EPA

Casmalia Resources Superfund Site
Santa Barbara County, California

U.S. Environmental Protection Agency • Region 9 • San Francisco, CA • November 2017

EPA Seeks Public Comments on Proposed Final Site Cleanup Plan

Introduction

The United States Environmental Protection Agency (EPA or Agency) requests public comments on its Proposed Plan to address contaminated soil, groundwater, and surface water at the Casmalia Resources (CR) Superfund Site.

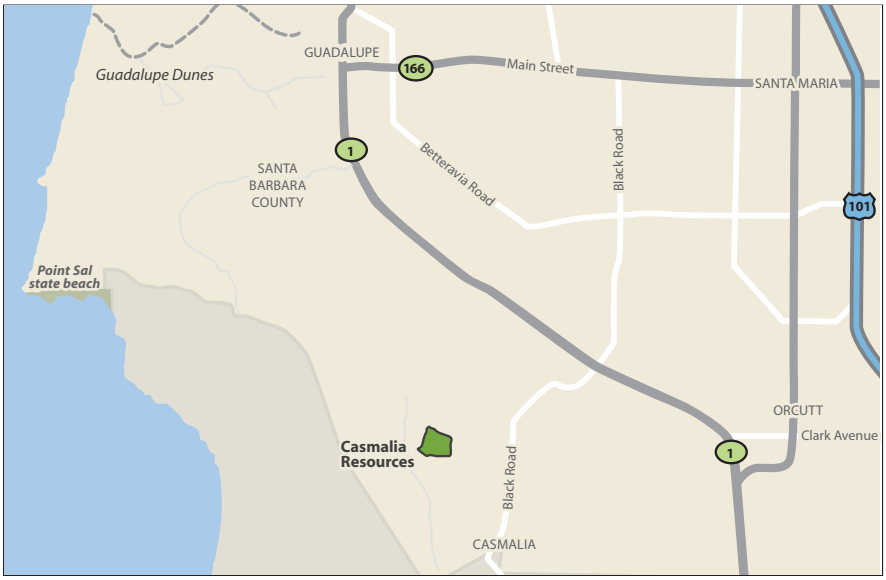

Figure 1: Casmalia Resources Superfund Site location map

Please Join Us for a Public Meeting

EPA seeks public input on the Proposed Plan and invites you to a Public Meeting on **Wednesday, December 6, 2017.** EPA will present the Proposed Plan, and the public can give written and oral comments for the official record. The meeting will take place at the following location:

Orcutt Academy Charter School
formerly Winifred Wollam Elementary School

3491 Point Sal Road
Casmalia, California 93429
6:00 p.m. – 8:00 p.m.

The Proposed Plan outlines the final cleanup activities for the site. EPA started emergency response work at the facility in 1992, followed by ongoing actions by EPA and the Casmalia Steering Committee (CSC) to study and clean up the site for protection of human health and the environment. Although the site has been stabilized and there are no current risks to the public, cleanup work and long-term operation and maintenance (O&M) on the site are necessary for long-term protection.

After studying many cleanup alternatives, EPA has drafted a plan for final cleanup. EPA is holding a 60-day comment period in which comments can be submitted. EPA will also hold a public meeting on **Wednesday, December 6, 2017** in Casmalia. All public comments must be received or postmarked by **Monday, January 22, 2018**. Please see contact information at the back of this fact sheet.

EPA's favored cleanup choice (Preferred Alternative) includes the following elements:

- Installation of engineered capping systems on the landfills and adjacent areas
- Removal of contaminated liquids
- Removal of concentrated areas of soil contamination (hotspots)
- Use of groundwater collection and treatment systems
- Installation of long-term surface water management features
- Reduction of contamination sources
- Institutional controls (ICs) to help ensure protectiveness
- A combined Technical Impracticability (TI) zone and Waste Management Area (WMA) within Area 5 North where waste will be capped in place

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- A Point of Compliance (POC) boundary, where groundwater contaminants outside this boundary must reach cleanup goals
- Ongoing O&M to make sure pollutants and contaminated groundwater are contained on-site

EPA has prepared this Proposed Plan to clean up the site in consultation with the California Department of Toxic Substances Control (DTSC), the Central Coast Regional Water Quality Control Board (Water Board), and community stakeholders. EPA has also consulted with the U.S. Fish and Wildlife Service (USFWS) and the California Department of Fish and Wildlife (CDFW) to review protections of special status wildlife species during development of the Preferred Alternative.

Although EPA has identified a Preferred Alternative, EPA will not make a final decision until all comments are considered. The public is encouraged to provide comments on the alternatives. All comments will be considered and responded to before a final remedy decision is made and outlined in a Record of Decision (ROD). The ROD will include a summary of EPA's responses to the public comments.

For more detailed information, the public can review a longer, more technical, Proposed Plan document, as well as supporting documents, including a review of past studies and new data summarized in a report called a Remedial Investigation (RI), and the consideration and comparison of cleanup options called a Feasibility Study (FS) report. These documents are contained within the administrative record, in formats as described at the end of this document.

Figure 2: Casmalia Resources site showing former waste management units in the mid-1980s

EPA's primary objective for the Proposed Plan is to protect health and the environment from contaminants found at the site.[1]

Background

Site History

The CR site is an inactive hazardous waste management facility that covers approximately 252 acres in the northwestern corner of Santa Barbara County, California. The site was owned and operated by CR from 1972 to 1989, and accepted a wide range of solid and liquid hazardous waste materials, including more than 5.6 billion pounds of waste from over 10,000 waste generators. The operations included landfills, surface impoundments, evaporation pads, waste spreading areas, injection wells, and burial trenches.

The company managing the facility ultimately experienced operational and financial challenges that led to regulatory and community environmental concerns. The facility stopped accepting waste in 1989 and ended operations in 1991. EPA temporarily took over critical site stabilization activities from 1992 to 1996 under Superfund emergency response authority. The EPA emergency response actions included the collection, treatment, and disposal of contaminated liquids; management of surface water; groundwater monitoring; and stabilization of the landfills.

EPA and the Casmalia Steering Committee (CSC), a group of 54 primary potentially responsible parties (PRPs), then finalized a legal agreement, called a Consent Decree (CD) in 1997 that provided for the CSC to conduct site studies and cleanup. The CSC began work in 1997 and will be responsible for implementing the Preferred Alternative described in the Proposed Plan. EPA placed the site on the National Priorities List (Superfund) in 2001.

Setting

The site is in the Casmalia Hills and sits near a ridge that separates two distinct groundwater areas (basins): the Santa Maria Valley basin to the north and east, and the San Antonio Valley Creek basin to the south. Groundwater below the site is not a drinking water source for the town of Casmalia or any other community.

The small town of Casmalia is located 1.5 miles south of the site and has a population of about 300. Larger nearby

[1] *By presenting the Proposed Plan to the public, EPA fulfills the public notice and comment requirements of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 United States Code (U.S.C.) Section 9617(a), and the National Contingency Plan (NCP), 40 Code of Federal Regulations (CFR) Sections 300.430(f) (2) and (3).*

communities include Santa Maria/Orcutt, located about 10 miles northeast of the site; Guadalupe, about 8 miles north of the site; and Lompoc, about 16 miles southeast of the site. Nearby land is mainly used for agriculture, grazing, and oil field development.

Geology and Groundwater Under the Site

The site lies above dense claystone bedrock with very low permeability. Permeability is the ability for liquids to pass through a geologic layer. The main claystone layers at the site are known as the Upper Hydrostratigraphic Unit (Upper-HSU) and Lower Hydrostratigraphic Unit (Lower-HSU).

The Upper-HSU is a weathered, more highly fractured claystone, whereas the Lower-HSU is unweathered, less fractured, and less permeable. Groundwater flow is very restricted in both the Upper-HSU and Lower-HSU. Most groundwater flows through fractures in the Upper-HSU. Groundwater flows much more slowly in the Lower-HSU where fractures are less common. The fracture patterns are irregular and partially connected. Groundwater and contaminant storage also occurs within the claystone matrix (located between fractures). The low permeability and matrix storage limit groundwater flow, and also prevent effective use of groundwater collection and treatment technologies.

Key Accomplishments to Date

Over the past 20 years, EPA and the CSC have achieved many successes and completed the following key projects to stabilize the site and remove or contain contamination:

- Covered (capped) four of the five existing landfills.
- Removed the former RCRA Canyon waste and placed into existing landfills (prior to capping).
- Removed most former waste disposal ponds and pads, and placed contaminated soils into existing landfills (prior to capping).
- Installed the Gallery Well and Sump 9B liquids extraction systems, which have removed about 19 million gallons of contaminated liquids from the Pesticides/Solvents (P/S) Landfill area since operations began.
- Installed the Perimeter Source Control Trench (PSCT) downgradient of the P/S Landfill, which has collected about 87 million gallons of liquid since operations began.
- Installed three perimeter containment trenches (PCTs) near the southern site boundary to stop off-site groundwater migration.
- Installed about 400 on-site and off-property monitoring wells and piezometers, with ongoing monitoring at selected locations.
- Built improvements to the surface water collection and storage systems.
- Built a wetland in the B-Drainage south of the site for habitat restoration for special-status amphibians.
- Completed RI and FS reports to evaluate site cleanup options.
- Established an ongoing site maintenance program, including: collection, treatment, and disposal of contaminated liquids; landfill cap maintenance; groundwater, surface water, and biological monitoring; and reporting.

Figure 3: Installation of groundwater monitoring well

Figure 4: Landfill panorama photo (with RCF Pond and visible salt buildup in foreground)

Nature and Extent of Contamination

The CR facility accepted a range of waste materials, and contained five former landfills and many waste management units. As a result of these activities, contamination is found throughout the site. Over 300 chemicals have been detected, including volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), and metals. These chemicals are found in soil, claystone, surface water and sediment, groundwater, and, to a lesser amount, soil vapor. Contaminants are also found as non-aqueous phase liquids (NAPL). NAPL includes a light component (LNAPL) that moves towards the water table surface, and a dense component (DNAPL) that can sink well below the water table surface.

Five Study Areas

Given the site's size and complexity, EPA has divided it into five different study areas to make cleanup activities easier to manage. The study areas include four land surface areas and a fifth area for groundwater (see Figure 5). The study areas are:

- **Area 1:** Capped Landfills Area, Burial Trench Area (BTA), and Central Drainage Area (CDA)
- **Area 2:** Resource Conservation and Recovery Act (RCRA) Canyon and West Canyon Spray Area (WCSA)
- **Area 3:** Former Ponds and Pads Area
- **Area 4:** Stormwater Ponds and Treated Liquid Impoundments
- **Area 5:** Site Groundwater

Area 1: Capped Landfills Area, BTA, & CDA

Area 1 includes the five former landfills and other closely spaced waste management units, and is the most heavily contaminated part of the site. The Gallery Well, Sump 9B, and PSCT were constructed here to control and contain contaminated liquids (NAPL and groundwater) within this study area.

Area 2: RCRA Canyon and WCSA

Area 2 includes a waste disposal area called RCRA Canyon and WCSA where solid and liquid waste was spread. This

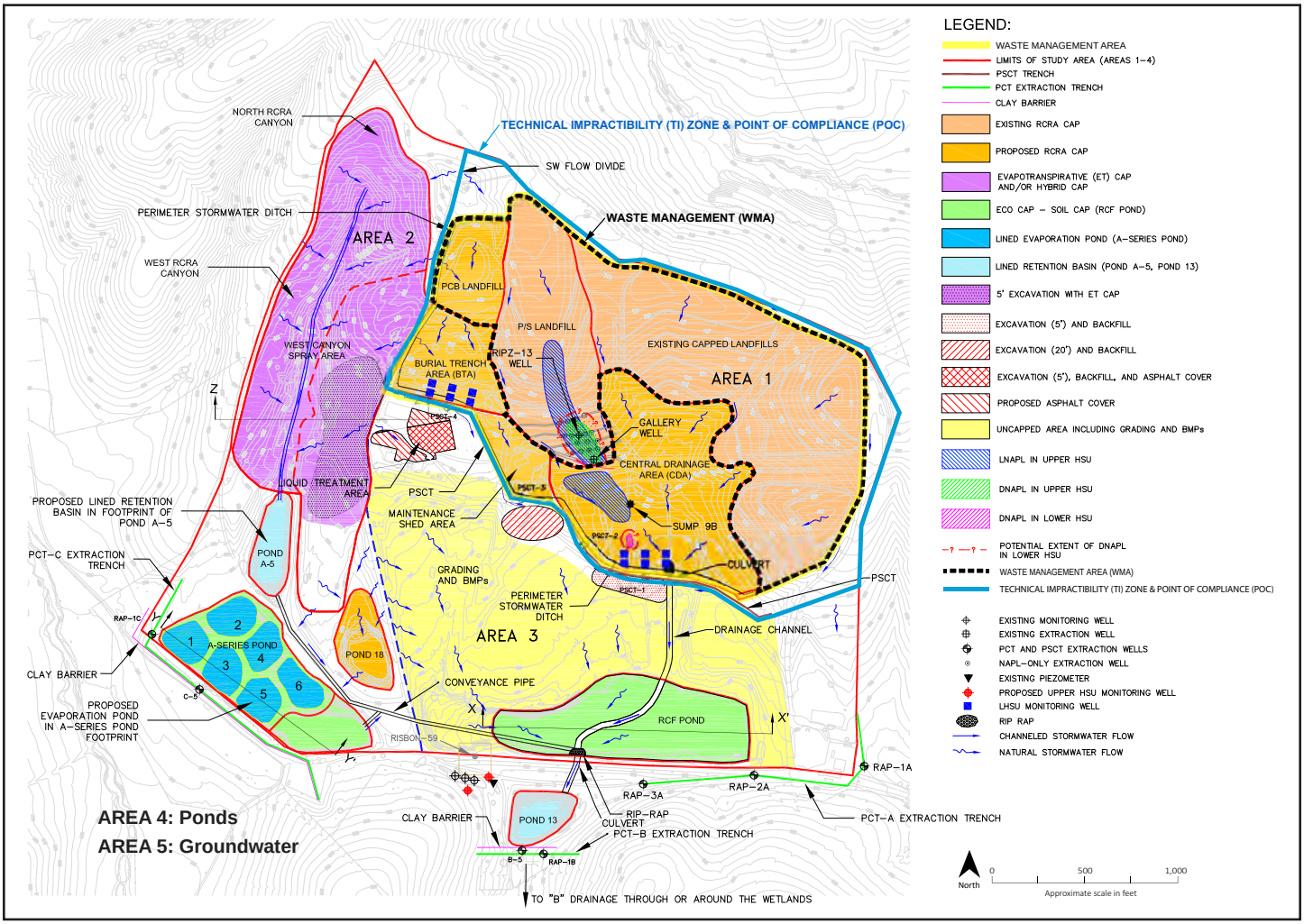

Figure 5: Alternative 3 and other current site features

area contains contaminated soils that are above ecological risk standards and may be contamination sources for both surface water and groundwater.

Area 3: Former Ponds and Pads Area

Area 3 includes the central and southern portion of the site, where numerous chemical pits, ponds and evaporation pads (known as surface impoundments) were located. Although activities to close many of these areas were conducted from 1988 to 1990, contaminated soils remain and were sources of groundwater contamination. Area 3 also includes portions of land where various concentrated areas (hotspots) of soil contamination are located.

Area 4: Stormwater Ponds and Treated Liquid Management Areas

Area 4 includes the five existing ponds created after surface impoundment closure in the late 1980s. The five ponds were constructed initially on a temporary basis to store and evaporate stormwater runoff from capped and uncapped portions of the property, treated water from the PSCT, and untreated water from the PCTs. The ponds contain liquids and sediment with elevated levels of salt and metals.

Area 5: Sitewide Groundwater

Area 5 includes site groundwater and is divided into three subareas based on site features, hydrology, and nature and extent of contamination: Area 5 North, Area 5 West, and Area 5 South.

Area 5 North
This area includes groundwater north of the PSCT and under many former waste management areas (including the former landfills), which are the most significant sources of contamination. Investigations have revealed the presence of up to 100,000 gallons of DNAPL pooled near the base of the P/S Landfill, and a similar amount of LNAPL pooled in this area. The pooled NAPL is a major continuing source of groundwater contamination.

Groundwater contamination is widespread throughout Area 5 North in both the Upper-HSU and Lower-HSU. Contamination comes from many different chemicals, including VOCs, SVOCs, and metals.

A geochemical process called matrix diffusion will make it nearly impossible to remove all the contamination from Area 5 North and restore groundwater to drinking water standards. Many contaminants have been trapped within very fine-grained claystone and will continue to be slowly released to groundwater for hundreds to thousands of years. Cleanup alternatives for Area 5 North, therefore, focus on containing contamination rather than completely removing it.

Area 5 West
Groundwater under RCRA Canyon and the WCSA has elevated metals and VOCs.

A process known as natural attenuation plays an important role in Area 5 West. Data collected as part of the investigations has shown physical, chemical and biological processes are slowly improving water quality over time.

Area 5 South
Groundwater south of the PSCT has elevated metals and VOCs. The natural attenuation process also plays an important role in Area 5 South in slowly improving water quality over time.

Waste Impacts

Waste Material, Soil, Soil Vapor

The site contains large amounts of surface and shallow waste, and contaminated soils. Investigations have identified several locations where potential contact with soil should be addressed by installing an engineered cap and/or soil hotspot removal. Shallow waste and contaminated soils also serve as ongoing sources of contamination to soil vapor and groundwater. Capping and/or removing soil is necessary to prevent soil vapor from being released and to keep chemicals from further polluting the groundwater.

Non-aqueous Phase Liquid (LNAPL & DNAPL)

The site contains large volumes of NAPL in Area 1. Based on laboratory analysis, the NAPL contains over 100 chemicals, including VOCs, SVOCs, and many other compounds. Monitoring has found up to 100,000 gallons of pooled DNAPL at the base of the P/S Landfill, and a similar amount of pooled LNAPL at the water table. The pooled NAPL is a major source of contamination that must be removed as much as possible to limit the spread of contamination. The FS evaluated options for NAPL removal and recommended using vertical wells to remove NAPL from the P/S Landfill area.

Contaminated Groundwater

The site contains impacted groundwater with several hundred different contaminants. Groundwater contamination is pervasive throughout the site. To address this risk, engineered containment features (PSCT, PCTs) have been installed and continue to operate so that groundwater contamination is effectively contained within the site boundaries. In addition, natural attenuation processes are occurring which degrade organic compounds and limit contaminant transport.

Contaminated Surface Water & Sediment

Surface water management is a key challenge for the site. Areas where rainwater comes into contact with surface contamination must be carefully managed. The five ponds contain high amounts of metals and salt. To address this risk, the FS presents options to close all ponds and construct lined surface impoundments and evaporation ponds for long-term operations.

Samples taken from surface water and sediment off the site in areas along Casmalia Creek and the site drainages showed no signs of adverse impacts by former site operations.

Human Health & Ecological Risks

EPA conducted assessments during the RI/FS process, including a human health risk assessment (HHRA) and an ecological risk assessment (ERA) to determine the risks from site contaminants.

Human Health Risk Assessment

The HHRA looked at the likelihood of someone getting cancer and developing other non-cancer effects if they were to come into contact with site contamination. The HHRA studied:

- Sources of contamination in different areas
- Potentially impacted populations
- Ways in which populations could be exposed including direct physical contact, ingestion, inhalation, and movement of contamination through air, soil, fractured rock, surface water, and groundwater

Potentially impacted populations included site workers, potential trespassers, recreational users, and off-property residents such as neighbors and local ranchers. Residents in the town of Casmalia are not impacted since site contamination does not reach the town.

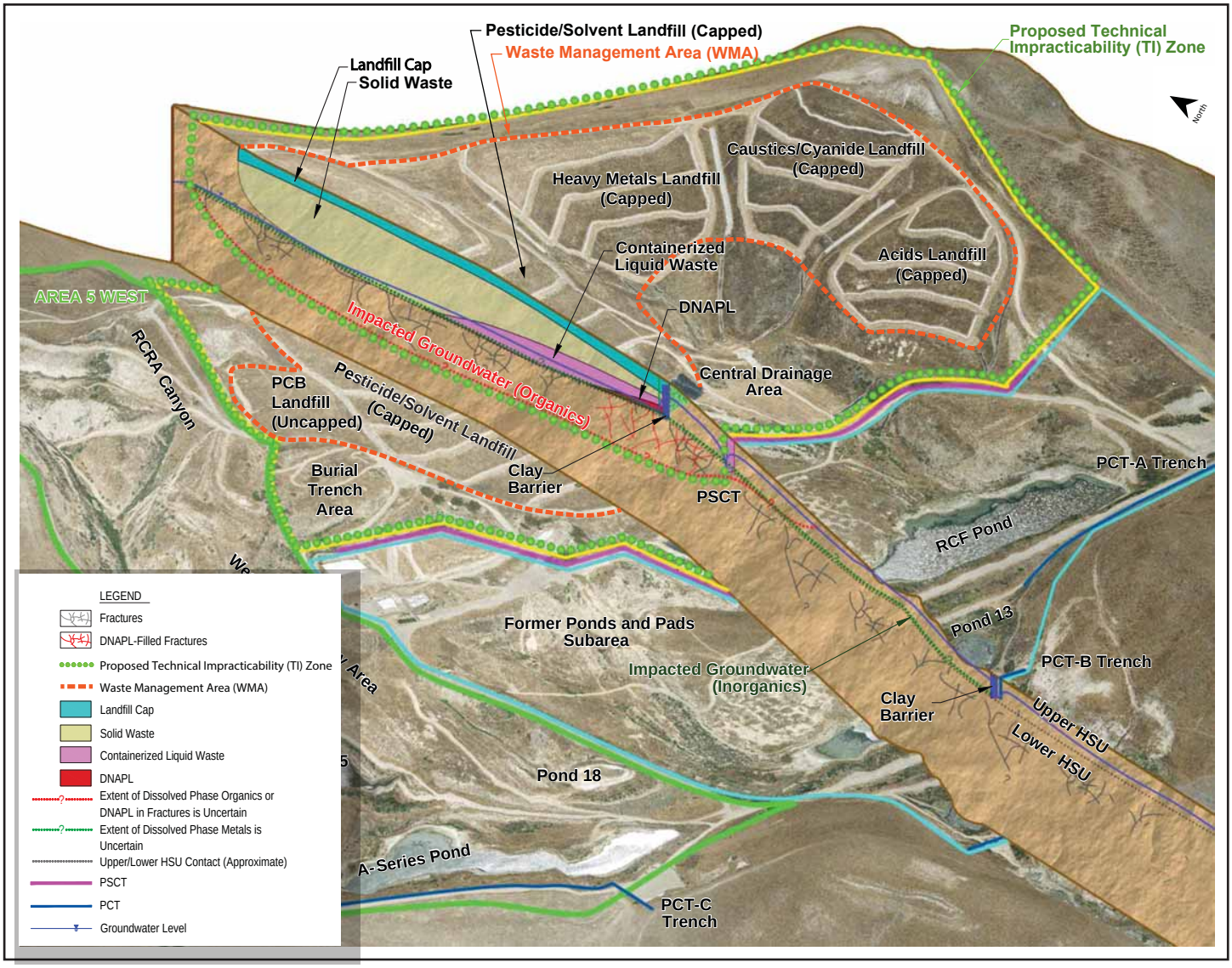

Figure 6: Cross section with key site features

EPA also evaluated risks that may occur from reasonably anticipated future land and water use. This portion of the HHRA looked at risks to future on-site workers and potential trespassers, and to off-site ranchers, recreational users, and hypothetical future residents.

Although EPA has no reason to believe that future property use will rely on on-site groundwater, maximum contaminant levels (MCLs) will apply as the cleanup goals for the chemicals found in groundwater outside of Area 5 North.

Of the 300 chemicals of interest, the results of the HHRA showed that the chemicals of concern (COCs) which could harm human health include the following:

- **In the Soil:** Tetrachloroethene (PCE), trichloroethene (TCE), and 2-(2-chloro-4-methylphenoxyl) propionic acid (MCPP)
- **In the Surface Water:** arsenic
- **In the Groundwater:** PCE, TCE, and 90 other chemicals that exceed drinking water standards (i.e. MCLs)
- **In the Soil Vapor:** PCE, TCE, and 1,3-butadiene

Ecological Risk Assessment (ERA)

The ERA studied potential risks from on-site chemical sources to a wide range of plant and wildlife species.

The results of the ERA showed shallow waste materials and contaminated soils in some areas of the site present risks to wildlife species. The main COCs for wildlife in terrestrial (land) areas are metals (chromium, copper, and zinc).

For example, the five surface ponds in Area 4 contain high amounts of metals and salts. EPA has determined it is critical to close all five ponds based on various combinations of ecological risk, attractive nuisances to endangered species, human health risk, and long-term site cleanup goals, and construct lined stormwater channels and evaporation ponds for long-term operations.

The site also contains several listed threatened and endangered species, including the California Red Legged Frog, the California Tiger Salamander, and the Western Spadefoot toad. EPA has been working with the U.S. Fish and Wildlife Service and the California Department of Fish and Wildlife to improve habitat conditions and protections of these species.

Cleanup Objectives

EPA developed the following cleanup objectives to protect human health and the environment after evaluating the nature and extent of contamination and site risks.

- Prevent human exposure to chemicals in soil, groundwater, surface water, and soil vapor so they do not pose an unacceptable health risk.
- Prevent ecological exposure to chemicals in soil, surface water, and pond sediment so that they do not present an unacceptable risk to plants and wildlife, including threatened and endangered species.
- Remove hotspots of highly contaminated soils to reduce sources of groundwater contamination.
- Remove and contain NAPL (both LNAPL and DNAPL) source material from the P/S Landfill and nearby areas as much as possible to reduce sources of groundwater contamination.
- Contain groundwater contamination within Area 5 North where groundwater restoration to applicable standards is not technically possible.
- Restore the beneficial use of groundwater by achieving cleanup goals where technically possible (Area 5 South and Area 5 West), and prevent movement of groundwater contamination beyond the site boundary.
- Maintain or provide soil, sediment, vegetation, and water quality capable of supporting a functioning ecosystem for the aquatic and land plant and wildlife populations at the site.

Cleanup Alternatives

The FS identified and evaluated six cleanup alternatives, including an alternative to not clean up the site. The alternatives range from the least aggressive (Alternative 1) to the most aggressive (Alternative 6) in terms of how quickly cleanup objectives can be reached. The costs, however, increase significantly from the least aggressive to the most aggressive alternative. The common elements of each alternative (except the No Further Action Alternative) are summarized below.

Common Elements of Alternatives

- Engineered capping systems for landfills and the adjacent areas
- Liquids extraction (including NAPL) from Area 5 North and other areas, with on-site and off-site treatment
- A combined Technical Impracticability (TI) zone and Waste Management Area (WMA) designation within Area 5 North where waste will be capped in place (EPA policy allows for designation of landfills where waste will be left in place as WMAs)
- A Point of Compliance (POC) boundary, where groundwater contaminants outside the WMA/TI Zone must reach cleanup goals

- Use of institutional controls (ICs), including legally enforceable land use restrictions, to help ensure protectiveness
- Monitored natural attenuation (MNA) for groundwater in areas beyond the interconnected WMA/TI Zone
- Long-term groundwater monitoring to verify that contaminants have not migrated beyond the POC or the site boundary

The 2011 RI Report included a technical impracticability (TI) evaluation that concluded it would not be possible to clean up groundwater in Area 5 North in a reasonable amount of time. Groundwater modeling showed that full restoration of groundwater to MCLs could not be achieved even after several thousand years even with aggressive pump-and-treat remediation. Area 5 North contains large volumes of waste materials, large volumes of pooled NAPL, and low permeability claystone that traps contaminants and releases them slowly. No cleanup technologies can effectively remove the wide range of contaminants in this type of setting.

Therefore, EPA has proposed to waive the requirement to reach cleanup standards for COCs in groundwater in Area 5 North, and to label Area 5 North as a TI zone. Consistent with EPA policy and guidance, EPA is also proposing to designate a Waste Management Area (WMA) within the TI zone, around the 5 former landfills (P/S, Heavy Metals, Caustic/Cyanides, Acids, and PCBs). Designation of a WMA is appropriate because waste materials are being left in place, and because there is no expectation that groundwater within this area can be cleaned up for beneficial use.

Finally, to demonstrate that groundwater quality is not worsened outside the combined WMA and TI zone, EPA is designating a POC along the boundary of Area 5 North (same boundary as the TI zone). Cleanup standards would apply outside the WMA/TI Zone, but would not apply inside.

Alternative 1: No Further Action

EPA is required by CERCLA to include a No Further Action Alternative for comparison. This alternative provides no additional cleanup, but takes into account response actions that have already been completed. EPA will not be selecting this alternative, because it does not meet any of the cleanup goals.

Figure 7: Waste Management Area (WMA) and TI Zone

Alternative 2: Capping, Liquids Extraction, Large Evaporation Pond

The area-specific cleanup actions for Alternative 2 are as follows:

Area 1: The remaining areas (PCB Landfill, CDA, BTA) would be covered with an engineered RCRA cap and tie into the existing nearby caps. Stormwater would be directed to the B-Drainage and Casmalia Creek.

Area 2: The west side of RCRA Canyon would be covered with an evapotranspiration (ET) cap. Contaminated shallow soils will be excavated in the WCSA. Stormwater from the west side would be directed to the B-Drainage & Casmalia Creek, while WCSA runoff would be directed into a new 11-acre lined evaporation pond.

Area 3: Four soil hotspot areas (Ponds A/B, Area South of PSCT-1, Liquids Treatment Area, Maintenance Shed Area) would be excavated and/or capped, and groundwater monitoring would be conducted for hotspot RISBON-59.

Area 4: The five existing ponds would be cleaned up as follows:

- Pond 18: Remove all liquids, place clean soil, and install a RCRA cap to close the pond.
- Pond A-5: Remove all liquids, place excavated soil from the WCSA, and construct a double-lined cap to convert it into a stormwater holding pond.
- Pond 13: Remove all liquids, place clean soil, and construct a double-lined cap to convert it into a stormwater holding pond.
- RCF Pond: Remove all liquids, place clean soil, construct a soil "eco-cap," and construct a new, lined, stormwater channel.
- A-Series Pond: Remove all liquids, increase the pond size to about 11 acres, place clean soil, and construct a double-lined cap with a leak detection and removal system. The new evaporation pond would receive remaining liquids

before construction from the other existing ponds, and future treated liquids.

Area 5 (North): EPA is proposing to designate a TI zone for groundwater in Area 5 North, and to label the five Area 5 North landfills as a WMA.

Liquids, including NAPL, will be removed using existing and new systems. Up to 16 new monitoring wells will be installed in the Lower-HSU to make sure NAPL is not migrating southward underneath the PSCT and outside the TI zone. If NAPL migration is detected beyond the POC at the Area 5 North boundary, there may be additional monitoring and extraction in defined areas.

Liquids, including NAPL, removed from the P/S Landfill area would be stored and shipped for treatment and disposal at an EPA-approved off-site facility. Liquids extracted from the PSCT would continue to be treated at the site with an upgraded treatment system, and treated water would be directed to the new evaporation pond.

Area 5 South and Area 5 West: The extracted liquids from the PCTs will be treated in an upgraded treatment system, and treated water piped to the new evaporation pond. Additionally, MNA is expected to naturally break down organic compounds over time.

Groundwater monitoring will be performed in these areas including at the site boundary; if contaminant migration is detected beyond the POC or the site boundary, additional monitoring and extraction may be done in defined areas.

The construction time for Alternative 2 is estimated to be 5 years. Based on modeling, the estimated cleanup time for VOCs and inorganics in groundwater in Area 5 South is 260 years after sources are removed. Similarly, the estimated cleanup time for VOCs and inorganics in groundwater in Area 5 West is 220 years after sources are removed. All cleanup times are best estimates, and not certain.

Anticipated Costs ($) for Alternative 2	
Cost	54 million (M)
Annual (O&M)	4M / Year
Net Present Value (NPV) (7%/3%), 100 year	92M / 159M

Alternative 3: Capping, Liquids Extraction, Small Evaporation Pond (Preferred Alternative)

Alternative 3 is similar to Alternative 2, and would include landfill capping, liquids extraction, and a smaller (about 6-acre) evaporation pond(s) instead of the larger (about 11-acre) pond. The main difference is additional capping in Area 2 to make sure that all stormwater runoff from RCRA Canyon can be directed to the B-Drainage instead of managed in the evaporation pond.

The estimated time to construct Alternative 3 is 5 years. The estimated cleanup time for groundwater in Areas 5 South and West would be similar to those presented for Alternative 2.

Anticipated Costs ($) for Alternative 3	
Cost	60 million (M)
Annual (O&M)	4.1M / Year
Net Present Value (NPV) (7%/3%), 100 year	96M / 164M

Alternative 4: Capping, Liquids Extraction, Off-Site Discharge

Alternative 4 is similar to Alternative 3, and would include landfill capping, liquids extraction, and off-site surface water discharge without an evaporation pond. Adding a treatment plant for extracted liquids to meet National Pollutant Discharge Elimination System (NPDES) permit requirements would be needed to eliminate the pond. The treated liquids would then be discharged off-site to Casmalia Creek, instead of being managed in an evaporation pond. This alternative, however, would require an "Exception" to the Water Board's Basin Plan to address the requirement that prohibits waste discharge to surface waters within the San Antonio Valley Creek basin.

The estimated time to construct Alternative 4 is 5 years. The estimated cleanup time for groundwater in Areas 5 South and West would be similar to those presented for Alternatives 2 and 3.

Anticipated Costs ($) for Alternative 4	
Cost	65.7 million (M)
Annual (O&M)	7.8M / Year
Net Present Value (NPV) (7%/3%), 100 year	152M / 283M

Alternative 5: Capping, Liquids Extraction, P/S Landfill Dewatering, Small Evaporation Pond

Alternative 5 is similar to Alternative 3, and would include landfill capping, liquids extraction, and aggressive dewatering of the P/S Landfill area using horizontal extraction wells. The treated liquids would be discharged to a new evaporation pond.

The estimated time to construct for Alternative 5 is 5 years. Despite the more aggressive removal, the estimated cleanup time for groundwater in Areas 5 South and West to reach cleanup levels would be similar to those presented for Alternative 2.

Anticipated Costs ($) for Alternative 5	
Cost	69.4 million (M)
Annual (O&M)	8.5M / Year
Net Present Value (NPV) (7%/3%), 100 year	121M / 192M

Alternative 6: Capping, Liquids Extraction, P/S Landfill Dewatering, Groundwater Extraction, Off-Site Discharge

Alternative 6 is a variation of Alternative 5 that also includes landfill capping, liquids extraction, P/S Landfill dewatering, and adds construction and operation of about 80 new groundwater extraction wells in Areas 5 South and West to help reduce the time to reach cleanup goals. In addition, treated liquids would be directed to the C-Drainage west of the site in compliance with NPDES permit requirements, and no evaporation pond would be needed. This would require an "Exception" to the Water Board's Basin Plan.

The estimated time to construct for Alternative 6 is 5 years. Despite the more aggressive removal, groundwater modeling shows that cleanup of groundwater in Areas 5 South and West could take over a century.

Anticipated Costs ($) for Alternative 6	
Cost	93.2 million (M)
Annual (O&M)	15M / Year
Net Present Value (NPV) (7%/3%), 100 year	229M / 412M

Evaluation of Alternatives and Preferred Alternative

EPA is recommending Alternative 3 (Capping, Liquids Extraction, Small Evaporation Pond) as the Preferred Alternative based on an evaluation using the nine CERCLA criteria (see inset). The Preferred Alternative is a combined containment and treatment remedy that includes NAPL source removal, extraction and treatment of contaminated liquids, containment of pollutants in landfills, soils, and groundwater, and ongoing monitoring.

Alternative 3 is protective of human health and the environment (more protective than Alternative 2) and achieves cleanup levels in a reasonable time frame, considering the complexity of the site. The alternative ranks high in long-term effectiveness, includes containment to prevent off-site migration of wastes, and provides source reduction by extraction and treatment of liquids in the most heavily contaminated parts of the site.

Alternative 3 uses proven and reliable technology, including previously installed capping systems, existing containment trenches (shown to be effective), new engineered capping systems, and the installation of upgraded liquids extraction and treatment systems.

Back up (contingency) measures, such as additional monitoring and focused extraction, will be performed in localized areas if found necessary by EPA. If routine monitoring indicates groundwater contamination is migrating beyond the POC or site boundary, such contingency measures may include additional sampling, additional monitoring wells, and/or additional extraction wells to direct contaminants into site treatment systems.

Because waste will remain at the site, EPA is required by law to conduct reviews every 5 years to evaluate the long-term protectiveness of the remedy. If it is determined that parts of the remedy are not protective, EPA will consider actions to make sure protectiveness continues.

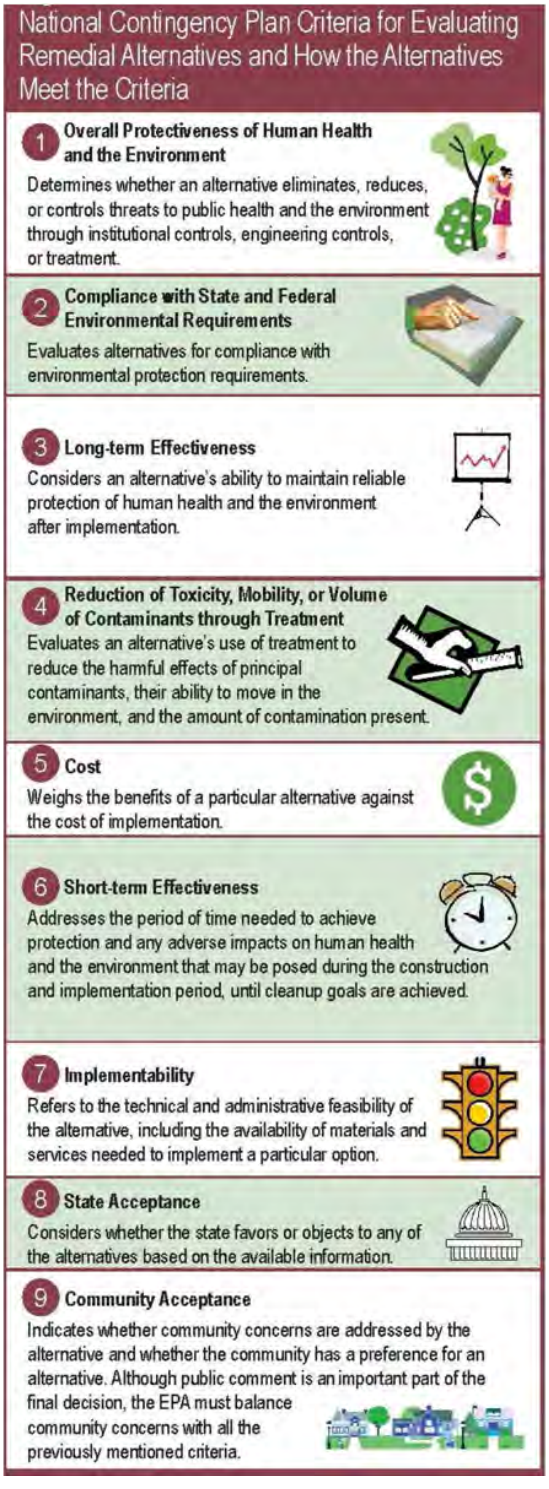

Table 1. Summary of Sitewide Cleanup Alternatives Evaluation

Evaluation Criteria	Alternative 1: No Further Action	Alternative 2: Large Evaporation Pond	PREFERRED Alternative 3: Small Evaporation Pond	Alternative 4: No Evaporation Pond	Alternative 5: P/S Landfill Dewatering with Evaporation Pond	Alternative 6: Aggressive Groundwater Extraction w/ No Evaporation Pond
1. Overall Protection of Human Health and the Environment	No	Yes	Yes	Yes	Yes	Yes
2. Compliance with ARARs	No	Yes	Yes	Yes	Yes	Yes
3. Long-Term Effectiveness	N/A	◑	◕	◕	◕	◕
4. Reduction of Toxicity, Mobility or Volume through Treatment	N/A	◔	◔	◔	◑	◑
5. Short-Term Effectiveness	N/A	◑	◕	◑	◔	○
6. Implementability	N/A	◑	◕	◑	◔	○
7. Cost	N/A	◔	◔	○	○	○
8. State Acceptance	State Agencies have expressed support for the Preferred Alternative (3)					
9. Community Acceptance	Pending review after 60-day public comment period					
Green Impacts Assessment	N/A	◕	◑	◕	○	○
Capital (2014 $)	$0	$53,987,000	$59,967,000	$65,737,000	$69,411,000	$93,245,000
Annual O&M (2014 $)	$2,724,000	$3,997,000	$4,065,000	$7,772,000	$8,464,000	$14,849,000
Capital + O&M, 30-year, 3%	$53,400,000	$115,445,000	$120,224,000	$195,733,000	$147,035,000	$291,069,000
Capital + O&M, 30-year, 7%	$33,807,000	$85,195,000	$89,499,000	$138,550,000	$113,814,000	$209,924,000
Capital + O&M, 100-year, 3%	$86,089,000	$159,052,000	$163,561,000	$282,661,000	$191,734,000	$412,474,000
Capital + O&M, 100-year, 7%	$38,875,000	$91,956,000	$96,218,000	$152,025,000	$120,744,000	$228,744,000

○ Poor / Low ◑ Moderate ● Good / High

◔ Poor / Low to Moderate ◕ Moderate to Good

Alternative 3 has an estimated cost of about $60 million with annual O&M costs of about $4.1 million. Present value costs are about $164 million assuming a 3 percent interest rate, and about $96 million assuming a 7 percent interest rate. On this basis, Alternative 3 is cost-effective because it optimizes protectiveness at a reasonable cost, compared to the other alternatives. The more aggressive alternatives (Alternatives 4 through 6) would cost significantly more than Alternative 3 and would not lead to significantly more protectiveness. Groundwater is effectively contained within Site boundaries and EPA has no reason to believe that future properties would rely on-site groundwater. Alternatives 4-6 would also include additional safety risks for long-term operations and off-site waste transportation and disposal.

With respect to State acceptance, California agencies (DTSC, Water Board, and CDFW) have worked with EPA and the PRPs in planning, implementing, and evaluating response actions for many years. The State agencies have expressed support for the Preferred Alternative.

Figure 8: EE/CA landfill cap construction (with RCF Pond in foreground)

Casmalia Resources Superfund Site
Proposed Plan and Public Meeting

Community Participation

To make sure that the community's concerns are being addressed, a **Public Comment Period lasting sixty (60) calendar days will open Wednesday, November 22, 2017, and close on Monday, January 22, 2018.** ***Please submit written comments to Alejandro Diaz.*** **In addition, EPA will hold a public meeting on Wednesday, December 6, 2017 from 6:00 p.m. to 8:00 p.m.**

EPA will provide a transcript of the public meeting on our website, and once the final cleanup action is selected in a document called a Record of Decision (ROD). EPA is issuing a technical Proposed Plan document to further describe the selected remedy. You can find links to the Proposed Plan and the key supporting documents on our website. In addition, the complete Administrative Record is available for viewing at the following Information Repository location:

Santa Maria Public Library
2nd Floor, Reference Department
421 S. McClelland Street
Santa Maria, CA 93454
(805) 925 – 0994

For More Information

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EPA Casmalia Website

http://www.epa.gov/superfund/casmalia

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