

Norwalk Tank Farm Update

***Presented to the Norwalk Tank Farm
Restoration Advisory Board***

July 26, 2007

Presentation Overview

Topics to be Covered

- Second Addendum to RAP Update
- Remediation Operations Update
- Semi-Annual Groundwater Monitoring
- Site Conceptual Model Update

Second Addendum to RAP Update

- **Dual-Phase Extraction (DPE) Test**
 - Performed during May 2007
 - Results support the preliminary design

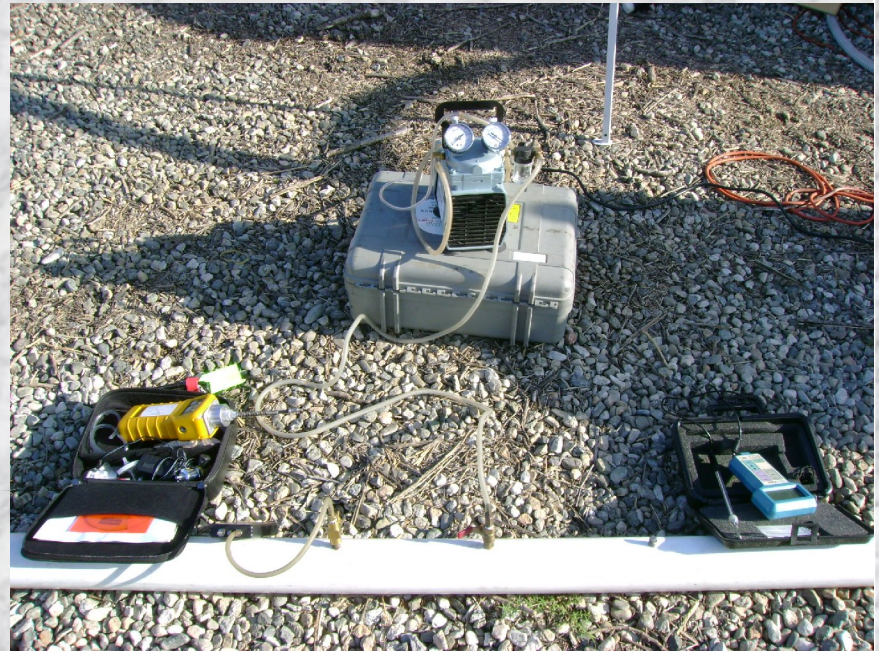
- **Pipeline and Utility Clearance**
 - Additional precautions taken during work in the vicinity of KMEP pipelines

- **Well Installation**
 - Six onsite wells
 - One offsite well

Second Addendum to RAP Update - DPE Test



Second Addendum to RAP Update – DPE Test



Second Addendum to RAP Update – Pipeline & Utility Clearance



Second Addendum to RAP Update – Pipeline & Utility Clearance



Second Addendum to RAP Update – Well Installation



Second Addendum to RAP Update

■ Construction

- Converted 4 existing Soil Vapor Extraction (SVE) wells to DPE wells by installing pumps in GMW-9, MW-SF-2, MW-SF-3, and MW-SF-6 and connecting these wells to the groundwater treatment system.
- Upgraded the air supply manifold.
- Connecting the seven new wells and MW-O-1 to the soil vapor and groundwater treatment system manifolds.

Second Addendum to RAP Update – Construction



Second Addendum to RAP Update – Construction



Southeastern Easement Prior to Brush Clearance



Southeastern Easement After Brush Clearance



Groundwater/Product Extraction System

- 8 groundwater extraction wells in the West Side Barrier area
- 10 total fluids (product and groundwater) extraction wells and 2 groundwater extraction wells in the South-Central Plume area
- 2 total fluids (product and groundwater) extraction wells and 1 groundwater extraction well in the Southeastern 24-Inch Block Valve area

Groundwater/Product Extraction System Operations Summary

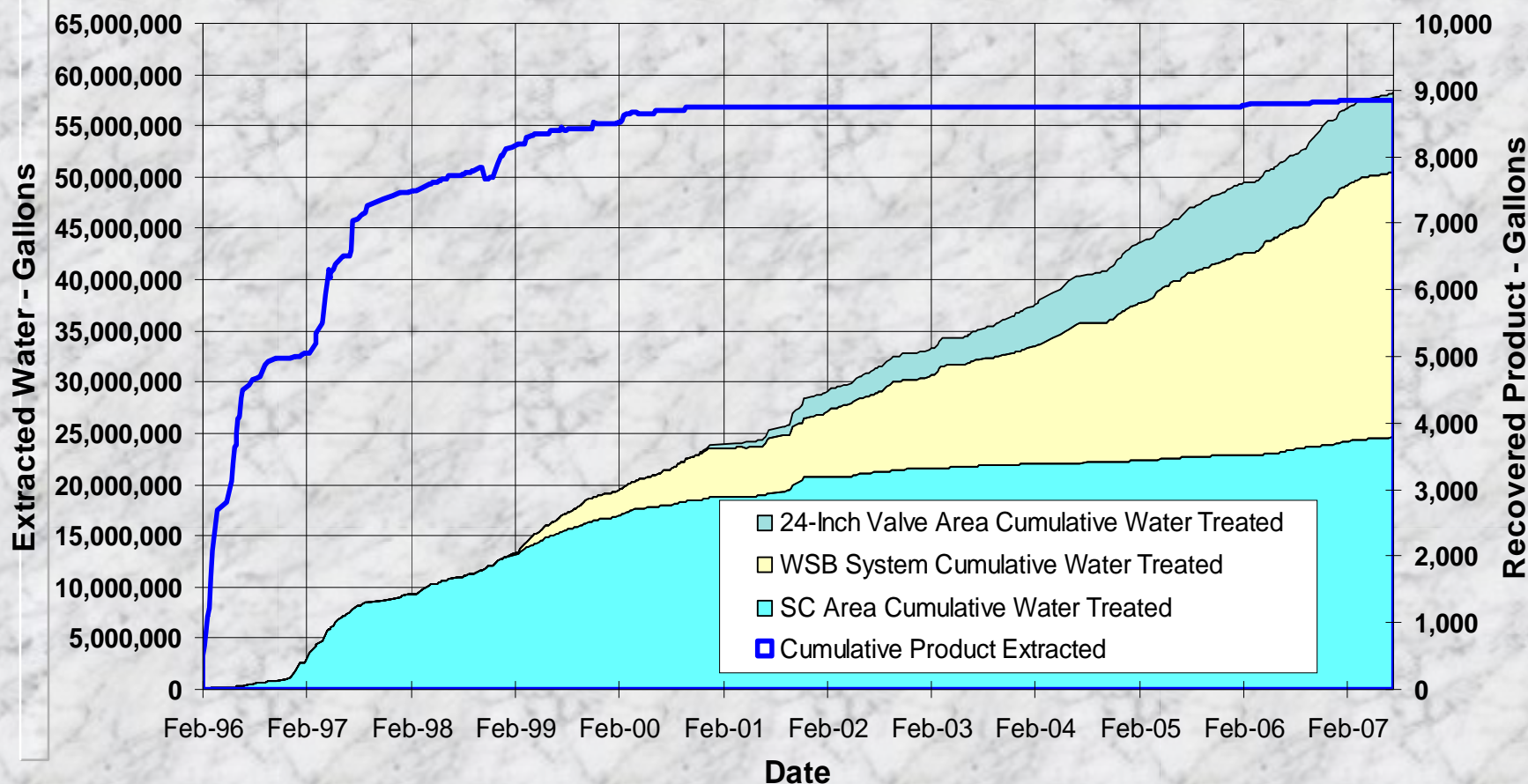
- Total groundwater extracted since April 2007 RAB meeting:
 - South-Central Plume area: 313,500 gallons
 - Southeastern 24-Inch Valve area: 76,600 gallons
 - West Side Barrier area: 266,700 gallons
 - Manual product recovery: 0 gallons
- Total groundwater extracted since September 1995:
 - South-Central Plume area: 24.7 million gallons
 - Southeastern 24-Inch Valve area: 7.7 million gallons
 - West Side Barrier area: 25.9 million gallons
 - Total groundwater extracted: 58.3 million gallons
 - 8,846 gallons free product removed

Groundwater/Product Extraction System Operations Summary

- The groundwater/product extraction system operated continuously during the second quarter 2007 with the following exceptions:
 - semi-annual groundwater monitoring event
 - dual-phase extraction test
 - well installations
 - connection of wells to existing treatment manifolds
- Percent operation: 68%

Groundwater/Product Extraction System Operations Summary

Produced Extracted and Water Treated Summary



Soil Vapor Extraction System

- 17 onsite and 5 off-site vapor extraction wells in the South-Central Plume area.
- 2 vapor extraction wells in the Southeastern 24-Inch Block Valve area.

Soil Vapor Extraction System Operations Summary

- Approximately 200 gallons equivalent of fuel removed from soil and destroyed by catalytic oxidation since the April 2007 RAB meeting.
- Approximately 451,700 gallons equivalent of fuel removed from soil and destroyed by catalytic and thermal oxidation since September 1995.
- Approximately 55,882 hours of operation since September 1995.

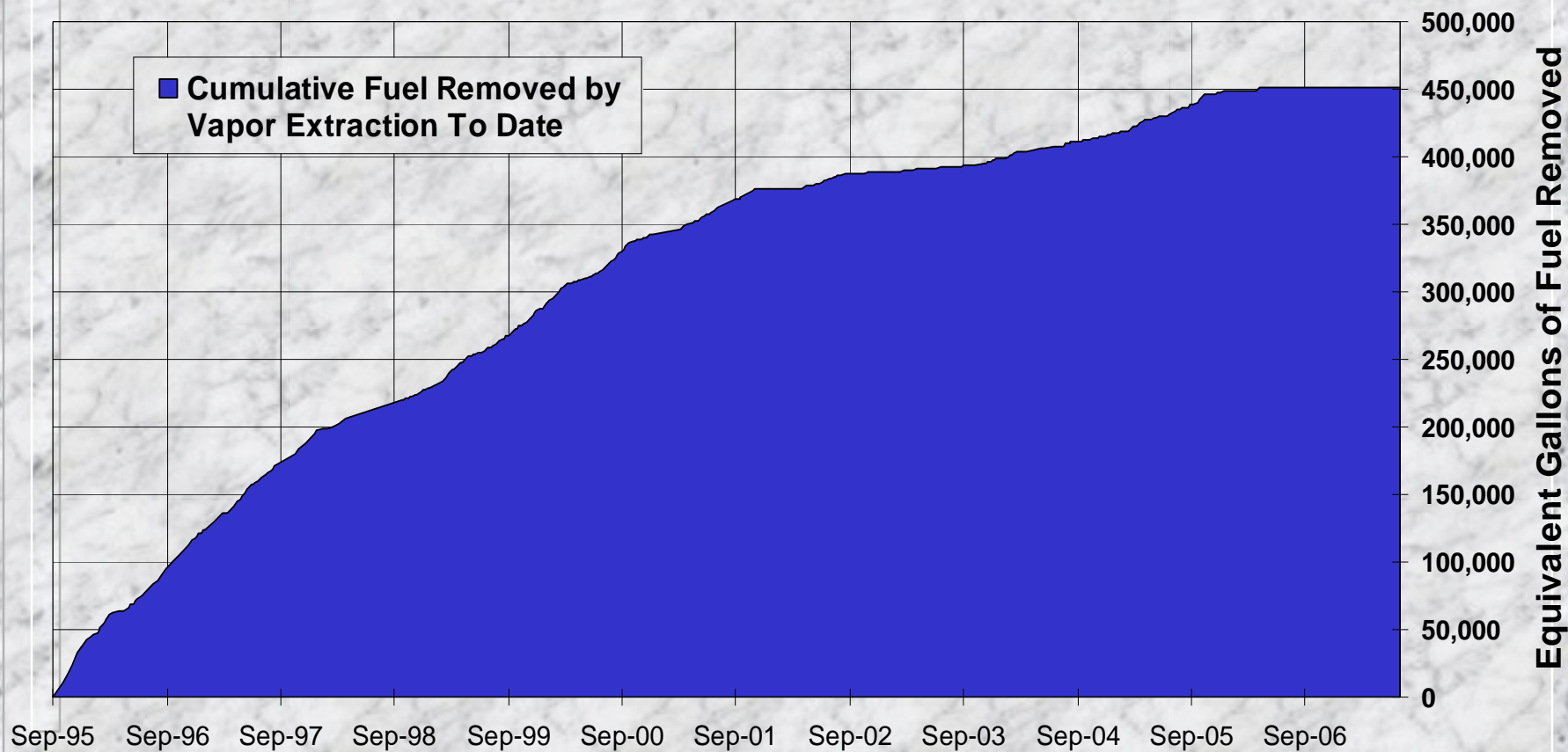
Soil Vapor Extraction System Operations Summary

- The SVE system operated continuously during the second quarter 2007 with the following exceptions:
 - semi-annual groundwater monitoring event
 - dual-phase extraction test
 - well installations
 - connection of wells to existing treatment manifolds

- Percent operation: 50%

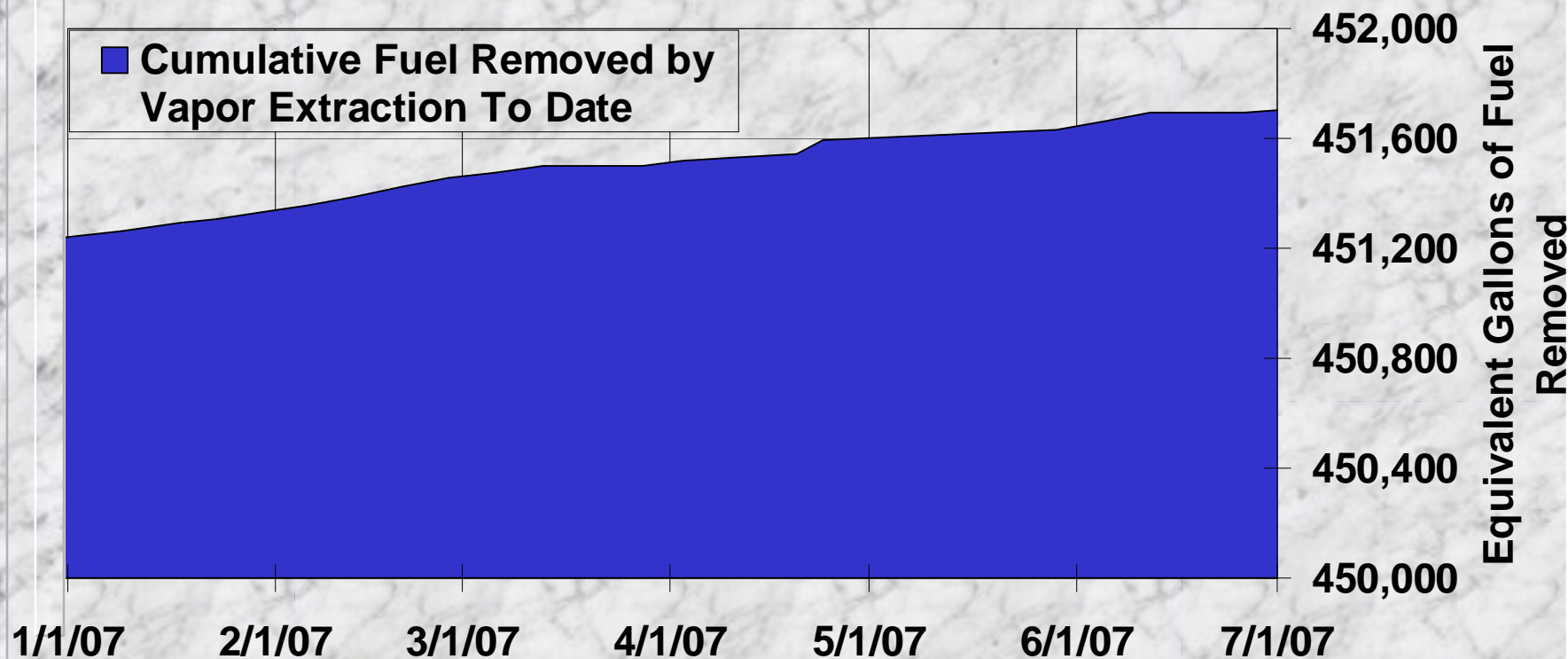
Soil Vapor Extraction System Operations Summary

Cumulative Fuel Removed by Vapor Extraction To Date



Soil Vapor Extraction System Operations Summary

Cumulative Fuel Removed by Vapor Extraction - Past Six Months



First Semi-Annual 2007 Groundwater Monitoring Event

- 103 wells sampled, including 5 Exposition wells.
- Groundwater levels encountered during April 2007 were generally similar to those encountered during previous monitoring events at the site .
- No VOCs were detected in Exposition wells.
- Free product was detected in the northern tank farm area, the south-central area, and the southeastern area. Free product was not detected in the truck rack area.

First Semi-Annual 2007 Groundwater Monitoring Event (cont.)

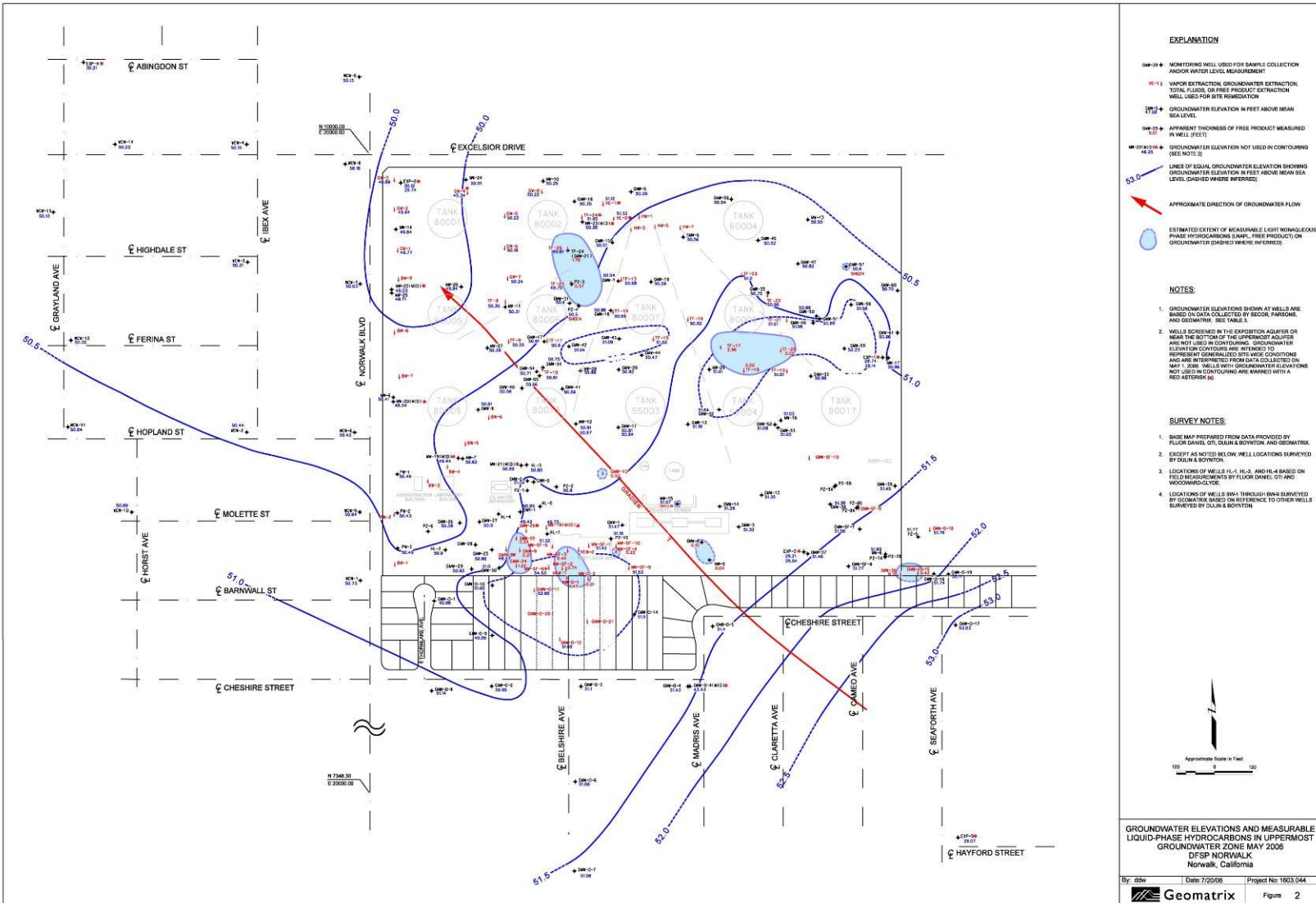
- In the south-central off-site area, VOC concentrations remained non-detect in wells GMW-O-1 and GMW-O-2 and decreased in GMW-O-3 since November 2005.
- In general, the lateral extents of TPH, benzene, MTBE, and 1,2-DCA in the south-central area remain similar to those interpreted during recent monitoring events.

First Semi-Annual 2007 Groundwater Monitoring Event (cont.)

- In the southeastern area, VOCs generally remained stable compared with December 2006. 1,2-DCA was not detected.
- In the western off-site area, the lateral extents of 1,2-DCA and MTBE remain similar to those interpreted in the previous semi-annual monitoring event in December 2006. Benzene was not detected in this area.

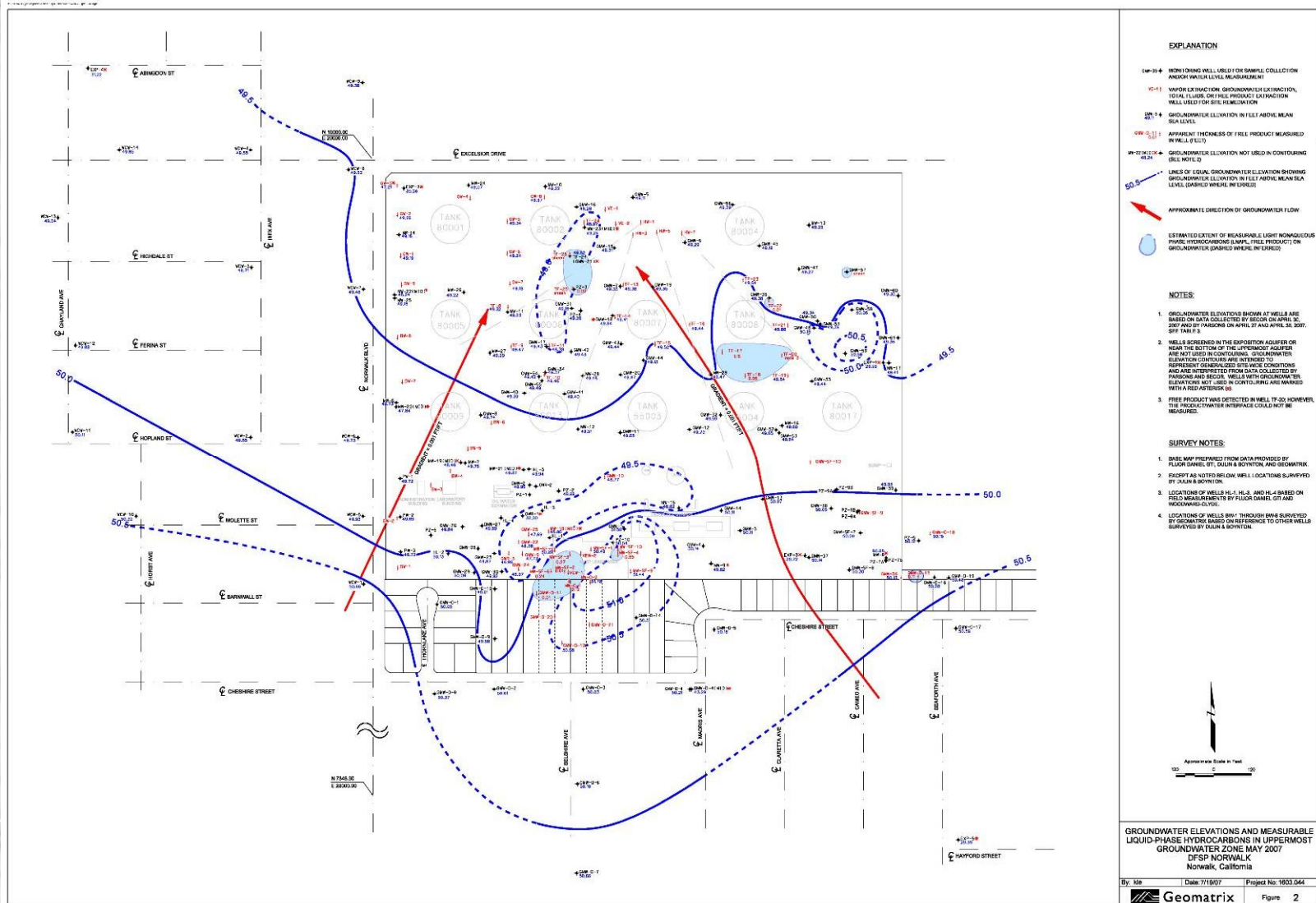
Groundwater Elevations and Measurable Liquid-Phase Hydrocarbons

May 2006

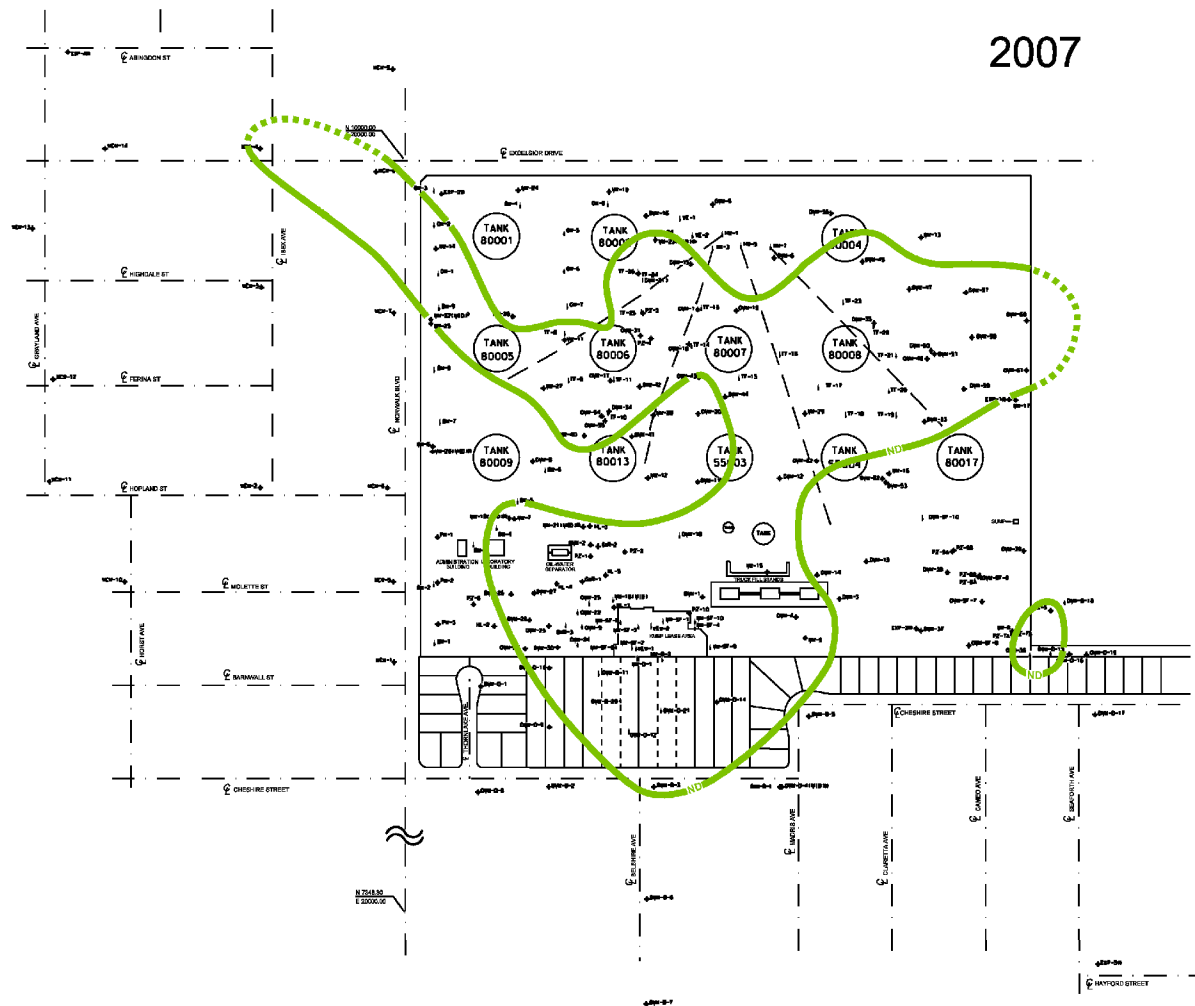


Groundwater Elevations and Measurable Liquid-Phase Hydrocarbons

April 2007



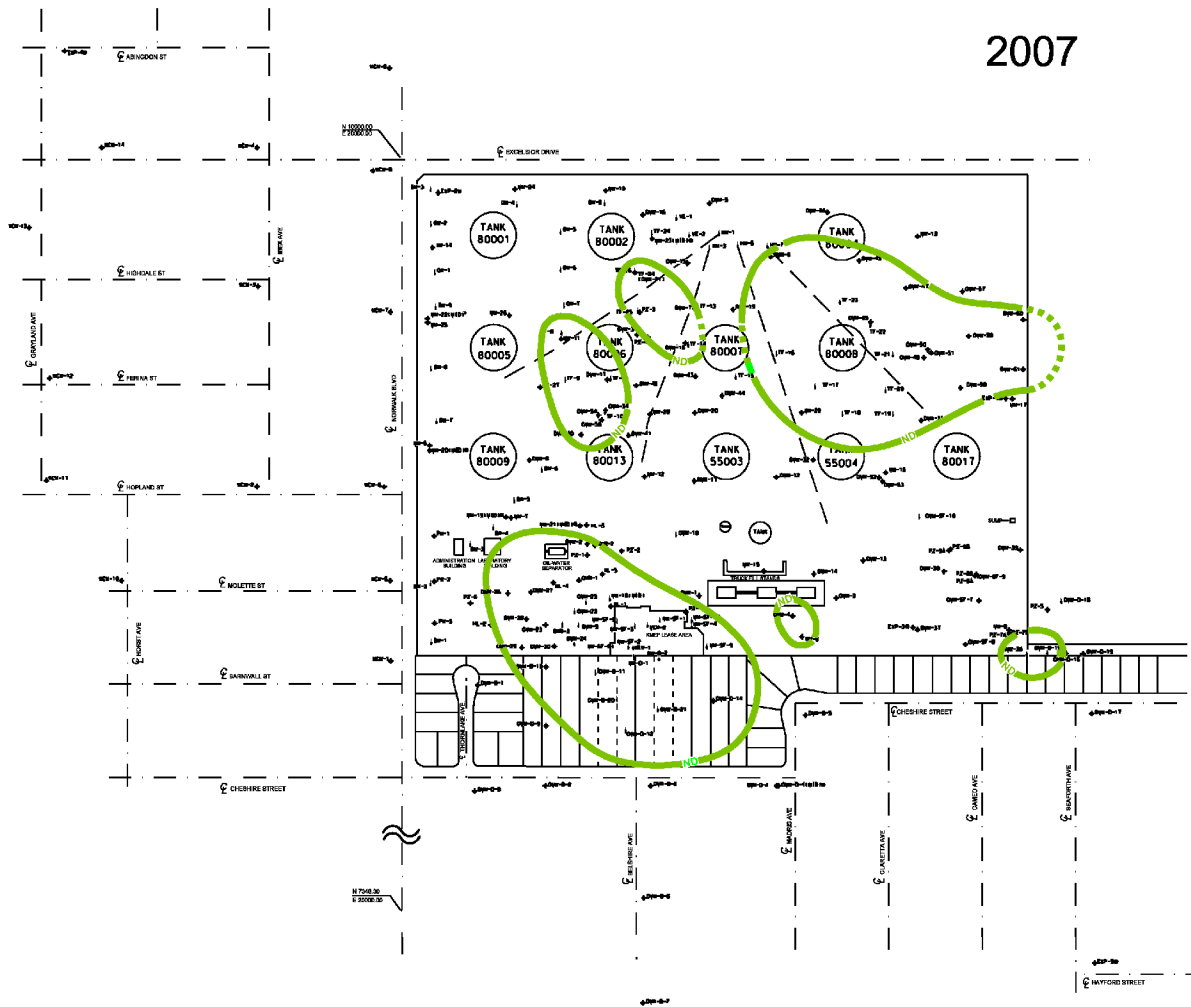
Total Petroleum Hydrocarbons In Uppermost Groundwater Zone May 2006 and May 2007



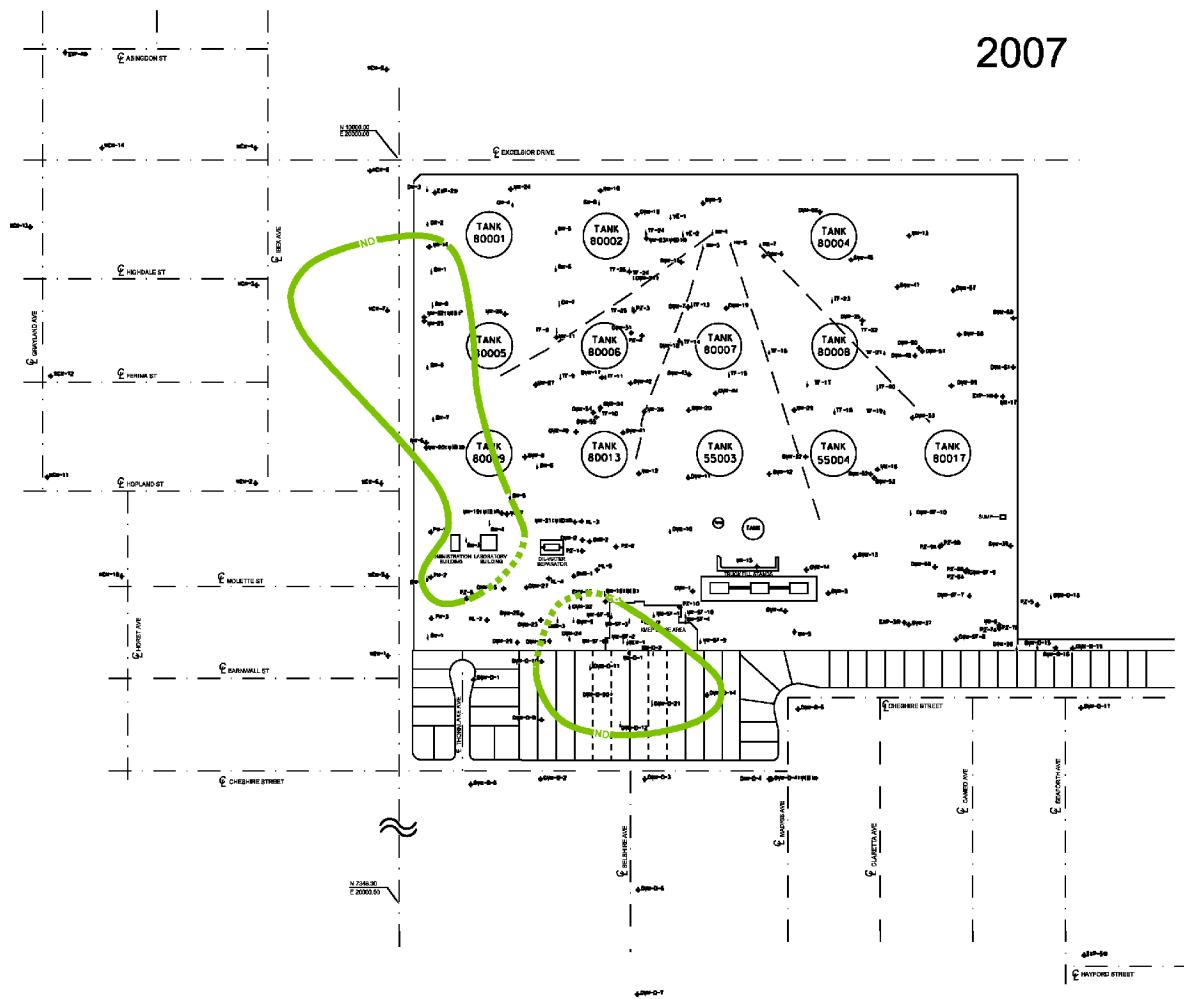
Benzene

In Uppermost Groundwater Zone

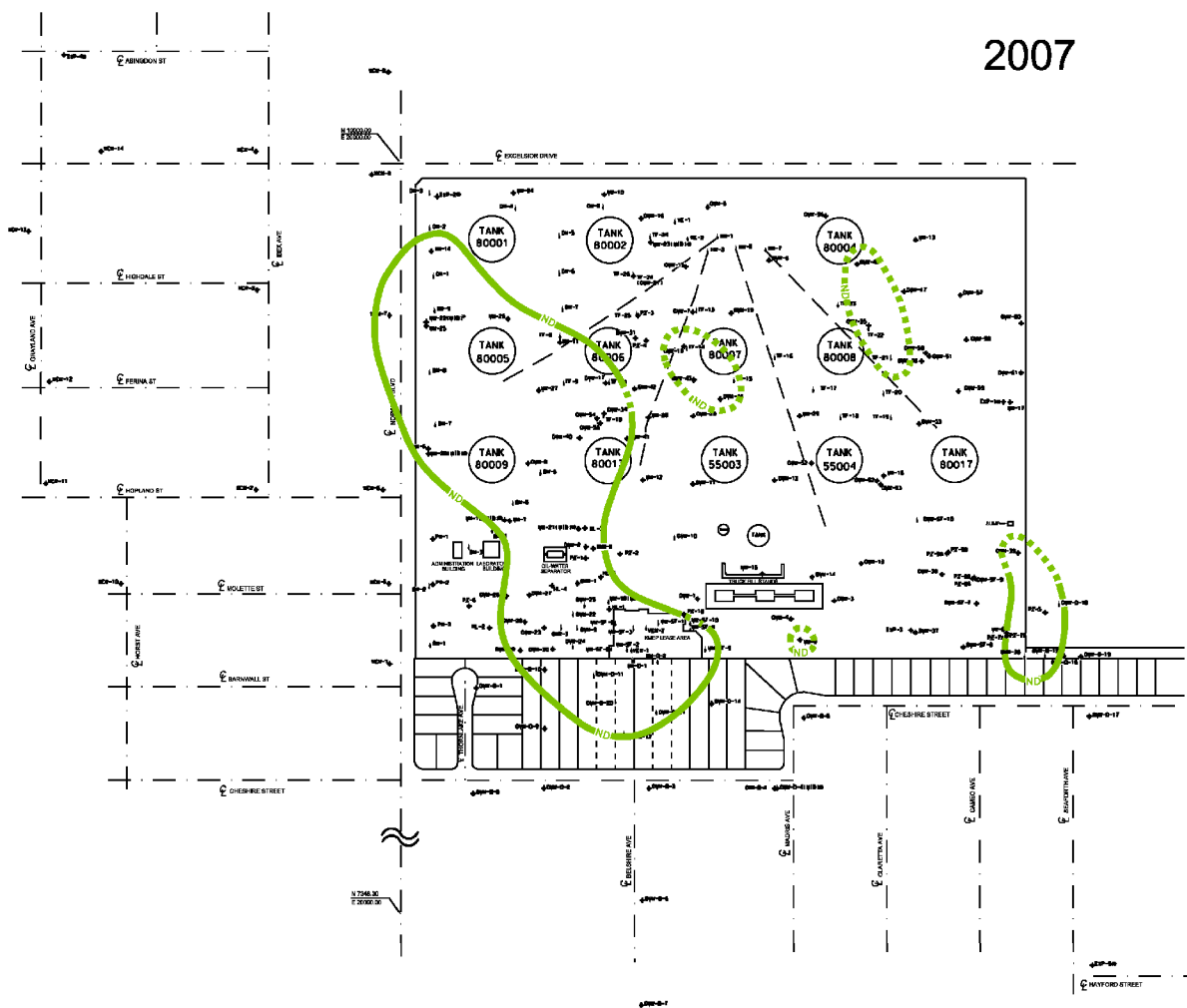
May 2006 and May 2007



1,2-Dichloroethane In Uppermost Groundwater Zone May 2006 and May 2007



Methyl tert-Butyl Ether In Uppermost Groundwater Zone May 2006 and May 2007



Site Conceptual Model

- Currently working with the RWQCB to develop a model showing subsurface conditions and remediation progress.