FINAL
Explanation of Significant Differences No. 2 to the Riverbank Army Ammunition Plant (RBAAP) Record of Decision

March 2026

United States Department of the Army

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LIST OF ACRONYMS AND ABBREVIATIONS

µg/L	Micrograms per liter
ALCOA	Aluminum Company of America
Army	United States Department of the Army
BRAC	Base Realignment and Closure
Cal/EPA	California Environmental Protection Agency
CFR	Code of Federal Regulations
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CRUP	Covenant to restrict the use of property
DHS	Department of Health Services
DTSC	Department of Toxic Substances Control
DWR	Department of Water Resources
EE/CA	Engineering Evaluation/Cost Analysis
E/P	Evaporation/Percolation
ESD	Explanation of Significant Differences
FFA	Federal Facility Agreement
GWTP	Groundwater Treatment Plant
GWTS	Groundwater Treatment System
IC	Institutional Controls
IGWTS	Interim Groundwater Treatment System
IWTP	Industrial Wastewater Treatment Plant
HLA	Harding Lawson Associates
LUC	Land Use Control
MCL	Maximum Contaminant Level
MWSS	Municipal Water Supply System
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NPL	National Priorities List
PPWS	Permanent Potable Water Supply
RBAAP	Riverbank Army Ammunition Plant
RWQCB	Regional Water Quality Control Board
ROD	Record of Decision
TPH	Total Petroleum Hydrocarbons
USACE	United States Army Corps of Engineers
USAEC	United States Army Environmental Command
U.S.C.	United States Code
USEPA	United States Environmental Protection Agency

1.0 INTRODUCTION AND STATEMENT OF PURPOSE

1.1 SITE NAME AND LOCATION

The Riverbank Army Ammunition Plant (RBAAP) is located near the City of Riverbank at 5300 Claus Road in Stanislaus County, California. The main plant is about 1.5 miles south of the Stanislaus-San Joaquin County boundary and approximately 10 miles northeast of the City of Modesto (Figure 1). The main plant area consists of 145 acres and there are four industrial waste treatment evaporation/percolation (E/P) ponds covering an additional 28.848 acres located approximately 1.5 miles north of the main plant within Stanislaus County. The RBAAP is situated in a primarily rural area, bordered on the east by pastureland and on the north, west and south by sparse residential areas (Figure 1). In 2017, Parcel B (part of the main plant area) was transferred out of federal ownership via a Finding of Suitability to Transfer.

1.2 LEAD AND SUPPORT AGENCIES

Environmental investigations by the U.S. Department of the Army (Army) began at the RBAAP in 1980. The preliminary site characterization was completed in 1986 and identified chromium and cyanide as the contaminants of concern in groundwater on- and off-post of the RBAAP. An interim response action was initiated in 1989 and the RBAAP was placed on the United States Environmental Protection Agency's (USEPA's) National Priorities List (NPL) on February 16, 1990. Since that time, environmental investigations, and remedial actions at the RBAAP have been conducted under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA, 42 U.S.C. §9601 et seq.). A Federal Facility Agreement (FFA) was signed by the Army as the lead agency, and the USEPA, the Department of Toxic Substances Control (DTSC, part of the California Environmental Protection Agency [Cal/EPA] and formerly the Department of Health Services [DHS]), and the Central Valley Regional Water Quality Control Board (RWQCB, also part of the Cal/EPA) as the support agencies. Effective in June 1990, the FFA established schedules for performing remedial investigations and feasibility studies.

1.3 RECORD OF DECISION

A final remedial action for the RBAAP was adopted in a "site-wide" Record of Decision (ROD) signed by the USEPA, the DTSC, the RWQCB and the Army in March 1994. If the lead agency (Army) determines a significant change to the selected remedy, as described in the ROD, is necessary after the ROD is signed, CERCLA §117(c) and National Oil and Hazardous Substances Pollution Contingency Plan (NCP) 40 CFR §300.435(c)(2)(i) require the lead agency to address post-ROD significant changes.

1.4 SUMMARY OF CIRCUMSTANCES REQUIRING AN ESD

The Army has prepared this Explanation of Significant Differences (ESD) to:

- Add language clarifying that the permanent potable water supply ("PPWS") removal action completed in December 1992 is part of the groundwater remedy, wherever contamination above MCLs exists;

- Include institutional controls ("ICs") in the groundwater remedy to address on-post groundwater contamination, and groundwater contamination that extends beyond the boundaries of the former RBAAP;
- Specify that groundwater use restrictions included in the Army's deed transferring Parcel B are part of the groundwater remedy;
- Identify California's land use covenant regulation, 22 CCR §67391.1, as an applicable or relevant and appropriate requirement ("ARAR"), for both the groundwater and soil remedies and include a requirement that the property transferee execute and record a land use covenant with DTSC that includes use restrictions parallel to the restrictions in the deed(s);
- Memorialize the change of the cyanide remedial goal from the Federal Maximum Contaminant Level (MCL) of 200 µg/L to the California MCL of 150 µg/L; and
- Memorialize the change of the chromium remedial goal from the prior State MCL of 50 micrograms per liter (µg/L) to the revised State MCL of 10 µg/L.

The Land Use Controls ("LUCs") are necessary for long-term protection of human health and the environment. Certain LUCs will protect site users from risks remaining on-post at RBAAP and will apply to contaminated groundwater and soils at the RBAAP. See Figure 2 that describes "on-post" LUCs at RBAAP that will be implemented pursuant to this ESD #2. Figure 2 also includes parcel delineations "on-post." This ESD #2 also includes certain LUCs for off-post groundwater. This ESD #2 also clarifies that connections to the permanent potable water supply, which were completed under the prior interim/removal action, are part of the final remedy selected in the 1994 ROD and that the permanent potable water supply remedy component remains to provide an alternative water supply to properties with water supply wells overlying groundwater contaminated above MCLs by releases at RBAAP. This ESD #2 describes and selects the groundwater use restrictions as part of the CERCLA remedy on Parcel B, which has already transferred out of Army control. As part of the selection of LUCs as part of the remedy, the ARARs table will be modified to include the California land use covenant regulation, 22 CCR §67391.1 and specific subparts and make it a condition of transfer that the transferee enter into a covenant to restrict the use of property ("CRUP") with the DTSC.

1.5 ADMINISTRATIVE RECORD

In accordance with NCP §300.825(a)(2), this ESD #2 will become part of the Administrative Record file for the RBAAP, located at the Stanislaus County Library. This ESD #2 will be available to the public at:

Stanislaus County Library, Riverbank Branch
3442 Santa Fe Avenue, Riverbank, California, 95367
(209) 869-7008
http://www.stanislauslibrary.org/

2.0 SITE HISTORY, CONTAMINATION, AND SELECTED REMEDY

2.1 SITE HISTORY AND CONTAMINATION

The Aluminum Company of America (ALCOA) originally constructed the RBAAP in 1942 as an aluminum reduction plant supplying the U.S. military. The facility subsequently closed in August 1944. From 1951 until 2009, the RBAAP produced steel cartridge cases, with production peaking during the Korean and Vietnam conflicts. The Army's Installation Restoration Program at RBAAP concluded that chromium, primarily in the hexavalent form, and free cyanide associated with past operations had contaminated groundwater both on and off the facility (Weston, 1991).

Aboveground tanks that were part of the Industrial Waste Treatment Plant (IWTP) were identified as one source of chromium contamination. The tanks were used for IWTP wastewaters generated from the electroplating, cleaning, and metal finishing processes at the facility. These processes involved use of zinc chromate solutions. The original IWTP storage and equalization tanks were made of redwood and are believed to have periodically leaked. IWTP was officially closed through the Resource Conservation and Recovery Act Permit in 2016.

The landfill, a 4.5-acre parcel that was used for surface and trench disposal and debris burning from 1942 to 1966, was identified as another source of contamination. Monitoring wells installed downgradient of the landfill indicated that it was a likely source of cyanide and chromium contamination in groundwater. The cyanide contamination was linked to the disposal of potliners from the aluminum reduction process on the southern portion of the landfill. Chromium contamination in this area of the facility has been traced to construction debris, which included chromium-contaminated bricks.

Implementation of the interim groundwater remedial action (groundwater extraction with treatment) began with initial operations of the Interim Groundwater Treatment System (IGWTS), completed in 1990 and brought on-line in October 1991. The IGWTS was used initially to provide capture of contaminated groundwater flowing westward across the facility boundaries.

In accordance with the RBAAP Permanent Potable Water Supply (PPWS) Engineering Evaluation/Cost Analysis (EE/CA), approved in 1991, the existing public water supply system of the City of Riverbank was extended to service the properties adjacent to the RBAAP. The Army selected the PPWS as a response action in the Action Memorandum dated 1991. The Army completed this removal action in 1992. Thus, impacted residents were provided with a public water supply for domestic use.

2.2 SELECTED REMEDY

2.2.1 Groundwater

The remedy for the RBAAP groundwater contamination selected in the 1994 ROD was increased groundwater extraction (compared with the IGWTS) with treatment, by chemical reduction/precipitation, until the aquifer meets federal and state MCLs of 10 µg/L for chromium and 150 µg/L for cyanide. See Figure 5 for the Historic Plume Maps from the 1991 Remedial Investigation/Feasibility Study (Weston, 1991).

After completion of the remedial design effort in 1995, the Army modified the groundwater extraction system to include extraction wells west of the RBAAP facility. The system was designed to provide full capture of the portions of the chromium and cyanide plumes that exceeded MCLs. Expansion of the overall Groundwater Treatment Plant (GWTP), consisting of the IGWTS and the groundwater treatment system (GWTS), to handle increased pumping from the expanded extraction system was completed in November 1996. In October 2005, optimization of the GWTS was implemented and the IGWTS was shut down.

A monitoring plan for evaluating hydraulic capture and changes in water quality and water levels was established in conjunction with the design of the GWTS (CH2M Hill, 1997). Subsequently, the monitoring plan was evaluated and modified as detailed in the Groundwater Treatment Assessment Report (HLA, 1998) and the quarterly monitoring reports, particularly in the first quarter of 2000 (CH2M Hill, 2000). The monitoring plan was further modified in 2014 to abandon on and off-post monitoring wells, as well as reduce the frequency of select sampling events (USACE 2014). The monitoring plan is updated annually in coordination with the DTSC, EPA and RWQCB through the annual reports.

Analytical data from groundwater samples collected since initiation of the remedial action show that, overall, the GWTS was effective at capturing the groundwater contamination plumes and treating groundwater to below MCLs (Figure 6). However, the results of studies indicated the GWTS was not effective at reducing chromium concentrations to below the MCL in certain small, localized areas. To reach the clean-up goal of 10 µg/L for chromium, a modified remedial approach was needed to address chromium contamination in groundwater. When it became apparent that the groundwater remedy selected to treat chromium was not as effective as it was for treating cyanide, an Explanation of Significant Differences (ESD # 1) was published in January 2013 to add in situ treatment for chromium to the groundwater remedy.

2.2.2 Landfill

The remedy for the RBAAP landfill selected in the 1994 ROD was a final cover to be maintained to ensure its integrity for a period of 20 years, and the installation of up to two additional groundwater monitoring wells adjacent to the landfill. Requirements for the final cover are outlined in the ROD (USAEC, 1994). The final cover was constructed in 1995. The effectiveness of the remedy is regularly evaluated during the Five Year Review process using groundwater monitoring, surface water monitoring, final cover monitoring, and surface water drainage monitoring. The most recent Five Year Review recommends that maintenance of the landfill cap be continued until there is no unacceptable risk to human health or the environment from the landfill (USACE, 2020).

2.2.3 Evaporation/Percolation Ponds

Removal of zinc and Total Petroleum Hydrocarbon (TPH) contaminated sediments, prior to the ROD, appeared to eliminate the need for additional remedial action. Therefore, the ROD concluded that no further action was necessary to address unacceptable risks associated with the E/P ponds[1].

[1] Subsequent questions have arisen regarding residual risks to ecological receptors. These eco-risks will be investigated and, as necessary and appropriate, addressed in a subsequent decision document.

3.0 BASIS FOR THE EXPLANATION OF SIGNIFICANT DIFFERENCES

This ESD is prepared in accordance with Section 117(c) of CERCLA, 42 U.S.C. § 9617(c) and 40 Code of Federal Regulations (C.F.R.) § 300.435(c)(2)(i) and § 300.825(a)(2) and documents significant changes to the remedy selected in the ROD. LUCs in the ROD were a component of only the landfill remedy and did not apply site-wide or as a component of either the soil or groundwater remedy. On-post cleanup was conducted to allow for the intended land use which was and continues to be industrial. Contamination in the on- and off-post groundwater continues to exceed groundwater cleanup standards identified in the ROD. For these reasons, the Army has determined that, to ensure long-term protectiveness of the remedy, it is appropriate to add Remedial Action Objectives (RAOs) to the original remedy to address exposure scenarios that may present an unacceptable risk, including residential use exposure to soil contamination, access to and use of on-post and off-post groundwater contaminated above the cleanup standards (MCLs for drinking water). To meet these RAOs, the Army has prepared this ESD #2 to add LUCs as part of the final remedy.

LUCs to address soil exposure scenarios will prohibit residential use of RBAAP and restrict soil disturbing activities without a pre-approved soil management plan, in areas contaminated above unrestricted use and unlimited exposure (UU/UE) levels by a release of hazardous substances to the environment. Other LUCs will address potential exposure to contaminated groundwater, both on- and off-post. Within the boundaries of RBAAP, LUCs will restrict access to, and the use of, groundwater contaminated above MCLs or in a manner that interferes with the integrity of the groundwater remedy. The LUCs for RBAAP property will be implemented through lease restrictions pending property transfer, and on transfer through deed restrictions and a State land use covenant that parallels the restrictions in the deed. The Army will require the recording of the referenced State land use covenant as a condition of transfer.

Beyond the current boundaries of RBAAP, separate LUCs will address potential exposure to off-post groundwater. These separate LUCs include informational devices to alert owners and occupants of properties that overlie the contaminated groundwater plume caused by the Army's use of RBAAP (Groundwater Plume) contaminated above MCLs that it is not safe to use the groundwater for potable purposes and the availability of an alternative water supply.

In addition, the Army selects as a governmental control component of the groundwater remedy the Groundwater Well Siting and Construction Guidelines[2] that Stanislaus County adopted pursuant to Stanislaus County, California County Code Title 9, Health and Safety, Chapter 9.36, Water Wells ("County Guidelines"). The County Guidelines provide an added layer of protection as they contain siting and construction requirements for new or modified wells, including separation distances, which in accordance with the guidelines is the distance, in feet or fractions of a mile, by which a well is required to be laterally separated from a potential contamination source to prevent

[2] California Department of Water Resources (DWR) sets the minimum standards for water, monitoring, cathodic protection, and geothermal heat exchange wells, with the purpose of protecting California's groundwater quality. Local jurisdictions have the authority to adopt standards which meet or exceed the DWR standards. Because DWR is in the process of updating its minimum standards, Stanislaus County adopted its Well Construction and Siting Guidelines. Well standards are administered and enforced at the local level and Army will continue to coordinate with Stanislaus County to share information related to groundwater wells and the RBAAP Groundwater Plume.

potential water quality degradation as a result of well completion or operation, and the horizontal separation distances in the Guidelines are more restrictive than state standards. *See* https://www.stancounty.com/er/pdf/groundwater-well-siting.pdf.

Finally, as part of this ESD, the Army is clarifying that the Permanent Potable Water Supply (PPWS) removal action undertaken by the Army prior to the ROD is part of the ongoing groundwater remedy selected in the ROD. Pursuant to the PPWS remedy component, the Army, in coordination with the City of Riverbank or other responsible municipal water purveyor, will connect properties with drinking water wells contaminated above MCLs by past RBAAP activities to the purveyor's water supply system wherever the municipal supply system is available. If the groundwater has migrated to areas that do not have the infrastructure to supply potable water from a municipal water system, the Army will coordinate with the system provider to extend the system.

3.1 REMEDIAL ACTION OBJECTIVES

The ESD #2 RAOs supplement the RAOs that were described in the 1994 ROD and are as follows:

- Prevent, mitigate, and reduce exposure to contaminants above unacceptable risk levels.
- Prohibit the development and use of the RBAAP facility for residential purposes.
- Prevent human exposure to contaminated drinking water above State and Federal MCLs.
- Prevent activities that could negatively impact the groundwater remedy on the RBAAP facility and parcels adjacent to the former RBAAP, including damage or destruction to system infrastructure (remedy integrity).

4.0 DESCRIPTION OF SIGNIFICANT DIFFERENCES

The revised remedy is described and evaluated within this section. The difference between the ROD and this ESD involves a clarification to ensure that the PPWS is formally included as part of the remedy and the incorporation of LUCs to ensure the remedy remains protective of human health and the environment in the long-term. The LUCs will also be more particularly described in an enforceable LUC Remedial Design (LUCRD), which is a primary document under the FFA, and will be prepared within 90 days of ESD #2 signature. LUCs will be maintained until the concentration of hazardous substances in the soil and groundwater are at such levels to allow for unlimited use and unrestricted exposure. The Army is responsible for implementing, maintaining, reporting on, and enforcing the LUCs. Although the Army intends to transfer these procedural responsibilities to another party by contract, property transfer agreement, or through other means, the Army shall retain responsibility for remedy integrity. Any activity that is inconsistent with the IC objectives or use restrictions, or any other action that may interfere with the effectiveness of the ICs will be addressed by the Army as soon as practicable, but in no case will the process be initiated later than ten days after the Army becomes aware of the breach. The Army will notify EPA and the State as soon as practicable but no longer than ten days after discovery of any activity that is inconsistent with the IC objectives or use restrictions identified herein, or any other action that may interfere with the effectiveness of the ICs. The Army will notify EPA and the State

regarding how the Army has addressed or will address the breach within ten days of sending EPA and the State notification of the breach. Prior to seeking approval from the EPA and the State, the recipient of the property must notify and obtain approval from the Army of any proposals for a land use change at a site inconsistent with the use restrictions and assumptions described in the 1994 ROD, ESD#1, and this ESD #2. The Army shall not modify or terminate LUCs, implementation actions, or modify land use without approval of EPA and concurrence of the State, as set forth in the FFA for RBAAP. The Army shall seek prior concurrence before an anticipated action that may disrupt the effectiveness of the LUCs or an anticipated action that may alter or negate the need for LUCs. Finally, this section also describes the efforts the Army will undertake to require the execution and recording of a CRUP between the State and non-Federal transferee(s), so that the State and EPA, as a third-party beneficiary, may enforce the LUCs being selected in this ESD #2 as part of the CERCLA remedy.

4.1 CLARIFICATION OF THE 1994 ROD

As described in Section 2.1, above, the Army performed a non-time critical removal action in 1991-1992 that extended the City of Riverbank's (Riverbank) municipal water supply system (MWSS) to properties overlying the Groundwater Plume. The ensuing 1994 ROD references the PPWS in both subsection 1.4 of the "Declaration" section, "Description of the Selected Remedy," and subsections 2.3.2 and 2.16.1 of the "Decision Summary" section, "Response Actions and Solid Waste Management Units (SWMUs); Permanent Potable Water supply (PPWS) Response Action" and "Selected Remedies; Groundwater Remedy," respectively. Although the Army intended that the 1994 ROD incorporate the PPWS as a component of the groundwater remedy selected in the 1994 ROD, the ROD's references to the PPWS noted in the preceding sentence do not clearly do so.

To clarify that the PPWS is part of the final groundwater remedy, the Army herein selects connection to the PPWS as a component of the final groundwater remedy for RBAAP. The PPWS is a permanent action, meaning that the infrastructure installed to extend Riverbank's MWSS to properties overlying the Groundwater Plume became part of that system on installation and will remain in place even after the groundwater cleanup goals have been achieved. As part of the PPWS component of the groundwater remedy, the Army will notify property owners who have drinking water wells within the RBAAP Groundwater Plume that the Army will provide a connection to the PPWS to properties with drinking water wells contaminated above cleanup standards. Connection to a PPWS will continue to be offered until groundwater cleanup goals have been achieved. Connection to Riverbank's MWSS provided property owners with a water supply to replace use of groundwater from groundwater wells being used for drinking water. To address remaining potential exposure pathways to contaminated groundwater above cleanup goals, the Army is adding a variety of other measures to the RBAAP groundwater remedy as well (see section 4.4).

4.2 STATE COVENANT TO RESTRICT USE OF PROPERTY AND OTHER DEED RESTRICTIONS

In accordance with the California land use covenant ARAR, 22 CCR § 67391.1 (see section 4.3.2), the Army will require in the deed as a condition of conveyance that the non-Federal property transferee execute and record at closing, a CRUP between the transferee and the State. In addition,

the Army will work with non-Federal owners of former RBAAP property (e.g., Parcel B) to facilitate the execution and recording of a CRUP between the non-Federal property owner and State to ensure that the restrictions included in the United States' deed of conveyance also are included in a consistent manner in the CRUP.[3] To ensure protection of human health and the environment , appropriate restrictions consistent with the LUCs for on-post properties identified within this ESD #2, will be included in the deed transferring property.[4] The CRUP is to run with the land pursuant to 22 CCR § 67391.1, and shall continue in perpetuity unless modified or terminated in accordance with applicable law.

Each transfer of fee title from the United States will include a CERCLA 120(h)(3) notice which will have a description of the residual contamination on the property and the environmental use restrictions, expressly prohibiting activities inconsistent with the performance measure goals and objectives.

The environmental restrictions are included in a section of the CERCLA 120(h)(3) notice that the United States is required to include in the deed for any property that has had hazardous substances stored for one year or more, known to have been released or disposed of on the property. Each deed will also contain a reservation of access to the property for the United States and their respective officials, agents, employees, contractors, and subcontractors for purposes consistent with CERCLA, the NCP, and the FFA. The deed will contain appropriate provisions to ensure that the restrictions continue to run with the land and are enforceable by the Army.

During the time between the execution of this ESD #2 and deeding of the property, equivalent restrictions will be implemented by lease or easement terms, which are no less restrictive than the use restrictions and controls described above, in this ESD #2. These lease or easement terms shall remain in place until the property is transferred by deed, at which time they will be superseded by the ICs described in this ESD #2.

Concurrent with the transfer of fee title from the Army to transferee, information regarding the environmental use restrictions and controls will be communicated in writing to the property owners and to appropriate state and local agencies to ensure such agencies can factor such conditions into their oversight and decision-making activities regarding the property.

4.3 ON-POST LAND USE CONTROLS

4.3.1 LUCs are appropriate at RBAAP to ensure long-term protection of human health and the environment where there is potential for human exposure to contaminated groundwater above groundwater cleanup goals and to residual contaminants in soil cleaned up only to industrial levels.

[3] The Army may not require a non-Federal owner of already-transferred former RBAAP property such as Parcel B to enter into a CRUP. However, the Army will request the new property owner to execute and record a covenant.

[4] Generally, if a parcel is identified that achieves cleanup levels suitable for unlimited use/unrestricted exposure, land use restrictions may not be imposed as a component of the remedy or for transfer of the parcel; land use restrictions may be imposed for purposes of maintaining the integrity of a remedy implemented on adjacent property. Groundwater restrictions as well as a "Non Interference with Groundwater Monitoring Well and Groundwater Infrastructure" (remedy integrity) were included in the deed for Parcel B and the Army is selecting them as a component of the groundwater remedy in this ESD to further protect the integrity of that remedy.

LUCs described below will be implemented and maintained until the concentration of hazardous substances in the soil and groundwater are at such levels to allow for UU/UE. A LUCRD document will be prepared to detail the Army's LUC maintenance plan and obligations.

See Figure 2 for a Parcel delineation, and a depiction of the areas to which the on-post LUCs apply. The on-post LUCs include:

(1) On-Post Residential Use Restriction. Parcels A, 1, 1A, 2, 2A, and NW Storm Water Reservoir shall be used solely for commercial or industrial activities and not for residential purposes. "Residential" includes, but is not limited to:

(a) A residence, including any mobile home or factory-built housing, constructed or installed for use as residential human habitation.

(b) A hospital for humans.

(c) A public or private school for persons under 18 years of age.

(d) A day care center for children.

(2) On-Post Groundwater Use Restrictions and Prohibition. For the purpose of the restrictions and prohibition set forth in this section 4.3.1(2), groundwater shall have the same meaning as in §101(12) of CERCLA.

(a) No drilling into, or extraction or removal of, groundwater from beneath Parcels A, 1, 1A, 2, 2A, and NW Storm Water Reservoir, is permitted without prior written approval of the FFA parties until the cleanup goals for groundwater are achieved. These restrictions do not apply to:

- Three wells (I1, I5 and I6) that are currently permitted for potable water under a State of California Domestic Water Supply Permit.
- Removal actions, remedial actions, or groundwater monitoring under EPA or California state agency oversight.

(b) The extraction of groundwater from beneath Parcel B for the purpose of using the groundwater for potable or non-potable use is prohibited until the cleanup goals for groundwater are achieved. The de minimis removal of groundwater incidental to drilling on Parcel B unrelated to groundwater extraction is not subject to this prohibition.

(3) On-Post Restriction on Interference with Remedial and Monitoring Systems. Activity on Parcels A, 1, 1A, 2, 2A, B, and NW Storm Water Reservoir that may alter, interfere with, or otherwise affect the integrity or effectiveness of, or the access to, any investigative, remedial, monitoring, operation or maintenance system (e.g., cap, vapor extraction system, monitoring system, groundwater extraction system and infrastructure, groundwater wells, groundwater well heads, in situ treatment systems, etc.) is prohibited without prior written approval of the FFA Signatories.

(4) Restriction on Access, Excavation, and Other Soil Disturbing Activities on the Parcel A Landfill. The 1994 ROD selected access and deed restrictions for the landfill; the Army is clarifying in this ESD that the deed restrictions included as part of the remedy selected in the ROD may restrict unauthorized excavation activities that may damage the soil cover and liner. The Owner or Occupant shall not conduct or permit others to conduct any excavation activities (including but not limited to digging, drilling, or any other excavation or disturbance of the land surface or subsurface) on the landfill as described in Figure 4, or any other activities that may damage the landfill soil cover and liner. The Owner or Occupant shall not construct, make, or permit any alterations, additions, or improvements to the landfill in any way without prior written approval of FFA Signatories and the Owner shall place and maintain signage around the landfill notifying users of the aforementioned access restrictions.

(5) Restriction on Soil Disturbances. No activities that will disturb the soil (including but not limited to digging, drilling, or any other excavation or disturbance of the land surface or subsurface) shall be allowed on Parcels A (not including the landfill that is covered under Section 4.1(4) above), 1, 1A, 2A, and NW Storm Water Reservoir without a Soil Management Plan pre-approved by the FFA Signatories in writing. This restriction does not apply to removal actions, remedial actions, or monitoring actions. Soil brought to the surface by grading, excavation, trenching, or backfilling unrelated to CERCLA response actions, shall be managed in accordance with all applicable provisions of state and federal law.

4.3.2 ARARs

The Army identifies 22 CCR §§ 67391.1(a), (d), (e)(2), and (i) as ARARs for the remedy selected in the 1994 ROD, as modified by this ESD #2, based on the site-specific circumstances at RBAAP. As required by these provisions, the Army has identified LUCs to restrict use as necessary to protect human health and the environment. (See Section 4.3). The details for implementation of the LUCs will be described in a LUCRD or similar document after ESD #2 is issued. Pending the transfer of RBAAP property that is subject to LUCs, the Army will implement the selected LUCs through lease provisions for leased property, and through a property management plan for Army owned and controlled property, pursuant to (a), (e)(2), and (i). To implement (a), (d), and (i) at the time of transfer, the Army will include in the deed for RBAAP property that is subject to LUCs: a) the LUCs identified herein; and b) a provision that requires the transferee to enter into a land use covenant with the State that incorporates the identified LUCs, and record that covenant in the chain of title within ten days following the property's transfer. The ARARs table is modified as documented in Attachment A.

4.4 OFF-POST[5] GROUNDWATER LAND USE CONTROLS MONITORING DEVICES

4.4.1. Informational Device LUCs. To ensure continued protection of human health and the environment, the Army incorporates into the groundwater remedy the following LUCs/ICs informational/monitoring devices. These devices include notices and other

[5] For purposes of this ESD #2, "off-post" means property that was not part of the RBAAP (the United States has not owned and Department of Army has not had administrative control over).

public outreach efforts to "off-post" property owners/occupants, and information sharing with Stanislaus County and other appropriate governmental agencies regarding potential use of groundwater within the Groundwater Plumes[6]. (Specific information regarding the implementation of the informational devices, including roles and responsibilities, logistics of notifications and other processes, will be established in the LUCRD.):

(1) Send annual notifications to the properties overlying the Groundwater Plumes contaminated above the MCL for chromium until remedial goals are achieved. The notification will provide information related to the Groundwater Plume and the MCLs and remind the property owners/occupants that potable use of well water containing contaminants which exceed MCLs is not recommended because it poses an unacceptable risk to human health, in addition to providing points of contact and other information.

(2) The Army will work with the Regulators and Stanislaus County to establish an agreement memorializing the annual exchange of the following information. The Army annually will provide a current well inventory record to Stanislaus County to cross-check completeness of the Army's well survey and work cooperatively with the County and other government agencies, as appropriate, to identify and address information gaps associated with groundwater use/wells within the area overlying the Groundwater Plume. The Army will also annually seek from Stanislaus County information about well permit applications in the areas prohibited by County Guidelines due to their proximity to the Groundwater Plume.

(3) Annually perform reviews of the Sustainable Groundwater Management (SGMA) data viewer to access well completion reports and California Department of Water Resources online databases to obtain information on well completion reports/information submitted in accordance with CA Water Code 13751 and update or supplement the Army's well survey memorandum, as necessary.

4.4.2. PPWS. To assist the Army in verifying that the PPWS component of the groundwater remedy meets the goal of providing a water supply to properties with drinking water wells located within the groundwater plumes contaminated in excess of MCLs and to identify if a connection of a property to the PPWS is warranted, in addition to use of information obtained pursuant to section 4.4.1 above, the Army intends to conduct well surveys at a frequency determined in the remedial design documentation to evaluate properties located within the area overlying the off-post groundwater contamination plume to supplement the well survey performed in the 1990s as part of the initial remedial action. The well surveys will assess whether there are drinking water wells located on off-post properties overlying the groundwater plume where groundwater is or will be above the MCLs and obtain additional information regarding well construction such as date drilled, method used to install, and depth to groundwater for use in determining whether connection to PPWS should be offered. The PPWS

[6] Various documents reference "groundwater plume" or "plumes" based on both areal extent and contaminant-specific.

component of the groundwater remedy requires the Army to notify property owners who have drinking water wells within the area overlying the RBAAP groundwater plume and to provide a connection to the PPWS to properties with drinking water wells contaminated above cleanup standards.

4.4.3. County Guidelines. As an additional layer of protection, the Army incorporates as a governmental control component of the remedy the Groundwater Well Siting and Construction Guidelines that Stanislaus County adopted pursuant to Stanislaus County, California County Code Title 9, Health and Safety, Chapter 9.36, Water Wells. The County Guidelines specify the lateral separation required between a newly constructed well and a potential contamination source. If the Army becomes aware that the County Guidelines are being violated, it will coordinate with Stanislaus County for appropriate action. If the County Guidelines are rescinded or no longer maintained by Stanislaus County, the Army will evaluate the protectiveness of the groundwater remedy for off-post areas without the County Guidelines as part of the remedy.

4.5 FIVE YEAR REVIEWS

The effectiveness of the remedy, including the LUCs identified and described in this ESD and their implementation as will be further described in the LUCRD, will be evaluated to determine whether the remedy remains protective of human health and the environment as part of the CERCLA Five Year Review process under section 121, consistent with the NCP (40 CFR § 300.430(f)(4)(ii)), and the FFA. The Army will annually monitor the environmental use restrictions and controls. The monitoring reports will be used in preparation of the Five Year Review to evaluate the effectiveness of the remedy. The annual evaluation will address whether the use restrictions and controls referenced above were communicated in the deed(s), whether the owners and state and local agencies were notified of the use restrictions and controls affecting the property, and whether use of the property has conformed to such restrictions and controls.

5.0 AFFIRMATION OF STATUTORY DETERMINATIONS

With the modification of the remedy by this ESD, the remedy will satisfy the requirements of CERCLA §121. The Army, the USEPA, the DTSC and the RWQCB believe the modified remedy will be protective of human health and the environment.

6.0 SUPPORT AGENCY COMMENTS

The USEPA, DTSC, and RWQCB agree that the modifications to the ROD as set forth in this ESD #2 are necessary for long-term protection of human health and the environment. Specific comments can be found in Appendices B, C, and D.

7.0 PUBLIC PARTICIPATION COMPLIANCE

Public participation requirements set out in the NCP, 40 C.F.R § 300.435(c)(2)(i), will be met with the placement of this ESD #2 in the Administrative Record pursuant to § 300.825(a)(2) and with the publication of a notification to the public concerning this ESD in a major local newspaper after signature. The RBAAP ROD, the 2013 ESD #1, and this ESD #2 will be available to the public at:

Stanislaus County Library, Riverbank Branch
3442 Santa Fe Avenue, Riverbank, California, 95367
(209) 869-7008
http://www.stanislauslibrary.org/

8.0 REFERENCES

Ahtna, 2024. "Annual Groundwater Monitoring, Landfill, and Groundwater Treatment Report (2022 Fourth Quarter), Riverbank Army Ammunition Plant, Riverbank, California. February

Army, 1991. "Action Memorandum Riverbank Army Ammunition Plant Permanent Water Supply", Riverbank Army Ammunition Plan, Riverbank California. October

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CH2M Hill, 1997. "Final Extraction System Design and Monitoring Plan with System Operating Procedures." Riverbank Army Ammunition Plant, Riverbank, California. September 24.

CH2M Hill, 2000. "Quarterly Groundwater Monitoring Report, RBAAP Groundwater Monitoring Program, 2000 – First Quarter." Riverbank Army Ammunition Plant, Riverbank, California. April.

Department of Water Resources (DWR), 1990. "California Water Well Standards, Bulletins 74-81 and 74-90."

Harding Lawson Associates (HLA), 1998. "Groundwater Treatment System Assessment Report, August 1996 through November 1997." Riverbank Army Ammunition Plant, Riverbank, California. September 10.

USAEC, 1994. "Riverbank Army Ammunition Plant (RBAAP) Record of Decision." Riverbank Army Ammunition Plant, Riverbank, California. March.

USACE, 2014. Final Groundwater Monitoring Plan Riverbank Army Ammunition Plant, Riverbank, CA. August.

USACE, 2020. "Final Fourth Five Year Review for Riverbank Army Ammunition Plant". Riverbank Army Ammunition Plant, July.

USACE, 2022. "Final Fifth Five Year Review for Riverbank Army Ammunition Plant". Riverbank Army Ammunition Plant, March.

Weston, Roy F., 1991. Riverbank Army Ammunition Plant Remedial Investigation Report. West Chester, Pennsylvania. Prepared for Commander, U.S. Army Toxic and Hazardous Materials Agency, Aberdeen Proving Ground, Maryland 21010-5401. July.

SIGNATURE PAGE

EXPLANATION OF SIGNIFICANT DIFFERENCES No. 2

RIVERBANK army AMMUNITION PLANT
RIVERBANK, CALIFORNIA

United States Department of the Army

RAMSDELL.RICHARD.C.1161451408
Digitally signed by RAMSDELL.RICHARD.C.1161451408
Date: 2026.03.26 09:56:26 -04'00'

Richard Ramsdell
BRAC Director
Office of the Deputy Assistant Secretary of the Army
(Environment, Safety and Occupational Health)

26 March 2026
Date

SIGNATURE PAGE

EXPLANATION OF SIGNIFICANT DIFFERENCES No. 2

RIVERBANK ARMY AMMUNITION PLANT
RIVERBANK, CALIFORNIA

United States Environmental Protection Agency

MICHAEL MONTGOMERY

Digitally signed by MICHAEL MONTGOMERY
Date: 2026.04.13 14:42:49 -07'00'

Michael Montgomery
Director
Superfund & Emergency Management Division
U.S. Environmental Protection Agency
Region 9

Date

SIGNATURE PAGE

EXPLANATION OF SIGNIFICANT DIFFERENCES No. 2

RIVERBANK ARMY AMMUNITION PLANT
RIVERBANK, CALIFORNIA

California Environmental Protection Agency
Department of Toxic Substances Control

The State of California, Department of Toxic Substances Control (DTSC) had an opportunity to review and comment on the ESD and its concerns were addressed.

Dominique Forrester 3/30/2026

Dominique Forrester
Branch Chief
Site Mitigation and Restoration Program – Sacramento Office
California Environmental Protection Agency
Department of Toxic Substances Control

Date

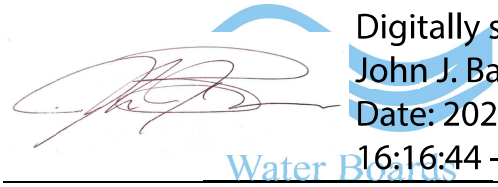
SIGNATURE PAGE

EXPLANATION OF SIGNIFICANT DIFFERENCES No. 2

RIVERBANK ARMY AMMUNITION PLANT
RIVERBANK, CALIFORNIA

California Environmental Protection Agency
Regional Water Quality Control Board, Central Valley Region

The State of California, Central Valley Regional Water Quality Control Board had an opportunity to review and comment on the ESD and its concerns were addressed.



3/26/2026

for Patrick Pulupa
Executive Officer
California Environmental Protection Agency
Regional Water Quality Control Board, Central Valley Region

Date

FIGURES

FIGURE 1
Vicinity Map

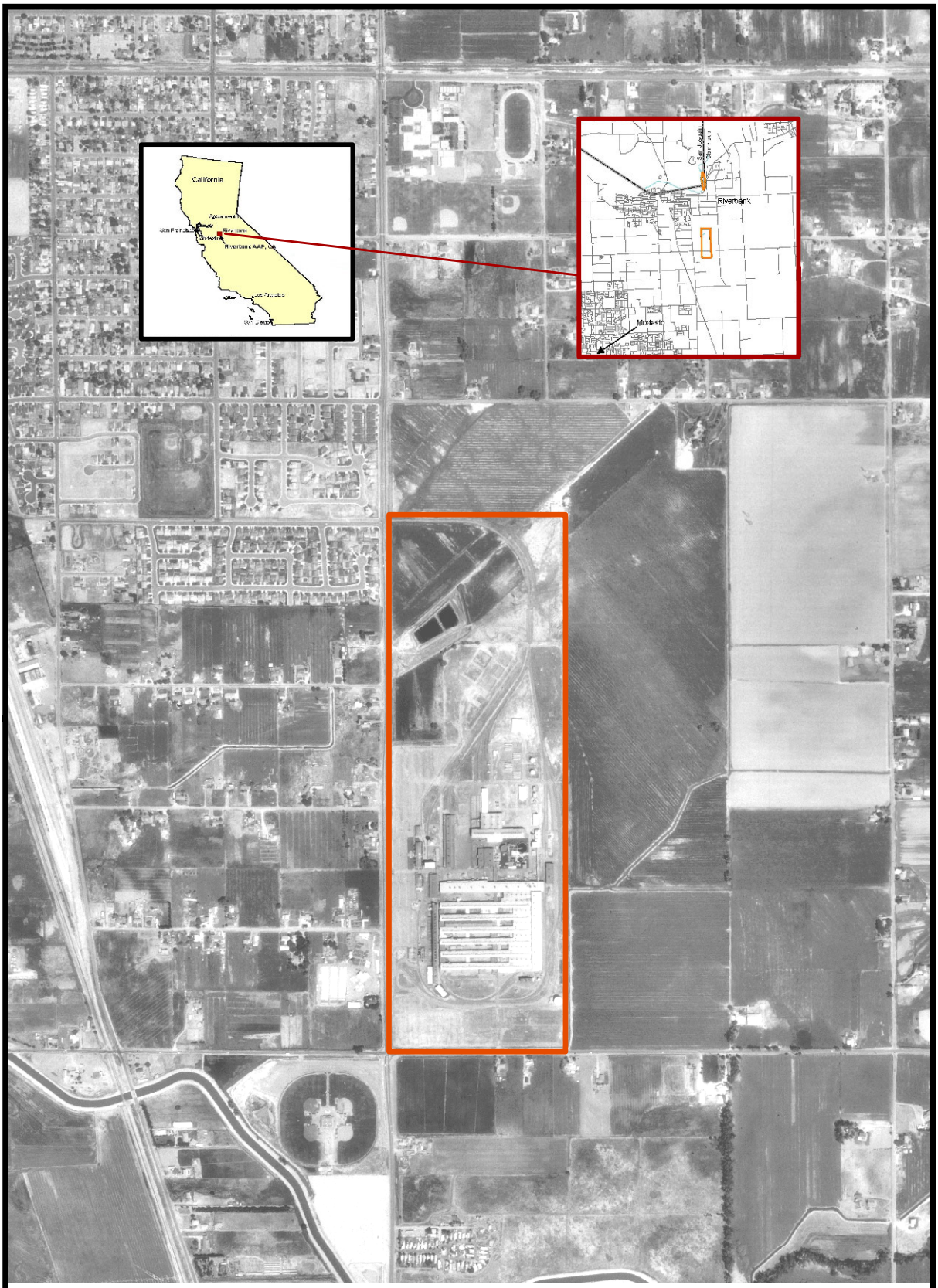


FIGURE 1
VICINITY MAP

RBAAP Site Investigation Report
Riverbank Army Ammunition Plant
Riverbank, California

CH2MHILL

FIGURE 2
Parcel and LUC Depiction, including location of Parcel A Landfill

LANDFILL

PARCEL B
No longer owned by the Army

NW STORM WATER RESERVOIR

PARCEL 2

PARCEL 2A

PARCEL A

PARCEL 1

PARCEL 1A

- Residential Use Restriction
- Groundwater Use Restriction
- Restriction on the Interference with Remedial Efforts and Monitoring Systems
- Excavation Restriction on Landfill
- Restricting Soil Disturbance (other than landfill)

Legend

- Parcel Boundary
- Landfill
- Railroad

N

0 100 200 300 400 500
Feet

Coordinate System: State Plane California 3
Projection: Lambert Conformal Conic
Datum: North American 1983

Riverbank Parcel Use Restrictions

Riverbank Army Ammunition Plant
Riverbank, California
Stanislaus County

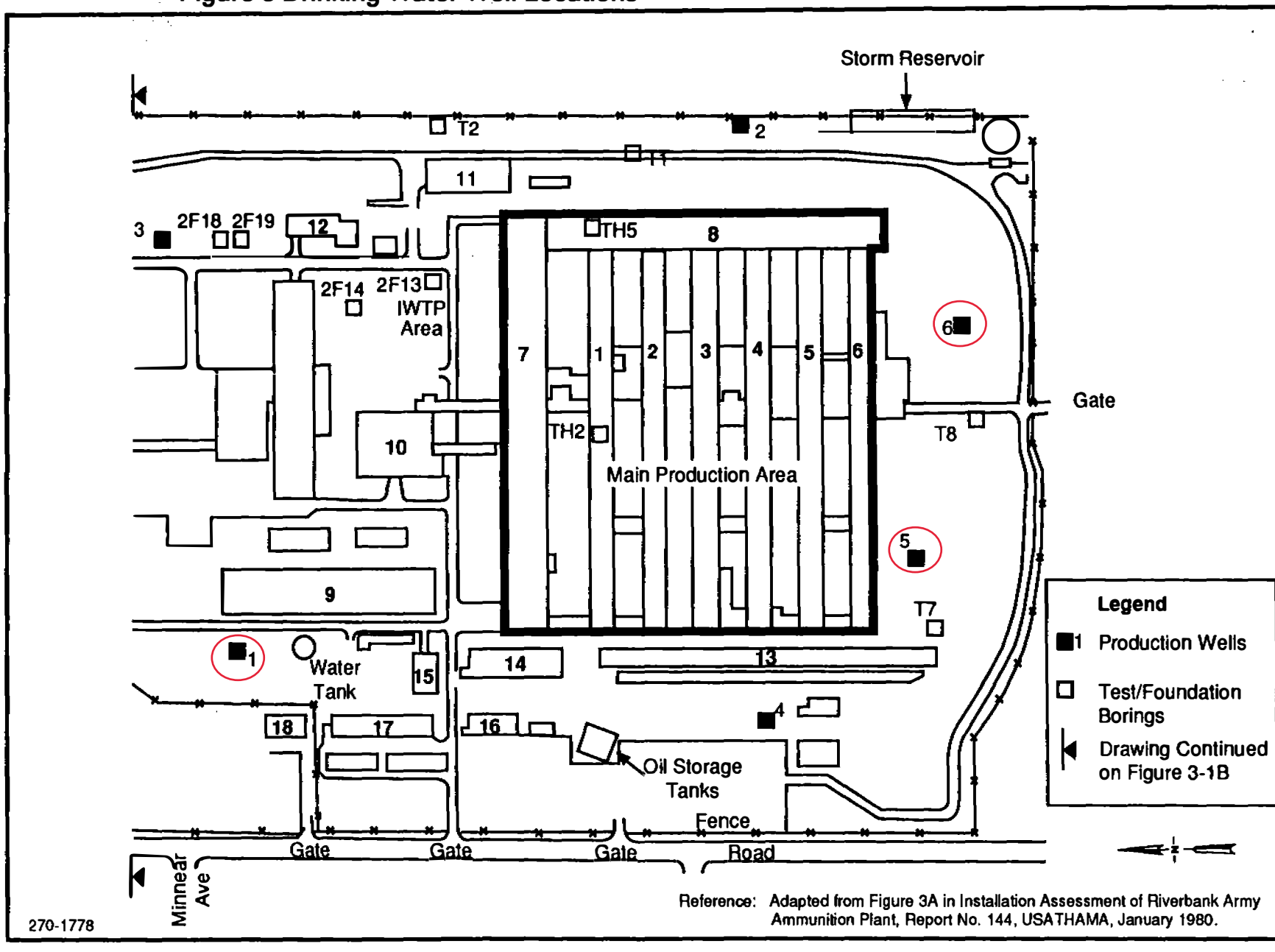
US Army Corps of Engineers
Sacramento District

The data depicted in these GIS layers are the result of digital analyses performed on a database consisting of information from a variety of governmental and other credible sources. The accuracy of the information presented is limited to the collective accuracy of the database on the date of the analysis. This information is believed accurate, and reasonable efforts have been made to ensure the accuracy of the data. However, the U.S. Army Corps of Engineers, Sacramento District GIS Unit expressly disclaims responsibility for damages or liability that may arise from using this data. This product is the property of the U.S. Army Corps of Engineers, Sacramento District GIS Team, and this product's use is thereby restricted.

Path: D:\Riverbank\Riverbank\GIS\GIS_Projects\Parcel_UseRestrictions\RBAAP_Parcel_UseRestrictions.mxd

FIGURE 3
Drinking Water Well Locations

Figure 3 Drinking Water Well Locations

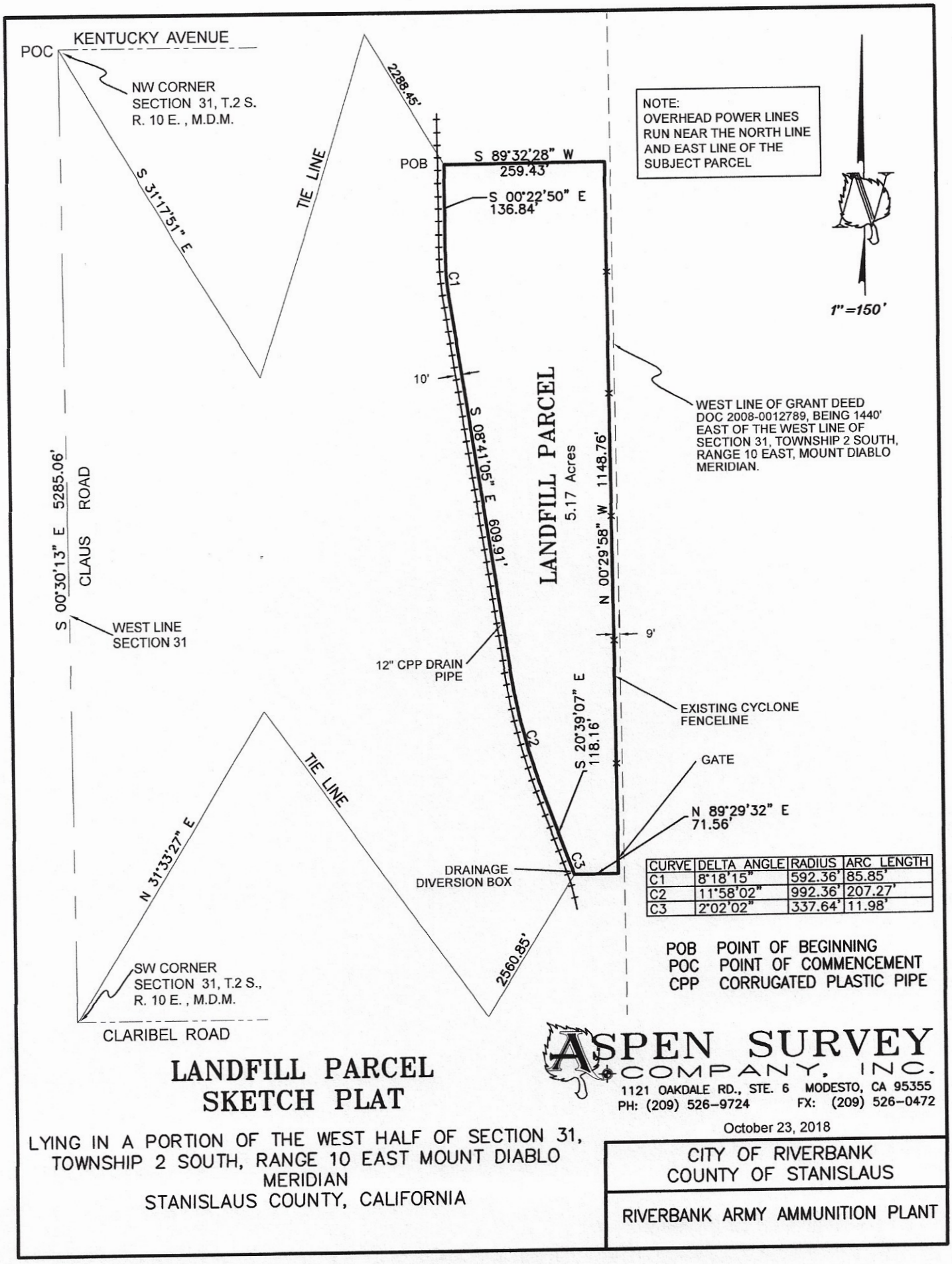


Reference: Adapted from Figure 3A in Installation Assessment of Riverbank Army Ammunition Plant, Report No. 144, USATHAMA, January 1980.

270-1778

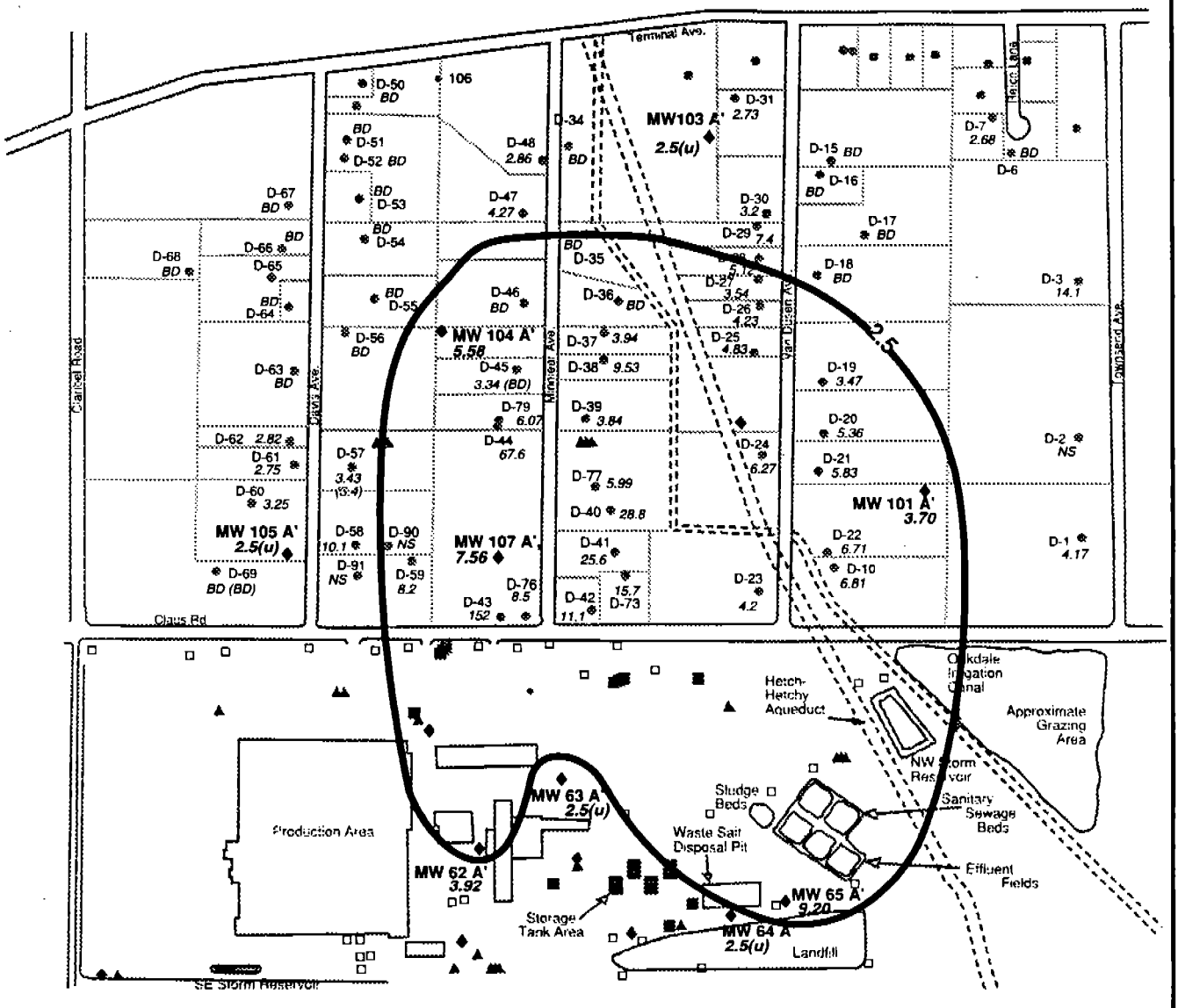
FIGURE 4
Location of Landfill

Figure 4 Landfill Survey and Location of Landfill




Approximate Landfill Parcel Boundary

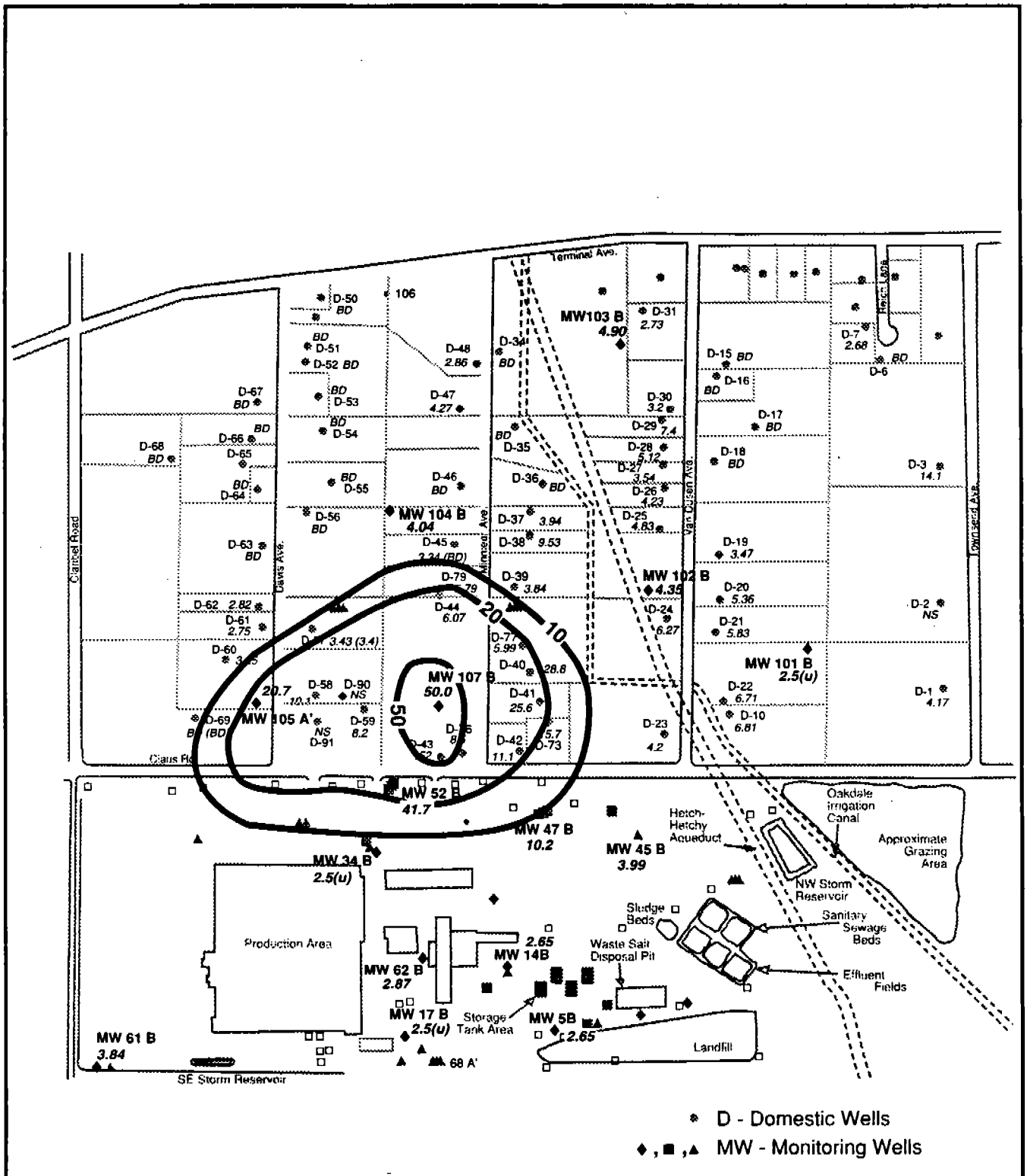
FIGURE 5
1991 Remedial Investigation/ Feasibility Study Historic Plume Maps



NOTE: 1. The 2.5 ppb contour line represents the detection limit for Chromium.
2. Concentrations indicated for domestic wells are representitive of multiple aquifer zones depending on the particular well screen depth and length. Contour lines shown were produced from monitoring well data obtained from monitoring wells screened in the specific aquifer zone.

517-5671b

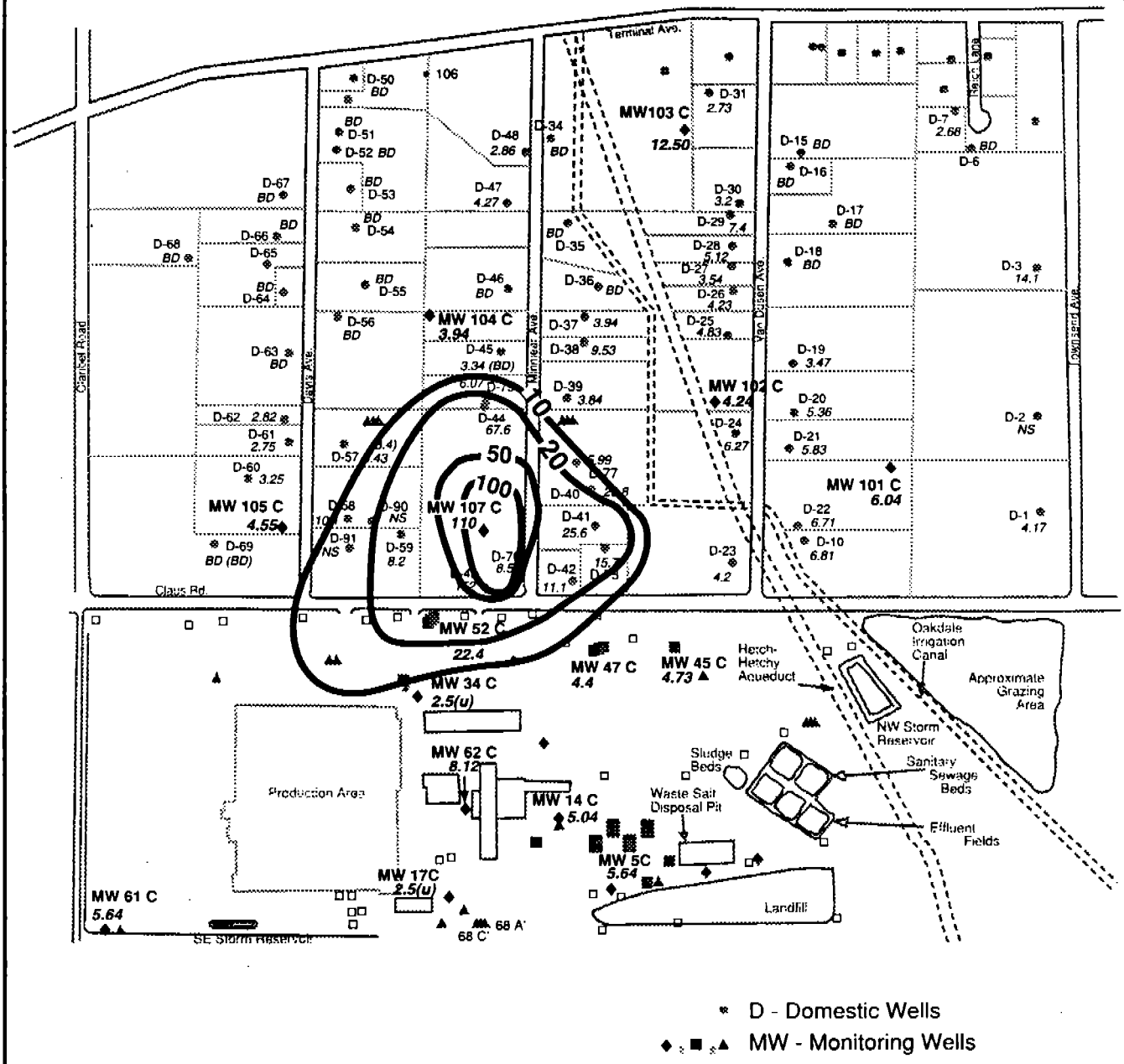
FIGURE 5-37 A' ZONE- PHASE I RI TOTAL CHROMIUM ISOPLETH MAP



NOTE: Concentrations indicated for domestic wells are representitive of multiple aquifer zones depending on the particular well screen depth and length. Contour lines shown were produced from monitoring well data obtained from monitoring wells screened in the specific aquifer zone.

517-5671c

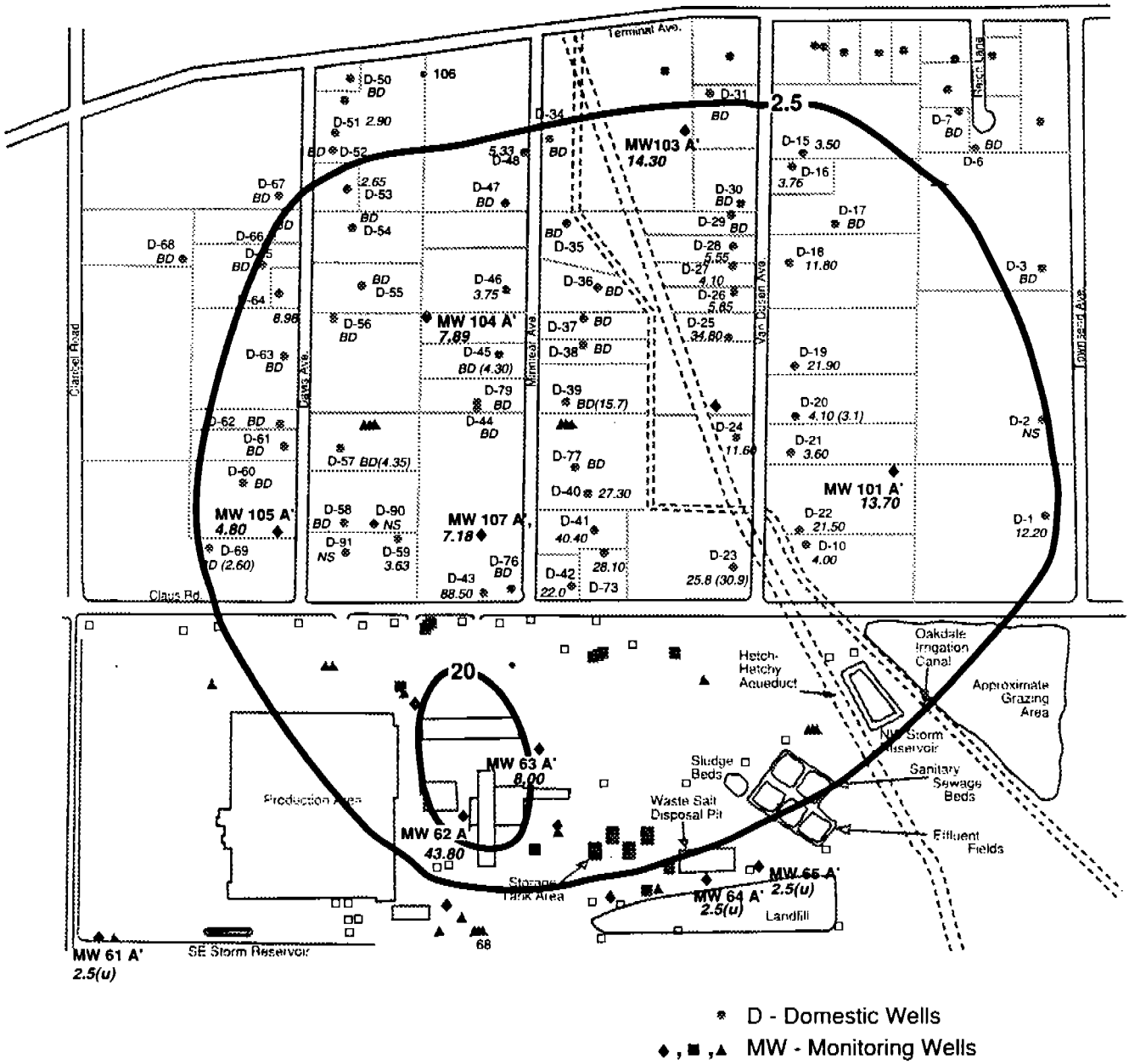
FIGURE 5-38 B ZONE - PHASE I RI TOTAL CHROMIUM ISOPLETH MAP



NOTE: Concentrations indicated for domestic wells are representitive of multiple aquifer zones depending on the particular well screen depth and length. Contour lines shown were produced from monitoring well data obtained from monitoring wells screened in the specific aquifer zone.

517-5671d

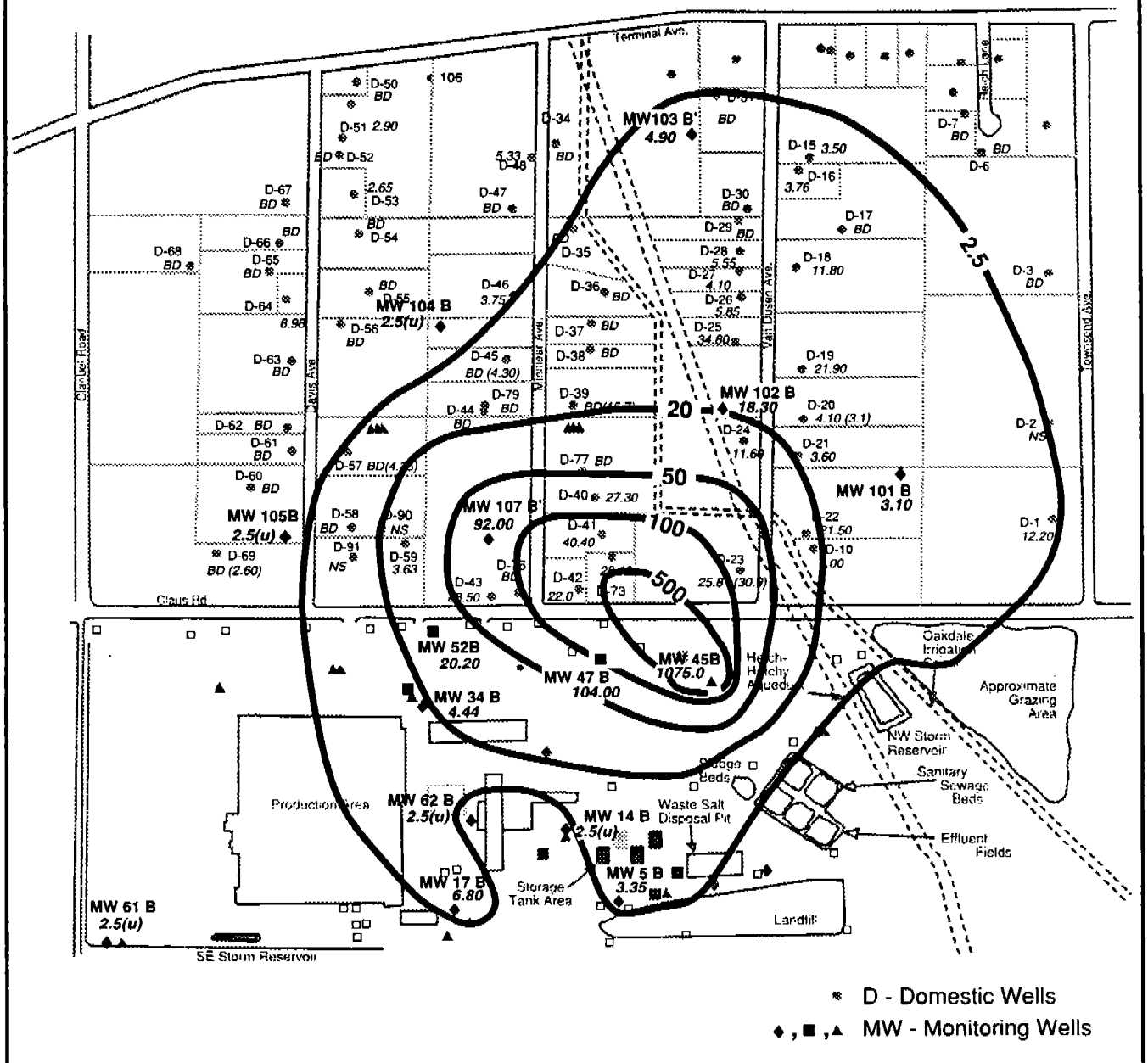
FIGURE 5-39 C ZONE - PHASE I RI TOTAL CHROMIUM ISOPLETH MAP



NOTE: 1. The 2.5 ppb contour line represents the detection limit for Cyanide.
2. Concentrations indicated for domestic wells are representitive of multiple aquifer zones depending on the particular well screen depth and length. Contour lines shown were produced from monitoring well data obtained from monitoring wells screened in the specific aquifer zone.

517-5671a

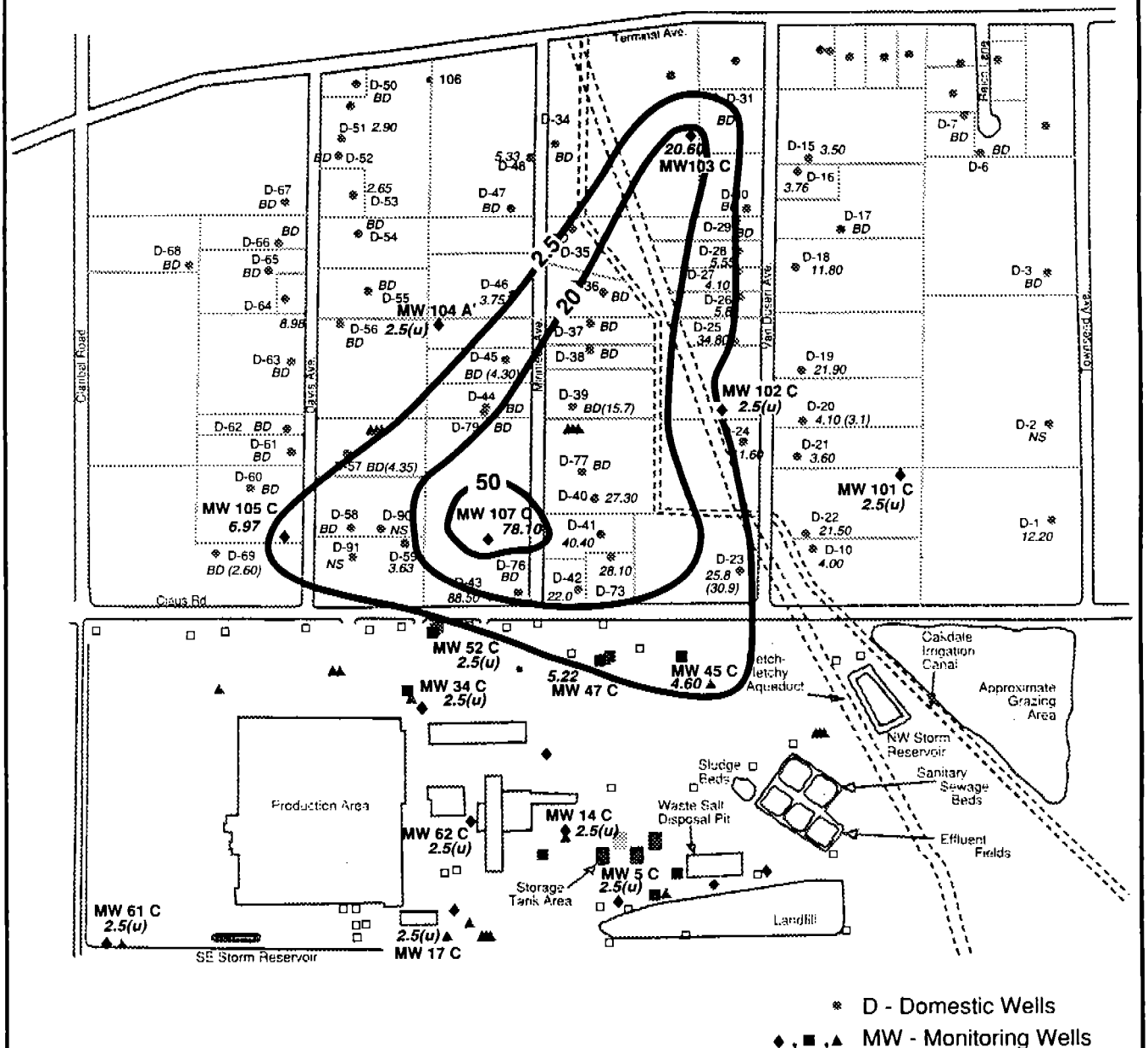
FIGURE 5-40 A' ZONE - PHASE I RI TOTAL CYANIDE ISOPLETH MAP



NOTE: 1. The 2.5 ppb contour line represents the detection limit for Cyanide.
2. Concentrations indicated for domestic wells are representitive of multiple aquifer zones depending on the particular well screen depth and length. Contour lines shown were produced from monitoring well data obtained from monitoring wells screened in the specific aquifer zone.

517-5671i

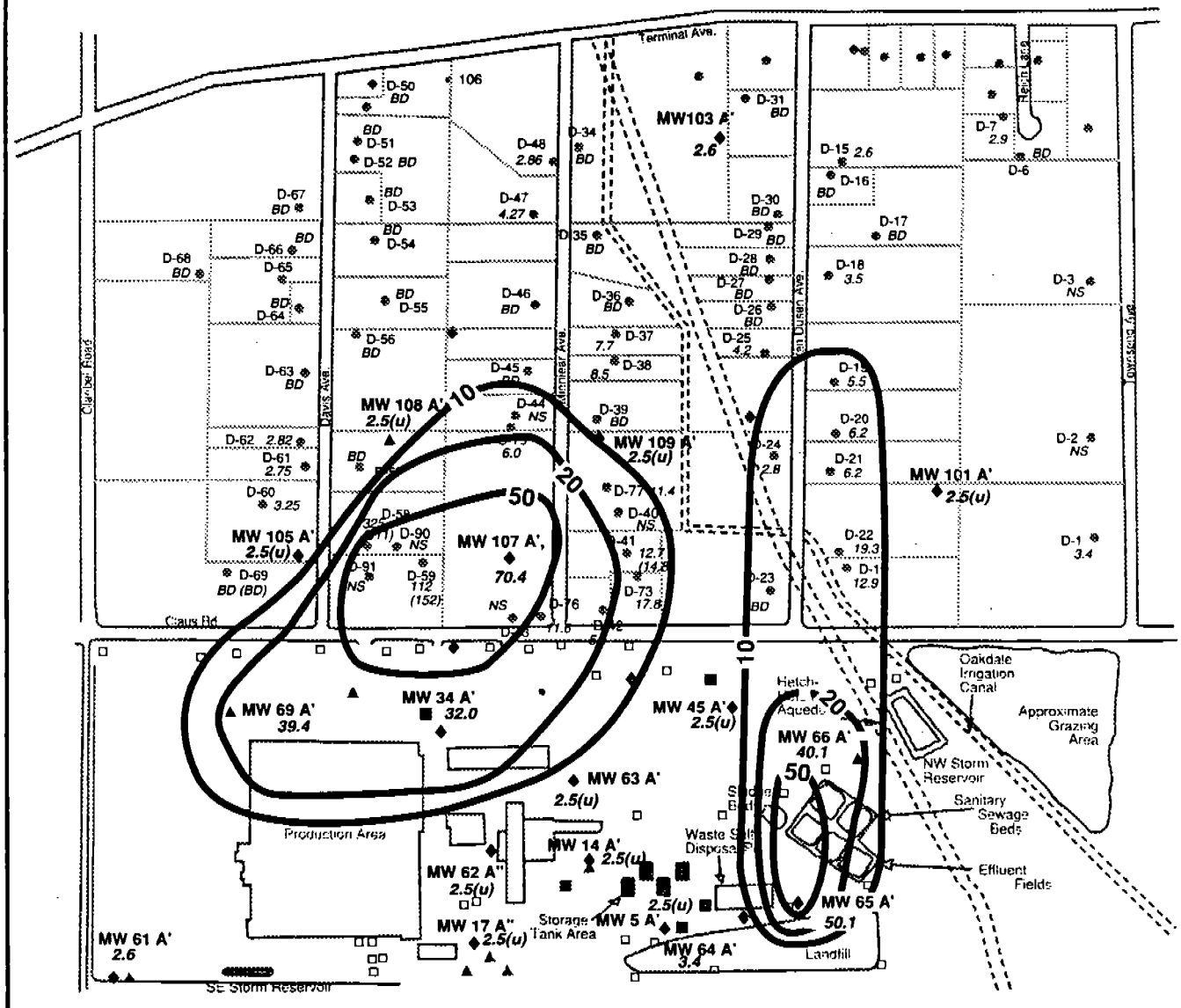
FIGURE 5-41 B ZONE - PHASE I RI TOTAL CYANIDE ISOPLETH MAP



NOTE: 1. The 2.5 ppb contour line represents the detection limit for Cyanide.
2. Concentrations indicated for domestic wells are representitive of multiple aquifer zones depending on the particular well screen depth and length. Contour lines shown were produced from monitoring well data obtained from monitoring wells screened in the specific aquifer zone.

517-5671I

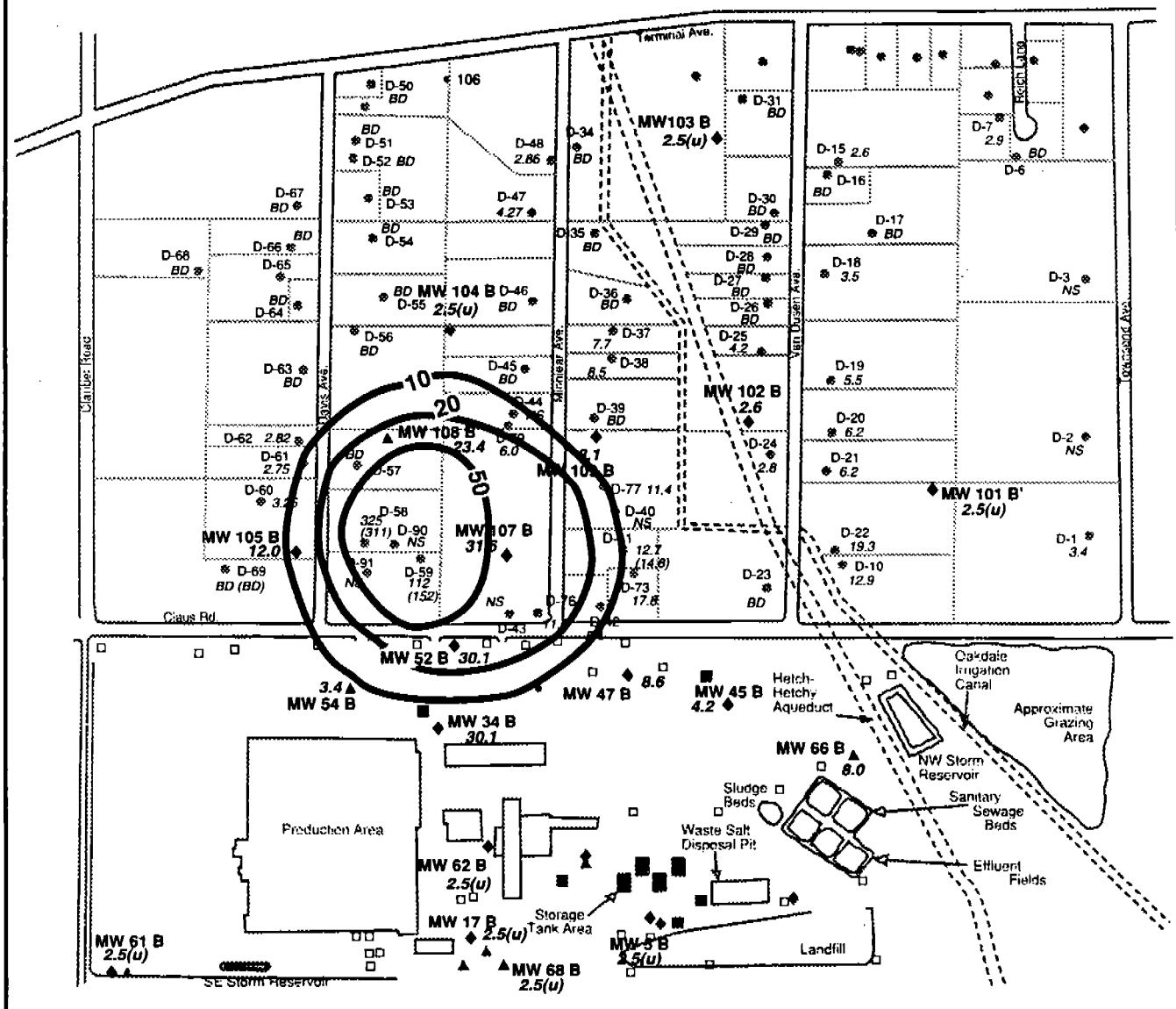
FIGURE 5-42 C ZONE - PHASE I RI TOTAL CYANIDE ISOPLETH MAP



NOTE: Concentrations indicated for domestic wells are representitive of multiple aquifer zones depending on the particular well screen depth and length. Contour lines shown were produced from monitoring well data obtained from monitoring wells screened in the specific aquifer zone.

517-5671e

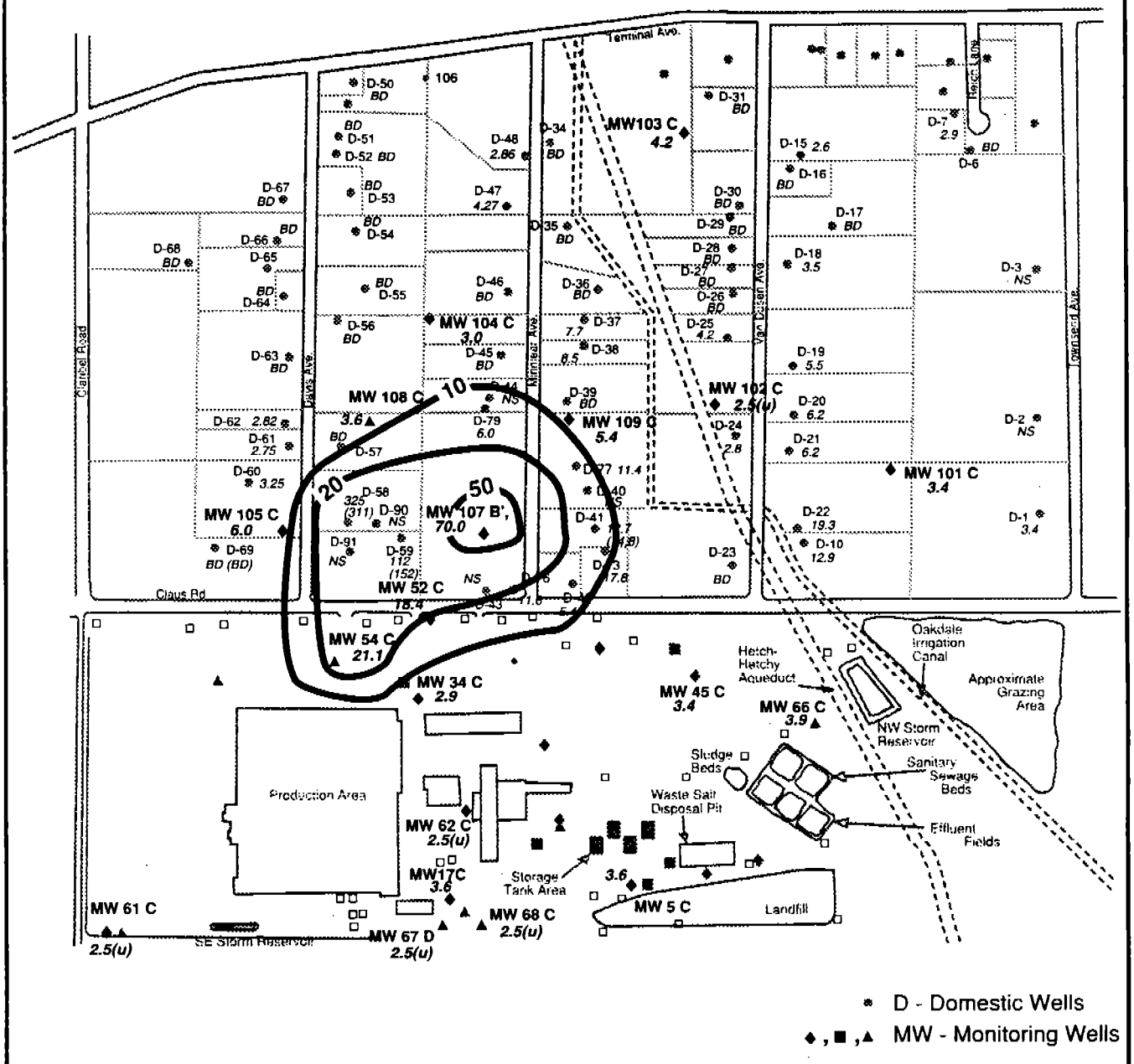
FIGURE 5-43 A' ZONE - PHASE II RI TOTAL CHROMIUM ISOPLETH MAP



NOTE: Concentrations indicated for domestic wells are representitive of multiple aquifer zones depending on the particular well screen depth and length. Contour lines shown were produced from monitoring well data obtained from monitoring wells screened in the specific aquifer zone.

517-5671f

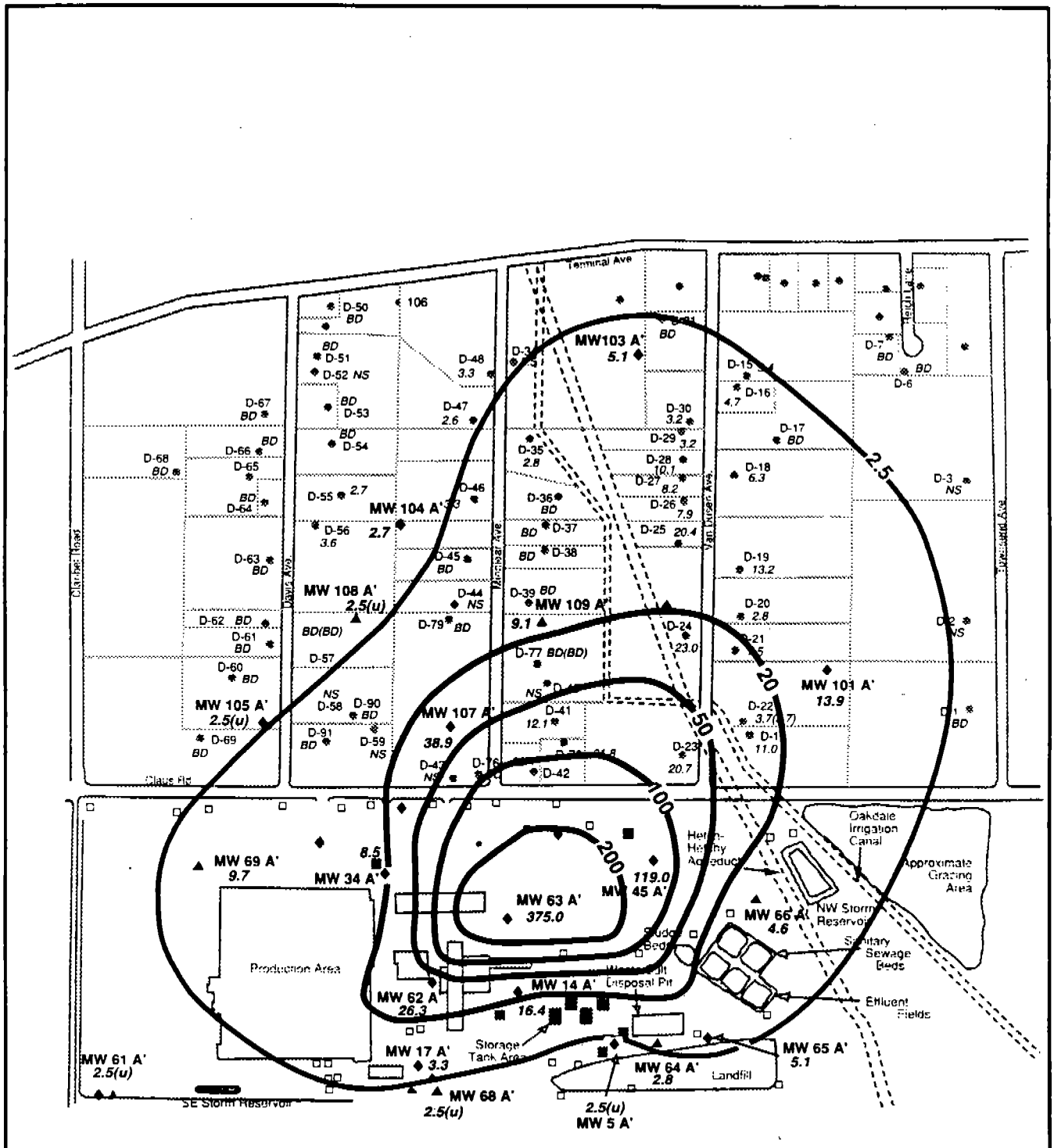
FIGURE 5-44 B ZONE - PHASE II RI TOTAL CHROMIUM ISOPLETH MAP



NOTE: Concentrations indicated for domestic wells are representitive of multiple aquifer zones depending on the particular well screen depth and length. Contour lines shown were produced from monitoring well data obtained from monitoring wells screened in the specific aquifer zone.

517-5671g

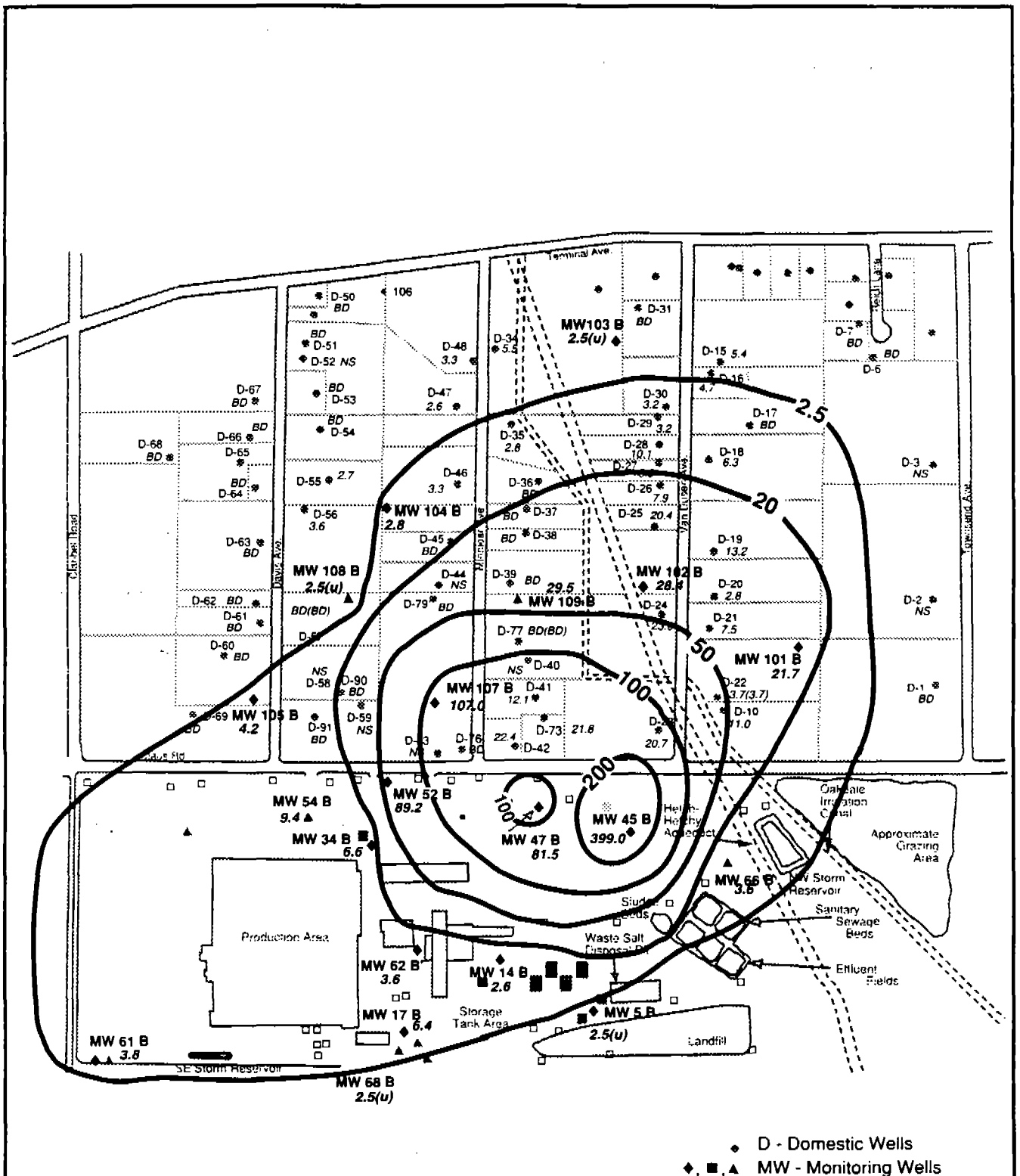
FIGURE 5-45 C ZONE - PHASE II RI TOTAL CHROMIUM ISOPLETH MAP



NOTE: 1. The 2.5 ppb contour line represents the detection limit for Cyanide.
2. Concentrations indicated for domestic wells are representitive of multiple aquifer zones depending on the particular well screen depth and length. Contour lines shown were produced from monitoring well data obtained from monitoring wells screened in the specific aquifer zone.

517-5671h

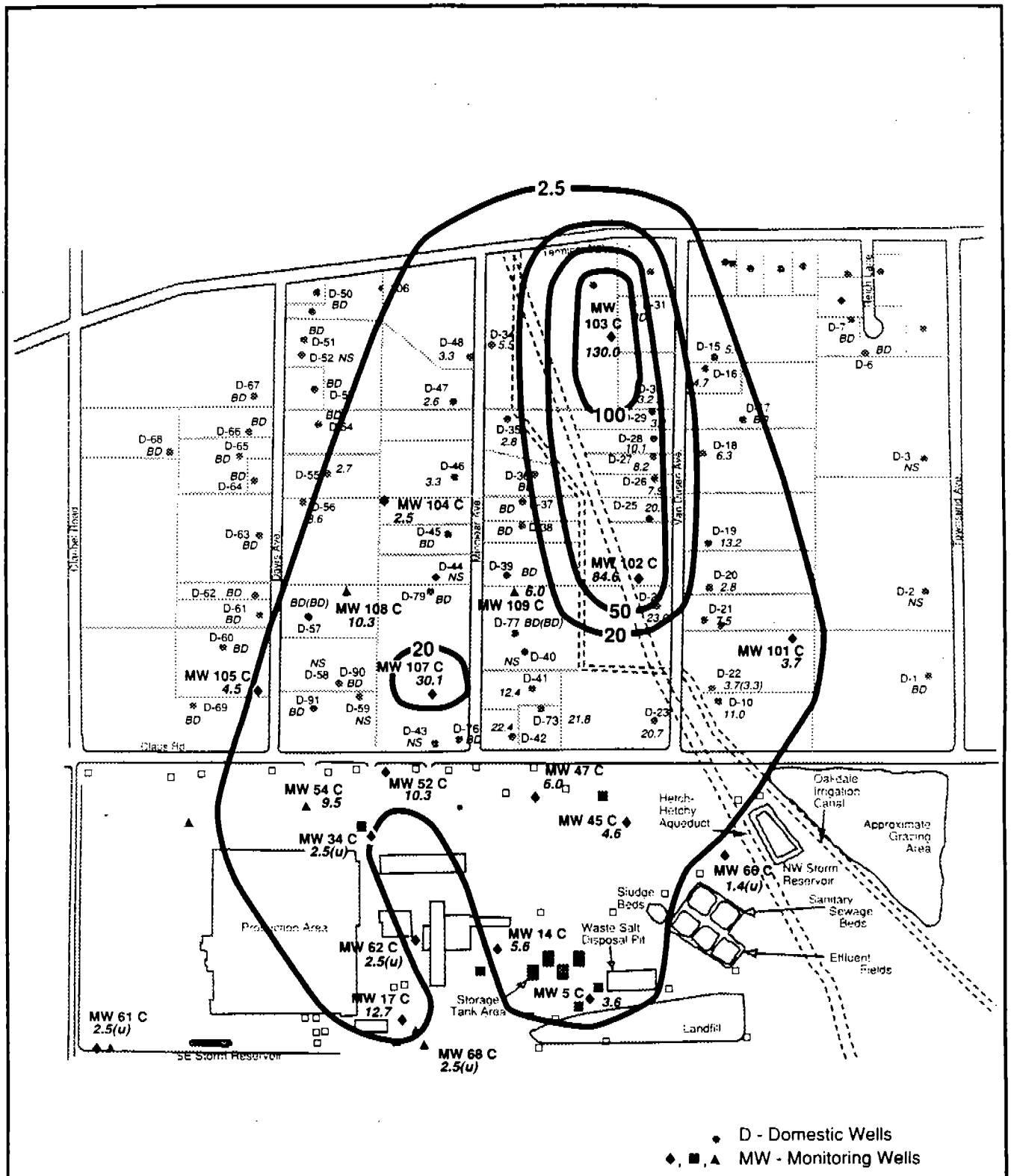
FIGURE 5-46 A' ZONE - PHASE II RI TOTAL CYANIDE ISOPLETH MAP



NOTE: 1. The 2.5 ppb contour line represents the detection limit for Cyanide.
2. Concentrations indicated for domestic wells are representitive of multiple aquifer zones depending on the particular well screen depth and length. Contour lines shown were produced from monitoring well data obtained from monitoring wells screened in the specific aquifer zone.

571-5671j

FIGURE 5-47 B ZONE - PHASE II RI TOTAL CYANIDE ISOPLETH MAP

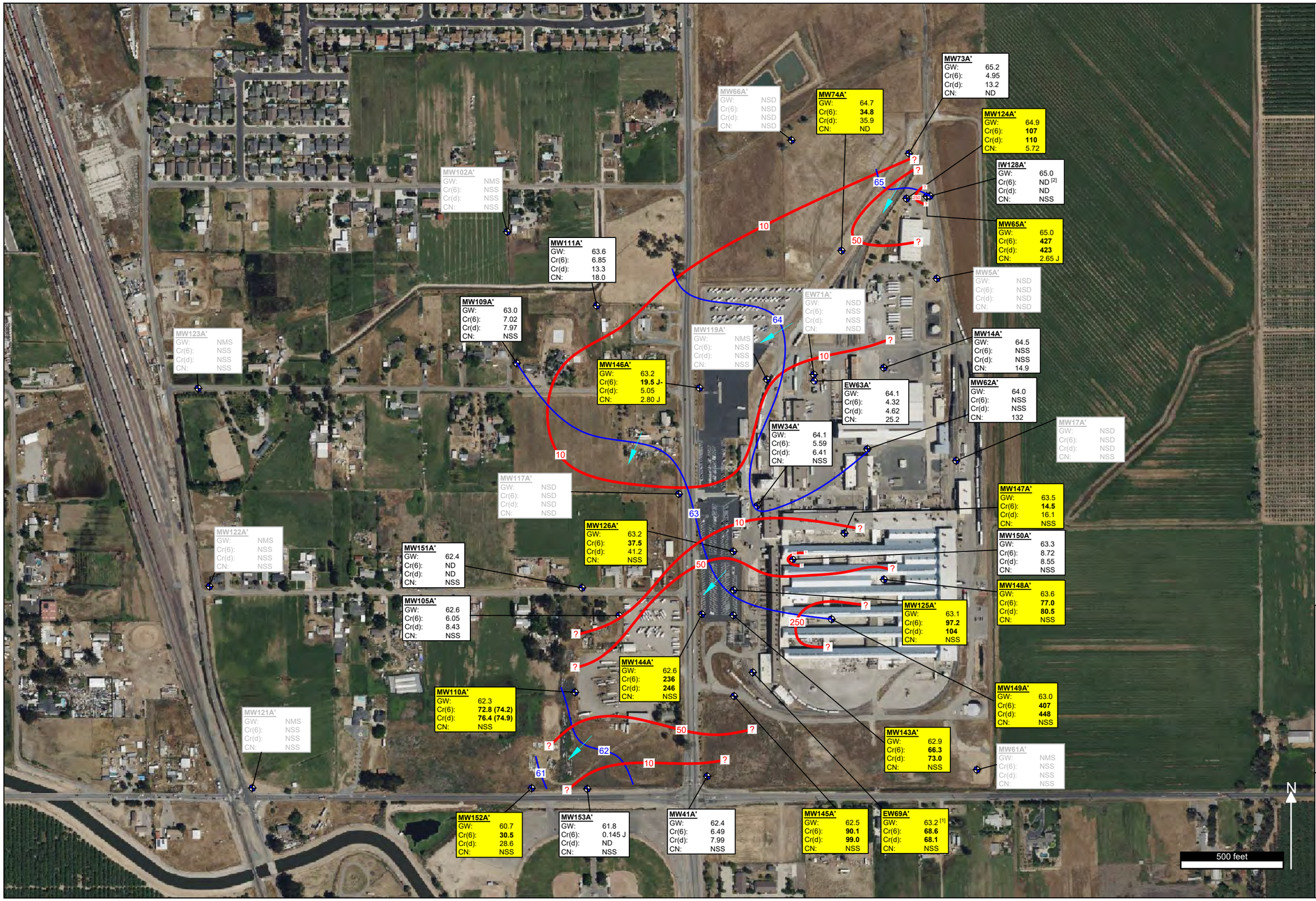


NOTE: 1. The 2.5 ppb contour line represents the detection limit for Cyanide.
2. Concentrations indicated for domestic wells are representitive of multiple aquifer zones depending on the particular well screen depth and length. Contour lines shown were produced from monitoring well data obtained from monitoring wells screened in the specific aquifer zone.

517-5671k

FIGURE 5-48 C ZONE - PHASE II RI TOTAL CYANIDE ISOPLETH MAP

FIGURE 6
2nd Quarter 2025
Semiannual Report Plume
Maps



Legend

- Groundwater Well
- Lines of equal groundwater elevation
- Groundwater Flow Direction
- Lines of equal hexavalent chromium concentration
- 10 — Hexavalent chromium concentration in microgams per liter (ug/L)
- ? — Indicates uncertainty in the plume extents consequent to data gaps

Notes:

[1] The groundwater elevation from EW69A' was excluded from the contouring analysis.
[2] The hexavalent chromium concentration at IW128A' was excluded from the contouring analysis.

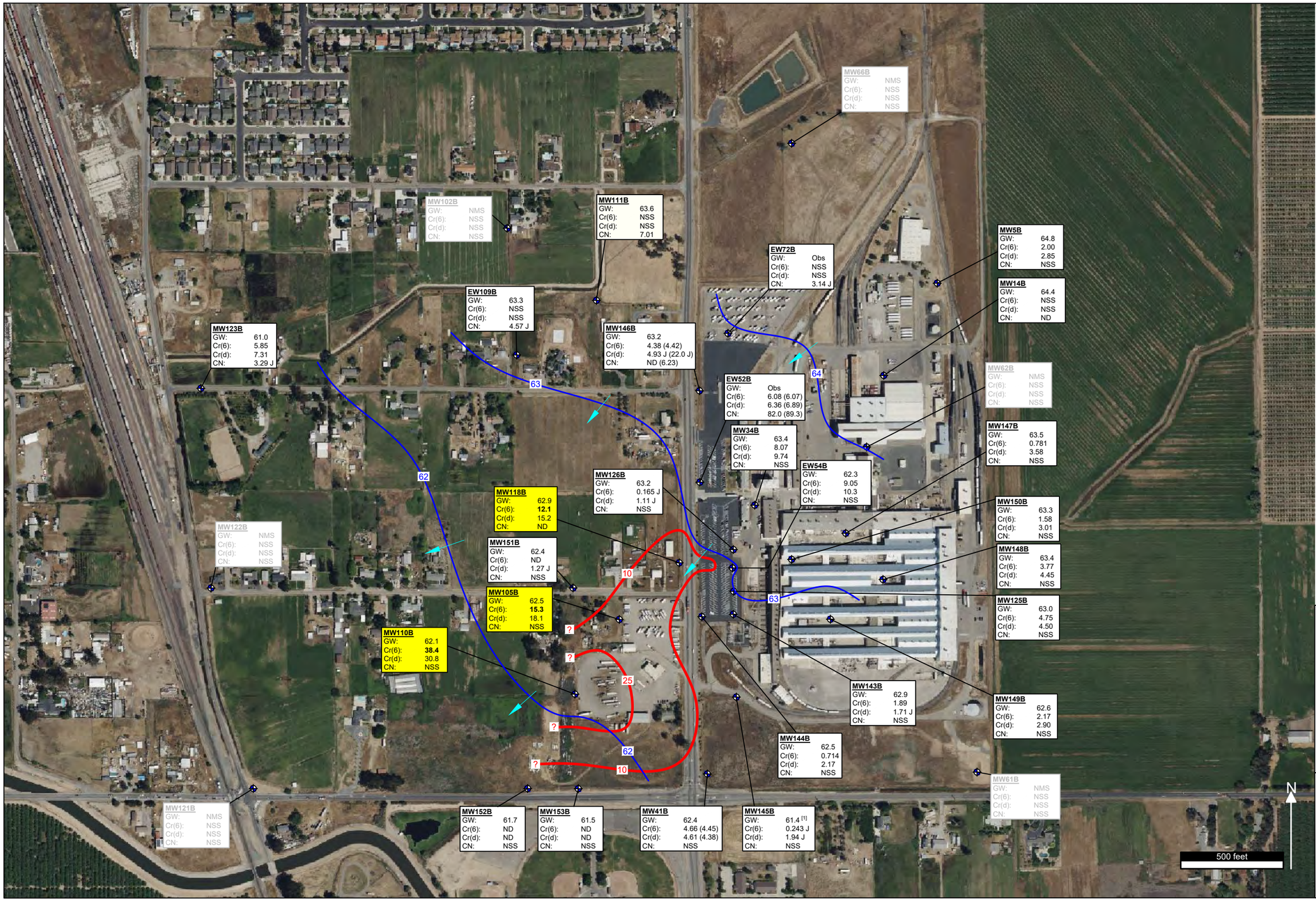
- The Action Levels are 10 ug/L for hexavalent chromium, 50 ug/L for dissolved chromium and 150 ug/L for cyanide. Concentrations exceeding the Action Levels are indicated in **BOLD** and with yellow data boxes
- Results from field duplicate samples are provided in parentheses
- CN: Cyanide
- COC: Constituent of concern
- Cr(6): Hexavalent chromium
- Cr(d): Dissolved chromium
- GW: Groundwater elevation it feet above mean sea level (2-3 June 2025)
- J: Estimated value, (+/-) high or low bias
- ND: Analyte not detected
- NSD: No sample, dry well or insufficent water for sampling
- NMS: No measurement scheduled
- NSS: No sample scheduled

Groundwater Isocontour and COC Isoconcentration Map (2Q25, A'-Zone)

Semiannual Groundwater Monitoring, Landfill, and Groundwater Treatment Report (2025 Second Quarter)
Riverbank Army Ammunition Plant
Riverbank, California

Ahtna

Figure 6



Legend

- Groundwater Well
- Lines of equal groundwater elevation
- Groundwater Flow Direction
- Lines of equal hexavalent chromium concentration
- 10 — Hexavalent chromium concentration in micrograms per liter (ug/L)
- ? — Indicates uncertainty in the plume extents consequent to data gaps

Notes:

[1] The groundwater elevation at MW145B was excluded from the contouring analysis due to a suspected erroneous measurement.

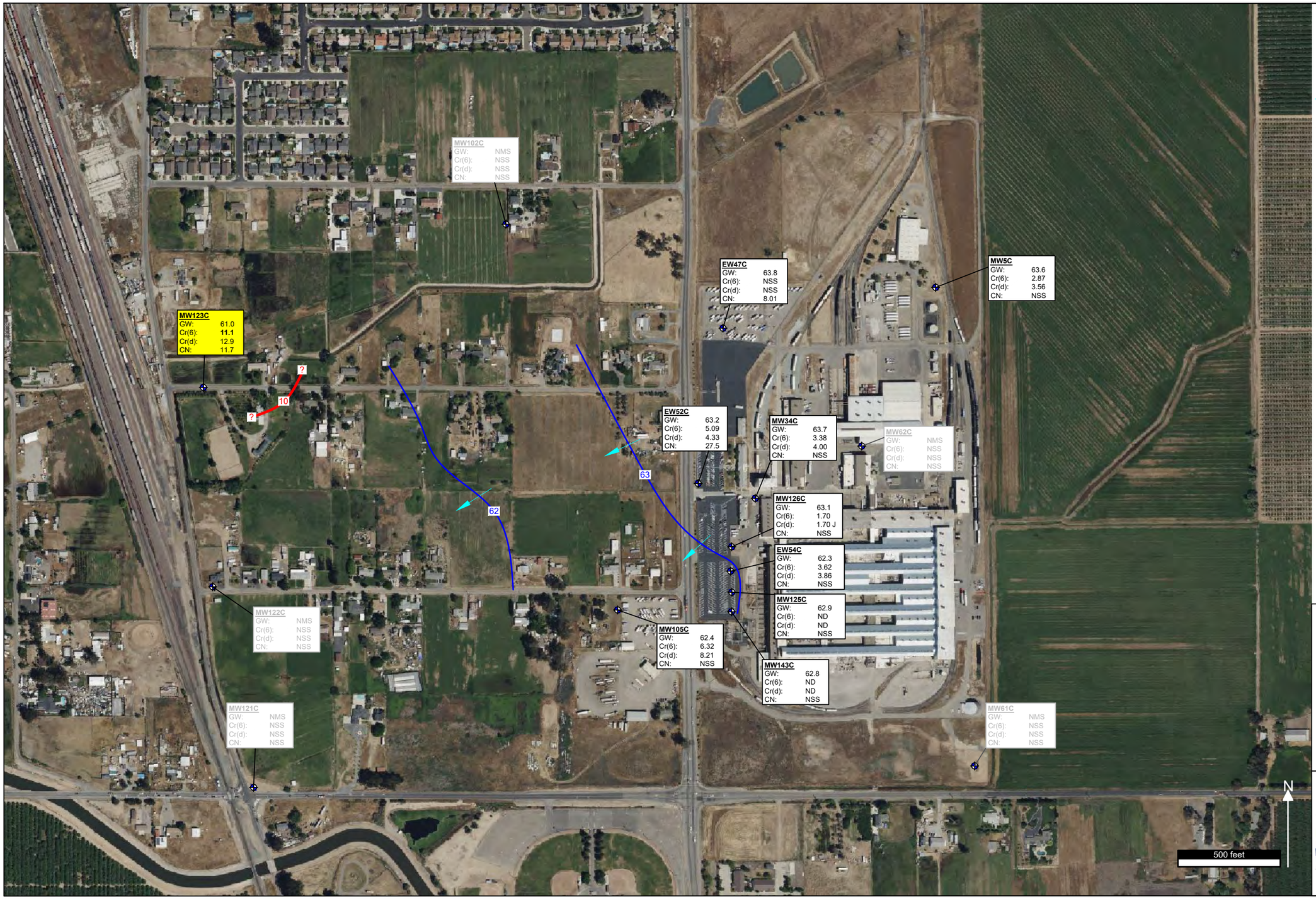
- The Action Levels are 10 ug/L for hexavalent chromium, 50 ug/L for dissolved chromium and 150 ug/L for cyanide. Concentrations exceeding the Action Levels are indicated in **BOLD** and with yellow data boxes
- Results from field duplicate samples are provided in parentheses
- CN: Cyanide
- COC: Constituent of concern
- Cr(6): Hexavalent chromium
- Cr(d): Dissolved chromium
- GW: Groundwater elevation it feet above mean sea level (2-3 June 2025)
- J: Estimated value, (+/-) high or low bias
- ND: Analyte not detected
- NMS: No measurement scheduled
- NSS: No sample scheduled
- Obs: Water level could not be measured due to an obstruction in the well

Groundwater Isocontour and COC Isoconcentration Map (2Q25, B-Zone)

Semiannual Groundwater Monitoring, Landfill, and Groundwater Treatment Report (2025 Second Quarter)
Riverbank Army Ammunition Plant
Riverbank, California

Ahtna

Figure 7



Legend

- Groundwater Well
- Lines of equal groundwater elevation
- Groundwater Flow Direction
- Lines of equal hexavalent chromium concentration
- 10 — Hexavalent chromium concentration in micrograms per liter (ug/L)
- ? — Indicates uncertainty in the plume extents consequent to data gaps

Notes:

- The Action Levels are 10 ug/L for hexavalent chromium, 50 ug/L for dissolved chromium and 150 ug/L for cyanide. Concentrations exceeding the Action Levels are indicated in **BOLD** and with yellow data boxes
- Results from field duplicate samples are provided in parentheses
- CN: Cyanide
- COC: Constituent of concern
- Cr(6): Hexavalent chromium
- Cr(d): Dissolved chromium
- GW: Groundwater elevation it feet above mean sea level (2-3 June 2025)
- J: Estimated value, (+/-) high or low bias
- ND: Analyte not detected
- NMS: No measurement scheduled
- NSS: No sample scheduled

Groundwater Isocontour and COC Isoconcentration Map (2Q25, C-Zone)

Semiannual Groundwater Monitoring, Landfill, and Groundwater Treatment Report (2025 Second Quarter)
Riverbank Army Ammunition Plant
Riverbank, California

Ahtna

Figure 8

APPENDICES

APPENDIX A

Revised ARARs Table

SUMMARY OF APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS IDENTIFIED FOR RIVERBANK ARMY AMMUNITION PLANT (RBAAP)

(Page 1 of 1) Item No.	Requirement	Citation	Federal or State Requirement	Description	ARAR Determination
Action –Specific ARARs					
14	Land Use Controls (LUCs)	22 CCR, Div. 4.5, Ch. 39, Section 67391.1(a), (d), (e)(2), (i)	State	Requires a landowner to execute and record, except under (e)(2) when recording is infeasible, a land use covenant that: imposes appropriate limitations on land use when a cleanup leaves, inter alia, hazardous substances on a property at levels unsuitable for unrestricted use, i.e., unrestricted use and unlimited exposure (UU/UE); and runs with the land. A federal entity may satisfy this requirement for the transfer of property to a non-federal entity by requiring the transferee to enter into a land use covenant with the State. A federal entity may satisfy this requirement when transferring property to another federal entity through other mechanisms that ensure appropriate restrictions remain in place to prohibit future land use(s) that are incompatible with the levels of, inter alia, hazardous substances that remain on the property.	Relevant and appropriate
	Maximum Contaminant Levels	22 CCR, Div. 4, Ch. 15, §64431	State	California has adopted a Maximum Contaminant Level (MCL) more stringent than the federal standard, at 10µg/L. The more stringent state standard is the adopted ARAR and cleanup goal for groundwater plumes at the RBAAP.	Relevant and Appropriate

APPENDIX B

Response to Support Agency Comments

Environmental Protection Agency ESD#2 Document Comments[1]			
	Date	**Comment**	**Army Response**
1	01MAR24	Please clarify whether the PPWS remedy component applies only to off-base areas, or also to on-base areas in the event that on-base potable GW wells were to become contaminated.	The remedy applies to contaminated groundwater above MCLs, wherever that groundwater is located. The text of §1.4, first bullet has been changed to "…is part of the groundwater remedy, wherever contamination above MCLs exists."
2	01MAR24	Ics [sic] for the GW remedy are necessary not only for GW beyond the boundaries of RBAAP, but also on base too.	Concur, text has been added to include "on-post".
	03MAR24	See EPA's comment on Section 1.4 regarding the reference to "long-term" protectiveness. Further clarified in an email on 15MAR24: "either the reference to Section 1.4 as the location of a of a comment on "long-term protectiveness" is erroneous, or the comment was inadvertently omitted. The point about the ESD's references to long-term protectiveness, however, is made in a comment on Section 4.3.1, which states: "As noted earlier, if there currently are no measures in place to ensure that soil disturbing activities do not create a completed exposure pathway, then it isn't clear that the remedy is short-term protective either." There are five instances of "long-term protectiveness" reference, and one use of the phrase that somehow was not tagged with a comment to see Section 1.4. in summary, please consider the comment in Section 4.3.1 as applicable to all references to "long-term protectiveness" that suggest "short-term protectiveness" is not an issue."	During the course of the fourth and fifth Five Year Reviews, the EPA and the Army issued separate protectiveness determinations for the site, with the understanding that the remedy modifications selected in the ESD#2 would resolve both short-term and long-term protectiveness concerns. By later dated 11MAY2022, the Army issued a statement that the remedy is short-term protective for the landfill, protectiveness deferred for the groundwater remedy, and protectiveness deferred for the sitewide remedy. By later dated 24SEP2021, the EPA provided their independent statement on protectiveness which included that the remedy is not protective in the long-term and that short-term protectiveness is deferred until the ESD No. 2 is issued. No text changes are associated with this comment.
3	01MAR24	Please place the footnote after the period, and replace the footnote text with the text EPA proposed in its 1/13/2023 comment: "Although not addressed in ESD2, post-ROD investigations have identified ecological risks that require	Partially Concur. The second sentence has been added to the footnote to the second sentence of §2.2.3. The first sentence is inaccurate as there have been no Post-ROD investigations, since the ROD selected NFA for the E/P Ponds. The new footnote has been changed as follows:

[1] Comments were primarily in the redline strikeout (RLSO) format of the Draft Final ESD#2. A majority of the comments were complied with and addressed within the document. Remaining comments or more complex comments appear in this Response to Comments table. They have been copied and pasted for compilation here. The RLSO Draft Final ESD#2 is attached in its entirety as Appendix C, but is identified as not for public distribution. The publicly available ESD will not contain Appendix C.

		further investigation and potentially remediation. These eco-risks will be investigated and, as necessary and appropriate, addressed in a subsequent decision document."	"A proposed use change for the E/P Ponds, which has since been abandoned, resulted in agency questions regarding residual risks to ecological receptors. These eco-risks will be investigated and, as necessary and appropriate, addressed in a subsequent decision document.
4	02MAR24	The following comments about RAOs were included in EPA's 1/13/23 comments, but to date have not been addressed by the Army- The revised text needs revision to better state what the ESD is adding in the way of RAOs and the measures to achieve the RAOs. For example, presumably the RAO isn't to restrict/limit use, but to prevent exposure to media contaminated above levels of concern, through the adoption of LUCs as part of the remedy. The RAO for GW could be the same for both on- and off-post even though the LUCs needed to achieve the RAOs may differ. From EPA's ROD Guidance: "The remedial action objectives (RAOs) describe what the proposed site cleanup is expected to accomplish. . . . . RAOs may vary for different portions of the site (e.g., returning ground water to drinking water use, and reducing contaminant concentrations in soil to below X ppm so that it is safe for the reasonably anticipated future land use at the site)." Also: 1) please revise the phrase "that had not been included" to "that were not included;" 2) as the ROD already includes an RAO of "restor[ing] the groundwater in all water-bearing zones to remediation goals," please clarify the relationship of the ESD RAOs to the ROD's GW restoration RAO; 3) please ensure that the description of the RAOs here and in subsequent sections is the same (e.g., see Section 4); and 4) please include a remedy integrity RAO for the off-post remedial infrastructure as well, per EPA's comment on the August 2022	Acknowledged. RAOs have been added to Section 3.1, the text now reads: • Prevent, mitigate, reduce exposure to contaminants above unacceptable risk levels. • Prevent human exposure to contaminated drinking water above State and Federal MCLs • Prevent activities that could negative impact the groundwater remedy on adjacent parcels, including damage or destruction to system infrastructure.

		draft. Finally, please create a new subsection to discuss/present the new RAOs before discussing the new remedial measures selected in the ESD (suggest a new section 4.1 to set forth the new RAOs).	
5	25OCT22	Please explain the intended meaning of the highlighted text; the ESD is a CERCLA decision document, and LUCs selected in it are components of the CERCLA remedy for the RBAAP Superfund Site, and as such would be enforceable as part of the CERCLA remedy.	This is a requirement of EPA for the Fort Ord CRUP documents. To be consistent between Army programs, it has been included in the RBAAP CRUP documents.
6	25OCT22	Please provide a map that shows historical and current groundwater plume boundaries with contaminant concentrations.	Concur. 1991 RI/FS historical maps and one 2022 updated map have been added to the ESD#2 attachments.
7	02MAR24	The Army uses CRUP in the text following the section heading, but SLUC in the heading itself. Recommend that the Army use the same term consistently throughout the document. Also, a SLUC/CRUP is not itself a land use control, rather it like a deed is a mechanism for implementing land use controls. Therefore recommend placing the discussion of the SLUC/CRUP in a separate section.	Concur. The text of §4.2 has been changed to clarify the State Land Use Control and Covenant is implemented through a CRUP. The text of the section title has been changed to 4.2 STATE LAND USE CONTROL AND COVENANT AND OTHER DEED RESTRICTIONS. The text of the subsequent paragraph has been edited with the following introductory sentence: "The State Land Use Control and Covenant is implemented through a CRUP described herein." Non-concur. The SLUC/CRUP discussion is separate from the LUC section.
8	25OCT22	Please explain what the Army means by the enforcement of LUCs "outside of CERCLA" when the context of the Army's agreement "to facilitate the execution and recording of a CRUP" is a CERCLA remedy decision document. The point of the ESD is to describe the modifications to the CERCLA remedy selected in the ROD, not to non-CERCLA actions.	Acknowledged. This language is from DTSC.
9	02MAR24	Please explain the inclusion of the highlighted sentence in this section titled "State Land Use Covenant," given that it concerns the inclusion of restrictions on land use in the Army's deed., and why it wouldn't be better located elsewhere.	The restrictions on residential use are based on the assumptions supporting the 1994 ROD, that the site has been evaluated for industrial/commercial exposure pathway. The LUC, incorporated into the CRUP, helps to ensure these assumptions remain valid through future reuse and development. Text remains as is.

10	02MAR24	As noted earlier, if there currently are no measures in place to ensure that soil disturbing activities do not create a completed exposure pathway, then it isn't clear that the remedy is short-term protective either.	This ESD#2 is the mechanism to select soil management plans in contaminated areas within Parcels 1, 1A, 2A, and Parcel A.
11	02MAR24	As noted elsewhere, LUCs must be described in the decision document, although their implementation, including roles and responsibilities, may be set forth in a post-decision document such as a LUCRD.	Concur.
12	02MAR24	As currently stated, the restriction is permanent, rather than only until the groundwater cleanup goals are achieved. Is that what the Army intends?	This is the intent. The restrictions may be lifted at a later date, if MCLs are achieved and no unacceptable risks remain.
13	02MAR24	Is any well drilling prohibited? If so, it would be clearer to say so, rather than identifying three separate types of drilling (which suggests that other types may be acceptable.	This language was supplied by the DTSC to meet their standardized template. Remains unchanged.
14	27OCT22 02MAR24	Please clarify the relationship between the landfill restrictions proposed in the ESD and those included as part of the remedy selected in the 1994 ROD: "However, since the soils will remain in place at the landfill, access and deed restrictions will also be implemented for the landfill area. These restrictions will prevent exposure to the landfill soils after the final cover maintenance period has ended." The Army has not yet responded to the comment about the relationship of the ROD and this ESD. In addition, the description of the restriction as limited to "Excavation" does not seem to capture the appropriate restrictions, as compared to "Soil Disturbing Activities." Recommend revising title to "Restrictions on Soil Disturbing Activities on the Parcel A Landfill."	The ROD narrative in §2.14.3; *Alternative 3: Final Cover*; final paragraph (pg 2-26); second and third sentences presents the remedy that was selected and the ESD#2 narrative in Section 4.3.1 Item (4) memorializes the LUCs that are in place since the remedy has been implemented. The title of Section 4.3.1 Item (4) has been revised to: "Restrictions on Soil Disturbing Activities on the Parcel A Landfill
15	25OCT22	Per EPA's comment on the August 2022 draft: "Clarify if this is part of a LUC and if so for what	This is part of the LUC.

		areas" This comment, which inadvertently was not formatted the same as EPA's other comments (no reference to EPA, or the issue category, and not in red font), appears to have been overlooked by the Army.	
16	03MAR24	As noted in previous discussions and comments, reporting in annual reports, etc, is more like monitoring of the effectiveness of the informational device ICs. Suggest including a references to annual reviews and reports in the IC monitoring context.	Concurred with text changes; annual reviews are included in Sec. 4.4.1(3).
17	03MAR24	As noted above with reference to text in the introductory paragraph, the activities described here are not informational device ICs, they are more like monitoring efforts related to the effectiveness of the informational devices and the County Guidelines (mentioned below).	Acknowledged.
18	25OCT22	The modified text incorporated by the Army is acceptable with the exception of the term "potable," which too limits the scope of the PPWS remedy and appears inconsistent with earlier descriptions of the scope of the PPWS remedy component.	Non-concur. The remedy was intended to prevent drinking water exposure. Text is not changed.
19	20OCT22. 11JAN23	Delete this text as the PPWS does not address the prevention of the use of existing wells for potable water supply, just the provision of a potable water supply connection. The information collected to confirm its functioning as intended therefore should be related to whether it is continuing to provide a potable water supply. In this regard, please note that the ROD RAO for groundwater is the cleanup of groundwater to the cleanup standards (p. 2-72). In connection with clarifying that the PPWS is part of the groundwater remedy and adding other measures in relation to the off-post contaminated GW, EPA therefore recommends adding one or more RAOs for the GW	Concur. RAOs have been added to section 3.1.

		remedy that address prevention of exposure to contaminated GW pending cleanup to MCLs, and one or more RAOs related to remedy integrity (for on-post, as well). The Army's response does not address the second paragraph of EPA's original comment about RAOs for the groundwater remedy. Please respond to this part of EPA's comment.	
20	03MAR24	As EPA previously has noted, the kind of activities described in this paragraph are not informational device ICs, but instead methods for monitoring the effectiveness of the IC component of the remedy.	This section is not a sub-section of the Informational Device description. It describes the controls in place regarding the off-site implementation of the PPWS.
Environmental Protection Agency Draft Final ESD#2 Email Comments			
	Date	**Comment**	**Army Response**
21	04MAR24	Reference site map: This should be changed to "Parcel A" as referenced throughout the ESD2.	Concur.
22	004MAR24	Since the original RBAAP ROD does not include the ICs checklist language (please see the attached OSWER Directive 9355.6-12); therefore, EPA-HQ requests that the RBAAP ESD2 includes the language from this ICs checklist.	Language from the LUC Checklist Guidance Document has been added to Sections 4.0, 4.2, and 4.5, and is shown in the Red Line Strikeout Draft ESD#2 in Appendix C.
Department of Toxic Substances Control Comments on Draft Final ESD#2			
	Date	**Comment**	**Army Response**
1	20OCT22	Please add that the Explanation of Significant Differences No. 2 dated April 2011 was submitted to the regulators and later withdrawn by the Army.	The language in this section is about the selected remedy. A withdrawn document from 2011 is not relevant and could lead to confusion.
2	20OCT22	Please include the Stanislaus County Groundwater Well Siting and Construction Guidelines as an attachment to this ESD 2	Adding the link to the current version from the County website.
3	20OCT22	Can we add updating the Remediation Goals to meet the Toxicity Rule Criteria (TRC)? Please make sure the TRC rule is listed as an ARAR. The chemicals of concern RG might change in the future and would be incorporated into the Five-Year Reviews.	If needed, as referenced in the comment, the Army will address any toxicity changes through 5YR.
4	08JAN24	Please change Branch Chief name to Hortensia Muniz.	Concur.

	Central Valley RWQCB on DRAFT Final ESD#2[2]		
	Date	**Comment**	**Army Response**
1	04MAR24	The Army submitted the revised ESD#2 through two separate emails in December 2023.	Acknowledged.
2	04MAR24	The Army declared a 4 March 2023 deadline for Regulatory Agencies to provide comments.	The Army proposed the required FFA review period of 30 days and a pre-emptive extension of an additional 45 days in consideration of year-end holidays, other documents under review by all agencies, and the understanding that the review would require more time. If the RWQCB needed an extension, the FFA describes the process to request one.
3	04MAR24	Several Central Valley Water Board comments remain outstanding.	This response to comments is intended to close all outstanding comments and is designed to provide those responses in one document.
4	29JAN24	The Army's 3 January 2024 letter declares the Army's formal observation of the California Maximum Contaminant Level (MCL) for cyanide, equal to 150 micrograms per liter (µg/L), as an applicable or relevant and appropriate requirement (ARAR) for RBAAP, thereby observing the 150 µg/L MCL henceforth as a remedial action level.	Correct. The Army had attempted to memorialize discussions with previous personnel that the exposure calculations and assumptions under the Federal MCL standard of 200 µg/L were the same as those calculated under the State MCL. However, after a change in personnel, the State's position shifted and the request to emphasize the more stringent State standard was made. In accordance with CERCLA, the NCP, and EPA guidance, the more stringent State MCL is recognized as an ARAR.
5	29JAN24	The groundwater cyanide cleanup level is declared in the 1994 Record of Decision (ROD) and it acknowledges the remediation requirement that the "aquifer meets federal and state MCLs and state Water Quality Objectives." However, the ROD more explicitly states that the remediation levels were established as the federal and state MCL of 200 µg/L.	Acknowledged. See comment #4.
6	29JAN24	The Army's letter states that it is not necessary to include the 150 µg/L MCL in the ESD#2 (or any future ESD) because the MCL is already considered to be an applicable ARAR by the Army. The language in the ROD needs to be modified to ensure that future actions fulfill that intent. Explicit inclusion of the 150 µg/L MCL is necessary for the	The Army periodically encounters changes in remediation standards during routine Five Year Reviews and through other remedy assessments. If the standards are a part of identified ARARs, sometimes the EPA or State partner requests a Memorandum for Record to notify within the Administrative Record that the ARAR is more stringent than described in the ROD. In a few instances, an ESD is suggested. In this case, the ESD was edited only to the extent of the items in

[2] The Central Valley Water Board comments compiled several comment letters sent over the course of two years. The comments have been condensed and, in some cases, paraphrased for clarity. The complete comment letter is attached in Appendix D.

		protectiveness of the remedy and thus inclusion in the ESD#2 is both appropriate and necessary.	dispute, which doesn't include the changed MCL. If the Parties have no objections, Sections 1.4 and 2.2.1 will be edited to include a statement regarding the revised State standard. If approved by all parties, those edits will be as follows: § 1.4; Fifth bullet • "Memorialize the change of the cyanide remedial goal from 200 µg/L to 150 µg/L." § 2.2.1; first sentence: "…until the aquifer meets federal and state Maximum Contaminant Limits (MCLs) of 50 µg/L for chromium and 150 µg/L for cyanide."
7	29JAN24	Central Valley Water Board staff underscores the significance of the Army including the 150 µg/L as an ARAR in ESD#2 on the following premises: • Inclusion will materially change the cleanup level for the groundwater remedy. This will require the Army to remove all language in ESD#2 currently citing the federal cleanup level for cyanide in groundwater and replace the language with the agreed upon 150 µg/L MCL. • Inclusion will require the Army to conduct further analysis of the cyanide contamination in groundwater in order to accomplish the remedy protectiveness statement made in Sec. 3.0 of the ESD#2. The Army will need to define the current spatial extents of cyanide concentrations in groundwater that exceed the 150 µg/L, both on and off base. Off base cyanide groundwater contamination is likely, as was demonstrated by the Army in 2021. The Army has demonstrated multiple cyanide groundwater exceedances in samples collected from groundwater well EW52B	In general, see response to comment 6 With respect to the bulleted items, these are addressed in order: • The only appearance of 200 µg/L is in § 2.2.1; first sentence which has been addressed in response to comment 6. • This comment is acknowledged but it does not affect the scope of the ESD2.

		since 2021. To ensure the remedy is protective, the groundwater remediation scope will likely increase in terms of volume(s) of treated groundwater and associated cost(s). • Inclusion is necessary to ensure the protectiveness of the Land Use Controls identified in Sec. 4.4 of the ESD#2 • Inclusion is necessary for the Army to properly meet the Remediation Action Objectives (RAOs), as identified in Sec. 3.0 and Sec. 4.0 of the ESD#2. • Inclusion will require the Army to take forward-looking actions to meet this more stringent cleanup goal, including but not limited to, re-assessing remedy performance under the CERCLA Five Year Review process.	• This comment is acknowledged but it does not affect the scope of the ESD2. • This comment is acknowledged but it does not affect the scope of the ESD2. • This comment is acknowledged but it does not affect the scope of the ESD2.
8	05DEC23	This letter is a friendly reminder that the Army cannot finalize ESD#2 without addressing all comments issued on ESD#2. Because the dispute resolution process has taken months since the 31 January 2023 comments were issued, it is appropriate to update two comments.	Acknowledged. The Army understands there are outstanding comments that were not addressed or discussed during the dispute resolution.
9	05DEC23	The Central Valley Water Board staff maintains that the California cyanide MCL for groundwater is an applicable or relevant and appropriate requirement (ARARs) for RBAAP and expects the Army update the ESD# to recognize the California cyanide MCL for groundwater equal to 150 micrograms per liter.	Acknowledged. See response to comment 6.
10	05DEC23	Groundwater Remedy Effectiveness: Footnotes 2, 3, 5, and 6 herein document project findings that demonstrate the lack of groundwater remedy effectiveness for RBAAP. Central Valley Water Board staff recently	Groundwater remedy effectiveness is not the purpose of the ESD#2 and this comment is beyond the scope of the ESD#2. Remedy effectiveness is evaluated in Five Year Reviews and to demonstrate a remedy is operating properly and successfully (OPS),

		issued a letter on 27 September 2023 citing some of these letters and the key issues that require further address before the Army can defensibly state that [the] groundwater remedy at RBAAP is effective. The Army will need to recognize these letters in response to Comment #2 in the 31 January 2023 letter.	neither of which are a component of the ESD#2.
11	31JAN23	ESD#2 does not identify why Parcels 1 and 1A require LUCs, as put forth in Sec. 4.3; Sec. 2.1 (Site History and Contamination) should set the working premise for the required LUCs. Further, Sec. 2.2 should also recognize the scope of Parcel 1 and 1A remedial efforts, to date, and state the status of the Remedial Investigation/Feasibility Study (RI/FS).	The RI/FS that supported the 1994 ROD evaluated the site for the reasonably foreseeable future use of the property, which was and continues to be industrial/commercial. This implies either a residential use restriction or a requirement to re-assess the risk assessment, should a new land use be pursued. This ESD#2 is to memorialize and formally select the residential use restriction, as it applies to all parcels. Parcel 1/1A is being further investigated for additional releases that are not found at the rest of the Parcels. That separate remedial investigation and response is ongoing and does not belong in the ESD#2.
12	31JAN23	ESD#2 is prematurely optimistic when describing groundwater remedy effectiveness at RBAAP.	Remedy effectiveness is not a component of the ESD#2.
13	31JAN23	Central Valley Water Board staff issued a Five-Year Review letter to the Army dated 1 August 2022. This letter specifically addresses California groundwater MCLs for hexavalent chromium and cyanide. The August 2022 letter is relevant to defining the short-term and long-term effectiveness, relevance and completeness of ESD#2 as it relates to groundwater.	The intent of the ESD#2 is to formally select Land Use Controls and is not a referendum on the groundwater remedy effectiveness. That was the subject of ESD#1. The implementation of the groundwater remedy continues to include injections to support in situ treatment, in combination with the pump and treat system being reactivated. Comment is beyond the scope of the ESD#2.
14		The Central Valley Water Board continues to believe that a state CRUP is an ARAR and needs to be a part of the remedy to ensure it is executed and recorded.	Acknowledged. This item was resolved in the Dispute Resolution and addressed in Appendix A, Revised ARARs Table.
15	31JAN23	Central Valley Water Board staff would like to clarify that any soil disturbance, including but not limited to those defined in Section 4.2 of ESD#2, require approval from state and federal regulatory agencies under the LUC (see Comment #4 [#14 of this RTCs]) and FFA agreement. Documents, such as Soil Management Work	Non-concur. This is inaccurate. Soil disturbances and controls, such as creating Soil Management Plans, are only required on those portions of the Property that have had a release of a hazardous substance, pollutant, or contaminant into the environment. Soil restrictions are identified in the LUC Map and are not required on Parcel B or Parcel 2. There is no requirement for a Soil Management Plan in the RBAAP FFA.

		Plan, for example will be necessary to obtain this approval.	
16	31JAN23	Sec. 4.3 is more accurately identified as an institutionalized control (IC), rather than a LUC. The Army technically has no land use control off-post. The Central Valley Water Board staff recommend the following to meet this objective: • Perform an annual review of the Sustainable Groundwater Management (SGMA) data viewer to access well completion reports and update the well survey Memorandum, as necessary. • On an annual basis, the Army will contact the California Department of Water Resources to obtain information on well completion reports submitted in accordance with CA Water Code 13751 and update the well survey Memorandum, as necessary. • On an annual basis, the Army will outreach to the County with the current well inventory record to cross-check completeness of the survey. The Army will work cooperatively with the County and local community programs and additional government agencies as applicable to fill and information gaps. • The Army will document annual review, public outreach and well survey updates to in the RBAAP Annual Report. • The Army will consider supplemental methods and technologies (e.g., remote sensing technologies such as LiDAR, airborne magnetic	Since the subject of §4.3 of the ESD#2 is *On-Post* LUCs, the principal of non-ownership off-post is not in the scope of the section. However, there appears to be a typo in the ESD#2 §4.4 that has inserted in front of §4.4.1 This has been corrected in the final ESD#2. The title of §4.4 has been changed to "OFF-POST GROUNDWATER INSTITUTIONAL CONTROLS" In addition, the first sentence of §4.4.1 has been changed to "… incorporates the following Institutional Controls (ICs)" Bulleted items are addressed below: • Army review of SGMA in the vicinity of the downgradient extent of the chromium plumes and cyanide plumes is outside the scope of ESD#2. This can be addressed within the context of current meeting forums and the LUCRD. • Army review of additional wells installed in the vicinity of the downgradient extent of the chromium plumes and cyanide plumes is outside the scope of ESD#2. This can be addressed within the context of current meeting forums. and the LUCRD. • Army review of County records for survey completeness is outside the scope of ESD#2. This can be addressed within the context of current meeting forums and the LUCRD. • Army review of additional wells installed in the vicinity of the downgradient extent of the chromium plumes and cyanide plumes is outside the scope of ESD#2. This can be addressed within the context of current meeting forums and the LUCRD. • Army exploration of possible unrecorded wells using remote sensing technologies is outside the scope of ESD#2. This can be addressed within the context of current meeting forums and the LUCRD.

		surveys, etc.) to help identify domestic groundwater wells within the off-post affected groundwater footprint, including wells downgradient and within at least one mile of the footprint where the plume boundary is unknown. Much of this data may be readily available from public agencies. The technologies might help with identifying suspected undocumented wells, which are considered, for all intents and purposes, those installed prior to County record.	
17	31JAN23	ESD#2 references the County's Guidelines, published April 2022, multiple times. For situational awareness, please understand: A) The Guidelines are provisional, as stated clearly on page 2 of 5 of the Board of Supervisors of the County of Stanislaus Board Action Summary. B) Central Valley Water Board staff completed a technical review of the County's Guidelines and deem the County's current procedures for assessing groundwater risks, specifically associated with RBAAP, are technically inadequate to protect human health and safety. On this premise, the Guidelines should not serv as a standalone IC in ESD#2. The Army will need to take additional steps with the County to prevent domestic well installation in off-post hexavalent chromium contaminated groundwater. ESD#2 should specifically document what additional	In general comment 17 is acknowledged. Specific responses to items A and B are below: A) Acknowledged. Thank you for the clarification. B) Undertaking additional undefined steps with Stanislaus County to enhance protectiveness of the PPWS and ICs remedy is outside the scope of ESD#2. This can be addressed within the context of current meeting forums and the LUCRD.

			steps the Army will take to address this inadequacy and make sure the County is in possession of necessary information to protect human health and safety and the environment. Finally, ESD#2 will need to include a contingency plan or statement in the event the County will no accept nor adopt the Army's proposed approach(es) or procedures(s).	

APPENDIX C

Additional Comments and Army Responses on ESD #2 (July 2024 and May 2025 versions)

APPENDIX C
ADDITIONAL COMMENTS AND ARMY RESPONSES

US Army ODCS, G-9, BRAC Branch		**Review Comments**			**DAIN-ISE-BRAC Branch**	
Project:	Riverbank Army Ammunition Plant					
Document:	Final Explanation of Significant Differences No. 2				**Date:**	July 2024
Transmittal	E-mail					
Contractor (Prime):	NA					
Contract No.:	NA					
Task Order:	NA					
Reviewer:	Xuan-Mai Tran & Eric Esler	**Organization:**	U.S. EPA Region IX		**Date:**	22 August 2024

No.	**Reference (page/paragraph)**	**Review Comment**	**Response**
	General Comments		
1.			
	Specific Comments		
1.	§4.3.1(4)	[22AUG24-Tran] The highlighted text appears to be missing text; as currently drafted it says that "access restrictions **are** unauthorized excavation activities" (emphasis added), but this does not make sense. Please revise to clarify the meaning of the text. Also, although the landfill is located within the fence-line around the RBAAP and there is a guard at the front gate, there currently is no fence around the landfill itself. To address the ROD's specification that access restrictions related to the landfill will be implemented, at a minimum text therefore should be added to prohibit anyone from getting onto (walking, driving, etc.) the landfill without written permission of the Army and the other FFA parties. The Army also could consider including the posting warning signs as a separate engineering control component of the remedy. .	Concur. The text has been changed to “access restrictions may preclude unauthorized excavation activities”. The highlighted text is followed by a list of examples of unauthorized activities such as digging, drilling, or any other disturbance of the land surface or subsurface. Concur that signs can be displayed to notify users of the site of these access restrictions. Text to include the

			signage has been added to §4.3.1(4).
2.	§ 4.3.1(5)	[21AUG24 - Esler] Given the concern that was raised recently regarding the accuracy of the background threshold values (BTVs) for soil calculated using data from inappropriate on-base sampling locations, resulting in biased-high BTVs, Parcels 2 and B should be included in Section 4.3.1.(5) until the Army provides accurate BTVs to demonstrate that soil contamination above applicable screening levels on these two parcels is at or below background levels. Applying soil disturbance restrictions to Parcels 2 and B will facilitate finalization and issuance of ESD2.	Non-concur. There is no evidence that the BTVs are biased-high and no evidence of a release of a hazardous substance, pollutant or contaminant into the environment on either Parcel 2 or Parcel B resulting in an unacceptable risk that requires remedial action. In addition, this request directly conflicts with the Statement of Resolution of Informal Dispute regarding the remedies required to be selected under the ESD #2. The Army can agree to a brand new Remedial Investigation for these sites, but not to selecting a remedy without evidence of an unacceptable risk.
3.	§ 4.4.1(3)	[21AUG24-Esler] EPA disagrees with the Army's characterization of these items as LUCs, as opposed to monitoring measures for the effectiveness of the LUCs. As commented previously, the activities described in this paragraph are not informational device, they are monitoring efforts related to determining the effectiveness of the remedy for off-base contaminated groundwater, informational devices and the Stanislaus County groundwater ordinance. The Army acknowledged EPA's comment on this issue, but no changes were made to the text. Since they are monitoring activities, they should be included in a separate section that discusses such.	Non-concur. The title for this section was changed to “Off-Post Groundwater Land Use Controls Monitoring Devices” in response to EPA’s comments.
4.	§ 4.4.2	[20AUG24-Tran] The Army did not revise the text as requested to reflect the agreed-upon language from the dispute resolution agreement. The text agreed on in the dispute resolution statement	Partial Concurrence. The Dispute Resolution text identified in the comment is

		provides that "As part of the PPWS component of the groundwater remedy, the Army will notify property owners who have drinking water wells within the RBAAP Groundwater Plume that the Army will provide a connection to the PPWS to properties with drinking water wells contaminated above cleanup standards." The additional language included in this revised version of ESD2 is inconsistent with the language agreed upon in the dispute resolution. In addition, the phrase "potable wells" is not complete, and should be revised at least to "potable water wells," and preferably to match the agreed-upon language, "drinking water wells".	provided, verbatim, in the paragraph identified in the Dispute Resolution Statement, paragraph 4.1. This paragraph is intended to cover a broader category of wells for maximum protectiveness to apply to all potable wells rather than just drinking water wells. "Potable wells" in this paragraph will be changed to "drinking water wells".
5.	§ 4.4.2	[21AUG24-Esler] This highlighted text suggests that the "intention" is describing the "conduct [of] well surveys", not the "repeated as necessary." EPA suggests the highlighted text to be replaced with: "the Army will conduct well surveys to evaluate properties . . . ." The frequency of the well surveys will be determined in the remedial design documentation." Also, although not noted in the original comment, this is not a LUC either; it is a monitoring effort and should be placed in the section about monitoring (along with the activities discussed in Section 4.4.1(3)).	Concur. The text will be revised to change "repeated as necessary" to "the frequency of the well surveys will be determined in the remedial design documentation." The Army notes that the layering structure of these monitoring efforts combined with the County's well siting guidance should reduce the possibility of any new wells being drilled in the vicinity of RBAAP and thus the well survey requirement would taper, especially without visible evidence of newly constructed homes. The title of this section was changed to include "Monitoring".

APPENDIX C
ADDITIONAL COMMENTS AND ARMY RESPONSES

Transmittal	E-mail				
Contractor (Prime):	NA				
Contract No.:	NA				
Task Order:	NA				
Reviewer:	Carla Landrum	**Organization**	California Regional Water Quality Control Board, Central Valley Region	**Date:**	23 August 2024

No.	Reference (page/paragraph)	Review Comment	Response
	General Comments	As to the Army's response to the Central Valley Water Board's letters issued to the Army on 24 June 2024 (available on GeoTracker*), which are partially included in Appendix E on pdf page 126 of the attached version of the ESD, Central Valley Water Board staff does not concur with the Army's response. Because the EPA's comment on Section 4.3.1(5) in the attached ESD#2 aligns with Central Valley Water Board staff's comments issued on 24 June 2024, Central Valley Water Board staff will await the Army's response to EPA's comment before fully addressing the Army's response presented in Appendix E of the attached ESD. Please understand Central Valley Water Board staff will not sign the ESD without the Army either gathering additional information to address the data gaps or developing administrative controls as put forth in the 24 June 2024 letters made available through the GeoTracker link below.	Non-Concur. As noted above, the Army cannot select a remedy for a site that has no demonstrable release of a hazardous substance, pollutant or contaminant that has resulted in an unacceptable risk to human health or the environmental. Additionally, changing the responses specific to Parcel 2 and Parcel B directly conflicts with the Informal Dispute Resolution that all Parties agreed to. If the EPA and the State wish for the Army to proceed with a new Remedial Investigation for Parcel 2 and Parcel B, that can be done but selected a remedy without identifying a release is not part of the CERCLA process. Additionally, data gaps are not a part of this ESD #2.

APPENDIX C
ADDITIONAL COMMENTS AND ARMY RESPONSES

US Army ODCS, G-9, BRAC Branch		**Review Comments**			**DAIN-ISE-BRAC Branch**	
Project:	Riverbank Army Ammunition Plant					
Document:	Final Explanation of Significant Differences No. 2				**Date:**	July 2024
Transmittal No.	NA					
Contractor (Prime):	NA					
Contract No.:	NA					
Task Order:	NA					
Reviewer:	Shahid Mahmood	**Organization**	CA Department of Toxic Substances Control		**Date:**	22 Aug 2024 (Email)

No.	**Reference (page/paragraph)**	**Review Comment**	**Response**
	General Comments	Provide rational for commercial/industrial use restrictions regarding parcel 2.	The Army acknowledges that prior to 1 October 2024, the rationale to include LUCs on Parcel 2 (preventing residential reuse) was its proximity to contaminated parcels and prior industrial use, as well as the adjacent groundwater plume. After the new CA State MCLs for hexavalent chromium went into effect on 1 October 2024, Parcel 2 should now be considered a part of groundwater plume that requires a remedy, including LUCs, prior to transfer or as part of the Early Transfer process. The transfer will include land use controls that are based on current site conditions. The Land Use Controls will include the

			restriction of use of groundwater (for any reason), restrictions on the inference with the remedial efforts and monitoring systems, as well as residential use restrictions.
	General Comments	Has the Army considered conducting Per-and Polyfluoroalkyl Substances (PFAS) sampling and metals sampling concurrently? This comment is presented with the situational awareness that the regulatory agencies have requested additional sampling for metals in both soil and groundwater for Parcel 2.	Concur. As noted in the response to comments for the FOST Amendment for Parcel 2, the Army has agreed to conduct additional sampling in Parcel 2. Specific information related to the further investigation of Parcel 2 will be shared in project-specific documents.
	General Comments	Please note that additional restrictions in a Covenant to Restrict Use of Property (CRUP) might be required pending future investigation at Parcel 2 and discussed in a Record of Decision Amendment or Explanation of Significant Difference	Partially concur. The Army will include a CRUP in the Finding of Suitability for Early Transfer (FOSET), which will be provided for the State's review and approval.

US Army ODCS, G-9, BRAC Branch	**Review Comments**	**DAIN-ISE-BRAC Branch**

Project:	Riverbank Army Ammunition Plant					
Document:	Final Explanation of Significant Differences No. 2				**Date:**	May 2025
Transmittal No.	NA					
Contractor (Prime):	NA					
Contract No.:	NA					
Task Order:	NA					
Reviewer:	Xuan-Mai Tran & Eric Esler	**Organization**	U.S. Environmental Protection Agency		**Date:**	July 2025

No.	**Reference (page/paragraph)**	**Review Comment**	**Response**

APPENDIX C
ADDITIONAL COMMENTS AND ARMY RESPONSES

1	Page 6, Section 3.1 RAOs.	Suggest deleting the phrase “on adjacent parcels” from the fourth bullet. Is this what is meant, "on adjacent parcels"? Isn't this RAO for both on- and off-base GW? If so, need to add a reference to the on-base GW too.	Partially concur. The fourth bullet differentiated the RAO to only restrict activities that could impact the integrity of the remedial system to adjacent parcels and EPA requested it apply to both on- and off-post activities. This RAO was specifically written to select the Parcel B deed restriction language that serves as a land use control on that parcel but it should apply to both on and off. RAO was edited to: “… remedy on the RBAAP facility and former RBAAP adjacent parcels…”
2	Page 10, Section 4.3.1(4)	As drafted, the highlighted text places responsibility not only on the property owner, but also on a tenant/lessee/etc. It does not seem appropriate for a tenant/etc. to bear responsibility for posting signage, for example.	Concur. The restriction required the “Owner or Occupant” to post signs, etc. and EPA questioned whether this is appropriate. This is holdover RCRA language but is not significant. The Army will transfer the property with restrictions and all future owners and occupants will utilize the property in accordance with those restrictions. The Army will also likely have a third party be responsible for the day-to-day maintenance of those restrictions but ultimately the Army is responsible for making sure the restrictions (signage) remains in place and effective.

					The RAO was edited to delete "or Occupant".	
US Army ODCS, G-9, BRAC Branch		**Review Comments**			**DAIN-ISE-BRAC Branch**	
Project:	Riverbank Army Ammunition Plant					
Document:	Final Explanation of Significant Differences No. 2				**Date:**	May 2025
Transmittal No.	NA					
Contractor (Prime):	NA					
Contract No.:	NA					
Task Order:	NA					
Reviewer:	Xuan-Mai Tran & Eric Esler	**Organization**	U.S. Environmental Protection Agency		**Date:**	18 Nov 2025 (Email)
No.	**Reference (page/paragraph)**	**Review Comment**			**Response**	
1	**Section 4.3.1(5)**	Response to previous Army Comment 2 (Aug. 24): EPA's *Guidance for Comparing Background and Chemical Concentrations in Soil for CERCLA Sites* (OSWER *540-R-01-003,* September 2002), expressly quoting EPA's *Risk Assessment Guidance for Superfund, Volume I, Human Health Evaluation Manual (Part A)* (EPA/540/1-89/002, December 1989), states that "the locations of the background samples must be areas that could not have received contamination from the site, but that do have the same basic characteristics as the medium of concern at the site" (PDF PP. 16 and 55, respectively). The Army, however, collected soil samples to calculate background threshold values for the CERCLA cleanup at the Riverbank Army Ammunition Plant (RBAAP) on the facility property due to constraints on access to properties beyond the facility's boundary with similar basic soil characteristics. Soil samples from areas on the facility property not impacted by site contamination could be used to calculate background values if areas beyond the facility's boundary are inaccessible or otherwise unsuitable. Due to the small size of the facility property, as well as the presence of contaminant source areas throughout the facility property, though, it is not possible definitively to determine that the soil samples collected by the Army are not contaminated from on-site			The Army agrees to undertake a new investigation of background threshold values. The investigation will attempt to include soil samples from property beyond the RBAAP facility's boundary, contingent on the ability to obtain rights-of-entry for sampling.	

		sources. Cleanup decisions for the site that are based on the Army's previously calculated background values, or comparisons to those background values, therefore may not be protective of human health and the environment. To address EPA's concerns about the Army's calculation of background threshold values, first expressed in a comment on ESD 2 dated 8/21/2024, the Army offered in its response-to-EPA's 8/21/2024-comment, to undertake a further investigation of Parcels 2 and B ("*The Army can agree to a new Remedial Investigation [RI] for these sites [referencing Parcels 2 and B], . . .*"). EPA accepts the Army's offer to undertake a further investigation of these two parcels, but it believes all that is required is an investigation of background threshold values based on soil samples from property beyond the RBAAP facility's boundary in accordance with EPA guidance, not a full RI.	

US Army ODCS, G-9, BRAC Branch	**Review Comments**	**DAIN-ISE-BRAC Branch**

Project:	Riverbank Army Ammunition Plant					
Document:	Final Explanation of Significant Differences No. 2				**Date:**	May 2025
Transmittal No.	NA					
Contractor (Prime):	NA					
Contract No.:	NA					
Task Order:	NA					
Reviewer:	Shahid Mahmood	**Organization**	CA Department of Toxic Substances Control		**Date:**	24 Nov 2025 (Email)

No.	**Reference (page/paragraph)**	**Review Comment**	**Response**
1	Section 4.3.1(2)(a)	Revise text as follows: "Prohibited activities include: *(a) Drilling without prior written approval by the Federal Facility Agreement (FFA) parties.*	Section 4.3.1(2) has been updated per DTSC's email dated 18 December 2025.
2	Signature page (20/129)	Please update the Branch Chief name to Mr. Dominique Forrester.	Concur. Signature block has been updated.

APPENDIX C
ADDITIONAL COMMENTS AND ARMY RESPONSES

US Army ODCS, G-9, BRAC Branch		**Review Comments**			**DAIN-ISE-BRAC Branch**
Project:	Riverbank Army Ammunition Plant				
Document:	Final Explanation of Significant Differences No. 2			**Date:**	May 2025
Transmittal No.	NA				
Contractor (Prime):	NA				
Contract No.:	NA				
Task Order:	NA				
Reviewer:	Xuan-Mai Tran	**Organization**	U.S. Environmental Protection Agency	**Date:**	01 Dec 2025 (Email)

No.	**Reference (page/paragraph)**	**Review Comment**	**Response**
1	Section 4.3.1(2)	I read the correspondences between the Army and the DTSC on the revised language related to drilling activities (Section 4.3.1(2)). I do have couple edits below since the ESD2 already defined "FFA" in the prior section (Section 1.2 Lead and Support Agencies). In addition, Section 4.3.1(2) heading is "On-Post Groundwater Use Restriction", but the activities below are listed/included as "Prohibited". Please revise to make the text consistent. "(a) Drilling for water, oil, or gas without prior written approval by the ~~Federal Facility Agreement (~~FFA~~)~~ Parties. "(b) Extraction or removal of groundwater without prior written approval by the ~~Federal Facility Agreement (~~FFA~~)~~ Parties. "(c) Exception. This section does not apply to three wells (I1, I5 and I6) that are currently permitted for potable water under a State of California Domestic Water Supply Permit."	Section 4.3.1(2) has been updated per DTSC's email dated 18 December 2025.

US Army ODCS, G-9, BRAC Branch		**Review Comments**	**DAIN-ISE-BRAC Branch**
Project:	Riverbank Army Ammunition Plant		
Document:	Final Explanation of Significant Differences No. 2	**Date:**	May 2025
Transmittal No.	NA		

APPENDIX C
ADDITIONAL COMMENTS AND ARMY RESPONSES

Contractor (Prime):	NA				
Contract No.:	NA				
Task Order:	NA				
Reviewer:	Shahid Mahmood	**Organization**	CA Department of Toxic Substances Control	**Date:**	18 December 2025 (Email)

No.	Reference (page/paragraph)	Review Comment	Response
1	Section 4.3.1(2)(a)	The changes under Section 4.3.1(2) (on pdf page 12/129) should be as follows: ***2) On-Post Groundwater Use Restrictions and Prohibition.*** For the purpose of the restrictions and prohibition set forth in this section 4.3.1(2), groundwater shall have the same meaning as in §101(12) of CERCLA. (a) No drilling into, or extraction or removal of, groundwater from beneath Parcels A, 1, 1A, 2, 2A, and NW Storm Water Reservoir, is permitted without prior written approval of the FFA parties until the cleanup goals for groundwater are achieved. These restrictions do not apply to: • Three wells (I1, I5 and I6) that are currently permitted for potable water under a State of California Domestic Water Supply Permit. • Removal actions, remedial actions, groundwater monitoring, or any remediation efforts under EPA or California state agency oversight. (b) The extraction of groundwater from beneath Parcel B for the purpose of using the groundwater for potable or non-potable use is prohibited until the cleanup goals for groundwater are achieved. The de minimis removal of groundwater incidental to drilling on Parcel B unrelated to groundwater extraction is not subject to this prohibition."	Concur. As discussed in a meeting with all parties on February 18, 2026, the Army agrees and will revise the text as requested.

APPENDIX D

Central Valley Water Board Comment Letter(s)

Central Valley Regional Water Quality Control Board

4 March 2024

Mr. Mark Leeper
Program Manager
Office of the Deputy Chief of Staff, G-9
BRAC Branch, IS Environmental Division
600 Army Pentagon
Washington, DC 203100-0600
Mark.s.leeper.civ@army.mil

SUMMARY OF OUTSTANDING COMMENTS ON EXPLANATION OF SIGNIFICANT DIFFERENCES #2, RIVERBANK ARMY AMMUNITION PLANT, RIVERBANK, CALIFORNIA

Through two separate emails, dated 11 December 2023 and 19 December 2023, the Department of the Army (Army) submitted a revised Explanation of Significant Differences #2 (revised ESD#2) to the Environmental Protection Agency (EPA), Department of Toxic Substances Control (DTSC) and the Central Valley Regional Water Quality Control Board (Central Valley Water Board) (collectively, Regulatory Agencies). In a 20 December 2023 email, the Army declared a 4 March 2023 deadline for Regulatory Agencies to provide comment on the revised ESD#2. The revised ESD#2 is dated "November 2023".

Several Central Valley Water Board staff's comments issued to the Army regarding ESD#2 remain outstanding. These outstanding comments are documented in the project record by reference to the following citations. All URLs are compatible with Google Chrome. All citations below are enclosed.

1. **29 January 2024 CVWB Letter.**

   Central Valley Water Board, 2024. *Central Valley Regional Water Quality Control Board Response to Army's Position on Cyanide MCL for Riverbank Army Ammunition Plant (RBAAP) Groundwater Cleanup Goal*. January 29.

   GeoTracker URL:
   https://documents.geotracker.waterboards.ca.gov/regulators/deliverable_documents/1761457145/SignedPostToGeoTracker1.pdf

2. **5 December 2023 CVWB Letter.**

   Central Valley Water Board, 2023. *Explanation of Significant Differences #2 Resolution, Riverbank Army Ammunition Plant, Stanislaus County*. December 5.

   GeoTracker URL:
   https://documents.geotracker.waterboards.ca.gov/regulators/deliverable_documents/5307157218/20231205_RBAAP_ResolutionLetter_ESD2_Final.pdf

3. **31 January 2023 CVWB Letter.**

   Central Valley Water Board, 2023. *Central Valley Regional Water Quality Control Board Response to Draft Final Explanation of Significant Differences No. 2 to the Riverbank Army Ammunition Plant Record of Decision.* January 31.

   GeoTracker URL:
   https://documents.geotracker.waterboards.ca.gov/regulators/deliverable_documents/7390577018/20230131Riverbank_ESD2CVWBCommentsFinalSigned.pdf

4. **General Comment #1, Army Response to Comments, Draft Final Southern Parcels 1 & 1A RIFS.**

   Response to comments are enclosed. The most recent round of comments were issued by the Regulatory Agencies in July and August 2023[1].

If you have any questions, or would like to discuss over a conference call, please contact Carla Landrum at (916) 464-4820 (e-mail: carla.landrum@waterboards.ca.gov).

Sincerely,

Carla Landrum, PhD
Engineering Geologist
Federal Facilities Unit

[1] Central Valley Water Board, 2023. Central Valley Regional Water Quality Control Board Response to Draft Final Southern Parcels 1 & 1A and OID Drainage Ditch Remedial Investigation and Feasibility Study Report, Former Riverbank Army Ammunition Plant (RBAAP), Stanislaus County. August 18.

GeoTracker URL:
https://documents.geotracker.waterboards.ca.gov/regulators/deliverable_documents/1482267081/20230818_RBAAP_2022ParcelsA_1ARIFSRTCs_Final.pdf

MARK W. CLARDY, P.G. #7055
Senior Engineering Geologist
Federal Cleanup Unit

Enclosures

Central Valley Regional Water Quality Control Board

29 January 2024

Mr. Mark Leeper
Program Manager
Office of the Deputy Chief of Staff, G-9
BRAC Branch, IS Environmental Division
600 Army Pentagon
Washington, DC 203100-0600
Mark.s.leeper.civ@army.mil

CENTRAL VALLEY REGIONAL WATER QUALITY CONTROL BOARD RESPONSE TO ARMY'S POSITION ON CYANIDE MCL FOR RIVERBANK ARMY AMMUNITION PLANT (RBAAP) GROUNDWATER CLEANUP GOAL

On 3 January 2024, the Department of the Army (Army) issued the enclosed letter addressed to the Environmental Protection Agency (EPA), Department of Toxic Substances Control (DTSC) and the Central Valley Regional Water Quality Control Board (Central Valley Water Board). The Army's letter declares the Army's formal observation of the California groundwater Maximum Contaminant Level (MCL) for cyanide, equal to 150 micrograms per liter (µg/L), as an applicable or relevant and appropriate requirement (ARAR) for RBAAP, thereby observing the 150 µg/L MCL henceforth as a remedial action level.

The groundwater cyanide cleanup level is declared in the 1994 Record of Decision (ROD)[1]. As the Army points out in its 3 January 2024 letter, the RBAAP 1994 ROD acknowledges the remediation requirement that the "aquifer meets federal and state MCLs and state Water Quality Objectives". However, the ROD more explicitly states that the remediation levels were established as the federal and state MCL of 200 µg/L (See pages 1-3 and 2-47 and Table 2-1 of the ROD).

The Army's 3 January 2024 letter states that it is not necessary to include the 150 µg/L MCL in Explanation of Significant Differences #2 (ESD2) (or any future ESD) because the MCL is already considered to be an applicable ARAR by the Army. While the Central Valley Water Board appreciates the Army's intent to comply with the state's 150 µg/L MCL, the language in the ROD needs to be modified to ensure that future actions

[1] Record of Decision, 1994. Riverbank Army Ammunition Plant. March. https://documents.geotracker.waterboards.ca.gov/regulators/deliverable_documents/2418304920/19940301%20RBAAP%20(GeoT)%20Record%20of%20Decision.pdf

fulfill that intent. Explicit inclusion of the 150 µg/L MCL is necessary for the protectiveness of the remedy and thus inclusion in ESD2 is both appropriate and necessary. Central Valley Water Board staff underscores the significance of the Army including the 150 µg/L MCL as an ARAR in ESD2 on the following premises:

1. Inclusion will materially change the cleanup level for the groundwater remedy. This will require the Army to remove all language in ESD2 currently citing the federal cleanup level for cyanide in groundwater and replace the language with the agreed upon 150 µg/L MCL. This includes the following sentence on page 3, Section 2.2.1 of the Draft Final version of ESD2:

> "The remedy for the RBAAP groundwater contamination selected in the 1994 ROD was increased groundwater extraction with treatment, by chemical reduction/precipitation, until the aquifer meets federal and state Maximum Contaminant Limits (MCLs) of 50 µg/L for chromium and 200 µg/L for cyanide."

2. Inclusion will require the Army to conduct further analysis of the cyanide contamination in groundwater in order to accomplish the remedy protectiveness statement made in Section 3.0 on page 5 of the Draft Final ESD2:

> "If the groundwater has migrated to areas that do not have the infrastructure to supply potable water from a municipal water system, the Army will coordinate with the system provider or other alternatives to ensure that there are no ongoing exposures to contaminated water and that the remedy remains protective."

To accomplish remedy protectiveness, as stated above, the Army will need to define the current spatial extents of cyanide concentrations in groundwater that exceed the 150 µg/L, both on and off base. Off base cyanide groundwater contamination is likely, as was demonstrated by the Army in 2021 (see Attachment 1 to this letter). In addition to Attachment 1, the Army has demonstrated multiple cyanide groundwater exceedances in samples collected from groundwater well EW52B since 2021. To ensure the remedy is protective, the groundwater remediation scope will likely increase in terms of volume(s) of treated groundwater and associated cost(s).

3. Inclusion is necessary to ensure the protectiveness of the Land Use Controls identified in section 4.4 of the Draft Final ESD2.

4. Inclusion is necessary for the Army to properly meet the Remediation Action Objectives (RAOs), as identified in Section 3.0 and Section 4.0 of the "Draft Final" ESD2.

5. Inclusion will require the Army to take forward-looking actions to meet this more stringent cleanup goal, including but not limited to, re-assessing remedy performance under the next CERCLA Five Year Review process. The Draft Final ESD2 references the Five Year Review process in Section 4.5.

The above said, the Central Valley Water Board maintains the position that ESD2 is the most effective, immediate, and cost-efficient mechanism to modify the ROD to record the Army's inclusion of the 150 µg/L MCL as an ARAR.

If you have any questions regarding this letter, or would like to discuss over a conference call, please contact Carla Landrum at (916) 464-4820 (e-mail: carla.landrum@waterboards.ca.gov).

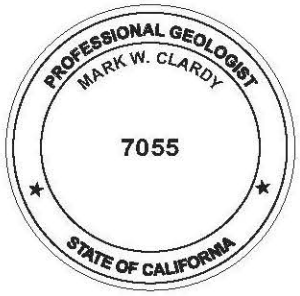
Sincerely,

Carla Landrum
Digitally signed by Carla Landrum
Date: 2024.01.29 10:46:56 -08'00'
Water Boards

Carla Landrum, PhD
Engineering Geologist
Federal Facilities Unit

Mark W. Clardy
Digitally signed by Mark W. Clardy
Date: 2024.01.29 11:20:37 -08'00'
Water Boards

MARK W. CLARDY, P.G. #7055
Senior Engineering Geologist
Federal Cleanup Unit



Enclosure

cc: (via email)

Ms. Xuan-Mai Tran, USEPA, San Francisco
Tran.Xuan-Mai@epa.gov

Mr. Shahid Mahmood, DTSC, Sacramento
Shahid.Mahmood@dtsc.ca.gov

Mr. Lucas Zavala, US Army Corps of Engineers, Sacramento
lucas.a.zavala@usace.army.mil

Ms. Marisela Garcia, City of Riverbank, CA
mhgarcia@riverbank.org

Ms. Stephanie Freier, Stanislaus County Environmental Resources

sfreier@envres.org

Mr. Randy Brandt, Geosyntec
rbrandt@geosyntec.com

Mr. Jarrett Hollis, Aemetis
jarrett.hollis@aemetis.com

Steve Clements, Ahtna
sclements@ahtna.net

Drew Van Allen, Aemetis
drew.vanallen@aemetis.com

Curtis Payton, Department of the Army
r.c.payton.civ@army.mil

DEPARTMENT OF THE ARMY
OFFICE OF THE DEPUTY CHIEF OF STAFF, G-9
600 ARMY PENTAGON
WASHINGTON, DC 20310-0600

DAIN-ISE

January 3, 2024

Ms. Xuan-Mai Tran
U.S. EPA Region IX
(SFD-8-3)
75 Hawthorne St
San Francisco, CA 94105

Mr. Shahid Mahmood
California Department of
Toxic Substances Control
8800 Cal Center Drive
Sacramento, CA 95826-
3200

Ms. Carla Landrum
California Regional Water
Quality Control Board, Central
Valley Region
11020 Sun Center Drive, Suite
200
Rancho Cordova, CA 95670-
6114

SUBJECT: Clarification of Army position on Cyanide MCL for Riverbank Army Ammunition Plant (RBAAP) groundwater cleanup goal.

Ms. Tran, Ms. Landrum & Mr. Mahmood:

The Army is in receipt of the Central Valley Regional Water Quality Control Board's (CVRWQCB's) email time stamped 20DEC2023 15:22 PST. In this email the RWQCB staff continue to perseverate on the issue of the cyanide Maximum Contaminant Level (MCL) of 150 µg/L being applied to the ESD2 document. Ms. Landrum states, among other things, "… for some reason [the letter dated 5DEC23] is not registering. ESD2 needs to reflect the California groundwater MCL for cyanide."

The Army would like to assure all of our agency partners that it is indeed "registering." To be clear, the Army agrees with past agency assessments that the cyanide MCL of 150 µg/L is an applicable ARAR as stipulated in the 1994 Record of Decision (ROD). Table 2-1, page 2-25 of the ROD states:

> "The groundwater will be extracted and treated until the aquifer meets federal and state MCLs and state Water Quality Objectives (WQOs) for protection of the beneficial use classifications for municipal, domestic, industrial, and agricultural water supply."

While the previous MCL was identified in Table 2-1 as 200 µg/L (as of March 1994), the more recently developed MCL of 150 µg/L (California, 2003 June 12) is considered by the Army to be an applicable ARAR. Consequently, the adoption of this lower MCL standard does not rise to the level of an ESD; whether in the ESD2 under review or in future ESDs should they be necessitated.

To reiterate, the Army solicits commentary on the Draft Final ESD2 and that all comments be provided in a comprehensive stand-alone comments document for each agency (i.e. EPA, DTSC, CVRWQCB). If there are past comments that have been unaddressed or incompletely addressed, those comments should be recapitulated in the comments to this Draft Final ESD2.

Please also note that it is important to keep comments germane to the ESD2, which was prepared to:

- Add language clarifying that the permanent potable water supply ("PPWS") removal action completed in December 1992 is part of the groundwater remedy;
- Include institutional controls ("ICs") in the groundwater remedy to address groundwater contamination that extends beyond the boundaries of the former RBAAP;
- Specify that groundwater use restrictions included in the Army's deed transferring Parcel B are part of the groundwater remedy; and
- Identify California's land use covenant regulation, 22 CCR §67391.1, as an applicable or relevant and appropriate requirement ("ARAR"), for both the groundwater and soil remedies and include a requirement that the property transferee execute and record a land use covenant with DTSC that includes use restrictions parallel to the restrictions in the deed(s).

As always, the Army appreciates the partnership of EPA, DTSC and CVRWQCB and apologizes for not making this position emphatically clear sooner.

Thank you for your continued support and cooperation. The Army appreciates your input and looks forward to any additional comments you may have on the ESD2 and other pending Army documents for the RBAAP remedial actions.

Please feel free to contact BRAC Environmental Coordinator, Mr. Curtis Payton, at 916.267.1246, or via email r.c.payton.civ@army.mil, or Mr. Mark Leeper at 202.763.8664 or email, mark.s.leeper.civ@army.mi if you have any further questions.

Sincerely,

PAYTON.R.CURTIS.II.1231979707

Digitally signed by PAYTON.R.CURTIS.II.1231979707
Date: 2024.01.03 13:16:15 -08'00'

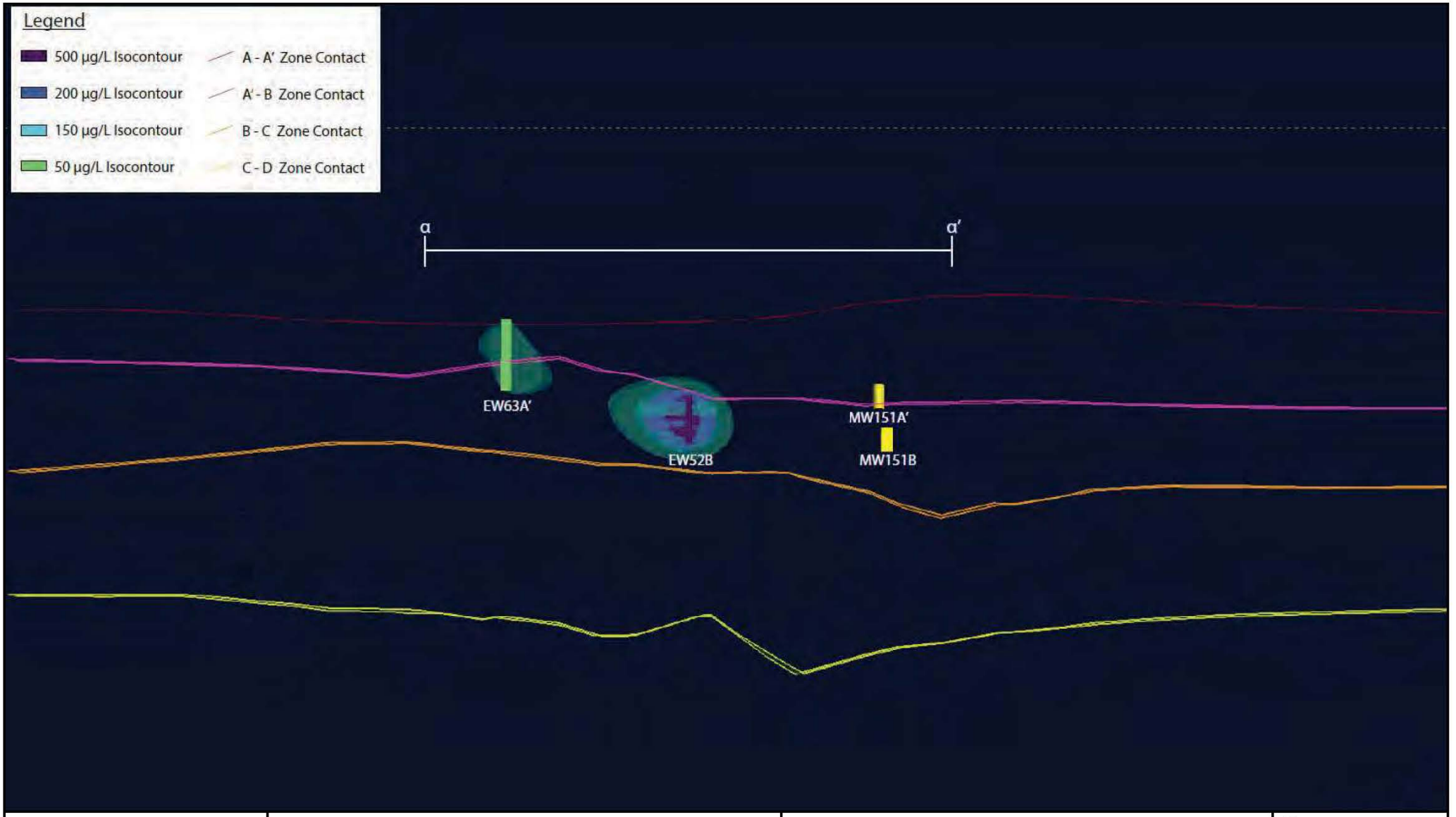
Curtis Payton
BRAC Environmental Coordinator
Environmental Division Installation Services Directorate

cc:

Ms. Erin Mauer, erin.c.mauer.civ@army.mil
Ms. Susan Ryan, susan.m.ryan.civ@army.mil
Mr. Scott Armstrong, scott.armstrong@calibresys.com
Mr. Lucas Zavala, lucas.a.zavala@usace.army.mil
Ms. Marisela Garcia, mhgarcia@riverbank.org

ATTACHMENTS

Ahtna	Groundwater Modeling - Cyanide Map View	Annual Groundwater Monitoring, Landfill, and Groundwater Treatment Report (2021 Fourth Quarter) Riverbank Army Ammunition Plant Riverbank, California	Figure 15



Ahtna	Groundwater Modeling – Cyanide Cross Section (α - α')	Annual Groundwater Monitoring, Landfill, and Groundwater Treatment Report (2021 Fourth Quarter) Riverbank Army Ammunition Plant Riverbank, California	Figure 16

Central Valley Regional Water Quality Control Board

5 December 2023

Mr. Mark Leeper
Program Manager
Office of the Deputy Chief of Staff, G-9
BRAC Branch, IS Environmental Division
600 Army Pentagon
Washington, DC 203100-0600
Mark.s.leeper.civ@army.mil

EXPLANATION OF SIGNIFICANT DIFFERENCES #2 RESOLUTION, RIVERBANK ARMY AMMUNITION PLANT, STANISLAUS COUNTY

Central Valley Regional Water Quality Control Board (Central Valley Water Board) staff submit this letter recognizing the United States Department of the Army (Army), the Department of Toxic Substances (DTSC), the United States Environmental Protection Agency (EPA) and the Central Valley Water Board are reaching a resolution regarding the informal dispute triggered on 3-4 February 2021 for the Draft Final Explanation of Significant Differences #2 to the Riverbank Army Ammunition Plant (RBAAP) Record of Decision (ROD).

On 15 September 2022, Central Valley Water Board staff, at the request of the principals, issued select comments embedded in a redline strikeout version of ESD2. These comments were focused on the disputed issues in an effort to expedite a dispute resolution between the Army and regulatory agencies. A second letter was issued by Central Valley Water Board staff, dated 31 January 2023[1], containing comments on ESD2 that were not dispute-related but require address before ESD2 can be finalized.

This letter is a friendly reminder that the Army cannot finalize ESD2 without addressing all comments issued on ESD2. Because the dispute resolution process has taken months since the 31 January 2023 comments were issued, it is appropriate to update two comments, as described below.

[1] Central Valley Water Board, 2023. Central Valley Regional Water Quality Control Board Response to: Draft Final Explanation of Significant Differences No. 2 to the Riverbank Army Ammunition Plant Record of Decision. January 31. https://documents.geotracker.waterboards.ca.gov/regulators/deliverable_documents/7390577018/20230131Riverbank_ESD2CVWBCommentsFinalSigned.pdf

Cyanide Groundwater MCL (with direct reference to Comment #3 in the 31 January 2023 letter):

The Central Valley Water Board and the Army have exchanged several letters regarding California's cyanide groundwater Maximum Contaminant Level (MCL) since January 2023, including the Army providing its data and calculations on 26 April 2023 to substantiate the claim that the state's cyanide MCL is as protective as the less stringent federal MCL. Upon review of the Army's data and calculations, Central Valley Water Board staff cannot establish a defensible basis to concur with the Army's stance that the less stringent federal cyanide MCL is as protective as the more stringent California cyanide MCL and, in response, issued a letter in May 2023[2] explaining this stance. The Army responded to the May 2023 letter in September 2023, which again did not demonstrate the protectiveness of the Army's federal cyanide MCL, and the Central Valley Water Board issued a second letter on 18 October 2023[3] in response to the Army's letter. With reference to these letters, Central Valley Water Board staff maintains that the California cyanide MCL for groundwater is an applicable or relevant and appropriate requirement (ARARs) for RBAAP and expects the Army update ESD2 to recognize the California cyanide MCL for groundwater equal to 150 micrograms per liter. It is notable that this request has been documented in several Five-Year Reviews[4], most recently in a Central Valley Water Board letter dated 1 August 2022[5].

Groundwater Remedy Effectiveness (with direct reference to Comment #2 in the 31 January 2023 letter):

Footnotes 2, 3, 5, and 6 herein document project findings that demonstrate the lack of groundwater remedy effectiveness for RBAAP. Central Valley Water Board staff

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[2] Central Valley Water Board, 2023. Central Valley Regional Water Quality Control Board Response to: EW63A' Cyanide Rebound Study Path Forward Memorandum and Offbase Groundwater Plume Migration, Riverbank Army Ammunition Plant (RBAAP), Riverbank, California. May 30. https://documents.geotracker.waterboards.ca.gov/regulators/deliverable_documents/1073301017/20230530_RBAAP_CynanideReboundStudy_Final.pdf

[3] Central Valley Water Board, 2023. Central Valley Regional Water Quality Control Board Response to United States Army Corps of Engineers 22 September 2023 Letter, Riverbank Army Ammunition Plant, Stanislaus County. October 18th. https://documents.geotracker.waterboards.ca.gov/regulators/deliverable_documents/2392484366/20231018_RBAAP_22SeptArmyLetter_CVWBResponse_FinalCombined.pdf

[4] Central Valley Water Board, 2021. Draft Fifth Five-Year Review Report, Former Riverbank Army Ammunition Plant, Stanislaus County. July 13. https://documents.geotracker.waterboards.ca.gov/regulators/deliverable_documents/5942166984/Comments%20on%20Draft%20Fifth%20Five-Year%20Review%20Report%20(final%207-13-21%20mlp).pdf

[5] Central Valley Water Board, 2022. Central Valley Regional Water Quality Control Board Response to: Final Fifth Five-Year Review Report, Former Riverbank Army Ammunition Plant (RBAAP), Stanislaus County. August 1. https://documents.geotracker.waterboards.ca.gov/regulators/deliverable_documents/6042417228/2022-08-01 Riverbank_FiveYRReviewFinalSigned.pdf

recently issued a letter on 27 September 2023[6] citing some of these letters and the key issues that require further address before the Army can defensibly state that groundwater remedy at RBAAP is effective. The Army will need to recognize these letters in response to Comment #2 in the 31 January 2023 letter.

If you have any questions regarding this letter, or would like to discuss over a conference call, please contact Carla Landrum at (916) 464-4820 (e-mail: carla.landrum@waterboards.ca.gov).

Sincerely,

Carla Landrum

Digitally signed by Carla Landrum
Date: 2023.12.05 15:24:54 -08'00'

Carla Landrum, PhD
Engineering Geologist
Federal Facilities Unit

Mark W. Clardy

Digitally signed by Mark W. Clardy
Date: 2023.12.05 16:29:08 -08'00'

MARK W. CLARDY, P.G. #7055
Senior Engineering Geologist
Federal Cleanup Unit

Cc (via email)

Ms. Xuan-Mai Tran, USEPA, San Francisco
Tran.Xuan-Mai@epa.gov

Mr. Shahid Mahmood, DTSC, Sacramento
Shahid.Mahmood@dtsc.ca.gov

Mr. Lucas Zavala, US Army Corps of Engineers, Sacramento
lucas.a.zavala@usace.army.mil

Ms. Marisela Garcia, City of Riverbank, CA
mhgarcia@riverbank.org

[6] Central Valley Water Board, 2023. Central Valley Regional Water Quality Control Board Response to: Groundwater Treatment Plant Operations Status Report (Second Quarter 2023), Former Riverbank Army Ammunition Plant, Riverbank, California. September 27. https://documents.geotracker.waterboards.ca.gov/regulators/deliverable_documents/9034543693/20230927_RBAAP_2Q23GWTS_Rpt_Final.pdf

Ms. Stephanie Freier, Stanislaus County Environmental Resources
sfreier@envres.org

Mr. Rob Kostlivy, Director of Stanislaus County Environmental Resources
rkostlivy@envres.org

Mr. Randy Brandt, Geosyntec
rbrandt@geosyntec.com

Mr. Jarrett Hollis, Aemetis
jarrett.hollis@aemetis.com

Mr. Curtis Payton
r.c.payton.civ@army.mil

31 January 2023

Mr. Webster W.L. "Hank" Procter
Program Manager
Office of the Deputy Chief of Staff for Installation Management
DAIM-ODB, Operations Branch
BRAC Division
2530 Crystal Drive
Arlington, Virginia 22202
webster.w.procter.civ@army.mil

CENTRAL VALLEY REGIONAL WATER QUALITY CONTROL BOARD RESPONSE TO: DRAFT FINAL EXPLANATION OF SIGNIFICANT DIFFERENCES NO. 2 TO THE RIVERBANK ARMY AMMUNITION PLANT RECORD OF DECISION

Central Valley Regional Water Quality Control Board (Central Valley Water Board) staff reviewed the *Draft Final Explanation of Significant Differences No. 2* (ESD2) for the Riverbank Army Ammunition Plant (RBAAP). The U.S. Army Corps of Engineers Sacramento District (Army) submitted the ESD2 via email on 10 August 2022.

ESD2 selects on-post land use controls (LUCs) and off-post institutional controls (ICs) as part of the final remedy to help protect human health and the environment. On-post LUCs pertain to soil and groundwater. Off-post ICs pertain to groundwater and are generally administrative relating to public outreach, public awareness, and documenting the threat for nearby residents to consume hexavalent chromium and cyanide affected groundwater and the procedures for mitigating this threat.

On 15 September 2022 Central Valley Water Board staff, at the request of the principals, issued select comments embedded in a redline strikeout version of ESD2. This was in effort to expedite a dispute resolution between the Army and regulatory agencies. To date, a resolution has not been made. This letter formalizes remaining Central Valley Water Board staff comments on ESD2 and is inclusive of those submitted to the Army on 15 September 2022.

1) Parcels 1 and 1A

ESD2 does not identify why Parcels 1 and 1A require LUCs, as put forth in Section 4.3; Section 2.1 (Site History and Contamination) should set the working premise for the required LUCs. Further, Section 2.2 should also recognize the scope of Parcel 1 and 1A remedial efforts, to date, and state the status of the Remedial Investigation/Feasibility

Study (RIFS). This comment is in line with a similar comment Central Valley Water Board staff issued on 24 February 2011 (CVWB, 2011).

2) Groundwater Remedy Effectiveness

ESD2 is prematurely optimistic when describing groundwater remedy effectiveness at RBAAP. Central Valley Water Board staff would like to clarify the following:

A) Sampling results as recent as third quarter 2022 indicate the extent of the off-post groundwater hexavalent chromium plume above 50 micrograms per liter (µg/L) is beyond the current RBAAP groundwater monitoring well network. Further, these sample results have shown a general upward trend since the beginning of 2022, suggesting the plume is actively migrating. Without sampling beyond the current monitoring well network, the Army cannot fully delineate the extent of the off-post hexavalent chromium groundwater plume and the associated exposure risks to human health and the environment. A defensible, complete and effective groundwater remedy cannot be selected nor fully implemented until the hexavalent chromium plume is fully delineated. Please see Comment #3.

B) Groundwater cyanide concentrations sampled in 2021 and 2022 as part of a rebound study have shown concentrations in exceedance of 150 µg/L, which is equal to the State's MCL for cyanide, and 200 µg/L, which is the project's current action level. Some of these exceedances were consecutive and above 200 µg/L, which met criteria for re-initiating the groundwater extraction and treatment for cyanide per the approved Rebound Study Work Plan (Ahtna, 2020). The Army has yet to resume groundwater extraction and treatment at RBAAP in accordance with the Rebound Study Work Plan. Please see Comment 3.

3) California Groundwater MCLs

Central Valley Water Board staff issued a Five-Year Review letter to the Army dated 1 August 2022 (CVWB, 2022). This letter specifically addresses California groundwater MCLs for hexavalent chromium and cyanide. The August 2022 letter is relevant to defining the short-term and long-term effectiveness, relevance and completeness of ESD2 as it relates to groundwater.

For clarity, the State of California MCL for cyanide is 150 µg/L, but the project action level is the Federal MCL equal to 200 µg/L. The California Division of Drinking Water adopted the cyanide MCL on 12 June 2003 which was after the execution of the March 1994 site-wide Record of Decision (ROD). The cyanide MCL has withstood the test of time as a state MCL, regardless of the Army's argument it reflects a statistical error. To date, the Army has refused to adopt the California MCL as an ARAR and project action level. The Central Valley Water Board maintains the 150 µg/L MCL is an ARAR and requests the Army to update ESD2 (Section 2.2.1) to recognize the State's cyanide MCL as the cleanup goal. To avoid any potential confusion, this update should reflect the cyanide MCL in its published format, which is a whole number with two significant digits, not one. If the Army will not make this update, then the Army will need to present the data and calculations it used to claim the state's cyanide MCL reflects a statistical error within 60 days of the issuance of this letter.

4) Land Use Covenant
This issue has been discussed extensively, but the Central Valley Water Board continues to believe that a state CRUP is an ARAR and needs to be a part of the remedy to ensure it is executed and recorded. The updated language provided by the Army in section 4.2 is not sufficient. It merely says that the Army will facilitate the execution and recording of a CRUP but then says that the Army cannot require the future landowner to enter into a CRUP. The fact that the Army is expressly stating that it is not a requirement makes the facilitation meaningless as the State, including the Central Valley Water Board, has no recourse if the CRUP is not completed.

5) Soil Disturbances
Central Valley Water Board staff would like to clarify that any soil disturbance, including but not limited to those defined in Section 4.2 of ESD2, require approval from state and federal regulatory agencies under the LUC (see Comment #4) and FFA agreement. Documents, such as a Soil Management Work Plan, for example, will be necessary to obtain this approval.

6) Off-Post Groundwater Contamination
Section 4.3 is more accurately identified as an institutionalized control (IC), rather than a LUC. The Army technically has no land use control off-post.

Of relevance is the groundwater well survey public outreach the Army completed in 2021 and documented in a Memorandum to File (Department of the Army, 2022)(Memorandum). Central Valley Water Board staff consider this survey as "living", or ongoing, and request routine updates and review be incorporated in the ESD2 to service the objective of the off-post Institutional Control for groundwater. In addition to those actions suggested in Section 4.3 of ESD2, Central Valley Water Board staff recommend the following to meet this objective:

- Perform an annual review of the Sustainable Groundwater Management (SGMA) data viewer to access well completion reports and update the well survey Memorandum, as necessary.
- On an annual basis, the Army will contact the California Department of Water Resources to obtain information on well completion reports submitted in accordance with CA Water Code 13751 and update the well survey Memorandum, as necessary.
- On an annual basis, the Army will outreach to the County with the current well inventory record to cross-check completeness of the survey. The Army will work cooperatively with the County and local community programs and additional government agencies as applicable to fill any information gaps.
- The Army will document annual review, public outreach and well survey updates to in the RBAAP Annual Report.
- The Army will consider supplemental methods and technologies (e.g., remote sensing technologies such as LiDAR, airborne magnetic surveys, etc.) to help identify domestic groundwater wells within the off-post affected groundwater footprint, including wells downgradient and within at least one mile of the footprint

where the plume boundary is unknown. Much of this data may be readily available from public agencies. The technologies might help with identifying suspected undocumented wells, which are considered, for all intents and purposes, those installed prior to County record.

Please update ESD2 to reflect the above procedures.

7) Stanislaus County Groundwater Well Siting and Construction Guidelines (Guidelines)

ESD2 references the County's Guidelines, published in April 2022, multiple times. For situational awareness, please understand:

A) The Guidelines are provisional, as stated clearly on page 2 of 5 of the Board of Supervisors of the County of Stanislaus Board Action Summary:

"The DWR is developing an updated version of the State Well Standards that is currently expected to be issued in approximately one year, but in the meantime, the County desires to adopt Implementation Guidelines for its Well Ordinance that will provide clear definition as to which permit applications will be required to undergo discretionary review."

As such, the Guidelines, as they currently exist, will likely not serve the project in the "long-term".

B) Central Valley Water Board staff completed a technical review of the County's Guidelines and deem the County's current procedures for assessing groundwater risks, specifically associated with RBAAP, are technically inadequate to protect human health and safety. On this premise, the Guidelines should not serve as a standalone IC in ESD2. The Army will need to take additional steps with the County to prevent domestic well installation in off-post hexavalent chromium contaminated groundwater. ESD2 should specifically document what additional steps the Army will take to address this inadequacy and make sure the County is in possession of necessary information to protect human health and safety and the environment. Finally, ESD2 will need to include a contingency plan or statement in the event the County will not accept nor adopt the Army's proposed approach(es) or procedure(s).

The Central Valley Water Board requests updates to the ESD2 as commented herein. If you have any questions regarding this letter, or would like to discuss the comments over a conference call, please contact Carla Landrum at (916) 464-4820 (e-mail: carla.landrum@waterboards.ca.gov) or John Murphy at (916) 464-4636 (e-mail: chris.flower@waterboards.ca.gov).

Sincerely,

Carla Landrum
Digitally signed by Carla Landrum
Date: 2023.01.31 12:42:51 -08'00'

Carla Landrum, PhD
Engineering Geologist
Federal Facilities Unit

Christopher Flower
Digitally signed by Christopher Flower
Date: 2023.01.31 12:38:05 -08'00'

Christopher Flower, PG
Supervising Engineering Geologist
Site Cleanup Program

PROFESSIONAL GEOLOGIST
Christopher T. Flower
No. 8585
STATE OF CALIFORNIA

References:

Ahtna, 2020. *Final EW63'A Cyanide Rebound Study Work Plan*, Riverbank Army Ammunition Plant, Riverbank, California. February.

Central Valley Water Board (CVWB), 2011. *Draft Explanation of Significant Differences No. 2, Riverbank Army Ammunition Plant (RBAAP), Stanislaus County*. 24 February.

Central Valley Water Board (CVWB), 2022. *Central Valley Regional Water Quality Control Board Response to: Final Fifth Five-Year Review Report, Former Riverbank Army Ammunition Plant (RBAAP), Stanislaus County.* August 1.

Department of the Army, 2022. Memorandum for Record. *Summary of Technical Data from Survey of Groundwater Wells in the Surrounding Area Adjacent to Riverbank Army Ammunition Plant (RBAAP), Riverbank, CA., Supporting Ordinance Consultation Discussions*. February 10.

cc: (via email)

Ms. Xuan-Mai Tran, USEPA, San Francisco
Tran.Xuan-Mai@epa.gov

Mr. Shahid Mahmood, DTSC, Sacramento
Shahid.Mahmood@dtsc.ca.gov

Mr. Lucas Zavala, US Army Corps of Engineers, Sacramento
lucas.a.zavala@usace.army.mil

Ms. Stephanie Freier, Stanislaus County Environmental Resources
sfreier@envres.org

Draft Final RI/FS for Parcels 1 & 1A (Southern Parcels), Riverbank, California, July 2019
Responses to Regulatory Comments

Type	Agency	No	Page	Line #	Regulator Comment	USACE Response	Regulator Comment 2 (11/22/22)	USACE Response 2	Regulator Comment 3 (7/26/23 and 8/9/23)
G	EPA	1			The overlap of remedial investigations and remedial actions and on-site versus off-site contamination handling in different reports/investigations is confusing. Inclusion of a comprehensive investigation and remediation history for the site, including downgradient impacts investigated as a separate site to provide an understanding of the sites remedial 'phase' status and what parcels are included in the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) process this Remedial Investigation (RI) and Feasibility Study (FS) represents, should be considered. For example, it is unclear why the downgradient sediment investigations regulatory comments on the Draft Final Southern Parcels 1, 1A and OID Drainage Ditch Soil Data Gap Investigation Report in the RI/FS were included in Appendix D when this was part of another remedial 'phase.' Please consider including a comprehensive investigation and remediation history.	A table that includes the following investigation/remedial action timeline has been included in Section 1.3: 1. 2011 - Preliminary Soil "Data Gap" Investigation to determine if windblown Aroclor 1268 is present on Parcels 1 and 1A. Aroclor 1260 and 1268 were observed at concentrations above screening criteria. 2. 2013 - Soil Investigation to determine lateral and possible vertical extent of observed Aroclor concentrations. 3. 2015 to 2017 - Time Critical Removal Action of PCB impacted soils on Parcels 1 & 1A and the OID ditch north of Claribel Road. The comments and responses for the Data Gap Investigation are included since data from the investigation has been used to assess risks and hazards in the current document.	The response partially addresses the comment. While Table 1-1 (Investigation and Remedial Action Timeline) was added to Section 1.3 (Site Description), it is not a comprehensive investigation and remediation history for the site, as was requested in the original comment, and the overlap of remedial investigations and remedial actions remains unclear. For example, Table 1-1 indicates that in 2011, Aroclor 1260 and 1268 were observed at concentrations above the screening criteria, but it is unclear if the exceedances occurred on Parcel 1, Parcel 1A, or both. The extent of the exceedances is also unclear. As another example, the Action for 2013 indicates that comments and responses for the data gap investigation are included in Appendix D, but it is unclear if this statement refers to the preliminary soil data gap investigation conducted in 2011 or the soil investigation conducted in 2013 to determine lateral and vertical extents of Aroclor concentrations. Please revise the Draft Final Southern Parcels 1 & 1A and OID Drainage Ditch Remedial Investigation and Feasibility Study Report, Riverbank Army Ammunition Plant, Riverbank CA, dated October 2022 (the RI/FS Report) to include a comprehensive investigation and remediation history for the site, including addressing the issues discussed above.	The following text has been added to as Section 1.3 Table 1-1, Investigation and Remedial Action Timeline. 2011 - As part of a past investigation to determine possible windblown, non-liquid polychlorinated biphenyl (NLPCB) contamination in soil due to the weathering of Galbestos siding, four surface soil samples were taken in November 2011 at the request of the Central Valley Regional Water Quality Control Board (CVRWQCB) on Parcel 1. The sample locations represented the most likely areas of deposition of windblown PCBs based on predominant wind direction. Aroclor-1268, the Aroclor most commonly associated with Galbestos PCB contamination, was not detected in the soil samples. However, Aroclor-1260 was detected (maximum of 530 mg/kg). Aroclor-1260 is indicative of liquid contamination, such as that in dielectric fluid used in manufacturing processes at RAAP. 2013 - Surface and subsurface soils were sampled to determine the nature and extent of PCB contamination. Analysis of soil samples showed that PCBs that exceeded Industrial RSL were present in both surface and subsurface soils at Parcels 1 & 1A and the OID Drainage Ditch where it borders the southern portion of the RAAP property. The highest detected concentration was 3,200 mg/Kg at the surface located in the northeastern area of Parcel 1. Aroclor-1268 exceeded the EPA Industrial RSL in one sample at 1.5 ft bgs with a concentration of 4.7 mg/Kg in the southwestern area of Parcel 1. 2015-2017 Soils above 0.99 mg/kg PCB as Aroclor from Parcels 1 &1A, and sediment from the OID Ditch on the RBAAP southern boundary above 0.22 mg/kg were excavated. A total of 43,306.88 tons of soil (31,010.20 non-hazardous and 12,296.68 tons of TSCA) were disposed of at appropriate landfills. The excavations ranged from 1 to 4 feet bgs. After reaching the predetermined depth confirmation samples were collected. Confirmation samples were compared to the numeric cleanup goals to determine further excavation requirements . With the exception of one grid along the OID Ditch, D-11, the cleanup goals were met. Upon the completion, the site was backfilled with 9,044.85 tons of clean, approved fill material. The site was graded to prevent any water from migrating off site. Finally the site was fenced and hydroseeded.	NA
G	EPA	2			The FS does not follow the Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA (EPA/540/G-89/004), dated October 1988 (RI/FS Guidance) Section 4 of the RI/FS guidance (e.g., as summarized in Figure 4-1 and Table 4-1) details the development of screening alternatives. The initial steps are to develop remedial action objectives (RAOs), define the area(s) and volume(s) of contaminated media, then develop media-specific General Response Actions (GRAs). Following the development of these key items, remedial technologies would be identified and screened based on technical implementability. One or more process options representing each remedial technology would then be evaluated based on effectiveness, implementability and cost and then developed into remedial alternatives based on the retained process options. Finally, a detailed and comparative screening of alternatives would be completed. At this point, ARARs would be developed. This RI/FS overlooks these developmental steps of the FS process and generically discusses process options for all media although only soil and sediment should be continued. A comprehensive review of the alternatives is needed to complete an evaluation for soil and sediment similar to Figure 4-4 in the RI/FS guidance. Please develop RAOs for each medium of interest, then conduct screening related to each GRA, technology, and process option as outlined in the RI/FS guidance.	Reference to the RAOs developed during the TCRA is included in Section 2.2, the RAOs and their development are further defined in the new Section 7.0 "Remedial Action Objectives". The follow text has been added to the new Section 7.0: "The RAOs are defined for the TCRA in the TCRA Work Completion Report (RORE, 2020). The RAOs for the TCRA were to reduce unacceptable risk to human health and the environment by preventing direct contact exposure to soils and sediment with PCB concentrations greater than the acceptable exposure point concentration. The TCRA RAO exposure point concentrations are: ▪Soil and soil piles in Parcel 1 and 1A – 0.99 mg/kg Aroclor 1260 (EPA industrial RSL) as calculated exposure point concentrations for each parcel; and ▪Sediment in the adjact OID Drainage Canal – 0.22 mg/kg Aroclor 1260 (NOAA sediment ecological benchmark) as the calculated exposure point concentration for the ditch. The TCRA met its established RAOs for all grids except for Grid D-11, but the risk assessment determined that potential contact with site sediments does not pose an unacceptable health risk to any human receptor. The intended future use of the property is industrial. Specifically, the Army intends to transfer Parcels 1&1A to the City of Riverbank. The State and Stanislaus County intend to widen Claribel road, and based on preliminary construction designs, the expansion includes Parcels 1 &1A. As indicated in the risk assessment (Section 4.0), the only impacted medium that requires remedial action is site soil and the only receptor requiring remedial action is a future on-site residential receptor. The RAO for the FS is to protect potential future residential receptors from direct contact exposure to site soil exceeding the EPA residential RSL of 0.24 mg/kg." The TCRA and other investigations are further discussed in responses to EPA comment 1 and other comments.	The response does not address the comment. While Section 7.0 (Remedial Action Objectives) includes a remedial action objective (RAO) for human health, the RI/FS Report does not include an RAO for environmental protection. In addition, Section 8.0 (Feasibility Study: Screening of Process Options) is insufficiently detailed. For example, it is unclear how the remedial process options and technologies were screened (i.e., a table specifying how each does or does not satisfy the screening criteria effectiveness, technical implementability, and cost should be included). Further, Section 9.2 (Remedial Action Alternatives for Soil) should specify the type of institutional controls (i.e., to prohibit residential and sensitive uses). Finally, Section 10.4 (Remedy Preference) states that Alternative S-2 is the preferred remedy; however, a remedy preference should not be specified in a feasibility study, rather, the remedy preference should be specified in the Proposed Plan. Please revise the RI/FS Report to address these issues, including removing Section 10.4.	Section 7.0 - See response to specific comment 6 Section 8.0 - Added Table 8-1 to show the relative ranking that lead to the selection of alternatives. Section 9.2, Added to ALternative S-2 "via deed restrictions to prohibit residential and sensitivie uses". Section 10.4 has been removed.	The response addresses the comment; however, the response indicates text was added to Section 9.2 stating, "via deed restrictions to prohibit residential and sensitive uses," but the revision does not include "sensitive uses." Please ensure all proposed text revisions are incorporated into the Final RI/FS.
G	EPA	3			The cost estimates lack sufficient detail to evaluate adequacy of the assumptions underlying the components of the cost, as such, it is unclear if the remedial alternatives were appropriately scoped and costed so as to reflect a - 30%/ +50% margin as allowed for during the FS process. Sufficient details to independently verify the units and costs, particularly for lump sum items, should be provided so that these cost estimates can be verified. For example, specific estimated units (quantities), and the basis for the items such as the depth of excavation should be included. Costs for each alternative/site should include, but are not limited to, costs for mobilization, initial excavation, inspections, analytical samples, step-out/down excavation, separation of debris if encountered, transportation, disposal, backfill, site restoration, demobilization, and contingency. Please revise the cost estimates to present the costs in the format specified in A Guide to Developing and Documenting Cost Estimates During the Feasibility Study, EPA 540-R-00-002, dated July 2000 ensuring that a line-item breakdown of costs is provided for each alternative.	The cost estimate summaries are included in Section 10 of the revised RIFS. The detailed cost estimates are included in Appendix E of the RIFS. The detailed cost estimates include the details requested in EPA's comment. The cost estimates provided are prepared consistent with Army policy and would be used to contract the proposed alternatives.	NA		NA
G	EPA	4			The required sustainability analysis (green remediation) is missing. As indicated in the U.S. Environmental Protection Agency (EPA) Green Remediation: Incorporating Sustainable Environmental Practices into Remediation of Contaminated Sites, EPA 542-R-08-002, dated April 2008 (EPA Green Remediation Guidance) or Methodology for Understanding and Reducing a Project's Environmental Footprint, EPA 542-R-12-002, dated February 2012 (EPA Environmental Footprint Guidance) energy consumption, greenhouse gas emissions (carbon dioxide, methane, and nitrous oxides), pollutant emissions (carbon monoxide, oxides of sulfur, oxides of nitrogen, and particulate matter), water consumption, ecological impacts/change in resource use, resource consumption, and worker safety should be used to evaluate the environmental footprint of the remedial action alternatives. Please revise the RI/FS to include a sustainability analysis for each alternative.	A discussion of sustainability analysis was added to Section 10.2.6 (formerly 9.2.6) discussing sustainability for the applicable analyses consistent with the cited guidance.	The response does not address the comment. The response indicates that Section 10.2.6 (Implementability Evaluation) discusses sustainability, but the information in Section 10.2.6 is insufficiently detailed. For example, the evaluation of Alternative S-3 states, "The alternative's sustainability analysis ranks low due to the operation required for full excavation," but no other information is provided. As such, it is unclear what was evaluated to determine the sustainability analysis ranking (i.e., it is unclear if energy consumption, greenhouse gas emissions, pollutant emissions, water consumption, ecological impacts/changes in resource use, resource consumption, and worker safety were evaluated, as requested in the original comment). Please revise the RI/FS Report to include a detailed sustainability analysis for each alternative.	The following text has been revised in Section 10.2.6, "The alternative's sustainability analysis ranks low due to the operation required for full excavation. During full excavation, increased particulate emissions are expected even with wet methods for dust control. In addition, multiple truckloads of material removed would result in increased energy consumption and emission of greenhouses gases associated with fuel combustion. If selected as the remedial alternative, best management practices such as alternate vehicle fuels, use of new excavation and hauling equipment and/or using exhaust scrubbers should be required."	The response addresses the comment; however, the proposed text has not been incorporated into the document. The response indicates the following text has been added to Section 10.2.6: "The alternative's sustainability analysis ranks low due to the operation required for full excavation. During full excavation, increased particulate emissions are expected even with wet methods for dust control. In addition, multiple truckloads of material removed would result in increased energy consumption and emission of greenhouses gases associated with fuel combustion. If selected as the remedial alternative, best management practices such as alternate vehicle fuels, use of new excavation and hauling equipment and/or using exhaust scrubbers should be required." However, text in Section 10.2.6 only includes the first sentence of the response. Please revise the document to include the text as stated in the response.
						Additional Comment 1 (11/22/22)	Several editorial issues and incorrect references were observed throughout the RI/FS Report. For example, Section 10.2.7 (Cost Evaluation) still references Tables 9-1 and 9-2, rather than Tables 10-1 and 10-2, for cost summaries. As another example, the last sentence in Section 10.3 (Comparative Analysis of Alternatives) reads, "The current cost and implementability of Alternative S-3 assumes of [sic] sufficiently clean soil below 1-foot bgs." It is recommended that a thorough editorial review of the RI/FS Report be performed to correct these issues.	Editorial - Completed after other comments were addressed.	The response addresses the comment; however, it does not appear a thorough editorial review has been completed. For example, Section 10.2.7 still references Table 9-1 and Table 9-2. Please ensure the Final RI/FS undergoes a final thorough editorial review.

Draft Final RI/FS for Parcels 1 & 1A (Southern Parcels), Riverbank, California, July 2019
Responses to Regulatory Comments

Type	Agency	No	Page	Line #	Regulator Comment	USACE Response	Regulator Comment 2 (11/22/22)	USACE Response 2	Regulator Comment 3 (7/26/23 and 8/9/23)
S	EPA	1	11		Figure 1-4, Southern Parcels 1 & 1A and OID Drainage Ditch Conceptual Site Model, Page 11: The figure does not present a conceptual site model (CSM) that can be used to assess the contamination and exposure pathways at the site. One component of the RI is to collect and analyze existing data to develop a CSM that can be used to assess both the nature and the extent of contamination and to identify potential exposure pathways and potential human health and/or environmental receptors and Figure 1-4 is missing several key components of a CSM as defined in the RI/FS Guidance. For example, question marks are not sufficient for the vertical extent of contamination, ecological receptors are not represented in the figure, the routes of exposure are not presented, and the excavated Oakdale Irrigation District (OID) sediment pile along the ditch is not presented as COC source. Please consult the EPA RI/FS guidance about the required components of a CSM and update the CSM to be a more useful tool for evaluating exposure concerns while completing the RI and FS.	A revised CSM has been included as Figure 1-4.	The response addresses the comment; however, the "Migration to Groundwater" box includes a reference to footnote (3), but it appears the correct reference is footnote (2), as there is no footnote (3). Please revise Figure 1-4 to resolve this discrepancy.	Figure 1-4 revised as suggested.	NA
S	EPA	2	15		Section 2.2, Interim Remedial Action, Page 15: The summary that states that the Time Critical Removal Action (TCRA) removed contamination from the southern parcels and the ditch and RAO is not completely true. Ditch grid D-11 (Figure 2) was erroneously overlooked during the TCRA so the RAOs were not reached in this grid. This off-site soil is addressed in another phase of the remediation, but this 'phased' approach is not explained. Please revise this section of the RI to define where D-11 is to be addressed and clarify that RAOs were not fully attained.	Added the following language to Section 2.2: "The PCB concentration in the sediment ditch grid D-11 do not meet the RAOs and the residual concentrations are discussed and evaluated in the risk assessment. Potential offsite impacts of PCBs will be evaluated in a separate investigation and were not evaluated in this effort."	NA		NA
S	EPA	3	23		Section 4.0, Risk Assessment Overview, Page 23: The last sentence of the section is not accurate for grid D-11 as stated in previous Section 3.2, PCB Soil Sample Results at the OID Drainage Ditch. Polychlorinated biphenyl (PCB) concentrations in sediment was not reduced below the remediation goal of 0.22 mg/kg in grid D-11 of the OID Drainage Ditch. Please update the section to accurately reflect remaining PCB concentrations in the excluded grid.	Text has been revised as indicated, and the residual sediment concentrations of 0.45 mg/kg is still present in grid D-11.	NA		NA
S	EPA	4	25		Section 4.4, Exposure Concentrations and Chemical of Potential Concern, Page 25: The statement, "Previously detected concentrations of Aroclor 1262 and 1268 (USACE, 2015) were removed during the Time Critical Removal Action and no other Aroclor compounds have been detected in any sampling event" is inaccurate and misleading. The soil concentrations of Aroclor as Aroclor 1260 have been reduced in the grids of Southern Parcel 1, Parcel 1A and the OID Drainage Ditch (except for grid D-11) but have not been 'removed' and a sampling event (on site) has not been conducted since confirmation sampling for the TCRA. Please revise the text for accuracy.	Section 4.4 has been revised to indicate that, with the exception of Aroclor 1260, no other Aroclor compounds were detected during confirmation sampling.	The response partially addresses the comment. The response indicates that the text in Section 4.4 (Exposure Concentrations and Chemicals of Potential Concern) was revised to state, "No other Aroclor compounds were detected during confirmation sampling;" however, the text in Section 4.4 still states, "No other Aroclor compounds have been detected in any sampling event." Please revise Section 4.4 to include the text proposed in the response.	Revised Section 4.4 as suggested.	NA
S	EPA	5	46		Section 8.1, Retained Process Options, Page 46 and Section 8.2, Remedial Action Alternatives for Soil, Page 46: "Unrestricted Use and Unlimited Exposure" is not a process option. Excavation is a process option that would also require a disposal option. Alternative development (Figure 4-1) of the RI/FS Guidance indicates that potential treatment and disposal technologies should first be identified and screened based on technical implementability. Process options are then evaluated based on effectiveness, implementability, and relative cost to select a representative process for each technology type. Please revise the Draft FS to specify excavation and off-site disposal rather than "Unrestricted Use and Unlimited Exposure".	Section 9.1 (formerly Section 8.1) has been revised as indicated.	The response partially addresses the comment. Section 8.0 (Feasibility Study: Screening of Process Options) does not provide details about how the remedial process options and technologies were screened for technical implementability, effectiveness, and cost. Please revise the RI/FS Report to provide these details.	Section 8.0 - Added Table 8-1 to show the relative ranking that lead to the selection of alternatives.	NA
S	EPA	6	46		Section 8.2, Remedial Action Alternatives for Soil, Page 46: Remediation Goals (RGs) and RAOs are not presented in the FS but RAOs are referenced in phrases like "would be taken to achieve RAOs." If the RAOs are the same as those used for the TCRA, they should still be presented. Please update the FS according to the RI/FS Guidance and include RGs and RAOs before the development of remedial alternatives to attain the RGs/RAOs.	See Response to EPA comment #2, and RAO has been included in the Feasibility Study in the new Section 7.0.	The response partially addresses the comment. While Section 7.0 (Remedial Action Objectives) includes an RAO for human health, the RI/FS Report does not include an RAO for environmental protection, nor does it include remedial goals (RGs). Without RGs, it is unclear how confirmation samples from the area excavated for Alternative S-3 would be evaluated. Please revise the RI/FS Report to include an RAO for the environment, as well as RGs.	The end of Section 7.0 has been updated to state: "The RAOs for the FS are: 1) to protect potential current and future human receptors from exposure to site soils; and 2) to protect potential future offsite ecological receptors from exposure to transported sediment within the OID Ditch. he numeric remedial goals (RGs) for the FS are: •Soil and soil piles in Parcel 1 and 1A – 0.24 mg/kg Aroclor 1260 (EPA residential RSL); and •Sediment in the adjacent OID Drainage Canal – 0.68 mg/kg Aroclor 1260 as the calculated exposure point concentration for the ditch."	NA
S	EPA	7	49		Section 9.0, Detailed Analysis of Remedial Action Alternatives, Cost Page 49: The Office of Management and Budget, Circular A-94 Appendix C referenced is November 2019 with a discount rate of 2.4 for a 30-year period, but the 2021 memorandum was issued on December 21, 2020 with 2021 rate for a 30-year period of 1.7. Additionally, the discount rate is not utilized in the cost estimates. Please use this rate and add a present worth analysis of the alternatives.	The OMB Circular reference has been updated to the memo issued on March, 2022 and rate of 0.5 has been included in the cost analysis. The discount rate of 0.5% has been applied to the five year review reports in alternative S-2 and the associated tables (10-1, E-1, and E-2) have been updated.	The response addresses the comment; however, the text in Section 10.0 (Detailed Analysis of Remedial Action Alternatives), Cost subsection (Page 55), still states, "The revised interest rate as of November 2019 is 1.7." Please revise this section to include the correct date of the discount rate.	Revised Section 10.0 as suggested.	The response addresses the comment; however, the revision has still not been incorporated into the document. The response indicates the text was revised to reference the updated memo issued in March 2022 with a discount rate of 0.5% included in the cost analysis. However, the text in Section 10.0 (Detailed Analysis of Remedial Action Alternatives) still references the November 2019 rate of 1.7%. It is noted Table E-2 uses the discount of 0.5%. Please revise the Draft Final RI/FS to include the revisions indicated in the response.
S	EPA	8	49		Section 9.1.1 – Alternative 1, Page 49: Alternative S-1 includes the erroneous assumption that the "soil would be confirmed as within risk management." This assumption should not be included as it does not matter if there is risk or not for the No Action Alternative. The No Action Alternative is included a baseline remedial alternative of No Action as required by the National Contingency Plan (NCP). Please delete the quoted statement to remove the errant assumption regarding risk management.	Section 10.1.1 (formerly Section 9.1.1) - Alternative 1 has been revised as indicated.	NA		NA
S	EPA	9	49		Section 9.1.2, Alternative 2, Page 49: The text states that this alternative uses only institutional controls (ICs) to attain RAOs. Assuming the RAO is the same as those utilized in the TCRA (e.g., to reduce contamination to below industrial or commercial use), then ICs would not be sufficient to reach RAOs. Instead, ICs are needed to restrict to residential use due to the hazard index of 10.8, not because of industrial or commercial use. Please revise the discussion about ICs for Alternative S-2 and remove mention of soil removal if it is not part of this remedial alternative.	Section 10.1.2 (formerly 9.1.2), Alternative 2 has been revised as indicated and states the alternative would restrict residential use due to the current hazard index of 10.8.	The response partially addresses the comment. Section 10.1.2 (Alternative S-2 – Soil Removal with LUCIP) indicates a current hazard index of 10.8; however, there is insufficient risk assessment information to support a hazard index of 10.8 (e.g., the residential risk table is missing from Section 4 and Appendix G). Please revise the RI/FS Report to provide the calculations that resulted in a residential hazard index of 10.8.	The residential risk information and calculation of the residential hazard index are already included in Table 4-1 and Table G-10. The following text has been added to Table 4.1 Incremental Lifetime Cancer Risk = (Maximum Detected Concentration)/Regional Screening Level) X 1E-6. Hazard Index = Maximum Detected Concentration/Regional Screening Level	NA

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S	EPA	10	49		Section 9.1.3, Alternative S-3, Page 49: The text does not provide the basis for assuming that excavation to 1 foot below ground surface is sufficient to reach RAOs. Please provide support for this quantification.	The following text has been added to Section 10.1.3 (formerly 9.1.3): "During the TCRA, the maximum excavation depth was three feet below ground surface. PCB migration was not likely, and high concentrations observed at depth are likely due to physical disturbance of site soil, such as discing or road construction. PCBs are hydrophobic, and migration further is unlikely. Therefore, the Army assumed one foot of additional excavation in grids that don't currently meet the residential criteria is sufficient."	The response does not address the comment, and the revised text in Section 10.1.3 (Alternative S-3 – Optimization via Removal to UU/UE) in insufficient to support the assumption that excavation to 1-foot below ground surface (bgs) will allow the RAOs to be met. For example, the depth of the remaining contamination and whether the grids were left open (i.e., no backfill) are unclear. If the grids were backfilled, then the backfill should be excavated, as well as the contaminated soil. As such, the excavation depth will be greater than 1 ft bgs. Please revise the RI/FS Report to address these issues.	The following additional text has been added to Section 10.1.3 (Alternative S-3) - "A total of 43,306 tons of soil were excavated during the TCRA, while only 9,044 tons of clean imported fill was placed prior to regrading the entire site. In addition, 50 of the 108 confirmation samples collected prior to regrading showed detected concentrations below the residental RSL. Therefore, excavation to 1 ft bgs is a reasonable excavation depth to evaluate for this alternative."	NA
S	EPA	11	50		Section 9.2, Detailed Analysis of Remedial Action Alternatives for Soil, Page 50: The fact that RAOs were not met for all grids during the TCRA is not included in the analysis of threshold and balancing criteria. In addition, the excess lifetime cancer risk (ELCR) for arsenic is exceeded as presented in Table G-10 of the human health risk calculations in Appendix G. Please update the analysis to consider exposure to the soil contaminants in exceedance of screening levels.	Added the following language to the evaluation of Alternative S-2 in Section 10.2.1 (previously Section 9.2.1): "Note that the TCRA numerical RAOs (EPA RSLs for industrial use) have not been met in Grid D-11, but the risk assessment determined that potential contact with site sediments does not pose an unacceptable health risk to any human receptor" The observed arsenic concentrations are within the background concentrations for RBAAP. As such, arsenic is not considered a COC and is not included in evaluation of remedial alternatives. The only COC, as indicated in the RI risk assessment, is Aroclor 1260. Arsenic comparison to background is discussed in the last paragraph of Section 4.7	The response does not address the comment. The text in Section 10.2.1 (Overall Protection of Human Health and the Environment) was revised to state, "Note that the TCRA RAOs (EPA RSLs for industrial use) have not been met in Grid D-11, but the risk assessment determined that potential contact with site sediments does not pose an unacceptable health risk to any human receptor;" however, without the residential risk and hazard table, this statement is unsubstantiated. In addition, the RI/FS Report does not discuss how Alternative S-2 will remain protective of human health if any soil covering the contamination that was left in place in Grid D-11 erodes (i.e., the exposure pathway becomes complete due to erosion). Note that because a third party is involved, it cannot be assumed that the area will be paved until that actually occurs. Please revise the RI/FS Report to include information to substantiate the above quoted statement. Please also revise the RI/FS Report to discuss how Alternative S-2 will remain protective of human health if soil erosion occurs in the drainage ditch.	The following language has been revised in Section 10.2.1 (previously Section 9.2.1): "Note that the TCRA numerical RAOs (NOAA sediment criteria) have not been met in Grid D-11, but the risk assessment determined that potential contact with site sediments does not pose an unacceptable hazard to ecological receptors. Further, all detected sediment confirmation concentrations in the OID Ditch are below the industrial RSL indicating acceptable risks and hazards to current and future industrial workers and OID personnel."	NA
S	EPA	12	50-51,54		Section 9.2.4, Reduction of Toxicity, Mobility, or Volume of Contamination through Treatment, Page 50 – 51 and Table 9-3, CERCLA Comparison Matrix for Remedial Action Alternative, Page 54: There is no reduction in toxicity, mobility, or volume of contamination thru treatment for Alternative S-3, Optimization or for either of the other two alternative. The contaminated soil is transported and disposed offsite without treatment as required to satisfy this criterion. Each alternative should be scored zero in Table 9-3. Please revise the section and Table 9-3, CERCLA Comparison Matrix for Remedial Action Alternative accordingly.	Section 10.2.4 (formerly 9.2.4) text was updated and table revised to a score of 1 for each as "1" represents "low or failure", total scores were revised.	NA		NA
S	EPA	13	50		Section 9.2.2, Compliance with ARARs, Page 50: The evaluation of Alternatives S-2 and S-3 lack sufficient detail regarding compliance with ARARs. Please revise the ARARs compliance evaluation to provide sufficient details.	Section 10.2.2 (formerly 9.2.2) has been revised to include additional details regarding compliance with ARARs, the section now reads: "Alternative S-2 will comply with **with chemical-specific ARARs as the use of ICs would limit potential PCB exposures to commercial or industrial receptors, and prohibit residential use of the property. The Action-specific and Location-specific ARARs are not applicable to Alternative S-2.**" and "Alternative S-3 would be designed to comply with ARARs. **The alternative would comply with the chemical-specific ARAR by removing the contaminated soil and confirming contamination levels are below the threshold for UU/UE and by ensuring the waste transporter meets all state and local PCB waste operation requirements.** All treatment components would be designed to comply with action- and location-specific ARARs."	NA		NA
S	EPA	14	50		Section 9.2.3, Long-Term Effectiveness and Permanence, Page 50: The long term effectiveness and permanence section does not discuss the adequacy and reliability of controls. Please revise this section to conform to Section 6.0 of the RI/FS Guidance.	Section 10.2.3 (formerly 9.2.3) has been revised to include additional details regarding compliance with ARARs as indicated in EPA/540/G-89/004. The section now reads: "**Alternative S-1, No Action.** Alternative S-1 scores low on long-term effectiveness **due to possible contaminant mobility and increased risk of future exposure associated with commercial or residential use. The alternative does not adequately restrict future exposure to potential receptors above acceptable risk thresholds. The alternative is not adequate or reliable to ensure that there would not be exposure to potential receptors above acceptable risk thresholds.** Alternative S-2, Soil Removal with LUCIP. Alternative S-2 ranks higher than the No Action Alternative with respect to this criterion because the land use controls would prevent the increased human risk of commercial or residential use. **The alternative is adequate and reliable in the long-term as the LUCIP would ensure that the land use will not change and the future use as an expanded highway will prevent residential exposure from occurring.** However, violation of land use controls and contaminant mobility still present some risk to long-term effectiveness. **There is no technical component to this remedy that would require replacement or reevaluation in the long-term.** Alternative S-3, Optimization. Alternative S-3 ranks higher than Alternative S-2 because it involves the permanent removal of surface contamination from the site. **The alternative is adequate and reliable in the long-term as it removes all residual contamination and does not require a technical component for long-term management.** "	NA		NA
S	EPA	15	51		Section 9.2.5, Short-Term Effectiveness, Page 51: The time to reach RAOs is not included in this section as required by the RI/FS Guidance. Please revise the discussion of criterion to include the time to reach RAOs for each alternative.	Section 10.2.5 (formerly 9.2.5) has been revised to include a discussion of time to reach RAOs for each alternative.	NA		NA
S	EPA	16	51		Section 9.2.6, Implementability Evaluation, Page 51: The RI/FS Guidance lists factors involved in the analysis of the criterion as the technical and administrative feasibility of implementing an alternative and the availability of various services and materials required during its implementation. The text does not evaluate these factors. Please revise the section to address each factor of the criterion listed in the RI/FS Guidance for each remedial alternative.	Section 10.2.6 (formerly 9.2.6) has been revised to include additional details regarding compliance with ARARs as indicated in EPA/540/G-89/004. The section now reads: "Alternative S-1, No Action. Alternative S-1 scores high on technical implementability because it would not entail any active treatment or related construction activities. **Thus, the criteria for construction and operation, reliability of technology, and ease of undertaking additional remedy action do not need to be addressed and the alternative does not require a sustainability analysis.** However, Alternative S-1 scores low on administrative implementability because it would not be easy to obtain approval of this alternative among the various stakeholders. **Alternative S-1 scores high on availability of services and materials as there would not be any services or material required for the alternative.** This alternative would also include the addition of Parcel's 1 & 1A and the OID to the existing RBAAP 5 Year Review. Alternative S-2, Soil Removal with LUCIP. Alternative S-2 ranks as high as the No Action Alternative with respect to technical implementability because no additional physical work would be implemented. **Thus, the criteria for construction and operation, reliability of technology, and ease of undertaking additional remedy action do not need to be addressed and the alternative does not require a sustainability analysis.** The administrative implementability of Alternative S-2 is higher than Alternative S-1 because current control levels are within risk assessment threshold for industrial use, but land use controls would need to be drafted into the deed and transfer documentation. **Alternative S-1 scores high on availability of services and materials as there would not be any services or material required for the alternative.** This alternative would also include the addition of Parcel's 1 & 1A and the OID to the existing RBAAP 5 Year Review. Alternative S-3, Optimization. Alternative S-3 ranks low compared to the other alternatives with respect to technical implementability because it entails full excavation, additional sampling efforts, and soil fill. **With respect to technical implementability, the construction and operation criteria and reliability of technology criteria rank high because removal and disposal of contaminated soil is a common remediation technology with high reliability. However, the ease of undertaking additional remedial actions ranks low due to the potential for over-excavation if confirmation samples indicate concentrations above UU/UE thresholds and unnecessary exposure to site workers. The alternative's sustainability analysis ranks low due to the operations required for full excavation. The administrative implementability of Alternative S-2 ranks lower thank S-2 but higher than S-1, as the remedial action would require coordination with stakeholders to obtain the appropriate permits and approvals for the remedial action.** Activities would also require thorough organization, planning, and coordination with the nearby businesses, contractors, and appropriate landfills. **The availability of service and material ranks lower than S-1 and S-2 as soil would have to be disposed of at appropriate landfills and the remedial action would require acquiring services through a contractor."**	NA		NA

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S	EPA	17	52		Section 9.2.7, Cost Evaluation, Page 52: It is stated that Alternative S-3 will require five-year reviews (FYRs); however, FYRs should not be required beyond one initial review while the remediation is being completed to attain unrestricted use (UU)/unrestricted exposure (UE). It is also inaccurately assumed that the FYR costs are the same for the three alternatives. Please update the discussion and cost utilized in Appendix E – Cost Estimate to reflect the varying requirements for FYRs for each alternative.	Section 10.2.7 (formerly 9.2.7) and the Appendix E (cost evaluation) have been revised as indicated.	The response does not address the comment. The original comment requested that Section 10.2.7 (Cost Evaluation) and Appendix E (Cost Estimate) be revised to reflect the varying requirements for Five-Year Reviews (FYRs) for each alternative; however, the text in Section 10.2.7 states, "The cost of No Action is assumed to be zero. In reality, there would be costs associated with five-year reviews and other costs. However, these costs would be shared by all alternatives, such that the assumption of zero costs for the No Action alternative is adequate for comparison." This statement still gives the impression that the FYR requirements are the same for the three alternatives, which is inaccurate. In addition, the cost evaluation for Alternative S-3, as presented in Table 10-2 and Appendix E, does not appear to include the cost of the FYR. Please revise the RI/FS Report to include the varying requirements for FYRs and other costs for each alternative.	The Text was revised to state: "The cost of Alternative S-1, No Action, is assumed to only be the costs associated with five-year reviews. Thus, the cost for Alternative S-1 is assumed to be $174,371.00." Table 10-1 was not revised as it is assumed that 5 year reviews will be required for Alternative S-2 and 5 year review costs are already included in Table 10-1. Table 10-2 was not revised as it is assumed that 5 year reviews will not be required for Alternative S-3 as it is assumed the remedy will reach UE/UU prior to requiring a 5 year review. 5 year review costs were already not included in Table 10-2.	NA
S	EPA	18	54,51		Table 9-3, CERCLA Comparison Matrix for Remedial Action Alternative, Page 54 and Section 9.2.6, Implementability Evaluation, Page 51: It is unclear why Alternative 3 scored 1 for implementability. Excavation and off-site disposal are commonly used technologies that are readily implementable. Please revise the text and Table 9-3 to acknowledge that excavation and off-site disposal can be readily implemented and increase the score for this alternative.	Table 10-3 (formerly 9-3) has been revised as indicated. The implementability score was changed to 2.	NA		NA
S	EPA	19	54		Section 9.3, Comparative Analysis of Alternatives, Page 54: Alternative S-3 was discounted because cleanup to unrestricted use/unrestricted exposure (UU/UE) was considered unnecessary to attain site close out because the property is zoned industrial and intended for sale as industrial; however, this cannot be assumed to always be the case given pressure in California to construct housing. Section 4.3, Human Exposure Pathways and Media of Concern, presents in the third paragraph a cumulative residential risk screening evaluation to residential standards that was conducted to evaluate potential closure without further remedial action, but the risk screening evaluation was not discussed. Industrial regional screening levels (RSLs) are referenced in several sections of the FS as an acceptable cleanup level, but due to the absence of RAOs, it is unclear if this was the intent. Please revise the FS to discuss the risk screening evaluation, clarify the use of industrial RSLs, and define site RGs	A remedial action objective has been included in the revised FS (see Response to EPA comment #2). The sale of Parcels 1 &1A is not assumed, rather the Army will limit site use to commercial/industrial with appropriate deed restrictions in place. Section 10.3 (formerly 9.3) has been revised to read: "However, the Southern Parcels are currently zoned for industrial use and intended for sale as industrial property, **and Alternative S-2 includes a LUCIP as part of the alternative which will limit the site use to commercial/industrial.**"	NA		NA
G	DTSC	1	6		As stated in Section 4.3, groundwater is not considered a medium of concern during the risk assessment because PCBs are not considered water soluble and are not mobile in soil. Furthermore, depth to groundwater for the nearest groundwater monitoring well (145A') is 69.9 feet below ground surface and Riverbank is in an arid environment with low annual precipitation. However, it is unclear if past groundwater sampling results have indicated any impact of PCBs in groundwater at the site. Please revise the text to discuss if historical groundwater sampling data are available to verify that PCBs are immobile in soil and have not impacted groundwater in the soil affected areas. If no groundwater PCB data are available, at least one round of PCB sampling and analysis should be conducted at the wells in the Southern Parcels OID Drainage Ditch areas.	Groundwater has not been sampled for PCBs. Further discussion and evaluation of observed PCBs have been included in Section 4.3. Based on an evaluation of data collected in 108 single borings with soil samples collected at 0.5 feet and 1.5 feet below ground surface, a site-specific attenuation factor of 0.09/foot was calculated. The calculated attenuation factor is conservative since all data, including obvious high outliers with no attenuation have been included. The high outlier data is likely an artifact of discing during routine maintenance, which drove PCB impacted soil deeper. Regardless, application of the 0.09/foot to the highest observed concentration (3200 mg/kg) results in an expected soil concentration of 7 E-70 mg/kg at the vadose zone/groundwater interface (69 feet), which would cause a negligent impact to groundwater at this site.	Comment not adequately addressed. In the RTCs and Section 4.3 of the Revised Report, the Army uses a site-specific attenuation factor of 0.09/foot to predict that PCBs will not reach the groundwater table. The site-specific attenuation factor was calculated based on the evaluation of soil sampling data collected at 0.5 feet and 1.5 feet below ground surface (bgs). It is unclear how the attenuation factor was calculated and how it should be applied to predict the leachability of PCBs in the soil column. More details of the calculation and application of the PCB attenuation factor in soils should be provided to regulatory agencies for review. For assurance and verification purposes, the Army should conduct at least one round of groundwater sampling for PCBs at the wells in area of concern to demonstrate that PCBs in soil have not reached groundwater at the site.	Section 4.3 has been revised to include the following text:The Agency for Toxic Substances and Disease Registry (ATSDR)in the Toxicological Profile for PCBs, compiled data that indicate "PCBs in soil are unlikely to migrate to groundwater because of strong binding to soil." (https://www.atsdr.cdc.gov/toxprofiles/tp17.pdf) However, to evaluate potential impacts of PCBs to groundwater, a site-specific attenuation factor was determined by: 1.Calculating 107 boring-specific attenuation factors by dividing the measured concentration at 1.5 feet below ground surface (bgs) by the measured concentration observed at 0.5 feet bgs. 2.The resulting boring-specific attenuation factors were used to determine the 95% upper confidence limit of the mean using ProUCL software (v. 5.1.002). The resulting 95% UCL for a one-foot attenuation is 0.30 (Appendix). 3.The depth to groundwater for the nearest well (41A') is 69.9 feet. To estimate the expected concentration of PCBs at the vadose zone/groundwater interface, the attenuation factor was iteratively applied to the highest detected surface soil concentration (3200 mg/kg PCB) for 69 feet, and the resulting estimated concentration at the interface is 2.0 X 10-33 mg/kg. The estimated concentration is likely conservative given the following factors: •The highest detected historic concentration (3200 mg/kg) was used. •RBAAP is in an arid environment with low annual rainfall. The first foot of infiltration would be highest since the hydraulic head created by rainfall would be greatest at the surface. •Use of 107 different boring in the calculation would capture potential deviations in soil type and potential preferential pathways. •The soils have been disced regularly, likely driving surface PCB concentrations deeper than infiltration alone. •The 41A' well is currently dry, so potential downgradient impacts are unlikely.	NA
G	DTSC	2	7		Section 9.0 evaluates three alternative remedies for feasibility study. It appears Alternative S-2 (Soil Removal with Land Use Control Implementation Plan (LUCIP)) is likely to be the best remedy for PCB contamination in soil. However, there is no conclusion drawn from the evaluation on which alternative will be selected as the final remedy of the PCBs in soil. As one of the objectives of the Report, please include a section to explicitly state what final remedy alternative will be selected for the PCB contamination in soil at the site.	Section 10.4 (formerly 9.4) has been included to indicate that Alternative S-2 is the preferred remedy. Remedy selection will occur within the subsequent Proposed Plan.	Comment addressed. In Section 10.4 of the Revised Report, the Army states that Alternative S-2 is selected as the preferred remedy. GSU has no further comment.	In response to EPA general comment #2, the selection of a preferred remedy should not be indicated in the Feasibility Study. Section 10.4 has been removed in response to EPA's comments.	NA
G	DTSC	N/A	9		Following the TCRA, a Screening-Level Ecological Risk Assessment (SLERA) was performed. The report indicates that there is minimal ecological habitat present, represented only as a transitional strip between the parcels and adjacent agricultural land. The Southern Parcels are regularly mowed and the OID ditch is dredged to facilitate water flow. OID ditch sediment concentrations were compared to the total PCB Probable Effects Concentration (PEC) of 0.68 mg/kg. None of the OID ditch sediment samples exceeded the PEC. Given the lack of habitat for upland soils, the zoning to industrial use, and the lack of PEC exceedances in the OID ditch, ERAS agrees with the report's conclusion that risks to ecological receptors are de minimis.	Concurrence received.	N/A	N/A	NA

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S	DTSC	1a and 1b	12		Removal Action Completion Concerns: HERO notes that there is uncertainty regarding the completion of the removal action, which leads to uncertainty with the data used in the risk assessment. These issues should be captured in the Report in the Uncertainty Section. a) Confirmation samples were composited, which is atypical. Compositing is most appropriate when there is some amount of uniformity expected in the data. This is not the case for confirmation samples from excavated contaminated areas. HERO recognizes that the excavation areas have already been backfilled and resampling would be problematic. HERO previously recommended comparing the confirmation sampling results to 1/5 of the clean-up goal. Many of the excavation areas would not pass this evaluation; only 43 of the 99 confirmation samples would pass using this method for the Southern Parcels data. b) Sidewall samples were not collected from the edges of the excavation. This represents a data gap.	Composited confirmation samples are an accepted industry practice, as indicated in the responses to comments on the TCRA. As previously discussed, the excavation and sampling was not a discreet action for each grid, rather the excavations occurred such that sidewalls were not present for 81 of the 90 grids excavated during sampling. 18 grids were not excavated. The Section 4.10.1 has been revised to to state "Some of the data used in the risk assessment were composited samples and there is some sampling uncertainties associated with those results. "	HERO does not concur that "compositing confirmation samples is a standard industry practice." There are situations where it may be appropriate, but it is not the standard practice. Compositing of samples is most appropriate when there is some amount of uniformity expected in the data. This is not the case for confirmation samples from excavated contaminated areas. This is demonstrated in results from the TCRA. For example, S-81 and S-82 are 5-for both grids. Aroclor 1260 was detected at 0.084 mg/kg in S-81 and 54 mg/kg in S-82, which resulted in S-82 being over excavated beyond the initial 0.5 feet. HERO recognizes that the excavation areas have already been backfilled and resampling would be problematic. It is for this reason that HERO recommended comparing the confirmation sampling results to 1/5 of the clean-up goal. It is clear that many of the excavation areas would not pass this evaluation. It is also not clear why sidewall samples wouldn't have been collected from the edges of the excavation where it would have been possible to do so. HERO notes that uncertainty remains regarding the completion of the removal action, which ultimately means there is added uncertainty in the human health risk assessment and the associated cancer risk and non-cancer hazard are likely underestimated. HERO recommends that an additional risk assessment evaluation be included using an adjusted confirmation sample dataset. If a sample was part of a 5-point composite, the resulting concentration could be multiplied by 5 to address the uncertainty. A risks assessment using this adjusted dataset could then be used to aid in risk management decision making. HERO acknowledges that this approach may over-estimate the risk, however, it will provide a range of potential risks and non-cancer hazards for the risk manager to consider in evaluating the protectiveness of the remedy.	See Response to DTSC Comment 2a, 2b, 2c	NA
S	DTSC	2a,2b, and 2c	12,13		Human Health Risk Assessment: HERO does not concur with the conclusions of the risk assessment as DTSC guidance on exposure and toxicity factors was not utilized resulting in lower estimates of risk. Please reference the appropriate DTSC Human Health Risk Assessment (HHRA) Notes as follows: a) HHRA Note 1: Recommended DTSC Default Exposure Factors (https://dtsc.ca.gov/wp-content/uploads/sites/31/2019/04/HHRA-Note-1-April-2019.pdf). These exposure parameters differ from US EPA for multiple factors and their use would result in higher estimates of risk. b) HHRA Note 3: DTSC-modified Screening Levels (DTSC-SLs; https://dtsc.ca.gov/wp-content/uploads/sites/31/2019/04/HHRA-Note-3-June-2020-A.pdf). Of particular note is the commercial/industrial screening level for Aroclor 1260 of 0.6 mg/kg. Compared to the maximum concentration of 0.970 mg/kg used in the risk assessment, this would be an estimated risk of 2x10-6 as compared to the 3x10-7 risk presented in the Report. c) HHRA Note 10: Toxicity Criteria (https://dtsc.ca.gov/wpcontent/uploads/sites/31/2019/02/HHRA-Note-10-2019-02-25.pdf). HHRA Note 10 should be used to ensure that the appropriate toxicity criteria as promulgated by the California Toxicity Criteria Rule are used in the risk assessment.	Even though the DTSC Toxicity Rule has been promulgated, the cleanup values derived therefrom are not promulgated. As a result, the Army must continue to use the EPA Toxicity Values that were derived until EPA completes its evaluation and promulgates new values. The Army cannot move forward with the DTSC TCR values that have not been properly promulgated. Further, the Army cannot use more stringent toxicity values promulgated under the DTSC TCR, when there is valid IRIS Toxicity Criteria available. It is only in the absence of IRIS Toxicity Criteria that the Army would even begin to consider more stringent state toxicity values (third tier values) pursuant to current Army policy and guidance. The "estimate" of risk using the lower screening value carries the same regulatory and statutory weight as use of the EPA RSL. As indicated in the comment discussion, use of the 0.6 mg/kg screening value results in a risk estimate within the USEPA acceptable risk management range.	HERO recommends using a dual track approach where the risk and non-cancer are presented using both US EPA and DTSC recommended methodology to aid in risk management decision making. Additionally, per HHRA Note 8, and consistent with what was presented recently by the Army in the Langsthroth Pond and South OID Drainage Ditch RI/FS (USACE, September 2022), non-cancer hazard for Aroclor 1260 is to be calculated using the reference dose (RfD) for Aroclor 1254 as a surrogate. The maximum detection of Aroclor 1260 following excavation is 0.97 mg/kg. Conservatively, this can be estimated to be 4.85 mg/kg when adjusted by a factor of 5 due to the composite nature of the sample. This value exceeds the DTSC-SLs of 0.24 mg/kg and 0.6 mg/kg for residential and commercial/industrial uses, respectively. It also exceeds the residential non-cancer DTSC-SL of 1.2 mg/kg but remains below the non-cancer DTSC-SL of 8.4 mg/kg for commercial/industrial land uses. The estimated potential excess risk due to Aroclor 1260 using DTSC recommended methodology is 2x10-5 for residential and 8x10-6 for commercial/industrial, both of which exceed the point of departure for risk management decisions. The associated non-cancer hazard quotient (HQ) for residential use is 4 and for commercial/industrial the HQ is 0.6. The hazard index for commercial/industrial land use from Table G-10, which did not include the HQ for Aroclor 1260, is 0.916. The HI with the adjusted Aroclor 1260 included is 1.5, which exceeds the target hazard of 1 and necessitates a target organ analysis to evaluate non-cancer effects. The evaluation using the adjusted concentrations due to composite sampling and DTSC methodology results in risks and non-cancer hazard that exceed the point of departure. HERO recommends including this evaluation in the Report.	Table 4-1 has been updated to include non-carcinogenic hazard estimates using Aroclor 1254 as a surrogate for Aroclor 1260. The resulting HI is now 0.98, which has been modified in the summary. In addition, Table4-2 has been included in the uncertainties section 4.10.1 and evaluates an exposure point concentration of 4.85 mg/kg, along with DTSC-SLs for cancer and non-cancer endpoints as indicated in the comment. The resulting ILCRs and HIs are discussed in the revised uncertainties section as well. The ILCR for commercial/industrial land use of 1.8 X10-05 exceeds the point of departure for risk management decisions, but is within the risk management range. The resulting HI for commercial/industrial land use is 1.49, which would indicate a potential hazard to human health. However, the major contributor to non-cancer hazards is arsenic (HQ 0.9)and is based on background risk. Regardless, the target organs for arsenic and Aroclor 1254 are hyperpigmentation/vascular and ocular/immunilogical. The two contributors to an HI above 1 have differing target organs and mechanisms of action.	NA
S	DTSC	3	13		Vanadium Background: Additional lines of evidence are needed to support the claim that concentrations of vanadium are representative of background.	Vanadium was evaluated in an updated version of the *Riverbank Army Ammunition Plant Metals in Soil Background Determination* (USACE, 2015) with data collected from Parcels 1 &1A, and a vanadium background value of 62 mg/kg was accepted by EPA, DTSC and the Water Board. Specific discussion of vanadium has been removed and Table G-10 has been updated to reflect the revised background values.	HEROs comment has been adequately addressed.	N/A	NA
S	DTSC	1	General		The present worth for each alternative was calculated using the discount rate in the 2018 OMB, Circular A-94 Appendix C. This present worth calculation should be updated using the current version of the OMB Circular A-9r Appendix C.	The OMB Circular reference has been updated to the memo issued on March, 2022 and rate of 0.5 has been included in the cost analysis. The discount rate of 0.5% has been applied to the five year review reports in alternative S-2 and the associated tables (10-1, E-1, and E-2) have been updated.	We acknowledge that the cost estimate for Alternative S-2 has been updated using the most recent OMB Circular A-94 Appendix C. However, we noticed that the cost estimate for Alternative S-2 does not include a cost for annual inspections, which is typically a component of the land use control plan. Please include the cost for annual inspections in the cost estimate of Alternative S-2. In addition, text on page 136 appears to be an artifact of the previous of version of the Draft Final RIFS and should be removed.	Evaluation of deeed restrictions and land use controls are included in the estimated costs for Five Year Reviews. Page 136 of the submitted file is witnin the Laboratory Data Appendix.	ESPO July Response. We acknowledge that the cost estimate included the cost to prepare the Land Use Control Implementation Plan (LUCIP). However, our previous comment referred to the cost associated with the inspection and documentation required annually to validate that the controls in the LUCIP are maintained. While this effort maybe limited and the associated cost maybe small, the cost estimate should include the cost for this effort. In addition, references to Tables 9-1 through Table 9-3 should be updated to be Tables 10-1 through Table 10-3.

Draft Final RI/FS for Parcels 1 & 1A (Southern Parcels), Riverbank, California, July 2019
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G	CV-RWQCB	1	General		The soil removal actions conducted on the southern parcels and portions of OID (southern parcels) were done without consultation with U.S. Environmental Protection Agency (EPA), Department of Toxic Substances Control (DTSC), or Central Valley Water Board staff. The lack of regulatory involvement prior to and during implementation of the soil removal actions has created a significant amount of uncertainty with the adequacy of the remedial actions. More specifically, the Army implemented composite sampling in their confirmation sampling program and sidewall samples were not collected from grids that were excavated to depths of 3 to 4 feet below ground surface. This sampling program is inconsistent with established guidance and with the recent soil removal actions conducted on other RBAAP parcels. These issues could have been avoided if the RBAAP regulatory team was involved in development of the TCRA Work Plan. Although the Army has removed most of the soils and sediments with PCB concentrations exceeding project remedial goals, remedial action objectives (RAOs) do not appear to have been achieved throughout the southern parcels. The Army needs to explain how the confirmation sampling program implemented for the southern parcel soil removal actions was adequate to demonstrate achievement of RAOs. If not, the Army should submit a work plan for regulatory review that identifies the data gaps and the additional sampling needed to document RAOs were met.	See response to DTSC comment 1a and 1b above regarding composite sampling and sidewall sampling. The remedial action objectives of the TCRA were met, with the exception of grid D-11, since sediment was not excavated to achieve the numeric objective of 0.22 mg/kg. However, the subsequent risk assessment evaluated all residual detected concentrations of compounds and the estimated risks and hazards exceed the *de minimis* value (1E-06) for residential receptors, but are below the same *de minimis* value for industrial receptors. Since the property will be transferred with a deed restriction limiting the property to commercial/industrial use, the selected alternative meets the remedial action objectives as stated in the revised FS. These restrictions will be placed on the property through the completion of a LUC RD and ROD.	This comment is partially addressed by the Army. The Army's response recognizes that the Remedial Action Objectives (RAOs) were not met for grid D-11 "since sediment was not excavated to achieve the numeric objective of 0.22 mg/kg." The Army further explains in their response that future deed restrictions will limit the property's use which, ostensibly, would help meet the RAOs. Note that grid D-11 is subject to an easement by the Oakdale Irrigation District (OID). The OID constructed the ditch and continues to maintain it for water conveyance. It is unclear if the Army has the right to enforce any deed restrictions within the easement and, if so, if the restrictions will prohibit use of the ditch, which might be necessary to meet the RAOs for grid D-11. Further, the Draft Final RIFS includes updated text on page 18, Section 2.2: "The PCB concentration in the sediment ditch grid D-11 do not meet the RAOs and the residual concentrations are discussed and evaluated in the risk assessment. Potential offsite impacts of PCBs will be evaluated in a separate investigation and were not evaluated in this effort." The Army needs to re-address this General Comment and clarify how RAOs have been, or will be, met for grid D-11. This includes elaborating and identifying what is meant by "a separate investigation".	The numerical cleanup goal from the TCRA, 0.22 mg/kg Aroclor 1260, was not met for D-11 as indicated in the text. The residual value of 0.45 mg/kg was evaluated in the ecological risk assessment and did not result in uaccaceptable risks to ecological receptors. However, none of the detected confirmation sediment concentrations within the OID Ditch exceeded the industrial RSL. OID Ditch sediment does not result in unnacceptable risk to OID personnel or future site workers. The separate investigation was revised for clarity: "Potential offsite impacts of PCBs are being evaluated in a separate ongoing investigation (Langstroth Pond and South OID Drainage Ditch Remedial Investigation) and were not evaluated in this effort."	To fully address this comment, please clarify if the Army has the right to enforce deed restriction(s) on the Oakdale Irrigation District (OID) ditch. If the Army does have this right, please describe how the Army plans to implement said deed restriction(s) (e.g., updates to the current easement, etc.). Further, Parcel 1 & 1A are subject to the finalization of Explanation of Significant Differences #2 (ESD2), which remains under dispute. As such, ESD2 will require finalization before the Army can demonstrate RAOs can be met, as put forth in the subject RIFS. If the Army has the right to enforce deed restrictions on the OID ditch, the Army should recognize the OID ditch in ESD2 to fully materialize land use restrictions and, therefore, achieve RAOs. Additionally, the Army's response suggests the OID ditch is subject to industrial use risk assessment criteria ("RSL"). This is misleading as the OID ditch is an open surface water channel that conveys water for agricultural use(s), not industrial. Further, the OID ditch is open and accessible to the general public, which is not limited to an industrial site worker. Finally, the Army did not make the indicated update in Section 2.2 of the "revised" RIFS issued on 20 July 2023.
G	CV-RWQCB	2	General		It is unclear from Figures 2-1 and 2-2 and Table 2-1 in the Draft RI/FS Report how deep each "cleared" grid was excavated. The post excavation figure shows the final PCB concentrations, but not the final excavation depth for each grid. Likewise, the tables presenting soil sample confirmation results do not show the final excavation depths. Revise the figures and table to clearly show this information.	Table 2-1 "Grid Excavation Confirmation Sample Summary" has been included that indicates the final depth, as known, for each grid and the final confirmation sample concentration.	This comment is partially addressed by the Army. Table 2-2 defines "Overexcavation" in a footnote as a "depth typically 6" to 18". Over excavation implies a depth that is deeper than the anticipated excavation depth. For grids that have sample data at 1.5 feet, what depth is representing "Overexcavation" since the over excavation depth range truncates at 18" or 1.5 feet? The RIFS needs to address this discrepancy and identify depths at which excavation stopped within each grid. If this information is unknown, the RIFS needs to state as such.	The footnote for Table 2-2 was revised for clarity "Overexcavation to a depth typically 6" to 18" deeper than original excavation (final excavation depths are included in Figure 2-1)". Figure 2-1 was updated to include the final overexavation depths.	Central Valley Water Board staff acknowledge the Army's response to this General Comment, however, the Army did not update the 20 July 2023 revised RIFS, as indicated
G	CV-RWQCB	3	General		Figures 2-1 and 2-2 show an approximately 50-foot by 400-foot area on the boundary between Parcels 1and 1A that was not sampled or excavated even though all of the adjacent grids exceeded the EPA Industrial RSL for PCBs in soil of 0.99 mg/kg prior to soil removal actions. It is unclear if this area is present or a mistake in graphical presentation of site data. If this area is not actually present, then the figures need to be revised to remove it. If it is present, soil samples need to be collected from this area for PCBs analysis.	The figures have been revised to remove the gap between parcels. Soil was excavated to the parcel boundary during the TCRA.	NA		NA
G	CV-RWQCB	4	General		The Remedial Action Alternatives include a "No Action" alternative and a "Soil Removal with LUCIP" alternative. However, both of these alternatives include the recently completed TCRA soil removal actions. To avoid confusion in discussing remedial alternatives, we recommend revising the "No Action" alternative to the "Soil Removal with no Institutional Controls" or something similar.	The risk assessment and remedial alternatives have been presented using the current conditions and analytical information for Parcels 1 &1A. The alternatives incorporate the TCRA removal action and whether further remedial action is required.	NA		NA
G	CV-RWQCB	5	General		Central Valley Water Board staff defer to EPA and DTSC on evaluation of the human health and ecological risk assessments presented in Sections 4 and 5 of the Draft RI/FS Report.	Comment received.	NA		NA
G	CV-RWQCB	6	General		There are off-site areas impacted by PCBs that have not been adequately characterized. In particular, PCBs have migrated downstream of OID grid location D-14 and have reached the Langstroth Pond. These impacts were discovered more than 7 years ago and the Army needs to provide an aggressive schedule to complete characterization and, if warranted, implement remedial actions.	A Remedial Investigation/Feasibility Study Report for Langstroth Pond and the OID Ditch south of Claribel Road is currently in progress and will be submitted to the regulatory agencies for review.	NA		NA
S	CV-RWQCB	1	1	Section 1.1, Regulatory Authority	Page 1, Section 1.1, Regulatory Authority: Although the DTSC is the designated State-lead, the Central Valley Water Board is also a signatory to the Federal Facility Agreement. Revise this section accordingly.	Under DSMOA, the State shall designate a lead State agency for each DoD installation within the State. The lead State agency for an installation shall coordinate among other State agencies to represent a single State position as to remedial/removal actions at the installation. The lead State agency shall designate a State Agency Coordinator who shall be the single point-of-contact between the DoD component installation and the State regarding State involvement in the remedial and removal action responses. The text in Section 1.1 is revised to state that the RWQCB is a party to the FFA but the State of California has designated the DTSC as the lead State agency.	NA		NA
S	CV-RWQCB	2	2	Section 1.3, Site Description	Page 2, Section 1.3, Site Description: This section states the OID drainage ditch empties into an "off-post" pond. Revise this section and Figure 1-3 to identify this pond as Langstroth Pond.	Section 1.3 and Figure 1-3 has been revised as indicated to identify Langstroth Pond.	NA		NA
S	CV-RWQCB	3	Figure 1-3		Figure 1-3: This figure shows excavated sediment piles highlighted in yellow near the Langstroth Pond. However, there is no discussion or presentation of confirmation sample results for these piles as there are for the sediment piles that are part of the southern parcels. Please explain.	Figure 1-3 identifies the previously excavated sediment piles that were the result of ditch maintenance by OID personnel, as indicated by the asterisk in the figure. The piles south of Claribel Road have not been excavated, and are discussed in the in progress Langstroth Pond RI/FS.	NA		NA
S	CV-RWQCB	4	Figure 1-5		Add the missing scale and north arrow.	A north arrow and scale have been included for Figure 1-5.	NA		NA
S	CV-RWQCB	5	36	5.7, Ecological Risk Assessment Summary	Page 36, Section 5.7, Ecological Risk Assessment Summary: Subsection 5.7.1 appears to be missing or the subsections are misnumbered. Correct this discrepancy.	Section 5.7 subsection have been corrected to 5.7.1 and 5.7.2.	NA		NA