Project Description

Field Work Activity of Petroleum Hydrocarbon Remedial Action,
Napa River/Napa Creek Flood Protection Project, Stations 737+00 to 758+00
Napa, California

Preplaced Remedial Action Contract, Contract No. DACA05-99-D-0012
Delivery Order CM-15

Task Order Value: $3,708,354

Overall Project Description:

The U.S. Army Corps of Engineers (USACE) and the Napa County Flood Control and Water Conservation District (NCFCWCD) are implementing flood management features along a 7-mile stretch of the Napa River through and south of the City of Napa, California as part of the Napa River/Napa Creek Flood Protection Project (Flood Project). The Flood Project is designed to protect the residents and businesses of Napa County from floods up to, and including, a 100-year storm event. Project features include widening the Napa River flood plain by excavating soils and constructing a marsh plain terrace and a flood plain terrace along the river. The portion of the Flood Project between Station (STA) 737+00 and 7th Street (approximately STA 758+00), on the east side of the Napa River, includes nine identified petroleum-impacted facilities/sites, primarily former bulk fuel terminal facilities. Some of the facilities are known to have released petroleum products to subsurface soil and groundwater. Because the Site is within the area requiring soil excavation to construct flood and marsh plain terraces, the USACE is combining the flood improvement and soil remediation efforts in this portion of the Flood Project. The area of river bank terracing work that is being accomplished for the Flood Project concurrent with the remedial actions extends both north and south of the HTRW Site area from the intersection of 6th and River Streets in the north (STA 762+00) to Tulocay Creek in the south (STA 724+00). Due to project access limitations in 2002, the remedial action and flood protection measures work is being conducted in a phased manner; Phase 1 was completed in 2002 and Phase 2 was planned for the 2003 construction season pending Federal budget considerations.

TO-15 Task Order Description:

MWH performed remedial action for the Phase 1 petroleum hydrocarbon impacted areas within the Napa River/Napa Creek Flood Protection Project, located in Napa, California. MWH's scope of work for this task order included excavation and grading of petroleum hydrocarbon-impacted areas and of the non-impacted Nord Vineyard area, soil transport and placement at the reuse site, soil transportation and off-site disposal at a Class II landfill, dewatering the excavation and water treatment.

The Phase 1 remedial action and flood control measures began in July 2002. The Phase 1 area extends from Tulocay Creek in the south to Oil Company Road in the north, and was limited in extent to the east by the Napa Valley Railroad (NVRR) tracks, which are to be relocated by the Flood Project, but had not yet been removed as of the summer of 2002. The principal flood protection improvements, remedial actions, and engineering controls conducted at the Site under this task order include the following:

- Excavation and grading of the site to create marsh plain and flood plain terraces. Excavated 45,765 cubic yards from impacted areas, and 109,257 cubic yards from non-impacted areas of the Nord Vineyard.
- Overexcavation of soils that do not meet Flood Project criteria at the design elevation and backfill with clean fill. Excavated 20,435 cubic yards from below design elevations and backfilled with clean fill.
- Dewatering, treatment, and discharge of petroleum-impacted groundwater. Dewatered, treated, and discharged 14,648,866 gallons of water.
- Off-site reuse of excavated soil at reuse site, located immediately southeast of the Site. Placed 77,100 cubic yards of material at the reuse site.
- Off-site disposal of soil that does not meet project standards for reuse. Transported and disposed of 43,621 tons of impacted soil at a Class II landfill.

- Regulatory agency acceptance
- Modularized design allows system to be tailored for specific site needs
- Fast-track capability to start-up and operation

Please see the attached marketing description / pamphlet of this process in the Appendix.

Similar Projects

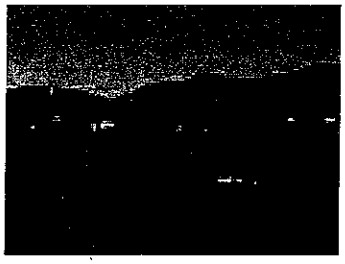
This section demonstrates our ability to perform services and implement technical elements that are similar in scope and complexity to those identified and anticipated at the Yosemite Creek site. These projects were selected to highlight the following experience and capabilities:

- U.S. EPA Region 9
- Polychlorinated biphenyls (PCBs) and Remediation
- Sediment Handling, Treatment, and Disposal
- Wetlands Restoration

Napa River / Napa Creek Flood Protection Project, Napa, California

U.S. Army Corps of Engineers, Sacramento District

The U.S. Army Corps of Engineers (USACE) and the Napa County Flood Control and Water Conservation District implemented flood management features along a 7-mile stretch of the Napa River through and south of the City of Napa as part of the Napa River/ Napa Creek Flood Protection Project (Project). The portion of the Project between River Street and Tolocay Creek, on the East side of the Napa River, contained nine identified contaminated sites in the area of current and former bulk fuel facilities. Because these sites were in the area requiring soil excavation to construct flood and marsh plain terraces for the Flood Protection Project, the USACE combined flood protection improvement and soil remediation efforts in the portion of the Project that contained these sites. The USEPA Region 9 provided the regulatory oversight for the project. MWH proposed and negotiated the contaminant clean-up levels for the project with the USEPA.



Project Highlights

- Negotiations with USEPA Region 9
- Sheet pile use to Isolate Site from tidal waters
- 102,000 cy of soil beneficially reused
- 135,000 cy of soil moved to landfills for disposal

As part of pre-construction activities for the flood protection improvement and soil remediation efforts, MWH conducted a subsurface soil investigation and hydrogeologic investigation program to evaluate required sheet pile placement and soil excavations to be implemented during soil remediation activities. The field portion of the program consisted of the advancement and logging of 64 geotechnical and environmental borings, 17 test trenches, and two temporary groundwater monitoring wells. Geotechnical and environmental soil characterization tests were performed on selected soil samples collected from the field portion of the program.

Data collected from the field and laboratory testing portion of the investigation program was used to evaluate future placement of temporary sheet piles, including parameters for evaluating excavation slope stability, seepage beneath sheet piles, basal heave at excavation bottoms, and potential settlements due to excavation dewatering. In addition, field and laboratory data was used to study groundwater hydrogeologic conditions in order to estimate the volume of water that could be expected to enter excavations during remediation activities. Prior to the commencement of excavation activities, MWH conducted an extensive in-situ soil characterization program to determine the disposition of soils to be excavated during construction. MWH created a multi-layered grid system across the site and collected samples to represent 100 to 200 CY volumes of soil to be excavated. Confirmation samples at the planned flood and marsh plain terraces were also collected concurrently with the characterization samples. Results of sampling were used to develop an excavation plan whereby excavated soils were either immediately disposed at an offsite landfill or beneficially reused, as appropriate given contaminant concentrations in the representative samples. This improved project planning and reduced project costs compared to a typical ex-situ soil staging and characterization approach.

MWH provided CM at Risk construction services, geotechnical design and engineering support and subcontractor oversight during the design / build construction phase of the remediation/ flood control improvements. MWH competitively procured seven work packages to complete the construction phase of this project. Site work included installation of 2,300 lineal feet of sheet pile extending 40 feet below surface to 20 feet above high tide water level in the Napa River. A 1,000 gallon per minute (gpm) de-watering and water treatment system was used to completely dewater the area behind the sheet pile wall. A total of 50MG of contaminated water was removed and treated. Water turbidity was controlled with silt curtains and monitored daily in the field for regulatory compliance. A total of 237,000 CY of soil were excavated at the former bulk fuel facilities during the project, 102,000 CY of the excavated soils were reused beneficially and 135,000 CY of the excavated soils were transported and disposed off-site. Potential release of hydrocarbons compounded by tidal fluctuations of up to 8' twice per day was controlled using oil booms connected to the turbidity curtains and visual inspection and maintenance of the sheet pile wall. The terracing effort involved substantial civil grading of over 200,000 CY's of soil to complete a bi-level flood plain area. The lower terrace is a marsh plain designed as a tidal zone which is saturated twice a day. The flood plain terrace at a slightly higher elevation serves as area to accommodate volumes of water during flood conditions. Sheet piling was removed and native vegetation was provided as surface completion to restore natural habitat and prevent soil erosion. The newly constructed terraces were constructed within budget and schedule requirements and have substantially reduced flood potential in and around the City of Napa as observed since site construction. The total construction dollar value of phase 1 and phase 2 of the project was $8.7M.

McCormick and Baxter Superfund Site, Stockton, California

U.S. Army Corps of Engineers, Sacramento District

McCormick and Baxter Superfund Site (MBSS) is located on 29 acres near the Port of Stockton, California. This former industrial site borders Old Mormon Slough to the North, which joins the Stockton Deepwater Channel on the San Joaquin River. McCormick and Baxter Creosoting Company operated a wood treating facility at the site from 1946 to 1990. Wood treatment operations caused the site to be contaminated with creosote, pentachlorophenol (PCP), chrome, copper, zinc, and arsenic. The contamination impacted the banks of the Old Mormon Slough and the sediments at the bottom of the slough. Remediation of the site was conduced in two phases in accordance with the EPA Region IX's Record of Decision for remediation, which consisted of bank stabilization (Phase I) and in-situ capping of sediments in slough (Phase II).

Project Highlights

- Negotiations with EPA Region 9
- Insitu capping of 5-acres of contaminated slough sediments
- 42,000cy of cap material placed

MWH developed the Remedial Action work plan and conducted remedial construction for both Phase I and Phase II. MWH provided engineering and construction services during both phases of the project in compliance with the work plan and water quality criteria during both phases of construction. MWH assisted in United States Army Corps of Engineers (USACE) and EPA negotiation efforts to accelerate removal of moored marine vessels from the slough prior to commencement of remedial construction. MWH successfully completed both phases of the project on schedule and below budget despite significant scrutiny from regulatory and community stakeholders during project design and execution.

The overall goal of the remedial action for Phase I was to excavate the south bank of the Old Mormon Slough to a 2H:1V slope and construct a bank protection system to minimize further erosion of the slope preventing site soils from migrating into the slough and further contaminating the sediments. All excavated material was stockpiled onsite, except vegetation from clearing and timber piles removed from the slough. The vegetation and timber piles were disposed of offsite.

A major concern during Phase I was the migration of contaminated soils and sediments outside of the contaminated channel and the potential impact on the water quality and uncontaminated sediments. MWH

2009

Environmental Controls / Remediation
Golden Eagle Refinery, Martinez CA

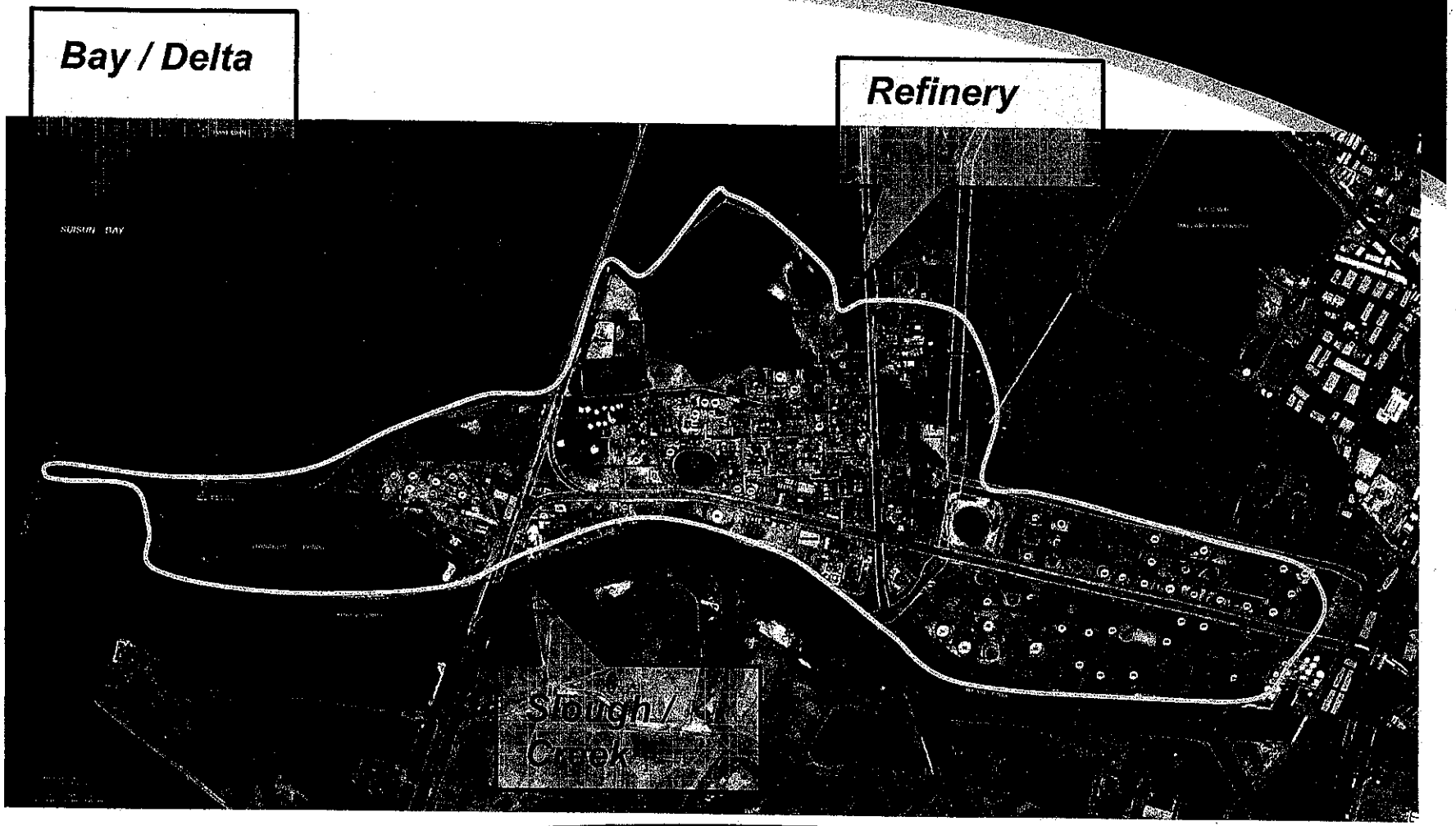
MWH

BUILDING A BETTER WORLD

Golden Eagle Refinery (GER)
Martinez, CA

- 700 Full-Time Employees; equal number of full-ti… contractors.
- 2,206 acre facility
- Built by Associated Oil in 1913
- Crude capacity:
  - 166,000 barrels/day (2nd largest refinery in Northern CA)
- Products:
  - Motor fuels, gasoline, diesel, heavy fuel oils, liquefied petroleum gas, petroleum coke.

Overview of GER

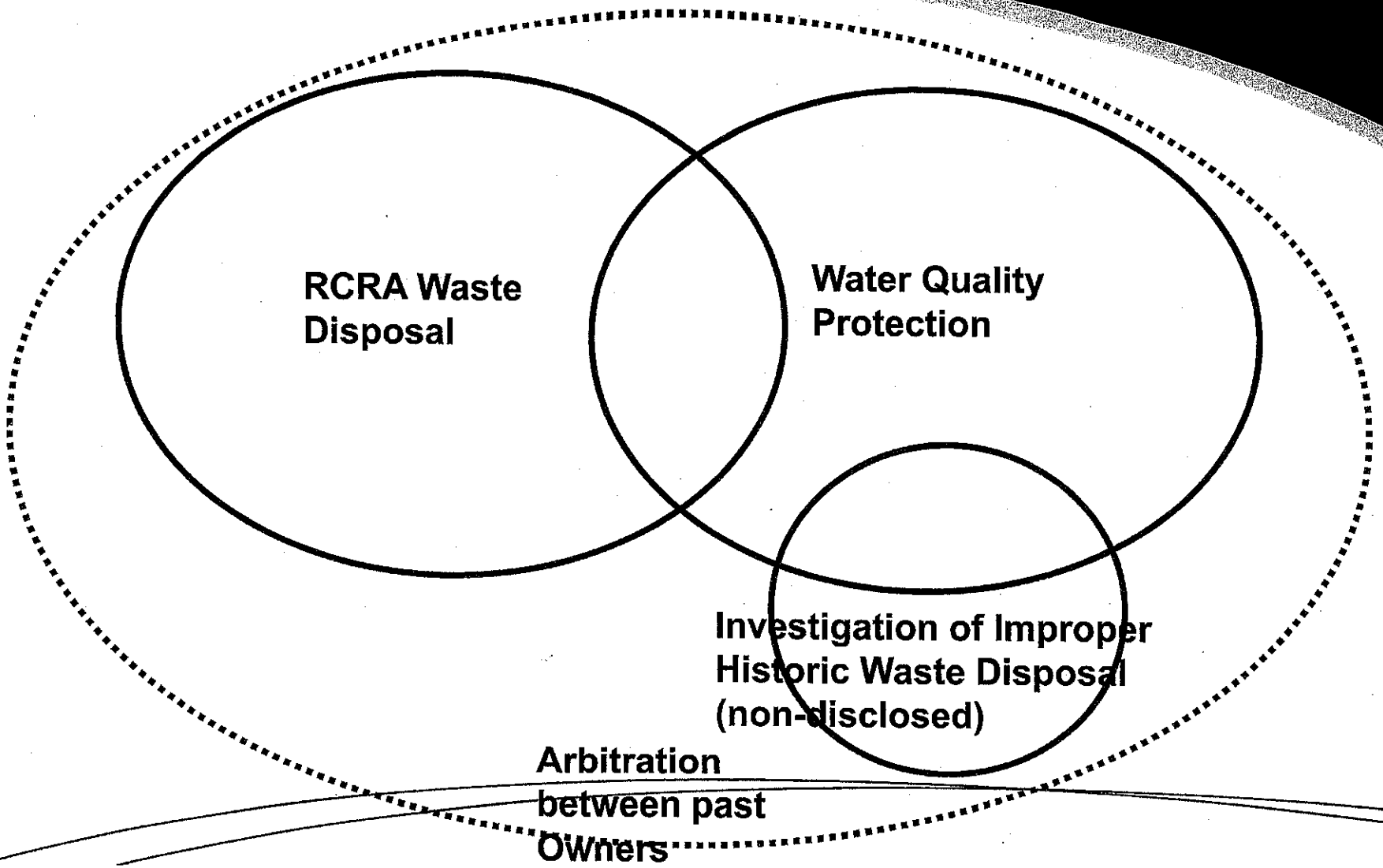


GER Environmental History: *Complicated*

Multiple Owners via Sales, Acquisitions, & Mergers:

1913 – 1966	TEXACO	A string of companies that ultimately became ***Texaco*** (Texaco now owned by Chevron)
1966 – 1979	PHILLIPS 66	Phillips Petroleum Company of Oklahoma expanding
1979 – Sep 2000	TOSCO	ITosco's 1st facility – Tosco purchased by Phillips in 2001, later became ConocoPhillips
Sep '00 – May '02	Ultramar	Start of 4th "Environmental Liability" Lineage
May '02 to Present	TESORO	Bought Refinery and Ultramar Liability

Regulatory Drivers



USEPA RCRA PROCESS

- Driven by an US EPA 3008(h) Order from 1980s
- Identified Responsible Parties (Past Owners)
- Order Required:
  - RCRA Facility Investigation (RFI)
  - Corrective Measures Study (CMS)
  - Corrective Measures Implementation (CMI)

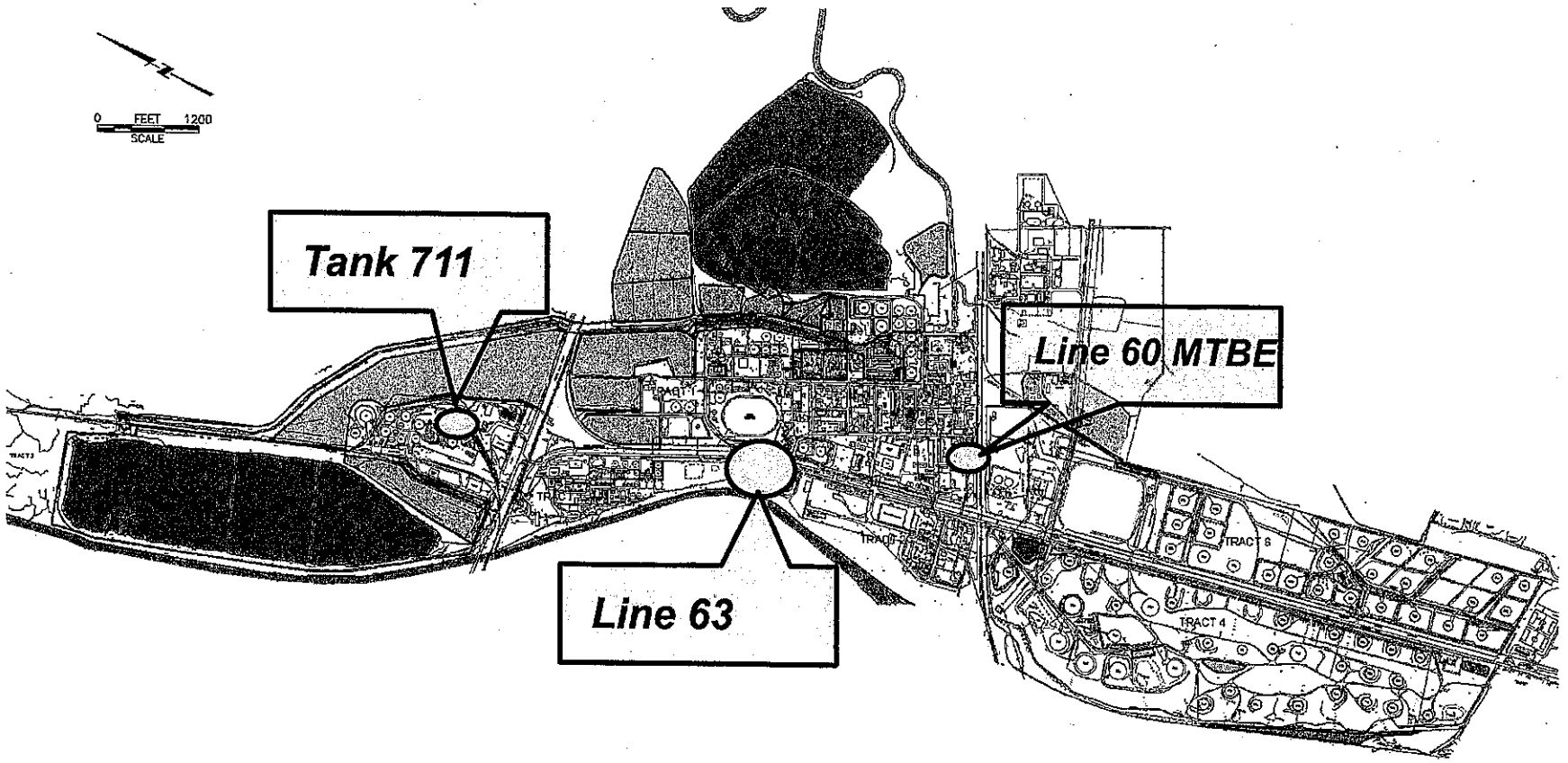
WATER QUALITY PROTECTION PROCESS

- Driven by the Porter-Cologne "Clean Water" Act
- Administered by the Regional Water Quality Control Board – San Francisco Bay Region (RWQCB)
- Two Current Orders
- Re-affirms USEPA Process
- Additional Investigation Requirements:
  - Active Class II Impounds
  - Stormwater Basins & Canals

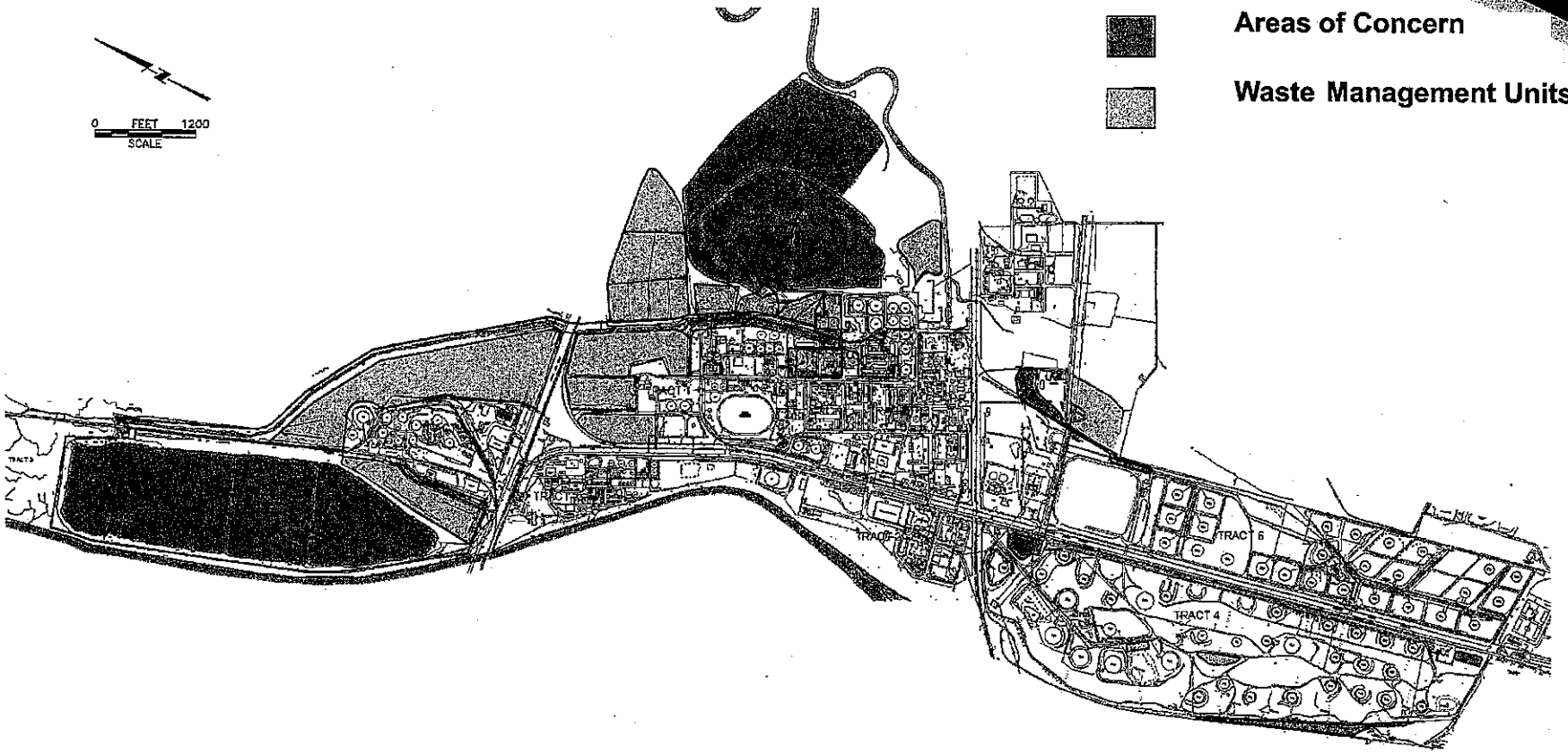
Environmental Work at GER

- Historic CERCLA / RCRA Waste Management Unit Investigations / Closures
- Hydrocarbon and acid release investigations / mitigations
- Aboveground storage tank and pipeway upgrades / leak detection programs
- Soils management on capital improvements
- Class II Surface Impoundment compliance studies / planning
- Air Emissions
- Wastewater Discharge (post treatment)

Release Projects



Waste Management Units and Areas of Concern



Major Remedial Work

Releases

- Line 60 Mtbe release (500 to subsurface) (1999)
- Tank 711 (gasoline from fill line) (2003)
- Line 63 Gas Release (corroded buried line) (2007)

Waste Management Units

- WMU-13. Soil stabilization project underway
- Oily Water Canal. Sludge removal / dewatering
- WMU-32. Investigation /remedial planning to control Acid sludge
- WMU-5/8/9. Engineered Covers

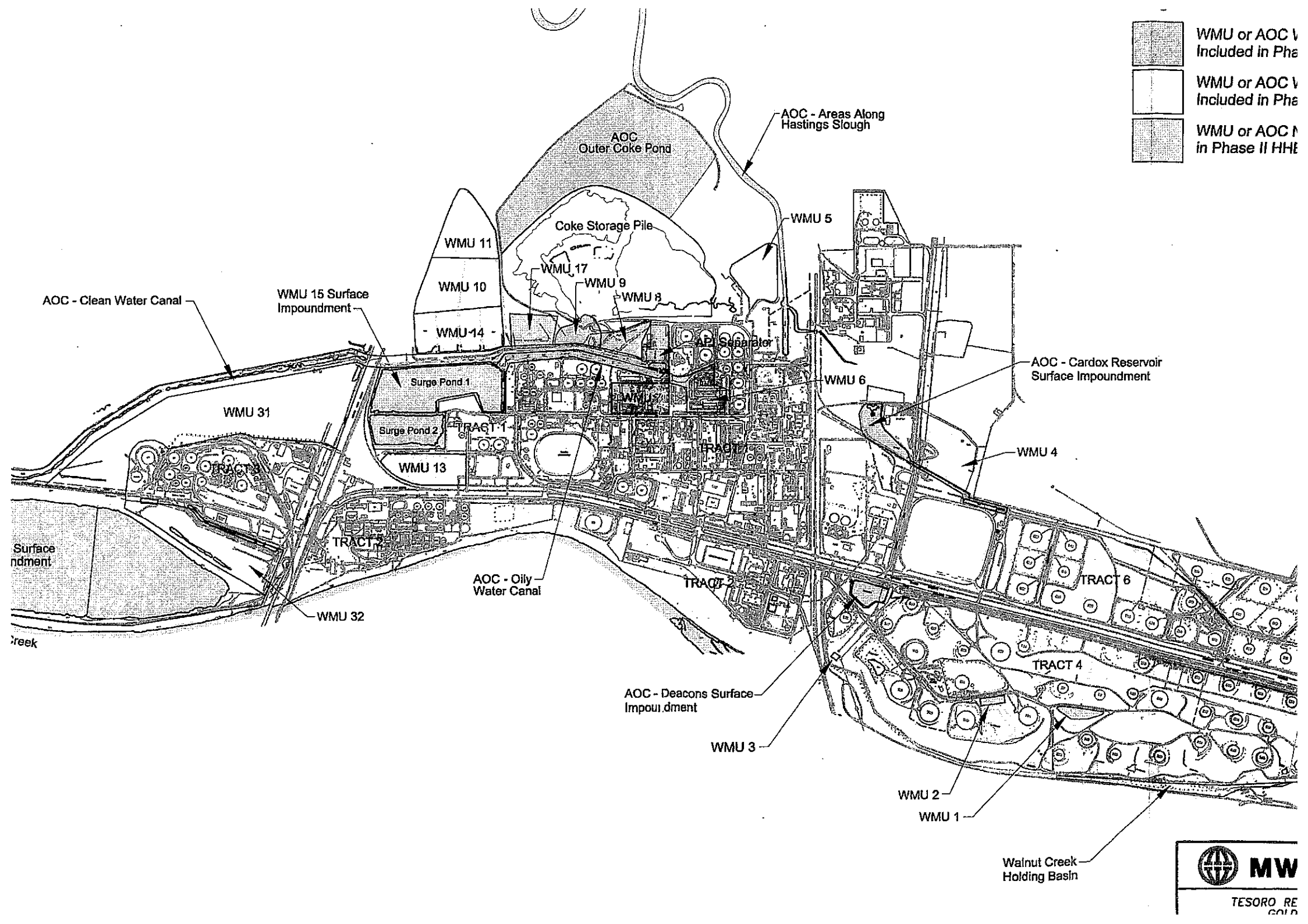
Detail Continued

WASTEWATER System:

- GER discharges 3 to 4 million gallons/day wastewater; peak flow from treatment facility: 8.5 mgd.
- Much of the wastewater infrastructure is ageing.
- Potential new discharge requirements may mandate system upgrades.

PIPING SYSTEMS:

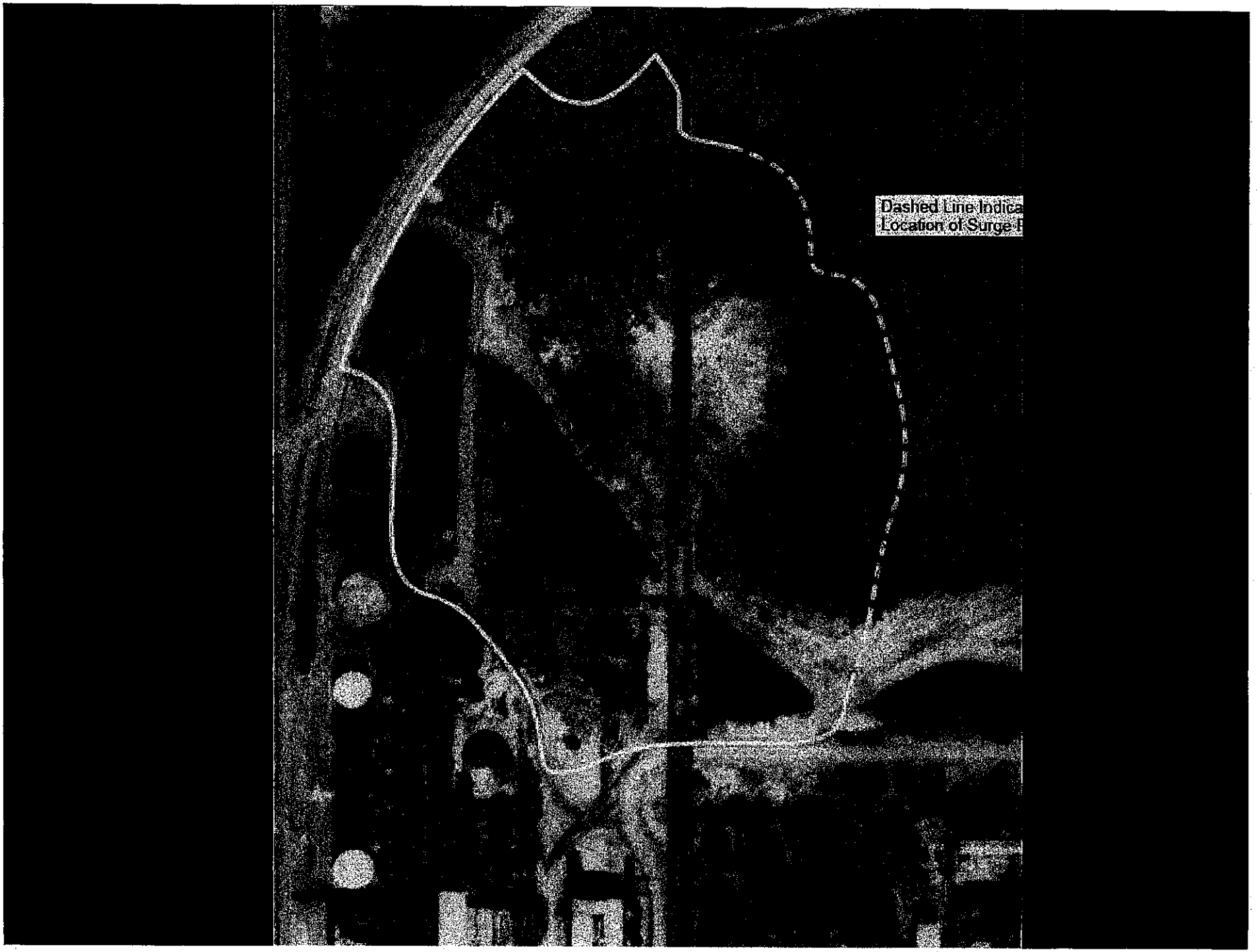
- 1000s of miles of sewer systems, water lines, and product lines.
- Much of the piping system infrastructure is aging and some portions are failing.

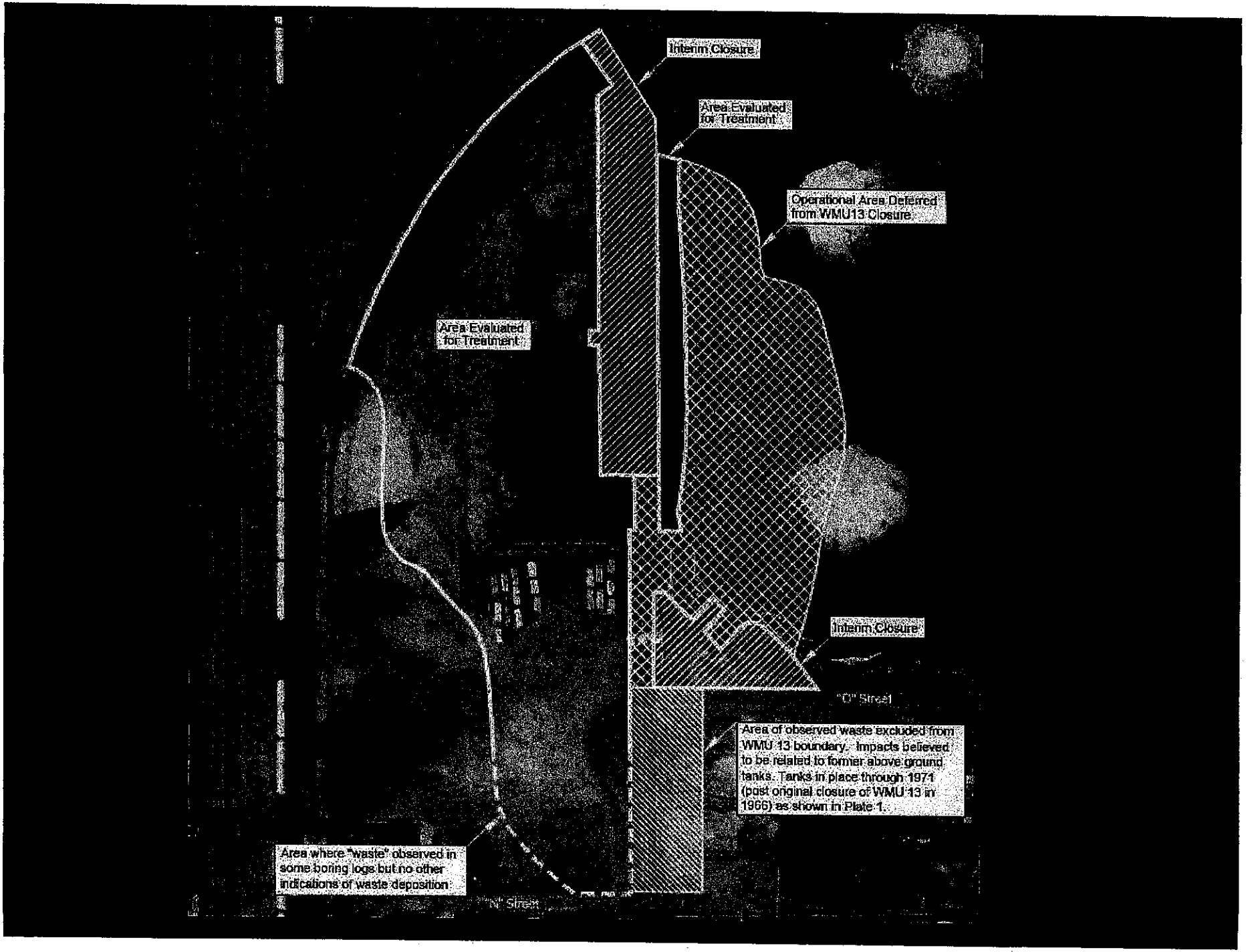

WMU or AOC
Included in Pha
WMU or AOC
Included in Pha
WMU or AOC
in Phase II HHE
AOC - Areas Along Hastings Slough
AOC Outer Coke Pond
Coke Storage Pile
WMU 5
WMU 11
WMU 10
WMU 14
WMU 17
WMU 9
WMU 8
AOC - Clean Water Canal
WMU 15 Surface Impoundment
API Separator
AOC - Cardox Reservoir Surface Impoundment
WMU 6
Surge Pond 1
Surge Pond 2
WMU 31
TRACT 1
TRACT 2
TRACT 3
WMU 13
WMU 4
TRACT 6
TRACT 4
AOC - Oily Water Canal
WMU 32
AOC - Deacons Surface Impoundment
WMU 3
WMU 2
WMU 1
Walnut Creek Holding Basin
MW
TESORO RE
GOLD

Golden Eagle Refinery

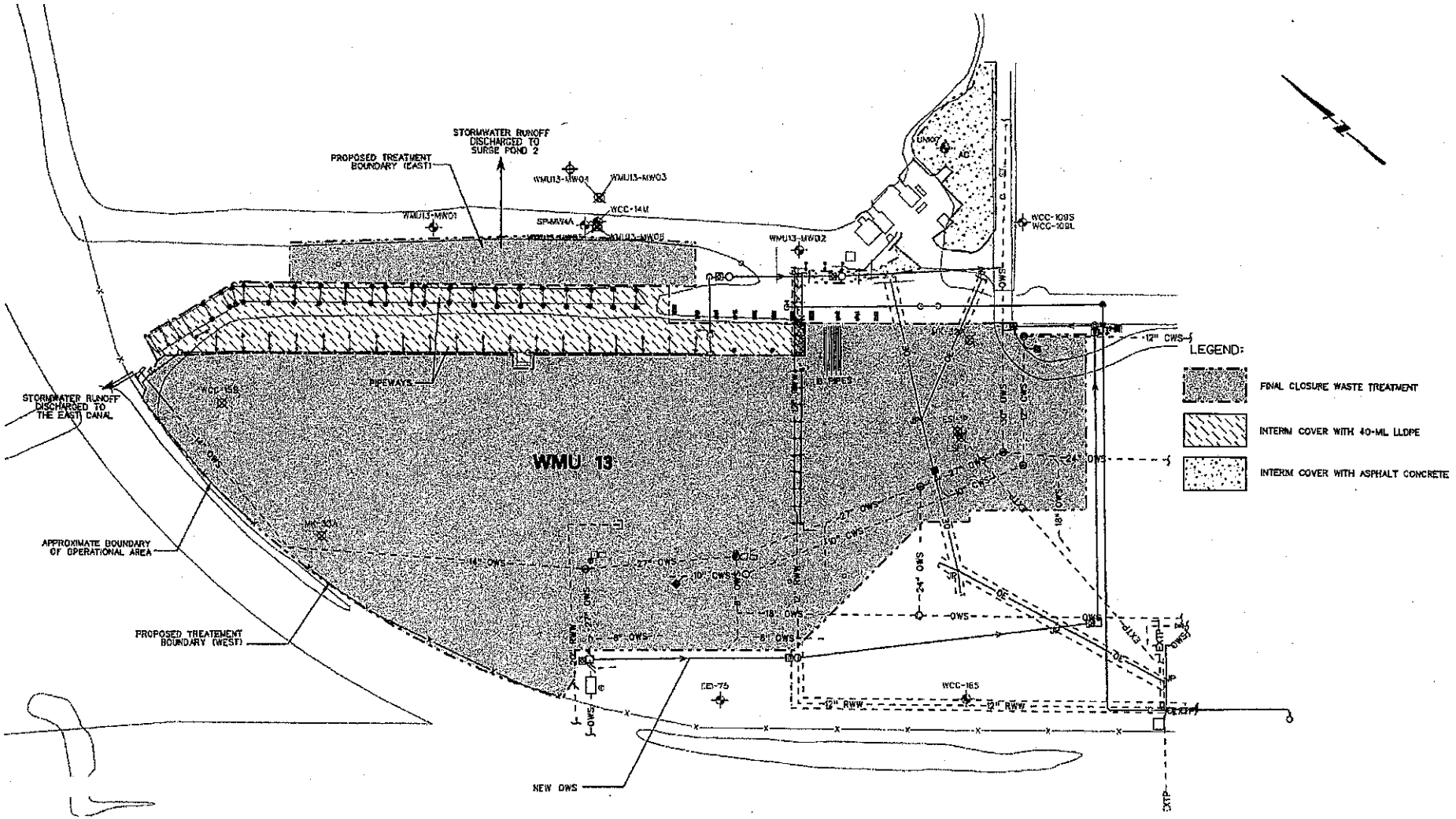
Waste Management Unit 13 Closure Project


Google
Imagery ©2009 DigitalGlobe, GeoEye, U.S. Geological Survey, Map data ©2009 Tele Atlas
Terms of Use

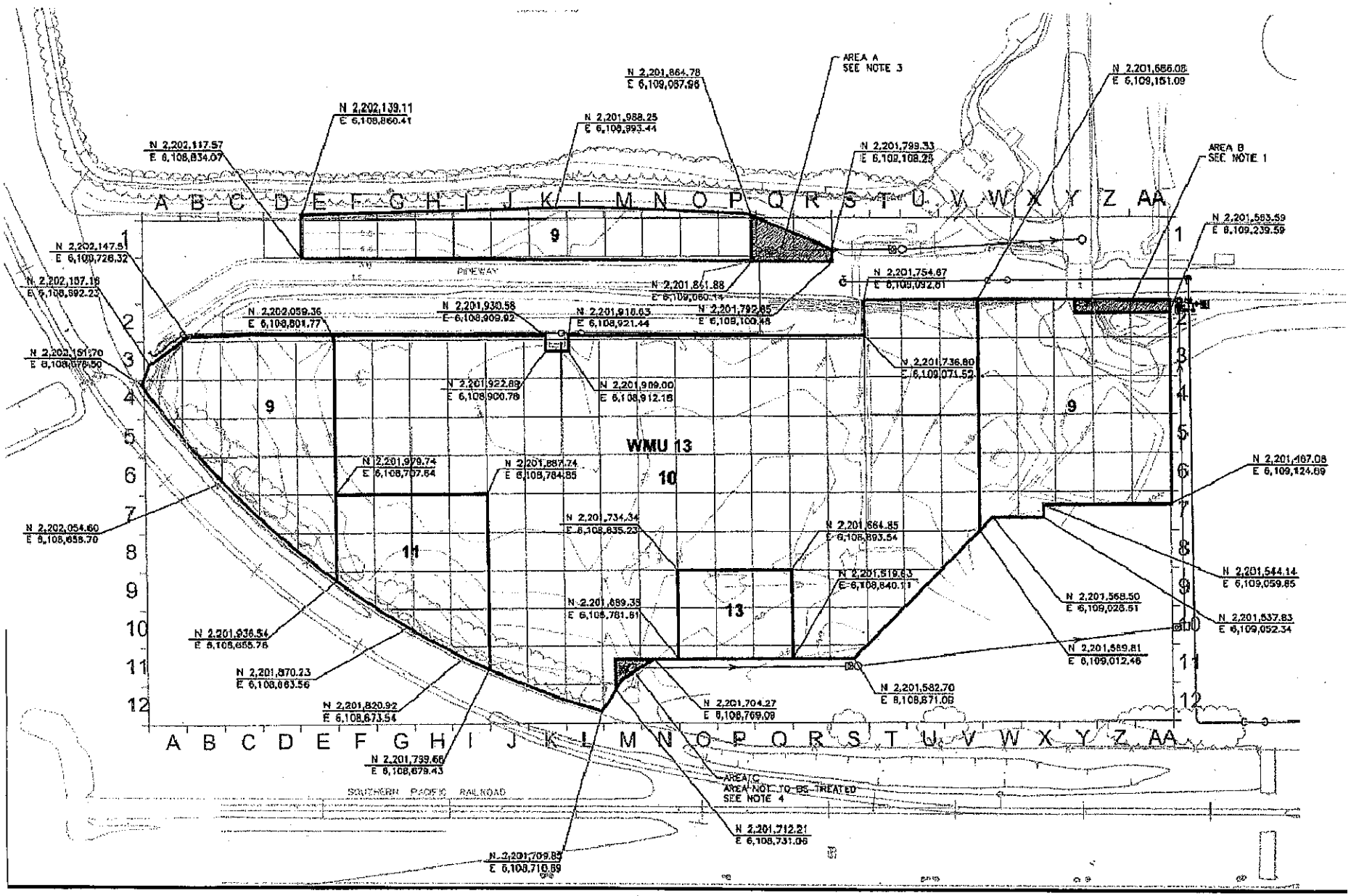

Dashed Line Indica
Location of Surge I


Interim Closure
Area Evaluated for Treatment
Operational Area Deferred from WMU13 Closure
Area Evaluated for Treatment
Interim Closure
"O" Street
Area of observed waste excluded from WMU 13 boundary. Impacts believed to be related to former above ground tanks. Tanks in place through 1971 (post original closure of WMU 13 in 1966) as shown in Plate 1.
Area where "waste" observed in some boring logs but no other indications of waste deposition
"N" Street

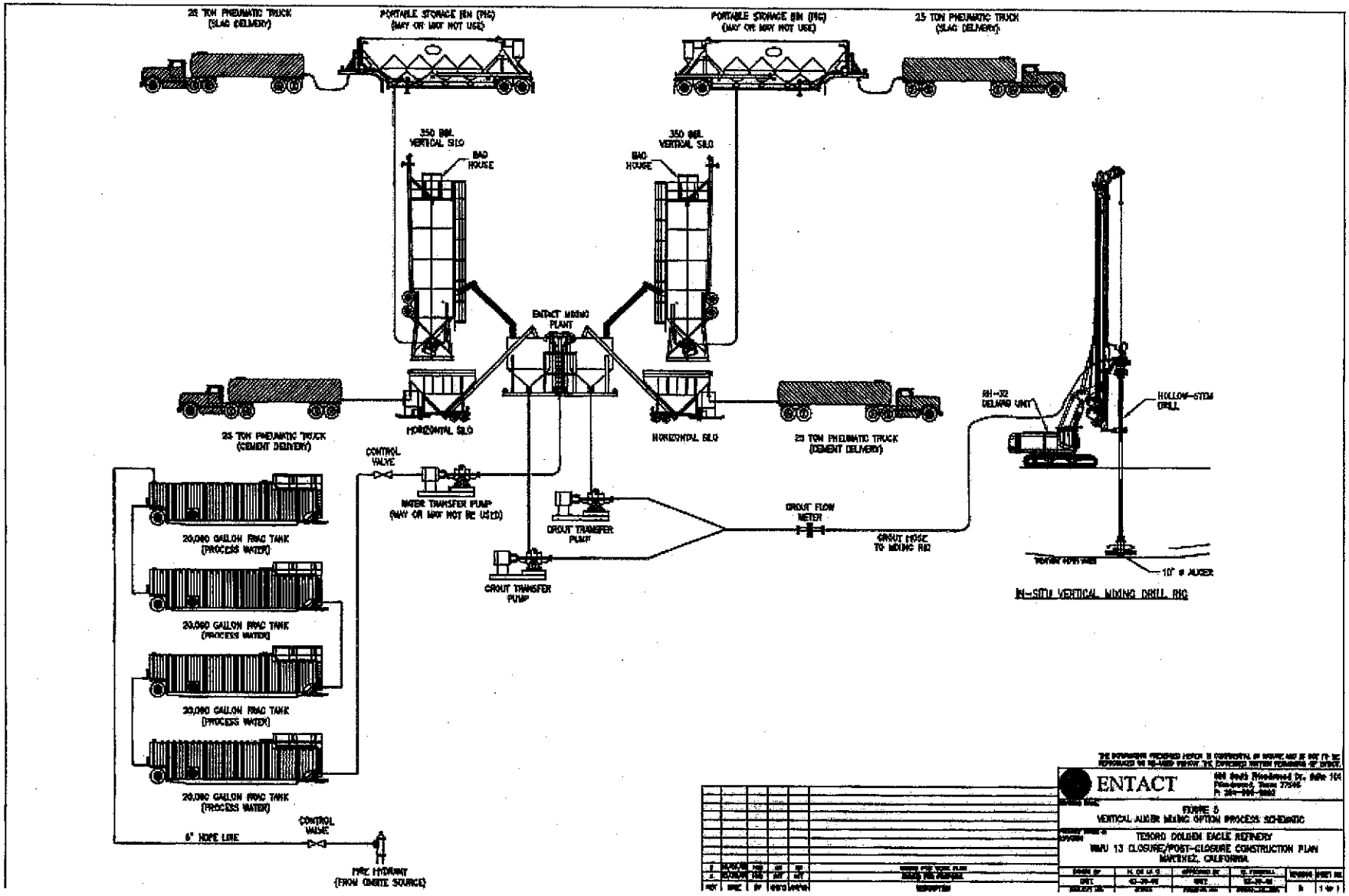
Closure Approach



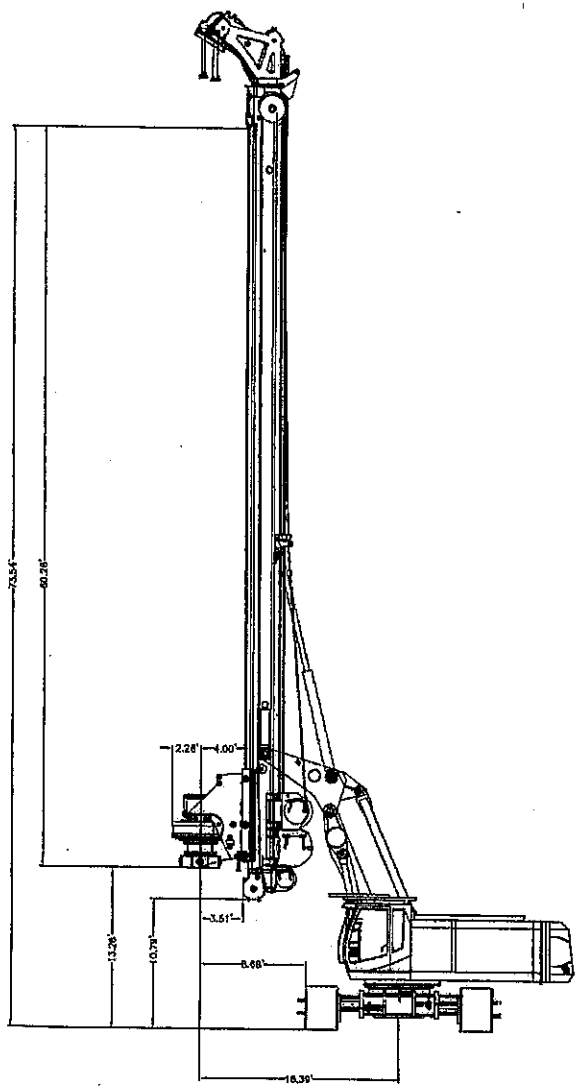
Waste treatment plan

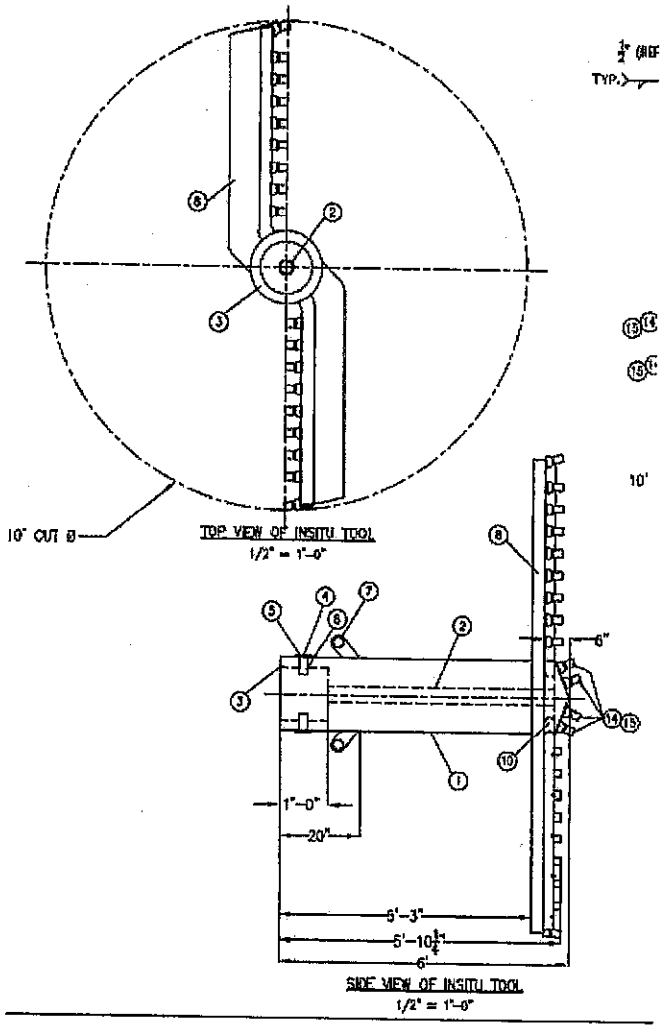


Batch Plant Setup

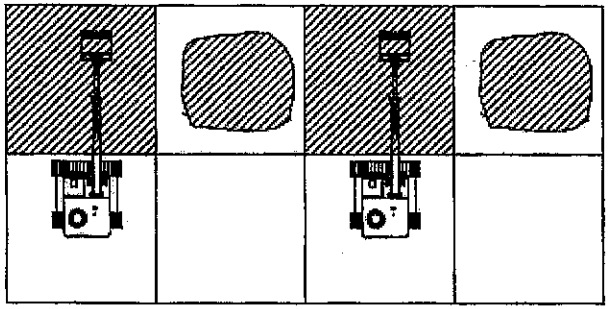


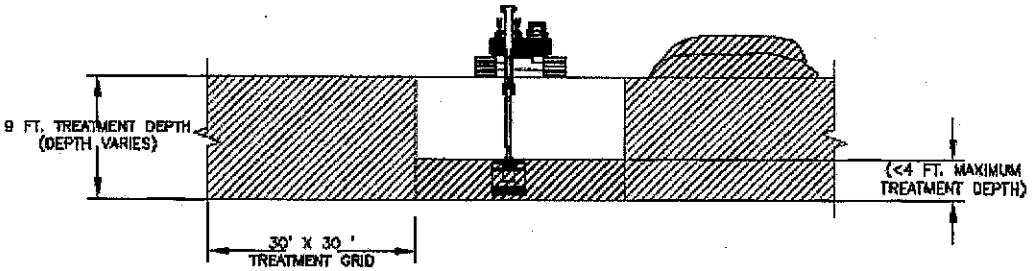
Delmag RH-20

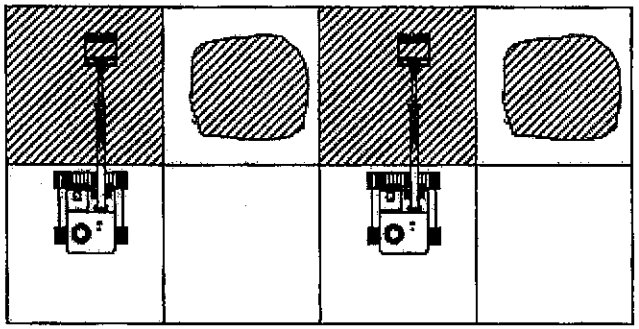


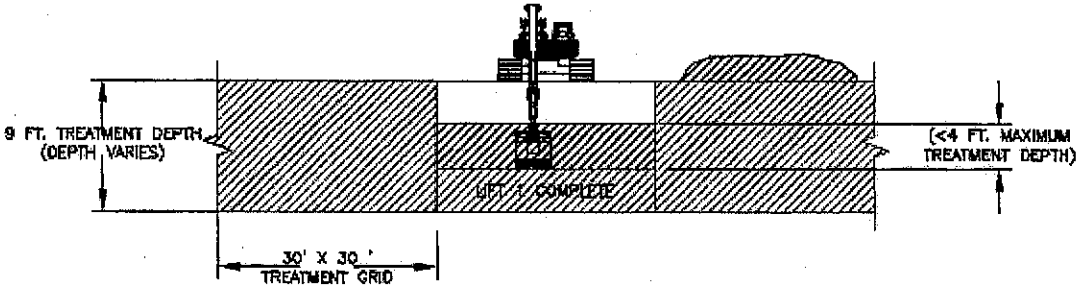

10' OUT Ø
TOP VIEW OF INSITU TOOL
1/2" = 1'-0"
1'-0"
20"
5'-3"
6'
SIDE VIEW OF INSITU TOOL
1/2" = 1'-0"

Excavator mixing (east area only)



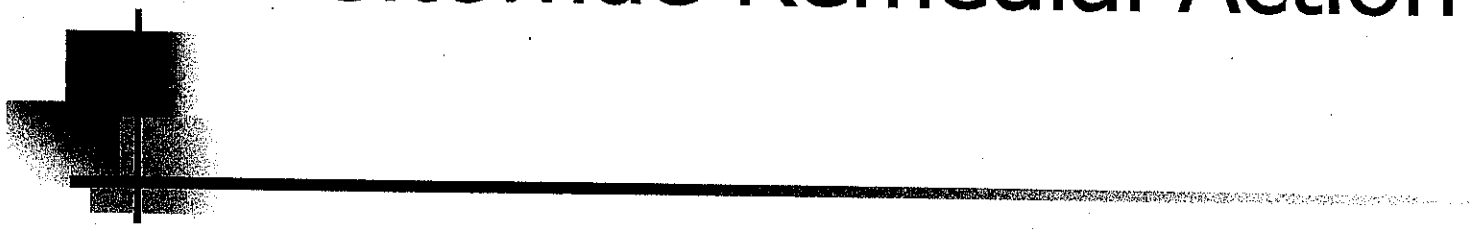






Amorco MTBE Remediation Project

Sitewide Remedial Action Plan



Project History

- Corroded Fill Line (Mid 1990s)
- MTBE groundwater Plume Identified (2005)
- Interim Groundwater Extraction Begun (2007)
- Treatment System In Place (2008)
- Site-wide RAP Submitted (July 2009)
- Expanded Controls (Being Implemented Now)

Site Challenges

1) Extraction has been from Point Localities

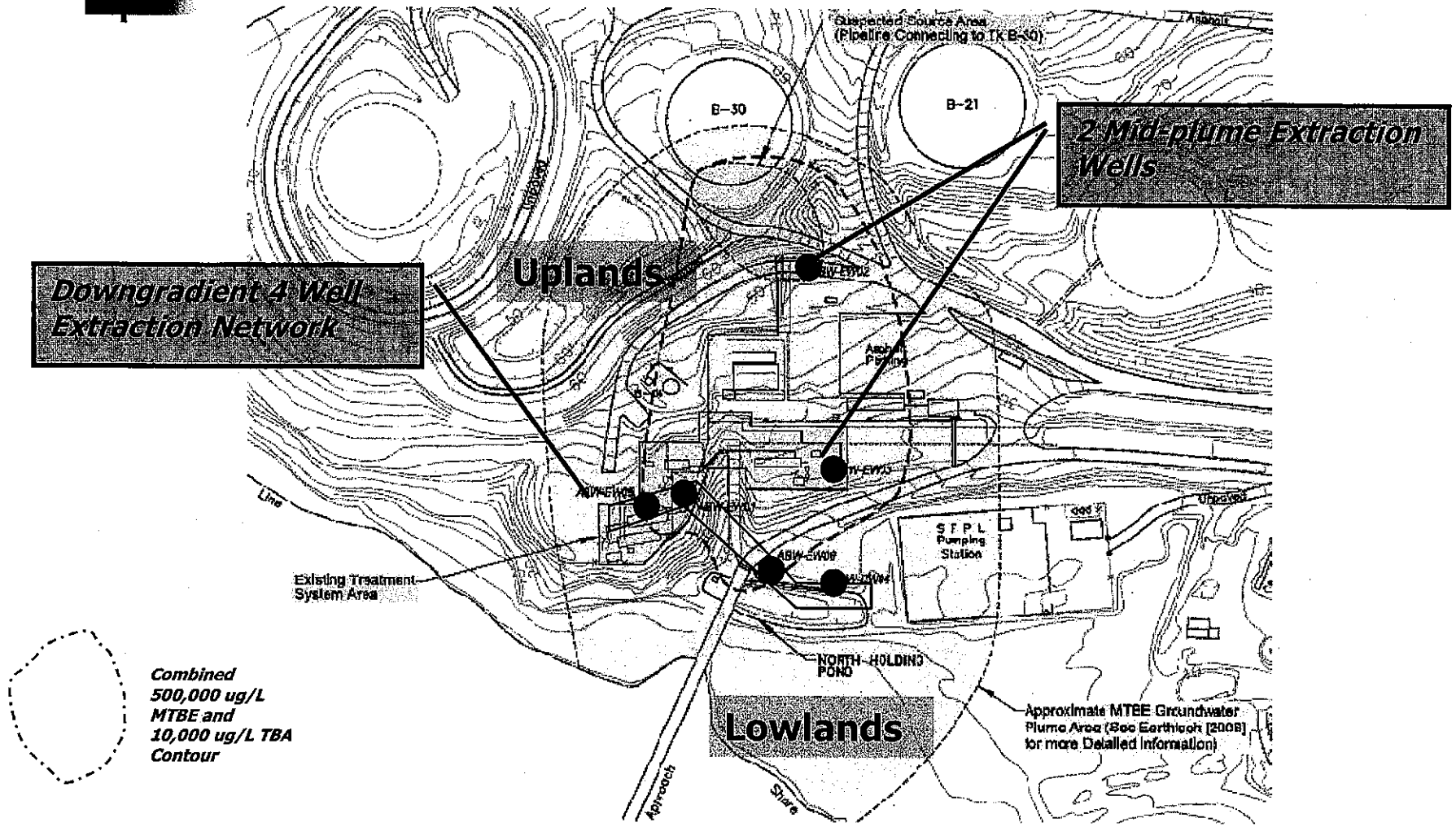
2) Yield/Flux of Groundwater has been Low and Potentially Decreasing

3) Mass Removal Fairly Small and Concentrations not Decreasing Readily

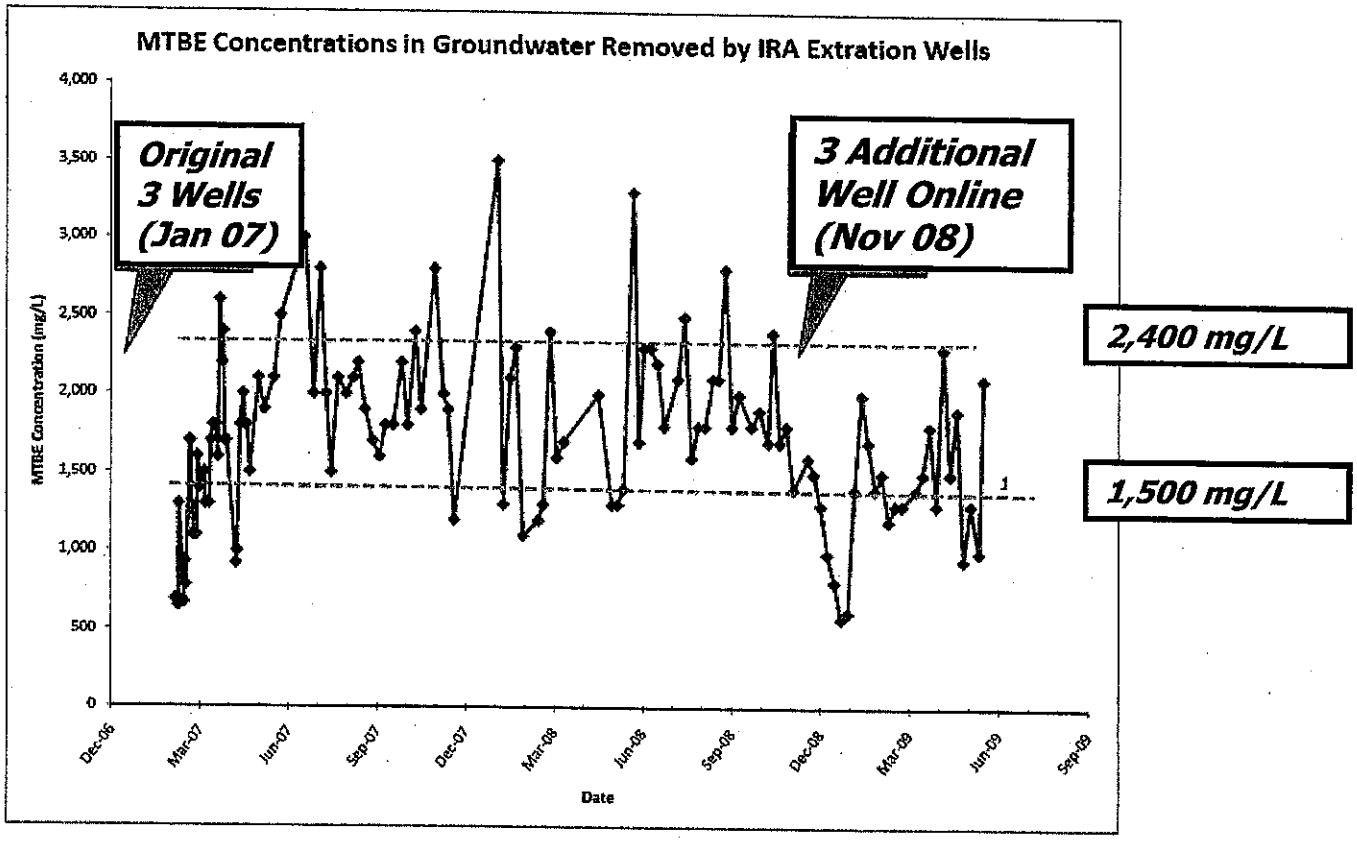
4) Current O&M Cost is Very High
($50,000 to $75,000month = ~ $700,000 per year)

5) Lowlands has not been Isolated from the Core Plume

Downgradient GW Capture / Collection
(w/ two opportunistic midplume points)



Influent Concentrations Over Time



- Generally Steady (w/ some fluctuations)
- Approx 1,500 to 2,400 mg/L

Needed a Revised Remedial Approach

Needs to...

- Involve a more *Robust, Downgradient* Control
- Take the Pressure off of Lowlands
- Target Decreasing Concentrations in the Plume Core
- Recognize that the Likelihood of MTBE persisting in groundwater is *High*

A 3-tierred Remedial Framework

I. Establishing Hydraulic Control of Plume

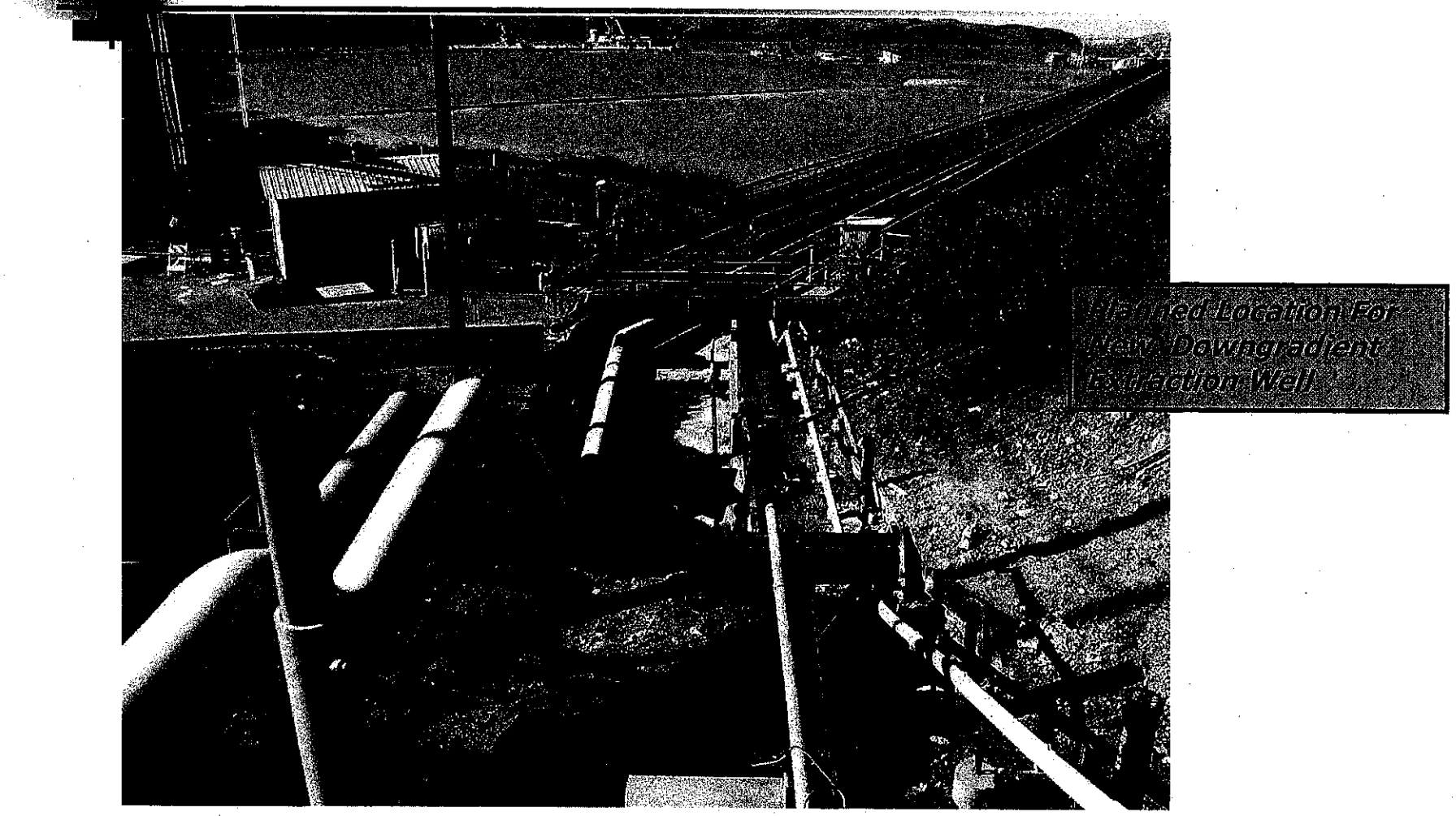
- Near the Uplands / Lowland Boundary

II. Reducing Long-term Potential of Plume Migrating to Lowlands

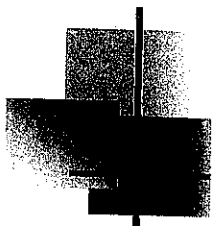
III. Reducing Oxygenate Concentrations in Plume Core by order-of-magnitude:

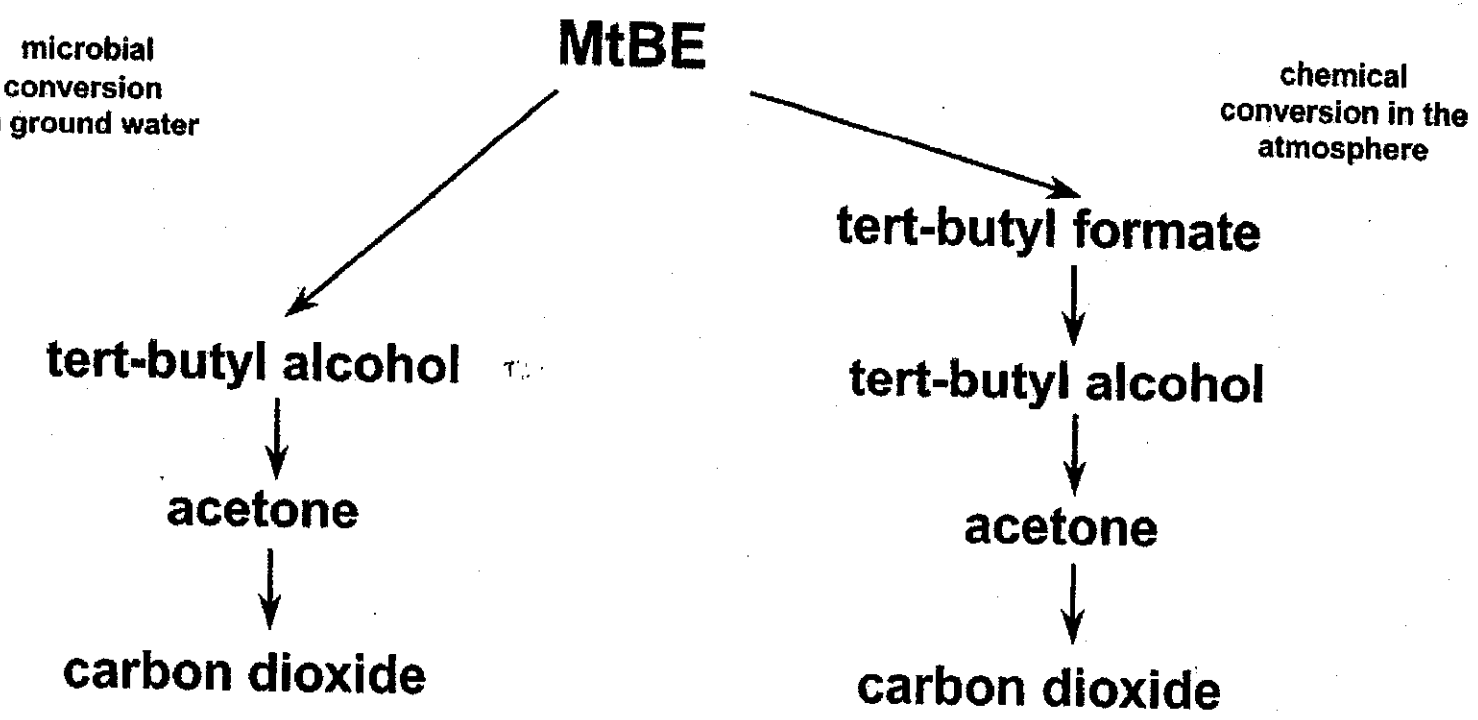
- Ensure protection of human health and environment
- More conducive to biodegradation

Planned Additional Extraction Well Location



Summary of the Degradation Pathway of MtBE





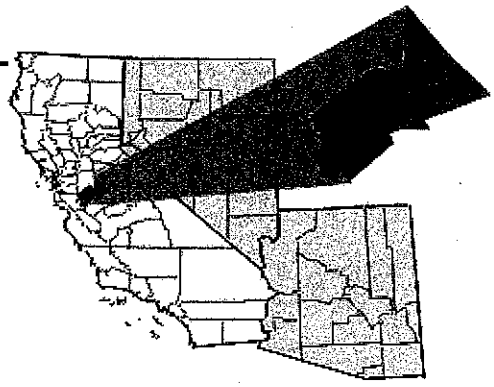
Zogorski et al. 1999

(Adapted from: Church and others, 1997, Method for determination of methyl *tert*-butyl ether and its degradation products in water: Environmental Science and Technology, vol. 31, no. 12, pp. 3723-3726.)

Region 9: Superfund

Last updated July 22nd, 2009

Valley Wood Preserving, Inc.



Link to a site area map

EPA #: CAD063020143

State: California(CA)

County: Stanislaus

City: 1½ miles southeast of Turlock

Congressional District: 18

Other Names: Other Names:

Bulletin Board

EPA Conducting a "Five-Year Review" of the Site Cleanup. See below for further information - if you have any comments or concerns about cleanup actions at the Valley Wood site that you would like considered in the review, please contact EPA (see below for contact information). Thanks!

On this page

Links

Description and History

NPL Listing History
NPL Status: Final
Proposed Date: 06/24/1988
Final Date: 03/31/1989
Deleted Date:

The Valley Wood Preserving, Inc. (VWP) Superfund site, a former wood preserving facility, is located at 2237 South Golden State Boulevard on the southeast side of Turlock, California. In 1973, VWP began wood preserving operations that involved pressure-treating wood with a water-based solution containing chromium, copper and arsenic. Wood preserving operations at the site ceased in 1979 because these activities had resulted in on-site soil and groundwater contamination and off-site groundwater contamination. The contaminants of concern at the site include hexavalent chromium and arsenic.

In 1989, EPA added the site to the National Priorities List and became the lead regulatory agency for cleanup of the site. On September 27, 1991, EPA issued a Record of Decision (ROD) identifying cleanup remedies for contaminated soil and groundwater. This cleanup plan was updated in 1994, 2003 and again in 2007. VWP has implemented soil and groundwater cleanup activities at the site, including excavation and off-site disposal of contaminated soil. Currently, only residual levels of groundwater contamination remain at the site.

Contaminants and Risks

Contaminated Media:


Groundwater


Soil and Sludges

Prior to cleanup activities, soil and groundwater were contaminated with hexavalent chromium and arsenic. Currently, only a localized plume of low-level contamination remains in shallow groundwater at the site. This contamination is being addressed as the final cleanup remedy at the site. As a result of cleanup actions, there are currently no threats to drinking water supplies, and the remaining low levels of soil contamination are safe for industrial and commercial uses of the property.

Who is Involved

This site is being addressed through Federal and potentially responsible parties' actions.

Investigation and Cleanup Activities

The cleanup at this site involved emergency actions and a long-term remedial cleanup of the entire site. Currently, only residual groundwater contamination remains to be addressed.


Emergency Actions: After closing the site, the company excavated and disposed of approximately 1,500 cubic yards of contaminated soil. During initial groundwater cleanup from 1979 to 1983, approximately 70,000,000 gallons of chromium-contaminated groundwater were extracted. The groundwater was treated by an electrochemical treatment process and then discharged to paved depressions for evaporation. The purpose of this action was to retard plume movement and to protect domestic wells downgradient from the site. Additionally, Valley Wood Preserving removed sludge from the tank that would be used to hold water from pumping for testing; drilled several wells, originally used for monitoring, and later used for groundwater extraction; removed underground storage tanks; and drilled three deep wells as an alternate source of drinking water for three homes.


EPA selected cleanup plans for soil and groundwater in the September 1991 ROD. The cleanup plan was modified in 1994, 2003 and in 2007.

Groundwater: The initial groundwater cleanup plan involved extracting contaminated groundwater, treating it above-ground with an electrochemical process to reduce the hexavalent chromium to trivalent chromium (a non-toxic, less mobile form of chromium), followed by additional treatment using activated alumina to remove residual arsenic. The treated groundwater was discharged into an infiltration pond on the VWP property, where the water eventually seeped back into the subsurface.

EPA modified the groundwater remedial action on December 9, 1994, in an Explanation of Significant Differences (ESD). The ESD modified the groundwater cleanup plan by allowing *in-situ* groundwater treatment through a site-wide pilot study. An *in-situ* treatment is an active underground treatment to reduce concentrations of remaining contamination. The ESD also proposed adding the technology to the groundwater remedy if the desired results of the pilot study were achieved. The *in-situ* treatment pilot study consisted of reinjecting treated groundwater into the aquifer and saturated soil in order to reduce hexavalent chromium concentrations in subsurface soil and groundwater. During the pilot study, VWP continued to operate the pump and treat system for groundwater consistent with the initial cleanup plan, but rather than discharging the treated water into the infiltration ponds, VWP amended the treated water with calcium polysulfide (an ionic reductant) and reinjected it into the groundwater through a series of injection wells. The added calcium polysulfide reductant reacted with the hexavalent chromium, *in-situ,* reducing it to trivalent chromium, the less toxic and less soluble form of chromium. Trivalent chromium precipitated out of the groundwater onto subsurface soil particles and remains in the subsurface at the site, where it no longer poses a threat to groundwater quality.

During the pilot study, residual calcium polysulfide from the *in-situ* treatment mobilized arsenic and manganese, and also generated sulfate, temporarily and locally causing increased concentrations of these contaminants in

groundwater beneath the site and down gradient of the VWP property. These temporary and localized concentration increases were expected as part of the pilot study.

The *in-situ* treatment of hexavalent chromium effectively reduced concentrations in groundwater such that EPA determined that the groundwater extraction system could be shut down. The groundwater treatment system has been dismantled and removed from the site. Currently, low levels of hexavalent chromium and arsenic remain in groundwater at levels above cleanup goals.

EPA modified the groundwater remedial action again on March 30, 2007, in a second ROD Amendment. This ROD Amendment #2 modifies the previously selected groundwater remedy for treating contaminated groundwater at the Site. The revisions affect both the groundwater cleanup standards and cleanup methodology selected in the 1991 ROD and revisions.

The groundwater remedy outlined in this ROD Amendment #2 provides for: a) *in-situ* treatment to address residual levels of arsenic contamination in groundwater beneath and downgradient of the Site, b) monitored natural attenuation to address residual hexavalent chromium, any remaining levels of arsenic following the *in-situ* treatment, and secondary contaminants generated by the *in-situ* treatment, and c) a revised cleanup goal of 10 micrograms per liter (µg/L) for arsenic in groundwater impacted by Site activities.

Soil: The 1991 Record of Decision selected a cleanup plan for soil which was amended in September 2003 when EPA issued a ROD Amendment. The soil remedy initially selected in the ROD was to excavate the contaminated soil, fix and stabilize the hazardous substances with a stabilizing agent and backfill the fixed soils into the excavated areas. The ROD Amendment revised the cleanup standards for soil consistent with the expected future industrial use of the property. It also revised the cleanup plan to require excavation and off-site disposal of contaminated soil that exceeded the revised cleanup standards. A deed restriction was also required to restrict the land use activities on the VWP property to industrial use. All soil cleanup actions have been completed at the site.

In 1989, the EPA and Valley Wood Preserving entered into a Consent Order which required the company to conduct emergency actions including the on-site removal and treatment of contaminated groundwater. The potentially responsible parties continued to extract and treat groundwater in accordance with the Consent Order until the system was dismantled in 2004. In 1990, Valley Wood Preserving and the EPA entered into a Consent Order requiring the company to conduct an investigation of the site. In 2004, EPA issued a Unilateral Administrative Order to Valley Wood Preserving to design and implement the soil remedy. The Work Plan included removal of contaminated soil from the property, off-site disposal, and back-filling with clean material. EPA issued a Unilateral Administrative Order to Valley Wood Preserving in September 2007 to design and implement the final groundwater remedy. The Work Plan for implementing the final groundwater remedy includes *in-situ* treatment to address residuals arsenic contamination in groundwater followed by Monitored Natural Attenuation to address any remaining arsenic, hexavalent chromium and secondary constituents of interest that are the result of *in-situ* treatment process.

Cleanup Results to Date

Removing tanks, contaminated soil, and treating groundwater have significantly reduced the potential for exposure to site contaminants at the Valley Wood Preserving, Inc. site.

EPA has begun the initial five-year review of cleanup actions undertaken at the Valley Wood Superfund Site in Turlock, California. The review will evaluate whether the cleanup actions for the Site remain protective of human health and the environment.

When EPA's cleanup remedy leaves some waste in place or the remedy will take longer than five years to complete, the Superfund law requires an evaluation of the protectiveness of remedial systems every five years. The purpose of the five-year review is to evaluate how the constructed remedy is operating and to measure the progress towards achieving the Site's cleanup objectives. Because there are still traces of groundwater contamination, five year reviews will continue until the contaminant levels have met remedial goals and the groundwater has been restored to a level that supports its designated beneficial uses.

Upon completion of the review, a copy of the final report will be placed in the local information repository listed below and a notice will appear announcing the completion of the Five-Year Review Report in the local paper. EPA will monitor the Site and conduct additional five-year reviews until the Site has been sufficiently cleaned up to allow unrestricted use.

Potentially Responsible Parties

Potentially responsible parties (PRPs) refers to companies that are potentially responsible for generating, transporting, or disposing of the hazardous waste found at the site.

Online information about the PRPs for the site is not yet available.

Documents and Reports

Administrative Records

Remedial Site

Remedial, Suppl #6

Fact Sheets

08/01/04 Soil Cleanup Update

01/01/07 EPA ANNOUNCES PROPOSED PLAN FOR FINAL GROUNDWATER REMEDY

Records of Decision

09/27/91 Record of Decision

12/09/94 Explanation of Differences

09/29/03 Amendment #1 to the Record of Decision

03/01/07 Amendment #2 to the Record of Decision

Community Involvement

Public Meetings:
EPA is currently in the process of performing a five year review of the site cleanup. If you have any comments or concerns about Valley Wood's Site cleanup plan that you would like considered in the review, EPA is always interested in hearing from you. Please contact Project Manager David Stensby or Community Involvement Coordinator Leana Rosetti at the numbers below. If you would like to be added to our mailing list and receive future fact sheets, please contact Leana Rosetti.

After the 5 year review report is completed, which is estimated to be in the summer of 2009, it will be available to the public in the information repository listed below.

Public Information Repositories

The public information repositories for the site are at the following locations:

Stanislaus County Library Turlock
Branch 550 Minaret Avenue
Turlock, CA 95380 (209) 664-8100

The most complete collection of documents
is the official EPA site file, maintained at

the following location:

Superfund Records Center
Mail Stop SFD-7C
95 Hawthorne Street, Room 403
San Francisco, CA 94105
(415) 536-2000

Enter main lobby of 75 Hawthorne street,
go to 4th floor of South Wing Annex.

Additional Links

Contacts

	Name	Phone Number	Email	Address
EPA Site Manager	David Stensby	415-972-3246	Stensby.David@epa.gov	Mail Code SFD71 75 Hawthorne Street San Francisco, CA 94105
EPA Community Involvement Coordinator	Leana Rosetti	415-972-3070 1-800-231-3075	Rosetti.Leana@epa.gov	Mail Code SFD63 75 Hawthorne Street

				San Francisco, CA 94105
EPA Public Information Center		415-947-8701	r9.info@epa.gov	
State Contact	McKinley Lewis, Jr. Department of Toxic Substances Control	916-255-3625		Northern California Cleanup Operations Branch 8800 Cal Center Drive, Suite 3 Sacramento, CA 95826
PRP Contact				
Community Contact				
Other Contacts				
After Hours (Emergency Response)	US EPA	(800) 424-8802		

EPA VALLEY WOOD PRESERVING SUPERFUND SITE

U.S. Environmental Protection Agency \$ Region 9 \$ San Francisco, CA \$ January 2007

EPA ANNOUNCES PROPOSED PLAN FOR FINAL GROUNDWATER REMEDY

This Proposed Plan identifies the United States Environmental Protection Agency's (EPA's) Preferred Alternative for cleaning up residual contaminated groundwater at the Valley Wood Preserving Superfund Site located in Turlock, California (see Figure 1) and provides the rationale for this preference. In addition, this Plan includes summaries of other cleanup alternatives evaluated for use at this site. The U.S. Environmental Protection Agency (EPA), the lead agency for site activities, and the California Department of Toxic Substances Control (DTSC), the support agency, together are issuing this plan. EPA, in consultation with DTSC, will select a final remedy for the site after reviewing and considering all information submitted during the 30-day public comment period. EPA, in consultation with DTSC, may modify the Preferred Alternative or select another response action presented in this Proposed Plan based on new information or public comments. Therefore, the public is encouraged to review and comment on all the alternatives presented in this Proposed Plan.

EPA is issuing this Proposed Plan as part of its public participation responsibilities under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA Section 117a) and Section 300.430(f)(2) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). This Proposed Plan summarizes information that can be found in greater detail in the Focused Feasibility Study, dated January 19, 2007 and other documents contained in the Administrative Record file for this site. EPA and DTSC encourage the public to review these documents to gain a more comprehensive understanding of the site and the Superfund activities that have been conducted at the site. Copies of the documents are available for review at the Information Repositories listed on this page.

Mark Your Calendar – Dates to Remember

PUBLIC COMMENT PERIOD

February 7, 2007 – March 8, 2007

U.S. EPA will accept written comments on the Proposed Plan during the public comment period. Written comments must be postmarked or emailed no later than March 8, 2007. See contact information on page 10.

PUBLIC MEETING ON PROPOSED PLAN

EPA will hold a public meeting to explain the Proposed Plan and all of the alternatives presented in the Focused Feasibility Study. Oral and written comments will also be accepted at the meeting. The meeting will be held on Tuesday, February 13, 2007 at 7 pm at the Veterans of Foreign Wars Building located at 1405 East Linwood Avenue in Turlock, CA.

For more information, selected documents are located at the following locations:

Stanislaus County Library
Turlock Branch
550 Minaret Avenue
Turlock, CA 95380
Phone (209) 667-1666

Hours:
Monday - Thursday 10 am - 9 pm
Friday - Saturday 10 am - 5 pm
Sunday 12(noon) - 5 pm

U.S. EPA Superfund Records Center
95 Hawthorne St., Suite 403S
San Francisco, CA. 94104
Phone (415) 536-2000

Hours:
Monday-Friday 8am to 5 p.m.

SITE BACKGROUND

The Valley Wood Preserving, Inc. (VWP) Superfund site, a former wood preserving facility, is located at 2237 South Golden State Boulevard on the southeast side of Turlock, California (see Figure 1). In 1973, VWP began operations that involved pressure-treating wood with a water-based

solution containing chromium, copper and arsenic. Wood preserving operations at the site ceased in 1979 because these activities had resulted in on-site soil and groundwater contamination and off-site groundwater contamination. The contaminants of concern at the site include hexavalent chromium and arsenic.

In 1989, EPA added the site to the **National Priorities List**[1] and became the lead regulatory agency for cleanup of the site. On September 27, 1991, EPA issued a Record of Decision (ROD) identifying cleanup remedies for contaminated soil and groundwater. This cleanup plan was updated in 1994 and again in 2003. VWP has implemented soil and groundwater cleanup activities at the site, including excavation and off-site disposal of contaminated soil. Currently, only residual levels of groundwater contamination remain at the site.

SITE CHARACTERISTICS

In 1990 and 1991, VWP conducted a Remedial Investigation/Feasibility Study (RI/FS) under EPA's oversight. The RI/FS identified the types, quantities and locations of contaminants and developed ways to address the contamination problems. The RI indicated that:

- $ Hexavalent chromium and arsenic were the primary contaminants of concern detected in subsurface soil and groundwater at the VWP facility
- $ Hexavalent chromium was also detected in groundwater **downgradient** of the facility
- $ Technologies were available to remediate these contaminants

[1] Words in **bold** are defined in the glossary on page 9.

PRIOR REMEDIAL ACTIONS AT THE SITE

EPA selected cleanup plans for soil and groundwater in the September 1991 ROD. The groundwater cleanup plan involved extracting contaminated groundwater, treating it above-ground with an electrochemical process to reduce the hexavalent chromium to trivalent chromium (a non-toxic, less mobile form of chromium), followed by additional treatment using activated alumina to remove residual arsenic. The treated groundwater was discharged into an infiltration pond on the VWP property where the water eventually seeped back into the subsurface.

EPA modified the groundwater remedial action on December 9, 1994 in an Explanation of Significant Differences (ESD). The ESD modified the groundwater cleanup plan by allowing an ***in-situ*** groundwater treatment through a site-wide pilot study. The ESD also proposed adding the technology to the groundwater remedy if the desired results of the pilot study were achieved. The *in-situ* treatment pilot study consisted of reinjecting treated groundwater into the aquifer and saturated soil in order to reduce hexavalent chromium concentrations in subsurface soil and groundwater. During the pilot study, VWP continued to operate the pump and treat system for groundwater consistent with the

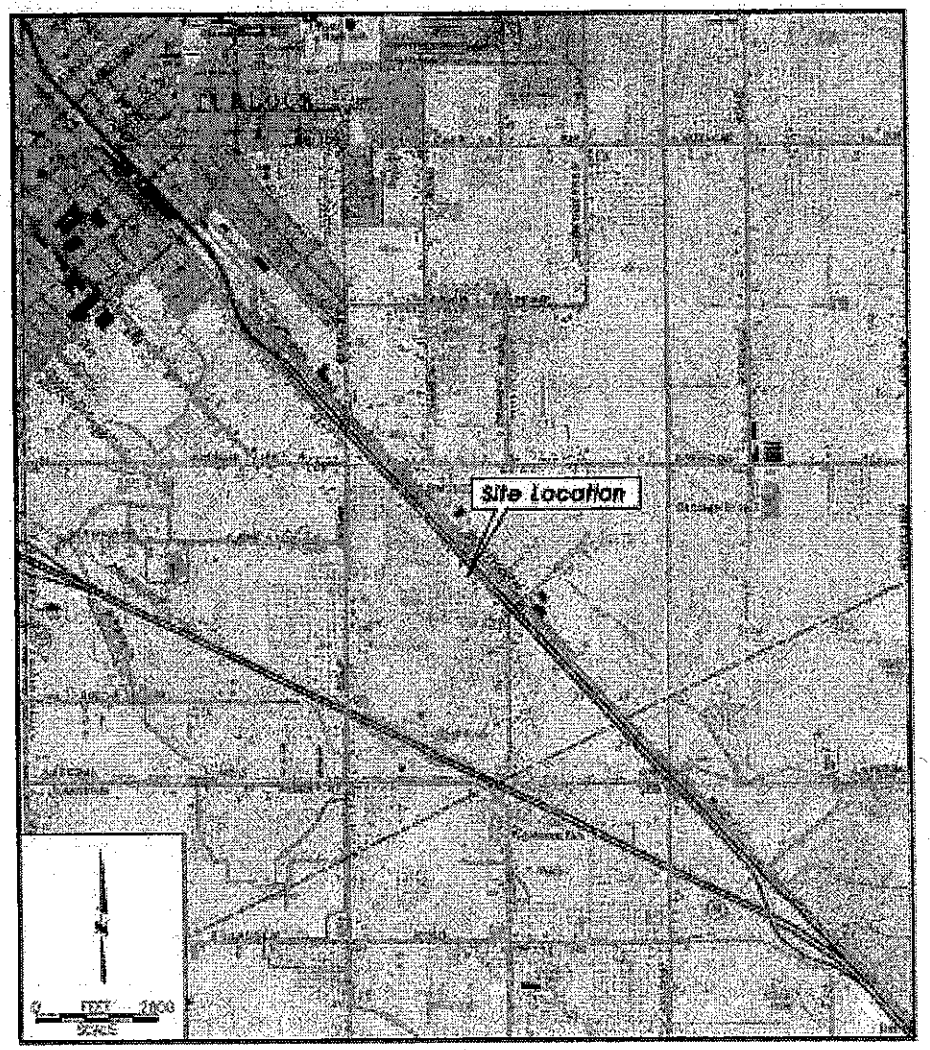


Figure 1: Site Location Map

initial cleanup plan, but rather than discharging the treated water into the infiltration ponds, VWP amended the treated water with calcium polysulfide (an ionic reductant) and also reinjected it into the groundwater through a series of injection wells. The added calcium polysulfide reductant reacted with the hexavalent chromium, *in-situ*, reducing it to trivalent chromium, the less toxic and less soluble form of chromium. Trivalent chromium precipitated out of the groundwater onto subsurface soil particles and remains in the subsurface at the site where it no longer poses a threat to groundwater quality.

During the pilot study, residual calcium polysulfide from the *in-situ* treatment locally mobilized arsenic and manganese, and also generated sulfate, temporarily and locally causing increased concentrations of these contaminants in groundwater beneath the site and down gradient of the VWP property. These temporary and localized concentration increases were expected as part of the pilot study.

The *in-situ* treatment of hexavalent chromium effectively reduced concentrations in groundwater such that EPA determined that the groundwater extraction system could be shut down. The groundwater treatment system has been dismantled and removed from the site. Currently, low levels of hexavalent chromium and arsenic remain in groundwater at levels above cleanup goals and warrant consideration of additional remedial action (see Figures 2 and 3).

On September 29, 2003, EPA issued a ROD Amendment modifying the cleanup plan for soil. The soil remedy initially selected in the ROD was to excavate the contaminated soil, fix and stabilize the hazardous substances with a stabilizing agent and backfill the fixed soils into the excavated areas. The ROD Amendment revised the cleanup standards for soil consistent with the expected future industrial use of the property. It also revised the cleanup plan to require excavation and off-site disposal of contaminated soil that exceeded the revised cleanup standards. A deed restriction was also required to restrict the land use activities on the VWP property to industrial use.

SCOPE AND ROLE OF THE PROPOSED ACTION

This proposed remedial action will be the final remedial action for the site. The Remedial Action Objective for groundwater for the site is to restore groundwater to its beneficial use within a reasonable time frame. The proposed remedial action will address residual hexavalent chromium and arsenic in groundwater beneath the site. Contaminated soil and most of the off-property contaminated groundwater have been addressed through prior remedial actions.

The remedial action will meet final site cleanup goals for groundwater that are consistent with federal and state **Maximum Contaminant Levels (MCLs)** for drinking water. The cleanup standard for hexavalent chromium is 50 parts per billion (**ppb**), which corresponds to the California MCL for total chromium in water. EPA is proposing to revise the site cleanup goal for arsenic to 10 ppb for shallow groundwater where site impacts have been observed, which is consistent with the revised federal MCL for arsenic. The cleanup goal for arsenic would thus be lowered from the original 1991 cleanup plan. There is a deeper groundwater zone where no facility contamination has migrated but where naturally-occurring arsenic concentrations are higher than the revised federal MCL, in the range of 20 to 25 ppb. This zone is not addressed by the proposed cleanup plan.

Through the use of continued *in-situ* treatment technology and **monitored natural attenuation,** the groundwater is expected to meet remedial action goals in approximately four years.

SUMMARY OF SITE RISKS

Contaminated groundwater represents the primary remaining source of risk at the site. The proposed response action will return groundwater to its beneficial uses within a reasonable period of time. Soil contamination has been addressed through prior remedial actions. The remaining groundwater contamination is not widespread and the concentrations are not significantly above cleanup goals. No domestic wells are contaminated and no one is exposed to contaminated groundwater.

REMEDIAL ACTION OBJECTIVES

The Remedial Action Objectives outlined in the original 1989 Record of Decision for the site were to:

- $ Restore the groundwater to its beneficial uses within a reasonable time frame
- $ Prevent contaminants in soil from leaching into the groundwater

This proposed action continues to addresses the first objective by proposing to remediate residual concentrations of hexavalent chromium and arsenic in groundwater. The *in-situ* treatment of hexavalent chromium has effectively reduced contaminant concentrations in groundwater.

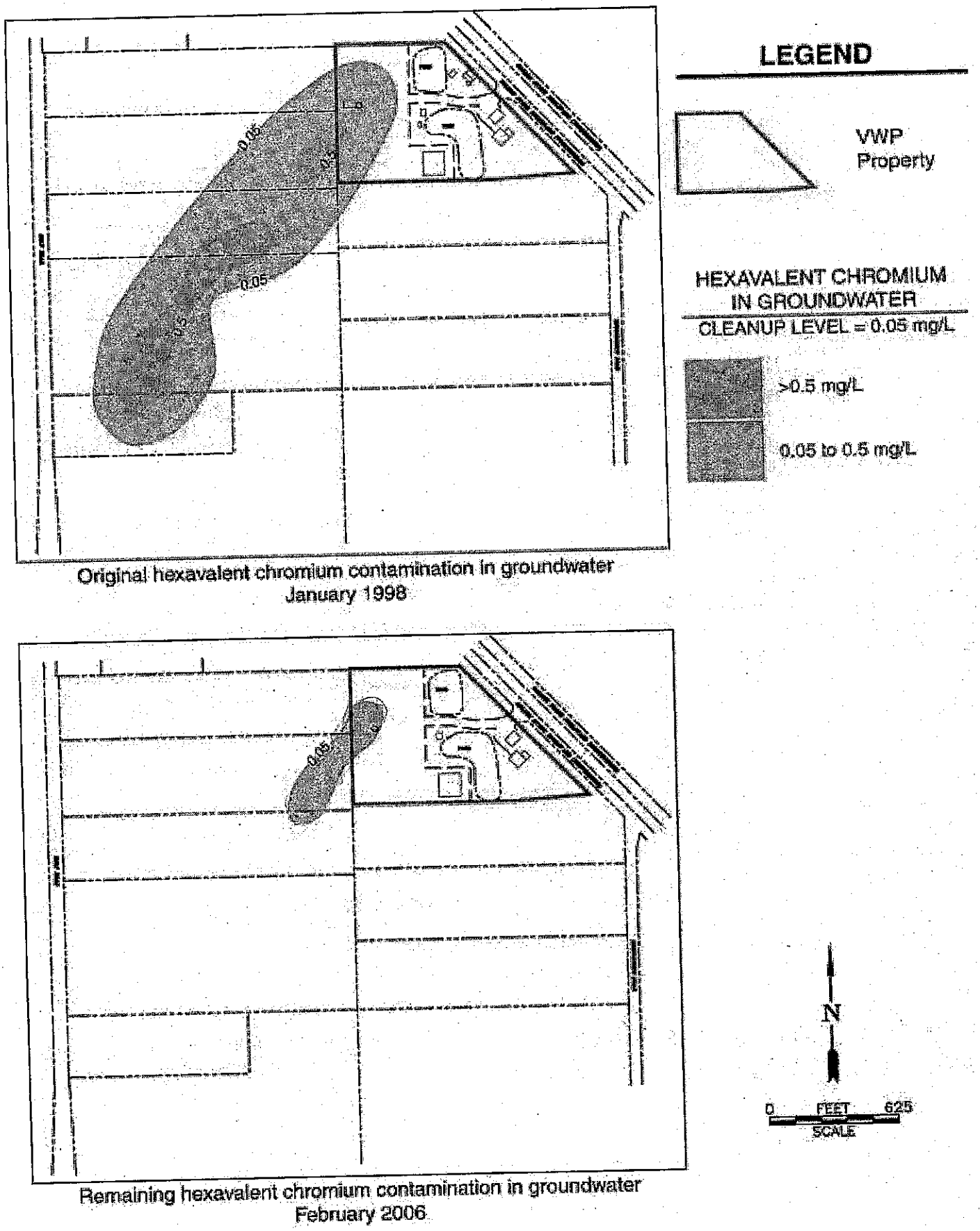


Figure 2: Hexavalent chromium concentrations in groundwater before and after *In-Situ* treatment

SUMMARY OF ALTERNATIVES

The following remedial alternatives are evaluated in the Focused Feasibility Study:

Remedial Alternatives Evaluated for Continued Groundwater	
1. No Action	Under this alternative, no further action would be taken.
2. Monitored Natural Attenuation	This alternative relies on natural processes (biological or geochemical) to clean-up contamination in groundwater. This alternative includes a monitoring program to verify that the natural attenuation is occurring according to predictions.
3. *In-Situ* Treatment and Monitored Natural Attenuation	This alternative involves an active underground treatment to reduce concentrations of remaining contamination. This alternative also relies on natural processes (biological or geochemical) in addition to the *in-situ* treatment to cleanup residual contamination in groundwater. This alternative includes a monitoring program assess progress towards cleanup goals.

Table 1: Remedial alternatives evaluated for continued groundwater

Very low concentrations of hexavalent chromium remain in groundwater beneath the site and trend analyses conducted during the Focused Feasibility Study indicate that these levels will naturally decrease within the next few years to concentrations below the chromium MCL. Arsenic concentrations remain at levels that warrant consideration of additional groundwater remedial action to achieve Remedial Action Objectives within a reasonable time frame.

As described in the Focused Feasibility Study, VWP proposes to reduce concentrations of arsenic in groundwater through *in-situ* treatment followed by monitored natural attenuation. The proposed *in-situ* treatment will result in the arsenic chemically adsorbing to the soil matrix thereby reducing concentrations in groundwater. The soil Remedial Action Objectives have been met through prior cleanup work completed at the site.

EVALUATION OF ALTERNATIVES

Nine criteria are used by EPA to evaluate and compare remediation alternatives in order to select a remedy (See Tables 2 and 3). This Proposed Plan summarizes the performance of each alternative against the nine criteria noting how each alternative compares to the other options under consideration. The "Detailed Analysis of Alternatives" can be found in the Focused Feasibility Study dated January 19, 2007 which is available for review at the Turlock Branch of the Stanislaus County Library and at the EPA's Superfund Records Center.

EPA's preferred alternative for cleanup of the residual groundwater contamination at the Valley Wood Preserving, Inc. site is Alternative 3: *In-Situ* Treatment and Monitored Natural Attenuation. The alternatives evaluated are:

Alternative 1 – No Action

EPA's guidance requires this alternative to be evaluated to establish a baseline for comparison. Under this Alternative, no further action would be taken to clean up or monitor contaminated groundwater.

Alternative 2 – Monitored Natural Attenuation

This remedial alternative relies on natural processes (biological and geochemical) to clean up or attenuate contamination in groundwater. There are several requisite conditions that must be in effect for Monitored Natural Attenuation to be effective at the site. These requisite conditions include: removal of contaminant sources and presence of natural attenuation capabilities in the subsurface.

VWP implemented the soil remedy in July 2004 which removed the source of arsenic and hexavalent chromium contamination through excavation and off-site disposal of contaminated soil. Natural attenuation capabilities appear to be present at the site since hexavalent chromium and arsenic concentrations in groundwater have been declining with time (even after the termination of the pump and treat system in 2004).

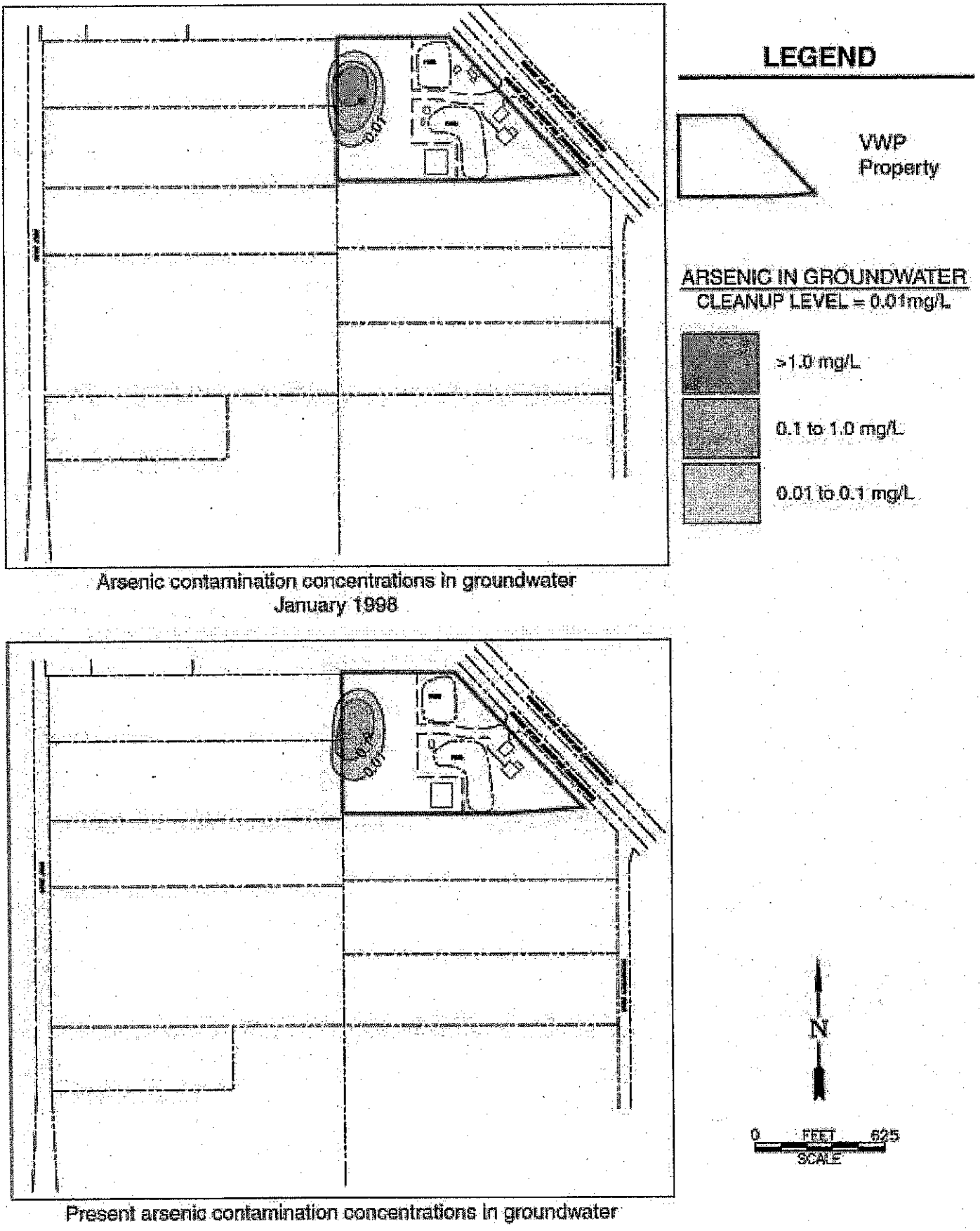


Figure 3: Arsenic concentrations in groundwater

This alternative requires continued groundwater monitoring to demonstrate that natural attenuation is occurring. The trend analysis included in the Focused Feasibility Study indicates that this alternative may take more than 10 years (with a maximum of 30 to 40 years) to achieve cleanup goals. The longer time period is associated with reaching arsenic cleanup goals in the western area of the VWP property.

Alternative 3 – *In-Situ* Treatment and Monitored Natural Attenuation

This alternative is the preferred alternative for the site and involves addressing residual concentrations of arsenic in groundwater with an *in-situ* treatment. There are several different *in-situ* treatment options that may be appropriate for addressing arsenic in groundwater at the site. Specific *in-situ* treatment will be evaluated through a **Treatability Study** conducted in the Remedial Design phase of the project. *In-situ* treatment options may include introducing oxygen into the aquifer to promote the adsorption of arsenic onto soil particles. Oxygen can also be introduced by **air sparging** and/or the use of calcium peroxide or sodium persulfate, a time-release form of oxygen addition. Additionally, substances specifically designed for arsenic cleanup can be added to the groundwater to reduce the concentrations of arsenic.

The hexavalent chromium concentrations in groundwater are currently low enough that additional *in-situ* treatment is not necessary to achieve cleanup goals. The remaining hexavalent chromium concentrations will be addressed through Monitored Natural Attenuation.

Evaluation Criteria for Superfund Remedial Alternatives
Overall Protection of Human Health and the Environment determines whether an alternative eliminates, reduces, or controls threats to public health and the environment through institutional controls, engineering controls or treatment.
Compliance with ARARs evaluates whether the alternative meets Federal and State environmental statutes, regulations, and other requirements that pertain to the site or whether a waiver is justified.
Long-term Effectiveness and Permanence considers the ability of an alternative to maintain protection of human health and the environment.
Reduction of Toxicity, Mobility or Volume of Contaminants through Treatment evaluates an alternative's use of treatment to reduce the harmful effects of principal contaminants, their ability to move in the environment and the amount of contamination present.
Short-term Effectiveness considers the length of time needed to implement an alternative and the risks the alternative poses to workers, residents and the environment during implementation.
Implementability considers the technical and administrative feasibility of implementing the alternative, including factors such as the relative availability of goods and services.
Cost includes estimated capital and annual operations and maintenance costs as well as present worth cost. Present worth cost is the total cost of an alternative over time in terms of today's dollar value. Cost estimates are expected to be accurate within a range of +50 to -30 percent.
State Acceptance considers whether the State concurs with, opposes or has no comment on the preferred alternative as described in the Focused Feasibility Study and Proposed Plan.
Community Acceptance considers whether the local community agrees with EPA's analyses and preferred alternative. Comments received on the Proposed Plan are an important indicator of community acceptance.

Table 2: Evaluation criteria for Superfund remedial alternatives

VALLEY WOOD PRESERVING RESIDUAL GROUNDWATER
ALTERNATIVE EVALUATION TABLE

Evaluation Criteria	Alternative 1 No Action	Alternative 2 Monitored Natural Attenuation	Alternative 3 PREFERRED *In-Situ* Treatment and Monitored Natural Attenuation
Overall Protection of Human Health and the Environment	Does not meet criteria	Fully meets criteria	Fully meets criteria
Compliance with ARARs	Does not meet criteria	Fully meets criteria	Fully meets criteria
Long-term Effectiveness and Permanence	Does not meet criteria	Fully meets criteria	Fully meets criteria
Reduction of Toxicity, Mobility or Volume of Contaminants through Treatment	Does not meet criteria	Does not meet criteria as MNA relies on natural processes to reduce toxicity, mobility and volume, not treatment.	Fully meets criteria
Short-term Effectiveness	Does not meet criteria	Partially meets criteria	Fully meets criteria
Implementability	Does not meet criteria	Fully meets criteria	Fully meets criteria
Cost	$0	$414,995	$299,740
State Acceptance	DTSC and Regional Water Quality Control Board have verbally concurred with EPA's preferred alternative.		
Community Acceptance	Community acceptance of the preferred alternative will be evaluated after the public comment period.		

Table 3: Valley Wood Preserving groundwater alternative evaluation table

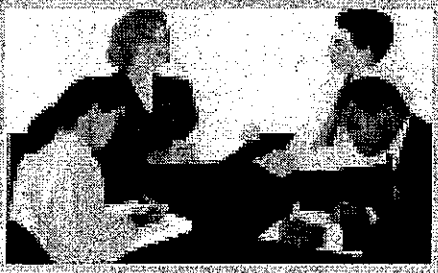
This remedial alternative also relies on monitored natural attenuation (described above) following *in-situ* treatment to meet cleanup goals. The trend analysis included in the Focused Feasibility Study shows that this alternative is expected to take approximately four years to meet cleanup goals.

PREFERRED ALTERNATIVE

EPA's Preferred Alternative for completing the cleanup of residual groundwater contamination at the Valley Wood Preserving, Inc. site is Alternative 3 – *In-Situ* Treatment and Monitored Natural Attenuation. This alternative is expected to achieve cleanup goals sooner than the other alternatives and is also expected to cost less than Alternative 2. EPA believes the preferred alternative remedy is protective of human health and the environment and would result in meeting the groundwater remedial action objective for the site, which is to restore groundwater to its beneficial uses within a reasonable time period.

COMMUNITY PARTICIPATION

Community input is an important part of the Superfund decision-making process. You are encouraged to comment on the Proposed Plan either in person at the February 13, 2007 public meeting or in writing during the public comment period (February 7, 2007 – March 7, 2007). Please send written comments to Dana Barton (see contact information on page 10).



Glossary

Air sparging - Injecting air or oxygen into an aquifer.

ARARs - Applicable or relevant and appropriate requirements. ARARs are promulgated, or legally enforceable federal and state requirements.

Contaminants of Concern - Any contaminant that is expected to be present at the site ... Equivalent Term: regulated substance of concern.

Downgradient - The direction that groundwater flows; similar to "downstream" for surface water.

In-situ - Latin term meaning "in the original place." In this case, it refers to a groundwater treatment component that promotes the chemical reactions of the treatment process to occur below ground rather than in an above-ground tank.

Maximum Contaminant Level (MCL) - The highest level of a contaminant that is allowed in drinking water.

Monitored Natural Attenuation (MNA) - refers to the reliance on natural attenuation processes, within the context of a carefully controlled and monitored site cleanup, to achieve site-specific remedial objectives.

National Priorities List – A list of the most serious hazardous waste sites in the United States that require long-term cleanup. These sites have been evaluated according to the Hazard Ranking System criteria and qualify for expenditure of Superfund money if there is no party to pay for the cleanup.

Part per billion (ppb) – One part contaminant in one billion parts substance (soil, water, etc.) For water, it is equivalent to one microgram per liter.

Treatability Study - The testing and documentation activities to evaluate the effectiveness of a proposed remedial action prior to full scale design and implementation. Treatability study includes, but is not limited to, bench scale studies and pilot scale studies.

Contact Information

If you have questions or concerns contact:

Lauren Berkman
Community Involvement Coordinator
U.S. Environmental Protection Agency
75 Hawthorne Street, SFD-3
San Francisco, CA 94105
(415) 972-3292
Or call toll-free 1-800-231-3075
Berkman.lauren@epa.gov

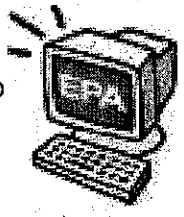
If you have specific questions about the proposed cleanup plan, contact:

Dana Barton
Remedial Project Manager
U.S. Environmental Protection Agency
75 Hawthorne Street, SFD-7-3
San Francisco, CA 94105
(415) 972- 3087
Barton.dana@epa.gov

The State of California point of contact is:

Sam Martinez
Department of Toxic Substances Control
Northern California Cleanup Operations Branch
8800 Cal Center Drive, Suite 3
Sacramento, CA 95826
SMartinez@dtsc.ca.gov

To learn more about the site refer to EPA website: URL: **www.epa.gov/region09/waste/sfund**



United States Environmental Protection Agency
Region 9
75 Hawthorne Street (SFD-3)
San Francisco, CA 94105
Attn: Lauren Berkman (VWP 1-07)

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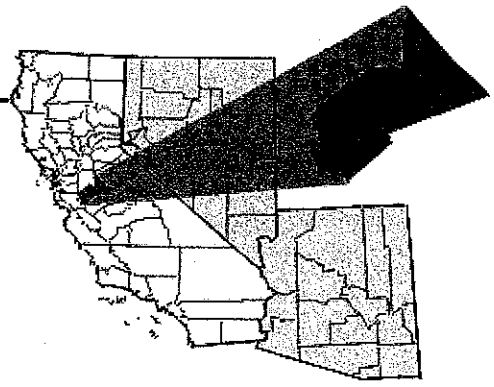
Address Service Requested

Region 9: Superfund

Last updated February 25th, 2009

MODESTO GROUND WATER CONTAMINATION



Link to a site area map

EPA #: CAD981997752
State: California(CA)
County: Stanislaus
City: Modesto
Congressional District: 18
Other Names:

Bulletin Board

On this page

Links

Description and History

NPL Listing History
NPL Status: Final
Proposed Date: 06/24/1988
Final Date: 03/31/1989
Deleted Date:

The Modesto Ground Water Contamination site is related to a dry cleaning facility that leaked tetrachloroethylene (PCE) into the soil and ground water. The dry cleaning facility discharged wastewater containing PCE into the sewer system for approximately 50 years, and an unknown quantity of PCE was released into the subsurface. The old leaky dry cleaning equipment has been replaced with new equipment, and PCE is no longer being discharged from the facility. The dry cleaner is located approximately 1,200 feet from a municipal well, which was contaminated with PCE from the dry cleaner. The City of Modesto began monitoring ground water in 1984 and Municipal Well 11 was found to be contaminated with PCE above the allowable drinking water standard. Well 11

was temporarily taken out of service by the City and a wellhead granular activated carbon treatment system was installed in June 1991 to remove the PCE contamination from the ground water. Well 11 was then shut down again in October 1995 because it was found to be contaminated with low levels of naturally occurring uranium that were slightly above the allowable drinking water level. It is unknown if Well 11 will ever be used again as a source of drinking water because of the naturally occurring uranium. EPA plans to complete the cleanup of the PCE at the dry cleaner to prevent other wells from becoming contaminated.

Contaminants and Risks

Contaminated Media:

Groundwater

Soil and Sludges

Ground water and soil at the site are contaminated with PCE and low levels of naturally occurring uranium. Potential health threats to people include drinking, eating, breathing, or touching contaminated soil or ground water. To minimize the possibility of drinking contaminated ground water, Municipal Well 11 has been shut off, and institutional controls have been implemented to restrict private use of ground water. Most of the site is paved to minimize touching or ingesting contaminated ground water and soil. PCE vapor migrating from the subsurface into indoor air has been found to be a problem only in the building directly over the soil contamination.

Who is Involved

This site is being addressed through Federal actions.

Investigation and Cleanup Activities

This site is being addressed in two stages: initial actions and a long-term remedial phase focusing on cleanup of the entire site.

Initial Actions: Information on the soil and ground water contamination at the site was collected during a removal assessment in 1990, and a limited soil vapor extraction system was installed to address shallow soil contamination. Subsequent investigations determined that no immediate actions were required and the first soil vapor extraction system was turned off.

Entire Site: EPA completed a three-phase remedial investigation from 1991 to 1996 to determine the nature and extent of contamination at the site. EPA conducted additional soil and groundwater investigations in 2007 and 2008. Monitoring wells are sampled quarterly to track the groundwater contamination plume. EPA also began a vapor intrusion investigation in 2007 to evaluate the potential migration of soil vapor into buildings at the site.

In 1997 EPA selected an interim remedy for cleaning up the PCE contamination. This remedy includes a groundwater extraction and treatment system and a soil vapor extraction (SVE) and treatment system. A feasibility study will be conducted to select a final remedy, and a final Record of Decision is planned for 2012.

The interim groundwater and soil vapor extraction and treatment systems were installed in 2000 and continue to operate. The SVE system was expanded in 2008 to increase the removal of PCE from the soil. The first Five Year Review of the interim remedy was completed in 2008.

Cleanup Results to Date

As of 2008, the interim remedies have removed over 3400 pounds of PCE mass from the soil and over 400 pounds of PCE mass from the groundwater. The system has treated over 110 million gallons of groundwater.

Potentially Responsible Parties

Potentially responsible parties (PRPs) refers to companies that are potentially responsible for generating, transporting, or disposing of the hazardous waste found at the site.

PRPs have been identified.

Documents and Reports

Fact Sheets

07/01/97 EPA Proposes Plan for Groundwater Cleanup Project in Modesto, California

02/01/00 Modesto Superfund Site--EPA Announces Start of Construction for Cleanup of Groundwater Contamination

Technical Documents

09/01/97 The "Modesto Ground Water Contamination" Site - Modesto Stanislaus County, California (EPA ID#: CAD 981997752)

09/01/08 Five-Year Review Report For Modesto Groundwater Contamination Superfund Site - Modesto, California

03/01/09 Quarterly Report

05/01/09 Quarterly Report

Community Involvement

Public Meetings:

Public Information Repositories

The public information repositories for the site are at the following locations:

Stanislaus County Free Library
1500 I Street, Modesto, CA 95354
(209) 558-7814

The most complete collection of documents
is the official EPA site file, maintained at

the following location:

Superfund Records Center
Mail Stop SFD-7C
95 Hawthorne Street, Room 403
San Francisco, CA 94105
(415) 536-2000

Enter main lobby of 75 Hawthorne street,
go to 4th floor of South Wing Annex.

Additional Links

Contacts

	Name	Phone Number	Email	Address
EPA Site Manager	Marie Lacey	415-972-3163	Lacey.Marie@epamail.epa.gov	75 Hawthorne Street Mail Code SFD-7-2 San Francisco, CA 94105
EPA Community Involvement Coordinator	Luis Garcia-Bakarich	1-800-231-3075 or direct at 415-972-3237	garcia-bakarich.luis@epa.gov	75 Hawthorne Street Mail Code SFD-3 San Francisco, CA 94105
EPA Public Information Center		415-947-8701	r9.info@epamail.epa.gov	
State Contact	Edward Cargile	916-255-3703	ecargile@dtsc.ca.gov	
PRP Contact				
Community Contact				
Other Contacts				
After Hours (Emergency Response)	US EPA	(800) 424-8802		

EPA MODESTO SUPERFUND SITE

U.S. Environmental Protection Agency • Region 9 • San Francisco, CA • February 2000

EPA Announces Start of Construction for Cleanup of Groundwater Contamination

Summary

In February 2000, construction is scheduled to begin at the Modesto Groundwater Contamination Superfund Site in central Modesto. Construction will mark the initiation of EPA's soil and groundwater cleanup at the site. Cleanup is necessary to prevent the contaminant perchloroethylene from spreading and, in a worst case scenario, impacting water supply wells. At this time it is uncertain how many years it will take to clean up the soil and groundwater, but EPA intends to continue its efforts into the foreseeable future.

As part of the construction, equipment will be installed to remove the chemical perchloroethylene from soil and groundwater. The perchloroethylene is believed to have come from past spills at a local dry cleaning establishment and the municipal sewer. Treated groundwater will be discharged to the City of Modesto sewer system under the strict conditions of a permit issued by the City. Contaminants removed from soil and groundwater will be shipped offsite to a facility permitted and designed to handle the waste material.

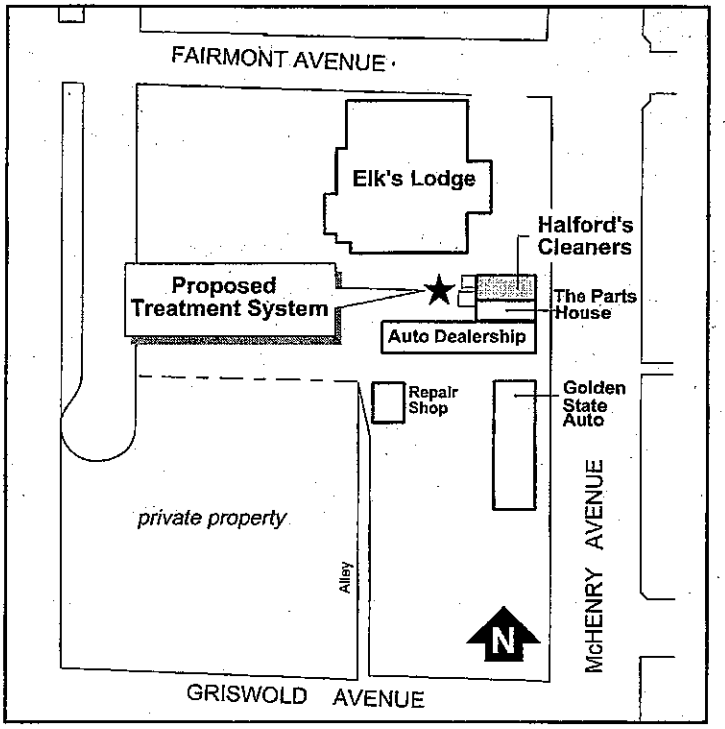


Figure 1. Location of Proposed Treatment System

What to Expect During Construction

The duration of construction will be approximately four to six weeks. Most of the operations should not impact local residential areas. Construction activity for the most part will be limited to private property located in an area directly to the southeast of the intersection of Fairmont Avenue and McHenry Avenue, in the vicinity of Halford's Cleaners. This will be light construction activity, consisting of: limited earth moving; the pouring of concrete; the positioning of mostly prefabricated one-story structures; trenching and the installation of piping to and from the prefabricated structures. Here are some of the things you may see as the construction work continues:

• Equipment and Gear

The types of construction vehicles and equipment which will be seen may include: backhoes (for trenching); bulldozers (for earth moving); dump trucks (for transporting backfill materials to the site and/or removing excess soil); concrete mixers; water storage tanks; pickup trucks; treatment equipment (which will be housed in trailers); and an office trailer. In addition, stored materials such as lengths of pipe and piles of dirt will be present at the construction site. Construction vehicles may be parked overnight at the site or on adjacent private property (for which permission has been obtained from the property owners).

Activity at the Site

Current (February - April 2000)

Pouring of concrete pads; installation of pre-packaged treatment systems for soil and groundwater cleanup; installation of piping to connect groundwater and soil vapor wells to the treatment systems; installation of connection to the municipal sewer system; start-up and testing of treatment systems.

Prior to February 2000

Environmental measurements taken and data collected; extent of soil and groundwater contamination defined; interim cleanup plan selected; cleanup system designed; groundwater and soil vapor wells installed.

Planned (after April 2000)

Continued operation of treatment systems; continued collection of data to determine the extent of reduction of contaminants in soil and groundwater; selection of a final cleanup plan.

• Traffic

We expect that as many as ten vehicles per day will be coming to the construction site, but that there will be only a few occasions during which heavy vehicles (dump trucks, for example) will be traveling to and from the site.

• Safety

Standard construction safety procedures will be used. These include signs which identify this area as a Superfund construction project. The signs will include telephone numbers which the public can call should any questions arise. A health and safety plan has been developed for the site for the purpose of protecting workers and minimizing impacts to the local community. Site security will also include standard construction procedures such as locking equipment storage boxes at the end of each day and informing the police and/or fire department if security problems arise.

• Hours of Construction Activity

Working will be conducted between 7:00 a.m. and 5:00 p.m., Monday through Friday, unless residents agree to other times. Work on Saturdays, if approved, would be limited to completing activities already started. New activities will not be started during the weekends. No construction activities will be allowed on Sundays.

• Dust Control

During construction, dust and air pollution will be minimized by wetting down bare soils, requiring the use of properly operating combustion emission control devices on construction vehicles and equipment, and encouraging shutdown of motorized equipment not actually in use. Refuse (garbage) burning will not be permitted on the construction site.

• Noise

Construction operations will be conducted to cause the least annoyance to the general public, residents and businesses in the vicinity of the work, in compliance with applicable local ordinances. Compressors used for construction will be equipped with silencers on intake lines. Gasoline or oil-operated equipment will be equipped with silencers or mufflers on intake and exhaust lines. Process equipment for the constructed groundwater and soil treatment systems will be housed in steel container boxes. The containers will be sound insulated to reduce process equipment noise. The exterior noise level within 15 feet of the containers will be below 50 decibels.

Specifics About the Construction

1. Groundwater Treatment System

The groundwater treatment system has been designed to remove the contaminant perchloroethylene. Contaminated groundwater will be pumped from the surrounding area through a well. In the treatment system, the water will flow through a two-step process:

The first step consists of an air-stripping vessel. In the air-stripping vessel, the water disperses as a thin film over specially designed "packing material". Air is forced through the water, transferring the perchloroethylene from the water into the air. The air then flows through an "air phase" vessel containing activated carbon, which traps the perchloroethylene and allows the cleaned air to return to the atmosphere. The activated carbon in the vessel is periodically removed, trucked offsite to an approved disposal facility, and replaced with new carbon. In most cases this first treatment step is projected to remove close to one hundred percent of the perchloroethylene from the water.

In the second step, the water flows though a "liquid phase" vessel containing activated carbon, which traps any remaining perchloroethylene. The activated carbon in the vessel is periodically removed, trucked offsite to an approved disposal facility, and replaced with new carbon. As the water emerges from the second phase of the treatment system it is expected not to contain perchloroethylene at levels detectable by advanced laboratory analysis. The treated water will then enter the City of Modesto sewer system.

2. Soil Treatment System

The soil treatment system has been designed to remove the contaminant perchloroethylene from the surrounding area. The soil itself will not be excavated. Perchloroethylene will be extracted from the soil through "vapor extraction wells".

These wells are specially designed so that when a vacuum is applied at the well, air will flow through the soil. In this way the perchloroethylene is transferred from the soil into the air moving through the well. This air then flows through an "air phase" vessel containing activated carbon, which traps the perchloroethylene and allows the cleaned air to return to the atmosphere. The activated carbon in the vessel is periodically removed, trucked offsite to an approved disposal facility, and replaced with new carbon.

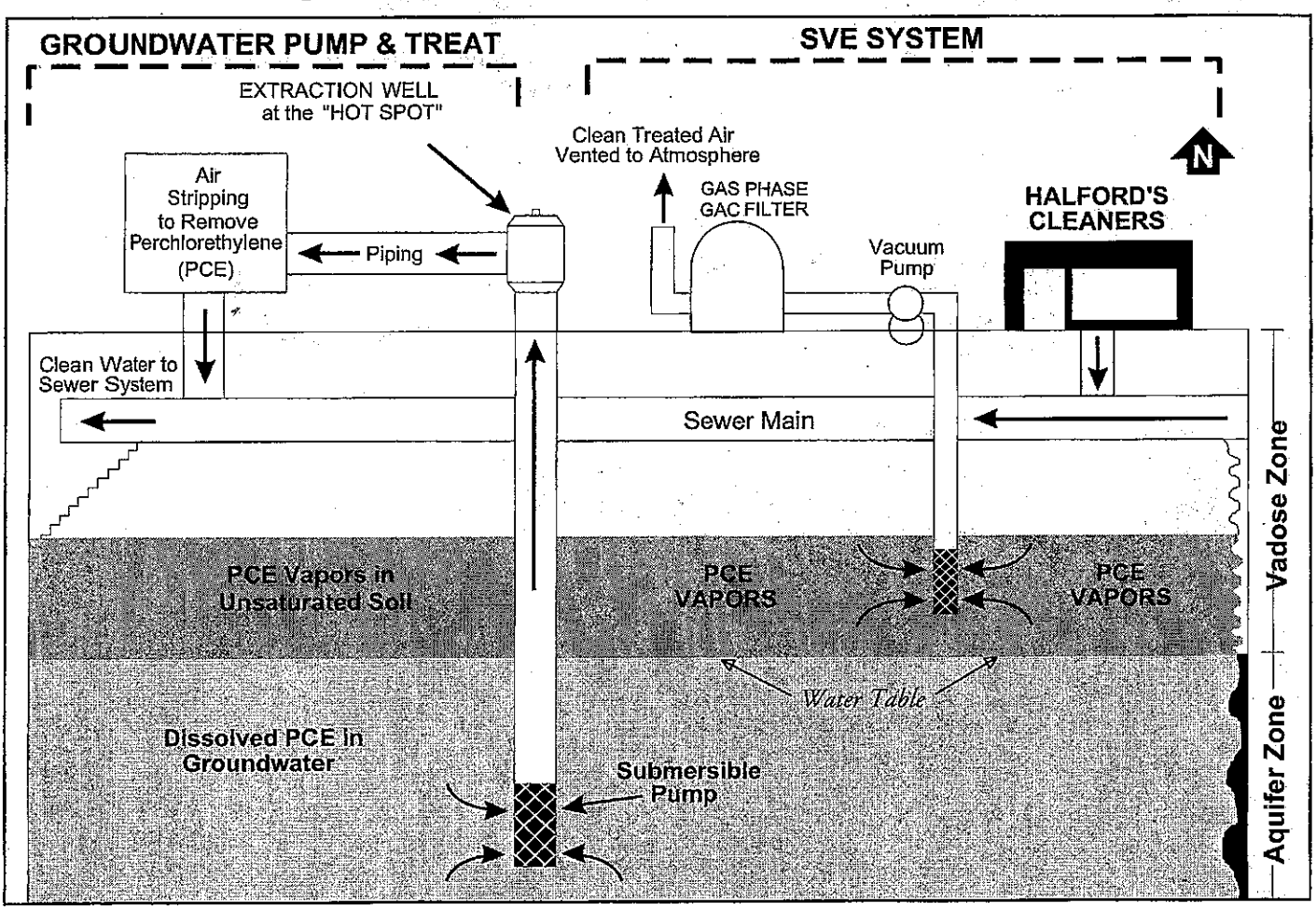


Figure 2. Groundwater and Soil Vapor Extraction (SVE) Systems

EPA MAILING LIST FOR THE MODESTO SUPERFUND SITE

We need your help to update our mailing list for the Modesto Superfund Site. Please mark the box and complete the coupon below and return to:

Vicky M. Semones
75 Hawthorne St., (SFD-3)
San Francisco, CA 94105.

Or you may call toll free at 1-800-231-3075. Thank you.

- ❑ If you would like to be ADDED to our list
- ❑ If you have CHANGED your address
- ❑ If you would like to be DELETED from our list

If you're on our list and have NO changes, you DON'T have to reply - but you may want to pass this along to someone else who might want to be on our list. Thank you.

NAME _____

STREET ADDRESS _____

CITY/STATE/ZIP _____

Contacts For The Community

You may call the U.S. EPA TOLL FREE. You may also contact U.S. EPA specialists DIRECT.

Call Vicky Semones
Community Involvement Coordinator at
1-800-231-3075
with any questions about this fact sheet.
[semones.vicky@epa.gov.]

Call Dave Seter
Remedial Project Manager at
415-744-2400
with any questions about site activities.
[seter.david@epa.gov]

(Si necesita esta información en español, por favor llame al 1-800-231-3075.)

Written information about the site is available at:

Stanislaus County Free Library
1500 "I" Street
Modesto, CA 95354
(209) 558-7814

You may access certain EPA documents electronically on the Internet:

EPA Website:	http://www.epa.gov
EPA Superfund Website:	http://www.epa.gov/superfund
Region 9 Website:	http://www.epa.gov/region09

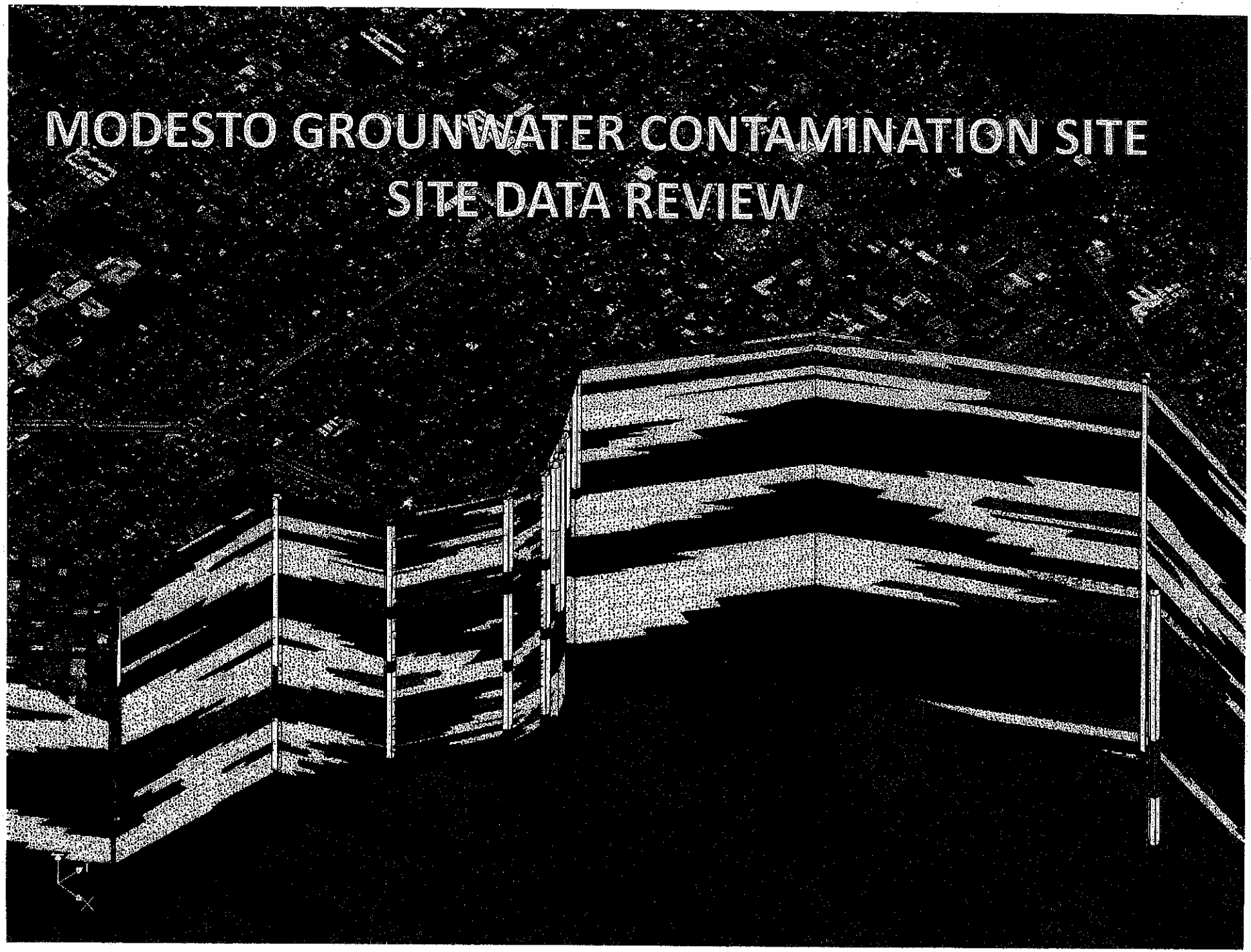
Printed on 30% Postconsumer Recycled / Recyclable Paper

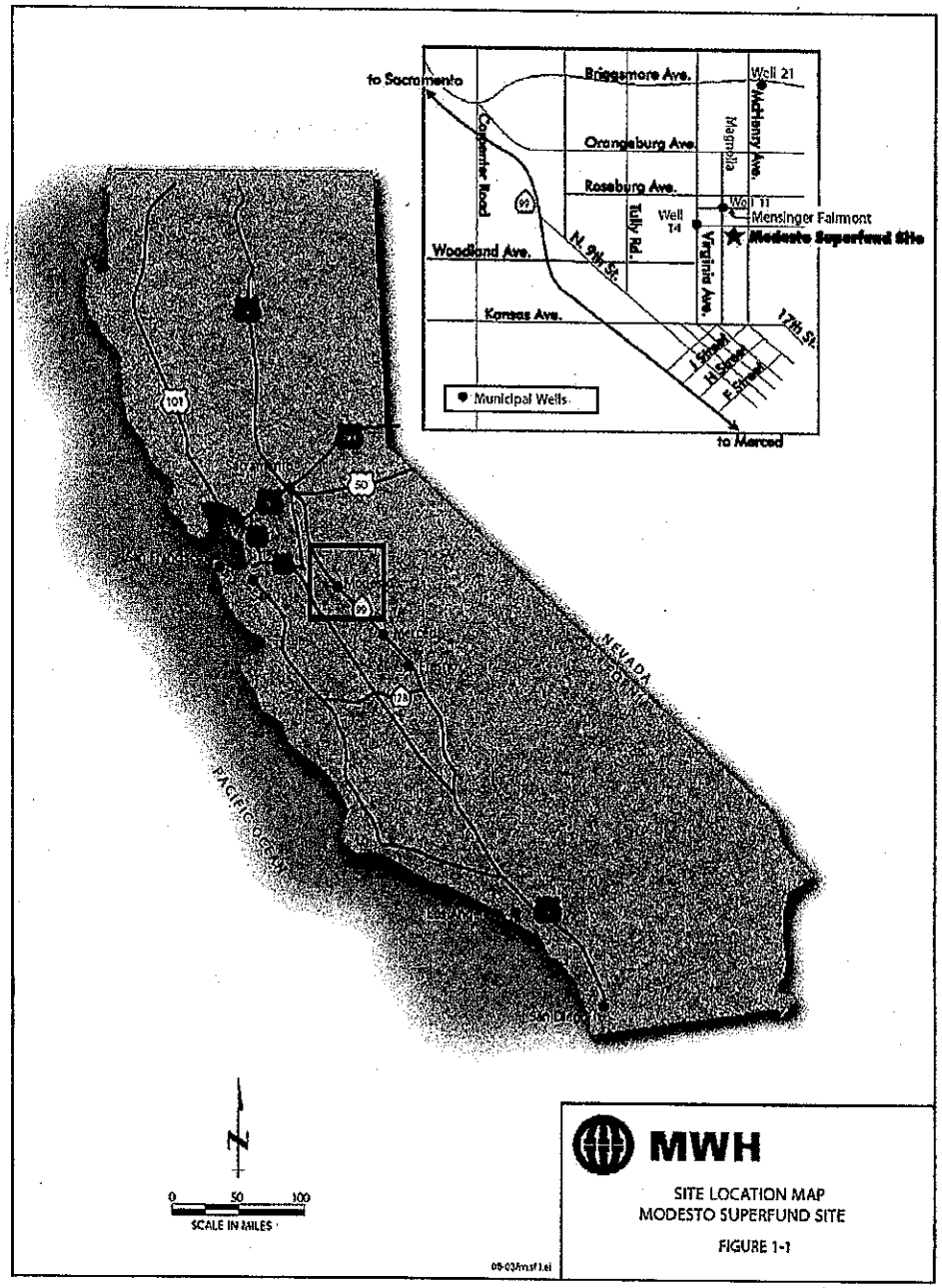
U.S. Environmental Protection Agency, Region 9
75 Hawthorne Street (SFD-3)
San Francisco, CA 94105-3901
Attn: Vicky Semones

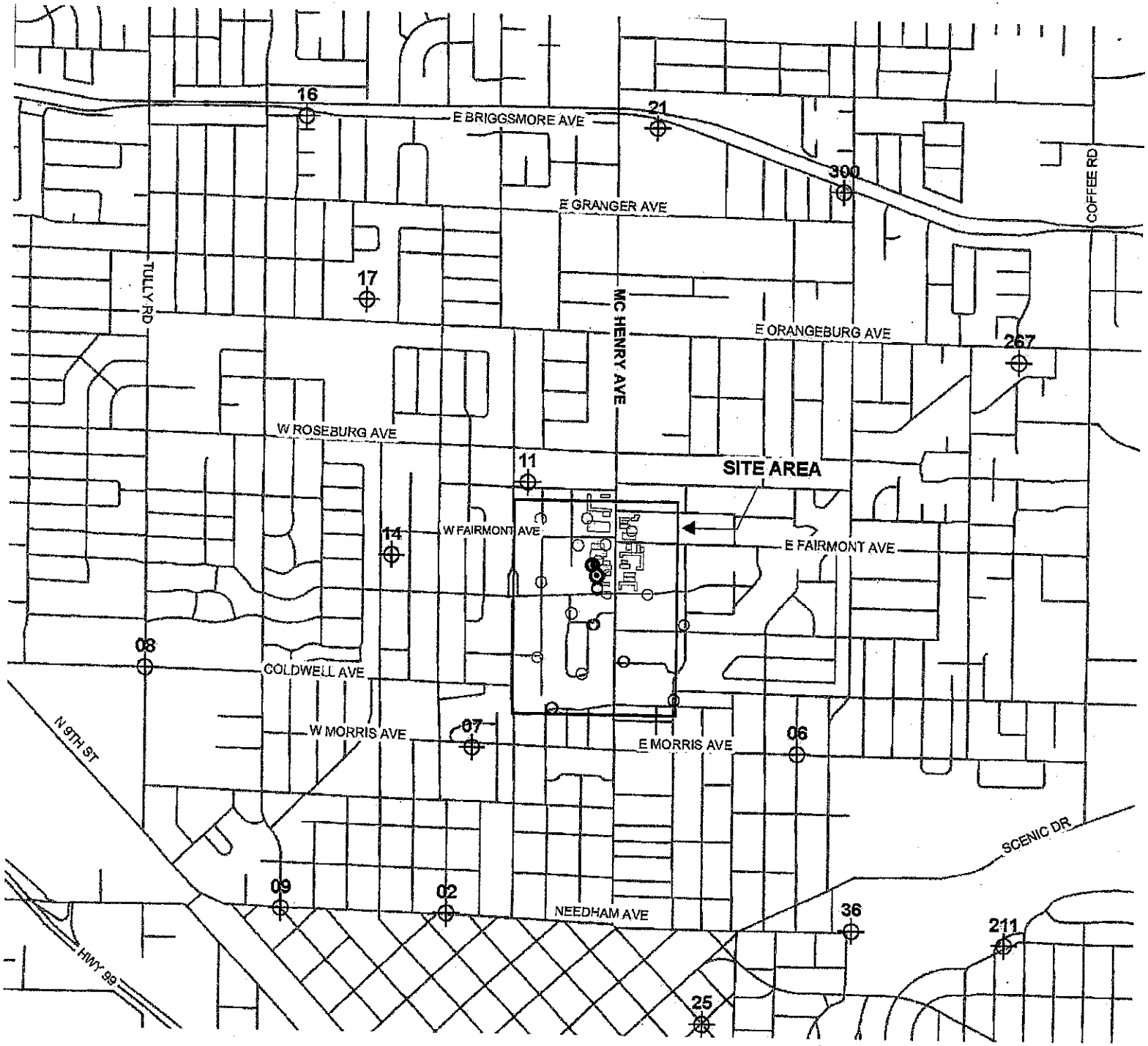
Official Business
Penalty for Private Use, $300
Address Correction Requested

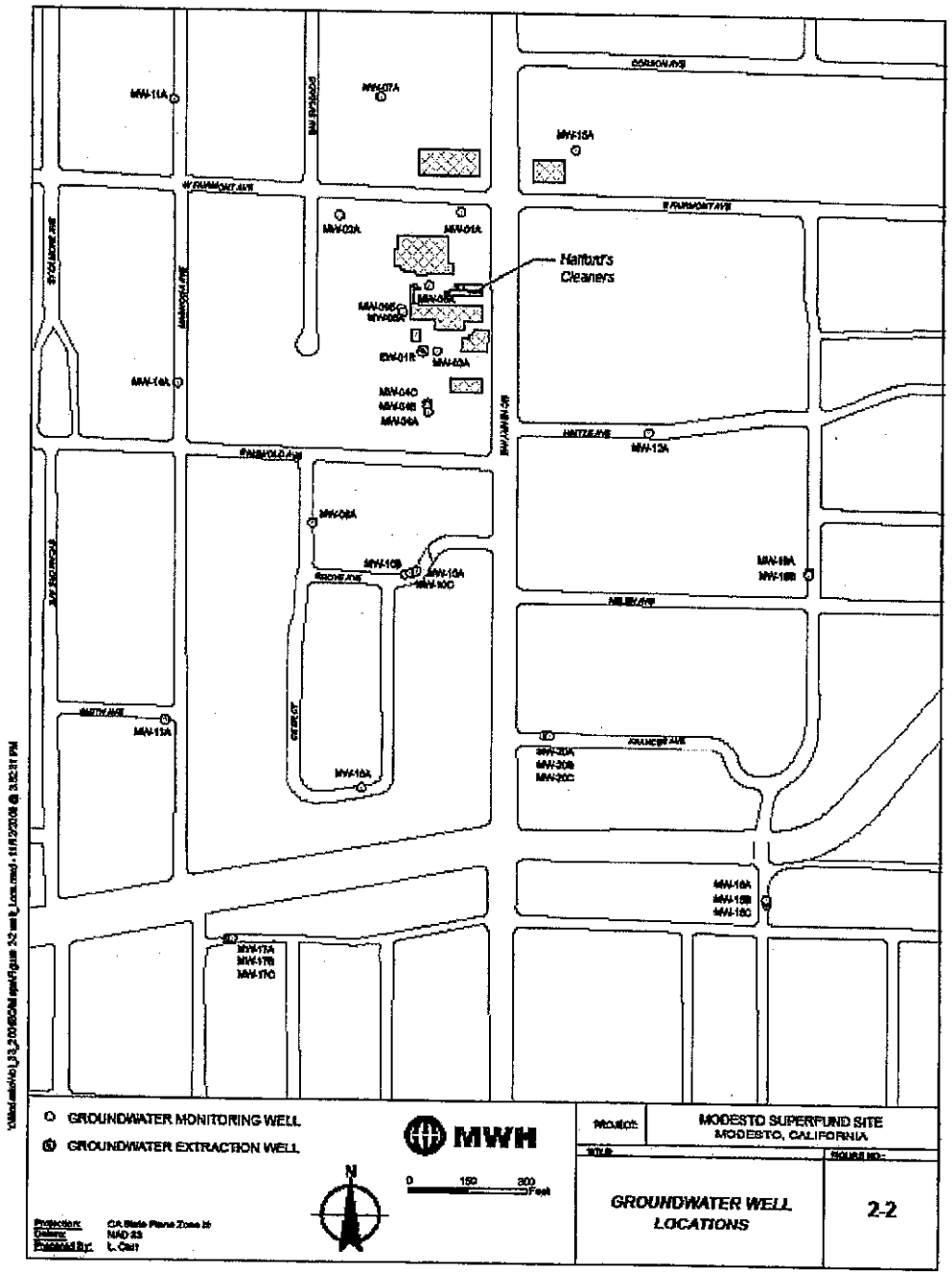
FIRST-CLASS MAIL
POSTAGE & FEES PAID
U.S. EPA
Permit No. G-35

MODESTO GROUNWATER CONTAMINATION SITE
SITE DATA REVIEW



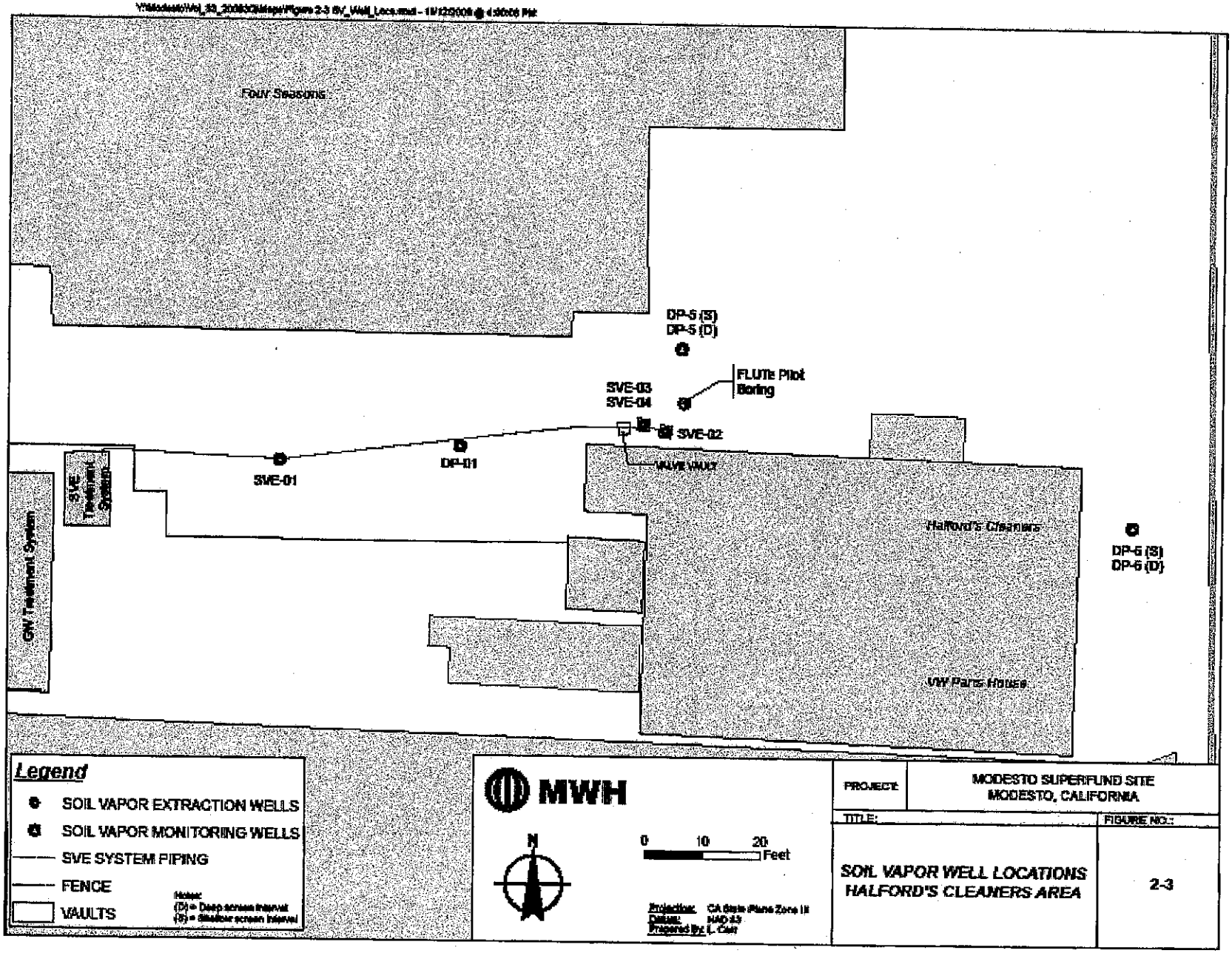

to Sacramento
Briggsmore Ave.
Well 21
McHenry Ave.
Orangeburg Ave.
Roseburg Ave.
Carpenter Road
Magnolia
Well 11
Mensinger Fairmont
Well 14
Modesto Superfund Site
Tully Rd.
N. 9th St.
Virginia Ave.
Woodland Ave.
Kansas Ave.
17th St.
J Street
H Street
F Street
Municipal Wells
to Merced
99
101
50
NEVADA
PACIFIC OCEAN
0
50
100
SCALE IN MILES
MWH
SITE LOCATION MAP
MODESTO SUPERFUND SITE
FIGURE 1-1


16
E BRIGGSMORE AVE
21
300
E GRANGER AVE
COFFEE RD
TULLY RD
17
MC HENRY AVE
E ORANGEBURG AVE
267
W ROSEBURG AVE
11
SITE AREA
14
W FAIRMONT AVE
E FAIRMONT AVE
08
COLDWELL AVE
N 9TH ST
W MORRIS AVE
07
E MORRIS AVE
06
SCENIC DR
09
02
NEEDHAM AVE
36
211
HWY 99
25

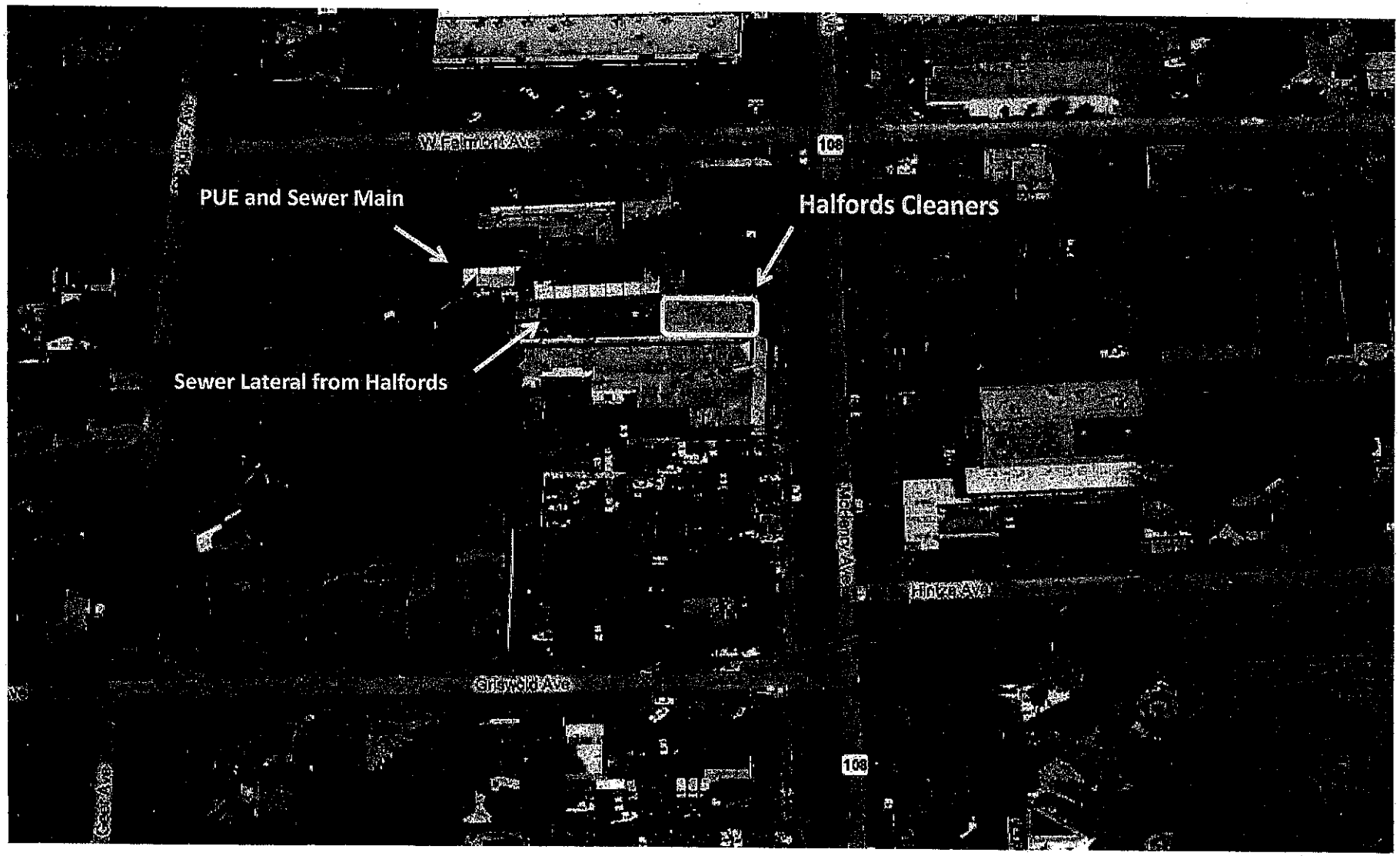


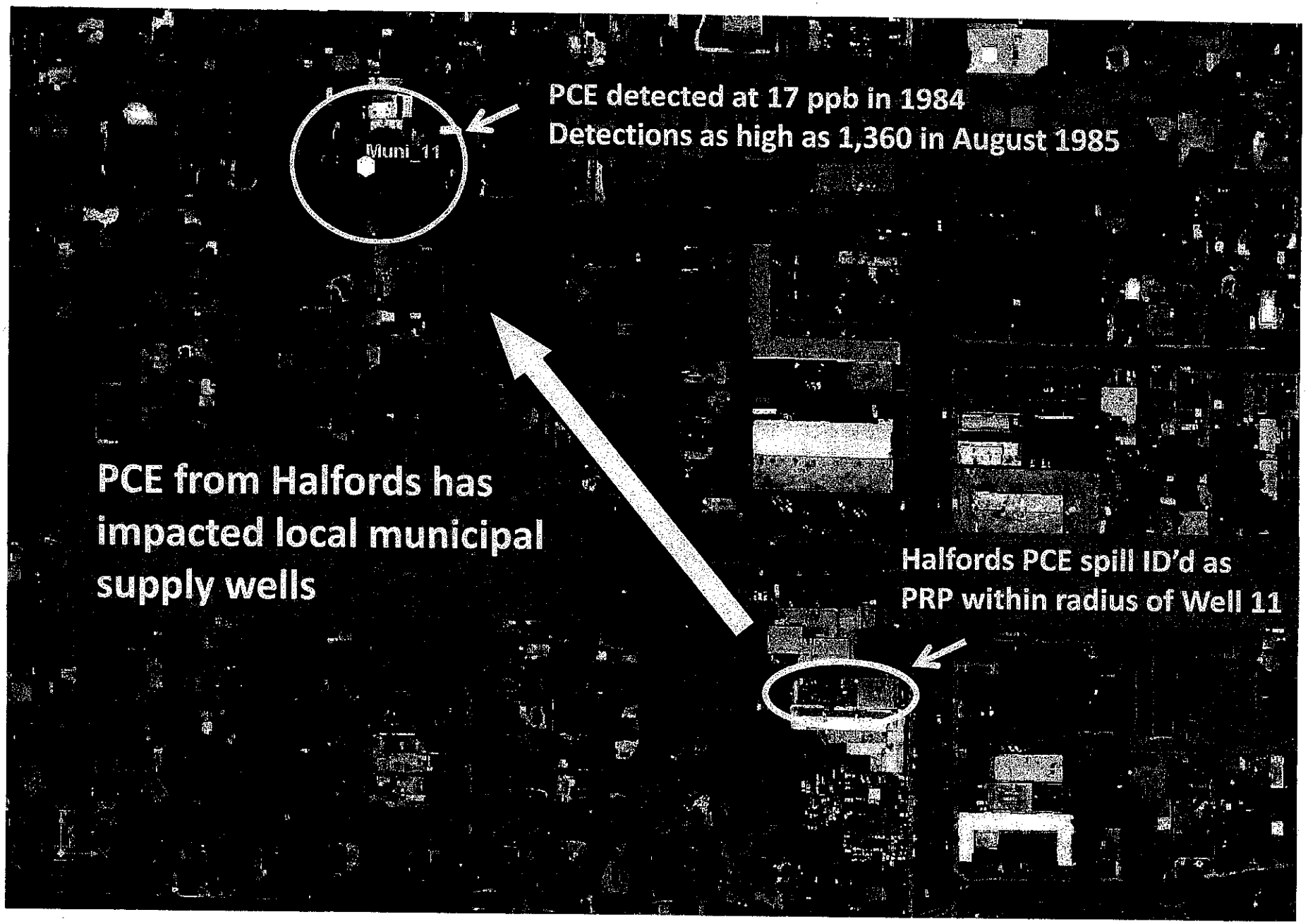
31 groundwater wells monitoring the site at depths ranging from about 60 to 250 feet bgs.

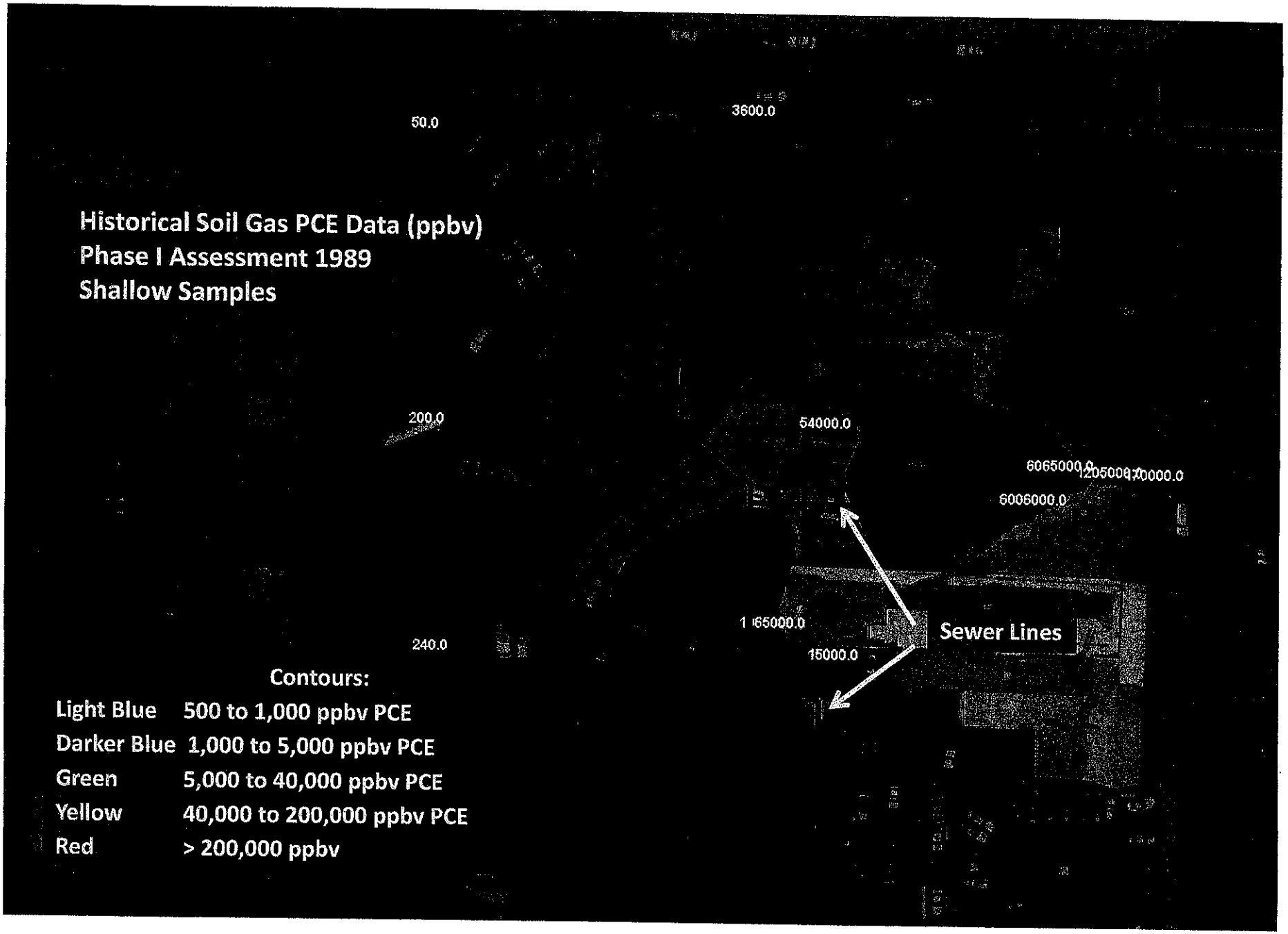
Groundwater is at 45 ft bgs


Four Seasons
DP-5 (S)
DP-5 (D)
FLUTe Pilot Boring
SVE-03
SVE-04
SVE-02
SVE-01
DP-01
VAULT
SVE Treatment System
GW Treatment System
Halford's Cleaners
DP-6 (S)
DP-6 (D)
VW Parts House
Legend
SOIL VAPOR EXTRACTION WELLS
SOIL VAPOR MONITORING WELLS
SVE SYSTEM PIPING
FENCE
VAULTS
MWH
N
0
10
20
Feet
PROJECT:
MODESTO SUPERFUND SITE
MODESTO, CALIFORNIA
TITLE:
SOIL VAPOR WELL LOCATIONS
HALFORD'S CLEANERS AREA
FIGURE NO.:
2-3

Oblique View to North



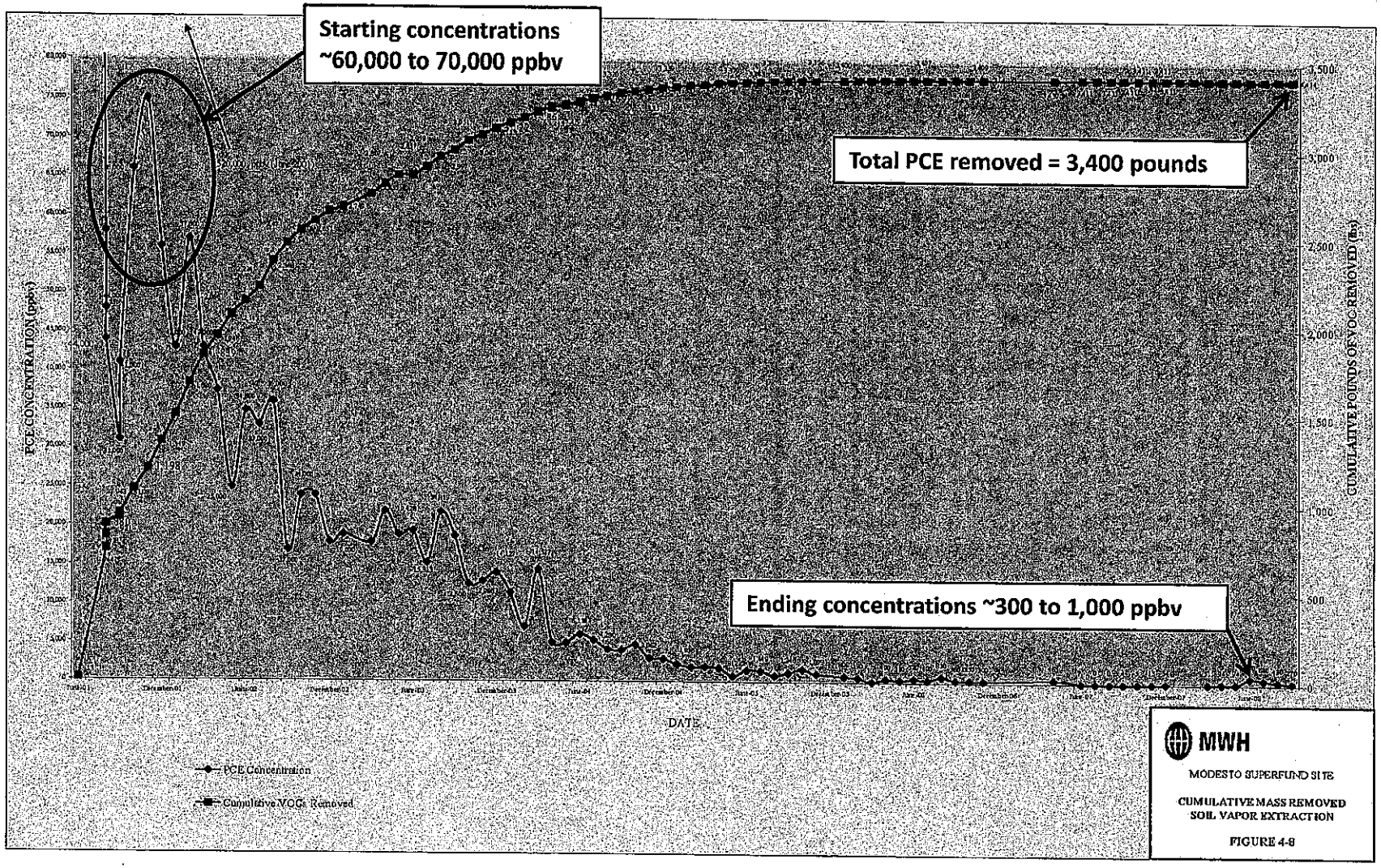

Muni_11
PCE detected at 17 ppb in 1984
Detections as high as 1,360 in August 1985
PCE from Halfords has impacted local municipal supply wells
Halfords PCE spill ID'd as PRP within radius of Well 11

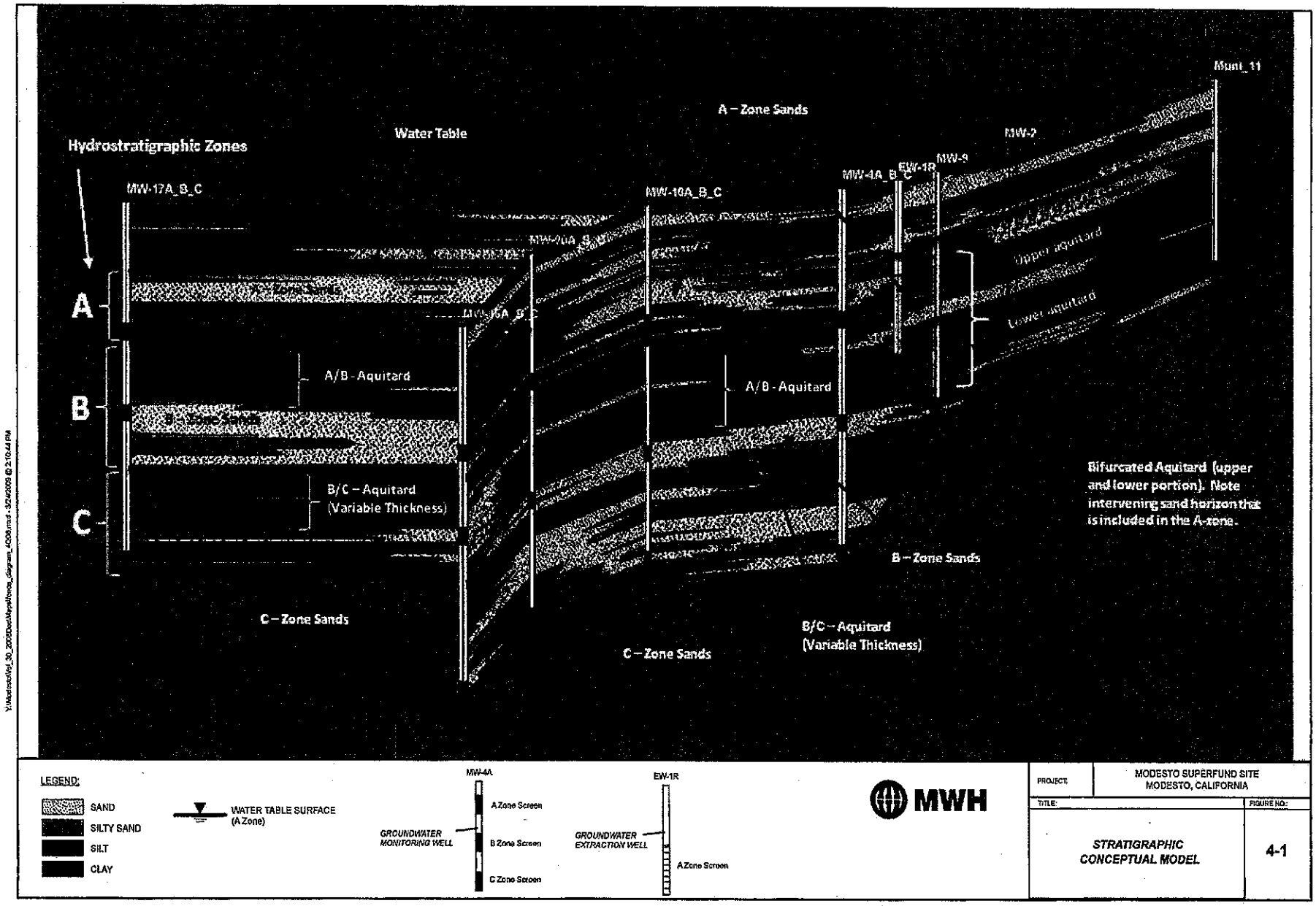

Historical Soil Gas PCE Data (ppbv)
Phase I Assessment 1989
Shallow Samples
50.0
3600.0
200.0
54000.0
6065000.0
6006000.0
1 65000.0
15000.0
240.0
Sewer Lines
Contours:
Light Blue 500 to 1,000 ppbv PCE
Darker Blue 1,000 to 5,000 ppbv PCE
Green 5,000 to 40,000 ppbv PCE
Yellow 40,000 to 200,000 ppbv PCE
Red > 200,000 ppbv

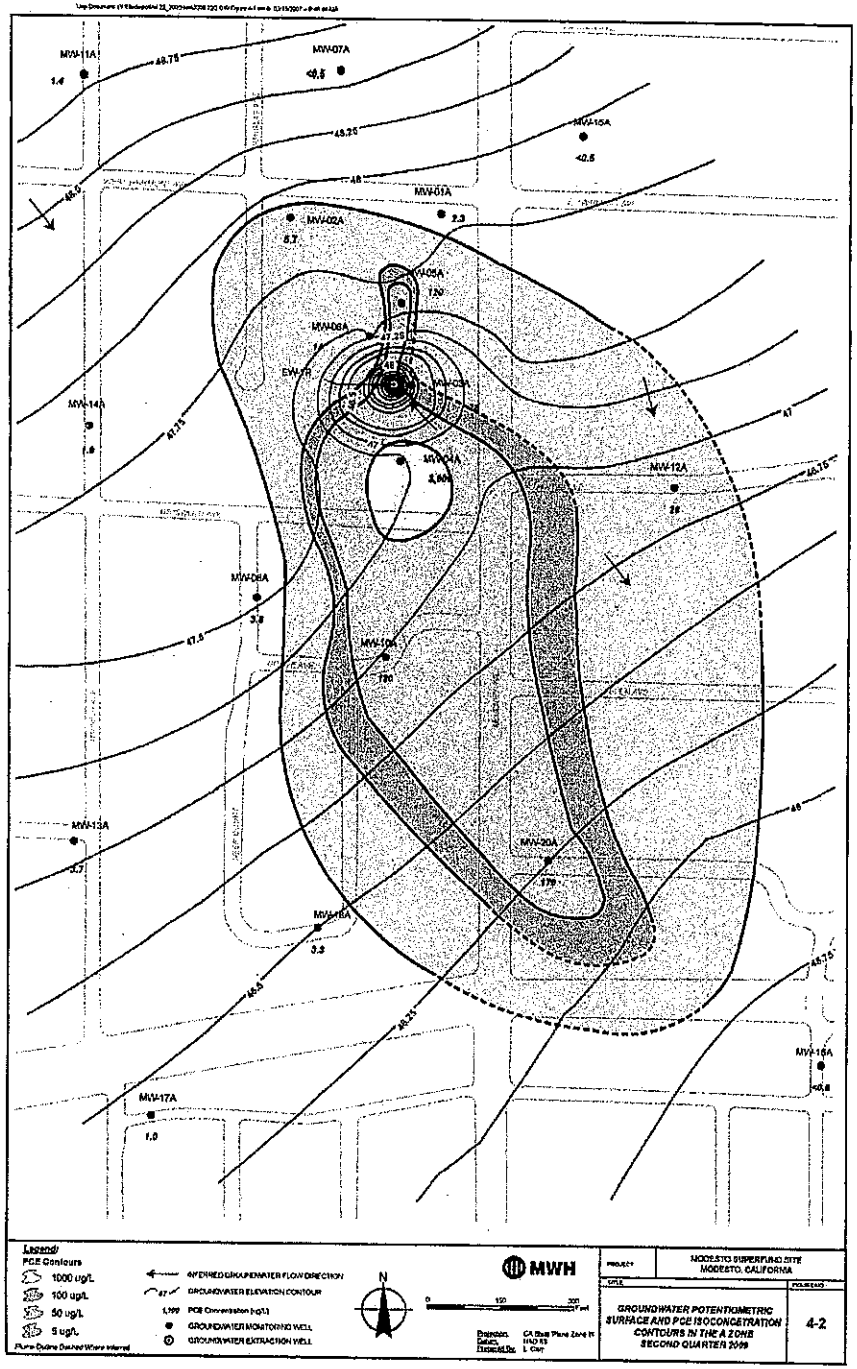
Interim Remedial Action

- **Interim ROD (USEPA, 1997) specifies:**
  - **Vadose Zone**
    - Soil vapor extraction in conjunction with a groundwater pump and treat system
    - Treatment by adsorption to GAC prior to atmospheric discharge
  - **Groundwater**
    - Pumping rate of 50 gpm
    - One or more extraction wells
    - PCE removal with air stripping
    - Polishing with liquid phase GAC
    - Off-gas treatment with vapor phase GAC
    - Uranium removal with ion exchange
    - Discharge to sanitary sewer

SVE-1 Operation History
June 2001 through October 2008

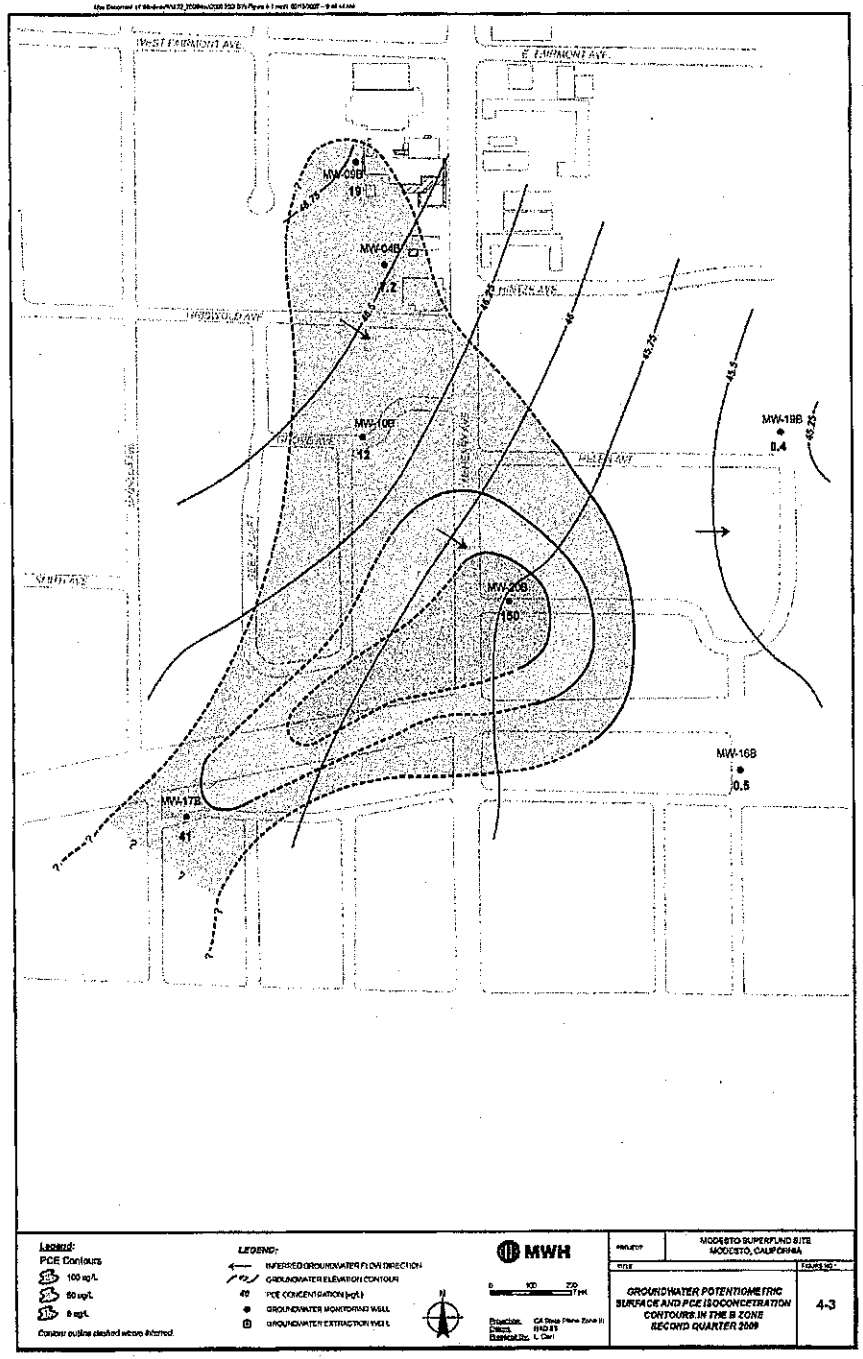



Hydrostratigraphic Zones
Water Table
A – Zone Sands
MW-17A_B_C
MW-10A_B_C
MW-4A_B_C
EW-1R
MW-9
MW-2
Muni_11
A
B
C
A/B - Aquitard
B/C – Aquitard
(Variable Thickness)
Upper aquitard
Lower aquitard
Bifurcated Aquitard (upper and lower portion). Note intervening sand horizon that is included in the A-zone.
B – Zone Sands
C – Zone Sands
B/C – Aquitard
(Variable Thickness)
C – Zone Sands
LEGEND:
SAND
SILTY SAND
SILT
CLAY
WATER TABLE SURFACE (A Zone)
MW-4A
A Zone Screen
B Zone Screen
C Zone Screen
GROUNDWATER MONITORING WELL
EW-1R
A Zone Screen
GROUNDWATER EXTRACTION WELL
MWH
PROJECT: MODESTO SUPERFUND SITE
MODESTO, CALIFORNIA
TITLE: STRATIGRAPHIC CONCEPTUAL MODEL
FIGURE NO: 4-1



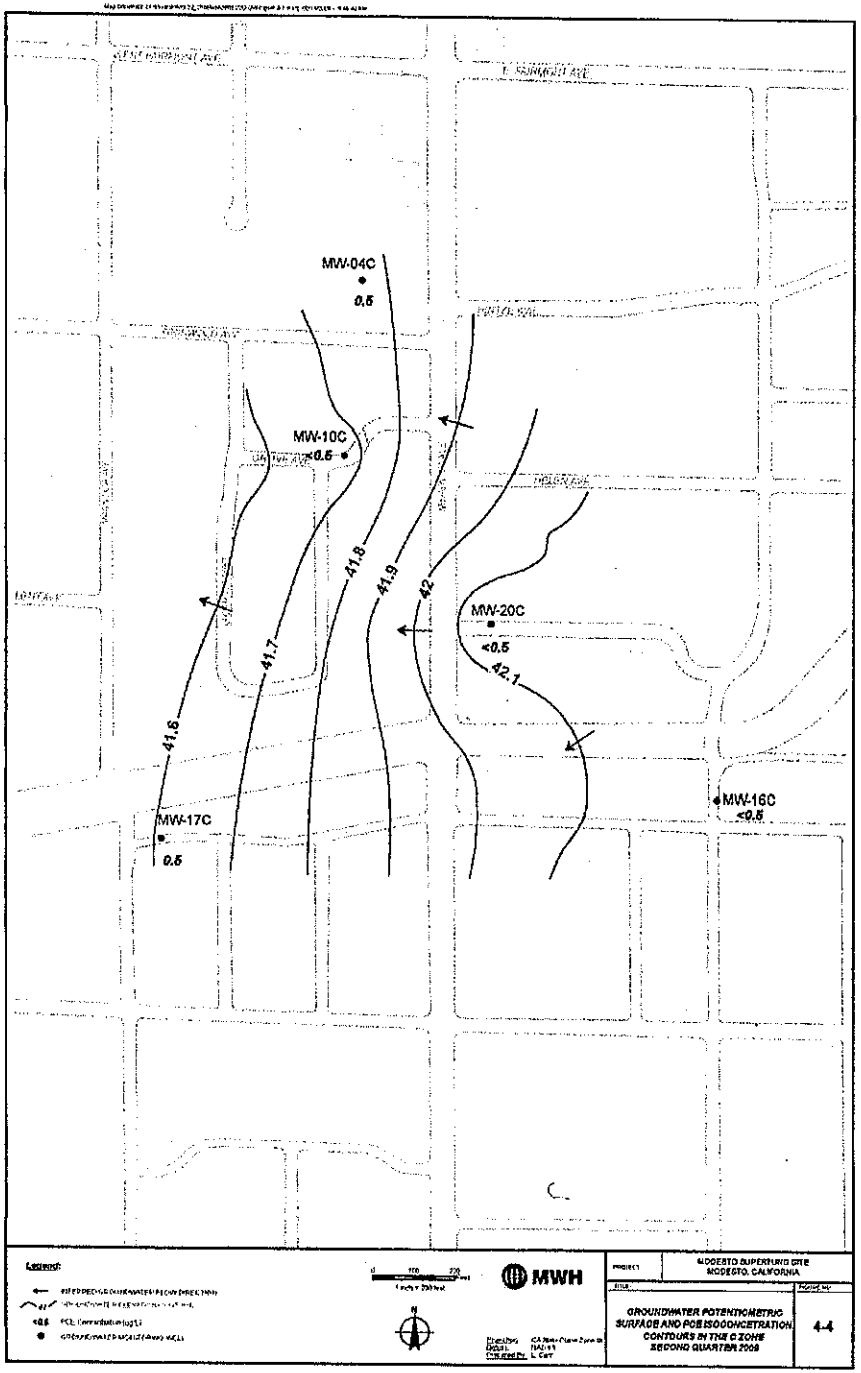
PCE Distribution in the A-Zone

May 2009



PCE Distribution in the B-Zone

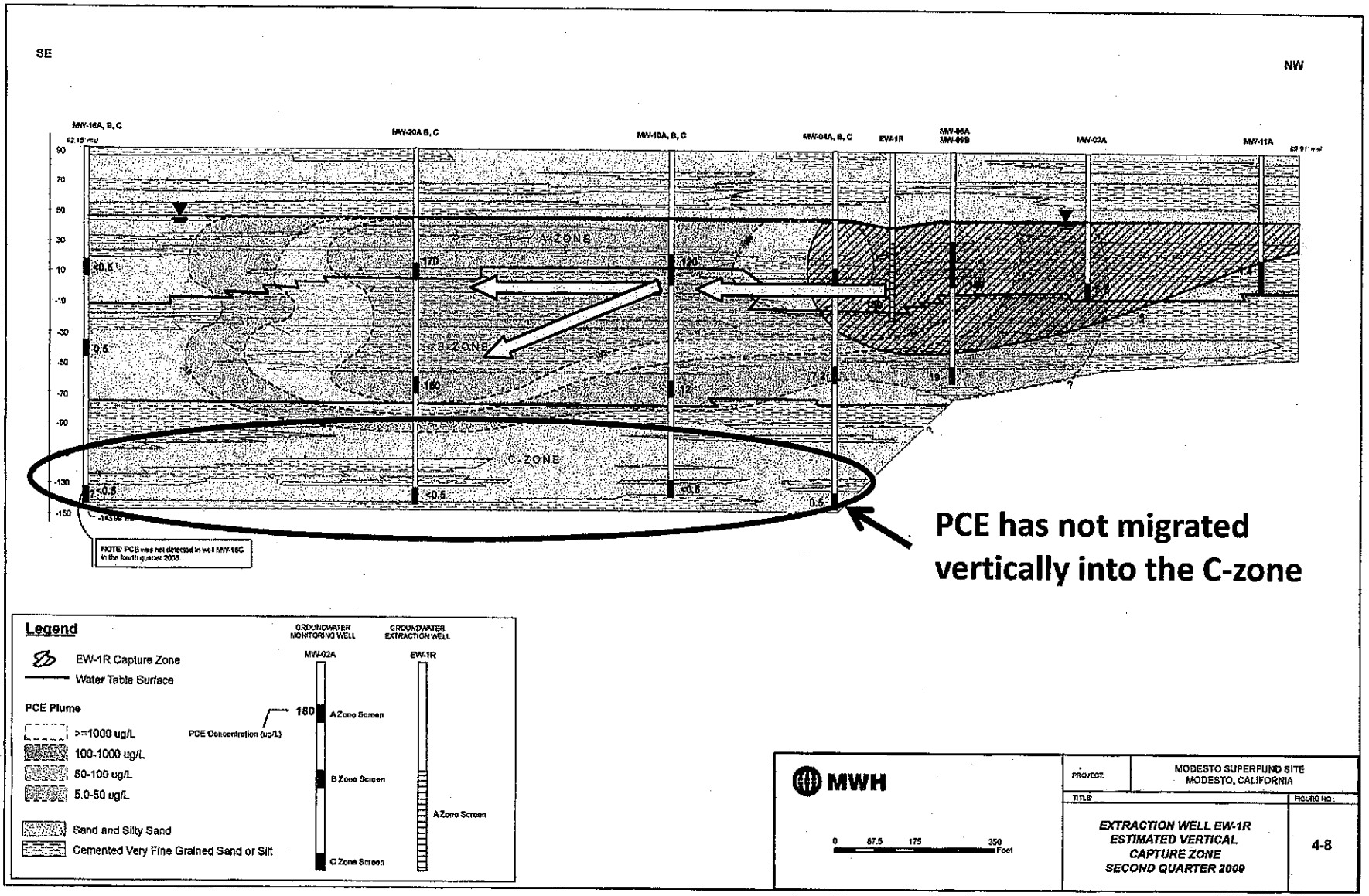
May 2009

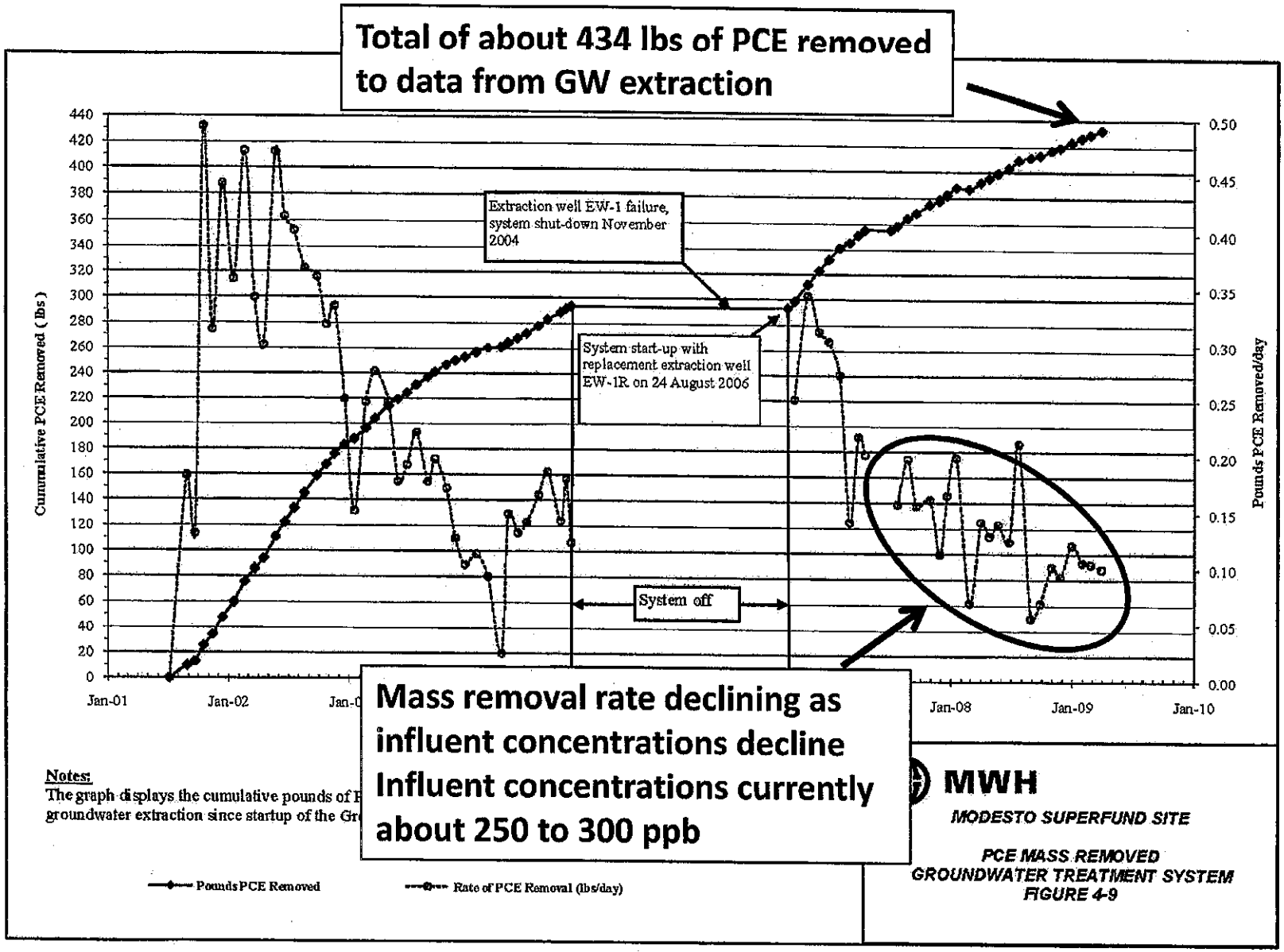


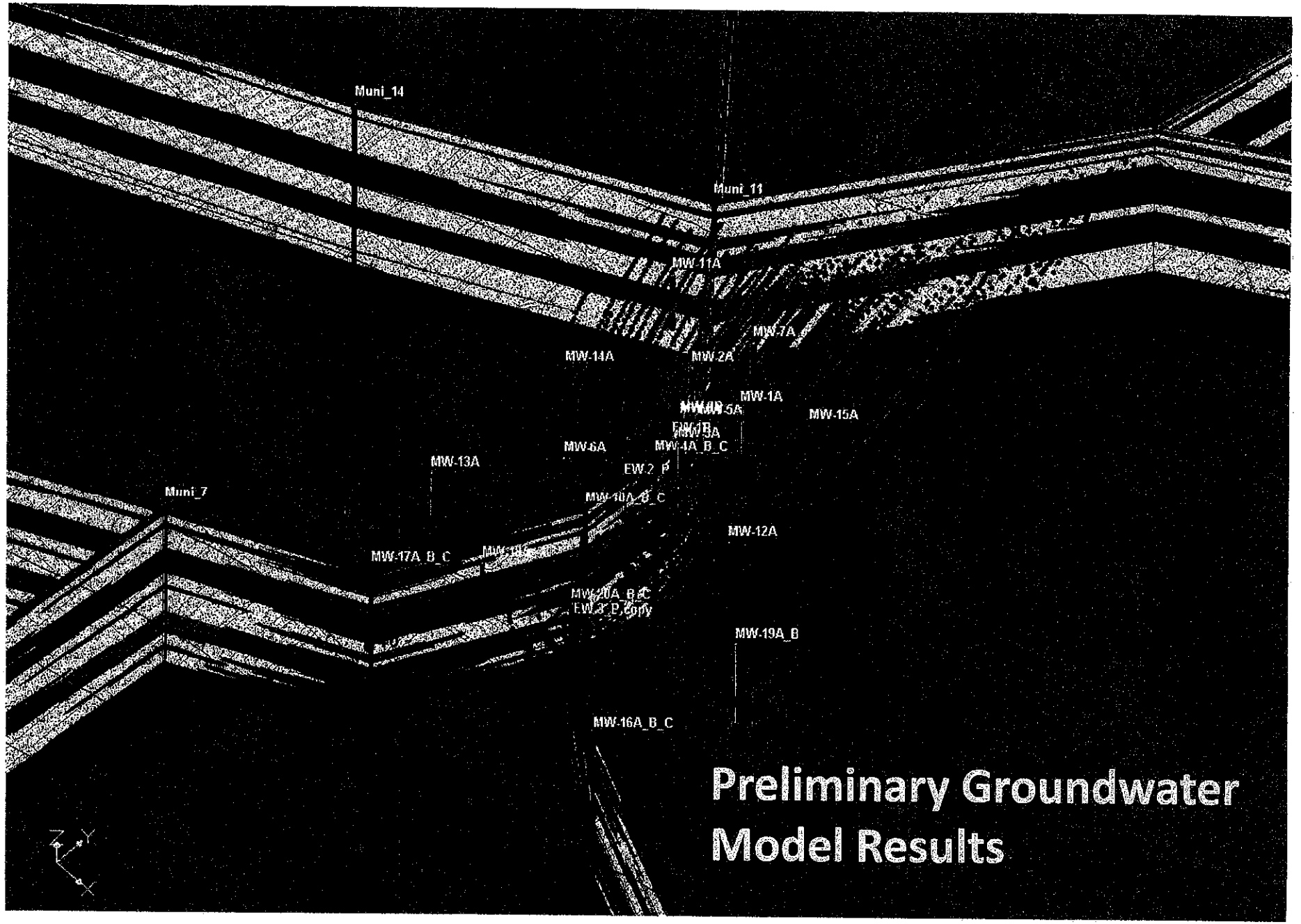
PCE does not occur in the C-zone

May 2009

Profile View Southwest - PCE Distribution May 2009




Total of about 434 lbs of PCE removed to data from GW extraction
Extraction well EW-1 failure, system shut-down November 2004
System start-up with replacement extraction well EW-1R on 24 August 2006
System off
Mass removal rate declining as influent concentrations decline
Influent concentrations currently about 250 to 300 ppb
Cumulative PCE Removed (lbs)
Pounds PCE Removed/day
Jan-01
Jan-02
Jan-08
Jan-09
Jan-10
Notes:
Pounds PCE Removed
Rate of PCE Removal (lbs/day)
MWH
MODESTO SUPERFUND SITE
PCE MASS REMOVED
GROUNDWATER TREATMENT SYSTEM
FIGURE 4-9


Muni_14
Muni_11
MW-11A
MW-7A
MW-14A
MW-2A
MW-1A
MW-15A
MW-6A
MW-4A_B_C
MW-13A
Muni_7
MW-10A_B_C
MW-12A
MW-17A_B_C
MW-19A_B
MW-16A_B_C
Preliminary Groundwater Model Results

Region 9: Superfund

Last updated April 29th, 2009

MATHER AIR FORCE BASE

EPA #: CA8570024143

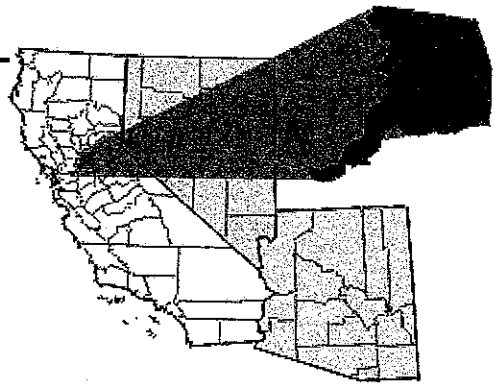
State: California(CA)

County: Sacramento

City: 12 miles east of Sacramento

Congressional District: 11

Other Names: Other Names: AC & W Disposal Site, Mather Field



Link to a site area map

Bulletin Board

On this page

Links

Description and History

NPL Listing History
NPL Status: Final
Proposed Date: 10/15/1984
Final Date: 07/22/1987
Deleted Date:

The U.S. Air Force built Mather Air Force Base (MAFB) in 1918 to serve as a flight training school. After World War II, MAFB was the sole aerial navigation school for U.S. military and its allies. In 1958, the Strategic Air Command B-52 squadron was assigned to Mather, a position it kept until 1989. Up to 1993, when it was decommissioned as an active air base under the Base Realignment and Closure Act (BRAC), MAFB's primary mission was training of military personnel. At the time of closure, the base encompassed 5,845 acres, including 129 acres of easements. Most of the base was ruled surplus to the needs of the federal government and has been transferred

or leased to various entities, primarily the County of Sacramento. In 1995, Mather Airport was officially reopened as a 2,675-acre cargo airport and another 1,432 acres became the Mather Regional Park. Other areas of the former AFB have been developed for housing, a business park, the Veterans Administration Medical Center, and the Federal Aviation Administration's Northern California TRACON facility.
Environmental investigations began at MAFB in 1982 and continued for several years. A total of 89 areas with significant contamination were identified. Most of these Installation Restoration Program (IRP) sites had contaminated soils/sediments and included fire training areas, drainage ditches, waste pits, oil/water separator sites, spill sites, landfills and a sewage treatment plant. Soils are contaminated from toxic and hazardous materials, such as petroleum, oils, lubricants, solvents and protective coatings used during routine maintenance and operation of Mather. In addition, groundwater is contaminated beneath portions of MAFB with five groundwater plumes identified. One of the groundwater plumes is in the Aircraft Control and Warning (AC&W) Disposal Area, located on the east-central part of the base between family housing and the aircraft alert apron. The AC&W groundwater plume contains trichloroethene (TCE). The AC&W Disposal Area was listed on the National Priorities List (NPL) in July 1987. Another groundwater plume, the Site 7 plume, begins at the southern edge of MAFB and extends off-base; it is associated with the Site 7 Disposal Area. Landfills in the northeastern area of the base are believed to be the source of the Northeast plume that has low concentrations of chlorinated solvents in proximity to two closed landfills. The groundwater plume of greatest concern is the Main Base/Strategic Air Command (SAC) Area plume which is two plumes that have commingled and migrated over a mile offbase. Approximately 10,000 people live within a 1-mile radius of the site, and approximately 60,000 people within a 3-mile radius of the site depend on groundwater for their main drinking water supplies. The entire base was listed on the NPL in November 1989.

Contaminants and Risks

Contaminated Media:


Groundwater


Soil and Sludges


Environmentally Sensitive Area

Soil and groundwater contain various volatile organic compounds (VOCs), gasoline, diesel fuel, metals, pesticides, and other contaminants. There is the potential for human exposure to these hazardous chemicals by accidentally ingesting, inhaling, or coming into direct contact with contaminated soil or groundwater. In addition, the EPA is concerned about the ecological impact of these contaminants and that remediation and/or reuse does not affect the vernal pools found at Mather.

Who is Involved

This site is being addressed through Federal actions, with the Air Force as the lead agency.

Investigation and Cleanup Activities

This site is being addressed in five stages: immediate actions and four long-term remedial phases focusing on cleanup of the AC&W Disposal Area, the landfills, groundwater and soils, and basewide soils sites.


The Air Force took action to clean up three soil areas using soil excavation, bioventing, and air sparging. In addition, the Air Force provided alternate sources of drinking water to residents along the western boundary of Mather whose domestic wells had been contaminated by base operations. Initially, the Air Force provided bottled water to residents of Old Placerville Road and Happy Lane and in 1986 the Air Force connected the Citizens Utility District water supply to four residences on Old Placerville Road and the Camelia Mather Mobile Home Park (37 units).


AC&W Disposal Area: In 1989, the Air Force began investigating the nature and extent of contamination at the AC&W Disposal Area. Late in 1993, the Air Force selected a cleanup remedy for the area that consisted of extracting the contaminated groundwater; treating the extracted groundwater by air stripping, and reinjecting the treated groundwater into the ground. This system became operational in 1995. In 1997, the disposal option changed to discharge of the treated groundwater to Lake Mather. The AC&W plume is contained and TCE concentrations are declining.


Landfills: In 1996 the Air Force excavated and consolidated contaminated soil from three landfills into another landfill. Two landfills, including the consolidation landfill, received low permeablity caps, which eliminated the potential for human contact with the refuse and reduced infiltration. The capped landfills are monitored for potential releases to groundwater and air.

Soil Sites: Of the 82 IRP sites identified for soils clean up, 69 have completed remediation. Most of these sites are relatively small areas such as ditches, motor pool wash areas, paint shops, fire training areas and oil/water separator sites. Some contaminated soils have been excavated and either bioremediated or disposed of offsite. Other areas of contaminated soil have been treated in-situ with soil vapor extraction (SVE) systems and bioventing. One area was capped.

Soil Sites: There remain 13 contaminated soil sites at Mather that are currently under remediation. These sites are being treated with SVE systems which extract chlorinated solvents and other volatile compounds from soil.

Groundwater: There are four other groundwater plumes in addition to the AC&W groundwater plume -- the Site 7 plume, the Northeast plume, and the Main Base/SAC Area plume. The Site 7 plume is associated with the Site 7 disposal pit, which was capped in 1999. The Site 7 plume is being remediated through a groundwater extraction and treatment system (ie., "pump and treat"). Contaminated groundwater is extracted and run through an air stripper that removes the contaminants; the treated water is reinjected into the groundwater system. The Site 7 plume extends offsite into a gravel mining area, which has made remediation difficult since wells have had to be abandoned and then redeveloped as mining progressed. The system went back on line in late 2006 after a more than three year down period. The Northeast plume is in the vicinity of landfills 3 and 4. Because of the low concentrations of contaminants in the plume, the plume is being monitored to see if the contaminant concentrations decline or increase over time. Concentrations in the plume have declined such that the plume currently being monitored is in close proximity to the former landfills. The Main Base/SAC Area plumes have comingled and are being treated as one, using extraction and air stripping. The Main Base/SAC plume has migrated over a mile offsite to the west/southwest of the MAFB, affecting three municipal supply wells. As a result, the Air Force installed well-head treatment systems at these three public drinking water supply wells in 1997. Because of the size of this plume, the Air Force has taken a phased approach to its remediation using pump and treat methods. The first three phases focused on "hot spot" removal, by installing 27 extraction wells primarily on the former base property. Phase IV, completed in 2002, added 8 extraction wells to control plume migration. An additional extraction well was installed at the southwest toe of the plume in late 2004 and a final extraction well was installed at the toe of the southern lobe of the plume in late 2007. The extracted groundwater is treated by air stripping and the treated water is currently reinjected into the groundwater system. Due to injection well capacity failures, the Air Force has proposed to begin surface discharge of treated water to a local ditch in 2008.

Mather Air Force Base is participating in the Installation Restoration Program (IRP), a specially funded program established by the Department of Defense (DOD) in 1978 to identify, investigate, and control the migration of hazardous contaminants at military and other DOD facilities. Mather Air Force Base was approved for closure under the 1988 Defense Base Closure and Realignment Commission and Congressional Action, which established special accounts for funding the environmental cleanup at closing bases.

Cleanup Results to Date

For the most part, potential exposure to contaminated soils has been eliminated through excavation and treatment of soils. Thirteen of 82 soils IRP sites are still under active remediation. Providing an alternate water supply to affected residents and installing wellhead treatment on municipal supply wells have reduced the potential of exposure to contaminated drinking water.

Potentially Responsible Parties

Potentially responsible parties (PRPs) refers to companies that are potentially responsible for generating, transporting, or disposing of the hazardous waste found at the site.

The Air Force is acting on behalf of the DOD to clean up the former Mather AFB.

Documents and Reports
Community Involvement

Public Meetings: RAB meetings are held on a pre-determined Wednesday evening three times per year.

Public Information Repositories

The public information repositories for the site are at the following locations:

Sacramento Central Library, 828 I Street, Sacramento, CA 95814

The most complete collection of documents
is the official EPA site file, maintained at

the following location:

Superfund Records Center
Mail Stop SFD-7C
95 Hawthorne Street, Room 403
San Francisco, CA 94105
(415) 536-2000

Enter main lobby of 75 Hawthorne street,
go to 4th floor of South Wing Annex.

Additional Links

Online versions are available through the U.S. Air Force website. Records of Decision can also be found at this link: https://afrpaar.lackland.af.mil/ar/docsearch.aspx

Contacts

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PRP Contact	Steve Hamilton, AFRPA	(916) 643-6420 x105	steve.hamilton@afrpa.pentagon.af.mil	3411 Olson St (#105), McClellan, CA 95652
Community Contact	Sandra Lunceford			RAB Co-Chair
Other Contacts				
After Hours (Emergency Response)	US EPA	(800) 424-8802		