

Completion of the Five-Year Review for the Del Amo Superfund Site

The United States Environmental Protection Agency (EPA) conducts regular evaluations of certain Superfund site cleanup remedies to determine if a cleanup currently is, or will be once completed, protective of human health and the environment. These evaluations are called Five-Year Reviews (FYRs). EPA has completed the third FYR of the cleanup remedies at the Del Amo Superfund Site.

In October 2015, EPA published two FYR reports. These reports document the reviews and evaluate whether the remedies are working as planned, or will once installed. The FYR for Operable Units 1 and 2 (OU1 and OU2) was the third FYR issued for the site and focused on the soil, non-aqueous phase liquid (NAPL), and waste pits remedies. The other FYR issued in October 2015, focused on the Dual Site groundwater remedy (OU3), which is a joint remedy for the Del Amo and Montrose Superfund Sites. All FYR reports are available on EPA's Del Amo website: <http://www.epa.gov/superfund/delamo>

A **Superfund cleanup remedy** is a long-term action that removes or substantially reduces hazardous substances (or contaminants) in the environment.

Background

The Del Amo Superfund Site (the Site), is located in Los Angeles, California, and includes approximately 280 acres in a narrow strip of the city known as the Harbor Gateway neighborhood. The Site was the location of a synthetic rubber plant which operated from 1943 to 1972. During the operation of the rubber plant, contaminants were released into the environment at various locations throughout the property. Additionally, sludge and liquid wastes were disposed of in unlined waste pits and evaporation ponds, referred to as the "waste pit area" or OU2. OU2 is located at the corner of Vermont Avenue and Del Amo Boulevard (see Figure 2).

Environmental investigations have shown that contaminant releases at OU1 and OU2 have impacted soil and groundwater beneath the Site. Today, the main contaminants of concern (COCs) include volatile organic compounds (VOCs), such as benzene, tetrachloroethene (PCE), trichloroethene (TCE), semi-volatile organic compounds (SVOCs) including naphthalene, and metals, such as arsenic, cadmium, and manganese (see Table 1).

The pesticide DDT and other related chemicals are also present in the groundwater as a result of activities at the neighboring Montrose Superfund Site. Contaminated groundwater from the two sites has partially merged, so EPA is addressing the groundwater at both sites as a single cleanup project (OU3).

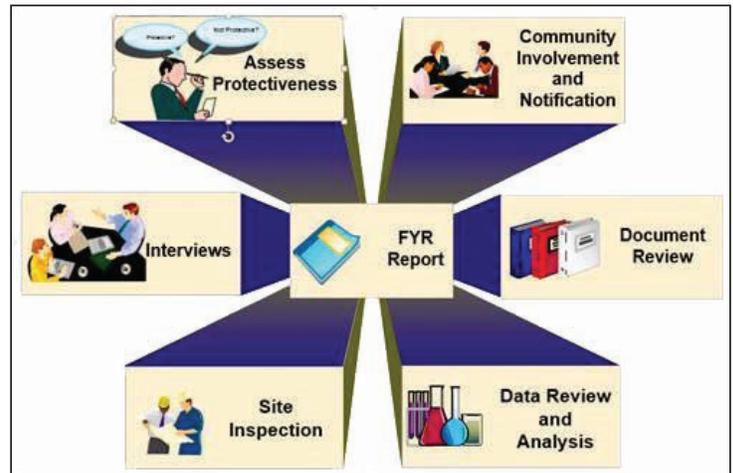


Figure 1: Five-Year Review (FYR) Process



Note: No one is presently drinking or using contaminated groundwater from beneath the Del Amo or Montrose Superfund Sites. Currently, drinking water is provided to residents in the area by the California Water Service Company and comes from sources outside the contaminated area.

Table 1: Del Amo Superfund Site Operable Unit Remedies

Operable Unit (OU)	Primary Site-Related Contaminants of Concern (COC)	Components of the Remedy in Record of Decision (ROD)
OU1 Soil and non-aqueous phase liquids (NAPL)	Arsenic Benzene Benzo(b)fluoranthene Benzo(a)pyrene Copper 4,4-DDT indeno(1,2,3-cd)pyrene n-Nitrosodiphenylamine Perchloroethylene (PCE) i-Propyltoluene Trichloroethylene (TCE)	<p style="text-align: center;">ROD signed September 30, 2011</p> <ul style="list-style-type: none"> • Institutional controls (ICs): informational outreach; building permit review; General Plan footnote, and restrictive covenants (Status: Under design) • Capping for impacted shallow outdoor soils in four areas (Status: Under design) • Building engineering controls (BECs) for VOC-impacted shallow soil at one building (Status: Under design) • Soil vapor extraction (SVE) for VOC-impacted shallow outdoor soil at three areas and one building (Status: Under design) • In-situ chemical oxidation (ISCO) and SVE for deep soil and NAPL-impacted groundwater in three areas (Status: Under design) • Excavation for areas of contamination encountered during future redevelopment/construction (Status: Under design) <ul style="list-style-type: none"> ◦ For areas where excavation is not possible, then BECs, capping, or SVE, and Restrictive Covenants will be used (Status: Under design)
OU2 Waste pits area	Benzene Naphthalene	<p style="text-align: center;">ROD signed September 5, 1997</p> <ul style="list-style-type: none"> • ICs: land-use deed restrictions (Status: In place) • A multi-layer impermeable cap over the waste pits (Status: In place) • Installation of SVE system with in-situ bioventing (Status: In place) • Security fencing (Status: In place) • Long term operation and maintenance of all components (Status: On-going)
OU3 Dual Site groundwater*	Benzene Chlorobenzene Parachlorobenzene Sulfonic Acid (pCBSA) Perchloroethylene (PCE) Trichloroethylene (TCE)	<p style="text-align: center;">ROD signed March 30, 1999</p> <ul style="list-style-type: none"> • ICs (Status: In place) • Containment and isolation of NAPL (Status: Pending) • Groundwater extraction, treatment, disposal, and reinjection of treated water (Status: Pending) • Technical impracticability (TI) waiver (Status: In place) • Collection of additional field data (Status: On-going)

NOTE: *OU3 includes the neighboring Montrose Superfund Site

Figure 2



Montrose & Del Amo Superfund Sites

Harbor Gateway, Los Angeles County, CA • May 2016



Explanation of Remedy Terms

Vapor Intrusion: a process where volatilization (evaporation) of underground contaminants moves into indoor air through cracks and other openings in the foundation of a building

Institutional Controls (ICs): non-engineering actions, such as administrative or legal controls, that minimize the potential for human exposure to contamination by ensuring appropriate land or resource use or protecting the integrity of a remedy. For OU1, the ICs utilize legal agreements with property owners known as “deed restrictions,” reviewing building permit applications in coordination with the City of Los Angeles, putting a footnote into the Los Angeles land-use General Plan, and providing information to owners and the general public. For OU2, the IC is a land-use deed restriction which prohibits the use of the property for hospitals, schools, day care, or residences; the deed restriction also prohibits disturbance of any components of the remedy.

Multi-Layer Impermeable Cap: a cover positioned over the waste pits to prevent rainwater from infiltrating through the ground and to prevent vapors from being released into the air from the underlying waste. The cover consists of several layers of high density synthetic materials, a layer to capture vapors, and a topsoil layer.

Gas Collection and Treatment System: a piece of the multi-layer impermeable cap which collects vapors that rise from the waste pits (below the multi-layer impermeable cap), then treats and releases the treated air onsite.

Soil Vapor Extraction and In-Situ Bioventing Technology (SVE/IBT): the system that extracts and treats underground vapors beneath the waste pits in order to prevent contaminants from entering the groundwater or moving out from beneath the multi-layer impermeable cap. The SVE/IBT system releases treated air onsite.

Security Fencing: above-ground fencing surrounding the SVE/IBT system.

Perimeter Monitoring Wells: wells surrounding the waste pits area which monitor the soil vapor concentrations to detect if site contaminants are migrating away from the waste pits.

Dual Site Groundwater Extraction and Treatment System: a system of wells that pumps contaminated groundwater, pipes it to a treatment facility, then re-injects the treated water back into the ground.

Technical Impracticability (TI) Waiver: EPA’s decision to waive cleanup standards (for example, meeting drinking water standards in groundwater) because it is technically impracticable to achieve those cleanup standards, due to site conditions. Impracticability may be due to lack of technology or extremely high costs.

Record of Decision (ROD): the primary cleanup plan at a Superfund site, which explains EPA’s selected cleanup remedy as well as the factors that led to EPA selecting the cleanup remedy among other cleanup alternatives.

Contaminants of Concern (COCs): any physical, chemical, biological, or radiological substance or matter present in any media at concentrations that may pose a threat to human health or the environment, resulting from a release or potential release from a Superfund site.

Five-Year Review Findings

In the FYRs, EPA evaluated each remedy separately and made conclusions for each OU as follows:

- **The remedy at OU1 (soil and NAPL) requires additional information in order to determine if it is protective of human health and the environment.** Further information is needed to assess vapor intrusion in the commercial buildings on the Del Amo property. EPA's understanding of vapor intrusion and indoor air sampling has improved over the past five years. Given that the most recent indoor air data for commercial buildings on the Del Amo property was obtained 20 years ago, it is difficult to determine whether building occupants are currently protected.
- **The remedy at OU2 (waste pits) is protective of human health and the environment.** Institutional controls are in place that are preventing exposures to COCs. The multi-layer impermeable cap over the waste pits is in good condition and prevents direct human contact with COCs. The SVE and IBT system is working to prevent site-related underground vapors from entering into the environment. To be protective in the long-term, benzene emission standards from the gas collection and treatment system and the SVE/IBT need to be reviewed and updated. Additionally, the sampling plan for the perimeter wells needs to be revised to ensure protection from vapor intrusion.
- **The remedy at OU3 (Dual Site groundwater) is protective of human health and the environment.** People are not exposed to or coming into direct contact with contaminated groundwater. The recent preliminary investigation of vapor intrusion conducted in 2015 suggests there are no urgent health risks associated with vapor intrusion in the neighborhood south of the Site. EPA is continuing its comprehensive vapor intrusion investigation.

To be protective in the long term, EPA should: 1) secure full operation of the OU3 Dual Site groundwater system; 2) continue investigating the potential for vapor intrusion in the neighborhood south of the Site; 3) collect additional information to better evaluate the effectiveness of benzene degradation; and, 4) isolate and contain TCE source areas to prevent further migration.

In addition, the EPA needs to: improve the groundwater monitoring well network; obtain more information about a contaminant called pCBSA; coordinate a comprehensive area-wide strategy to effectively communicate with other agencies; and reevaluate the protectiveness.

Five-Year Review Reports

In October of 2015, EPA published two FYR reports:

- 1) Third Five-Year Review Report for Del Amo Superfund Site Operable Unit #1 and #2; and
- 2) First Five-Year Review Report for Dual-Site Groundwater Operable Unit Montrose Chemical and Del Amo Superfund Sites.

In both 2005 and 2010, EPA published FYR reports for OU2. All reports can be found on EPA's Region 9 Del Amo Superfund site website under the "Technical Documents" section. Fact sheets summarizing all FYR reports can be found on the Region 9 Del Amo Superfund site website under the "Fact Sheets" section.

Next Steps

EPA is implementing the recommendations in the FYR reports and will report to the United States Congress annually on the progress. FYRs are required by law for the Del Amo and Montrose Superfund sites because hazardous waste is left on-site that does not allow for unlimited use and unrestricted exposure. The next FYR will be due by October 2020.

The Del Amo/Montrose Dual Site Groundwater Extraction and Treatment System

The Dual Site groundwater extraction and treatment system (groundwater system) includes a water treatment facility, located on the former Montrose plant property, on the West side of Normandie Avenue at Jon Street (between 190th Street and Torrance Ave). Under EPA oversight, Montrose constructed the groundwater system in 2013-2014 and conducted a series of performance tests in 2015.

EPA expects a fully operational groundwater system in 2016

It is an EPA priority to turn on the groundwater system as soon as possible, in order to:

- Protect the drinking water supply of the communities of Torrance, Gardena, West Carson, Dominguez, and unincorporated Los Angeles County from site-related contamination; and
- Protect the community neighboring the Sites from the potential for site-related contaminants in the indoor air of their homes and businesses (vapor intrusion).

The groundwater contains high levels of contaminants that if ever used would have known human health risks. With no groundwater system in place, these contaminants will continue to migrate, vertically and horizontally, to cleaner or less contaminated areas in the aquifers. These contaminants include volatile organic compounds (VOCs) that may volatilize (evaporate) and migrate into indoor air through cracks and other openings in the foundation slabs of a building.

Therefore, a fully operating groundwater system will prevent contaminants from migrating to cleaner areas of the aquifers and reduce the potential of vapor intrusion into overlying homes and businesses near the Sites.

The groundwater system includes 11 wells that pump contaminated groundwater, through underground piping to a water treatment facility to remove the contaminants (see Figure 3). The treated groundwater is then pumped through a separate network of underground piping to seven injection wells that reinject the treated water back underground.

EPA will complete an anti-degradation policy analysis to understand impacts of reinjection

The reinjection of treated groundwater is an essential component of the groundwater system. It provides a water barrier or a “water wall” to prevent groundwater contamination from migrating, vertically and horizontally, to cleaner or less contaminated areas in the aquifers. Reinjection also conserves water!

Concerns have been raised about a chemical known as pCBSA, an unwanted byproduct of historical DDT manufacturing at the former Montrose plant. EPA set a reinjection standard of 25 parts per million, based on toxicity studies from the 1990s that showed no evidence of health risks from pCBSA. Nevertheless, EPA is currently working with the State to further assess the need for any additional or new toxicity information on pCBSA.

EPA is doing an Anti-Degradation Policy analysis consistent with California State Resolution 68-16. This analysis will answer questions regarding how the reinjection of treated water (or discharge) might impact – or degrade – the aquifers (or receiving water):

- Is the receiving water considered “high quality water?”
- Will the reinjection cause degradation of the receiving water?
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- If the reinjection will cause degradation, will it unreasonably affect the beneficial uses?
- Does the groundwater system constitute “best practicable treatment or control?”
- Is the groundwater system to the maximum benefit of the people of the state?

EPA Wants Your Feedback!

EPA plans to issue the draft anti-degradation analysis for a 30-day public review period this summer. We will update our website, send out an email, and mail a postcard.

Figure 3

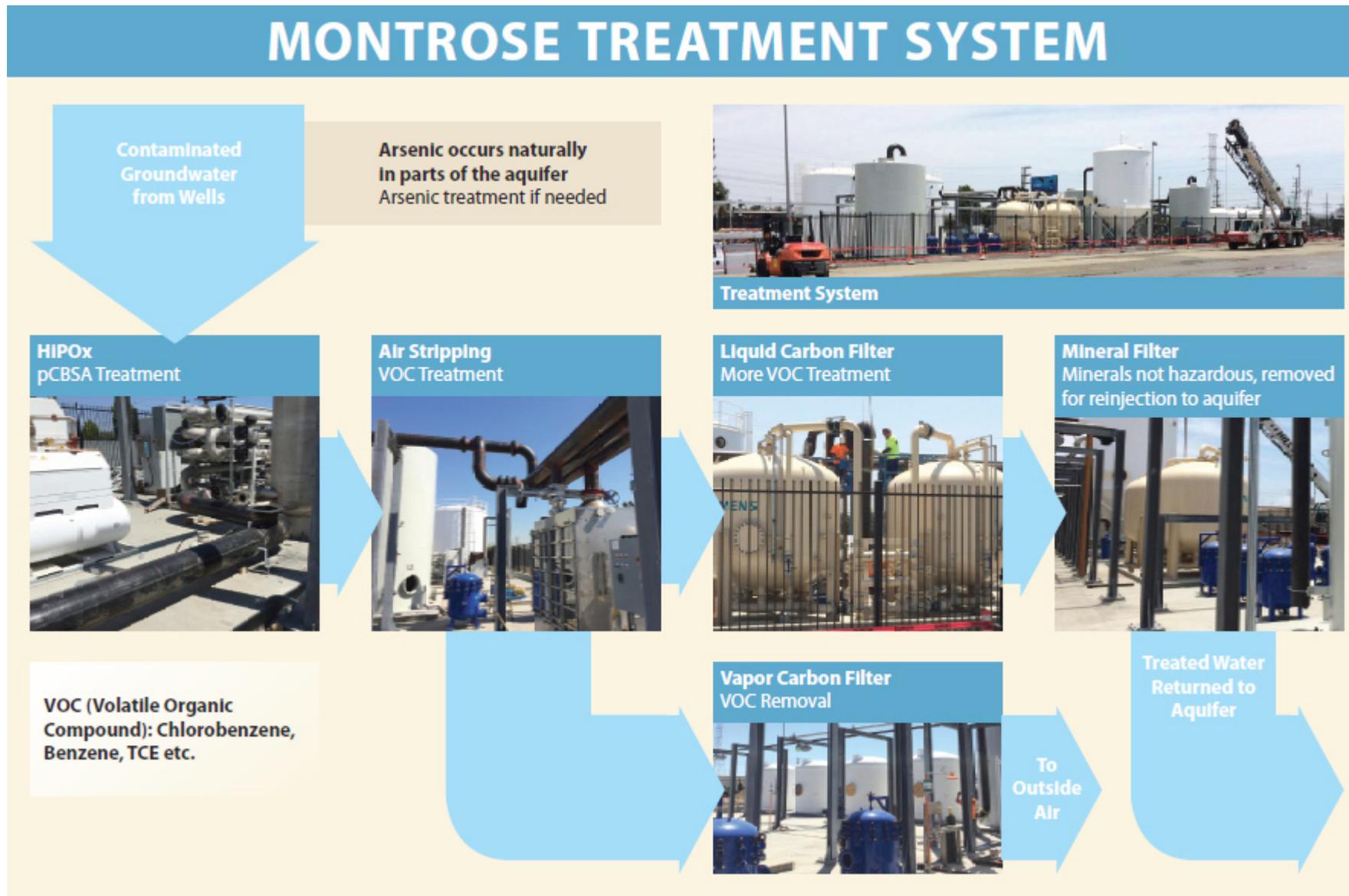


Figure 3: Del Amo/Montrose Dual Site Groundwater Extraction and Treatment System



Del Amo Superfund Site

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How Do I Get More Information?

If you have any questions about the Del Amo or Montrose Superfund Sites or if you would like to be added to the site mailing list, please don't hesitate to contact us.

EPA Contacts

Yolanda Sanchez Community Involvement Coordinator (415) 972-3880 sanchez.yolanda@epa.gov	Ray Chavira Remedial Project Manager for OU3 (415) 947-4218 chavira.raymond@epa.gov	Dante Rodriguez Remedial Project Manager for OU1 and OU2 (415) 972-3166 rodriguez.dante@epa.gov	Tu Nguyen Remedial Project Manager for OU1 and OU2 (415) 972-3443 nguyen.anhtu@epa.gov
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Information Repositories

An information repository is placed near a Superfund site and contains documents, reports, and letters about site cleanup activities.

Carson Public Library 151 East Carson Street Carson, CA 90745 (310) 830-0901	Torrance Civic Center Library 3301 Torrance Boulevard Torrance, CA 90503 (310) 618-5959	Superfund Records Center Mail Stop SFD-7C 95 Hawthorne St., Room 403 San Francisco, CA 94105 (415) 536-2000
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Websites

Del Amo Superfund site website: <http://www.epa.gov/superfund/delamo>
Montrose Superfund site website: <http://www.epa.gov/superfund/montrose>

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