA	NA	NA	0.0484	0.0484	Max Detected	0.0484	Max Detected
PHENANTHRENE	Non-Par	0.05	-3.75	0.018	0.09	0.07	0.07	Max Detected	0.07	Max Detected
PHENOL	NA	NA	NA	NA	NA	0.14	0.14	Max Detected	0.14	Max Detected
PYRENE	Non-Par	0.05	-3.41	0.029	0.08	0.16	0.079	95% Chebyshev UCL	0.079	95% Chebyshev UCL

Table C2-7a
Medium-Specific Exposure Point Concentration Summary
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Medium:	Soil (0 to 2 feet bgs)
Exposure Medium:	Soil
Exposure Point:	On-Site Soil

Chemical of Potential Concern	Distribution[a]	Mean of Normal Data[b]	Mean of Lognormal Data[c]	Median	UCL[d]	Maximum Detected Concentration	Reasonable Maximum Exposure		Central Tendency Exposure	
							Medium EPC Value[e]	Medium EPC Statistic and Rationale[f]	Medium EPC Value[e]	Medium EPC Statistic and Rationale[f]
TPH (mg/kg)										
TPH AS DIESEL	Non-Par	20	2.94	19.15	21.5	78	21.5	Student's-t UCL	21.5	Student's-t UCL
TPH AS GASOLINE	Non-Par	0.13	-3.92	0.015	0.56	8	0.56	97.5% Chebyshev UCL	0.56	97.5% Chebyshev UCL
TPH AS MOTOR OIL	Non-Par	119	4.23	64.115	215	1690	215	95% Chebyshev UCL	215	95% Chebyshev UCL
VOCs (mg/kg)										
ACETONE	Non-Par	0.022	-4.53	0.005	0.1	0.1	0.1	99% Chebyshev UCL	0.1	99% Chebyshev UCL
CARBON DISULFIDE	NA	NA	NA	NA	NA	0.007	0.007	Max Detected	0.007	Max Detected
CHLOROBENZENE	NA	NA	NA	NA	NA	0.005	0.005	Max Detected	0.005	Max Detected
ETHYLBENZENE	NA	NA	NA	NA	NA	0.018	0.018	Max Detected	0.018	Max Detected
TOLUENE	NA	NA	NA	NA	NA	0.03	0.03	Max Detected	0.03	Max Detected
TRICHLOROETHENE	NA	NA	NA	NA	NA	0.007	0.007	Max Detected	0.007	Max Detected
XYLENE (TOTAL)	Non-Par	0.062	-3.54	0.1	0.15	0.167	0.15	99% Chebyshev UCL	0.15	99% Chebyshev UCL

The UCL for chemicals that are italicized and underlined have been modified for post remediation residual risk.

bgs Below Ground Surface.
EPC Exposure Point Concentration.
mg/kg Milligram per kilogram.
NA Not Applicable for small data sets.
PCBs Polychlorinated Biphenyls
SVOC Semivolatile Organic Compound
TPH Total Petroleum Hydrocarbon
UCL Upper confidence limit of the mean.
VOCs Volatile Organic Compounds

a Gamma = Data follow gamma distribution using chi-square approximation.
Normal = Data are normally distributed.
Lognormal = Data are lognormally distributed.
Non-par = Data are non-parametric.
Lilliefors Test was used to determine the distribution for sample sets greater than 50.
Shapiro and Wilk W-Test was used to determine the distribution for sample sets less than 50.

b The value presented is the arithmetic mean calculated using distribution-dependent formulas. One half the sample quantitation limit was used as a proxy concentration for non-detects to calculate the mean.

c The value presented is the mean of log-transformed data calculated using distribution-dependent formulas. One half the sample quantitation limit was used as a proxy concentration for non-detects to calculate the mean.

d The value presented is the UCL calculated using distribution-dependent formulas. One half the sample quantitation limit was used as a proxy concentration for non-detects to calculate the UCL.

e If the UCL value exceeds the maximum detected concentration, the maximum detected concentration is used for the medium EPC value.

f Recommended UCL statistic using United States Environmental Protection Agency ProUCL Version 3.0 software.

Table C2-7b
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil (0 to 2 feet)
Exposure Point:	Surface Soil (0 to 2 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
INGESTION	**INORGANICS**									
	ALUMINUM	26,902	mg/kg	2.94E-02	1.22E-02	mg/kg-day	1.00E+00	mg/kg-day	2.94E-02	1.22E-02
	ANTIMONY	2.3	mg/kg	2.51E-06	1.05E-06	mg/kg-day	4.00E-04	mg/kg-day	6.28E-03	2.62E-03
	ARSENIC	21.7	mg/kg	2.37E-05	9.88E-06	mg/kg-day	3.00E-04	mg/kg-day	7.90E-02	3.29E-02
	BARIUM	89.1	mg/kg	9.74E-05	4.06E-05	mg/kg-day	7.00E-02	mg/kg-day	1.39E-03	5.80E-04
	BERYLLIUM	0.4	mg/kg	4.81E-07	2.00E-07	mg/kg-day	2.00E-03	mg/kg-day	2.40E-04	1.00E-04
	CADMIUM	2.5	mg/kg	2.76E-06	1.15E-06	mg/kg-day	5.00E-04	mg/kg-day	5.53E-03	2.30E-03
	CHROMIUM	110	mg/kg	1.20E-04	4.99E-05	mg/kg-day	1.50E+00	mg/kg-day	7.99E-05	3.33E-05
	COBALT	21	mg/kg	2.32E-05	9.65E-06	mg/kg-day	2.00E-02	mg/kg-day	1.16E-03	4.83E-04
	COPPER	105	mg/kg	1.15E-04	4.78E-05	mg/kg-day	4.00E-02	mg/kg-day	2.87E-03	1.20E-03
	LEAD	56	mg/kg	6.14E-05	2.56E-05	mg/kg-day	NA	mg/kg-day	NA	NA
	MANGANESE	930	mg/kg	1.02E-03	4.23E-04	mg/kg-day	1.40E-01	mg/kg-day	7.26E-03	3.02E-03
	MERCURY	1.1	mg/kg	1.20E-06	5.01E-07	mg/kg-day	3.00E-04	mg/kg-day	4.01E-03	1.67E-03
	MOLYBDENUM	5.3	mg/kg	5.79E-06	2.41E-06	mg/kg-day	5.00E-03	mg/kg-day	1.16E-03	4.83E-04
	NICKEL	106	mg/kg	1.16E-04	4.83E-05	mg/kg-day	2.00E-02	mg/kg-day	5.79E-03	2.41E-03
	SELENIUM	1.1	mg/kg	1.20E-06	5.01E-07	mg/kg-day	5.00E-03	mg/kg-day	2.40E-04	1.00E-04
	SILVER	2.3	mg/kg	2.51E-06	1.05E-06	mg/kg-day	5.00E-03	mg/kg-day	5.03E-04	2.09E-04
	THALLIUM	0.29	mg/kg	3.17E-07	1.32E-07	mg/kg-day	6.60E-05	mg/kg-day	4.80E-03	2.00E-03
	TIN	15.9	mg/kg	1.74E-05	7.24E-06	mg/kg-day	6.00E-01	mg/kg-day	2.90E-05	1.21E-05
	VANADIUM	102	mg/kg	1.11E-04	4.64E-05	mg/kg-day	7.00E-03	mg/kg-day	1.59E-02	6.64E-03
	ZINC	194	mg/kg	2.12E-04	8.83E-05	mg/kg-day	3.00E-01	mg/kg-day	7.07E-04	2.94E-04
	PESTICIDES									
	ALPHA-CHLORDANE	0.0048	mg/kg	5.25E-09	2.19E-09	mg/kg-day	5.00E-04	mg/kg-day	1.05E-05	4.37E-06
	BETA BHC	0.001	mg/kg	1.09E-09	4.55E-10	mg/kg-day	2.00E-04	mg/kg-day	5.46E-06	2.28E-06
	DELTA BHC	0.002	mg/kg	2.19E-09	9.11E-10	mg/kg-day	NA	mg/kg-day	NA	NA
	2,4- DDD	0.03	mg/kg	3.28E-08	1.37E-08	mg/kg-day	5.00E-04	mg/kg-day	6.56E-05	2.73E-05
	4,4- DDD	0.092	mg/kg	1.01E-07	4.19E-08	mg/kg-day	5.00E-04	mg/kg-day	2.01E-04	8.38E-05
	4,4- DDE	0.018	mg/kg	1.97E-08	8.20E-09	mg/kg-day	5.00E-04	mg/kg-day	3.93E-05	1.64E-05
	4,4- DDT	0.012	mg/kg	1.31E-08	5.46E-09	mg/kg-day	5.00E-04	mg/kg-day	2.62E-05	1.09E-05
	DIELDRIN	0.0029	mg/kg	3.17E-09	1.32E-09	mg/kg-day	5.00E-05	mg/kg-day	6.34E-05	2.64E-05
	ENDOSULFAN I	0.004	mg/kg	4.37E-09	1.82E-09	mg/kg-day	6.00E-03	mg/kg-day	7.29E-07	3.04E-07

Table C2-7b
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil (0 to 2 feet)
Exposure Point:	Surface Soil (0 to 2 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
INGESTION (CONTINUED)	ENDOSULFAN SULFATE	0.003	mg/kg	3.28E-09	1.37E-09	mg/kg-day	6.00E-03	mg/kg-day	5.46E-07	2.28E-07
	ENDRIN	0.02	mg/kg	2.19E-08	9.11E-09	mg/kg-day	3.00E-04	mg/kg-day	7.29E-05	3.04E-05
	ENDRIN ALDEHYDE	0.006	mg/kg	6.56E-09	2.73E-09	mg/kg-day	3.00E-04	mg/kg-day	2.19E-05	9.11E-06
	ENDRIN KETONE	0.0023	mg/kg	2.51E-09	1.05E-09	mg/kg-day	3.00E-04	mg/kg-day	8.38E-06	3.49E-06
	GAMMA-CHLORDANE	0.0052	mg/kg	5.68E-09	2.37E-09	mg/kg-day	5.00E-04	mg/kg-day	1.14E-05	4.74E-06
	HEPTACHLOR	0.0002	mg/kg	2.19E-10	9.11E-11	mg/kg-day	5.00E-04	mg/kg-day	4.37E-07	1.82E-07
	HEPTACHLOR EPOXIDE	0.0003	mg/kg	3.28E-10	1.37E-10	mg/kg-day	1.30E-05	mg/kg-day	2.52E-05	1.05E-05
	HEXACHLOROBENZENE	0.0008	mg/kg	8.74E-10	3.64E-10	mg/kg-day	8.00E-04	mg/kg-day	1.09E-06	4.55E-07
	METHOXYCHLOR	0.012	mg/kg	1.31E-08	5.46E-09	mg/kg-day	5.00E-03	mg/kg-day	2.62E-06	1.09E-06
	MIREX	0.004	mg/kg	4.37E-09	1.82E-09	mg/kg-day	2.00E-04	mg/kg-day	2.19E-05	9.11E-06
	TRANS-NONACHLOR	0.0024	mg/kg	2.62E-09	1.09E-09	mg/kg-day	5.00E-04	mg/kg-day	5.25E-06	2.19E-06
	PCBs									
	PCBs (TOTAL)	0.05	mg/kg	5.57E-08	2.32E-08	mg/kg-day	2.00E-05	mg/kg-day	2.79E-03	1.16E-03
	SVOCs									
	ACENAPHTHENE	0.057	mg/kg	6.26E-08	2.61E-08	mg/kg-day	6.00E-02	mg/kg-day	1.04E-06	4.35E-07
	ACENAPHTHYLENE	0.04	mg/kg	4.33E-08	1.80E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	ANTHRACENE	0.0658	mg/kg	7.19E-08	3.00E-08	mg/kg-day	3.00E-01	mg/kg-day	2.40E-07	9.99E-08
	BENZO(A)ANTHRACENE	0.100	mg/kg	1.09E-07	4.55E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(A)PYRENE	0.096	mg/kg	1.05E-07	4.37E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(B)FLUORANTHENE	0.083	mg/kg	9.07E-08	3.78E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(G,H,I)PERYLENE	0.082	mg/kg	8.96E-08	3.73E-08	mg/kg-day	4.00E-02	mg/kg-day	2.24E-06	9.33E-07
	BENZO(K)FLUORANTHENE	0.07	mg/kg	7.32E-08	3.05E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	BIS(2-ETHYLHEXYL)PHTHAL	0.12	mg/kg	1.31E-07	5.46E-08	mg/kg-day	2.00E-02	mg/kg-day	6.56E-06	2.73E-06
	BUTYLBENZYLPHTHALATE	0.025	mg/kg	2.73E-08	1.14E-08	mg/kg-day	2.00E-01	mg/kg-day	1.37E-07	5.69E-08
	CARBAZOLE	0.14	mg/kg	1.54E-07	6.42E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	4- CHLOROANILINE	0.003	mg/kg	3.28E-09	1.37E-09	mg/kg-day	4.00E-03	mg/kg-day	8.20E-07	3.42E-07
	2- CHLOROPHENOL	0.043	mg/kg	4.73E-08	1.97E-08	mg/kg-day	5.00E-03	mg/kg-day	9.46E-06	3.94E-06
	CHRYSENE	0.090	mg/kg	9.84E-08	4.10E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	DIBENZOFURAN	0.079	mg/kg	8.62E-08	3.59E-08	mg/kg-day	2.00E-03	mg/kg-day	4.31E-05	1.80E-05
	3,3- DICHLOROBENZIDINE	0.012	mg/kg	1.31E-08	5.46E-09	mg/kg-day	NA	mg/kg-day	NA	NA
	FLUORANTHENE	0.084	mg/kg	9.18E-08	3.82E-08	mg/kg-day	4.00E-02	mg/kg-day	2.29E-06	9.56E-07

Table C2-7b
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil (0 to 2 feet)
Exposure Point:	Surface Soil (0 to 2 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
	FLUORENE	0.054	mg/kg	5.90E-08	2.46E-08	mg/kg-day	4.00E-02	mg/kg-day	1.48E-06	6.15E-07

Table C2-7b
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil (0 to 2 feet)
Exposure Point:	Surface Soil (0 to 2 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
INGESTION (CONTINUED)	*INDENO(1,2,3-CD)PYRENE*	0.10	mg/kg	1.09E-07	4.55E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	2- METHYLNAPHTHALENE	0.052	mg/kg	5.72E-08	2.38E-08	mg/kg-day	4.00E-03	mg/kg-day	1.43E-05	5.95E-06
	4- METHYLPHENOL	0.067	mg/kg	7.30E-08	3.04E-08	mg/kg-day	5.00E-03	mg/kg-day	1.46E-05	6.08E-06
	NAPHTHALENE	0.085	mg/kg	9.29E-08	3.87E-08	mg/kg-day	2.00E-02	mg/kg-day	4.64E-06	1.94E-06
	PENTACHLOROPHENOL	0.048	mg/kg	5.29E-08	2.20E-08	mg/kg-day	3.00E-02	mg/kg-day	1.76E-06	7.35E-07
	PHENANTHRENE	0.070	mg/kg	7.65E-08	3.19E-08	mg/kg-day	3.00E-01	mg/kg-day	2.55E-07	1.06E-07
	PHENOL	0.14	mg/kg	1.53E-07	6.37E-08	mg/kg-day	6.00E-01	mg/kg-day	2.55E-07	1.06E-07
	PYRENE	0.079	mg/kg	8.63E-08	3.60E-08	mg/kg-day	3.00E-02	mg/kg-day	2.88E-06	1.20E-06
	TPH									
	TPH AS DIESEL	22	mg/kg	2.35E-05	9.79E-06	mg/kg-day	NA	mg/kg-day	NA	NA
	TPH AS GASOLINE	0.6	mg/kg	6.12E-07	2.55E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	TPH AS MOTOR OIL	215	mg/kg	2.35E-04	9.79E-05	mg/kg-day	NA	mg/kg-day	NA	NA
	VOCs									
	ACETONE	0.10	mg/kg	1.09E-07	4.55E-08	mg/kg-day	9.00E-01	mg/kg-day	1.21E-07	5.06E-08
	CARBON DISULFIDE	0.007	mg/kg	7.65E-09	3.19E-09	mg/kg-day	1.00E-01	mg/kg-day	7.65E-08	3.19E-08
	CHLOROBENZENE	0.005	mg/kg	5.46E-09	2.28E-09	mg/kg-day	2.00E-02	mg/kg-day	2.73E-07	1.14E-07
	ETHYLBENZENE	0.018	mg/kg	1.97E-08	8.20E-09	mg/kg-day	1.00E-01	mg/kg-day	1.97E-07	8.20E-08
	TOLUENE	0.03	mg/kg	3.28E-08	1.37E-08	mg/kg-day	2.00E-01	mg/kg-day	1.64E-07	6.83E-08
	TRICHLOROETHENE	0.007	mg/kg	7.65E-09	3.19E-09	mg/kg-day	3.00E-04	mg/kg-day	2.55E-05	1.06E-05
	XYLENE (TOTAL)	0.15	mg/kg	1.64E-07	6.83E-08	mg/kg-day	2.00E-01	mg/kg-day	8.20E-07	3.42E-07
DERMAL CONTACT	**INORGANICS**									
	ALUMINUM	26,902	mg/kg	NA	NA	mg/kg-day	1.00E+00	mg/kg-day	NA	NA
	ANTIMONY	2.3	mg/kg	NA	NA	mg/kg-day	6.00E-05	mg/kg-day	NA	NA
	ARSENIC	21.7	mg/kg	3.27E-06	1.36E-06	mg/kg-day	3.00E-04	mg/kg-day	1.09E-02	4.54E-03
	BARIUM	89.1	mg/kg	NA	NA	mg/kg-day	4.90E-03	mg/kg-day	NA	NA
	BERYLLIUM	0.4	mg/kg	NA	NA	mg/kg-day	1.40E-05	mg/kg-day	NA	NA
	CADMIUM	2.5	mg/kg	1.27E-08	5.29E-09	mg/kg-day	1.25E-05	mg/kg-day	1.02E-03	4.23E-04
	CHROMIUM	110	mg/kg	NA	NA	mg/kg-day	1.95E-02	mg/kg-day	NA	NA
	COBALT	21	mg/kg	NA	NA	mg/kg-day	2.00E-02	mg/kg-day	NA	NA
	COPPER	105	mg/kg	NA	NA	mg/kg-day	4.00E-02	mg/kg-day	NA	NA
	LEAD	56	mg/kg	NA	NA	mg/kg-day	NA	mg/kg-day	NA	NA

Table C2-7b
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil (0 to 2 feet)
Exposure Point:	Surface Soil (0 to 2 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
DERMAL CONTACT (CONTINUED)	*MANGANESE*	930	mg/kg	NA	NA	mg/kg-day	5.60E-03	mg/kg-day	NA	NA
	MERCURY	1.1	mg/kg	NA	NA	mg/kg-day	2.10E-05	mg/kg-day	NA	NA
	MOLYBDENUM	5.3	mg/kg	NA	NA	mg/kg-day	5.00E-03	mg/kg-day	NA	NA
	NICKEL	106	mg/kg	NA	NA	mg/kg-day	8.00E-04	mg/kg-day	NA	NA
	SELENIUM	1.1	mg/kg	NA	NA	mg/kg-day	5.00E-03	mg/kg-day	NA	NA
	SILVER	2.3	mg/kg	NA	NA	mg/kg-day	2.00E-04	mg/kg-day	NA	NA
	THALLIUM	0.29	mg/kg	NA	NA	mg/kg-day	6.60E-05	mg/kg-day	NA	NA
	TIN	15.9	mg/kg	NA	NA	mg/kg-day	6.00E-01	mg/kg-day	NA	NA
	VANADIUM	102	mg/kg	NA	NA	mg/kg-day	1.82E-04	mg/kg-day	NA	NA
	ZINC	194	mg/kg	NA	NA	mg/kg-day	3.00E-01	mg/kg-day	NA	NA
	PESTICIDES									
	ALPHA-CHLORDANE	0.0048	mg/kg	9.63E-10	4.01E-10	mg/kg-day	5.00E-04	mg/kg-day	1.93E-06	8.03E-07
	BETA BHC	0.001	mg/kg	2.01E-10	8.36E-11	mg/kg-day	2.00E-04	mg/kg-day	1.00E-06	4.18E-07
	DELTA BHC	0.002	mg/kg	4.01E-10	1.67E-10	mg/kg-day	NA	mg/kg-day	NA	NA
	2,4- DDD	0.03	mg/kg	4.51E-09	1.88E-09	mg/kg-day	5.00E-04	mg/kg-day	9.03E-06	3.76E-06
	4,4- DDD	0.092	mg/kg	1.38E-08	5.77E-09	mg/kg-day	5.00E-04	mg/kg-day	2.77E-05	1.15E-05
	4,4- DDE	0.018	mg/kg	2.71E-09	1.13E-09	mg/kg-day	5.00E-04	mg/kg-day	5.42E-06	2.26E-06
	4,4- DDT	0.012	mg/kg	1.81E-09	7.52E-10	mg/kg-day	5.00E-04	mg/kg-day	3.61E-06	1.50E-06
	DIELDRIN	0.0029	mg/kg	1.45E-09	6.06E-10	mg/kg-day	5.00E-05	mg/kg-day	2.91E-05	1.21E-05
	ENDOSULFAN I	0.004	mg/kg	2.01E-09	8.36E-10	mg/kg-day	6.00E-03	mg/kg-day	3.34E-07	1.39E-07
	ENDOSULFAN SULFATE	0.003	mg/kg	1.50E-09	6.27E-10	mg/kg-day	6.00E-03	mg/kg-day	2.51E-07	1.05E-07
	ENDRIN	0.02	mg/kg	1.00E-08	4.18E-09	mg/kg-day	3.00E-04	mg/kg-day	3.34E-05	1.39E-05
	ENDRIN ALDEHYDE	0.006	mg/kg	3.01E-09	1.25E-09	mg/kg-day	3.00E-04	mg/kg-day	1.00E-05	4.18E-06
	ENDRIN KETONE	0.0023	mg/kg	1.15E-09	4.81E-10	mg/kg-day	3.00E-04	mg/kg-day	3.85E-06	1.60E-06
	GAMMA-CHLORDANE	0.0052	mg/kg	1.04E-09	4.35E-10	mg/kg-day	5.00E-04	mg/kg-day	2.09E-06	8.69E-07
	HEPTACHLOR	0.0002	mg/kg	1.00E-10	4.18E-11	mg/kg-day	5.00E-04	mg/kg-day	2.01E-07	8.36E-08
	HEPTACHLOR EPOXIDE	0.0003	mg/kg	1.50E-10	6.27E-11	mg/kg-day	1.30E-05	mg/kg-day	1.16E-05	4.82E-06
	HEXACHLOROBENZENE	0.0008	mg/kg	4.01E-10	1.67E-10	mg/kg-day	8.00E-04	mg/kg-day	5.02E-07	2.09E-07
	METHOXYCHLOR	0.012	mg/kg	2.41E-09	1.00E-09	mg/kg-day	5.00E-03	mg/kg-day	4.82E-07	2.01E-07
	MIREX	0.004	mg/kg	2.01E-09	8.36E-10	mg/kg-day	2.00E-04	mg/kg-day	1.00E-05	4.18E-06
	TRANS-NONACHLOR	0.0024	mg/kg	4.82E-10	2.01E-10	mg/kg-day	5.00E-04	mg/kg-day	9.63E-07	4.01E-07

Table C2-7b
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil (0 to 2 feet)
Exposure Point:	Surface Soil (0 to 2 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
DERMAL CONTACT (CONTINUED)	**PCBs**									
	PCBs (TOTAL)	0.05	mg/kg	3.58E-08	1.49E-08	mg/kg-day	2.00E-05	mg/kg-day	1.79E-03	7.46E-04
	SVOCs									
	ACENAPHTHENE	0.057	mg/kg	3.74E-08	1.56E-08	mg/kg-day	6.00E-02	mg/kg-day	6.23E-07	2.59E-07
	ACENAPHTHYLENE	0.04	mg/kg	2.58E-08	1.08E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	ANTHRACENE	0.0658	mg/kg	4.29E-08	1.79E-08	mg/kg-day	3.00E-01	mg/kg-day	1.43E-07	5.96E-08
	BENZO(A)ANTHRACENE	0.100	mg/kg	6.52E-08	2.72E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(A)PYRENE	0.096	mg/kg	6.26E-08	2.61E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(B)FLUORANTHENE	0.083	mg/kg	5.41E-08	2.26E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(G,H,I)PERYLENE	0.082	mg/kg	5.35E-08	2.23E-08	mg/kg-day	4.00E-02	mg/kg-day	1.34E-06	5.57E-07
	BENZO(K)FLUORANTHENE	0.07	mg/kg	4.37E-08	1.82E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	BIS(2-ETHYLHEXYL)PHTHAL	0.12	mg/kg	6.02E-08	2.51E-08	mg/kg-day	2.00E-02	mg/kg-day	3.01E-06	1.25E-06
	BUTYLBENZYLPHTHALATE	0.025	mg/kg	1.25E-08	5.23E-09	mg/kg-day	2.00E-01	mg/kg-day	6.27E-08	2.61E-08
	CARBAZOLE	0.14	mg/kg	7.07E-08	2.95E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	4- CHLOROANILINE	0.003	mg/kg	1.50E-09	6.27E-10	mg/kg-day	4.00E-03	mg/kg-day	3.76E-07	1.57E-07
	2- CHLOROPHENOL	0.043	mg/kg	2.17E-08	9.05E-09	mg/kg-day	5.00E-03	mg/kg-day	4.34E-06	1.81E-06
	CHRYSENE	0.090	mg/kg	5.87E-08	2.45E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	DIBENZOFURAN	0.079	mg/kg	3.96E-08	1.65E-08	mg/kg-day	2.00E-03	mg/kg-day	1.98E-05	8.25E-06
	3,3- DICHLOROBENZIDINE	0.012	mg/kg	6.02E-09	2.51E-09	mg/kg-day	NA	mg/kg-day	NA	NA
	FLUORANTHENE	0.084	mg/kg	5.48E-08	2.28E-08	mg/kg-day	4.00E-02	mg/kg-day	1.37E-06	5.71E-07
	FLUORENE	0.054	mg/kg	3.52E-08	1.47E-08	mg/kg-day	4.00E-02	mg/kg-day	8.80E-07	3.67E-07
	INDENO(1,2,3-CD)PYRENE	0.10	mg/kg	6.52E-08	2.72E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	2- METHYLNAPHTHALENE	0.052	mg/kg	2.62E-08	1.09E-08	mg/kg-day	4.00E-03	mg/kg-day	6.56E-06	2.73E-06
	4- METHYLPHENOL	0.067	mg/kg	3.35E-08	1.40E-08	mg/kg-day	5.00E-03	mg/kg-day	6.70E-06	2.79E-06
	NAPHTHALENE	0.085	mg/kg	5.54E-08	2.31E-08	mg/kg-day	2.00E-02	mg/kg-day	2.77E-06	1.15E-06
	PENTACHLOROPHENOL	0.048	mg/kg	2.43E-08	1.01E-08	mg/kg-day	3.00E-02	mg/kg-day	8.09E-07	3.37E-07
	PHENANTHRENE	0.070	mg/kg	4.56E-08	1.90E-08	mg/kg-day	3.00E-01	mg/kg-day	1.52E-07	6.34E-08
	PHENOL	0.14	mg/kg	7.02E-08	2.93E-08	mg/kg-day	6.00E-01	mg/kg-day	1.17E-07	4.88E-08
	PYRENE	0.079	mg/kg	5.15E-08	2.15E-08	mg/kg-day	3.00E-02	mg/kg-day	1.72E-06	7.16E-07
	TPH									
	TPH AS DIESEL	22	mg/kg	NA	NA	mg/kg-day	NA	mg/kg-day	NA	NA

Table C2-7b
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil (0 to 2 feet)
Exposure Point:	Surface Soil (0 to 2 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
DERMAL CONTACT (CONTINUED)	*TPH AS GASOLINE*	0.6	mg/kg	NA	NA	mg/kg-day	NA	mg/kg-day	NA	NA
	TPH AS MOTOR OIL	215	mg/kg	NA	NA	mg/kg-day	NA	mg/kg-day	NA	NA
	VOCs									
	ACETONE	0.10	mg/kg	NA	NA	mg/kg-day	9.00E-01	mg/kg-day	NA	NA
	CARBON DISULFIDE	0.007	mg/kg	NA	NA	mg/kg-day	1.00E-01	mg/kg-day	NA	NA
	CHLOROBENZENE	0.005	mg/kg	NA	NA	mg/kg-day	2.00E-02	mg/kg-day	NA	NA
	ETHYLBENZENE	0.018	mg/kg	NA	NA	mg/kg-day	1.00E-01	mg/kg-day	NA	NA
	TOLUENE	0.03	mg/kg	NA	NA	mg/kg-day	2.00E-01	mg/kg-day	NA	NA
	TRICHLOROETHENE	0.007	mg/kg	NA	NA	mg/kg-day	3.00E-04	mg/kg-day	NA	NA
	XYLENE (TOTAL)	0.15	mg/kg	NA	NA	mg/kg-day	2.00E-01	mg/kg-day	NA	NA
INHALATION OF PARTICULATES AND VAPORS	**INORGANICS**									
	ALUMINUM	26,902	mg/kg	1.24E-06	5.15E-07	mg/kg-day	1.40E-03	mg/kg-day	8.83E-04	3.68E-04
	ANTIMONY	2.3	mg/kg	1.06E-10	4.40E-11	mg/kg-day	NA	mg/kg-day	NA	NA
	ARSENIC	21.7	mg/kg	9.97E-10	4.15E-10	mg/kg-day	8.57E-06	mg/kg-day	1.16E-04	4.85E-05
	BARIUM	89.1	mg/kg	4.09E-09	1.71E-09	mg/kg-day	1.43E-04	mg/kg-day	2.86E-05	1.19E-05
	BERYLLIUM	0.4	mg/kg	2.02E-11	8.42E-12	mg/kg-day	2.00E-06	mg/kg-day	1.01E-05	4.22E-06
	CADMIUM	2.5	mg/kg	1.16E-10	4.84E-11	mg/kg-day	5.71E-06	mg/kg-day	2.04E-05	8.48E-06
	CHROMIUM	110	mg/kg	5.04E-09	2.10E-09	mg/kg-day	NA	mg/kg-day	NA	NA
	COBALT	21	mg/kg	9.74E-10	4.06E-10	mg/kg-day	5.70E-06	mg/kg-day	1.71E-04	7.12E-05
	COPPER	105	mg/kg	4.82E-09	2.01E-09	mg/kg-day	NA	mg/kg-day	NA	NA
	LEAD	56	mg/kg	2.58E-09	1.08E-09	mg/kg-day	NA	mg/kg-day	NA	NA
	MANGANESE	930	mg/kg	4.27E-08	1.78E-08	mg/kg-day	1.43E-05	mg/kg-day	2.99E-03	1.25E-03
	MERCURY	1.1	mg/kg	5.05E-11	2.11E-11	mg/kg-day	2.57E-05	mg/kg-day	1.97E-06	8.20E-07
	MOLYBDENUM	5.3	mg/kg	2.44E-10	1.01E-10	mg/kg-day	NA	mg/kg-day	NA	NA
	NICKEL	106	mg/kg	4.87E-09	2.03E-09	mg/kg-day	1.43E-05	mg/kg-day	3.41E-04	1.42E-04
	SELENIUM	1.1	mg/kg	5.05E-11	2.11E-11	mg/kg-day	5.71E-03	mg/kg-day	8.85E-09	3.69E-09
	SILVER	2.3	mg/kg	1.06E-10	4.40E-11	mg/kg-day	NA	mg/kg-day	NA	NA
	THALLIUM	0.29	mg/kg	1.33E-11	5.55E-12	mg/kg-day	NA	mg/kg-day	NA	NA
	TIN	15.9	mg/kg	7.31E-10	3.04E-10	mg/kg-day	NA	mg/kg-day	NA	NA
	VANADIUM	102	mg/kg	4.69E-09	1.95E-09	mg/kg-day	NA	mg/kg-day	NA	NA
	ZINC	194	mg/kg	8.91E-09	3.71E-09	mg/kg-day	NA	mg/kg-day	NA	NA

Table C2-7b
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil (0 to 2 feet)
Exposure Point:	Surface Soil (0 to 2 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
INHALATION OF PARTICULATES AND VAPORS (CONTINUED)	**PESTICIDES**									
	ALPHA-CHLORDANE	0.0048	mg/kg	2.21E-13	9.19E-14	mg/kg-day	2.00E-04	mg/kg-day	1.10E-09	4.59E-10
	BETA BHC	0.001	mg/kg	4.59E-14	1.91E-14	mg/kg-day	2.00E-04	mg/kg-day	2.30E-10	9.57E-11
	DELTA BHC	0.002	mg/kg	9.19E-14	3.83E-14	mg/kg-day	NA	mg/kg-day	NA	NA
	2,4- DDD	0.03	mg/kg	1.38E-12	5.74E-13	mg/kg-day	5.00E-04	mg/kg-day	2.76E-09	1.15E-09
	4,4- DDD	0.092	mg/kg	4.23E-12	1.76E-12	mg/kg-day	5.00E-04	mg/kg-day	8.45E-09	3.52E-09
	4,4- DDE	0.018	mg/kg	8.27E-13	3.45E-13	mg/kg-day	5.00E-04	mg/kg-day	1.65E-09	6.89E-10
	4,4- DDT	0.012	mg/kg	5.51E-13	2.30E-13	mg/kg-day	5.00E-04	mg/kg-day	1.10E-09	4.59E-10
	DIELDRIN	0.0029	mg/kg	1.33E-13	5.55E-14	mg/kg-day	5.00E-05	mg/kg-day	2.67E-09	1.11E-09
	ENDOSULFAN I	0.004	mg/kg	1.84E-13	7.66E-14	mg/kg-day	6.00E-03	mg/kg-day	3.06E-11	1.28E-11
	ENDOSULFAN SULFATE	0.003	mg/kg	1.38E-13	5.74E-14	mg/kg-day	6.00E-03	mg/kg-day	2.30E-11	9.57E-12
	ENDRIN	0.02	mg/kg	9.19E-13	3.83E-13	mg/kg-day	3.00E-04	mg/kg-day	3.06E-09	1.28E-09
	ENDRIN ALDEHYDE	0.006	mg/kg	2.76E-13	1.15E-13	mg/kg-day	3.00E-04	mg/kg-day	9.19E-10	3.83E-10
	ENDRIN KETONE	0.0023	mg/kg	1.06E-13	4.40E-14	mg/kg-day	3.00E-04	mg/kg-day	3.52E-10	1.47E-10
	GAMMA-CHLORDANE	0.0052	mg/kg	2.39E-13	9.96E-14	mg/kg-day	2.00E-04	mg/kg-day	1.19E-09	4.98E-10
	HEPTACHLOR	0.0002	mg/kg	9.19E-15	3.83E-15	mg/kg-day	5.00E-04	mg/kg-day	1.84E-11	7.66E-12
	HEPTACHLOR EPOXIDE	0.0003	mg/kg	1.38E-14	5.74E-15	mg/kg-day	1.30E-05	mg/kg-day	1.06E-09	4.42E-10
	HEXACHLOROBENZENE	0.0008	mg/kg	3.68E-14	1.53E-14	mg/kg-day	8.00E-04	mg/kg-day	4.59E-11	1.91E-11
	METHOXYCHLOR	0.012	mg/kg	5.51E-13	2.30E-13	mg/kg-day	5.00E-03	mg/kg-day	1.10E-10	4.59E-11
	MIREX	0.004	mg/kg	1.84E-13	7.66E-14	mg/kg-day	2.00E-04	mg/kg-day	9.19E-10	3.83E-10
	TRANS-NONACHLOR	0.0024	mg/kg	1.10E-13	4.59E-14	mg/kg-day	2.00E-04	mg/kg-day	5.51E-10	2.30E-10
	PCBs									
	PCBs (TOTAL)	0.05	mg/kg	2.34E-12	9.76E-13	mg/kg-day	2.00E-05	mg/kg-day	1.17E-07	4.88E-08
	SVOCs									
	ACENAPHTHENE	0.057	mg/kg	1.93E-08	8.05E-09	mg/kg-day	6.00E-02	mg/kg-day	3.22E-07	1.34E-07
	ACENAPHTHYLENE	0.04	mg/kg	1.82E-12	7.58E-13	mg/kg-day	NA	mg/kg-day	NA	NA
	ANTHRACENE	0.0658	mg/kg	5.70E-09	2.38E-09	mg/kg-day	3.00E-01	mg/kg-day	1.90E-08	7.92E-09
	BENZO(A)ANTHRACENE	0.100	mg/kg	4.59E-12	1.91E-12	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(A)PYRENE	0.096	mg/kg	4.41E-12	1.84E-12	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(B)FLUORANTHENE	0.083	mg/kg	3.81E-12	1.59E-12	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(G,H,I)PERYLENE	0.082	mg/kg	3.77E-12	1.57E-12	mg/kg-day	4.00E-02	mg/kg-day	9.42E-11	3.92E-11

Table C2-7b
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil (0 to 2 feet)
Exposure Point:	Surface Soil (0 to 2 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
INHALATION OF PARTICULATES AND VAPORS (CONTINUED)	*BENZO(K)FLUORANTHENE*	0.07	mg/kg	3.08E-12	1.28E-12	mg/kg-day	NA	mg/kg-day	NA	NA
	BIS(2-ETHYLHEXYL)PHTHAL	0.12	mg/kg	5.51E-12	2.30E-12	mg/kg-day	2.00E-02	mg/kg-day	2.76E-10	1.15E-10
	BUTYLBENZYLPHTHALATE	0.025	mg/kg	1.15E-12	4.79E-13	mg/kg-day	2.00E-01	mg/kg-day	5.74E-12	2.39E-12
	CARBAZOLE	0.14	mg/kg	6.48E-12	2.70E-12	mg/kg-day	NA	mg/kg-day	NA	NA
	4- CHLOROANILINE	0.003	mg/kg	1.38E-13	5.74E-14	mg/kg-day	4.00E-03	mg/kg-day	3.45E-11	1.44E-11
	2- CHLOROPHENOL	0.043	mg/kg	1.99E-12	8.29E-13	mg/kg-day	5.00E-03	mg/kg-day	3.98E-10	1.66E-10
	CHRYSENE	0.090	mg/kg	2.02E-09	8.42E-10	mg/kg-day	NA	mg/kg-day	NA	NA
	DIBENZOFURAN	0.079	mg/kg	3.63E-12	1.51E-12	mg/kg-day	2.00E-03	mg/kg-day	1.81E-09	7.55E-10
	3,3- DICHLOROBENZIDINE	0.012	mg/kg	5.51E-13	2.30E-13	mg/kg-day	NA	mg/kg-day	NA	NA
	FLUORANTHENE	0.084	mg/kg	3.86E-12	1.61E-12	mg/kg-day	4.00E-02	mg/kg-day	9.65E-11	4.02E-11
	FLUORENE	0.054	mg/kg	9.10E-09	3.79E-09	mg/kg-day	4.00E-02	mg/kg-day	2.27E-07	9.48E-08
	INDENO(1,2,3-CD)PYRENE	0.10	mg/kg	4.59E-12	1.91E-12	mg/kg-day	NA	mg/kg-day	NA	NA
	2- METHYLNAPHTHALENE	0.052	mg/kg	2.40E-12	1.00E-12	mg/kg-day	NA	mg/kg-day	NA	NA
	4- METHYLPHENOL	0.067	mg/kg	3.07E-12	1.28E-12	mg/kg-day	NA	mg/kg-day	NA	NA
	NAPHTHALENE	0.085	mg/kg	1.20E-07	5.00E-08	mg/kg-day	8.57E-04	mg/kg-day	1.40E-04	5.83E-05
	PENTACHLOROPHENOL	0.048	mg/kg	2.22E-12	9.27E-13	mg/kg-day	3.00E-02	mg/kg-day	7.41E-11	3.09E-11
	PHENANTHRENE	0.070	mg/kg	3.22E-12	1.34E-12	mg/kg-day	3.00E-01	mg/kg-day	1.07E-11	4.47E-12
	PHENOL	0.14	mg/kg	6.43E-12	2.68E-12	mg/kg-day	5.71E-02	mg/kg-day	1.13E-10	4.69E-11
	PYRENE	0.079	mg/kg	1.26E-09	5.25E-10	mg/kg-day	3.00E-02	mg/kg-day	4.20E-08	1.75E-08
	TPH									
	TPH AS DIESEL	22	mg/kg	9.88E-10	4.12E-10	mg/kg-day	NA	mg/kg-day	NA	NA
	TPH AS GASOLINE	0.6	mg/kg	2.57E-11	1.07E-11	mg/kg-day	NA	mg/kg-day	NA	NA
	TPH AS MOTOR OIL	215	mg/kg	9.88E-09	4.12E-09	mg/kg-day	NA	mg/kg-day	NA	NA
	VOCs									
	ACETONE	0.10	mg/kg	4.67E-07	1.94E-07	mg/kg-day	9.00E-01	mg/kg-day	5.18E-07	2.16E-07
	CARBON DISULFIDE	0.007	mg/kg	3.54E-07	1.47E-07	mg/kg-day	2.00E-01	mg/kg-day	1.77E-06	7.37E-07
	CHLOROBENZENE	0.005	mg/kg	4.81E-08	2.01E-08	mg/kg-day	5.71E-03	mg/kg-day	8.43E-06	3.51E-06
	ETHYLBENZENE	0.018	mg/kg	2.02E-07	8.42E-08	mg/kg-day	2.86E-01	mg/kg-day	7.07E-07	2.95E-07
	TOLUENE	0.03	mg/kg	4.55E-07	1.90E-07	mg/kg-day	8.57E-02	mg/kg-day	5.31E-06	2.21E-06
	TRICHLOROETHENE	0.007	mg/kg	1.29E-07	5.36E-08	mg/kg-day	1.00E-02	mg/kg-day	1.29E-05	5.36E-06

Table C2-7b
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil (0 to 2 feet)
Exposure Point:	Surface Soil (0 to 2 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
	XYLENE (TOTAL)	0.15	mg/kg	1.49E-06	6.21E-07	mg/kg-day	2.86E-02	mg/kg-day	5.21E-05	2.17E-05

Notes:
The HQ for chemicals that are italicized and underlined have been modified for post remediation residual risk.
CTE = Central Tendency Exposure
EPC = Exposure point concentration
HQ = Hazard Quotient
mg/kg = milligrams per kilogram
mg/kg-day = milligrams per kilogram per day
NA = Not Applicable
PCBs = Polychlorinated Biphenyls
RfD = Reference Dose
RME = Reasonable Maximum Exposure
SVOCs = Semivolatile Organic Compounds
TPH = Total Petroleum Hydrocarbons
VOCs = Volatile Organic Compounds

Table C2-7c
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil (0 to 2 feet)
Exposure Point:	Surface Soil (0 to 2 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INGESTION	**INORGANICS**									
	ALUMINUM	26,902	mg/kg	7.14E-03	2.97E-03	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ANTIMONY	2.3	mg/kg	6.10E-07	2.54E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ARSENIC	21.7	mg/kg	5.76E-06	2.40E-06	mg/kg-day	9.45E+00	$(mg/kg\text{-}day)^{-1}$	5.44E-05	2.27E-05
	BARIUM	89.1	mg/kg	2.36E-05	9.85E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BERYLLIUM	0.4	mg/kg	1.17E-07	4.87E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CADMIUM	2.5	mg/kg	6.71E-07	2.80E-07	mg/kg-day	3.80E-01	$(mg/kg\text{-}day)^{-1}$	2.55E-07	1.06E-07
	CHROMIUM	110	mg/kg	2.91E-05	1.21E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	COBALT	21	mg/kg	5.63E-06	2.34E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	COPPER	105	mg/kg	2.79E-05	1.16E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	LEAD	56	mg/kg	1.49E-05	6.21E-06	mg/kg-day	8.50E-03	$(mg/kg\text{-}day)^{-1}$	1.27E-07	5.28E-08
	MANGANESE	930	mg/kg	2.47E-04	1.03E-04	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MERCURY	1.1	mg/kg	2.92E-07	1.22E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MOLYBDENUM	5.3	mg/kg	1.41E-06	5.86E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	NICKEL	106	mg/kg	2.81E-05	1.17E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	SELENIUM	1.1	mg/kg	2.92E-07	1.22E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	SILVER	2.3	mg/kg	6.10E-07	2.54E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	THALLIUM	0.29	mg/kg	7.70E-08	3.21E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TIN	15.9	mg/kg	4.22E-06	1.76E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	VANADIUM	102	mg/kg	2.71E-05	1.13E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ZINC	194	mg/kg	5.15E-05	2.15E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PESTICIDES									
	ALPHA-CHLORDANE	0.0048	mg/kg	1.27E-09	5.31E-10	mg/kg-day	1.30E+00	$(mg/kg\text{-}day)^{-1}$	1.66E-09	6.90E-10
	BETA BHC	0.001	mg/kg	2.65E-10	1.11E-10	mg/kg-day	1.80E+00	$(mg/kg\text{-}day)^{-1}$	4.78E-10	1.99E-10

Table C2-7c
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil (0 to 2 feet)
Exposure Point:	Surface Soil (0 to 2 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INGESTION (CONTINUED)	DELTA BHC	0.002	mg/kg	5.31E-10	2.21E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	2,4- DDD	0.03	mg/kg	7.96E-09	3.32E-09	mg/kg-day	2.40E-01	$(mg/kg\text{-}day)^{-1}$	1.91E-09	7.96E-10
	4,4- DDD	0.092	mg/kg	2.44E-08	1.02E-08	mg/kg-day	2.40E-01	$(mg/kg\text{-}day)^{-1}$	5.86E-09	2.44E-09
	4,4- DDE	0.018	mg/kg	4.78E-09	1.99E-09	mg/kg-day	3.40E-01	$(mg/kg\text{-}day)^{-1}$	1.62E-09	6.77E-10
	4,4- DDT	0.012	mg/kg	3.18E-09	1.33E-09	mg/kg-day	3.40E-01	$(mg/kg\text{-}day)^{-1}$	1.08E-09	4.51E-10
	DIELDRIN	0.0029	mg/kg	7.70E-10	3.21E-10	mg/kg-day	1.60E+01	$(mg/kg\text{-}day)^{-1}$	1.23E-08	5.13E-09
	ENDOSULFAN I	0.004	mg/kg	1.06E-09	4.42E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDOSULFAN SULFATE	0.003	mg/kg	7.96E-10	3.32E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN	0.02	mg/kg	5.31E-09	2.21E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN ALDEHYDE	0.006	mg/kg	1.59E-09	6.64E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN KETONE	0.0023	mg/kg	6.10E-10	2.54E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	GAMMA-CHLORDANE	0.0052	mg/kg	1.38E-09	5.75E-10	mg/kg-day	1.30E+00	$(mg/kg\text{-}day)^{-1}$	1.79E-09	7.48E-10
	HEPTACHLOR	0.0002	mg/kg	5.31E-11	2.21E-11	mg/kg-day	4.50E+00	$(mg/kg\text{-}day)^{-1}$	2.39E-10	9.95E-11
	HEPTACHLOR EPOXIDE	0.0003	mg/kg	7.96E-11	3.32E-11	mg/kg-day	9.10E+00	$(mg/kg\text{-}day)^{-1}$	7.25E-10	3.02E-10
	HEXACHLOROBENZENE	0.0008	mg/kg	2.12E-10	8.85E-11	mg/kg-day	1.80E+00	$(mg/kg\text{-}day)^{-1}$	3.82E-10	1.59E-10
	METHOXYCHLOR	0.012	mg/kg	3.18E-09	1.33E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MIREX	0.004	mg/kg	1.06E-09	4.42E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TRANS-NONACHLOR	0.0024	mg/kg	6.37E-10	2.65E-10	mg/kg-day	1.30E+00	$(mg/kg\text{-}day)^{-1}$	8.28E-10	3.45E-10
	PCBs									
	PCBs (TOTAL)	0.05	mg/kg	1.35E-08	5.64E-09	mg/kg-day	5.00E+00	$(mg/kg\text{-}day)^{-1}$	6.77E-08	2.82E-08
	SVOCs									
	ACENAPHTHENE	0.057	mg/kg	1.52E-08	6.34E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ACENAPHTHYLENE	0.04	mg/kg	1.05E-08	4.38E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ANTHRACENE	0.0658	mg/kg	1.75E-08	7.28E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

Table C2-7c
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil (0 to 2 feet)
Exposure Point:	Surface Soil (0 to 2 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INGESTION (CONTINUED)	*BENZO(A)ANTHRACENE*	0.100	mg/kg	2.65E-08	1.11E-08	mg/kg-day	1.20E+00	$(mg/kg\text{-}day)^{-1}$	3.18E-08	1.33E-08
	BENZO(A)PYRENE	0.096	mg/kg	2.55E-08	1.06E-08	mg/kg-day	1.20E+01	$(mg/kg\text{-}day)^{-1}$	3.06E-07	1.27E-07
	BENZO(B)FLUORANTHENE	0.083	mg/kg	2.20E-08	9.18E-09	mg/kg-day	1.20E+00	$(mg/kg\text{-}day)^{-1}$	2.64E-08	1.10E-08
	BENZO(G,H,I)PERYLENE	0.082	mg/kg	2.18E-08	9.07E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BENZO(K)FLUORANTHENE	0.07	mg/kg	1.78E-08	7.41E-09	mg/kg-day	1.20E+00	$(mg/kg\text{-}day)^{-1}$	2.13E-08	8.89E-09
	BIS(2-ETHYLHEXYL)PHTHALATE	0.12	mg/kg	3.18E-08	1.33E-08	mg/kg-day	1.40E-02	$(mg/kg\text{-}day)^{-1}$	4.46E-10	1.86E-10
	BUTYLBENZYLPHTHALATE	0.025	mg/kg	6.64E-09	2.76E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CARBAZOLE	0.14	mg/kg	3.74E-08	1.56E-08	mg/kg-day	2.00E-02	$(mg/kg\text{-}day)^{-1}$	7.48E-10	3.12E-10
	4- CHLOROANILINE	0.003	mg/kg	7.96E-10	3.32E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	2- CHLOROPHENOL	0.043	mg/kg	1.15E-08	4.79E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CHRYSENE	0.090	mg/kg	2.39E-08	9.95E-09	mg/kg-day	1.20E-01	$(mg/kg\text{-}day)^{-1}$	2.87E-09	1.19E-09
	DIBENZOFURAN	0.079	mg/kg	2.09E-08	8.73E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	3,3- DICHLOROBENZIDINE	0.012	mg/kg	3.18E-09	1.33E-09	mg/kg-day	4.50E-01	$(mg/kg\text{-}day)^{-1}$	1.43E-09	5.97E-10
	FLUORANTHENE	0.084	mg/kg	2.23E-08	9.29E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	FLUORENE	0.054	mg/kg	1.43E-08	5.97E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	INDENO(1,2,3-CD)PYRENE	0.10	mg/kg	2.65E-08	1.11E-08	mg/kg-day	1.20E+00	$(mg/kg\text{-}day)^{-1}$	3.18E-08	1.33E-08
	2- METHYLNAPHTHALENE	0.052	mg/kg	1.39E-08	5.78E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	4- METHYLPHENOL	0.067	mg/kg	1.77E-08	7.39E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	NAPHTHALENE	0.085	mg/kg	2.26E-08	9.40E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PENTACHLOROPHENOL	0.048	mg/kg	1.28E-08	5.35E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PHENANTHRENE	0.070	mg/kg	1.86E-08	7.74E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PHENOL	0.14	mg/kg	3.72E-08	1.55E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PYRENE	0.079	mg/kg	2.10E-08	8.74E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

Table C2-7c
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil (0 to 2 feet)
Exposure Point:	Surface Soil (0 to 2 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INGESTION (CONTINUED)	**TPH**									
	TPH AS DIESEL	22	mg/kg	5.71E-06	2.38E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TPH AS GASOLINE	0.6	mg/kg	1.49E-07	6.19E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TPH AS MOTOR OIL	215	mg/kg	5.71E-05	2.38E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	VOCs									
	ACETONE	0.10	mg/kg	2.65E-08	1.11E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CARBON DISULFIDE	0.007	mg/kg	1.86E-09	7.74E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CHLOROBENZENE	0.005	mg/kg	1.33E-09	5.53E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ETHYLBENZENE	0.018	mg/kg	4.78E-09	1.99E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TOLUENE	0.03	mg/kg	7.96E-09	3.32E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TRICHLOROETHENE	0.007	mg/kg	1.86E-09	7.74E-10	mg/kg-day	4.10E-01	$(mg/kg\text{-}day)^{-1}$	7.62E-10	3.17E-10
	XYLENE (TOTAL)	0.15	mg/kg	3.98E-08	1.66E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
DERMAL CONTACT	**INORGANICS**									
	ALUMINUM	26,902	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ANTIMONY	2.3	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ARSENIC	21.7	mg/kg	7.93E-07	3.30E-07	mg/kg-day	9.45E+00	$(mg/kg\text{-}day)^{-1}$	7.49E-06	3.12E-06
	BARIUM	89.1	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BERYLLIUM	0.4	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CADMIUM	2.5	mg/kg	3.08E-09	1.28E-09	mg/kg-day	1.52E+01	$(mg/kg\text{-}day)^{-1}$	4.68E-08	1.95E-08
	CHROMIUM	110	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	COBALT	21	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	COPPER	105	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	LEAD	56	mg/kg	NA	NA	mg/kg-day	8.50E-03	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MANGANESE	930	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

Table C2-7c
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil (0 to 2 feet)
Exposure Point:	Surface Soil (0 to 2 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
DERMAL CONTACT (CONTINUED)	*MERCURY*	1.1	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MOLYBDENUM	5.3	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	NICKEL	106	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	SELENIUM	1.1	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	SILVER	2.3	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	THALLIUM	0.29	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TIN	15.9	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	VANADIUM	102	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ZINC	194	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PESTICIDES									
	ALPHA-CHLORDANE	0.0048	mg/kg	2.34E-10	9.75E-11	mg/kg-day	1.30E+00	$(mg/kg\text{-}day)^{-1}$	3.04E-10	1.27E-10
	BETA BHC	0.001	mg/kg	4.87E-11	2.03E-11	mg/kg-day	1.80E+00	$(mg/kg\text{-}day)^{-1}$	8.77E-11	3.65E-11
	DELTA BHC	0.002	mg/kg	9.75E-11	4.06E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	2,4- DDD	0.03	mg/kg	1.10E-09	4.57E-10	mg/kg-day	2.40E-01	$(mg/kg\text{-}day)^{-1}$	2.63E-10	1.10E-10
	4,4- DDD	0.092	mg/kg	3.36E-09	1.40E-09	mg/kg-day	2.40E-01	$(mg/kg\text{-}day)^{-1}$	8.07E-10	3.36E-10
	4,4- DDE	0.018	mg/kg	6.58E-10	2.74E-10	mg/kg-day	3.40E-01	$(mg/kg\text{-}day)^{-1}$	2.24E-10	9.32E-11
	4,4- DDT	0.012	mg/kg	4.39E-10	1.83E-10	mg/kg-day	3.40E-01	$(mg/kg\text{-}day)^{-1}$	1.49E-10	6.21E-11
	DIELDRIN	0.0029	mg/kg	3.53E-10	1.47E-10	mg/kg-day	1.60E+01	$(mg/kg\text{-}day)^{-1}$	5.65E-09	2.36E-09
	ENDOSULFAN I	0.004	mg/kg	4.87E-10	2.03E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDOSULFAN SULFATE	0.003	mg/kg	3.65E-10	1.52E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN	0.02	mg/kg	2.44E-09	1.02E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN ALDEHYDE	0.006	mg/kg	7.31E-10	3.05E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN KETONE	0.0023	mg/kg	2.80E-10	1.17E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	GAMMA-CHLORDANE	0.0052	mg/kg	2.53E-10	1.06E-10	mg/kg-day	1.30E+00	$(mg/kg\text{-}day)^{-1}$	3.29E-10	1.37E-10

Table C2-7c
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil (0 to 2 feet)
Exposure Point:	Surface Soil (0 to 2 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
DERMAL CONTACT (CONTINUED)	HEPTACHLOR	0.0002	mg/kg	2.44E-11	1.02E-11	mg/kg-day	4.50E+00	$(mg/kg\text{-}day)^{-1}$	1.10E-10	4.57E-11
	HEPTACHLOR EPOXIDE	0.0003	mg/kg	3.65E-11	1.52E-11	mg/kg-day	9.10E+00	$(mg/kg\text{-}day)^{-1}$	3.33E-10	1.39E-10
	HEXACHLOROBENZENE	0.0008	mg/kg	9.75E-11	4.06E-11	mg/kg-day	1.80E+00	$(mg/kg\text{-}day)^{-1}$	1.75E-10	7.31E-11
	METHOXYCHLOR	0.012	mg/kg	5.85E-10	2.44E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MIREX	0.004	mg/kg	4.87E-10	2.03E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TRANS-NONACHLOR	0.0024	mg/kg	1.17E-10	4.87E-11	mg/kg-day	1.30E+00	$(mg/kg\text{-}day)^{-1}$	1.52E-10	6.33E-11
	PCBs									
	PCBs (TOTAL)	0.05	mg/kg	8.70E-09	3.62E-09	mg/kg-day	5.00E+00	$(mg/kg\text{-}day)^{-1}$	4.35E-08	1.81E-08
	SVOCs									
	ACENAPHTHENE	0.057	mg/kg	9.07E-09	3.78E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ACENAPHTHYLENE	0.04	mg/kg	6.27E-09	2.61E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ANTHRACENE	0.0658	mg/kg	1.04E-08	4.34E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BENZO(A)ANTHRACENE	0.100	mg/kg	1.58E-08	6.60E-09	mg/kg-day	1.20E+00	$(mg/kg\text{-}day)^{-1}$	1.90E-08	7.92E-09
	BENZO(A)PYRENE	0.096	mg/kg	1.52E-08	6.33E-09	mg/kg-day	1.20E+01	$(mg/kg\text{-}day)^{-1}$	1.82E-07	7.60E-08
	BENZO(B)FLUORANTHENE	0.083	mg/kg	1.31E-08	5.48E-09	mg/kg-day	1.20E+00	$(mg/kg\text{-}day)^{-1}$	1.58E-08	6.57E-09
	BENZO(G,H,I)PERYLENE	0.082	mg/kg	1.30E-08	5.41E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BENZO(K)FLUORANTHENE	0.07	mg/kg	1.06E-08	4.42E-09	mg/kg-day	1.20E+00	$(mg/kg\text{-}day)^{-1}$	1.27E-08	5.31E-09
	BIS(2-ETHYLHEXYL)PHTHALATE	0.12	mg/kg	1.46E-08	6.09E-09	mg/kg-day	1.40E-02	$(mg/kg\text{-}day)^{-1}$	2.05E-10	8.53E-11
	BUTYLBENZYLPHTHALATE	0.025	mg/kg	3.05E-09	1.27E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CARBAZOLE	0.14	mg/kg	1.72E-08	7.16E-09	mg/kg-day	2.00E-02	$(mg/kg\text{-}day)^{-1}$	3.44E-10	1.43E-10
	4- CHLOROANILINE	0.003	mg/kg	3.65E-10	1.52E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	2- CHLOROPHENOL	0.043	mg/kg	5.27E-09	2.20E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CHRYSENE	0.090	mg/kg	1.43E-08	5.94E-09	mg/kg-day	1.20E-01	$(mg/kg\text{-}day)^{-1}$	1.71E-09	7.13E-10
	DIBENZOFURAN	0.079	mg/kg	9.61E-09	4.00E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

Table C2-7c
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil (0 to 2 feet)
Exposure Point:	Surface Soil (0 to 2 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
DERMAL CONTACT (CONTINUED)	3,3- DICHLOROBENZIDINE	0.012	mg/kg	1.46E-09	6.09E-10	mg/kg-day	4.50E-01	$(mg/kg\text{-}day)^{-1}$	6.58E-10	2.74E-10
	FLUORANTHENE	0.084	mg/kg	1.33E-08	5.54E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	FLUORENE	0.054	mg/kg	8.55E-09	3.56E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	INDENO(1,2,3-CD)PYRENE	0.10	mg/kg	1.58E-08	6.60E-09	mg/kg-day	1.20E+00	$(mg/kg\text{-}day)^{-1}$	1.90E-08	7.92E-09
	2- METHYLNAPHTHALENE	0.052	mg/kg	6.37E-09	2.65E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	4- METHYLPHENOL	0.067	mg/kg	8.14E-09	3.39E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	NAPHTHALENE	0.085	mg/kg	1.35E-08	5.61E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PENTACHLOROPHENOL	0.048	mg/kg	5.90E-09	2.46E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PHENANTHRENE	0.070	mg/kg	1.11E-08	4.62E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PHENOL	0.14	mg/kg	1.71E-08	7.11E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PYRENE	0.079	mg/kg	1.25E-08	5.21E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TPH									
	TPH AS DIESEL	22	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TPH AS GASOLINE	0.6	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TPH AS MOTOR OIL	215	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	VOCs									
	ACETONE	0.10	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CARBON DISULFIDE	0.007	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CHLOROBENZENE	0.005	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ETHYLBENZENE	0.018	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TOLUENE	0.03	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TRICHLOROETHENE	0.007	mg/kg	NA	NA	mg/kg-day	4.10E-01	$(mg/kg\text{-}day)^{-1}$	NA	NA
	XYLENE (TOTAL)	0.15	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

Table C2-7c
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil (0 to 2 feet)
Exposure Point:	Surface Soil (0 to 2 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INHALATION OF PARTICULATES AND VAPORS	**INORGANICS**									
	ALUMINUM	26,902	mg/kg	3.00E-07	1.25E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ANTIMONY	2.3	mg/kg	2.57E-11	1.07E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ARSENIC	21.7	mg/kg	2.42E-10	1.01E-10	mg/kg-day	1.20E+01	$(mg/kg\text{-}day)^{-1}$	2.91E-09	1.21E-09
	BARIUM	89.1	mg/kg	9.94E-10	4.14E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BERYLLIUM	0.4	mg/kg	4.91E-12	2.05E-12	mg/kg-day	8.40E+00	$(mg/kg\text{-}day)^{-1}$	4.12E-11	1.72E-11
	CADMIUM	2.5	mg/kg	2.82E-11	1.18E-11	mg/kg-day	1.50E+01	$(mg/kg\text{-}day)^{-1}$	4.23E-10	1.76E-10
	CHROMIUM	110	mg/kg	1.22E-09	5.10E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	COBALT	21	mg/kg	2.37E-10	9.86E-11	mg/kg-day	9.80E+00	$(mg/kg\text{-}day)^{-1}$	2.32E-09	9.66E-10
	COPPER	105	mg/kg	1.17E-09	4.88E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	LEAD	56	mg/kg	6.27E-10	2.61E-10	mg/kg-day	4.20E-02	$(mg/kg\text{-}day)^{-1}$	2.63E-11	1.10E-11
	MANGANESE	930	mg/kg	1.04E-08	4.32E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MERCURY	1.1	mg/kg	1.23E-11	5.11E-12	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MOLYBDENUM	5.3	mg/kg	5.91E-11	2.46E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	NICKEL	106	mg/kg	1.18E-09	4.93E-10	mg/kg-day	9.10E-01	$(mg/kg\text{-}day)^{-1}$	1.08E-09	4.49E-10
	SELENIUM	1.1	mg/kg	1.23E-11	5.11E-12	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	SILVER	2.3	mg/kg	2.57E-11	1.07E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	THALLIUM	0.29	mg/kg	3.24E-12	1.35E-12	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TIN	15.9	mg/kg	1.77E-10	7.39E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	VANADIUM	102	mg/kg	1.14E-09	4.74E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ZINC	194	mg/kg	2.16E-09	9.02E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PESTICIDES									
	ALPHA-CHLORDANE	0.0048	mg/kg	5.36E-14	2.23E-14	mg/kg-day	3.50E-01	$(mg/kg\text{-}day)^{-1}$	1.87E-14	7.81E-15
	BETA BHC	0.001	mg/kg	1.12E-14	4.65E-15	mg/kg-day	1.86E+00	$(mg/kg\text{-}day)^{-1}$	2.08E-14	8.65E-15

Table C2-7c
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil (0 to 2 feet)
Exposure Point:	Surface Soil (0 to 2 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INHALATION OF PARTICULATES AND VAPORS (CONTINUED)	DELTA BHC	0.002	mg/kg	2.23E-14	9.30E-15	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	2,4- DDD	0.03	mg/kg	3.35E-13	1.39E-13	mg/kg-day	2.40E-01	$(mg/kg\text{-}day)^{-1}$	8.03E-14	3.35E-14
	4,4- DDD	0.092	mg/kg	1.03E-12	4.28E-13	mg/kg-day	2.40E-01	$(mg/kg\text{-}day)^{-1}$	2.46E-13	1.03E-13
	4,4- DDE	0.018	mg/kg	2.01E-13	8.37E-14	mg/kg-day	3.40E-01	$(mg/kg\text{-}day)^{-1}$	6.83E-14	2.85E-14
	4,4- DDT	0.012	mg/kg	1.34E-13	5.58E-14	mg/kg-day	3.40E-01	$(mg/kg\text{-}day)^{-1}$	4.55E-14	1.90E-14
	DIELDRIN	0.0029	mg/kg	3.24E-14	1.35E-14	mg/kg-day	1.60E+01	$(mg/kg\text{-}day)^{-1}$	5.18E-13	2.16E-13
	ENDOSULFAN I	0.004	mg/kg	4.46E-14	1.86E-14	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDOSULFAN SULFATE	0.003	mg/kg	3.35E-14	1.39E-14	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN	0.02	mg/kg	2.23E-13	9.30E-14	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN ALDEHYDE	0.006	mg/kg	6.70E-14	2.79E-14	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN KETONE	0.0023	mg/kg	2.57E-14	1.07E-14	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	GAMMA-CHLORDANE	0.0052	mg/kg	5.80E-14	2.42E-14	mg/kg-day	3.50E-01	$(mg/kg\text{-}day)^{-1}$	2.03E-14	8.46E-15
	HEPTACHLOR	0.0002	mg/kg	2.23E-15	9.30E-16	mg/kg-day	4.50E+00	$(mg/kg\text{-}day)^{-1}$	1.00E-14	4.18E-15
	HEPTACHLOR EPOXIDE	0.0003	mg/kg	3.35E-15	1.39E-15	mg/kg-day	9.10E+00	$(mg/kg\text{-}day)^{-1}$	3.05E-14	1.27E-14
	HEXACHLOROBENZENE	0.0008	mg/kg	8.93E-15	3.72E-15	mg/kg-day	1.80E+00	$(mg/kg\text{-}day)^{-1}$	1.61E-14	6.70E-15
	METHOXYCHLOR	0.012	mg/kg	1.34E-13	5.58E-14	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MIREX	0.004	mg/kg	4.46E-14	1.86E-14	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TRANS-NONACHLOR	0.0024	mg/kg	2.68E-14	1.12E-14	mg/kg-day	3.50E-01	$(mg/kg\text{-}day)^{-1}$	9.37E-15	3.91E-15
	PCBs									
	PCBs (TOTAL)	0.05	mg/kg	5.69E-13	2.37E-13	mg/kg-day	2.00E+00	$(mg/kg\text{-}day)^{-1}$	1.14E-12	4.74E-13
	SVOCs									
	ACENAPHTHENE	0.057	mg/kg	4.69E-09	1.95E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ACENAPHTHYLENE	0.04	mg/kg	4.42E-13	1.84E-13	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ANTHRACENE	0.0658	mg/kg	1.38E-09	5.77E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

Table C2-7c
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil (0 to 2 feet)
Exposure Point:	Surface Soil (0 to 2 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INHALATION OF PARTICULATES AND VAPORS (CONTINUED)	*BENZO(A)ANTHRACENE*	0.100	mg/kg	1.12E-12	4.65E-13	mg/kg-day	3.90E-01	$(mg/kg\text{-}day)^{-1}$	4.35E-13	1.81E-13
	BENZO(A)PYRENE	0.096	mg/kg	1.07E-12	4.46E-13	mg/kg-day	3.90E+00	$(mg/kg\text{-}day)^{-1}$	4.18E-12	1.74E-12
	BENZO(B)FLUORANTHENE	0.083	mg/kg	9.26E-13	3.86E-13	mg/kg-day	3.90E-01	$(mg/kg\text{-}day)^{-1}$	3.61E-13	1.51E-13
	BENZO(G,H,I)PERYLENE	0.082	mg/kg	9.15E-13	3.81E-13	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BENZO(K)FLUORANTHENE	0.07	mg/kg	7.48E-13	3.12E-13	mg/kg-day	3.90E-01	$(mg/kg\text{-}day)^{-1}$	2.92E-13	1.21E-13
	BIS(2-ETHYLHEXYL)PHTHALATE	0.12	mg/kg	1.34E-12	5.58E-13	mg/kg-day	1.40E-02	$(mg/kg\text{-}day)^{-1}$	1.87E-14	7.81E-15
	BUTYLBENZYLPHTHALATE	0.025	mg/kg	2.79E-13	1.16E-13	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CARBAZOLE	0.14	mg/kg	1.57E-12	6.56E-13	mg/kg-day	2.00E-02	$(mg/kg\text{-}day)^{-1}$	3.15E-14	1.31E-14
	4- CHLOROANILINE	0.003	mg/kg	3.35E-14	1.39E-14	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	2- CHLOROPHENOL	0.043	mg/kg	4.83E-13	2.01E-13	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CHRYSENE	0.090	mg/kg	4.91E-10	2.05E-10	mg/kg-day	3.90E-02	$(mg/kg\text{-}day)^{-1}$	1.91E-11	7.98E-12
	DIBENZOFURAN	0.079	mg/kg	8.80E-13	3.67E-13	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	3,3- DICHLOROBENZIDINE	0.012	mg/kg	1.34E-13	5.58E-14	mg/kg-day	4.50E-01	$(mg/kg\text{-}day)^{-1}$	6.03E-14	2.51E-14
	FLUORANTHENE	0.084	mg/kg	9.37E-13	3.91E-13	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	FLUORENE	0.054	mg/kg	2.21E-09	9.21E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	INDENO(1,2,3-CD)PYRENE	0.10	mg/kg	1.12E-12	4.65E-13	mg/kg-day	3.90E-01	$(mg/kg\text{-}day)^{-1}$	4.35E-13	1.81E-13
	2- METHYLNAPHTHALENE	0.052	mg/kg	5.84E-13	2.43E-13	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	4- METHYLPHENOL	0.067	mg/kg	7.45E-13	3.11E-13	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	NAPHTHALENE	0.085	mg/kg	2.91E-08	1.21E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PENTACHLOROPHENOL	0.048	mg/kg	5.40E-13	2.25E-13	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PHENANTHRENE	0.070	mg/kg	7.81E-13	3.25E-13	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PHENOL	0.14	mg/kg	1.56E-12	6.51E-13	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PYRENE	0.079	mg/kg	3.06E-10	1.28E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

Table C2-7c
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil (0 to 2 feet)
Exposure Point:	Surface Soil (0 to 2 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INHALATION OF PARTICULATES AND VAPORS (CONTINUED)	**TPH**									
	TPH AS DIESEL	22	mg/kg	2.40E-10	1.00E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TPH AS GASOLINE	0.6	mg/kg	6.25E-12	2.60E-12	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TPH AS MOTOR OIL	215	mg/kg	2.40E-09	1.00E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	VOCs									
	ACETONE	0.10	mg/kg	1.13E-07	4.72E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CARBON DISULFIDE	0.007	mg/kg	8.59E-08	3.58E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CHLOROBENZENE	0.005	mg/kg	1.17E-08	4.87E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ETHYLBENZENE	0.018	mg/kg	4.91E-08	2.05E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TOLUENE	0.03	mg/kg	1.10E-07	4.60E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TRICHLOROETHENE	0.007	mg/kg	3.12E-08	1.30E-08	mg/kg-day	7.00E-03	$(mg/kg\text{-}day)^{-1}$	2.19E-10	9.11E-11
	XYLENE (TOTAL)	0.15	mg/kg	3.62E-07	1.51E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

Notes:
The cancer risk for chemicals that are italicized and underlined have been modified for post remediation residual risk.
CTE = Central Tendency Exposure
EPC = Exposure point concentration
HQ = Hazard Quotient
mg/kg = milligrams per kilogram
mg/kg-day = milligrams per kilogram per day
NA = Not Applicable
PCBs = Polychlorinated Biphenyls
RME = Reasonable Maximum Exposure
SVOCs = Semivolatile Organic Compounds
TPH = Total Petroleum Hydrocarbons
VOCs = Volatile Organic Compounds

Table C2-7d
Summary of Current Receptor RME Cancer Risks and Noncarcinogenic Hazard Indices
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Receptor Population:	Recreational User
Receptor Age:	Child (1 to 17 years)

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Primary Target Organ	Non-Carconogenic Hazard Index			
				Ingestion	Dermal	Inhalation (Outdoor)	Exposure Routes Total			Ingestion HQ	Dermal HQ	Inhalation (Outdoor) HQ	Total HI
Soil (0 to 2 feet)	Soil	On-Site Soil	**INORGANICS (mg/kg)**					**INORGANICS (mg/kg)**					
			ALUMINUM	NA	NA	NA	NA	ALUMINUM	Body Weight	2.94E-02	NA	8.83E-04	3.03E-02
			ANTIMONY	NA	NA	NA	NA	ANTIMONY	Blood; Whole Body	6.28E-03	NA	NA	6.28E-03
			ARSENIC	5.44E-05	7.49E-06	2.91E-09	6.19E-05	ARSENIC	Cardiovascular System; Fetal; Nervous System; Skin	7.90E-02	1.09E-02	1.16E-04	9.01E-02
			BARIUM	NA	NA	NA	NA	BARIUM	Cardiovascular System; Fetal; Kidney; NOEL	1.39E-03	NA	2.86E-05	1.42E-03
			BERYLLIUM	NA	NA	4.12E-11	4.12E-11	BERYLLIUM	GI System; Immune System; Respiratory	2.40E-04	NA	1.01E-05	2.51E-04
			CADMIUM	2.55E-07	4.68E-08	4.23E-10	3.02E-07	CADMIUM	Kidney; Respiratory	5.53E-03	1.02E-03	2.04E-05	6.57E-03
			CHROMIUM	NA	NA	NA	NA	CHROMIUM	NOEL	7.99E-05	NA	NA	7.99E-05
			COBALT	NA	NA	2.32E-09	2.32E-09	COBALT	Cardiovascular System; Respiratory	1.16E-03	NA	1.71E-04	1.33E-03
			COPPER	NA	NA	NA	NA	COPPER	GI System	2.87E-03	NA	NA	2.87E-03
			LEAD	1.27E-07	NA	2.63E-11	1.27E-07	LEAD	NA	NA	NA	NA	NA
			MANGANESE	NA	NA	NA	NA	MANGANESE	Nervous System	7.26E-03	NA	2.99E-03	1.02E-02
			MERCURY	NA	NA	NA	NA	MERCURY	Nervous System	4.01E-03	NA	1.97E-06	4.01E-03
			MOLYBDENUM	NA	NA	NA	NA	MOLYBDENUM	Kidney	1.16E-03	NA	NA	1.16E-03
			NICKEL	NA	NA	1.08E-09	1.08E-09	NICKEL	Body Weight; Respiratory	5.79E-03	NA	3.41E-04	6.13E-03
			SELENIUM	NA	NA	NA	NA	SELENIUM	Cardiovascular System; Liver; Nervous System; Skin	2.40E-04	NA	8.85E-09	2.40E-04
			SILVER	NA	NA	NA	NA	SILVER	Skin	5.03E-04	NA	NA	5.03E-04
			THALLIUM	NA	NA	NA	NA	THALLIUM	Blood; Liver	4.80E-03	NA	NA	4.80E-03
			TIN	NA	NA	NA	NA	TIN	Kidney; Liver	2.90E-05	NA	NA	2.90E-05
			VANADIUM	NA	NA	NA	NA	VANADIUM	NOEL	1.59E-02	NA	NA	1.59E-02
			ZINC	NA	NA	NA	NA	ZINC	Blood	7.07E-04	NA	NA	7.07E-04
			PESTICIDES (mg/kg)					**PESTICIDES (mg/kg)**					
			ALPHA-CHLORDANE	1.66E-09	3.04E-10	1.87E-14	1.96E-09	ALPHA-CHLORDANE	Liver	1.05E-05	1.93E-06	1.10E-09	1.24E-05
			BETA BHC	4.78E-10	8.77E-11	2.08E-14	5.65E-10	BETA BHC	Liver	5.46E-06	1.00E-06	2.30E-10	6.47E-06
			DELTA BHC	NA	NA	NA	NA	DELTA BHC	NA	NA	NA	NA	NA
			2,4- DDD	1.91E-09	2.63E-10	8.03E-14	2.17E-09	2,4 DDD	Liver	6.56E-05	9.03E-06	2.76E-09	7.46E-05
			4,4- DDD	5.86E-09	8.07E-10	2.46E-13	6.67E-09	4,4- DDD	Liver	2.01E-04	2.77E-05	8.45E-09	2.29E-04
			4,4- DDE	1.62E-09	2.24E-10	6.83E-14	1.85E-09	4,4- DDE	Liver	3.93E-05	5.42E-06	1.65E-09	4.48E-05
			4,4- DDT	1.08E-09	1.49E-10	4.55E-14	1.23E-09	4,4- DDT	Liver	2.62E-05	3.61E-06	1.10E-09	2.98E-05
			DIELDRIN	1.23E-08	5.65E-09	5.18E-13	1.80E-08	DIELDRIN	Liver	6.34E-05	2.91E-05	2.67E-09	9.25E-05

Table C2-7d
Summary of Current Receptor RME Cancer Risks and Noncarcinogenic Hazard Indices
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Receptor Population:	Recreational User
Receptor Age:	Child (1 to 17 years)

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Primary Target Organ	Non-Carconogenic Hazard Index			
				Ingestion	Dermal	Inhalation (Outdoor)	Exposure Routes Total			Ingestion HQ	Dermal HQ	Inhalation (Outdoor) HQ	Total HI
			ENDOSULFAN I	NA	NA	NA	NA	ENDOSULFAN I	Body Weight; Kidney; Nervous System	7.29E-07	3.34E-07	3.06E-11	1.06E-06
			ENDOSULFAN SULFATE	NA	NA	NA	NA	ENDOSULFAN SULFATE	Body Weight; Kidney; Nervous System	5.46E-07	2.51E-07	2.30E-11	7.97E-07
			ENDRIN	NA	NA	NA	NA	ENDRIN	Liver; Kidney; Nervous System	7.29E-05	3.34E-05	3.06E-09	1.06E-04
			ENDRIN ALDEHYDE	NA	NA	NA	NA	ENDRIN ALDEHYDE	Liver; Kidney; Nervous System	2.19E-05	1.00E-05	9.19E-10	3.19E-05
			ENDRIN KETONE	NA	NA	NA	NA	ENDRIN KETONE	Liver; Kidney; Nervous System	8.38E-06	3.85E-06	3.52E-10	1.22E-05
			GAMMA-CHLORDANE	1.79E-09	3.29E-10	2.03E-14	2.12E-09	GAMMA-CHLORDANE	Liver	1.14E-05	2.09E-06	1.19E-09	1.35E-05
			HEPTACHLOR	2.39E-10	1.10E-10	1.00E-14	3.49E-10	HEPTACHLOR	Liver	4.37E-07	2.01E-07	1.84E-11	6.38E-07
			HEPTACHLOR EPOXIDE	7.25E-10	3.33E-10	3.05E-14	1.06E-09	HEPTACHLOR EPOXIDE	Liver	2.52E-05	1.16E-05	1.06E-09	3.68E-05
			HEXACHLOROBENZENE	3.82E-10	1.75E-10	1.61E-14	5.58E-10	HEXACHLOROBENZENE	Liver	1.09E-06	5.02E-07	4.59E-11	1.59E-06
			METHOXYCHLOR	NA	NA	NA	NA	METHOXYCHLOR	Fetal	2.62E-06	4.82E-07	1.10E-10	3.10E-06
			MIREX	NA	NA	NA	NA	MIREX	Liver	2.19E-05	1.00E-05	9.19E-10	3.19E-05
			TRANS-NONACHLOR	8.28E-10	1.52E-10	9.37E-15	9.80E-10	TRANS-NONACHLOR	Liver	5.25E-06	9.63E-07	5.51E-10	6.21E-06
			PCBs (mg/kg)					**PCBs (mg/kg)**					
			PCBs (TOTAL)	6.77E-08	4.35E-08	1.14E-12	1.11E-07	PCBs (TOTAL)	Immune System	2.79E-03	1.79E-03	1.17E-07	4.58E-03
			SVOCs (mg/kg)					**SVOCs (mg/kg)**					
			ACENAPHTHENE	NA	NA	NA	NA	ACENAPHTHENE	Liver	1.04E-06	6.23E-07	3.22E-07	1.99E-06
			ACENAPHTHYLENE	NA	NA	NA	NA	ACENAPHTHYLENE	NA	NA	NA	NA	NA
			ANTHRACENE	NA	NA	NA	NA	ANTHRACENE	NOEL	2.40E-07	1.43E-07	1.90E-08	4.02E-07
			BENZO(A)ANTHRACENE	3.18E-08	1.90E-08	4.35E-13	5.09E-08	BENZO(A)ANTHRACENE	NA	NA	NA	NA	NA
			BENZO(A)PYRENE	3.06E-07	1.82E-07	4.18E-12	4.88E-07	BENZO(A)PYRENE	NA	NA	NA	NA	NA
			BENZO(B)FLUORANTHENE	2.64E-08	1.58E-08	3.61E-13	4.22E-08	BENZO(B)FLUORANTHENE	NA	NA	NA	NA	NA
			BENZO(G,H,I)PERYLENE	NA	NA	NA	NA	BENZO(G,H,I)PERYLENE	Kidney; Nervous System	2.24E-06	1.34E-06	9.42E-11	3.58E-06
			BENZO(K)FLUORANTHENE	2.13E-08	1.27E-08	2.92E-13	3.41E-08	BENZO(K)FLUORANTHENE	NA	NA	NA	NA	NA
			BIS(2-ETHYLHEXYL)PHTHALATE	4.46E-10	2.05E-10	1.87E-14	6.51E-10	BIS(2-ETHYLHEXYL)PHTHALATE	Liver	6.56E-06	3.01E-06	2.76E-10	9.57E-06
			BUTYLBENZYPHTHALATE	NA	NA	NA	NA	BUTYLBENZYPHTHALATE	Liver	1.37E-07	6.27E-08	5.74E-12	1.99E-07
			CABAZOLE	7.48E-10	3.44E-10	3.15E-14	1.09E-09	CABAZOLE	NA	NA	NA	NA	NA
			4- CHLOROANILINE	NA	NA	NA	NA	4- CHLOROANILINE	Spleen	8.20E-07	3.76E-07	3.45E-11	1.20E-06
			2- CHLOROPHENOL	NA	NA	NA	NA	2- CHLOROPHENOL	Reproductive	9.46E-06	4.34E-06	3.98E-10	1.38E-05
			CHRYSENE	2.87E-09	1.71E-09	1.91E-11	4.60E-09	CHRYSENE	NA	NA	NA	NA	NA
			DIBENZOFURAN	NA	NA	NA	NA	DIBENZOFURAN	NA	4.31E-05	1.98E-05	1.81E-09	6.29E-05
			3,3- DICHLOROBENZIDINE	1.43E-09	6.58E-10	6.03E-14	2.09E-09	3,3- DICHLOROBENZIDINE	NA	NA	NA	NA	NA
			FLUORANTHENE	NA	NA	NA	NA	FLUORANTHENE	Blood; Kidney; Liver	2.29E-06	1.37E-06	9.65E-11	3.66E-06

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Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Current
Receptor Population:	Recreational User
Receptor Age:	Child (1 to 17 years)

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Primary Target Organ	Non-Carconogenic Hazard Index			
				Ingestion	Dermal	Inhalation (Outdoor)	Exposure Routes Total			Ingestion HQ	Dermal HQ	Inhalation (Outdoor) HQ	Total HI
			FLUORENE	NA	NA	NA	NA	FLUORENE	Blood	1.48E-06	8.80E-07	2.27E-07	2.58E-06
			INDENO(1,2,3-CD)PYRENE	3.18E-08	1.90E-08	4.35E-13	5.09E-08	INDENO(1,2,3-CD)PYRENE	NA	NA	NA	NA	NA
			2- METHYLNAPHTHALENE	NA	NA	NA	NA	2- METHYLNAPHTHALENE	Body Weight; Respiratory	1.43E-05	6.56E-06	NA	2.08E-05
			4- METHYPHENOL	NA	NA	NA	NA	4- METHYLPHENOL	Nervous System; Respiratory	1.46E-05	6.70E-06	NA	2.13E-05
			NAPHTHALENE	NA	NA	NA	NA	NAPHTHALENE	Body Weight; Respiratory	4.64E-06	2.77E-06	1.40E-04	1.47E-04
			PENTACHLOROPHENOL	NA	NA	NA	NA	PENTACHLOROPHENOL	Liver; Kidney	1.76E-06	8.09E-07	7.41E-11	2.57E-06
			PHENANTHRENE	NA	NA	NA	NA	PHENANTHRENE	NOEL	2.55E-07	1.52E-07	1.07E-11	4.07E-07
			PHENOL	NA	NA	NA	NA	PHENOL	Cardiovascular System; Fetal; Kidney; Liver; Nervous System	2.55E-07	1.17E-07	1.13E-10	3.72E-07
			PYRENE	NA	NA	NA	NA	PYRENE	Kidney	2.88E-06	1.72E-06	4.20E-08	4.64E-06
			TPH (mg/kg)					**TPH (mg/kg)**					
			TPH AS DIESEL	NA	NA	NA	NA	TPH AS DIESEL	NA	NA	NA	NA	NA
			TPH AS GASOLINE	NA	NA	NA	NA	TPH AS GASOLINE	NA	NA	NA	NA	NA
			TPH AS MOTOR OIL	NA	NA	NA	NA	TPH AS MOTOR OIL	NA	NA	NA	NA	NA
			VOCs (mg/kg)					**VOCs (mg/kg)**					
			ACETONE	NA	NA	NA	NA	ACETONE	Kidney; Liver	1.21E-07	NA	5.18E-07	6.40E-07
			CARBON DISULFIDE	NA	NA	NA	NA	CARBON DISULFIDE	Fetal	7.65E-08	NA	1.77E-06	1.85E-06
			CHLOROBENZENE	NA	NA	NA	NA	CHLOROBENZENE	Kidney; Liver; Reproductive System	2.73E-07	NA	8.43E-06	8.70E-06
			ETHYLBENZENE	NA	NA	NA	NA	ETHYLBENZENE	Fetal; Kidney; Liver	1.97E-07	NA	7.07E-07	9.04E-07
			TOLUENE	NA	NA	NA	NA	TOLUENE	Fetal; Kidney; Liver; Nervous System; Respiratory	1.64E-07	NA	5.31E-06	5.47E-06
			TRICHLOROETHENE	7.62E-10	NA	2.19E-10	9.80E-10	TRICHLOROETHENE	Eyes; Nervous System	2.55E-05	NA	1.29E-05	3.84E-05
			XYLENE (TOTAL)	NA	NA	NA	NA	XYLENE (TOTAL)	Body Weight; Fetal; Nervous System; Respiratory	8.20E-07	NA	5.21E-05	5.30E-05
Groundwater	Shallow Groundwater	Vapors	**VOCs (ug/L)**					**VOCs (ug/L)**					
			ACETONE	NA	NA	NA	NA	ACETONE	Kidney; Liver	NA	NA	5.63E-04	5.63E-04
			BENZENE	NA	NA	9.57E-07	9.57E-07	BENZENE	Fetal; Immune System; Nervous System; Respiratory	NA	NA	4.60E-03	4.60E-03
			2- BUTANONE	NA	NA	NA	NA	2- BUTANONE	Fetal	NA	NA	3.82E-03	3.82E-03
			CARBON DISULFIDE	NA	NA	NA	NA	CARBON DISULFIDE	Fetal; Nervous System	NA	NA	3.55E-04	3.55E-04

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Mare Island, Vallejo, California

Scenario Timeframe:	Current
Receptor Population:	Recreational User
Receptor Age:	Child (1 to 17 years)

				Carcinogenic Risk						Non-Carconogenic Hazard Index			
Medium	**Exposure Medium**	**Exposure Point**	**Chemical**	**Ingestion**	**Dermal**	**Inhalation (Outdoor)**	**Exposure Routes Total**	**Chemical**	**Primary Target Organ**	**Ingestion HQ**	**Dermal HQ**	**Inhalation (Outdoor) HQ**	**Total HI**
			CHLOROBENZENE	NA	NA	NA	NA	CHLOROBENZENE	Kidney; Liver; Reproductive System	NA	NA	2.66E-03	2.66E-03
			CHLOROMETHANE	NA	NA	6.50E-08	6.50E-08	CHLOROMETHANE	NA	NA	NA	4.94E-04	4.94E-04
			CIS-1,2-DICHLOROETHENE	NA	NA	NA	NA	CIS-1,2-DICHLOROETHENE	Blood	NA	NA	6.98E-03	6.98E-03
			1,3- DICHLOROBENZENE			NA		1,3- DICHLOROBENZENE	NA	NA	NA	3.84E-04	3.84E-04
			1,2- DICHLOROETHENE (TOTAL)	NA	NA	NA	NA	1,2- DICHLOROETHENE (TOTAL)	Blood, Liver	NA	NA	3.28E-02	3.28E-02
			ETHYLBENZENE	NA	NA	NA	NA	ETHYLBENZENE	Fetal; Kidney; Liver	NA	NA	7.42E-05	7.42E-05
			TOLUENE	NA	NA	NA	NA	TOLUENE	Fetal; Kidney; Liver; Nervous System; Respiratory	NA	NA	2.12E-04	2.12E-04
			TRANS-1,2-DICHLOROETHENE	NA	NA	NA	NA	TRANS-1,2-DICHLOROETHENE	Blood; Liver	NA	NA	6.52E-04	6.52E-04
			1,2,4- TRIMETHYLBENZENE	NA	NA	NA	NA	1,2,4- TRIMETHYLBENZENE	NA	NA	NA	6.60E-03	6.60E-03
			1,3,5- TRIMETHYLBENZENE	NA	NA	NA	NA	1,3,5- TRIMETHYLBENZENE	NA	NA	NA	4.99E-03	4.99E-03
			VINYL CHLORIDE	NA	NA	9.07E-08	9.07E-08	VINYL CHLORIDE	GI System; Liver; Nervous System	NA	NA	8.48E-04	8.48E-04
			XYLENE (TOTAL)	NA	NA	NA	NA	XYLENE (TOTAL)	Body Weight; Fetal; Nervous System; Respiratory	NA	NA	1.49E-03	1.49E-03
Groundwater	Intermediate and Deep Groundwater	Vapors	**VOCs (ug/L)**					**VOCs (ug/L)**					
			ACETONE	NA	NA	NA	NA	ACETONE	Kidney; Liver	NA	NA	1.25E-04	1.25E-04
			BENZENE	NA	NA	1.40E-06	1.40E-06	BENZENE	Fetal; Immune System; Nervous System; Respiratory	NA	NA	6.73E-03	6.73E-03
			2- BUTANONE	NA	NA	NA	NA	2- BUTANONE	Fetal	NA	NA	5.83E-04	5.83E-04
			CARBON DISULFIDE	NA	NA	NA	NA	CARBON DISULFIDE	Fetal; Nervous System	NA	NA	5.61E-04	5.61E-04
			CHLOROBENZENE	NA	NA	NA	NA	CHLOROBENZENE	Kidney; Liver; Reproductive System	NA	NA	1.01E-02	1.01E-02
			4- METHYL-2-PENTANONE	NA	NA	NA	NA	4- METHYL-2-PENTANONE	Fetal; Kidney; Liver	NA	NA	2.12E-04	2.12E-04
Wetland Surface Water	Surface Water	Surface Water	**INORGANICS (ug/L)**					**INORGANICS (ug/L)**					
			ALUMINUM	NA	NA	NA	NA	ALUMINUM	Body Weight	2.34E-04	2.15E-05	NA	2.56E-04
			ANTIMONY	NA	NA	NA	NA	ANTIMONY	Blood; Whole Body	1.94E-04	1.18E-04	NA	3.12E-04
			ARSENIC	1.63E-05	1.50E-07	NA	1.65E-05	ARSENIC	Cardiovascular System; Fetal; Nervous System; Skin	2.37E-03	2.17E-04	NA	2.59E-03
			BARIUM	NA	NA	NA	NA	BARIUM	Cardiovascular System; Fetal; Kidney; NOEL	5.13E-05	6.72E-05	NA	1.18E-04
			CADMIUM	3.66E-08	6.71E-09	NA	4.33E-08	CADMIUM	Kidney; Respiratory	3.96E-05	7.27E-05	NA	1.12E-04
			CHROMIUM	NA	NA	NA	NA	CHROMIUM	NOEL	1.61E-07	1.14E-06	NA	1.30E-06

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Mare Island, Vallejo, California

Scenario Timeframe:	Current
Receptor Population:	Recreational User
Receptor Age:	Child (1 to 17 years)

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Primary Target Organ	Non-Carconogenic Hazard Index			
				Ingestion	Dermal	Inhalation (Outdoor)	Exposure Routes Total			Ingestion HQ	Dermal HQ	Inhalation (Outdoor) HQ	Total HI
			COBALT	NA	NA	NA	NA	COBALT	Cardiovascular System; Respiratory	1.98E-05	7.27E-07	NA	2.05E-05
			COPPER	NA	NA	NA	NA	COPPER	GI System	3.75E-05	3.44E-06	NA	4.09E-05
			LEAD	2.07E-09	1.90E-12	NA	2.07E-09	LEAD	NA	NA	NA	NA	NA
			MANGANESE	NA	NA	NA	NA	MANGANESE	Nervous System	1.29E-03	2.95E-03	NA	4.23E-03
			MERCURY	NA	NA	NA	NA	MERCURY	Nervous System	3.79E-05	4.98E-05	NA	8.77E-05
			MOLYBDENUM	NA	NA	NA	NA	MOLYBDENUM	Kidney	5.46E-05	5.02E-06	NA	5.97E-05
			NICKEL	NA	NA	NA	NA	NICKEL	Body Weight; Respiratory	2.57E-04	1.18E-04	NA	3.75E-04
			SELENIUM	NA	NA	NA	NA	SELENIUM	Cardiovascular System; Liver; Nervous System; Skin	2.00E-04	1.84E-05	NA	2.19E-04
			SILVER	NA	NA	NA	NA	SILVER	Skin	1.55E-05	2.13E-05	NA	3.68E-05
			VANADIUM	NA	NA	NA	NA	VANADIUM	NOEL	1.01E-04	3.56E-04	NA	4.57E-04
			ZINC	NA	NA	NA	NA	ZINC	Blood	1.97E-06	1.09E-07	NA	2.08E-06
			PESTICIDES (ug/L)					**PESTICIDES (ug/L)**					
			ALPHA BHC	5.92E-09	NA	NA	5.92E-09	ALPHA BHC	Liver	7.74E-07	NA	NA	7.74E-07
			4,4- DDE	1.02E-10	8.40E-10	NA	9.41E-10	4,4- DDE	Liver	2.46E-07	2.03E-05	NA	2.06E-05
			4,4- DDT	3.20E-09	4.96E-08	NA	5.28E-08	4,4- DDT	Liver	7.74E-06	1.20E-03	NA	1.21E-03
			ENDOSULFAN SULFATE	NA	NA	NA	NA	ENDOSULFAN SULFATE	Body Weight; Kidney; Nervous System	4.86E-07	NA	NA	4.86E-07
			ENDRIN	NA	NA	NA	NA	ENDRIN	Liver; Kidney; Nervous System	2.12E-06	1.98E-05	NA	2.19E-05
			GAMMA-BHC	1.34E-09	NA	NA	1.34E-09	GAMMA-BHC	Kidney; Liver	1.67E-06	8.97E-06	NA	1.06E-05
			HEPTACHLOR	1.39E-09	8.86E-10	NA	2.28E-09	HEPTACHLOR	Liver	2.55E-07	1.62E-06	NA	1.88E-06
			PCBs (ug/L)					**PCBs (ug/L)**					
			PCBs (TOTAL)	8.29E-09	2.04E-07	NA	2.12E-07	PCBs (TOTAL)	Immune System	3.42E-05	8.39E-03	NA	8.43E-03
			SVOCs (ug/L)					**SVOCs (ug/L)**					
			BIS(2-ETHYLHEXYL)PHTHALATE	1.27E-08	2.63E-08	NA	3.90E-08	BIS(2-ETHYLHEXYL)PHTHALATE	Liver	1.87E-05	3.87E-04	NA	4.05E-04
			CHRYSENE	2.65E-09	4.51E-08	NA	4.78E-08	CHRYSENE	NA	NA	NA	NA	NA
			2,4 DIMETHYLPHENOL	NA	NA	NA	NA	2,4- DIMETHYLPHENOL	Blood; Nervous System	4.55E-07	9.17E-07	NA	1.37E-06
			DI-N-BUTYLPHTHALATE	NA	NA	NA	NA	DI-N-BUTYLPHTHALATE	Whole Body	2.37E-06	2.55E-05	NA	2.79E-05
			ISOPHORONE	NA	NA	NA	NA	ISOPHORONE	NOEL	2.28E-08	1.56E-08	NA	3.84E-08
			4- METHYLPHENOL	NA	NA	NA	NA	4- METHYLPHENOL	Nervous System; Respiratory	2.36E-04	3.02E-04	NA	5.38E-04
			TPH (mg/L)					**TPH (mg/L)**					
			TPH AS DIESEL	NA	NA	NA	NA	TPH AS DIESEL	NA	NA	NA	NA	NA

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Scenario Timeframe:	Current
Receptor Population:	Recreational User
Receptor Age:	Child (1 to 17 years)

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Primary Target Organ	Non-Carconogenic Hazard Index			
				Ingestion	Dermal	Inhalation (Outdoor)	Exposure Routes Total			Ingestion HQ	Dermal HQ	Inhalation (Outdoor) HQ	Total HI
			TPH AS GASOLINE	NA	NA	NA	NA	TPH AS GASOLINE	NA	NA	NA	NA	NA
			TPH AS MOTOR OIL	NA	NA	NA	NA	TPH AS MOTOR OIL	NA	NA	NA	NA	NA

Cancer Risk Across Soil:	6.3E-05
Cancer Risk Across Groundwater:	2.5E-06
Cancer Risk Across Surface Water:	1.7E-05
Total Cancer Risk:	8.3E-05

HI Across Soil:	1.9E-01
HI Across Groundwater:	8.6E-02
HI Across Surface Water:	2.0E-02
Total HI:	2.9E-01
Total Blood HI:	5.2E-02
Total Body Weight HI:	3.8E-02
Total Cardiovascular System HI:	9.6E-02
Total Fetal/Reproductive System HI:	1.2E-01
Total GI System HI:	4.0E-03
Total Immune System HI:	2.5E-02
Total Kidney HI:	2.4E-02
Total Liver HI:	5.6E-02
Total Nervous System HI:	1.3E-01
Total NOEL HI:	1.8E-02
Total Respiratory HI:	2.9E-02
Total Skin HI:	9.4E-02
Total Whole Body HI:	6.6E-03

Notes:
EPC = Exposure point concentration
GI = Gastrointestinal
HQ = Hazard Quotient
HI = Hazard Index
mg/kg = milligrams per kilogram
mg/L = milligrams per liter
NA = Not Applicable
PCBs = Polychlorinated Biphenyls
RME = Reasonable Maximum Exposure
SVOCs = Semivolatile Organic Compounds
TPH = Total Petroleum Hydrocarbons
VOCs = Volatile Organic Compounds
ug/L = microgram per liter

Table C2-7e
Summary of Estimated Cancer Risks and Hazard Indices for Soil
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	RME Result			
	Baseline Cancer Risk*	**Baseline Hazard Index***	**Residual Cancer Risk**	**Residual Hazard Index**
Recreational User - Current				
Total Risk Across Soil	6.5E-05	2.0E-01	6.3E-05	1.9E-01
Total Risk Across Soil (without arsenic)	1.8E-06	1.1E-01	1.3E-06	9.9E-02

Notes:

RME = Reasonable Maximum Exposure

* - Baseline HHRA did not include full data set; outlier concentrations were excluded.

Table C2-7f
Comparison of EPCs, Cancer Risk Estimates, and Hazard Indices from Baseline Risk Assessment
Non-Tidal Wetland Areas Alternative 5
Soil (0 to 2 feet bgs)
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Chemical of Potential Concern	Baseline Risk Estimates			Alternative WET-5 Estimates		
		Recreational User			Recreational User	
	Medium EPC Value	RME Carcinogenic Risk	RME Total HI	Medium EPC Value	RME Carcinogenic Risk	RME Total HI
INORGANICS (mg/kg)						
ALUMINUM	26852	NA	3.02E-02	26,902	NA	3.03E-02
ANTIMONY	2.9	NA	7.92E-03	2.3	NA	6.28E-03
ARSENIC	22.1	6.31E-05	9.17E-02	21.7	6.19E-05	9.01E-02
BARIUM	86.4	NA	1.38E-03	89.1	NA	1.42E-03
BERYLLIUM	0.6	5.62E-11	3.42E-04	0.4	4.12E-11	2.51E-04
CADMIUM	2.6	3.11E-07	6.75E-03	2.5	3.02E-07	6.57E-03
CHROMIUM	113	NA	8.23E-05	110	NA	7.99E-05
COBALT	21	2.30E-09	1.32E-03	21	2.32E-09	1.33E-03
COPPER	108	NA	2.95E-03	105	NA	2.87E-03
LEAD	184	4.15E-07	NA	56	1.27E-07	NA
MANGANESE	935	NA	1.03E-02	930	NA	1.02E-02
MERCURY	1.2	NA	4.37E-03	1.1	NA	4.01E-03
MOLYBDENUM	4.8	NA	1.05E-03	5.3	NA	1.16E-03
NICKEL	108	1.10E-09	6.25E-03	106	1.08E-09	6.13E-03
SELENIUM	1.1	NA	2.40E-04	1.1	NA	2.40E-04
SILVER	2.2	NA	4.81E-04	2.3	NA	5.03E-04
THALLIUM	0.29	NA	4.80E-03	0.29	NA	4.80E-03
TIN	16.6	NA	3.02E-05	15.9	NA	2.90E-05
VANADIUM	102	NA	1.59E-02	102	NA	1.59E-02
ZINC	200	NA	7.29E-04	194	NA	7.07E-04
PCBs (mg/kg)						
PCBs (TOTAL)	0.17	3.71E-07	1.53E-02	0.05	1.11E-07	4.58E-03
SVOCs (mg/kg)						
ACENAPHTHENE	0.099	NA	3.42E-06	0.057	NA	1.99E-06
ACENAPHTHYLENE	0.127	NA	NA	0.04	NA	NA
ANTHRACENE	0.14	NA	8.55E-07	0.0658	NA	4.02E-07
BENZO(A)ANTHRACENE	0.097	4.93E-08	NA	0.100	5.09E-08	NA
BENZO(A)PYRENE	0.094	4.78E-07	NA	0.096	4.88E-07	NA
BENZO(B)FLUORANTHENE	0.096	4.88E-08	NA	0.083	4.22E-08	NA

Table C2-7f
Comparison of EPCs, Cancer Risk Estimates, and Hazard Indices from Baseline Risk Assessment
Non-Tidal Wetland Areas Alternative 5
Soil (0 to 2 feet bgs)
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Chemical of Potential Concern	Baseline Risk Estimates			Alternative WET-5 Estimates		
		Recreational User			Recreational User	
	Medium EPC Value	RME Carcinogenic Risk	RME Total HI	Medium EPC Value	RME Carcinogenic Risk	RME Total HI
BENZO(G,H,I)PERYLENE	0.084	NA	3.66E-06	0.082	NA	3.58E-06
BENZO(K)FLUORANTHENE	0.11	5.59E-08	NA	0.07	3.41E-08	NA
CHRYSENE	0.087	4.44E-09	NA	0.09	4.60E-09	NA
FLUORANTHENE	0.083	NA	3.62E-06	0.084	NA	3.66E-06
FLUORENE	0.091	NA	4.37E-06	0.054	NA	2.58E-06
INDENO(1,2,3-CD)PYRENE	0.10	5.09E-08	NA	0.10	5.09E-08	NA
NAPHTHALENE	0.091	NA	1.58E-04	0.085	NA	1.47E-04
PHENANTHRENE	0.095	NA	5.53E-07	0.07	NA	4.07E-07
PYRENE	0.079	NA	4.64E-06	0.079	NA	4.64E-06
TPH (mg/kg)						
TPH AS DIESEL	26.2	NA	NA	21.5	NA	NA
TPH AS GASOLINE	0.7	NA	NA	0.6	NA	NA
TPH AS MOTOR OIL	243	NA	NA	215	NA	NA
SOIL TOTALS:		**6.5E-05**	**2.0E-01**		**6.3E-05**	**1.9E-01**

Table C2-7g
Post-Remediation Gray Fox Risk Calculations (Wetland Sediment Residual Concentration)
Shallow Soil (0 - 2 ft bgs) at Hazard Quotient of 1
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Concentrations				Intake (mg/kg BW-day)					Hazard Quotient (HQ) - Low					Hazard Quotient (HQ) - High			
COPEC[a]	Surface Water (mg/L)[b]	Sediment[c]	Small Mammal BAF[d]	Small Mammal Tissue[d]	Surface Water	Sediment	Small Mammal	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Small Mammal	Total Intake		High TRV (mg/kg BW-day)	Surface Water	Sediment	Small Mammal	Total Intake
Metals (mg/kg)																			
Aluminum	12.6	2.69E+04	1.11E-02	2.97E+02	2.72E-01	8.59E+00	3.39E+00	1.23E+01	1.93	1.4E-01	4.5E+00	1.8E+00	6.4E+00	>1	19.3	1.4E-02	4.5E-01	1.8E-01	6.4E-01
Antimony	0.003	2.30E+00	1.22E+00	2.80E+00	6.48E-05	7.34E-04	3.20E-02	3.28E-02	0.06	1.1E-03	1.2E-02	5.4E-01	5.6E-01		23.4	2.8E-06	3.1E-05	1.4E-03	1.4E-03
Arsenic	0.0436	2.17E+01	--	0	9.42E-04	6.93E-03	0.00E+00	7.87E-03	0.32	2.9E-03	2.2E-02	0	2.5E-02		4.7	2.0E-04	1.5E-03	0.0E+00	1.7E-03
Barium	0.24	8.91E+01	9.41E-02	8.39E+00	5.10E-03	2.85E-02	9.57E-02	1.29E-01	51.8	9.8E-05	5.5E-04	1.8E-03	2.5E-03		66.0	7.7E-05	4.3E-04	1.4E-03	2.0E-03
Beryllium		4.40E-01	--	0		1.41E-04	0.00E+00	1.41E-04	0.532		2.6E-04	0	2.6E-04		0.554		2.5E-04	0.0E+00	2.5E-04
Cadmium	0.0016	2.53E+00	--	0	3.46E-05	8.08E-04	0.00E+00	8.42E-04	0.06	5.8E-04	1.3E-02	0	1.4E-02		2.64	1.3E-05	3.1E-04	0.0E+00	3.2E-04
Chromium +3	0.0263	9.13E+01	2.60E-02	2.38E+00	5.68E-04	2.92E-02	2.71E-02	5.69E-02	2	2.4E-04	1.2E-02	1.1E-02	2.4E-02		23.1	2.5E-05	1.3E-03	1.2E-03	2.5E-03
Chromium +6	0.0263	1.83E+01	2.60E-02	4.76E-01	5.68E-04	5.83E-03	5.43E-03	1.18E-02	5.66	1.0E-04	1.0E-03	0	2.1E-03		35.1	1.6E-05	1.7E-04	1.5E-04	3.4E-04
Cobalt	0.0164	2.12E+01	--	0	3.54E-04	6.77E-03	0.00E+00	7.12E-03	1.2	3.0E-04	5.6E-03	0	5.9E-03		20	1.8E-05	3.4E-04	0.0E+00	3.6E-04
Copper	0.233	1.05E+02	3.45E-01	3.63E+01	5.04E-03	3.35E-02	4.14E-01	4.52E-01	2.67	1.9E-03	1.3E-02	1.5E-01	1.7E-01		632	8.0E-06	5.3E-05	6.5E-04	7.2E-04
Lead	0.0031	5.62E+01	6.10E-01	3.43E+01	6.70E-05	1.79E-02	3.91E-01	4.09E-01	1	6.7E-05	1.8E-02	3.9E-01	4.1E-01		241	2.8E-07	7.5E-05	1.6E-03	1.7E-03
Manganese	7.42	9.30E+02	--	0	1.60E-01	2.97E-01	0.00E+00	4.57E-01	13.7	1.2E-02	2.2E-02	0	3.3E-02		159.09	1.0E-03	1.9E-03	0.0E+00	2.9E-03
Mercury	0.00029	1.10E+00	--	0	6.27E-06	3.51E-04	0.00E+00	3.58E-04	0.027	2.3E-04	1.3E-02	0	1.3E-02		0.27	2.3E-05	1.3E-03	0.0E+00	1.3E-03
Molybdenum	0.0312	5.30E+00	--	0	6.74E-04	1.69E-03	0.00E+00	2.37E-03	0.26	2.6E-03	6.5E-03	0	9.1E-03		2.6	2.6E-04	6.5E-04	0.0E+00	9.1E-04
Nickel	0.166	1.06E+02	--	0	3.59E-03	3.38E-02	0.00E+00	3.74E-02	0.13	2.7E-02	2.5E-01	0	2.8E-01		31.6	1.1E-04	1.1E-03	0.0E+00	1.2E-03
Selenium	0.029	1.10E+00	6.12E+00	6.73E+00	6.27E-04	3.51E-04	7.67E-02	7.77E-02	0.05	1.3E-02	7.0E-03	1.5E+00	1.6E+00	>1	1.21	5.2E-04	2.9E-04	6.3E-02	6.4E-02
Silver	0.0019	2.30E+00	--	0	4.11E-05	7.34E-04	0.00E+00	7.76E-04	0.38	1.1E-04	2.0E-03	0	2.1E-03		3.75	1.1E-05	2.0E-04	0.0E+00	2.1E-04
Thallium		2.90E-01	1.01E+00	2.92E-01		9.26E-05	3.33E-03	3.43E-03	0.48		1.9E-04	6.9E-03	7.1E-03		1.43		6.5E-05	2.3E-03	2.4E-03
Tin		1.59E+01	--	0		5.08E-03	0.00E+00	5.08E-03	23.4		2.2E-04	0	2.2E-04		35		1.5E-04	0.0E+00	1.5E-04
Vanadium	0.05	1.02E+02	--	0	1.08E-03	3.26E-02	0.00E+00	3.37E-02	0.21	5.1E-03	1.6E-01	0	1.6E-01		2.1	5.1E-04	1.6E-02	0.0E+00	1.6E-02
Zinc	0.042	1.94E+02	1.11E+00	2.15E+02	9.08E-04	6.20E-02	2.45E+00	2.51E+00	9.6	9.5E-05	6.5E-03	2.6E-01	2.6E-01		411	2.2E-06	1.5E-04	6.0E-03	6.1E-03
Volatile Organics (mg/kg)																			
Acetone		1.00E-01	--	0		3.19E-05	0.00E+00	3.19E-05	10		3.2E-06	0	3.2E-06		50		6.4E-07	0.0E+00	6.4E-07
Benzene			--	0		0	0.00E+00	0.00E+00	26.4		0.0E+00	0	0.0E+00		263.6		0.0E+00	0.0E+00	0.0E+00
Carbon disulfide		7.00E-03	--	0		2.24E-06	0.00E+00	2.24E-06	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Chlorobenzene		5.00E-03	--	0		1.60E-06	0.00E+00	1.60E-06	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
cis-1,2-Dichlorobenzene			--	0		0	0.00E+00	0.00E+00	45.2		0.0E+00	0	0.0E+00		452		0.0E+00	0.0E+00	0.0E+00
Ethylbenzene		1.80E-02	--	0		5.75E-06	0.00E+00	5.75E-06	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
4-Isopropyltoluene			--	0		0	0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Methylene chloride			--	0		0	0.00E+00	0.00E+00	5.9		0.0E+00	0	0.0E+00		50		0.0E+00	0.0E+00	0.0E+00
Naphthalene			--	0		0	0.00E+00	0.00E+00	50		0.0E+00	0	0.0E+00		150		0.0E+00	0.0E+00	0.0E+00
Toluene		3.00E-02	--	0		9.58E-06	0.00E+00	9.58E-06	26		3.7E-07	0	3.7E-07		260		3.7E-08	0.0E+00	3.7E-08
trans-1,2-Dichloroethene			--	0		0	0.00E+00	0.00E+00	45.2		0.0E+00	0	0.0E+00		452		0.0E+00	0.0E+00	0.0E+00
Trichloroethene		7.00E-03	--	0		2.24E-06	0.00E+00	2.24E-06	0.7		3.2E-06	0	3.2E-06		7		3.2E-07	0.0E+00	3.2E-07
1,2,4-Trimethylbenzene			--	0		0	0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
1,3,5-Trimethylbenzene			--	0		0	0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Vinyl chloride			--	0		0	0.00E+00	0.00E+00	0.17		0.0E+00	0	0.0E+00		2		0.0E+00	0.0E+00	0.0E+00
Xylenes		1.50E-01	--	0		4.79E-05	0.00E+00	4.79E-05	2.1		2.3E-05	0	2.3E-05		2.6		1.8E-05	0.0E+00	1.8E-05
Pesticides (mg/kg)																			
alpha-Chlordane		4.80E-03	--	0		1.53E-06	0.00E+00	1.53E-06	4.6		3.3E-07	0	3.3E-07		9.2		1.7E-07	0	1.7E-07
beta-BHC		1.00E-03	--	0		3.19E-07	0.00E+00	3.19E-07	1.6		2.0E-07	0	2.0E-07		3.2		1.0E-07	0	1.0E-07
delta-BHC		2.00E-03	--	0		6.39E-07	0.00E+00	6.39E-07	1.6		4.0E-07	0	4.0E-07		3.2		2.0E-07	0	2.0E-07
2,4-DDD		3.00E-02	1.04E+00	3.13E-02		9.58E-06	3.57E-04	3.67E-04	0.8		1.2E-05	4.5E-04	4.6E-04		16		6.0E-07	2.2E-05	2.3E-05
DDD		9.20E-02	1.04E+00	9.60E-02		2.94E-05	1.10E-03	1.12E-03	0.8		3.7E-05	1.4E-03	1.4E-03		16		1.8E-06	6.8E-05	7.0E-05
DDE	0.0000027	1.80E-02	1.04E+00	1.88E-02	5.84E-08	5.75E-06	2.14E-04	2.20E-04	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
DDTs	0.00014	1.20E-02	1.04E+00	1.25E-02	3.03E-06	3.83E-06	1.43E-04	1.50E-04	0.8	3.8E-06	4.8E-06	1.8E-04	1.9E-04		16	1.9E-07	2.4E-07	8.9E-06	9.4E-06
Dieldrin		2.90E-03	--	0		9.26E-07	0.00E+00	9.26E-07	0.015		6.2E-05	0	6.2E-05		1.7		5.4E-07	0	5.4E-07
Endosulfan I		4.00E-03	--	0		1.28E-06	0.00E+00	1.28E-06	0.15		8.5E-06	0	8.5E-06		1.5		8.5E-07	0	8.5E-07

Table C2-7g
Post-Remediation Gray Fox Risk Calculations (Wetland Sediment Residual Concentration)
Shallow Soil (0 - 2 ft bgs) at Hazard Quotient of 1
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Concentrations				Intake (mg/kg BW-day)					Hazard Quotient (HQ) - Low					Hazard Quotient (HQ) - High			
COPEC[a]	Surface Water (mg/L)[b]	Sediment[c]	Small Mammal BAF[d]	Small Mammal Tissue[d]	Surface Water	Sediment	Small Mammal	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Small Mammal	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Sediment	Small Mammal	Total Intake
Endosulfan sulfate	0.00012	3.00E-03	--	0	2.59E-06	9.58E-07	0.00E+00	3.55E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Endrin	0.000014	2.00E-02	--	0	3.03E-07	6.39E-06	0.00E+00	6.69E-06	0.09	3.3E-06	6.9E-05	0	7.3E-05	0.92	3.3E-07	6.9E-06	0	7.3E-06
Endrin aldehyde		6.00E-03	--	0		1.92E-06	0.00E+00	1.92E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Endrin Ketone		2.30E-03	--	0		7.34E-07	0.00E+00	7.34E-07	NTV	NTV	NTV	NTV	NTV	0.92		8.0E-07	0	8.0E-07
gamma-Chlordane		5.20E-03	--	0		1.66E-06	0.00E+00	1.66E-06	4.6		3.6E-07	0	3.6E-07	9.2		1.8E-07	0	1.8E-07
Heptachlor	0.0000028	2.00E-04	--	0	6.05E-08	6.39E-08	0.00E+00	1.24E-07	0.13	4.7E-07	4.9E-07	0.0	9.6E-07	6.8	8.9E-09	9.4E-09	0	1.8E-08
Heptachlor epoxide		3.00E-04	--	0		9.58E-08	0.00E+00	9.58E-08	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Hexachlorobenzene		8.00E-04	--	0		2.55E-07	0.00E+00	2.55E-07	1.6		1.6E-07	0	1.6E-07	16		1.6E-08	0	1.6E-08
Methoxychlor	0	1.20E-02	--	0		3.83E-06	0.00E+00	3.83E-06	2.5		1.5E-06	0	1.5E-06	50		7.7E-08	0	7.7E-08
Mirex		4.00E-03	--	0		1.28E-06	0.00E+00	1.28E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
trans-Nonachlor		2.40E-03	--	0		7.66E-07	0.00E+00	7.66E-07	4.6		1.7E-07	0	1.7E-07	9.2		8.3E-08	0	8.3E-08
SVOCs (mg/kg)																		
Acenaphthene		5.73E-02	--	0		1.83E-05	0.00E+00	1.83E-05	1.31		1.4E-05	0	1.4E-05	32.8		5.6E-07	0	5.6E-07
Acenaphthylene		3.96E-02	--	0		1.26E-05	0.00E+00	1.26E-05	1.31		9.7E-06	0	9.7E-06	32.8		3.9E-07	0	3.9E-07
Anthracene		6.58E-02	--	0		2.10E-05	0.00E+00	2.10E-05	1.31		1.6E-05	0	1.6E-05	32.8		6.4E-07	0	6.4E-07
Benzo(a)anthracene		1.00E-01	--	0		3.19E-05	0.00E+00	3.19E-05	1.31		2.4E-05	0	2.4E-05	32.8		9.7E-07	0	9.7E-07
Benzo(a)pyrene		9.60E-02	--	0		3.07E-05	0.00E+00	3.07E-05	1.31		2.3E-05	0	2.3E-05	32.8		9.3E-07	0	9.3E-07
Benzo(b)fluoranthene		8.30E-02	--	0		2.65E-05	0.00E+00	2.65E-05	1.31		2.0E-05	0	2.0E-05	32.8		8.1E-07	0	8.1E-07
Benzo(g,h,i)perylene		8.20E-02	--	0		2.62E-05	0.00E+00	2.62E-05	1.31		2.0E-05	0	2.0E-05	32.8		8.0E-07	0	8.0E-07
Benzo(k)fluoranthene		6.70E-02	--	0		2.14E-05	0.00E+00	2.14E-05	1.31		1.6E-05	0	1.6E-05	32.8		6.5E-07	0	6.5E-07
Benzoic acid			--	0		0	0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Bis(2-ethylhexyl)phthalate	0.027	1.20E-01	--	0	5.84E-04	3.83E-05	0.00E+00	6.22E-04	18.3	3.2E-05	2.1E-06	0	3.4E-05	183	3.2E-06	2.1E-07	0	3.4E-06
Butylbenzylphthalate		2.50E-02	--	0		7.98E-06	0.00E+00	7.98E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Carbazole		1.41E-01	--	0		4.50E-05	0.00E+00	4.50E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Chloroaniline		3.00E-03	--	0		9.58E-07	0.00E+00	9.58E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2-Chloropropane		4.33E-02	--	0		1.38E-05	0.00E+00	1.38E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chrysene	0.0002	9.00E-02	--	0	4.32E-06	2.87E-05	0.00E+00	3.31E-05	1.31	3.3E-06	2.2E-05	0	2.5E-05	32.8	1.3E-07	8.8E-07	0	1.0E-06
Dibenzofuran		7.89E-02	--	0		2.52E-05	0.00E+00	2.52E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
3,3-Dichlorobenzidine		1.20E-02	--	0		3.83E-06	0.00E+00	3.83E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2,6-Dinitrotoluene			--	0		0	0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Fluoranthene		8.40E-02	--	0		2.68E-05	0.00E+00	2.68E-05	1.31		2.0E-05	0	2.0E-05	32.8		8.2E-07	0	8.2E-07
Fluorene		5.40E-02	--	0		1.72E-05	0.00E+00	1.72E-05	1.31		1.3E-05	0	1.3E-05	32.8		5.3E-07	0	5.3E-07
Indeno(1,2,3-cd)pyrene		1.00E-01	--	0		3.19E-05	0.00E+00	3.19E-05	1.31		2.4E-05	0	2.4E-05	32.8		9.7E-07	0	9.7E-07
2-Methylnaphthalene		5.23E-02	--	0		1.67E-05	0.00E+00	1.67E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Methylphenol	0.12	6.68E-02	--	0	2.59E-03	2.13E-05	0.00E+00	2.61E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Naphthalene		8.50E-02	--	0		2.71E-05	0.00E+00	2.71E-05	50		5.4E-07	0	5.4E-07	150		1.8E-07	0	1.8E-07
Pentachlorophenol		4.84E-02	--	0		1.55E-05	0.00E+00	1.55E-05	8.42		1.8E-06	0	1.8E-06	27.4		5.6E-07	0	5.6E-07
Phenanthrene		7.00E-02	--	0		2.24E-05	0.00E+00	2.24E-05	1.31		1.7E-05	0	1.7E-05	32.8		6.8E-07	0	6.8E-07
Phenol		1.40E-01	--	0		4.47E-05	0.00E+00	4.47E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pyrene		7.90E-02	--	0		2.52E-05	0.00E+00	2.52E-05	1.31		1.9E-05	0	1.9E-05	32.8		7.7E-07	0	7.7E-07
PCBs (mg/kg)																		
PCBs (Total Congeners)	0.000016	0.05	1.81E+01	9.22E-01	3.46E-07	1.63E-05	1.05E-02	1.05E-02	0.36	9.6E-07	4.5E-05	2.9E-02	2.9E-02	1.28	2.7E-07	1.3E-05	8.2E-03	8.2E-03

>1 = The calculated hazard quotient exceeds 1 (i.e., > 1.5)

Table C2-7g
Post-Remediation Gray Fox Risk Calculations (Wetland Sediment Residual Concentration)
Shallow Soil (0 - 2 ft bgs) at Hazard Quotient of 1
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Concentrations				Intake (mg/kg BW-day)					Hazard Quotient (HQ) - Low					Hazard Quotient (HQ) - High			
COPEC[a]	Surface Water (mg/L)[b]	Sediment[c]	Small Mammal BAF[d]	Small Mammal Tissue[d]	Surface Water	Sediment	Small Mammal	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Small Mammal	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Sediment	Small Mammal	Total Intake

Exposure Assumptions and Equation:[e]

	Value	
Ingestion Rate (IR) prey(dry wt.) =	0.177	kg/day (dry weight)
IRmammal(dry wt.) =	0.177	kg/day (dry weight)
IRsediment (dry wt.)[f] =	0.00496	kg-day (dry weight)
IRsurface water[g] =	0.335	L/day
Cprey =	chem-specific	mg/kg or µg/kg
Csediment =	chem-specific	mg/kg or µg/kg
Csurface water =	chem-specific	mg/L or µg/L
Tissue Moisture (TMsmall mammal) =	68%	percent
Dietary Composition Factor (DCF)[h] =	100%	percent
Site Use Factor (SUF)[i] =	25%	percent
Body Weight (BW) =	3.88	kg

Intake Equation = [IRmammal(dry wt) x (Cprey(mammal, dry wt)/1-TM) x DCF x SUF]/BW] + [(IRsoil x Csoil x DCF x SUF)]/BW] + [(IRsurface water x Csurface water x DCF x SUF)]/BW]

Risk (hazard quotient) = Intake / TRV

Prey tissue(dry wt) = Prey tissue (wet wt.) / (1-Tissue Moisture)

NTV = No toxicity data available.

NA = Not applicable.

Blank cell indicates COPEC was not detected in this medium.

Notes:

a All chemicals detected in sediments are considered as constituents of potential ecological concern.

b All concentrations of constituents in surface water are based on the maximum concentration.

c All concentrations of constituents in sediment are based on the residual concentrations expressed in dry weight.

d Site-specific BAFs (dry weight basis). Calculated small mammal tissue concentrations (sediment concentration x BAF). Tissue concentrations are on a dry weight basis.

e Exposure parameters used to calculate risk are discussed in detail in Section 4.2 of the ERA..

f Ingestion rate of soil based on 2.8 percent of of the prey ingestion rate (dry weight); based on a red fox (Beyer et al. (1994).

g Based on equation for mammals: Water intake (L/day) = $0.099Wt(kg)^{0.90}$ (EPA 1993)

h Dietary composition factor was based on a conservative assumption of 100% dietary intake of small mammals from the site.

i Site use factor was based on a 25% use of the site for the fox's foraging range.

Table C2-7h
Post-Remediation Northern Harrier Risk Calculations (Wetland Sediment Residual Concentration)
Shallow Soil (0 - 2 ft bgs) at Hazard Quotient of 1
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Concentrations				Intake (mg/kg BW-day)					Hazard Quotient (HQ) - Low					Hazard Quotient (HQ) - High			
COPEC[a]	Surface Water (mg/L)[b]	Sediment[c]	Small Mammal BAF[d]	Small Mammal Tissue[d]	Surface Water	Sediment	Small Mammal	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Small Mammal	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Sediment	Small Mammal	Total Intake
Metals (mg/kg)																		
Aluminum	12.6	2.69E+04	1.11E-02	297	2.43E-01	5.12E+00	8.09E+00	1.35E+01	109.7	2.2E-03	4.7E-02	7.4E-02	1.2E-01	1,097	2.2E-04	4.7E-03	7.4E-03	1.2E-02
Antimony	0.003	2.30E+00	1.22E+00	3	5.80E-05	4.38E-04	7.62E-02	7.67E-02	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Arsenic	0.0436	2.17E+01	--	0	8.43E-04	4.13E-03	0.00E+00	4.98E-03	5.5	1.5E-04	7.5E-04	0.0E+00	9.0E-04	22	3.8E-05	1.9E-04	0.0E+00	2.3E-04
Barium	0.24	8.91E+01	9.41E-02	8	4.56E-03	1.70E-02	2.28E-01	2.50E-01	20.8	2.2E-04	8.2E-04	1.1E-02	1.2E-02	41.7	1.1E-04	4.1E-04	5.5E-03	6.0E-03
Beryllium		4.40E-01		0		8.38E-05		8.38E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Cadmium	0.0016	2.53E+00	--	0	3.09E-05	4.82E-04	0.00E+00	5.13E-04	0.08	3.9E-04	6.0E-03	0.0E+00	6.4E-03	10.4	3.0E-06	4.6E-05	0.0E+00	4.9E-05
Chromium +3	0.0263	9.13E+01	2.60E-02	2	5.08E-04	1.74E-02	6.47E-02	8.26E-02	2.66	1.9E-04	6.5E-03	2.4E-02	3.1E-02	2.78	1.8E-04	6.3E-03	2.3E-02	3.0E-02
Chromium +6	0.0263	1.83E+01	2.60E-02	0	5.08E-04	3.48E-03	1.29E-02	1.69E-02	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Cobalt	0.0164	2.12E+01	--	0	3.17E-04	4.04E-03	0.00E+00	4.36E-03	7.61	4.2E-05	5.3E-04	0.0E+00	5.7E-04	17	1.9E-05	2.4E-04	0.0E+00	2.6E-04
Copper	0.233	1.05E+02	3.45E-01	36	4.50E-03	2.00E-02	9.87E-01	1.01E+00	2.3	2.0E-03	8.7E-03	4.3E-01	4.4E-01	52.3	8.6E-05	3.8E-04	1.9E-02	1.9E-02
Lead	0.0031	5.62E+01	6.10E-01	34	5.99E-05	1.07E-02	9.34E-01	9.44E-01	0.014	4.3E-03	7.6E-01	6.7E+01	6.7E+01 >1	8.75	6.8E-06	1.2E-03	1.1E-01	1.1E-01
Manganese	7.42	9.30E+02	--	0	1.43E-01	1.77E-01	0.00E+00	3.21E-01	77.6	1.8E-03	2.3E-03	0.0E+00	4.1E-03	776	1.8E-04	2.3E-04	0.0E+00	4.1E-04
Mercury	0.00029	1.10E+00	--	0	5.60E-06	2.10E-04	0.00E+00	2.15E-04	0.039	1.4E-04	5.4E-03	0.0E+00	5.5E-03	0.18	3.1E-05	1.2E-03	0.0E+00	1.2E-03
Molybdenum	0.0312	5.30E+00	--	0	6.03E-04	1.01E-03	0.00E+00	1.61E-03	3.5	1.7E-04	2.9E-04	0.0E+00	4.6E-04	35.3	1.7E-05	2.9E-05	0.0E+00	4.6E-05
Nickel	0.166	1.06E+02	--	0	3.21E-03	2.02E-02	0.00E+00	2.34E-02	1.38	2.3E-03	1.5E-02	0.0E+00	1.7E-02	56.3	5.7E-05	3.6E-04	0.0E+00	4.2E-04
Selenium	0.029	1.10E+00	6.12E+00	7	5.60E-04	2.10E-04	1.83E-01	1.84E-01	0.23	2.4E-03	9.1E-04	8.0E-01	8.0E-01	0.93	6.0E-04	2.3E-04	2.0E-01	2.0E-01
Silver	0.0019	2.30E+00	--	0	3.67E-05	4.38E-04	0.00E+00	4.75E-04	178.00	2.1E-07	2.5E-06	0.0E+00	2.7E-06	NTV	NTV	NTV	NTV	NTV
Thallium		2.90E-01	1.01E+00	0		5.52E-05	7.95E-03	8.01E-03	0.35		1.6E-04	2.3E-02	2.3E-02	NTV	NTV	NTV	NTV	NTV
Tin		1.59E+01	--	0		3.03E-03	0.00E+00	3.03E-03	6.80		4.5E-04	0.0E+00	4.5E-04	16.9		1.8E-04	0.0E+00	1.8E-04
Vanadium	0.05	1.02E+02	--	0	9.66E-04	1.94E-02	0.00E+00	2.04E-02	11.4	8.5E-05	1.7E-03	0.0E+00	1.8E-03	114	8.5E-06	1.7E-04	0.0E+00	1.8E-04
Zinc	0.042	1.94E+02	1.11E+00	215	8.12E-04	3.70E-02	5.85E+00	5.89E+00	17.2	4.7E-05	2.1E-03	3.4E-01	3.4E-01	172	4.7E-06	2.1E-04	3.4E-02	3.4E-02
Volatile Organics (mg/kg)																		
Acetone		1.00E-01	--	0		1.90E-05	0.00E+00	1.90E-05	52		3.7E-07	0.0E+00	3.7E-07	520		3.7E-08	0.0E+00	3.7E-08
Benzene			--	0			0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Carbon disulfide		7.00E-03	--	0		1.33E-06	0.00E+00	1.33E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chlorobenzene		5.00E-03	--	0		9.52E-07	0.00E+00	9.52E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
cis-1,2-Dichlorobenzene			--	0			0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Ethylbenzene		1.80E-02	--	0		3.43E-06	0.00E+00	3.43E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Isopropyltoluene			--	0			0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Methylene chloride			--	0			0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Naphthalene			--	0			0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Toluene		3.00E-02	--	0		5.71E-06	0.00E+00	5.71E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
trans-1,2-Dichloroethene			--	0			0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Trichloroethene		7.00E-03	--	0		1.33E-06	0.00E+00	1.33E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
1,2,4-Trimethylbenzene			--	0			0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
1,3,5-Trimethylbenzene			--	0			0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Vinyl chloride			--	0			0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Xylenes		1.50E-01	--	0		2.86E-05	0.00E+00	2.86E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pesticides (mg/kg)																		
alpha-Chlordane		4.80E-03	--	0		9.14E-07	0.00E+00	9.14E-07	0.0014		6.5E-04	0.0E+00	6.5E-04	0.014		6.5E-05	0.0E+00	6.5E-05
beta-BHC		1.00E-03	--	0		1.90E-07	0.00E+00	1.90E-07	0.56		3.4E-07	0.0E+00	3.4E-07	2.25		8.5E-08	0.0E+00	8.5E-08
delta-BHC		2.00E-03	--	0		3.81E-07	0.00E+00	3.81E-07	0.56		6.8E-07	0.0E+00	6.8E-07	2.25		1.7E-07	0.0E+00	1.7E-07
2,4-DDD		3.00E-02	1.04E+00	0		5.71E-06	8.52E-04	8.58E-04	0.009		6.3E-04	9.5E-02	9.5E-02	1.5		3.8E-06	5.7E-04	5.7E-04
DDD		9.20E-02	1.04E+00	0		1.75E-05	2.61E-03	2.63E-03	0.009		1.9E-03	2.9E-01	2.9E-01	1.5		1.2E-05	1.7E-03	1.8E-03
DDE	0.0000027	1.80E-02	1.04E+00	0	5.22E-08	3.43E-06	5.11E-04	5.15E-04	NTV	NTV	NTV	NTV	NTV	0.6	8.7E-08	5.7E-06	8.5E-04	8.6E-04
DDTs	0.00014	1.20E-02	1.04E+00	0	2.71E-06	2.29E-06	3.41E-04	3.46E-04	0.009	3.0E-04	2.5E-04	3.8E-02	3.8E-02	1.5	1.8E-06	1.5E-06	2.3E-04	2.3E-04

Table C2-7h
Post-Remediation Northern Harrier Risk Calculations (Wetland Sediment Residual Concentration)
Shallow Soil (0 - 2 ft bgs) at Hazard Quotient of 1
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Concentrations				Intake (mg/kg BW-day)					Hazard Quotient (HQ) - Low					Hazard Quotient (HQ) - High			
COPEC[a]	Surface Water (mg/L)[b]	Sediment[c]	Small Mammal BAF[d]	Small Mammal Tissue[d]	Surface Water	Sediment	Small Mammal	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Small Mammal	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Sediment	Small Mammal	Total Intake
Dieldrin		2.90E-03	--	0		5.52E-07	0.00E+00	5.52E-07	0.0709		7.8E-06	0.0E+00	7.8E-06	0.98		5.6E-07	0.0E+00	5.6E-07
Endosulfan I		4.00E-03	--	0		7.62E-07	0.00E+00	7.62E-07	10		7.6E-08	0.0E+00	7.6E-08	100		7.6E-09	0.0E+00	7.6E-09
Endosulfan sulfate	0.00012	3.00E-03	--	0	2.32E-06	5.71E-07	0.00E+00	2.89E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Endrin	0.000014	2.00E-02	--	0	2.71E-07	3.81E-06	0.00E+00	4.08E-06	0.3	9.0E-07	1.3E-05	0.0E+00	1.4E-05	3	9.0E-08	1.3E-06	0.0E+00	1.4E-06
Endrin aldehyde		6.00E-03	--	0		1.14E-06	0.00E+00	1.14E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Endrin Ketone		2.30E-03	--	0		4.38E-07	0.00E+00	4.38E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
gamma-Chlordane		5.20E-03	--	0		9.90E-07	0.00E+00	9.90E-07	0.0014		7.1E-04	0.0E+00	7.1E-04	0.014		7.1E-05	0.0E+00	7.1E-05
Heptachlor	0.0000028	2.00E-04	--	0	5.41E-08	3.81E-08	0.00E+00	9.22E-08	0.065	8.3E-07	5.9E-07	0.0E+00	1.4E-06	0.65	8.3E-08	5.9E-08	0.0E+00	1.4E-07
Heptachlor epoxide		3.00E-04	--	0		5.71E-08	0.00E+00	5.71E-08	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Hexachlorobenzene		8.00E-04	--	0		1.52E-07	0.00E+00	1.52E-07	0.23		6.6E-07	0.0E+00	6.6E-07	2.3		6.6E-08	0.0E+00	6.6E-08
Methoxychlor		1.20E-02	--	0		2.29E-06	0.00E+00	2.29E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Mirex		4.00E-03	--	0		7.62E-07	0.00E+00	7.62E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
trans-Nonachlor		2.40E-03	--	0		4.57E-07	0.00E+00	4.57E-07	0.0014		3.3E-04	0.0E+00	3.3E-04	0.014		3.3E-05	0.0E+00	3.3E-05
SVOCs (mg/kg)																		
Acenaphthene		5.73E-02	--	0		1.09E-05	0.00E+00	1.09E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Acenaphthylene		3.96E-02	--	0		7.54E-06	0.00E+00	7.54E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Anthracene		6.58E-02	--	0		1.25E-05	0.00E+00	1.25E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(a)anthracene		1.00E-01	--	0		1.90E-05	0.00E+00	1.90E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(a)pyrene		9.60E-02	--	0		1.83E-05	0.00E+00	1.83E-05	0.001		1.8E-02	0.0E+00	1.8E-02	0.01		1.8E-03	0.0E+00	1.8E-03
Benzo(b)fluoranthene		8.30E-02	--	0		1.58E-05	0.00E+00	1.58E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(g,h,i)perylene		8.20E-02	--	0		1.56E-05	0.00E+00	1.56E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(k)fluoranthene		6.70E-02	--	0		1.28E-05	0.00E+00	1.28E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzoic acid			--	0			0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Bis(2-ethylhexyl)phthalate	0.027	1.20E-01	--	0	5.22E-04	2.29E-05	0.00E+00	5.45E-04	1.1	4.7E-04	2.1E-05	0.0E+00	5.0E-04	11	4.7E-05	2.1E-06	0.0E+00	5.0E-05
Butylbenzylphthalate		2.50E-02	--	0		4.76E-06	0.00E+00	4.76E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Carbazole		1.41E-01	--	0		2.69E-05	0.00E+00	2.69E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Chloroaniline		3.00E-03	--	0		5.71E-07	0.00E+00	5.71E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2-Chloropropane		4.33E-02	--	0		8.25E-06	0.00E+00	8.25E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chrysene	0.0002	9.00E-02	--	0	3.87E-06	1.71E-05	0.00E+00	2.10E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Dibenzofuran		7.89E-02	--	0		1.50E-05	0.00E+00	1.50E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
3,3-Dichlorobenzidine		1.20E-02	--	0		2.29E-06	0.00E+00	2.29E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2,6-Dinitrotoluene			--	0			0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Fluoranthene		8.40E-02	--	0		1.60E-05	0.00E+00	1.60E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Fluorene		5.40E-02	--	0		1.03E-05	0.00E+00	1.03E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Indeno(1,2,3-cd)pyrene		1.00E-01	--	0		1.90E-05	0.00E+00	1.90E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2-Methylnaphthalene		5.23E-02	--	0		9.96E-06	0.00E+00	9.96E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Methylphenol	0.12	6.68E-02	--	0	2.32E-03	1.27E-05	0.00E+00	2.33E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Naphthalene		8.50E-02	--	0		1.62E-05	0.00E+00	1.62E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pentachlorophenol		4.84E-02	--	0		9.22E-06	0.00E+00	9.22E-06	6.7		1.4E-06	0.0E+00	1.4E-06	22.5		4.1E-07	0.0E+00	4.1E-07
Phenanthrene		7.00E-02	--	0		1.33E-05	0.00E+00	1.33E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Phenol		1.40E-01	--	0		2.67E-05	0.00E+00	2.67E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pyrene		7.90E-02	--	0		1.50E-05	0.00E+00	1.50E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
PCBs (mg/kg)																		
PCBs (Total Congeners)	0.000016	5.10E-02	1.81E+01	1	3.09E-07	9.71E-06	2.51E-02	2.51E-02	0.09	3.4E-06	1.1E-04	2.8E-01	2.8E-01	1.27	2.4E-07	7.6E-06	2.0E-02	2.0E-02

>1 = The calculated hazard quotient exceeds 1 (i.e., > 1.5)

Table C2-7h
Post-Remediation Northern Harrier Risk Calculations (Wetland Sediment Residual Concentration)
Shallow Soil (0 - 2 ft bgs) at Hazard Quotient of 1
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Concentrations				Intake (mg/kg BW-day)					Hazard Quotient (HQ) - Low					Hazard Quotient (HQ) - High			
COPEC[a]	Surface Water (mg/L)[b]	Sediment[c]	Small Mammal BAF[d]	Small Mammal Tissue[d]	Surface Water	Sediment	Small Mammal	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Small Mammal	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Sediment	Small Mammal	Total Intake

Exposure Assumptions and Equation:[e]

		Value	
Ingestion Rate (IR) prey(dry wt.)	=	0.048	
IRsmall mammal (dry wt.)	=	0.048	kg/day (dry weight)
IRsoil (dry wt.)[f]	=	0.000336	kg-day (dry weight)
IRsurface water[g]	=	0.034	L/day
Cprey	=	chem-specific	mg/kg or µg/kg
Csoil	=	chem-specific	mg/kg or µg/kg
Csurface water	=	chem-specific	mg/L or µg/L
Tissue Moisture (TMsmall mammal)	=	68%	percent
Dietary Composition Factor (DCF)[h]	=	100%	percent
Site Use Factor (SUF)[i]	=	25%	percent
Body Weight (BW)	=	0.441	kg

Intake Equation = [IRmammal(dry wt) x (Cprey(mammal, dry wt)/1-TM) x DCF x SUF]/BW] + [(IRsoil x Csoil x DCF x SUF)]/BW] + [(IRsurface water x Csurface water x DCF x SUF)]/BW]

Risk (hazard quotient) = Intake / TRV

Prey tissue(dry wt) = Prey tissue (wet wt.) / (1-Tissue Moisture)

NTV = No toxicity data available.

NA = Not applicable.

Blank cell indicates COPEC was not detected in this medium.

Notes:

a All chemicals detected in sediments are considered as constituents of potential ecological concern.

b All concentrations of constituents in surface water are based on the maximum concentration.

c All concentrations of constituents in sediment are based on the residual concentrations expressed in dry weight.

d Site-specific BAFs (dry weight basis). Calculated small mammal tissue concentrations (sediment concentration x BAF). Tissue concentrations are on a dry weight basis.

e Exposure parameters used to calculate risk are discussed in detail in Section 4.2 of ERA.

f Ingestion rate of sedimentl based on 0.7 percent of of the prey ingestion rate (dry weight); based on rate for bald eagle in Pascoe et al. (1996).

g Based on equation for birds: Water intake (L/day) = $0.059Wt(kg)^{0.67}$ (EPA 1993)

h Dietary composition factor was based on a conservative assumption of 100% dietary intake of small mammals from the site.

i Site use factor was based on 25% use of the site for the harrier's foraging range.

Table C2-7i
Post-Remediation Mallard (Non-Breeding) Risk Calculations (Wetland Sediment Residual Concentration)
Shallow Soil (0 - 2 ft bgs) at Hazard Quotient of 1
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Concentrations				Intake (mg/kg BW-day)					Hazard Quotient (HQ) - Low					Hazard Quotient (HQ) - High			
COPEC[a]	Surface Water (mg/L)[b]	Sediments[c]	Plant BAF[d]	Plant Tissue[d]	Surface Water	Sediment	Plant	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Plant	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Sediment	Plant	Total Intake
Metals (mg/kg)																		
Aluminum	12.6	2.69E+04	7.56E-03	2.03E+02	7.60E-02	8.70E+00	1.99E+00	1.08E+01	109.7	6.9E-04	7.9E-02	1.8E-02	9.8E-02	1,097	6.9E-05	7.9E-03	1.8E-03	9.8E-03
Antimony	0.003	2.30E+00	2.27E-01	5.23E-01	1.81E-05	7.44E-04	5.12E-03	5.88E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Arsenic	0.0436	2.17E+01	1.15E-01	2.50E+00	2.63E-04	7.01E-03	2.45E-02	3.18E-02	5.5	4.8E-05	1.3E-03	4.5E-03	5.8E-03	22	1.2E-05	3.2E-04	1.1E-03	1.4E-03
Barium	0.24	8.91E+01	7.87E-02	7.01E+00	1.42E-03	2.88E-02	6.87E-02	9.89E-02	20.8	6.8E-05	1.4E-03	3.3E-03	4.8E-03	41.7	3.4E-05	6.9E-04	1.6E-03	2.4E-03
Beryllium		4.40E-01	--	0		1.42E-04	0	1.42E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Cadmium	0.0016	2.53E+00	1.40E+00	3.53E+00	9.65E-06	8.18E-04	3.46E-02	3.54E-02	0.08	1.2E-04	1.0E-02	4.3E-01	4.4E-01	10.40	9.3E-07	7.9E-05	3.3E-03	3.4E-03
Chromium +3	0.0263	9.13E+01	--	0	1.59E-04	2.95E-02	0	2.97E-02	2.66	6.0E-05	1.1E-02	0.0E+00	1.1E-02	2.78	5.7E-05	1.1E-02	0.0E+00	1.1E-02
Chromium +6	0.0263	1.83E+01	--	0	1.59E-04	5.91E-03	0	6.06E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Cobalt	0.0164	2.12E+01	--	0	9.89E-05	6.85E-03	0	6.95E-03	7.61	1.3E-05	9.0E-04	0.0E+00	9.1E-04	17	5.8E-06	4.0E-04	0.0E+00	4.1E-04
Copper	0.233	1.05E+02	5.68E-02	5.97E+00	1.40E-03	3.39E-02	5.85E-02	9.38E-02	2.3	6.1E-04	1.5E-02	2.5E-02	4.1E-02	52.3	2.7E-05	6.5E-04	1.1E-03	1.8E-03
Lead	0.0031	5.62E+01	7.51E-03	4.22E-01	1.87E-05	1.82E-02	4.13E-03	2.23E-02	0.014	1.3E-03	1.3E+00	3.0E-01	1.6E+00 >1	8.75	2.1E-06	2.1E-03	4.7E-04	2.6E-03
Manganese	7.42	9.30E+02	4.89E-01	4.55E+02	4.47E-02	3.01E-01	4.46E+00	4.80E+00	77.6	5.8E-04	3.9E-03	5.7E-02	6.2E-02	776	5.8E-05	3.9E-04	5.7E-03	6.2E-03
Mercury	0.00029	1.10E+00	--	0	1.75E-06	3.56E-04	0	3.57E-04	0.039	4.5E-05	9.1E-03	0.0E+00	9.2E-03	0.18	9.7E-06	2.0E-03	0.0E+00	2.0E-03
Molybdenum	0.0312	5.30E+00	--	0	1.88E-04	1.71E-03	0	1.90E-03	3.5	5.4E-05	4.9E-04	0.0E+00	5.4E-04	35.3	5.3E-06	4.9E-05	0.0E+00	5.4E-05
Nickel	0.166	1.06E+02	1.39E-02	1.47E+00	1.00E-03	3.43E-02	1.44E-02	4.97E-02	1.38	7.3E-04	2.5E-02	1.0E-02	3.6E-02	56.3	1.8E-05	6.1E-04	2.6E-04	8.8E-04
Selenium	0.029	1.10E+00	--	0	1.75E-04	3.56E-04	0	5.30E-04	0.23	7.6E-04	1.5E-03	0.0E+00	2.3E-03	0.93	1.9E-04	3.8E-04	0.0E+00	5.7E-04
Silver	0.0019	2.30E+00	--	0	1.15E-05	7.44E-04	0	7.55E-04	178.00	6.4E-08	4.2E-06	0.0E+00	4.2E-06	NTV	NTV	NTV	NTV	NTV
Thallium		2.90E-01	--	0		9.37E-05	0	9.37E-05	0.35		2.7E-04	0.0E+00	2.7E-04	NTV	NTV	NTV	NTV	NTV
Tin		1.59E+01	1.55E+00	2.47E+01		5.14E-03	2.42E-01	2.47E-01	6.80		7.6E-04	3.6E-02	3.6E-02	16.9		3.0E-04	1.4E-02	1.5E-02
Vanadium	0.05	1.02E+02	2.20E-02	2.25E+00	3.01E-04	3.30E-02	2.20E-02	5.53E-02	11.4	2.6E-05	2.9E-03	1.9E-03	4.9E-03	114	2.6E-06	2.9E-04	1.9E-04	4.9E-04
Zinc	0.042	1.94E+02	8.47E-02	1.64E+01	2.53E-04	6.27E-02	1.61E-01	2.24E-01	17.2	1.5E-05	3.6E-03	9.4E-03	1.3E-02	172	1.5E-06	3.6E-04	9.4E-04	1.3E-03
Volatile Organics (mg/kg)																		
Acetone		1.00E-01	--	0		3.23E-05	0	3.23E-05	52		6.2E-07	0.0E+00	6.2E-07	520		6.2E-08	0.0E+00	6.2E-08
Benzene			--	0			0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Carbon disulfide		7.00E-03	--	0		2.26E-06	0	2.26E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chlorobenzene		5.00E-03	--	0		1.62E-06	0	1.62E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
cis-1,2-Dichlorobenzene			--	0			0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Ethylbenzene		1.80E-02	--	0		5.82E-06	0	5.82E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Isopropyltoluene			--	0			0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Methylene chloride			--	0			0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Naphthalene			--	0			0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Toluene		3.00E-02	--	0		9.70E-06	0	9.70E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
trans-1,2-Dichloroethene			--	0			0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Trichloroethene		7.00E-03	--	0		2.26E-06	0	2.26E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
1,2,4-Trimethylbenzene			--	0			0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
1,3,5-Trimethylbenzene			--	0			0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Vinyl chloride			--	0			0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Xylenes		1.50E-01	--	0		4.85E-05	0	4.85E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pesticides (mg/kg)																		
alpha-Chlordane		4.80E-03	--	0		1.55E-06	0	1.55E-06	0.0014		1.1E-03	0.0E+00	1.1E-03	0.014		1.1E-04	0.0E+00	1.1E-04
beta-BHC		1.00E-03	--	0		3.23E-07	0	3.23E-07	0.56		5.8E-07	0.0E+00	5.8E-07	2.25		1.4E-07	0.0E+00	1.4E-07
delta-BHC		2.00E-03	--	0		6.47E-07	0	6.47E-07	0.56		1.2E-06	0.0E+00	1.2E-06	2.25		2.9E-07	0.0E+00	2.9E-07
2,4-DDD		3.00E-02	--	0		9.70E-06	0	9.70E-06	0.009		1.1E-03	0.0E+00	1.1E-03	1.5		6.5E-06	0.0E+00	6.5E-06
4,4-DDD		9.20E-02	--	0		2.97E-05	0	2.97E-05	0.009		3.3E-03	0.0E+00	3.3E-03	1.5		2.0E-05	0.0E+00	2.0E-05
DDE	0.0000027	1.80E-02	--	0	1.63E-08	5.82E-06	0	5.84E-06	NTV	NTV	NTV	NTV	NTV	0.6	2.7E-08	9.7E-06	0.0E+00	9.7E-06
DDTs	0.00014	1.20E-02	--	0	8.44E-07	3.88E-06	0	4.72E-06	0.009	9.4E-05	4.3E-04	0.0E+00	5.2E-04	1.5	5.6E-07	2.6E-06	0.0E+00	3.1E-06
Dieldrin		2.90E-03	--	0		9.37E-07	0	9.37E-07	0.0709		1.3E-05	0.0E+00	1.3E-05	0.98		9.6E-07	0.0E+00	9.6E-07
Endosulfan I		4.00E-03	--	0		1.29E-06	0	1.29E-06	10		1.3E-07	0.0E+00	1.3E-07	100		1.3E-08	0.0E+00	1.3E-08
Endosulfan sulfate	0.00012	3.00E-03	--	0	7.24E-07	9.70E-07	0	1.69E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Endrin	0.000014	2.00E-02	--	0	8.44E-08	6.47E-06	0	6.55E-06	0.3	2.8E-07	2.2E-05	0.0E+00	2.2E-05	3	2.8E-08	2.2E-06	0.0E+00	2.2E-06
Endrin aldehyde		6.00E-03	--	0		1.94E-06	0	1.94E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Endrin Ketone		2.30E-03	--	0		7.44E-07	0	7.44E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
gamma Chlordane		5.20E-03	--	0		1.68E-06	0	1.68E-06	0.0014		1.2E-03	0.0E+00	1.2E-03	0.014		1.2E-04	0.0E+00	1.2E-04
Heptachlor	0.0000028	2.00E-04	--	0	1.69E-08	6.47E-08	0	8.15E-08	0.065	2.6E-07	9.9E-07	0.0E+00	1.3E-06	0.65	2.6E-08	9.9E-08	0.0E+00	1.3E-07
Heptachlor epoxide		3.00E-04	--	0		9.70E-08	0	9.70E-08	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Hexachlorobenzene		8.00E-04	--	0		2.59E-07	0	2.59E-07	0.23		1.1E-06	0.0E+00	1.1E-06	2.3		1.1E-07	0.0E+00	1.1E-07
Methoxychlor		1.20E-02	--	0		3.88E-06	0	3.88E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Mirex		4.00E-03	--	0		1.29E-06	0	1.29E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
trans-Nonachlor		2.40E-03	--	0		7.76E-07	0	7.76E-07	0.0014		5.5E-04	0.0E+00	5.5E-04	0.014		5.5E-05	0.0E+00	5.5E-05

Table C2-7i
Post-Remediation Mallard (Non-Breeding) Risk Calculations (Wetland Sediment Residual Concentration)
Shallow Soil (0 - 2 ft bgs) at Hazard Quotient of 1
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Concentrations				Intake (mg/kg BW-day)					Hazard Quotient (HQ) - Low					Hazard Quotient (HQ) - High			
COPEC[a]	Surface Water (mg/L)[b]	Sediments[c]	Plant BAF[d]	Plant Tissue[d]	Surface Water	Sediment	Plant	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Plant	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Sediment	Plant	Total Intake
SVOCs (mg/kg)																		
Acenaphthene		5.73E-02	--	0		1.85E-05	0	1.85E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Acenaphthylene		3.96E-02	--	0		1.28E-05	0	1.28E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Anthracene		6.58E-02	1.89E+00	1.24E-01		2.13E-05	1.22E-03	1.24E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(a)anthracene		1.00E-01	--	0		3.23E-05	0	3.23E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(a)pyrene		9.60E-02	--	0		3.10E-05	0	3.10E-05	0.001		3.1E-02	0.0E+00	3.1E-02	0.01		3.1E-03	0.0E+00	3.1E-03
Benzo(b)fluoranthene		8.30E-02	--	0		2.68E-05	0	2.68E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(ghi)perylene		8.20E-02	--	0		2.65E-05	0	2.65E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(k)fluoranthene		6.70E-02	--	0		2.17E-05	0	2.17E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzoic acid			--	0			0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Bis(2-ethylhexyl)phthalate	0.027	1.20E-01	--	0	1.63E-04	3.88E-05	0	2.02E-04	1.1	1.5E-04	3.5E-05	0.0E+00	1.8E-04	11	1.5E-05	3.5E-06	0.0E+00	1.8E-05
Butylbenzylphthalate		2.50E-02	--	0		8.08E-06	0	8.08E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Carbazole		1.41E-01	--	0		4.56E-05	0	4.56E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Chloroaniline		3.00E-03	--	0		9.70E-07	0	9.70E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2-Chloropropane		4.33E-02	--	0		1.40E-05	0	1.40E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chrysene	0.0002	9.00E-02	--	0	1.21E-06	2.91E-05	0	3.03E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Dibenzofuran		7.89E-02	--	0		2.55E-05	0	2.55E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
3,3-Dichlorobenzidine		1.20E-02	--	0		3.88E-06	0	3.88E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2,6-Dinitrotoluene			--	0			0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Fluoranthene		8.40E-02	1.17E+00	9.86E-02		2.72E-05	9.66E-04	9.93E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Fluorene		5.40E-02	--	0		1.75E-05	0	1.75E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Indeno(123,cd)pyrene		1.00E-01	--	0		3.23E-05	0	3.23E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2-Methylnaphthalene		5.23E-02	--	0		1.69E-05	0	1.69E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Methylphenol	0.12	6.68E-02	--	0	7.24E-04	2.16E-05	0	7.45E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Naphthalene		8.50E-02	--	0		2.75E-05	0	2.75E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pentachlorophenol		4.84E-02	--	0		1.56E-05	0	1.56E-05	6.7		2.3E-06	0.0E+00	2.3E-06	22.5		7.0E-07	0.0E+00	7.0E-07
Phenanthrene		7.00E-02	1.64E+00	1.15E-01		2.26E-05	1.12E-03	1.15E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Phenol		1.40E-01	--	0		4.53E-05	0	4.53E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pyrene		7.90E-02	--	0		2.55E-05	0	2.55E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
PCBs (mg/kg)																		
PCBs (TOTAL)-congeners	0.000016	5.10E-02	1.09E-01	5.57E-03	9.65E-08	1.65E-05	5.46E-05	7.12E-05	0.09	1.1E-06	1.8E-04	6.1E-04	7.9E-04	1.27	7.6E-08	1.3E-05	4.3E-05	5.6E-05
																		>1 = The calculated hazard quotient exceeds 1 (i.e., > 1.5)

Exposure Assumptions and Equation:[e]

	Value	Units
Ingestion Rate (IR) prey(dry wt.) =	0.0917	kg/day (dry weight)
IRplant(dry wt.) =	0.0917	kg/day (dry weight)
IRsediment (dry wt.)[f] =	0.00303	kg/day (dry weight)
Cprey =	chem-specific	kg-day (dry weight)
Csediment =	chem-specific	kg-day (dry weight)
Tissue Moisture (TMplant) =	8.5%	percent
IRsurface water[g] =	0.056	L/day
Csurface water =	chem-specific	mg/L or µg/L
Dietary Composition Factor (DCF)[h] =	100%	percent
Site Use Factor (SUF)[i] =	10%	percent
Body Weight (BW) =	0.9361	kg

Intake Equation = [IRplant (dry wt) x [Cprey (plant, wet wt) /1-TM] x DCF x SUF]/BW + [IRsediment x Csediment x DCF x SUF)]/BW +[(IRsurface water x Csurface water x DCF x SUF)]/BW

Risk (hazard quotient) = Intake / TRV

NTV = Not toxicity data available.

Prey tissue(dry wt) = Prey tissue (wet wt.) / (1-Tissue Moisture)

NA = Not available.

Blank cell indicates COPEC was not detected in this medium.

Notes:

a All chemicals detected in sediments are considered as constituents of potential ecological concern.

b All concentrations of constituents in surface water are based on the maximum concentration.

c All concentrations of constituents in sediment are based on the residual concentrations expressed in dry weight.

d Site-specific BAFs (dry weight basis). Calculated plant tissue concentrations (sediment concentration x BAF). Tissue concentrations are on a dry weight basis.

e Exposure parameters used to calculate risk are discussed in detail in Section 4.2 of ERA.

f Ingestion rate of sediment based on 3.3 percent of of the prey ingestion rate (dry weight); based on mallard data from Beyer et al. (1994).

g Based on equation for birds: Water intake (L/day) = $0.059Wt(kg)^{0.67}$ (EPA 1993)

h Dietary composition factor was based on a conservative assumption of 100% dietary intake of plants from the site.

i Site use factor was based on 10% use of the site for the mallard's foraging range.

Table C2-7j
Post-Remediation Mallard (Breeding) Risk Calculations (Wetland Sediment Residual Concentration)
Shallow Soil (0 - 2 ft bgs) at Hazard Quotient of 1
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Point Concentration						Intake (mg/kg BW-day)					Low TRV	Hazard Quotient (HQ) - Low					High TRV	Hazard Quotient (HQ) - High				
COPEC[a]	Surface Water (mg/L)[b]	Sediments[c]	Plant BAF[d]	Plant Tissue[d]	Invertebrate BAF[d]	Invertebrate Tissue[d]	Surface Water	Sediment	Plant	Invertebrate	Total Intake (mg/kg/day)	(mg/kg BW-day)	Surface Water	Sediment	Plant	Invertebrate	Total Intake	(mg/kg BW-day)	Surface Water	Sediment	Plant	Invertebrate	Total Intake
Metals (mg/kg)																							
Aluminum	12.6	2.69E+04	7.56E-03	2.03E+02	1.93E-01	5.19E+03	3.04E-01	3.48E+01	1.99E+00	1.52E+02	1.90E+02	109.7	2.8E-03	3.2E-01	1.8E-02	1.4E+00	1.7E+00 >1	1,097	2.8E-04	3.2E-02	1.8E-03	1.4E-01	1.7E-01
Antimony	0.003	2.30E+00	2.27E-01	5.23E-01	2.32E-01	5.33E-01	7.24E-05	2.97E-03	5.12E-03	1.57E-02	2.38E-02	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Arsenic	0.0436	2.17E+01	1.15E-01	2.50E+00	1.92E-01	4.16E+00	1.05E-03	2.81E-02	2.45E-02	1.22E-01	1.76E-01	5.5	1.9E-04	5.1E-03	4.5E-03	2.2E-02	3.2E-02	22	4.8E-05	1.3E-03	1.1E-03	5.6E-03	8.0E-03
Barium	0.24	8.91E+01	7.87E-02	7.01E+00	1.50E+00	1.33E+02	5.69E-03	1.15E-01	6.87E-02	3.92E+00	4.11E+00	20.8	2.7E-04	5.5E-03	3.3E-03	1.9E-01	2.0E-01	41.7	1.4E-04	2.8E-03	1.6E-03	9.4E-02	9.9E-02
Beryllium		4.40E-01	--	0	--	0		5.69E-04	0.00E+00	0.00E+00	5.69E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Cadmium	0.0016	2.53E+00	1.40E+00	3.53E+00	2.15E-01	5.44E-01	3.86E-05	3.27E-03	3.46E-02	1.60E-02	5.39E-02	0.08	4.8E-04	4.1E-02	4.3E-01	2.0E-01	6.7E-01	10.40	3.7E-06	3.1E-04	3.3E-03	1.5E-03	5.2E-03
Chromium +3	0.0263	9.13E+01	--	0	5.53E-01	5.05E+01	6.34E-04	1.18E-01	0.00E+00	1.49E+00	1.60E+00	2.66	2.4E-04	4.4E-02	0.0E+00	5.6E-01	6.0E-01	2.78	2.3E-04	4.2E-02	0.0E+00	5.3E-01	5.8E-01
Chromium +6	0.0263	1.83E+01	--	0	5.53E-01	1.01E+01	6.34E-04	2.36E-02	0.00E+00	2.97E-01	3.21E-01	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Cobalt	0.0164	2.12E+01	--	0	--	0	3.96E-04	2.74E-02	0.00E+00	0.00E+00	2.78E-02	7.61	5.2E-05	3.6E-03	0.0E+00	0.0E+00	3.7E-03	17	2.3E-05	1.6E-03	0.0E+00	0.0E+00	1.6E-03
Copper	0.233	1.05E+02	5.68E-02	5.97E+00	6.67E-01	7.00E+01	5.62E-03	1.36E-01	5.85E-02	2.06E+00	2.26E+00	2.3	2.4E-03	5.9E-02	2.5E-02	8.9E-01	9.8E-01	52.3	1.1E-04	2.6E-03	1.1E-03	3.9E-02	4.3E-02
Lead	0.0031	5.62E+01	7.51E-03	4.22E-01	5.07E-02	2.85E+00	7.48E-05	7.27E-02	4.13E-03	8.38E-02	1.61E-01	0.014	5.3E-03	5.2E+00	3.0E-01	6.0E+00	1.1E+01 >1	8.75	8.5E-06	8.3E-03	4.7E-04	9.6E-03	1.8E-02
Manganese	7.42	9.30E+02	4.89E-01	4.55E+02	5.29E+00	4.92E+03	1.79E-01	1.20E+00	4.46E+00	1.45E+02	1.51E+02	77.6	2.3E-03	1.5E-02	5.7E-02	1.9E+00	1.9E+00 >1	776	2.3E-04	1.5E-03	5.7E-03	1.9E-01	1.9E-01
Mercury	0.00029	1.10E+00	--	0	6.96E-01	7.66E-01	6.99E-06	1.42E-03	0.00E+00	2.25E-02	2.39E-02	0.039	1.8E-04	3.6E-02	0.0E+00	5.8E-01	6.1E-01	0.18	3.9E-05	7.9E-03	0.0E+00	1.3E-01	1.3E-01
Molybdenum	0.0312	5.30E+00	--	0	--	0	7.53E-04	6.85E-03	0.00E+00	0.00E+00	7.61E-03	3.5	2.2E-04	2.0E-03	0.0E+00	0.0E+00	2.2E-03	35.3	2.1E-05	1.9E-04	0.0E+00	0.0E+00	2.2E-04
Nickel	0.166	1.06E+02	1.39E-02	1.47E+00	3.65E-01	3.86E+01	4.00E-03	1.37E-01	1.44E-02	1.14E+00	1.29E+00	1.38	2.9E-03	9.9E-02	1.0E-02	8.2E-01	9.4E-01	56.3	7.1E-05	2.4E-03	2.6E-04	2.0E-02	2.3E-02
Selenium	0.029	1.10E+00	--	0	--	0	6.99E-04	1.42E-03	0.00E+00	0.00E+00	2.12E-03	0.23	3.0E-03	6.2E-03	0.0E+00	0.0E+00	9.2E-03	0.93	7.5E-04	1.5E-03	0.0E+00	0.0E+00	2.3E-03
Silver	0.0019	2.30E+00	--	0	--	0	4.58E-05	2.97E-03	0.00E+00	0.00E+00	3.02E-03	178.00	2.6E-07	1.7E-05	0.0E+00	0.0E+00	1.7E-05	NTV	NTV	NTV	NTV	NTV	NTV
Thallium		2.90E-01	--	0	--	0		3.75E-04	0.00E+00	0.00E+00	3.75E-04	0.35		1.1E-03	0.0E+00	0.0E+00	1.1E-03	NTV	NTV	NTV	NTV	NTV	NTV
Tin		1.59E+01	1.55E+00	2.47E+01	--	0		2.06E-02	2.42E-01	0.00E+00	2.63E-01	6.80		3.0E-03	3.6E-02	0.0E+00	3.9E-02	16.9		1.2E-03	1.4E-02	0.0E+00	1.6E-02
Vanadium	0.05	1.02E+02	2.20E-02	2.25E+00	2.96E-02	3.01E+00	1.21E-03	1.32E-01	2.20E-02	8.86E-02	2.44E-01	11.4	1.1E-04	1.2E-02	1.9E-03	7.8E-03	2.1E-02	114	1.1E-05	1.2E-03	1.9E-04	7.8E-04	2.1E-03
Zinc	0.042	1.94E+02	8.47E-02	1.64E+01	1.51E+00	2.93E+02	1.01E-03	2.51E-01	1.61E-01	8.62E+00	9.03E+00	17.2	5.9E-05	1.5E-02	9.4E-03	5.0E-01	5.3E-01	172	5.9E-06	1.5E-03	9.4E-04	5.0E-02	5.3E-02
Volatile Organics (mg/kg)																							
Acetone		1.00E-01	--	0	--	0		1.29E-04	0.00E+00	0.00E+00	1.29E-04	52		2.5E-06	0.0E+00	0.0E+00	2.5E-06	520		2.5E-07	0.0E+00	0.0E+00	2.5E-07
Benzene			--	0	--	0			0.00E+00	0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Carbon disulfide		7.00E-03	--	0	--	0		9.05E-06	0.00E+00	0.00E+00	9.05E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chlorobenzene		5.00E-03	--	0	--	0		6.47E-06	0.00E+00	0.00E+00	6.47E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
cis-1,2-Dichlorobenzene			--	0	--	0			0.00E+00	0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Ethylbenzene		1.80E-02	--	0	--	0		2.33E-05	0.00E+00	0.00E+00	2.33E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Isopropyltoluene			--	0	--	0			0.00E+00	0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Methylene chloride			--	0	--	0			0.00E+00	0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Naphthalene			--	0	--	0			0.00E+00	0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Toluene		3.00E-02	--	0	--	0		3.88E-05	0.00E+00	0.00E+00	3.88E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
trans-1,2-Dichloroethene			--	0	--	0			0.00E+00	0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Trichloroethene		7.00E-03	--	0	--	0		9.05E-06	0.00E+00	0.00E+00	9.05E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
1,2,4-Trimethylbenzene			--	0	--	0			0.00E+00	0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
1,3,5-Trimethylbenzene			--	0	--	0			0.00E+00	0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Vinyl chloride			--	0	--	0			0.00E+00	0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Xylenes		1.50E-01	--	0	--	0		1.94E-04	0.00E+00	0.00E+00	1.94E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pesticides (mg/kg)																							
alpha-Chlordane		4.80E-03	--	0	--	0		6.21E-06	0.00E+00	0.00E+00	6.21E-06	0.0014		4.4E-03	0.0E+00	0.0E+00	4.4E-03	0.014		4.4E-04	0.0E+00	0.0E+00	4.4E-04
beta-BHC		1.00E-03	--	0	--	0		1.29E-06	0.00E+00	0.00E+00	1.29E-06	0.56		2.3E-06	0.0E+00	0.0E+00	2.3E-06	2.25		5.7E-07	0.0E+00	0.0E+00	5.7E-07
delta-BHC		2.00E-03	--	0	--	0		2.59E-06	0.00E+00	0.00E+00	2.59E-06	0.56		4.6E-06	0.0E+00	0.0E+00	4.6E-06	2.25		1.1E-06	0.0E+00	0.0E+00	1.1E-06
2,4-DDD		3.00E-02	--	0	--	0		3.88E-05	0.00E+00	0.00E+00	3.88E-05	0.009		4.3E-03	0.0E+00	0.0E+00	4.3E-03	1.5		2.6E-05	0.0E+00	0.0E+00	2.6E-05
4,4-DDD		9.20E-02	--	0	--	0		1.19E-04	0.00E+00	0.00E+00	1.19E-04	0.009		1.3E-02	0.0E+00	0.0E+00	1.3E-02	1.5		7.9E-05	0.0E+00	0.0E+00	7.9E-05
DDE	0.0000027	1.80E-02	--	0	--	0	6.51E-08	2.33E-05	0.00E+00	0.00E+00	2.33E-05	NTV	NTV	NTV	NTV	NTV	NTV	0.6	1.1E-07	3.9E-05	0.0E+00	0.0E+00	3.9E-05
DDTs	0.00014	1.20E-02	--	0	--	0	3.38E-06	1.55E-05	0.00E+00	0.00E+00	1.89E-05	0.009	3.8E-04	1.7E-03	0.0E+00	0.0E+00	2.1E-03	1.5	2.3E-06	1.0E-05	0.0E+00	0.0E+00	1.3E-05
Dieldrin		2.90E-03	--	0	--	0		3.75E-06	0.00E+00	0.00E+00	3.75E-06	0.0709		5.3E-05	0.0E+00	0.0E+00	5.3E-05	0.98		3.8E-06	0.0E+00	0.0E+00	3.8E-06
Endosulfan I		4.00E-03	--	0	--	0		5.17E-06	0.00E+00	0.00E+00	5.17E-06	10		5.2E-07	0.0E+00	0.0E+00	5.2E-07	100		5.2E-08	0.0E+00	0.0E+00	5.2E-08
Endosulfan sulfate	0.00012	3.00E-03	--	0	--	0	2.89E-06	3.88E-06	0.00E+00	0.00E+00	6.77E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Endrin	0.000014	2.00E-02	--	0	--	0	3.38E-07	2.59E-05	0.00E+00	0.00E+00	2.62E-05	0.3	1.1E-06	8.6E-05	0.0E+00	0.0E+00	8.7E-05	3	1.1E-07	8.6E-06	0.0E+00	0.0E+00	8.7E-06
Endrin aldehyde		6.00E-03	--	0	--	0		7.76E-06	0.00E+00	0.00E+00	7.76E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Endrin Ketone		2.30E-03	--	0	--	0		2.97E-06	0.00E+00	0.00E+00	2.97E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
gamma-Chlordane		5.20E-03	--	0	--	0		6.72E-06	0.00E+00	0.00E+00	6.72E-06	0.0014		4.8E-03	0.0E+00	0.0E+00	4.8E-03	0.014		4.8E-04	0.0E+00	0.0E+00	4.8E-04
Heptachlor	0.0000028	2.00E-04	--	0	--	0	6.75E-08	2.59E-07	0.00E+00	0.00E+00	3.26E-07	0.065	1.0E-06	4.0E-06	0.0E+00	0.0E+00	5.0E-06	0.65	1.0E-07	4.0E-07	0.0E+00	0.0E+00	5.0E-07
Heptachlor epoxide		3.00E-04	--	0	--	0		3.88E-07	0.00E+00	0.00E+00	3.88E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Hexachlorobenzene		8.00E-04	--	0	--	0		1.03E-06	0.00E+00	0.00E+00	1.03E-06	0.23		4.5E-06	0.0E+00	0.0E+00	4.5E-06	2.3		4.5E-07	0.0E+00	0.0E+00	4.5E-07
Methoxychlor		1.20E-02	--	0	--	0		1.55E-05	0.00E+00	0.00E+00	1.55E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Mirex		4.00E-03	--	0	--	0		5.17E-06	0.00E+00	0.00E+00	5.17E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
trans-Nonachlor		2.40E-03	--	0	--	0		3.10E-06	0.00E+00	0.00E+00	3.10E-06	0.0014		2.2E-03	0.0E+00	0.0E+00	2.2E-03	0.014		2.2E-04	0.0E+00	0.0E+00	2.2E-04
SVOCs (mg/kg)																							
Acenaphthene		5.73E-02	--	0	--	0		7.41E-05	0.00E+00	0.00E+00	7.41E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Acenaphthylene		3.96E-02	--	0	--	0		5.12E-05	0.00E+00	0.00E+00	5.12E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Anthracene		6.58E-02	1.89E+00	1.24E-01	--	0		8.51E-05	1.22E-03	0.00E+00	1.30E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(a)anthracene		1.00E-01	--	0	--	0		1.29E-04	0.00E+00	0.00E+00	1.29E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(a)pyrene		9.60E-02	--	0	--	0		1.24E-04	0.00E+00	0.00E+00	1.24E-04	0.001		1.2E-01	0.0E+00	0.0E+00	1.2E-01	0.01		1.2E-02	0.0E+00	0.0E+00	1.2E-02
Benzo(b)fluoranthene		8.30E-02	--	0	--	0		1.07E-04	0.00E+00	0.00E+00	1.07E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(ghi)perylene		8.20E-02	--	0	--	0		1.06E-04	0.00E+00	0.00E+00	1.06E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(k)fluoranthene		6.70E-02	--	0	--	0		8.66E-05	0.00E+00	0.00E+00	8.66E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzoic acid			--	0	--	0			0.00E+00	0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Bis(2-ethylhexyl)phthalate	0.027	1.20E-01	--	0	--	0	6.51E-04	1.55E-04	0.00E+00	0.00E+00	8.06E-04	1.1	5.9E-04	1.4E-04	0.0E+00	0.0E+00	7.3E-04	11	5.9E-05	1.4E-05	0.0E+00	0.0E+00	7.3E-05
Butylbenzylphthalate		2.50E-02	--	0	--	0		3.23E-05	0.00E+00	0.00E+00	3.23E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Carbazole		1.41E-01	--	0	--	0		1.82E-04	0.00E+00	0.00E+00	1.82E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Chloroaniline		3.00E-03	--	0	--	0		3.88E-06	0.00E+00	0.00E+00	3.88E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2-Chloropropane		4.33E-02	--	0	--	0		5.60E-05	0.00E+00	0.00E+00	5.60E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chrysene	0.0002	9.00E-02	--	0	--	0	4.82E-06	1.16E-04	0.00E+00	0.00E+00	1.21E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Dibenzofuran		7.89E-02	--	0	--	0		1.02E-04	0.00E+00	0.00E+00	1.02E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
3,3-Dichlorobenzidine		1.20E-02	--	0	--	0		1.55E-05	0.00E+00	0.00E+00	1.55E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2,6-Dinitrotoluene			--	0	--	0			0.00E+00	0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Fluoranthene		8.40E-02	1.17E+00	9.86E-02	--	0		1.09E-04	9.66E-04	0.00E+00	1.07E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV

Table C2-7j
Post-Remediation Mallard (Breeding) Risk Calculations (Wetland Sediment Residual Concentration)
Shallow Soil (0 - 2 ft bgs) at Hazard Quotient of 1
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Point Concentration						Intake (mg/kg BW-day)						Hazard Quotient (HQ) - Low						Hazard Quotient (HQ) - High					
COPEC[a]	Surface Water (mg/L)[b]	Sediments[c]	Plant BAF[d]	Plant Tissue[d]	Invertebrate BAF[d]	Invertebrate Tissue[d]	Surface Water	Sediment	Plant	Invertebrate	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Plant	Invertebrate	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Sediment	Plant	Invertebrate	Total Intake
Fluorene		5.40E-02	--	0	--	0		6.98E-05	0.00E+00	0.00E+00	6.98E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Indeno(123,cd)pyrene		1.00E-01	--	0	--	0		1.29E-04	0.00E+00	0.00E+00	1.29E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2-Methylnaphthalene		5.23E-02	--	0	--	0		6.76E-05	0.00E+00	0.00E+00	6.76E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Methylphenol	0.12	6.68E-02	--	0	--	0	2.89E-03	8.64E-05	0.00E+00	0.00E+00	2.98E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Naphthalene		8.50E-02	--	0	--	0		1.10E-04	0.00E+00	0.00E+00	1.10E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pentachlorophenol		4.84E-02	--	0	--	0		6.26E-05	0.00E+00	0.00E+00	6.26E-05	6.7		9.3E-06	0.0E+00	0.0E+00	9.3E-06	22.5		2.8E-06	0.0E+00	0.0E+00	2.8E-06
Phenanthrene		7.00E-02	1.64E+00	1.15E-01	2.51E+00	1.76E-01		9.05E-05	1.12E-03	5.16E-03	6.38E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Phenol		1.40E-01	--	0	--	0		1.81E-04	0.00E+00	0.00E+00	1.81E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pyrene		7.90E-02	--	0	--	0		1.02E-04	0.00E+00	0.00E+00	1.02E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
PCBs (mg/kg)																								
PCBs (TOTAL)-congeners	0.000016	5.10E-02	1.09E-01	5.57E-03	1.16E+01	5.92E-01	3.86E-07	6.59E-05	5.46E-05	1.74E-02	1.75E-02	0.09	4.3E-06	7.3E-04	6.1E-04	1.9E-01	1.9E-01	1.27	3.0E-07	5.2E-05	4.3E-05	1.4E-02	1.4E-02
																								>1 = The calculated hazard quotient exceeds 1 (i.e., > 1.5)

Exposure Assumptions and Equation:[e]

	Value	Units
Ingestion Rate (IR) prey(dry wt.) =	0.0917	kg/day (dry weight)
IRplant(dry wt.)[f] =	0.0229	kg/day (dry weight)
IRinvertebrate(dry wt.)[f] =	0.0688	kg/day (dry weight)
IRsediment (dry wt.)[g] =	0.00303	kg-day (dry weight)
Cprey =	chem-specific	mg/kg or µg/kg
Csediment =	chem-specific	mg/kg or µg/kg
Tissue Moisture (TMplant) =	8.5%	percent
IRsurface water[h] =	0.056	L/day
Csurface water =	chem-specific	mg/L or µg/L
Dietary Composition Factor (DCF)[i] =	100%	percent
Site Use Factor (SUF)[j] =	40%	percent
Body Weight =	0.9361	kg

Intake Equation= [IRplant (dry wt) x [Cprey(plant, dry wt)/1-TM) x DCF x SUF]/BW] + [IRinvertebrate (dry wt) x Cprey(invertebrate, dry wt) x DCF x SUF)/BW] + [(IRsediment x Csediment x DCF x SUF))/BW +[(IRsurface water x Csurface water x DCF x SUF))/

Risk (hazard quotient) = Intake / TRV

Prey tissue(dry wt) = Prey tissue (wet wt.) / (1-Tissue Moisture)

NTV = Not toxicity data available.

Blank cell indicates COPEC was not detected in this medium.

Notes:

a All chemicals detected in sediments are considered as constituents of potential ecological concern.

b All concentrations of constituents in surface water are based on the maximum concentration.

c All concentrations of constituents in sediment are based on the residual concentrations expressed in dry weight.

d Site-specific BAFs (dry weight basis). Calculated plant and invertebrate tissue concentrations (sediment concentration x BAF). Tissue concentrations are on a dry weight basis.

e Exposure parameters used to calculate risk are discussed in detail in Section 4.2 of ERA.

f Based on dietary composition of 25% plant and 75% invertebrate.

g Ingestion rate of sediment based on 3.3 percent of of the prey ingestion rate (dry weight); based on mallards (Beyer et al. 1994).

h Based on equation for birds: Water intake (L/day) = $0.059Wt(kg)^{.67}$ (EPA 1993)

i Dietary composition factor was based on a conservative assumption of 100% dietary intake of plants and invertebrates from the site.

j Site use factor was based on 40% use of the site for the mallard's foraging range.

Table C2-7k
Post-Remediation Great Blue Heron Risk Calculations (Wetland Sediment Residual Concentration)
Shallow Soil (0 - 2 ft bgs) at Hazard Quotient of 1
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Point Concentration						Intake (mg/kg BW-day)						Hazard Quotient (HQ) - Low						Hazard Quotient (HQ) - High				
COPEC[a]	Surface Water (mg/L)[b]	Sediments[c]	Small Mammal BAF[d]	Small Mammal Tissue[d]	Amphibian BAF[d]	Amphibian Tissue[d]	Surface Water	Sediment	Small mammal	Amphibian	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Small mammal	Amphibian	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Sediment	Small mammal	Amphibian	Total Intake
Metals (mg/kg)																							
Aluminum	12.6	2.69E+04	1.11E-02	297	7.75E-03	209	5.65E-01	4.87E+01	8.17E+00	5.72E+00	6.32E+01	109.7	5.2E-03	4.4E-01	7.4E-02	5.2E-02	5.8E-01	1,097	5.2E-04	4.4E-02	7.4E-03	5.2E-03	5.8E-02
Antimony	0.003	2.30E+00	1.22E+00	3	--	0	1.35E-04	4.17E-03	7.69E-02	0	8.12E-02	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Arsenic	0.0436	2.17E+01	--	0	--	0	1.96E-03	3.93E-02	0	0	4.13E-02	5.5	3.6E-04	7.1E-03	0.0E+00	0.0E+00	7.5E-03	22	8.9E-05	1.8E-03	0.0E+00	0.0E+00	1.9E-03
Barium	0.24	8.91E+01	9.41E-02	8	--	0	1.06E-02	1.61E-01	2.30E-01	0	4.02E-01	20.8	5.1E-04	7.8E-03	1.1E-02	0.0E+00	1.9E-02	41.7	2.5E-04	3.9E-03	5.5E-03	0.0E+00	9.6E-03
Beryllium		4.40E-01	--	0	--	0		7.97E-04	0.00E+00	0	7.97E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Cadmium	0.0016	2.53E+00	--	0	--	0	7.18E-05	4.58E-03	0.00E+00	0	4.66E-03	0.08	9.0E-04	5.7E-02	0.0E+00	0.0E+00	5.8E-02	10.40	6.9E-06	4.4E-04	0.0E+00	0.0E+00	4.5E-04
Chromium +3	0.0263	9.13E+01	2.60E-02	2	2.45E-01	22	1.18E-03	1.65E-01	6.53E-02	6.15E-01	8.46E-01	2.66	4.4E-04	6.2E-02	2.5E-02	2.3E-01	3.2E-01	2.78	4.2E-04	6.0E-02	2.3E-02	2.2E-01	3.0E-01
Chromium +6	0.0263	1.83E+01	2.60E-02	0	2.45E-01	4	1.18E-03	3.31E-02	1.31E-02	1.23E-01	1.70E-01	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Cobalt	0.0164	2.12E+01	--	0	--	0	7.36E-04	3.84E-02	0	0	3.91E-02	7.61	9.7E-05	5.0E-03	0.0E+00	0.0E+00	5.1E-03	17	4.3E-05	2.3E-03	0.0E+00	0.0E+00	2.3E-03
Copper	0.233	1.05E+02	3.45E-01	36	--	0	1.05E-02	1.90E-01	9.96E-01	0	1.20E+00	2.3	4.5E-03	8.3E-02	4.3E-01	0.0E+00	5.2E-01	52.3	2.0E-04	3.6E-03	1.9E-02	0.0E+00	2.3E-02
Lead	0.0031	5.62E+01	6.10E-01	34	--	0	1.39E-04	1.02E-01	9.42E-01	0	1.04E+00	0.014	9.9E-03	7.3E+00	6.7E+01	0.0E+00	7.5E+01	>1	8.75	1.6E-05	1.2E-02	1.1E-01	0.0E+00	1.2E-01
Manganese	7.42	9.30E+02	--	0	4.78E-02	44	3.33E-01	1.68E+00	0	1.22E+00	3.24E+00	77.6	4.3E-03	2.2E-02	0.0E+00	1.6E-02	4.2E-02	776	4.3E-04	2.2E-03	0.0E+00	1.6E-03	4.2E-03
Mercury	0.00029	1.10E+00	--	0	7.42E-01	1	1.30E-05	1.99E-03	0	2.24E-02	2.44E-02	0.039	3.3E-04	5.1E-02	0.0E+00	5.7E-01	6.3E-01	0.18	7.2E-05	1.1E-02	0.0E+00	1.2E-01	1.4E-01
Molybdenum	0.0312	5.30E+00	--	0	--	0	1.40E-03	9.60E-03	0	0	1.10E-02	3.5	4.0E-04	2.7E-03	0.0E+00	0.0E+00	3.1E-03	35.3	4.0E-05	2.7E-04	0.0E+00	0.0E+00	3.1E-04
Nickel	0.166	1.06E+02	--	0	--	0	7.45E-03	1.92E-01	0	0	1.99E-01	1.38	5.4E-03	1.4E-01	0.0E+00	0.0E+00	1.4E-01	56.3	1.3E-04	3.4E-03	0.0E+00	0.0E+00	3.5E-03
Selenium	0.029	1.10E+00	6.12E+00	7	5.77E+00	6	1.30E-03	1.99E-03	1.85E-01	1.74E-01	3.62E-01	0.23	5.7E-03	8.7E-03	8.0E-01	7.6E-01	1.6E+00	>1	0.93	1.4E-03	2.1E-03	2.0E-01	1.9E-01	3.9E-01
Silver	0.0019	2.30E+00	--	0	--	0	8.52E-05	4.17E-03	0	0	4.25E-03	178.00	4.8E-07	2.3E-05	0.0E+00	0.0E+00	2.4E-05	NTV	NTV	NTV	NTV	NTV	NTV
Thallium		2.90E-01	1.01E+00	0	--	0		5.25E-04	8.02E-03	0	8.55E-03	0.35		1.5E-03	2.3E-02	0.0E+00	2.4E-02	NTV	NTV	NTV	NTV	NTV	NTV
Tin		1.59E+01	--	0	--	0		2.88E-02	0	0	2.88E-02	6.80		4.2E-03	0.0E+00	0.0E+00	4.2E-03	16.9		1.7E-03	0.0E+00	0.0E+00	1.7E-03
Vanadium	0.05	1.02E+02	--	0	--	0	2.24E-03	1.85E-01	0	0	1.87E-01	11.4	2.0E-04	1.6E-02	0.0E+00	0.0E+00	1.6E-02	114	2.0E-05	1.6E-03	0.0E+00	0.0E+00	1.6E-03
Zinc	0.042	1.94E+02	1.11E+00	215	7.87E-01	153	1.88E-03	3.51E-01	5.90E+00	4.19E+00	1.04E+01	17.2	1.1E-04	2.0E-02	3.4E-01	2.4E-01	6.1E-01	172	1.1E-05	2.0E-03	3.4E-02	2.4E-02	6.1E-02
Volatile Organics (mg/kg)																							
Acetone		1.00E-01	--	0	--	0		1.81E-04	0	0	1.81E-04	52		3.5E-06	0.0E+00	0.0E+00	3.5E-06	520		3.5E-07	0.0E+00	0.0E+00	3.5E-07
Benzene			--	0	--	0			0	0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Carbon disulfide		7.00E-03	--	0	--	0		1.27E-05	0	0	1.27E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chlorobenzene		5.00E-03	--	0	--	0		9.06E-06	0	0	9.06E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
cis-1,2-Dichlorobenzene			--	0	--	0			0	0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Ethylbenzene		1.80E-02	--	0	--	0		3.26E-05	0	0	3.26E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Isopropyltoluene			--	0	--	0			0	0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Methylene chloride			--	0	--	0			0	0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Naphthalene			--	0	--	0			0	0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Toluene		3.00E-02	--	0	--	0		5.44E-05	0	0	5.44E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
trans-1,2-Dichloroethene			--	0	--	0			0	0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Trichloroethene		7.00E-03	--	0	--	0		1.27E-05	0	0	1.27E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
1,2,4-Trimethylbenzene			--	0	--	0			0	0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
1,3,5-Trimethylbenzene			--	0	--	0			0	0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Vinyl chloride			--	0	--	0			0	0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Xylenes		1.50E-01	--	0	--	0		2.72E-04	0	0	2.72E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pesticides (mg/kg)																							
alpha-Chlordane		4.80E-03	--	0	--	0		8.70E-06	0	0	8.70E-06	0.0014		6.2E-03	0.0E+00	0.0E+00	6.2E-03	0.014		6.2E-04	0.0E+00	0.0E+00	6.2E-04
beta-BHC		1.00E-03	--	0	--	0		1.81E-06	0	0	1.81E-06	0.56		3.2E-06	0.0E+00	0.0E+00	3.2E-06	2.25		8.1E-07	0.0E+00	0.0E+00	8.1E-07
delta-BHC		2.00E-03	--	0	--	0		3.62E-06	0	0	3.62E-06	0.56		6.5E-06	0.0E+00	0.0E+00	6.5E-06	2.25		1.6E-06	0.0E+00	0.0E+00	1.6E-06
2,4-DDD		3.00E-02	1.04E+00	0	--	0		5.44E-05	8.60E-04	0	9.14E-04	0.009		6.0E-03	9.6E-02	0.0E+00	1.0E-01	1.5		3.6E-05	5.7E-04	0.0E+00	6.1E-04
4,4-DDD		9.20E-02	1.04E+00	0	--	0		1.67E-04	2.64E-03	0	2.80E-03	0.009		1.9E-02	2.9E-01	0.0E+00	3.1E-01	1.5		1.1E-04	1.8E-03	0.0E+00	1.9E-03
DDE	0.0000027	1.80E-02	1.04E+00	0	--	0	1.21E-07	3.26E-05	5.16E-04	0	5.49E-04	NTV	NTV	NTV	NTV	NTV	NTV	0.6	2.0E-07	5.4E-05	8.6E-04	0.0E+00	9.1E-04
DDTs	0.00014	1.20E-02	1.04E+00	0	--	0	6.28E-06	2.17E-05	3.44E-04	0	3.72E-04	0.009	7.0E-04	2.4E-03	3.8E-02	0.0E+00	4.1E-02	1.5	4.2E-06	1.4E-05	2.3E-04	0.0E+00	2.5E-04
Dieldrin		2.90E-03	--	0	--	0		5.25E-06	0	0	5.25E-06	0.0709		7.4E-05	0.0E+00	0.0E+00	7.4E-05	0.98		5.4E-06	0.0E+00	0.0E+00	5.4E-06
Endosulfan I		4.00E-03	--	0	--	0		7.25E-06	0	0	7.25E-06	10		7.2E-07	0.0E+00	0.0E+00	7.2E-07	100		7.2E-08	0.0E+00	0.0E+00	7.2E-08
Endosulfan sulfate	0.00012	3.00E-03	--	0	--	0	5.38E-06	5.44E-06	0	0	1.08E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Endrin	0.000014	2.00E-02	--	0	--	0	6.28E-07	3.62E-05	0	0	3.69E-05	0.3	2.1E-06	1.2E-04	0.0E+00	0.0E+00	1.2E-04	3	2.1E-07	1.2E-05	0.0E+00	0.0E+00	1.2E-05
Endrin aldehyde		6.00E-03	--	0	--	0		1.09E-05	0	0	1.09E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Endrin Ketone		2.30E-03	--	0	--	0		4.17E-06	0	0	4.17E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
gamma-Chlordane		5.20E-03	--	0	--	0		9.42E-06	0	0	9.42E-06	0.0014		6.7E-03	0.0E+00	0.0E+00	6.7E-03	0.014		6.7E-04	0.0E+00	0.0E+00	6.7E-04
Heptachlor	0.0000028	2.00E-04	--	0	--	0	1.26E-07	3.62E-07	0	0	4.88E-07	0.065	1.9E-06	5.6E-06	0.0E+00	0.0E+00	7.5E-06	0.65	1.9E-07	5.6E-07	0.0E+00	0.0E+00	7.5E-07
Heptachlor epoxide		3.00E-04	--	0	--	0		5.44E-07	0	0	5.44E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Hexachlorobenzene		8.00E-04	--	0	--	0		1.45E-06	0	0	1.45E-06	0.23		6.3E-06	0.0E+00	0.0E+00	6.3E-06	2.3		6.3E-07	0.0E+00	0.0E+00	6.3E-07
Methoxychlor		1.20E-02	--	0	--	0		2.17E-05	0	0	2.17E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Mirex		4.00E-03	--	0	--	0		7.25E-06	0	0	7.25E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
trans-Nonachlor		2.40E-03	--	0	--	0		4.35E-06	0	0	4.35E-06	0.0014		3.1E-03	0.0E+00	0.0E+00	3.1E-03	0.014		3.1E-04	0.0E+00	0.0E+00	3.1E-04
SVOCs (mg/kg)																							
Acenaphthene		5.73E-02	--	0	--	0		1.04E-04	0	0	1.04E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Acenaphthylene		3.96E-02	--	0	--	0		7.17E-05	0	0	7.17E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Anthracene		6.58E-02	--	0	--	0		1.19E-04	0	0	1.19E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(a)anthracene		1.00E-01	--	0	--	0		1.81E-04	0	0	1.81E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(a)pyrene		9.60E-02	--	0	--	0		1.74E-04	0	0	1.74E-04	0.001		1.7E-01	0.0E+00	0.0E+00	1.7E-01	0.01		1.7E-02	0.0E+00	0.0E+00	1.7E-02
Benzo(b)fluoranthene		8.30E-02	--	0	--	0		1.50E-04	0	0	1.50E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(ghi)perylene		8.20E-02	--	0	--	0		1.49E-04	0	0	1.49E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(k)fluoranthene		6.70E-02	--	0	--	0		1.21E-04	0	0	1.21E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzoic acid			--	0	--	0			0	0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Bis(2-ethylhexyl)phthalate	0.027	1.20E-01	--	0	--	0	1.21E-03	2.17E-04	0	0	1.43E-03	1.1	1.1E-03	2.0E-04	0.0E+00	0.0E+00	1.3E-03	11	1.1E-04	2.0E-05	0.0E+00	0.0E+00	1.3E-04
Butylbenzylphthalate		2.50E-02	--	0	--	0		4.53E-05	0	0	4.53E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Carbazole		1.41E-01	--	0	--	0		2.55E-04	0	0	2.55E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Chloroaniline		3.00E-03	--	0	--	0		5.44E-06	0	0	5.44E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2-Chloropropane		4.33E-02	--	0	--	0		7.84E-05	0	0	7.84E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chrysene	0.0002	9.00E-02	--	0	--	0	8.97E-06	1.63E-04	0	0	1.72E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Dibenzofuran		7.89E-02	--	0	--	0		1.43E-04	0	0	1.43E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
3,3-Dichlorobenzidine		1.20E-02	--	0	--	0		2.17E-05	0	0	2.17E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2,6-Dinitrotoluene			--	0	--	0			0	0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Fluoranthene		8.40E-02	--	0	--	0		1.52E-04	0	0	1.52E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV

Table C2-7k
Post-Remediation Great Blue Heron Risk Calculations (Wetland Sediment Residual Concentration)
Shallow Soil (0 - 2 ft bgs) at Hazard Quotient of 1
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Point Concentration						Intake (mg/kg BW-day)						Hazard Quotient (HQ) - Low						Hazard Quotient (HQ) - High					
COPEC[a]	Surface Water (mg/L)[b]	Sediments[c]	Small Mammal BAF[d]	Small Mammal Tissue[d]	Amphibian BAF[d]	Amphibian Tissue[d]	Surface Water	Sediment	Small mammal	Amphibian	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Small mammal	Amphibian	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Sediment	Small mammal	Amphibian	Total Intake
Fluorene		5.40E-02	--	0	--	0		9.78E-05	0	0	9.78E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Indeno(123,cd)pyrene		1.00E-01	--	0	--	0		1.81E-04	0	0	1.81E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2-Methylnaphthalene		5.23E-02	--	0	--	0		9.48E-05	0	0	9.48E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Methylphenol	0.12	6.68E-02	--	0	--	0	5.38E-03	1.21E-04	0	0	5.50E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Naphthalene		8.50E-02	--	0	--	0		1.54E-04	0	0	1.54E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pentachlorophenol		4.84E-02	--	0	--	0		8.77E-05	0	0	8.77E-05	6.7		1.3E-05	0.0E+00	0.0E+00	1.3E-05	22.5		3.9E-06	0.0E+00	0.0E+00	3.9E-06
Phenanthrene		7.00E-02	--	0	--	0		1.27E-04	0	0	1.27E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Phenol		1.40E-01	--	0	--	0		2.54E-04	0	0	2.54E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pyrene		7.90E-02	--	0	--	0		1.43E-04	0	0	1.43E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
PCBs (mg/kg)																							
PCBs (TOTAL)-congeners	0.000016	5.10E-02	1.81E+01	1	1.03E+01	1	7.18E-07	9.24E-05	2.53E-02	2.83E-01	3.08E-01	0.09	8.0E-06	1.0E-03	2.8E-01	3.1E+00	3.4E+00	>1	1.27	5.7E-07	7.3E-05	2.0E-02	2.2E-01	2.4E-01
>1 = The calculated hazard quotient exceeds 1 (i.e., > 1.5)																								

Exposure Assumptions and Equation:[e]

	Value	Units
Ingestion Rate (IR) prey(dry wt.) =	0.126	kg/day (dry weight)
IRsmall mammal(dry wt.)[f] =	0.063	kg/day (dry weight)
IRamphibian (dry wt.)[f] =	0.063	kg/day (dry weight)
IRsediment (dry wt.)[g] =	0.00416	kg-day (dry weight)
Cprey =	chem-specific	mg/kg or µg/kg
Csediment =	chem-specific	mg/kg or µg/kg
Tissue Moisture (TMsmall mammal) =	68%	percent
Tissue Moisture (TMamphibian) =	85%	percent
IRsurface water[h] =	0.103	L/day
Csurface water =	chem-specific	mg/L or µg/L
Dietary Composition Factor (DCF)[i] =	100%	percent
Site Use Factor (SUF)[j] =	100%	percent
Body Weight (BW) =	2.295	kg

Intake Equation= [Irsmall mammal (dry wt) x (Cprey(small mammal, dry wt)/1-TM) x DCF x SUF]/BW] + [IRamphibian (dry wt) x Cprey(amphibians, dry wt) x DCF x SUF]/BW] + [(IRsediment x Csediment x DCF x SUF)]/BW + [(IRsurface water x Csurface water x DCF x

Risk (hazard quotient) = Intake / TRV

Prey tissue(dry wt) = Prey tissue (wet wt.) / (1-Tissue Moisture)

NTV = Not toxicity data available.

Blank cell indicates COPEC was not detected in this medium.

Notes:

a All chemicals detected in sediments are considered as constituents of potential ecological concern.

b All concentrations of constituents in surface water are based on the maximum concentration.

c All concentrations of constituents in sediment are based on the residual concentrations expressed in dry weight.

d Site-specific BAFs (dry weight basis). Calculated small mammal tissue and amphibian concentrations (sediment concentration x BAF). Tissue concentrations are on a dry weight basis.

e Exposure parameters used to calculate risk are discussed in detail in Section 4.2 of ERA.

f Based on dietary composition of 50% small mammal and 50% amphibians.

g Ingestion rate of sediment based on 3.3 percent of of the prey ingestion rate (dry weight); based on mallards (Beyer et al. 1994).

h Based on equation for birds: Water intake (L/day) = $0.059Wt(kg)^{0.67}$ (EPA 1993)

i Dietary composition factor was based on a conservative assumption of 100% dietary intake of small mammals and amphibians from the site.

j Site use factor was based on a conservative 100% use of the site for the heron's foraging range.

Table C2-7l
Post-Remediation Kildeer Risk Calculations (Wetland Sediment Residual Concentration)
Shallow Soil (0 - 2 ft bgs) at Hazard Quotient of 1
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Concentrations				Intake (mg/kg BW-day)					Hazard Quotient (HQ) - Low					Hazard Quotient (HQ) - High			
COPEC[a]	Surface Water (mg/L)[b]	Sediments[c]	Invertebrate BAF[d]	Invertebrate Tissue[d]	Surface Water	Soils	Invertebrate	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Soils	Invertebrate	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Soils	Invertebrate	Total Intake
Metals (mg/kg)																		
Aluminum	12.6	2.69E+04	1.93E-01	5.19E+03	1.78E+00	1.04E+03	1.11E+03	2.15E+03	109.7	1.6E-02	9.4E+00	1.0E+01	2.0E+01 >1	1,097	1.6E-03	9.4E-01	1.0E+00	2.0E+00 >1
Antimony	0.003	2.30E+00	2.32E-01	5.33E-01	4.24E-04	8.85E-02	1.14E-01	2.03E-01	NTV	NTV	NTV	NTV	NTV >1	NTV	NTV	NTV	NTV	NTV
Arsenic	0.0436	2.17E+01	1.92E-01	4.16E+00	6.15E-03	8.35E-01	8.90E-01	1.73E+00	5.5	1.1E-03	1.5E-01	1.6E-01	3.1E-01	22	2.8E-04	3.8E-02	4.0E-02	7.9E-02
Barium	0.24	8.91E+01	1.50E+00	1.33E+02	3.33E-02	3.43E+00	2.85E+01	3.20E+01	20.8	1.6E-03	1.6E-01	1.4E+00	1.5E+00 >1	41.7	8.0E-04	8.2E-02	6.8E-01	7.7E-01
Beryllium		4.40E-01	--	0		1.69E-02	0.00E+00	1.69E-02	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Cadmium	0.0016	2.53E+00	2.15E-01	5.44E-01	2.26E-04	9.74E-02	1.16E-01	2.14E-01	0.08	2.8E-03	1.2E+00	1.5E+00	2.7E+00 >1	10.40	2.2E-05	9.4E-03	1.1E-02	2.1E-02
Chromium +3	0.0263	9.13E+01	5.53E-01	5.05E+01	3.71E-03	3.51E+00	1.08E+01	1.43E+01	2.66	1.4E-03	1.3E+00	4.1E+00	5.4E+00 >1	2.78	1.3E-03	1.3E+00	3.9E+00	5.2E+00 >1
Chromium +6	0.0263	1.83E+01	5.53E-01	10	3.71E-03	7.03E-01	2.16E+00	2.87E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Cobalt	0.0164	2.12E+01	--	0	2.32E-03	8.16E-01	0.00E+00	8.18E-01	7.61	3.0E-04	1.1E-01	0.0E+00	1.1E-01	17	1.4E-04	4.8E-02	0.0E+00	4.8E-02
Copper	0.233	1.05E+02	6.67E-01	7.00E+01	3.29E-02	4.04E+00	1.50E+01	1.90E+01	2.3	1.4E-02	1.8E+00	6.5E+00	8.3E+00 >1	52.3	6.3E-04	7.7E-02	2.9E-01	3.6E-01
Lead	0.0031	5.62E+01	5.07E-02	2.85E+00	4.38E-04	2.16E+00	6.09E-01	2.77E+00	0.014	3.1E-02	1.5E+02	4.4E+01	2.0E+02 >1	8.75	5.0E-05	2.5E-01	7.0E-02	3.2E-01
Manganese	7.42	9.30E+02	5.29E+00	4.92E+03	1.05E+00	3.58E+01	1.05E+03	1.09E+03	77.6	1.3E-02	4.6E-01	1.4E+01	1.4E+01 >1	776	1.3E-03	4.6E-02	1.4E+00	1.4E+00
Mercury	0.00029	1.10E+00	6.96E-01	7.66E-01	4.09E-05	4.23E-02	1.64E-01	2.06E-01	0.039	1.0E-03	1.1E+00	4.2E+00	5.3E+00 >1	0.18	2.3E-04	2.4E-01	9.1E-01	1.1E+00
Molybdenum	0.0312	5.30E+00	--	0	4.40E-03	2.04E-01	0.00E+00	2.08E-01	3.5	1.3E-03	5.8E-02	0.0E+00	6.0E-02	35.3	1.2E-04	5.8E-03	0.0E+00	5.9E-03
Nickel	0.166	1.06E+02	3.65E-01	3.86E+01	2.34E-02	4.08E+00	8.26E+00	1.24E+01	1.38	1.7E-02	3.0E+00	6.0E+00	9.0E+00 >1	56.3	4.2E-04	7.2E-02	1.5E-01	2.2E-01
Selenium	0.029	1.10E+00	--	0	4.09E-03	4.23E-02	0.00E+00	4.64E-02	0.23	1.8E-02	1.8E-01	0.0E+00	2.0E-01	0.93	4.4E-03	4.6E-02	0.0E+00	5.0E-02
Silver	0.0019	2.30E+00	--	0	2.68E-04	8.85E-02	0.00E+00	8.88E-02	178.00	1.5E-06	5.0E-04	0.0E+00	5.0E-04	NTV	NTV	NTV	NTV	NTV
Thallium		2.90E-01	--	0		1.12E-02	0.00E+00	1.12E-02	0.35		3.2E-02	0.0E+00	3.2E-02	NTV	NTV	NTV	NTV	NTV
Tin		1.59E+01	--	0		6.12E-01	0.00E+00	6.12E-01	6.80		9.0E-02	0.0E+00	9.0E-02	16.9		3.6E-02	0.0E+00	3.6E-02
Vanadium	0.05	1.02E+02	2.96E-02	3.01E+00	7.06E-03	3.93E+00	6.44E-01	4.58E+00	11.4	6.2E-04	3.4E-01	5.7E-02	4.0E-01	114	6.2E-05	3.4E-02	5.7E-03	4.0E-02
Zinc	0.042	1.94E+02	1.51E+00	2.93E+02	5.93E-03	7.47E+00	6.27E+01	7.02E+01	17.2	3.4E-04	4.3E-01	3.6E+00	4.1E+00 >1	172	3.4E-05	4.3E-02	3.6E-01	4.1E-01
Volatile Organics (mg/kg)																		
Acetone		1.00E-01	--	0		3.85E-03	0.00E+00	3.85E-03	52		7.4E-05	0.0E+00	7.4E-05	520		7.4E-06	0.0E+00	7.4E-06
Benzene			--	0			0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Carbon disulfide		7.00E-03	--	0		2.69E-04	0.00E+00	2.69E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chlorobenzene		5.00E-03	--	0		1.92E-04	0.00E+00	1.92E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
cis-1,2-Dichlorobenzene			--	0			0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Ethylbenzene		1.80E-02	--	0		6.93E-04	0.00E+00	6.93E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Isopropyltoluene			--	0			0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Methylene chloride			--	0			0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Naphthalene			--	0			0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Toluene		3.00E-02	--	0		1.15E-03	0.00E+00	1.15E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
trans-1,2-Dichloroethene			--	0			0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Trichloroethene		7.00E-03	--	0		2.69E-04	0.00E+00	2.69E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
1,2,4-Trimethylbenzene			--	0			0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
1,3,5-Trimethylbenzene			--	0			0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Vinyl chloride			--	0			0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Xylenes		1.50E-01	--	0		5.77E-03	0.00E+00	5.77E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pesticides (mg/kg)																		
alpha-Chlordane		4.80E-03	--	0		1.85E-04	0.00E+00	1.85E-04	0.0014		1.3E-01	0.0E+00	1.3E-01	0.014		1.3E-02	0.0E+00	1.3E-02
beta-BHC		1.00E-03	--	0		3.85E-05	0.00E+00	3.85E-05	0.56		6.9E-05	0.0E+00	6.9E-05	2.25		1.7E-05	0.0E+00	1.7E-05
delta-BHC		2.00E-03	--	0		7.70E-05	0.00E+00	7.70E-05	0.56		1.4E-04	0.0E+00	1.4E-04	2.25		3.4E-05	0.0E+00	3.4E-05
2,4-DDD		3.00E-02	--	0		1.15E-03	0.00E+00	1.15E-03	0.009		1.3E-01	0.0E+00	1.3E-01	1.5		7.7E-04	0.0E+00	7.7E-04
4,4-DDD		9.20E-02	--	0		3.54E-03	0.00E+00	3.54E-03	0.009		3.9E-01	0.0E+00	3.9E-01	1.5		2.4E-03	0.0E+00	2.4E-03
DDE	0.0000027	1.80E-02	--	0	3.81E-07	6.93E-04	0.00E+00	6.93E-04	NTV	NTV	NTV	NTV	NTV	0.6	6.4E-07	1.2E-03	0.0E+00	1.2E-03
DDTs	0.00014	1.20E-02	--	0	1.98E-05	4.62E-04	0.00E+00	4.82E-04	0.009	2.2E-03	5.1E-02	0.0E+00	5.4E-02	1.5	1.3E-05	3.1E-04	0.0E+00	3.2E-04
Dieldrin		2.90E-03	--	0		1.12E-04	0.00E+00	1.12E-04	0.0709		1.6E-03	0.0E+00	1.6E-03	0.98		1.1E-04	0.0E+00	1.1E-04
Endosulfan I		4.00E-03	--	0		1.54E-04	0.00E+00	1.54E-04	10		1.5E-05	0.0E+00	1.5E-05	100		1.5E-06	0.0E+00	1.5E-06
Endosulfan sulfate	0.00012	3.00E-03	--	0	1.69E-05	1.15E-04	0.00E+00	1.32E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Endrin	0.000014	2.00E-02	--	0	1.98E-06	7.70E-04	0.00E+00	7.72E-04	0.3	6.6E-06	2.6E-03	0.0E+00	2.6E-03	3	6.6E-07	2.6E-04	0.0E+00	2.6E-04
Endrin aldehyde		6.00E-03	--	0		2.31E-04	0.00E+00	2.31E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Endrin Ketone		2.30E-03	--	0		8.85E-05	0.00E+00	8.85E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Gamma-BHC	0.000011	5.20E-03	--	0	1.55E-06	2.00E-04	0.00E+00	2.02E-04	2	7.8E-07	1.0E-04	0.0E+00	1.0E-04	20	7.8E-08	1.0E-05	0.0E+00	1.0E-05
Heptachlor	0.0000028	2.00E-04	--	0	3.95E-07	7.70E-06	0.00E+00	8.09E-06	0.065	6.1E-06	1.2E-04	0.0E+00	1.2E-04	0.65	6.1E-07	1.2E-05	0.0E+00	1.2E-05
Heptachlor epoxide		3.00E-04	--	0		1.15E-05	0.00E+00	1.15E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Hexachlorobenzene		8.00E-04	--	0		3.08E-05	0.00E+00	3.08E-05	0.23		1.3E-04	0.0E+00	1.3E-04	2.3		1.3E-05	0.0E+00	1.3E-05
Methoxychlor		1.20E-02	--	0		4.62E-04	0.00E+00	4.62E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Mirex		4.00E-03	--	0		1.54E-04	0.00E+00	1.54E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
trans-Nonachlor		2.40E-03	--	0		9.24E-05	0.00E+00	9.24E-05	0.0014		6.6E-02	0.0E+00	6.6E-02	0.014		6.6E-03	0.0E+00	6.6E-03

Table C2-7l
Post-Remediation Kildeer Risk Calculations (Wetland Sediment Residual Concentration)
Shallow Soil (0 - 2 ft bgs) at Hazard Quotient of 1
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Concentrations				Intake (mg/kg BW-day)					Hazard Quotient (HQ) - Low					Hazard Quotient (HQ) - High			
COPEC[a]	Surface Water (mg/L)[b]	Sediments[c]	Invertebrate BAF[d]	Invertebrate Tissue[d]	Surface Water	Soils	Invertebrate	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Soils	Invertebrate	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Soils	Invertebrate	Total Intake
SVOCs (mg/kg)																		
Acenaphthene		5.73E-02	--	0		2.20E-03	0.00E+00	2.20E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Acenaphthylene		3.96E-02	--	0		1.52E-03	0.00E+00	1.52E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Anthracene		6.58E-02	--	0		2.53E-03	0.00E+00	2.53E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(a)anthracene		1.00E-01	--	0		3.85E-03	0.00E+00	3.85E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(a)pyrene		9.60E-02	--	0		3.69E-03	0.00E+00	3.69E-03	0.001		3.7E+00	0.0E+00	3.7E+00 >1	0.01		3.7E-01	0.0E+00	3.7E-01
Benzo(b)fluoranthene		8.30E-02	--	0		3.19E-03	0.00E+00	3.19E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(ghi)perylene		8.20E-02	--	0		3.16E-03	0.00E+00	3.16E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(k)fluoranthene		6.70E-02	--	0		2.58E-03	0.00E+00	2.58E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzoic acid			--	0			0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Bis(2-ethylhexyl)phthalate	0.027	1.20E-01	--	0	3.81E-03	4.62E-03	0.00E+00	8.43E-03	1.1	3.5E-03	4.2E-03	0.0E+00	7.7E-03	11	3.5E-04	4.2E-04	0.0E+00	7.7E-04
Butylbenzylphthalate		2.50E-02	--	0		9.62E-04	0.00E+00	9.62E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Carbazole		1.41E-01	--	0		5.43E-03	0.00E+00	5.43E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Chloroaniline		3.00E-03	--	0		1.15E-04	0.00E+00	1.15E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2-Chloropropane		4.33E-02	--	0		1.67E-03	0.00E+00	1.67E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chrysene	0.0002	9.00E-02	--	0	2.82E-05	3.46E-03	0.00E+00	3.49E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Dibenzofuran		7.89E-02	--	0		3.04E-03	0.00E+00	3.04E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
3,3-Dichlorobenzidine		1.20E-02	--	0		4.62E-04	0.00E+00	4.62E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2,6-Dinitrotoluene			--	0			0.00E+00	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Fluoranthene		8.40E-02	--	0		3.23E-03	0.00E+00	3.23E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Fluorene		5.40E-02	--	0		2.08E-03	0.00E+00	2.08E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Indeno(123,cd)pyrene		1.00E-01	--	0		3.85E-03	0.00E+00	3.85E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2-Methylnaphthalene		5.23E-02	--	0		2.01E-03	0.00E+00	2.01E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Methylphenol	0.12	6.68E-02	--	0	1.69E-02	2.57E-03	0.00E+00	1.95E-02	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Naphthalene		8.50E-02	--	0		3.27E-03	0.00E+00	3.27E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pentachlorophenol		4.84E-02	--	0		1.86E-03	0.00E+00	1.86E-03	6.7		2.8E-04	0.0E+00	2.8E-04	22.5		8.3E-05	0.0E+00	8.3E-05
Phenanthrene		7.00E-02	2.51E+00	1.76E-01		2.69E-03	3.76E-02	4.03E-02	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Phenol		1.40E-01	--	0		5.39E-03	0.00E+00	5.39E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pyrene		7.90E-02	--	0		3.04E-03	0.00E+00	3.04E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
PCBs (mg/kg)																		
PCBs (TOTAL)-congeners	0.000016	5.10E-02	1.16E+01	5.92E-01	2.26E-06	1.96E-03	1.27E-01	1.29E-01	0.09	2.5E-05	2.2E-02	1.4E+00	1.4E+00	1.27	1.8E-06	1.5E-03	1.0E-01	1.0E-01
>1 = The calculated hazard quotient exceeds 1 (i.e., > 1.5)																		

Exposure Assumptions and Equation[e]:

	Value	Units
Ingestion Rate (IR) prey(dry wt.) =	0.0152	kg/day (dry weight)
IRinvertebrate(dry wt.) =	0.0152	kg/day (dry weight)
IRsediment (dry wt.)[f] =	0.00274	kg-day (dry weight)
Cprey =	chem-specific	mg/kg or µg/kg
Csediment =	chem-specific	mg/kg or µg/kg
IRsurface water[g] =	0.010	L/day
Csurface water =	chem-specific	mg/L or µg/L
Dietary Composition Factor (DCF)[h] =	100%	percent
Site Use Factor (SUF)[i] =	100%	percent
Body Weight (BW) =	0.0711	kg

Intake Equation = [IRinvertebrate (dry wt) x Cprey(invertebrate, dry wt) x DCF x SUF]/BW] +{(IRsediment x Csediment x DCF x SUF)]/BW] + [(IRsurface water x Csurface water x DCF x SUF)]/BW]

Risk (hazard quotient) = Intake / TRV

Prey tissue(dry wt) = Prey tissue (wet wt.) / (1-Tissue Moisture)

NTV = Not toxicity data available.

NA = Not available.

Blank cell indicates COPEC was not detected in this medium.

Notes:

a All chemicals detected in sediments are considered as constituents of potential ecological concern.

b All concentrations of constituents in surface water are based on the maximum concentration.

c All concentrations of constituents in sediment are based on the residual concentrations expressed in dry weight.

d Site-specific BAFs (dry weight basis). Calculated invertebrate tissue concentrations (sediment concentration x BAF). Tissue concentrations are on a dry weight basis.

e Exposure parameters used to calculate risk are discussed in detail in Section 4.2 of ERA.

f Ingestion rate of sediment based on 18 percent of of the prey ingestion rate (dry weight); based on average of sandpiper data from Beyer et al. 1994).

g Based on equation for birds: Water intake (L/day) = $0.059Wt(kg)^{0.67}$ (EPA 1993)

h Dietary composition factor was based on a conservative assumption of 100% dietary intake of invertebrates from the site.

i Site use factor was based on a conservative 100% use of the site for the killdeer's foraging range.

Table C2-7m
Post-Remediation Salt Marsh Harvest Mouse Risk Calculations (Wetland Sediment Residual Concentration)
Shallow Soil (0 - 2 ft bgs) at Hazard Quotient of 1
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Concentrations				Intake (mg/kg BW-day)					HQ - Low TRV					HQ - High TRV			
COPEC[a]	Surface Water (mg/L)[b]	Sediments[c]	Pickelweed BAF[d]	Pickleweed Tissue[d]	Surface Water	Sediment	Pickleweed	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Pickleweed	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Sediment	Pickleweed	Total Intake
Metals (mg/kg)																		
Aluminum	12.6	2.69E+04	3.64E-03	98	1.98E+00	1.98E+02	2.99E+01	2.29E+02	1.93	1.0E+00	1.0E+02	1.6E+01	1.2E+02 >1	19.3	1.0E-01	1.0E+01	1.6E+00	1.2E+01 >1
Antimony	0.003	2.30E+00	2.95E+00	7	4.71E-04	1.69E-02	2.08E+00	2.09E+00	0.06	8.0E-03	2.9E-01	3.5E+01	3.5E+01 >1	23.4	2.0E-05	7.2E-04	8.9E-02	8.9E-02
Arsenic	0.0436	2.17E+01	1.50E-01	3	6.84E-03	1.59E-01	9.97E-01	1.16E+00	0.32	2.1E-02	5.0E-01	3.1E+00	3.6E+00 >1	4.7	1.5E-03	3.4E-02	2.1E-01	2.5E-01
Barium	0.24	8.91E+01	5.56E-01	50	3.70E-02	6.54E-01	1.52E+01	1.58E+01	51.8	7.1E-04	1.3E-02	2.9E-01	3.1E-01	66.0	5.6E-04	9.9E-03	2.3E-01	2.4E-01
Beryllium		4.40E-01	--	0		3.23E-03	0	3.23E-03	0.532		6.1E-03	0.0E+00	6.1E-03	0.554		5.8E-03	0.0E+00	5.8E-03
Cadmium	0.0016	2.53E+00	6.76E-01	2	2.51E-04	1.86E-02	5.24E-01	5.43E-01	0.06	4.2E-03	3.1E-01	8.7E+00	9.0E+00 >1	2.64	9.5E-05	7.0E-03	2.0E-01	2.1E-01
Chromium +3	0.0263	9.13E+01	--	0	4.13E-03	6.71E-01	0	6.75E-01	2	1.7E-03	2.8E-01	0.0E+00	2.8E-01	23.1	1.8E-04	2.9E-02	0.0E+00	2.9E-02
Chromium +6	0.0263	1.83E+01	--	0	4.13E-03	1.34E-01	0	1.38E-01	5.66	7.3E-04	2.4E-02	0.0E+00	2.4E-02	35.1	1.2E-04	3.8E-03	0.0E+00	3.9E-03
Cobalt	0.0164	2.12E+01	--	0	2.57E-03	1.56E-01	0	1.58E-01	1.2	2.1E-03	1.3E-01	0.0E+00	1.3E-01	20	1.3E-04	7.8E-03	0.0E+00	7.9E-03
Copper	0.233	1.05E+02	1.82E-01	19	3.66E-02	7.71E-01	5.84E+00	6.64E+00	2.67	1.4E-02	2.9E-01	2.2E+00	2.5E+00 >1	632	5.8E-05	1.2E-03	9.2E-03	1.1E-02
Lead	0.0031	5.62E+01	7.92E-02	4	4.86E-04	4.13E-01	1.36E+00	1.77E+00	1	4.9E-04	4.1E-01	1.4E+00	1.8E+00 >1	241	2.0E-06	1.7E-03	5.7E-03	7.4E-03
Manganese	7.42	9.30E+02	1.75E+00	1630	1.16E+00	6.83E+00	4.99E+02	5.07E+02	13.7	8.5E-02	5.0E-01	3.6E+01	3.7E+01 >1	159.09	7.3E-03	4.3E-02	3.1E+00	3.2E+00 >1
Mercury	0.00029	1.10E+00	--	0	4.55E-05	8.08E-03	0	8.12E-03	0.027	1.7E-03	3.0E-01	0.0E+00	3.0E-01	0.27	1.7E-04	3.0E-02	0.0E+00	3.0E-02
Molybdenum	0.0312	5.30E+00	--	0	4.90E-03	3.89E-02	0	4.38E-02	0.26	1.9E-02	1.5E-01	0.0E+00	1.7E-01	2.6	1.9E-03	1.5E-02	0.0E+00	1.7E-02
Nickel	0.166	1.06E+02	1.14E-01	12	2.60E-02	7.78E-01	3.69E+00	4.50E+00	0.13	2.0E-01	5.9E+00	2.8E+01	3.4E+01 >1	31.6	8.2E-04	2.5E-02	1.2E-01	1.4E-01
Selenium	0.029	1.10E+00	--	0	4.55E-03	8.08E-03	0	1.26E-02	0.05	9.1E-02	1.6E-01	0.0E+00	2.5E-01	1.21	3.8E-03	6.7E-03	0.0E+00	1.0E-02
Silver	0.0019	2.30E+00	--	0	2.98E-04	1.69E-02	0	1.72E-02	0.38	7.9E-04	4.5E-02	0.0E+00	4.6E-02	3.75	7.9E-05	4.5E-03	0.0E+00	4.6E-03
Thallium		2.90E-01	--	0		2.13E-03	0	2.13E-03	0.48		4.4E-03	0.0E+00	4.4E-03	1.43		1.5E-03	0.0E+00	1.5E-03
Tin		1.59E+01	6.21E+00	99		1.17E-01	3.02E+01	3.03E+01	23.4		5.0E-03	1.3E+00	1.3E+00	35		3.3E-03	8.6E-01	8.7E-01
Vanadium	0.05	1.02E+02	--	0	7.85E-03	7.49E-01	0	7.57E-01	0.21	3.7E-02	3.6E+00	0.0E+00	3.6E+00 >1	2.1	3.7E-03	3.6E-01	0.0E+00	3.6E-01
Zinc	0.042	1.94E+02	3.77E-01	73	6.59E-03	1.42E+00	2.24E+01	2.38E+01	9.6	6.9E-04	1.5E-01	2.3E+00	2.5E+00 >1	411	1.6E-05	3.5E-03	5.4E-02	5.8E-02
Volatile Organics (mg/kg)																		
Acetone		1.00E-01	--	0		7.34E-04	0	7.34E-04	10	1.0E+01	7.3E-05	0.0E+00	7.3E-05	50		1.5E-05	0.0E+00	1.5E-05
Benzene			--	0			0	0.00E+00	26.4			0.0E+00	0.0E+00	263.6			0.0E+00	0.0E+00
Carbon disulfide		7.00E-03	--	0		5.14E-05	0	5.14E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chlorobenzene		5.00E-03	--	0		3.67E-05	0	3.67E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
cis-1,2-Dichlorobenzene			--	0			0	0.00E+00	45.2			0.0E+00	0.0E+00	452			0.0E+00	0.0E+00
Ethylbenzene		1.80E-02	--	0		1.32E-04	0	1.32E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Isopropyltoluene			--	0			0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Methylene chloride			--	0			0	0.00E+00	5.9			0.0E+00	0.0E+00	50			0.0E+00	0.0E+00
Naphthalene			--	0			0	0.00E+00	50			0.0E+00	0.0E+00	150			0.0E+00	0.0E+00
Toluene		3.00E-02	--	0		2.20E-04	0	2.20E-04	26		8.5E-06	0.0E+00	8.5E-06	260		8.5E-07	0.0E+00	8.5E-07
trans-1,2-Dichloroethene			--	0			0	0.00E+00	45.2			0.0E+00	0.0E+00	452			0.0E+00	0.0E+00
Trichloroethene		7.00E-03	--	0		5.14E-05	0	5.14E-05	0.7		7.3E-05	0.0E+00	7.3E-05	7		7.3E-06	0.0E+00	7.3E-06
1,2,4-Trimethylbenzene			--	0			0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
1,3,5-Trimethylbenzene			--	0			0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Vinyl chloride			--	0			0	0.00E+00	0.17			0.0E+00	0.0E+00	2			0.0E+00	0.0E+00
Xylenes		1.50E-01	--	0		1.10E-03	0	1.10E-03	2.1		5.2E-04	0.0E+00	5.2E-04	2.6		4.2E-04	0.0E+00	4.2E-04
Pesticides (mg/kg)																		
alpha-Chlordane		4.80E-03	--	0		3.53E-05	0	3.53E-05	4.6		7.7E-06	0.0E+00	7.7E-06	9.2		3.8E-06	0.0E+00	3.8E-06
beta-BHC		1.00E-03	--	0		7.34E-06	0	7.34E-06	1.6		4.6E-06	0.0E+00	4.6E-06	3.2		2.3E-06	0.0E+00	2.3E-06
delta-BHC		2.00E-03	--	0		1.47E-05	0	1.47E-05	1.6		9.2E-06	0.0E+00	9.2E-06	3.2		4.6E-06	0.0E+00	4.6E-06
2,4-DDD		3.00E-02	--	0		2.20E-04	0	2.20E-04	0.8		2.8E-04	0.0E+00	2.8E-04	16		1.4E-05	0.0E+00	1.4E-05
4,4-DDD		9.20E-02	--	0		6.76E-04	0	6.76E-04	0.8		8.4E-04	0.0E+00	8.4E-04	16		4.2E-05	0.0E+00	4.2E-05
DDE	0.0000027	1.80E-02	--	0	4.24E-07	1.32E-04	0	1.33E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
DDTs	0.00014	1.20E-02	--	0	2.20E-05	8.81E-05	0	1.10E-04	0.8	2.7E-05	1.1E-04	0.0E+00	1.4E-04	16	1.4E-06	5.5E-06	0.0E+00	6.9E-06
Dieldrin		2.90E-03	--	0		2.13E-05	0	2.13E-05	0.015		1.4E-03	0.0E+00	1.4E-03	1.7		1.3E-05	0.0E+00	1.3E-05
Endosulfan I		4.00E-03	--	0		2.94E-05	0	2.94E-05	0.15		2.0E-04	0.0E+00	2.0E-04	1.5		2.0E-05	0.0E+00	2.0E-05
Endosulfan sulfate	0.00012	3.00E-03	--	0	1.88E-05	2.20E-05	0	4.09E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Endrin	0.000014	2.00E-02	--	0	2.20E-06	1.47E-04	0	1.49E-04	0.09	2.4E-05	1.6E-03	0.0E+00	1.6E-03	0.92	2.4E-06	1.6E-04	0.0E+00	1.6E-04
Endrin aldehyde		6.00E-03	--	0		4.41E-05	0	4.41E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Endrin Ketone		2.30E-03	--	0		1.69E-05	0	1.69E-05	NTV	NTV	NTV	NTV	NTV	0.92		1.8E-05	0.0E+00	1.8E-05
gamma-Chlordane		5.20E-03	--	0		3.82E-05	0	3.82E-05	4.6		8.3E-06	0.0E+00	8.3E-06	9.2		4.2E-06	0.0E+00	4.2E-06
Heptachlor	0.0000028	2.00E-04	--	0	4.39E-07	1.47E-06	0	1.91E-06	0.13	3.4E-06	1.1E-05	0.0E+00	1.5E-05	6.8	6.5E-08	2.2E-07	0.0E+00	2.8E-07
Heptachlor epoxide		3.00E-04	--	0		2.20E-06	0	2.20E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Hexachlorobenzene		8.00E-04	--	0		5.88E-06	0	5.88E-06	1.6		3.7E-06	0.0E+00	3.7E-06	16		3.7E-07	0.0E+00	3.7E-07
Methoxychlor		1.20E-02	--	0		8.81E-05	0	8.81E-05	2.5		3.5E-05	0.0E+00	3.5E-05	50		1.8E-06	0.0E+00	1.8E-06
Mirex		4.00E-03	--	0		2.94E-05	0	2.94E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV

Table C2-7m
Post-Remediation Salt Marsh Harvest Mouse Risk Calculations (Wetland Sediment Residual Concentration)
Shallow Soil (0 - 2 ft bgs) at Hazard Quotient of 1
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Concentrations				Intake (mg/kg BW-day)					HQ - Low TRV					HQ - High TRV			
COPEC[a]	Surface Water (mg/L)[b]	Sediments[c]	Pickelweed BAF[d]	Pickleweed Tissue[d]	Surface Water	Sediment	Pickleweed	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Pickleweed	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Sediment	Pickleweed	Total Intake
trans-Nonachlor		2.40E-03	--	0		1.76E-05	0	1.76E-05	4.6		3.8E-06	0.0E+00	3.8E-06	9.2		1.9E-06	0.0E+00	1.9E-06
SVOCs (mg/kg)																		
Acenaphthene		5.73E-02	--	0		4.21E-04	0	4.21E-04	1.31		3.2E-04	0.0E+00	3.2E-04	32.8		1.3E-05	0.0E+00	1.3E-05
Acenaphthylene		3.96E-02	--	0		2.91E-04	0	2.91E-04	1.31		2.2E-04	0.0E+00	2.2E-04	32.8		8.9E-06	0.0E+00	8.9E-06
Anthracene		6.58E-02	--	0		4.83E-04	0	4.83E-04	1.31		3.7E-04	0.0E+00	3.7E-04	32.8		1.5E-05	0.0E+00	1.5E-05
Benzo(a)anthracene		1.00E-01	1.29E+00	0		7.34E-04	3.96E-02	4.03E-02	1.31		5.6E-04	3.0E-02	3.1E-02	32.8		2.2E-05	1.2E-03	1.2E-03
Benzo(a)pyrene		9.60E-02	2.31E+00	0		7.05E-04	6.79E-02	6.86E-02	1.31		5.4E-04	5.2E-02	5.2E-02	32.8		2.2E-05	2.1E-03	2.1E-03
Benzo(b)fluoranthene		8.30E-02	1.55E+00	0		6.10E-04	3.94E-02	4.00E-02	1.31		4.7E-04	3.0E-02	3.1E-02	32.8		1.9E-05	1.2E-03	1.2E-03
Benzo(ghi)perylene		8.20E-02	1.55E+00	0		6.02E-04	3.90E-02	3.96E-02	1.31		4.6E-04	3.0E-02	3.0E-02	32.8		1.8E-05	1.2E-03	1.2E-03
Benzo(k)fluoranthene		6.70E-02	1.55E+00	0		4.92E-04	3.18E-02	3.23E-02	1.31		3.8E-04	2.4E-02	2.5E-02	32.8		1.5E-05	9.7E-04	9.9E-04
Benzoic acid			--	0			0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Bis(2-ethylhexyl)phthalate	0.027	1.20E-01	--	0	4.24E-03	8.81E-04	0	5.12E-03	18.3	2.3E-04	4.8E-05	0.0E+00	2.8E-04	183	2.3E-05	4.8E-06	0.0E+00	2.8E-05
Butylbenzylphthalate		2.50E-02	--	0		1.84E-04	0	1.84E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Carbazole		1.41E-01	--	0		1.04E-03	0	1.04E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Chloroaniline		3.00E-03	--	0			0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2-Chlorophenol		4.33E-02	--	0		3.18E-04	0	3.18E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chrysene	0.0002	9.00E-02	2.09E+00	0	3.14E-05	6.61E-04	5.76E-02	5.83E-02	1.31	2.4E-05	5.0E-04	4.4E-02	4.4E-02	32.8	9.6E-07	2.0E-05	1.8E-03	1.8E-03
Dibenzofuran		7.89E-02	--	0		5.79E-04	0	5.79E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
3,3-Dichlorobenzidine		1.20E-02	--	0		8.81E-05	0	8.81E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2,6-Dinitrotoluene			--	0			0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Fluoranthene		8.40E-02	--	0		6.17E-04	0	6.17E-04	1.31		4.7E-04	0.0E+00	4.7E-04	32.8		1.9E-05	0.0E+00	1.9E-05
Fluorene		5.40E-02	--	0		3.97E-04	0	3.97E-04	1.31		3.0E-04	0.0E+00	3.0E-04	32.8		1.2E-05	0.0E+00	1.2E-05
Indeno(123,cd)pyrene		1.00E-01	3.17E+00	0		7.34E-04	9.70E-02	9.77E-02	1.31		5.6E-04	7.4E-02	7.5E-02	32.8		2.2E-05	3.0E-03	3.0E-03
2-Methylnaphthalene		5.23E-02	--	0		3.84E-04	0	3.84E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Methylphenol	0.12	6.68E-02	--	0	1.88E-02	4.91E-04	0	1.93E-02	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Naphthalene		8.50E-02	--	0		6.24E-04	0	6.24E-04	50		1.2E-05	0.0E+00	1.2E-05	150		4.2E-06	0.0E+00	4.2E-06
Pentachlorophenol		4.84E-02	--	0		3.55E-04	0	3.55E-04	8.42		4.2E-05	0.0E+00	4.2E-05	27.4		1.3E-05	0.0E+00	1.3E-05
Phenanthrene		7.00E-02	--	0		5.14E-04	0	5.14E-04	1.31		3.9E-04	0.0E+00	3.9E-04	32.8		1.6E-05	0.0E+00	1.6E-05
Phenol		1.40E-01	--	0		1.03E-03	0	1.03E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pyrene		7.90E-02	--	0		5.80E-04	0	5.80E-04	1.31		4.4E-04	0.0E+00	4.4E-04	32.8		1.8E-05	0.0E+00	1.8E-05
PCBs (mg/kg)																		
PCBs (TOTAL)-congeners	0.000016	5.10E-02	2.72E+00	0	2.51E-06	3.75E-04	4.24E-02	4.28E-02	0.36	7.0E-06	1.0E-03	1.2E-01	1.2E-01	1.28	2.0E-06	2.9E-04	3.3E-02	3.3E-02

>1 = The calculated hazard quotient exceeds 1 (i.e., > 1.5)

Exposure Assumptions and Equation:[e]

	Value	Units
Ingestion Rate (IR) prey(dry wt.) =	0.00306	kg/day (dry weight)
Irpickleweed (dry wt.) =	0.00306	kg/day (dry weight)
IRsediment (dry wt.)[f] =	0.0000734	kg-day (dry weight)
Cprey =	chem-specific	mg/kg or µg/kg
Csediment =	chem-specific	mg/kg or µg/kg
Tissue Moisture (pickleweed) =	81.6%	percent
IRsurface water[g] =	0.00157	L/day
Csurface water =	chem-specific	mg/L or µg/L
Dietary Composition Factor (DCF)[h] =	100%	percent
Site Use Factor (SUF)[i] =	100%	percent
Body Weight (BW) =	0.01	kg

Intake Equation = [Irpickleweed (dry wt) x (Cprey(pickleweed, dry wt)/1-TM) x DCF x SUF]/BW] + [(IRsediment x Csediment x DCF x SUF)]/BW]+ [(Irsurface water x Csurface water x DCF x SUF)]/BW]

Risk (hazard quotient) = Intake / TRV

Prey tissue(dry wt) = Prey tissue (wet wt.) / (1-Tissue Moisture)

NTV = Not toxicity data available.

Blank cell indicates COPEC was not detected in this medium.

Notes:

a All chemicals detected in sediments are considered as constituents of potential ecological concern.

b All concentrations of constituents in surface water are based on the maximum concentration.

c All concentrations of constituents in sediment are based on the residual concentrations expressed in dry weight.

d Site-specific BAFs (dry weight basis). Calculated pickelweed tissue concentrations (sediment concentration x BAF). Tissue concentrations are on a dry weight basis.

e Exposure parameters used to calculate risk are discussed in detail in Section 4.2 of ERA.

f Ingestion rate of sediment based on 2.4 percent of of the prey ingestion rate (dry weight); based on a meadow vole (Beyer et al. (1994).

g Based on equation for mammals: Water intake (L/day) = $0.099Wt(kg)^{90}$ (EPA 1993)

h Dietary composition factor was based on a conservative assumption of 100% dietary intake of pickleweed from the site.

i Site use factor was based on a conservative 100% use of the site for the harvest mouse's foraging range.

Table C2-7n
Summary of Residual Risk Estimates: Shallow Soil (0 - 2 ft bgs)
Hazard Quotient = 1
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Fox		Harrier		Mallard (breeding)		Mallard (non-breeding)		Heron		Killdeer		Salt Marsh Harvest Mouse	
Chemical	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**
Hazard Quotient = 1														
Metals (mg/kg)														
Aluminum	6.4E+00 >1	6.4E-01	1.2E-01	1.2E-02	1.7E+00 >1	1.7E-01	9.8E-02	9.8E-03	5.8E-01	5.8E-02	2.0E+01 >1	2.0E+00 >1	1.2E+02 >1	1.2E+01 >1
Antimony	5.6E-01	1.4E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV >1	NTV	3.5E+01 >1	8.9E-02
Arsenic	2.5E-02	1.7E-03	9.0E-04	2.3E-04	3.2E-02	8.0E-03	5.8E-03	1.4E-03	7.5E-03	1.9E-03	3.1E-01	7.9E-02	3.6E+00 >1	2.5E-01
Barium	2.5E-03	2.0E-03	1.2E-02	6.0E-03	2.0E-01	9.9E-02	4.8E-03	2.4E-03	1.9E-02	9.6E-03	1.5E+00 >1	7.7E-01	3.1E-01	2.4E-01
Beryllium	2.6E-04	2.5E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	6.1E-03	5.8E-03
Cadmium	1.4E-02	3.2E-04	6.4E-03	4.9E-05	6.7E-01	5.2E-03	4.4E-01	3.4E-03	5.8E-02	4.5E-04	2.7E+00 >1	2.1E-02	9.0E+00 >1	2.1E-01
Chromium +3	2.4E-02	2.5E-03	3.1E-02	3.0E-02	6.0E-01	5.8E-01	1.1E-02	1.1E-02	3.2E-01	3.0E-01	5.4E+00 >1	5.2E+00 >1	2.8E-01	2.9E-02
Chromium +6	2.1E-03	3.4E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	2.4E-02	3.9E-03
Cobalt	5.9E-03	3.6E-04	5.7E-04	2.6E-04	3.7E-03	1.6E-03	9.1E-04	4.1E-04	5.1E-03	2.3E-03	1.1E-01	4.8E-02	1.3E-01	7.9E-03
Copper	1.7E-01	7.2E-04	4.4E-01	1.9E-02	9.8E-01	4.3E-02	4.1E-02	1.8E-03	5.2E-01	2.3E-02	8.3E+00 >1	3.6E-01	2.5E+00 >1	1.1E-02
Lead	4.1E-01	1.7E-03	6.7E+01 >1	1.1E-01	1.1E+01 >1	1.8E-02	1.6E+00 >1	2.6E-03	7.5E+01 >1	1.2E-01	2.0E+02 >1	3.2E-01	1.8E+00 >1	7.4E-03
Manganese	3.3E-02	2.9E-03	4.1E-03	4.1E-04	1.9E+00 >1	1.9E-01	6.2E-02	6.2E-03	4.2E-02	4.2E-03	1.4E+01 >1	1.4E+00	3.7E+01 >1	3.2E+00 >1
Mercury	1.3E-02	1.3E-03	5.5E-03	1.2E-03	6.1E-01	1.3E-01	9.2E-03	2.0E-03	6.3E-01	1.4E-01	5.3E+00 >1	1.1E+00	3.0E-01	3.0E-02
Molybdenum	9.1E-03	9.1E-04	4.6E-04	4.6E-05	2.2E-03	2.2E-04	5.4E-04	5.4E-05	3.1E-03	3.1E-04	6.0E-02	5.9E-03	1.7E-01	1.7E-02
Nickel	2.8E-01	1.2E-03	1.7E-02	4.2E-04	9.4E-01	2.3E-02	3.6E-02	8.8E-04	1.4E-01	3.5E-03	9.0E+00 >1	2.2E-01	3.4E+01 >1	1.4E-01
Selenium	1.6E+00 >1	6.4E-02	8.0E-01	2.0E-01	9.2E-03	2.3E-03	2.3E-03	5.7E-04	1.6E+00 >1	3.9E-01	2.0E-01	5.0E-02	2.5E-01	1.0E-02
Silver	2.1E-03	2.1E-04	2.7E-06	NTV	1.7E-05	NTV	4.2E-06	NTV	2.4E-05	NTV	5.0E-04	NTV	4.6E-02	4.6E-03
Thallium	7.1E-03	2.4E-03	2.3E-02	NTV	1.1E-03	NTV	2.7E-04	NTV	2.4E-02	NTV	3.2E-02	NTV	4.4E-03	1.5E-03
Tin	2.2E-04	1.5E-04	4.5E-04	1.8E-04	3.9E-02	1.6E-02	3.6E-02	1.5E-02	4.2E-03	1.7E-03	9.0E-02	3.6E-02	1.3E+00	8.7E-01
Vanadium	1.6E-01	1.6E-02	1.8E-03	1.8E-04	2.1E-02	2.1E-03	4.9E-03	4.9E-04	1.6E-02	1.6E-03	4.0E-01	4.0E-02	3.6E+00 >1	3.6E-01
Zinc	2.6E-01	6.1E-03	3.4E-01	3.4E-02	5.3E-01	5.3E-02	1.3E-02	1.3E-03	6.1E-01	6.1E-02	4.1E+00 >1	4.1E-01	2.5E+00 >1	5.8E-02
Volatile Organics (mg/kg)														
Acetone	3.2E-06	6.4E-07	3.7E-07	3.7E-08	2.5E-06	2.5E-07	6.2E-07	6.2E-08	3.5E-06	3.5E-07	7.4E-05	7.4E-06	7.3E-05	1.5E-05
Benzene	0.0E+00	0.0E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	0.0E+00	0.0E+00
Carbon disulfide	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chlorobenzene	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
cis-1,2-Dichlorobenzene	0.0E+00	0.0E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	0.0E+00	0.0E+00
Ethylbenzene	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Isopropyltoluene	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Methylene chloride	0.0E+00	0.0E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	0.0E+00	0.0E+00
Naphthalene	0.0E+00	0.0E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	0.0E+00	0.0E+00
Toluene	3.7E-07	3.7E-08	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	8.5E-06	8.5E-07
trans-1,2-Dichloroethene	0.0E+00	0.0E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	0.0E+00	0.0E+00
Trichloroethene	3.2E-06	3.2E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	7.3E-05	7.3E-06
1,2,4-Trimethylbenzene	NTV	NTV	***NTV***	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
1,3,5-Trimethylbenzene	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Vinyl chloride	0.0E+00	0.0E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	0.0E+00	0.0E+00
Xylenes	2.3E-05	1.8E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	5.2E-04	4.2E-04

Table C2-7n
Summary of Residual Risk Estimates: Shallow Soil (0 - 2 ft bgs)
Hazard Quotient = 1
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Fox		Harrier		Mallard (breeding)		Mallard (non-breeding)		Heron		Killdeer		Salt Marsh Harvest Mouse	
Chemical	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**
Pesticides (mg/kg)														
alpha-Chlordane	3.3E-07	1.7E-07	6.5E-04	6.5E-05	4.4E-03	4.4E-04	1.1E-03	0.000110834	6.2E-03	6.2E-04	1.3E-01	1.3E-02	7.7E-06	3.8E-06
beta-BHC	2.0E-07	1.0E-07	3.4E-07	8.5E-08	2.3E-06	5.7E-07	5.8E-07	1.4E-07	3.2E-06	8.1E-07	6.9E-05	1.7E-05	4.6E-06	2.3E-06
delta-BHC	4.0E-07	2.0E-07	6.8E-07	1.7E-07	4.6E-06	1.1E-06	1.2E-06	2.9E-07	6.5E-06	1.6E-06	1.4E-04	3.4E-05	9.2E-06	4.6E-06
2,4-DDD	4.6E-04	2.3E-05	9.5E-02	5.7E-04	4.3E-03	2.6E-05	1.1E-03	6.5E-06	1.0E-01	6.1E-04	1.3E-01	7.7E-04	2.8E-04	1.4E-05
DDD	1.4E-03	7.0E-05	2.9E-01	1.8E-03	1.3E-02	7.9E-05	3.3E-03	2.0E-05	3.1E-01	1.9E-03	3.9E-01	2.4E-03	8.4E-04	4.2E-05
DDE	NTV	NTV	NTV	8.6E-04	NTV	3.9E-05	NTV	9.7E-06	NTV	9.1E-04	NTV	1.2E-03	NTV	NTV
DDTs	1.9E-04	9.4E-06	3.8E-02	2.3E-04	2.1E-03	1.3E-05	5.2E-04	3.1E-06	4.1E-02	2.5E-04	5.4E-02	3.2E-04	1.4E-04	6.9E-06
Dieldrin	6.2E-05	5.4E-07	7.8E-06	5.6E-07	5.3E-05	3.8E-06	1.3E-05	9.6E-07	7.4E-05	5.4E-06	1.6E-03	1.1E-04	1.4E-03	1.3E-05
Endosulfan I	8.5E-06	8.5E-07	7.6E-08	7.6E-09	5.2E-07	5.2E-08	1.3E-07	1.3E-08	7.2E-07	7.2E-08	1.5E-05	1.5E-06	2.0E-04	2.0E-05
Endosulfan sulfate	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Endrin	7.3E-05	7.3E-06	1.4E-05	1.4E-06	8.7E-05	8.7E-06	2.2E-05	2.2E-06	1.2E-04	1.2E-05	2.6E-03	2.6E-04	1.6E-03	1.6E-04
Endrin aldehyde	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Endrin Ketone	NTV	8.0E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	1.8E-05
gamma-Chlordane	3.6E-07	1.8E-07	7.1E-04	7.1E-05	4.8E-03	4.8E-04	1.2E-03	1.2E-04	6.7E-03	6.7E-04	1.0E-04	1.0E-05	8.3E-06	4.2E-06
Heptachlor	9.6E-07	1.8E-08	1.4E-06	1.4E-07	5.0E-06	5.0E-07	1.3E-06	1.3E-07	7.5E-06	7.5E-07	1.2E-04	1.2E-05	1.5E-05	2.8E-07
Heptachlor epoxide	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Hexachlorobenzene	1.6E-07	1.6E-08	6.6E-07	6.6E-08	4.5E-06	4.5E-07	1.1E-06	1.1E-07	6.3E-06	6.3E-07	1.3E-04	1.3E-05	3.7E-06	3.7E-07
Methoxychlor	1.5E-06	7.7E-08	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	3.5E-05	1.8E-06
Mirex	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
trans-Nonachlor	1.7E-07	8.3E-08	3.3E-04	3.3E-05	2.2E-03	2.2E-04	5.5E-04	5.5E-05	3.1E-03	3.1E-04	6.6E-02	6.6E-03	3.8E-06	1.9E-06
SVOCs (mg/kg)														
Acenaphthene	1.4E-05	5.6E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	3.2E-04	1.3E-05
Acenaphthylene	9.7E-06	3.9E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	2.2E-04	8.9E-06
Anthracene	1.6E-05	6.4E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	3.7E-04	1.5E-05
Benzo(a)anthracene	2.4E-05	9.7E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	3.1E-02	1.2E-03
Benzo(a)pyrene	2.3E-05	9.3E-07	1.8E-02	1.8E-03	1.2E-01	1.2E-02	3.1E-02	3.1E-03	1.7E-01	1.7E-02	3.7E+00 >1	3.7E-01	5.2E-02	2.1E-03
Benzo(b)fluoranthene	2.0E-05	8.1E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	3.1E-02	1.2E-03
Benzo(g,h,i)perylene	2.0E-05	8.0E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	3.0E-02	1.2E-03
Benzo(k)fluoranthene	1.6E-05	6.5E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	2.5E-02	9.9E-04
Benzoic acid	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Bis(2-ethylhexyl)phthalate	3.4E-05	3.4E-06	5.0E-04	5.0E-05	7.3E-04	7.3E-05	1.8E-04	1.8E-05	1.3E-03	1.3E-04	7.7E-03	7.7E-04	2.8E-04	2.8E-05
Butylbenzylphthalate	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Carbazole	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Chloroaniline	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2-Chloropropane	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chrysene	2.5E-05	1.0E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	4.4E-02	1.8E-03
Dibenzofuran	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
3,3-Dichlorobenzidine	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2,6-Dinitrotoluene	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Fluoranthene	2.0E-05	8.2E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	4.7E-04	1.9E-05
Fluorene	1.3E-05	5.3E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	3.0E-04	1.2E-05
Indeno(1,2,3-cd)pyrene	2.4E-05	9.7E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	7.5E-02	3.0E-03

Table C2-7n
Summary of Residual Risk Estimates: Shallow Soil (0 - 2 ft bgs)
Hazard Quotient = 1
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Fox		Harrier		Mallard (breeding)		Mallard (non-breeding)		Heron		Killdeer		Salt Marsh Harvest Mouse	
Chemical	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**
2-Methylnaphthalene	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Methylphenol	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Naphthalene	5.4E-07	1.8E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	1.2E-05	4.2E-06
Pentachlorophenol	1.8E-06	5.6E-07	1.4E-06	4.1E-07	9.3E-06	2.8E-06	2.3E-06	7.0E-07	1.3E-05	3.9E-06	2.8E-04	8.3E-05	4.2E-05	1.3E-05
Phenanthrene	1.7E-05	6.8E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	3.9E-04	1.6E-05
Phenol	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pyrene	1.9E-05	7.7E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	4.4E-04	1.8E-05
PCBs (mg/kg)														
PCBs (Total Congeners)	2.9E-02	8.2E-03	2.8E-01	2.0E-02	1.9E-01	1.4E-02	7.9E-04	5.6E-05	3.4E+00 >1	2.4E-01	1.4E+00	1.0E-01	1.2E-01	3.3E-02

Table C2-8a
Medium-Specific Exposure Point Concentration Summary
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil (0 to 10 feet bgs)
Exposure Medium:	Soil
Exposure Point:	On-Site Soil

Chemical of Potential Concern	Distribution[a]	Mean of Normal Data[b]	Mean of Lognormal Data[c]	Median	UCL[d]	Maximum Detected Concentration	Reasonable Maximum Exposure		Central Tendency Exposure	
							Medium EPC Value[e]	Medium EPC Statistic and Rationale[f]	Medium EPC Value[e]	Medium EPC Statistic and Rationale[f]
INORGANICS (mg/kg)										
ALUMINUM	Non-Par	25653	10.1	25,100	26862	41400	26,862	Student's-t UCL	26,862	Student's-t UCL
ANTIMONY	Non-Par	3.15	0.73	2.1	4.5	49.9	4.5	95% Chebyshev UCL	4.5	95% Chebyshev UCL
ARSENIC	Normal	20.0	2.91	20	21.2	43.2	21.2	Student's-t UCL	21.2	Student's-t UCL
BARIUM	Non-Par	87.4	4.40	79	93.6	330	93.6	Student's-t UCL	93.6	Student's-t UCL
BERYLLIUM	Non-Par	0.44	-1.25	0.33	0.66	2.5	0.66	97.5% Chebyshev UCL	0.66	97.5% Chebyshev UCL
CADMIUM	Non-Par	2.00	0.07	1.1	2.9	6	2.94	97.5% Chebyshev UCL	2.94	97.5% Chebyshev UCL
CHROMIUM	Non-Par	140	4.70	102	225	3100	225	95% Chebyshev UCL	225	95% Chebyshev UCL
COBALT	Non-Par	15.5	2.53	18.7	18.5	38.2	18.5	95% Chebyshev UCL	18.5	95% Chebyshev UCL
COPPER	Non-Par	123	4.59	94.25	193	2600	193	95% Chebyshev UCL	193	95% Chebyshev UCL
HEXAVALENT CHROMIUM	NA	NA	NA	NA	NA	0.07	0.07	Max Detected	0.07	Max Detected
LEAD	Non-Par	62.5	3.92	51.55	85.1	651	85.1	95% Chebyshev UCL	85.1	95% Chebyshev UCL
MANGANESE	Non-Par	849	6.65	808	901	3800	901	Student's-t UCL	901	Student's-t UCL
MERCURY	Gamma	1.03	-0.22	0.94	1.15	6	1.15	Approximate Gamma UCL	1.15	Approximate Gamma UCL
MOLYBDENUM	Non-Par	2.49	-0.68	0.23	5.4	44.3	5.4	97.5% Chebyshev UCL	5.4	97.5% Chebyshev UCL
NICKEL	Non-Par	107	4.58	107	113	493	113	Student's-t UCL	113	Student's-t UCL
SELENIUM	Non-Par	0.89	-0.58	0.6	1.27	4.5	1.27	95% Chebyshev UCL	1.27	95% Chebyshev UCL
SILVER	Non-Par	1.75	-0.75	0.28	2.8	5.2	2.8	97.5% Chebyshev UCL	2.8	97.5% Chebyshev UCL
THALLIUM	Non-Par	0.30	-1.53	0.185	0.49	2.6	0.49	95% Chebyshev UCL	0.49	95% Chebyshev UCL
TIN	Normal	13.6	2.58	13.85	14.2	20.4	14.2	Student's-t UCL	14.2	Student's-t UCL
VANADIUM	Non-Par	103	4.54	89.95	109	203	109	Student's-t UCL	109	Student's-t UCL
ZINC	Non-Par	206	5.24	188	220	1080	220	Student's-t UCL	220	Student's-t UCL
PESTICIDES (mg/kg)										
ALPHA-CHLORDANE	Non-Par	0.0029	-7.67	0.0004	0.0082	0.051	0.0082	97.5% Chebyshev UCL	0.0082	97.5% Chebyshev UCL
BETA BHC	NA	NA	NA	NA	NA	0.001	0.001	Max Detected	0.001	Max Detected
DELTA BHC	NA	NA	NA	NA	NA	0.002	0.002	Max Detected	0.002	Max Detected
2,4- DDD	Non-Par	0.0064	-5.98	0.001	0.029	0.03	0.029	99% Chebyshev UCL	0.029	99% Chebyshev UCL
4,4- DDD	Non-Par	0.028	-5.63	0.003	0.086	0.8	0.086	97.5% Chebyshev UCL	0.086	97.5% Chebyshev UCL
4,4- DDE	Non-Par	0.0054	-6.8	0.001	0.017	0.2	0.017	97.5% Chebyshev UCL	0.017	97.5% Chebyshev UCL
4,4- DDT	Non-Par	0.0053	-6.48	0.002	0.012	0.08	0.012	97.5% Chebyshev UCL	0.012	97.5% Chebyshev UCL
DIELDRIN	Non-Par	0.0019	-7.37	0.001	0.0039	0.005	0.0039	97.5% Chebyshev UCL	0.0039	97.5% Chebyshev UCL
ENDOSULFAN I	NA	NA	NA	NA	NA	0.004	0.004	Max Detected	0.004	Max Detected
ENDOSULFAN SULFATE	NA	NA	NA	NA	NA	0.003	0.003	Max Detected	0.003	Max Detected
ENDRIN	NA	NA	NA	NA	NA	0.02	0.02	Max Detected	0.02	Max Detected
ENDRIN ALDEHYDE	NA	NA	NA	NA	NA	0.006	0.006	Max Detected	0.006	Max Detected
ENDRIN KETONE	Non-Par	0.0013	-7.84	0.0004	0.003	0.003	0.003	97.5% Chebyshev UCL	0.003	97.5% Chebyshev UCL
GAMMA-CHLORDANE	Non-Par	0.0029	-7.75	0.0004	0.0085	0.059	0.0085	97.5% Chebyshev UCL	0.0085	97.5% Chebyshev UCL
HEPTACHLOR	NA	NA	NA	NA	NA	0.0002	0.0002	Max Detected	0.0002	Max Detected
HEPTACHLOR EPOXIDE	NA	NA	NA	NA	NA	0.0003	0.0003	Max Detected	0.0003	Max Detected

Table C2-8a
Medium-Specific Exposure Point Concentration Summary
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil (0 to 10 feet bgs)
Exposure Medium:	Soil
Exposure Point:	On-Site Soil

Chemical of Potential Concern	Distribution[a]	Mean of Normal Data[b]	Mean of Lognormal Data[c]	Median	UCL[d]	Maximum Detected Concentration	Reasonable Maximum Exposure		Central Tendency Exposure	
							Medium EPC Value[e]	Medium EPC Statistic and Rationale[f]	Medium EPC Value[e]	Medium EPC Statistic and Rationale[f]
HEXACHLOROBENZENE	Non-Par	0.00083	-8.13	0.0003	0.0023	0.0008	0.0008	Max Detected	0.0008	Max Detected
METHOXYCHLOR	Non-Par	0.0065	-7.02	0.00125	0.02	0.04	0.02	99% Chebyshev UCL	0.02	99% Chebyshev UCL
MIREX	NA	NA	NA	NA	NA	0.004	0.004	Max Detected	0.004	Max Detected
TRANS-NONACHLOR	Non-Par	0.00087	-8.17	0.000275	0.0024	0.005	0.0024	97.5% Chebyshev UCL	0.0024	97.5% Chebyshev UCL
PCBs (mg/kg)										
PCBs (TOTAL)	Lognormal	0.08	-4.27	0.0122	0.13	2	0.13	H-UCL	0.13	H-UCL
SVOCs (mg/kg)										
ACENAPHTHENE	Non-Par	0.09	-3.00	0.04134	0.14	1.0567	0.14	95% Chebyshev UCL	0.14	95% Chebyshev UCL
ACENAPHTHYLENE	Non-Par	0.08	-3.08	0.032	0.12	0.4388	0.12	95% Chebyshev UCL	0.12	95% Chebyshev UCL
ANTHRACENE	Non-Par	0.07	-3.44	0.0245	0.13	0.678	0.13	97.5% Chebyshev UCL	0.13	97.5% Chebyshev UCL
BENZO(A)ANTHRACENE	Non-Par	0.10	-3.28	0.024	0.29	3.6821	0.29	97.5% Chebyshev UCL	0.29	97.5% Chebyshev UCL
BENZO(A)PYRENE	Non-Par	0.09	-3.44	0.02175	0.26	3.0884	0.256	97.5% Chebyshev UCL	0.256	97.5% Chebyshev UCL
BENZO(B)FLUORANTHENE	Non-Par	0.11	-3.04	0.03	0.26	2.755	0.256	97.5% Chebyshev UCL	0.256	97.5% Chebyshev UCL
BENZO(G,H,I)PERYLENE	Non-Par	0.08	-3.20	0.025	0.17	1.5074	0.168	97.5% Chebyshev UCL	0.168	97.5% Chebyshev UCL
BENZO(K)FLUORANTHENE	Non-Par	0.10	-3.20	0.0245	0.25	2.774	0.245	97.5% Chebyshev UCL	0.245	97.5% Chebyshev UCL
BENZOIC ACID	NA	NA	NA	NA	NA	0.68	0.68	Max Detected	0.68	Max Detected
BIS(2-ETHYLHEXYL)PHTHALATE	Non-Par	0.27	-3.17	0.04	1.10	15.4642	1.1	97.5% Chebyshev UCL	1.1	97.5% Chebyshev UCL
BUTYLBENZYLPHTHALATE	NA	NA	NA	NA	NA	0.025	0.025	Max Detected	0.025	Max Detected
CARBAZOLE	Non-Par	0.21	-2.67	0.026	0.55	4.0942	0.55	97.5% Chebyshev UCL	0.55	97.5% Chebyshev UCL
4- CHLOROANILINE	NA	NA	NA	NA	NA	0.003	0.003	Max Detected	0.003	Max Detected
2- CHLOROPHENOL	NA	NA	NA	NA	NA	0.0433	0.0433	Max Detected	0.0433	Max Detected
CHRYSENE	Non-Par	0.09	-3.46	0.0225	0.28	3.742	0.28	97.5% Chebyshev UCL	0.28	97.5% Chebyshev UCL
DIBENZOFURAN	Non-Par	0.18	-2.52	0.1	0.36	2.8628	0.36	97.5% Chebyshev UCL	0.36	97.5% Chebyshev UCL
3,3- DICHLOROBENZIDINE	NA	NA	NA	NA	NA	0.012	0.012	Max Detected	0.012	Max Detected
2,6- DINITROTOLUENE	NA	NA	NA	NA	NA	0.37	0.37	Max Detected	0.37	Max Detected
FLUORANTHENE	Non-Par	0.12	-3.23	0.0285	0.41	5.6279	0.406	97.5% Chebyshev UCL	0.406	97.5% Chebyshev UCL
FLUORENE	Non-Par	0.08	-3.27	0.0245	0.14	0.7256	0.14	97.5% Chebyshev UCL	0.14	97.5% Chebyshev UCL
INDENO(1,2,3-CD)PYRENE	Non-Par	0.08	-3.44	0.022	0.17	1	0.17	97.5% Chebyshev UCL	0.17	97.5% Chebyshev UCL
2- METHYLNAPHTHALENE	Non-Par	0.12	-2.76	0.0445	0.18	0.6251	0.18	97.5% Chebyshev UCL	0.18	97.5% Chebyshev UCL
4- METHYLPHENOL	Non-Par	0.15	-2.55	0.1	0.23	0.8757	0.23	97.5% Chebyshev UCL	0.23	97.5% Chebyshev UCL
NAPHTHALENE	Non-Par	0.07	-3.16	0.02975	0.11	0.4723	0.11	95% Chebyshev UCL	0.11	95% Chebyshev UCL
PENTACHLOROPHENOL	Non-Par	0.36	-1.68	0.2375	0.54	0.7512	0.54	97.5% Chebyshev UCL	0.54	97.5% Chebyshev UCL
PHENANTHRENE	Non-Par	0.09	-3.43	0.02225	0.21	2.2809	0.21	97.5% Chebyshev UCL	0.21	97.5% Chebyshev UCL
PHENOL	Non-Par	0.17	-2.52	0.1	0.29	1.7625	0.29	97.5% Chebyshev UCL	0.29	97.5% Chebyshev UCL
PYRENE	Non-Par	0.13	-3.12	0.0358	0.46	6.3265	0.46	97.5% Chebyshev UCL	0.46	97.5% Chebyshev UCL
TPH (mg/kg)										
TPH AS DIESEL	Non-Par	78.8	3.38	19.15	190	1100	190	97.5% Chebyshev UCL	190	97.5% Chebyshev UCL
TPH AS GASOLINE	Non-Par	0.88	-3.48	0.0153	4.5	51	4.5	97.5% Chebyshev UCL	4.5	97.5% Chebyshev UCL
TPH AS MOTOR OIL	Non-Par	145	4.22	54.5	314	2700	314	97.5% Chebyshev UCL	314	97.5% Chebyshev UCL

Table C2-8a
Medium-Specific Exposure Point Concentration Summary
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil (0 to 10 feet bgs)
Exposure Medium:	Soil
Exposure Point:	On-Site Soil

Chemical of Potential Concern	Distribution[a]	Mean of Normal Data[b]	Mean of Lognormal Data[c]	Median	UCL[d]	Maximum Detected Concentration	Reasonable Maximum Exposure		Central Tendency Exposure	
							Medium EPC Value[e]	Medium EPC Statistic and Rationale[f]	Medium EPC Value[e]	Medium EPC Statistic and Rationale[f]
VOCs (mg/kg)										
ACETONE	Non-Par	0.087	-3.69	0.0175	0.32	0.4	0.32	99% Chebyshev UCL	0.32	99% Chebyshev UCL
BENZENE	NA	NA	NA	NA	NA	0.025	0.005	Max Detected	0.005	Max Detected
CARBON DISULFIDE	Non-Par	0.011	-5.02	0.005	0.025	0.04	0.025	95% Chebyshev UCL	0.025	95% Chebyshev UCL
CHLOROBENZENE	Non-Par	0.0099	-5.09	0.005	0.024	0.04	0.024	95% Chebyshev UCL	0.024	95% Chebyshev UCL
CIS-1,2-DICHLOROETHENE	NA	NA	NA	NA	NA	0.052	0.005	Max Detected	0.005	Max Detected
ETHYLBENZENE	Non-Par	0.025	-4.1	0.03	0.044	0.2	0.044	97.5% Chebyshev UCL	0.044	97.5% Chebyshev UCL
4- ISOPROPYLTOLUENE	NA	NA	NA	NA	NA	0.0072	0.0072	Max Detected	0.0072	Max Detected
METHYLENE CHLORIDE	NA	NA	NA	NA	NA	0.3	0.3	Max Detected	0.3	Max Detected
NAPHTHALENE	NA	NA	NA	NA	NA	0.016	0.016	Max Detected	0.016	Max Detected
TOLUENE	NA	NA	NA	NA	NA	0.03	0.03	Max Detected	0.03	Max Detected
TRANS-1,2-DICHLOROETHENE	NA	NA	NA	NA	NA	0.023	0.023	Max Detected	0.023	Max Detected
TRICHLOROETHENE	NA	NA	NA	NA	NA	0.007	0.007	Max Detected	0.007	Max Detected
1,2,4- TRIMETHYLBENZENE	NA	NA	NA	NA	NA	0.025	0.025	Max Detected	0.025	Max Detected
1,3,5- TRIMETHYLBENZENE	NA	NA	NA	NA	NA	0.0093	0.0093	Max Detected	0.0093	Max Detected
VINYL CHLORIDE	NA	NA	NA	NA	NA	0.034	0.034	Max Detected	0.034	Max Detected
XYLENE (TOTAL)	Non-Par	0.07	-3.37	0.1	0.11	0.2	0.11	97.5% Chebyshev UCL	0.11	97.5% Chebyshev UCL

The UCL for chemicals that are italicized and underlined have been modified for post remediation residual risk.

bgs Below Ground Surface.
EPC Exposure Point Concentration.
mg/kg Milligram per kilogram.
NA Not Applicable for small data sets.
PCBs Polychlorinated Biphenyls
SVOC Semivolatile Organic Compound
TPH Total Petroleum Hydrocarbon
UCL Upper confidence limit of the mean.
VOCs Volatile Organic Compounds

a Gamma = Data follow gamma distribution using chi-square approximation.
Normal = Data are normally distributed.
Lognormal = Data are lognormally distributed.
Non-par = Data are non-parametric.
Lilliefors Test was used to determine the distribution for sample sets greater than 50.
Shapiro and Wilk W-Test was used to determine the distribution for sample sets less than 50.

b The value presented is the arithmetic mean calculated using distribution-dependent formulas. One half the sample quantitation limit was used as a proxy concentration for non-detects to calculate the mean.

c The value presented is the mean of log-transformed data calculated using distribution-dependent formulas. One half the sample quantitation limit was used as a proxy concentration for non-detects to calculate the mean.

d The value presented is the UCL calculated using distribution-dependent formulas. One half the sample quantitation limit was used as a proxy concentration for non-detects to calculate the UCL.

e If the UCL value exceeds the maximum detected concentration, the maximum detected concentration is used for the medium EPC value.

f Recommended UCL statistic using United States Environmental Protection Agency ProUCL Version 3.0 software.

Table C2-8b
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
INGESTION	**INORGANICS**									
	ALUMINUM	26,862	mg/kg	2.94E-02	1.22E-02	mg/kg-day	1.00E+00	mg/kg-day	2.94E-02	1.22E-02
	ANTIMONY	4.5	mg/kg	4.92E-06	2.05E-06	mg/kg-day	4.00E-04	mg/kg-day	1.23E-02	5.12E-03
	ARSENIC	21.2	mg/kg	2.32E-05	9.65E-06	mg/kg-day	3.00E-04	mg/kg-day	7.72E-02	3.22E-02
	BARIUM	93.6	mg/kg	1.02E-04	4.26E-05	mg/kg-day	7.00E-02	mg/kg-day	1.46E-03	6.09E-04
	BERYLLIUM	0.66	mg/kg	7.21E-07	3.01E-07	mg/kg-day	2.00E-03	mg/kg-day	3.61E-04	1.50E-04
	CADMIUM	2.94	mg/kg	3.21E-06	1.34E-06	mg/kg-day	5.00E-04	mg/kg-day	6.43E-03	2.68E-03
	CHROMIUM	225	mg/kg	2.46E-04	1.02E-04	mg/kg-day	1.50E+00	mg/kg-day	1.64E-04	6.83E-05
	COBALT	18.5	mg/kg	2.02E-05	8.42E-06	mg/kg-day	2.00E-02	mg/kg-day	1.01E-03	4.21E-04
	COPPER	193	mg/kg	2.11E-04	8.79E-05	mg/kg-day	4.00E-02	mg/kg-day	5.27E-03	2.20E-03
	HEXAVALENT CHROMIUM	0.07	mg/kg	7.65E-08	3.19E-08	mg/kg-day	3.00E-03	mg/kg-day	2.55E-05	1.06E-05
	LEAD	85	mg/kg	9.30E-05	3.88E-05	mg/kg-day	NA	mg/kg-day	NA	NA
	MANGANESE	901	mg/kg	9.85E-04	4.10E-04	mg/kg-day	1.40E-01	mg/kg-day	7.03E-03	2.93E-03
	MERCURY	1.2	mg/kg	1.26E-06	5.24E-07	mg/kg-day	3.00E-04	mg/kg-day	4.19E-03	1.75E-03
	MOLYBDENUM	5.4	mg/kg	5.90E-06	2.46E-06	mg/kg-day	5.00E-03	mg/kg-day	1.18E-03	4.92E-04
	NICKEL	113	mg/kg	1.23E-04	5.15E-05	mg/kg-day	2.00E-02	mg/kg-day	6.17E-03	2.57E-03
	SELENIUM	1.3	mg/kg	1.39E-06	5.78E-07	mg/kg-day	5.00E-03	mg/kg-day	2.78E-04	1.16E-04
	SILVER	2.8	mg/kg	3.06E-06	1.27E-06	mg/kg-day	5.00E-03	mg/kg-day	6.12E-04	2.55E-04
	THALLIUM	0.49	mg/kg	5.35E-07	2.23E-07	mg/kg-day	6.60E-05	mg/kg-day	8.11E-03	3.38E-03
	TIN	14.2	mg/kg	1.55E-05	6.47E-06	mg/kg-day	6.00E-01	mg/kg-day	2.59E-05	1.08E-05
	VANADIUM	109	mg/kg	1.19E-04	4.96E-05	mg/kg-day	7.00E-03	mg/kg-day	1.70E-02	7.09E-03
	ZINC	220	mg/kg	2.40E-04	1.00E-04	mg/kg-day	3.00E-01	mg/kg-day	8.01E-04	3.34E-04
	PESTICIDES									
	ALPHA-CHLORDANE	0.0082	mg/kg	8.96E-09	3.73E-09	mg/kg-day	5.00E-04	mg/kg-day	1.79E-05	7.47E-06
	BETA BHC	0.001	mg/kg	1.09E-09	4.55E-10	mg/kg-day	2.00E-04	mg/kg-day	5.46E-06	2.28E-06
	DELTA BHC	0.002	mg/kg	2.19E-09	9.11E-10	mg/kg-day	NA	mg/kg-day	NA	NA
	2,4- DDD	0.029	mg/kg	3.17E-08	1.32E-08	mg/kg-day	5.00E-04	mg/kg-day	6.34E-05	2.64E-05
	4,4- DDD	0.086	mg/kg	9.40E-08	3.92E-08	mg/kg-day	5.00E-04	mg/kg-day	1.88E-04	7.83E-05

Table C2-8b
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
INGESTION (CONTINUED)	4,4- DDE	0.017	mg/kg	1.86E-08	7.74E-09	mg/kg-day	5.00E-04	mg/kg-day	3.72E-05	1.55E-05
	4,4- DDT	0.012	mg/kg	1.31E-08	5.46E-09	mg/kg-day	5.00E-04	mg/kg-day	2.62E-05	1.09E-05
	DIELDRIN	0.0039	mg/kg	4.26E-09	1.78E-09	mg/kg-day	5.00E-05	mg/kg-day	8.52E-05	3.55E-05
	ENDOSULFAN I	0.004	mg/kg	4.37E-09	1.82E-09	mg/kg-day	6.00E-03	mg/kg-day	7.29E-07	3.04E-07
	ENDOSULFAN SULFATE	0.003	mg/kg	3.28E-09	1.37E-09	mg/kg-day	6.00E-03	mg/kg-day	5.46E-07	2.28E-07
	ENDRIN	0.02	mg/kg	2.19E-08	9.11E-09	mg/kg-day	3.00E-04	mg/kg-day	7.29E-05	3.04E-05
	ENDRIN ALDEHYDE	0.006	mg/kg	6.56E-09	2.73E-09	mg/kg-day	3.00E-04	mg/kg-day	2.19E-05	9.11E-06
	ENDRIN KETONE	0.003	mg/kg	3.28E-09	1.37E-09	mg/kg-day	3.00E-04	mg/kg-day	1.09E-05	4.55E-06
	GAMMA-CHLORDANE	0.0085	mg/kg	9.29E-09	3.87E-09	mg/kg-day	5.00E-04	mg/kg-day	1.86E-05	7.74E-06
	HEPTACHLOR	0.0002	mg/kg	2.19E-10	9.11E-11	mg/kg-day	5.00E-04	mg/kg-day	4.37E-07	1.82E-07
	HEPTACHLOR EPOXIDE	0.0003	mg/kg	3.28E-10	1.37E-10	mg/kg-day	1.30E-05	mg/kg-day	2.52E-05	1.05E-05
	HEXACHLOROBENZENE	0.0008	mg/kg	8.74E-10	3.64E-10	mg/kg-day	8.00E-04	mg/kg-day	1.09E-06	4.55E-07
	METHOXYCHLOR	0.02	mg/kg	2.19E-08	9.11E-09	mg/kg-day	5.00E-03	mg/kg-day	4.37E-06	1.82E-06
	MIREX	0.004	mg/kg	4.37E-09	1.82E-09	mg/kg-day	2.00E-04	mg/kg-day	2.19E-05	9.11E-06
	TRANS-NONACHLOR	0.0024	mg/kg	2.62E-09	1.09E-09	mg/kg-day	5.00E-04	mg/kg-day	5.25E-06	2.19E-06
	PCBs									
	PCBs (TOTAL)	0.13	mg/kg	1.41E-07	5.87E-08	mg/kg-day	2.00E-05	mg/kg-day	7.05E-03	2.94E-03
	SVOCs									
	ACENAPHTHENE	0.14	mg/kg	1.53E-07	6.37E-08	mg/kg-day	6.00E-02	mg/kg-day	2.55E-06	1.06E-06
	ACENAPHTHYLENE	0.12	mg/kg	1.31E-07	5.46E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	ANTHRACENE	0.13	mg/kg	1.42E-07	5.92E-08	mg/kg-day	3.00E-01	mg/kg-day	4.74E-07	1.97E-07
	BENZO(A)ANTHRACENE	0.29	mg/kg	3.17E-07	1.32E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(A)PYRENE	0.26	mg/kg	2.80E-07	1.17E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(B)FLUORANTHENE	0.26	mg/kg	2.80E-07	1.17E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(G,H,I)PERYLENE	0.17	mg/kg	1.84E-07	7.65E-08	mg/kg-day	4.00E-02	mg/kg-day	4.59E-06	1.91E-06
	BENZO(K)FLUORANTHENE	0.25	mg/kg	2.68E-07	1.12E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZOIC ACID	0.68	mg/kg	7.43E-07	3.10E-07	mg/kg-day	4.00E+00	mg/kg-day	1.86E-07	7.74E-08
	BIS(2-ETHYLHEXYL)PHTHAL	1.1	mg/kg	1.20E-06	5.01E-07	mg/kg-day	2.00E-02	mg/kg-day	6.01E-05	2.50E-05

Table C2-8b
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
INGESTION (CONTINUED)	BUTYLBENZYLPHTHALATE	0.025	mg/kg	2.73E-08	1.14E-08	mg/kg-day	2.00E-01	mg/kg-day	1.37E-07	5.69E-08
	CARBAZOLE	0.55	mg/kg	6.01E-07	2.50E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	4- CHLOROANILINE	0.003	mg/kg	3.28E-09	1.37E-09	mg/kg-day	4.00E-03	mg/kg-day	8.20E-07	3.42E-07
	2- CHLOROPHENOL	0.043	mg/kg	4.73E-08	1.97E-08	mg/kg-day	5.00E-03	mg/kg-day	9.46E-06	3.94E-06
	CHRYSENE	0.28	mg/kg	3.06E-07	1.27E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	DIBENZOFURAN	0.36	mg/kg	3.93E-07	1.64E-07	mg/kg-day	2.00E-03	mg/kg-day	1.97E-04	8.20E-05
	3,3- DICHLOROBENZIDINE	0.012	mg/kg	1.31E-08	5.46E-09	mg/kg-day	NA	mg/kg-day	NA	NA
	2,6- DINITROTOLUENE	0.37	mg/kg	4.04E-07	1.68E-07	mg/kg-day	1.00E-03	mg/kg-day	4.04E-04	1.68E-04
	FLUORANTHENE	0.406	mg/kg	4.44E-07	1.85E-07	mg/kg-day	4.00E-02	mg/kg-day	1.11E-05	4.62E-06
	FLUORENE	0.1	mg/kg	1.53E-07	6.37E-08	mg/kg-day	4.00E-02	mg/kg-day	3.82E-06	1.59E-06
	INDENO(1,2,3-CD)PYRENE	0.17	mg/kg	1.86E-07	7.74E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	2- METHYLNAPHTHALENE	0.18	mg/kg	1.97E-07	8.20E-08	mg/kg-day	4.00E-03	mg/kg-day	4.92E-05	2.05E-05
	4- METHYLPHENOL	0.23	mg/kg	2.51E-07	1.05E-07	mg/kg-day	5.00E-03	mg/kg-day	5.03E-05	2.09E-05
	NAPHTHALENE	0.11	mg/kg	1.20E-07	5.01E-08	mg/kg-day	2.00E-02	mg/kg-day	6.01E-06	2.50E-06
	PENTACHLOROPHENOL	0.54	mg/kg	5.90E-07	2.46E-07	mg/kg-day	3.00E-02	mg/kg-day	1.97E-05	8.20E-06
	PHENANTHRENE	0.21	mg/kg	2.29E-07	9.56E-08	mg/kg-day	3.00E-01	mg/kg-day	7.65E-07	3.19E-07
	PHENOL	0.29	mg/kg	3.17E-07	1.32E-07	mg/kg-day	6.00E-01	mg/kg-day	5.28E-07	2.20E-07
	PYRENE	0.460	mg/kg	5.03E-07	2.09E-07	mg/kg-day	3.00E-02	mg/kg-day	1.68E-05	6.98E-06
	TPH									
	TPH AS DIESEL	190	mg/kg	2.08E-04	8.65E-05	mg/kg-day	NA	mg/kg-day	NA	NA
	TPH AS GASOLINE	4.5	mg/kg	4.92E-06	2.05E-06	mg/kg-day	NA	mg/kg-day	NA	NA
	TPH AS MOTOR OIL	314	mg/kg	3.43E-04	1.43E-04	mg/kg-day	NA	mg/kg-day	NA	NA
	VOCs									
	ACETONE	0.32	mg/kg	3.50E-07	1.46E-07	mg/kg-day	9.00E-01	mg/kg-day	3.89E-07	1.62E-07
	BENZENE	0.005	mg/kg	5.46E-09	2.28E-09	mg/kg-day	4.00E-03	mg/kg-day	1.37E-06	5.69E-07
	CARBON DISULFIDE	0.025	mg/kg	2.73E-08	1.14E-08	mg/kg-day	1.00E-01	mg/kg-day	2.73E-07	1.14E-07
	CHLOROBENZENE	0.024	mg/kg	2.62E-08	1.09E-08	mg/kg-day	2.00E-02	mg/kg-day	1.31E-06	5.46E-07
	CIS-1,2-DICHLOROETHENE	0.005	mg/kg	5.46E-09	2.28E-09	mg/kg-day	1.00E-02	mg/kg-day	5.46E-07	2.28E-07

Table C2-8b
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
INGESTION (CONTINUED)	ETHYLBENZENE	0.044	mg/kg	4.81E-08	2.00E-08	mg/kg-day	1.00E-01	mg/kg-day	4.81E-07	2.00E-07
	4- ISOPROPYLTOLUENE	0.007	mg/kg	7.87E-09	3.28E-09	mg/kg-day	NA	mg/kg-day	NA	NA
	METHYLENE CHLORIDE	0.3	mg/kg	3.28E-07	1.37E-07	mg/kg-day	6.00E-02	mg/kg-day	5.46E-06	2.28E-06
	NAPHTHALENE	0.016	mg/kg	1.75E-08	7.29E-09	mg/kg-day	2.00E-02	mg/kg-day	8.74E-07	3.64E-07
	TOLUENE	0.03	mg/kg	3.28E-08	1.37E-08	mg/kg-day	2.00E-01	mg/kg-day	1.64E-07	6.83E-08
	TRANS-1,2-DICHLOROETHEN	0.023	mg/kg	2.51E-08	1.05E-08	mg/kg-day	2.00E-02	mg/kg-day	1.26E-06	5.24E-07
	TRICHLOROETHENE	0.007	mg/kg	7.65E-09	3.19E-09	mg/kg-day	3.00E-04	mg/kg-day	2.55E-05	1.06E-05
	1,2,4- TRIMETHYLBENZENE	0.025	mg/kg	2.73E-08	1.14E-08	mg/kg-day	5.00E-02	mg/kg-day	5.46E-07	2.28E-07
	1,3,5- TRIMETHYLBENZENE	0.009	mg/kg	1.02E-08	4.23E-09	mg/kg-day	5.00E-02	mg/kg-day	2.03E-07	8.47E-08
	VINYL CHLORIDE	0.034	mg/kg	3.72E-08	1.55E-08	mg/kg-day	3.00E-03	mg/kg-day	1.24E-05	5.16E-06
	XYLENE (TOTAL)	0.11	mg/kg	1.20E-07	5.01E-08	mg/kg-day	2.00E-01	mg/kg-day	6.01E-07	2.50E-07
DERMAL CONTACT	**INORGANICS**									
	ALUMINUM	26,862	mg/kg	NA	NA	mg/kg-day	1.00E+00	mg/kg-day	NA	NA
	ANTIMONY	4.5	mg/kg	NA	NA	mg/kg-day	6.00E-05	mg/kg-day	NA	NA
	ARSENIC	21.2	mg/kg	3.19E-06	1.33E-06	mg/kg-day	3.00E-04	mg/kg-day	1.06E-02	4.43E-03
	BARIUM	93.6	mg/kg	NA	NA	mg/kg-day	4.90E-03	mg/kg-day	NA	NA
	BERYLLIUM	0.66	mg/kg	NA	NA	mg/kg-day	1.40E-05	mg/kg-day	NA	NA
	CADMIUM	2.94	mg/kg	1.47E-08	6.14E-09	mg/kg-day	1.25E-05	mg/kg-day	1.18E-03	4.92E-04
	CHROMIUM	225	mg/kg	NA	NA	mg/kg-day	1.95E-02	mg/kg-day	NA	NA
	COBALT	18.5	mg/kg	NA	NA	mg/kg-day	2.00E-02	mg/kg-day	NA	NA
	COPPER	193	mg/kg	NA	NA	mg/kg-day	4.00E-02	mg/kg-day	NA	NA
	HEXAVALENT CHROMIUM	0.07	mg/kg	NA	NA	mg/kg-day	7.50E-05	mg/kg-day	NA	NA
	LEAD	85	mg/kg	NA	NA	mg/kg-day	NA	mg/kg-day	NA	NA
	MANGANESE	901	mg/kg	NA	NA	mg/kg-day	5.60E-03	mg/kg-day	NA	NA
	MERCURY	1.2	mg/kg	NA	NA	mg/kg-day	2.10E-05	mg/kg-day	NA	NA
	MOLYBDENUM	5.4	mg/kg	NA	NA	mg/kg-day	5.00E-03	mg/kg-day	NA	NA
	NICKEL	113	mg/kg	NA	NA	mg/kg-day	8.00E-04	mg/kg-day	NA	NA
	SELENIUM	1.3	mg/kg	NA	NA	mg/kg-day	5.00E-03	mg/kg-day	NA	NA

Table C2-8b
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
DERMAL CONTACT (CONTINUED)	*SILVER*	2.8	mg/kg	NA	NA	mg/kg-day	2.00E-04	mg/kg-day	NA	NA
	THALLIUM	0.49	mg/kg	NA	NA	mg/kg-day	6.60E-05	mg/kg-day	NA	NA
	TIN	14.2	mg/kg	NA	NA	mg/kg-day	6.00E-01	mg/kg-day	NA	NA
	VANADIUM	109	mg/kg	NA	NA	mg/kg-day	1.82E-04	mg/kg-day	NA	NA
	ZINC	220	mg/kg	NA	NA	mg/kg-day	3.00E-01	mg/kg-day	NA	NA
	PESTICIDES									
	ALPHA-CHLORDANE	0.0082	mg/kg	1.65E-09	6.86E-10	mg/kg-day	5.00E-04	mg/kg-day	3.29E-06	1.37E-06
	BETA BHC	0.001	mg/kg	2.01E-10	8.36E-11	mg/kg-day	2.00E-04	mg/kg-day	1.00E-06	4.18E-07
	DELTA BHC	0.002	mg/kg	4.01E-10	1.67E-10	mg/kg-day	NA	mg/kg-day	NA	NA
	2,4- DDD	0.029	mg/kg	4.36E-09	1.82E-09	mg/kg-day	5.00E-04	mg/kg-day	8.73E-06	3.64E-06
	4,4- DDD	0.086	mg/kg	1.29E-08	5.39E-09	mg/kg-day	5.00E-04	mg/kg-day	2.59E-05	1.08E-05
	4,4- DDE	0.017	mg/kg	2.56E-09	1.07E-09	mg/kg-day	5.00E-04	mg/kg-day	5.12E-06	2.13E-06
	4,4- DDT	0.012	mg/kg	1.81E-09	7.52E-10	mg/kg-day	5.00E-04	mg/kg-day	3.61E-06	1.50E-06
	DIELDRIN	0.0039	mg/kg	1.96E-09	8.15E-10	mg/kg-day	5.00E-05	mg/kg-day	3.91E-05	1.63E-05
	ENDOSULFAN I	0.004	mg/kg	2.01E-09	8.36E-10	mg/kg-day	6.00E-03	mg/kg-day	3.34E-07	1.39E-07
	ENDOSULFAN SULFATE	0.003	mg/kg	1.50E-09	6.27E-10	mg/kg-day	6.00E-03	mg/kg-day	2.51E-07	1.05E-07
	ENDRIN	0.02	mg/kg	1.00E-08	4.18E-09	mg/kg-day	3.00E-04	mg/kg-day	3.34E-05	1.39E-05
	ENDRIN ALDEHYDE	0.006	mg/kg	3.01E-09	1.25E-09	mg/kg-day	3.00E-04	mg/kg-day	1.00E-05	4.18E-06
	ENDRIN KETONE	0.003	mg/kg	1.50E-09	6.27E-10	mg/kg-day	3.00E-04	mg/kg-day	5.02E-06	2.09E-06
	GAMMA-CHLORDANE	0.0085	mg/kg	1.71E-09	7.11E-10	mg/kg-day	5.00E-04	mg/kg-day	3.41E-06	1.42E-06
	HEPTACHLOR	0.0002	mg/kg	1.00E-10	4.18E-11	mg/kg-day	5.00E-04	mg/kg-day	2.01E-07	8.36E-08
	HEPTACHLOR EPOXIDE	0.0003	mg/kg	1.50E-10	6.27E-11	mg/kg-day	1.30E-05	mg/kg-day	1.16E-05	4.82E-06
	HEXACHLOROBENZENE	0.0008	mg/kg	4.01E-10	1.67E-10	mg/kg-day	8.00E-04	mg/kg-day	5.02E-07	2.09E-07
	METHOXYCHLOR	0.02	mg/kg	4.01E-09	1.67E-09	mg/kg-day	5.00E-03	mg/kg-day	8.03E-07	3.34E-07
	MIREX	0.004	mg/kg	2.01E-09	8.36E-10	mg/kg-day	2.00E-04	mg/kg-day	1.00E-05	4.18E-06
	TRANS-NONACHLOR	0.0024	mg/kg	4.82E-10	2.01E-10	mg/kg-day	5.00E-04	mg/kg-day	9.63E-07	4.01E-07
	PCBs									

Table C2-8b
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
	PCBs (TOTAL)	0.13	mg/kg	9.06E-08	3.77E-08	mg/kg-day	2.00E-05	mg/kg-day	4.53E-03	1.89E-03

Table C2-8b
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
DERMAL CONTACT (CONTINUED)	**SVOCs**									
	ACENAPHTHENE	0.14	mg/kg	9.13E-08	3.80E-08	mg/kg-day	6.00E-02	mg/kg-day	1.52E-06	6.34E-07
	ACENAPHTHYLENE	0.12	mg/kg	7.83E-08	3.26E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	ANTHRACENE	0.13	mg/kg	8.48E-08	3.53E-08	mg/kg-day	3.00E-01	mg/kg-day	2.83E-07	1.18E-07
	BENZO(A)ANTHRACENE	0.29	mg/kg	1.89E-07	7.88E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(A)PYRENE	0.26	mg/kg	1.67E-07	6.96E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(B)FLUORANTHENE	0.26	mg/kg	1.67E-07	6.96E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(G,H,I)PERYLENE	0.17	mg/kg	1.10E-07	4.56E-08	mg/kg-day	4.00E-02	mg/kg-day	2.74E-06	1.14E-06
	BENZO(K)FLUORANTHENE	0.25	mg/kg	1.60E-07	6.66E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZOIC ACID	0.68	mg/kg	3.41E-07	1.42E-07	mg/kg-day	4.00E+00	mg/kg-day	8.53E-08	3.55E-08
	BIS(2-ETHYLHEXYL)PHTHAL	1.1	mg/kg	5.52E-07	2.30E-07	mg/kg-day	2.00E-02	mg/kg-day	2.76E-05	1.15E-05
	BUTYLBENZYLPHTHALATE	0.025	mg/kg	1.25E-08	5.23E-09	mg/kg-day	2.00E-01	mg/kg-day	6.27E-08	2.61E-08
	CARBAZOLE	0.55	mg/kg	2.76E-07	1.15E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	4- CHLOROANILINE	0.003	mg/kg	1.50E-09	6.27E-10	mg/kg-day	4.00E-03	mg/kg-day	3.76E-07	1.57E-07
	2- CHLOROPHENOL	0.043	mg/kg	2.17E-08	9.05E-09	mg/kg-day	5.00E-03	mg/kg-day	4.34E-06	1.81E-06
	CHRYSENE	0.28	mg/kg	1.83E-07	7.61E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	DIBENZOFURAN	0.36	mg/kg	1.81E-07	7.52E-08	mg/kg-day	2.00E-03	mg/kg-day	9.03E-05	3.76E-05
	3,3- DICHLOROBENZIDINE	0.012	mg/kg	6.02E-09	2.51E-09	mg/kg-day	NA	mg/kg-day	NA	NA
	2,6- DINITROTOLUENE	0.37	mg/kg	1.86E-07	7.73E-08	mg/kg-day	1.00E-03	mg/kg-day	1.86E-04	7.73E-05
	FLUORANTHENE	0.406	mg/kg	2.65E-07	1.10E-07	mg/kg-day	4.00E-02	mg/kg-day	6.62E-06	2.76E-06
	FLUORENE	0.1	mg/kg	9.13E-08	3.80E-08	mg/kg-day	4.00E-02	mg/kg-day	2.28E-06	9.51E-07
	INDENO(1,2,3-CD)PYRENE	0.17	mg/kg	1.11E-07	4.62E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	2- METHYLNAPHTHALENE	0.18	mg/kg	9.03E-08	3.76E-08	mg/kg-day	4.00E-03	mg/kg-day	2.26E-05	9.41E-06
	4- METHYLPHENOL	0.23	mg/kg	1.15E-07	4.81E-08	mg/kg-day	5.00E-03	mg/kg-day	2.31E-05	9.61E-06
	NAPHTHALENE	0.11	mg/kg	7.17E-08	2.99E-08	mg/kg-day	2.00E-02	mg/kg-day	3.59E-06	1.49E-06
	PENTACHLOROPHENOL	0.54	mg/kg	2.71E-07	1.13E-07	mg/kg-day	3.00E-02	mg/kg-day	9.03E-06	3.76E-06
	PHENANTHRENE	0.21	mg/kg	1.37E-07	5.71E-08	mg/kg-day	3.00E-01	mg/kg-day	4.56E-07	1.90E-07
	PHENOL	0.29	mg/kg	1.45E-07	6.06E-08	mg/kg-day	6.00E-01	mg/kg-day	2.42E-07	1.01E-07

Table C2-8b
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
DERMAL CONTACT (CONTINUED)	*PYRENE*	0.460	mg/kg	3.00E-07	1.25E-07	mg/kg-day	3.00E-02	mg/kg-day	1.00E-05	4.17E-06
	TPH									
	TPH AS DIESEL	190	mg/kg	NA	NA	mg/kg-day	NA	mg/kg-day	NA	NA
	TPH AS GASOLINE	4.5	mg/kg	NA	NA	mg/kg-day	NA	mg/kg-day	NA	NA
	TPH AS MOTOR OIL	314	mg/kg	NA	NA	mg/kg-day	NA	mg/kg-day	NA	NA
	VOCs									
	ACETONE	0.32	mg/kg	NA	NA	mg/kg-day	9.00E-01	mg/kg-day	NA	NA
	BENZENE	0.005	mg/kg	NA	NA	mg/kg-day	4.00E-03	mg/kg-day	NA	NA
	CARBON DISULFIDE	0.025	mg/kg	NA	NA	mg/kg-day	1.00E-01	mg/kg-day	NA	NA
	CHLOROBENZENE	0.024	mg/kg	NA	NA	mg/kg-day	2.00E-02	mg/kg-day	NA	NA
	CIS-1,2-DICHLOROETHENE	0.005	mg/kg	NA	NA	mg/kg-day	1.00E-02	mg/kg-day	NA	NA
	ETHYLBENZENE	0.044	mg/kg	NA	NA	mg/kg-day	1.00E-01	mg/kg-day	NA	NA
	4- ISOPROPYLTOLUENE	0.007	mg/kg	NA	NA	mg/kg-day	NA	mg/kg-day	NA	NA
	METHYLENE CHLORIDE	0.3	mg/kg	NA	NA	mg/kg-day	6.00E-02	mg/kg-day	NA	NA
	NAPHTHALENE	0.016	mg/kg	NA	NA	mg/kg-day	2.00E-02	mg/kg-day	NA	NA
	TOLUENE	0.03	mg/kg	NA	NA	mg/kg-day	2.00E-01	mg/kg-day	NA	NA
	TRANS-1,2-DICHLOROETHENI	0.023	mg/kg	NA	NA	mg/kg-day	2.00E-02	mg/kg-day	NA	NA
	TRICHLOROETHENE	0.007	mg/kg	NA	NA	mg/kg-day	3.00E-04	mg/kg-day	NA	NA
	1,2,4- TRIMETHYLBENZENE	0.025	mg/kg	NA	NA	mg/kg-day	5.00E-02	mg/kg-day	NA	NA
	1,3,5- TRIMETHYLBENZENE	0.009	mg/kg	NA	NA	mg/kg-day	5.00E-02	mg/kg-day	NA	NA
	VINYL CHLORIDE	0.034	mg/kg	NA	NA	mg/kg-day	3.00E-03	mg/kg-day	NA	NA
	XYLENE (TOTAL)	0.11	mg/kg	NA	NA	mg/kg-day	2.00E-01	mg/kg-day	NA	NA
INHALATION OF PARTICULATES AND VAPORS	**INORGANICS**									
	ALUMINUM	26,862	mg/kg	1.23E-06	5.14E-07	mg/kg-day	1.40E-03	mg/kg-day	8.82E-04	3.67E-04
	ANTIMONY	4.5	mg/kg	2.07E-10	8.62E-11	mg/kg-day	NA	mg/kg-day	NA	NA
	ARSENIC	21.2	mg/kg	9.74E-10	4.06E-10	mg/kg-day	8.57E-06	mg/kg-day	1.14E-04	4.74E-05
	BARIUM	93.6	mg/kg	4.30E-09	1.79E-09	mg/kg-day	1.43E-04	mg/kg-day	3.01E-05	1.25E-05
	BERYLLIUM	0.66	mg/kg	3.03E-11	1.26E-11	mg/kg-day	2.00E-06	mg/kg-day	1.52E-05	6.32E-06

Table C2-8b
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
INHALATION OF PARTICULATES AND VAPORS (CONTINUED)	*CADMIUM*	2.94	mg/kg	1.35E-10	5.63E-11	mg/kg-day	5.71E-06	mg/kg-day	2.37E-05	9.86E-06
	CHROMIUM	225	mg/kg	1.03E-08	4.31E-09	mg/kg-day	NA	mg/kg-day	NA	NA
	COBALT	18.5	mg/kg	8.50E-10	3.54E-10	mg/kg-day	5.70E-06	mg/kg-day	1.49E-04	6.21E-05
	COPPER	193	mg/kg	8.87E-09	3.70E-09	mg/kg-day	NA	mg/kg-day	NA	NA
	HEXAVALENT CHROMIUM	0.07	mg/kg	3.22E-12	1.34E-12	mg/kg-day	2.86E-05	mg/kg-day	1.12E-07	4.69E-08
	LEAD	85	mg/kg	3.91E-09	1.63E-09	mg/kg-day	NA	mg/kg-day	NA	NA
	MANGANESE	901	mg/kg	4.14E-08	1.73E-08	mg/kg-day	1.43E-05	mg/kg-day	2.90E-03	1.21E-03
	MERCURY	1.2	mg/kg	5.28E-11	2.20E-11	mg/kg-day	2.57E-05	mg/kg-day	2.06E-06	8.57E-07
	MOLYBDENUM	5.4	mg/kg	2.48E-10	1.03E-10	mg/kg-day	NA	mg/kg-day	NA	NA
	NICKEL	113	mg/kg	5.19E-09	2.16E-09	mg/kg-day	1.43E-05	mg/kg-day	3.64E-04	1.52E-04
	SELENIUM	1.3	mg/kg	5.84E-11	2.43E-11	mg/kg-day	5.71E-03	mg/kg-day	1.02E-08	4.26E-09
	SILVER	2.8	mg/kg	1.29E-10	5.36E-11	mg/kg-day	NA	mg/kg-day	NA	NA
	THALLIUM	0.49	mg/kg	2.25E-11	9.38E-12	mg/kg-day	NA	mg/kg-day	NA	NA
	TIN	14.2	mg/kg	6.52E-10	2.72E-10	mg/kg-day	NA	mg/kg-day	NA	NA
	VANADIUM	109	mg/kg	5.01E-09	2.09E-09	mg/kg-day	NA	mg/kg-day	NA	NA
	ZINC	220	mg/kg	1.01E-08	4.21E-09	mg/kg-day	NA	mg/kg-day	NA	NA
	PESTICIDES									
	ALPHA-CHLORDANE	0.0082	mg/kg	3.77E-13	1.57E-13	mg/kg-day	2.00E-04	mg/kg-day	1.88E-09	7.85E-10
	BETA BHC	0.001	mg/kg	4.59E-14	1.91E-14	mg/kg-day	2.00E-04	mg/kg-day	2.30E-10	9.57E-11
	DELTA BHC	0.002	mg/kg	9.19E-14	3.83E-14	mg/kg-day	NA	mg/kg-day	NA	NA
	2,4- DDD	0.029	mg/kg	1.33E-12	5.55E-13	mg/kg-day	5.00E-04	mg/kg-day	2.67E-09	1.11E-09
	4,4- DDD	0.086	mg/kg	3.95E-12	1.65E-12	mg/kg-day	5.00E-04	mg/kg-day	7.90E-09	3.29E-09
	4,4- DDE	0.017	mg/kg	7.81E-13	3.25E-13	mg/kg-day	5.00E-04	mg/kg-day	1.56E-09	6.51E-10
	4,4- DDT	0.012	mg/kg	5.51E-13	2.30E-13	mg/kg-day	5.00E-04	mg/kg-day	1.10E-09	4.59E-10
	DIELDRIN	0.0039	mg/kg	1.79E-13	7.47E-14	mg/kg-day	5.00E-05	mg/kg-day	3.58E-09	1.49E-09
	ENDOSULFAN I	0.004	mg/kg	1.84E-13	7.66E-14	mg/kg-day	6.00E-03	mg/kg-day	3.06E-11	1.28E-11
	ENDOSULFAN SULFATE	0.003	mg/kg	1.38E-13	5.74E-14	mg/kg-day	6.00E-03	mg/kg-day	2.30E-11	9.57E-12
	ENDRIN	0.02	mg/kg	9.19E-13	3.83E-13	mg/kg-day	3.00E-04	mg/kg-day	3.06E-09	1.28E-09

Table C2-8b
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
INHALATION OF PARTICULATES AND VAPORS (CONTINUED)	ENDRIN ALDEHYDE	0.006	mg/kg	2.76E-13	1.15E-13	mg/kg-day	3.00E-04	mg/kg-day	9.19E-10	3.83E-10
	ENDRIN KETONE	0.003	mg/kg	1.38E-13	5.74E-14	mg/kg-day	3.00E-04	mg/kg-day	4.59E-10	1.91E-10
	GAMMA-CHLORDANE	0.0085	mg/kg	3.91E-13	1.63E-13	mg/kg-day	2.00E-04	mg/kg-day	1.95E-09	8.14E-10
	HEPTACHLOR	0.0002	mg/kg	9.19E-15	3.83E-15	mg/kg-day	5.00E-04	mg/kg-day	1.84E-11	7.66E-12
	HEPTACHLOR EPOXIDE	0.0003	mg/kg	1.38E-14	5.74E-15	mg/kg-day	1.30E-05	mg/kg-day	1.06E-09	4.42E-10
	HEXACHLOROBENZENE	0.0008	mg/kg	3.68E-14	1.53E-14	mg/kg-day	8.00E-04	mg/kg-day	4.59E-11	1.91E-11
	METHOXYCHLOR	0.02	mg/kg	9.19E-13	3.83E-13	mg/kg-day	5.00E-03	mg/kg-day	1.84E-10	7.66E-11
	MIREX	0.004	mg/kg	1.84E-13	7.66E-14	mg/kg-day	2.00E-04	mg/kg-day	9.19E-10	3.83E-10
	TRANS-NONACHLOR	0.0024	mg/kg	1.10E-13	4.59E-14	mg/kg-day	2.00E-04	mg/kg-day	5.51E-10	2.30E-10
	PCBs									
	PCBs (TOTAL)	0.13	mg/kg	5.93E-12	2.47E-12	mg/kg-day	2.00E-05	mg/kg-day	2.96E-07	1.23E-07
	SVOCs									
	ACENAPHTHENE	0.14	mg/kg	4.72E-08	1.97E-08	mg/kg-day	6.00E-02	mg/kg-day	7.86E-07	3.28E-07
	ACENAPHTHYLENE	0.12	mg/kg	5.51E-12	2.30E-12	mg/kg-day	NA	mg/kg-day	NA	NA
	ANTHRACENE	0.13	mg/kg	1.13E-08	4.69E-09	mg/kg-day	3.00E-01	mg/kg-day	3.75E-08	1.56E-08
	BENZO(A)ANTHRACENE	0.29	mg/kg	1.33E-11	5.55E-12	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(A)PYRENE	0.26	mg/kg	1.18E-11	4.90E-12	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(B)FLUORANTHENE	0.26	mg/kg	1.18E-11	4.90E-12	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(G,H,I)PERYLENE	0.17	mg/kg	7.72E-12	3.22E-12	mg/kg-day	4.00E-02	mg/kg-day	1.93E-10	8.04E-11
	BENZO(K)FLUORANTHENE	0.25	mg/kg	1.13E-11	4.69E-12	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZOIC ACID	0.68	mg/kg	3.12E-11	1.30E-11	mg/kg-day	4.00E+00	mg/kg-day	NA	NA
	BIS(2-ETHYLHEXYL)PHTHAL	1.1	mg/kg	5.05E-11	2.11E-11	mg/kg-day	2.00E-02	mg/kg-day	2.53E-09	1.05E-09
	BUTYLBENZYLPHTHALATE	0.025	mg/kg	1.15E-12	4.79E-13	mg/kg-day	2.00E-01	mg/kg-day	5.74E-12	2.39E-12
	CARBAZOLE	0.55	mg/kg	2.53E-11	1.05E-11	mg/kg-day	NA	mg/kg-day	NA	NA
	4- CHLOROANILINE	0.003	mg/kg	1.38E-13	5.74E-14	mg/kg-day	4.00E-03	mg/kg-day	3.45E-11	1.44E-11
	2- CHLOROPHENOL	0.043	mg/kg	1.99E-12	8.29E-13	mg/kg-day	5.00E-03	mg/kg-day	3.98E-10	1.66E-10
	CHRYSENE	0.28	mg/kg	6.29E-09	2.62E-09	mg/kg-day	NA	mg/kg-day	NA	NA
	DIBENZOFURAN	0.36	mg/kg	1.65E-11	6.89E-12	mg/kg-day	2.00E-03	mg/kg-day	8.27E-09	3.45E-09

Table C2-8b
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
INHALATION OF PARTICULATES AND VAPORS (CONTINUED)	3,3- DICHLOROBENZIDINE	0.012	mg/kg	5.51E-13	2.30E-13	mg/kg-day	NA	mg/kg-day	NA	NA
	2,6- DINITROTOLUENE	0.37	mg/kg	1.70E-11	7.08E-12	mg/kg-day	1.00E-03	mg/kg-day	1.70E-08	7.08E-09
	FLUORANTHENE	0.406	mg/kg	1.87E-11	7.77E-12	mg/kg-day	4.00E-02	mg/kg-day	4.66E-10	1.94E-10
	FLUORENE	0.1	mg/kg	2.36E-08	9.83E-09	mg/kg-day	4.00E-02	mg/kg-day	5.90E-07	2.46E-07
	INDENO(1,2,3-CD)PYRENE	0.17	mg/kg	7.81E-12	3.25E-12	mg/kg-day	NA	mg/kg-day	NA	NA
	2- METHYLNAPHTHALENE	0.18	mg/kg	8.27E-12	3.45E-12	mg/kg-day	NA	mg/kg-day	NA	NA
	4- METHYLPHENOL	0.23	mg/kg	1.06E-11	4.40E-12	mg/kg-day	NA	mg/kg-day	NA	NA
	NAPHTHALENE	0.11	mg/kg	1.55E-07	6.46E-08	mg/kg-day	8.57E-04	mg/kg-day	1.81E-04	7.54E-05
	PENTACHLOROPHENOL	0.54	mg/kg	2.48E-11	1.03E-11	mg/kg-day	3.00E-02	mg/kg-day	8.27E-10	3.45E-10
	PHENANTHRENE	0.21	mg/kg	9.65E-12	4.02E-12	mg/kg-day	3.00E-01	mg/kg-day	3.22E-11	1.34E-11
	PHENOL	0.29	mg/kg	1.33E-11	5.55E-12	mg/kg-day	5.71E-02	mg/kg-day	2.33E-10	9.72E-11
	PYRENE	0.460	mg/kg	7.34E-09	3.06E-09	mg/kg-day	3.00E-02	mg/kg-day	2.45E-07	1.02E-07
	TPH									
	TPH AS DIESEL	190	mg/kg	8.73E-09	3.64E-09	mg/kg-day	NA	mg/kg-day	NA	NA
	TPH AS GASOLINE	4.5	mg/kg	2.07E-10	8.62E-11	mg/kg-day	NA	mg/kg-day	NA	NA
	TPH AS MOTOR OIL	314	mg/kg	1.44E-08	6.01E-09	mg/kg-day	NA	mg/kg-day	NA	NA
	VOCs									
	ACETONE	0.32	mg/kg	1.49E-06	6.22E-07	mg/kg-day	9.00E-01	mg/kg-day	1.66E-06	6.91E-07
	BENZENE	0.005	mg/kg	1.12E-07	4.68E-08	mg/kg-day	8.57E-03	mg/kg-day	1.31E-05	5.46E-06
	CARBON DISULFIDE	0.025	mg/kg	1.26E-06	5.27E-07	mg/kg-day	2.00E-01	mg/kg-day	6.32E-06	2.63E-06
	CHLOROBENZENE	0.024	mg/kg	2.31E-07	9.63E-08	mg/kg-day	5.71E-03	mg/kg-day	4.05E-05	1.69E-05
	CIS-1,2-DICHLOROETHENE	0.005	mg/kg	1.05E-07	4.36E-08	mg/kg-day	1.00E-02	mg/kg-day	1.05E-05	4.36E-06
	ETHYLBENZENE	0.044	mg/kg	4.94E-07	2.06E-07	mg/kg-day	2.86E-01	mg/kg-day	1.73E-06	7.20E-07
	4- ISOPROPYLTOLUENE	0.007	mg/kg	NA	NA	mg/kg-day	NA	mg/kg-day	NA	NA
	METHYLENE CHLORIDE	0.3	mg/kg	7.28E-06	3.03E-06	mg/kg-day	1.14E-01	mg/kg-day	6.38E-05	2.66E-05
	NAPHTHALENE	0.016	mg/kg	2.26E-08	9.40E-09	mg/kg-day	8.57E-04	mg/kg-day	2.63E-05	1.10E-05
	TOLUENE	0.03	mg/kg	4.55E-07	1.90E-07	mg/kg-day	8.57E-02	mg/kg-day	5.31E-06	2.21E-06
	TRANS-1,2-DICHLOROETHEN	0.023	mg/kg	6.07E-07	2.53E-07	mg/kg-day	2.00E-02	mg/kg-day	3.03E-05	1.26E-05

Table C2-8b
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
INHALATION OF PARTICULATES AND VAPORS (CONTINUED)	TRICHLOROETHENE	0.007	mg/kg	1.29E-07	5.36E-08	mg/kg-day	1.00E-02	mg/kg-day	1.29E-05	5.36E-06
	1,2,4- TRIMETHYLBENZENE	0.025	mg/kg	7.58E-08	3.16E-08	mg/kg-day	1.70E-03	mg/kg-day	4.46E-05	1.86E-05
	1,3,5- TRIMETHYLBENZENE	0.009	mg/kg	7.05E-08	2.94E-08	mg/kg-day	1.70E-03	mg/kg-day	4.15E-05	1.73E-05
	VINYL CHLORIDE	0.034	mg/kg	2.06E-06	8.59E-07	mg/kg-day	2.86E-02	mg/kg-day	7.21E-05	3.00E-05
	XYLENE (TOTAL)	0.11	mg/kg	1.09E-06	4.56E-07	mg/kg-day	2.86E-02	mg/kg-day	3.82E-05	1.59E-05

Notes:
The HQ for chemicals that are italicized and underlined have been modified for post remediation residual risk.
CTE = Central Tendency Exposure
EPC = Exposure point concentration
HQ = Hazard Quotient
mg/kg = milligrams per kilogram
mg/kg-day = milligrams per kilogram per day
NA = Not Applicable
PCBs = Polychlorinated Biphenyls
RfD = Reference Dose
RME = Reasonable Maximum Exposure
SVOCs = Semivolatile Organic Compounds
TPH = Total Petroleum Hydrocarbons
VOCs = Volatile Organic Compounds

Table C2-8c
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
INGESTION	**INORGANICS**									
	ALUMINUM	26,862	mg/kg	8.67E-02	8.67E-02	mg/kg-day	1.00E+00	mg/kg-day	8.67E-02	8.67E-02
	ANTIMONY	4.5	mg/kg	1.45E-05	1.45E-05	mg/kg-day	4.00E-04	mg/kg-day	3.63E-02	3.63E-02
	ARSENIC	21.2	mg/kg	6.85E-05	6.85E-05	mg/kg-day	3.00E-04	mg/kg-day	2.28E-01	2.28E-01
	BARIUM	93.6	mg/kg	3.02E-04	3.02E-04	mg/kg-day	7.00E-02	mg/kg-day	4.32E-03	4.32E-03
	BERYLLIUM	0.66	mg/kg	2.13E-06	2.13E-06	mg/kg-day	2.00E-03	mg/kg-day	1.07E-03	1.07E-03
	CADMIUM	2.94	mg/kg	9.49E-06	9.49E-06	mg/kg-day	5.00E-04	mg/kg-day	1.90E-02	1.90E-02
	CHROMIUM	225	mg/kg	7.27E-04	7.27E-04	mg/kg-day	1.50E+00	mg/kg-day	4.84E-04	4.84E-04
	COBALT	18.5	mg/kg	5.97E-05	5.97E-05	mg/kg-day	2.00E-02	mg/kg-day	2.99E-03	2.99E-03
	COPPER	193	mg/kg	6.23E-04	6.23E-04	mg/kg-day	4.00E-02	mg/kg-day	1.56E-02	1.56E-02
	HEXAVALENT CHROMIUM	0.07	mg/kg	2.26E-07	2.26E-07	mg/kg-day	3.00E-03	mg/kg-day	7.53E-05	7.53E-05
	LEAD	85	mg/kg	2.75E-04	2.75E-04	mg/kg-day	NA	mg/kg-day	NA	NA
	MANGANESE	901	mg/kg	2.91E-03	2.91E-03	mg/kg-day	1.40E-01	mg/kg-day	2.08E-02	2.08E-02
	MERCURY	1.2	mg/kg	3.71E-06	3.71E-06	mg/kg-day	3.00E-04	mg/kg-day	1.24E-02	1.24E-02
	MOLYBDENUM	5.4	mg/kg	1.74E-05	1.74E-05	mg/kg-day	5.00E-03	mg/kg-day	3.49E-03	3.49E-03
	NICKEL	113	mg/kg	3.65E-04	3.65E-04	mg/kg-day	2.00E-02	mg/kg-day	1.82E-02	1.82E-02
	SELENIUM	1.3	mg/kg	4.10E-06	4.10E-06	mg/kg-day	5.00E-03	mg/kg-day	8.20E-04	8.20E-04
	SILVER	2.8	mg/kg	9.04E-06	9.04E-06	mg/kg-day	5.00E-03	mg/kg-day	1.81E-03	1.81E-03
	THALLIUM	0.49	mg/kg	1.58E-06	1.58E-06	mg/kg-day	6.60E-05	mg/kg-day	2.40E-02	2.40E-02
	TIN	14.2	mg/kg	4.59E-05	4.59E-05	mg/kg-day	6.00E-01	mg/kg-day	7.64E-05	7.64E-05
	VANADIUM	109	mg/kg	3.52E-04	3.52E-04	mg/kg-day	7.00E-03	mg/kg-day	5.03E-02	5.03E-02
	ZINC	220	mg/kg	7.10E-04	7.10E-04	mg/kg-day	3.00E-01	mg/kg-day	2.37E-03	2.37E-03
	PESTICIDES									
	ALPHA-CHLORDANE	0.0082	mg/kg	2.65E-08	2.65E-08	mg/kg-day	5.00E-04	mg/kg-day	5.30E-05	5.30E-05
	BETA BHC	0.001	mg/kg	3.23E-09	3.23E-09	mg/kg-day	2.00E-04	mg/kg-day	1.61E-05	1.61E-05
	DELTA BHC	0.002	mg/kg	6.46E-09	6.46E-09	mg/kg-day	NA	mg/kg-day	NA	NA
	2,4- DDD	0.029	mg/kg	9.36E-08	9.36E-08	mg/kg-day	5.00E-04	mg/kg-day	1.87E-04	1.87E-04
	4,4- DDD	0.086	mg/kg	2.78E-07	2.78E-07	mg/kg-day	5.00E-04	mg/kg-day	5.55E-04	5.55E-04

Table C2-8c
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
INGESTION (CONTINUED)	4,4- DDE	0.017	mg/kg	5.49E-08	5.49E-08	mg/kg-day	5.00E-04	mg/kg-day	1.10E-04	1.10E-04
	4,4- DDT	0.012	mg/kg	3.87E-08	3.87E-08	mg/kg-day	5.00E-04	mg/kg-day	7.75E-05	7.75E-05
	DIELDRIN	0.0039	mg/kg	1.26E-08	1.26E-08	mg/kg-day	5.00E-05	mg/kg-day	2.52E-04	2.52E-04
	ENDOSULFAN I	0.004	mg/kg	1.29E-08	1.29E-08	mg/kg-day	6.00E-03	mg/kg-day	2.15E-06	2.15E-06
	ENDOSULFAN SULFATE	0.003	mg/kg	9.69E-09	9.69E-09	mg/kg-day	6.00E-03	mg/kg-day	1.61E-06	1.61E-06
	ENDRIN	0.02	mg/kg	6.46E-08	6.46E-08	mg/kg-day	3.00E-04	mg/kg-day	2.15E-04	2.15E-04
	ENDRIN ALDEHYDE	0.006	mg/kg	1.94E-08	1.94E-08	mg/kg-day	3.00E-04	mg/kg-day	6.46E-05	6.46E-05
	ENDRIN KETONE	0.003	mg/kg	9.69E-09	9.69E-09	mg/kg-day	3.00E-04	mg/kg-day	3.23E-05	3.23E-05
	GAMMA-CHLORDANE	0.0085	mg/kg	2.74E-08	2.74E-08	mg/kg-day	5.00E-04	mg/kg-day	5.49E-05	5.49E-05
	HEPTACHLOR	0.0002	mg/kg	6.46E-10	6.46E-10	mg/kg-day	5.00E-04	mg/kg-day	1.29E-06	1.29E-06
	HEPTACHLOR EPOXIDE	0.0003	mg/kg	9.69E-10	9.69E-10	mg/kg-day	1.30E-05	mg/kg-day	7.45E-05	7.45E-05
	HEXACHLOROBENZENE	0.0008	mg/kg	2.58E-09	2.58E-09	mg/kg-day	8.00E-04	mg/kg-day	3.23E-06	3.23E-06
	METHOXYCHLOR	0.02	mg/kg	6.46E-08	6.46E-08	mg/kg-day	5.00E-03	mg/kg-day	1.29E-05	1.29E-05
	MIREX	0.004	mg/kg	1.29E-08	1.29E-08	mg/kg-day	2.00E-04	mg/kg-day	6.46E-05	6.46E-05
	TRANS-NONACHLOR	0.0024	mg/kg	7.75E-09	7.75E-09	mg/kg-day	5.00E-04	mg/kg-day	1.55E-05	1.55E-05
	PCBs									
	PCBs (TOTAL)	0.13	mg/kg	4.17E-07	4.17E-07	mg/kg-day	2.00E-05	mg/kg-day	2.08E-02	2.08E-02
	SVOCs									
	ACENAPHTHENE	0.14	mg/kg	4.52E-07	4.52E-07	mg/kg-day	6.00E-02	mg/kg-day	7.53E-06	7.53E-06
	ACENAPHTHYLENE	0.12	mg/kg	3.87E-07	3.87E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	ANTHRACENE	0.13	mg/kg	4.20E-07	4.20E-07	mg/kg-day	3.00E-01	mg/kg-day	1.40E-06	1.40E-06
	BENZO(A)ANTHRACENE	0.29	mg/kg	9.36E-07	9.36E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(A)PYRENE	0.26	mg/kg	8.27E-07	8.27E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(B)FLUORANTHENE	0.26	mg/kg	8.27E-07	8.27E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(G,H,I)PERYLENE	0.17	mg/kg	5.42E-07	5.42E-07	mg/kg-day	4.00E-02	mg/kg-day	1.36E-05	1.36E-05
	BENZO(K)FLUORANTHENE	0.25	mg/kg	7.91E-07	7.91E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZOIC ACID	0.68	mg/kg	2.20E-06	2.20E-06	mg/kg-day	4.00E+00	mg/kg-day	5.49E-07	5.49E-07
	BIS(2-ETHYLHEXYL)PHTHALATE	1.1	mg/kg	3.55E-06	3.55E-06	mg/kg-day	2.00E-02	mg/kg-day	1.78E-04	1.78E-04

Table C2-8c
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
INGESTION (CONTINUED)	BUTYLBENZYLPHTHALATE	0.025	mg/kg	8.07E-08	8.07E-08	mg/kg-day	2.00E-01	mg/kg-day	4.04E-07	4.04E-07
	CARBAZOLE	0.55	mg/kg	1.78E-06	1.78E-06	mg/kg-day	NA	mg/kg-day	NA	NA
	4- CHLOROANILINE	0.003	mg/kg	9.69E-09	9.69E-09	mg/kg-day	4.00E-03	mg/kg-day	2.42E-06	2.42E-06
	2- CHLOROPHENOL	0.043	mg/kg	1.40E-07	1.40E-07	mg/kg-day	5.00E-03	mg/kg-day	2.80E-05	2.80E-05
	CHRYSENE	0.28	mg/kg	9.04E-07	9.04E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	DIBENZOFURAN	0.36	mg/kg	1.16E-06	1.16E-06	mg/kg-day	2.00E-03	mg/kg-day	5.81E-04	5.81E-04
	3,3- DICHLOROBENZIDINE	0.012	mg/kg	3.87E-08	3.87E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	2,6- DINITROTOLUENE	0.37	mg/kg	1.19E-06	1.19E-06	mg/kg-day	1.00E-03	mg/kg-day	1.19E-03	1.19E-03
	FLUORANTHENE	0.406	mg/kg	1.31E-06	1.31E-06	mg/kg-day	4.00E-02	mg/kg-day	3.28E-05	3.28E-05
	FLUORENE	0.1	mg/kg	4.52E-07	4.52E-07	mg/kg-day	4.00E-02	mg/kg-day	1.13E-05	1.13E-05
	INDENO(1,2,3-CD)PYRENE	0.17	mg/kg	5.49E-07	5.49E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	2- METHYLNAPHTHALENE	0.18	mg/kg	5.81E-07	5.81E-07	mg/kg-day	4.00E-03	mg/kg-day	1.45E-04	1.45E-04
	4- METHYLPHENOL	0.23	mg/kg	7.43E-07	7.43E-07	mg/kg-day	5.00E-03	mg/kg-day	1.49E-04	1.49E-04
	NAPHTHALENE	0.11	mg/kg	3.55E-07	3.55E-07	mg/kg-day	2.00E-02	mg/kg-day	1.78E-05	1.78E-05
	PENTACHLOROPHENOL	0.54	mg/kg	1.74E-06	1.74E-06	mg/kg-day	3.00E-02	mg/kg-day	5.81E-05	5.81E-05
	PHENANTHRENE	0.21	mg/kg	6.78E-07	6.78E-07	mg/kg-day	3.00E-01	mg/kg-day	2.26E-06	2.26E-06
	PHENOL	0.29	mg/kg	9.36E-07	9.36E-07	mg/kg-day	6.00E-01	mg/kg-day	1.56E-06	1.56E-06
	PYRENE	0.460	mg/kg	1.49E-06	1.49E-06	mg/kg-day	3.00E-02	mg/kg-day	4.95E-05	4.95E-05
	TPH									
	TPH AS DIESEL	190	mg/kg	6.14E-04	6.14E-04	mg/kg-day	NA	mg/kg-day	NA	NA
	TPH AS GASOLINE	4.5	mg/kg	1.45E-05	1.45E-05	mg/kg-day	NA	mg/kg-day	NA	NA
	TPH AS MOTOR OIL	314	mg/kg	1.01E-03	1.01E-03	mg/kg-day	NA	mg/kg-day	NA	NA
	VOCs									
	ACETONE	0.32	mg/kg	1.03E-06	1.03E-06	mg/kg-day	9.00E-01	mg/kg-day	1.15E-06	1.15E-06
	BENZENE	0.005	mg/kg	1.61E-08	1.61E-08	mg/kg-day	4.00E-03	mg/kg-day	4.04E-06	4.04E-06
	CARBON DISULFIDE	0.025	mg/kg	8.07E-08	8.07E-08	mg/kg-day	1.00E-01	mg/kg-day	8.07E-07	8.07E-07
	CHLOROBENZENE	0.024	mg/kg	7.75E-08	7.75E-08	mg/kg-day	2.00E-02	mg/kg-day	3.87E-06	3.87E-06
	CIS-1,2-DICHLOROETHENE	0.005	mg/kg	1.61E-08	1.61E-08	mg/kg-day	1.00E-02	mg/kg-day	1.61E-06	1.61E-06

Table C2-8c
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
INGESTION (CONTINUED)	ETHYLBENZENE	0.044	mg/kg	1.42E-07	1.42E-07	mg/kg-day	1.00E-01	mg/kg-day	1.42E-06	1.42E-06
	4- ISOPROPYLTOLUENE	0.007	mg/kg	2.32E-08	2.32E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	METHYLENE CHLORIDE	0.3	mg/kg	9.69E-07	9.69E-07	mg/kg-day	6.00E-02	mg/kg-day	1.61E-05	1.61E-05
	NAPHTHALENE	0.016	mg/kg	5.17E-08	5.17E-08	mg/kg-day	2.00E-02	mg/kg-day	2.58E-06	2.58E-06
	TOLUENE	0.03	mg/kg	9.69E-08	9.69E-08	mg/kg-day	2.00E-01	mg/kg-day	4.84E-07	4.84E-07
	TRANS-1,2-DICHLOROETHENE	0.023	mg/kg	7.43E-08	7.43E-08	mg/kg-day	2.00E-02	mg/kg-day	3.71E-06	3.71E-06
	TRICHLOROETHENE	0.007	mg/kg	2.26E-08	2.26E-08	mg/kg-day	3.00E-04	mg/kg-day	7.53E-05	7.53E-05
	1,2,4- TRIMETHYLBENZENE	0.025	mg/kg	8.07E-08	8.07E-08	mg/kg-day	5.00E-02	mg/kg-day	1.61E-06	1.61E-06
	1,3,5- TRIMETHYLBENZENE	0.009	mg/kg	3.00E-08	3.00E-08	mg/kg-day	5.00E-02	mg/kg-day	6.01E-07	6.01E-07
	VINYL CHLORIDE	0.034	mg/kg	1.10E-07	1.10E-07	mg/kg-day	3.00E-03	mg/kg-day	3.66E-05	3.66E-05
	XYLENE (TOTAL)	0.11	mg/kg	3.55E-07	3.55E-07	mg/kg-day	2.00E-01	mg/kg-day	1.78E-06	1.78E-06
DERMAL CONTACT	**INORGANICS**									
	ALUMINUM	26,862	mg/kg	NA	NA	mg/kg-day	1.00E+00	mg/kg-day	NA	NA
	ANTIMONY	4.5	mg/kg	NA	NA	mg/kg-day	6.00E-05	mg/kg-day	NA	NA
	ARSENIC	21.2	mg/kg	6.16E-06	6.16E-06	mg/kg-day	3.00E-04	mg/kg-day	2.05E-02	2.05E-02
	BARIUM	93.6	mg/kg	NA	NA	mg/kg-day	4.90E-03	mg/kg-day	NA	NA
	BERYLLIUM	0.66	mg/kg	NA	NA	mg/kg-day	1.40E-05	mg/kg-day	NA	NA
	CADMIUM	2.94	mg/kg	2.85E-08	2.85E-08	mg/kg-day	1.25E-05	mg/kg-day	2.28E-03	2.28E-03
	CHROMIUM	225	mg/kg	NA	NA	mg/kg-day	1.95E-02	mg/kg-day	NA	NA
	COBALT	18.5	mg/kg	NA	NA	mg/kg-day	2.00E-02	mg/kg-day	NA	NA
	COPPER	193	mg/kg	NA	NA	mg/kg-day	4.00E-02	mg/kg-day	NA	NA
	HEXAVALENT CHROMIUM	0.07	mg/kg	NA	NA	mg/kg-day	7.50E-05	mg/kg-day	NA	NA
	LEAD	85	mg/kg	NA	NA	mg/kg-day	NA	mg/kg-day	NA	NA
	MANGANESE	901	mg/kg	NA	NA	mg/kg-day	5.60E-03	mg/kg-day	NA	NA
	MERCURY	1.2	mg/kg	NA	NA	mg/kg-day	2.10E-05	mg/kg-day	NA	NA
	MOLYBDENUM	5.4	mg/kg	NA	NA	mg/kg-day	5.00E-03	mg/kg-day	NA	NA
	NICKEL	113	mg/kg	NA	NA	mg/kg-day	8.00E-04	mg/kg-day	NA	NA
	SELENIUM	1.3	mg/kg	NA	NA	mg/kg-day	5.00E-03	mg/kg-day	NA	NA

Table C2-8c
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
DERMAL CONTACT (CONTINUED)	*SILVER*	2.8	mg/kg	NA	NA	mg/kg-day	2.00E-04	mg/kg-day	NA	NA
	THALLIUM	0.49	mg/kg	NA	NA	mg/kg-day	6.60E-05	mg/kg-day	NA	NA
	TIN	14.2	mg/kg	NA	NA	mg/kg-day	6.00E-01	mg/kg-day	NA	NA
	VANADIUM	109	mg/kg	NA	NA	mg/kg-day	1.82E-04	mg/kg-day	NA	NA
	ZINC	220	mg/kg	NA	NA	mg/kg-day	3.00E-01	mg/kg-day	NA	NA
	PESTICIDES									
	ALPHA-CHLORDANE	0.0082	mg/kg	3.18E-09	3.18E-09	mg/kg-day	5.00E-04	mg/kg-day	6.35E-06	6.35E-06
	BETA BHC	0.001	mg/kg	3.87E-10	3.87E-10	mg/kg-day	2.00E-04	mg/kg-day	1.94E-06	1.94E-06
	DELTA BHC	0.002	mg/kg	7.75E-10	7.75E-10	mg/kg-day	NA	mg/kg-day	NA	NA
	2,4- DDD	0.029	mg/kg	8.43E-09	8.43E-09	mg/kg-day	5.00E-04	mg/kg-day	1.69E-05	1.69E-05
	4,4- DDD	0.086	mg/kg	2.50E-08	2.50E-08	mg/kg-day	5.00E-04	mg/kg-day	5.00E-05	5.00E-05
	4,4- DDE	0.017	mg/kg	4.94E-09	4.94E-09	mg/kg-day	5.00E-04	mg/kg-day	9.88E-06	9.88E-06
	4,4- DDT	0.012	mg/kg	3.49E-09	3.49E-09	mg/kg-day	5.00E-04	mg/kg-day	6.97E-06	6.97E-06
	DIELDRIN	0.0039	mg/kg	3.78E-09	3.78E-09	mg/kg-day	5.00E-05	mg/kg-day	7.56E-05	7.56E-05
	ENDOSULFAN I	0.004	mg/kg	3.87E-09	3.87E-09	mg/kg-day	6.00E-03	mg/kg-day	6.46E-07	6.46E-07
	ENDOSULFAN SULFATE	0.003	mg/kg	2.91E-09	2.91E-09	mg/kg-day	6.00E-03	mg/kg-day	4.84E-07	4.84E-07
	ENDRIN	0.02	mg/kg	1.94E-08	1.94E-08	mg/kg-day	3.00E-04	mg/kg-day	6.46E-05	6.46E-05
	ENDRIN ALDEHYDE	0.006	mg/kg	5.81E-09	5.81E-09	mg/kg-day	3.00E-04	mg/kg-day	1.94E-05	1.94E-05
	ENDRIN KETONE	0.003	mg/kg	2.91E-09	2.91E-09	mg/kg-day	3.00E-04	mg/kg-day	9.69E-06	9.69E-06
	GAMMA-CHLORDANE	0.0085	mg/kg	3.29E-09	3.29E-09	mg/kg-day	5.00E-04	mg/kg-day	6.59E-06	6.59E-06
	HEPTACHLOR	0.0002	mg/kg	1.94E-10	1.94E-10	mg/kg-day	5.00E-04	mg/kg-day	3.87E-07	3.87E-07
	HEPTACHLOR EPOXIDE	0.0003	mg/kg	2.91E-10	2.91E-10	mg/kg-day	1.30E-05	mg/kg-day	2.24E-05	2.24E-05
	HEXACHLOROBENZENE	0.0008	mg/kg	7.75E-10	7.75E-10	mg/kg-day	8.00E-04	mg/kg-day	9.69E-07	9.69E-07
	METHOXYCHLOR	0.02	mg/kg	7.75E-09	7.75E-09	mg/kg-day	5.00E-03	mg/kg-day	1.55E-06	1.55E-06
	MIREX	0.004	mg/kg	3.87E-09	3.87E-09	mg/kg-day	2.00E-04	mg/kg-day	1.94E-05	1.94E-05
	TRANS-NONACHLOR	0.0024	mg/kg	9.30E-10	9.30E-10	mg/kg-day	5.00E-04	mg/kg-day	1.86E-06	1.86E-06
	PCBs									
	PCBs (TOTAL)	0.13	mg/kg	1.75E-07	1.75E-07	mg/kg-day	2.00E-05	mg/kg-day	8.75E-03	8.75E-03

Table C2-8c
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
DERMAL CONTACT (CONTINUED)	**SVOCs**									
	ACENAPHTHENE	0.14	mg/kg	1.76E-07	1.76E-07	mg/kg-day	6.00E-02	mg/kg-day	2.94E-06	2.94E-06
	ACENAPHTHYLENE	0.12	mg/kg	1.51E-07	1.51E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	ANTHRACENE	0.13	mg/kg	1.64E-07	1.64E-07	mg/kg-day	3.00E-01	mg/kg-day	5.46E-07	5.46E-07
	BENZO(A)ANTHRACENE	0.29	mg/kg	3.65E-07	3.65E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(A)PYRENE	0.26	mg/kg	3.22E-07	3.22E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(B)FLUORANTHENE	0.26	mg/kg	3.22E-07	3.22E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(G,H,I)PERYLENE	0.17	mg/kg	2.12E-07	2.12E-07	mg/kg-day	4.00E-02	mg/kg-day	5.29E-06	5.29E-06
	BENZO(K)FLUORANTHENE	0.25	mg/kg	3.09E-07	3.09E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZOIC ACID	0.68	mg/kg	6.59E-07	6.59E-07	mg/kg-day	4.00E+00	mg/kg-day	1.65E-07	1.65E-07
	BIS(2-ETHYLHEXYL)PHTHALATE	1.1	mg/kg	1.07E-06	1.07E-06	mg/kg-day	2.00E-02	mg/kg-day	5.33E-05	5.33E-05
	BUTYLBENZYLPHTHALATE	0.025	mg/kg	2.42E-08	2.42E-08	mg/kg-day	2.00E-01	mg/kg-day	1.21E-07	1.21E-07
	CARBAZOLE	0.55	mg/kg	5.33E-07	5.33E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	4- CHLOROANILINE	0.003	mg/kg	2.91E-09	2.91E-09	mg/kg-day	4.00E-03	mg/kg-day	7.27E-07	7.27E-07
	2- CHLOROPHENOL	0.043	mg/kg	4.19E-08	4.19E-08	mg/kg-day	5.00E-03	mg/kg-day	8.39E-06	8.39E-06
	CHRYSENE	0.28	mg/kg	3.53E-07	3.53E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	DIBENZOFURAN	0.36	mg/kg	3.49E-07	3.49E-07	mg/kg-day	2.00E-03	mg/kg-day	1.74E-04	1.74E-04
	3,3- DICHLOROBENZIDINE	0.012	mg/kg	1.16E-08	1.16E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	2,6- DINITROTOLUENE	0.37	mg/kg	3.58E-07	3.58E-07	mg/kg-day	1.00E-03	mg/kg-day	3.58E-04	3.58E-04
	FLUORANTHENE	0.406	mg/kg	5.11E-07	5.11E-07	mg/kg-day	4.00E-02	mg/kg-day	1.28E-05	1.28E-05
	FLUORENE	0.1	mg/kg	1.76E-07	1.76E-07	mg/kg-day	4.00E-02	mg/kg-day	4.41E-06	4.41E-06
	INDENO(1,2,3-CD)PYRENE	0.17	mg/kg	2.14E-07	2.14E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	2- METHYLNAPHTHALENE	0.18	mg/kg	1.74E-07	1.74E-07	mg/kg-day	4.00E-03	mg/kg-day	4.36E-05	4.36E-05
	4- METHYLPHENOL	0.23	mg/kg	2.23E-07	2.23E-07	mg/kg-day	5.00E-03	mg/kg-day	4.46E-05	4.46E-05
	NAPHTHALENE	0.11	mg/kg	1.39E-07	1.39E-07	mg/kg-day	2.00E-02	mg/kg-day	6.93E-06	6.93E-06
	PENTACHLOROPHENOL	0.54	mg/kg	5.23E-07	5.23E-07	mg/kg-day	3.00E-02	mg/kg-day	1.74E-05	1.74E-05
	PHENANTHRENE	0.21	mg/kg	2.64E-07	2.64E-07	mg/kg-day	3.00E-01	mg/kg-day	8.82E-07	8.82E-07
	PHENOL	0.29	mg/kg	2.81E-07	2.81E-07	mg/kg-day	6.00E-01	mg/kg-day	4.68E-07	4.68E-07

Table C2-8c
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
DERMAL CONTACT (CONTINUED)	*PYRENE*	0.460	mg/kg	5.79E-07	5.79E-07	mg/kg-day	3.00E-02	mg/kg-day	1.93E-05	1.93E-05
	TPH									
	TPH AS DIESEL	190	mg/kg	NA	NA	mg/kg-day	NA	mg/kg-day	NA	NA
	TPH AS GASOLINE	4.5	mg/kg	NA	NA	mg/kg-day	NA	mg/kg-day	NA	NA
	TPH AS MOTOR OIL	314	mg/kg	NA	NA	mg/kg-day	NA	mg/kg-day	NA	NA
	VOCs									
	ACETONE	0.32	mg/kg	NA	NA	mg/kg-day	9.00E-01	mg/kg-day	NA	NA
	BENZENE	0.005	mg/kg	NA	NA	mg/kg-day	4.00E-03	mg/kg-day	NA	NA
	CARBON DISULFIDE	0.025	mg/kg	NA	NA	mg/kg-day	1.00E-01	mg/kg-day	NA	NA
	CHLOROBENZENE	0.024	mg/kg	NA	NA	mg/kg-day	2.00E-02	mg/kg-day	NA	NA
	CIS-1,2-DICHLOROETHENE	0.005	mg/kg	NA	NA	mg/kg-day	1.00E-02	mg/kg-day	NA	NA
	ETHYLBENZENE	0.044	mg/kg	NA	NA	mg/kg-day	1.00E-01	mg/kg-day	NA	NA
	4- ISOPROPYLTOLUENE	0.007	mg/kg	NA	NA	mg/kg-day	NA	mg/kg-day	NA	NA
	METHYLENE CHLORIDE	0.3	mg/kg	NA	NA	mg/kg-day	6.00E-02	mg/kg-day	NA	NA
	NAPHTHALENE	0.016	mg/kg	NA	NA	mg/kg-day	2.00E-02	mg/kg-day	NA	NA
	TOLUENE	0.03	mg/kg	NA	NA	mg/kg-day	2.00E-01	mg/kg-day	NA	NA
	TRANS-1,2-DICHLOROETHENE	0.023	mg/kg	NA	NA	mg/kg-day	2.00E-02	mg/kg-day	NA	NA
	TRICHLOROETHENE	0.007	mg/kg	NA	NA	mg/kg-day	3.00E-04	mg/kg-day	NA	NA
	1,2,4- TRIMETHYLBENZENE	0.025	mg/kg	NA	NA	mg/kg-day	5.00E-02	mg/kg-day	NA	NA
	1,3,5- TRIMETHYLBENZENE	0.009	mg/kg	NA	NA	mg/kg-day	5.00E-02	mg/kg-day	NA	NA
	VINYL CHLORIDE	0.034	mg/kg	NA	NA	mg/kg-day	3.00E-03	mg/kg-day	NA	NA
	XYLENE (TOTAL)	0.11	mg/kg	NA	NA	mg/kg-day	2.00E-01	mg/kg-day	NA	NA
INHALATION OF PARTICULATES AND VAPORS	**INORGANICS**									
	ALUMINUM	26,862	mg/kg	1.60E-04	8.33E-05	mg/kg-day	1.40E-03	mg/kg-day	1.14E-01	5.95E-02
	ANTIMONY	4.5	mg/kg	2.68E-08	1.40E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	ARSENIC	21.2	mg/kg	1.26E-07	6.58E-08	mg/kg-day	8.57E-06	mg/kg-day	1.48E-02	7.68E-03
	BARIUM	93.6	mg/kg	5.58E-07	2.90E-07	mg/kg-day	1.43E-04	mg/kg-day	3.91E-03	2.03E-03
	BERYLLIUM	0.66	mg/kg	3.94E-09	2.05E-09	mg/kg-day	2.00E-06	mg/kg-day	1.97E-03	1.02E-03

Table C2-8c
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
INHALATION OF PARTICULATES AND VAPORS (CONTINUED)	*CADMIUM*	2.94	mg/kg	1.75E-08	9.12E-09	mg/kg-day	5.71E-06	mg/kg-day	3.07E-03	1.60E-03
	CHROMIUM	225	mg/kg	1.34E-06	6.98E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	COBALT	18.5	mg/kg	1.10E-07	5.74E-08	mg/kg-day	5.70E-06	mg/kg-day	1.94E-02	1.01E-02
	COPPER	193	mg/kg	1.15E-06	5.99E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	HEXAVALENT CHROMIUM	0.07	mg/kg	4.18E-10	2.17E-10	mg/kg-day	2.86E-05	mg/kg-day	1.46E-05	7.59E-06
	LEAD	85	mg/kg	5.08E-07	2.64E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	MANGANESE	901	mg/kg	5.38E-06	2.80E-06	mg/kg-day	1.43E-05	mg/kg-day	3.76E-01	1.95E-01
	MERCURY	1.2	mg/kg	6.86E-09	3.57E-09	mg/kg-day	2.57E-05	mg/kg-day	2.67E-04	1.39E-04
	MOLYBDENUM	5.4	mg/kg	3.22E-08	1.68E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	NICKEL	113	mg/kg	6.74E-07	3.51E-07	mg/kg-day	1.43E-05	mg/kg-day	4.72E-02	2.46E-02
	SELENIUM	1.3	mg/kg	7.58E-09	3.94E-09	mg/kg-day	5.71E-03	mg/kg-day	1.33E-06	6.90E-07
	SILVER	2.8	mg/kg	1.67E-08	8.69E-09	mg/kg-day	NA	mg/kg-day	NA	NA
	THALLIUM	0.49	mg/kg	2.92E-09	1.52E-09	mg/kg-day	NA	mg/kg-day	NA	NA
	TIN	14.2	mg/kg	8.47E-08	4.41E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	VANADIUM	109	mg/kg	6.50E-07	3.38E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	ZINC	220	mg/kg	1.31E-06	6.83E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	PESTICIDES									
	ALPHA-CHLORDANE	0.0082	mg/kg	4.89E-11	2.54E-11	mg/kg-day	2.00E-04	mg/kg-day	2.45E-07	1.27E-07
	BETA BHC	0.001	mg/kg	5.97E-12	3.10E-12	mg/kg-day	2.00E-04	mg/kg-day	2.98E-08	1.55E-08
	DELTA BHC	0.002	mg/kg	1.19E-11	6.20E-12	mg/kg-day	NA	mg/kg-day	NA	NA
	2,4- DDD	0.029	mg/kg	1.73E-10	9.00E-11	mg/kg-day	5.00E-04	mg/kg-day	3.46E-07	1.80E-07
	4,4- DDD	0.086	mg/kg	5.13E-10	2.67E-10	mg/kg-day	5.00E-04	mg/kg-day	1.03E-06	5.34E-07
	4,4- DDE	0.017	mg/kg	1.01E-10	5.27E-11	mg/kg-day	5.00E-04	mg/kg-day	2.03E-07	1.05E-07
	4,4- DDT	0.012	mg/kg	7.16E-11	3.72E-11	mg/kg-day	5.00E-04	mg/kg-day	1.43E-07	7.45E-08
	DIELDRIN	0.0039	mg/kg	2.33E-11	1.21E-11	mg/kg-day	5.00E-05	mg/kg-day	4.65E-07	2.42E-07
	ENDOSULFAN I	0.004	mg/kg	2.39E-11	1.24E-11	mg/kg-day	6.00E-03	mg/kg-day	3.98E-09	2.07E-09
	ENDOSULFAN SULFATE	0.003	mg/kg	1.79E-11	9.31E-12	mg/kg-day	6.00E-03	mg/kg-day	2.98E-09	1.55E-09
	ENDRIN	0.02	mg/kg	1.19E-10	6.20E-11	mg/kg-day	3.00E-04	mg/kg-day	3.98E-07	2.07E-07

Table C2-8c
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
INHALATION OF PARTICULATES AND VAPORS (CONTINUED)	ENDRIN ALDEHYDE	0.006	mg/kg	3.58E-11	1.86E-11	mg/kg-day	3.00E-04	mg/kg-day	1.19E-07	6.20E-08
	ENDRIN KETONE	0.003	mg/kg	1.79E-11	9.31E-12	mg/kg-day	3.00E-04	mg/kg-day	5.97E-08	3.10E-08
	GAMMA-CHLORDANE	0.0085	mg/kg	5.07E-11	2.64E-11	mg/kg-day	2.00E-04	mg/kg-day	2.54E-07	1.32E-07
	HEPTACHLOR	0.0002	mg/kg	1.19E-12	6.20E-13	mg/kg-day	5.00E-04	mg/kg-day	2.39E-09	1.24E-09
	HEPTACHLOR EPOXIDE	0.0003	mg/kg	1.79E-12	9.31E-13	mg/kg-day	1.30E-05	mg/kg-day	1.38E-07	7.16E-08
	HEXACHLOROBENZENE	0.0008	mg/kg	4.77E-12	2.48E-12	mg/kg-day	8.00E-04	mg/kg-day	5.97E-09	3.10E-09
	METHOXYCHLOR	0.02	mg/kg	1.19E-10	6.20E-11	mg/kg-day	5.00E-03	mg/kg-day	2.39E-08	1.24E-08
	MIREX	0.004	mg/kg	2.39E-11	1.24E-11	mg/kg-day	2.00E-04	mg/kg-day	1.19E-07	6.20E-08
	TRANS-NONACHLOR	0.0024	mg/kg	1.43E-11	7.45E-12	mg/kg-day	2.00E-04	mg/kg-day	7.16E-08	3.72E-08
	PCBs									
	PCBs (TOTAL)	0.13	mg/kg	7.70E-10	4.00E-10	mg/kg-day	2.00E-05	mg/kg-day	3.85E-05	2.00E-05
	SVOCs									
	ACENAPHTHENE	0.14	mg/kg	1.52E-07	7.91E-08	mg/kg-day	6.00E-02	mg/kg-day	2.54E-06	1.32E-06
	ACENAPHTHYLENE	0.12	mg/kg	7.16E-10	3.72E-10	mg/kg-day	NA	mg/kg-day	NA	NA
	ANTHRACENE	0.13	mg/kg	3.63E-08	1.89E-08	mg/kg-day	3.00E-01	mg/kg-day	1.21E-07	6.30E-08
	BENZO(A)ANTHRACENE	0.29	mg/kg	1.73E-09	9.00E-10	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(A)PYRENE	0.26	mg/kg	1.53E-09	7.94E-10	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(B)FLUORANTHENE	0.26	mg/kg	1.53E-09	7.94E-10	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZO(G,H,I)PERYLENE	0.17	mg/kg	1.00E-09	5.21E-10	mg/kg-day	4.00E-02	mg/kg-day	2.51E-08	1.30E-08
	BENZO(K)FLUORANTHENE	0.25	mg/kg	1.46E-09	7.60E-10	mg/kg-day	NA	mg/kg-day	NA	NA
	BENZOIC ACID	0.68	mg/kg	4.06E-09	2.11E-09	mg/kg-day	4.00E+00	mg/kg-day	1.01E-09	5.27E-10
	BIS(2-ETHYLHEXYL)PHTHALATE	1.1	mg/kg	6.56E-09	3.41E-09	mg/kg-day	2.00E-02	mg/kg-day	3.28E-07	1.71E-07
	BUTYLBENZYLPHTHALATE	0.025	mg/kg	1.49E-10	7.76E-11	mg/kg-day	2.00E-01	mg/kg-day	7.46E-10	3.88E-10
	CARBAZOLE	0.55	mg/kg	3.28E-09	1.71E-09	mg/kg-day	NA	mg/kg-day	NA	NA
	4- CHLOROANILINE	0.003	mg/kg	1.79E-11	9.31E-12	mg/kg-day	4.00E-03	mg/kg-day	4.47E-09	2.33E-09
	2- CHLOROPHENOL	0.043	mg/kg	2.58E-10	1.34E-10	mg/kg-day	5.00E-03	mg/kg-day	5.17E-08	2.69E-08
	CHRYSENE	0.28	mg/kg	2.03E-08	1.06E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	DIBENZOFURAN	0.36	mg/kg	2.15E-09	1.12E-09	mg/kg-day	2.00E-03	mg/kg-day	1.07E-06	5.58E-07

Table C2-8c
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
INHALATION OF PARTICULATES AND VAPORS (CONTINUED)	3,3- DICHLOROBENZIDINE	0.012	mg/kg	7.16E-11	3.72E-11	mg/kg-day	NA	mg/kg-day	NA	NA
	2,6- DINITROTOLUENE	0.37	mg/kg	2.21E-09	1.15E-09	mg/kg-day	1.00E-03	mg/kg-day	2.21E-06	1.15E-06
	FLUORANTHENE	0.406	mg/kg	2.42E-09	1.26E-09	mg/kg-day	4.00E-02	mg/kg-day	6.06E-08	3.15E-08
	FLUORENE	0.1	mg/kg	7.61E-08	3.96E-08	mg/kg-day	4.00E-02	mg/kg-day	1.90E-06	9.89E-07
	INDENO(1,2,3-CD)PYRENE	0.17	mg/kg	1.01E-09	5.27E-10	mg/kg-day	NA	mg/kg-day	NA	NA
	2- METHYLNAPHTHALENE	0.18	mg/kg	1.07E-09	5.58E-10	mg/kg-day	NA	mg/kg-day	NA	NA
	4- METHYLPHENOL	0.23	mg/kg	1.37E-09	7.14E-10	mg/kg-day	NA	mg/kg-day	NA	NA
	NAPHTHALENE	0.11	mg/kg	5.01E-07	2.60E-07	mg/kg-day	8.57E-04	mg/kg-day	5.84E-04	3.04E-04
	PENTACHLOROPHENOL	0.54	mg/kg	3.22E-09	1.68E-09	mg/kg-day	3.00E-02	mg/kg-day	1.07E-07	5.58E-08
	PHENANTHRENE	0.21	mg/kg	1.25E-09	6.52E-10	mg/kg-day	3.00E-01	mg/kg-day	4.18E-09	2.17E-09
	PHENOL	0.29	mg/kg	1.73E-09	9.00E-10	mg/kg-day	5.71E-02	mg/kg-day	3.03E-08	1.58E-08
	PYRENE	0.460	mg/kg	2.37E-08	1.23E-08	mg/kg-day	3.00E-02	mg/kg-day	7.90E-07	4.11E-07
	TPH									
	TPH AS DIESEL	190	mg/kg	1.13E-06	5.89E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	TPH AS GASOLINE	4.5	mg/kg	2.68E-08	1.40E-08	mg/kg-day	NA	mg/kg-day	NA	NA
	TPH AS MOTOR OIL	314	mg/kg	1.87E-06	9.74E-07	mg/kg-day	NA	mg/kg-day	NA	NA
	VOCs									
	ACETONE	0.32	mg/kg	4.82E-06	2.50E-06	mg/kg-day	9.00E-01	mg/kg-day	5.35E-06	2.78E-06
	BENZENE	0.005	mg/kg	3.62E-07	1.88E-07	mg/kg-day	8.57E-03	mg/kg-day	4.23E-05	2.20E-05
	CARBON DISULFIDE	0.025	mg/kg	4.08E-06	2.12E-06	mg/kg-day	2.00E-01	mg/kg-day	2.04E-05	1.06E-05
	CHLOROBENZENE	0.024	mg/kg	7.46E-07	3.88E-07	mg/kg-day	5.71E-03	mg/kg-day	1.31E-04	6.79E-05
	CIS-1,2-DICHLOROETHENE	0.005	mg/kg	3.37E-07	1.75E-07	mg/kg-day	1.00E-02	mg/kg-day	3.37E-05	1.75E-05
	ETHYLBENZENE	0.044	mg/kg	1.59E-06	8.29E-07	mg/kg-day	2.86E-01	mg/kg-day	5.58E-06	2.90E-06
	4- ISOPROPYLTOLUENE	0.007	mg/kg	NA	NA	mg/kg-day	NA	mg/kg-day	NA	NA
	METHYLENE CHLORIDE	0.3	mg/kg	2.35E-05	1.22E-05	mg/kg-day	1.14E-01	mg/kg-day	2.06E-04	1.07E-04
	NAPHTHALENE	0.016	mg/kg	7.28E-08	3.79E-08	mg/kg-day	8.57E-04	mg/kg-day	8.50E-05	4.42E-05
	TOLUENE	0.03	mg/kg	1.47E-06	7.63E-07	mg/kg-day	8.57E-02	mg/kg-day	1.71E-05	8.91E-06
	TRANS-1,2-DICHLOROETHENE	0.023	mg/kg	1.96E-06	1.02E-06	mg/kg-day	2.00E-02	mg/kg-day	9.78E-05	5.09E-05

Table C2-8c
Calculation of Noncarcinogenic Hazard Quotients
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	RfD	RfD Units	HQ (RME)	HQ (CTE)
INHALATION OF PARTICULATES AND VAPORS (CONTINUED)	TRICHLOROETHENE	0.007	mg/kg	4.15E-07	2.16E-07	mg/kg-day	1.00E-02	mg/kg-day	4.15E-05	2.16E-05
	1,2,4- TRIMETHYLBENZENE	0.025	mg/kg	2.45E-07	1.27E-07	mg/kg-day	1.70E-03	mg/kg-day	1.44E-04	7.48E-05
	1,3,5- TRIMETHYLBENZENE	0.009	mg/kg	2.27E-07	1.18E-07	mg/kg-day	1.70E-03	mg/kg-day	1.34E-04	6.96E-05
	VINYL CHLORIDE	0.034	mg/kg	6.65E-06	3.46E-06	mg/kg-day	2.86E-02	mg/kg-day	2.33E-04	1.21E-04
	XYLENE (TOTAL)	0.11	mg/kg	3.53E-06	1.84E-06	mg/kg-day	2.86E-02	mg/kg-day	1.23E-04	6.42E-05

Notes:
The HQ for chemicals that are italicized and underlined have been modified for post remediation residual risk.
CTE = Central Tendency Exposure
EPC = Exposure point concentration
HQ = Hazard Quotient
mg/kg = milligrams per kilogram
mg/kg-day = milligrams per kilogram per day
NA = Not Applicable
PCBs = Polychlorinated Biphenyls
RfD = Reference Dose
RME = Reasonable Maximum Exposure
SVOCs = Semivolatile Organic Compounds
TPH = Total Petroleum Hydrocarbons
VOCs = Volatile Organic Compounds

Table C2-8d
Calculation of Cancer Risks
Non-Tidal Wetland Area Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INGESTION	**INORGANICS**									
	ALUMINUM	26,862	mg/kg	7.13E-03	2.97E-03	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ANTIMONY	4.5	mg/kg	1.19E-06	4.98E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ARSENIC	21.2	mg/kg	5.63E-06	2.34E-06	mg/kg-day	9.45E+00	$(mg/kg\text{-}day)^{-1}$	5.32E-05	2.22E-05
	BARIUM	93.6	mg/kg	2.48E-05	1.04E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BERYLLIUM	0.66	mg/kg	1.75E-07	7.30E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CADMIUM	2.94	mg/kg	7.80E-07	3.25E-07	mg/kg-day	3.80E-01	$(mg/kg\text{-}day)^{-1}$	2.97E-07	1.24E-07
	CHROMIUM	225	mg/kg	5.97E-05	2.49E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	COBALT	18.5	mg/kg	4.91E-06	2.05E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	COPPER	193	mg/kg	5.12E-05	2.13E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	HEXAVALENT CHROMIUM	0.07	mg/kg	1.86E-08	7.74E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	LEAD	85	mg/kg	2.26E-05	9.41E-06	mg/kg-day	8.50E-03	$(mg/kg\text{-}day)^{-1}$	1.92E-07	8.00E-08
	MANGANESE	901	mg/kg	2.39E-04	9.96E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MERCURY	1.2	mg/kg	3.05E-07	1.27E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MOLYBDENUM	5.4	mg/kg	1.43E-06	5.97E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	NICKEL	113	mg/kg	3.00E-05	1.25E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	SELENIUM	1.3	mg/kg	3.37E-07	1.40E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	SILVER	2.8	mg/kg	7.43E-07	3.10E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	THALLIUM	0.49	mg/kg	1.30E-07	5.42E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TIN	14.2	mg/kg	3.77E-06	1.57E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	VANADIUM	109	mg/kg	2.89E-05	1.21E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ZINC	220	mg/kg	5.84E-05	2.43E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

Table C2-8d
Calculation of Cancer Risks
Non-Tidal Wetland Area Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INGESTION (CONTINUED)	**PESTICIDES**									
	ALPHA-CHLORDANE	0.0082	mg/kg	2.18E-09	9.07E-10	mg/kg-day	1.30E+00	$(mg/kg\text{-}day)^{-1}$	2.83E-09	1.18E-09
	BETA BHC	0.001	mg/kg	2.65E-10	1.11E-10	mg/kg-day	1.80E+00	$(mg/kg\text{-}day)^{-1}$	4.78E-10	1.99E-10
	DELTA BHC	0.002	mg/kg	5.31E-10	2.21E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	2,4- DDD	0.029	mg/kg	7.70E-09	3.21E-09	mg/kg-day	2.40E-01	$(mg/kg\text{-}day)^{-1}$	1.85E-09	7.70E-10
	4,4- DDD	0.086	mg/kg	2.28E-08	9.51E-09	mg/kg-day	2.40E-01	$(mg/kg\text{-}day)^{-1}$	5.48E-09	2.28E-09
	4,4- DDE	0.017	mg/kg	4.51E-09	1.88E-09	mg/kg-day	3.40E-01	$(mg/kg\text{-}day)^{-1}$	1.53E-09	6.39E-10
	4,4- DDT	0.012	mg/kg	3.18E-09	1.33E-09	mg/kg-day	3.40E-01	$(mg/kg\text{-}day)^{-1}$	1.08E-09	4.51E-10
	DIELDRIN	0.0039	mg/kg	1.04E-09	4.31E-10	mg/kg-day	1.60E+01	$(mg/kg\text{-}day)^{-1}$	1.66E-08	6.90E-09
	ENDOSULFAN I	0.004	mg/kg	1.06E-09	4.42E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDOSULFAN SULFATE	0.003	mg/kg	7.96E-10	3.32E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN	0.02	mg/kg	5.31E-09	2.21E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN ALDEHYDE	0.006	mg/kg	1.59E-09	6.64E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN KETONE	0.003	mg/kg	7.96E-10	3.32E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	GAMMA-CHLORDANE	0.0085	mg/kg	2.26E-09	9.40E-10	mg/kg-day	1.30E+00	$(mg/kg\text{-}day)^{-1}$	2.93E-09	1.22E-09
	HEPTACHLOR	0.0002	mg/kg	5.31E-11	2.21E-11	mg/kg-day	4.50E+00	$(mg/kg\text{-}day)^{-1}$	2.39E-10	9.95E-11
	HEPTACHLOR EPOXIDE	0.0003	mg/kg	7.96E-11	3.32E-11	mg/kg-day	9.10E+00	$(mg/kg\text{-}day)^{-1}$	7.25E-10	3.02E-10
	HEXACHLOROBENZENE	0.0008	mg/kg	2.12E-10	8.85E-11	mg/kg-day	1.80E+00	$(mg/kg\text{-}day)^{-1}$	3.82E-10	1.59E-10
	METHOXYCHLOR	0.02	mg/kg	5.31E-09	2.21E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MIREX	0.004	mg/kg	1.06E-09	4.42E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TRANS-NONACHLOR	0.0024	mg/kg	6.37E-10	2.65E-10	mg/kg-day	1.30E+00	$(mg/kg\text{-}day)^{-1}$	8.28E-10	3.45E-10
	PCBs									
	PCBs (TOTAL)	0.13	mg/kg	3.42E-08	1.43E-08	mg/kg-day	5.00E+00	$(mg/kg\text{-}day)^{-1}$	1.71E-07	7.13E-08

Table C2-8d
Calculation of Cancer Risks
Non-Tidal Wetland Area Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INGESTION	**SVOCs**									
(CONTINUED)	*ACENAPHTHENE*	0.14	mg/kg	3.72E-08	1.55E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ACENAPHTHYLENE	0.12	mg/kg	3.18E-08	1.33E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ANTHRACENE	0.13	mg/kg	3.45E-08	1.44E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BENZO(A)ANTHRACENE	0.29	mg/kg	7.70E-08	3.21E-08	mg/kg-day	1.20E+00	$(mg/kg\text{-}day)^{-1}$	9.24E-08	3.85E-08
	BENZO(A)PYRENE	0.26	mg/kg	6.79E-08	2.83E-08	mg/kg-day	1.20E+01	$(mg/kg\text{-}day)^{-1}$	8.15E-07	3.40E-07
	BENZO(B)FLUORANTHENE	0.26	mg/kg	6.79E-08	2.83E-08	mg/kg-day	1.20E+00	$(mg/kg\text{-}day)^{-1}$	8.15E-08	3.40E-08
	BENZO(G,H,I)PERYLENE	0.17	mg/kg	4.46E-08	1.86E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BENZO(K)FLUORANTHENE	0.25	mg/kg	6.50E-08	2.71E-08	mg/kg-day	1.20E+00	$(mg/kg\text{-}day)^{-1}$	7.80E-08	3.25E-08
	BENZOIC ACID	0.68	mg/kg	1.80E-07	7.52E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BIS(2-ETHYLHEXYL)PHTHALATE	1.1	mg/kg	2.92E-07	1.22E-07	mg/kg-day	1.40E-02	$(mg/kg\text{-}day)^{-1}$	4.09E-09	1.70E-09
	BUTYLBENZYLPHTHALATE	0.025	mg/kg	6.64E-09	2.76E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CARBAZOLE	0.55	mg/kg	1.46E-07	6.08E-08	mg/kg-day	2.00E-02	$(mg/kg\text{-}day)^{-1}$	2.92E-09	1.22E-09
	4- CHLOROANILINE	0.003	mg/kg	7.96E-10	3.32E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	2- CHLOROPHENOL	0.043	mg/kg	1.15E-08	4.79E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CHRYSENE	0.28	mg/kg	7.43E-08	3.10E-08	mg/kg-day	1.20E-01	$(mg/kg\text{-}day)^{-1}$	8.92E-09	3.72E-09
	DIBENZOFURAN	0.36	mg/kg	9.55E-08	3.98E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	3,3- DICHLOROBENZIDINE	0.012	mg/kg	3.18E-09	1.33E-09	mg/kg-day	4.50E-01	$(mg/kg\text{-}day)^{-1}$	1.43E-09	5.97E-10
	2,6- DINITROTOLUENE	0.37	mg/kg	9.82E-08	4.09E-08	mg/kg-day	6.10E-01	$(mg/kg\text{-}day)^{-1}$	5.99E-08	2.50E-08
	FLUORANTHENE	0.406	mg/kg	1.08E-07	4.49E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	FLUORENE	0.1	mg/kg	3.72E-08	1.55E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	INDENO(1,2,3-CD)PYRENE	0.17	mg/kg	4.51E-08	1.88E-08	mg/kg-day	1.20E+00	$(mg/kg\text{-}day)^{-1}$	5.41E-08	2.26E-08
	2- METHYLNAPHTHALENE	0.18	mg/kg	4.78E-08	1.99E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

Table C2-8d
Calculation of Cancer Risks
Non-Tidal Wetland Area Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INGESTION (CONTINUED)	4- METHYLPHENOL	0.23	mg/kg	6.10E-08	2.54E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	NAPHTHALENE	0.11	mg/kg	2.92E-08	1.22E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PENTACHLOROPHENOL	0.54	mg/kg	1.43E-07	5.97E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PHENANTHRENE	0.21	mg/kg	5.57E-08	2.32E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PHENOL	0.29	mg/kg	7.70E-08	3.21E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PYRENE	0.460	mg/kg	1.22E-07	5.09E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TPH									
	TPH AS DIESEL	190	mg/kg	5.04E-05	2.10E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TPH AS GASOLINE	4.5	mg/kg	1.19E-06	4.98E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TPH AS MOTOR OIL	314	mg/kg	8.33E-05	3.47E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	VOCs									
	ACETONE	0.32	mg/kg	8.49E-08	3.54E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BENZENE	0.005	mg/kg	1.33E-09	5.53E-10	mg/kg-day	1.00E-01	$(mg/kg\text{-}day)^{-1}$	1.33E-10	5.53E-11
	CARBON DISULFIDE	0.025	mg/kg	6.64E-09	2.76E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CHLOROBENZENE	0.024	mg/kg	6.37E-09	2.65E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CIS-1,2-DICHLOROETHENE	0.005	mg/kg	1.33E-09	5.53E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ETHYLBENZENE	0.044	mg/kg	1.17E-08	4.87E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	4- ISOPROPYLTOLUENE	0.007	mg/kg	1.91E-09	7.96E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	METHYLENE CHLORIDE	0.3	mg/kg	7.96E-08	3.32E-08	mg/kg-day	1.40E-02	$(mg/kg\text{-}day)^{-1}$	1.11E-09	4.64E-10
	NAPHTHALENE	0.016	mg/kg	4.25E-09	1.77E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TOLUENE	0.03	mg/kg	7.96E-09	3.32E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TRANS-1,2-DICHLOROETHENE	0.023	mg/kg	6.10E-09	2.54E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TRICHLOROETHENE	0.007	mg/kg	1.86E-09	7.74E-10	mg/kg-day	4.10E-01	$(mg/kg\text{-}day)^{-1}$	7.62E-10	3.17E-10

Table C2-8d
Calculation of Cancer Risks
Non-Tidal Wetland Area Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INGESTION (CONTINUED)	1,2,4- TRIMETHYLBENZENE	0.025	mg/kg	6.64E-09	2.76E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	1,3,5- TRIMETHYLBENZENE	0.009	mg/kg	2.47E-09	1.03E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	VINYL CHLORIDE	0.034	mg/kg	9.02E-09	3.76E-09	mg/kg-day	1.50E+00	$(mg/kg\text{-}day)^{-1}$	1.35E-08	5.64E-09
	XYLENE (TOTAL)	0.11	mg/kg	2.92E-08	1.22E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
DERMAL CONTACT	**INORGANICS**									
	ALUMINUM	26,862	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ANTIMONY	4.5	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ARSENIC	21.2	mg/kg	7.75E-07	3.23E-07	mg/kg-day	9.45E+00	$(mg/kg\text{-}day)^{-1}$	7.32E-06	3.05E-06
	BARIUM	93.6	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BERYLLIUM	0.66	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CADMIUM	2.94	mg/kg	3.58E-09	1.49E-09	mg/kg-day	1.52E+01	$(mg/kg\text{-}day)^{-1}$	5.44E-08	2.27E-08
	CHROMIUM	225	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	COBALT	18.5	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	COPPER	193	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	HEXAVALENT CHROMIUM	0.07	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	LEAD	85	mg/kg	NA	NA	mg/kg-day	8.50E-03	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MANGANESE	901	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MERCURY	1.2	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MOLYBDENUM	5.4	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	NICKEL	113	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	SELENIUM	1.3	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	SILVER	2.8	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	THALLIUM	0.49	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

Table C2-8d
Calculation of Cancer Risks
Non-Tidal Wetland Area Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
DERMAL CONTACT (CONTINUED)	*TIN*	14.2	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	VANADIUM	109	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ZINC	220	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PESTICIDES									
	ALPHA-CHLORDANE	0.0082	mg/kg	4.00E-10	1.66E-10	mg/kg-day	1.30E+00	$(mg/kg\text{-}day)^{-1}$	5.19E-10	2.16E-10
	BETA BHC	0.001	mg/kg	4.87E-11	2.03E-11	mg/kg-day	1.80E+00	$(mg/kg\text{-}day)^{-1}$	8.77E-11	3.65E-11
	DELTA BHC	0.002	mg/kg	9.75E-11	4.06E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	2,4- DDD	0.029	mg/kg	1.06E-09	4.42E-10	mg/kg-day	2.40E-01	$(mg/kg\text{-}day)^{-1}$	2.54E-10	1.06E-10
	4,4- DDD	0.086	mg/kg	3.14E-09	1.31E-09	mg/kg-day	2.40E-01	$(mg/kg\text{-}day)^{-1}$	7.54E-10	3.14E-10
	4,4- DDE	0.017	mg/kg	6.21E-10	2.59E-10	mg/kg-day	3.40E-01	$(mg/kg\text{-}day)^{-1}$	2.11E-10	8.80E-11
	4,4- DDT	0.012	mg/kg	4.39E-10	1.83E-10	mg/kg-day	3.40E-01	$(mg/kg\text{-}day)^{-1}$	1.49E-10	6.21E-11
	DIELDRIN	0.0039	mg/kg	4.75E-10	1.98E-10	mg/kg-day	1.60E+01	$(mg/kg\text{-}day)^{-1}$	7.60E-09	3.17E-09
	ENDOSULFAN I	0.004	mg/kg	4.87E-10	2.03E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDOSULFAN SULFATE	0.003	mg/kg	3.65E-10	1.52E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN	0.02	mg/kg	2.44E-09	1.02E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN ALDEHYDE	0.006	mg/kg	7.31E-10	3.05E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN KETONE	0.003	mg/kg	3.65E-10	1.52E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	GAMMA-CHLORDANE	0.0085	mg/kg	4.14E-10	1.73E-10	mg/kg-day	1.30E+00	$(mg/kg\text{-}day)^{-1}$	5.38E-10	2.24E-10
	HEPTACHLOR	0.0002	mg/kg	2.44E-11	1.02E-11	mg/kg-day	4.50E+00	$(mg/kg\text{-}day)^{-1}$	1.10E-10	4.57E-11
	HEPTACHLOR EPOXIDE	0.0003	mg/kg	3.65E-11	1.52E-11	mg/kg-day	9.10E+00	$(mg/kg\text{-}day)^{-1}$	3.33E-10	1.39E-10
	HEXACHLOROBENZENE	0.0008	mg/kg	9.75E-11	4.06E-11	mg/kg-day	1.80E+00	$(mg/kg\text{-}day)^{-1}$	1.75E-10	7.31E-11
	METHOXYCHLOR	0.02	mg/kg	9.75E-10	4.06E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MIREX	0.004	mg/kg	4.87E-10	2.03E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

Table C2-8d
Calculation of Cancer Risks
Non-Tidal Wetland Area Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
DERMAL CONTACT (CONTINUED)	TRANS-NONACHLOR	0.0024	mg/kg	1.17E-10	4.87E-11	mg/kg-day	1.30E+00	$(mg/kg\text{-}day)^{-1}$	1.52E-10	6.33E-11
	PCBs									
	PCBs (TOTAL)	0.13	mg/kg	2.20E-08	9.17E-09	mg/kg-day	5.00E+00	$(mg/kg\text{-}day)^{-1}$	1.10E-07	4.58E-08
	SVOCs									
	ACENAPHTHENE	0.14	mg/kg	2.22E-08	9.24E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ACENAPHTHYLENE	0.12	mg/kg	1.90E-08	7.92E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ANTHRACENE	0.13	mg/kg	2.06E-08	8.58E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BENZO(A)ANTHRACENE	0.29	mg/kg	4.59E-08	1.91E-08	mg/kg-day	1.20E+00	$(mg/kg\text{-}day)^{-1}$	5.51E-08	2.30E-08
	BENZO(A)PYRENE	0.26	mg/kg	4.05E-08	1.69E-08	mg/kg-day	1.20E+01	$(mg/kg\text{-}day)^{-1}$	4.87E-07	2.03E-07
	BENZO(B)FLUORANTHENE	0.26	mg/kg	4.05E-08	1.69E-08	mg/kg-day	1.20E+00	$(mg/kg\text{-}day)^{-1}$	4.87E-08	2.03E-08
	BENZO(G,H,I)PERYLENE	0.17	mg/kg	2.66E-08	1.11E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BENZO(K)FLUORANTHENE	0.25	mg/kg	3.88E-08	1.62E-08	mg/kg-day	1.20E+00	$(mg/kg\text{-}day)^{-1}$	4.66E-08	1.94E-08
	BENZOIC ACID	0.68	mg/kg	8.28E-08	3.45E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BIS(2-ETHYLHEXYL)PHTHALATE	1.1	mg/kg	1.34E-07	5.58E-08	mg/kg-day	1.40E-02	$(mg/kg\text{-}day)^{-1}$	1.88E-09	7.82E-10
	BUTYLBENZYLPHTHALATE	0.025	mg/kg	3.05E-09	1.27E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CARBAZOLE	0.55	mg/kg	6.70E-08	2.79E-08	mg/kg-day	2.00E-02	$(mg/kg\text{-}day)^{-1}$	1.34E-09	5.58E-10
	4-CHLOROANILINE	0.003	mg/kg	3.65E-10	1.52E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	2-CHLOROPHENOL	0.043	mg/kg	5.27E-09	2.20E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CHRYSENE	0.28	mg/kg	4.43E-08	1.85E-08	mg/kg-day	1.20E-01	$(mg/kg\text{-}day)^{-1}$	5.32E-09	2.22E-09
	DIBENZOFURAN	0.36	mg/kg	4.39E-08	1.83E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	3,3-DICHLOROBENZIDINE	0.012	mg/kg	1.46E-09	6.09E-10	mg/kg-day	4.50E-01	$(mg/kg\text{-}day)^{-1}$	6.58E-10	2.74E-10
	2,6-DINITROTOLUENE	0.37	mg/kg	4.51E-08	1.88E-08	mg/kg-day	6.10E-01	$(mg/kg\text{-}day)^{-1}$	2.75E-08	1.15E-08
	FLUORANTHENE	0.406	mg/kg	6.43E-08	2.68E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

Table C2-8d
Calculation of Cancer Risks
Non-Tidal Wetland Area Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
DERMAL CONTACT (CONTINUED)	*FLUORENE*	0.1	mg/kg	2.22E-08	9.24E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	INDENO(1,2,3-CD)PYRENE	0.17	mg/kg	2.69E-08	1.12E-08	mg/kg-day	1.20E+00	$(mg/kg\text{-}day)^{-1}$	3.23E-08	1.35E-08
	2- METHYLNAPHTHALENE	0.18	mg/kg	2.19E-08	9.14E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	4- METHYLPHENOL	0.23	mg/kg	2.80E-08	1.17E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	NAPHTHALENE	0.11	mg/kg	1.74E-08	7.26E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PENTACHLOROPHENOL	0.54	mg/kg	6.58E-08	2.74E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PHENANTHRENE	0.21	mg/kg	3.33E-08	1.39E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PHENOL	0.29	mg/kg	3.53E-08	1.47E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PYRENE	0.460	mg/kg	7.28E-08	3.04E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TPH									
	TPH AS DIESEL	190	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TPH AS GASOLINE	4.5	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TPH AS MOTOR OIL	314	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	VOCs									
	ACETONE	0.32	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BENZENE	0.005	mg/kg	NA	NA	mg/kg-day	1.00E-01	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CARBON DISULFIDE	0.025	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CHLOROBENZENE	0.024	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CIS-1,2-DICHLOROETHENE	0.005	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ETHYLBENZENE	0.044	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	4- ISOPROPYLTOLUENE	0.007	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	METHYLENE CHLORIDE	0.3	mg/kg	NA	NA	mg/kg-day	1.40E-02	$(mg/kg\text{-}day)^{-1}$	NA	NA
	NAPHTHALENE	0.016	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

Table C2-8d
Calculation of Cancer Risks
Non-Tidal Wetland Area Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
DERMAL CONTACT (CONTINUED)	TOLUENE	0.03	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TRANS-1,2-DICHLOROETHENE	0.023	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TRICHLOROETHENE	0.007	mg/kg	NA	NA	mg/kg-day	4.10E-01	$(mg/kg\text{-}day)^{-1}$	NA	NA
	1,2,4- TRIMETHYLBENZENE	0.025	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	1,3,5- TRIMETHYLBENZENE	0.009	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	VINYL CHLORIDE	0.034	mg/kg	NA	NA	mg/kg-day	1.50E+00	$(mg/kg\text{-}day)^{-1}$	NA	NA
	XYLENE (TOTAL)	0.11	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
INHALATION OF PARTICULATES AND VAPORS	**INORGANICS**									
	ALUMINUM	26,862	mg/kg	3.00E-07	1.25E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ANTIMONY	4.5	mg/kg	5.02E-11	2.09E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ARSENIC	21.2	mg/kg	2.37E-10	9.86E-11	mg/kg-day	1.20E+01	$(mg/kg\text{-}day)^{-1}$	2.84E-09	1.18E-09
	BARIUM	93.6	mg/kg	1.04E-09	4.35E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BERYLLIUM	0.66	mg/kg	7.37E-12	3.07E-12	mg/kg-day	8.40E+00	$(mg/kg\text{-}day)^{-1}$	6.19E-11	2.58E-11
	CADMIUM	2.94	mg/kg	3.28E-11	1.37E-11	mg/kg-day	1.50E+01	$(mg/kg\text{-}day)^{-1}$	4.92E-10	2.05E-10
	CHROMIUM	225	mg/kg	2.51E-09	1.05E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	COBALT	18.5	mg/kg	2.06E-10	8.60E-11	mg/kg-day	9.80E+00	$(mg/kg\text{-}day)^{-1}$	2.02E-09	8.43E-10
	COPPER	193	mg/kg	2.15E-09	8.97E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	HEXAVALENT CHROMIUM	0.07	mg/kg	7.81E-13	3.25E-13	mg/kg-day	5.10E+02	$(mg/kg\text{-}day)^{-1}$	3.98E-10	1.66E-10
	LEAD	85	mg/kg	9.50E-10	3.96E-10	mg/kg-day	4.20E-02	$(mg/kg\text{-}day)^{-1}$	3.99E-11	1.66E-11
	MANGANESE	901	mg/kg	1.01E-08	4.19E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MERCURY	1.2	mg/kg	1.28E-11	5.35E-12	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MOLYBDENUM	5.4	mg/kg	6.03E-11	2.51E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	NICKEL	113	mg/kg	1.26E-09	5.25E-10	mg/kg-day	9.10E-01	$(mg/kg\text{-}day)^{-1}$	1.15E-09	4.78E-10

Table C2-8d
Calculation of Cancer Risks
Non-Tidal Wetland Area Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INHALATION OF PARTICULATES AND VAPORS (CONTINUED)	*SELENIUM*	1.3	mg/kg	1.42E-11	5.91E-12	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	SILVER	2.8	mg/kg	3.12E-11	1.30E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	THALLIUM	0.49	mg/kg	5.47E-12	2.28E-12	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TIN	14.2	mg/kg	1.58E-10	6.60E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	VANADIUM	109	mg/kg	1.22E-09	5.07E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ZINC	220	mg/kg	2.46E-09	1.02E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PESTICIDES									
	ALPHA-CHLORDANE	0.0082	mg/kg	9.15E-14	3.81E-14	mg/kg-day	3.50E-01	$(mg/kg\text{-}day)^{-1}$	3.20E-14	1.33E-14
	BETA BHC	0.001	mg/kg	1.12E-14	4.65E-15	mg/kg-day	1.86E+00	$(mg/kg\text{-}day)^{-1}$	2.08E-14	8.65E-15
	DELTA BHC	0.002	mg/kg	2.23E-14	9.30E-15	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	2,4- DDD	0.029	mg/kg	3.24E-13	1.35E-13	mg/kg-day	2.40E-01	$(mg/kg\text{-}day)^{-1}$	7.77E-14	3.24E-14
	4,4- DDD	0.086	mg/kg	9.60E-13	4.00E-13	mg/kg-day	2.40E-01	$(mg/kg\text{-}day)^{-1}$	2.30E-13	9.60E-14
	4,4- DDE	0.017	mg/kg	1.90E-13	7.90E-14	mg/kg-day	3.40E-01	$(mg/kg\text{-}day)^{-1}$	6.45E-14	2.69E-14
	4,4- DDT	0.012	mg/kg	1.34E-13	5.58E-14	mg/kg-day	3.40E-01	$(mg/kg\text{-}day)^{-1}$	4.55E-14	1.90E-14
	DIELDRIN	0.0039	mg/kg	4.35E-14	1.81E-14	mg/kg-day	1.60E+01	$(mg/kg\text{-}day)^{-1}$	6.96E-13	2.90E-13
	ENDOSULFAN I	0.004	mg/kg	4.46E-14	1.86E-14	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDOSULFAN SULFATE	0.003	mg/kg	3.35E-14	1.39E-14	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN	0.02	mg/kg	2.23E-13	9.30E-14	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN ALDEHYDE	0.006	mg/kg	6.70E-14	2.79E-14	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN KETONE	0.003	mg/kg	3.35E-14	1.39E-14	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	GAMMA-CHLORDANE	0.0085	mg/kg	9.49E-14	3.95E-14	mg/kg-day	3.50E-01	$(mg/kg\text{-}day)^{-1}$	3.32E-14	1.38E-14
	HEPTACHLOR	0.0002	mg/kg	2.23E-15	9.30E-16	mg/kg-day	4.50E+00	$(mg/kg\text{-}day)^{-1}$	1.00E-14	4.18E-15
	HEPTACHLOR EPOXIDE	0.0003	mg/kg	3.35E-15	1.39E-15	mg/kg-day	9.10E+00	$(mg/kg\text{-}day)^{-1}$	3.05E-14	1.27E-14

Table C2-8d
Calculation of Cancer Risks
Non-Tidal Wetland Area Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INHALATION OF PARTICULATES AND VAPORS (CONTINUED)	HEXACHLOROBENZENE	0.0008	mg/kg	8.93E-15	3.72E-15	mg/kg-day	1.80E+00	$(mg/kg\text{-}day)^{-1}$	1.61E-14	6.70E-15
	METHOXYCHLOR	0.02	mg/kg	2.23E-13	9.30E-14	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MIREX	0.004	mg/kg	4.46E-14	1.86E-14	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TRANS-NONACHLOR	0.0024	mg/kg	2.68E-14	1.12E-14	mg/kg-day	3.50E-01	$(mg/kg\text{-}day)^{-1}$	9.37E-15	3.91E-15
	PCBs									
	PCBs (TOTAL)	0.13	mg/kg	1.44E-12	6.00E-13	mg/kg-day	2.00E+00	$(mg/kg\text{-}day)^{-1}$	2.88E-12	1.20E-12
	SVOCs									
	ACENAPHTHENE	0.14	mg/kg	1.15E-08	4.77E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ACENAPHTHYLENE	0.12	mg/kg	1.34E-12	5.58E-13	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ANTHRACENE	0.13	mg/kg	2.74E-09	1.14E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BENZO(A)ANTHRACENE	0.29	mg/kg	3.24E-12	1.35E-12	mg/kg-day	3.90E-01	$(mg/kg\text{-}day)^{-1}$	1.26E-12	5.26E-13
	BENZO(A)PYRENE	0.26	mg/kg	2.86E-12	1.19E-12	mg/kg-day	3.90E+00	$(mg/kg\text{-}day)^{-1}$	1.11E-11	4.64E-12
	BENZO(B)FLUORANTHENE	0.26	mg/kg	2.86E-12	1.19E-12	mg/kg-day	3.90E-01	$(mg/kg\text{-}day)^{-1}$	1.11E-12	4.64E-13
	BENZO(G,H,I)PERYLENE	0.17	mg/kg	1.87E-12	7.81E-13	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BENZO(K)FLUORANTHENE	0.25	mg/kg	2.73E-12	1.14E-12	mg/kg-day	3.90E-01	$(mg/kg\text{-}day)^{-1}$	1.07E-12	4.44E-13
	BENZOIC ACID	0.68	mg/kg	7.59E-12	3.16E-12	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BIS(2-ETHYLHEXYL)PHTHALATE	1.1	mg/kg	1.23E-11	5.11E-12	mg/kg-day	1.40E-02	$(mg/kg\text{-}day)^{-1}$	1.72E-13	7.16E-14
	BUTYLBENZYLPHTHALATE	0.025	mg/kg	2.79E-13	1.16E-13	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CARBAZOLE	0.55	mg/kg	6.14E-12	2.56E-12	mg/kg-day	2.00E-02	$(mg/kg\text{-}day)^{-1}$	1.23E-13	5.11E-14
	4- CHLOROANILINE	0.003	mg/kg	3.35E-14	1.39E-14	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	2- CHLOROPHENOL	0.043	mg/kg	4.83E-13	2.01E-13	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CHRYSENE	0.28	mg/kg	1.53E-09	6.36E-10	mg/kg-day	3.90E-02	$(mg/kg\text{-}day)^{-1}$	5.96E-11	2.48E-11
	DIBENZOFURAN	0.36	mg/kg	4.02E-12	1.67E-12	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

Table C2-8d
Calculation of Cancer Risks
Non-Tidal Wetland Area Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INHALATION OF PARTICULATES AND VAPORS (CONTINUED)	3,3- DICHLOROBENZIDINE	0.012	mg/kg	1.34E-13	5.58E-14	mg/kg-day	4.50E-01	$(mg/kg\text{-}day)^{-1}$	6.03E-14	2.51E-14
	2,6- DINITROTOLUENE	0.37	mg/kg	4.13E-12	1.72E-12	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	FLUORANTHENE	0.406	mg/kg	4.53E-12	1.89E-12	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	FLUORENE	0.1	mg/kg	5.73E-09	2.39E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	INDENO(1,2,3-CD)PYRENE	0.17	mg/kg	1.90E-12	7.90E-13	mg/kg-day	3.90E-01	$(mg/kg\text{-}day)^{-1}$	7.40E-13	3.08E-13
	2- METHYLNAPHTHALENE	0.18	mg/kg	2.01E-12	8.37E-13	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	4- METHYLPHENOL	0.23	mg/kg	2.57E-12	1.07E-12	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	NAPHTHALENE	0.11	mg/kg	3.77E-08	1.57E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PENTACHLOROPHENOL	0.54	mg/kg	6.03E-12	2.51E-12	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PHENANTHRENE	0.21	mg/kg	2.34E-12	9.76E-13	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PHENOL	0.29	mg/kg	3.24E-12	1.35E-12	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PYRENE	0.460	mg/kg	1.78E-09	7.43E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TPH									
	TPH AS DIESEL	190	mg/kg	2.12E-09	8.83E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TPH AS GASOLINE	4.5	mg/kg	5.02E-11	2.09E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TPH AS MOTOR OIL	314	mg/kg	3.50E-09	1.46E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	VOCs									
	ACETONE	0.32	mg/kg	3.63E-07	1.51E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BENZENE	0.005	mg/kg	2.73E-08	1.14E-08	mg/kg-day	1.00E-01	$(mg/kg\text{-}day)^{-1}$	2.73E-09	1.14E-09
	CARBON DISULFIDE	0.025	mg/kg	3.07E-07	1.28E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CHLOROBENZENE	0.024	mg/kg	5.61E-08	2.34E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CIS-1,2-DICHLOROETHENE	0.005	mg/kg	2.54E-08	1.06E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ETHYLBENZENE	0.044	mg/kg	1.20E-07	5.00E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

Table C2-8d
Calculation of Cancer Risks
Non-Tidal Wetland Area Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Recreational
Receptor Age:	Child (1 to 17 years old)

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INHALATION OF PARTICULATES AND VAPORS (CONTINUED)	4- ISOPROPYLTOLUENE	0.007	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	METHYLENE CHLORIDE	0.3	mg/kg	1.77E-06	7.37E-07	mg/kg-day	3.50E-03	$(mg/kg\text{-}day)^{-1}$	6.19E-09	2.58E-09
	NAPHTHALENE	0.016	mg/kg	5.48E-09	2.28E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TOLUENE	0.03	mg/kg	1.10E-07	4.60E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TRANS-1,2-DICHLOROETHENE	0.023	mg/kg	1.47E-07	6.14E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TRICHLOROETHENE	0.007	mg/kg	3.12E-08	1.30E-08	mg/kg-day	7.00E-03	$(mg/kg\text{-}day)^{-1}$	2.19E-10	9.11E-11
	1,2,4- TRIMETHYLBENZENE	0.025	mg/kg	1.84E-08	7.67E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	1,3,5- TRIMETHYLBENZENE	0.009	mg/kg	1.71E-08	7.13E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	VINYL CHLORIDE	0.034	mg/kg	5.01E-07	2.09E-07	mg/kg-day	1.54E-02	$(mg/kg\text{-}day)^{-1}$	7.71E-09	3.21E-09
	XYLENE (TOTAL)	0.11	mg/kg	2.66E-07	1.11E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

Notes:
The cancer risk for chemicals that are italicized and underlined have been modified for post remediation residual risk.
CTE = Central Tendency Exposure
EPC = Exposure point concentration
HQ = Hazard Quotient
mg/kg = milligrams per kilogram
mg/kg-day = milligrams per kilogram per day
NA = Not Applicable
PCBs = Polychlorinated Biphenyls
RME = Reasonable Maximum Exposure
SVOCs = Semivolatile Organic Compounds
TPH = Total Petroleum Hydrocarbons
VOCs = Volatile Organic Compounds

Table C2-8e
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INGESTION	**INORGANICS**									
	ALUMINUM	26,862	mg/kg	1.24E-03	1.24E-03	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ANTIMONY	4.5	mg/kg	2.08E-07	2.08E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ARSENIC	21.2	mg/kg	9.78E-07	9.78E-07	mg/kg-day	9.45E+00	$(mg/kg\text{-}day)^{-1}$	9.24E-06	9.24E-06
	BARIUM	93.6	mg/kg	4.32E-06	4.32E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BERYLLIUM	0.66	mg/kg	3.04E-08	3.04E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CADMIUM	2.94	mg/kg	1.36E-07	1.36E-07	mg/kg-day	3.80E-01	$(mg/kg\text{-}day)^{-1}$	5.15E-08	5.15E-08
	CHROMIUM	225	mg/kg	1.04E-05	1.04E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	COBALT	18.5	mg/kg	8.53E-07	8.53E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	COPPER	193	mg/kg	8.90E-06	8.90E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	HEXAVALENT CHROMIUM	0.07	mg/kg	3.23E-09	3.23E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	LEAD	85	mg/kg	3.93E-06	3.93E-06	mg/kg-day	8.50E-03	$(mg/kg\text{-}day)^{-1}$	3.34E-08	3.34E-08
	MANGANESE	901	mg/kg	4.16E-05	4.16E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MERCURY	1.2	mg/kg	5.30E-08	5.30E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MOLYBDENUM	5.4	mg/kg	2.49E-07	2.49E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	NICKEL	113	mg/kg	5.21E-06	5.21E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	SELENIUM	1.3	mg/kg	5.86E-08	5.86E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	SILVER	2.8	mg/kg	1.29E-07	1.29E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	THALLIUM	0.49	mg/kg	2.26E-08	2.26E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TIN	14.2	mg/kg	6.55E-07	6.55E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	VANADIUM	109	mg/kg	5.03E-06	5.03E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ZINC	220	mg/kg	1.01E-05	1.01E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

Table C2-8e
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INGESTION	**PESTICIDES**									
(CONTINUED)	ALPHA-CHLORDANE	0.0082	mg/kg	3.78E-10	3.78E-10	mg/kg-day	1.30E+00	$(mg/kg\text{-}day)^{-1}$	4.92E-10	4.92E-10
	BETA BHC	0.001	mg/kg	4.61E-11	4.61E-11	mg/kg-day	1.80E+00	$(mg/kg\text{-}day)^{-1}$	8.30E-11	8.30E-11
	DELTA BHC	0.002	mg/kg	9.23E-11	9.23E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	2,4- DDD	0.029	mg/kg	1.34E-09	1.34E-09	mg/kg-day	2.40E-01	$(mg/kg\text{-}day)^{-1}$	3.21E-10	3.21E-10
	4,4- DDD	0.086	mg/kg	3.97E-09	3.97E-09	mg/kg-day	2.40E-01	$(mg/kg\text{-}day)^{-1}$	9.52E-10	9.52E-10
	4,4- DDE	0.017	mg/kg	7.84E-10	7.84E-10	mg/kg-day	3.40E-01	$(mg/kg\text{-}day)^{-1}$	2.67E-10	2.67E-10
	4,4- DDT	0.012	mg/kg	5.54E-10	5.54E-10	mg/kg-day	3.40E-01	$(mg/kg\text{-}day)^{-1}$	1.88E-10	1.88E-10
	DIELDRIN	0.0039	mg/kg	1.80E-10	1.80E-10	mg/kg-day	1.60E+01	$(mg/kg\text{-}day)^{-1}$	2.88E-09	2.88E-09
	ENDOSULFAN I	0.004	mg/kg	1.85E-10	1.85E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDOSULFAN SULFATE	0.003	mg/kg	1.38E-10	1.38E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN	0.02	mg/kg	9.23E-10	9.23E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN ALDEHYDE	0.006	mg/kg	2.77E-10	2.77E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN KETONE	0.003	mg/kg	1.38E-10	1.38E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	GAMMA-CHLORDANE	0.0085	mg/kg	3.92E-10	3.92E-10	mg/kg-day	1.30E+00	$(mg/kg\text{-}day)^{-1}$	5.10E-10	5.10E-10
	HEPTACHLOR	0.0002	mg/kg	9.23E-12	9.23E-12	mg/kg-day	4.50E+00	$(mg/kg\text{-}day)^{-1}$	4.15E-11	4.15E-11
	HEPTACHLOR EPOXIDE	0.0003	mg/kg	1.38E-11	1.38E-11	mg/kg-day	9.10E+00	$(mg/kg\text{-}day)^{-1}$	1.26E-10	1.26E-10
	HEXACHLOROBENZENE	0.0008	mg/kg	3.69E-11	3.69E-11	mg/kg-day	1.80E+00	$(mg/kg\text{-}day)^{-1}$	6.64E-11	6.64E-11
	METHOXYCHLOR	0.02	mg/kg	9.23E-10	9.23E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MIREX	0.004	mg/kg	1.85E-10	1.85E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TRANS-NONACHLOR	0.0024	mg/kg	1.11E-10	1.11E-10	mg/kg-day	1.30E+00	$(mg/kg\text{-}day)^{-1}$	1.44E-10	1.44E-10
	PCBs									
	PCBs (TOTAL)	0.13	mg/kg	5.95E-09	5.95E-09	mg/kg-day	5.00E+00	$(mg/kg\text{-}day)^{-1}$	2.98E-08	2.98E-08

Table C2-8e
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INGESTION	**SVOCs**									
(CONTINUED)	*ACENAPHTHENE*	0.14	mg/kg	6.46E-09	6.46E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ACENAPHTHYLENE	0.12	mg/kg	5.54E-09	5.54E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ANTHRACENE	0.13	mg/kg	6.00E-09	6.00E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BENZO(A)ANTHRACENE	0.29	mg/kg	1.34E-08	1.34E-08	mg/kg-day	1.20E+00	$(mg/kg\text{-}day)^{-1}$	1.61E-08	1.61E-08
	BENZO(A)PYRENE	0.26	mg/kg	1.18E-08	1.18E-08	mg/kg-day	1.20E+01	$(mg/kg\text{-}day)^{-1}$	1.42E-07	1.42E-07
	BENZO(B)FLUORANTHENE	0.26	mg/kg	1.18E-08	1.18E-08	mg/kg-day	1.20E+00	$(mg/kg\text{-}day)^{-1}$	1.42E-08	1.42E-08
	BENZO(G,H,I)PERYLENE	0.17	mg/kg	7.75E-09	7.75E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BENZO(K)FLUORANTHENE	0.25	mg/kg	1.13E-08	1.13E-08	mg/kg-day	1.20E+00	$(mg/kg\text{-}day)^{-1}$	1.36E-08	1.36E-08
	BENZOIC ACID	0.68	mg/kg	3.14E-08	3.14E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BIS(2-ETHYLHEXYL)PHTHALATE	1.1	mg/kg	5.07E-08	5.07E-08	mg/kg-day	1.40E-02	$(mg/kg\text{-}day)^{-1}$	7.10E-10	7.10E-10
	BUTYLBENZYLPHTHALATE	0.025	mg/kg	1.15E-09	1.15E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CARBAZOLE	0.55	mg/kg	2.54E-08	2.54E-08	mg/kg-day	2.00E-02	$(mg/kg\text{-}day)^{-1}$	5.07E-10	5.07E-10
	4- CHLOROANILINE	0.003	mg/kg	1.38E-10	1.38E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	2- CHLOROPHENOL	0.043	mg/kg	2.00E-09	2.00E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CHRYSENE	0.28	mg/kg	1.29E-08	1.29E-08	mg/kg-day	1.20E-01	$(mg/kg\text{-}day)^{-1}$	1.55E-09	1.55E-09
	DIBENZOFURAN	0.36	mg/kg	1.66E-08	1.66E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	3,3- DICHLOROBENZIDINE	0.012	mg/kg	5.54E-10	5.54E-10	mg/kg-day	4.50E-01	$(mg/kg\text{-}day)^{-1}$	2.49E-10	2.49E-10
	2,6- DINITROTOLUENE	0.37	mg/kg	1.71E-08	1.71E-08	mg/kg-day	6.10E-01	$(mg/kg\text{-}day)^{-1}$	1.04E-08	1.04E-08
	FLUORANTHENE	0.406	mg/kg	1.87E-08	1.87E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	FLUORENE	0.1	mg/kg	6.46E-09	6.46E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	INDENO(1,2,3-CD)PYRENE	0.17	mg/kg	7.84E-09	7.84E-09	mg/kg-day	1.20E+00	$(mg/kg\text{-}day)^{-1}$	9.41E-09	9.41E-09
	2- METHYLNAPHTHALENE	0.18	mg/kg	8.30E-09	8.30E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

Table C2-8e
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INGESTION (CONTINUED)	4- METHYLPHENOL	0.23	mg/kg	1.06E-08	1.06E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	NAPHTHALENE	0.11	mg/kg	5.07E-09	5.07E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PENTACHLOROPHENOL	0.54	mg/kg	2.49E-08	2.49E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PHENANTHRENE	0.21	mg/kg	9.69E-09	9.69E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PHENOL	0.29	mg/kg	1.34E-08	1.34E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PYRENE	0.460	mg/kg	2.12E-08	2.12E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TPH									
	TPH AS DIESEL	190	mg/kg	8.76E-06	8.76E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TPH AS GASOLINE	4.5	mg/kg	2.08E-07	2.08E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TPH AS MOTOR OIL	314	mg/kg	1.45E-05	1.45E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	VOCs									
	ACETONE	0.32	mg/kg	1.48E-08	1.48E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BENZENE	0.005	mg/kg	2.31E-10	2.31E-10	mg/kg-day	1.00E-01	$(mg/kg\text{-}day)^{-1}$	2.31E-11	2.31E-11
	CARBON DISULFIDE	0.025	mg/kg	1.15E-09	1.15E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CHLOROBENZENE	0.024	mg/kg	1.11E-09	1.11E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CIS-1,2-DICHLOROETHENE	0.005	mg/kg	2.31E-10	2.31E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ETHYLBENZENE	0.044	mg/kg	2.03E-09	2.03E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	4- ISOPROPYLTOLUENE	0.007	mg/kg	3.32E-10	3.32E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	METHYLENE CHLORIDE	0.3	mg/kg	1.38E-08	1.38E-08	mg/kg-day	1.40E-02	$(mg/kg\text{-}day)^{-1}$	1.94E-10	1.94E-10
	NAPHTHALENE	0.016	mg/kg	7.38E-10	7.38E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TOLUENE	0.03	mg/kg	1.38E-09	1.38E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TRANS-1,2-DICHLOROETHENE	0.023	mg/kg	1.06E-09	1.06E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TRICHLOROETHENE	0.007	mg/kg	3.23E-10	3.23E-10	mg/kg-day	4.10E-01	$(mg/kg\text{-}day)^{-1}$	1.32E-10	1.32E-10

Table C2-8e
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INGESTION (CONTINUED)	1,2,4- TRIMETHYLBENZENE	0.025	mg/kg	1.15E-09	1.15E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	1,3,5- TRIMETHYLBENZENE	0.009	mg/kg	4.29E-10	4.29E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	VINYL CHLORIDE	0.034	mg/kg	1.57E-09	1.57E-09	mg/kg-day	1.50E+00	$(mg/kg\text{-}day)^{-1}$	2.35E-09	2.35E-09
	XYLENE (TOTAL)	0.11	mg/kg	5.07E-09	5.07E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
DERMAL CONTACT	**INORGANICS**									
	ALUMINUM	26,862	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ANTIMONY	4.5	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ARSENIC	21.2	mg/kg	8.80E-08	8.80E-08	mg/kg-day	9.45E+00	$(mg/kg\text{-}day)^{-1}$	8.32E-07	8.32E-07
	BARIUM	93.6	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BERYLLIUM	0.66	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CADMIUM	2.94	mg/kg	4.07E-10	4.07E-10	mg/kg-day	1.52E+01	$(mg/kg\text{-}day)^{-1}$	6.18E-09	6.18E-09
	CHROMIUM	225	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	COBALT	18.5	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	COPPER	193	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	HEXAVALENT CHROMIUM	0.07	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	LEAD	85	mg/kg	NA	NA	mg/kg-day	8.50E-03	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MANGANESE	901	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MERCURY	1.2	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MOLYBDENUM	5.4	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	NICKEL	113	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	SELENIUM	1.3	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	SILVER	2.8	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	THALLIUM	0.49	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

Table C2-8e
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
DERMAL CONTACT (CONTINUED)	*TIN*	14.2	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	VANADIUM	109	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ZINC	220	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PESTICIDES									
	ALPHA-CHLORDANE	0.0082	mg/kg	4.54E-11	4.54E-11	mg/kg-day	1.30E+00	$(mg/kg\text{-}day)^{-1}$	5.90E-11	5.90E-11
	BETA BHC	0.001	mg/kg	5.54E-12	5.54E-12	mg/kg-day	1.80E+00	$(mg/kg\text{-}day)^{-1}$	9.96E-12	9.96E-12
	DELTA BHC	0.002	mg/kg	1.11E-11	1.11E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	2,4- DDD	0.029	mg/kg	1.20E-10	1.20E-10	mg/kg-day	2.40E-01	$(mg/kg\text{-}day)^{-1}$	2.89E-11	2.89E-11
	4,4- DDD	0.086	mg/kg	3.57E-10	3.57E-10	mg/kg-day	2.40E-01	$(mg/kg\text{-}day)^{-1}$	8.57E-11	8.57E-11
	4,4- DDE	0.017	mg/kg	7.06E-11	7.06E-11	mg/kg-day	3.40E-01	$(mg/kg\text{-}day)^{-1}$	2.40E-11	2.40E-11
	4,4- DDT	0.012	mg/kg	4.98E-11	4.98E-11	mg/kg-day	3.40E-01	$(mg/kg\text{-}day)^{-1}$	1.69E-11	1.69E-11
	DIELDRIN	0.0039	mg/kg	5.40E-11	5.40E-11	mg/kg-day	1.60E+01	$(mg/kg\text{-}day)^{-1}$	8.64E-10	8.64E-10
	ENDOSULFAN I	0.004	mg/kg	5.54E-11	5.54E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDOSULFAN SULFATE	0.003	mg/kg	4.15E-11	4.15E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN	0.02	mg/kg	2.77E-10	2.77E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN ALDEHYDE	0.006	mg/kg	8.30E-11	8.30E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN KETONE	0.003	mg/kg	4.15E-11	4.15E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	GAMMA-CHLORDANE	0.0085	mg/kg	4.71E-11	4.71E-11	mg/kg-day	1.30E+00	$(mg/kg\text{-}day)^{-1}$	6.12E-11	6.12E-11
	HEPTACHLOR	0.0002	mg/kg	2.77E-12	2.77E-12	mg/kg-day	4.50E+00	$(mg/kg\text{-}day)^{-1}$	1.25E-11	1.25E-11
	HEPTACHLOR EPOXIDE	0.0003	mg/kg	4.15E-12	4.15E-12	mg/kg-day	9.10E+00	$(mg/kg\text{-}day)^{-1}$	3.78E-11	3.78E-11
	HEXACHLOROBENZENE	0.0008	mg/kg	1.11E-11	1.11E-11	mg/kg-day	1.80E+00	$(mg/kg\text{-}day)^{-1}$	1.99E-11	1.99E-11
	METHOXYCHLOR	0.02	mg/kg	1.11E-10	1.11E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MIREX	0.004	mg/kg	5.54E-11	5.54E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

Table C2-8e
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
DERMAL CONTACT (CONTINUED)	TRANS-NONACHLOR	0.0024	mg/kg	1.33E-11	1.33E-11	mg/kg-day	1.30E+00	$(mg/kg\text{-}day)^{-1}$	1.73E-11	1.73E-11
	PCBs									
	PCBs (TOTAL)	0.13	mg/kg	2.50E-09	2.50E-09	mg/kg-day	5.00E+00	$(mg/kg\text{-}day)^{-1}$	1.25E-08	1.25E-08
	SVOCs									
	ACENAPHTHENE	0.14	mg/kg	2.52E-09	2.52E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ACENAPHTHYLENE	0.12	mg/kg	2.16E-09	2.16E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ANTHRACENE	0.13	mg/kg	2.34E-09	2.34E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BENZO(A)ANTHRACENE	0.29	mg/kg	5.22E-09	5.22E-09	mg/kg-day	1.20E+00	$(mg/kg\text{-}day)^{-1}$	6.26E-09	6.26E-09
	BENZO(A)PYRENE	0.26	mg/kg	4.61E-09	4.61E-09	mg/kg-day	1.20E+01	$(mg/kg\text{-}day)^{-1}$	5.53E-08	5.53E-08
	BENZO(B)FLUORANTHENE	0.26	mg/kg	4.61E-09	4.61E-09	mg/kg-day	1.20E+00	$(mg/kg\text{-}day)^{-1}$	5.53E-09	5.53E-09
	BENZO(G,H,I)PERYLENE	0.17	mg/kg	3.02E-09	3.02E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BENZO(K)FLUORANTHENE	0.25	mg/kg	4.41E-09	4.41E-09	mg/kg-day	1.20E+00	$(mg/kg\text{-}day)^{-1}$	5.29E-09	5.29E-09
	BENZOIC ACID	0.68	mg/kg	9.41E-09	9.41E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BIS(2-ETHYLHEXYL)PHTHALATE	1.1	mg/kg	1.52E-08	1.52E-08	mg/kg-day	1.40E-02	$(mg/kg\text{-}day)^{-1}$	2.13E-10	2.13E-10
	BUTYLBENZYLPHTHALATE	0.025	mg/kg	3.46E-10	3.46E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CARBAZOLE	0.55	mg/kg	7.61E-09	7.61E-09	mg/kg-day	2.00E-02	$(mg/kg\text{-}day)^{-1}$	1.52E-10	1.52E-10
	4- CHLOROANILINE	0.003	mg/kg	4.15E-11	4.15E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	2- CHLOROPHENOL	0.043	mg/kg	5.99E-10	5.99E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CHRYSENE	0.28	mg/kg	5.04E-09	5.04E-09	mg/kg-day	1.20E-01	$(mg/kg\text{-}day)^{-1}$	6.04E-10	6.04E-10
	DIBENZOFURAN	0.36	mg/kg	4.98E-09	4.98E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	3,3- DICHLOROBENZIDINE	0.012	mg/kg	1.66E-10	1.66E-10	mg/kg-day	4.50E-01	$(mg/kg\text{-}day)^{-1}$	7.47E-11	7.47E-11
	2,6- DINITROTOLUENE	0.37	mg/kg	5.12E-09	5.12E-09	mg/kg-day	6.10E-01	$(mg/kg\text{-}day)^{-1}$	3.12E-09	3.12E-09
	FLUORANTHENE	0.406	mg/kg	7.30E-09	7.30E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

Table C2-8e
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
DERMAL CONTACT (CONTINUED)	*FLUORENE*	0.1	mg/kg	2.52E-09	2.52E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	INDENO(1,2,3-CD)PYRENE	0.17	mg/kg	3.06E-09	3.06E-09	mg/kg-day	1.20E+00	$(mg/kg\text{-}day)^{-1}$	3.67E-09	3.67E-09
	2- METHYLNAPHTHALENE	0.18	mg/kg	2.49E-09	2.49E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	4- METHYLPHENOL	0.23	mg/kg	3.18E-09	3.18E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	NAPHTHALENE	0.11	mg/kg	1.98E-09	1.98E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PENTACHLOROPHENOL	0.54	mg/kg	7.47E-09	7.47E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PHENANTHRENE	0.21	mg/kg	3.78E-09	3.78E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PHENOL	0.29	mg/kg	4.01E-09	4.01E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PYRENE	0.460	mg/kg	8.28E-09	8.28E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TPH									
	TPH AS DIESEL	190	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TPH AS GASOLINE	4.5	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TPH AS MOTOR OIL	314	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	VOCs									
	ACETONE	0.32	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BENZENE	0.005	mg/kg	NA	NA	mg/kg-day	1.00E-01	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CARBON DISULFIDE	0.025	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CHLOROBENZENE	0.024	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CIS-1,2-DICHLOROETHENE	0.005	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ETHYLBENZENE	0.044	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	4- ISOPROPYLTOLUENE	0.007	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	METHYLENE CHLORIDE	0.3	mg/kg	NA	NA	mg/kg-day	1.40E-02	$(mg/kg\text{-}day)^{-1}$	NA	NA
	NAPHTHALENE	0.016	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

Table C2-8e
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
DERMAL CONTACT (CONTINUED)	TOLUENE	0.03	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TRANS-1,2-DICHLOROETHENE	0.023	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TRICHLOROETHENE	0.007	mg/kg	NA	NA	mg/kg-day	4.10E-01	$(mg/kg\text{-}day)^{-1}$	NA	NA
	1,2,4- TRIMETHYLBENZENE	0.025	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	1,3,5- TRIMETHYLBENZENE	0.009	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	VINYL CHLORIDE	0.034	mg/kg	NA	NA	mg/kg-day	1.50E+00	$(mg/kg\text{-}day)^{-1}$	NA	NA
	XYLENE (TOTAL)	0.11	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
INHALATION OF PARTICULATES AND VAPORS	**INORGANICS**									
	ALUMINUM	26,862	mg/kg	2.29E-06	1.19E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ANTIMONY	4.5	mg/kg	3.84E-10	1.99E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ARSENIC	21.2	mg/kg	1.81E-09	9.40E-10	mg/kg-day	1.20E+01	$(mg/kg\text{-}day)^{-1}$	2.17E-08	1.13E-08
	BARIUM	93.6	mg/kg	7.98E-09	4.15E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BERYLLIUM	0.66	mg/kg	5.63E-11	2.93E-11	mg/kg-day	8.40E+00	$(mg/kg\text{-}day)^{-1}$	4.73E-10	2.46E-10
	CADMIUM	2.94	mg/kg	2.51E-10	1.30E-10	mg/kg-day	1.50E+01	$(mg/kg\text{-}day)^{-1}$	3.76E-09	1.95E-09
	CHROMIUM	225	mg/kg	1.92E-08	9.97E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	COBALT	18.5	mg/kg	1.58E-09	8.20E-10	mg/kg-day	9.80E+00	$(mg/kg\text{-}day)^{-1}$	1.55E-08	8.04E-09
	COPPER	193	mg/kg	1.64E-08	8.55E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	HEXAVALENT CHROMIUM	0.07	mg/kg	5.97E-12	3.10E-12	mg/kg-day	5.10E+02	$(mg/kg\text{-}day)^{-1}$	3.04E-09	1.58E-09
	LEAD	85	mg/kg	7.25E-09	3.77E-09	mg/kg-day	4.20E-02	$(mg/kg\text{-}day)^{-1}$	3.05E-10	1.58E-10
	MANGANESE	901	mg/kg	7.68E-08	3.99E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MERCURY	1.2	mg/kg	9.80E-11	5.10E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MOLYBDENUM	5.4	mg/kg	4.60E-10	2.39E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	NICKEL	113	mg/kg	9.63E-09	5.01E-09	mg/kg-day	9.10E-01	$(mg/kg\text{-}day)^{-1}$	8.76E-09	4.56E-09

Table C2-8e
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INHALATION OF PARTICULATES AND VAPORS (CONTINUED)	*SELENIUM*	1.3	mg/kg	1.08E-10	5.63E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	SILVER	2.8	mg/kg	2.39E-10	1.24E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	THALLIUM	0.49	mg/kg	4.18E-11	2.17E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TIN	14.2	mg/kg	1.21E-09	6.29E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	VANADIUM	109	mg/kg	9.29E-09	4.83E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ZINC	220	mg/kg	1.88E-08	9.75E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PESTICIDES									
	ALPHA-CHLORDANE	0.0082	mg/kg	6.99E-13	3.63E-13	mg/kg-day	3.50E-01	$(mg/kg\text{-}day)^{-1}$	2.45E-13	1.27E-13
	BETA BHC	0.001	mg/kg	8.52E-14	4.43E-14	mg/kg-day	1.86E+00	$(mg/kg\text{-}day)^{-1}$	1.59E-13	8.24E-14
	DELTA BHC	0.002	mg/kg	1.70E-13	8.86E-14	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	2,4- DDD	0.029	mg/kg	2.47E-12	1.29E-12	mg/kg-day	2.40E-01	$(mg/kg\text{-}day)^{-1}$	5.93E-13	3.08E-13
	4,4- DDD	0.086	mg/kg	7.33E-12	3.81E-12	mg/kg-day	2.40E-01	$(mg/kg\text{-}day)^{-1}$	1.76E-12	9.15E-13
	4,4- DDE	0.017	mg/kg	1.45E-12	7.53E-13	mg/kg-day	3.40E-01	$(mg/kg\text{-}day)^{-1}$	4.93E-13	2.56E-13
	4,4- DDT	0.012	mg/kg	1.02E-12	5.32E-13	mg/kg-day	3.40E-01	$(mg/kg\text{-}day)^{-1}$	3.48E-13	1.81E-13
	DIELDRIN	0.0039	mg/kg	3.32E-13	1.73E-13	mg/kg-day	1.60E+01	$(mg/kg\text{-}day)^{-1}$	5.32E-12	2.77E-12
	ENDOSULFAN I	0.004	mg/kg	3.41E-13	1.77E-13	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDOSULFAN SULFATE	0.003	mg/kg	2.56E-13	1.33E-13	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN	0.02	mg/kg	1.70E-12	8.86E-13	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN ALDEHYDE	0.006	mg/kg	5.11E-13	2.66E-13	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ENDRIN KETONE	0.003	mg/kg	2.56E-13	1.33E-13	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	GAMMA-CHLORDANE	0.0085	mg/kg	7.24E-13	3.77E-13	mg/kg-day	3.50E-01	$(mg/kg\text{-}day)^{-1}$	2.54E-13	1.32E-13
	HEPTACHLOR	0.0002	mg/kg	1.70E-14	8.86E-15	mg/kg-day	4.50E+00	$(mg/kg\text{-}day)^{-1}$	7.67E-14	3.99E-14
	HEPTACHLOR EPOXIDE	0.0003	mg/kg	2.56E-14	1.33E-14	mg/kg-day	9.10E+00	$(mg/kg\text{-}day)^{-1}$	2.33E-13	1.21E-13

Table C2-8e
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INHALATION OF PARTICULATES AND VAPORS (CONTINUED)	HEXACHLOROBENZENE	0.0008	mg/kg	6.82E-14	3.55E-14	mg/kg-day	1.80E+00	$(mg/kg\text{-}day)^{-1}$	1.23E-13	6.38E-14
	METHOXYCHLOR	0.02	mg/kg	1.70E-12	8.86E-13	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	MIREX	0.004	mg/kg	3.41E-13	1.77E-13	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TRANS-NONACHLOR	0.0024	mg/kg	2.05E-13	1.06E-13	mg/kg-day	3.50E-01	$(mg/kg\text{-}day)^{-1}$	7.16E-14	3.72E-14
	PCBs									
	PCBs (TOTAL)	0.13	mg/kg	1.10E-11	5.72E-12	mg/kg-day	2.00E+00	$(mg/kg\text{-}day)^{-1}$	2.20E-11	1.14E-11
	SVOCs									
	ACENAPHTHENE	0.14	mg/kg	2.17E-09	1.13E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ACENAPHTHYLENE	0.12	mg/kg	1.02E-11	5.32E-12	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ANTHRACENE	0.13	mg/kg	5.19E-10	2.70E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BENZO(A)ANTHRACENE	0.29	mg/kg	2.47E-11	1.29E-11	mg/kg-day	3.90E-01	$(mg/kg\text{-}day)^{-1}$	9.64E-12	5.01E-12
	BENZO(A)PYRENE	0.26	mg/kg	2.18E-11	1.13E-11	mg/kg-day	3.90E+00	$(mg/kg\text{-}day)^{-1}$	8.51E-11	4.43E-11
	BENZO(B)FLUORANTHENE	0.26	mg/kg	2.18E-11	1.13E-11	mg/kg-day	3.90E-01	$(mg/kg\text{-}day)^{-1}$	8.51E-12	4.43E-12
	BENZO(G,H,I)PERYLENE	0.17	mg/kg	1.43E-11	7.45E-12	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BENZO(K)FLUORANTHENE	0.25	mg/kg	2.09E-11	1.09E-11	mg/kg-day	3.90E-01	$(mg/kg\text{-}day)^{-1}$	8.14E-12	4.23E-12
	BENZOIC ACID	0.68	mg/kg	5.80E-11	3.01E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BIS(2-ETHYLHEXYL)PHTHALATE	1.1	mg/kg	9.38E-11	4.88E-11	mg/kg-day	1.40E-02	$(mg/kg\text{-}day)^{-1}$	1.31E-12	6.83E-13
	BUTYLBENZYLPHTHALATE	0.025	mg/kg	2.13E-12	1.11E-12	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CARBAZOLE	0.55	mg/kg	4.69E-11	2.44E-11	mg/kg-day	2.00E-02	$(mg/kg\text{-}day)^{-1}$	9.38E-13	4.88E-13
	4- CHLOROANILINE	0.003	mg/kg	2.56E-13	1.33E-13	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	2- CHLOROPHENOL	0.043	mg/kg	3.69E-12	1.92E-12	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CHRYSENE	0.28	mg/kg	2.90E-10	1.51E-10	mg/kg-day	3.90E-02	$(mg/kg\text{-}day)^{-1}$	1.13E-11	5.88E-12
	DIBENZOFURAN	0.36	mg/kg	3.07E-11	1.60E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

Table C2-8e
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INHALATION OF PARTICULATES AND VAPORS (CONTINUED)	3,3- DICHLOROBENZIDINE	0.012	mg/kg	1.02E-12	5.32E-13	mg/kg-day	4.50E-01	$(mg/kg\text{-}day)^{-1}$	4.60E-13	2.39E-13
	2,6- DINITROTOLUENE	0.37	mg/kg	3.15E-11	1.64E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	FLUORANTHENE	0.406	mg/kg	3.46E-11	1.80E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	FLUORENE	0.1	mg/kg	1.09E-09	5.65E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	INDENO(1,2,3-CD)PYRENE	0.17	mg/kg	1.45E-11	7.53E-12	mg/kg-day	3.90E-01	$(mg/kg\text{-}day)^{-1}$	5.65E-12	2.94E-12
	2- METHYLNAPHTHALENE	0.18	mg/kg	1.53E-11	7.98E-12	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	4- METHYLPHENOL	0.23	mg/kg	1.96E-11	1.02E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	NAPHTHALENE	0.11	mg/kg	7.15E-09	3.72E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PENTACHLOROPHENOL	0.54	mg/kg	4.60E-11	2.39E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PHENANTHRENE	0.21	mg/kg	1.79E-11	9.31E-12	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PHENOL	0.29	mg/kg	2.47E-11	1.29E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	PYRENE	0.460	mg/kg	3.38E-10	1.76E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TPH									
	TPH AS DIESEL	190	mg/kg	1.62E-08	8.42E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TPH AS GASOLINE	4.5	mg/kg	3.84E-10	1.99E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TPH AS MOTOR OIL	314	mg/kg	2.68E-08	1.39E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	VOCs									
	ACETONE	0.32	mg/kg	6.88E-08	3.58E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	BENZENE	0.005	mg/kg	5.18E-09	2.69E-09	mg/kg-day	1.00E-01	$(mg/kg\text{-}day)^{-1}$	5.18E-10	2.69E-10
	CARBON DISULFIDE	0.025	mg/kg	5.82E-08	3.03E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CHLOROBENZENE	0.024	mg/kg	1.07E-08	5.54E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	CIS-1,2-DICHLOROETHENE	0.005	mg/kg	4.82E-09	2.51E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	ETHYLBENZENE	0.044	mg/kg	2.28E-08	1.18E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

Table C2-8e
Calculation of Cancer Risks
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Mixed Zone Soil (0 to 10 feet)
Exposure Point:	Mixed Zone Soil (0 to 10 feet)
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical	EPC	EPC Units	Intake (RME)	Intake (CTE)	Intake Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk (RME)	Cancer Risk (CTE)
INHALATION OF PARTICULATES AND VAPORS (CONTINUED)	4- ISOPROPYLTOLUENE	0.007	mg/kg	NA	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	METHYLENE CHLORIDE	0.3	mg/kg	3.35E-07	1.74E-07	mg/kg-day	3.50E-03	$(mg/kg\text{-}day)^{-1}$	1.17E-09	6.11E-10
	NAPHTHALENE	0.016	mg/kg	1.04E-09	5.41E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TOLUENE	0.03	mg/kg	2.10E-08	1.09E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TRANS-1,2-DICHLOROETHENE	0.023	mg/kg	2.80E-08	1.45E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	TRICHLOROETHENE	0.007	mg/kg	5.93E-09	3.08E-09	mg/kg-day	7.00E-03	$(mg/kg\text{-}day)^{-1}$	4.15E-11	2.16E-11
	1,2,4- TRIMETHYLBENZENE	0.025	mg/kg	3.49E-09	1.82E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	1,3,5- TRIMETHYLBENZENE	0.009	mg/kg	3.25E-09	1.69E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA
	VINYL CHLORIDE	0.034	mg/kg	9.51E-08	4.94E-08	mg/kg-day	1.54E-02	$(mg/kg\text{-}day)^{-1}$	1.46E-09	7.61E-10
	XYLENE (TOTAL)	0.11	mg/kg	5.04E-08	2.62E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA

Notes:
The cancer risk for chemicals that are italicized and underlined have been modified for post remediation residual risk.
CTE = Central Tendency Exposure
EPC = Exposure point concentration
HQ = Hazard Quotient
mg/kg = milligrams per kilogram
mg/kg-day = milligrams per kilogram per day
NA = Not Applicable
PCBs = Polychlorinated Biphenyls
RME = Reasonable Maximum Exposure
SVOCs = Semivolatile Organic Compounds
TPH = Total Petroleum Hydrocarbons
VOCs = Volatile Organic Compounds

Table C2-8f
Summary of Current Receptor RME Cancer Risks and Noncarcinogenic Hazard Indices
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Receptor Population:	Recreational User
Receptor Age:	Child (1 to 17 years)

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Primary Target Organ	Non-Carconogenic Hazard Index			
				Ingestion	Dermal	Inhalation (Outdoor)	Exposure Routes Total			Ingestion HQ	Dermal HQ	Inhalation (Outdoor) HQ	Total HI
Soil (0 to 10 feet)	Soil	On-Site Soil	**INORGANICS (mg/kg)**					**INORGANICS (mg/kg)**					
			ALUMINUM	NA	NA	NA	NA	ALUMINUM	Body Weight	2.94E-02	NA	8.82E-04	3.02E-02
			ANTIMONY	NA	NA	NA	NA	ANTIMONY	Blood; Whole Body	1.23E-02	NA	NA	1.23E-02
			ARSENIC	5.32E-05	7.32E-06	2.84E-09	6.05E-05	ARSENIC	Cardiovascular System; Fetal; Nervous System; Skin	7.72E-02	1.06E-02	1.14E-04	8.80E-02
			BARIUM	NA	NA	NA	NA	BARIUM	Cardiovascular System; Fetal; Kidney; NOEL	1.46E-03	NA	3.01E-05	1.49E-03
			BERYLLIUM	NA	NA	6.19E-11	6.19E-11	BERYLLIUM	GI System; Immune System; Respiratory	3.61E-04	NA	1.52E-05	3.76E-04
			CADMIUM	2.97E-07	5.44E-08	4.92E-10	3.51E-07	CADMIUM	Kidney; Respiratory	6.43E-03	1.18E-03	2.37E-05	7.63E-03
			CHROMIUM	NA	NA	NA	NA	CHROMIUM	NOEL	1.64E-04	NA	NA	1.64E-04
			COBALT	NA	NA	2.02E-09	2.02E-09	COBALT	Cardiovascular System; Respiratory	1.01E-03	NA	1.49E-04	1.16E-03
			COPPER	NA	NA	NA	NA	COPPER	GI System	5.27E-03	NA	NA	5.27E-03
			HEXAVALENT CHROMIUM	NA	NA	3.98E-10	3.98E-10	HEXAVALENT CHROMIUM	NOEL; Respiratory	2.55E-05	NA	1.12E-07	2.56E-05
			LEAD	1.92E-07	NA	3.99E-11	1.92E-07	LEAD	NA	NA	NA	NA	NA
			MANGANESE	NA	NA	NA	NA	MANGANESE	Nervous System	7.03E-03	NA	2.90E-03	9.93E-03
			MERCURY	NA	NA	NA	NA	MERCURY	Nervous System	4.19E-03	NA	2.06E-06	4.19E-03
			MOLYBDENUM	NA	NA	NA	NA	MOLYBDENUM	Kidney	1.18E-03	NA	NA	1.18E-03
			NICKEL	NA	NA	1.15E-09	1.15E-09	NICKEL	Body Weight; Respiratory	6.17E-03	NA	3.64E-04	6.54E-03
			SELENIUM	NA	NA	NA	NA	SELENIUM	Cardiovascular System; Liver; Nervous System; Skin	2.78E-04	NA	1.02E-08	2.78E-04
			SILVER	NA	NA	NA	NA	SILVER	Skin	6.12E-04	NA	NA	6.12E-04
			THALLIUM	NA	NA	NA	NA	THALLIUM	Blood; Liver	8.11E-03	NA	NA	8.11E-03
			TIN	NA	NA	NA	NA	TIN	Kidney; Liver	2.59E-05	NA	NA	2.59E-05
			VANADIUM	NA	NA	NA	NA	VANADIUM	NOEL	1.70E-02	NA	NA	1.70E-02
			ZINC	NA	NA	NA	NA	ZINC	Blood	8.01E-04	NA	NA	8.01E-04
			PESTICIDES (mg/kg)					**PESTICIDES (mg/kg)**					
			ALPHA-CHLORDANE	2.83E-09	5.19E-10	3.20E-14	3.35E-09	ALPHA-CHLORDANE	Liver	1.79E-05	3.29E-06	1.88E-09	2.12E-05
			BETA BHC	4.78E-10	8.77E-11	2.08E-14	5.65E-10	BETA BHC	Liver	5.46E-06	1.00E-06	2.30E-10	6.47E-06
			DELTA BHC	NA	NA	NA	NA	DELTA BHC	NA	NA	NA	NA	NA
			2,4- DDD	1.85E-09	2.54E-10	7.77E-14	2.10E-09	2,4 DDD	Liver	6.34E-05	8.73E-06	2.67E-09	7.21E-05
			4,4- DDD	5.48E-09	7.54E-10	2.30E-13	6.23E-09	4,4- DDD	Liver	1.88E-04	2.59E-05	7.90E-09	2.14E-04
			4,4- DDE	1.53E-09	2.11E-10	6.45E-14	1.75E-09	4,4- DDE	Liver	3.72E-05	5.12E-06	1.56E-09	4.23E-05
			4,4- DDT	1.08E-09	1.49E-10	4.55E-14	1.23E-09	4,4- DDT	Liver	2.62E-05	3.61E-06	1.10E-09	2.98E-05

Table C2-8f
Summary of Current Receptor RME Cancer Risks and Noncarcinogenic Hazard Indices
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Receptor Population:	Recreational User
Receptor Age:	Child (1 to 17 years)

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Primary Target Organ	Non-Carconogenic Hazard Index			
				Ingestion	Dermal	Inhalation (Outdoor)	Exposure Routes Total			Ingestion HQ	Dermal HQ	Inhalation (Outdoor) HQ	Total HI
			DIELDRIN	1.66E-08	7.60E-09	6.96E-13	2.42E-08	DIELDRIN	Liver	8.52E-05	3.91E-05	3.58E-09	1.24E-04
			ENDOSULFAN I	NA	NA	NA	NA	ENDOSULFAN I	Body Weight; Kidney; Nervous System	7.29E-07	3.34E-07	3.06E-11	1.06E-06
			ENDOSULFAN SULFATE	NA	NA	NA	NA	ENDOSULFAN SULFATE	Body Weight; Kidney; Nervous System	5.46E-07	2.51E-07	2.30E-11	7.97E-07
			ENDRIN	NA	NA	NA	NA	ENDRIN	Liver; Kidney; Nervous System	7.29E-05	3.34E-05	3.06E-09	1.06E-04
			ENDRIN ALDEHYDE	NA	NA	NA	NA	ENDRIN ALDEHYDE	Liver; Kidney; Nervous System	2.19E-05	1.00E-05	9.19E-10	3.19E-05
			ENDRIN KETONE	NA	NA	NA	NA	ENDRIN KETONE	Liver; Kidney; Nervous System	1.09E-05	5.02E-06	4.59E-10	1.59E-05
			GAMMA-CHLORDANE	2.93E-09	5.38E-10	3.32E-14	3.47E-09	GAMMA-CHLORDANE	Liver	1.86E-05	3.41E-06	1.95E-09	2.20E-05
			HEPTACHLOR	2.39E-10	1.10E-10	1.00E-14	3.49E-10	HEPTACHLOR	Liver	4.37E-07	2.01E-07	1.84E-11	6.38E-07
			HEPTACHLOR EPOXIDE	7.25E-10	3.33E-10	3.05E-14	1.06E-09	HEPTACHLOR EPOXIDE	Liver	2.52E-05	1.16E-05	1.06E-09	3.68E-05
			HEXACHLOROBENZENE	3.82E-10	1.75E-10	1.61E-14	5.58E-10	HEXACHLOROBENZENE	Liver	1.09E-06	5.02E-07	4.59E-11	1.59E-06
			METHOXYCHLOR	NA	NA	NA	NA	METHOXYCHLOR	Fetal	4.37E-06	8.03E-07	1.84E-10	5.17E-06
			MIREX	NA	NA	NA	NA	MIREX	Liver	2.19E-05	1.00E-05	9.19E-10	3.19E-05
			TRANS-NONACHLOR	8.28E-10	1.52E-10	9.37E-15	9.80E-10	TRANS-NONACHLOR	Liver	5.25E-06	9.63E-07	5.51E-10	6.21E-06
			PCBs (mg/kg)					**PCBs (mg/kg)**					
			PCBs (TOTAL)	1.71E-07	1.10E-07	2.88E-12	2.81E-07	PCBs (TOTAL)	Immune System	7.05E-03	4.53E-03	2.96E-07	1.16E-02
			SVOCs (mg/kg)					**SVOCs (mg/kg)**					
			ACENAPHTHENE	NA	NA	NA	NA	ACENAPHTHENE	Liver	2.55E-06	1.52E-06	7.86E-07	4.86E-06
			ACENAPHTHYLENE	NA	NA	NA	NA	ACENAPHTHYLENE	NA	NA	NA	NA	NA
			ANTHRACENE	NA	NA	NA	NA	ANTHRACENE	NOEL	4.74E-07	2.83E-07	3.75E-08	7.94E-07
			BENZO(A)ANTHRACENE	9.24E-08	5.51E-08	1.26E-12	1.47E-07	BENZO(A)ANTHRACENE	NA	NA	NA	NA	NA
			BENZO(A)PYRENE	8.15E-07	4.87E-07	1.11E-11	1.30E-06	BENZO(A)PYRENE	NA	NA	NA	NA	NA
			BENZO(B)FLUORANTHENE	8.15E-08	4.87E-08	1.11E-12	1.30E-07	BENZO(B)FLUORANTHENE	NA	NA	NA	NA	NA
			BENZO(G,H,I)PERYLENE	NA	NA	NA	NA	BENZO(G,H,I)PERYLENE	Kidney; Nervous System	4.59E-06	2.74E-06	1.93E-10	7.33E-06
			BENZO(K)FLUORANTHENE	7.80E-08	4.66E-08	1.07E-12	1.25E-07	BENZO(K)FLUORANTHENE	NA	NA	NA	NA	NA
			BENZOIC ACID	NA	NA	NA	NA	BENZOIC ACID	NOEL	1.86E-07	8.53E-08	NA	2.71E-07
			BIS(2-ETHYLHEXYL)PHTHALATE	4.09E-09	1.88E-09	1.72E-13	5.96E-09	BIS(2-ETHYLHEXYL)PHTHALATE	Liver	6.01E-05	2.76E-05	2.53E-09	8.77E-05
			BUTYLBENZYPHTHALATE	NA	NA	NA	NA	BUTYLBENZYPHTHALATE	Liver	1.37E-07	6.27E-08	5.74E-12	1.99E-07
			CABAZOLE	2.92E-09	1.34E-09	1.23E-13	4.26E-09	CABAZOLE	NA	NA	NA	NA	NA
			4- CHLOROANILINE	NA	NA	NA	NA	4- CHLOROANILINE	Spleen	8.20E-07	3.76E-07	3.45E-11	1.20E-06
			2- CHLOROPHENOL	NA	NA	NA	NA	2- CHLOROPHENOL	Reproductive	9.46E-06	4.34E-06	3.98E-10	1.38E-05
			CHRYSENE	8.92E-09	5.32E-09	5.96E-11	1.43E-08	CHRYSENE	NA	NA	NA	NA	NA
			DIBENZOFURAN	NA	NA	NA	NA	DIBENZOFURAN	NA	1.97E-04	9.03E-05	8.27E-09	2.87E-04

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Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Receptor Population:	Recreational User
Receptor Age:	Child (1 to 17 years)

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Primary Target Organ	Non-Carconogenic Hazard Index			
				Ingestion	Dermal	Inhalation (Outdoor)	Exposure Routes Total			Ingestion HQ	Dermal HQ	Inhalation (Outdoor) HQ	Total HI
			3,3- DICHLOROBENZIDINE	1.43E-09	6.58E-10	6.03E-14	2.09E-09	3,3- DICHLOROBENZIDINE	NA	NA	NA	NA	NA
			2,6- DINITROTOLUENE	5.99E-08	2.75E-08	NA	8.74E-08	2,6- DINITROTOLUENE	NA	4.04E-04	1.86E-04	1.70E-08	5.90E-04
			FLUORANTHENE	NA	NA	NA	NA	FLUORANTHENE	Blood; Kidney; Liver	1.11E-05	6.62E-06	4.66E-10	1.77E-05
			FLUORENE	NA	NA	NA	NA	FLUORENE	Blood	3.82E-06	2.28E-06	5.90E-07	6.70E-06
			INDENO(1,2,3-CD)PYRENE	5.41E-08	3.23E-08	7.40E-13	8.65E-08	INDENO(1,2,3-CD)PYRENE	NA	NA	NA	NA	NA
			2- METHYLNAPHTHALENE	NA	NA	NA	NA	2- METHYLNAPHTHALENE	Body Weight; Respiratory	4.92E-05	2.26E-05	NA	7.18E-05
			4- METHYPHENOL	NA	NA	NA	NA	4- METHYLPHENOL	Nervous System; Respiratory	5.03E-05	2.31E-05	NA	7.33E-05
			NAPHTHALENE	NA	NA	NA	NA	NAPHTHALENE	Body Weight; Respiratory	6.01E-06	3.59E-06	1.81E-04	1.91E-04
			PENTACHLOROPHENOL	NA	NA	NA	NA	PENTACHLOROPHENOL	Liver; Kidney	1.97E-05	9.03E-06	8.27E-10	2.87E-05
			PHENANTHRENE	NA	NA	NA	NA	PHENANTHRENE	NOEL	7.65E-07	4.56E-07	3.22E-11	1.22E-06
			PHENOL	NA	NA	NA	NA	PHENOL	Cardiovascular System; Fetal; Kidney; Liver; Nervous System	5.28E-07	2.42E-07	2.33E-10	7.71E-07
			PYRENE	NA	NA	NA	NA	PYRENE	Kidney	1.68E-05	1.00E-05	2.45E-07	2.70E-05
			TPH (mg/kg)					**TPH (mg/kg)**					
			TPH AS DIESEL	NA	NA	NA	NA	TPH AS DIESEL	NA	NA	NA	NA	NA
			TPH AS GASOLINE	NA	NA	NA	NA	TPH AS GASOLINE	NA	NA	NA	NA	NA
			TPH AS MOTOR OIL	NA	NA	NA	NA	TPH AS MOTOR OIL	NA	NA	NA	NA	NA
			VOCs (mg/kg)					**VOCs (mg/kg)**					
			ACETONE	NA	NA	NA	NA	ACETONE	Kidney; Liver	3.89E-07	NA	1.66E-06	2.05E-06
			BENZENE	1.33E-10	NA	2.73E-09	2.86E-09	BENZENE	Immune System	1.37E-06	NA	1.31E-05	1.45E-05
			CARBON DISULFIDE	NA	NA	NA	NA	CARBON DISULFIDE	Fetal	2.73E-07	NA	6.32E-06	6.59E-06
			CHLOROBENZENE	NA	NA	NA	NA	CHLOROBENZENE	Kidney; Liver; Reproductive System	1.31E-06	NA	4.05E-05	4.18E-05
			CIS-1,2-DICHLOROETHENE	NA	NA	NA	NA	CIS-1,2-DICHLOROETHENE	Blood	5.46E-07	NA	1.05E-05	1.10E-05
			ETHYLBENZENE	NA	NA	NA	NA	ETHYLBENZENE	Fetal; Kidney; Liver	4.81E-07	NA	1.73E-06	2.21E-06
			4- ISOPROPYLTOLUENE	NA	NA	NA	NA	4- ISOPROPYLTOLUENE	NA	NA	NA	NA	NA
			METHYLENE CHLORIDE	1.11E-09	NA	6.19E-09	7.30E-09	METHYLENE CHLORIDE	Cardiovascular System; Liver; Nervous System	5.46E-06	NA	6.38E-05	6.93E-05
			NAPHTHALENE	NA	NA	NA	NA	NAPHTHALENE	Body Weight; Respiratory	8.74E-07	NA	2.63E-05	2.72E-05
			TOLUENE	NA	NA	NA	NA	TOLUENE	Fetal; Kidney; Liver; Nervous System; Respiratory	1.64E-07	NA	5.31E-06	5.47E-06
			TRANS-1,2-TRICHLOROETHENE	NA	NA	NA	NA	TRANS-1,2-TRICHLOROETHENE	Blood	1.26E-06	NA	3.03E-05	3.16E-05
			TRICHLOROETHENE	7.62E-10	NA	2.19E-10	9.80E-10	TRICHLOROETHENE	Eyes; Nervous System	2.55E-05	NA	1.29E-05	3.84E-05

Table C2-8f
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Non-Tidal Wetland Areas Alternative 5
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Mare Island, Vallejo, California

Scenario Timeframe:	Future
Receptor Population:	Recreational User
Receptor Age:	Child (1 to 17 years)

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Primary Target Organ	Non-Carconogenic Hazard Index			
				Ingestion	Dermal	Inhalation (Outdoor)	Exposure Routes Total			Ingestion HQ	Dermal HQ	Inhalation (Outdoor) HQ	Total HI
			1,2,4- TRIMETHYLBENZENE	NA	NA	NA	NA	1,2,4- TRIMETHYLBENZENE	NA	5.46E-07	NA	4.46E-05	4.51E-05
			1,3,5- TRIMETHYLBENZENE	NA	NA	NA	NA	1,3,5- TRIMETHYLBENZENE	NA	2.03E-07	NA	4.15E-05	4.17E-05
			VINYL CHLORIDE	1.35E-08	NA	7.71E-09	2.12E-08	VINYL CHLORIDE	GI System; Liver; Nervous System	1.24E-05	NA	7.21E-05	8.45E-05
			XYLENE (TOTAL)	NA	NA	NA	NA	XYLENE (TOTAL)	Body Weight; Fetal; Nervous System; Respiratory	6.01E-07	NA	3.82E-05	3.88E-05
Groundwater	Shallow Groundwater	Vapors	**VOCs (ug/L)**					**VOCs (ug/L)**					
			ACETONE	NA	NA	NA	NA	ACETONE	Kidney; Liver	NA	NA	5.63E-04	5.63E-04
			BENZENE	NA	NA	9.57E-07	9.57E-07	BENZENE	Fetal; Immune System; Nervous System; Respiratory	NA	NA	4.60E-03	4.60E-03
			2- BUTANONE	NA	NA	NA	NA	2- BUTANONE	Fetal	NA	NA	3.82E-03	3.82E-03
			CARBON DISULFIDE	NA	NA	NA	NA	CARBON DISULFIDE	Fetal; Nervous System	NA	NA	3.55E-04	3.55E-04
			CHLOROBENZENE	NA	NA	NA	NA	CHLOROBENZENE	Kidney; Liver; Reproductive System	NA	NA	2.66E-03	2.66E-03
			CHLOROMETHANE	NA	NA	6.50E-08	6.50E-08	CHLOROMETHANE	NA	NA	NA	4.94E-04	4.94E-04
			CIS-1,2-DICHLOROETHENE	NA	NA	NA	NA	CIS-1,2-DICHLOROETHENE	Blood	NA	NA	6.98E-03	6.98E-03
			1,3- DICHLOROBENZENE			NA		1,3- DICHLOROBENZENE	NA	NA	NA	3.84E-04	3.84E-04
			1,2- DICHLOROETHENE (TOTAL)	NA	NA	NA	NA	1,2- DICHLOROETHENE (TOTAL)	Blood, Liver	NA	NA	3.28E-02	3.28E-02
			ETHYLBENZENE	NA	NA	NA	NA	ETHYLBENZENE	Fetal; Kidney; Liver	NA	NA	7.42E-05	7.42E-05
			TOLUENE	NA	NA	NA	NA	TOLUENE	Fetal; Kidney; Liver; Nervous System; Respiratory	NA	NA	2.12E-04	2.12E-04
			TRANS-1,2-DICHLOROETHENE	NA	NA	NA	NA	TRANS-1,2-DICHLOROETHENE	Blood; Liver	NA	NA	6.52E-04	6.52E-04
			1,2,4- TRIMETHYLBENZENE	NA	NA	NA	NA	1,2,4- TRIMETHYLBENZENE	NA	NA	NA	6.60E-03	6.60E-03
			1,3,5- TRIMETHYLBENZENE	NA	NA	NA	NA	1,3,5- TRIMETHYLBENZENE	NA	NA	NA	4.99E-03	4.99E-03
			VINYL CHLORIDE	NA	NA	9.07E-08	9.07E-08	VINYL CHLORIDE	GI System; Liver; Nervous System	NA	NA	8.48E-04	8.48E-04
			XYLENE (TOTAL)	NA	NA	NA	NA	XYLENE (TOTAL)	Body Weight; Fetal; Nervous System; Respiratory	NA	NA	1.49E-03	1.49E-03
Groundwater	Intermediate and Deep Groundwater	Vapors	**VOCs (ug/L)**					**VOCs (ug/L)**					
			ACETONE	NA	NA	NA	NA	ACETONE	Kidney; Liver	NA	NA	1.25E-04	1.25E-04
			BENZENE	NA	NA	1.40E-06	1.40E-06	BENZENE	Fetal; Immune System; Nervous System; Respiratory	NA	NA	6.73E-03	6.73E-03
			2- BUTANONE	NA	NA	NA	NA	2- BUTANONE	Fetal	NA	NA	5.83E-04	5.83E-04
			CARBON DISULFIDE	NA	NA	NA	NA	CARBON DISULFIDE	Fetal; Nervous System	NA	NA	5.61E-04	5.61E-04

Table C2-8f
Summary of Current Receptor RME Cancer Risks and Noncarcinogenic Hazard Indices
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Receptor Population:	Recreational User
Receptor Age:	Child (1 to 17 years)

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Primary Target Organ	Non-Carconogenic Hazard Index			
				Ingestion	Dermal	Inhalation (Outdoor)	Exposure Routes Total			Ingestion HQ	Dermal HQ	Inhalation (Outdoor) HQ	Total HI
			CHLOROBENZENE	NA	NA	NA	NA	CHLOROBENZENE	Kidney; Liver; Reproductive System	NA	NA	1.01E-02	1.01E-02
			4- METHYL-2-PENTANONE	NA	NA	NA	NA	4- METHYL-2-PENTANONE	Fetal; Kidney; Liver	NA	NA	2.12E-04	2.12E-04
Wetland	Surface	Surface	**INORGANICS (ug/L)**					**INORGANICS (ug/L)**					
Surface Water	Water	Water	ALUMINUM	NA	NA	NA	NA	ALUMINUM	Body Weight	2.34E-04	2.15E-05	NA	2.56E-04
			ANTIMONY	NA	NA	NA	NA	ANTIMONY	Blood; Whole Body	1.94E-04	1.18E-04	NA	3.12E-04
			ARSENIC	1.63E-05	1.50E-07	NA	1.65E-05	ARSENIC	Cardiovascular System; Fetal; Nervous System; Skin	2.37E-03	2.17E-04	NA	2.59E-03
			BARIUM	NA	NA	NA	NA	BARIUM	Cardiovascular System; Fetal; Kidney; NOEL	5.13E-05	6.72E-05	NA	1.18E-04
			CADMIUM	3.66E-08	6.71E-09	NA	4.33E-08	CADMIUM	Kidney; Respiratory	3.96E-05	7.27E-05	NA	1.12E-04
			CHROMIUM	NA	NA	NA	NA	CHROMIUM	NOEL	1.61E-07	1.14E-06	NA	1.30E-06
			COBALT	NA	NA	NA	NA	COBALT	Cardiovascular System; Respiratory	1.98E-05	7.27E-07	NA	2.05E-05
			COPPER	NA	NA	NA	NA	COPPER	GI System	3.75E-05	3.44E-06	NA	4.09E-05
			LEAD	2.07E-09	1.90E-12	NA	2.07E-09	LEAD	NA	NA	NA	NA	NA
			MANGANESE	NA	NA	NA	NA	MANGANESE	Nervous System	1.29E-03	2.95E-03	NA	4.23E-03
			MERCURY	NA	NA	NA	NA	MERCURY	Nervous System	3.79E-05	4.98E-05	NA	8.77E-05
			MOLYBDENUM	NA	NA	NA	NA	MOLYBDENUM	Kidney	5.46E-05	5.02E-06	NA	5.97E-05
			NICKEL	NA	NA	NA	NA	NICKEL	Body Weight; Respiratory	2.57E-04	1.18E-04	NA	3.75E-04
			SELENIUM	NA	NA	NA	NA	SELENIUM	Cardiovascular System; Liver; Nervous System; Skin	2.00E-04	1.84E-05	NA	2.19E-04
			SILVER	NA	NA	NA	NA	SILVER	Skin	1.55E-05	2.13E-05	NA	3.68E-05
			VANADIUM	NA	NA	NA	NA	VANADIUM	NOEL	1.01E-04	3.56E-04	NA	4.57E-04
			ZINC	NA	NA	NA	NA	ZINC	Blood	1.97E-06	1.09E-07	NA	2.08E-06
			PESTICIDES (ug/L)					**PESTICIDES (ug/L)**					
			ALPHA BHC	5.92E-09	NA	NA	5.92E-09	ALPHA BHC	Liver	7.74E-07	NA	NA	7.74E-07
			4,4- DDE	1.02E-10	8.40E-10	NA	9.41E-10	4,4- DDE	Liver	2.46E-07	2.03E-05	NA	2.06E-05
			4,4- DDT	3.20E-09	4.96E-08	NA	5.28E-08	4,4- DDT	Liver	7.74E-06	1.20E-03	NA	1.21E-03
			ENDOSULFAN SULFATE	NA	NA	NA	NA	ENDOSULFAN SULFATE	Body Weight; Kidney; Nervous System	4.86E-07	NA	NA	4.86E-07
			ENDRIN	NA	NA	NA	NA	ENDRIN	Liver; Kidney; Nervous System	2.12E-06	1.98E-05	NA	2.19E-05
			GAMMA-BHC	1.34E-09	NA	NA	1.34E-09	GAMMA-BHC	Kidney; Liver	1.67E-06	8.97E-06	NA	1.06E-05
			HEPTACHLOR	1.39E-09	8.86E-10	NA	2.28E-09	HEPTACHLOR	Liver	2.55E-07	1.62E-06	NA	1.88E-06

Table C2-8f
Summary of Current Receptor RME Cancer Risks and Noncarcinogenic Hazard Indices
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Receptor Population:	Recreational User
Receptor Age:	Child (1 to 17 years)

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Primary Target Organ	Non-Carconogenic Hazard Index			
				Ingestion	Dermal	Inhalation (Outdoor)	Exposure Routes Total			Ingestion HQ	Dermal HQ	Inhalation (Outdoor) HQ	Total HI
			PCBs (ug/L)					**PCBs (ug/L)**					
			PCBs (TOTAL)	8.29E-09	2.04E-07	NA	2.12E-07	PCBs (TOTAL)	Immune System	3.42E-05	8.39E-03	NA	8.43E-03
			SVOCs (ug/L)					**SVOCs (ug/L)**					
			BIS(2-ETHYLHEXYL)PHTHALATE	1.27E-08	2.63E-08	NA	3.90E-08	BIS(2-ETHYLHEXYL)PHTHALATE	Liver	1.87E-05	3.87E-04	NA	4.05E-04
			CHRYSENE	2.65E-09	4.51E-08	NA	4.78E-08	CHRYSENE	NA	NA	NA	NA	NA
			2,4 DIMETHYLPHENOL	NA	NA	NA	NA	2,4- DIMETHYLPHENOL	Blood; Nervous System	4.55E-07	9.17E-07	NA	1.37E-06
			DI-N-BUTYLPHTHALATE	NA	NA	NA	NA	DI-N-BUTYLPHTHALATE	Whole Body	2.37E-06	2.55E-05	NA	2.79E-05
			ISOPHORONE	NA	NA	NA	NA	ISOPHORONE	NOEL	2.28E-08	1.56E-08	NA	3.84E-08
			4- METHYLPHENOL	NA	NA	NA	NA	4- METHYLPHENOL	Nervous System; Respiratory	2.36E-04	3.02E-04	NA	5.38E-04
			TPH (mg/L)					**TPH (mg/L)**					
			TPH AS DIESEL	NA	NA	NA	NA	TPH AS DIESEL	NA	NA	NA	NA	NA
			TPH AS GASOLINE	NA	NA	NA	NA	TPH AS GASOLINE	NA	NA	NA	NA	NA
			TPH AS MOTOR OIL	NA	NA	NA	NA	TPH AS MOTOR OIL	NA	NA	NA	NA	NA

Cancer Risk Across Soil:	6.3E-05
Cancer Risk Across Groundwater:	2.5E-06
Cancer Risk Across Surface Water:	1.7E-05
Total Cancer Risk:	8.3E-05

HI Across Soil:	2.1E-01
HI Across Groundwater:	8.6E-02
HI Across Surface Water:	2.0E-02
Total HI:	3.1E-01
Total Blood HI:	6.2E-02
Total Body Weight HI:	3.9E-02
Total Cardiovascular System HI:	9.4E-02
Total Fetal/Reproductive System HI:	1.2E-01
Total GI System HI:	6.6E-03
Total Immune System HI:	3.2E-02
Total Kidney HI:	2.5E-02
Total Liver HI:	6.0E-02
Total Nervous System HI:	1.3E-01
Total NOEL HI:	1.9E-02
Total Respiratory HI:	3.0E-02
Total Skin HI:	9.2E-02
Total Whole Body HI:	1.3E-02

Notes:
EPC = Exposure point concentration
GI = Gastrointestinal
HQ = Hazard Quotient
HI = Hazard Index
mg/kg = milligrams per kilogram
mg/L = milligrams per liter
NA = Not Applicable
PCBs = Polychlorinated Biphenyls
RME = Reasonable Maximum Exposure
SVOCs = Semivolatile Organic Compounds
TPH = Total Petroleum Hydrocarbons
VOCs = Volatile Organic Compounds
ug/L = microgram per liter

Table C2-8g
Summary of Future Receptor RME Cancer Risks and Noncarcinogenic Hazard Indices
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Receptor Population:	Construction Worker
Receptor Age:	Adult

				Carcinogenic Risk						Non-Carconogenic Hazard Index			
Medium	**Exposure Medium**	**Exposure Point**	**Chemical**	**Ingestion**	**Dermal**	**Inhalation (Outdoor)**	**Exposure Routes Total**	**Chemical**	**Primary Target Organ**	**Ingestion HQ**	**Dermal HQ**	**Inhalation (Outdoor) HQ**	**Total HI**
Soil (0 to 10 feet)	Soil	On-Site Soil	**INORGANICS (mg/kg)**					**INORGANICS (mg/kg)**					
			ALUMINUM	NA	NA	NA	NA	ALUMINUM	Body Weight	8.67E-02	NA	1.14E-01	2.01E-01
			ANTIMONY	NA	NA	NA	NA	ANTIMONY	Blood; Whole Body	3.63E-02	NA	NA	3.63E-02
			ARSENIC	9.24E-06	8.32E-07	2.17E-08	1.01E-05	ARSENIC	Cardiovascular System; Fetal; Nervous System; Skin	2.28E-01	2.05E-02	1.48E-02	2.63E-01
			BARIUM	NA	NA	NA	NA	BARIUM	Cardiovascular System; Fetal; Kidney; NOEL	4.32E-03	NA	3.91E-03	8.22E-03
			BERYLLIUM	NA	NA	4.73E-10	4.73E-10	BERYLLIUM	GI System; Immune System; Respiratory	1.07E-03	NA	1.97E-03	3.04E-03
			CADMIUM	5.15E-08	6.18E-09	3.76E-09	6.15E-08	CADMIUM	Kidney; Respiratory	1.90E-02	2.28E-03	3.07E-03	2.43E-02
			CHROMIUM	NA	NA	NA	NA	CHROMIUM	NOEL	4.84E-04	NA	NA	4.84E-04
			COBALT	NA	NA	1.55E-08	1.55E-08	COBALT	Cardiovascular System; Respiratory	2.99E-03	NA	1.94E-02	2.24E-02
			COPPER	NA	NA	NA	NA	COPPER	GI System	1.56E-02	NA	NA	1.56E-02
			HEXAVALENT CHROMIUM	NA	NA	3.04E-09	3.04E-09	HEXAVALENT CHROMIUM	NOEL; Respiratory	7.53E-05	NA	1.46E-05	8.99E-05
			LEAD	3.34E-08	NA	3.05E-10	3.37E-08	LEAD	NA	NA	NA	NA	NA
			MANGANESE	NA	NA	NA	NA	MANGANESE	Nervous System	2.08E-02	NA	3.76E-01	3.97E-01
			MERCURY	NA	NA	NA	NA	MERCURY	Nervous System	1.24E-02	NA	2.67E-04	1.26E-02
			MOLYBDENUM	NA	NA	NA	NA	MOLYBDENUM	Kidney	3.49E-03	NA	NA	3.49E-03
			NICKEL	NA	NA	8.76E-09	8.76E-09	NICKEL	Body Weight; Respiratory	1.82E-02	NA	4.72E-02	6.55E-02
			SELENIUM	NA	NA	NA	NA	SELENIUM	Cardiovascular System; Liver; Nervous System; Skin	8.20E-04	NA	1.33E-06	8.21E-04
			SILVER	NA	NA	NA	NA	SILVER	Skin	1.81E-03	NA	NA	1.81E-03
			THALLIUM	NA	NA	NA	NA	THALLIUM	Blood; Liver	2.40E-02	NA	NA	2.40E-02
			TIN	NA	NA	NA	NA	TIN	Kidney; Liver	7.64E-05	NA	NA	7.64E-05
			VANADIUM	NA	NA	NA	NA	VANADIUM	NOEL	5.03E-02	NA	NA	5.03E-02
			ZINC	NA	NA	NA	NA	ZINC	Blood	2.37E-03	NA	NA	2.37E-03
			PESTICIDES (mg/kg)					**PESTICIDES (mg/kg)**					
			ALPHA-CHLORDANE	4.92E-10	5.90E-11	2.45E-13	5.51E-10	ALPHA-CHLORDANE	Liver	5.30E-05	6.35E-06	2.45E-07	5.96E-05
			BETA BHC	8.30E-11	9.96E-12	1.59E-13	9.32E-11	BETA BHC	Liver	1.61E-05	1.94E-06	2.98E-08	1.81E-05
			DELTA BHC	NA	NA	NA	NA	DELTA BHC	NA	NA	NA	NA	NA
			2,4- DDD	3.21E-10	2.89E-11	5.93E-13	3.51E-10	2,4 DDD	Liver	1.87E-04	1.69E-05	3.46E-07	2.04E-04
			4,4- DDD	9.52E-10	8.57E-11	1.76E-12	1.04E-09	4,4- DDD	Liver	5.55E-04	5.00E-05	1.03E-06	6.06E-04
			4,4- DDE	2.67E-10	2.40E-11	4.93E-13	2.91E-10	4,4- DDE	Liver	1.10E-04	9.88E-06	2.03E-07	1.20E-04
			4,4- DDT	1.88E-10	1.69E-11	3.48E-13	2.05E-10	4,4- DDT	Liver	7.75E-05	6.97E-06	1.43E-07	8.46E-05
			DIELDRIN	2.88E-09	8.64E-10	5.32E-12	3.75E-09	DIELDRIN	Liver	2.52E-04	7.56E-05	4.65E-07	3.28E-04

Table C2-8g
Summary of Future Receptor RME Cancer Risks and Noncarcinogenic Hazard Indices
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Receptor Population:	Construction Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Primary Target Organ	Non-Carconogenic Hazard Index			
				Ingestion	Dermal	Inhalation (Outdoor)	Exposure Routes Total			Ingestion HQ	Dermal HQ	Inhalation (Outdoor) HQ	Total HI
			ENDOSULFAN I	NA	NA	NA	NA	ENDOSULFAN I	Body Weight; Kidney; Nervous System	2.15E-06	6.46E-07	3.98E-09	2.80E-06
			ENDOSULFAN SULFATE	NA	NA	NA	NA	ENDOSULFAN SULFATE	Body Weight; Kidney; Nervous System	1.61E-06	4.84E-07	2.98E-09	2.10E-06
			ENDRIN	NA	NA	NA	NA	ENDRIN	Liver; Kidney; Nervous System	2.15E-04	6.46E-05	3.98E-07	2.80E-04
			ENDRIN ALDEHYDE	NA	NA	NA	NA	ENDRIN ALDEHYDE	Liver; Kidney; Nervous System	6.46E-05	1.94E-05	1.19E-07	8.41E-05
			ENDRIN KETONE	NA	NA	NA	NA	ENDRIN KETONE	Liver; Kidney; Nervous System	3.23E-05	9.69E-06	5.97E-08	4.20E-05
			GAMMA-CHLORDANE	5.10E-10	6.12E-11	2.54E-13	5.71E-10	GAMMA-CHLORDANE	Liver	5.49E-05	6.59E-06	2.54E-07	6.17E-05
			HEPTACHLOR	4.15E-11	1.25E-11	7.67E-14	5.40E-11	HEPTACHLOR	Liver	1.29E-06	3.87E-07	2.39E-09	1.68E-06
			HEPTACHLOR EPOXIDE	1.26E-10	3.78E-11	2.33E-13	1.64E-10	HEPTACHLOR EPOXIDE	Liver	7.45E-05	2.24E-05	1.38E-07	9.70E-05
			HEXACHLOROBENZENE	6.64E-11	1.99E-11	1.23E-13	8.65E-11	HEXACHLOROBENZENE	Liver	3.23E-06	9.69E-07	5.97E-09	4.20E-06
			METHOXYCHLOR	NA	NA	NA	NA	METHOXYCHLOR	Fetal	1.29E-05	1.55E-06	2.39E-08	1.45E-05
			MIREX	NA	NA	NA	NA	MIREX	Liver	6.46E-05	1.94E-05	1.19E-07	8.41E-05
			TRANS-NONACHLOR	1.44E-10	1.73E-11	7.16E-14	1.61E-10	TRANS-NONACHLOR	Liver	1.55E-05	1.86E-06	7.16E-08	1.74E-05
			PCBs (mg/kg)					**PCBs (mg/kg)**					
			PCBs (TOTAL)	2.98E-08	1.25E-08	2.20E-11	4.23E-08	PCBs (TOTAL)	Immune System	2.08E-02	8.75E-03	3.85E-05	2.96E-02
			SVOCs (mg/kg)					**SVOCs (mg/kg)**					
			ACENAPHTHENE	NA	NA	NA	NA	ACENAPHTHENE	Liver	7.53E-06	2.94E-06	2.54E-06	1.30E-05
			ACENAPHTHYLENE	NA	NA	NA	NA	ACENAPHTHYLENE	NA	NA	NA	NA	NA
			ANTHRACENE	NA	NA	NA	NA	ANTHRACENE	NOEL	1.40E-06	5.46E-07	1.21E-07	2.07E-06
			BENZO(A)ANTHRACENE	1.61E-08	6.26E-09	9.64E-12	2.23E-08	BENZO(A)ANTHRACENE	NA	NA	NA	NA	NA
			BENZO(A)PYRENE	1.42E-07	5.53E-08	8.51E-11	1.97E-07	BENZO(A)PYRENE	NA	NA	NA	NA	NA
			BENZO(B)FLUORANTHENE	1.42E-08	5.53E-09	8.51E-12	1.97E-08	BENZO(B)FLUORANTHENE	NA	NA	NA	NA	NA
			BENZO(G,H,I)PERYLENE	NA	NA	NA	NA	BENZO(G,H,I)PERYLENE	Kidney; Nervous System	1.36E-05	5.29E-06	2.51E-08	1.89E-05
			BENZO(K)FLUORANTHENE	1.36E-08	5.29E-09	8.14E-12	1.89E-08	BENZO(K)FLUORANTHENE	NA	NA	NA	NA	NA
			BENZOIC ACID	NA	NA	NA	NA	BENZOIC ACID	NOEL	5.49E-07	1.65E-07	1.01E-09	7.15E-07
			BIS(2-ETHYLHEXYL)PHTHALATE	7.10E-10	2.13E-10	1.31E-12	9.25E-10	BIS(2-ETHYLHEXYL)PHTHALATE	Liver	1.78E-04	5.33E-05	3.28E-07	2.31E-04
			BUTYLBENZYPHTHALATE	NA	NA	NA	NA	BUTYLBENZYPHTHALATE	Liver	4.04E-07	1.21E-07	7.46E-10	5.25E-07
			CABAZOLE	5.07E-10	1.52E-10	9.38E-13	6.61E-10	CABAZOLE	NA	NA	NA	NA	NA
			4- CHLOROANILINE	NA	NA	NA	NA	4- CHLOROANILINE	Spleen	2.42E-06	7.27E-07	4.47E-09	3.15E-06
			2- CHLOROPHENOL	NA	NA	NA	NA	2- CHLOROPHENOL	Reproductive	2.80E-05	8.39E-06	5.17E-08	3.64E-05
			CHRYSENE	1.55E-09	6.04E-10	1.13E-11	2.17E-09	CHRYSENE	NA	NA	NA	NA	NA
			DIBENZOFURAN	NA	NA	NA	NA	DIBENZOFURAN	NA	5.81E-04	1.74E-04	1.07E-06	7.57E-04
			3,3- DICHLOROBENZIDINE	2.49E-10	7.47E-11	4.60E-13	3.24E-10	3,3- DICHLOROBENZIDINE	NA	NA	NA	NA	NA

Table C2-8g
Summary of Future Receptor RME Cancer Risks and Noncarcinogenic Hazard Indices
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Receptor Population:	Construction Worker
Receptor Age:	Adult

				Carcinogenic Risk						Non-Carconogenic Hazard Index			
Medium	**Exposure Medium**	**Exposure Point**	**Chemical**	**Ingestion**	**Dermal**	**Inhalation (Outdoor)**	**Exposure Routes Total**	**Chemical**	**Primary Target Organ**	**Ingestion HQ**	**Dermal HQ**	**Inhalation (Outdoor) HQ**	**Total HI**
			2,6- DINITROTOLUENE	1.04E-08	3.12E-09	NA	1.35E-08	2,6- DINITROTOLUENE	NA	1.19E-03	3.58E-04	2.21E-06	1.56E-03
			FLUORANTHENE	NA	NA	NA	NA	FLUORANTHENE	Blood; Kidney; Liver	3.28E-05	1.28E-05	6.06E-08	4.56E-05
			FLUORENE	NA	NA	NA	NA	FLUORENE	Blood	1.13E-05	4.41E-06	1.90E-06	1.76E-05
			INDENO(1,2,3-CD)PYRENE	9.41E-09	3.67E-09	5.65E-12	1.31E-08	INDENO(1,2,3-CD)PYRENE	NA	NA	NA	NA	NA
			2- METHYLNAPHTHALENE	NA	NA	NA	NA	2- METHYLNAPHTHALENE	Body Weight; Respiratory	1.45E-04	4.36E-05	NA	1.89E-04
			4- METHYPHENOL	NA	NA	NA	NA	4- METHYLPHENOL	Nervous System; Respiratory	1.49E-04	4.46E-05	NA	1.93E-04
			NAPHTHALENE	NA	NA	NA	NA	NAPHTHALENE	Body Weight; Respiratory	1.78E-05	6.93E-06	5.84E-04	6.09E-04
			PENTACHLOROPHENOL	NA	NA	NA	NA	PENTACHLOROPHENOL	Liver; Kidney	5.81E-05	1.74E-05	1.07E-07	7.57E-05
			PHENANTHRENE	NA	NA	NA	NA	PHENANTHRENE	NOEL	2.26E-06	8.82E-07	4.18E-09	3.15E-06
			PHENOL	NA	NA	NA	NA	PHENOL	Cardiovascular System; Fetal; Kidney; Liver; Nervous System	1.56E-06	4.68E-07	3.03E-08	2.06E-06
			PYRENE	NA	NA	NA	NA	PYRENE	Kidney	4.95E-05	1.93E-05	7.90E-07	6.96E-05
			TPH (mg/kg)					**TPH (mg/kg)**					
			TPH AS DIESEL	NA	NA	NA	NA	TPH AS DIESEL	NA	NA	NA	NA	NA
			TPH AS GASOLINE	NA	NA	NA	NA	TPH AS GASOLINE	NA	NA	NA	NA	NA
			TPH AS MOTOR OIL	NA	NA	NA	NA	TPH AS MOTOR OIL	NA	NA	NA	NA	NA
			VOCs (mg/kg)					**VOCs (mg/kg)**					
			ACETONE	NA	NA	NA	NA	ACETONE	Kidney; Liver	1.15E-06	NA	5.35E-06	6.50E-06
			BENZENE	2.31E-11	NA	5.18E-10	5.41E-10	BENZENE	Immune System	4.04E-06	NA	4.23E-05	4.63E-05
			CARBON DISULFIDE	NA	NA	NA	NA	CARBON DISULFIDE	Fetal	8.07E-07	NA	2.04E-05	2.12E-05
			CHLOROBENZENE	NA	NA	NA	NA	CHLOROBENZENE	Kidney; Liver; Reproductive System	3.87E-06	NA	1.31E-04	1.34E-04
			CIS-1,2-DICHLOROETHENE	NA	NA	NA	NA	CIS-1,2-DICHLOROETHENE	Blood	1.61E-06	NA	3.37E-05	3.54E-05
			ETHYLBENZENE	NA	NA	NA	NA	ETHYLBENZENE	Fetal; Kidney; Liver	1.42E-06	NA	5.58E-06	7.00E-06
			4- ISOPROPYLTOLUENE	NA	NA	NA	NA	4- ISOPROPYLTOLUENE	NA	NA	NA	NA	NA
			METHYLENE CHLORIDE	1.94E-10	NA	1.17E-09	1.37E-09	METHYLENE CHLORIDE	Cardiovascular System; Liver; Nervous System	1.61E-05	NA	2.06E-04	2.22E-04
			NAPHTHALENE	NA	NA	NA	NA	NAPHTHALENE	Body Weight; Respiratory	2.58E-06	NA	8.50E-05	8.76E-05
			TOLUENE	NA	NA	NA	NA	TOLUENE	Fetal; Kidney; Liver; Nervous System; Respiratory	4.84E-07	NA	1.71E-05	1.76E-05
			TRANS-1,2-TRICHLOROETHENE	NA	NA	NA	NA	TRANS-1,2-TRICHLOROETHENE	Blood	3.71E-06	NA	9.78E-05	1.02E-04
			TRICHLOROETHENE	1.32E-10	NA	4.15E-11	1.74E-10	TRICHLOROETHENE	Eyes; Nervous System	7.53E-05	NA	4.15E-05	1.17E-04
			1,2,4- TRIMETHYLBENZENE	NA	NA	NA	NA	1,2,4- TRIMETHYLBENZENE	NA	1.61E-06	NA	1.44E-04	1.46E-04

Table C2-8g
Summary of Future Receptor RME Cancer Risks and Noncarcinogenic Hazard Indices
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Receptor Population:	Construction Worker
Receptor Age:	Adult

				Carcinogenic Risk						Non-Carconogenic Hazard Index			
Medium	**Exposure Medium**	**Exposure Point**	**Chemical**	**Ingestion**	**Dermal**	**Inhalation (Outdoor)**	**Exposure Routes Total**	**Chemical**	**Primary Target Organ**	**Ingestion HQ**	**Dermal HQ**	**Inhalation (Outdoor) HQ**	**Total HI**
			1,3,5- TRIMETHYLBENZENE	NA	NA	NA	NA	1,3,5- TRIMETHYLBENZENE	NA	6.01E-07	NA	1.34E-04	1.34E-04
			VINYL CHLORIDE	2.35E-09	NA	1.46E-09	3.82E-09	VINYL CHLORIDE	GI System; Liver; Nervous System	3.66E-05	NA	2.33E-04	2.69E-04
			XYLENE (TOTAL)	NA	NA	NA	NA	XYLENE (TOTAL)	Body Weight; Fetal; Nervous System; Respiratory	1.78E-06	NA	1.23E-04	1.25E-04
Groundwater	Shallow Groundwater	Vapors	**VOCs (ug/L)**					**VOCs (ug/L)**					
			ACETONE	NA	NA	NA	NA	ACETONE	Kidney; Liver	NA	NA	1.82E-03	1.82E-03
			BENZENE	NA	NA	1.82E-07	1.82E-07	BENZENE	Fetal; Immune System; Nervous System; Respiratory	NA	NA	1.49E-02	1.49E-02
			2- BUTANONE	NA	NA	NA	NA	2- BUTANONE	Fetal	NA	NA	1.23E-02	1.23E-02
			CARBON DISULFIDE	NA	NA	NA	NA	CARBON DISULFIDE	Fetal; Nervous System	NA	NA	1.14E-03	1.14E-03
			CHLOROBENZENE	NA	NA	NA	NA	CHLOROBENZENE	Kidney; Liver; Reproductive System	NA	NA	8.57E-03	8.57E-03
			CHLOROMETHANE	NA	NA	1.23E-08	1.23E-08	CHLOROMETHANE	NA	NA	NA	1.59E-03	1.59E-03
			CIS-1,2-DICHLOROETHENE	NA	NA	NA	NA	CIS-1,2-DICHLOROETHENE	Blood	NA	NA	2.25E-02	2.25E-02
			1,3- DICHLOROBENZENE			NA		1,3- DICHLOROBENZENE	NA	NA	NA	1.24E-03	1.24E-03
			1,2- DICHLOROETHENE (TOTAL)	NA	NA	NA	NA	1,2- DICHLOROETHENE (TOTAL)	Blood, Liver	NA	NA	1.06E-01	1.06E-01
			ETHYLBENZENE	NA	NA	NA	NA	ETHYLBENZENE	Fetal; Kidney; Liver	NA	NA	2.39E-04	2.39E-04
			TOLUENE	NA	NA	NA	NA	TOLUENE	Fetal; Kidney; Liver; Nervous System; Respiratory	NA	NA	6.85E-04	6.85E-04
			TRANS-1,2-DICHLOROETHENE	NA	NA	NA	NA	TRANS-1,2-DICHLOROETHENE	Blood; Liver	NA	NA	2.10E-03	2.10E-03
			1,2,4- TRIMETHYLBENZENE	NA	NA	NA	NA	1,2,4- TRIMETHYLBENZENE	NA	NA	NA	2.13E-02	2.13E-02
			1,3,5- TRIMETHYLBENZENE	NA	NA	NA	NA	1,3,5- TRIMETHYLBENZENE	NA	NA	NA	1.61E-02	1.61E-02
			VINYL CHLORIDE	NA	NA	1.72E-08	1.72E-08	VINYL CHLORIDE	GI System; Liver; Nervous System	NA	NA	2.74E-03	2.74E-03
			XYLENE (TOTAL)	NA	NA	NA	NA	XYLENE (TOTAL)	Body Weight; Fetal; Nervous System; Respiratory	NA	NA	4.80E-03	4.80E-03
Groundwater	Intermediate and Deep Groundwater	Vapors	**VOCs (ug/L)**					**VOCs (ug/L)**					
			ACETONE	NA	NA	NA	NA	ACETONE	Kidney; Liver	NA	NA	4.02E-04	4.02E-04
			BENZENE	NA	NA	2.66E-07	2.66E-07	BENZENE	Fetal; Immune System; Nervous System; Respiratory	NA	NA	2.17E-02	2.17E-02
			2- BUTANONE	NA	NA	NA	NA	2- BUTANONE	Fetal	NA	NA	1.88E-03	1.88E-03
			CARBON DISULFIDE	NA	NA	NA	NA	CARBON DISULFIDE	Fetal; Nervous System	NA	NA	1.81E-03	1.81E-03
			CHLOROBENZENE	NA	NA	NA	NA	CHLOROBENZENE	Kidney; Liver; Reproductive System	NA	NA	3.26E-02	3.26E-02

Table C2-8g
Summary of Future Receptor RME Cancer Risks and Noncarcinogenic Hazard Indices
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

Scenario Timeframe:	Future
Receptor Population:	Construction Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk: Ingestion	Carcinogenic Risk: Dermal	Carcinogenic Risk: Inhalation (Outdoor)	Carcinogenic Risk: Exposure Routes Total	Chemical	Primary Target Organ	Non-Carcinogenic Hazard Index: Ingestion HQ	Non-Carcinogenic Hazard Index: Dermal HQ	Non-Carcinogenic Hazard Index: Inhalation (Outdoor) HQ	Non-Carcinogenic Hazard Index: Total HI
			4- METHYL-2-PENTANONE	NA	NA	NA	NA	4- METHYL-2-PENTANONE	Fetal; Kidney; Liver	NA	NA	6.85E-04	6.85E-04

Cancer Risk Across Soil:	1.1E-05
Cancer Risk Across Groundwater:	4.8E-07
Total Cancer Risk:	1.1E-05

HI Across Soil:	1.2E+00
HI Across Groundwater:	2.8E-01
Total HI:	1.4E+00
Total Blood HI:	1.9E-01
Total Body Weight HI:	2.7E-01
Total Cardiovascular System HI:	3.0E-01
Total Fetal/Reproductive System HI:	3.6E-01
Total GI System HI:	2.2E-02
Total Immune System HI:	6.9E-02
Total Kidney HI:	8.2E-02
Total Liver HI:	1.8E-01
Total Nervous System HI:	7.2E-01
Total NOEL HI:	5.9E-02
Total Respiratory HI:	1.6E-01
Total Skin HI:	2.7E-01
Total Whole Body HI:	3.6E-02

Notes:
EPC = Exposure point concentration
GI = Gastrointestinal
HQ = Hazard Quotient
HI = Hazard Index
mg/kg = milligrams per kilogram
mg/L = milligrams per liter
NA = Not Applicable
PCBs = Polychlorinated Biphenyls
RME = Reasonable Maximum Exposure
SVOCs = Semivolatile Organic Compounds
TPH = Total Petroleum Hydrocarbons
VOCs = Volatile Organic Compounds
ug/L = microgram per liter

Table C2-8h
Summary of Estimated Cancer Risks and Hazard Indices for Soil
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	RME Result			
	Baseline Cancer Risk*	**Baseline Hazard Index***	**Residual Cancer Risk**	**Residual Hazard Index**
Recreational User - Future				
Total Risk Across Soil	6.4E-05	2.5E-01	6.3E-05	2.1E-01
Total Risk Across Soil (without arsenic)	3.2E-06	1.6E-01	2.8E-06	1.2E-01
Construction Worker - Future				
Total Risk Across Soil	1.1E-05	1.3E+00	1.1E-05	1.2E+00
Total Risk Across Soil (without arsenic)	5.2E-07	1.0E+00	4.7E-07	9.1E-01

Notes:

RME = Reasonable Maximum Exposure

* - Baseline HHRA did not include full data set; outlier concentrations were excluded.

Table C2-8i
Comparison of EPCs, Cancer Risk Estimates, and Hazard Indices from Baseline Risk Assessment
Non-Tidal Wetland Areas Alternative 5
Soil (0 to 10 feet bgs)
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Baseline Risk Estimates					Alternative WET-5 Estimates				
		Recreational User		Construction Worker			Recreational User		Construction Worker	
Chemical of Potential Concern	Medium EPC Value	RME Carcinogenic Risk	RME Total HI	RME Carcinogenic Risk	RME Total HI	Medium EPC Value	RME Carcinogenic Risk	RME Total HI	RME Carcinogenic Risk	RME Total HI
INORGANICS (mg/kg)										
ALUMINUM	30,215	NA	3.40E-02	NA	2.26E-01	26,862	NA	3.02E-02	NA	2.01E-01
ANTIMONY	11.2	NA	3.06E-02	NA	9.04E-02	4.5	NA	1.23E-02	NA	3.63E-02
ARSENIC	21.3	6.08E-05	8.84E-02	1.01E-05	2.65E-01	21.2	6.05E-05	8.80E-02	1.01E-05	2.63E-01
BARIUM	90.1	NA	1.44E-03	NA	7.92E-03	93.6	NA	1.49E-03	NA	8.22E-03
BERYLLIUM	0.64	6.00E-11	3.64E-04	4.58E-10	2.94E-03	0.66	6.19E-11	3.76E-04	4.73E-10	3.04E-03
CADMIUM	2.97	3.55E-07	7.71E-03	6.21E-08	2.46E-02	2.94	3.51E-07	7.63E-03	6.15E-08	2.43E-02
CHROMIUM	137	NA	9.98E-05	NA	2.95E-04	225	NA	1.64E-04	NA	4.84E-04
COBALT	18.5	2.02E-09	1.16E-03	1.55E-08	2.24E-02	18.5	2.02E-09	1.16E-03	1.55E-08	2.24E-02
COPPER	108	NA	2.95E-03	NA	8.72E-03	193	NA	5.27E-03	NA	1.56E-02
HEXAVALENT CHROMIUM	0.07	3.98E-10	2.56E-05	3.04E-09	8.99E-05	0.07	3.98E-10	2.56E-05	3.04E-09	8.99E-05
LEAD	166	3.75E-07	NA	6.57E-08	NA	85	1.92E-07	NA	3.37E-08	NA
MANGANESE	900	NA	9.92E-03	NA	3.96E-01	901	NA	9.93E-03	NA	3.97E-01
MERCURY	1.2	NA	4.37E-03	NA	1.32E-02	1.2	NA	4.19E-03	NA	1.26E-02
MOLYBDENUM	9.5	NA	2.08E-03	NA	6.14E-03	5.4	NA	1.18E-03	NA	3.49E-03
NICKEL	107	1.09E-09	6.19E-03	8.30E-09	6.20E-02	113	1.15E-09	6.54E-03	8.76E-09	6.55E-02
SELENIUM	1.4	NA	3.06E-04	NA	9.06E-04	1.3	NA	2.78E-04	NA	8.21E-04
SILVER	2.7	NA	5.90E-04	NA	1.74E-03	2.8	NA	6.12E-04	NA	1.81E-03
THALLIUM	0.47	NA	7.78E-03	NA	2.30E-02	0.49	NA	8.11E-03	NA	2.40E-02
TIN	14.7	NA	2.68E-05	NA	7.91E-05	14.2	NA	2.59E-05	NA	7.64E-05
VANADIUM	115	NA	1.80E-02	NA	5.30E-02	109	NA	1.70E-02	NA	5.03E-02
ZINC	210	NA	7.65E-04	NA	2.26E-03	220	NA	8.01E-04	NA	2.37E-03
PCBs (mg/kg)										
PCBs (TOTAL)	0.36	7.85E-07	3.23E-02	1.18E-07	8.26E-02	0.129	2.81E-07	1.16E-02	4.23E-08	2.96E-02
SVOCs (mg/kg)										
ACENAPHTHENE	0.42	NA	1.46E-05	NA	3.90E-05	0.14	NA	4.86E-06	NA	1.30E-05
ACENAPHTHYLENE	0.12	NA	NA	NA	NA	0.12	NA	NA	NA	NA
ANTHRACENE	1.1	NA	6.72E-06	NA	1.75E-05	0.13	NA	7.94E-07	NA	2.07E-06
BENZO(A)ANTHRACENE	0.12	6.10E-08	NA	9.24E-09	NA	0.29	1.47E-07	NA	2.23E-08	NA
BENZO(A)PYRENE	0.11	5.59E-07	NA	8.47E-08	NA	0.256	1.30E-06	NA	1.97E-07	NA
BENZO(B)FLUORANTHENE	0.15	7.63E-08	NA	1.15E-08	NA	0.256	1.30E-07	NA	1.97E-08	NA
BENZO(G,H,I)PERYLENE	0.59	NA	2.57E-05	NA	6.63E-05	0.168	NA	7.33E-06	NA	1.89E-05
BENZO(K)FLUORANTHENE	1.38	7.02E-07	NA	1.06E-07	NA	0.245	1.25E-07	NA	1.89E-08	NA
CHRYSENE	0.11	5.62E-09	NA	8.51E-10	NA	0.28	1.43E-08	NA	2.17E-09	NA
FLUORANTHENE	0.091	NA	3.97E-06	NA	1.02E-05	0.406	NA	1.77E-05	NA	4.56E-05
FLUORENE	0.5	NA	2.39E-05	NA	6.29E-05	0.14	NA	6.70E-06	NA	1.76E-05
INDENO(1,2,3-CD)PYRENE	0.12	6.10E-08	NA	9.24E-09	NA	0.17	8.65E-08	NA	1.31E-08	NA
NAPHTHALENE	0.35	NA	6.07E-04	NA	1.94E-03	0.11	NA	1.91E-04	NA	6.09E-04
PHENANTHRENE	0.12	NA	6.98E-07	NA	1.80E-06	0.21	NA	1.22E-06	NA	3.15E-06
PYRENE	0.096	NA	5.63E-06	NA	1.45E-05	0.46	NA	2.70E-05	NA	6.96E-05

Table C2-8i
Comparison of EPCs, Cancer Risk Estimates, and Hazard Indices from Baseline Risk Assessment
Non-Tidal Wetland Areas Alternative 5
Soil (0 to 10 feet bgs)
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Baseline Risk Estimates					Alternative WET-5 Estimates				
		Recreational User		Construction Worker			Recreational User		Construction Worker	
Chemical of Potential Concern	Medium EPC Value	RME Carcinogenic Risk	RME Total HI	RME Carcinogenic Risk	RME Total HI	Medium EPC Value	RME Carcinogenic Risk	RME Total HI	RME Carcinogenic Risk	RME Total HI
TPH (mg/kg)										
TPH AS DIESEL	677	NA	NA	NA	NA	190	NA	NA	NA	NA
TPH AS GASOLINE	4.6	NA	NA	NA	NA	4.5	NA	NA	NA	NA
TPH AS MOTOR OIL	324	NA	NA	NA	NA	314	NA	NA	NA	NA
SOIL TOTALS:		**6.4E-05**	**2.5E-01**	**1.1E-05**	**1.3E+00**		**6.3E-05**	**2.1E-01**	**1.1E-05**	**1.2E+00**

Table C2-8j
Post-Remediation Gray Fox Risk Calculations (Wetland Sediment Residual Concentration)
Deep Soil (0 - 10 ft bgs) at Hazard Quotient of 1
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Concentrations				Intake (mg/kg BW-day)					Hazard Quotient (HQ) - Low					Hazard Quotient (HQ) - High			
COPEC[a]	Surface Water (mg/L)[b]	Sediment[c]	Small Mammal BAF[d]	Small Mammal Tissue[d]	Surface Water	Sediment	Small Mammal	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Small Mammal	Total Intake		High TRV (mg/kg BW-day)	Surface Water	Sediment	Small Mammal	Total Intake
Metals (mg/kg)																			
Aluminum	12.6	2.69E+04	1.11E-02	2.97E+02	2.72E-01	8.58E+00	3.39E+00	1.22E+01	1.93	1.4E-01	4.4E+00	1.8E+00	6.3E+00	>1	19.3	1.4E-02	4.4E-01	1.8E-01	6.3E-01
Antimony	0.003	4.50E+00	1.22E+00	5.48E+00	6.48E-05	1.44E-03	6.25E-02	6.40E-02	0.06	1.1E-03	2.4E-02	1.1E+00	1.1E+00		23.4	2.8E-06	6.1E-05	2.7E-03	2.7E-03
Arsenic	0.0436	2.12E+01	--	0	9.42E-04	6.77E-03	0.00E+00	7.71E-03	0.32	2.9E-03	2.1E-02	0	2.4E-02		4.7	2.0E-04	1.4E-03	0.0E+00	1.6E-03
Barium	0.24	9.36E+01	9.41E-02	8.81E+00	5.10E-03	2.99E-02	1.00E-01	1.35E-01	51.8	9.8E-05	5.8E-04	1.9E-03	2.6E-03		66.0	7.7E-05	4.5E-04	1.5E-03	2.1E-03
Beryllium		6.60E-01	--	0		2.11E-04	0.00E+00	2.11E-04	0.532		4.0E-04	0	4.0E-04		0.554		3.8E-04	0.0E+00	3.8E-04
Cadmium	0.0016	2.94E+00	--	0	3.46E-05	9.39E-04	0.00E+00	9.73E-04	0.06	5.8E-04	1.6E-02	0	1.6E-02		2.64	1.3E-05	3.6E-04	0.0E+00	3.7E-04
Chromium +3	0.0263	2.25E+02	2.60E-02	5.86E+00	5.68E-04	7.18E-02	6.68E-02	1.39E-01	2	2.4E-04	3.0E-02	2.8E-02	5.8E-02		23.1	2.5E-05	3.1E-03	2.9E-03	6.0E-03
Chromium +6	0.0263	7.00E-02	2.60E-02	1.82E-03	5.68E-04	2.24E-05	2.08E-05	6.12E-04	5.66	1.0E-04	3.9E-06	0	1.1E-04		35.1	1.6E-05	6.4E-07	5.9E-07	1.7E-05
Cobalt	0.0164	1.85E+01	--	0	3.54E-04	5.91E-03	0.00E+00	6.26E-03	1.2	3.0E-04	4.9E-03	0	5.2E-03		20	1.8E-05	3.0E-04	0.0E+00	3.1E-04
Copper	0.233	1.93E+02	3.45E-01	6.67E+01	5.04E-03	6.16E-02	7.60E-01	8.27E-01	2.67	1.9E-03	2.3E-02	2.8E-01	3.1E-01		632	8.0E-06	9.8E-05	1.2E-03	1.3E-03
Lead	0.0031	8.51E+01	6.10E-01	5.20E+01	6.70E-05	2.72E-02	5.92E-01	6.20E-01	1	6.7E-05	2.7E-02	5.9E-01	6.2E-01		241	2.8E-07	1.1E-04	2.5E-03	2.6E-03
Manganese	7.42	9.01E+02	--	0	1.60E-01	2.88E-01	0.00E+00	4.48E-01	13.7	1.2E-02	2.1E-02	0	3.3E-02		159.09	1.0E-03	1.8E-03	0.0E+00	2.8E-03
Mercury	0.00029	1.15E+00	--	0	6.27E-06	3.67E-04	0.00E+00	3.73E-04	0.027	2.3E-04	1.4E-02	0	1.4E-02		0.27	2.3E-05	1.4E-03	0.0E+00	1.4E-03
Molybdenum	0.0312	5.40E+00	--	0	6.74E-04	1.72E-03	0.00E+00	2.40E-03	0.26	2.6E-03	6.6E-03	0	9.2E-03		2.6	2.6E-04	6.6E-04	0.0E+00	9.2E-04
Nickel	0.166	1.13E+02	--	0	3.59E-03	3.61E-02	0.00E+00	3.97E-02	0.13	2.7E-02	2.7E-01	0	3.0E-01		31.6	1.1E-04	1.1E-03	0.0E+00	1.3E-03
Selenium	0.029	1.27E+00	6.12E+00	7.77E+00	6.27E-04	4.06E-04	8.86E-02	8.96E-02	0.05	1.3E-02	8.1E-03	1.8E+00	1.8E+00	>1	1.21	5.2E-04	3.4E-04	7.3E-02	7.4E-02
Silver	0.0019	2.80E+00	--	0	4.11E-05	8.94E-04	0.00E+00	9.35E-04	0.38	1.1E-04	2.4E-03	0	2.5E-03		3.75	1.1E-05	2.4E-04	0.0E+00	2.5E-04
Thallium		4.90E-01	1.01E+00	4.94E-01		1.56E-04	5.63E-03	5.79E-03	0.48		3.3E-04	1.2E-02	1.2E-02		1.43		1.1E-04	3.9E-03	4.0E-03
Tin		1.42E+01	--	0		4.53E-03	0.00E+00	4.53E-03	23.4		1.9E-04	0	1.9E-04		35		1.3E-04	0.0E+00	1.3E-04
Vanadium	0.05	1.09E+02	--	0	1.08E-03	3.48E-02	0.00E+00	3.59E-02	0.21	5.1E-03	1.7E-01	0	1.7E-01		2.1	5.1E-04	1.7E-02	0.0E+00	1.7E-02
Zinc	0.042	2.20E+02	1.11E+00	2.44E+02	9.08E-04	7.03E-02	2.78E+00	2.85E+00	9.6	9.5E-05	7.3E-03	2.9E-01	3.0E-01		411	2.2E-06	1.7E-04	6.8E-03	6.9E-03
Volatile Organics (mg/kg)																			
Acetone		3.20E-01	--	0		1.02E-04	0.00E+00	1.02E-04	10		1.0E-05	0	1.0E-05		50		2.0E-06	0.0E+00	2.0E-06
Benzene		5.00E-03	--	0		1.60E-06	0.00E+00	1.60E-06	26.4		6.0E-08	0	6.0E-08		263.6		6.1E-09	0.0E+00	6.1E-09
Carbon disulfide		2.50E-02	--	0		7.98E-06	0.00E+00	7.98E-06	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Chlorobenzene		2.40E-02	--	0		7.66E-06	0.00E+00	7.66E-06	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
cis-1,2-Dichlorobenzene		5.00E-03	--	0		1.60E-06	0.00E+00	1.60E-06	45.2		3.5E-08	0	3.5E-08		452		3.5E-09	0.0E+00	3.5E-09
Ethylbenzene		4.40E-02	--	0		1.41E-05	0.00E+00	1.41E-05	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
4-Isopropyltoluene		7.20E-03	--	0		2.30E-06	0.00E+00	2.30E-06	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Methylene chloride		3.00E-01	--	0		9.58E-05	0.00E+00	9.58E-05	5.9		1.6E-05	0	1.6E-05		50		1.9E-06	0.0E+00	1.9E-06
Naphthalene		1.60E-02	--	0		5.11E-06	0.00E+00	5.11E-06	50		1.0E-07	0	1.0E-07		150		3.4E-08	0.0E+00	3.4E-08
Toluene		3.00E-02	--	0		9.58E-06	0.00E+00	9.58E-06	26		3.7E-07	0	3.7E-07		260		3.7E-08	0.0E+00	3.7E-08
trans-1,2-Dichloroethene		2.30E-02	--	0		7.34E-06	0.00E+00	7.34E-06	45.2		1.6E-07	0	1.6E-07		452		1.6E-08	0.0E+00	1.6E-08
Trichloroethene		7.00E-03	--	0		2.24E-06	0.00E+00	2.24E-06	0.7		3.2E-06	0	3.2E-06		7		3.2E-07	0.0E+00	3.2E-07
1,2,4-Trimethylbenzene		2.50E-02	--	0		7.98E-06	0.00E+00	7.98E-06	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
1,3,5-Trimethylbenzene		9.30E-03	--	0		2.97E-06	0.00E+00	2.97E-06	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
Vinyl chloride		3.40E-02	--	0		1.09E-05	0.00E+00	1.09E-05	0.17		6.4E-05	0	6.4E-05		2		6.4E-06	0.0E+00	6.4E-06
Xylenes		1.10E-01	--	0		3.51E-05	0.00E+00	3.51E-05	2.1		1.7E-05	0	1.7E-05		2.6		1.4E-05	0.0E+00	1.4E-05
Pesticides (mg/kg)																			
alpha-Chlordane		8.20E-03	--	0		2.62E-06	0.00E+00	2.62E-06	4.6		5.7E-07	0	5.7E-07		9.2		2.8E-07	0	2.8E-07
beta-BHC		1.00E-03	--	0		3.19E-07	0.00E+00	3.19E-07	1.6		2.0E-07	0	2.0E-07		3.2		1.0E-07	0	1.0E-07
delta-BHC		2.00E-03	--	0		6.39E-07	0.00E+00	6.39E-07	1.6		4.0E-07	0	4.0E-07		3.2		2.0E-07	0	2.0E-07
2,4-DDD		2.90E-02	1.04E+00	3.03E-02		9.26E-06	3.45E-04	3.55E-04	0.8		1.2E-05	4.3E-04	4.4E-04		16		5.8E-07	2.2E-05	2.2E-05
DDD		8.60E-02	1.04E+00	8.98E-02		2.75E-05	1.02E-03	1.05E-03	0.8		3.4E-05	1.3E-03	1.3E-03		16		1.7E-06	6.4E-05	6.6E-05
DDE	0.0000027	1.70E-02	1.04E+00	1.77E-02	5.84E-08	5.43E-06	2.02E-04	2.08E-04	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV
DDTs	0.00014	1.20E-02	1.04E+00	1.25E-02	3.03E-06	3.83E-06	1.43E-04	1.50E-04	0.8	3.8E-06	4.8E-06	1.8E-04	1.9E-04		16	1.9E-07	2.4E-07	8.9E-06	9.4E-06
Dieldrin		3.90E-03	--	0		1.25E-06	0.00E+00	1.25E-06	0.015		8.3E-05	0	8.3E-05		1.7		7.3E-07	0	7.3E-07
Endosulfan I		4.00E-03	--	0		1.28E-06	0.00E+00	1.28E-06	0.15		8.5E-06	0	8.5E-06		1.5		8.5E-07	0	8.5E-07
Endosulfan sulfate	0.00012	3.00E-03	--	0	2.59E-06	9.58E-07	0.00E+00	3.55E-06	NTV	NTV	NTV	NTV	NTV		NTV	NTV	NTV	NTV	NTV

Table C2-8j
Post-Remediation Gray Fox Risk Calculations (Wetland Sediment Residual Concentration)
Deep Soil (0 - 10 ft bgs) at Hazard Quotient of 1
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Concentrations				Intake (mg/kg BW-day)					Hazard Quotient (HQ) - Low					Hazard Quotient (HQ) - High			
COPEC[a]	Surface Water (mg/L)[b]	Sediment[c]	Small Mammal BAF[d]	Small Mammal Tissue[d]	Surface Water	Sediment	Small Mammal	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Small Mammal	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Sediment	Small Mammal	Total Intake
Endrin	0.000014	2.00E-02	--	0	3.03E-07	6.39E-06	0.00E+00	6.69E-06	0.09	3.3E-06	6.9E-05	0	7.3E-05	0.92	3.3E-07	6.9E-06	0	7.3E-06
Endrin aldehyde		6.00E-03	--	0		1.92E-06	0.00E+00	1.92E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Endrin Ketone		3.00E-03	--	0		9.58E-07	0.00E+00	9.58E-07	NTV	NTV	NTV	NTV	NTV	0.92		1.0E-06	0	1.0E-06
gamma-Chlordane		8.50E-03	--	0		2.71E-06	0.00E+00	2.71E-06	4.6		5.9E-07	0	5.9E-07	9.2		3.0E-07	0	3.0E-07
Heptachlor	0.0000028	2.00E-04	--	0	6.05E-08	6.39E-08	0.00E+00	1.24E-07	0.13	4.7E-07	4.9E-07	0.0	9.6E-07	6.8	8.9E-09	9.4E-09	0	1.8E-08
Heptachlor epoxide		3.00E-04	--	0		9.58E-08	0.00E+00	9.58E-08	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Hexachlorobenzene		8.00E-04	--	0		2.55E-07	0.00E+00	2.55E-07	1.6		1.6E-07	0	1.6E-07	16		1.6E-08	0	1.6E-08
Methoxychlor	0	2.00E-02	--	0		6.39E-06	0.00E+00	6.39E-06	2.5		2.6E-06	0	2.6E-06	50		1.3E-07	0	1.3E-07
Mirex		4.00E-03	--	0		1.28E-06	0.00E+00	1.28E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
trans-Nonachlor		2.40E-03	--	0		7.66E-07	0.00E+00	7.66E-07	4.6		1.7E-07	0	1.7E-07	9.2		8.3E-08	0	8.3E-08
SVOCs (mg/kg)																		
Acenaphthene		1.40E-01	--	0		4.47E-05	0.00E+00	4.47E-05	1.31		3.4E-05	0	3.4E-05	32.8		1.4E-06	0	1.4E-06
Acenaphthylene		1.20E-01	--	0		3.83E-05	0.00E+00	3.83E-05	1.31		2.9E-05	0	2.9E-05	32.8		1.2E-06	0	1.2E-06
Anthracene		1.30E-01	--	0		4.15E-05	0.00E+00	4.15E-05	1.31		3.2E-05	0	3.2E-05	32.8		1.3E-06	0	1.3E-06
Benzo(a)anthracene		2.90E-01	--	0		9.26E-05	0.00E+00	9.26E-05	1.31		7.1E-05	0	7.1E-05	32.8		2.8E-06	0	2.8E-06
Benzo(a)pyrene		2.56E-01	--	0		8.17E-05	0.00E+00	8.17E-05	1.31		6.2E-05	0	6.2E-05	32.8		2.5E-06	0	2.5E-06
Benzo(b)fluoranthene		2.56E-01	--	0		8.17E-05	0.00E+00	8.17E-05	1.31		6.2E-05	0	6.2E-05	32.8		2.5E-06	0	2.5E-06
Benzo(g,h,i)perylene		1.68E-01	--	0		5.36E-05	0.00E+00	5.36E-05	1.31		4.1E-05	0	4.1E-05	32.8		1.6E-06	0	1.6E-06
Benzo(k)fluoranthene		2.45E-01	--	0		7.82E-05	0.00E+00	7.82E-05	1.31		6.0E-05	0	6.0E-05	32.8		2.4E-06	0	2.4E-06
Benzoic acid		6.80E-01	--	0		2.17E-04	0.00E+00	2.17E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Bis(2-ethylhexyl)phthalate	0.027	1.10E+00	--	0	5.84E-04	3.51E-04	0.00E+00	9.35E-04	18.3	3.2E-05	1.9E-05	0	5.1E-05	183	3.2E-06	1.9E-06	0	5.1E-06
Butylbenzylphthalate		2.50E-02	--	0		7.98E-06	0.00E+00	7.98E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Carbazole		5.50E-01	--	0		1.76E-04	0.00E+00	1.76E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Chloroaniline		3.00E-03	--	0		9.58E-07	0.00E+00	9.58E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2-Chloropropane		4.33E-02	--	0		1.38E-05	0.00E+00	1.38E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chrysene	0.0002	2.80E-01	--	0	4.32E-06	8.94E-05	0.00E+00	9.37E-05	1.31	3.3E-06	6.8E-05	0	7.2E-05	32.8	1.3E-07	2.7E-06	0	2.9E-06
Dibenzofuran		3.60E-01	--	0		1.15E-04	0.00E+00	1.15E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
3,3-Dichlorobenzidine		1.20E-02	--	0		3.83E-06	0.00E+00	3.83E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2,6-Dinitrotoluene		3.70E-01	--	0		1.18E-04	0.00E+00	1.18E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Fluoranthene		4.06E-01	--	0		1.30E-04	0.00E+00	1.30E-04	1.31		9.9E-05	0	9.9E-05	32.8		4.0E-06	0	4.0E-06
Fluorene		1.40E-01	--	0		4.47E-05	0.00E+00	4.47E-05	1.31		3.4E-05	0	3.4E-05	32.8		1.4E-06	0	1.4E-06
Indeno(1,2,3-cd)pyrene		1.70E-01	--	0		5.43E-05	0.00E+00	5.43E-05	1.31		4.1E-05	0	4.1E-05	32.8		1.7E-06	0	1.7E-06
2-Methylnaphthalene		1.80E-01	--	0		5.75E-05	0.00E+00	5.75E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Methylphenol	0.12	2.30E-01	--	0	2.59E-03	7.34E-05	0.00E+00	2.67E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Naphthalene		1.10E-01	--	0		3.51E-05	0.00E+00	3.51E-05	50		7.0E-07	0	7.0E-07	150		2.3E-07	0	2.3E-07
Pentachlorophenol		5.40E-01	--	0		1.72E-04	0.00E+00	1.72E-04	8.42		2.0E-05	0	2.0E-05	27.4		6.3E-06	0	6.3E-06
Phenanthrene		2.10E-01	--	0		6.71E-05	0.00E+00	6.71E-05	1.31		5.1E-05	0	5.1E-05	32.8		2.0E-06	0	2.0E-06
Phenol		2.90E-01	--	0		9.26E-05	0.00E+00	9.26E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pyrene		4.60E-01	--	0		1.47E-04	0.00E+00	1.47E-04	1.31		1.1E-04	0	1.1E-04	32.8		4.5E-06	0	4.5E-06
PCBs (mg/kg)																		
PCBs (Total Congeners)	0.000016	1.29E-01	1.81E+01	2.33E+00	3.46E-07	4.12E-05	2.66E-02	2.66E-02	0.36	9.6E-07	1.1E-04	7.4E-02	7.4E-02	1.28	2.7E-07	3.2E-05	2.1E-02	2.1E-02

>1 = The calculated hazard quotient exceeds 1 (i.e., > 1.5)

Table C2-8j
Post-Remediation Gray Fox Risk Calculations (Wetland Sediment Residual Concentration)
Deep Soil (0 - 10 ft bgs) at Hazard Quotient of 1
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Concentrations				Intake (mg/kg BW-day)					Hazard Quotient (HQ) - Low					Hazard Quotient (HQ) - High			
COPEC[a]	Surface Water (mg/L)[b]	Sediment[c]	Small Mammal BAF[d]	Small Mammal Tissue[d]	Surface Water	Sediment	Small Mammal	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Small Mammal	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Sediment	Small Mammal	Total Intake

Exposure Assumptions and Equation:[e]

	Value	
Ingestion Rate (IR) prey(dry wt.) =	0.177	kg/day (dry weight)
IRmammal(dry wt.) =	0.177	kg/day (dry weight)
IRsediment (dry wt.)[f] =	0.00496	kg-day (dry weight)
IRsurface water[g] =	0.335	L/day
Cprey =	chem-specific	mg/kg or µg/kg
Csediment =	chem-specific	mg/kg or µg/kg
Csurface water =	chem-specific	mg/L or µg/L
Tissue Moisture (TMsmall mammal) =	68%	percent
Dietary Composition Factor (DCF)[h] =	100%	percent
Site Use Factor (SUF)[i] =	25%	percent
Body Weight (BW) =	3.88	kg

Intake Equation = [IRmammal(dry wt) x (Cprey(mammal, dry wt)/1-TM) x DCF x SUF]/BW] + [(IRsoil x Csoil x DCF x SUF)]/BW] + [(IRsurface water x Csurface water x DCF x SUF)]/BW]

Risk (hazard quotient) = Intake / TRV

Prey tissue(dry wt) = Prey tissue (wet wt.) / (1-Tissue Moisture)

NTV = No toxicity data available.

NA = Not applicable.

Blank cell indicates COPEC was not detected in this medium.

Notes:

a All chemicals detected in sediments are considered as constituents of potential ecological concern.

b All concentrations of constituents in surface water are based on the maximum concentration.

c All concentrations of constituents in sediment are based on the residual concentrations expressed in dry weight.

d Site-specific BAFs (dry weight basis). Calculated small mammal tissue concentrations (sediment concentration x BAF). Tissue concentrations are on a dry weight basis.

e Exposure parameters used to calculate risk are discussed in detail in Section 4.2 of the ERA..

f Ingestion rate of soil based on 2.8 percent of of the prey ingestion rate (dry weight); based on a red fox (Beyer et al. (1994).

g Based on equation for mammals: Water intake (L/day) = $0.099Wt(kg)^{0.90}$ (EPA 1993)

h Dietary composition factor was based on a conservative assumption of 100% dietary intake of small mammals from the site.

i Site use factor was based on a 25% use of the site for the fox's foraging range.

Table C2-8k
Post-Remediation Northern Harrier Risk Calculations (Wetland Sediment Residual Concentration)
Deep Soil (0 - 10 ft bgs) at Hazard Quotient of 1
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Concentrations				Intake (mg/kg BW-day)					Hazard Quotient (HQ) - Low					Hazard Quotient (HQ) - High			
COPEC[a]	Surface Water (mg/L)[b]	Sediment[c]	Small Mammal BAF[d]	Small Mammal Tissue[d]	Surface Water	Sediment	Small Mammal	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Small Mammal	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Sediment	Small Mammal	Total Intake
Metals (mg/kg)																		
Aluminum	12.6	2.69E+04	1.11E-02	297	2.43E-01	5.12E+00	8.08E+00	1.34E+01	109.7	2.2E-03	4.7E-02	7.4E-02	1.2E-01	1,097	2.2E-04	4.7E-03	7.4E-03	1.2E-02
Antimony	0.003	4.50E+00	1.22E+00	5	5.80E-05	8.57E-04	1.49E-01	1.50E-01	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Arsenic	0.0436	2.12E+01	--	0	8.43E-04	4.04E-03	0.00E+00	4.88E-03	5.5	1.5E-04	7.3E-04	0.0E+00	8.9E-04	22	3.8E-05	1.8E-04	0.0E+00	2.2E-04
Barium	0.24	9.36E+01	9.41E-02	9	4.56E-03	1.78E-02	2.40E-01	2.62E-01	20.8	2.2E-04	8.6E-04	1.2E-02	1.3E-02	41.7	1.1E-04	4.3E-04	5.8E-03	6.3E-03
Beryllium		6.60E-01		0		1.26E-04		1.26E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Cadmium	0.0016	2.94E+00	--	0	3.09E-05	5.60E-04	0.00E+00	5.91E-04	0.08	3.9E-04	7.0E-03	0.0E+00	7.4E-03	10.4	3.0E-06	5.4E-05	0.0E+00	5.7E-05
Chromium +3	0.0263	2.25E+02	2.60E-02	6	5.08E-04	4.29E-02	1.59E-01	2.03E-01	2.66	1.9E-04	1.6E-02	6.0E-02	7.6E-02	2.78	1.8E-04	1.5E-02	5.7E-02	7.3E-02
Chromium +6	0.0263	7.00E-02	2.60E-02	0	5.08E-04	1.33E-05	4.96E-05	5.71E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Cobalt	0.0164	1.85E+01	--	0	3.17E-04	3.52E-03	0.00E+00	3.84E-03	7.61	4.2E-05	4.6E-04	0.0E+00	5.0E-04	17	1.9E-05	2.1E-04	0.0E+00	2.3E-04
Copper	0.233	1.93E+02	3.45E-01	67	4.50E-03	3.68E-02	1.81E+00	1.86E+00	2.3	2.0E-03	1.6E-02	7.9E-01	8.1E-01	52.3	8.6E-05	7.0E-04	3.5E-02	3.5E-02
Lead	0.0031	8.51E+01	6.10E-01	52	5.99E-05	1.62E-02	1.41E+00	1.43E+00	0.014	4.3E-03	1.2E+00	1.0E+02	1.0E+02 >1	8.75	6.8E-06	1.9E-03	1.6E-01	1.6E-01
Manganese	7.42	9.01E+02	--	0	1.43E-01	1.72E-01	0.00E+00	3.15E-01	77.6	1.8E-03	2.2E-03	0.0E+00	4.1E-03	776	1.8E-04	2.2E-04	0.0E+00	4.1E-04
Mercury	0.00029	1.15E+00	--	0	5.60E-06	2.19E-04	0.00E+00	2.25E-04	0.039	1.4E-04	5.6E-03	0.0E+00	5.8E-03	0.18	3.1E-05	1.2E-03	0.0E+00	1.2E-03
Molybdenum	0.0312	5.40E+00	--	0	6.03E-04	1.03E-03	0.00E+00	1.63E-03	3.5	1.7E-04	2.9E-04	0.0E+00	4.7E-04	35.3	1.7E-05	2.9E-05	0.0E+00	4.6E-05
Nickel	0.166	1.13E+02	--	0	3.21E-03	2.15E-02	0.00E+00	2.47E-02	1.38	2.3E-03	1.6E-02	0.0E+00	1.8E-02	56.3	5.7E-05	3.8E-04	0.0E+00	4.4E-04
Selenium	0.029	1.27E+00	6.12E+00	8	5.60E-04	2.42E-04	2.11E-01	2.12E-01	0.23	2.4E-03	1.1E-03	9.2E-01	9.2E-01	0.93	6.0E-04	2.6E-04	2.3E-01	2.3E-01
Silver	0.0019	2.80E+00	--	0	3.67E-05	5.33E-04	0.00E+00	5.70E-04	178.00	2.1E-07	3.0E-06	0.0E+00	3.2E-06	NTV	NTV	NTV	NTV	NTV
Thallium		4.90E-01	1.01E+00	0		9.33E-05	1.34E-02	1.35E-02	0.35		2.7E-04	3.8E-02	3.9E-02	NTV	NTV	NTV	NTV	NTV
Tin		1.42E+01	--	0		2.70E-03	0.00E+00	2.70E-03	6.80		4.0E-04	0.0E+00	4.0E-04	16.9		1.6E-04	0.0E+00	1.6E-04
Vanadium	0.05	1.09E+02	--	0	9.66E-04	2.08E-02	0.00E+00	2.17E-02	11.4	8.5E-05	1.8E-03	0.0E+00	1.9E-03	114	8.5E-06	1.8E-04	0.0E+00	1.9E-04
Zinc	0.042	2.20E+02	1.11E+00	244	8.12E-04	4.19E-02	6.63E+00	6.67E+00	17.2	4.7E-05	2.4E-03	3.9E-01	3.9E-01	172	4.7E-06	2.4E-04	3.9E-02	3.9E-02
Volatile Organics (mg/kg)																		
Acetone		3.20E-01	--	0		6.10E-05	0.00E+00	6.10E-05	52		1.2E-06	0.0E+00	1.2E-06	520		1.2E-07	0.0E+00	1.2E-07
Benzene		5.00E-03	--	0		9.52E-07	0.00E+00	9.52E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Carbon disulfide		2.50E-02	--	0		4.76E-06	0.00E+00	4.76E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chlorobenzene		2.40E-02	--	0		4.57E-06	0.00E+00	4.57E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
cis-1,2-Dichlorobenzene		5.00E-03	--	0		9.52E-07	0.00E+00	9.52E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Ethylbenzene		4.40E-02	--	0		8.38E-06	0.00E+00	8.38E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Isopropyltoluene		7.20E-03	--	0		1.37E-06	0.00E+00	1.37E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Methylene chloride		3.00E-01	--	0		5.71E-05	0.00E+00	5.71E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Naphthalene		1.60E-02	--	0		3.05E-06	0.00E+00	3.05E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Toluene		3.00E-02	--	0		5.71E-06	0.00E+00	5.71E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
trans-1,2-Dichloroethene		2.30E-02	--	0		4.38E-06	0.00E+00	4.38E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Trichloroethene		7.00E-03	--	0		1.33E-06	0.00E+00	1.33E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
1,2,4-Trimethylbenzene		2.50E-02	--	0		4.76E-06	0.00E+00	4.76E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
1,3,5-Trimethylbenzene		9.30E-03	--	0		1.77E-06	0.00E+00	1.77E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Vinyl chloride		3.40E-02	--	0		6.48E-06	0.00E+00	6.48E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Xylenes		1.10E-01	--	0		2.10E-05	0.00E+00	2.10E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pesticides (mg/kg)																		
alpha-Chlordane		8.20E-03	--	0		1.56E-06	0.00E+00	1.56E-06	0.0014		1.1E-03	0.0E+00	1.1E-03	0.014		1.1E-04	0.0E+00	1.1E-04
beta-BHC		1.00E-03	--	0		1.90E-07	0.00E+00	1.90E-07	0.56		3.4E-07	0.0E+00	3.4E-07	2.25		8.5E-08	0.0E+00	8.5E-08
delta-BHC		2.00E-03	--	0		3.81E-07	0.00E+00	3.81E-07	0.56		6.8E-07	0.0E+00	6.8E-07	2.25		1.7E-07	0.0E+00	1.7E-07
2,4-DDD		2.90E-02	1.04E+00	0		5.52E-06	8.24E-04	8.29E-04	0.009		6.1E-04	9.2E-02	9.2E-02	1.5		3.7E-06	5.5E-04	5.5E-04
DDD		8.60E-02	1.04E+00	0		1.64E-05	2.44E-03	2.46E-03	0.009		1.8E-03	2.7E-01	2.7E-01	1.5		1.1E-05	1.6E-03	1.6E-03
DDE	0.0000027	1.70E-02	1.04E+00	0	5.22E-08	3.24E-06	4.83E-04	4.86E-04	NTV	NTV	NTV	NTV	NTV	0.6	8.7E-08	5.4E-06	8.0E-04	8.1E-04
DDTs	0.00014	1.20E-02	1.04E+00	0	2.71E-06	2.29E-06	3.41E-04	3.46E-04	0.009	3.0E-04	2.5E-04	3.8E-02	3.8E-02	1.5	1.8E-06	1.5E-06	2.3E-04	2.3E-04

Table C2-8k
Post-Remediation Northern Harrier Risk Calculations (Wetland Sediment Residual Concentration)
Deep Soil (0 - 10 ft bgs) at Hazard Quotient of 1
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Concentrations				Intake (mg/kg BW-day)					Hazard Quotient (HQ) - Low					Hazard Quotient (HQ) - High			
COPEC[a]	Surface Water (mg/L)[b]	Sediment[c]	Small Mammal BAF[d]	Small Mammal Tissue[d]	Surface Water	Sediment	Small Mammal	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Small Mammal	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Sediment	Small Mammal	Total Intake
Dieldrin		3.90E-03	--	0		7.43E-07	0.00E+00	7.43E-07	0.0709		1.0E-05	0.0E+00	1.0E-05	0.98		7.6E-07	0.0E+00	7.6E-07
Endosulfan I		4.00E-03	--	0		7.62E-07	0.00E+00	7.62E-07	10		7.6E-08	0.0E+00	7.6E-08	100		7.6E-09	0.0E+00	7.6E-09
Endosulfan sulfate	0.00012	3.00E-03	--	0	2.32E-06	5.71E-07	0.00E+00	2.89E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Endrin	0.000014	2.00E-02	--	0	2.71E-07	3.81E-06	0.00E+00	4.08E-06	0.3	9.0E-07	1.3E-05	0.0E+00	1.4E-05	3	9.0E-08	1.3E-06	0.0E+00	1.4E-06
Endrin aldehyde		6.00E-03	--	0		1.14E-06	0.00E+00	1.14E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Endrin Ketone		3.00E-03	--	0		5.71E-07	0.00E+00	5.71E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
gamma-Chlordane		8.50E-03	--	0		1.62E-06	0.00E+00	1.62E-06	0.0014		1.2E-03	0.0E+00	1.2E-03	0.014		1.2E-04	0.0E+00	1.2E-04
Heptachlor	0.0000028	2.00E-04	--	0	5.41E-08	3.81E-08	0.00E+00	9.22E-08	0.065	8.3E-07	5.9E-07	0.0E+00	1.4E-06	0.65	8.3E-08	5.9E-08	0.0E+00	1.4E-07
Heptachlor epoxide		3.00E-04	--	0		5.71E-08	0.00E+00	5.71E-08	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Hexachlorobenzene		8.00E-04	--	0		1.52E-07	0.00E+00	1.52E-07	0.23		6.6E-07	0.0E+00	6.6E-07	2.3		6.6E-08	0.0E+00	6.6E-08
Methoxychlor		2.00E-02	--	0		3.81E-06	0.00E+00	3.81E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Mirex		4.00E-03	--	0		7.62E-07	0.00E+00	7.62E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
trans-Nonachlor		2.40E-03	--	0		4.57E-07	0.00E+00	4.57E-07	0.0014		3.3E-04	0.0E+00	3.3E-04	0.014		3.3E-05	0.0E+00	3.3E-05
SVOCs (mg/kg)																		
Acenaphthene		1.40E-01	--	0		2.67E-05	0.00E+00	2.67E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Acenaphthylene		1.20E-01	--	0		2.29E-05	0.00E+00	2.29E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Anthracene		1.30E-01	--	0		2.48E-05	0.00E+00	2.48E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(a)anthracene		2.90E-01	--	0		5.52E-05	0.00E+00	5.52E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(a)pyrene		2.56E-01	--	0		4.88E-05	0.00E+00	4.88E-05	0.001		4.9E-02	0.0E+00	4.9E-02	0.01		4.9E-03	0.0E+00	4.9E-03
Benzo(b)fluoranthene		2.56E-01	--	0		4.88E-05	0.00E+00	4.88E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(g,h,i)perylene		1.68E-01	--	0		3.20E-05	0.00E+00	3.20E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(k)fluoranthene		2.45E-01	--	0		4.67E-05	0.00E+00	4.67E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzoic acid		6.80E-01	--	0		1.30E-04	0.00E+00	1.30E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Bis(2-ethylhexyl)phthalate	0.027	1.10E+00	--	0	5.22E-04	2.10E-04	0.00E+00	7.31E-04	1.1	4.7E-04	1.9E-04	0.0E+00	6.6E-04	11	4.7E-05	1.9E-05	0.0E+00	6.6E-05
Butylbenzylphthalate		2.50E-02	--	0		4.76E-06	0.00E+00	4.76E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Carbazole		5.50E-01	--	0		1.05E-04	0.00E+00	1.05E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Chloroaniline		3.00E-03	--	0		5.71E-07	0.00E+00	5.71E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2-Chloropropane		4.33E-02	--	0		8.25E-06	0.00E+00	8.25E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chrysene	0.0002	2.80E-01	--	0	3.87E-06	5.33E-05	0.00E+00	5.72E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Dibenzofuran		3.60E-01	--	0		6.86E-05	0.00E+00	6.86E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
3,3-Dichlorobenzidine		1.20E-02	--	0		2.29E-06	0.00E+00	2.29E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2,6-Dinitrotoluene		3.70E-01	--	0		7.05E-05	0.00E+00	7.05E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Fluoranthene		4.06E-01	--	0		7.73E-05	0.00E+00	7.73E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Fluorene		1.40E-01	--	0		2.67E-05	0.00E+00	2.67E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Indeno(1,2,3-cd)pyrene		1.70E-01	--	0		3.24E-05	0.00E+00	3.24E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2-Methylnaphthalene		1.80E-01	--	0		3.43E-05	0.00E+00	3.43E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Methylphenol	0.12	2.30E-01	--	0	2.32E-03	4.38E-05	0.00E+00	2.36E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Naphthalene		1.10E-01	--	0		2.10E-05	0.00E+00	2.10E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pentachlorophenol		5.40E-01	--	0		1.03E-04	0.00E+00	1.03E-04	6.7		1.5E-05	0.0E+00	1.5E-05	22.5		4.6E-06	0.0E+00	4.6E-06
Phenanthrene		2.10E-01	--	0		4.00E-05	0.00E+00	4.00E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Phenol		2.90E-01	--	0		5.52E-05	0.00E+00	5.52E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pyrene		4.60E-01	--	0		8.76E-05	0.00E+00	8.76E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
PCBs (mg/kg)																		
PCBs (Total Congeners)	0.000016	1.29E-01	1.81E+01	2	3.09E-07	2.46E-05	6.35E-02	6.35E-02	0.09	3.4E-06	2.7E-04	7.1E-01	7.1E-01	1.27	2.4E-07	1.9E-05	5.0E-02	5.0E-02

>1 = The calculated hazard quotient exceeds 1 (i.e., > 1.5)

Table C2-8k
Post-Remediation Northern Harrier Risk Calculations (Wetland Sediment Residual Concentration)
Deep Soil (0 - 10 ft bgs) at Hazard Quotient of 1
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Concentrations				Intake (mg/kg BW-day)					Hazard Quotient (HQ) - Low					Hazard Quotient (HQ) - High			
COPEC[a]	Surface Water (mg/L)[b]	Sediment[c]	Small Mammal BAF[d]	Small Mammal Tissue[d]	Surface Water	Sediment	Small Mammal	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Small Mammal	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Sediment	Small Mammal	Total Intake

Exposure Assumptions and Equation:[e]

	Value	
Ingestion Rate (IR) prey(dry wt.) =	0.048	
IRsmall mammal (dry wt.) =	0.048	kg/day (dry weight)
IRsoil (dry wt.)[f] =	0.000336	kg-day (dry weight)
IRsurface water[g] =	0.034	L/day
Cprey =	chem-specific	mg/kg or µg/kg
Csoil =	chem-specific	mg/kg or µg/kg
Csurface water =	chem-specific	mg/L or µg/L
Tissue Moisture (TMsmall mammal) =	68%	percent
Dietary Composition Factor (DCF)[h] =	100%	percent
Site Use Factor (SUF)[i] =	25%	percent
Body Weight (BW) =	0.441	kg

Intake Equation = [IRmammal(dry wt) x (Cprey(mammal, dry wt)/1-TM) x DCF x SUF]/BW] + [(IRsoil x Csoil x DCF x SUF)]/BW] + [(IRsurface water x Csurface water x DCF x SUF)]/BW]

Risk (hazard quotient) = Intake / TRV

Prey tissue(dry wt) = Prey tissue (wet wt.) / (1-Tissue Moisture)

NTV = No toxicity data available.

NA = Not applicable.

Blank cell indicates COPEC was not detected in this medium.

Notes:

a All chemicals detected in sediments are considered as constituents of potential ecological concern.

b All concentrations of constituents in surface water are based on the maximum concentration.

c All concentrations of constituents in sediment are based on the residual concentrations expressed in dry weight.

d Site-specific BAFs (dry weight basis). Calculated small mammal tissue concentrations (sediment concentration x BAF). Tissue concentrations are on a dry weight basis.

e Exposure parameters used to calculate risk are discussed in detail in Section 4.2 of ERA.

f Ingestion rate of sedimentl based on 0.7 percent of of the prey ingestion rate (dry weight); based on rate for bald eagle in Pascoe et al. (1996).

g Based on equation for birds: Water intake (L/day) = $0.059Wt(kg)^{0.67}$ (EPA 1993)

h Dietary composition factor was based on a conservative assumption of 100% dietary intake of small mammals from the site.

i Site use factor was based on 25% use of the site for the harrier's foraging range.

Table C2-8l
Post-Remediation Mallard (Non-Breeding) Risk Calculations (Wetland Sediment Residual Concentration)
Deep Soil (0 - 10 ft bgs) at Hazard Quotient of 1
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Concentrations				Intake (mg/kg BW-day)					Hazard Quotient (HQ) - Low					Hazard Quotient (HQ) - High			
COPEC[a]	Surface Water (mg/L)[b]	Sediments[c]	Plant BAF[d]	Plant Tissue[d]	Surface Water	Sediment	Plant	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Plant	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Sediment	Plant	Total Intake
Metals (mg/kg)																		
Aluminum	12.6	2.69E+04	7.56E-03	2.03E+02	7.60E-02	8.68E+00	1.99E+00	1.07E+01	109.7	6.9E-04	7.9E-02	1.8E-02	9.8E-02	1,097	6.9E-05	7.9E-03	1.8E-03	9.8E-03
Antimony	0.003	4.50E+00	2.27E-01	1.02E+00	1.81E-05	1.45E-03	1.00E-02	1.15E-02	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Arsenic	0.0436	2.12E+01	1.15E-01	2.45E+00	2.63E-04	6.85E-03	2.40E-02	3.11E-02	5.5	4.8E-05	1.2E-03	4.4E-03	5.6E-03	22	1.2E-05	3.1E-04	1.1E-03	1.4E-03
Barium	0.24	9.36E+01	7.87E-02	7.37E+00	1.42E-03	3.03E-02	7.22E-02	1.04E-01	20.8	6.8E-05	1.5E-03	3.5E-03	5.0E-03	41.7	3.4E-05	7.3E-04	1.7E-03	2.5E-03
Beryllium		6.60E-01	--	0		2.13E-04	0	2.13E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Cadmium	0.0016	2.94E+00	1.40E+00	4.11E+00	9.65E-06	9.50E-04	4.02E-02	4.12E-02	0.08	1.2E-04	1.2E-02	5.0E-01	5.1E-01	10.40	9.3E-07	9.1E-05	3.9E-03	4.0E-03
Chromium +3	0.0263	2.25E+02	--	0	1.59E-04	7.27E-02	0	7.29E-02	2.66	6.0E-05	2.7E-02	0.0E+00	2.7E-02	2.78	5.7E-05	2.6E-02	0.0E+00	2.6E-02
Chromium +6	0.0263	7.00E-02	--	0	1.59E-04	2.26E-05	0	1.81E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Cobalt	0.0164	1.85E+01	--	0	9.89E-05	5.98E-03	0	6.08E-03	7.61	1.3E-05	7.9E-04	0.0E+00	8.0E-04	17	5.8E-06	3.5E-04	0.0E+00	3.6E-04
Copper	0.233	1.93E+02	5.68E-02	1.10E+01	1.40E-03	6.24E-02	1.07E-01	1.71E-01	2.3	6.1E-04	2.7E-02	4.7E-02	7.4E-02	52.3	2.7E-05	1.2E-03	2.1E-03	3.3E-03
Lead	0.0031	8.51E+01	7.51E-03	6.39E-01	1.87E-05	2.75E-02	6.26E-03	3.38E-02	0.014	1.3E-03	2.0E+00	4.5E-01	2.4E+00 >1	8.75	2.1E-06	3.1E-03	7.2E-04	3.9E-03
Manganese	7.42	9.01E+02	4.89E-01	4.41E+02	4.47E-02	2.91E-01	4.32E+00	4.65E+00	77.6	5.8E-04	3.8E-03	5.6E-02	6.0E-02	776	5.8E-05	3.8E-04	5.6E-03	6.0E-03
Mercury	0.00029	1.15E+00	--	0	1.75E-06	3.72E-04	0	3.74E-04	0.039	4.5E-05	9.5E-03	0.0E+00	9.6E-03	0.18	9.7E-06	2.1E-03	0.0E+00	2.1E-03
Molybdenum	0.0312	5.40E+00	--	0	1.88E-04	1.75E-03	0	1.93E-03	3.5	5.4E-05	5.0E-04	0.0E+00	5.5E-04	35.3	5.3E-06	4.9E-05	0.0E+00	5.5E-05
Nickel	0.166	1.13E+02	1.39E-02	1.57E+00	1.00E-03	3.65E-02	1.54E-02	5.29E-02	1.38	7.3E-04	2.6E-02	1.1E-02	3.8E-02	56.3	1.8E-05	6.5E-04	2.7E-04	9.4E-04
Selenium	0.029	1.27E+00	--	0	1.75E-04	4.11E-04	0	5.85E-04	0.23	7.6E-04	1.8E-03	0.0E+00	2.5E-03	0.93	1.9E-04	4.4E-04	0.0E+00	6.3E-04
Silver	0.0019	2.80E+00	--	0	1.15E-05	9.05E-04	0	9.17E-04	178.00	6.4E-08	5.1E-06	0.0E+00	5.1E-06	NTV	NTV	NTV	NTV	NTV
Thallium		4.90E-01	--	0		1.58E-04	0	1.58E-04	0.35		4.5E-04	0.0E+00	4.5E-04	NTV	NTV	NTV	NTV	NTV
Tin		1.42E+01	1.55E+00	2.21E+01		4.59E-03	2.16E-01	2.21E-01	6.80		6.8E-04	3.2E-02	3.2E-02	16.9		2.7E-04	1.3E-02	1.3E-02
Vanadium	0.05	1.09E+02	2.20E-02	2.40E+00	3.01E-04	3.52E-02	2.35E-02	5.91E-02	11.4	2.6E-05	3.1E-03	2.1E-03	5.2E-03	114	2.6E-06	3.1E-04	2.1E-04	5.2E-04
Zinc	0.042	2.20E+02	8.47E-02	1.86E+01	2.53E-04	7.11E-02	1.82E-01	2.54E-01	17.2	1.5E-05	4.1E-03	1.1E-02	1.5E-02	172	1.5E-06	4.1E-04	1.1E-03	1.5E-03
Volatile Organics (mg/kg)																		
Acetone		3.20E-01	--	0		1.03E-04	0	1.03E-04	52		2.0E-06	0.0E+00	2.0E-06	520		2.0E-07	0.0E+00	2.0E-07
Benzene		5.00E-03	--	0		1.62E-06	0	1.62E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Carbon disulfide		2.50E-02	--	0		8.08E-06	0	8.08E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chlorobenzene		2.40E-02	--	0		7.76E-06	0	7.76E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
cis-1,2-Dichlorobenzene		5.00E-03	--	0		1.62E-06	0	1.62E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Ethylbenzene		4.40E-02	--	0		1.42E-05	0	1.42E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Isopropyltoluene		7.20E-03	--	0		2.33E-06	0	2.33E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Methylene chloride		3.00E-01	--	0		9.70E-05	0	9.70E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Naphthalene		1.60E-02	--	0		5.17E-06	0	5.17E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Toluene		3.00E-02	--	0		9.70E-06	0	9.70E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
trans-1,2-Dichloroethene		2.30E-02	--	0		7.44E-06	0	7.44E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Trichloroethene		7.00E-03	--	0		2.26E-06	0	2.26E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
1,2,4-Trimethylbenzene		2.50E-02	--	0		8.08E-06	0	8.08E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
1,3,5-Trimethylbenzene		9.30E-03	--	0		3.01E-06	0	3.01E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Vinyl chloride		3.40E-02	--	0		1.10E-05	0	1.10E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Xylenes		1.10E-01	--	0		3.56E-05	0	3.56E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pesticides (mg/kg)																		
alpha-Chlordane		8.20E-03	--	0		2.65E-06	0	2.65E-06	0.0014		1.9E-03	0.0E+00	1.9E-03	0.014		1.9E-04	0.0E+00	1.9E-04
beta-BHC		1.00E-03	--	0		3.23E-07	0	3.23E-07	0.56		5.8E-07	0.0E+00	5.8E-07	2.25		1.4E-07	0.0E+00	1.4E-07
delta-BHC		2.00E-03	--	0		6.47E-07	0	6.47E-07	0.56		1.2E-06	0.0E+00	1.2E-06	2.25		2.9E-07	0.0E+00	2.9E-07
2,4-DDD		2.90E-02	--	0		9.37E-06	0	9.37E-06	0.009		1.0E-03	0.0E+00	1.0E-03	1.5		6.2E-06	0.0E+00	6.2E-06
4,4-DDD		8.60E-02	--	0		2.78E-05	0	2.78E-05	0.009		3.1E-03	0.0E+00	3.1E-03	1.5		1.9E-05	0.0E+00	1.9E-05
DDE	0.0000027	1.70E-02	--	0	1.63E-08	5.50E-06	0	5.51E-06	NTV	NTV	NTV	NTV	NTV	0.6	2.7E-08	9.2E-06	0.0E+00	9.2E-06
DDTs	0.00014	1.20E-02	--	0	8.44E-07	3.88E-06	0	4.72E-06	0.009	9.4E-05	4.3E-04	0.0E+00	5.2E-04	1.5	5.6E-07	2.6E-06	0.0E+00	3.1E-06
Dieldrin		3.90E-03	--	0		1.26E-06	0	1.26E-06	0.0709		1.8E-05	0.0E+00	1.8E-05	0.98		1.3E-06	0.0E+00	1.3E-06
Endosulfan I		4.00E-03	--	0		1.29E-06	0	1.29E-06	10		1.3E-07	0.0E+00	1.3E-07	100		1.3E-08	0.0E+00	1.3E-08
Endosulfan sulfate	0.00012	3.00E-03	--	0	7.24E-07	9.70E-07	0	1.69E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Endrin	0.000014	2.00E-02	--	0	8.44E-08	6.47E-06	0	6.55E-06	0.3	2.8E-07	2.2E-05	0.0E+00	2.2E-05	3	2.8E-08	2.2E-06	0.0E+00	2.2E-06
Endrin aldehyde		6.00E-03	--	0		1.94E-06	0	1.94E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Endrin Ketone		3.00E-03	--	0		9.70E-07	0	9.70E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
gamma Chlordane		8.50E-03	--	0		2.75E-06	0	2.75E-06	0.0014		2.0E-03	0.0E+00	2.0E-03	0.014		2.0E-04	0.0E+00	2.0E-04
Heptachlor	0.0000028	2.00E-04	--	0	1.69E-08	6.47E-08	0	8.15E-08	0.065	2.6E-07	9.9E-07	0.0E+00	1.3E-06	0.65	2.6E-08	9.9E-08	0.0E+00	1.3E-07
Heptachlor epoxide		3.00E-04	--	0		9.70E-08	0	9.70E-08	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Hexachlorobenzene		8.00E-04	--	0		2.59E-07	0	2.59E-07	0.23		1.1E-06	0.0E+00	1.1E-06	2.3		1.1E-07	0.0E+00	1.1E-07
Methoxychlor		2.00E-02	--	0		6.47E-06	0	6.47E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Mirex		4.00E-03	--	0		1.29E-06	0	1.29E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
trans-Nonachlor		2.40E-03	--	0		7.76E-07	0	7.76E-07	0.0014		5.5E-04	0.0E+00	5.5E-04	0.014		5.5E-05	0.0E+00	5.5E-05

Table C2-8l
Post-Remediation Mallard (Non-Breeding) Risk Calculations (Wetland Sediment Residual Concentration)
Deep Soil (0 - 10 ft bgs) at Hazard Quotient of 1
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Concentrations				Intake (mg/kg BW-day)					Hazard Quotient (HQ) - Low					Hazard Quotient (HQ) - High			
COPEC[a]	Surface Water (mg/L)[b]	Sediments[c]	Plant BAF[d]	Plant Tissue[d]	Surface Water	Sediment	Plant	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Plant	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Sediment	Plant	Total Intake
SVOCs (mg/kg)																		
Acenaphthene		1.40E-01	--	0		4.53E-05	0	4.53E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Acenaphthylene		1.20E-01	--	0		3.88E-05	0	3.88E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Anthracene		1.30E-01	1.89E+00	2.45E-01		4.20E-05	2.40E-03	2.45E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(a)anthracene		2.90E-01	--	0		9.37E-05	0	9.37E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(a)pyrene		2.56E-01	--	0		8.28E-05	0	8.28E-05	0.001		8.3E-02	0.0E+00	8.3E-02	0.01		8.3E-03	0.0E+00	8.3E-03
Benzo(b)fluoranthene		2.56E-01	--	0		8.28E-05	0	8.28E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(ghi)perylene		1.68E-01	--	0		5.43E-05	0	5.43E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(k)fluoranthene		2.45E-01	--	0		7.92E-05	0	7.92E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzoic acid		6.80E-01	--	0		2.20E-04	0	2.20E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Bis(2-ethylhexyl)phthalate	0.027	1.10E+00	--	0	1.63E-04	3.56E-04	0	5.18E-04	1.1	1.5E-04	3.2E-04	0.0E+00	4.7E-04	11	1.5E-05	3.2E-05	0.0E+00	4.7E-05
Butylbenzylphthalate		2.50E-02	--	0		8.08E-06	0	8.08E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Carbazole		5.50E-01	--	0		1.78E-04	0	1.78E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Chloroaniline		3.00E-03	--	0		9.70E-07	0	9.70E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2-Chloropropane		4.33E-02	--	0		1.40E-05	0	1.40E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chrysene	0.0002	2.80E-01	--	0	1.21E-06	9.05E-05	0	9.17E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Dibenzofuran		3.60E-01	--	0		1.16E-04	0	1.16E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
3,3-Dichlorobenzidine		1.20E-02	--	0		3.88E-06	0	3.88E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2,6-Dinitrotoluene		3.70E-01	--	0		1.20E-04	0	1.20E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Fluoranthene		4.06E-01	1.17E+00	4.76E-01		1.31E-04	4.67E-03	4.80E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Fluorene		1.40E-01	--	0		4.53E-05	0	4.53E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Indeno(123,cd)pyrene		1.70E-01	--	0		5.50E-05	0	5.50E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2-Methylnaphthalene		1.80E-01	--	0		5.82E-05	0	5.82E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Methylphenol	0.12	2.30E-01	--	0	7.24E-04	7.44E-05	0	7.98E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Naphthalene		1.10E-01	--	0		3.56E-05	0	3.56E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pentachlorophenol		5.40E-01	--	0		1.75E-04	0	1.75E-04	6.7		2.6E-05	0.0E+00	2.6E-05	22.5		7.8E-06	0.0E+00	7.8E-06
Phenanthrene		2.10E-01	1.64E+00	3.44E-01		6.79E-05	3.37E-03	3.44E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Phenol		2.90E-01	--	0		9.37E-05	0	9.37E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pyrene		4.60E-01	--	0		1.49E-04	0	1.49E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
PCBs (mg/kg)																		
PCBs (TOTAL)-congeners	0.000016	1.29E-01	1.09E-01	1.41E-02	9.65E-08	4.17E-05	1.38E-04	1.80E-04	0.09	1.1E-06	4.6E-04	1.5E-03	2.0E-03	1.27	7.6E-08	3.3E-05	1.1E-04	1.4E-04

>1 = The calculated hazard quotient exceeds 1 (i.e., > 1.5)

Exposure Assumptions and Equation:[e]

	Value	Units
Ingestion Rate (IR) prey(dry wt.) =	0.0917	kg/day (dry weight)
IRplant(dry wt.) =	0.0917	kg/day (dry weight)
IRsediment (dry wt.)[f] =	0.00303	kg/day (dry weight)
Cprey =	chem-specific	kg-day (dry weight)
Csediment =	chem-specific	kg-day (dry weight)
Tissue Moisture (TMplant) =	8.5%	percent
IRsurface water[g] =	0.056	L/day
Csurface water =	chem-specific	mg/L or µg/L
Dietary Composition Factor (DCF)[h] =	100%	percent
Site Use Factor (SUF)[i] =	10%	percent
Body Weight (BW) =	0.9361	kg

Intake Equation = [IRplant (dry wt) x [Cprey (plant, wet wt) /1-TM] x DCF x SUF]/BW + [IRsediment x Csediment x DCF x SUF)]/BW +[(IRsurface water x Csurface water x DCF x SUF)]/BW

Risk (hazard quotient) = Intake / TRV

NTV = Not toxicity data available.

Prey tissue(dry wt) = Prey tissue (wet wt.) / (1-Tissue Moisture)

NA = Not available.

Blank cell indicates COPEC was not detected in this medium.

Notes:

a All chemicals detected in sediments are considered as constituents of potential ecological concern.

b All concentrations of constituents in surface water are based on the maximum concentration.

c All concentrations of constituents in sediment are based on the residual concentrations expressed in dry weight.

d Site-specific BAFs (dry weight basis). Calculated plant tissue concentrations (sediment concentration x BAF). Tissue concentrations are on a dry weight basis.

e Exposure parameters used to calculate risk are discussed in detail in Section 4.2 of ERA.

f Ingestion rate of sediment based on 3.3 percent of of the prey ingestion rate (dry weight); based on mallard data from Beyer et al. (1994).

g Based on equation for birds: Water intake (L/day) = $0.059Wt(kg)^{0.67}$ (EPA 1993)

h Dietary composition factor was based on a conservative assumption of 100% dietary intake of plants from the site.

i Site use factor was based on 10% use of the site for the mallard's foraging range.

Table C2-8m
Post-Remediation Mallard (Breeding) Risk Calculations (Wetland Sediment Residual Concentration)
Deep Soil (0 - 10 ft bgs) at Hazard Quotient of 1
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Point Concentration						Intake (mg/kg BW-day)					Low TRV	Hazard Quotient (HQ) - Low					High TRV	Hazard Quotient (HQ) - High				
COPEC[a]	Surface Water (mg/L)[b]	Sediments[c]	Plant BAF[d]	Plant Tissue[d]	Invertebrate BAF[d]	Invertebrate Tissue[d]	Surface Water	Sediment	Plant	Invertebrate	Total Intake (mg/kg/day)	(mg/kg BW-day)	Surface Water	Sediment	Plant	Invertebrate	Total Intake	(mg/kg BW-day)	Surface Water	Sediment	Plant	Invertebrate	Total Intake
Metals (mg/kg)																							
Aluminum	12.6	2.69E+04	7.56E-03	2.03E+02	1.93E-01	5.18E+03	3.04E-01	3.47E+01	1.99E+00	1.52E+02	1.89E+02	109.7	2.8E-03	3.2E-01	1.8E-02	1.4E+00	1.7E+00 >1	1,097	2.8E-04	3.2E-02	1.8E-03	1.4E-01	1.7E-01
Antimony	0.003	4.50E+00	2.27E-01	1.02E+00	2.32E-01	1.04E+00	7.24E-05	5.82E-03	1.00E-02	3.06E-02	4.65E-02	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Arsenic	0.0436	2.12E+01	1.15E-01	2.45E+00	1.92E-01	4.07E+00	1.05E-03	2.74E-02	2.40E-02	1.19E-01	1.72E-01	5.5	1.9E-04	5.0E-03	4.4E-03	2.2E-02	3.1E-02	22	4.8E-05	1.2E-03	1.1E-03	5.4E-03	7.8E-03
Barium	0.24	9.36E+01	7.87E-02	7.37E+00	1.50E+00	1.40E+02	5.69E-03	1.21E-01	7.22E-02	4.12E+00	4.32E+00	20.8	2.7E-04	5.8E-03	3.5E-03	2.0E-01	2.1E-01	41.7	1.4E-04	2.9E-03	1.7E-03	9.9E-02	1.0E-01
Beryllium		6.60E-01	--	0	--	0		8.53E-04	0.00E+00	0.00E+00	8.53E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Cadmium	0.0016	2.94E+00	1.40E+00	4.11E+00	2.15E-01	6.32E-01	3.86E-05	3.80E-03	4.02E-02	1.86E-02	6.26E-02	0.08	4.8E-04	4.8E-02	5.0E-01	2.3E-01	7.8E-01	10.40	3.7E-06	3.7E-04	3.9E-03	1.8E-03	6.0E-03
Chromium +3	0.0263	2.25E+02	--	0	5.53E-01	1.25E+02	6.34E-04	2.91E-01	0.00E+00	3.66E+00	3.95E+00	2.66	2.4E-04	1.1E-01	0.0E+00	1.4E+00	1.5E+00	2.78	2.3E-04	1.0E-01	0.0E+00	1.3E+00	1.4E+00
Chromium +6	0.0263	7.00E-02	--	0	5.53E-01	3.87E-02	6.34E-04	9.05E-05	0.00E+00	1.14E-03	1.86E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Cobalt	0.0164	1.85E+01	--	0	--	0	3.96E-04	2.39E-02	0.00E+00	0.00E+00	2.43E-02	7.61	5.2E-05	3.1E-03	0.0E+00	0.0E+00	3.2E-03	17	2.3E-05	1.4E-03	0.0E+00	0.0E+00	1.4E-03
Copper	0.233	1.93E+02	5.68E-02	1.10E+01	6.67E-01	1.29E+02	5.62E-03	2.50E-01	1.07E-01	3.78E+00	4.15E+00	2.3	2.4E-03	1.1E-01	4.7E-02	1.6E+00	1.8E+00 >1	52.3	1.1E-04	4.8E-03	2.1E-03	7.2E-02	7.9E-02
Lead	0.0031	8.51E+01	7.51E-03	6.39E-01	5.07E-02	4.32E+00	7.48E-05	1.10E-01	6.26E-03	1.27E-01	2.43E-01	0.014	5.3E-03	7.9E+00	4.5E-01	9.1E+00	1.7E+01 >1	8.75	8.5E-06	1.3E-02	7.2E-04	1.4E-02	2.8E-02
Manganese	7.42	9.01E+02	4.89E-01	4.41E+02	5.29E+00	4.77E+03	1.79E-01	1.17E+00	4.32E+00	1.40E+02	1.46E+02	77.6	2.3E-03	1.5E-02	5.6E-02	1.8E+00	1.9E+00 >1	776	2.3E-04	1.5E-03	5.6E-03	1.8E-01	1.9E-01
Mercury	0.00029	1.15E+00	--	0	6.96E-01	8.01E-01	6.99E-06	1.49E-03	0.00E+00	2.35E-02	2.50E-02	0.039	1.8E-04	3.8E-02	0.0E+00	6.0E-01	6.4E-01	0.18	3.9E-05	8.3E-03	0.0E+00	1.3E-01	1.4E-01
Molybdenum	0.0312	5.40E+00	--	0	--	0	7.53E-04	6.98E-03	0.00E+00	0.00E+00	7.74E-03	3.5	2.2E-04	2.0E-03	0.0E+00	0.0E+00	2.2E-03	35.3	2.1E-05	2.0E-04	0.0E+00	0.0E+00	2.2E-04
Nickel	0.166	1.13E+02	1.39E-02	1.57E+00	3.65E-01	4.12E+01	4.00E-03	1.46E-01	1.54E-02	1.21E+00	1.38E+00	1.38	2.9E-03	1.1E-01	1.1E-02	8.8E-01	1.0E+00	56.3	7.1E-05	2.6E-03	2.7E-04	2.2E-02	2.4E-02
Selenium	0.029	1.27E+00	--	0	--	0	6.99E-04	1.64E-03	0.00E+00	0.00E+00	2.34E-03	0.23	3.0E-03	7.1E-03	0.0E+00	0.0E+00	1.0E-02	0.93	7.5E-04	1.8E-03	0.0E+00	0.0E+00	2.5E-03
Silver	0.0019	2.80E+00	--	0	--	0	4.58E-05	3.62E-03	0.00E+00	0.00E+00	3.67E-03	178.00	2.6E-07	2.0E-05	0.0E+00	0.0E+00	2.1E-05	NTV	NTV	NTV	NTV	NTV	NTV
Thallium		4.90E-01	--	0	--	0		6.34E-04	0.00E+00	0.00E+00	6.34E-04	0.35		1.8E-03	0.0E+00	0.0E+00	1.8E-03	NTV	NTV	NTV	NTV	NTV	NTV
Tin		1.42E+01	1.55E+00	2.21E+01	--	0		1.84E-02	2.16E-01	0.00E+00	2.35E-01	6.80		2.7E-03	3.2E-02	0.0E+00	3.4E-02	16.9		1.1E-03	1.3E-02	0.0E+00	1.4E-02
Vanadium	0.05	1.09E+02	2.20E-02	2.40E+00	2.96E-02	3.22E+00	1.21E-03	1.41E-01	2.35E-02	9.47E-02	2.60E-01	11.4	1.1E-04	1.2E-02	2.1E-03	8.3E-03	2.3E-02	114	1.1E-05	1.2E-03	2.1E-04	8.3E-04	2.3E-03
Zinc	0.042	2.20E+02	8.47E-02	1.86E+01	1.51E+00	3.33E+02	1.01E-03	2.84E-01	1.82E-01	9.78E+00	1.02E+01	17.2	5.9E-05	1.7E-02	1.1E-02	5.7E-01	6.0E-01	172	5.9E-06	1.7E-03	1.1E-03	5.7E-02	6.0E-02
Volatile Organics (mg/kg)																							
Acetone		3.20E-01	--	0	--	0		4.14E-04	0.00E+00	0.00E+00	4.14E-04	52		8.0E-06	0.0E+00	0.0E+00	8.0E-06	520		8.0E-07	0.0E+00	0.0E+00	8.0E-07
Benzene		5.00E-03	--	0	--	0		6.47E-06	0.00E+00	0.00E+00	6.47E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Carbon disulfide		2.50E-02	--	0	--	0		3.23E-05	0.00E+00	0.00E+00	3.23E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chlorobenzene		2.40E-02	--	0	--	0		3.10E-05	0.00E+00	0.00E+00	3.10E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
cis-1,2-Dichlorobenzene		5.00E-03	--	0	--	0		6.47E-06	0.00E+00	0.00E+00	6.47E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Ethylbenzene		4.40E-02	--	0	--	0		5.69E-05	0.00E+00	0.00E+00	5.69E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Isopropyltoluene		7.20E-03	--	0	--	0		9.31E-06	0.00E+00	0.00E+00	9.31E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Methylene chloride		3.00E-01	--	0	--	0		3.88E-04	0.00E+00	0.00E+00	3.88E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Naphthalene		1.60E-02	--	0	--	0		2.07E-05	0.00E+00	0.00E+00	2.07E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Toluene		3.00E-02	--	0	--	0		3.88E-05	0.00E+00	0.00E+00	3.88E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
trans-1,2-Dichloroethene		2.30E-02	--	0	--	0		2.97E-05	0.00E+00	0.00E+00	2.97E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Trichloroethene		7.00E-03	--	0	--	0		9.05E-06	0.00E+00	0.00E+00	9.05E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
1,2,4-Trimethylbenzene		2.50E-02	--	0	--	0		3.23E-05	0.00E+00	0.00E+00	3.23E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
1,3,5-Trimethylbenzene		9.30E-03	--	0	--	0		1.20E-05	0.00E+00	0.00E+00	1.20E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Vinyl chloride		3.40E-02	--	0	--	0		4.40E-05	0.00E+00	0.00E+00	4.40E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Xylenes		1.10E-01	--	0	--	0		1.42E-04	0.00E+00	0.00E+00	1.42E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pesticides (mg/kg)																							
alpha-Chlordane		8.20E-03	--	0	--	0		1.06E-05	0.00E+00	0.00E+00	1.06E-05	0.0014		7.6E-03	0.0E+00	0.0E+00	7.6E-03	0.014		7.6E-04	0.0E+00	0.0E+00	7.6E-04
beta-BHC		1.00E-03	--	0	--	0		1.29E-06	0.00E+00	0.00E+00	1.29E-06	0.56		2.3E-06	0.0E+00	0.0E+00	2.3E-06	2.25		5.7E-07	0.0E+00	0.0E+00	5.7E-07
delta-BHC		2.00E-03	--	0	--	0		2.59E-06	0.00E+00	0.00E+00	2.59E-06	0.56		4.6E-06	0.0E+00	0.0E+00	4.6E-06	2.25		1.1E-06	0.0E+00	0.0E+00	1.1E-06
2,4-DDD		2.90E-02	--	0	--	0		3.75E-05	0.00E+00	0.00E+00	3.75E-05	0.009		4.2E-03	0.0E+00	0.0E+00	4.2E-03	1.5		2.5E-05	0.0E+00	0.0E+00	2.5E-05
4,4-DDD		8.60E-02	--	0	--	0		1.11E-04	0.00E+00	0.00E+00	1.11E-04	0.009		1.2E-02	0.0E+00	0.0E+00	1.2E-02	1.5		7.4E-05	0.0E+00	0.0E+00	7.4E-05
DDE	0.0000027	1.70E-02	--	0	--	0	6.51E-08	2.20E-05	0.00E+00	0.00E+00	2.20E-05	NTV	NTV	NTV	NTV	NTV	NTV	0.6	1.1E-07	3.7E-05	0.0E+00	0.0E+00	3.7E-05
DDTs	0.00014	1.20E-02	--	0	--	0	3.38E-06	1.55E-05	0.00E+00	0.00E+00	1.89E-05	0.009	3.8E-04	1.7E-03	0.0E+00	0.0E+00	2.1E-03	1.5	2.3E-06	1.0E-05	0.0E+00	0.0E+00	1.3E-05
Dieldrin		3.90E-03	--	0	--	0		5.04E-06	0.00E+00	0.00E+00	5.04E-06	0.0709		7.1E-05	0.0E+00	0.0E+00	7.1E-05	0.98		5.1E-06	0.0E+00	0.0E+00	5.1E-06
Endosulfan I		4.00E-03	--	0	--	0		5.17E-06	0.00E+00	0.00E+00	5.17E-06	10		5.2E-07	0.0E+00	0.0E+00	5.2E-07	100		5.2E-08	0.0E+00	0.0E+00	5.2E-08
Endosulfan sulfate	0.00012	3.00E-03	--	0	--	0	2.89E-06	3.88E-06	0.00E+00	0.00E+00	6.77E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Endrin	0.000014	2.00E-02	--	0	--	0	3.38E-07	2.59E-05	0.00E+00	0.00E+00	2.62E-05	0.3	1.1E-06	8.6E-05	0.0E+00	0.0E+00	8.7E-05	3	1.1E-07	8.6E-06	0.0E+00	0.0E+00	8.7E-06
Endrin aldehyde		6.00E-03	--	0	--	0		7.76E-06	0.00E+00	0.00E+00	7.76E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Endrin Ketone		3.00E-03	--	0	--	0		3.88E-06	0.00E+00	0.00E+00	3.88E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
gamma-Chlordane		8.50E-03	--	0	--	0		1.10E-05	0.00E+00	0.00E+00	1.10E-05	0.0014		7.9E-03	0.0E+00	0.0E+00	7.9E-03	0.014		7.9E-04	0.0E+00	0.0E+00	7.9E-04
Heptachlor	0.0000028	2.00E-04	--	0	--	0	6.75E-08	2.59E-07	0.00E+00	0.00E+00	3.26E-07	0.065	1.0E-06	4.0E-06	0.0E+00	0.0E+00	5.0E-06	0.65	1.0E-07	4.0E-07	0.0E+00	0.0E+00	5.0E-07
Heptachlor epoxide		3.00E-04	--	0	--	0		3.88E-07	0.00E+00	0.00E+00	3.88E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Hexachlorobenzene		8.00E-04	--	0	--	0		1.03E-06	0.00E+00	0.00E+00	1.03E-06	0.23		4.5E-06	0.0E+00	0.0E+00	4.5E-06	2.3		4.5E-07	0.0E+00	0.0E+00	4.5E-07
Methoxychlor		2.00E-02	--	0	--	0		2.59E-05	0.00E+00	0.00E+00	2.59E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Mirex		4.00E-03	--	0	--	0		5.17E-06	0.00E+00	0.00E+00	5.17E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
trans-Nonachlor		2.40E-03	--	0	--	0		3.10E-06	0.00E+00	0.00E+00	3.10E-06	0.0014		2.2E-03	0.0E+00	0.0E+00	2.2E-03	0.014		2.2E-04	0.0E+00	0.0E+00	2.2E-04
SVOCs (mg/kg)																							
Acenaphthene		1.40E-01	--	0	--	0		1.81E-04	0.00E+00	0.00E+00	1.81E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Acenaphthylene		1.20E-01	--	0	--	0		1.55E-04	0.00E+00	0.00E+00	1.55E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Anthracene		1.30E-01	1.89E+00	2.45E-01	--	0		1.68E-04	2.40E-03	0.00E+00	2.57E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(a)anthracene		2.90E-01	--	0	--	0		3.75E-04	0.00E+00	0.00E+00	3.75E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(a)pyrene		2.56E-01	--	0	--	0		3.31E-04	0.00E+00	0.00E+00	3.31E-04	0.001		3.3E-01	0.0E+00	0.0E+00	3.3E-01	0.01		3.3E-02	0.0E+00	0.0E+00	3.3E-02
Benzo(b)fluoranthene		2.56E-01	--	0	--	0		3.31E-04	0.00E+00	0.00E+00	3.31E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(ghi)perylene		1.68E-01	--	0	--	0		2.17E-04	0.00E+00	0.00E+00	2.17E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(k)fluoranthene		2.45E-01	--	0	--	0		3.17E-04	0.00E+00	0.00E+00	3.17E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzoic acid		6.80E-01	--	0	--	0		8.79E-04	0.00E+00	0.00E+00	8.79E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Bis(2-ethylhexyl)phthalate	0.027	1.10E+00	--	0	--	0	6.51E-04	1.42E-03	0.00E+00	0.00E+00	2.07E-03	1.1	5.9E-04	1.3E-03	0.0E+00	0.0E+00	1.9E-03	11	5.9E-05	1.3E-04	0.0E+00	0.0E+00	1.9E-04
Butylbenzylphthalate		2.50E-02	--	0	--	0		3.23E-05	0.00E+00	0.00E+00	3.23E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Carbazole		5.50E-01	--	0	--	0		7.11E-04	0.00E+00	0.00E+00	7.11E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Chloroaniline		3.00E-03	--	0	--	0		3.88E-06	0.00E+00	0.00E+00	3.88E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2-Chloropropane		4.33E-02	--	0	--	0		5.60E-05	0.00E+00	0.00E+00	5.60E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chrysene	0.0002	2.80E-01	--	0	--	0	4.82E-06	3.62E-04	0.00E+00	0.00E+00	3.67E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Dibenzofuran		3.60E-01	--	0	--	0		4.66E-04	0.00E+00	0.00E+00	4.66E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
3,3-Dichlorobenzidine		1.20E-02	--	0	--	0		1.55E-05	0.00E+00	0.00E+00	1.55E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2,6-Dinitrotoluene		3.70E-01	--	0	--	0		4.78E-04	0.00E+00	0.00E+00	4.78E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Fluoranthene		4.06E-01	1.17E+00	4.76E-01	--	0		5.25E-04	4.67E-03	0.00E+00	5.19E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV

Table C2-8m
Post-Remediation Mallard (Breeding) Risk Calculations (Wetland Sediment Residual Concentration)
Deep Soil (0 - 10 ft bgs) at Hazard Quotient of 1
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Point Concentration						Intake (mg/kg BW-day)						Hazard Quotient (HQ) - Low						Hazard Quotient (HQ) - High					
COPEC[a]	Surface Water (mg/L)[b]	Sediments[c]	Plant BAF[d]	Plant Tissue[d]	Invertebrate BAF[d]	Invertebrate Tissue[d]	Surface Water	Sediment	Plant	Invertebrate	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Plant	Invertebrate	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Sediment	Plant	Invertebrate	Total Intake
Fluorene		1.40E-01	--	0	--	0		1.81E-04	0.00E+00	0.00E+00	1.81E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Indeno(123,cd)pyrene		1.70E-01	--	0	--	0		2.20E-04	0.00E+00	0.00E+00	2.20E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2-Methylnaphthalene		1.80E-01	--	0	--	0		2.33E-04	0.00E+00	0.00E+00	2.33E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Methylphenol	0.12	2.30E-01	--	0	--	0	2.89E-03	2.97E-04	0.00E+00	0.00E+00	3.19E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Naphthalene		1.10E-01	--	0	--	0		1.42E-04	0.00E+00	0.00E+00	1.42E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pentachlorophenol		5.40E-01	--	0	--	0		6.98E-04	0.00E+00	0.00E+00	6.98E-04	6.7		1.0E-04	0.0E+00	0.0E+00	1.0E-04	22.5		3.1E-05	0.0E+00	0.0E+00	3.1E-05
Phenanthrene		2.10E-01	1.64E+00	3.44E-01	2.51E+00	5.27E-01		2.72E-04	3.37E-03	1.55E-02	1.91E-02	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Phenol		2.90E-01	--	0	--	0		3.75E-04	0.00E+00	0.00E+00	3.75E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pyrene		4.60E-01	--	0	--	0		5.95E-04	0.00E+00	0.00E+00	5.95E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
PCBs (mg/kg)																							
PCBs (TOTAL)-congeners	0.000016	1.29E-01	1.09E-01	1.41E-02	1.16E+01	1.50E+00	3.86E-07	1.67E-04	1.38E-04	4.40E-02	4.43E-02	0.09	4.3E-06	1.9E-03	1.5E-03	4.9E-01	4.9E-01	1.27	3.0E-07	1.3E-04	1.1E-04	3.5E-02	3.5E-02

>1 = The calculated hazard quotient exceeds 1 (i.e., > 1.5)

Exposure Assumptions and Equation:[e]

		Value	Units
Ingestion Rate (IR) prey(dry wt.)	=	0.0917	kg/day (dry weight)
IRplant(dry wt.)[f]	=	0.0229	kg/day (dry weight)
IRinvertebrate(dry wt.)[f]	=	0.0688	kg/day (dry weight)
IRsediment (dry wt.)[g]	=	0.00303	kg-day (dry weight)
Cprey	=	chem-specific	mg/kg or µg/kg
Csediment	=	chem-specific	mg/kg or µg/kg
Tissue Moisture (TMplant)	=	8.5%	percent
IRsurface water[h]	=	0.056	L/day
Csurface water	=	chem-specific	mg/L or µg/L
Dietary Composition Factor (DCF)[i]	=	100%	percent
Site Use Factor (SUF)[j]	=	40%	percent
Body Weight	=	0.9361	kg

Intake Equation= [IRplant (dry wt) x [Cprey(plant, dry wt)/1-TM) x DCF x SUF]/BW] + [IRinvertebrate (dry wt) x Cprey(invertebrate, dry wt) x DCF x SUF)/BW] + [(IRsediment x Csediment x DCF x SUF))/BW +[(IRsurface water x Csurface water x DCF x SUF))/

Risk (hazard quotient) = Intake / TRV

Prey tissue(dry wt) = Prey tissue (wet wt.) / (1-Tissue Moisture)

NTV = Not toxicity data available.

Blank cell indicates COPEC was not detected in this medium.

Notes:

a All chemicals detected in sediments are considered as constituents of potential ecological concern.

b All concentrations of constituents in surface water are based on the maximum concentration.

c All concentrations of constituents in sediment are based on the residual concentrations expressed in dry weight.

d Site-specific BAFs (dry weight basis). Calculated plant and invertebrate tissue concentrations (sediment concentration x BAF). Tissue concentrations are on a dry weight basis.

e Exposure parameters used to calculate risk are discussed in detail in Section 4.2 of ERA.

f Based on dietary composition of 25% plant and 75% invertebrate.

g Ingestion rate of sediment based on 3.3 percent of of the prey ingestion rate (dry weight); based on mallards (Beyer et al. 1994).

h Based on equation for birds: Water intake (L/day) = $0.059Wt(kg)^{.67}$ (EPA 1993)

i Dietary composition factor was based on a conservative assumption of 100% dietary intake of plants and invertebrates from the site.

j Site use factor was based on 40% use of the site for the mallard's foraging range.

Table C2-8n
Post-Remediation Great Blue Heron Risk Calculations (Wetland Sediment Residual Concentration)
Deep Soil (0 - 10 ft bgs) at Hazard Quotient of 1
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Point Concentration						Intake (mg/kg BW-day)						Hazard Quotient (HQ) - Low						Hazard Quotient (HQ) - High				
COPEC[a]	Surface Water (mg/L)[b]	Sediments[c]	Small Mammal BAF[d]	Small Mammal Tissue[d]	Amphibian BAF[d]	Amphibian Tissue[d]	Surface Water	Sediment	Small mammal	Amphibian	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Small mammal	Amphibian	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Sediment	Small mammal	Amphibian	Total Intake
Metals (mg/kg)																							
Aluminum	12.6	2.69E+04	1.11E-02	297	7.75E-03	208	5.65E-01	4.87E+01	8.15E+00	5.72E+00	6.31E+01	109.7	5.2E-03	4.4E-01	7.4E-02	5.2E-02	5.8E-01	1,097	5.2E-04	4.4E-02	7.4E-03	5.2E-03	5.8E-02
Antimony	0.003	4.50E+00	1.22E+00	5	--	0	1.35E-04	8.15E-03	1.50E-01	0	1.59E-01	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Arsenic	0.0436	2.12E+01	--	0	--	0	1.96E-03	3.84E-02	0	0	4.04E-02	5.5	3.6E-04	7.0E-03	0.0E+00	0.0E+00	7.3E-03	22	8.9E-05	1.7E-03	0.0E+00	0.0E+00	1.8E-03
Barium	0.24	9.36E+01	9.41E-02	9	--	0	1.06E-02	1.70E-01	2.42E-01	0	4.22E-01	20.8	5.1E-04	8.2E-03	1.2E-02	0.0E+00	2.0E-02	41.7	2.5E-04	4.1E-03	5.8E-03	0.0E+00	1.0E-02
Beryllium		6.60E-01	--	0	--	0		1.20E-03	0.00E+00	0	1.20E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Cadmium	0.0016	2.94E+00	--	0	--	0	7.18E-05	5.33E-03	0.00E+00	0	5.40E-03	0.08	9.0E-04	6.7E-02	0.0E+00	0.0E+00	6.7E-02	10.40	6.9E-06	5.1E-04	0.0E+00	0.0E+00	5.2E-04
Chromium +3	0.0263	2.25E+02	2.60E-02	6	2.45E-01	55	1.18E-03	4.08E-01	1.61E-01	1.51E+00	2.08E+00	2.66	4.4E-04	1.5E-01	6.0E-02	5.7E-01	7.8E-01	2.78	4.2E-04	1.5E-01	5.8E-02	5.4E-01	7.5E-01
Chromium +6	0.0263	7.00E-02	2.60E-02	0	2.45E-01	0	1.18E-03	1.27E-04	5.00E-05	4.71E-04	1.83E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Cobalt	0.0164	1.85E+01	--	0	--	0	7.36E-04	3.35E-02	0	0	3.43E-02	7.61	9.7E-05	4.4E-03	0.0E+00	0.0E+00	4.5E-03	17	4.3E-05	2.0E-03	0.0E+00	0.0E+00	2.0E-03
Copper	0.233	1.93E+02	3.45E-01	67	--	0	1.05E-02	3.50E-01	1.83E+00	0	2.19E+00	2.3	4.5E-03	1.5E-01	8.0E-01	0.0E+00	9.5E-01	52.3	2.0E-04	6.7E-03	3.5E-02	0.0E+00	4.2E-02
Lead	0.0031	8.51E+01	6.10E-01	52	--	0	1.39E-04	1.54E-01	1.43E+00	0	1.58E+00	0.014	9.9E-03	1.1E+01	1.0E+02	0.0E+00	1.1E+02	>1	8.75	1.6E-05	1.8E-02	1.6E-01	0.0E+00	1.8E-01
Manganese	7.42	9.01E+02	--	0	4.78E-02	43	3.33E-01	1.63E+00	0	1.18E+00	3.15E+00	77.6	4.3E-03	2.1E-02	0.0E+00	1.5E-02	4.1E-02	776	4.3E-04	2.1E-03	0.0E+00	1.5E-03	4.1E-03
Mercury	0.00029	1.15E+00	--	0	7.42E-01	1	1.30E-05	2.08E-03	0	2.34E-02	2.55E-02	0.039	3.3E-04	5.3E-02	0.0E+00	6.0E-01	6.5E-01	0.18	7.2E-05	1.2E-02	0.0E+00	1.3E-01	1.4E-01
Molybdenum	0.0312	5.40E+00	--	0	--	0	1.40E-03	9.78E-03	0	0	1.12E-02	3.5	4.0E-04	2.8E-03	0.0E+00	0.0E+00	3.2E-03	35.3	4.0E-05	2.8E-04	0.0E+00	0.0E+00	3.2E-04
Nickel	0.166	1.13E+02	--	0	--	0	7.45E-03	2.05E-01	0	0	2.12E-01	1.38	5.4E-03	1.5E-01	0.0E+00	0.0E+00	1.5E-01	56.3	1.3E-04	3.6E-03	0.0E+00	0.0E+00	3.8E-03
Selenium	0.029	1.27E+00	6.12E+00	8	5.77E+00	7	1.30E-03	2.30E-03	2.13E-01	2.01E-01	4.18E-01	0.23	5.7E-03	1.0E-02	9.3E-01	8.7E-01	1.8E+00	>1	0.93	1.4E-03	2.5E-03	2.3E-01	2.2E-01	4.5E-01
Silver	0.0019	2.80E+00	--	0	--	0	8.52E-05	5.07E-03	0	0	5.16E-03	178.00	4.8E-07	2.8E-05	0.0E+00	0.0E+00	2.9E-05	NTV	NTV	NTV	NTV	NTV	NTV
Thallium		4.90E-01	1.01E+00	0	--	0		8.88E-04	1.36E-02	0	1.44E-02	0.35		2.5E-03	3.9E-02	0.0E+00	4.1E-02	NTV	NTV	NTV	NTV	NTV	NTV
Tin		1.42E+01	--	0	--	0		2.57E-02	0	0	2.57E-02	6.80		3.8E-03	0.0E+00	0.0E+00	3.8E-03	16.9		1.5E-03	0.0E+00	0.0E+00	1.5E-03
Vanadium	0.05	1.09E+02	--	0	--	0	2.24E-03	1.97E-01	0	0	2.00E-01	11.4	2.0E-04	1.7E-02	0.0E+00	0.0E+00	1.8E-02	114	2.0E-05	1.7E-03	0.0E+00	0.0E+00	1.8E-03
Zinc	0.042	2.20E+02	1.11E+00	244	7.87E-01	173	1.88E-03	3.99E-01	6.69E+00	4.75E+00	1.18E+01	17.2	1.1E-04	2.3E-02	3.9E-01	2.8E-01	6.9E-01	172	1.1E-05	2.3E-03	3.9E-02	2.8E-02	6.9E-02
Volatile Organics (mg/kg)																							
Acetone		3.20E-01	--	0	--	0		5.80E-04	0	0	5.80E-04	52		1.1E-05	0.0E+00	0.0E+00	1.1E-05	520		1.1E-06	0.0E+00	0.0E+00	1.1E-06
Benzene		5.00E-03	--	0	--	0		9.06E-06	0	0	9.06E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Carbon disulfide		2.50E-02	--	0	--	0		4.53E-05	0	0	4.53E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chlorobenzene		2.40E-02	--	0	--	0		4.35E-05	0	0	4.35E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
cis-1,2-Dichlorobenzene		5.00E-03	--	0	--	0		9.06E-06	0	0	9.06E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Ethylbenzene		4.40E-02	--	0	--	0		7.97E-05	0	0	7.97E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Isopropyltoluene		7.20E-03	--	0	--	0		1.30E-05	0	0	1.30E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Methylene chloride		3.00E-01	--	0	--	0		5.44E-04	0	0	5.44E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Naphthalene		1.60E-02	--	0	--	0		2.90E-05	0	0	2.90E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Toluene		3.00E-02	--	0	--	0		5.44E-05	0	0	5.44E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
trans-1,2-Dichloroethene		2.30E-02	--	0	--	0		4.17E-05	0	0	4.17E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Trichloroethene		7.00E-03	--	0	--	0		1.27E-05	0	0	1.27E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
1,2,4-Trimethylbenzene		2.50E-02	--	0	--	0		4.53E-05	0	0	4.53E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
1,3,5-Trimethylbenzene		9.30E-03	--	0	--	0		1.68E-05	0	0	1.68E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Vinyl chloride		3.40E-02	--	0	--	0		6.16E-05	0	0	6.16E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Xylenes		1.10E-01	--	0	--	0		1.99E-04	0	0	1.99E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pesticides (mg/kg)																							
alpha-Chlordane		8.20E-03	--	0	--	0		1.49E-05	0	0	1.49E-05	0.0014		1.1E-02	0.0E+00	0.0E+00	1.1E-02	0.014		1.1E-03	0.0E+00	0.0E+00	1.1E-03
beta-BHC		1.00E-03	--	0	--	0		1.81E-06	0	0	1.81E-06	0.56		3.2E-06	0.0E+00	0.0E+00	3.2E-06	2.25		8.1E-07	0.0E+00	0.0E+00	8.1E-07
delta-BHC		2.00E-03	--	0	--	0		3.62E-06	0	0	3.62E-06	0.56		6.5E-06	0.0E+00	0.0E+00	6.5E-06	2.25		1.6E-06	0.0E+00	0.0E+00	1.6E-06
2,4-DDD		2.90E-02	1.04E+00	0	--	0		5.25E-05	8.31E-04	0	8.84E-04	0.009		5.8E-03	9.2E-02	0.0E+00	9.8E-02	1.5		3.5E-05	5.5E-04	0.0E+00	5.9E-04
4,4-DDD		8.60E-02	1.04E+00	0	--	0		1.56E-04	2.46E-03	0	2.62E-03	0.009		1.7E-02	2.7E-01	0.0E+00	2.9E-01	1.5		1.0E-04	1.6E-03	0.0E+00	1.7E-03
DDE	0.0000027	1.70E-02	1.04E+00	0	--	0	1.21E-07	3.08E-05	4.87E-04	0	5.18E-04	NTV	NTV	NTV	NTV	NTV	NTV	0.6	2.0E-07	5.1E-05	8.1E-04	0.0E+00	8.6E-04
DDTs	0.00014	1.20E-02	1.04E+00	0	--	0	6.28E-06	2.17E-05	3.44E-04	0	3.72E-04	0.009	7.0E-04	2.4E-03	3.8E-02	0.0E+00	4.1E-02	1.5	4.2E-06	1.4E-05	2.3E-04	0.0E+00	2.5E-04
Dieldrin		3.90E-03	--	0	--	0		7.07E-06	0	0	7.07E-06	0.0709		1.0E-04	0.0E+00	0.0E+00	1.0E-04	0.98		7.2E-06	0.0E+00	0.0E+00	7.2E-06
Endosulfan I		4.00E-03	--	0	--	0		7.25E-06	0	0	7.25E-06	10		7.2E-07	0.0E+00	0.0E+00	7.2E-07	100		7.2E-08	0.0E+00	0.0E+00	7.2E-08
Endosulfan sulfate	0.00012	3.00E-03	--	0	--	0	5.38E-06	5.44E-06	0	0	1.08E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Endrin	0.000014	2.00E-02	--	0	--	0	6.28E-07	3.62E-05	0	0	3.69E-05	0.3	2.1E-06	1.2E-04	0.0E+00	0.0E+00	1.2E-04	3	2.1E-07	1.2E-05	0.0E+00	0.0E+00	1.2E-05
Endrin aldehyde		6.00E-03	--	0	--	0		1.09E-05	0	0	1.09E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Endrin Ketone		3.00E-03	--	0	--	0		5.44E-06	0	0	5.44E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
gamma-Chlordane		8.50E-03	--	0	--	0		1.54E-05	0	0	1.54E-05	0.0014		1.1E-02	0.0E+00	0.0E+00	1.1E-02	0.014		1.1E-03	0.0E+00	0.0E+00	1.1E-03
Heptachlor	0.0000028	2.00E-04	--	0	--	0	1.26E-07	3.62E-07	0	0	4.88E-07	0.065	1.9E-06	5.6E-06	0.0E+00	0.0E+00	7.5E-06	0.65	1.9E-07	5.6E-07	0.0E+00	0.0E+00	7.5E-07
Heptachlor epoxide		3.00E-04	--	0	--	0		5.44E-07	0	0	5.44E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Hexachlorobenzene		8.00E-04	--	0	--	0		1.45E-06	0	0	1.45E-06	0.23		6.3E-06	0.0E+00	0.0E+00	6.3E-06	2.3		6.3E-07	0.0E+00	0.0E+00	6.3E-07
Methoxychlor		2.00E-02	--	0	--	0		3.62E-05	0	0	3.62E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Mirex		4.00E-03	--	0	--	0		7.25E-06	0	0	7.25E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
trans-Nonachlor		2.40E-03	--	0	--	0		4.35E-06	0	0	4.35E-06	0.0014		3.1E-03	0.0E+00	0.0E+00	3.1E-03	0.014		3.1E-04	0.0E+00	0.0E+00	3.1E-04
SVOCs (mg/kg)																							
Acenaphthene		1.40E-01	--	0	--	0		2.54E-04	0	0	2.54E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Acenaphthylene		1.20E-01	--	0	--	0		2.17E-04	0	0	2.17E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Anthracene		1.30E-01	--	0	--	0		2.36E-04	0	0	2.36E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(a)anthracene		2.90E-01	--	0	--	0		5.25E-04	0	0	5.25E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(a)pyrene		2.56E-01	--	0	--	0		4.64E-04	0	0	4.64E-04	0.001		4.6E-01	0.0E+00	0.0E+00	4.6E-01	0.01		4.6E-02	0.0E+00	0.0E+00	4.6E-02
Benzo(b)fluoranthene		2.56E-01	--	0	--	0		4.64E-04	0	0	4.64E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(ghi)perylene		1.68E-01	--	0	--	0		3.04E-04	0	0	3.04E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(k)fluoranthene		2.45E-01	--	0	--	0		4.44E-04	0	0	4.44E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzoic acid		6.80E-01	--	0	--	0		1.23E-03	0	0	1.23E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Bis(2-ethylhexyl)phthalate	0.027	1.10E+00	--	0	--	0	1.21E-03	1.99E-03	0	0	3.20E-03	1.1	1.1E-03	1.8E-03	0.0E+00	0.0E+00	2.9E-03	11	1.1E-04	1.8E-04	0.0E+00	0.0E+00	2.9E-04
Butylbenzylphthalate		2.50E-02	--	0	--	0		4.53E-05	0	0	4.53E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Carbazole		5.50E-01	--	0	--	0		9.96E-04	0	0	9.96E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Chloroaniline		3.00E-03	--	0	--	0		5.44E-06	0	0	5.44E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2-Chloropropane		4.33E-02	--	0	--	0		7.84E-05	0	0	7.84E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chrysene	0.0002	2.80E-01	--	0	--	0	8.97E-06	5.07E-04	0	0	5.16E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Dibenzofuran		3.60E-01	--	0	--	0		6.52E-04	0	0	6.52E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
3,3-Dichlorobenzidine		1.20E-02	--	0	--	0		2.17E-05	0	0	2.17E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2,6-Dinitrotoluene		3.70E-01	--	0	--	0		6.70E-04	0	0	6.70E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Fluoranthene		4.06E-01	--	0	--	0		7.36E-04	0	0	7.36E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV

Table C2-8n
Post-Remediation Great Blue Heron Risk Calculations (Wetland Sediment Residual Concentration)
Deep Soil (0 - 10 ft bgs) at Hazard Quotient of 1
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Point Concentration						Intake (mg/kg BW-day)						Hazard Quotient (HQ) - Low						Hazard Quotient (HQ) - High				
COPEC[a]	Surface Water (mg/L)[b]	Sediments[c]	Small Mammal BAF[d]	Small Mammal Tissue[d]	Amphibian BAF[d]	Amphibian Tissue[d]	Surface Water	Sediment	Small mammal	Amphibian	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Small mammal	Amphibian	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Sediment	Small mammal	Amphibian	Total Intake
Fluorene		1.40E-01	--	0	--	0		2.54E-04	0	0	2.54E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Indeno(123,cd)pyrene		1.70E-01	--	0	--	0		3.08E-04	0	0	3.08E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2-Methylnaphthalene		1.80E-01	--	0	--	0		3.26E-04	0	0	3.26E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Methylphenol	0.12	2.30E-01	--	0	--	0	5.38E-03	4.17E-04	0	0	5.80E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Naphthalene		1.10E-01	--	0	--	0		1.99E-04	0	0	1.99E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pentachlorophenol		5.40E-01	--	0	--	0		9.78E-04	0	0	9.78E-04	6.7		1.5E-04	0.0E+00	0.0E+00	1.5E-04	22.5		4.3E-05	0.0E+00	0.0E+00	4.3E-05
Phenanthrene		2.10E-01	--	0	--	0		3.80E-04	0	0	3.80E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Phenol		2.90E-01	--	0	--	0		5.25E-04	0	0	5.25E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pyrene		4.60E-01	--	0	--	0		8.33E-04	0	0	8.33E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
PCBs (mg/kg)																							
PCBs (TOTAL)-congeners	0.000016	1.29E-01	1.81E+01	2	1.03E+01	1	7.18E-07	2.34E-04	6.40E-02	2.83E-01	3.47E-01	0.09	8.0E-06	2.6E-03	7.1E-01	3.1E+00	3.9E+00 >1	1.27	5.7E-07	1.8E-04	5.0E-02	2.2E-01	2.7E-01
>1 = The calculated hazard quotient exceeds 1 (i.e., > 1.5)																							

Exposure Assumptions and Equation:[e]

	Value	Units
Ingestion Rate (IR) prey(dry wt.) =	0.126	kg/day (dry weight)
IRsmall mammal(dry wt.)[f] =	0.063	kg/day (dry weight)
IRamphibian (dry wt.)[f] =	0.063	kg/day (dry weight)
IRsediment (dry wt.)[g] =	0.00416	kg-day (dry weight)
Cprey =	chem-specific	mg/kg or µg/kg
Csediment =	chem-specific	mg/kg or µg/kg
Tissue Moisture (TMsmall mammal) =	68%	percent
Tissue Moisture (TMamphibian) =	85%	percent
IRsurface water[h] =	0.103	L/day
Csurface water =	chem-specific	mg/L or µg/L
Dietary Composition Factor (DCF)[i] =	100%	percent
Site Use Factor (SUF)[j] =	100%	percent
Body Weight (BW) =	2.295	kg

Intake Equation= [Irsmall mammal (dry wt) x (Cprey(small mammal, dry wt)/1-TM) x DCF x SUF]/BW] + [IRamphibian (dry wt) x Cprey(amphibians, dry wt) x DCF x SUF]/BW] + [(IRsediment x Csediment x DCF x SUF))/BW + [(IRsurface water x Csurface water x DCF x

Risk (hazard quotient) = Intake / TRV

Prey tissue(dry wt) = Prey tissue (wet wt.) / (1-Tissue Moisture)

NTV = Not toxicity data available.

Blank cell indicates COPEC was not detected in this medium.

Notes:

a All chemicals detected in sediments are considered as constituents of potential ecological concern.

b All concentrations of constituents in surface water are based on the maximum concentration.

c All concentrations of constituents in sediment are based on the residual concentrations expressed in dry weight.

d Site-specific BAFs (dry weight basis). Calculated small mammal tissue and amphibian concentrations (sediment concentration x BAF). Tissue concentrations are on a dry weight basis.

e Exposure parameters used to calculate risk are discussed in detail in Section 4.2 of ERA.

f Based on dietary composition of 50% small mammal and 50% amphibians.

g Ingestion rate of sediment based on 3.3 percent of of the prey ingestion rate (dry weight); based on mallards (Beyer et al. 1994).

h Based on equation for birds: Water intake (L/day) = $0.059Wt(kg)^{0.67}$ (EPA 1993)

i Dietary composition factor was based on a conservative assumption of 100% dietary intake of small mammals and amphibians from the site.

j Site use factor was based on a conservative 100% use of the site for the heron's foraging range.

Table C2-8o
Post-Remediation Kildeer Risk Calculations (Wetland Sediment Residual Concentration)
Deep Soil (0 - 10 ft bgs) at Hazard Quotient of 1
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Concentrations				Intake (mg/kg BW-day)					Hazard Quotient (HQ) - Low					Hazard Quotient (HQ) - High			
COPEC[a]	Surface Water (mg/L)[b]	Sediments[c]	Invertebrate BAF[d]	Invertebrate Tissue[d]	Surface Water	Soils	Invertebrate	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Soils	Invertebrate	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Soils	Invertebrate	Total Intake
Metals (mg/kg)																		
Aluminum	12.6	2.69E+04	1.93E-01	5.18E+03	1.78E+00	1.03E+03	1.11E+03	2.14E+03	109.7	1.6E-02	9.4E+00	1.0E+01	2.0E+01 >1	1,097	1.6E-03	9.4E-01	1.0E+00	2.0E+00 >1
Antimony	0.003	4.50E+00	2.32E-01	1.04E+00	4.24E-04	1.73E-01	2.23E-01	3.96E-01	NTV	NTV	NTV	NTV	NTV >1	NTV	NTV	NTV	NTV	NTV
Arsenic	0.0436	2.12E+01	1.92E-01	4.07E+00	6.15E-03	8.16E-01	8.69E-01	1.69E+00	5.5	1.1E-03	1.5E-01	1.6E-01	3.1E-01	22	2.8E-04	3.7E-02	4.0E-02	7.7E-02
Barium	0.24	9.36E+01	1.50E+00	1.40E+02	3.33E-02	3.60E+00	3.00E+01	3.36E+01	20.8	1.6E-03	1.7E-01	1.4E+00	1.6E+00 >1	41.7	8.0E-04	8.6E-02	7.2E-01	8.1E-01
Beryllium		6.60E-01	--	0		2.54E-02	0.00E+00	2.54E-02	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Cadmium	0.0016	2.94E+00	2.15E-01	6.32E-01	2.26E-04	1.13E-01	1.35E-01	2.49E-01	0.08	2.8E-03	1.4E+00	1.7E+00	3.1E+00 >1	10.40	2.2E-05	1.1E-02	1.3E-02	2.4E-02
Chromium +3	0.0263	2.25E+02	5.53E-01	1.25E+02	3.71E-03	8.66E+00	2.66E+01	3.53E+01	2.66	1.4E-03	3.3E+00	1.0E+01	1.3E+01 >1	2.78	1.3E-03	3.1E+00	9.6E+00	1.3E+01 >1
Chromium +6	0.0263	7.00E-02	5.53E-01	0	3.71E-03	2.69E-03	8.28E-03	1.47E-02	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Cobalt	0.0164	1.85E+01	--	0	2.32E-03	7.12E-01	0.00E+00	7.14E-01	7.61	3.0E-04	9.4E-02	0.0E+00	9.4E-02	17	1.4E-04	4.2E-02	0.0E+00	4.2E-02
Copper	0.233	1.93E+02	6.67E-01	1.29E+02	3.29E-02	7.43E+00	2.75E+01	3.50E+01	2.3	1.4E-02	3.2E+00	1.2E+01	1.5E+01 >1	52.3	6.3E-04	1.4E-01	5.3E-01	6.7E-01
Lead	0.0031	8.51E+01	5.07E-02	4.32E+00	4.38E-04	3.27E+00	9.23E-01	4.20E+00	0.014	3.1E-02	2.3E+02	6.6E+01	3.0E+02 >1	8.75	5.0E-05	3.7E-01	1.1E-01	4.8E-01
Manganese	7.42	9.01E+02	5.29E+00	4.77E+03	1.05E+00	3.47E+01	1.02E+03	1.06E+03	77.6	1.3E-02	4.5E-01	1.3E+01	1.4E+01 >1	776	1.3E-03	4.5E-02	1.3E+00	1.4E+00
Mercury	0.00029	1.15E+00	6.96E-01	8.01E-01	4.09E-05	4.43E-02	1.71E-01	2.15E-01	0.039	1.0E-03	1.1E+00	4.4E+00	5.5E+00 >1	0.18	2.3E-04	2.5E-01	9.5E-01	1.2E+00
Molybdenum	0.0312	5.40E+00	--	0	4.40E-03	2.08E-01	0.00E+00	2.12E-01	3.5	1.3E-03	5.9E-02	0.0E+00	6.1E-02	35.3	1.2E-04	5.9E-03	0.0E+00	6.0E-03
Nickel	0.166	1.13E+02	3.65E-01	4.12E+01	2.34E-02	4.35E+00	8.81E+00	1.32E+01	1.38	1.7E-02	3.2E+00	6.4E+00	9.6E+00 >1	56.3	4.2E-04	7.7E-02	1.6E-01	2.3E-01
Selenium	0.029	1.27E+00	--	0	4.09E-03	4.89E-02	0.00E+00	5.30E-02	0.23	1.8E-02	2.1E-01	0.0E+00	2.3E-01	0.93	4.4E-03	5.3E-02	0.0E+00	5.7E-02
Silver	0.0019	2.80E+00	--	0	2.68E-04	1.08E-01	0.00E+00	1.08E-01	178.00	1.5E-06	6.1E-04	0.0E+00	6.1E-04	NTV	NTV	NTV	NTV	NTV
Thallium		4.90E-01	--	0		1.89E-02	0.00E+00	1.89E-02	0.35		5.4E-02	0.0E+00	5.4E-02	NTV	NTV	NTV	NTV	NTV
Tin		1.42E+01	--	0		5.46E-01	0.00E+00	5.46E-01	6.80		8.0E-02	0.0E+00	8.0E-02	16.9		3.2E-02	0.0E+00	3.2E-02
Vanadium	0.05	1.09E+02	2.96E-02	3.22E+00	7.06E-03	4.19E+00	6.89E-01	4.89E+00	11.4	6.2E-04	3.7E-01	6.0E-02	4.3E-01	114	6.2E-05	3.7E-02	6.0E-03	4.3E-02
Zinc	0.042	2.20E+02	1.51E+00	3.33E+02	5.93E-03	8.47E+00	7.11E+01	7.96E+01	17.2	3.4E-04	4.9E-01	4.1E+00	4.6E+00 >1	172	3.4E-05	4.9E-02	4.1E-01	4.6E-01
Volatile Organics (mg/kg)																		
Acetone		3.20E-01	--	0		1.23E-02	0.00E+00	1.23E-02	52		2.4E-04	0.0E+00	2.4E-04	520		2.4E-05	0.0E+00	2.4E-05
Benzene		5.00E-03	--	0		1.92E-04	0.00E+00	1.92E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Carbon disulfide		2.50E-02	--	0		9.62E-04	0.00E+00	9.62E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chlorobenzene		2.40E-02	--	0		9.24E-04	0.00E+00	9.24E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
cis-1,2-Dichlorobenzene		5.00E-03	--	0		1.92E-04	0.00E+00	1.92E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Ethylbenzene		4.40E-02	--	0		1.69E-03	0.00E+00	1.69E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Isopropyltoluene		7.20E-03	--	0		2.77E-04	0.00E+00	2.77E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Methylene chloride		3.00E-01	--	0		1.15E-02	0.00E+00	1.15E-02	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Naphthalene		1.60E-02	--	0		6.16E-04	0.00E+00	6.16E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Toluene		3.00E-02	--	0		1.15E-03	0.00E+00	1.15E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
trans-1,2-Dichloroethene		2.30E-02	--	0		8.85E-04	0.00E+00	8.85E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Trichloroethene		7.00E-03	--	0		2.69E-04	0.00E+00	2.69E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
1,2,4-Trimethylbenzene		2.50E-02	--	0		9.62E-04	0.00E+00	9.62E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
1,3,5-Trimethylbenzene		9.30E-03	--	0		3.58E-04	0.00E+00	3.58E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Vinyl chloride		3.40E-02	--	0		1.31E-03	0.00E+00	1.31E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Xylenes		1.10E-01	--	0		4.23E-03	0.00E+00	4.23E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pesticides (mg/kg)																		
alpha-Chlordane		8.20E-03	--	0		3.16E-04	0.00E+00	3.16E-04	0.0014		2.3E-01	0.0E+00	2.3E-01	0.014		2.3E-02	0.0E+00	2.3E-02
beta-BHC		1.00E-03	--	0		3.85E-05	0.00E+00	3.85E-05	0.56		6.9E-05	0.0E+00	6.9E-05	2.25		1.7E-05	0.0E+00	1.7E-05
delta-BHC		2.00E-03	--	0		7.70E-05	0.00E+00	7.70E-05	0.56		1.4E-04	0.0E+00	1.4E-04	2.25		3.4E-05	0.0E+00	3.4E-05
2,4-DDD		2.90E-02	--	0		1.12E-03	0.00E+00	1.12E-03	0.009		1.2E-01	0.0E+00	1.2E-01	1.5		7.4E-04	0.0E+00	7.4E-04
4,4-DDD		8.60E-02	--	0		3.31E-03	0.00E+00	3.31E-03	0.009		3.7E-01	0.0E+00	3.7E-01	1.5		2.2E-03	0.0E+00	2.2E-03
DDE	0.0000027	1.70E-02	--	0	3.81E-07	6.54E-04	0.00E+00	6.55E-04	NTV	NTV	NTV	NTV	NTV	0.6	6.4E-07	1.1E-03	0.0E+00	1.1E-03
DDTs	0.00014	1.20E-02	--	0	1.98E-05	4.62E-04	0.00E+00	4.82E-04	0.009	2.2E-03	5.1E-02	0.0E+00	5.4E-02	1.5	1.3E-05	3.1E-04	0.0E+00	3.2E-04
Dieldrin		3.90E-03	--	0		1.50E-04	0.00E+00	1.50E-04	0.0709		2.1E-03	0.0E+00	2.1E-03	0.98		1.5E-04	0.0E+00	1.5E-04
Endosulfan I		4.00E-03	--	0		1.54E-04	0.00E+00	1.54E-04	10		1.5E-05	0.0E+00	1.5E-05	100		1.5E-06	0.0E+00	1.5E-06
Endosulfan sulfate	0.00012	3.00E-03	--	0	1.69E-05	1.15E-04	0.00E+00	1.32E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Endrin	0.000014	2.00E-02	--	0	1.98E-06	7.70E-04	0.00E+00	7.72E-04	0.3	6.6E-06	2.6E-03	0.0E+00	2.6E-03	3	6.6E-07	2.6E-04	0.0E+00	2.6E-04
Endrin aldehyde		6.00E-03	--	0		2.31E-04	0.00E+00	2.31E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Endrin Ketone		3.00E-03	--	0		1.15E-04	0.00E+00	1.15E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Gamma-BHC	0.000011	8.50E-03	--	0	1.55E-06	3.27E-04	0.00E+00	3.29E-04	2	7.8E-07	1.6E-04	0.0E+00	1.6E-04	20	7.8E-08	1.6E-05	0.0E+00	1.6E-05
Heptachlor	0.0000028	2.00E-04	--	0	3.95E-07	7.70E-06	0.00E+00	8.09E-06	0.065	6.1E-06	1.2E-04	0.0E+00	1.2E-04	0.65	6.1E-07	1.2E-05	0.0E+00	1.2E-05
Heptachlor epoxide		3.00E-04	--	0		1.15E-05	0.00E+00	1.15E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Hexachlorobenzene		8.00E-04	--	0		3.08E-05	0.00E+00	3.08E-05	0.23		1.3E-04	0.0E+00	1.3E-04	2.3		1.3E-05	0.0E+00	1.3E-05
Methoxychlor		2.00E-02	--	0		7.70E-04	0.00E+00	7.70E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Mirex		4.00E-03	--	0		1.54E-04	0.00E+00	1.54E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
trans-Nonachlor		2.40E-03	--	0		9.24E-05	0.00E+00	9.24E-05	0.0014		6.6E-02	0.0E+00	6.6E-02	0.014		6.6E-03	0.0E+00	6.6E-03

Table C2-8o
Post-Remediation Kildeer Risk Calculations (Wetland Sediment Residual Concentration)
Deep Soil (0 - 10 ft bgs) at Hazard Quotient of 1
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Concentrations				Intake (mg/kg BW-day)					Hazard Quotient (HQ) - Low					Hazard Quotient (HQ) - High			
COPEC[a]	Surface Water (mg/L)[b]	Sediments[c]	Invertebrate BAF[d]	Invertebrate Tissue[d]	Surface Water	Soils	Invertebrate	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Soils	Invertebrate	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Soils	Invertebrate	Total Intake
SVOCs (mg/kg)																		
Acenaphthene		1.40E-01	--	0		5.39E-03	0.00E+00	5.39E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Acenaphthylene		1.20E-01	--	0		4.62E-03	0.00E+00	4.62E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Anthracene		1.30E-01	--	0		5.00E-03	0.00E+00	5.00E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(a)anthracene		2.90E-01	--	0		1.12E-02	0.00E+00	1.12E-02	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(a)pyrene		2.56E-01	--	0		9.85E-03	0.00E+00	9.85E-03	0.001		9.9E+00	0.0E+00	9.9E+00 >1	0.01		9.9E-01	0.0E+00	9.9E-01
Benzo(b)fluoranthene		2.56E-01	--	0		9.85E-03	0.00E+00	9.85E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(ghi)perylene		1.68E-01	--	0		6.46E-03	0.00E+00	6.46E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzo(k)fluoranthene		2.45E-01	--	0		9.43E-03	0.00E+00	9.43E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Benzoic acid		6.80E-01	--	0		2.62E-02	0.00E+00	2.62E-02	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Bis(2-ethylhexyl)phthalate	0.027	1.10E+00	--	0	3.81E-03	4.23E-02	0.00E+00	4.61E-02	1.1	3.5E-03	3.8E-02	0.0E+00	4.2E-02	11	3.5E-04	3.8E-03	0.0E+00	4.2E-03
Butylbenzylphthalate		2.50E-02	--	0		9.62E-04	0.00E+00	9.62E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Carbazole		5.50E-01	--	0		2.12E-02	0.00E+00	2.12E-02	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Chloroaniline		3.00E-03	--	0		1.15E-04	0.00E+00	1.15E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2-Chloropropane		4.33E-02	--	0		1.67E-03	0.00E+00	1.67E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chrysene	0.0002	2.80E-01	--	0	2.82E-05	1.08E-02	0.00E+00	1.08E-02	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Dibenzofuran		3.60E-01	--	0		1.39E-02	0.00E+00	1.39E-02	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
3,3-Dichlorobenzidine		1.20E-02	--	0		4.62E-04	0.00E+00	4.62E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2,6-Dinitrotoluene		3.70E-01	--	0		1.42E-02	0.00E+00	1.42E-02	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Fluoranthene		4.06E-01	--	0		1.56E-02	0.00E+00	1.56E-02	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Fluorene		1.40E-01	--	0		5.39E-03	0.00E+00	5.39E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Indeno(123,cd)pyrene		1.70E-01	--	0		6.54E-03	0.00E+00	6.54E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2-Methylnaphthalene		1.80E-01	--	0		6.93E-03	0.00E+00	6.93E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Methylphenol	0.12	2.30E-01	--	0	1.69E-02	8.85E-03	0.00E+00	2.58E-02	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Naphthalene		1.10E-01	--	0		4.23E-03	0.00E+00	4.23E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pentachlorophenol		5.40E-01	--	0		2.08E-02	0.00E+00	2.08E-02	6.7		3.1E-03	0.0E+00	3.1E-03	22.5		9.2E-04	0.0E+00	9.2E-04
Phenanthrene		2.10E-01	2.51E+00	5.27E-01		8.08E-03	1.13E-01	1.21E-01	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Phenol		2.90E-01	--	0		1.12E-02	0.00E+00	1.12E-02	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pyrene		4.60E-01	--	0		1.77E-02	0.00E+00	1.77E-02	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
PCBs (mg/kg)																		
PCBs (TOTAL)-congeners	0.000016	1.29E-01	1.16E+01	1.50E+00	2.26E-06	4.96E-03	3.20E-01	3.25E-01	0.09	2.5E-05	5.5E-02	3.6E+00	3.6E+00 >1	1.27	1.8E-06	3.9E-03	2.5E-01	2.6E-01
>1 = The calculated hazard quotient exceeds 1 (i.e., > 1.5)																		

Exposure Assumptions and Equation[e]:

	Value	Units
Ingestion Rate (IR) prey(dry wt.) =	0.0152	kg/day (dry weight)
IRinvertebrate(dry wt.) =	0.0152	kg/day (dry weight)
IRsediment (dry wt.)[f] =	0.00274	kg-day (dry weight)
Cprey =	chem-specific	mg/kg or µg/kg
Csediment =	chem-specific	mg/kg or µg/kg
IRsurface water[g] =	0.010	L/day
Csurface water =	chem-specific	mg/L or µg/L
Dietary Composition Factor (DCF)[h] =	100%	percent
Site Use Factor (SUF)[i] =	100%	percent
Body Weight (BW) =	0.0711	kg

Intake Equation = [IRinvertebrate (dry wt) x Cprey(invertebrate, dry wt) x DCF x SUF]/BW] +{(IRsediment x Csediment x DCF x SUF)]/BW] + [(IRsurface water x Csurface water x DCF x SUF)]/BW]

Risk (hazard quotient) = Intake / TRV

Prey tissue(dry wt) = Prey tissue (wet wt.) / (1-Tissue Moisture)

NTV = Not toxicity data available.

NA = Not available.

Blank cell indicates COPEC was not detected in this medium.

Notes:

a All chemicals detected in sediments are considered as constituents of potential ecological concern.

b All concentrations of constituents in surface water are based on the maximum concentration.

c All concentrations of constituents in sediment are based on the residual concentrations expressed in dry weight.

d Site-specific BAFs (dry weight basis). Calculated invertebrate tissue concentrations (sediment concentration x BAF). Tissue concentrations are on a dry weight basis.

e Exposure parameters used to calculate risk are discussed in detail in Section 4.2 of ERA.

f Ingestion rate of sediment based on 18 percent of of the prey ingestion rate (dry weight); based on average of sandpiper data from Beyer et al. 1994).

g Based on equation for birds: Water intake (L/day) = $0.059Wt(kg)^{0.67}$ (EPA 1993)

h Dietary composition factor was based on a conservative assumption of 100% dietary intake of invertebrates from the site.

i Site use factor was based on a conservative 100% use of the site for the killdeer's foraging range.

Table C2-8p
Post-Remediation Salt Marsh Harvest Mouse Risk Calculations (Wetland Sediment Residual Concentration)
Deep Soil (0 - 10 ft bgs) at Hazard Quotient of 1
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Concentrations				Intake (mg/kg BW-day)					HQ - Low TRV					HQ - High TRV			
COPEC[a]	Surface Water (mg/L)[b]	Sediments[c]	Pickelweed BAF[d]	Pickleweed Tissue[d]	Surface Water	Sediment	Pickleweed	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Pickleweed	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Sediment	Pickleweed	Total Intake
Metals (mg/kg)																		
Aluminum	12.6	2.69E+04	3.64E-03	98	1.98E+00	1.97E+02	2.99E+01	2.29E+02	1.93	1.0E+00	1.0E+02	1.5E+01	1.2E+02 >1	19.3	1.0E-01	1.0E+01	1.5E+00	1.2E+01 >1
Antimony	0.003	4.50E+00	2.95E+00	13	4.71E-04	3.30E-02	4.06E+00	4.09E+00	0.06	8.0E-03	5.6E-01	6.9E+01	6.9E+01 >1	23.4	2.0E-05	1.4E-03	1.7E-01	1.7E-01
Arsenic	0.0436	2.12E+01	1.50E-01	3	6.84E-03	1.56E-01	9.74E-01	1.14E+00	0.32	2.1E-02	4.9E-01	3.0E+00	3.6E+00 >1	4.7	1.5E-03	3.3E-02	2.1E-01	2.4E-01
Barium	0.24	9.36E+01	5.56E-01	52	3.70E-02	6.87E-01	1.59E+01	1.66E+01	51.8	7.1E-04	1.3E-02	3.1E-01	3.2E-01	66.0	5.6E-04	1.0E-02	2.4E-01	2.5E-01
Beryllium		6.60E-01	--	0		4.85E-03	0	4.85E-03	0.532		9.1E-03	0.0E+00	9.1E-03	0.554		8.7E-03	0.0E+00	8.7E-03
Cadmium	0.0016	2.94E+00	6.76E-01	2	2.51E-04	2.16E-02	6.09E-01	6.30E-01	0.06	4.2E-03	3.6E-01	1.0E+01	1.1E+01 >1	2.64	9.5E-05	8.2E-03	2.3E-01	2.4E-01
Chromium +3	0.0263	2.25E+02	--	0	4.13E-03	1.65E+00	0	1.66E+00	2	1.7E-03	6.9E-01	0.0E+00	6.9E-01	23.1	1.8E-04	7.2E-02	0.0E+00	7.2E-02
Chromium +6	0.0263	7.00E-02	--	0	4.13E-03	5.14E-04	0	4.64E-03	5.66	7.3E-04	9.1E-05	0.0E+00	8.2E-04	35.1	1.2E-04	1.5E-05	0.0E+00	1.3E-04
Cobalt	0.0164	1.85E+01	--	0	2.57E-03	1.36E-01	0	1.38E-01	1.2	2.1E-03	1.1E-01	0.0E+00	1.2E-01	20	1.3E-04	6.8E-03	0.0E+00	6.9E-03
Copper	0.233	1.93E+02	1.82E-01	35	3.66E-02	1.42E+00	1.07E+01	1.22E+01	2.67	1.4E-02	5.3E-01	4.0E+00	4.6E+00 >1	632	5.8E-05	2.2E-03	1.7E-02	1.9E-02
Lead	0.0031	8.51E+01	7.92E-02	7	4.86E-04	6.25E-01	2.06E+00	2.69E+00	1	4.9E-04	6.2E-01	2.1E+00	2.7E+00 >1	241	2.0E-06	2.6E-03	8.6E-03	1.1E-02
Manganese	7.42	9.01E+02	1.75E+00	1579	1.16E+00	6.62E+00	4.83E+02	4.91E+02	13.7	8.5E-02	4.8E-01	3.5E+01	3.6E+01 >1	159.09	7.3E-03	4.2E-02	3.0E+00	3.1E+00 >1
Mercury	0.00029	1.15E+00	--	0	4.55E-05	8.45E-03	0	8.49E-03	0.027	1.7E-03	3.1E-01	0.0E+00	3.1E-01	0.27	1.7E-04	3.1E-02	0.0E+00	3.1E-02
Molybdenum	0.0312	5.40E+00	--	0	4.90E-03	3.97E-02	0	4.46E-02	0.26	1.9E-02	1.5E-01	0.0E+00	1.7E-01	2.6	1.9E-03	1.5E-02	0.0E+00	1.7E-02
Nickel	0.166	1.13E+02	1.14E-01	13	2.60E-02	8.30E-01	3.94E+00	4.79E+00	0.13	2.0E-01	6.2E+00	3.0E+01	3.6E+01 >1	31.6	8.2E-04	2.6E-02	1.2E-01	1.5E-01
Selenium	0.029	1.27E+00	--	0	4.55E-03	9.33E-03	0	1.39E-02	0.05	9.1E-02	1.9E-01	0.0E+00	2.8E-01	1.21	3.8E-03	7.7E-03	0.0E+00	1.1E-02
Silver	0.0019	2.80E+00	--	0	2.98E-04	2.06E-02	0	2.09E-02	0.38	7.9E-04	5.5E-02	0.0E+00	5.6E-02	3.75	7.9E-05	5.5E-03	0.0E+00	5.6E-03
Thallium		4.90E-01	--	0		3.60E-03	0	3.60E-03	0.48		7.5E-03	0.0E+00	7.5E-03	1.43		2.5E-03	0.0E+00	2.5E-03
Tin		1.42E+01	6.21E+00	88		1.04E-01	2.70E+01	2.71E+01	23.4		4.5E-03	1.2E+00	1.2E+00	35		3.0E-03	7.7E-01	7.7E-01
Vanadium	0.05	1.09E+02	--	0	7.85E-03	8.00E-01	0	8.08E-01	0.21	3.7E-02	3.8E+00	0.0E+00	3.8E+00 >1	2.1	3.7E-03	3.8E-01	0.0E+00	3.8E-01
Zinc	0.042	2.20E+02	3.77E-01	83	6.59E-03	1.62E+00	2.53E+01	2.70E+01	9.6	6.9E-04	1.7E-01	2.6E+00	2.8E+00 >1	411	1.6E-05	3.9E-03	6.2E-02	6.6E-02
Volatile Organics (mg/kg)																		
Acetone		3.20E-01	--	0		2.35E-03	0	2.35E-03	10	1.0E+01	2.4E-04	0.0E+00	2.4E-04	50		4.7E-05	0.0E+00	4.7E-05
Benzene		5.00E-03	--	0		3.67E-05	0	3.67E-05	26.4		1.4E-06	0.0E+00	1.4E-06	263.6		1.4E-07	0.0E+00	1.4E-07
Carbon disulfide		2.50E-02	--	0		1.84E-04	0	1.84E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chlorobenzene		2.40E-02	--	0		1.76E-04	0	1.76E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
cis-1,2-Dichlorobenzene		5.00E-03	--	0		3.67E-05	0	3.67E-05	45.2		8.1E-07	0.0E+00	8.1E-07	452		8.1E-08	0.0E+00	8.1E-08
Ethylbenzene		4.40E-02	--	0		3.23E-04	0	3.23E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Isopropyltoluene		7.20E-03	--	0		5.29E-05	0	5.29E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Methylene chloride		3.00E-01	--	0		2.20E-03	0	2.20E-03	5.9		3.7E-04	0.0E+00	3.7E-04	50		4.4E-05	0.0E+00	4.4E-05
Naphthalene		1.60E-02	--	0		1.18E-04	0	1.18E-04	50		2.4E-06	0.0E+00	2.4E-06	150		7.8E-07	0.0E+00	7.8E-07
Toluene		3.00E-02	--	0		2.20E-04	0	2.20E-04	26		8.5E-06	0.0E+00	8.5E-06	260		8.5E-07	0.0E+00	8.5E-07
trans-1,2-Dichloroethene		2.30E-02	--	0		1.69E-04	0	1.69E-04	45.2		3.7E-06	0.0E+00	3.7E-06	452		3.7E-07	0.0E+00	3.7E-07
Trichloroethene		7.00E-03	--	0		5.14E-05	0	5.14E-05	0.7		7.3E-05	0.0E+00	7.3E-05	7		7.3E-06	0.0E+00	7.3E-06
1,2,4-Trimethylbenzene		2.50E-02	--	0		1.84E-04	0	1.84E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
1,3,5-Trimethylbenzene		9.30E-03	--	0		6.83E-05	0	6.83E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Vinyl chloride		3.40E-02	--	0		2.50E-04	0	2.50E-04	0.17		1.5E-03	0.0E+00	1.5E-03	2		1.5E-04	0.0E+00	1.5E-04
Xylenes		1.10E-01	--	0		8.08E-04	0	8.08E-04	2.1		3.8E-04	0.0E+00	3.8E-04	2.6		3.1E-04	0.0E+00	3.1E-04
Pesticides (mg/kg)																		
alpha-Chlordane		8.20E-03	--	0		6.02E-05	0	6.02E-05	4.6		1.3E-05	0.0E+00	1.3E-05	9.2		6.5E-06	0.0E+00	6.5E-06
beta-BHC		1.00E-03	--	0		7.34E-06	0	7.34E-06	1.6		4.6E-06	0.0E+00	4.6E-06	3.2		2.3E-06	0.0E+00	2.3E-06
delta-BHC		2.00E-03	--	0		1.47E-05	0	1.47E-05	1.6		9.2E-06	0.0E+00	9.2E-06	3.2		4.6E-06	0.0E+00	4.6E-06
2,4-DDD		2.90E-02	--	0		2.13E-04	0	2.13E-04	0.8		2.7E-04	0.0E+00	2.7E-04	16		1.3E-05	0.0E+00	1.3E-05
4,4-DDD		8.60E-02	--	0		6.32E-04	0	6.32E-04	0.8		7.9E-04	0.0E+00	7.9E-04	16		3.9E-05	0.0E+00	3.9E-05
DDE	0.0000027	1.70E-02	--	0	4.24E-07	1.25E-04	0	1.25E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
DDTs	0.00014	1.20E-02	--	0	2.20E-05	8.81E-05	0	1.10E-04	0.8	2.7E-05	1.1E-04	0.0E+00	1.4E-04	16	1.4E-06	5.5E-06	0.0E+00	6.9E-06
Dieldrin		3.90E-03	--	0		2.86E-05	0	2.86E-05	0.015		1.9E-03	0.0E+00	1.9E-03	1.7		1.7E-05	0.0E+00	1.7E-05
Endosulfan I		4.00E-03	--	0		2.94E-05	0	2.94E-05	0.15		2.0E-04	0.0E+00	2.0E-04	1.5		2.0E-05	0.0E+00	2.0E-05
Endosulfan sulfate	0.00012	3.00E-03	--	0	1.88E-05	2.20E-05	0	4.09E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Endrin	0.000014	2.00E-02	--	0	2.20E-06	1.47E-04	0	1.49E-04	0.09	2.4E-05	1.6E-03	0.0E+00	1.6E-03	0.92	2.4E-06	1.6E-04	0.0E+00	1.6E-04
Endrin aldehyde		6.00E-03	--	0		4.41E-05	0	4.41E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Endrin Ketone		3.00E-03	--	0		2.20E-05	0	2.20E-05	NTV	NTV	NTV	NTV	NTV	0.92		2.4E-05	0.0E+00	2.4E-05
gamma-Chlordane		8.50E-03	--	0		6.24E-05	0	6.24E-05	4.6		1.4E-05	0.0E+00	1.4E-05	9.2		6.8E-06	0.0E+00	6.8E-06
Heptachlor	0.0000028	2.00E-04	--	0	4.39E-07	1.47E-06	0	1.91E-06	0.13	3.4E-06	1.1E-05	0.0E+00	1.5E-05	6.8	6.5E-08	2.2E-07	0.0E+00	2.8E-07
Heptachlor epoxide		3.00E-04	--	0		2.20E-06	0	2.20E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Hexachlorobenzene		8.00E-04	--	0		5.88E-06	0	5.88E-06	1.6		3.7E-06	0.0E+00	3.7E-06	16		3.7E-07	0.0E+00	3.7E-07
Methoxychlor		2.00E-02	--	0		1.47E-04	0	1.47E-04	2.5		5.9E-05	0.0E+00	5.9E-05	50		2.9E-06	0.0E+00	2.9E-06
Mirex		4.00E-03	--	0		2.94E-05	0	2.94E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV

Table C2-8p
Post-Remediation Salt Marsh Harvest Mouse Risk Calculations (Wetland Sediment Residual Concentration)
Deep Soil (0 - 10 ft bgs) at Hazard Quotient of 1
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Exposure Concentrations				Intake (mg/kg BW-day)					HQ - Low TRV					HQ - High TRV			
COPEC[a]	Surface Water (mg/L)[b]	Sediments[c]	Pickelweed BAF[d]	Pickleweed Tissue[d]	Surface Water	Sediment	Pickleweed	Total Intake (mg/kg/day)	Low TRV (mg/kg BW-day)	Surface Water	Sediment	Pickleweed	Total Intake	High TRV (mg/kg BW-day)	Surface Water	Sediment	Pickleweed	Total Intake
trans-Nonachlor		2.40E-03	--	0		1.76E-05	0	1.76E-05	4.6		3.8E-06	0.0E+00	3.8E-06	9.2		1.9E-06	0.0E+00	1.9E-06
SVOCs (mg/kg)																		
Acenaphthene		1.40E-01	--	0		1.03E-03	0	1.03E-03	1.31		7.8E-04	0.0E+00	7.8E-04	32.8		3.1E-05	0.0E+00	3.1E-05
Acenaphthylene		1.20E-01	--	0		8.81E-04	0	8.81E-04	1.31		6.7E-04	0.0E+00	6.7E-04	32.8		2.7E-05	0.0E+00	2.7E-05
Anthracene		1.30E-01	--	0		9.55E-04	0	9.55E-04	1.31		7.3E-04	0.0E+00	7.3E-04	32.8		2.9E-05	0.0E+00	2.9E-05
Benzo(a)anthracene		2.90E-01	1.29E+00	0		2.13E-03	1.15E-01	1.17E-01	1.31		1.6E-03	8.8E-02	8.9E-02	32.8		6.5E-05	3.5E-03	3.6E-03
Benzo(a)pyrene		2.56E-01	2.31E+00	1		1.88E-03	1.81E-01	1.83E-01	1.31		1.4E-03	1.4E-01	1.4E-01	32.8		5.7E-05	5.5E-03	5.6E-03
Benzo(b)fluoranthene		2.56E-01	1.55E+00	0		1.88E-03	1.22E-01	1.24E-01	1.31		1.4E-03	9.3E-02	9.4E-02	32.8		5.7E-05	3.7E-03	3.8E-03
Benzo(ghi)perylene		1.68E-01	1.55E+00	0		1.23E-03	7.98E-02	8.11E-02	1.31		9.4E-04	6.1E-02	6.2E-02	32.8		3.8E-05	2.4E-03	2.5E-03
Benzo(k)fluoranthene		2.45E-01	1.55E+00	0		1.80E-03	1.16E-01	1.18E-01	1.31		1.4E-03	8.9E-02	9.0E-02	32.8		5.5E-05	3.6E-03	3.6E-03
Benzoic acid		6.80E-01	--	0		4.99E-03	0	4.99E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Bis(2-ethylhexyl)phthalate	0.027	1.10E+00	--	0	4.24E-03	8.08E-03	0	1.23E-02	18.3	2.3E-04	4.4E-04	0.0E+00	6.7E-04	183	2.3E-05	4.4E-05	0.0E+00	6.7E-05
Butylbenzylphthalate		2.50E-02	--	0		1.84E-04	0	1.84E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Carbazole		5.50E-01	--	0		4.04E-03	0	4.04E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Chloroaniline		3.00E-03	--	0			0	0.00E+00	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2-Chlorophenol		4.33E-02	--	0		3.18E-04	0	3.18E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chrysene	0.0002	2.80E-01	2.09E+00	1	3.14E-05	2.06E-03	1.79E-01	1.81E-01	1.31	2.4E-05	1.6E-03	1.4E-01	1.4E-01	32.8	9.6E-07	6.3E-05	5.5E-03	5.5E-03
Dibenzofuran		3.60E-01	--	0		2.64E-03	0	2.64E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
3,3-Dichlorobenzidine		1.20E-02	--	0		8.81E-05	0	8.81E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2,6-Dinitrotoluene		3.70E-01	--	0		2.72E-03	0	2.72E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Fluoranthene		4.06E-01	--	0		2.98E-03	0	2.98E-03	1.31		2.3E-03	0.0E+00	2.3E-03	32.8		9.1E-05	0.0E+00	9.1E-05
Fluorene		1.40E-01	--	0		1.03E-03	0	1.03E-03	1.31		7.8E-04	0.0E+00	7.8E-04	32.8		3.1E-05	0.0E+00	3.1E-05
Indeno(123,cd)pyrene		1.70E-01	3.17E+00	1		1.25E-03	1.65E-01	1.66E-01	1.31		9.5E-04	1.3E-01	1.3E-01	32.8		3.8E-05	5.0E-03	5.1E-03
2-Methylnaphthalene		1.80E-01	--	0		1.32E-03	0	1.32E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Methylphenol	0.12	2.30E-01	--	0	1.88E-02	1.69E-03	0	2.05E-02	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Naphthalene		1.10E-01	--	0		8.08E-04	0	8.08E-04	50		1.6E-05	0.0E+00	1.6E-05	150		5.4E-06	0.0E+00	5.4E-06
Pentachlorophenol		5.40E-01	--	0		3.97E-03	0	3.97E-03	8.42		4.7E-04	0.0E+00	4.7E-04	27.4		1.4E-04	0.0E+00	1.4E-04
Phenanthrene		2.10E-01	--	0		1.54E-03	0	1.54E-03	1.31		1.2E-03	0.0E+00	1.2E-03	32.8		4.7E-05	0.0E+00	4.7E-05
Phenol		2.90E-01	--	0		2.13E-03	0	2.13E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pyrene		4.60E-01	--	0		3.38E-03	0	3.38E-03	1.31		2.6E-03	0.0E+00	2.6E-03	32.8		1.0E-04	0.0E+00	1.0E-04
PCBs (mg/kg)																		
PCBs (TOTAL)-congeners	0.000016	1.29E-01	2.72E+00	0	2.51E-06	9.47E-04	1.07E-01	1.08E-01	0.36	7.0E-06	2.6E-03	3.0E-01	3.0E-01	1.28	2.0E-06	7.4E-04	8.4E-02	8.5E-02

>1 = The calculated hazard quotient exceeds 1 (i.e., > 1.5)

Exposure Assumptions and Equation:[e]

	Value	Units
Ingestion Rate (IR) prey(dry wt.) =	0.00306	kg/day (dry weight)
Irpickleweed (dry wt.) =	0.00306	kg/day (dry weight)
IRsediment (dry wt.)[f] =	0.0000734	kg-day (dry weight)
Cprey =	chem-specific	mg/kg or µg/kg
Csediment =	chem-specific	mg/kg or µg/kg
Tissue Moisture (pickleweed) =	81.6%	percent
IRsurface water[g] =	0.00157	L/day
Csurface water =	chem-specific	mg/L or µg/L
Dietary Composition Factor (DCF)[h] =	100%	percent
Site Use Factor (SUF)[i] =	100%	percent
Body Weight (BW) =	0.01	kg

Intake Equation = [Irpickleweed (dry wt) x (Cprey(pickleweed, dry wt)/1-TM) x DCF x SUF]/BW] + [(IRsediment x Csediment x DCF x SUF)]/BW]+ [(Irsurface water x Csurface water x DCF x SUF)]/BW]

Risk (hazard quotient) = Intake / TRV

Prey tissue(dry wt) = Prey tissue (wet wt.) / (1-Tissue Moisture)

NTV = Not toxicity data available.

Blank cell indicates COPEC was not detected in this medium.

Notes:

a All chemicals detected in sediments are considered as constituents of potential ecological concern.

b All concentrations of constituents in surface water are based on the maximum concentration.

c All concentrations of constituents in sediment are based on the residual concentrations expressed in dry weight.

d Site-specific BAFs (dry weight basis). Calculated pickelweed tissue concentrations (sediment concentration x BAF). Tissue concentrations are on a dry weight basis.

e Exposure parameters used to calculate risk are discussed in detail in Section 4.2 of ERA.

f Ingestion rate of sediment based on 2.4 percent of of the prey ingestion rate (dry weight); based on a meadow vole (Beyer et al. (1994).

g Based on equation for mammals: Water intake (L/day) = $0.099Wt(kg)^{90}$ (EPA 1993)

h Dietary composition factor was based on a conservative assumption of 100% dietary intake of pickleweed from the site.

i Site use factor was based on a conservative 100% use of the site for the harvest mouse's foraging range.

Table C2-8q
Summary of Residual Risk Estimates: Deep Soil (0 - 10 ft bgs)
Hazard Quotient = 1
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Fox		Harrier		Mallard (breeding)		Mallard (non-breeding)		Heron		Killdeer		Salt Marsh Harvest Mouse	
Chemical	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**
Hazard Quotient = 1														
Metals (mg/kg)														
Aluminum	6.3E+00 **>1**	6.3E-01	1.2E-01	1.2E-02	1.7E+00 **>1**	1.7E-01	9.8E-02	9.8E-03	5.8E-01	5.8E-02	2.0E+01 **>1**	2.0E+00 **>1**	1.2E+02 **>1**	1.2E+01 **>1**
Antimony	1.1E+00	2.7E-03	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	6.9E+01 **>1**	1.7E-01
Arsenic	2.4E-02	1.6E-03	8.9E-04	2.2E-04	3.1E-02	7.8E-03	5.6E-03	1.4E-03	7.3E-03	1.8E-03	3.1E-01	7.7E-02	3.6E+00 **>1**	2.4E-01
Barium	2.6E-03	2.1E-03	1.3E-02	6.3E-03	2.1E-01	1.0E-01	5.0E-03	2.5E-03	2.0E-02	1.0E-02	1.6E+00 **>1**	8.1E-01	3.2E-01	2.5E-01
Beryllium	4.0E-04	3.8E-04	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	9.1E-03	8.7E-03
Cadmium	1.6E-02	3.7E-04	7.4E-03	5.7E-05	7.8E-01	6.0E-03	5.1E-01	4.0E-03	6.7E-02	5.2E-04	3.1E+00 **>1**	2.4E-02	1.1E+01 **>1**	2.4E-01
Chromium +3	5.8E-02	6.0E-03	7.6E-02	7.3E-02	1.5E+00	1.4E+00	2.7E-02	2.6E-02	7.8E-01	7.5E-01	1.3E+01 **>1**	1.3E+01 **>1**	6.9E-01	7.2E-02
Chromium +6	1.1E-04	1.7E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	8.2E-04	1.3E-04
Cobalt	5.2E-03	3.1E-04	5.0E-04	2.3E-04	3.2E-03	1.4E-03	8.0E-04	3.6E-04	4.5E-03	2.0E-03	9.4E-02	4.2E-02	1.2E-01	6.9E-03
Copper	3.1E-01	1.3E-03	8.1E-01	3.5E-02	1.8E+00 **>1**	7.9E-02	7.4E-02	3.3E-03	9.5E-01	4.2E-02	1.5E+01 **>1**	6.7E-01	4.6E+00 **>1**	1.9E-02
Lead	6.2E-01	2.6E-03	1.0E+02 **>1**	1.6E-01	1.7E+01 **>1**	2.8E-02	2.4E+00 **>1**	3.9E-03	1.1E+02 **>1**	1.8E-01	3.0E+02 **>1**	4.8E-01	2.7E+00 **>1**	1.1E-02
Manganese	3.3E-02	2.8E-03	4.1E-03	4.1E-04	1.9E+00 **>1**	1.9E-01	6.0E-02	6.0E-03	4.1E-02	4.1E-03	1.4E+01 **>1**	1.4E+00	3.6E+01 **>1**	3.1E+00 **>1**
Mercury	1.4E-02	1.4E-03	5.8E-03	1.2E-03	6.4E-01	1.4E-01	9.6E-03	2.1E-03	6.5E-01	1.4E-01	5.5E+00 **>1**	1.2E+00	3.1E-01	3.1E-02
Molybdenum	9.2E-03	9.2E-04	4.7E-04	4.6E-05	2.2E-03	2.2E-04	5.5E-04	5.5E-05	3.2E-03	3.2E-04	6.1E-02	6.0E-03	1.7E-01	1.7E-02
Nickel	3.0E-01	1.3E-03	1.8E-02	4.4E-04	1.0E+00	2.4E-02	3.8E-02	9.4E-04	1.5E-01	3.8E-03	9.6E+00 **>1**	2.3E-01	3.6E+01 **>1**	1.5E-01
Selenium	1.8E+00 **>1**	7.4E-02	9.2E-01	2.3E-01	1.0E-02	2.5E-03	2.5E-03	6.3E-04	1.8E+00 **>1**	4.5E-01	2.3E-01	5.7E-02	2.8E-01	1.1E-02
Silver	2.5E-03	2.5E-04	3.2E-06	NTV	2.1E-05	NTV	5.1E-06	NTV	2.9E-05	NTV	6.1E-04	NTV	5.6E-02	5.6E-03
Thallium	1.2E-02	4.0E-03	3.9E-02	NTV	1.8E-03	NTV	4.5E-04	NTV	4.1E-02	NTV	5.4E-02	NTV	7.5E-03	2.5E-03
Tin	1.9E-04	1.3E-04	4.0E-04	1.6E-04	3.4E-02	1.4E-02	3.2E-02	1.3E-02	3.8E-03	1.5E-03	8.0E-02	3.2E-02	1.2E+00	7.7E-01
Vanadium	1.7E-01	1.7E-02	1.9E-03	1.9E-04	2.3E-02	2.3E-03	5.2E-03	5.2E-04	1.8E-02	1.8E-03	4.3E-01	4.3E-02	3.8E+00 **>1**	3.8E-01
Zinc	3.0E-01	6.9E-03	3.9E-01	3.9E-02	6.0E-01	6.0E-02	1.5E-02	1.5E-03	6.9E-01	6.9E-02	4.6E+00 **>1**	4.6E-01	2.8E+00 **>1**	6.6E-02
Volatile Organics (mg/kg)														
Acetone	1.0E-05	2.0E-06	1.2E-06	1.2E-07	8.0E-06	8.0E-07	2.0E-06	2.0E-07	1.1E-05	1.1E-06	2.4E-04	2.4E-05	2.4E-04	4.7E-05
Benzene	6.0E-08	6.1E-09	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	1.4E-06	1.4E-07
Carbon disulfide	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chlorobenzene	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
cis-1,2-Dichlorobenzene	3.5E-08	3.5E-09	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	8.1E-07	8.1E-08
Ethylbenzene	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Isopropyltoluene	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Methylene chloride	1.6E-05	1.9E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	3.7E-04	4.4E-05
Naphthalene	1.0E-07	3.4E-08	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	2.4E-06	7.8E-07
Toluene	3.7E-07	3.7E-08	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	8.5E-06	8.5E-07
trans-1,2-Dichloroethene	1.6E-07	1.6E-08	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	3.7E-06	3.7E-07
Trichloroethene	3.2E-06	3.2E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	7.3E-05	7.3E-06
1,2,4-Trimethylbenzene	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
1,3,5-Trimethylbenzene	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Vinyl chloride	6.4E-05	6.4E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	1.5E-03	1.5E-04
Xylenes	1.7E-05	1.4E-05	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	3.8E-04	3.1E-04

Table C2-8q
Summary of Residual Risk Estimates: Deep Soil (0 - 10 ft bgs)
Hazard Quotient = 1
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Fox		Harrier		Mallard (breeding)		Mallard (non-breeding)		Heron		Killdeer		Salt Marsh Harvest Mouse	
Chemical	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**
Pesticides (mg/kg)														
alpha-Chlordane	5.7E-07	2.8E-07	1.1E-03	1.1E-04	7.6E-03	7.6E-04	1.9E-03	0.000189342	1.1E-02	1.1E-03	2.3E-01	2.3E-02	1.3E-05	6.5E-06
beta-BHC	2.0E-07	1.0E-07	3.4E-07	8.5E-08	2.3E-06	5.7E-07	5.8E-07	1.4E-07	3.2E-06	8.1E-07	6.9E-05	1.7E-05	4.6E-06	2.3E-06
delta-BHC	4.0E-07	2.0E-07	6.8E-07	1.7E-07	4.6E-06	1.1E-06	1.2E-06	2.9E-07	6.5E-06	1.6E-06	1.4E-04	3.4E-05	9.2E-06	4.6E-06
2,4-DDD	4.4E-04	2.2E-05	9.2E-02	5.5E-04	4.2E-03	2.5E-05	1.0E-03	6.2E-06	9.8E-02	5.9E-04	1.2E-01	7.4E-04	2.7E-04	1.3E-05
DDD	1.3E-03	6.6E-05	2.7E-01	1.6E-03	1.2E-02	7.4E-05	3.1E-03	1.9E-05	2.9E-01	1.7E-03	3.7E-01	2.2E-03	7.9E-04	3.9E-05
DDE	NTV	NTV	NTV	8.1E-04	NTV	3.7E-05	NTV	9.2E-06	NTV	8.6E-04	NTV	1.1E-03	NTV	NTV
DDTs	1.9E-04	9.4E-06	3.8E-02	2.3E-04	2.1E-03	1.3E-05	5.2E-04	3.1E-06	4.1E-02	2.5E-04	5.4E-02	3.2E-04	1.4E-04	6.9E-06
Dieldrin	8.3E-05	7.3E-07	1.0E-05	7.6E-07	7.1E-05	5.1E-06	1.8E-05	1.3E-06	1.0E-04	7.2E-06	2.1E-03	1.5E-04	1.9E-03	1.7E-05
Endosulfan I	8.5E-06	8.5E-07	7.6E-08	7.6E-09	5.2E-07	5.2E-08	1.3E-07	1.3E-08	7.2E-07	7.2E-08	1.5E-05	1.5E-06	2.0E-04	2.0E-05
Endosulfan sulfate	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Endrin	7.3E-05	7.3E-06	1.4E-05	1.4E-06	8.7E-05	8.7E-06	2.2E-05	2.2E-06	1.2E-04	1.2E-05	2.6E-03	2.6E-04	1.6E-03	1.6E-04
Endrin aldehyde	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Endrin Ketone	NTV	1.0E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	2.4E-05
gamma-Chlordane	5.9E-07	3.0E-07	1.2E-03	1.2E-04	7.9E-03	7.9E-04	2.0E-03	2.0E-04	1.1E-02	1.1E-03	1.6E-04	1.6E-05	1.4E-05	6.8E-06
Heptachlor	9.6E-07	1.8E-08	1.4E-06	1.4E-07	5.0E-06	5.0E-07	1.3E-06	1.3E-07	7.5E-06	7.5E-07	1.2E-04	1.2E-05	1.5E-05	2.8E-07
Heptachlor epoxide	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Hexachlorobenzene	1.6E-07	1.6E-08	6.6E-07	6.6E-08	4.5E-06	4.5E-07	1.1E-06	1.1E-07	6.3E-06	6.3E-07	1.3E-04	1.3E-05	3.7E-06	3.7E-07
Methoxychlor	2.6E-06	1.3E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	5.9E-05	2.9E-06
Mirex	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
trans-Nonachlor	1.7E-07	8.3E-08	3.3E-04	3.3E-05	2.2E-03	2.2E-04	5.5E-04	5.5E-05	3.1E-03	3.1E-04	6.6E-02	6.6E-03	3.8E-06	1.9E-06
SVOCs (mg/kg)														
Acenaphthene	3.4E-05	1.4E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	7.8E-04	3.1E-05
Acenaphthylene	2.9E-05	1.2E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	6.7E-04	2.7E-05
Anthracene	3.2E-05	1.3E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	7.3E-04	2.9E-05
Benzo(a)anthracene	7.1E-05	2.8E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	8.9E-02	3.6E-03
Benzo(a)pyrene	6.2E-05	2.5E-06	4.9E-02	4.9E-03	3.3E-01	3.3E-02	8.3E-02	8.3E-03	4.6E-01	4.6E-02	9.9E+00	**>1**	9.9E-01	1.4E-01	5.6E-03
Benzo(b)fluoranthene	6.2E-05	2.5E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	9.4E-02	3.8E-03
Benzo(g,h,i)perylene	4.1E-05	1.6E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	6.2E-02	2.5E-03
Benzo(k)fluoranthene	6.0E-05	2.4E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	9.0E-02	3.6E-03
Benzoic acid	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Bis(2-ethylhexyl)phthalate	5.1E-05	5.1E-06	6.6E-04	6.6E-05	1.9E-03	1.9E-04	4.7E-04	4.7E-05	2.9E-03	2.9E-04	4.2E-02	4.2E-03	6.7E-04	6.7E-05
Butylbenzylphthalate	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Carbazole	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Chloroaniline	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2-Chloropropane	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Chrysene	7.2E-05	2.9E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	1.4E-01	5.5E-03
Dibenzofuran	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
3,3-Dichlorobenzidine	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
2,6-Dinitrotoluene	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Fluoranthene	9.9E-05	4.0E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	2.3E-03	9.1E-05
Fluorene	3.4E-05	1.4E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	7.8E-04	3.1E-05

Table C2-8q
Summary of Residual Risk Estimates: Deep Soil (0 - 10 ft bgs)
Hazard Quotient = 1
Non-Tidal Wetland Areas Alternative 5
Investigation Area H1 Feasibility Study
Mare Island, Vallejo, California

	Fox		Harrier		Mallard (breeding)		Mallard (non-breeding)		Heron		Killdeer		Salt Marsh Harvest Mouse	
Chemical	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**	**HQ low**	**HQ high**
Indeno(1,2,3-cd)pyrene	4.1E-05	1.7E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	1.3E-01	5.1E-03
2-Methylnaphthalene	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
4-Methylphenol	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Naphthalene	7.0E-07	2.3E-07	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	1.6E-05	5.4E-06
Pentachlorophenol	2.0E-05	6.3E-06	1.5E-05	4.6E-06	1.0E-04	3.1E-05	2.6E-05	7.8E-06	1.5E-04	4.3E-05	3.1E-03	9.2E-04	4.7E-04	1.4E-04
Phenanthrene	5.1E-05	2.0E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	1.2E-03	4.7E-05
Phenol	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV
Pyrene	1.1E-04	4.5E-06	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	NTV	2.6E-03	1.0E-04
PCBs (mg/kg)														
PCBs (Total Congeners)	7.4E-02	2.1E-02	7.1E-01	5.0E-02	4.9E-01	3.5E-02	2.0E-03	1.4E-04	3.9E+00 **>1**	2.7E-01	3.6E+00 **>1**	2.6E-01	3.0E-01	8.5E-02