



DEFENSE LOGISTICS AGENCY

AMERICA'S COMBAT LOGISTICS SUPPORT AGENCY



Norwalk Tank Farm Update

Norwalk Tank Farm
Restoration Advisory Board

February 7, 2013



Presentation Overview

- General Site Activities
- Remediation Operations Update
- Concrete Demolition & Asbestos-Containing Material (ACM) Abatement Update
- Five-Year Action Plan Progress Report
- Planned Activities
- Second Semiannual 2012 Groundwater Monitoring Report



General Site Activities

- Submitted quarterly NPDES Discharge Monitoring Reports (DMR) for 2nd quarter 2012 and 3rd quarter 2012
- Submitted Remediation Monthly Status Summary Reports
- Conducted Groundwater Monitoring (GWM) - 3rd quarter 2012 event (July); 2nd semiannual event (October); 1st quarter 2013 event (January)
- Conducted site-wide weed abatement (September 9-14)
- Free product removal at GMW-62 on August 27, September 24, and January 8



Remediation Operations Update

- Remediation Systems and Objectives
 - Groundwater extraction (GWE) for contaminant mass containment
 - Soil vapor extraction (SVE) for contaminant mass removal and containment
 - Biosparging for contaminant mass removal



Remediation Systems Monitoring & Sampling

- GWE & SVE daily and weekly system inspections
- SVE system performance & compliance sampling:
 - 3rd quarter 2012: July 26, August 31, September 27
 - 4th quarter 2012: October 30, November 26, December 28
- GWE system performance & compliance sampling:
 - 3rd quarter 2012: July 26, August 31, September 27
 - 4th quarter 2012: October 28; November 26; December 3, 12, 19 and 28



GWE System Operations Summary

- GWE operated from 2 wells (GW-2 and GW-13) in the north-west area and from 2 wells (GW-15 and GW-16) in the north-eastern site area
- System **On** from July 1 through December 31, 2012 except for the following reasons and dates when it was **Off**:
 - July 2 – 12: 3rd quarter 2012 GWM event
 - August 17 – 20: local power failure
 - October 8 – 12: 4th quarter 2012 GWM event
 - October 24 – November 21: arsenic exceedance, evaluating changes in influent characterization and remedial options, change out arsenic ion exchange resin and activated carbon
 - November 21 – 26: secondary sump pump system repair
 - January 7 – 17, 2013: 1st quarter 2013 GWM event
- GWE system operation time:
 - 3rd quarter 2012: 86.2% of time / 97.2% of time excluding planned shutdowns for O&M and GWM event
 - 4th quarter 2012: 49.1% of time / 84.8% of time excluding planned shutdowns, permit compliance and GWM event



SVE System Operations Summary

- SVE operated from four horizontal wells (HW-1, HW-3, HW-5 and HW-7) spanning the entire former tank farm area and from 6 wells (SVE-32 through SVE-37) in the north-eastern site area
- System **On** from July 1 through December 31, 2012 except for the following periods when it was **Off**:
 - July 2 – 12: 3rd quarter 2012 GWM event
 - August 17 – 20: local power failure
 - September 14-17 and September 20-27: repairs to SVE system carbon vessel ducting
 - October 1: high temperature shut down
 - October 8 – 22: 4th quarter 2012 GWM event
 - October 22 – 23: SVE system vacuum line repair
 - January 7 – 17, 2013: 1st quarter 2013 GWM event

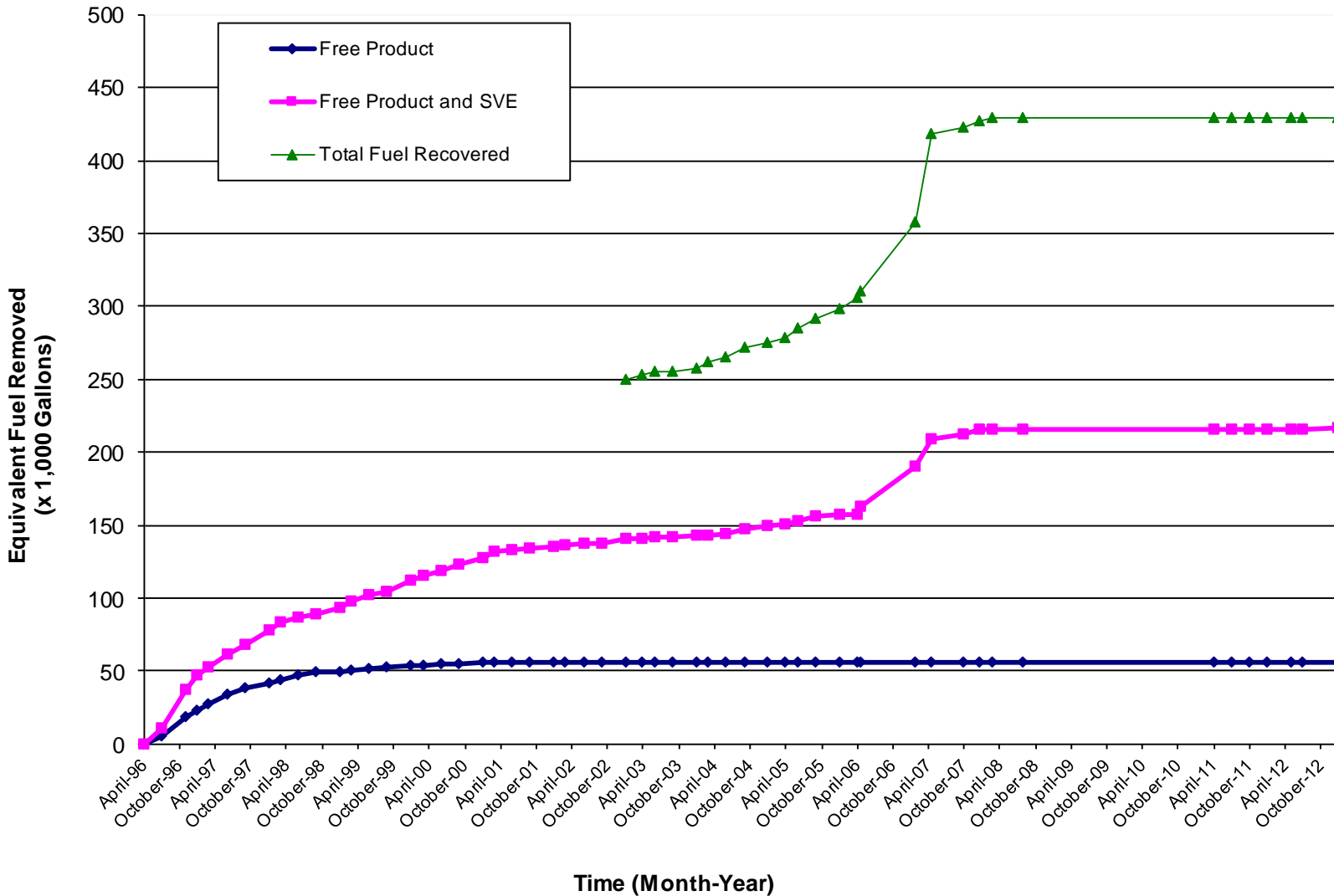


SVE System Operations Summary (cont'd)

- SVE system operation time:
 - 3rd quarter 2012: 74.5% of time / 94.2% of time excluding planned shutdowns
 - 4th quarter 2012: 82.9% of time / 99.1% of time excluding planned shutdowns



SVE System Operations Summary





Overall Operations Summary

- Groundwater extracted:
 - 3rd quarter 2012: 1,710,053 gallons
 - 4th quarter 2012: 1,085,836 gallons
 - 64.5 million gallons since Apr 1996
- Soil vapor extraction system equivalent fuel removed:
 - 3rd quarter 2012: 235 gallons (1,648 pounds)
 - 4th quarter 2012: 369 gallons (2,585 pounds)
 - 216,544 gallons (1.5 million pounds) since Apr 1996

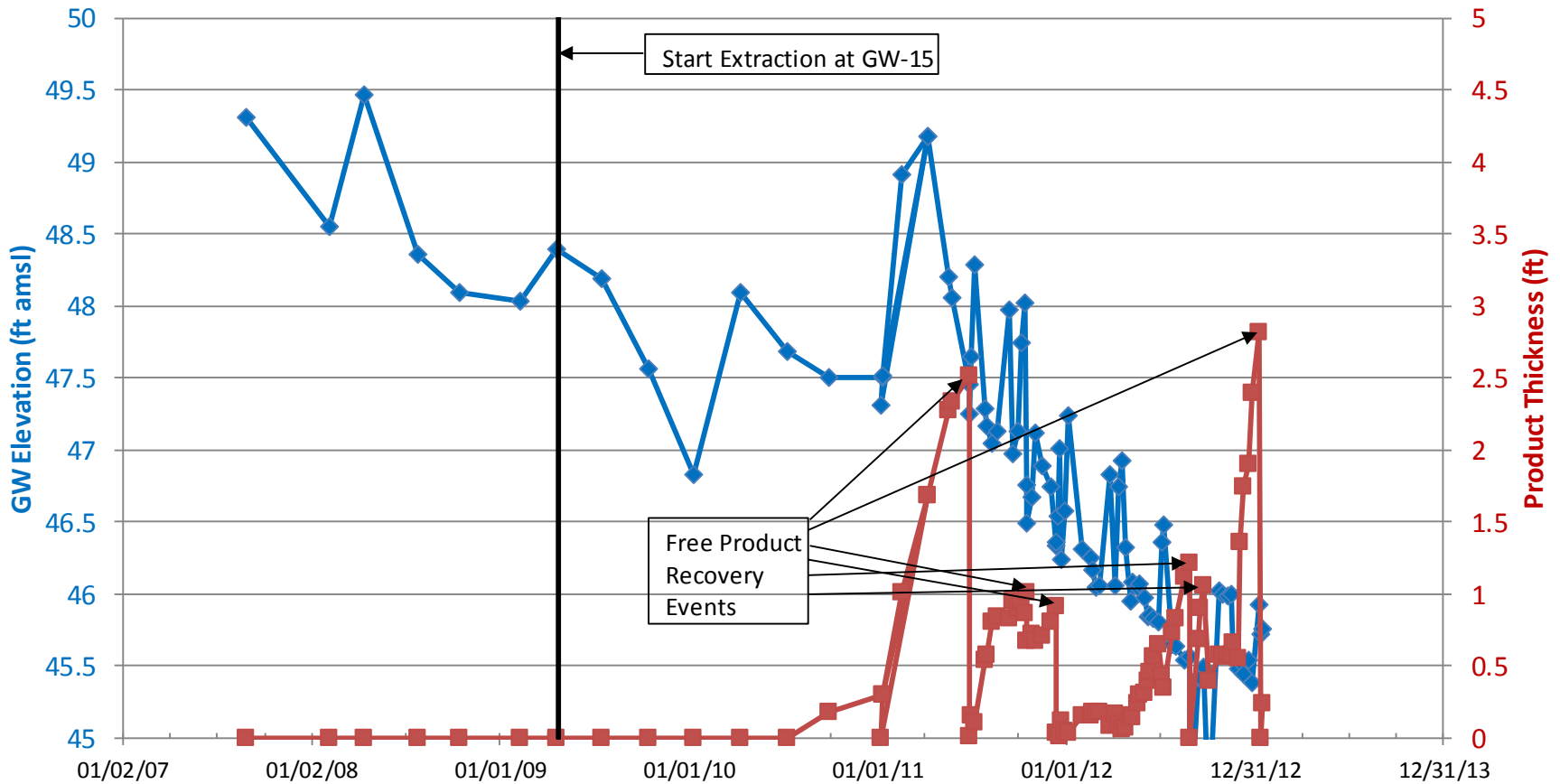


GMW-62 Free Product Monitoring

- GMW-62 is located in Holifield Park just adjacent to the eastern site property fence
- Since January 2011 free product has been measured at GMW-62
- GMW-62 quarterly gauging results:
 - 3rd quarter July 2012: 0.43 feet of product
 - 4th quarter October 2012: 0.49 feet of product
 - 1st quarter January 2013: 0.24 feet of product
- Free product recovery was conducted at GMW-62 as follows:
 - 08/27/12: 5 gallons of total fluids extracted resulting in 2 gallons of LNAPL
 - 09/24/12: 5 gallons of total fluids extracted resulting in 4 gallons of LNAPL
 - 01/08/13: 9 gallons of total fluids extracted resulting in 3 gallons of LNAPL
- Weekly gauging will continue and once thickness reaches 1 foot of free product it will be recovered



GMW-62 Groundwater Elevation and Product Thickness





Concrete Demolition & ACM Abatement Update

- Activities conducted during second half of 2012:
 - Demolished Navy and El Toro pump house foundations and below-grade infrastructure (excluding a portion of the Navy pump house left in place to ensure integrity of active KMEP line)
 - Abated and removed storm drain and fire water suppression vaults containing ACM
 - Removed piping in the pump house and TFS areas; pipes were cleaned, abated, disposed or recycled, as appropriate
 - Valve west of the Navy pump house (in the KMEP area) was cut and capped
 - Lift stations 1 and 2 were drained and demolished
- **All demolition and ACM abatement tasks have been completed**



Concrete Demolition & ACM Abatement Update (continued)

- Large excavations in the pump house, lift stations, vault south of 55003 were backfilled with clean import soil; compaction testing completed
 - Sample shed (behind the laboratory) was demolished and foundation removed
 - Concrete roadway in the TFS area was removed
 - Sound wall was dismantled
 - Impacted soil, ACM, concrete, asphalt and piping were disposed as appropriate
 - Transformer was re-located, substation at pump houses removed
- **All demolition and ACM abatement tasks have been completed**



Demolition Photos



Transformer before demolition

Area after removal of transformer, sound wall, pump houses, lift stations, truck fueling racks, and concrete roadway





Five-Year Action Plan Progress Report

- Free product recovery
 - Overall, fuel thickness and extent of free product in wells throughout the site have decreased; however, groundwater elevation has continued to decrease and therefore an increase in free product has been observed.
 - In October 2012 free product was detected in seven wells in the north-eastern/Holifield Park area, two wells in the truck fueling area, and one well west of the water tank area.
 - GMW-62 located in Holifield Park along with any on-site well that has measurable product are gauged weekly and vacuum-truck free product recovery is conducted once one foot thickness is measured.



Five-Year Action Plan Progress Report

- Soil vapor extraction
 - SVE operates continuously (since January 2011) from the north and north-eastern areas.
 - During the second semiannual period in 2012, approximately 4,232 pounds of contaminant mass has been destroyed by SVE and approximately 1.5 million pounds since April 1996.



Five-Year Action Plan Progress Report

- Groundwater extraction
 - Effectively decreased free product plumes over time.
 - Extraction from north-west corner and north-eastern area for containment has been effective.
 - Off-site wells continue to show non-detect or decreasing trends in TPH and BTEX concentrations.
 - Although TPH concentrations in most wells are lower and/or are declining, GWE is used for plume containment.



Remedial Action Plan Update

- July 12, 2012 letter from RWQCB approved proposed soil cleanup goals for all chemicals of concern including TPH, BTEX, MTBE, and TBA.
- **Soil Remediation Schedule**
 - SVE &/or bioventing operation: January 2012 - May 2014
 - Conduct additional soil investigation to delineate impacted areas and confirm clean areas: Feb 2013 – May 2013
 - Respiration test, soil confirmation sampling and reporting: May 2014 – December 2014
 - Potential new remedial solution: TBD



Remedial Action Plan Update

- **Groundwater Remediation Schedule**
 - GWE for containment will continue
 - Evaluate groundwater remediation technologies
 - Remedial action will be proposed and implemented: project for the second half of 2013 thru the end of 2014



Planned Activities

- Continue operation, weekly system inspections, required sampling, evaluation and optimization of GWE and SVE systems
- Conduct 1st quarter 2013 GWM sentry event (January); 1st semiannual 2013 event (April); 3rd quarter 2013 GWM sentry event (July)
- Prepare and submit NPDES DMR for 4th quarter 2012 and 1st and 2nd quarter 2013



Questions?



Second Semiannual 2012 Groundwater Monitoring Report

- 3rd Quarter Sentry Event July 2012
 - DLA and SFPP
- 2nd Semiannual Event October 2012
 - DLA and SFPP
- Monthly Events (Southeastern area wells)
 - August, September, November, and December 2012 – SFPP



Second Semiannual 2012 Groundwater Monitoring Report

- Well gauging and sampling
 - Low-flow sampling methods
 - 192 wells gauged
 - 101 wells sampled
 - SVE/TFE/GWE systems were turned off prior to gauging and sampling



Second Semiannual 2012 Groundwater Monitoring Report

- Comparisons were made for the groundwater elevations and quality **between annual data** pursuant to discussions during the last RAB meeting in August 2012
- Groundwater levels during October 2012 generally similar to those encountered a year ago in October 2011 monitoring event
- Uppermost Aquifer Groundwater Elevations
 - Groundwater elevations were on average 1.97 feet lower since October 2011
 - Horizontal hydraulic gradient was approximately 0.003 ft/ft toward the north; this is a slight shift in direction whereas before it was towards the north- northwest.
- Exposition Aquifer Groundwater Elevations
 - Groundwater elevations in three wells increased by 0.12 to 1.8 feet and decreased at two wells by 0.06 to 0.75 feet since October 2011
 - Horizontal hydraulic gradient was approximately 0.0003 ft/ft toward the east-southeastward

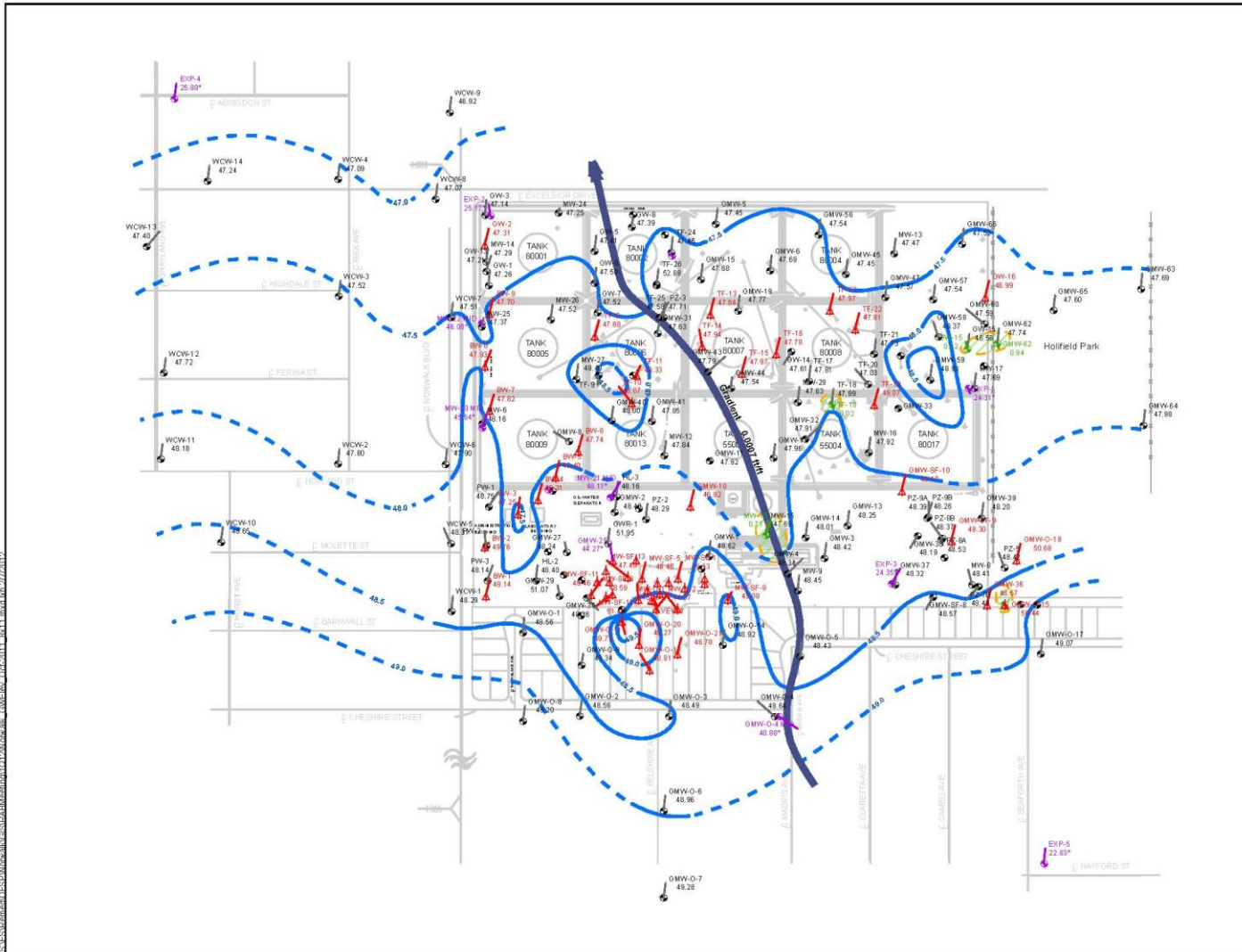


Second Semiannual 2012 Groundwater Monitoring Report

- Free product was measured in 12 of the 192 wells gauged from four areas of concern
 - Northern tank farm area at PZ-3, TF-17, TF-8, TF-20, TF-22, and TF-23
 - North-eastern area at GMW-62
 - Truck fueling area at MW-15 and GMW-4 and at GMW-10 northwest of the truck fueling area and west of the small slop tank
 - South-central area at GMW-O-12 and GMW-O-20
- Note that free product was not observed in any wells in the southeastern 24-inch block valve area



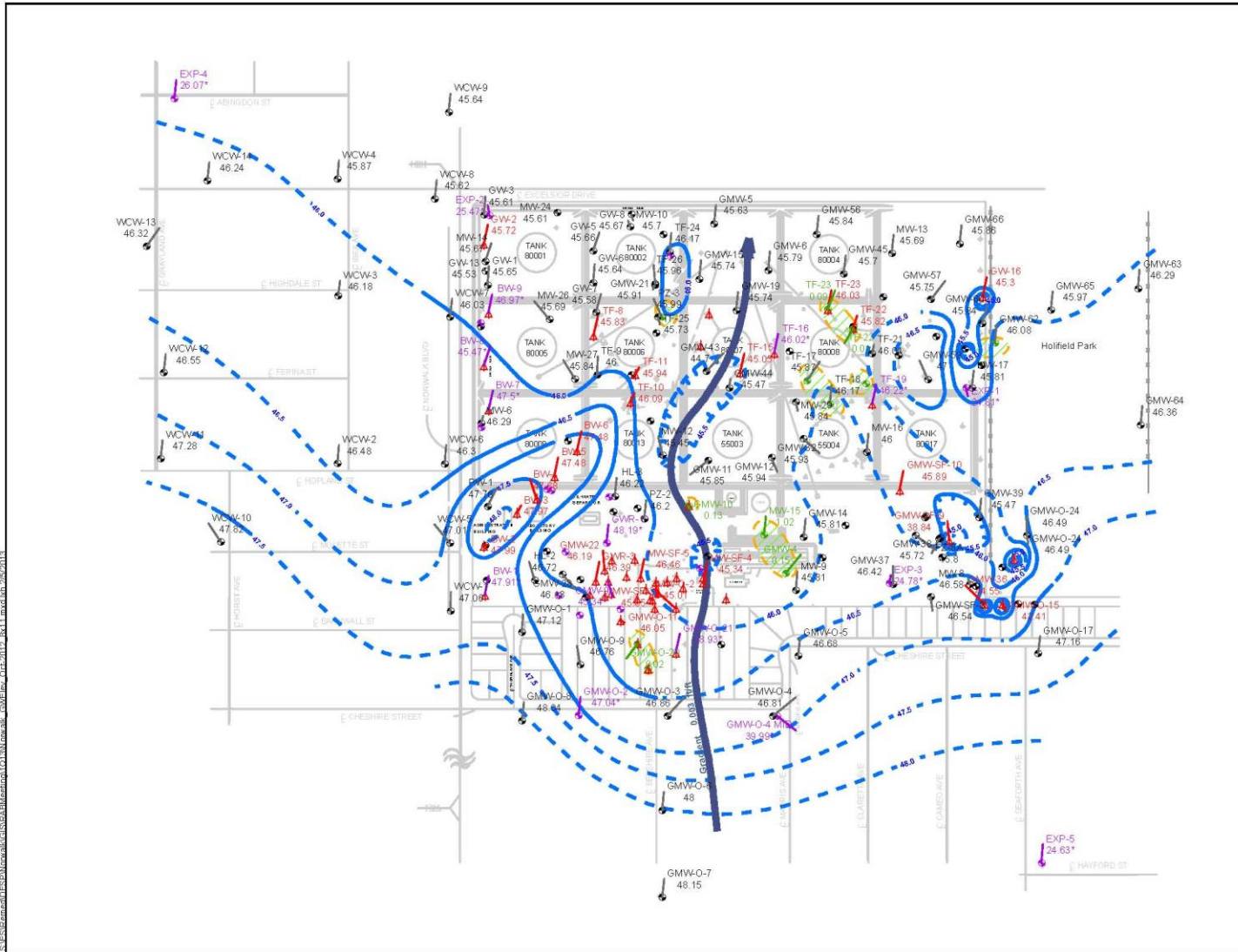
Groundwater Elevation and Free Product Plumes - October 2011



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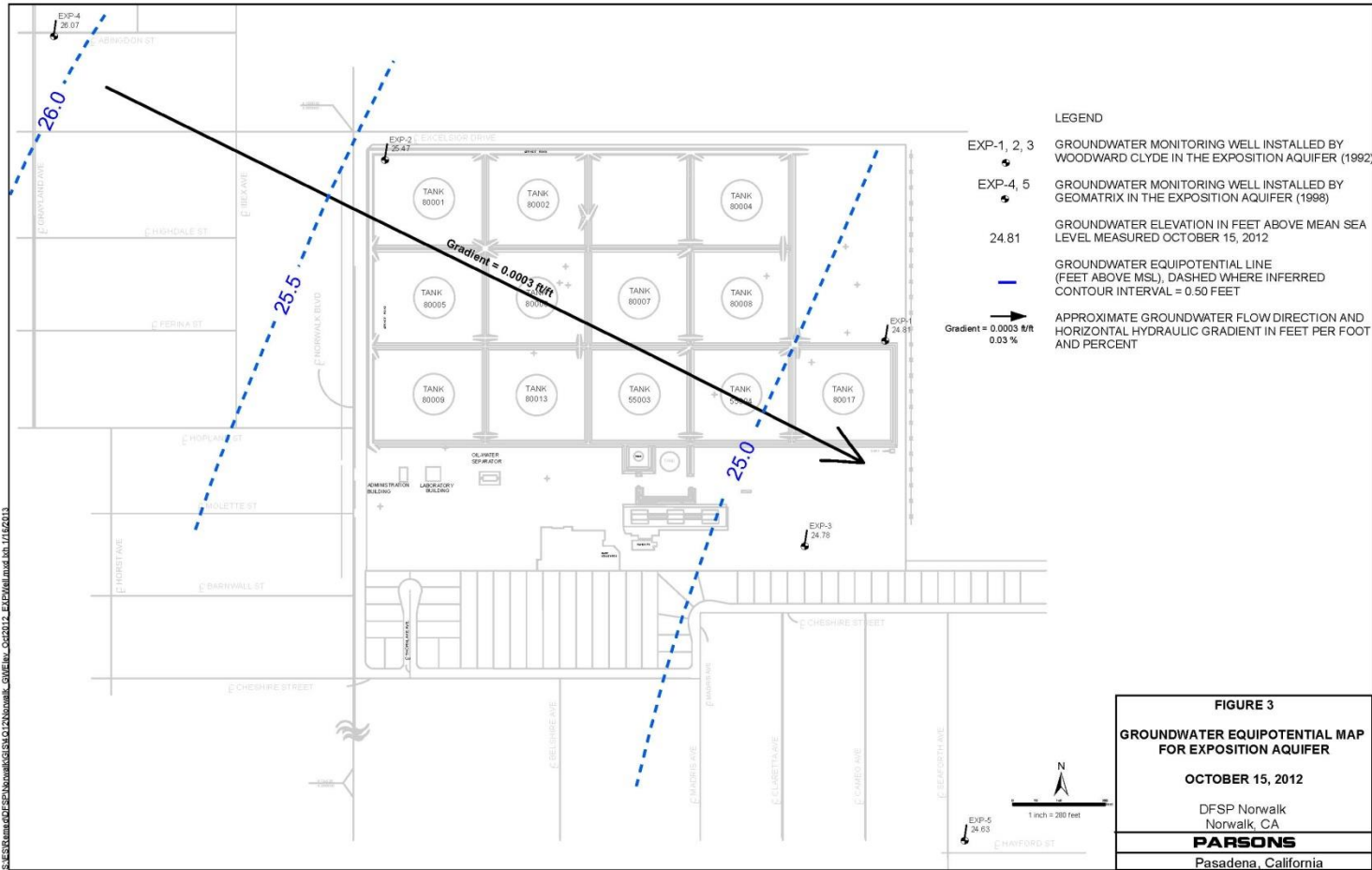


Groundwater Elevation and Free Product Plumes - October 2012





Groundwater Elevation Exposition - October 2012



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Second Semiannual 2012 Groundwater Monitoring Report

- **Exposition Aquifer Wells**
 - Wells sampled:
 - EXP-1, -2, and -3 sampled by both DLA and SFPP
 - EXP-5 sampled by SFPP
 - All analytical results were non detect, except for the following:
 - 1,2-DCA was detected at EXP-3 in at an estimated concentration of 0.45 J $\mu\text{g/L}$ (just below the laboratory reporting limit)
 - This type of low-level detection occasionally occurs in the EXP wells but is generally not repeated. The EXP wells will continue to be monitored quarterly

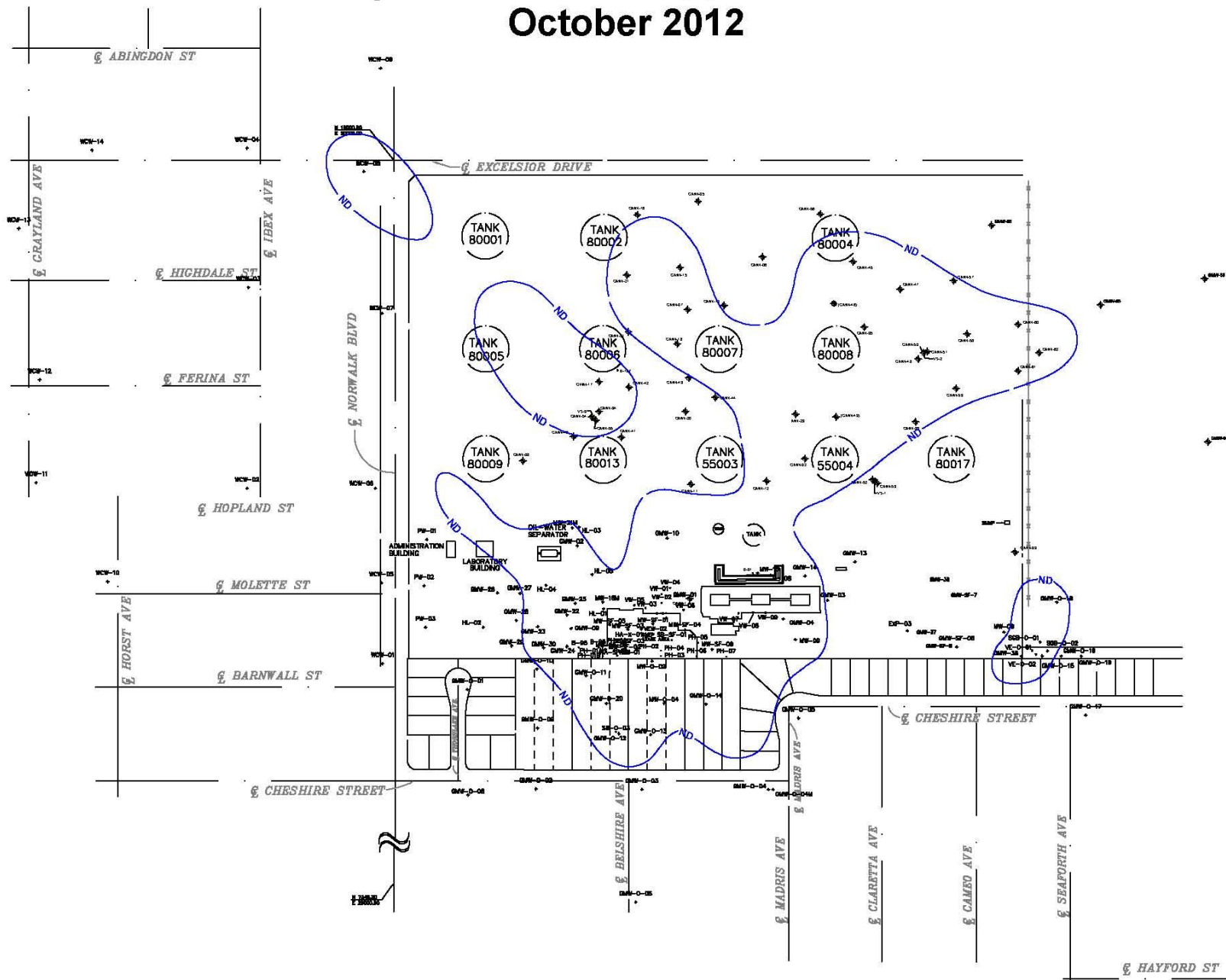


Second Semiannual 2012 Groundwater Monitoring Report

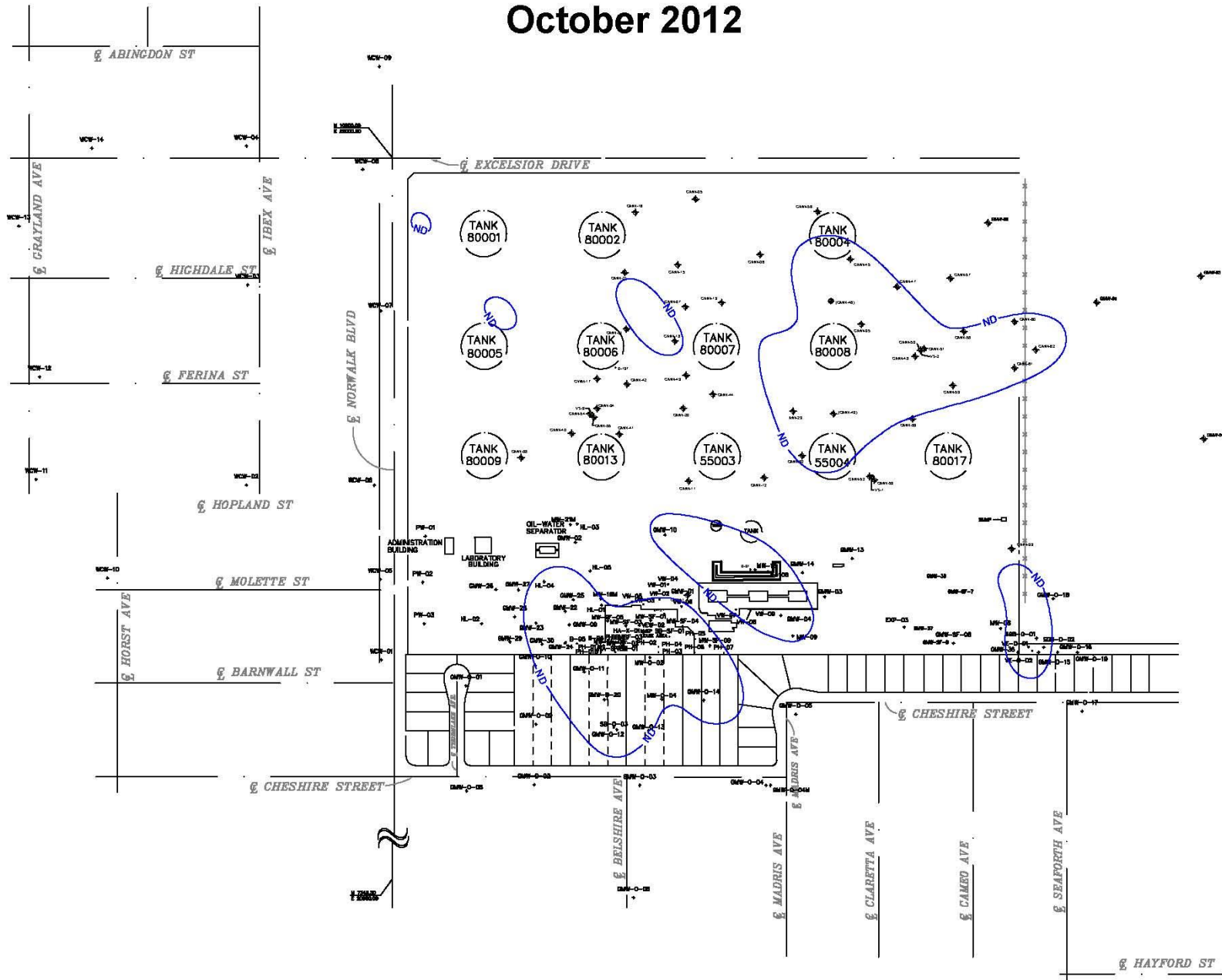
- **Uppermost Aquifer Wells**

- In most areas, the lateral extents of TPH, benzene, MTBE, TBA, and 1,2-DCA in groundwater remain similar to those interpreted during recent previous monitoring events and from a year ago in October 2011
- Concentrations are influenced by water level fluctuations

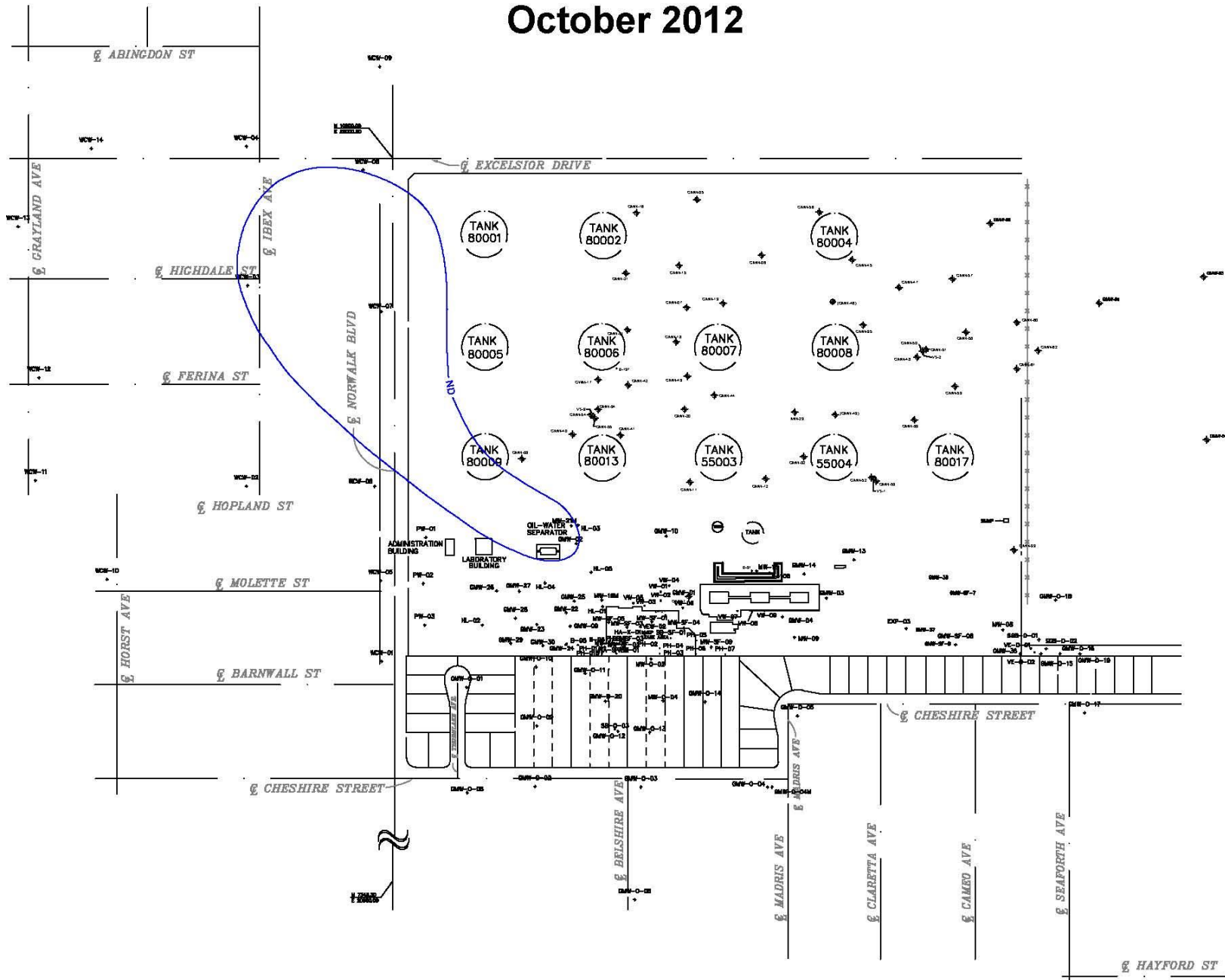
Total Petroleum Hydrocarbons In Uppermost Groundwater Zone October 2012



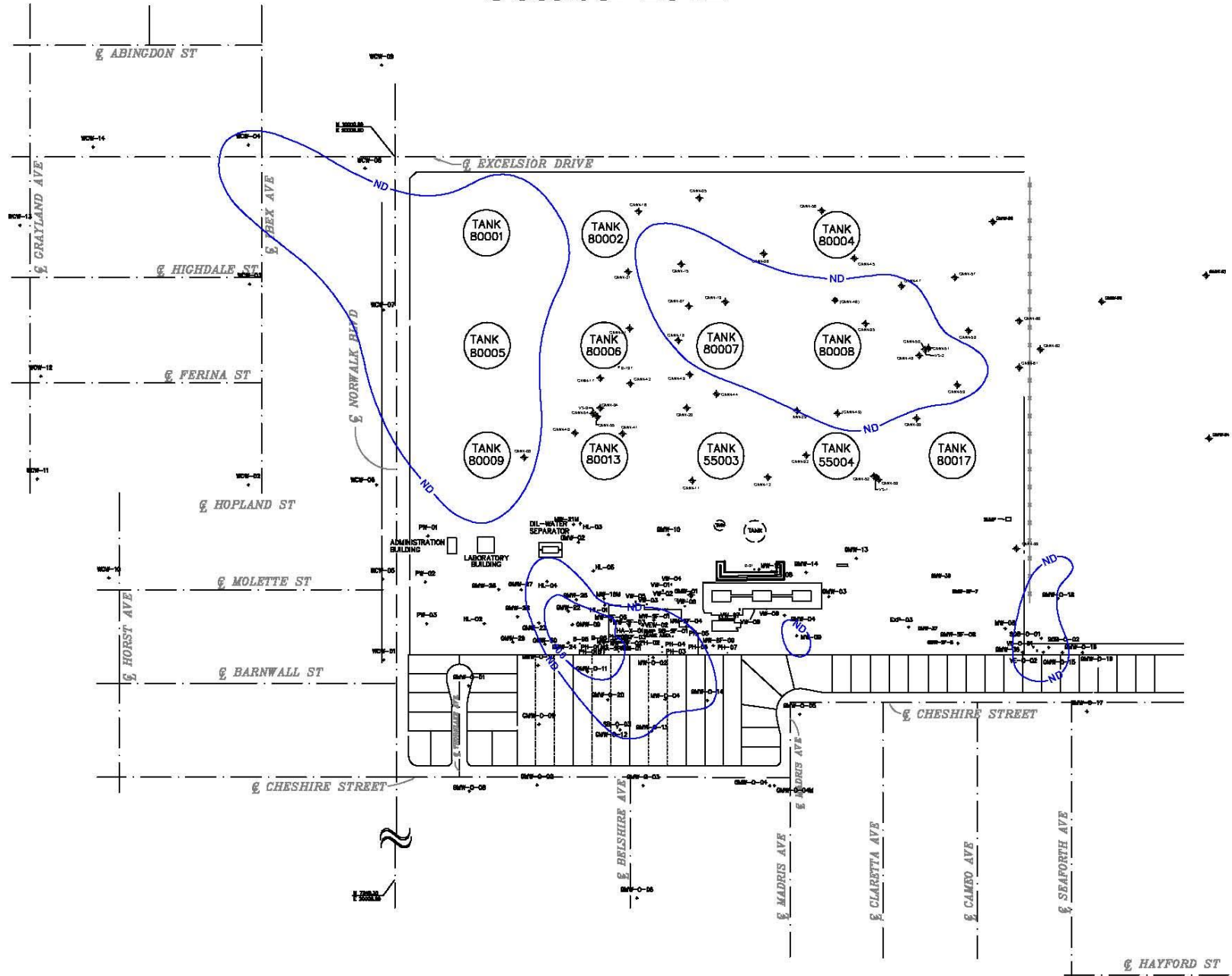
Benzene In Uppermost Groundwater Zone October 2012



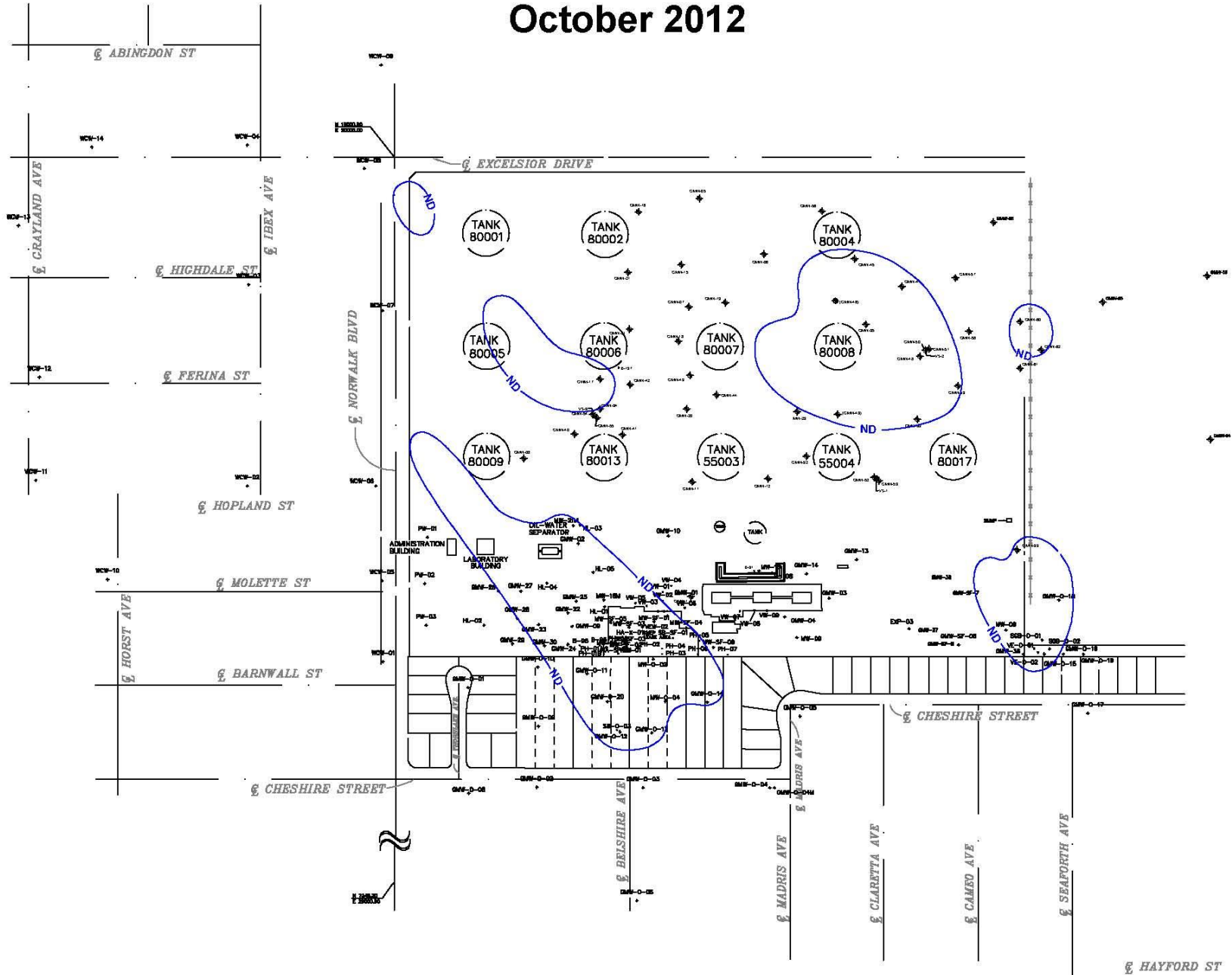
1,2-Dichloroethane In Uppermost Groundwater Zone October 2012



Methyl tert-butyl ether In Uppermost Groundwater Zone October 2012



Tert-Butyl Alcohol In Uppermost Groundwater Zone October 2012



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