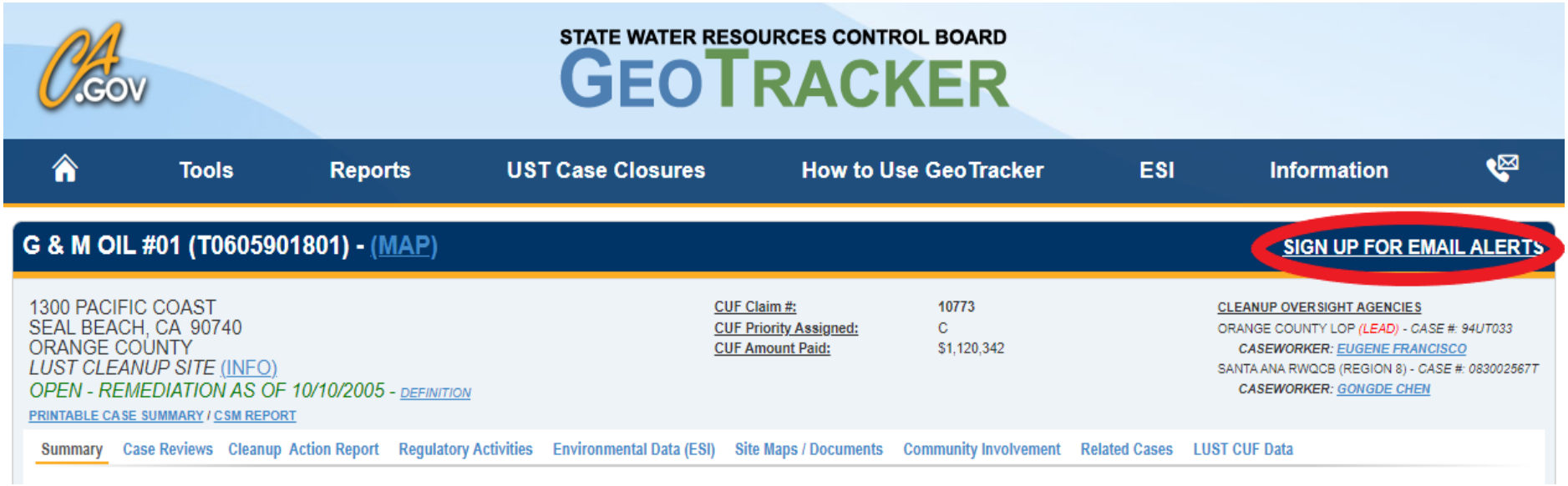
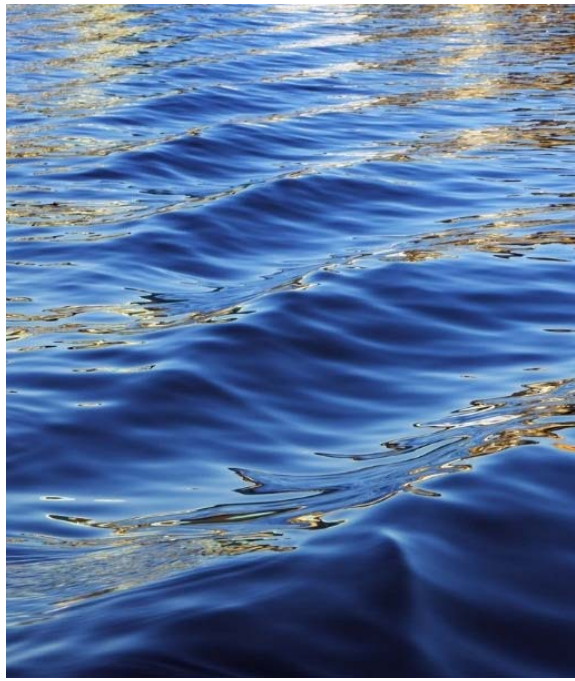
The following slide deck was presented at the Orange County Health Care Agency community meeting held August 1, 2023 to update the public on remediation efforts at 1300 Pacific Coast Highway. To receive updates on this site's progress, please visit Geotracker at https://geotracker.waterboards.ca.gov/profile_report.asp?global_id=T0605901801 and click the sign up for email alerts near the top right of the screen.



Atlas
ENVIRONMENTAL
ENGINEERING, INC.

Community Meeting

G&M Oil Company Station #01
1300 Pacific Coast Highway, Seal Beach, California

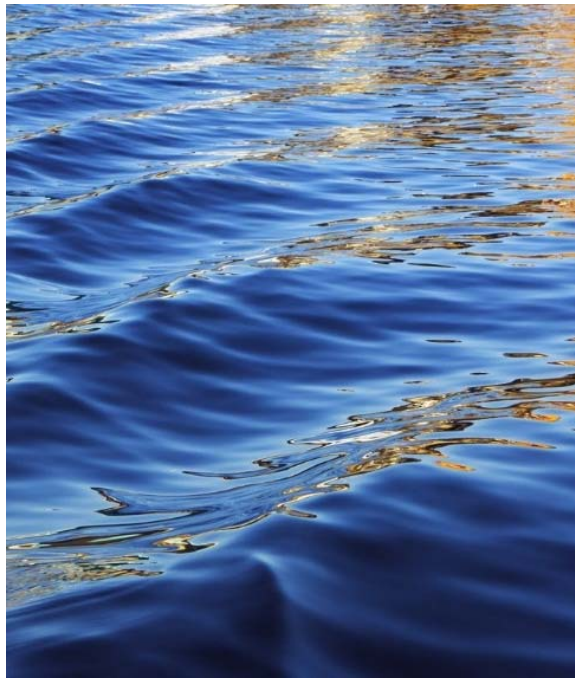


Topics of Discussion

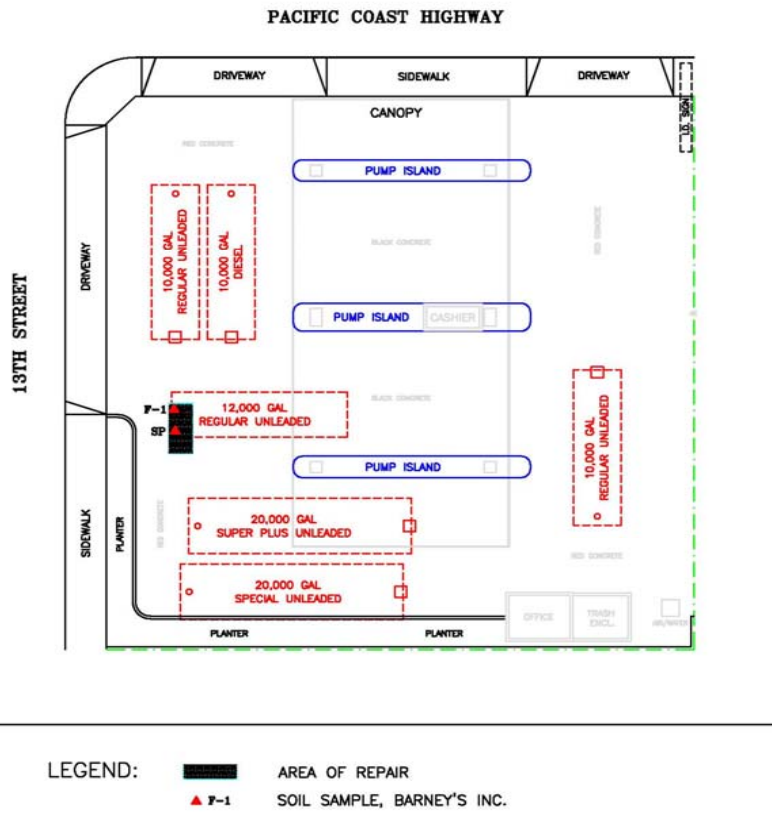
- **Site History**
  - Release Information
- **Regulatory Oversight and Policy**
  - Orange County Health Care Agency (OCHCA)
  - Low-Threat Underground Storage Tank Closure Policy (LTCP)
- **Assessments**
  - Soil
  - Groundwater
  - Soil Vapor
- **Remediation History**
  - Dual-Phase Extraction (DPE) Treatment (2001 – 2005)
  - Bio Sparge Treatment (2005 – 2014)
  - In-Situ Chemical Oxidation (2013)
  - Groundwater Over-Purge (2014 – 2020)
- **Next Steps**
- **Required Underground Storage Tank (UST) Removal**

Site History

Release Information



Site History

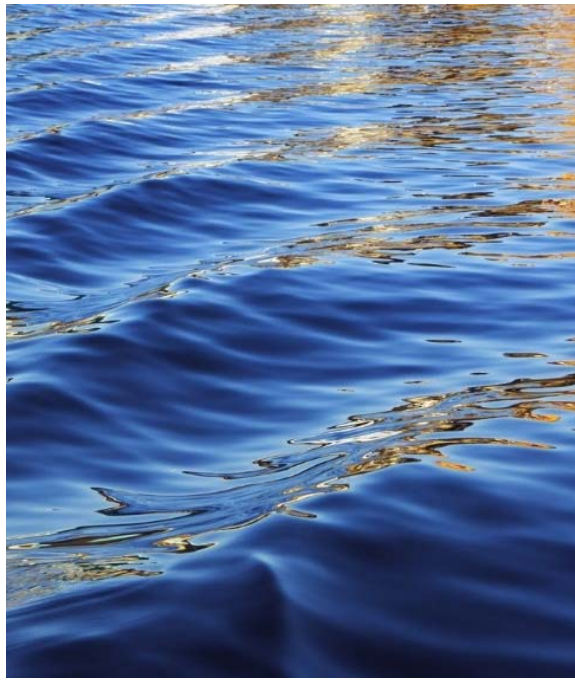


Release Information

- In May 1994 during fill/fittings/piping repair work on the 12,000-gallon regular unleaded UST, soil confirmation samples collected in the area of the repairs detected total petroleum hydrocarbons as gasoline (TPHg).

Regulatory Oversight & Policy

Orange County Health Care Agency & Low Threat Underground Storage Tank Closure Policy



Regulatory Oversight & Low-Threat Underground Storage Tank Case Closure Policy (LTCP)

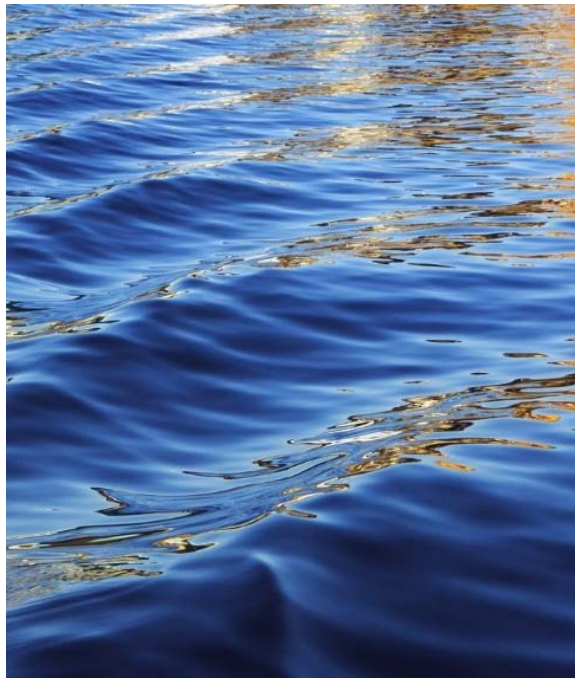
- The lead regulatory agency overseeing the environmental case is the Orange County Health Care Agency (OCHCA).
- All work is conducted under the direction of the OCHCA and uses the State Water Resource Control Board Low-Threat Underground Storage Tank Case Closure Policy (LTCP).
- **LTCP** is an established criteria that must be satisfied before consideration for case closure.
- **As of January 2023** a review of the LTCP for the site indicated the following:

Low-Threat Underground Storage Tank Case Closure Policy (LTCP)

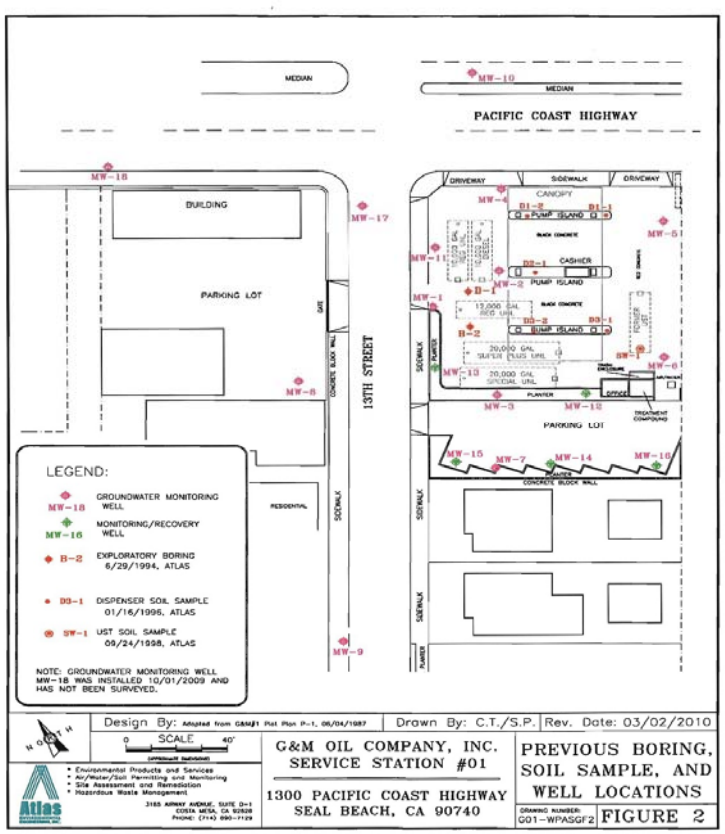
- **Groundwater**
  - The petroleum hydrocarbon plume in groundwater is less than 250 feet in length.
  - The nearest supply well is greater than 1,000 feet from the plume boundary.
  - Dissolved phase benzene concentration is less than 3,000 ug/L.
  - Dissolved phase MTBE concentration is less than 1,000 ug/L.
  - Free Product present in well MW-4 does not meet policy – additional secondary source removal is required.
- **Direct Contact and Outdoor Air Exposure**
  - Site meets direct contact and outdoor air exposure criteria due to the site being an active gas station with concrete as the surface cover.
- **Petroleum Vapor Intrusion to Indoor Air**
  - Onsite - meets vapor intrusion to indoor air.
  - Offsite - continued monitoring and further assessment is required.

Assessments

Soil, Groundwater and Soil Vapor



Soil Assessment

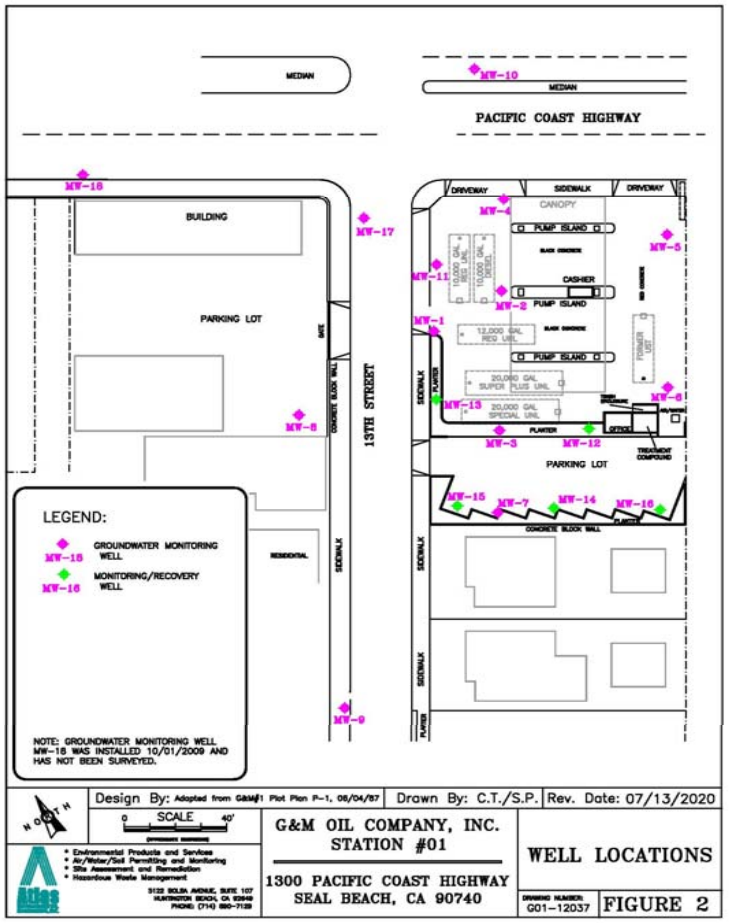


- From April 1995 through September 2019 soil assessment included advancing eighteen (18) soil borings and nine (9) discrete soil sample locations. These locations were selected to define the extent of the petroleum hydrocarbon impact in soil.
- Maximum Concentrations Detected:
  - TPHg – 18,000 mg/kg (B-1-4')
  - TPHd – 4,900 mg/kg (D1-1')
  - Benzene – 300 mg/kg (B-1-4')
  - MTBE – 5.05 mg/kg (MW-12-5)
  - TBA – 0.779 mg/kg (D1-2)

Groundwater Assessment

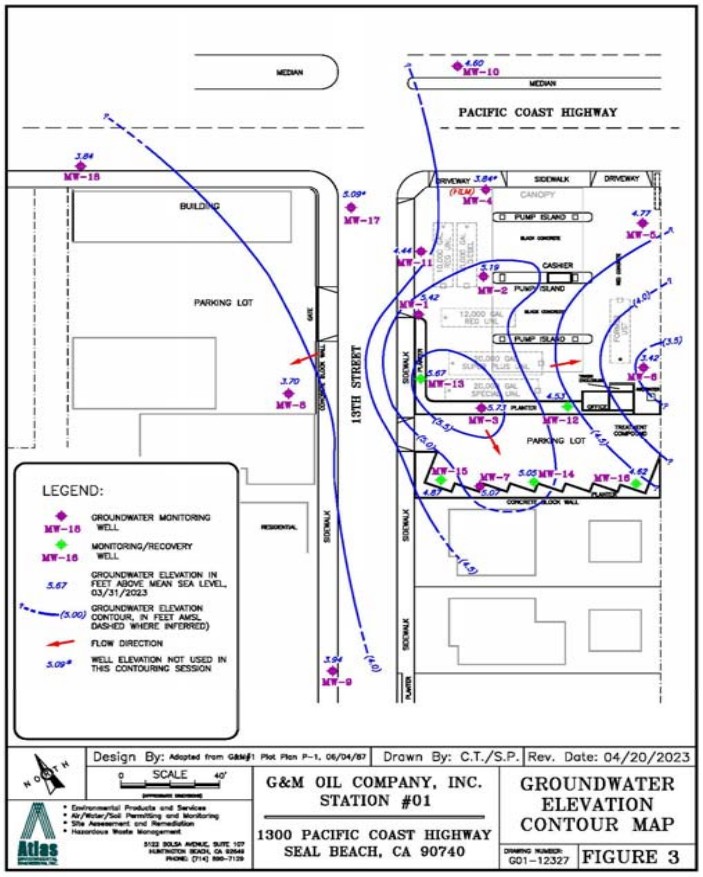
- A total of 18 groundwater monitoring wells were installed and identified as MW-1 through MW-18.
- Groundwater monitoring is conducted on a semi-annual basis during the 1st and 3rd quarters of each year.

***Drinking water is provided to the residents through the City and is a combination of imported and groundwater. The nearest groundwater production well is located over 2.5 miles away and is NOT impacted by the release from the subject site.



Groundwater Assessment

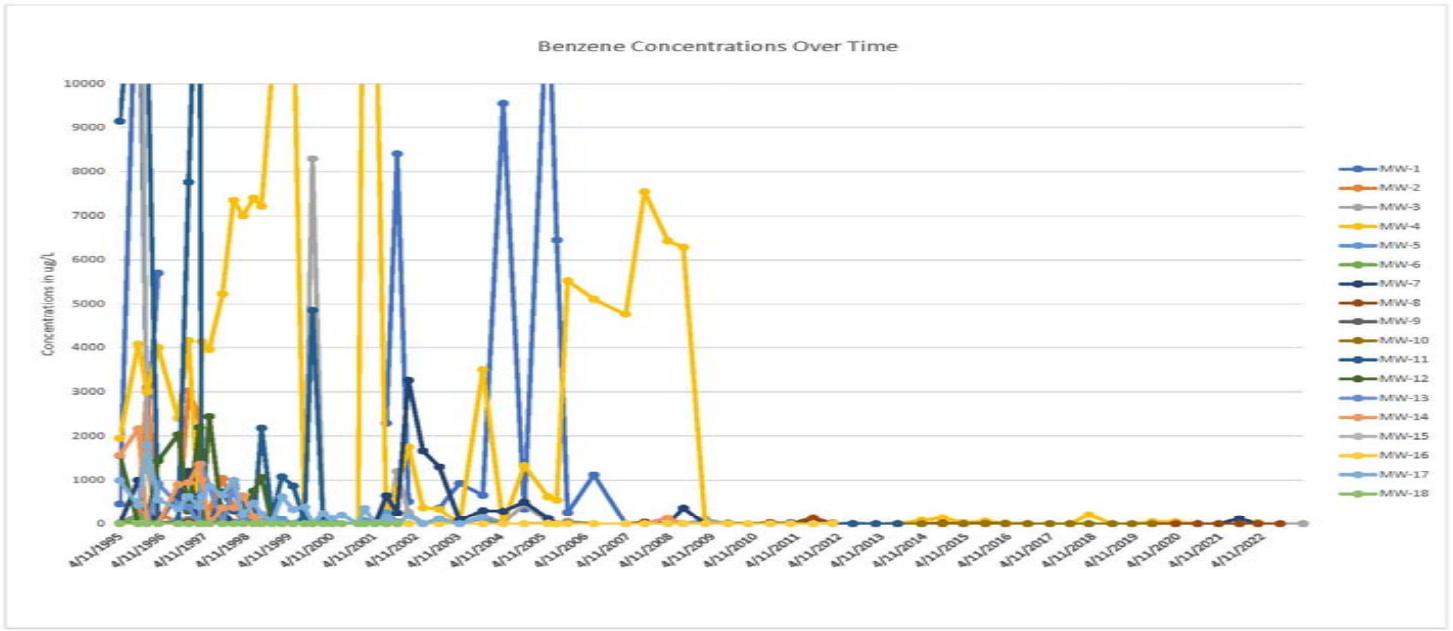
- Depth to groundwater measured in the monitoring wells ranges from approximately 2 to 4 feet bgs.
- Flow direction: Variable with mounding observed in the area of wells MW- 3 and MW-13.



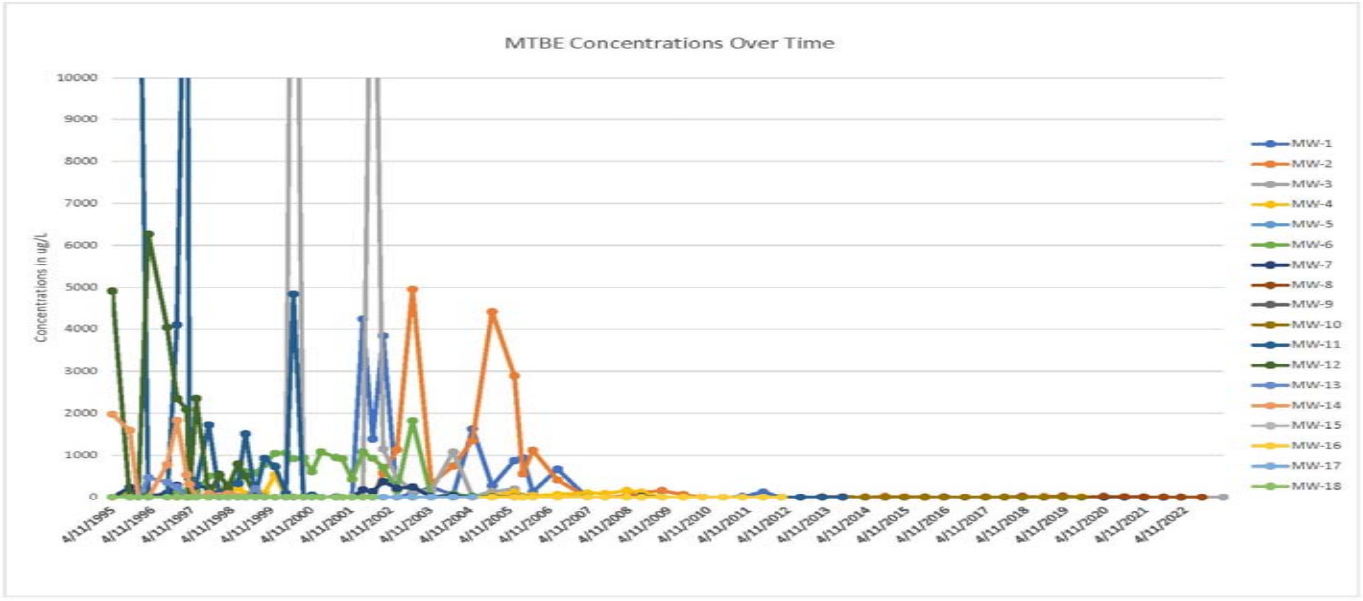
Groundwater Assessment

Pre-Remediation: Maximum Concentrations in Groundwater	Current Concentrations in Groundwater
• TPHg: LPH (2.35 ft) MW-2 • TPHd: 150,000 ug/L - MW-4 • Benzene: 18,200 ug/L – MW-4 • MTBE: 22,600 ug/L – MW-3 • TBA: 2,200 ug/L – MW-3	• TPHg: LPH(film)/47,600 ug/L MW-4 • TPHd: LPH(film)/900,000 ug/L MW-4 • Benzene: 158 ug/L – MW-17 • MTBE: 1 ug/L – MW-5 • TBA: 60.1 ug/L – MW-4

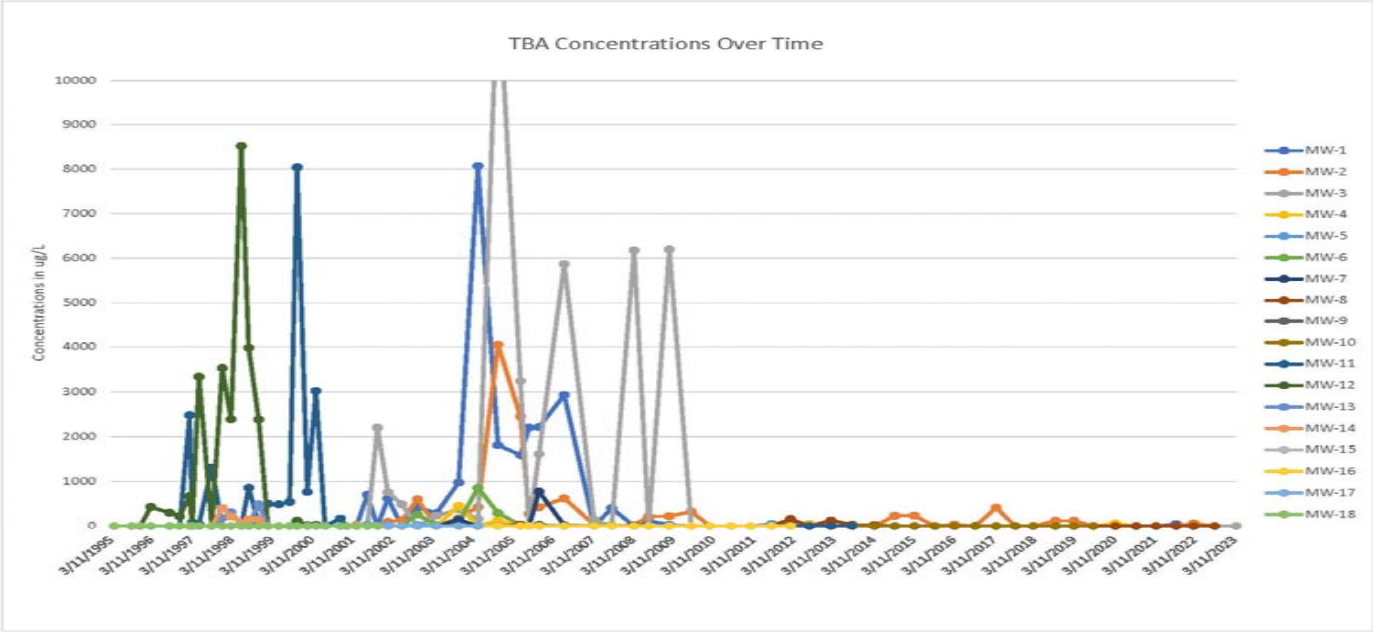
Groundwater Concentration Trend - Benzene



Groundwater Concentration Trend - MTBE

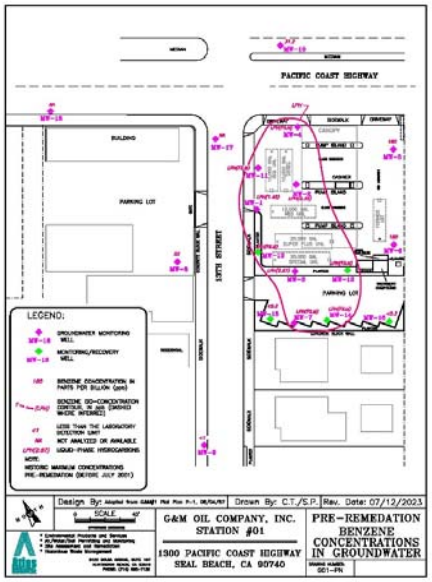


Groundwater Concentration Trend - TBA

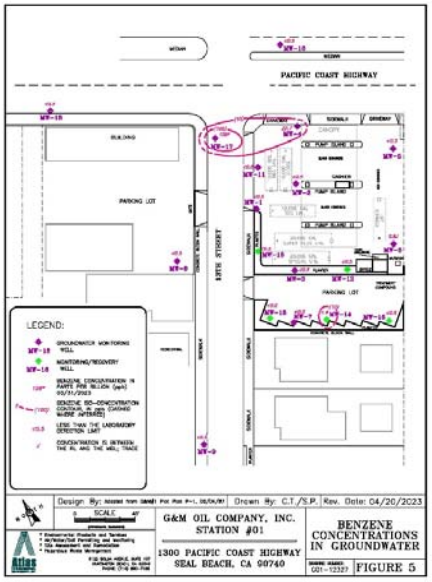


Benzene Concentrations in Groundwater

Pre-Remediation: Maximum Benzene Groundwater Concentrations

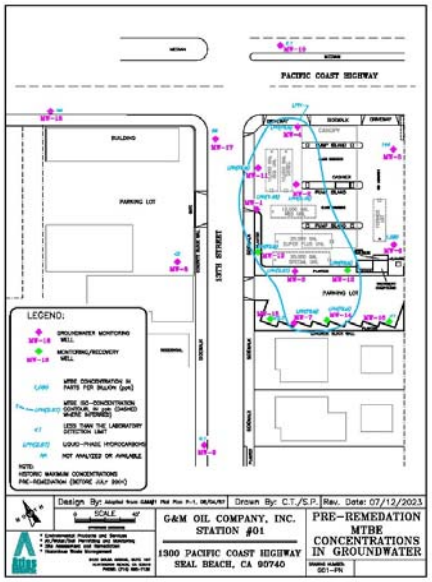


Current Groundwater: Benzene Concentrations

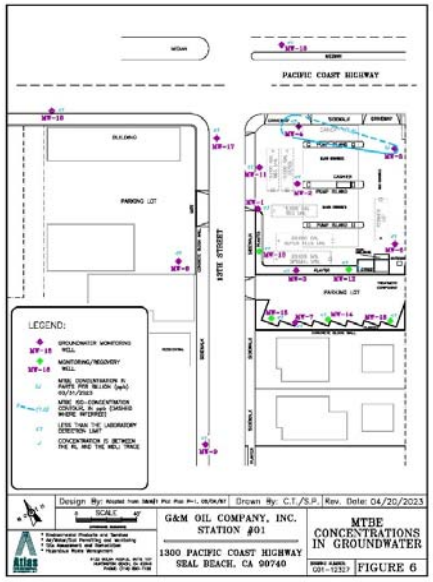


MTBE Concentrations in Groundwater

Historical Maximum Groundwater Concentrations : Pre - Remediation

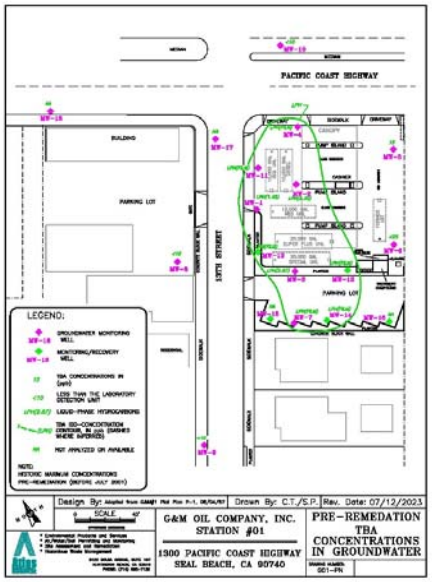


Current Groundwater Concentrations: MTBE

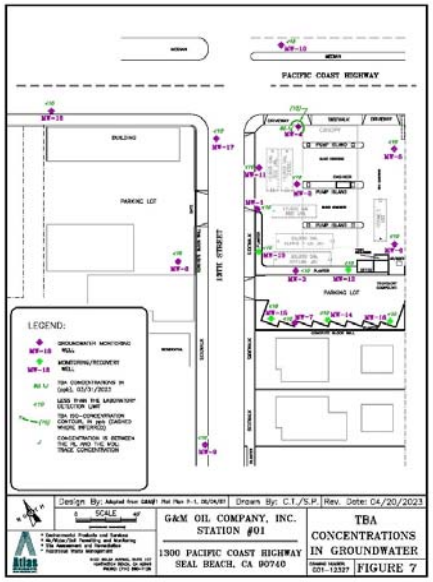


TBA Concentrations in Groundwater

Historical Maximum Groundwater Concentrations : Pre - Remediation



Current Groundwater Concentrations: TBA

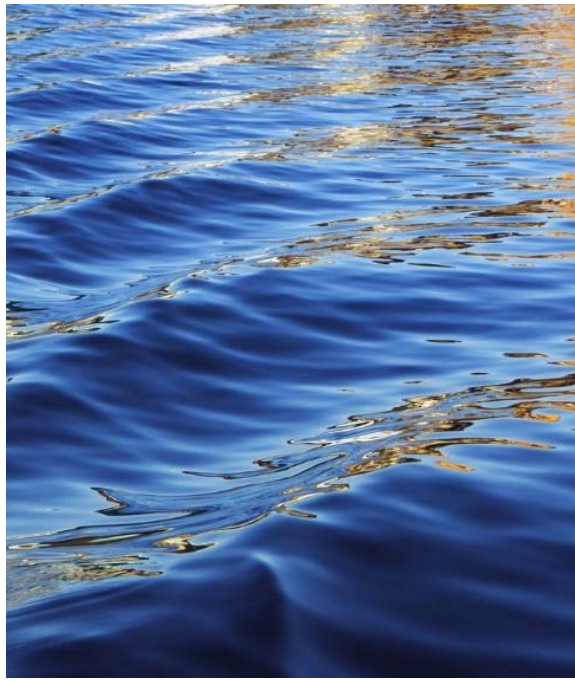


Soil Vapor Assessment (SVA)

- The SVA is used to evaluate vapor encroachment risks and potential vapor indoor exposure pathways.
- This data is used to establish human health risk assessment (HHRA).
- Active soil vapor survey events were conducted in:
  - 2011 and 2020
  - Findings did not indicate a risk to residential properties in both studies for vapor probes VP-3, VP-5, VP-6 and VP-7.
  - Additional SVA is proposed in the western corner of PCH and 13th Street to confirm data established during the 2020 SVA from vapor probes VP-1, VP-2 and VP-4 along the commercial property.
  - Additional vapor probes will be re-installed for continued monitoring for any fluctuations in the areas of VP-3, VP-6 and VP-7.

Remediation

- Dual-Phase Extraction (DPE), Bio Sparge Treatment, In-Situ Chemical Oxidation and Groundwater Over Purge



Remediation

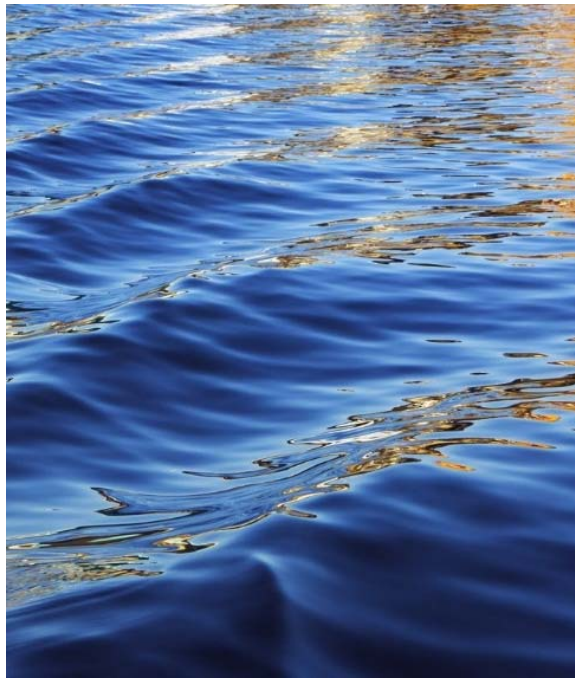
- From 2001 to 2020 various treatment technologies were implemented at the subject site.
  - **2001 through 2005 - Dual Phase Extraction (DPE)** – Treatment system that removes petroleum hydrocarbon liquid and vapors. Treatment used to simultaneously treat soil and groundwater concurrently.
    - Approximately 18,000 lbs of petroleum hydrocarbon removed.
    - Approximately 3.8 million gallons of dissolved-phase petroleum hydrocarbon in groundwater were recovered, treated and discharged into sanitary sewers.
  - **2005 through 2014 - Bio Sparge** – Treatment system that induce aerobic conditions within the subsurface to stimulate aerobic degradation of the petroleum hydrocarbons within the subsurface. Treatment used to treat groundwater.
  - **2013 - In-Situ Chemical Oxidation (ISCO) -** Hydrogen peroxide injections to further degrade petroleum hydrocarbons within a localized area. The area targeted was off-site well MW-17 to reduce dissolved phase petroleum hydrocarbons in groundwater.

Remediation

- **2014 to 2020 - Over-Purge** - evacuating dissolved phase petroleum hydrocarbon in groundwater using in-well pumps or mobile vacuum truck. Treatment was selected to reduce groundwater concentrations in wells MW-4 and MW-17.
  - Approximately 272,000 gallons of dissolved-phase petroleum hydrocarbon in groundwater was recovered.

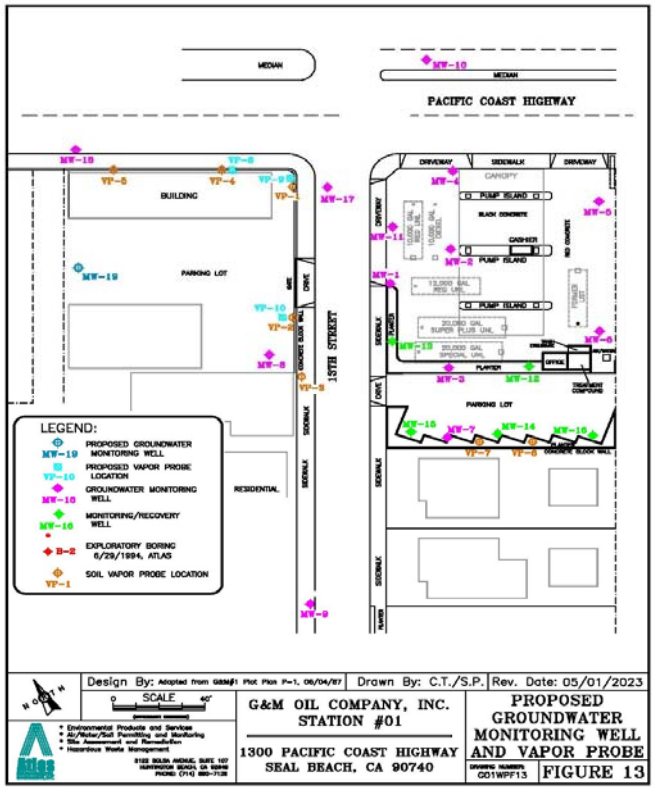
Next Step

Monitoring, Soil Vapor Confirmation and Treatment



LTCP Impediments to Site Closure

- Additional soil vapor sampling to confirm findings in the western area of PCH and 13th Street and monitor for any vapor fluctuations in the residential areas of VP-3, VP-6 and VP-7.
- Additional groundwater monitoring west/southwest of well MW-17.
- Mobile DPE using well MW-17 to reduce any vapors in the area of VP-1 and VP-4.
- Additional secondary source removal due to free product in well MW-4.

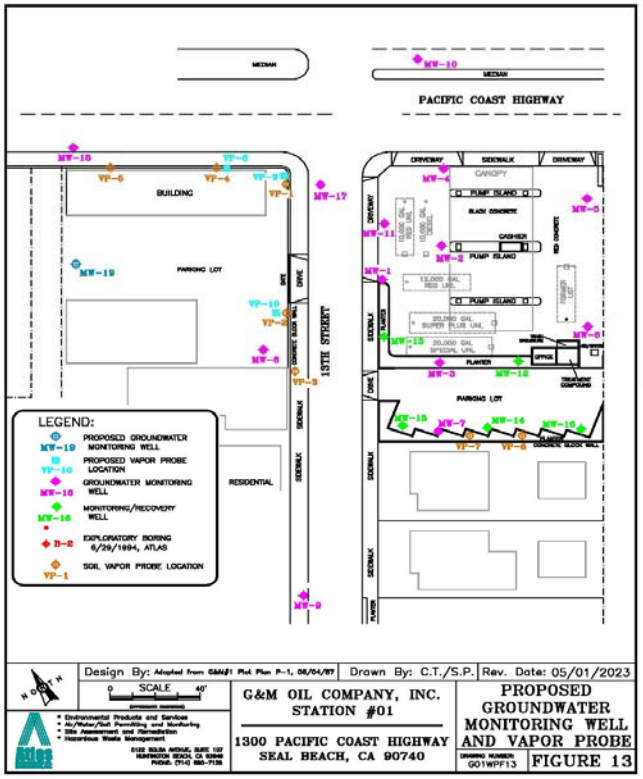


Additional Soil Vapor Assessment

- Additional SVA is anticipated to further evaluate soil vapor in the western area of PCH and 13th Steet.
  - Advance 1 boring to confirm actual groundwater depth to select appropriate assessment procedures.
  - If groundwater is 5 feet bgs/or deeper, then continue with proposed vapor probe locations VP-8, VP-9 and VP-10. In addition, reinstallation of vapor probes at previous locations identified as VP-3, VP-6 and VP-7 for monitoring fluctuations in vapor, if any.
  - If groundwater is shallower than 5 feet bgs, re-submit soil vapor assessment work plan to re-evaluate soil vapor to the south, west and southwest and include conduit study.

Well Installation and Monitoring

- Additional groundwater monitoring well MW-19 is proposed to further evaluate the groundwater quality southwest of well MW-17.
- Establish an access agreement with property owner and negotiations may delay any work.
- Proposed well MW-19 will be incorporated into the routine semi-annual groundwater monitoring event to establish additional groundwater trends.



Remediation

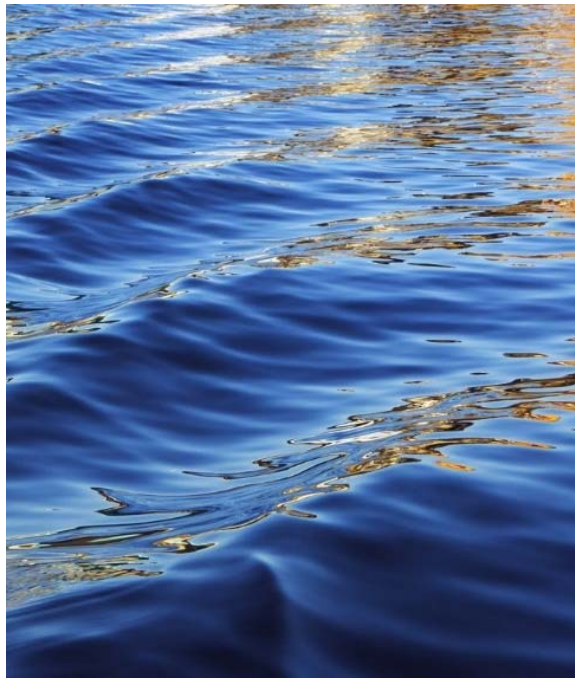
Off-Site Remediation

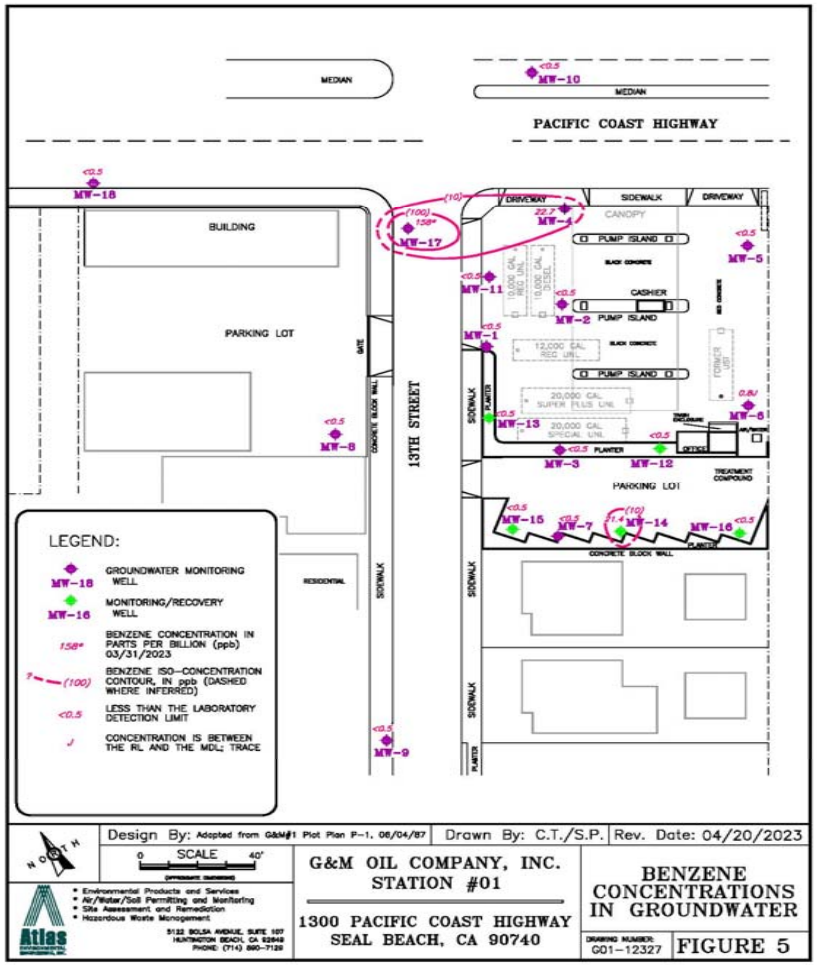
- DPE is proposed using off-site well MW-17 to recover soil vapor and groundwater.
- Treatment is anticipated to reduce soil vapor concentrations in the western corner of PCH and 13th Steet.

On-Site Remediation

- Soil excavation and ISCO treatment in the area of well MW-4.
- Treatment is anticipated to remove residual soil source in the area of MW-4 noted with a persistent LPH film.
- Once the identified impacted soil is excavated, a form of ISCO treatment will be selected as a soil/groundwater amendment to further treat the localized area, if applicable.

Required UST Removal





Required UST Removal

- **<u>On or before December 31, 2025</u>**, UST owners or operators must permanently close a UST if it was designed and constructed either before January 1, 1984 and does not meet the secondary containment and continuous monitoring requirements of Health and Safety Code (HSC), chapter 6.7, section 25291(a)(1)-(6), or if it was designed and constructed before January 1, 1997 with single-walled components (hybrid system), in accordance with HSC, section 25291(a)(7).
- Required UST removal activities provides the opportunity to directly access areas and remove residual soil impacts.
- The area around well MW-4 is anticipated for direct excavation and treatment based on the persistent elevated groundwater concentrations.

How is the Public kept Safe?

- A Multi-Agency Team
  - **Orange County Health Care Agency (OCHCA)** regulates the selected treatment path through an approved Remedial Action Plan and conducts field inspections during treatment activities to confirm the proper handling of material removed and/or treated.
  - **South Coast Air Quality Management District (AQMD)** establishes the criteria for soil vapor screening during excavation and handling.
  - **Santa Ana Regional Water Quality Control Board (SARWQCB)** permits the selected amendment to treat the soil/groundwater.