McCormick & Baxter Superfund Site

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY • REGION 9

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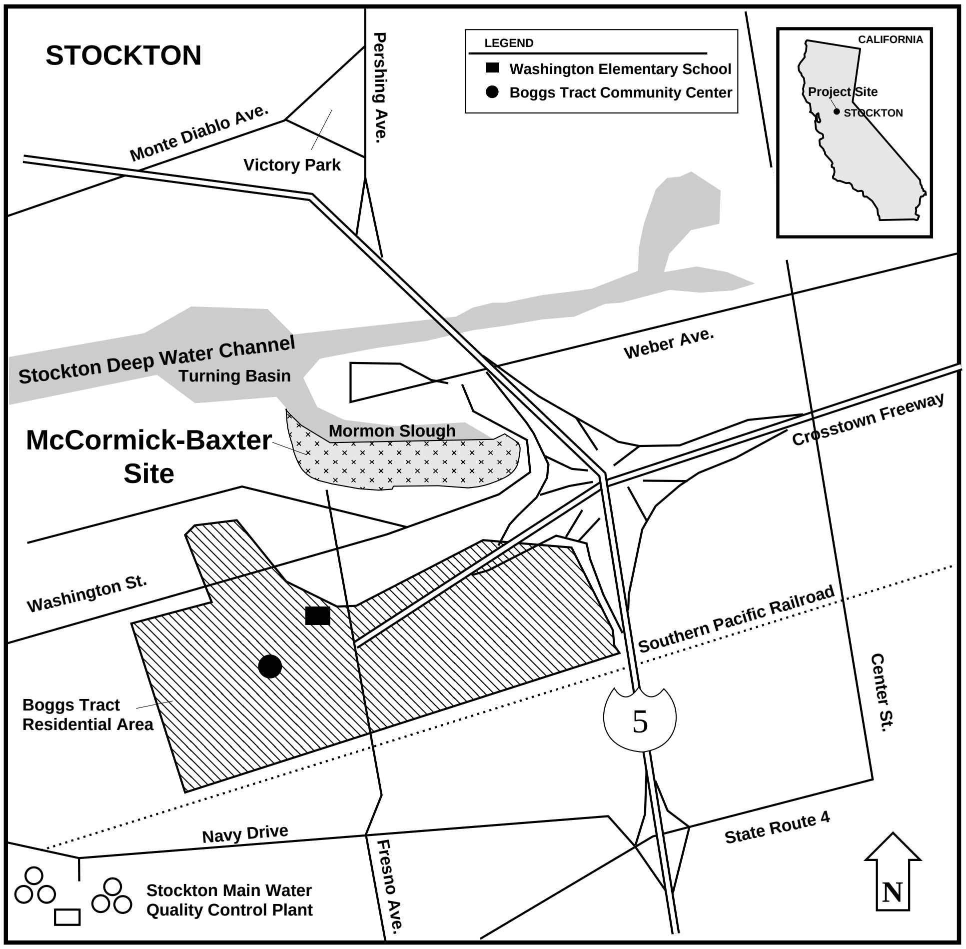


Figure 1: *Site location map of the McCormick and Baxter Superfund site in Stockton, CA*

OPPORTUNITIES FOR COMMUNITY INVOLVEMENT

You are encouraged to become involved with the cleanup process at the McCormick and Baxter Superfund Site. Activities include a Public Comment Period and a Community Meeting. Please see back page for more information.

EPA Announces Proposed Cleanup Plan for McCormick & Baxter Superfund Site

Introduction

This fact sheet presents the U.S. Environmental Protection Agency's (EPA) Proposed Plan for cleaning up soil, groundwater and sediment contamination at the McCormick & Baxter Superfund site in Stockton, California. This plan highlights key information about the extent of contamination at the site; potential human health and environmental risks posed by the contaminants; cleanup activities already completed at the site; and the technologies considered for the site cleanup, including EPA's preferred alternative. EPA is announcing this plan in accordance with section 117(a) of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) and is asking for public comments on it.

EPA is proposing a final remedy for soil and sediment, EPA is also proposing an interim remedy for groundwater to contain the groundwater plume while evaluating the effectiveness of a developing groundwater technology (see page 9). The remedy consists of:

- **Soil:** Excavation of surface soil from the eastern portion and consolidation/ capping in the western portion of the site; land use controls to limit access to the site

☞ WHAT'S INSIDE

- **Groundwater:** Extraction and treatment to control movement of the contaminated groundwater plume; restrictions on groundwater use.
- **Sediment:** Capping with clean sand to isolate contaminated sediment in Old Mormon Slough; some restrictions on use of the slough.

Please refer to pp 9,10 & 15 for details on each remedy.

EPA will hold a public meeting on September 29, 1998 to discuss the alternatives presented in this plan and to take comments. EPA encourages members of the public to review and comment on the alternatives described in this Proposed Plan during the public comment period (September 15-October 15, 1998). After review of all public comments, EPA, in consultation with the California Department of Toxic Substances Control (DTSC), the support agency, will select the cleanup remedy for the site. *Words in italics are included in the glossary on page 18.*

Site Background

The McCormick & Baxter site is located on 29 acres near the Port of Stockton (see **Figure 1**). The northern boundary of the site borders Old Mormon Slough which joins the Stockton Deepwater Channel on the San Joaquin River. Land use near the site includes heavy industrial, light manufacturing, and residential districts. The nearest residential area is located approximately 500 feet southwest of the site; additional residences are located across the I-5 freeway, approximately 750 feet southeast of the site.

McCormick & Baxter Creosoting Company operated a wood treating company at the site from 1946 until 1990, when the company went out of business. Most processes at the site involved treating wood with preservative solutions in retorts (large pressure vessels) located in the central portion of the site (**Figure 2**). After treatment, wood was removed and dried in storage areas throughout the site. Waste preservative from the

Figure 2: *Sources of Contamination at McCormick & Baxter Superfund Site*

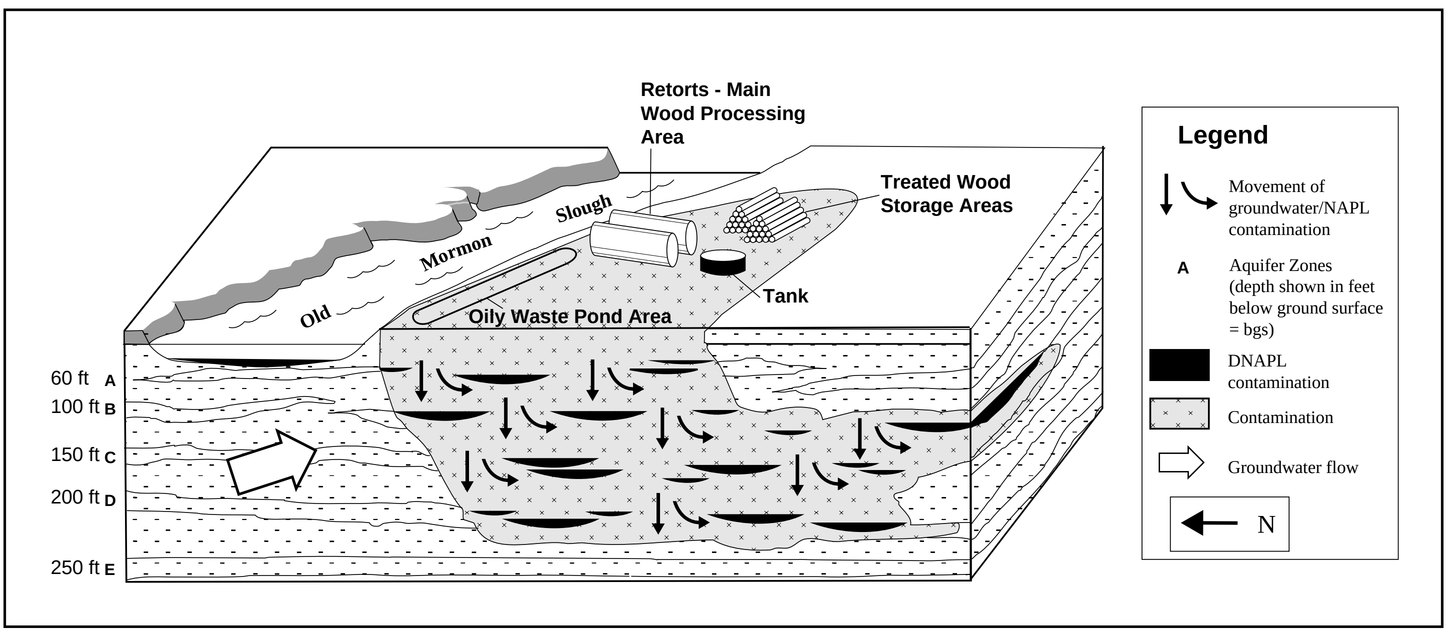


Table 1: *EPA Cleanup Activities at Site*

1992	Hazardous lab chemicals were neutralized and disposed. Site security was improved with new fencing.
1993	Tank chemicals and sludge were disposed off-site. Deteriorating asbestos was removed from processing area structures. Site security was improved with hiring of full-time security guards.
1994	Equipment was decontaminated and disposed off-site or sold at site auction. Demolition of buildings and above-ground tanks was completed.
1995	Twenty-nine new groundwater monitoring wells were installed. A pilot-scale *treatability study* was conducted at the site to evaluate potential soil cleanup technology.
1996	300-foot sheet piling wall was installed along Old Mormon Slough shoreline to control seeps from the oily waste ponds area. Laboratory treatability studies were conducted by EPA on site soils and groundwater to evaluate potential cleanup technologies.
1997	12,000 cubic yards of soil and oily waste were excavated from the oily waste ponds area, and transferred to on-site lined disposal area. Oily waste pond area was back-filled with clean soil. Central area of site was capped with asphalt cover.
Today	All wood treatment process units and tanks have been emptied of chemicals, cleaned and removed from the site. In addition, all above-ground structures at the site, with the exception of the office, two storage sheds and the stormwater collection system pumping station have been demolished.

treatment process was stored in oily waste ponds in the northwestern portion of the site next to Old Mormon Slough. These past processing operations caused contamination of soil and groundwater as well as sediment in the slough.

The site came to the attention of the California Regional Water Quality Control Board in 1977 after fish died in New Mormon Slough and the Stockton Deepwater Channel. This was attributed to chemicals in stormwater from the facility. As a result, McCormick & Baxter installed levees and a stormwater collection system to prevent further stormwater discharges from the site. Under state oversight, the company conducted investigations to determine the extent of contamination caused by operations at the site. M&B operated two groundwater extraction wells beginning in the mid-1980's. EPA stopped their operation in 1995 because they were only providing limited control of the groundwater plume.

McCormick & Baxter filed for bankruptcy in 1988 and continued operating the facility until 1990. EPA proposed the site to the *National Priorities List* (NPL) in February 1992. EPA added the site to the NPL on October 14, 1992 and became the lead agency to complete investigations at the site and to carry out a final cleanup remedy. Since that time, EPA has conducted many activities at the site. (Refer to **Table 1**)

Summary of Site Contamination

During the *Remedial Investigation* (RI) studies (see **Superfund Process** on page 14), EPA collected soil, groundwater and sediment samples to define the extent of contamination at the site and to fully assess potential risks to public health and the environment.

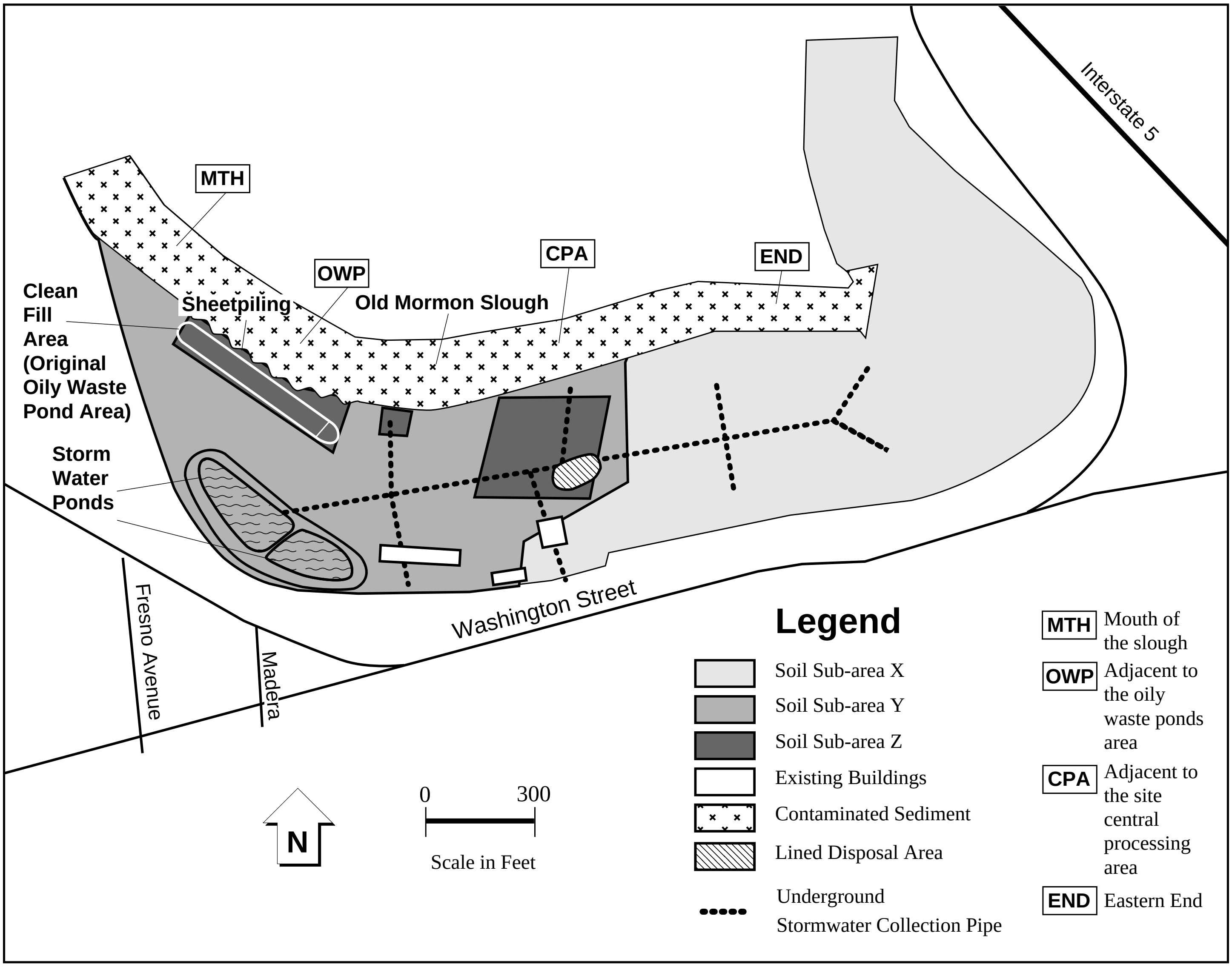
These studies found that *pentachlorophenol* (PCP), dioxin (which originates as a contaminant in industrial-grade PCP), *polynuclear aromatic hydrocarbons* (PAHs = compounds that are found in creosote) and arsenic (used in formulations with copper, chromium and zinc) are the primary contaminants of concern (COC's) found in soil, groundwater and sediment at the

FOR MORE INFORMATION

The information presented in this plan is based on several site documents, including the **Remedial Investigation (RI)**, **Feasibility Study (FS)**, **Human Health Risk Assessment** and **Ecological Risk Assessment** reports.

These and other site documents are available for review at the local information repository listed on page 19. The Administrative Record file, which contains all documents that were used to select a remedy, can be reviewed at the **EPA Superfund Records Center, 95 Hawthorne Street, San Francisco, CA 94105** and at **Stockton Public Library, 605 N. El Dorado Street, Stockton, 95203.**

Figure 3: *Soil and Sediment Contamination at McCormick & Baxter Superfund Site*



site. Naphthalene (a component of creosote) has low toxicity, but is also considered to be a COC at the site because it is very mobile.

Soils

EPA has divided soils at the M&B site into three soil "sub-areas" (Sub-areas X, Y and Z) based on the types and depths of contamination found at different parts of the site (see **Figure 3**).

Sub-area X is the eastern portion of the site where only the top foot of soil (except for a few isolated deeper spots) is contaminated with arsenic and low levels of dioxin. It is less contaminated than the rest of the site because it was only used for storage of treated wood. **Sub-area Y** is the upper layer (the *"vadose"* or *unsaturated zone*) of the western portion of the site where processing operations took place. Contamination in Sub-area Y extends to approximately 13 ft below ground surface (bgs). **Sub-area Z** consists of the areas of deeper soil contamination underlying Sub-area Y and extends from 13 ft bgs to 39 ft bgs. Most contamination in this sub-area is in the saturated zone (i.e., in direct contact with groundwater). Sub-areas Y and Z are contaminated with PCP, PAHs, dioxin and arsenic; the most contaminated and the deepest portions occur in the central processing area and the oily waste ponds area. The total volume of contaminated soils in cubic yards (cy) for Sub-area X is 37,100; in Sub-area Y it is 212,500 cy; and in Sub-area Z is 26,806 cy.

EPA also collected samples off-site to determine whether it would be necessary to clean up surface soil around the M&B property as part of the remedial action. The results showed that small-scale surface soil remediation may be necessary in the area immediately outside the site entrance. However, because it would be very small in scale, it could be conducted in conjunction with the other soil remediation described in this plan. EPA will take some additional off-site surface soil samples during the *Remedial Design* phase to confirm this. (Refer to **Superfund Process chart.**)

Groundwater

Groundwater, both below the M&B property and at locations beyond the fenceline, has been sampled since the early 1980's to monitor groundwater contamination related to the site. **Figure 4** shows the extent of groundwater contamination for all of the COCs found in groundwater at the site.

Groundwater generally flows in a southeasterly direction away from the site. Because some contaminants are more mobile than others, the various chemicals have migrated in different ways. For example, PCP is primarily found in the A aquifer zone (to approximately 60 ft below ground surface (bgs) while PAHs extend deeper to the B and C zones (to approximately 150 ft bgs). Arsenic and dioxin are more limited in extent because they are less mobile. (In addition, arsenic occurs naturally in geologic formations in the area, so its presence in groundwater does not originate solely from the M&B site.) Naphthalene, which is very mobile, has been detected in the D zone (to approximately 200 ft bgs) and at low levels in portions of the E zone (to approximately 250 ft bgs).

The highest concentrations of COCs are found in the uppermost aquifer (water-bearing) zones within the property boundary. Although groundwater contamination has moved beyond this area in the deeper aquifer zones, the years of sampling data indicate that the contaminant plume is not moving very quickly away from the site.

Groundwater can be affected by contaminants from soil in two ways. *Infiltration* of rain or irrigation water can cause contaminants in surface soils to leach into deeper soils and dissolve into groundwater. Also, the movement of substances called dense *non-aqueous phase liquids* (DNAPLs) can affect groundwater. DNAPLs do not dissolve in groundwater and can move independently of the normal groundwater flow. It is *DNAPL* movement, not infiltration, which is the primary cause of the widespread groundwater contamination found at the M&B site. DNAPLs are extremely difficult to remove from the subsurface and act as a continuing source of groundwater contamination. Because it is not technically possible to remove all DNAPL from the subsurface, complete cleanup of groundwater and soil at the site is impossible using current proven technologies.

Sediment

EPA sampling of sediment in Old Mormon Slough found site-related COCs at levels above sediment cleanup standards. Sampling of sediment at locations in the Stockton Deepwater Channel near the M&B site and in New Mormon Slough did not find the presence of contaminants related to the M&B site above sediment cleanup standards.

EPA also tested sediment in New Mormon Slough because stormwater from the site entered the City stormwater collection system and was discharged into New Mormon Slough for a period of approximately eight years. (This connection was closed in 1978 and no stormwater from the M&B site has entered New Mormon Slough since that time).

EPA divided Old Mormon Slough into four sub-areas based on the types and depths of contamination found at different parts of the slough (see **Figure 3**): END (eastern end); CPA (adjacent to the site central processing area; OWP (adjacent to the oily waste ponds area); and MTH (mouth of the slough).

The primary COCs identified in the sediments of Old Mormon Slough are PAHs and dioxin, generally not exceeding 8 feet below the mudline. Traces of oily material were found in Old Mormon Slough sediment samples, indicating the presence of *NAPLs*. However, contamination was found deeper than 18 ft below the mudline at two sample locations in the central and eastern portions of the slough. The MTH sub-area contains only a few shallow and scattered points of contamination at lower concentrations than the rest of the slough.

The volume of contaminated sediment at 0-8 feet below mudline in Old Mormon Slough that exceeded the total PAH sediment cleanup standard is 70,590 cubic yards.

Figure 4: *Extent of Groundwater Contamination*

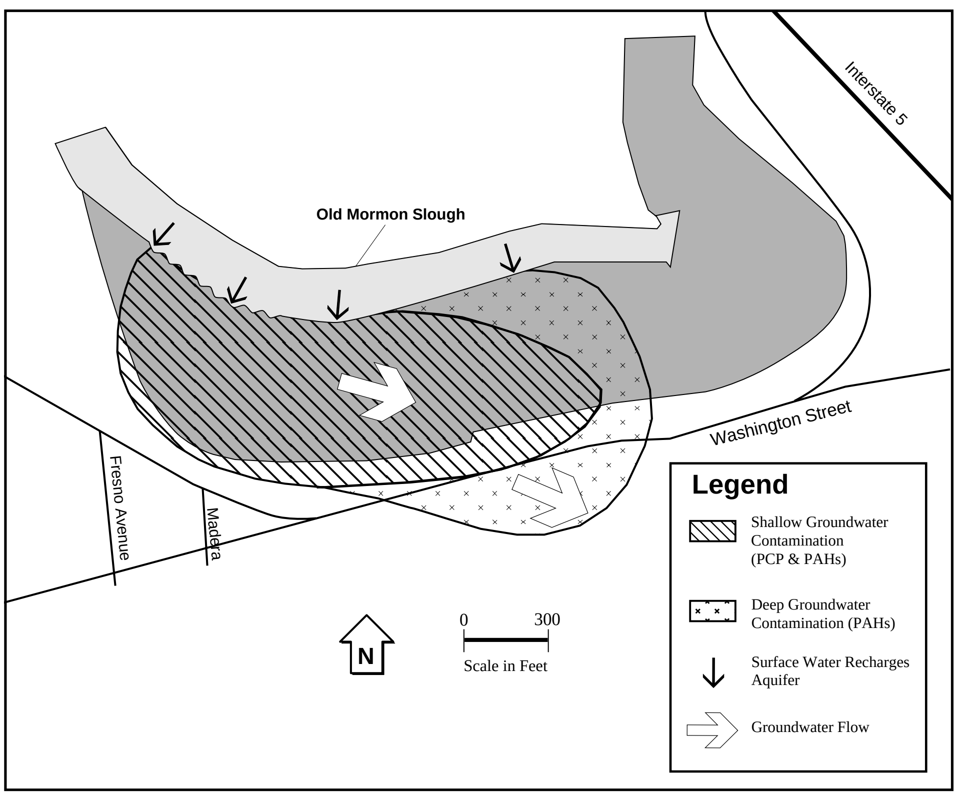
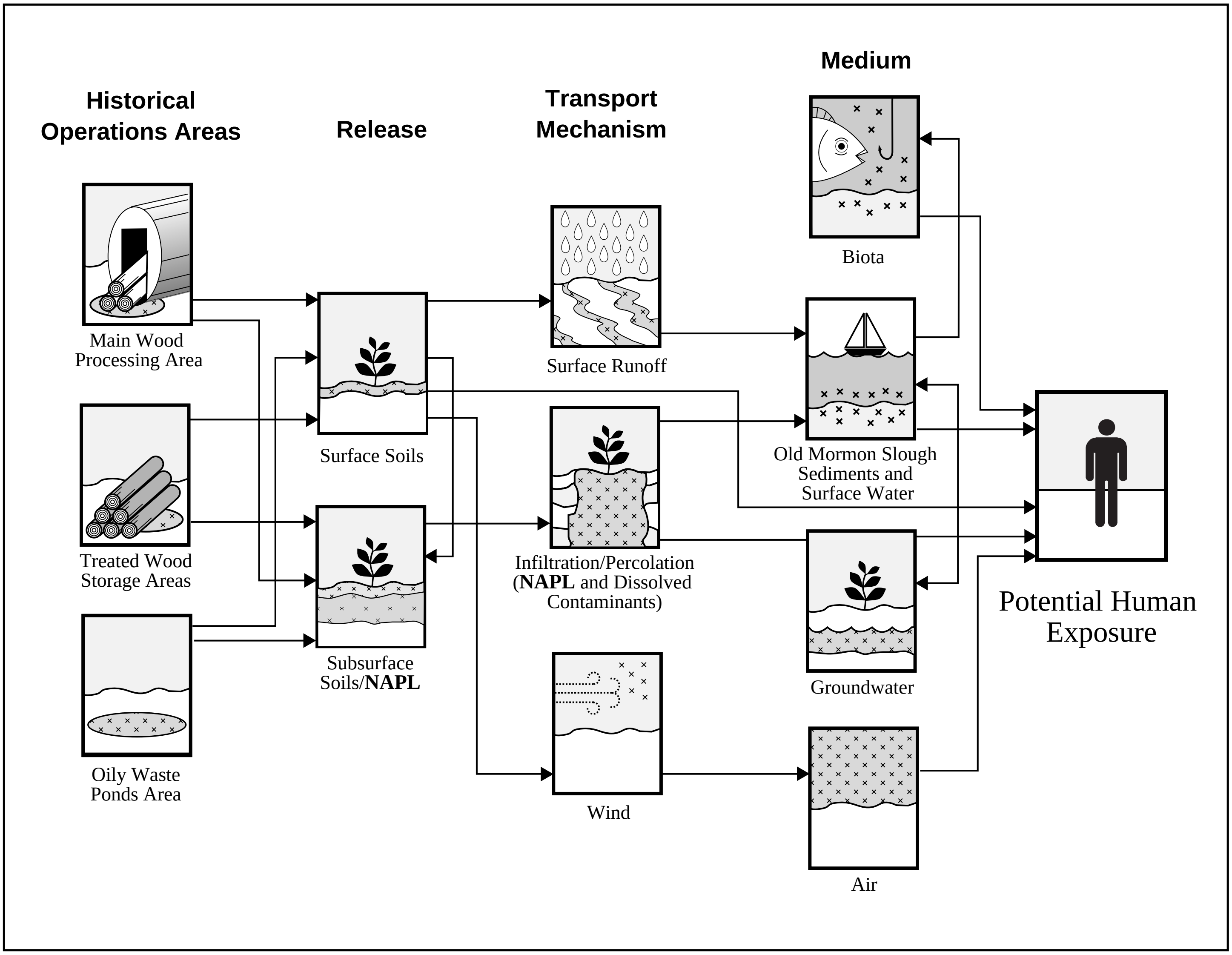


Figure 5: *Pathways for Potential Human Exposure to Contamination*



Assessment of Human Health and Environmental Risks

EPA conducted a human health *risk assessment* to evaluate "baseline" risk, i.e., risk if the site was not cleaned up and continued to be used for industrial purposes other than for treating wood. The study evaluated **potential** risks to humans through several risk exposure pathways at the site: (1) to on-site workers through exposure to chemicals in surface soil through incidental contact with the skin or ingestion of soil; (2) to both on-site workers and off-site residents from breathing contaminated dust from the site; (3) to persons who drink contaminated groundwater; and (4) to persons who eat contaminated fish caught near the site.

Potential risk for carcinogens (chemicals that can cause cancer) is defined in terms of the probability of an individual contracting cancer due to an extended exposure to contaminants. This probability is expressed as the number of "excess cancers" that would occur within a population in addition to the cancers that would otherwise occur to people not exposed to site contaminants. Risks that exceed one excess cancer in ten thousand mean that remedial action is generally warranted at the site.

For non-carcinogens (chemicals that do not cause cancer, but may cause other adverse health effects) the potential risk level is expressed in terms of a Hazard Index (HI). If the index is 1 or less than 1, no adverse health effects are expected to occur. If the index exceeds 1, unacceptable non-carcinogenic health effects may result, and remedial action is generally warranted at the site.

Risk from Contaminated Surface Soil

The only known **current** exposure to hazardous substances at the site would be to trespassers who come in contact with contaminated soil.

For workers at the site, the greatest risk of "excess" cancers, primarily from coming in direct contact with or ingesting surface soils, is three in one thousand. This risk level requires EPA clean-up action. For residents living near the site, the greatest **potential** cancer risk from breathing contaminants in dust from the site is five in one hundred million.

The non-carcinogenic Hazard Index (HI) for workers at the site from contaminated surface soil is estimated at 1, which means that no adverse health effects are expected to occur. For nearby residents (adults and children), the HI is much less than 1.

Risk From Contaminated Groundwater

Concentrations of contaminants in groundwater beneath the site exceed federal and state drinking water standards. Although the groundwater is not currently used for drinking water, it is considered a potential drinking water source by the state. If the contaminated groundwater were used for drinking water, it would exceed acceptable levels of risk. No contaminated groundwater from the M&B site is currently used or has been used in the past for human consumption. Neighborhood water is supplied by deep wells over one mile from the site. There is **no current** risk to nearby residents from using tap water.

All stormwater at the site is contained by a stormwater collection system and does not enter surrounding areas.

Risk from Eating Locally-Caught Fish

The EPA Human Health Risk Assessment used fish collected in Old Mormon Slough and the Stockton Channel to estimate the risk from eating locally-caught fish. The study found that the potential risks from eating fish contaminated with dioxin are generally higher for fish collected in Old Mormon Slough than in the Stockton Channel.

The potential risks from eating approximately 4.5 to 5 ounces of fish every day for 30 years (considered "subsistence consumption") exceed the carcinogenic risk range for the levels of dioxin found in fillets of some of the local fish species. Risks decrease for persons who eat fish less often and/or eat smaller amounts.

Exposure to contaminants in fish is also based on other factors such as how much of the contaminant is present, the size and species of the fish, and how the fish is cooked. Eating whole fish bodies is more of a health risk since contaminants are stored in skin and fatty tissue, and tend to concentrate in fish organs and guts.

The California Department of Health Services (DHS) has recently issued a recommendation that no fish which is caught in either the Stockton Channel, New Mormon Slough, or Old Mormon Slough should be eaten.

Ecological Risk Assessment

EPA conducted an Ecological Risk Assessment to study whether contamination at the M&B site was harmful to the environment. There is no evidence of widespread impact to the aquatic ecosystem. However, the level of sediment contamination found in Old Mormon Slough warrants remedial action as some risk was identified for some receptor species (bottom-dwelling organisms, fish and fish-eating birds).

Contamination at a site is divided into "principal" and "low-level" threats. A principal threat is caused by highly toxic or highly mobile contaminants that would present a significant risk to human health or the environment. Principal threats at the M&B site are those areas that were used for processing operations or where chemical handling occurred (i.e., the central processing area, including the track pit, tank farm, butt tank, and the oily waste ponds). Principal threat areas in sediment are those adjacent to the oily waste ponds, adjacent to the central processing area and the eastern section of the slough. Although groundwater is not a principal threat because it is considered a non-source material, DNAPL in groundwater is considered a principal threat waste.

Low-level threats are areas of the site that represent low risks. Soil low-level threats are generally found at those areas of the site that were used only for storage of treated wood. The mouth area of Old Mormon Slough represents a low-level threat area of sediment.

EPA generally expects to use treatment to address the principal threats posed by a site, if practicable. However, containment can be used for low-level threat areas or where treatment is impracticable.

Actual or threatened releases of hazardous substances from the site, if not addressed by the preferred alternative or one of the other active measures considered in this plan, may present a threat to public health, welfare or the environment.

Cleanup Standards

The overall goal of the remedial action at the M&B site is to protect human health and the environment from the risks presented by contamination in soil, groundwater and sediment. Based on the current land use zoning at and in the vicinity of the M&B property, EPA has determined that cleanup standards that are consistent with continued industrial use of the M&B site are appropriate.

The site has been divided into two separate Operable Units (OUs) for cleanup: the Soils-Groundwater OU and the Surface Water-Sediment OU (Old Mormon Slough). The specific goals for remediation of each OU are shown below.

Primary Goals for the Soils-Groundwater OU

- Prevent human exposure to contaminated surface soils through direct contact, ingestion or inhalation
- Prevent migration of contaminated surface soils from the site through stormwater runoff
- Remove or contain contaminated source areas (soil and DNAPL) that represent a threat to groundwater
- Prevent further migration of the groundwater contamination plume; prevent exposure to the contaminated groundwater; and evaluate further risk reduction

Primary Goals for Surface Water-Sediment OU

- Reduce potential risks to human health from the consumption of fish contaminated with site-related chemicals
- Prevent exposure of humans and aquatic organisms to contaminated sediments

- Remove or contain contaminated sediment in Old Mormon Slough that represents a threat to surface water or groundwater
- Allow restoration of the beneficial uses of surface waters in the area of the site (fish and shellfish harvesting) and protection of aquatic life and wildlife

SUMMARY OF CLEANUP ACTIVITIES

EPA evaluated a wide range of technologies to meet the industrial cleanup objectives for the M&B site. Remedial actions generally fall into three broad categories: **containment** (preventing movement of the contamination from the site), **disposal** (removing the contaminated material from the site), and **treatment** (destroying or immobilizing the contaminants). The alternatives that fall into each of these categories are identified in this section and in **Table 3**.

EPA conducted a technical screening process of potential technologies to identify those that were most appropriate for the conditions at this site. Decisions on the appropriateness of these technologies were based on the results of site-specific treatability studies and the success of the technology at similar sites. Innovative technologies were also considered.

Institutional controls such as land use and access restrictions were included in the evaluation. These controls include measures to prevent future disturbance of the selected remedy and to prevent inappropriate future uses of the site. Institutional controls would not fully protect human health. However, some controls such as deed restrictions, site access restrictions and/or governmental restrictions on groundwater use would be included in each of the following alternatives except No Action.

The following summaries include estimates of the costs to complete the remedies. Cost estimates are given in present value dollars and include design, construction and long-term operation and maintenance (O&M) costs. In accordance with EPA guidance, O&M costs were estimated for a 30-year period; however,

Table 2 lists the specific cleanup standards for soil and sediment at the M&B site. There are no cleanup standards listed for groundwater because a final groundwater remedy is not being selected at this time. There are two sets of cleanup standards for soil. Surface soil cleanup standards are for soil from 0 to 5 feet bgs and address the risk from direct contact with the soil at the surface or during shallow excavation. Subsurface soil cleanup standards are for soil deeper than 5 feet and address soil that represents a risk to groundwater through *leaching*. If the contamination at the site could be addressed by treatment of off-site disposal, then cleanup to these depths would be protective for future industrial use.

Table 2: *Cleanup Standards -* ***Soil*** *(mg/kg)*

Contaminant of Concern	Surface Soil Cleanup Level [a]	Subsurface Soil Cleanup Level [b]	Surface Soil Reference Concentration [c]	Subsurface Soil Reference Concentration [d]
Carcinogenic PAHs [e] **- Benzo(a)pyrene**	2.6	0.4 - 8	Not Applicable	Not Applicable
Non-carcinogenic PAHs: **- Acenapthene** **- Anthracene** **- Flourene** **- Naphthalene** **- Pyrene**	 1100 57 900 2400 1000	 29/570 590/12,000 28/560 4/84 210/4200	Not Applicable	Not Applicable
Pentachlorophenol	79	0.001/0.03	Not Applicable	Not Applicable
Dioxin [f]	0.001	----	Not Applicable	Not Applicable
Inorganics: **- Arsenic**	24	1/29	8.63	6.69

(Measurements in milligram per kilogram (mg/kg) = parts per million)
a Based on EPA Region 9 Preliminary Remediation Goals (PRGs) adjusted to 1x 10^{-5} risk level
b EPA Soil Screening Levels (SSLs) with a Dilution-Attenuation Factor (DAF) of 1 and 20, respectively
c Average of reference location concentrations based on 0-5 ft bgs soil samples
d Average of reference locations concentrations based on 5 -15 ft bgs soil samples
e Based on Relative Potency Values for benzo(a)pyrene (BAP)
f Centers for Disease Control (CDC) recommendation for dioxin

Table 2: *Cleanup Standards -* ***Sediment*** *(mg/kg)*

Contaminant of Concern	Old Mormon Slough-East	Old Mormon Slough-Central Processing Area	Old Mormon Slough-Oily Waste Ponds	Old Mormon Slough-Mouth	Other (a)
Total PAHs	12 mg/kg	5 mg/kg	5.3 mg/kg	3.7 mg/kg	10.4 mg/kg (SCR) 0.0601 mg/kg (SJR)
Dioxin	21 µg/kg	21 µg/kg	21 µg/kg	21 µg/kg	87.7 pg/g (SCR) 0.29 pg/g (SJR)

(Measurements in milligram per kilogram (mg/kg) = parts per million)
Note: Site-specific sediment cleanup levels for dioxin and total PAHs are based on the risk-based Maximum Sediment Concentrations (MSCs) developed in the Ecological Risk Assessment report
a Reference sediment concentration (dry wt.) from upstream Stockton Channel (SCR) and San Joaquin River (SJR)

O&M activities at this site are expected to extend beyond 30 years. Some institutional controls may remain in effect indefinitely.

Soil Cleanup Alternatives (Sub-areas X and Y)

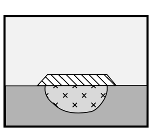
The soil remediation alternatives are for soil in the vadose (unsaturated) zone (Sub-areas X and Y). Sub-area Z is soil within the saturated zone and will be addressed when a final groundwater remedy is selected. EPA evaluated soil biological treatment (composting, land farming, slurry phase treatment); thermal treatment (incineration, thermal desorption); physical treatment (solidification/stabilization (S/S), soil washing); and chemical treatment (*solvent extraction*, *dehalogenation*).

Treatability tests conducted by EPA on site soils indicated that biological and thermal treatment processes would either not achieve soil cleanup standards or would be extremely difficult to implement because of the presence of dioxin. The tests also showed that chemical treatment (solvent extraction) could effectively treat organic soil contamination. However the cost would be prohibitive because of the large volume of soil to be treated and the amount of treatment residuals that would be created by the process. In addition, the biological and thermal technologies would not be effective for arsenic contamination.

Alternative S-1: No Action

No action would be taken at the site to address soil contamination. This represents baseline conditions at the site and is used for comparison with the other soil alternatives. Cost: $0

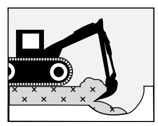
Soil Containment Alternatives



Alternative S-3: Capping-In-Place

A cap would be placed over the entire site. This cap would consist of a layer of asphaltic concrete over an aggregate (base rock) layer and a 1-3 ft protection layer of clean imported fill.This would make the stormwater ponds unnecessary, so the ponds would also be backfilled and capped.

Total Present Worth Cost: $3.3M -$5.1M (Capital: $2.8M -$4.1M; 30 Year O&M: $0.5M -$1M)

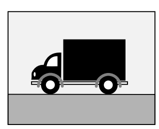


Alternative S-4: Excavation of Sub-area X Soils; Consolidation and Capping in Sub-area Y

Sub-area X soils would be excavated and moved to Sub-area Y. The stormwater ponds would be backfilled with the excavated soils and graded. The consolidated Sub-area X and Y soils would then be covered with the same type of cap as in S-3.

Total Present Worth Cost: $3.5M -$5.3M (Capital: $3.2M -$4.7M; 30 Year O&M: $0.3M -$0.6M)

Soil Disposal Alternative



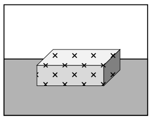
Alternative S-5: Excavation of Sub-area X Soils and Off-Site Disposal; Capping of Sub-area Y

Similar to S-4, this alternative would also excavate Sub-area X soils. However, rather than moving these soils (37,100) to Sub-area Y, these soils would be transported to a permitted hazardous waste landfill for off-site treatment (if necessary) and disposal.

Because the quantity of Sub-area Y soil (212,500 cy) is considered too large a volume for cost-effective off-site disposal, it would be contained on the site as in the previous alternatives. The costs estimated for this action assume that it will be completed after May 1999, when regulatory changes relating to off-site disposal of hazardous waste will increase the disposal costs. The same type of cap as in S-3 and S-4 would be installed over Sub-area Y, including the stormwater ponds.

Total Present Worth Cost: $16.1M - $26M (Capital: $15.8M -$25.4M; 30 Year O&M: $0.3M -$0.6M)

Soil Treatment Alternative:



Alternative S-6: Excavation and Ex-Situ Solidification/Stabilization of Sub-areas X and Y; Backfilling and Capping in Sub-area Y

Sub-area X and Y soils would be excavated and treated using *ex-situ solidification/stabilization (S/S)*. Site-specific treatability studies indicated that S/S would be effective for both organic and inorganic contaminants in these vadose zone soils. The treated soil would be used as backfill in Sub-area Y, including the stormwater ponds, and the area would be capped as in S-4 and S-5.

Total Present Worth Cost: $22.6M -$39M (Capital: $22.4M - $38.6M; 30 Year O&M: $0.3M -$0.6M

GROUNDWATER/NAPL (GW/N) CLEANUP ALTERNATIVES

The following cleanup alternatives do not represent a final remedy for groundwater. Although the goal for groundwater cleanup is to restore the aquifer beneath the site to drinking water standards, there are currently no proven technologies that can achieve it at this site. The groundwater alternatives evaluated in this proposed plan are for an interim remedy to contain the groundwater contamination plume until further studies are completed and a final decision can be made on how to remediate the groundwater contamination.

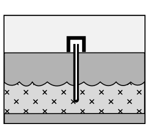
The proposed method for treating and disposing of the extracted groundwater is the same for all of the groundwater cleanup alternatives. Extracted groundwater would undergo an on-site “treatment train” of oil/water separation to remove DNAPL, biotreatment, filtration and carbon adsorption. The preferred disposal option for the treated groundwater is discharge to nearby surface water under the Clean Water Act National Pollutant Discharge Elimination System (NPDES) in combination with re-use for irrigation at or near the site if possible. The NAPL that was extracted and separated would be treated/ disposed off-site or recycled if possible.

Alternative GW/N-1: No Action (With Monitoring)

No action would be taken at the site to address groundwater and DNAPL contamination. Groundwater monitoring would be conducted for a minimum of 30 years. This represents baseline conditions at the site and is used for comparison with the other groundwater alternatives.

Total Present Worth Cost: $2.1M (30 year groundwater monitoring cost)

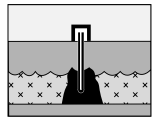
Groundwater/NAPL Containment Alternatives



Alternative GW/N-3: Groundwater Extraction/Treatment with Incidental DNAPL Removal

This alternative uses *hydraulic control* of the groundwater plume to prevent further movement of contaminated groundwater beyond its present limits. The system would use an estimated 33 extraction wells pumping at a total rate of 235 gallons per minute (gpm). DNAPL would be removed incidentally with groundwater. Extracted groundwater and DNAPL would be treated and disposed as described above.

Total Present Worth Cost: $13.4M (Capital: $2.5M; 30 Year O&M: $10.9M)



Alternative GW/N-4: Groundwater Extraction/Treatment with Systematic DNAPL Removal

Like GW/N-3, this alternative also relies on hydraulic control. This system would pump at the same rate as GW/N-3, but it would use more extraction wells (estimated at 43). In addition, dedicated DNAPL extraction wells would be installed at known and potential DNAPL source areas to maximize DNAPL recovery. Extracted groundwater and DNAPL would be treated and disposed as described above.

Total Present Worth Cost: $15.8M (Capital: $2.7M; 30 Year O&M: $13.1M)

Steam-Enhanced DNAPL Recovery —A Developing Technology

A new technology has recently been tried at sites with DNAPL contamination. The process surrounds the area of DNAPL with wells that inject steam into the subsurface to enhance the movement of DNAPL and direct it into recovery wells. The results of this technology have been promising at other sites. Although it is a very expensive technology, it could be cost-effective if it reduced the length of time that groundwater had to be extracted and treated at the site. While there are some reasons why this technology may be difficult to implement at this site (the contamination is very deep; the groundwater is close to the surface; the location of Old Mormon Slough may prohibit the injection of steam into the subsurface), the technology will be evaluated during the Remedial Design (RD) phase of this site cleanup to see if it could be used here effectively.

SEDIMENT CLEANUP ALTERNATIVES

EPA considered sediment treatment technologies similar to those for soil: biological treatment, thermal treatment, physical treatment, and chemical treatment. As contamination in the MTH sub-area of Old Mormon Slough is shallow, scattered and at relatively low concentrations, all of the alternatives (except No Action) assume that the MTH sub-area would not be actively remediated. The remedy for the MTH sub-area would rely on institutional controls (deed and/or land use restrictions on the future use of the slough) and/or access restrictions (warning signs and log booms).

Alternative SD-1: No Action (With Monitoring)

No action would be taken at the site to address sediment contamination. This represents baseline conditions in Old Mormon Slough and is used for comparison with the other sediment alternatives. Monitoring of sediment and *biota* would be conducted.

Total Present Worth Cost: $0.3M (30 year monitoring cost)

SELECTING A REMEDY

The U.S. EPA uses nine criteria to evaluate alternatives for addressing contamination at a hazardous waste site. They are:

1. **Overall Protection of Human Health and the Environment**
   How risks are eliminated, reduced or controlled through treatment, engineering or institutional controls.

2. **Compliance with Applicable or Relevant and Appropriate Requirements (ARARs)**
   Federal and state environmental statutes met and/or grounds for waiver provided.

3. **Long-term Effectiveness**
   Maintain reliable protection of human health and the environment over time, once cleanup goals are met.

4. **Reduction of Toxicity, Mobility or Volume (TMV) Through Treatment**
   Ability of a remedy to reduce the toxicity, mobility and volume of the hazardous contaminants present at the site.

5. **Short-term Effectiveness**
   Protection of human health and the environment during construction and implementation period.

6. **Implementability**
   Technical and administrative feasibility of a remedy, including the availability of materials and services needed to carry it out.

7. **Cost**
   Estimated capital, operation and maintenance costs of each alternative.

8. **State Acceptance**
   State concurs with, opposes or has no comment on the preferred alternative.

9. **Community Acceptance**
   Community concerns addressed; community preferences considered.

REMEDY

Table 3

EVALUATION CRITERIA	SOIL ALTERNATIVES					GROUNDWATER	
		CONTAINMENT ALTERNATIVES		DISPOSAL ALTERNATIVE	TREATMENT ALTERNATIVE		CONTAINMENT
	S-1: No Action	S-3: Capping in Place	S-4: Excavation of Sub-area X Soils, Consolidation and Capping in Sub-area Y	S-5: Excavation of Sub-area X Soils and Off-site Disposal, Capping of Sub-area Y	S-6: Excavation and Ex-situ Solidification/ Stabilation of Sub-area X and Y, Backfilling, and Capping in Sub-area Y	GW/N-1: No Action	GW/N-3: Hydraulic Control with Incidental NAPL Removal
Overall Protection of Human Health and Environment	-	+	+	+	+	-	+
Compliance with ARARs	-	+	+	+	+	-	-
Long-term Effectiveness and Permanence	-	-	+/-	+/-	+	-	+/-
Reduction in Toxicity, Mobility and Volume through Treatment	-	-	-	+/-	+/-	-	+/-
Short-term Effectiveness	N/A	+	+	+/-	+/-	N/A	+
Implementability	N/A	+	+	+/-	+/-	N/A	+
Cost ($ million)	$0	$3.3 - $5.1	$3.5 - $5.3	$16.1 - $26	$23 - $39	$2.1 (Monitoring)	$13.4
State Acceptance	-	-	+	-	-	-	+
Community Acceptance							

ALTERNATIVES	SEDIMENT ALTERNATIVES				
ALTERNATIVE		CONTAINMENT ALTERNATIVES		DISPOSAL ALTERNATIVE	TREATMENT ALTERNATIVE
GW/N-4: Hydraulic Control with Systematic NAPL Removal	SD-1: No Action	SD-2: Capping	SD-3: Dredging and Confined Disposal	SD-4: Dredging and Off-site Disposal	SD-3: Dredging and On-site Treatment
+	-	+	+	+	+
-	-	+	+	+	+
+/-	-	-	+/-	+/-	+/-
+/-	-	-	+/-	+	+
+	N/A	+	-	-	-
+	N/A	+	+/-	+/-	+/-
$15.8	$0.33 (Monitoring)	$1.9 - $2.9	$2.4 - $2.9	$40 - $351	$67.1 - $67.7
+	-	+	-	-	-

Legend

- = Does not meet criterion

+/- = Partially meets criterion

+ = Fully meets criterion

N/A = Not applicable

(shaded) = EPA's preferred alternative

Superfund is the commonly used name for the Comprehensive Environmental Response, Liability, and Compensation Act (CERCLA), a federal law enacted in 1980 and amended in 1986. CERCLA enables EPA to respond to hazardous waste sites that threaten public health and the environment.

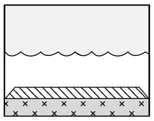
There are two major steps in the Superfund process. During Remedial Investigation EPA gathers information to determine the general nature, extent and sources of contamination at a site. The second major step is the Feasibility Study when possible cleanup alternatives are evaluated. EPA selects a cleanup alternative considering the following criteria: overall protection of human health and the environment; potency of the contamination (toxicity); ability of the contaminants to move through the environment (mobility); amount of contamination (volume); short-term and long-term effectiveness; how easily an alternative can be applied; cost; community acceptance; and compliance with state and federal laws.

Once the final cleanup plan has been selected, EPA formalizes this decision by signing a "Record of decision" (ROD). The ROD also contains a Responsiveness Summary, EPA's response to public comments. The design (Remedial Design) and actual cleanup activities (Remedial Action) can then proceed.

Site	***NPL Ranking/ Listing***	***Remedial Investi-gation (RI)***	***Feasibility Study (FS)***	***Proposed Plan/ Public Comment Period***	***Record of Decision (ROD)***	***Remedial Design***	***Remedial Action***
Completed				***We Are Here***	***To Be Completed***		
Contamination was first discovered in 1977; cleanup began by State and McCormick & Baxter; company closes in 1990	Site placed on EPA's National Priorities List, becoming eligible for remedial action under Superfund.	Completed identification of the sources and areas of contamination.	Identified cleanup options for the contamination problems.	The public will have the opportunity to comment on EPA's preferred cleanup option during a 30-day public comment period. EPA will consider these comments and respond to them in writing.	EPA will document the selected cleanup option(s) for the Superfund site.	A detailed plan for the selected remedy will be developed. Enforcement activities with potentially responsible parties will be pursued.	A qualified contractor will be selected to begin the cleanup according to the detailed plan.
	October 1992.	1994-1995	1994-1995	1998			

Public Involvement Activities Occur Throughout the Superfund Process

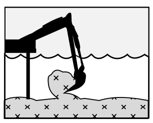
Sediment Containment Alternatives



Alternative SD-2: In-Place Capping

Approximately three-fourths of Old Mormon Slough would be capped with a minimum of two feet of clean sand to isolate the contaminated sediment from organisms in the slough and prevent the contaminants from being released into the surface water. Areas of the cap that may be susceptible to washing away would be strengthened with heavier material.

Total Present Worth Cost: $1.9M - $2.9M (Capital: $1.2M - $2.4M; 30-Year O&M: $0.6M)

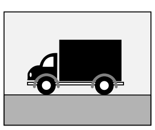


Alternative SD-3: Dredging and Confined Disposal; Partial Capping

The most heavily contaminated sediment in the OWP and CPA sub-areas of Old Mormon Slough would be dredged to approximately 8 feet below the mudline. A confined disposal facility (CDF) would be constructed by placing a sheet piling wall across the eastern end (approximately one-third) of the slough. The dredged material would be placed behind the wall and the CDF area would be capped over. Remaining areas of deeper contamination that may be exposed by the dredging would be capped (either an OWP/CPA cap or CPA only cap). The cost assumes a CPA cap only.

Total Present Worth Cost: $2.4M - $2.9M (Capital: $2M - $2.5M; 30-Year O&M: $0.4M)

Sediment Disposal Alternative

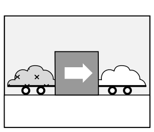


Alternative SD-4: Dredging and Off-Site Disposal; Partial Capping

Sediment would be dredged from the OWP, CPA and END sub-areas of Old Mormon Slough. It would be dewatered on-site and transported for off-site treatment (if necessary) and disposal at a permitted hazardous waste facility. The costs estimated for this action assume that it will be completed after May 1999, when regulatory changes relating to off-site disposal of hazardous waste will increase disposal costs. Remaining areas of deeper contamination that may be exposed by the dredging would be capped (either a full cap or CPA/END only cap). This cost assumes a CPA/END cap only.

Total Present Worth Cost: $39.5M - $351M (Capital: $39.1M - $350M; 30-Year O&M: $0.4M - $0.6M)

Sediment Treatment Alternative



Alternative SD-5: Dredging and On-Site Treatment; Partial Capping

Sediment would be dredged as in SD-4. The dredged material would be dewatered and treated on-site by solvent extraction to remove the organic contamination, then solidified to address the remaining *metals* contamination. The treated material would be disposed of in the western portion of the site, assuming sufficient space was available there. Remaining areas of deeper contamination that may be exposed by the dredging would be capped (either a full cap or CPA/END only cap). This cost assumes a CPA/END cap only.

Total Present Worth Cost: $67.1M - $67.7M (Capital: $66.7M-67.1M; 30-Year O&M: $0.4M - $0.6M)

COMPARISON OF CLEANUP ALTERNATIVES

As required by the *NCP* for selection of a final remedy, alternatives for soil, groundwater/NAPL and sediment were evaluated according to nine evaluation criteria (see FIGURE 5, Selecting a Remedy). The following section and TABLE 3 (Comparative Analysis Summary of Remedial Alternatives) summarize the evaluation carried out in the FS report for each of the nine criteria.

■ Overall Protection of Human Health and the Environment

Soil Alternatives

All of the soil alternatives except No Action reduce risk at the site by eliminating the direct contact and inhalation/ingestion pathways. Sub-areas X and Y are isolated and controlled under Alternative S-3. Soil cleanup standards could be achieved in Sub-area X under Alternatives S-4, S-5 and S-6, as contaminated soil would be removed from this portion of the site. Overall, risk reduction at the site is approximately equal under S-5 and S-6, which provide a slightly greater degree of protection of groundwater than under S-4.

Groundwater/NAPL Alternatives

Because neither GW/N-3 nor GW/N-4 will restore the groundwater aquifer, the degree of risk reduction that can practically be achieved in a reasonable period of time is similar for the two alternatives. Both groundwater/NAPL alternatives rely on hydraulic control to prevent further movement of contaminated groundwater and on institutional controls to prevent the use of contaminated groundwater beneath the site. Alternative GW/N-4 may be slightly more protective because it has the potential to remove more DNAPL. The No Action alternative includes long-term groundwater monitoring only, and does not provide any protectiveness.

Sediment Alternatives

SD-4 and SD-5 provide a greater degree of protectiveness than SD-2 or SD-3 because SD-4 and SD-5 would remove all accessible sediment contamination from Old Mormon Slough and dispose of it off-site or treat it on-site. Some deeper sediment contamination may be exposed in the CPA and END sub-areas by dredging (SD-3, SD-4 and SD-5), thus requiring some degree of capping following dredging. SD-2 and SD-3 are protective because they isolate the contamination under a sand cap or behind a confined disposal facility (CDF), preventing exposure to aquatic organisms and resuspension into the surface water. Long-term monitoring, maintenance and institutional controls would be required to ensure the integrity of the cap.

Compliance with ARARs

Soil Alternatives

There are no chemical-specific ARARs for soil. All soil alternatives except No Action are expected to comply with location- and action-specific ARARs.

Groundwater/NAPL Alternatives

None of the groundwater alternatives will comply with chemical-specific ARARs because none of them will restore the aquifer to drinking water standards. All the alternatives except No Action are expected to comply with location- and action-specific ARARs.

Sediment Alternatives

There are no chemical-specific ARARs for sediment. All sediment alternatives except No Action are expected to comply with location- and action-specific ARARs.

Long-Term Effectiveness

Soil Alternatives

Alternatives S-4, S-5 and S-6 would each eliminate Sub-area X risks by removing contaminated soil from this portion of the site. Alternative S-6 reduces residual risk at the site to a greater degree than S-4 and S-5 because it relies on treatment (S/S) as well as capping. (Although Sub-area X soils are completely removed from the site under S-5, contaminants are not destroyed but moved to an off-site location for management). S-3 also reduces risk at the site, although to a lesser extent, by leaving all contamination in place and capping over the entire site. The effectiveness of all alternatives involving capping are dependent on long-term monitoring and maintenance of the cap.

Groundwater/NAPL Alternatives

Alternatives GW/N-3 and GW/N-4 provide long-term risk reduction through containment as long as they continue to operate, but do not achieve aquifer restoration. Both alternatives ultimately rely on long-term extraction and treatment of groundwater (along with DNAPL removal and disposal/treatment/recycling) to control movement of the groundwater contamination plume and contain it on the site. The No Action alternative does not provide any long-term effectiveness.

Sediment Alternatives

Capping (SD-2), if properly monitored and maintained, is expected to be effective in isolating the contaminants. The confined disposal (SD-3), off-site disposal (SD-4) and on-site treatment (SD-5) alternatives all provide additional permanence and long-term effectiveness by reducing or removing the mass of contamination present in Old Mormon Slough. However, even the dredging alternatives are expected to leave some contaminated sediment that is technically unfeasible to excavate and would need to be followed by full or partial capping.

Reduction of Toxicity, Mobility or Volume (T/M/V)

Soil Alternatives

Capping alone (S-3 and S-4) does not reduce toxicity or volume, but does reduce the mobility of contaminants. Alternative S-5 would reduce the volume of contaminated soil at the site through the off-site disposal (and treatment if necessary) of Sub-area X soils. Alternative S-6, which includes treatment by S/S as well as capping, provides a greater reduction in mobility at Sub-area B; however, it does not reduce toxicity and volume. In fact, volume would be increased by the S/S process because of the addition of the binding materials.

Groundwater/NAPL Alternatives

There is no reduction in T/M/V under the No Action alternative. The other two alternatives achieve some reduction in T/M/V because they treat the extracted ground water and DNAPL. GW/N-4 may achieve a slightly greater reduction in T/M/V than GW/N-3 because it has the potential to remove more DNAPL. However, neither of these alternatives removes or treats source areas to the extent that aquifer restoration would be achieved within a reasonable period of time.

Sediment Alternatives

Two of the alternatives, SD-4 and SD-5, are designed to remove and/or treat the contaminated sediment to reduce its toxicity, mobility or volume. However, some inaccessible deeper sediment contamination may remain after dredging. SD-2 and SD-3 do not involve treatment and would not reduce toxicity or volume. However, they would reduce the mobility through containment, with SD-3 providing a slightly greater reduction. Migration of contaminants from sediment to groundwater would still represent a potential pathway.

Short-Term Effectiveness

Soil Alternatives

The short-term effectiveness of S-3 is better than for the other soil alternatives because the handling of contaminated soils is minimal and soils are capped in place. S-4 poses greater short-term risks because Sub-area X soils are excavated and moved to Sub-area Y. The short-term effectiveness of S-5 is lower than for S-3 and S-4 because it involves some risk to the public from the transportation and off-site disposal of a large volume of contaminated soil. Risks to remediation workers are greater under S-4 and S-5 than S-3. S-6 involves extensive handling and on-site treatment of contaminated soils, resulting in greater potential risks to remedial workers and the nearby community than S-3, S-4 or S-5. Alternative S-6 also takes a much longer time to complete.

Groundwater/NAPL Alternatives

Short-term risks under the No Action alternative are minimal since it only involves groundwater monitoring. There are some short-term risks to remediation workers under the other two alternatives as a result of construction activities and operation of the groundwater treatment system. GW/N-4 may have a slightly higher degree of risk because it involves the construction of more wells; however, both alternatives extract and treat the same volume of groundwater. No risks are expected to be posed to the nearby community as a result of long-term groundwater treatment at the site.

Sediment Alternatives

All of the alternatives except No Action present some risk to remediation workers. All of the alternatives would cause severe short-term impacts to organisms in the slough. The capping alternative (SD-2) presents the least risks to workers and to the slough ecosystem. All the alternatives involving dredging would present an increased risk to remediation workers, with the on-site treatment alternative having the greatest risk. Dredging will have more severe ecological effects on the slough than capping alone. The CDF alternative (SD-3) would cause the greatest environmental damage by permanently filling approximately 30% of the slough and its aquatic habitat.

■ Implementability

Soil Alternatives

Capping (S-3) is the simplest alternative to implement. S-4 is also relatively easy to implement, although it does involve excavation of Sub-area X. Alternatives S-4, S-5 and S-6 would result in elevation differences between the eastern and western portions of the site unless corrected with clean backfill. The implementability of off-site disposal (S-5) depends on the availability and accessibility of a permitted off-site hazardous waste disposal facility. Because of the complexity of the S/S process, S-6 would be the most difficult alternative to implement. Implementation times are the same (8 months) for S-3, S-4 and S-5. Alternative S-5 would require 20-22 months to implement.

Groundwater/NAPL Alternatives

Construction and operation of the groundwater extraction and treatment system are similar for Alternatives GW/N-3 and GW/N-4, although more extraction wells would be constructed for GW/N-4. Disposal of treated groundwater is expected to be discharged to surface water near the site or reuse for both GW/N-3 and GW/N-4. Implementability is the easiest for No Action, since it only involves groundwater monitoring. Implementation times to construct the groundwater extraction and treatment system are the same for both GW/N-3 and GW/N-4, 24 months.

Sediment Alternatives

All of the sediment alternatives are technically feasible. The on-site treatment alternative (SD-5) is the most technically complex and has the greatest implementation concerns. In addition, on-site disposal of the treated sediment in the upland portion of the site would be difficult due to limited capacity. The availability and accessibility of a permitted off-site disposal facility could cause significant scheduling delays and increased costs. Capping (SD-2) would raise the bottom of the slough by a minimum of two feet. The CDF alternative (SD-3) would fill approximately 30% of the slough and eliminate waterfront access to this portion of the slough. SD-3 and the other two alternatives involving dredging would deepen most of the slough. The off-site disposal alternative (SD-4) could cause public concern regarding the transportation of hazardous waste from the site. Implementation times are the same (4-10 months) for SD-3, SD-4 and SD-5, but 1-2 months for SD-2.

■ Cost

Soil Alternatives

The No Action alternative does not involve any cleanup costs. Alternative S-3 and S-4 costs are similar, estimated at $3.3M - $5.1M and $3.5M - $5.3M, respectively. The estimated S-5 cost range is $16.1M - $26M. Costs for S-6 are significantly higher than any of the others, estimated in the range of $22.6M - $39M.

Groundwater/NAPL Alternatives

The cost for groundwater monitoring alone (No Action) is approximately $2.1M for the required 30-year period. The costs for extracting and treating groundwater and NAPL for the same period of time for alternatives GW/N-3 and GW/N-4 are $13.4M and $15.8M, respectively. Construction costs for GW/N-4 are higher than for GW/N-3 because there are more extraction wells.

Sediment Alternatives

The No Action alternative includes costs for monitoring only ($0.33M). The capping alternative (SD-2) has the lowest capital and O&M costs ($1.9M), assuming the use of a 90% sand cap/10% armored cap combination. The CDF alternative (SD-3) has higher capital costs but lower O&M costs ($2.4M - $2.9M). The on-site treatment alternative (SD-5) has very high costs ($67.1M - $67.7M). Costs for off-site disposal (SD-4) range from $39.5M - $351M, because actual costs depend on the distance to the disposal facility and the pre-disposal treatment requirements.

■ State Acceptance

EPA is the lead agency and California DTSC is the support agency for the M&B site. DTSC has concurred on this Proposed Plan.

■ Community Acceptance

This will be determined based on comments received at the Proposed Plan Public Meeting and during the Public Comment Period.

EPA'S PREFERRED ALTERNATIVES FOR SOIL, SEDIMENT AND GROUNDWATER

Based on information currently available, EPA believes that the following alternatives provide the best balance among the other alternatives with respect to the evaluation criteria. EPA expects the preferred alternative to satisfy the statutory requirements in

CERCLA section 121(b) as follows: to be protective of human health and the environment; comply with ARARs (or justify a waiver); be cost-effective; utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable; satisfy the preference for treatment as a principal element, or justify not meeting the preference.

Soil Preferred Remedy

Alternative S-4 (Excavation of Sub-area X and Consolidation/ Capping in Sub-area Y) is the preferred alternative for soil remediation. This alternative is preferred because it removes contamination from the eastern half of the site and allows redevelopment of approximately half of the site, with some land use restrictions. Additionally, consolidation and capping of Sub-area X in the western portion of the site (Sub-area Y) provides a protective remedy at one-fourth to one-seventh the cost of off-site disposal or on-site treatment. Institutional controls such as land use and access restrictions would also be implemented to prevent future disturbance of the cap and to prevent inappropriate future uses of the site.

Groundwater/NAPL Preferred Interim Remedy

Alternative GW/N-4 (Groundwater Extraction/Treatment with Systematic NAPL Removal) is the preferred groundwater/NAPL remedy. This is an interim groundwater remedy. Both GW/N-3 and GW/N-4 contain the groundwater contamination plume and provide protection by preventing its further movement; however, GW/N-4 is preferred because it has the potential to remove more DNAPL. Institutional controls such as deed restrictions and/or governmental restrictions on groundwater use would be part of the groundwater remedy.

Sediment Preferred Remedy

SD-2 (In-Situ Capping) is the preferred sediment remedy. Because Old Mormon Slough is a dead end slough that is not well flushed by river or tidal action, contamination is likely to persist there for a long time in the absence of a cleanup effort. For the same reason, a sand cap (with limited reinforcement in areas susceptible to erosion) over the contaminated sediment is expected to be a protective and cost-effective remedy for Old Mormon Slough. Sediment is a potential source of groundwater contamination. However, this represents a relatively minor source compared to the very large amount of DNAPL in the Soils-Groundwater O.U. In addition, any groundwater contamination from sediment would be captured by the groundwater extraction system described under the Groundwater/NAPL preferred remedy. Two isolated areas of low-level sediment contamination near the mouth of Old Mormon Slough will be addressed by the use of institutional controls.

Changes to the Selected Remedy

The proposed final soil and sediment remedies are consistent with the interim groundwater containment remedy. If EPA later identifies and selects as the final groundwater remedy a different groundwater technology that can restore the aquifer to drinking water standards, EPA will re-evaluate the soil and sediment remedies to determine whether or not these remedies are consistent with any later selected groundwater remedy.

Because a final groundwater remedy is not being selected at this time, there will be a second Proposed Plan and Record of Decision in the future for this site. ■

THE NEXT STEPS

Please refer to figure 6 (the Superfund process). After the Public Comment Period closes, EPA will respond to written and verbal comments on the Proposed Plan in a document called a "Responsiveness Summary." After considering all public comments, EPA, with the concurrence of California EPA/DTSC, will make the decision for the remedy and document the decision in the Record of Decision (ROD), which includes the Responsiveness Summary. The ROD will be available for review at the locations described under "For More Information".

The final Remedial Action Plan, as presented in the ROD, could differ from the preferred alternative, depending on new information or arguments that the lead agency may consider as a result of public comments.

Once the ROD is signed, the selected cleanup alternatives will be implemented. This will include the preparation of engineering plans (remedial design, or RD) before actual cleanup begins. EPA will initiate RD immediately after completion of the ROD.

Glossary

Bioremediation -The use of microorganisms to transform harmful substances into non-toxic compounds
Carcinogen -A substance that causes cancer
Chemicals of Concern - Substances which pose a threat to public health and/or the environment
Dehalogenation - A process of using a chemical substance (such as iodine) to react with and change contaminants such as PCBs and dioxins that may be found in soil
Operable Unit - Operable Unit - The designation for an area of separate activity (or geographic area or specific site problem) which is undertaken as part of a Superfund site cleanup.
Pentachlorophenol (PCP) -An organic compound used as a wood preservative
Polynuclear aromatic hydrocarbons (PAHs) -Compounds contained in creosote; some PAHs cause cancer
Risk assessment -An evaluation of the risk posed to human health and/or the environment by exposure to contaminants at a site.
Treatability tests -Small-scale studies conducted either in a laboratory or at the site, to evaluate whether a technology is appropriate for a site
Unsaturated (Vadose) zone - The area above the water table where soil pores are not fully saturated, although some water may be present.

FOR MORE INFORMATION

EPA has established an information "repository" at the **Stockton Public Library, 605 N. El Dorado Street, Stockton, CA 95203**, phone **209-944-8221**. All of the documents related to the cleanup effort may be reviewed in the information center at the library during regular library hours.

We also have given extra copies of this fact sheet to the **Boggs Tract Community Center, 533 S. Los Angeles Avenue, Stockton, CA**. You may contact Arlene Coffee at **209-468-3978**.

Also, a complete Administrative Record, which forms the basis for technical decisions made at the site, is kept at the **EPA Records Center, 75 Hawthorne Street, San Francisco, CA 94105. Phone 415-744-2167**. Hours 8:00 AM - 4:30 PM, Monday through Friday.

QUESTIONS AND CONCERNS

If you have questions about information in this fact sheet or you have questions about the Superfund activities at the McCormick & Baxter site, please contact the EPA people below:

Technical Issues at the Site
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Community Concerns
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75 Hawthorne Street (CGR-2)
San Francisco, CA 94105
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EPA MAILING LIST FOR McCORMICK AND BAXTER

COUPON

We need your help to update our mailing list. Please mark the box and complete the coupon below. Or you may call toll free at 1-800-231-3975. 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. Thanks.

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Inside:

EPA Announces Proposed Cleanup for McCormick and Baxter Superfund Site

En esta edición:

La EPA anuncia su propuesta para la depuración del centro Superfund McCormick & Baxter

***PLUS:* Incluye resumen especial en español**

OPPORTUNITIES FOR COMMUNITY INVOLVEMENT

- ***Public Comment Period -*** **September 15 through October 15**
- ***Community Meeting -*** **September 29**

Public Comment Period

You can make a difference by giving EPA your verbal or written comments to this Proposed Plan and other site-related documents for clean-up of soil, groundwater and sediment at the McCormick & Baxter Superfund site in Stockton. Comments can be given orally or in writing at the Community Meeting on September 29, 1998 or you can send written comments, **post-marked no later than October 15**, to:

Marie Lacey, Remedial Project Manager
USEPA - Superfund Division
75 Hawthorne Street (SFD-7-4)
San Francisco, CA 94105

Community Meeting

On Monday, September 29,1998, from 7:00 pm to 9:00 pm, EPA will conduct a public meeting at the Boggs Tract Community Center, 533 S. Los Angeles Avenue, Stockton. Agency staff will give a brief presentation on the proposed cleanup plan, respond to questions and then take both oral and written comments on its Proposed Plan and related documents. Your comments will help EPA make its final decision.

All those who comment on the Proposed Plan will receive a "Response Summary," EPA's official response to all comments it receives.

U.S. Environmental Protection Agency, Region IX
75 Hawthorne Street (SFD-3)
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Attn: Vicky Semones

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Correction:

*EPA will hold a public meeting on **Monday, September 28**, 1998*