Selma Pressure Treating Company Superfund Site
Selma, California
Explanation of Significant Differences
OU2 Groundwater
September, 2013

Prepared by the United States Environmental Protection Agency, Region IX Site Cleanup Branch, Superfund Division

EXPLANATION OF SIGNIFICANT DIFFERENCES

Introduction to the Site and Statement of Purpose

This Explanation of Significant Differences (ESD) is for the Selma Pressure Treating Superfund Site (Site), in Selma, California. The Site is approximately 15 miles south of the City of Fresno. This is the fourth ESD (ESD4) for the Selma Site and applies solely to the groundwater Operable Unit (OU). Groundwater at the Site is contaminated with hexavalent chromium (Cr+6). The State of California Department of Toxic Substances Control (DTSC) assumed responsibility as lead agency for the Site on October 1, 2009. The United States Environmental Protection Agency (USEPA) is the support agency.

On September 24, 1988, USEPA signed the Record of Decision (1988 ROD) for both soils and groundwater at the Site. Subsequent to the 1988 ROD, a 1993 ESD1, 1997 ESD2, a 2003 ROD Amendment (for soils only), and a 2005 ESD3 were issued. The 1988 ROD and subsequent decision documents were developed in accordance with Section 117 of the Comprehensive Environmental Response, Compensation, and Liability Act, as amended, and the National Contingency Plan, 40 Code of Federal Regulations (CFR) part 300.435 (c)(2)(i) (55 Federal Register 8666, 8852 March 8, 1990). ESD4 will be part of the Site Administrative Record file (40 CFR §300.825(a) (2)).

The 1988 ROD, as amended by ESD1 and ESD2, established "pump and treat" (including treatment with precipitation, coagulation and flocculation technologies), as the remedy for groundwater. The cleanup standard established in the ROD for total chromium is the California Maximum Contaminant Level (MCL) of 50 parts per billion (ppb). The treated water is discharged to onsite surface percolation ponds. In 2003, USEPA modeled the effectiveness of plume containment and recovery. Because the modeling indicated that 30 years of pumping under the current well configuration would not be sufficient to completely mitigate the groundwater contamination at the Site, USEPA decided to supplement the existing pump and treat system with in situ bioremediation to reduce Cr+6 to its less toxic, less mobile trivalent form (Cr+3). This action was described in the 2005 ESD3. Following the success of the in situ bioremediation (ISB) pilot testing, groundwater pump and treat was suspended and ISB was implemented over a larger area of the Site. Groundwater extraction from the aquifer and treatment at the aboveground plant are no longer occurring at the Site.

The purpose of this proposed ESD4 is to ensure that DTSC is aware of any proposed future installation of wells within contaminated portions of the plume. The 1988 ROD did not establish prohibitions on the use of groundwater. There is a Land Use Covenant (LUC) in place between DTSC and the Site owner to limit the extraction of groundwater at the Site property for remediation purposes only. This proposed ESD4 would supplement the LUC by expanding the area of the Site that DTSC or its contractor currently monitors to track groundwater extraction within or near the plume areas beyond the Site property covered by the LUC. DTSC currently enforces the LUC using an institutional control (IC) monitoring system, which notifies DTSC when individuals have contacted Underground Service Alert, an organization that will locate and mark underground utilities prior to completing subsurface work, so that the work can be completed safely and utilities are not damaged. DTSC currently reviews the alerts

to see if any of the proposed work affects the requirements specified in the LUC, including proposed activities such as drilling a well. Expanding the area that DTSC monitors will allow DTSC to review any proposed well installation in the downgradient portion of the plume that is contaminated, and will allow DTSC to limit installation of wells within the contaminated portions of the plume as well as provide direction for proper construction of wells within deeper portions of the aquifer that are not contaminated.

DTSC concurs with this ESD4.

Site History, Contamination, and the Selected Remedy

The Site is approximately 18 acres in size, including a 4-acre wood treatment facility and 14 acres of former vineyards that were used for Site drainage (Figure 1). The Site is located between agricultural, residential, and industrial areas and is zoned for industrial reuse. Despite a scarcity of water, regional irrigation makes this one of the most productive agricultural regions in the world. Located in the center of the fertile San Joaquin Valley, the area is known for its many vineyards.

The Consolidated Irrigation District provides the majority of the area's irrigation water supply, which comes from both surface water and groundwater sources. Groundwater in the area is also used for the municipal water supply for the surrounding communities. However, contaminated groundwater from the Site is not used for the municipal water supply. The regional groundwater gradient in the vicinity of the Site is to the southwest. The groundwater resources in the area of the Site have been classified as a Sole-Source-Aquifer by the USEPA, under the Safe Drinking Water Act, 42 U.S.C.§1424(e). Under USEPA's Groundwater Protection Strategy (1984), the aquifer in the Site area has been classified as a Class IIA current drinking water source with other beneficial uses.

The wood treatment facility was used to treat lumber products almost continuously from 1936 until 1994. At least two general methods of wood preservation were used. Before 1965, lumber was dipped into a mixture of pentachlorophenol (PCP) and oil, and then was dried on open racks, where the excess liquid dripped off. In 1965, the Site was converted to a pressure-treating process, which consisted of two basic steps: conditioning the wood to reduce moisture content and increase permeability, and impregnating the wood with chemical preservatives.

From 1936 to 1971, chemical wastes from the treatment plant were disposed of onsite in percolation ditches, dry wells, an unlined pond, and a sludge pit. Chemical wood preservatives also were released to the ground, particularly in the wood treatment area, as a result of spillage, dripping, and leaking. Waste fluids were discharged through pipelines that ran along the boundaries of the former vineyards into offsite drainage areas and ditches. The chemical preservatives used at the Site include:

- Fluor-chromium-arsenate-phenol
- Chromated copper arsenate (CCA)
- Pentachlorphenol (PCP)
- Copper-8-quinolinolate
- Landscape timber (LST) concentrate
- Woodtox 140 RTU (contains PCP)
- Heavy Oil Penta 5% solution

In 1971, the State of California collected samples from an unlined sump on the property and concluded that the discharges posed a serious threat. From 1971 to 1981, the California Regional Water Quality Control Board (CRWQCB) regulated the discharges from the facility pursuant to a Waste Discharge Requirements Order. On January 31, 1981, the USEPA Field Investigation Team conducted an investigation in accordance with Section 3007 of the Resource Conservation and Recovery Act.

Between 1981 and 1984, CRWQCB, USEPA, and California Department of Health Services (DHS) pursued efforts to have the former wood treatment companies, Selma Pressure Treating Company (SPT) and Selma Leasing Company (SLC), investigate the Site to determine the extent of contamination. These parties never performed cleanup work at the Site and entered into a cash-out settlement with EPA and the State in 1996. The Site was placed on the National Priorities List (NPL) in September of 1983. In 1988, USEPA issued the Remedial Investigation/Feasibility Study (RI/FS) and signed the ROD. The 1993 ESD1 changed the term from "cleanup goal" to "cleanup standard"; reduced the soil cleanup standard for arsenic from 50 parts per million (ppm) to 25 ppm; identified additional areas of soil contamination to be excavated that were not included in the 1988 ROD; added a newly promulgated MCL of 1 ppb as a groundwater cleanup standard for pentachlorphenol (PCP); modified the groundwater extraction, treatment and reinjection system to a phased, observational approach; and removed the K001 classification as defined in 40 CFR § 261.32 for wastes generated from the Site. The 1997 ESD2 changed the recharge method for treated groundwater from reinjection, to onsite percolation ponds.

Based on the 1988 ROD, ESD1 and ESD2, USEPA constructed the groundwater treatment system for the Site. This included construction of eight extraction wells, associated pipelines, two large percolation ponds, and the groundwater treatment plant. The groundwater treatment system is a modified precipitation, coagulation and flocculation process that is performed at a neutral pH. The groundwater treatment plant began operation on September 21, 1998, and was in continuous operation until in situ bioremediation was applied at the Site in 2005. The Remedial Action Report documenting completed construction activities for the groundwater remedial action was completed in September 2000. The groundwater treatment plant has been treating an average of 200 gallons per minute (gpm) containing an average concentration of 350 to 360 ppb of Chromium+6 in the influent (blended from all extraction wells), which is treated before discharge from the plant.

A ROD Amendment for soils only was prepared in 2003. The ROD Amendment revised the remedy for soils to create a consolidated disposal area (RCRA cap) for soils that had been treated and capped onsite in several locations, and cap additional untreated soils left in place, with a modified asphalt ultra-low permeability barrier.

In 2003, USEPA recalibrated the Site groundwater model to evaluate the effectiveness of plume containment and recovery. The original groundwater model was developed in 1997 in support of the groundwater extraction system design. The 2003 model indicated that 30 years of pumping under the current well configuration would not be sufficient to completely mitigate the groundwater contamination at the Site. Based on the relatively high costs to upgrade the existing groundwater extraction and treatment, which was designed for a 10-year life span, and the promising results from pilot tests using in situ bioremediation to reduce Cr+6 to Cr+3 in groundwater, a third ESD was completed to allow for use of in situ bioremediation to supplement groundwater extraction and

treatment. Since 2005, in situ bioremediation injections have been conducted in phases across the plume using at first direct injection and then recirculation wells in the source area expanding to the downgradient portion of the plume south of Highway 99. The earlier extraction wells which were installed and connected to the conventional groundwater treatment plant in 1998 have been disconnected and re-routed and connected to the in situ bioremediation (ISB) treatment system. Groundwater extraction from the aquifer and treatment at the aboveground plant are no longer occurring at the Site.

Basis for Action

The 2011 Five-Year Review included a recommendation for a governmental IC to notify the public of the contamination at the Site and to limit installation of new wells within the intermediate and deep water bearing zones at the Site. The intermediate zone extends from about 45 to 75 feet bgs and the deep water bearing zone extends from 75 to 120 feet bgs. The plume boundaries above the groundwater cleanup level of 50 ug/L (the California maximum contaminant level for total chromium) are shown on Figure 2. Additional characterization at the toe of the plume is planned in 2014, as concentrations in wells located within the downgradient portion of the plume are currently above the cleanup standard.

Currently, there is a LUC for the Site that restricts extraction of groundwater for any purpose other than Site remediation. However, the LUC applies only to the Site property itself. The area DTSC monitors to enforce land use restrictions for the Site property will be expanded to include the portion of the plumes downgradient of the Site property. This will allow DTSC to review any proposed well installation in the downgradient portion of the plumes that are contaminated and to prevent exposure to people who may use the groundwater and to limit any potential migration of contamination from wells installed near or in in deeper aquifers below the plume. The IC boundary will be adjusted as appropriate once the plume boundary is delineated.

Description of Significant Differences

USEPA publishes an ESD when modifications to the selected remedy significantly change, but do not fundamentally alter the overall cleanup approach selected in the ROD. ESD4 modifies the remedy by expanding the area of the Site that DTSC currently monitors as part of the LUC to prevent extraction of groundwater within or near the plume to include a larger area of the plume. DTSC currently enforces the LUC by using an IC monitoring system operated by its contractor which notifies them when individuals have contacted Underground Service Alert to request that underground utilities are marked before any subsurface work is completed. DTSC currently reviews the alerts to see if any of the proposed work is restricted as specified in the LUC including the installation of wells and extraction of groundwater on the property. DTSC then consults with the individual person completing the work to assess the situation and whether it affects the land use restrictions. Expanding the area that DTSC monitors will allow DTSC to limit installation of wells within the contaminated portions of the plume as well as provide direction for proper construction of wells within deeper portions of the aquifer that are not contaminated. This will prevent exposure to people who may use the groundwater, and limit any potential vertical downward migration of contamination from wells installed below the contaminated portions of the plume. The area monitored may change over time depending on further characterization at the toe of the plume or as remediation continues.

Public Participation

A public notice will be placed in the local newspaper of general circulation after ESD4 is signed by USEPA. A copy of ESD4 will be placed in the Administrative Record for this Site. The Administrative Record is found at the following locations: The USEPA Region IX office in San Francisco, and the Fresno County Library, Selma Branch at the addresses below.*

Statutory Determination

The changes proposed in ESD4 are necessary to notify individuals of the newly established IC monitoring approach which is being put in place to ensure that installation of any wells in these areas is monitored and is conducted in a manner that does not transport contaminants or result in exposure of humans to contaminated groundwater. The overall remedial goals and standards for groundwater remain the same. The proposed remedy remains protective of human health and the environment and as described in this ESD4, fully meets the statutory requirements of the NCP.

Authorizing Signature

Kathleen Salyer
Environmental Protection Agency
Assistant Director, California Site Cleanup Branch
Superfund Division

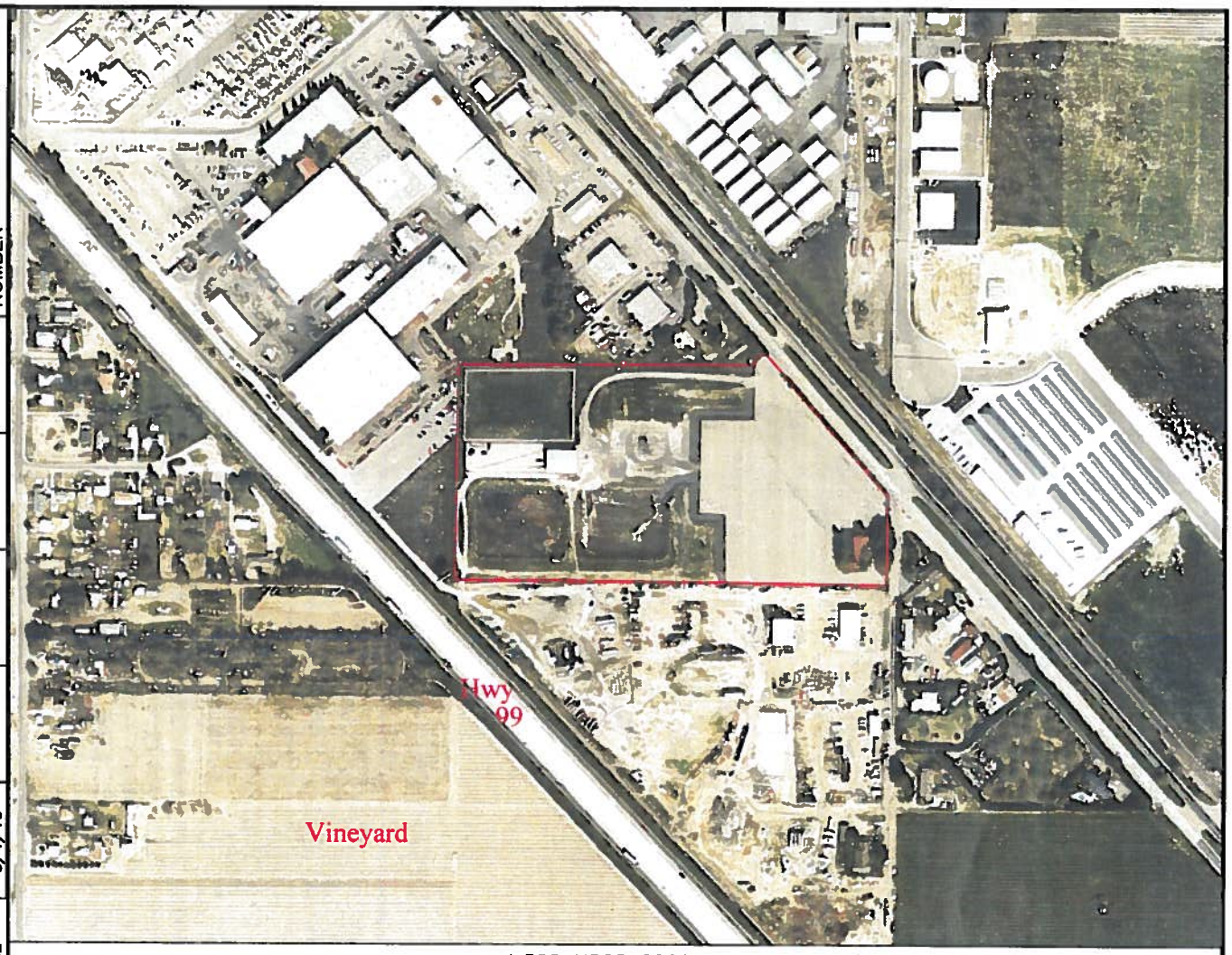
9/30/13
Date

*Additional information on the Site can be found at:http://www.epa.gov/region9/selma
Fresno County Library, Selma Branch,
2200 Selma Street
Selma, California 93662 (559) 896-3393

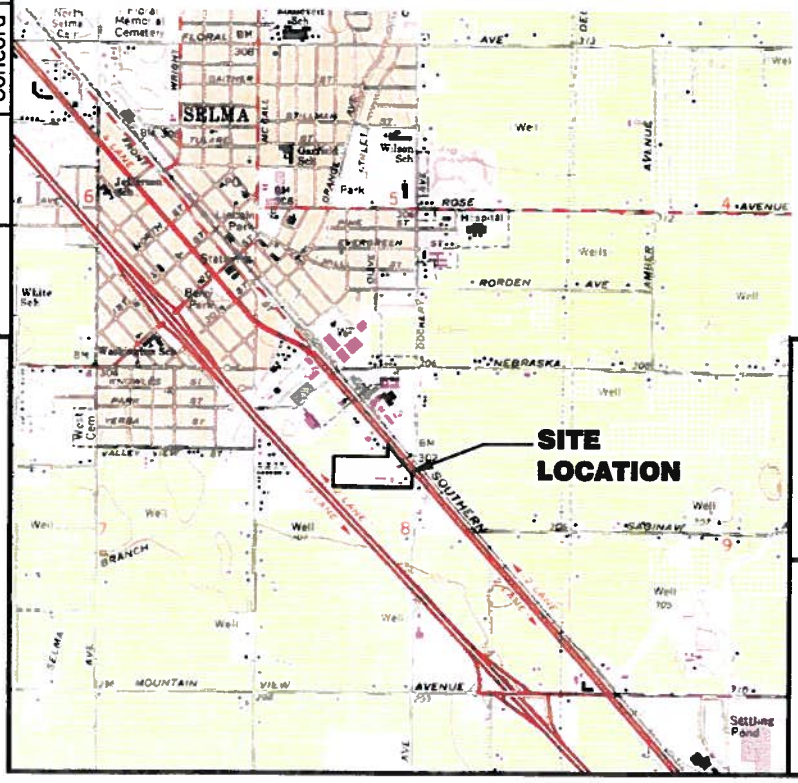
Department of Toxics Substances Control EnviroStor Website
http://www.envirostor.dtsc.ca.gov/public/profile_report.asp?global_id=10240051#

USEPA Region IX, Superfund Records Center
75 Hawthorne Street
San Francisco, California 94105 (415) 536-2000

IMAGE	X-REF	OFFICE	DRAWN BY	CHECKED BY	APPROVED BY	DRAWING NUMBER
		Concord	SJZ 3/1/10			137194-A1



1:500 USGS 2006



REFERENCE:
7.5' USGS TOPOGRAPHIC QUADRANGLE OF: SELMA, CALIF.; DATED:1964; PHOTOREVISED 1981; SCALE: 1:24,000

SCALE

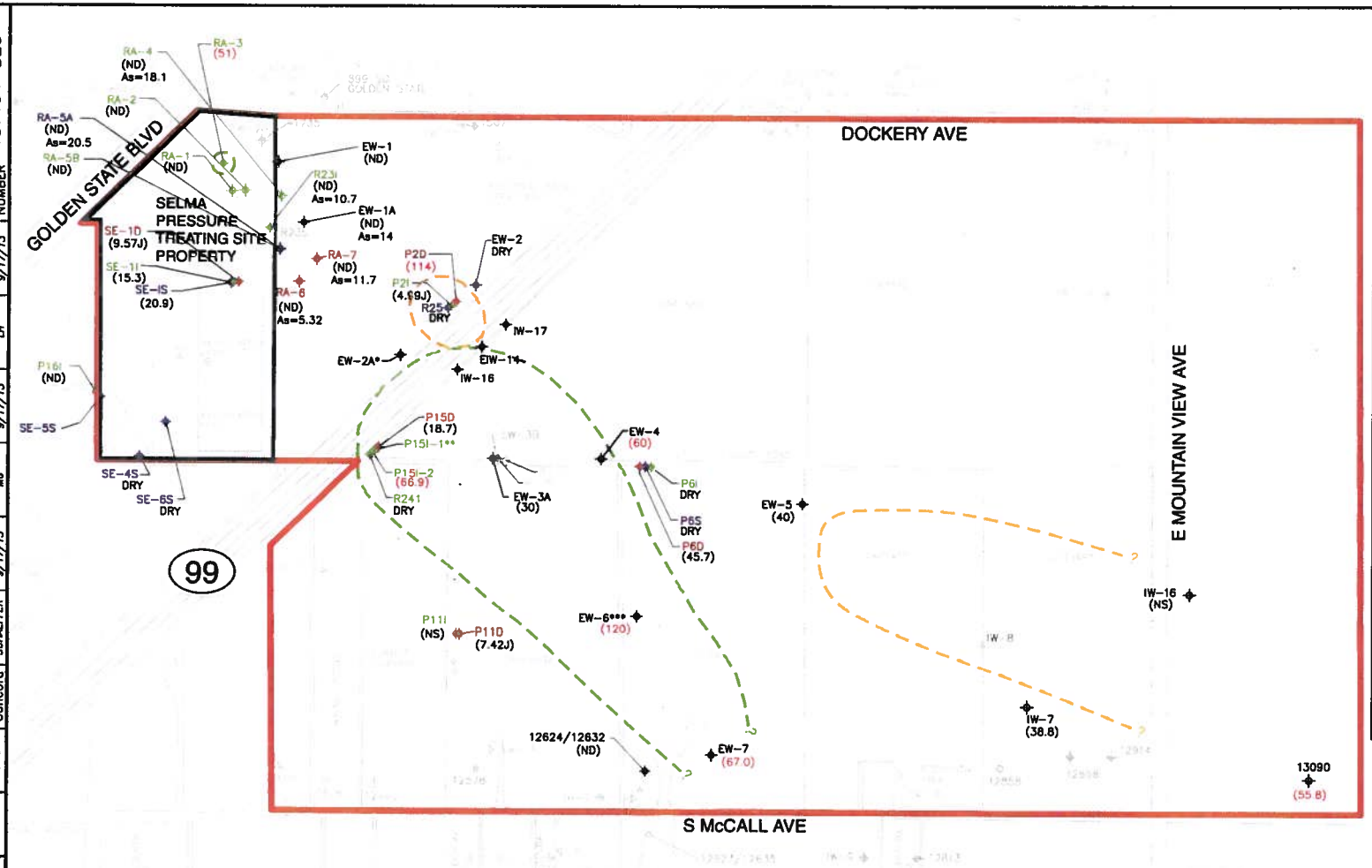
0 3000 6000 FEET

DEPARTMENT OF TOXIC SUBSTANCES CONTROL
SACRAMENTO, CALIFORNIA

FIGURE 1

SITE LOCATION MAP

SELMA SUPERFUND TREATING SITE
SELMA, CALIFORNIA



LEGEND

- SHALLOW WATER-BEARING UNIT MONITORING WELL (35-60 FT. BGS)
- INTERMEDIATE WATER-BEARING UNIT MONITORING WELL (54-100 FT. BGS)
- DEEP WATER-BEARING UNIT MONITORING WELL (95-138 FT. BGS)
- PRIVATE WELL OR MONITORING WELL
- P2D WELL IDENTIFICATION NUMBER
- 13090 RESIDENCE ADDRESS
- A/B CO-LOCATED INTERMEDIATE DEPTH AND DEEP MONITORING WELLS
- ESTIMATED 50 µg/L ISOCONCENTRATION LINE FOR HEXAVALENT CHROMIUM IN INTERMEDIATE WATER-BEARING UNIT
- ESTIMATED 50 µg/L ISOCONCENTRATION LINE FOR HEXAVALENT CHROMIUM IN DEEP WATER-BEARING UNIT
- INSTITUTIONAL CONTROL MONITORING AREA
- (13) HEXAVALENT CHROMIUM CONCENTRATION IN µg/L (>50 µg/L SHOWN IN RED) EW-3A, EW-4, EW-5, EW-6 – HACH KIT FIELD TEST RESULTS
- As ARESENIC IN µg/L
- NA NOT ACCESSIBLE
- ND NOT DETECTED
- NS NOT SAMPLED
- J ESTIMATED RESULT
- WD WELL DAMAGED
- µg/L MICROGRAMS PER LITER
- * WELL HAS BEEN CONVERTED INTO AN INJECTION WELL, MAY 2010
- ** WELL HAS BEEN CONVERTED INTO AN INJECTION WELL, MAY 2012
- *** WELL PUMP WAS NOT FUNCTIONING

NOTES:

1. PLUME CONFIGURATION CONSIDERS RECENT GROUNDWATER GRAB SAMPLING RESULTS OBTAINED AS PART OF REMEDIAL EFFORTS.
2. PLUME BOUNDARIES ARE BASED ON MAY 2013 GROUNDWATER DATA.

SCALE

0 400 800 FEET

Figure 2

Monitoring Well Locations and Plume

Selma Pressure Treating Site
Selma, CA

IMAGE	X-REF	OFFICE	DRAWN BY	CHECKED BY	APPROVED BY	DRAWING NUMBER
---	---	Concord	SCHAEFFER 9/17/13	MG 9/17/13	LH 9/17/13	137194-B20