

**FOURTH FIVE-YEAR REVIEW REPORT FOR  
MCCORMICK AND BAXTER CREOSOTING COMPANY SUPERFUND  
SITE  
SAN JOAQUIN COUNTY, CALIFORNIA**



PREPARED BY

U.S. Army Corps of Engineers

Seattle District

FOR

**U.S. Environmental Protection Agency**

Region 9

Approved by: **MICHAEL MONTGOMERY** Digitally signed by MICHAEL MONTGOMERY Date: 2023.09.25 18:20:43 -07'00' Date:

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## Errata Sheet

March 28, 2024

Page 14, second paragraph, second sentence (Section 2.4.1) – Replace the sentence “In 2015, the California Department of Toxic Substances Control (DTSC) became responsible for operation and maintenance for their parcel (Subarea X).” with “The 2007 Consent Decree between UPRR, DTSC, and EPA and the 2015 Soil Operable Unit Transfer Agreement both establish that UPRR maintains responsibility for O&M of the on-Site parcel that is owned by UPRR.”

# Executive Summary

This is the fourth Five-Year Review of the McCormick and Baxter Creosoting Company (Site) located in Stockton, California. The purpose of this Five-Year Review is to review information to determine if the remedy is and will continue to be protective of human health and the environment.

The Site is located at 1214 West Washington Street in the City of Stockton, California in San Joaquin County. The Site occupies approximately 32 acres near the Port of Stockton at the junction of Interstate 5 and State Highway 4. The McCormick and Baxter Creosoting Company operated at the Site for approximately fifty years until 1991. Various wood preservation processes were used at the Site during its operational history. Preservatives included creosote, pentachlorophenol, arsenic, copper, chromium, and zinc. Solvents or carriers for these preservatives included petroleum-based fuels, such as kerosene and diesel, butane, and ether.

In a March 1999 Record of Decision, Environmental Protection Agency (EPA) selected the following remedies for the groundwater, upland soils, and surface water-sediment contamination at the Site to protect long-term human health and the environment:

- Extraction of groundwater and on-Site treatment as the interim remedy;
- Excavation of contaminated soil in the eastern portion of the Site and the subsequent consolidation and capping of these soils in the western portion of the Site;
- Collecting storm water in catch basins to prevent off-Site discharges; and
- In-situ capping of contaminated sediments in Old Mormon Slough, north of the Site.

To date, the interim groundwater remedy has not been implemented. EPA is currently conducting groundwater monitoring to support the final selection of a groundwater remedy in addition to conducting several pilot studies to better characterize the groundwater contamination. Although there is no remedy being implemented for the groundwater, there are no current completed exposure pathways.

In 2005, EPA issued an Explanation of Significant Differences to clarify that the sediment remedial action included bank stabilization work to protect the cap and the permanent relocation of the individual living on a barge in the slough (including relocation of his vessels).

Construction of the soil remedy was completed in 2011, and the remedy is functioning as intended by the Record of Decision. Soil excavation, consolidation, and capping was successful in removing exposure pathways to contaminated soil on the Site. However, large cracks continue to appear in the asphalt cap which may be attributed to either inadequate design and/or construction or possibly attributed to trespassers driving across the cap. In January 2023, a storm event release from the basins was assumed to have occurred as evidenced by the full basins and the presence of water in the discharge pipe.

Construction of the surface water-sediment remedy was completed in 2006, and the remedy continues to function as intended by the Record of Decision. The sediments in the Old Mormon Slough were

successfully contained with a sand cap, and the cap remains effective to date. Access to the capped area of the slough is prohibited through a small boat intrusion barrier and U.S. Coast Guard Safety Zone.

Exposure assumptions, toxicity data, cleanup levels and remedial action objectives used at the time of the remedy selection are still valid. Toxicity values for multiple contaminants have changed since the last Five-Year Review; however, they do not affect the protectiveness of the remedies.

The upland soils remedy currently protects human health and the environment because the remedy prevents stormwater runoff, minimizes the migration of contaminants from subsurface soils, and prevents human exposure to contaminated surface soils. However, for the remedy to be protective in the long-term, the following actions need to be taken: the asphalt cap requires evaluation to ensure the quality and suitability of the cap remains protective; the stormwater basins require updates for additional capacity; and physical security access controls need to be updated to ensure trespassers cannot access the Site to ensure protectiveness.

The surface water-sediment remedy is protective of human health and the environment. All exposure pathways have been eliminated or controlled through the sand cap, the small boat intrusion barrier, and the safety zone established by the US Coast Guard.

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# List of Acronyms and Abbreviations

cPAH	Carcinogenic Polycyclic Aromatic Hydrocarbons
DTSC	California Department of Toxic Substances Control
EPA	United States Environmental Protection Agency
NAPL	Non-aqueous phase liquid
PAHs	Polynuclear aromatic hydrocarbons
PCP	Pentachlorophenol
ROD	Record of Decision
Site	McCormick and Baxter Creosoting Company Superfund Site
USACE	United States Army Corps of Engineers

# 1. Introduction

The purpose of a Five-Year Review is to evaluate the implementation and performance of a remedy in order to determine if the remedy will continue to be protective of human health and the environment. The methods, findings, and conclusions of reviews are documented in Five-Year Review reports. In addition, Five-Year Review reports identify issues found during the review, if any, and document recommendations to address them.

The U.S. Environmental Protection Agency (EPA) is preparing this five-year review pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act Section 121, 40 Code of Federal Regulation Section 300.430(f)(4)(ii) of the National Contingency Plan and EPA policy.

This is the fourth Five-Year Review for the McCormick and Baxter Creosoting Company Superfund Site (Site). The triggering action for this statutory review is the completion of the previous Five-Year Review Report on September 24, 2018. The Five-Year Review has been prepared because hazardous substances, pollutants, or contaminants remain at the Site above levels that allow for unlimited use and unrestricted exposure.

The Site consists of three Operable Units<sup>1</sup>. The upland soils and the surface water-sediment operable units will be addressed in this Five-Year Review. An interim remedy has been selected for the groundwater operable unit, but the groundwater remedy has not been implemented and will not be discussed in detail.

The McCormick and Baxter Creosoting Company Superfund Site Five-Year Review was led by Sania Kamran, EPA Region 9 Remedial Project Manager. Participants included Cynthia Wetmore, EPA Region 9 Superfund Five-Year Review Coordinator, Cynthia Ruelas, EPA Region 9 Superfund Five-Year Review co-coordinator, and from the U.S. Army Corps of Engineers (USACE): Jake Williams, Five-Year Review Project Manager, Justin McNabb, hydrogeologist, Katie Richwine, physical scientist, and Charity Meakes, environmental engineer. The review began on October 5, 2022.

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<sup>1</sup> During cleanup, a Site can be divided into distinct areas depending on the complexity of the problems associated with the Site. These areas, called operable units, may address geographic areas of a Site, specific Site problems, or areas where a specific action is required.



**Table 1. Five-Year Review Summary Form**

<b>SITE IDENTIFICATION</b>		
<b>Site Name:</b> McCormick and Baxter Creosoting Company		
<b>EPA ID:</b> CAD009106527		
<b>Region:</b> 9	<b>State:</b> CA	<b>City/County:</b> Stockton/San Joaquin
<b>SITE STATUS</b>		
<b>National Priorities List Status:</b> Final		
<b>Multiple Operable Units?</b> Yes	<b>Has the Site achieved construction completion?</b> No	
<b>REVIEW STATUS</b>		
<b>Lead agency:</b> EPA		
<b>Author name:</b> Sania Kamran, Project Manager		
<b>Author affiliation:</b> EPA		
<b>Review period:</b> 10/5/2022 – 5/12/2023		
<b>Date of Site inspection:</b> 3/16/2023		
<b>Type of review:</b> Statutory		
<b>Review number:</b> 4		
<b>Triggering action date:</b> 9/24/2018		
<b>Due date (<i>five years after triggering action date</i>):</b> 9/24/2023		

## 1.1. Background

The McCormick and Baxter Creosoting Company used various wood preservation processes at 1214 West Washington Street within the City of Stockton, San Joaquin County, California from 1946 until 1991. Petroleum-based fuels including kerosene and diesel, butane, and ether were used as carriers for wood preservatives such as creosote, pentachlorophenol (PCP), arsenic, copper, chromium, and zinc. The primary facility areas identified as principal sources of contamination include the main processing area, oily waste ponds area, Cellon process area, and PCP mixing shed/butt tank area (Figure 1).



Figure 1. Historic Site Use Map

Soil contamination occurred through the various handling processes and some on-Site disposal of products containing the preserving chemicals. Sediment contamination resulted from stormwater runoff, direct spills of chemicals during the processing operations and unloading of chemicals from barges, and migration of non-aqueous phase liquid (NAPL) from the upland portion of the Site. Groundwater contamination occurred through free-phase and dissolved-phase transport through the vadose zone and spread as a result of advective and dispersive properties of the aquifer and chemical properties.

Contamination at the Site was discovered in 1977 when a fish kill occurred in the waters of the New Mormon Slough and the Stockton Deepwater Channel following a major storm event. This prompted an investigation into the cause. It was discovered that PCP-laden stormwater runoff from the McCormick and Baxter facility discharged into New Mormon Slough via a connection to the City of Stockton storm drain system. Based on the results of a preliminary assessment and Site inspection, EPA proposed adding the McCormick and Baxter Creosoting Company Site to the National Priorities List and finalized the listing in October 1992.

## *1.2. Physical Characteristics*

The McCormick and Baxter Creosoting Company Superfund Site occupies approximately 32 acres near the Port of Stockton at the junction of Interstate 5 and State Highway 4 (Figure 1). An 8-acre parcel of land in the southeastern portion of the Site is owned by the Union Pacific Railroad. Old Mormon Slough forms the northern boundary of the Site, Washington Street forms the southern and eastern boundaries, and an industrial facility (located at the Port of Stockton Turning Basin) is located to the west of the Site.

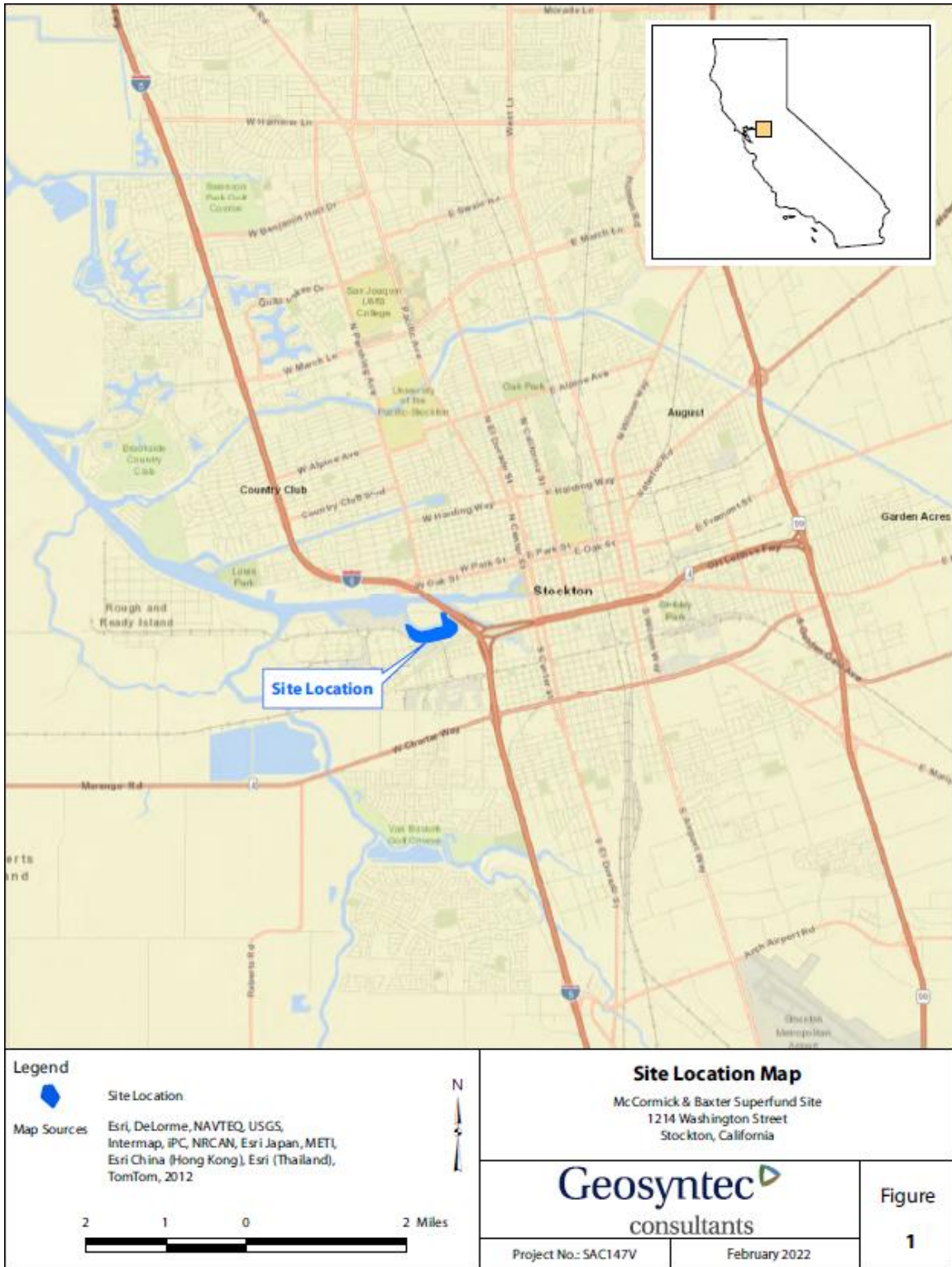
Regionally, the Site is situated on the margin of the Sacramento River-San Joaquin River Delta in the Great Valley geomorphic province of California. The terrain has low relief, with elevations ranging from 8 to 15 feet above mean sea level.

Non-potable supply wells (for either industrial or agricultural uses) exist to the northeast of the Site; however, the high salinity and total dissolved solids content of the water indicate that potable supply wells would not likely be installed near the Site. The nearest active municipal water supply wells to the Site are situated over 3.5 miles to the northeast and at a depth greater than 200 feet below ground surface.

Old Mormon Slough was historically used for water-borne transportation of lumber and other goods, and the western end of the slough, where it adjoins the Turning Basin, is still used as a docking area for barges and other vessels. Nearby surface water bodies include New Mormon Slough, the Stockton Deepwater Channel, and the San Joaquin River.

The Site is predominately in an industrial land-use area. Other nearby land uses include light manufacturing and residential. The nearest residential areas are located approximately 500 feet southwest of the Site and another 750 feet southeast of the Site, beyond Interstate 5 and State Highway 4 junction.

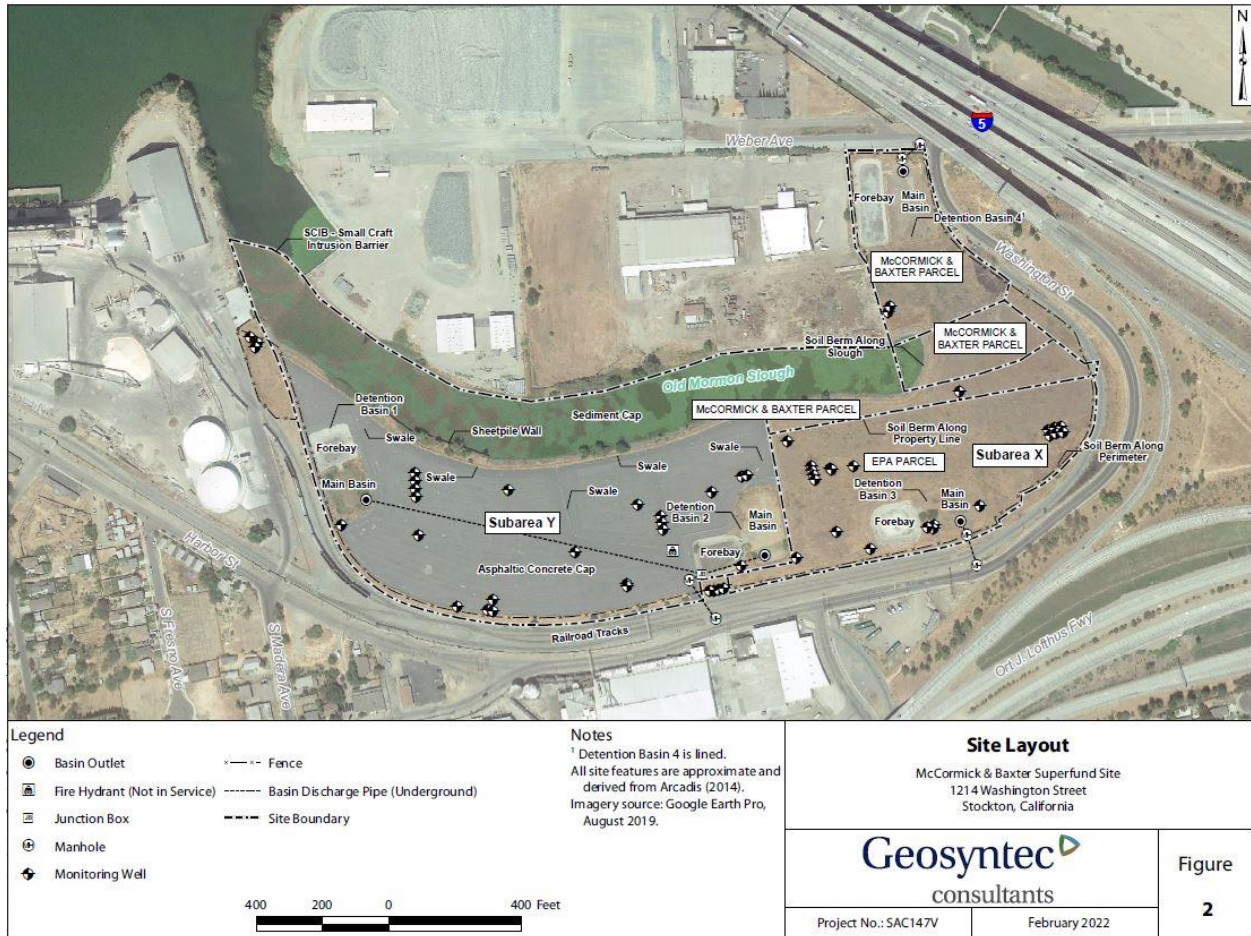
The 1999 ROD identified then-current and projected land use of the Site as continued industrial. This is consistent with the present land use at the Site. It is also consistent with the City of Stockton's 2035 General Plan, which designates the immediate Site area as industrial with commercial land use to the north, low-density residential to the southwest and medium-density residential to the southeast. The City of Stockton has a population of 322,120 (as of the 2020 US Census), most of whom reside within five miles of the Site.



Source: Geosyntec, 2022. 2021 Annual Operation and Maintenance Report.

**Figure 2. Location Map**





Source: Geosyntec, 2023. 2022 Annual Operation and Maintenance Report.

**Figure 3. Detailed Site Map**

### 1.3. Hydrology

The Site is located within the Eastern San Joaquin Subbasin of the San Joaquin Valley Groundwater Basin. The Eastern San Joaquin Subbasin is bounded by the Mokelumne River on the north and northwest, the San Joaquin River on the west, the Stanislaus River on the south and bedrock on the east.

Aquifers beneath the Site consist of a shallow aquifer that extends from approximately 15 feet below ground surface to 200 feet below ground surface and a deeper aquifer that extends from 200 to 1000 feet below ground surface. The shallow and the uppermost portion of the deep aquifer beneath the Site have been subdivided into five water-bearing zones designated as Zones A through E. These zones represent intervals of intermixed sands, clays, and silts.

The five zones are not hydraulically isolated from one another but are separated by silt-sand mixtures which impede (but do not prevent) groundwater movement between zones. Groundwater flow has varied in direction from northeast to southeast due to seasonal differences and multiple aquifer zones plus nearby

historical water extraction (pumping from City of Stockton production wells closest to the Site ended in 1993). With few exceptions, the observed vertical gradient of flow between aquifer zones has been downward.

Groundwater elevation measurements during the previous Five-Year Review ranged from 10 feet below ground surface near the Old Mormon Slough to 23 feet below ground surface near the southern perimeter of the Site.

## 2. Remedial Actions Summary

### 2.1. *Basis for Taking Action*

The primary contaminants of concern found in groundwater, soils, and sediments at the Site include PCP, carcinogenic polycyclic aromatic hydrocarbons (cPAHs), arsenic, dioxin/furans, and naphthalene. Groundwater concentrations exceed federal drinking water standards. The primary threat to human health is posed by incidental ingestion and dermal absorption by on-Site workers exposed to on-Site soils.

Sediment contamination related to the Site was limited to Old Mormon Slough. Two resident fish - bluegill and white catfish - and two fish-eating birds - great blue heron and double crested cormorant - migrate to the Old Mormon Slough and reside there for extended periods of time during sensitive life stages. PAHs posed a risk to aquatic receptors, most notably for fish and benthic fauna. Dioxin was estimated to be a potential low risk to bird and fish reproduction and health. Pentachlorophenol (PCP) was estimated to have a potential impact on both fish and benthic animals. However, as PCP was present but not widely distributed in sediment, no ecological risk was identified.

### 2.2. *Remedy Selection*

On March 31, 1999, EPA selected final remedies for the upland soils and surface water sediment and an interim remedy for groundwater.

#### 2.2.1. Uplands Soil Remedy

EPA established the following the remedial action objectives for upland soils in the 1999 ROD:

- Prevent human exposure to contaminated surface soils via direct contact, ingestion, or inhalation.
- Prevent stormwater runoff of contaminated surface soils into adjacent surface water bodies.
- Prevent or minimize the migration of contaminants from subsurface soils and from Old Mormon Slough sediment to groundwater.

EPA divided the Site soils into three subareas: X, Y, and Z with delineations based on lateral and vertical extent of contaminants of concern at concentrations above surface soil cleanup levels (Figure 2, Table 2). Subareas Y and Z cover the same footprint at different depths.

Subarea X includes soil contamination in the eastern portion of the Site where historically treated wood was stored throughout the area. The resulting soil contamination was shallow (1 foot below ground surface) with arsenic as the most widely distributed contaminant of concern.

Subarea Y includes soil contamination to 13 feet below ground surface in the western portion of the Site that historically operated as the central processing area with the oily waste ponds (including areas used for treated wood storage and the former stormwater collection ponds). Subarea Y encompasses vadose zone contamination for all organic and inorganic contaminants of concern.

Deeper soil contamination underlying Subarea Y (below 13 feet below ground surface or saturated soil) makes up the third subarea, Subarea Z.

Soil cleanup standards as identified in the ROD, are shown in Table 2.

**Table 2. Soil Cleanup Levels from 1999 Record of Decision**

Chemical	Cleanup Levels (mg/kg except as noted)	Basis for Cleanup Level
Benzo(a)pyrene	3.6	1999 EPA Region 9 Preliminary Remediation Goals (PRGs) adjusted to a 10 <sup>-5</sup> risk.
Acenaphthene	1100	
Anthracene	57	
Fluorene	900	
Naphthalene	190	
Pyrene	1000	
Pentachlorophenol	150	
2,3,7,8-TCDD (Dioxin)	1 µg/kg (dry weight, organic carbon normalized)	
Arsenic	30	

µg/kg = microgram per kilogram

The selected uplands soils remedy consisted of excavating all the Subarea X contaminated soil with concentrations exceeding soil cleanup levels, moving it to a separate location within the Subarea Y boundary, and covering the consolidated Subarea X soils and the Subarea Y soils with a cap. Subarea Y and Z soils were not excavated. The components of the remedy included:

- Site clearance and debris removal;
- Excavation of Subarea X soils;
- Initial grading of the area to be capped;
- Backfilling of Subarea X excavations with clean import fill;
- Backfilling and grading of the stormwater ponds with a portion of excavated Subarea X soils (approximately 10,000 cubic yards)<sup>2</sup>;

<sup>2</sup> Stormwater ponds were once located in Subarea Y. Because Subarea Y would ultimately be capped, contaminated soil from Subarea X was used as fill.

- Consolidation of remaining Subarea X soils in Subarea Y, and cap construction over the contaminated soil;
- Cap maintenance;
- Stormwater catch basins installation; and
- Institutional controls, including all or some of the following: Site access controls, land use restrictions, and proprietary and/or governmental restrictions.

### 2.2.2. Surface Water-Sediment Remedy

For the surface water-sediment remedy, the EPA identified the following remedial action objectives in the 1999 ROD:

- Reduce potential risks to human health from the consumption of fish contaminated with Site-related chemicals.
- Prevent humans and aquatic organisms from direct contact with sediment having contaminants in excess of risk-based concentrations or that have been shown to be toxic to aquatic organisms.
- Prevent or minimize the migration of contaminants from Old Mormon Slough sediments into the surface water column.
- Prevent or minimize the migration of contaminants from Old Mormon Slough sediments to groundwater.
- Allow full attainment of the beneficial uses of surface waters in the area of the Site, including fish and shellfish harvesting and the protection of aquatic life and wildlife.

Sediment cleanup standards (none for surface water), as identified in the ROD, are shown in Table 3.

**Table 3. Sediment Cleanup Levels (Old Mormon Slough) from 1999 Record of Decision**

Contaminant of Concern	Cleanup Standard	Basis for Cleanup Standard
Total PAHs	333 mg/kg (dry weight, organic carbon normalized)	Site-specific risk-based Maximum Sediment Concentrations developed in the Ecological Risk Assessment
2,3,7,8-TCDD (Dioxin)	21 ng/kg toxicity equivalence	

mg/kg = milligrams per kilogram

ng/kg = nanogram per kilogram

Sediment contamination related to the Site was limited to Old Mormon Slough located directly adjacent to the former McCormick and Baxter facility. EPA divided Old Mormon Slough into four subareas adjacent to the Site central processing area, the area adjacent to the oily waste ponds area, and the mouth of the slough.

The selected sediment remedy consisted of in-situ capping of contaminated Old Mormon Slough sediments in order to isolate areas of primary contamination (approximately three-fourths of the slough) by blanketing them with clean fine sand with a minimum thickness of two feet. The cap materials were to be armored with riprap and a gravel filter layer where necessary to prevent erosion. The capped portion of the slough would run from just north of the oily waste ponds area to the east end of the slough.



The selected sediment remedy also included the following institutional controls to:

- Limit navigational access to the slough,
- Warn visitors of Site hazards,
- Limit future use of Old Mormon Slough to appropriate uses, and
- Control future dredging of the slough to prevent disturbance of residual sediment contamination in the mouth of the slough.

On September 27, 2005, EPA signed an Explanation of Significance Differences to implement the following changes to the surface water-sediment remedy:

- Include bank stabilization along the slough to prevent erosion of contaminated soil from re-contaminating the sediment cap;
- Relocate a resident living on a barge in the slough for cap construction and future protection of the sediment cap; and
- Limit vessel access to the slough via a placement of log boom and additional signage.

### 2.2.3. Groundwater Remedy

Remedial action objectives identified in the ROD for the groundwater remedy are as follows:

- Prevent human exposure to groundwater contaminated above drinking water standards.
- Prevent the further spread of the groundwater contamination plume.
- Remove non-aqueous phase liquids (NAPL) to the extent practicable to reduce the continuing source to groundwater contamination.
- Contain NAPL sources that cannot be removed.
- Evaluate further groundwater risk reduction (40 CFR Section 300.430(a)(1)(iii)(F)).

Groundwater contamination at the Site was limited to semi-volatile organic compounds and to a lesser extent, dioxins. The interim groundwater remedy included groundwater extraction and on-Site treatment with discharge into surface water permitted by the National Pollution Discharge Elimination System (NPDES) and reuse for irrigation or industrial uses. In addition, NAPL would be extracted using dedicated wells and then sent for off-Site recycling or treatment/disposal.

## 2.3. *Remedy Implementation*

### 2.3.1. Soil Remedy

Union Pacific Railroad performed construction activities, including excavation of soil in Subarea X, consolidation of contaminated soil on Subarea Y, and capping the consolidated waste with 6 inches of compacted aggregate base overlain by 2 inches of asphaltic concrete over two construction seasons from May 2009 through February 2011.

Union Pacific Railroad recorded a land use covenant in December 2007 that limits the use, protects the integrity of remedial systems, and provides control over future grading and groundwater use on their

portion of the Site. Implementation of the land use covenant(s) for the remaining parcels is still in progress.

### 2.3.2. Surface Water-Sediment Remedy

EPA began bank stabilization in October 2002 for the surface water-sediment remedy and EPA completed the fine-sand subaqueous cap (minimum thickness 2 feet; average thickness 2.6 feet) in 2006. Before the cap was completed in 2006, all vessels and occupants living on the vessels within the Old Mormon Slough were removed to complete the capping construction as required by the decision document. EPA also installed the log boom at the outer end of the slough to prevent vessel traffic from entering and damaging the cap, and to also prevent people from fishing.

On August 26, 2013, EPA and the US Coast Guard replaced the log boom with a Whisper Wave Small Craft Intrusion Barrier due to continued breaching of the log boom. On October 1, 2013, the US Coast Guard established a Safety Zone in the capped portion of the slough to prohibit all vessels and personnel not associated with EPA from entering or transiting the capped area.

### 2.3.3. Groundwater Remedy

The interim groundwater remedy has not been implemented and groundwater data has not been collected since 2017. The primary chemicals of concern are naphthalene, acenaphthene, and PCP. Naphthalene and acenaphthene have been principally tracked due to 1) their relative abundance in coal tar creosote and relatively high mobility (naphthalene), 2) having the largest dissolved phase plumes (acenaphthene), and 3) their greatest relative magnitude of exceedance of the preliminary cleanup criteria. The previous Five-Year Review compared concentrations over a 13-year period (2004 to 2017) and concluded that the overall concentrations and extent of the contamination has not significantly varied.

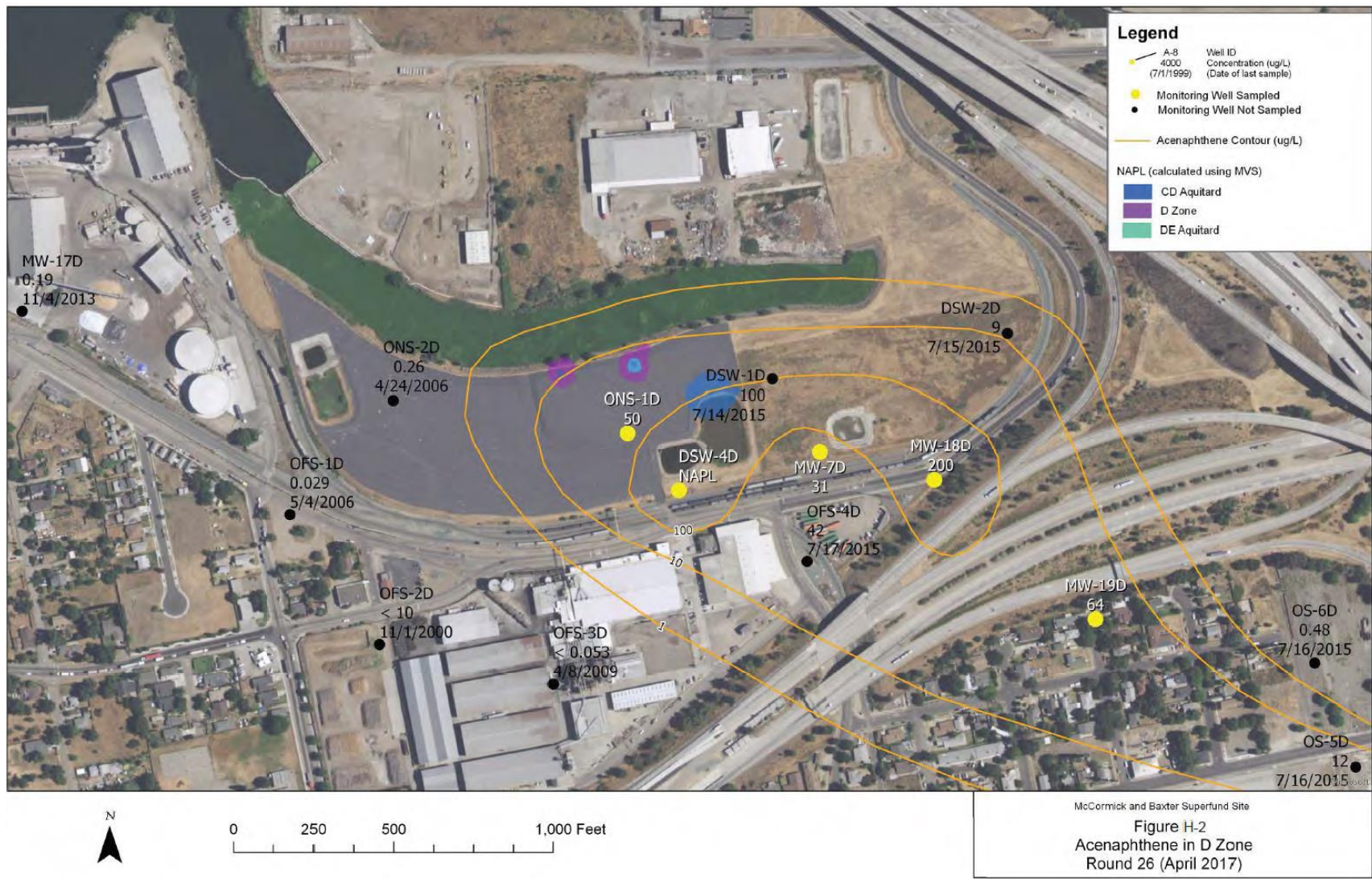


Figure 4. Extent of Acenaphthene Contamination (2017)



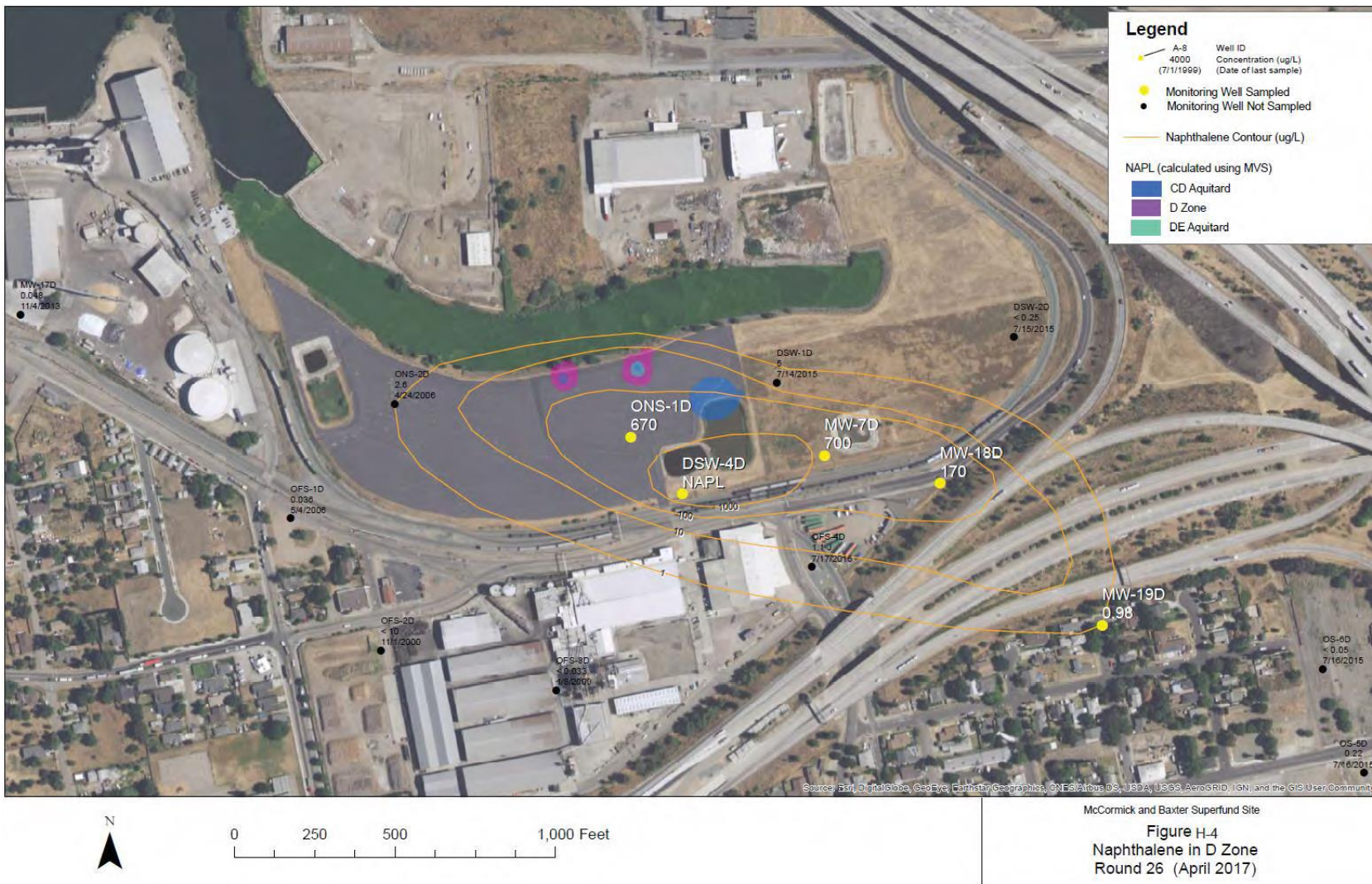


Figure 5. Extent of Naphthalene Contamination (2017)

### 2.3.4. Institutional Controls

Institutional controls involve controlling exposure to contaminated media by controlling access, implementing engineering controls (e.g. fencing and signs), and implementing land use restrictions.

**Table 4. Summary of Implemented Institutional Controls**

<b>Media, Engineered Controls, and Areas</b>	<b>Institutional Controls Called for in the Decision Documents</b>	<b>Impacted Parcel(s)</b>	<b>Objective</b>	<b>Title and Date (or planned)</b>
Soil	Yes	Subarea X  145-20-010	Land Use restrictions (protects the integrity of remedial systems, and provides control over future grading and groundwater use on the Site)	Environmental and Land Use Covenant (Instrument No. 2007-217-413, recorded December 31, 2007)
Soil	Yes	Subarea Y  145-20-001, 145-20-014, 145-19-10, 145-19-11, 145-19-12	Site access control, land use restrictions (prohibiting excavation, providing appropriate notices of hazardous waste).	In progress
Sediment/ Surface	Yes	Old Mormon Slough	Limit navigational access, provide warning signs, control dredging to prevent disturbance.	2006

## 2.4. System Operations/Operation and Maintenance

### 2.4.1. Operations and Maintenance Requirements

A Soil Remedy Operation and Maintenance Manual was prepared in May 2014 on behalf of Union Pacific Railroad for the entire Site. In 2015, the California Department of Toxic Substances Control (DTSC) became responsible for operation and maintenance for their parcel (Subarea X). GeoSyntec Consultants Inc., consultants for DTSC, updated the operations and maintenance plan on February 25, 2020. Operation and maintenance activities include maintaining the asphalt cap, mowing the revegetated areas, maintaining the on-Site basins, and stormwater monitoring. GeoSyntec conducts annual Site inspections for the soil remedy, which includes checking the asphalt for any cracks and sealing them, repairing any signs of failure or trespassing, and observing whether Site drainage is working properly.

Operation and maintenance activities for the sediment cap includes maintenance of the southern bank of Old Mormon Slough, periodic bathymetric survey of the sediment cap, sampling of sediment cap and

inspection and repair of access controls. DTSC conducts an annual inspection of the southern bank of Old Mormon Slough and access controls and periodic sediment soil sampling. Bathymetric surveys will be conducted on the analytical results of the cap material.

EPA retains responsibility for the development of the groundwater remedy and Site security requirements.

#### 2.4.2. Significant Operations and Maintenance over the Past Five Years

In May 2020, GeoSyntec conducted the 2020 annual inspection, which identified several major cracks and grown vegetation throughout the asphalt cap. GeoSyntec also inspected the three on-Site basins and determined that the basins had excess vegetation that needed mowing. GeoSyntec also inspected the southern bank of the Mormon slough and the access controls. In June 2020, Geosyntec collected sediment samples and stormwater samples, and completed fence repairs, vegetation removal, and asphalt cap crack-filling that were identified in the May 2020 inspection of needing action.

In June 2021, Geosyntec conducted the 2021 annual inspection of the asphalt cap, the basins, the Old Mormon Slough southern bank and access controls. Several cracks were observed on the asphalt cap, in addition to a large subsidence area. Geosyntec also observed three to five encampments located inside the perimeter fences, along with 15 fence holes, two barbed entanglements, and four damaged fence posts. The small craft intrusion barrier at the mouth of the slough was observed to be split in half. Geosyntec removed excess vegetation, repaired the small craft intrusion barrier and patched the asphalt cap in the fall of 2021. GeoSyntec also collected stormwater samples from Basins 1, 2, and 4, the results of which are discussed in the Data Review.



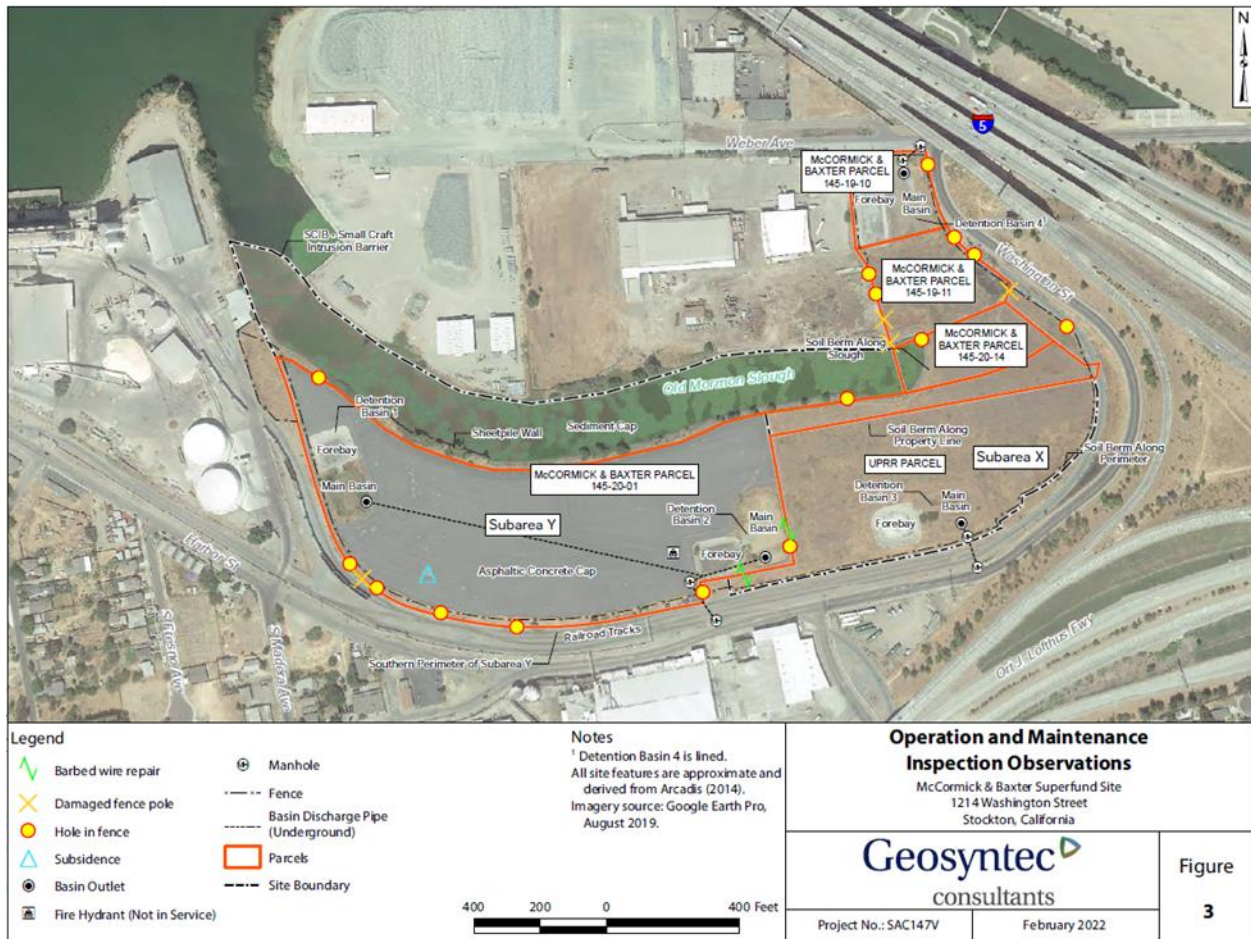


Figure 6. Operations and Maintenance Inspection Observations, February 2021

On May 22, 2022, GeoSyntec conducted the 2022 annual inspection of the soil and sediment remedy. Again, several cracks that needed repair were observed in the asphalt cap and vegetation removal was necessary. Ten temporary camps were observed inside the perimeter fence. The southern bank and the small craft intrusion barrier did not need any repairs. RDM Environmental, under Geosyntec oversight, made the recommended repairs later in May and early June of 2022.

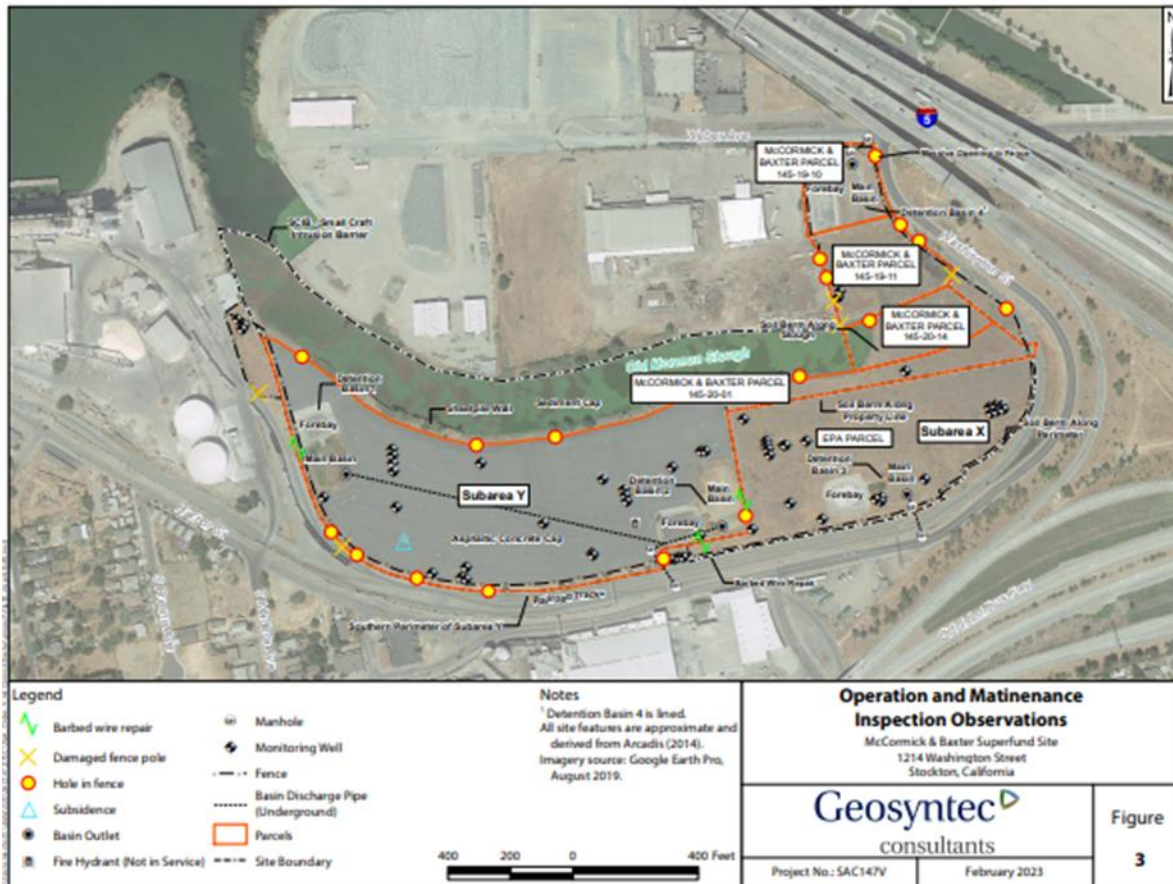


Figure 7. Operations and Maintenance Inspection Observations, February 2022

Stormwater samples were collected to monitor the stormwater quality to ensure it is compliant with City of Stockton Municipal Utilities District criteria. The first sampling event on December 9, 2022, had low water conditions. The second sampling event on January 12, 2023, followed a sequence of major storm events and assumed discharge to the City of Stockton sewer. During the January storm event discharge from the basins was assumed to have occurred as evidenced by the full basins and water in the discharge pipe.

EPA visited the Site on October 19, 2022, observed damaged fence in multiple locations, including some with holes large enough for vehicles to pass through and multiple signs of trespassing including tents, RVs, and cars. EPA also observed an approximately one-foot long and six-inch deep hole in Subarea X.



### 3. Progress Since the Last Five-Year Review

#### 3.1. Previous Five-Year Review Protectiveness Statement and Issues

The protectiveness statement from the 2018 Five-Year Review for the McCormick and Baxter Superfund Site stated the following:

*The remedy for the soils operable unit is currently protective of human health and the environment. All exposure pathways have been eliminated or controlled through the installation of an asphalt cap and partial implementation of institutional controls. In order to be protective in the long-term, the land use covenant needs to be recorded for the McCormick and Baxter property.*

*The remedy for the surface water-sediment operable unit is protective of human health and the environment. All exposure pathways have been eliminated or controlled through the installation of the sand cap and small boat intrusion barrier and the implementation of institutional controls.*

The 2018 Five-Year Review included one issue and recommendation. The recommendation and the current status are discussed below.

**Table 5. Status of Recommendations from the 2018 Five-Year Review**

Issue	Recommendation	Current Status	Current Implementation Status	Completion Date (if applicable)
The Environmental Land Use Covenant has not been recorded on the McCormick and Baxter owned portion of the property.	Implement a Land Use Covenant on the property.	Ongoing	Once the groundwater remedy is selected, EPA anticipates that the property will be redeveloped. DTSC drafted a land use covenant for the remaining parcels that will also include protecting the integrity of the asphalt cap.	<a href="#">Click here to enter a date</a>

#### 3.2. Work Completed at the Site During this Five-Year Review Period

Geosyntec field staff, contractors to DTSC, collected annual stormwater sampling events and another sampling event after a major storm in 2023.

As of April 11, 2023, camps on-Site have been displaced by Stockton Code Enforcement officers, and vehicles on-Site have been towed. Stockton Code Enforcement plans to place concrete blocks by the east side entrance to prevent unauthorized vehicles from accessing the Site.

EPA continued on-Site work related to the groundwater remedy implementation. In 2019, EPA conducted a phytoremediation study to determine the feasibility of using salt-tolerant hybrid poplar trees to decrease contaminant concentrations in groundwater pumped from a deep aquifer. After the phytoremediation study was complete, vandalism and theft were prevalent with the perimeter fence being breached multiple times and equipment being taken from the Site. EPA sampled six wells in 2021, as part of the

phytoremediation study, and will be conducting a more comprehensive groundwater monitoring event in Fall 2023.

Also, with respect to the implementation of the groundwater remedy, Environmental International Corporation, a contractor for USACE<sup>3</sup>, conducted NAPL recovery tests at existing Site wells during September and October 2019 to evaluate the feasibility of increasing NAPL recovery efficiencies in the existing Site wells. The test was successful at one well; however, the age of most wells (approaching 40 years), varying degrees of clogged screens, and other factors led to limited recovery of NAPL and a recommendation to not proceed with additional long-term NAPL recovery.

## 4. Five-Year Review Process

### 4.1. *Community Notification, Involvement and Site Interviews*

#### 4.1.1. Five-Year Review Public Notice

A public notice was made available by a newspaper posting and press release in *The Record* on Monday, December 19, 2022, stating that there was a Five-Year Review and inviting the public to submit any comments to the EPA (Appendix E). No public comments were received. The results of the review and the report will be made available at the Site information repository located at the addresses below:

Stockton-San Joaquin County  
Cesar Chavez Central Library  
605 North El Dorado Street  
Stockton, CA, 95202  
(209) 937-8221

and

Superfund Record Center  
75 Hawthorne Street, Room 3100  
San Francisco, CA, 94105  
(415) 947-8717  
Email: R9records@epa.gov

#### 4.1.2. Site Interviews

During the Five-Year Review process, interviews were conducted to document any perceived problems or successes with the remedy that has been implemented to date. EPA solicited written responses to questions from DTSC and an environmental engineer from USACE, Sacramento District. The specific responses of individuals from each group can be seen in Appendix F.

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<sup>3</sup> EPA has entered into an interagency agreement with the USACE Sacramento District to conduct work on the Site. EPA has a separate agreement with the USACE Seattle District to conduct the Five-Year Reviews.

An engineering geologist from DTSC provided response and stated that the remedy is functioning as expected; however, there are several issues noted during the past few years. The soil cap is functioning as expected, but the stormwater management system does not have sufficient capacity to manage stormwater. During a major storm in early January 2023, all basins were filled beyond their capacity. Additionally, flooding was noted throughout the majority of Subarea X due to poor grading, and the soil supporting the asphalt and the concrete edges was compromised, leading to more cracking and potholes (Refer to Figure 2 for the location of Subarea X within the Site). The engineering geologist mentioned that the stormwater blockages were addressed; however, the basins were beyond their capacity and a work plan will be created to address the potential copper exceedances measured in stormwater. In addition, trespassing and homeless encampments are a major health and safety issue for both on-Site workers and Site contractors. The accumulation of dry vegetation is also an issue because the owner of the Union Pacific Railroad Parcel refuses to carry out routine vegetation abatement on the property, which has become extremely dry during the summer months and poses a fire risk.

An environmental engineer from USACE Sacramento District provided responses and stated concerns about Site security in reference to the multiple holes in the fence and the unhoused individuals having access to the property. He believes that the operation and maintenance frequency visits are not sufficient to prevent fence damage or trespassing. In addition, the 2017 signs have been sun-damaged, vandalized, and are possibly missing at some locations throughout the Site. The environmental engineer recommends additional security checks that could include up to full-time security and updating the signs to ensure the Site is protected from trespassers and vandals.

## 4.2. *Data Review*

### 4.2.1. Stormwater Analysis

Stormwater sampling was performed at least once per year between 2020 and 2023. In 2020 and 2021, DTSC reported both total and dissolved copper concentrations in stormwater detention Basins 1, 2, and 4 above the City of Stockton Municipal Utilities District criteria limits and exceedances of total PAHs in Basins 2 and 4 (Table 5). However, since the discharge limits only apply to stormwater discharged off-Site and no stormwater has historically been discharged off-Site, no violation of the City discharge limit occurred. Water levels were low during the December 2022 sampling event; however, samples were taken from the main basins for the January 2023 sampling event following a major storm that inundated all three basins and the water was assumed to have discharged into the city sewer system (Figure 5). Sampling results again exceeded discharge limits for total copper in Basins 1 and 4, dissolved copper in Basin 1, and PAHs in Basin 4. Therefore, water with concentrations exceeding the discharge limits may have been discharged off-Site during the storms in early January of 2023.

**Table 6. Stormwater Analytical Results (2020 through January 2023) for the Site**

Sample ID	Stormwater Basin	Sample Date	Copper (mg/L)	Copper (Dissolved) (mg/L)	Total PAHs <sup>1</sup> (µg/L)
<b>Discharge Limit per Work Plan (Geosyntec, 2020)</b>			<b>0.01</b>	<b>0.01</b>	<b>0.049</b>
MB-SW-BAS01-20201221	Basin 1	12/21/2020	0.02	0.0095	0.279
MB-SW-BAS01-202010125		1/25/2021	0.021	0.016	0.047
MB-BAS01-20211102		11/2/2021	0.03	0.023	0.16
MB-BAS1-20211227		12/27/2021	0.028	0.021	ND
20211209-BS1		12/9/2022	0.18	0.17	ND
20230112-BS1		1/12/2023	0.027	0.019	0.037
MB-SW-BAS02-20201221	Basin 2	12/21/2020	0.0083	0.0071	0.023
MB-SW-BAS02-202010125		1/25/2021	0.0082	0.0073	0.024
MB-BAS02-20211102		11/2/2021	0.014	0.0035	0.040
MB-BAS2-20211227		12/27/2021	0.013	0.0098	ND
20211209-BS2		12/9/2022	0.019	0.020	ND
20230112-BS2		1/12/2023	0.0079	0.0045	0.039
MB-SW-BAS04-20201221	Basin 4	12/21/2020	0.11	NS	0.064
MB-SW-BAS04-202010125		1/25/2021	0.05	0.042	0.032
MB-BAS04-20211102		11/2/2021	0.017	0.016	ND
MB-BAS4-20211227		12/27/2021	0.015	0.013	ND
20211209-BS4		12/9/2022	0.13	0.110	ND
20230112-BS4		1/12/2023	0.015	0.0071	0.462

NS= Not Sampled

mg/L= milligrams per liter

µg/L = micrograms per liter

Grey highlight = Above discharge limit

PAH = Polyaromatic Hydrocarbons

Total PAHs = Total calculated by adding up only detected results



Figure 8. Basins 1, 2, and 4 Water Levels on January 12, 2023

#### 4.2.2. Sediment Cap

The 2020 sediment analytical results collected from the sediment cap are below the ROD cleanup standards (Table 6). An updated bathymetric survey that determines how much sediment deposition has occurred in the slough post-construction of the sediment cap was last conducted in 2008. The 2008 post-construction bathymetric survey of the capped area of the Old Mormon Slough identified some lowering of the cap surface relative to its immediate post-construction configuration, assumed to be due to continued compaction of soft underlying sediments.

**Table 7. Sediment Analytical Results from 2020 Operations and Maintenance Report**

Sample ID	Sample Date	2,3,7,8-TCDD TEQ <sup>1</sup> (pg/g)	PAHs (Organic Carbon Basis) <sup>2</sup> (mg/kg)
ROD Cleanup Standard <sup>3</sup>		21	333
multiple sample locations	2010	0.39 to 13.74	10 to 48
MB-SED-01	6/16/2020	1.4	9
MB-SED-02	6/16/2020	1.3	74
MB-SED-03	6/16/2020	1.3	35

1 = 2,3,7,8-TCDD TEQ analysis by EPA Method 8290, TEQ calculation based on World Health Organization 2005 TEF, Dioxins, Furans, and PCB Congeners. Reporting limits used for non-detect values.

2 = PAHs analysis using EPA Method 8270C SIM. Total PAHs are Organic Carbon Basis (calculated).

3 = EPA, 1999. Record of Decision, McCormick and Baxter Superfund Site, Stockton, California. March 31.

pg/g = picograms per gram

mg/kg = milligrams per kilogram

Although the sampling results indicate that the sediment cap is performing as intended, there have been recent concerns about potential damage from debris due to trespassing. On February 17, 2023, a company neighboring the Site notified EPA that a late-1990s Honda sedan was caught on fire near the slough. Stockton Police Department told Ms. Kamran that they did not remove the car. However, when EPA conducted a joint inspection on March 16, 2023, the car was not on-Site. Frequency of the bathymetric survey and the soil cap survey may need to be reevaluated given the trespassing concerns.

#### 4.2.3. Groundwater

The interim groundwater remedy has not been implemented and groundwater data has not been collected since 2017. The primary chemicals of concern are naphthalene, acenaphthene, and PCP. Naphthalene, acenaphthene have been principally tracked due to 1) their relative abundance in coal tar creosote and relatively high mobility (naphthalene), 2) having the largest dissolved phase plumes (acenaphthene), and 3) their greatest relative magnitude of exceedance of the preliminary cleanup criteria. The previous Five-Year review compared concentrations over a 13-year period (2004 to 2017) and concluded that the overall concentrations and extent of the contamination has not significantly varied.



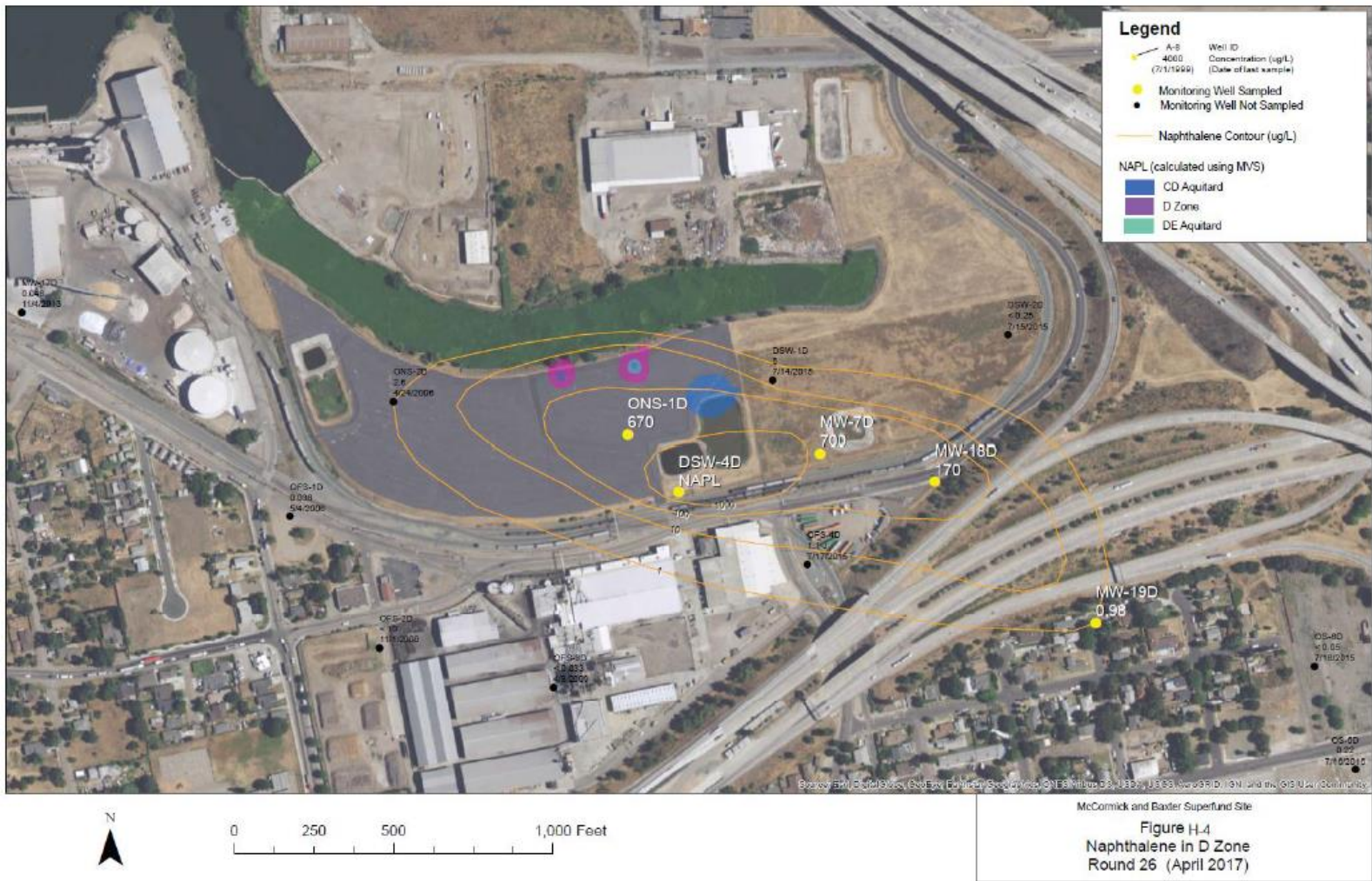


Figure 9. Extent of Naphthalene in D-zone (2017)

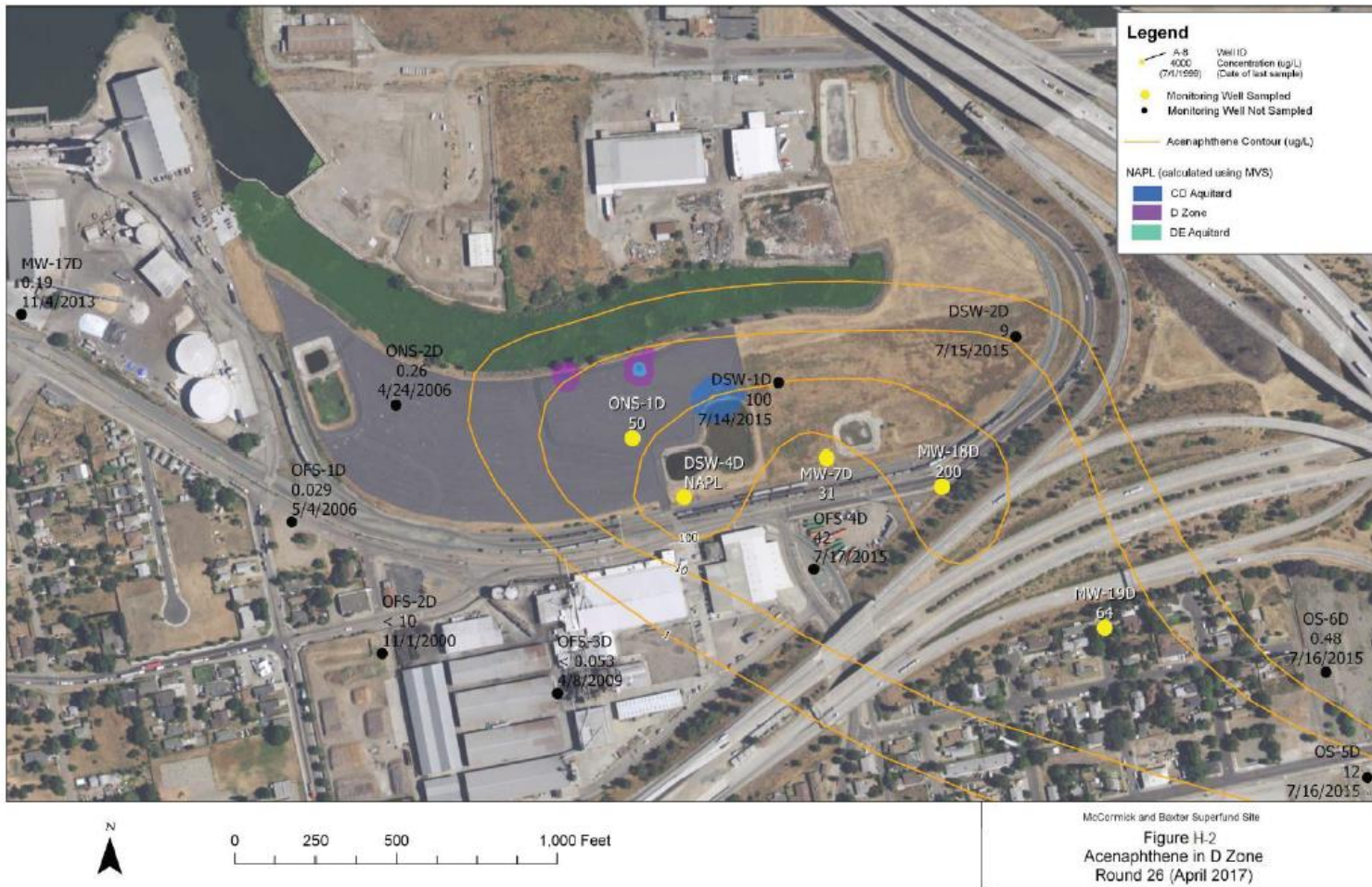


Figure 10. Extent of Acenaphthene in D-zone (2017)



#### 4.2.4. Sustainability

Climate change impacts that affect the Site may include the following: sea level rise, increased precipitation and drought, changes in snowmelt, increases/decreases in groundwater levels, and populations that are affected by disadvantaged community living situations.

Sea level rise continues to increase in Delta communities such as Stockton. Over the past 100 years, sea levels have risen 5 to 8 inches and could rise an additional two feet by 2050. With increased flooding, higher salinity concentrations in soil and groundwater within the San Joaquin Valley have the potential to accelerate the degradation of monitoring wells via saltwater intrusion. In addition, changes in groundwater levels may dramatically affect the region's infrastructure, including canals and waterways as the Site is protected by a levee. The land will become more unstable due to prolonged droughts that promote water filtration through the soil, soil cracking, erosion, and land subsidence.

Precipitation will become more intense by increasing the fraction of precipitation during the winter months from 75% (present day) to 80% (by the end of the century) which translates into longer dry seasons with 20% less precipitation on average. With more flooding and rain events, the stormwater detention tanks on-Site could potentially overflow into the forebay and increase the likelihood of stormwater discharge exceedances.

#### 4.3. Site Inspection

The inspection of the Site was conducted on March 16, 2023. In attendance were Sania Kamran, EPA, Amir Mahjoor, DTSC, Andy Andrews and Ritchie Hodges Geosyntec, and Charity Meakes, USACE. The purpose of the inspection was to assess the condition of the remedy and verify that the remedy is operating as intended (Appendix G).

The participants counted 23 breaches in the Site fencing, including two sections that were down or missing. All Site signage is faded and lacks identifying information that the Site is a Superfund Site. On-Site camping and related debris continue to be an issue with at least 22 actively used camping areas in addition to a dozen recreational vehicles, a semi-truck (without trailer), multiple tents, cars and lean-to's. Three stripped cars and one burned out car were located within the Site property and the on-Site fire hydrant had been opened. Dr. Mahjoor from DTSC stated that the city is planning to evict all the people remaining on-Site and repair the fences.

There is regular cracking throughout the asphalt cap with vegetation growth occurring from small grasses ranging from an eighth of an inch to larger weeds in approximately one-inch cracks. However, most of the cracking is on the smaller side of the variation. Damage may be related to either driving or subsidence due to several holes located throughout the cap.

The phytoremediation system appears to be missing one of the soil basins cubes that may have been emptied and reused for indeterminate purposes at a campsite in addition to broken piping that has been disassembled in many places. The phytoremediation study included 18 of the four-foot cubes for the initial study, however, aerial photos from 2022 indicate two of the cubes appear to be no longer on-

Site. A second 55-gallon drum containing well cuttings that was located on Site in 2014 appears to be missing as relayed by Dr. Mahjoor from DTSC.

The riprap cover to the slough and the small craft barrier did appear to be intact and functioning as intended. All four stormwater basins were full or overflowing between the forebays and the main basins due to recent rains. Ritchie Hodges from Geosyntec suggested that drainage from Basin 4 may be partially blocked; however, the group was not able to observe whether this was true due to the remaining standing water.

Overall, the Site appears to be lacking many security protocols in addition to missing equipment from the phytoremediation study. While the small craft barrier appears to be functioning as intended, the stormwater basins appear to still be clogged along with many monitoring wells lacking external identification.

## 5. Technical Assessment

### *5.1. Question A: Is the remedy functioning as intended by the decision documents?*

The soil remedy is functioning as intended to prevent exposure to contaminated soil through excavation, consolidation, and capping of contaminated soil. However, Site access has been compromised with numerous breaches to the perimeter fence, missing locks on gates, damaged fence posts and encampments throughout the Site property. As of April 2023, camps on-Site have been displaced by Stockton Code Enforcement officers, and all vehicles on-Site have been towed.

Repairs to the asphalt cap and vegetation removal are completed annually by DTSC. However, additional cracks and vegetation growing out of the cracks have been identified every year during the review period. Damage to the asphalt cap may be due to either subsidence or possibly from cars driving on the Site property. The asphalt cap may not be adequately designed or adequately constructed to prevent these reoccurring maintenance issues of depressions and cap cracking. However, there has been no evidence of exposure to contaminated soil under the cap.

The City of Stockton discharge limits for copper and dissolved copper and for total PAHs may have been exceeded due to severe storms in early January of 2023 that flooded the forebays of Basins 1, 2, and 4.

The surface water-sediment remedy is currently functioning as intended, as the 2020 sediment sampling analysis did not exceed the ROD standards for total PAHs and dioxins. Through capping of contaminated sediment, there are no exposure routes via the surface water-sediment remedy for contamination of PAHs and dioxins. The most recent bathymetric survey was conducted in 2008 as part of post-construction activities and the bathymetric survey requires an update to confirm that the depth of the sediment cap is adequate to prevent the migration of contaminants from Old Mormon Slough sediments into the surface water.

The land use covenant for the Union Pacific Railroad parcel is not enforced as trespassers have been seen on Site. As reported in the Site Inspection report, the fencing surrounding the Site has been breached multiple times and the lapse of security allows trespassers to continue to use the Site. In addition, parcels 145-20-01, 145-20-14, 145-19-11 and 145-19-10 require an approved and implemented land use covenant due to the trespassers recorded throughout the last five years. Physical access control measures (signs, fences, and gates) are deteriorating and ineffective at preventing trespassers from gaining access to the Site. The access restriction for the Old Mormon slough, the small boat intrusion, has been implemented.

Once the groundwater remedy is selected, EPA anticipates that the property will be redeveloped. DTSC drafted a land use covenant for the remaining parcels that will include protecting the integrity of the asphalt cap.

### *5.2. Question B: Are the exposure assumptions, Toxicity Data, Cleanup Levels, and Remedial Action Objectives Used at the Time of Remedy Selection Still Valid?*

Yes, exposure assumptions, toxicity data, cleanup levels and remedial action objectives used at the time of remedy selection are still valid. No chemical-specific ARARs were used to select cleanup levels. The to-be-considered factors used to identify cleanup levels in the sediments and soils have not substantially changed (Appendix C).

Toxicity values for multiple contaminants have changed since the last Five-Year Review (Appendix D). These changes do not affect the protectiveness of the remedies. The regional screening levels for naphthalene and pentachlorophenol are more stringent than the soil cleanup levels but the cleanup levels are still within EPA's acceptable risk range. The toxicity value for dioxin still indicates that the selected soil cleanup level in the 1999 ROD is outside of EPA's acceptable risk range. Despite changes in toxicity data for dioxin, the concentrations of dioxin in soil remaining after removal are within the range that EPA considers protective. Sediment data collected in 2020 confirm that total PAH and dioxin concentrations are below the ROD cleanup standards and the surface water-sediment remedy is functioning as intended.

The exposure pathways identified in the ROD for soil ingestion, soil particulate inhalation, and soil dermal contact are still valid assumptions. However, recently the Site has been subject to frequent and prolonged trespassing, possibly resulting in risk of exposure if no action is taken.

### *5.3. Question C: Has Any Other Information Come to Light That Could Call into Question the Protectiveness of the Remedy?*

Yes, climate change and sustainability continue to be an issue at the Site. The persistent problems of flooding, drought, extreme temperatures, and sea level rise remain leading problems. Additional evaluation is needed regarding the stormwater permit and the capacity of the stormwater basins if contamination continues to remain an issue with increased storm activity during the winter months. Sea level rise has the potential to degrade the groundwater monitoring wells via saltwater intrusion. Since the groundwater remedy has not been finalized, replacing any damaged or inaccessible groundwater monitoring wells may be needed to ensure proper evaluation of contaminants.

## 6. Issues/Recommendations

**Table 8. Issues and Recommendations Identified in the Five-Year Review**

<b>Issues and Recommendations Identified in the Five-Year Review:</b>				
OU(s): 2	<b>Issue Category: Operations and Maintenance</b> Suitability and quality of the asphalt cap.			
	<b>Issue:</b> Due to the constant maintenance issues associated with the asphalt cap (major cracking each year and depressions in the asphalt cap) the cap may not be suitable for long-term maintenance of the remedy at the Site. The non-performance of the asphalt cap may be due to the inadequacy of the design or construction, subsidence, or from unauthorized people driving on the cap.			
	<b>Recommendation:</b> Investigate the quality and suitability of the asphalt cap to ensure that the cap continues to protect human exposure to contaminated surface soils via direct contact, ingestion, or inhalation. A cap expert is recommended to evaluate the design/construction of the asphalt cap and to provide appropriate recommendations for the cap.			
<b>Affect Current Protectiveness</b>	<b>Affect Future Protectiveness</b>	<b>Party Responsible</b>	<b>Oversight Party</b>	<b>Milestone Date</b>
No	Yes	EPA	EPA	9/1/2028
OU(s): 2	<b>Issue Category: Site Access/Security</b>			
	<b>Issue:</b> Physical access control measures (signs, fences, and gates) are deteriorating and ineffective at preventing trespassers from gaining access to the Site.			
	<b>Recommendation:</b> Replace deteriorated or missing signs and repair breaches in the fences and gates. Consider frequent Site inspections to discourage trespassing.			
<b>Affect Current Protectiveness</b>	<b>Affect Future Protectiveness</b>	<b>Party Responsible</b>	<b>Oversight Party</b>	<b>Milestone Date</b>
No	Yes	EPA	EPA	9/30/2024
OU(s): 2	<b>Issue Category: Remedy Performance</b> City of Stockton Municipal Utilities District criteria limits			
	<b>Issue:</b> Discharge limits for copper, dissolved copper, and total PAHs have been exceeded per the City of Stockton Municipal Utilities District criteria limits. The contaminants may have been discharged off-Site due to multiple storms in January 2023.			
	<b>Recommendation:</b> Consider upgrading the stormwater system for greater capacity and cleaning the outfall pipes of the stormwater basins. A source evaluation for the elevated contaminants found in the stormwater basins is recommended to determine where the sources may be coming from.			
<b>Affect Current Protectiveness</b>	<b>Affect Future Protectiveness</b>	<b>Party Responsible</b>	<b>Oversight Party</b>	<b>Milestone Date</b>
No	Yes	State	EPA	9/1/2028

## 6.1. Other Findings

In addition, the following are recommendations that improve management of operations and maintenance to improve performance of the remedy and to promote sustainability but do not affect current and/or future protectiveness and were identified during the Five-Year Review:

- Evaluate the stormwater piping that connects the forebays to the main Basin as there may be a clog in several connections; and
- Protect the Site from fire hazards, as vegetation abatement is required for all parcels since dry vegetation poses a fire hazard.
- Consider modifying the current O&M Plan to define the frequency and/or conditions when sediment cap sampling, bathymetric survey, and asphalt cap inspection should be conducted.

## 7. Protectiveness Statement

**Table 9. Protectiveness Statement**

Protectiveness Statement(s)	
<i>Operable Unit: 2 (upland soils)</i>	<i>Protectiveness Determination: Short-term Protective</i>
<i>Protectiveness Statement:</i> The upland soils remedy currently protects human health and the environment because the remedy prevents stormwater runoff of contaminated surface soils into adjacent surface waterbodies; minimizes the migration of contaminants from subsurface soils and from the Old Mormon Slough; and prevents human exposure to contaminated surface soils. However, for the remedy to be protective in the long-term, the following actions need to be taken: the asphalt cap requires evaluation to ensure the quality and suitability of the cap remains protective; the stormwater basins require evaluation for additional capacity; and physical security controls need to be updated to ensure trespassers do not access the Site to ensure protectiveness.	

Protectiveness Statement(s)	
<i>Operable Unit: 3 (surface water-sediment)</i>	<i>Protectiveness Determination: Protective</i>
<i>Protectiveness Statement:</i> The surface water-sediment remedy is protective of human health and the environment. All exposure pathways have been eliminated or controlled through the sand cap, the small boat intrusion barrier, and the safety zone established by the US Coast Guard.	

## 8. Next Review

The next Five-Year Review report for the McCormick and Baxter Creosoting Company Superfund Site is required five years from the completion date of this review.

## Appendix A: List of Documents Reviewed

- California's Fourth Climate Change Assessment. 2023. Accessed December 13, 2022; <https://climateassessment.ca.gov>.
- DTSC (California Department of Toxic Substances Control). 2020. Operations and Maintenance Work Plan for the McCormick and Baxter Site, prepared by Geosyntec Consultants, Stockton, California. February 25.
- DTSC. 2021. 2020 Annual Operation and Maintenance Report, McCormick and Baxter Creosoting Company Superfund Site, prepared by Geosyntec Consultants, Stockton, California. March 1.
- DTSC. 2022. 2021 Annual Operation and Maintenance Report, McCormick and Baxter Creosoting Company Superfund Site, prepared by Geosyntec Consultants, Stockton, California. April 6.
- DTSC. 2022. Stormwater Discharge Criteria, 2021 Annual Operations and Maintenance Report Memorandum, McCormick and Baxter Creosoting Company Superfund Site, prepared by Sacramento Geological Services Unit, Stockton, California. June 15.
- DTSC. 2022. Site Visit Report, McCormick and Baxter Creosoting Company Superfund Site, Stockton, California. August 25.
- DTSC. 2023. 2022 Annual Operation and Maintenance Report, McCormick and Baxter Creosoting Company Superfund Site, prepared by Geosyntec Consultants, Stockton, California. March 16.
- EPA (United States Environmental Protection Agency). 1999. Record of Decision, McCormick and Baxter Creosoting Company, Operable Units 1 and 3, Stockton, California. March 31.
- EPA. 2005. Explanation of Significant Differences, McCormick and Baxter Creosoting Company Superfund Site, Operable Unit 3, Stockton, California. September 27.
- EPA. 2021. Field Sampling Plan, Groundwater Monitoring (Draft), McCormick and Baxter Creosoting Company Superfund Site, Stockton, California. August 17.
- EPA. 2022. McCormick and Baxter Site Inspection Report, McCormick and Baxter Creosoting Company Superfund Site, Stockton, California. October 19.
- Landmeyer JE, Rock S, Freeman JL, et al. Phytoremediation of slightly brackish, polycyclic aromatic hydrocarbon-contaminated groundwater from 250 ft below land surface: A pilot-scale study using salt-tolerant, endophyte-enhanced hybrid poplar trees at a Superfund Site in Central Valley of California, April-November 2019. *Remediation*. 2020;1-17. <https://doi.org/10.1002/rem.21664>
- U.S. Army Corps of Engineers, Seattle District, 2018. Third Five-Year Review for McCormick and Baxter Creosoting Company Superfund Site, Stockton, California. September 24.
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- RiskFactor.com. 2023. Accessed December 13, 2022; <https://riskfactor.com>

## Appendix B: Site Chronology

Event	Date
McCormick and Baxter Creosoting Company was in operation at the Site.	1946-1991
A fish kill in New Mormon Slough and Stockton Deepwater Channel was caused by PCP-contaminated stormwater runoff from the Site.	1977
Regional Water Quality Control Board issued a Cleanup and Abatement Order.	1978
McCormick and Baxter Creosoting Company entered into an agreement with DTSC and Regional Water Quality Control Board to investigate on-Site contamination.	1984
EPA Site inspection, preliminary assessment and hazard ranking were conducted.	1984
An EPA Site investigation report was conducted.	1990
McCormick and Baxter Creosoting Company conducted a baseline (human health) risk assessment.	1990
McCormick and Baxter Creosoting Company filed for bankruptcy.	1991
McCormick and Baxter Creosoting Company ceased on-Site wood treating operations.	1992
EPA finalized the Site's listing on the National Priority List.	1992
Removal of industrial chemicals, sludge, tanks, demolition and removal of most buildings was completed.	1992-1997
Combined Remedial Investigations/Feasibility Study activities were conducted.	1992-1999
A sheet-pile wall installed along Old Mormon Slough shoreline to control seeps from oily waste ponds area.	1996
Soil and oily waste were excavated from oily waste ponds area and transferred to a lined on-Site disposal area. The oily waste pond area was backfilled with clean soil; a lined disposal area and main processing area were capped with asphalt.	1997
The Proposed Plan was issued.	1998
The Record of Decision (final remedies for soil and sediment and interim remedy for groundwater) was signed.	1999
Remedial design of sediment remedy was developed.	1999-2002
Phase I of the sediment remedy was completed (bank stabilization).	2003
An Explanation of Significant Differences was issued.	2005
Remedial design/remedial action negotiations were conducted for the soil remedy.	2000-2006
Vessels were removed from the capping area within Old Mormon Slough	2006
The Phase II sediment remedy was completed (sediment capping).	2006
A Consent Decree for soil remedial design/remedial action was issued.	2007
The first Five Year Review was completed	2008
Post-construction bathymetric survey of the cap was conducted.	2008
Remedial design for the soils remedy was developed.	2008
Soil remedy excavation, confirmation sampling, and cap installation were undertaken.	2009-2011
Sediment remedy cap monitoring was conducted.	2010
Replacement of log boom with Whisper Wave Small Craft Intrusion Barrier.	2013
The second Five Year Review was completed.	2013
US Coast Guard establishes a Safety Zone in the capped portion of the slough.	2013
Transfer of soil remedy and sediment remedy to California DTSC for operation and maintenance.	2015



Event	Date
The third Five Year Review was completed.	September 2018
California DTSC updates the Operations and Maintenance Report Work Plan	February 25, 2020
EPA conducts a Pilot Study for Phytoremediation for the groundwater remedy	April-November 2020
California DTSC submits 2020 Operations and Maintenance Report	March 1, 2021
California DTSC submits 2021 Operations and Maintenance Report	April 6, 2022
Sacramento Geological Services Unit submits the Stormwater Discharge Memorandum to California DTSC	June 15, 2022
California DTSC conducts a Site visit	August 25, 2022
EPA conducts a Site visit	October 19, 2022

# Appendix C: Applicable or Relevant and Appropriate Requirements Assessment

Section 121 (d)(2)(A) of Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) specifies that Superfund remedial actions must meet any Federal standards, requirements, criteria, or limitations that are determined to be legally applicable or relevant and appropriate requirements (ARARs). ARARs are those standards, criteria, or limitations promulgated under Federal or State law that specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a CERCLA Site.

When ARARs are not fully protective, EPA may implement other federal or state policies, guidelines, or proposed rules capable of reducing the risks posed by a Site. The toxicity standards, while not legally binding since they have not been promulgated, may be used to achieve an unacceptable level of risk.

The ROD cleanup standards for soils and sediments are toxicity-based, not ARAR based and are evaluated in the Toxicity Analysis (Appendix E). The cleanup standards consider risks associated with dermal contact, ingestion, and inhalation of contaminated materials. Therefore, there are no regulated soil cleanup values against which cleanup levels chosen in the ROD can be compared.

Construction is completed on both the surface water-sediment remedies and the soil remedies, and no new information has come to light in this review to suggest changes to any other ARARs listed below. Accordingly, the legal analyses performed at the time of the ROD and ESD are no longer pertinent due to the phase of the remedies. There have been no revisions to laws and regulations that affect the protectiveness of the remedy.

There have been no changes in the following action- or location-specific ARARs, and therefore, there have been no changes affecting the protectiveness:

- Endangered Species Act of 1973 (16 U.S.C. section 1531, et seq.)
- 22 CCR Subpart N
- 22 CCR Division 4.5, Chapter 14
- 22 CCR 66264.310(a)(1)-(6)
- 22 CCR 66264.310(b)(1), (4) and (5)
- 62 Federal Register 25998
- 40 CFR Part 50
- CCR, Title 23, Chapter 15, Article 4
- State Board Resolution 68-16
- Construction Activity, Order No. 92-08-DWQ

- Rivers and Harbors Act (33 USC, Section 403, Section 10)
- Clean Water Act (33 USC Section 1344, Section 404)
- 42 USC Section 6921 et seq.

## Appendix D: Toxicity Assessment

A human health risk assessment was completed for the Site as part of the remedial investigation in July 1998. The baseline risk assessment identified exposure pathways at the Site as exposure to on-Site workers from soil by way of ingestion, inhalation, and dermal contact. Human ingestion of fish tissue from contaminated waters was also a concern. Soil cleanup levels were based on the 1999 Region 9 Preliminary Remediation Goals for industrial land-use (Table E-1). Sediment contaminant concentrations exceeded ecological levels of concern (Table E-2).

EPA adopted Regional Screening Levels as soil and sediment cleanup levels. EPA's Integrated Risk Information System updates toxicity values used by EPA in risk assessment when newer scientific information becomes available, and the most recent update available used for this analysis was the November 2022 update.

**Table E-1. Summary of Soil Toxicity Changes**

Chemical	Soil Cleanup Level (mg/kg)	Basis for Cleanup Level	Current Industrial RSL (mg/kg) c = cancer n = noncancer	RSLs More or Less Stringent than Cleanup Levels?
Benzo(a)pyrene	3.6	1999 EPA Region 9 Preliminary Remediation Goals (PRGs; currently known as regional screening levels or (RSLs) adjusted to a 10 <sup>-5</sup> risk for industrial land use.	2.1 c	More stringent
Acenaphthene	1100		45000 n	Less stringent
Anthracene	57		230000 n	Less stringent
Fluorene	900		30000 n	Less stringent
Naphthalene	190		86 c	More stringent
Pyrene	1000		23000 n	Less stringent
Pentachlorophenol	150		40 c	More stringent
2, 3, 7, 8-TCDD (Dioxin)	1 ug/kg (dry weight, organic carbon normalized)		0.22 ug/kg c (Cal Mod 0.22-0.7 ug/kg)	More stringent
Arsenic	30		480 ca 30 c (Cal Mod 4.2 n)	Less stringent

Notes:

c = cancer, n = noncancer, Cal Mod= California modified RSL (November 2022), RSL = Regional Screening Level (November 2022)

To evaluate the protectiveness of the cleanup levels for this Five-Year Review, the cleanup levels were compared to EPA's current regional screening levels. The regional screening levels addressing the risk

of developing cancer are chemical-specific concentrations for individual contaminants that correspond to an excess cancer risk level of  $5 \times 10^{-5}$  (or a hazard quotient of 1 for non-carcinogens), and they have been developed for a variety of exposure scenarios (i.e., residential, commercial/industrial). Regional screening levels are not de facto cleanup standards for a Superfund Site but provide a good indication of whether actions may be needed to address potential human health exposures. The EPA acceptable risk range is between  $1 \times 10^{-6}$  and  $1 \times 10^{-4}$ . Remedial goals that fall within this risk range were determined to be acceptable from a risk standpoint. The non-cancer regional screening levels correspond to a hazard quotient of 1.

There have been changes to the regional screening levels for chemicals of concern at the Site. The regional screening levels for acenaphthene, fluorene, and pyrene have not undergone any significant revisions that would affect protectiveness. Revisions to regional screening level for benzo(a)pyrene, pentachlorophenol, naphthalene, and dioxins indicate a higher cancer risk from exposure than previously considered. Based on the current regional screening levels, the excess cancer risk associated for benzo(a)pyrene, pentachlorophenol and naphthalene cleanup level is now  $4 \times 10^{-5}$  and the excess cancer risk associated with dioxin cleanup level is now  $5 \times 10^{-5}$  cancer. All excess risk values are within EPA's acceptable excess cancer risk range.

The basis for selecting the cleanup level for arsenic has not changed. However, the State of California issued a new non-cancer screening level in 2018, which would result in a Hazard Index of 8, well above EPA's Hazard Index cutoff of 1. Because the remedy consolidated all the contamination into the higher contaminated area and cap with clean soil, the direct exposure pathway has been eliminated.

#### Ecological Review

The Ecological Risk Assessment concluded that while sediment contamination was greater in Old Mormon Slough than in surrounding areas, biological effects were localized. Potential risk to receptor species were attributed to the presence of total PAHs and dioxin, and possibly PCP, in surface sediments. In general, metals were not found to be a risk factor to any of the assessment endpoints. The results for PCP were less certain, but PCP was estimated to have a potential impact to both fish and benthic animals. The total PAHs posed a risk to all assessment endpoints; threshold limits for total PAHs were exceeded principally for fish and benthic fauna. Dioxin had little effect on the assessment endpoints but was estimated to be a potential low risk to bird and fish reproduction and health.

The selected sediment remedy consisted of in-situ capping of contaminated Old Mormon Slough sediments to isolate areas of principal threat waste (approximately three-fourths of the slough) by blanketing them with clean fine sand with a minimum depth of 2 feet. The cap materials were armored with riprap and a gravel filter layer to prevent erosion.

**Table E-2. Summary of Sediment Toxicity Changes (Old Mormon Slough)**

<b>Chemical</b>	<b>Sediment Cleanup Level</b>	<b>Basis for Cleanup Level</b>
Total PAHs	333 milligrams per kilogram (dry weight, organic carbon normalized)	Site-Specific risk-based Maximum Sediment Concentrations developed in the Ecological Risk Assessment
2, 3, 7, 8-TCDD (Dioxin)	21 nanograms per kilogram toxicity equivalence	

Because Old Mormon Slough is a dead-end slough that is poorly flushed by river flow or tidal action, and due to the presence of a boom which prevents boat access and any concomitant sediment disturbance, the rate of any sediment transport out of the slough is expected to be very low. This would likely result in burial and stabilization of the contamination in place, rather than transporting it outside the Old Mormon Slough to other areas.

For total PAHs, there is more recent information that shows toxicity to juvenile fish at lower concentrations than the cleanup level. But ambient total PAHs in an industrial harbor such as the Port of Stockton are above these lower concentrations, therefore any new cleanup level for total PAHs would be comparable to the existing cleanup level.

# Appendix E: Public Notice



## EPA WANTS TO HEAR FROM YOU ABOUT THE MCCORMICK AND BAXTER SUPERFUND SITE CLEANUP

The U.S. Environmental Protection Agency (EPA) has started a review of the cleanup plan for the McCormick and Baxter Creosoting Company Superfund site. The site is in Stockton, Calif. This review will show if the cleanup plan is working as EPA intended.

Federal law requires EPA to review its cleanup plans every five years if:

- a cleanup takes more than five years to complete; or
- hazardous waste is still on-site.

EPA did the last review in 2018 and found the cleanup plan was working as intended.

### What is included in the review?

- An inspection of the site and technologies used for the cleanup
- A review of site data and maintenance records
- A review of any new laws or requirements that could affect the cleanup

### EPA would like to hear from you!

We would like to interview community members about how you think the site cleanup is going. **If you want to learn more about the site and/or be interviewed, please call Ms. Cynthia Wetmore before May 30, 2023:**

- Cynthia Wetmore, EPA Project Manager: (415) 972-3059 or [wetmore.cynthia@epa.gov](mailto:wetmore.cynthia@epa.gov)

### Where can I learn more?

Visit EPA's webpage at [epa.gov/superfund/mccormick-baxter](http://epa.gov/superfund/mccormick-baxter) for more information. To read the previous Five-Year Review reports, please click on the "Site Documents and Data Links" section. EPA has also set up an information repository with paper copies of the site's Administrative Record (which includes key documents and reports for the cleanup) at:

Stockton-San Joaquin County  
Cesar Chavez Central Library  
605 North El Dorado Street  
Stockton, CA, 95202  
(209) 937-8221  
*Please call for current hours of operation*

and

Superfund Record Center  
75 Hawthorne Street, Room 3100  
San Francisco, CA 94105  
Phone: (415) 947-8717  
Email: [R9records@epa.gov](mailto:R9records@epa.gov)  
Hours: 8:00 a.m.-5:00 p.m., Mon.-Fri.  
*Please call for current hours of operation*

**EPA will complete the Five-Year Review report no later than September 30, 2023. When complete, EPA will post a copy on the site's webpage and send a copy to the site information repository listed above.**

### Background

The McCormick & Baxter Creosoting Co. site is a 29-acre former wood preserving facility. It is located at 1214 West Washington St. in Stockton, Calif. From 1942 to 1990, utility pole and railroad tie treatment activities on site contaminated the soil and groundwater. After building the site's soil, sediment, and surface water remedy (cleanup plan) in 2006, operation and maintenance activities for the remedy started (and are ongoing). The groundwater has not been cleaned up yet. EPA is currently testing several groundwater cleanup options to see which is most effective.

CNSB#3650042

# Appendix F: Interview Forms

Five-Year Review Interview Record			
<b>Site:</b>	McCormick and Baxter Superfund Site	<b>EPA ID No:</b>	CAD009106527
Interview Questionnaire			
Date: January 31, 2023			
<b>(Fill in the components below, one line per person if multiple persons are providing responses)</b>			
Name	Organization	Title	Email
Amir Mahjoor	DTSC	Engineering Geologist	Amirsasan.mahjoor@dtsc.ca.gov
<b>(Record responses to the questions below)</b>			
<p>1) What is your overall impression of the project?                      The soil cap is functioning as expected. The stormwater management system of the Site does not have sufficient capacity to manage stormwater from a significant storm event. During the last major storm in early January 2023, all basins filled beyond their capacity. Much of Subarea X was flooded due to poor grading. During the storm event, the soil supporting the asphalt and its concrete edge were compromised. The asphalt and the concrete edge caved or collapsed where the supporting soil was compromised. Seeping water through the existing cracks and edges, saturated and loosen the asphalt foundation. The seepage led to the expansion of the existing cracks and the formation of potholes, fatigue cracks, and lateral cracks on the cap. A large pond formed in Subarea X due to poor grading. Trespassing and homeless encampment are major health and safety concerns for DTSC staff and DTSC contractors performing work at the Site. The accumulation of dry vegetation in Union Pacific (UP) owned parcels of Subarea X poses a fire hazard. UP refuses to carry out routine vegetation abatement at their parcels.</p>			
<p>2) Is the remedy functioning as expected? How well is the remedy performing?                      The remedy is functioning as expected with the issues noted in the previous answer.</p>			
<p>3) What does the monitoring data show? Are there any trends that show contaminant levels are decreasing?                      Referring to the 2020 ANNUAL OPERATION AND MAINTENANCE REPORT (AOMR) prepared by Geosyntec analysis of samples collected from the sediment cap does not show any contaminants above cleanup levels. According to 2020 and 2021 AOMRs stormwater analysis, copper was the only laboratory analytical result above the discharge limits in basins 1, 2, and 4.</p>			
<p>4) Is the frequency of O&amp;M visits sufficient to address the fence damage frequency and issues and prevent trespassing? Is there adequate signage on-Site?                      Inspections of the soil cap, fences, and general condition of the Site are performed annually, and repairs are carried out based on the results of Site inspections. The asphalt cap is repeated each year for the last two years. Damage to the fence by trespassers is an ongoing issue. On-Site signages are not adequate. During my last visit in November 2020, only flood zone warning signs were observed at the Site. Most of the signs were faded and difficult to read. No fish consumption advisory sign was noted around the Old Mormon Slough. No long-term exposure and no trespassing signage were observed at the Site.</p>			
<p>5) Have the stormwater blockages been addressed?                      The issue with the stormwater blockages was addressed but the forebays and the main basins still flooded during the latest major storm event.</p>			
<p>6) Have the holes in the cap been repaired?                      The asphalt cap has been repeated each year for the past two years.</p>			
<p>7) Have there been changes to the NPDES permit due to identified elevated copper levels in the stormwater discharge found in the 2020 and 2021 Site visits?                      To address the issue, the DTSC contractor (Geosyntec) will prepare a work plan and investigate potential copper sources.</p>			
<p>8) When was the last bathymetric survey conducted? What did the data show about the sediment cap? Is there a need to complete an additional bathymetric survey?                      The last bathymetric survey was conducted in 2008.</p>			
<p>9) Are you aware of any changes in the Federal/State/County/Local Laws and regulations that may impact the protectiveness of the</p>			



remedy?

No

10) Do you have any comments, suggestions, or recommendations regarding the project?

Site safety is a major concern for staff working at the Site and trespassers. Some of the ways to improve Site safety include more frequent inspections and repairs to fences and posting warning signs around the Site. The Site's stormwater management system failed to manage the volume of stormwater during the last large storm event and flooding occurred at several locations on the Site. It is recommended that the stormwater management system be upgraded. The DEP advised the DTSC of a prospective purchaser for the Site. The prospective purchaser buyer should be informed that the soil cap is not designed to support any load and use of the property would require redesigning the soil cap to support activities on the Site. Vegetation at the UP-owned parcels of the Site imposes fire hazard during the dry season.

#### Five-Year Review Interview Record

<b>Site:</b>	McCormick and Baxter Superfund Site	<b>EPA ID No:</b>	CAD009106527	
Interview Questionnaire				
Date: March 7, 2023				
<b>(Fill in the components below, one line per person if multiple persons are providing responses)</b>				
Name	Organization	Title	Telephone	Email
James Stellmach	USACE-SPK-EDE-E	Environmental engineer	916-804-9556	James.p.stellmach@usace.army.mil
<b>(Record responses to the questions below)</b>				
<p>1) What is your overall impression of the project? The project is in good shape, except for Site security, with multiple holes in the perimeter fence, and unhoued individuals having access to the property.</p> <p>2) Is the remedy functioning as expected? How well is the remedy performing? As far as I am aware, the sediment cap remedy is performing as expected, as is the soil cap remedy (there is some surficial damage, but I am not aware if this impacts the remedy).</p> <p>3) When was the last groundwater sampling event? What does the monitoring data show? Are there any trends that show contaminant levels are decreasing? 2017. I do not closely follow the results or trends.</p> <p>4) Is the frequency of O&amp;M visits sufficient to address the fence damage frequency and issues and prevent trespassing? Is there adequate signage on-Site? The O&amp;M frequency is not sufficient to prevent fence damage and trespassing. The number of signs was sufficient as of 2017, but signs have been sun-damaged and also vandalized, and possibly removed in some locations. Daily O&amp;M security of some frequency (if not full-time, then multiple checks throughout a 24-hour period) may be needed to ensure sufficient Site security O&amp;M.</p> <p>5) Have the stormwater blockages been addressed? I am not aware of this issue.</p> <p>6) Have the holes in the cap been repaired? I have only cursory awareness of this issue.</p> <p>7) Are you aware of any changes in the Federal/State/County/Local Laws and regulations that may impact the protectiveness of the remedy? No.</p> <p>8) Do you have any comments, suggestions, or recommendations regarding the project? Fence repairs and some form of consistent Site security O&amp;M should be implemented in order to maintain security of the Site.</p>				

# Appendix G: Site Inspection Report and Photos

## Trip Report

McCormick and Baxter Superfund Site – Stockton, San Joaquin County, CA

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### 1. INTRODUCTION

a. Date of Visit: March 16, 2023

b. Location: Stockton, CA

c. Purpose: A Site visit was conducted to visually inspect and document the conditions of the remedy, the Site, and the surrounding area for inclusion into the Five-Year Review Report.

d. Participants:

<u>NAME</u>	<u>ORGANIZATION</u>
Charity Meakes	USACE-SPK, Senior Environmental Engineer
Sania Kamran	EPA, RPM
Amir Mahjoor Ph. D.	DTSC, Engineering Geologist
Andy Andrews	Geosyntec, Senior Environmental Engineer
Ritchie Hodges	Geosyntec, Environmental Engineer

### 2. SUMMARY

A Site visit was completed at the McCormick and Baxter Superfund Site on March 16, 2023, as part of the Five-Year Review. The weather was sunny and in the low 60s. The Site visit occurred from approximately 12:45 to 14:45, which included a walk through the Site, as well as visits to some off-Site wells.

### 3. DISCUSSION

#### ***Asphalt cap***

There is regular cracking throughout the asphalt cap with vegetation growth occurring, from small grasses in ~1/8” cracks to large weeds in ~1” cracks (*see* photos 5, 7, 9, 14 and 20 for examples). The majority of cracking is on the smaller side of that variation, with some areas being larger, particularly in the NW corner of the Site (*see* photo 14). There is an area perhaps 20’ in diameter of subsidence or lack of drainage in the SW side of the asphalt cap, and another perhaps 50’x 20’ area with lack of drainage just North of Detention basin 2 in the asphalt cap (in photo 7). There is an area perhaps 12’ long on the SW side with a broken curb on the edge of the cap (*see* photo 13). There are several areas in the eastern soil portion of the Site that have been damaged by driving or perhaps subsidence, such as on the Eastern edge, as seen in pictures 1 and 10.

#### ***Property fencing and signage.***

It appears that there are 23 breaches in the Site fencing, including 2 sections that were down/missing in the NE corner of the Site that are several hundred feet long each (*see* photo 10).

There are small holes in or near all the detention basin gates (*see* photo 11 for example), and 17 other person- to vehicle-sized holes in the fence around the Site, including large damage to both access gates to the Site (*see* photos 12, 13, and 16, for examples).

The Site signage was universally faded and/or lacking (*see* photo 3 for typical detention basin sign). There did not appear to be any signage identifying the Site as a Superfund Site. No signage appeared to have any language other than English.

### ***On-Site camping and debris***

There were many areas of the Site that were actively being used, or perhaps had been used, for camping by unhoused people, including approximately a dozen RVs, a semi-truck (without trailer), multiple tents, cars and lean-to's. There are possibly 22 actively used camping areas, as well as additional areas of debris or possibly abandoned camping areas. There were also three stripped vehicles (a silver Toyota Prius, a blue sedan-like a Honda Accord, and a white SUV-like a Ford Expedition) and one burned out vehicle on the Site (appeared to be another SUV-like a Jeep Cherokee). The camping Sites are spread throughout the McCormick and Baxter Site, along every border fence, however the largest grouping is in the N and NE corner of the Site. *See* photos 1, 2, 5, 8, 10, 16 and 18, for examples. The on-Site fire hydrant had been opened (*see* photo 9).

At the time of the Site visit, very few of the people living on-Site were visible, but there were many friendly roaming dogs, the Stockton Police, Stockton Code enforcement personnel, and a proselytizer on-Site. According to Dr. Mahjoor from DTSC, the city said they were planning to evict all the people from the Site, clean it up, and repair the fences.

### ***Phytoremediation Study system***

There is one large (~3,000-gallon tank), and 16 approximately 4' soil basin cubes that were used in the phytoremediation study currently on Site. Fifteen of the cubes still appear in their original location, mostly full of soil and vegetation, with their insulation degrading (*see* photos 4 and 7). The piping for the system is broken and disassembled in many spots, including the tank having an open port near the bottom. One of the ~4' soil basin cubes appears to have been emptied and reused for indeterminate purposes at a campsite on the NW portion of the M&B Site (*see* photo 5). There were 18 of the ~4' cubes used in the phytoremediation study and visible on aerials in 2022; two of these no longer appear to be on-Site. There is no obvious area where the soil was emptied, however due to the size and weight of the containers, it may be safe to assume that they were emptied at the location of the study. There was also a vertical pipe extending perhaps 8-10 feet tall near the system, visible in photo 4.



View of Phytoremediation System with 18 soil basins in March 2022 on Google Earth

There is also one metal 55-gallon drum on-Site near the main gate (photo 6) holding IDW soil from 2014 that had been set aside for the phytoremediation study. Dr. Mahjoor from DTSC mentioned that another metal drum used to be on-Site next to the existing one, but we did not see the second drum on-Site.

### ***Riprap cover to slough, small craft barrier, and Sediment Cap***

The riprap cover, sheet piling, and small craft barrier did appear to be intact and functioning as intended. There was debris scattered around the riprap inside the slough-side fencing.

During our Site visit there was no indication of dumping of large items into the slough, however there were a couple large holes in the slough fence, through which it would have been possible that items large enough to potentially damage the sediment cap (such as a vehicle) could have entered the slough. Google satellite imagery from March 2022 (the latest currently available) also showed no indication of large items that may have gotten into the slough, however there were also slightly fewer campsites on-Site at that time, and the full phytoremediation system was still intact in that image as well. During our Site visit on March 16, 2023, one of the vehicles shown burning on-Site in pictures sent to the EPA March 20, 2023, from nearby business is no longer visible on-Site. It may be worthwhile in the future five-year review to do a backwards look through google earth images to make sure there is no evidence of large items visible in the slough water, and also to reach out to the city of Stockton to see if they know if whether that vehicle (which appeared to be a burned 4 door silver or white sedan), was towed off-Site.

### ***Stormwater basins***

All four stormwater basins were full or even overflowing between the forebays and main basins due to recent rains. Basins 2 and 4 had water covering the berm between the two basins (*see* photo 8, for example). Ritchie Hodges from Geosyntec, which has been DTSC's contractor on the Site in recent years, suggested that drainage from basin 4 may be partially blocked, but with all the water, the site inspection participants were not able to visually identify any specific concerns. Fencing around all basins was generally good, with the exception of a small hole near or in the gate at all four basins (*see* Photo 11, for example). All signage was faded (*see* Photo 3, for example). Monitoring well A-6 on the south side near basin 2 appears to have been damaged and flooded with the stormwater, although site inspection participants were not able to get inside fencing for a closer look. The DSW-7 wells in detention basin 3 also appeared to be flooded (*see* photo 18).

### ***Monitoring Wells***

Many monitoring wells lack external identification. While some wells appear to be secure and undamaged, there are several wells that are damaged, including A-10, which has a cracked base, or have open access, including DSW-5B. Others appear to be both damaged and open, including one of the DSW-1 wells (*see* photo 15). However, the exact wells were indeterminate due to lack of external identification. Additionally, some of the more easily accessible off-Site wells were inspected during the Site visit, and those appeared secured and undamaged (*see* photo 17 for example). In a separate email, James Stellmach of the USACE Sacramento office recently noted



that their team were not able to locate/access the following off-Site wells: OFS-5 wells and OS-6 wells appear to have been paved over; a couple of the OS-1 wells were buried; and MW-3E was inaccessible due to brambles overgrowth.

#### 4. ACTIONS

The USACE will incorporate information obtained from the Site visit into the Five-Year Review report.

Charity Meakes  
Senior Environmental Engineer  
Sacramento District



No.	Photo	Caption
1.		<p>View of Site from east on W. Washington St, looking West.</p> <p>Typical areas of campsites and debris.</p>
2.		<p>View of Site from east on W. Washington St, looking North-West towards detention basin 4.</p> <p>Typical areas of campsites and debris.</p>

3.



Det Basin 1 –  
Typical Faded Sign  
on all detention  
basin gates.



4.



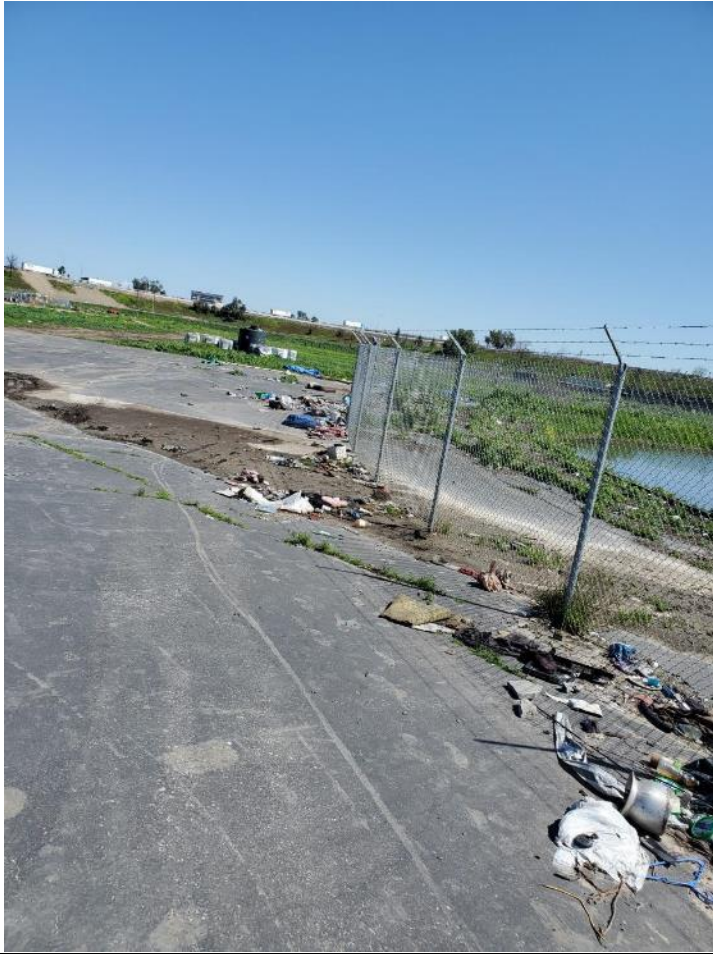
Main area with  
leftover phyto-  
remediation study  
equipment.

Typical debris.



5.		<p>One phyto-remediation tank (previously filled with soil and tree saplings) spotted being improperly reused on northern side of Site.</p>
6.		<p>Near main gate on south side of Site.</p> <p>One of two leftover drums of well cuttings from monitoring well construction in 2014. During a Site visit in December 2022, the second drum was still present. It appears that someone disposed of the contents of the second drum right behind it, in the vegetated area, visible on the left side of this photo. The location of the second drum is unknown.</p>

7.



Near Basin 2 looking East.

Typical Site debris, with Phyto-remediation system in mid-background, and area of subsidence/ponding on cap, with typical vegetation growth in cracks on cap in foreground.

8.




Detention basin 2, looking East.

Forebay and Main basin merged due to recent rains.

MW (A-6, likely) on South side of water (right side of photo) appears it had been submerged.

2 stripped vehicles to left, debris.



9.		<p>On-Site fire hydrant, opened.</p> <p>Typical asphalt cap cracking with vegetation.</p>
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10.		<p>One of two very large areas of missing fence in NE corner of Site, and typical damage to soil area in NE corner of Site.</p>
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11.



Detention Basin 2.  
Typical small hole  
in fence at all  
detention basins.

12.



Main entrance gate  
(south side of site)  
bent in half and  
typical debris and  
cap  
cracking/vegetation  
growth in  
foreground.



13.



Area of broken fence and broken curb on SW side of Site.

14.



NW corner of Site, looking NW –  
Small craft barrier intact.  
Some of largest of vegetation growing in cracks in cap up to ~1” wide.



15.



Monitoring well near phyto-remediation system (possibly one of the DSW-1 wells?).

16.



On NW part of Site, looking NW – One of multiple burned out and/or stripped vehicles on Site, with a vehicle sized large hole in fence to right.



17.



Off-Site OS-4 wells on W. Sonora St., with nearby campsite.

18.



Detention basin 3.  
  
DSW-7 wells appear to be under water.



19.



Inside slough fence, looking east.  
Large hole/access portal through fence visible on right.  
Typical debris.

20.



Typical asphalt cracking with vegetation growth.