APPENDIX E

ARARs Review

United Heckathorn Superfund Site 5-Year Review Applicable or Relevant and Appropriate Requirements (ARARs) Evaluation

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This technical memorandum presents an evaluation of the Applicable or Relevant and Appropriate Requirements (ARARs) at the United Heckathorn Superfund Site (site).

Purpose of ARARs Review

The purpose of an ARARs review is to determine whether laws, regulations, or guidance promulgated since approval of site decision documents alter the remedy's protectiveness of human health and the environment.

ARARs are established in the site decision documents: Record of Decisions (RODs). Changes to ARARs, where necessary, can be memorialized in ROD Amendments or Explanation of Significant Differences (ESDs).

The preamble to the National Contingency Plan (NCP) states that remedy selection decisions are not to be reopened unless new or modified requirements call into question the protectiveness of the selected remedy (55 CFR 8757, March 8, 1990). This is interpreted to mean generally that ARARs are frozen at the time of remedy approval, unless updated by additional decision documents.

ARARs Background

Section 121(d) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) requires that remedial actions implemented at CERCLA sites are carried out in compliance with any Federal or more stringent State environmental standards, requirements, criteria, or limitations that are determined to be ARARs.

CERCLA response actions are exempted by law from the requirement to obtain Federal, State or local permits related to any activities conducted completely on-site. However, this does not remove the requirement to meet the substantive provisions of permitting regulations that are ARARs.

The following remedies were selected in the 1995 ROD:

- Dredge all soft (young) bay mud from Lauritzen Channel and Parr Canal, with off-site disposal of dredged material.

- Place clean material in Lauritzen Channel and Parr Canal after dredging.
- Construct a cap around the former formulation area to prevent soil erosion.
- Attach a deed restriction limiting use of the property to non-residential uses.
- Implement upland operations and maintenance (O&M) and marine monitoring to verify the effectiveness of the remedy.

The selected remedial actions at Lauritzen Channel and Parr Canal were completed in 1997. Construction of the cap at the upland area was completed in 1999. Monitoring continues in the upland area, and in the marine sediments and surface waters of Lauritzen Channel and Parr Canal.

United Heckathorn Site ARARs Review

The following tables list the ARARs that relate to the protectiveness of the remedy established in the above-referenced decision documents, summarize the requirement for each ARAR, cite the regulatory basis for each ARAR, state the evaluated status of each ARAR, and comment on regulatory changes for each ARAR where applicable.

Table 1 contains chemical–specific ARARs, and Table 2 contains location-specific ARARs. The tables provide the applicable requirements and citation for each established ARAR; and describe whether any updates have occurred for each ARAR since the previous 5-Year Review. Current versions of the California Code of Regulations (CCR) and the Code of Federal Regulations (CFR) were consulted (via the internet or in hardcopy) to review pertinent updates of laws, regulations, or guidance.

TABLE 1
Chemical-Specific ARARs

Contaminant	Media	Requirement	Citation	Origin	ARARs Determination	Comments
DDT and Dieldrin	Surface Waters	Human Health WQC; Remediation Goal as established by EPA AWQC, derived to determine the Human Health WQC to prevent contaminant bioaccumulation for the protection of human health from consumption of fish	CWA. 42 USC Section 9621(d)(2)(A)(ii) and 40 CFR Section 300.430(e)(2)(i)(G). CWA, Section 304(a) requires EPA criteria for water quality	1995 ROD	Applicable	Human Health WQC: DDT = 0.59 ng/L (nanograms per liter) Dieldrin = 0.14 ng/L
DDT and Dieldrin	Surface Waters	Marine Chronic WQC; Established by EPA AWQC, derived to determine the Marine Chronic WQC to be protective of marine organisms and environment	CWA. 42 USC Section 9621(d)(2)(A)(ii) and 40 CFR Section 300.430(e)(2)(i)(G). CWA, Section 304(a) requires EPA criteria for water quality	1995 ROD	Applicable	Marine Chronic WQC: DDT = 1 ng/L Dieldrin = 1.9 ng/L

TABLE 1
Chemical-Specific ARARs

Contaminant	Media	Requirement	Citation	Origin	ARARs Determination	Comments
DDT and Dieldrin	Surface Waters	Control the release of hazardous substances to surface waters	Porter-Cologne, and US F&G Code, Section 5650	1995 ROD	Applicable	Based on the results of the ecological assessment, mean sediment levels were calculated to prevent violations of the remediation goal ARARs for surface waters, and to meet the NAS action level for DDT in fish to ensure protection of fish-eating birds.
DDT and Dieldrin	Fish and Shellfish	. The NAS saltwater action levels are TBCs, which provide an additional level of protection to fish-eating birds beyond the level that is the basis of the surface water ARARs for aquatic life. The NAS action level was retained as a TBC to help determine the protectiveness of remediation, since the US Fish and Wildlife Service raised concerns that the EPA criteria for DDT might not be stringent enough for the protection of fish-eating birds,	55 FR 8745	1995 ROD	To Be Considered	NAS action level for DDT in fish = 0.05 mg/kg (milligrams per kilogram). No chemical-specific soil or sediment remedial goals were identified as ARARs in the ROD or ESD. Based on the results of the ecological assessment, mean sediment levels were calculated to prevent violations of the remediation goal ARARs for surface waters, and to meet the NAS action level for DDT in fish to ensure protection of fish-eating birds.
DDT and Dieldrin	Fish and Shellfish	The FDA action levels for the marketability of fish and shellfish are TBCs for protecting human health; these levels are less stringent than the levels that would be achieved by meeting the surface water ARARs.	21 CFR 109 and 509	1995 ROD	To Be Considered	FDA action levels: DDT = 5.0 ppm (parts per million) Dieldrin = 0.3 ppm

Notes:

CAC = California Administrative Code

CCR = California Code of Regulations

CFR = Code of Federal Regulations

COCs = Contaminants of Concern

CWA = Clean Water Act

EPA = U. S. Environmental Protection Agency

F&G Code = US Fish and Game Code

FDA = U. S. Food and Drug Administration

H&S Code = California Health and Safety Code

NAS = National Academy of Science

ng/L = nanograms per liter

Porter-Cologne = California Porter Cologne Water Quality Control Act

ppm = parts per million

TSCA = Toxic Substances Control Act

WQC = Water Quality Criteria

TABLE 2
Location-Specific ARARs

Location	Requirement	Citation	Origin	ARARs Determination	Comments
Areas that potentially affect threatened or endangered species, or critical habitat	Conserve fish, wildlife and plants that are threatened with extinction; identify any threatened or endangered species, or critical habitat, that would be affected by remedial action .	ESA, 16 USC, Section 1531 et seq.	1995 ROD	Applicable	Least tern and California brown pelican (federally listed endangered species); American peregrine falcon (state listed endangered species)
Areas that potentially affect state threatened or endangered species, or critical habitat	Conserve fish, wildlife and plants that are threatened with extinction; identify any threatened or endangered species, or critical habitat, that would be affected by remedial action.	Cal-ESA, CA F&G Code, Section 2050	1995 ROD	Applicable	California black rail (state threatened species), and Two potentially affected plant species submitted by the CDFG: Mason's lilaeopsis and soft bird's-beak.

Notes:

CCR = California Code of Regulations

CDFG = California Department of Fish and Game

CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act

CZMA = Coastal Zone Management Act

ESA = Endangered Species Act of 1973

FR = Federal Register

FWPCA = Federal Water Pollution Control Act

H&S Code = California Health and Safety Code

SFBRWQCB = San Francisco Bay Regional Water Quality Control Board

USC = United States Code

USFWS = U.S. Fish and Wildlife Service

United Heckathorn Site ARARs Summary

The United Heckathorn site ARARs (as established in the ROD and ESD, and reviewed in the previous 5-Year Review) were evaluated and detailed in Tables 2 through 4. The basis for ARARs are laws and regulations applicable to the site location, remedy actions, and contaminants of concern. The contaminants of concern include DDT and dieldrin.

The site is located in Richmond Harbor, in Contra Costa County, California. The site includes five acres of land and approximately 15 acres of marine area (including Lauritzen Channel and Parr Canal) of Richmond Harbor (Figure 1, Location). The remedy actions determined in the 1995 ROD include:

- Dredge all soft (young) bay mud from Lauritzen Channel and Parr Canal, with off-site disposal of dredged material.
- Place clean material in Lauritzen Channel and Parr Canal after dredging.
- Construct a cap around the former formulation area to prevent soil erosion.

- Attach a deed restriction limiting use of the property to non-residential uses.
- Implement upland operations and maintenance (O&M) and marine monitoring to verify the effectiveness of the remedy.

The selected remedial actions at Lauritzen Channel and Parr Canal were completed in 1997. Construction of the cap at the upland area was completed in 1999. Monitoring continues in the upland area, and in the marine sediments and surface waters of Lauritzen Channel and Parr Canal

The United Heckathorn site is a CERCLA Superfund Site, and was placed on the NPL in 1990. CERCLA response actions are exempted by law from the requirement to obtain Federal, State or local permits related to any activities conducted completely on-site. However, this does not remove the requirement to meet the substantive provisions of permitting regulations that are ARARs.

United Heckathorn site ARARs were evaluated and detailed in Tables 2 through 4. There were no changes to existing action-specific, chemical-specific, nor location-specific ARARs.

TBC criteria, as defined in 40 CFR 300.400(g) (3), are non-promulgated advisories or guidance issued by federal or state government that are not legally binding but may provide useful information or recommended procedures for remedial action. The following were identified in the 1995 ROD, and are noted as TBC criteria for the United Heckathorn site:

- No chemical-specific soil or sediment remedial goals were identified as ARARs in the ROD or ESD. Based on the results of the ecological assessment, mean sediment levels were calculated to prevent violations of the remediation goal ARARs for surface waters, and to meet the NAS action level for DDT in fish to ensure protection of fish-eating birds. There are no chemical-specific ARARs for the concentration of COCs in fish and shellfish. The NAS saltwater action levels are TBCs, which provide an additional level of protection to fish-eating birds beyond the level that is the basis of the surface water ARARs for aquatic life. The NAS action level was retained as a TBC to help determine the protectiveness of remediation, since the U.S. Fish and Wildlife Service raised concerns that the EPA criteria for DDT might not be stringent enough for the protection of fish-eating birds. The NAS action level for DDT in fish is 0.05 mg/kg (milligrams per kilogram).
- The U. S. Food and Drug Administration (FDA) action levels for the marketability of fish and shellfish are TBCs for protecting human health; these levels are less stringent than the levels that would be achieved by meeting the surface water ARARs; FDA action levels: DDT = 5.0 ppm (parts per million); dieldrin = 0.3 ppm.

APPENDIX F

Risk Assessment & Toxicology Review

United Heckathorn Superfund Site 5-Year Review Risk Assessment and Toxicology Analysis

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DATE:	May 31, 2006
PROJECT NUMBER:	341517

This technical memorandum presents a risk assessment and toxicology analysis to support the five-year review of the United Heckathorn Superfund Site in the town Richmond, Contra Costa County, California.

In an effort to determine whether the remedy at the United Heckathorn site remains protective of human health, this section discusses changes in site conditions, changes in exposure pathways and changes in toxicity values, since selection of the Site remedy. Protectiveness of the environment (ecological risk of the marine sediments) at the site is evaluated in a separate document.

The final human health risk assessment (HHRA) for the site was prepared by ICF Technology, Inc. in May 1994 (ICF 1994). This risk assessment was reviewed as part of this evaluation.

Changes in Site Conditions

No major changes in the site conditions of the upland portion of the site that might affect the exposure pathways were identified as part of the five-year review. The Levin Terminal is surrounded by other industrial facilities. The property is fenced and access is limited.

Changes in Exposure Pathways

No new human health routes of exposure were identified that would challenge the accuracy of the protectiveness of the remedy. No new contaminants have been identified. However, new contaminant sources were identified during the Phase I and Phase II Source Investigations (PNNL 2004). These investigations identified a broken concrete outfall below the riprap on the eastern shore about 180 feet north of the Levin Pier which is a continuing source of sediment contamination. The Phase II Source Investigation also confirmed and delineated the sediment hotspot beneath the north end of Levin Pier.

The human health risk that continues is ingestion of fish and/or shellfish from the Lauritzen Channel, Santa Fe Channel, and/or Richmond Inner Harbor Channel by fishermen and their families. Community interviews conducted by the United States Environmental

Protection Agency (USEPA) for the HHRA confirmed that the area, particularly near Parr Canal, is used for recreational and subsistence fishing by local residents in spite of the California Department of Health Services (CDHS) multilingual signs warning that fish and shellfish may be contaminated with dichlorodiphenyl trichloroethane (DDT).

Both water and mussel tissue chemistry results for 2003 show that DDT is still present above the remediation goal, and the DDT is bioavailable and accumulated by resident biota. Since cleanup goals have not been achieved, a focused feasibility study is being prepared to address the newly identified sources of sediment contamination.

Changes in Toxicity Values

There have been a number of changes to the toxicity values for specific constituents of concern in soil and sediments at the United Heckathorn Superfund Site since the final HHRA was submitted in 1994. However, these changes do not affect the protectiveness of the remedy.

For carcinogenic effects, slope factors for naphthalene (oral and inhalation) and 1,4-dichlorobenzene (inhalation only) were not considered in the original HHRA. In August 2004, California's Office of Environmental Health Hazard Assessment (OEHHA) adopted a unit risk factor for naphthalene based on data for incidence of nasal respiratory epithelial adenoma and nasal olfactory epithelial neuroblastoma in male rats so cancer effects may have been under-estimated. However, revisions to the slope factors for isophorone, polychlorinated biphenyls (PCBs), benzo(k)fluoranthene, bis(2-ethylhexyl)phthalate, and vinyl chloride indicate a reduced excess cancer risk associated with potential oral and inhalation exposures to these compounds than previously considered.

Noncancer effects for alpha-BHC, beta-BHC, 2-methylnaphthalene, naphthalene (inhalation only) and vinyl chloride were not evaluated in the original HHRA. References doses are currently available for these compounds so noncancer effects may have previously been under-estimated. However, revisions to toxicity values for noncancer effects for 1,4-dichlorobenzene, endosulfan, PCBs, bis(2-ethylhexyl)phthalate, naphthalene (oral only), chromium (inhalation only), and zinc indicate a reduced hazard index from exposure to these chemicals than previously considered. In addition, new reference doses for 1,2,4-trichlorobenzene, naphthalene (inhalation only), and chromium (oral only) may indicate an increased cumulative hazard index (HI) than previously considered.

References

ICF Technology, Inc. (ICF) 1994. Final Human Health Risk Assessment for the United Heckathorn Superfund Site, Volume 1. May.

Pacific Northwest National Laboratory. (PNNL) 2004. Year 6 Post-Remediation Biomonitoring and Phase II Source Investigation at the United Heckathorn Superfund Site, Richmond, California. March.