



Norwalk Tank Farm Update

Norwalk Tank Farm
Restoration Advisory Board

August 8, 2013

Presentation Overview

- General Site Activities
- Remediation Operations Update
- Supplemental Soil Investigation
- Conceptual Site Model
- Revised Groundwater Monitoring and Reporting Program
- Five-Year Action Plan Progress Report
- Planned Activities

General Site Activities

- Submitted quarterly NPDES Discharge Monitoring Reports (DMR) for 4th quarter 2012 and 1st quarter 2013
- Submitted Remediation Monthly Status Summary Reports (through March 2013, to be replaced by quarterly reports)
- Free product removal on February 4, 19; March 4, 18; April 1, 15, 29; May 13, 28; June 12; July 16, 22
- SWPPP sampling on February 20, March 8, May 6
- Bee hive removal (February 25)
- Subsurface survey for soil investigation (March 6)

General Site Activities

- Soil drilling and sampling (March 11-18, April 22)
- Conducted groundwater monitoring – 1st semiannual event (April)
- USAF repairs for site security (April-May)
- Free product bail-down test at GMW-62 (May-June)
- Conducted site-wide weed abatement (May 22-29)
- Repair pedestrian path in Holifield Park (June 24-25)
- Soil sampling location survey (July 8-9)

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
  - Vacuum-truck recovery for free product
  - Absorbent socks for passive free product recovery

Remediation Systems Monitoring & Sampling

- GWE & SVE daily and weekly system inspections
- SVE system performance & compliance sampling:
  - 1st quarter 2013: January 31, February 27, March 28
  - 2nd quarter 2013: April 22
- GWE system performance & compliance sampling:
  - 1st quarter 2013: February 12, 27
  - 2nd quarter 2013: April 15, 22, 29; June 11, 21, 26

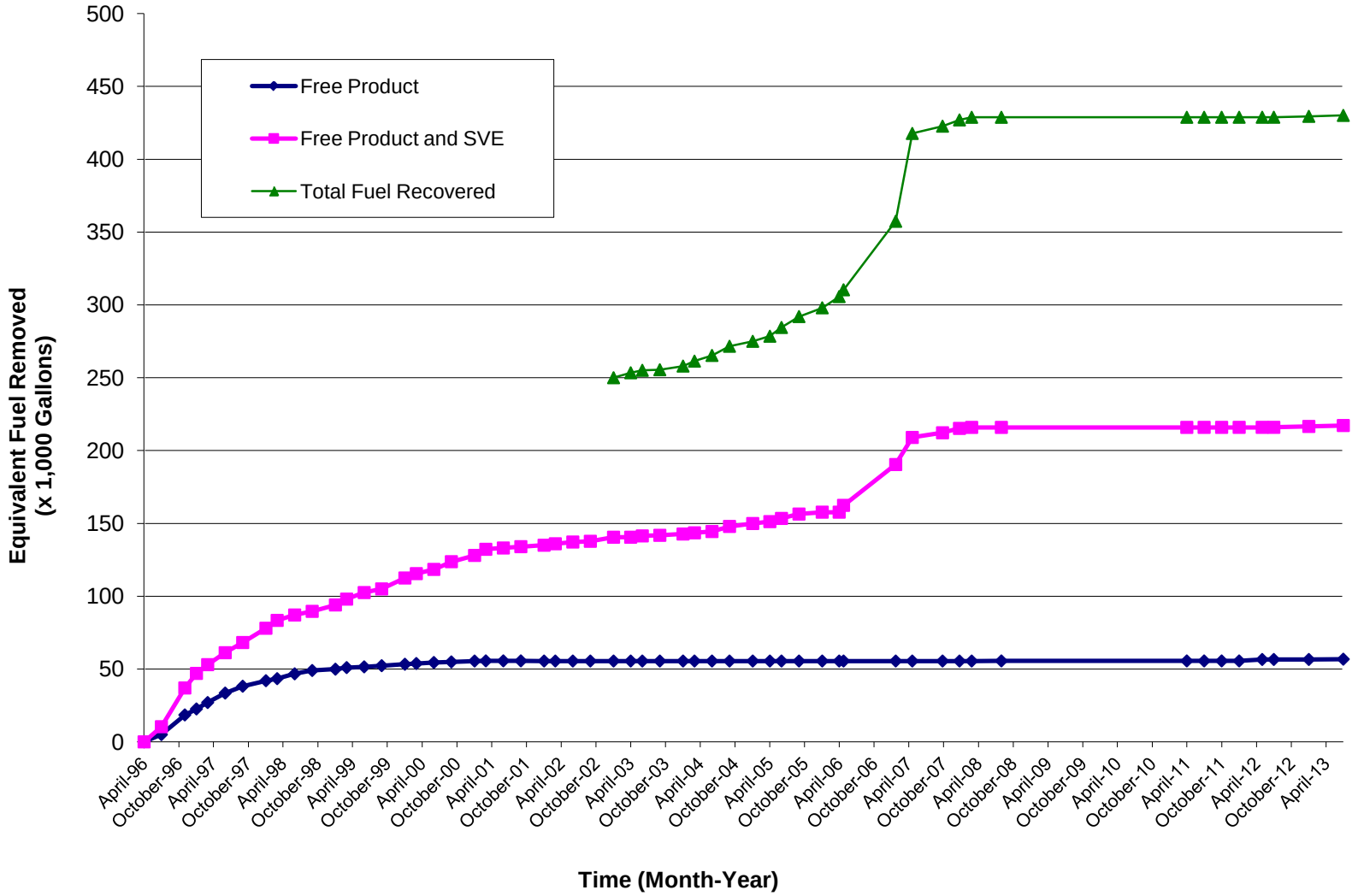
GWE System Operations Summary

- 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 January 1 through July 31, 2013 except for the following reasons and dates when it was **Off**:
  - January 7 – 17: 1st quarter 2013 GWM event
  - February 12 – April 11: arsenic discharge limit exceeded—system off for additional testing to investigate reduced efficiency of arsenic removal resin and explore system modifications to improve arsenic removal efficiency
  - May 1 – July 2: High arsenic in effluent. A second arsenic ion exchange vessel was designed and installed to enhance system. Activated carbon changed out.
- GWE system operation time:
  - 1st quarter 2013: 36% of time / 47% of time excluding planned shutdowns for O&M and GWM event
  - 2nd quarter 2013: 32.5% of time / 43% of time excluding planned shutdowns

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 January 1 through June 30, 2013 except for the following periods when it was **Off**:
  - January 7 – 17: 1st quarter 2013 GWM event
  - March 8 - 11: repair to vacuum extraction pipelines
  - March 25: oil change at blower
  - May 15 – June 30: leak in 8-inch vacuum extraction pipeline between carbon vessels GAC-2 and GAC-3
- SVE system operation time:
  - 1st quarter 2013: 86% of time / 97% of time excluding planned shutdowns
  - 2nd quarter 2013: 49% of time

SVE System Operations Summary



Overall Operations Summary

- Groundwater extracted and equivalent mass of TPH removed:
  - 1st quarter 2013: 748,341 gallons (0.028 pound)
  - 2nd quarter 2013: 673,397 gallons (0.026 pound)
  - 66 million gallons (9,912 pounds) since April 1996
- Soil vapor extraction system equivalent mass of TPH removed:
  - 1st quarter 2013: 2.1 gallons (14.6 pounds)
  - 2nd quarter 2013: 1.8 gallons (13.1 pounds)
  - 215,946 gallons (1.53 million pounds) since April 1996

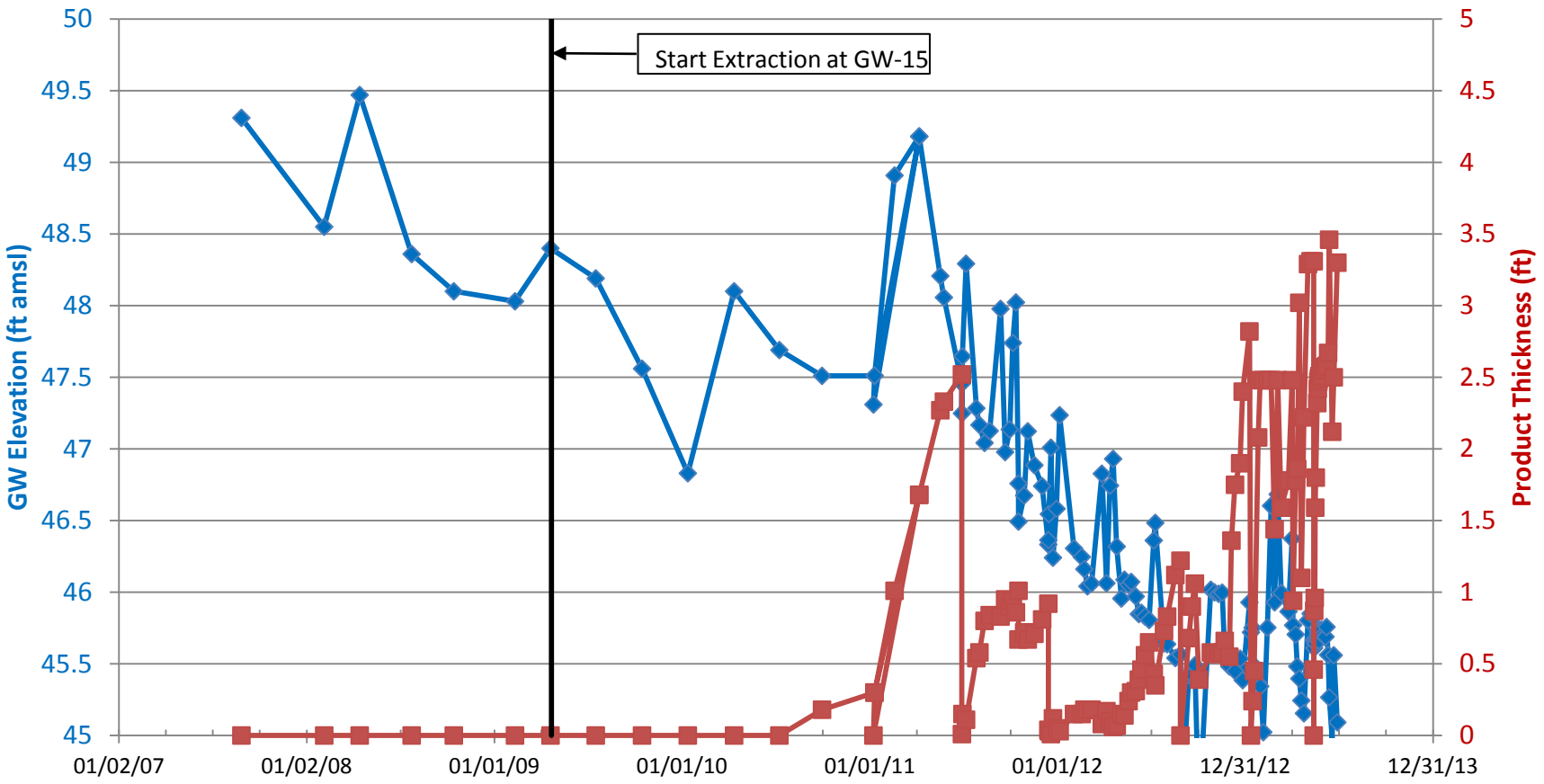
GMW-62 Free Product Monitoring

- Since January 2011 free product has been measured at GMW-62 (located in Holifield Park)
- GMW-62 quarterly gauging results:
  - 1st quarter January 2013: 0.24 feet of product
  - 2nd quarter April 2013: 1.78 feet of product
- Free product recovery was conducted at GMW-62 as follows:

Date	Apparent Product Thickness (ft)	Total Fluid Extracted (gal)	Free Product Removed (gal)
01/08/13	2.82	9	3
02/04/13	2.48	3	2
02/19/13	2.48	3	2
03/04/13	2.48	5	4
04/01/13	2.48	6	4
04/15/13	3.02	11	10
05/13/13	3.31	25	15
06/12/13	3.46	7	6.5
07/08/13	4.64	14	12

- Weekly gauging will continue and once thickness reaches 1 foot of free product it will be recovered

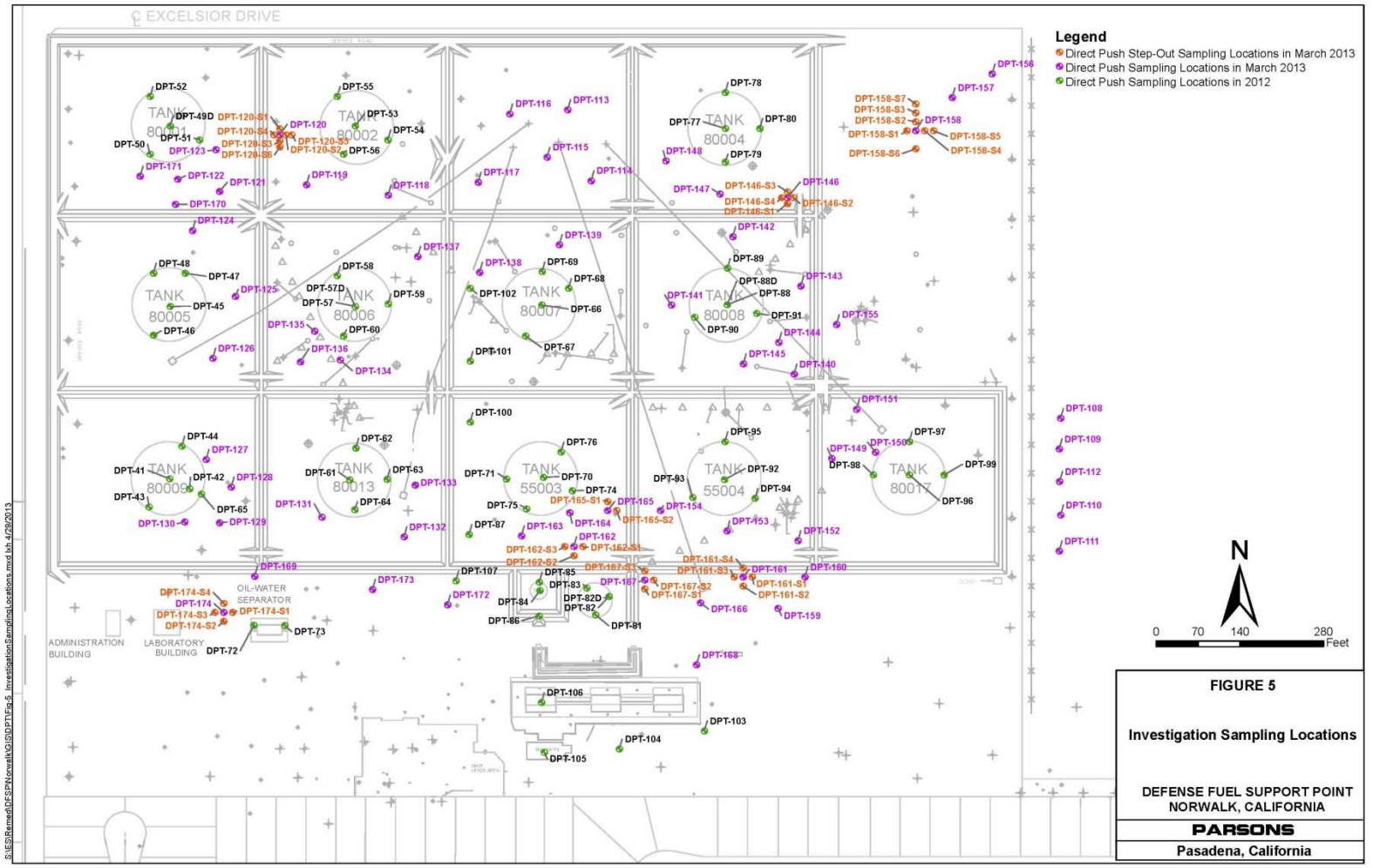
GMW-62 Groundwater Elevation and Product Thickness



Supplemental Soil Investigation

- Scope of work letter for supplemental investigation submitted to RWQCB on March 5, 2013
- Objectives:
  - Confirm non-impacted areas
  - Investigate any unknown area and any data gaps
  - Confirm and define limits of extent for impacted areas
- Scope of work:
  - 66 soil sampling locations (DPT-108 through DPT-174)
  - 439 soil samples
  - 31 duplicate soil samples
  - Analyzed for TPH as diesel, TPH as gasoline, and VOC

Supplemental Soil Investigation Sampling Locations



Supplemental Soil Investigation

- Results will be incorporated into the conceptual site model (CSM) and support in making remedial decisions
- Figures showing the extent of impacts both in soil and groundwater will be prepared and included in the final CSM
- Next slides will discuss the CSM

Conceptual Site Model

- A draft soil conceptual site model was submitted on September 4, 2012
- Updated soil results from the supplemental investigation will be added to the CSM
- March 20, 2013 - RWQCB requested a workplan for a light non-aqueous phase liquid (LNAPL) [free product] CSM and estimation of LNAPL transmissivity
- June 27 and July 30, 2013 – workplan and addendum workplan, respectively submitted

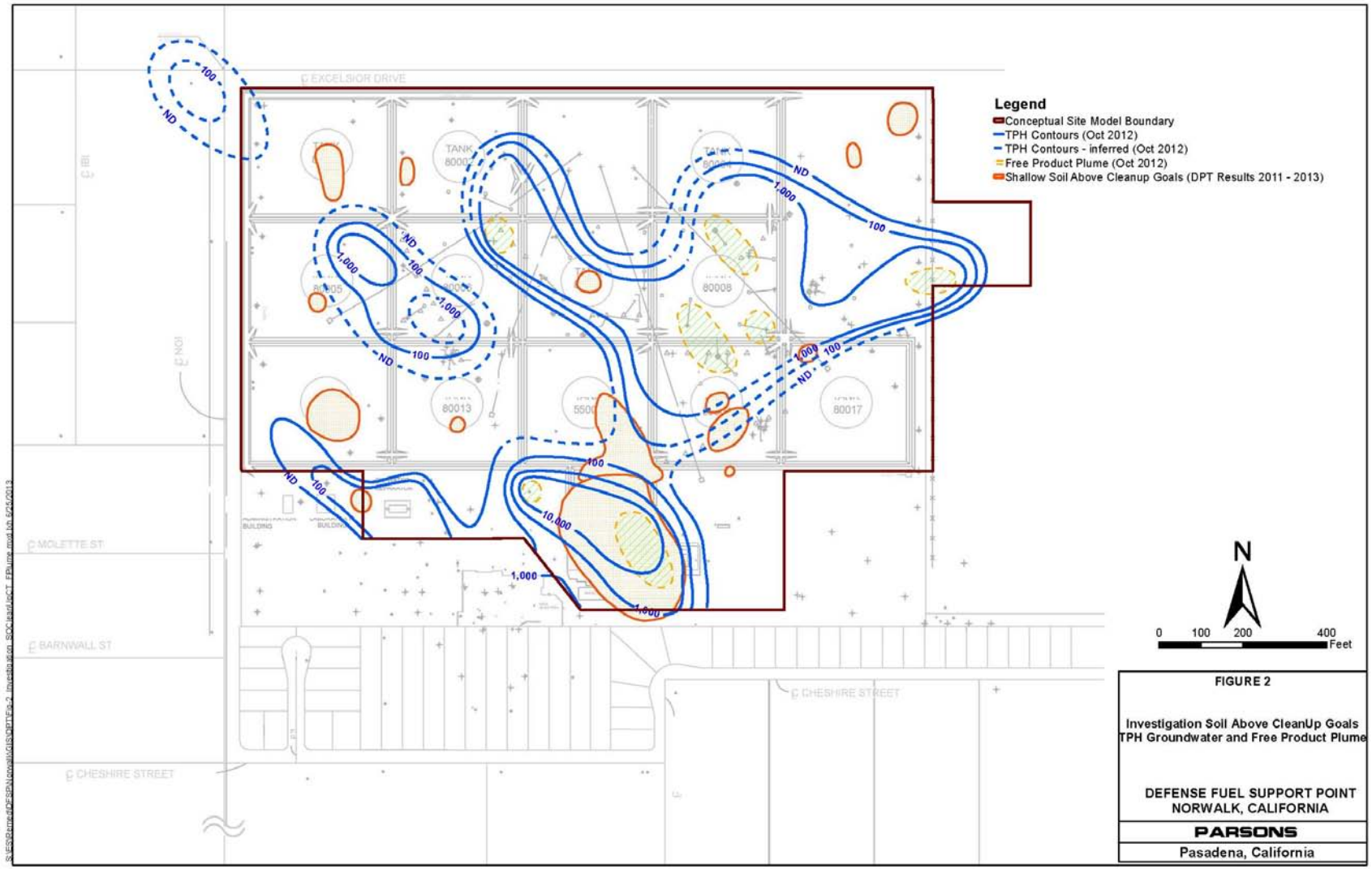
Conceptual Site Model

- LNAPL CSM will be added to the soil CSM and dissolved-phase will also be added to provide one complete CSM for the site that will include all impacted media
- All work performed for the LNAPL study and CSM will be in accordance with:
  - American Standard Test Method (ASTM) E2531-06, *Standard Guide for Development of Conceptual Site Models and Remediation Strategies for LNAPL Released to the Subsurface*
  - ASTM E2856-12, *Standard Guide for Estimation of LNAPL Transmissivity*
  - ITRC technical regulatory December 2009 guidance*, Evaluating LNAPL Remedial Technologies for Achieving Project Goals*

Conceptual Site Model

- The next figure displays the following:
  - DLA Energy's CSM boundary
  - groundwater concentration plumes for TPH and LNAPL plumes from the October 2012 semiannual groundwater monitoring event
  - preliminary draft of the impacted shallow soil areas down to 10 feet where concentrations are above the approved soil cleanup goals comprised from the soil data results of investigations in 2011 through 2013
- CSM will be submitted to RWQCB by September 30, 2013

Conceptual Site Model



Revised Groundwater Monitoring and Reporting Program

- December 20, 2012 – received request from RWQCB to provide a groundwater monitoring program evaluation report
- March 5, 2013 – submitted the Groundwater Monitoring Program Evaluation Report
- July 23, 2013 – submitted an update to the groundwater monitoring program evaluation report
- Objective:
  - to enhance the current groundwater network and monitoring program in order to evaluate the dissolved plume behavior over time

Revised Groundwater Monitoring and Reporting Program

- Scope of Work:
  - Identify data gaps for evaluating the dissolved plumes over time
  - Identify redundancies or deficiencies in the data being collected
  - Prepare and review time series concentration graphs for the wells in the current program
  - Evaluate concentration trends (stable, increasing, or decreasing) and concentration magnitude

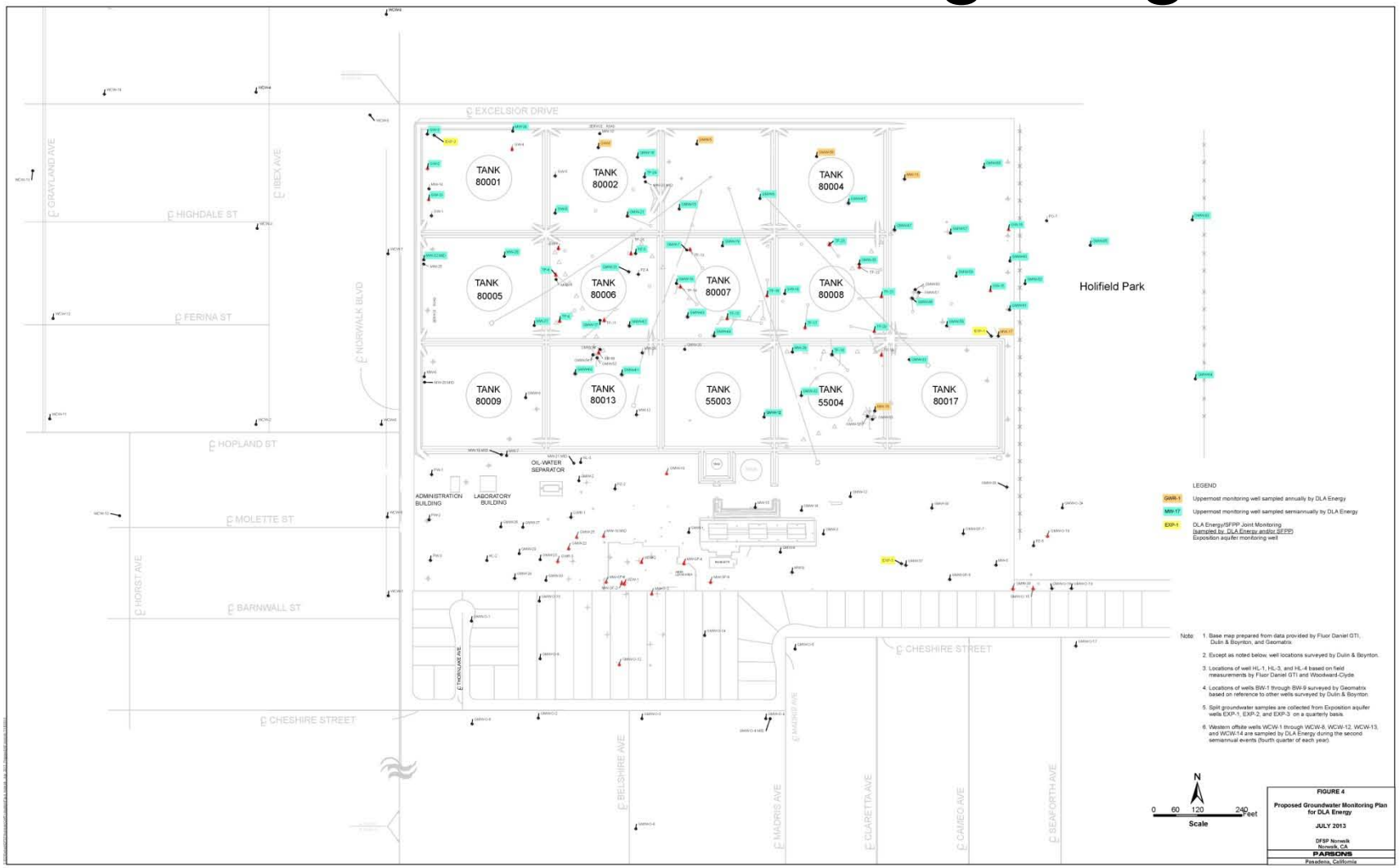
Revised Groundwater Monitoring and Reporting Program

- Current groundwater monitoring program
  - approved in May 2002 by the RWQCB
  - In accordance with the 1995 Groundwater Sampling and Analysis Plan
  - Semiannual and sentry (quarterly) monitoring
- Proposed revised groundwater monitoring program
  - 72 monitoring wells gauged semiannually
  - 57 monitoring wells sampled semiannually
  - Semiannual events to be conducted in April and October
  - 6 monitoring wells to be sampled annually in October
- 1st semiannual report to be prepared by CH2MHill and 2nd semiannual report to be prepared by Parsons

DLA Energy Proposed Groundwater Monitoring Program

Wells to be Sampled Semiannually				
Exposition Aquifer:				
EXP-1	EXP-2	EXP3		
Uppermost Aquifer:				
GMW-5	GMW-33	GMW-58	GW-8	MW-29
GMW-6	GMW-35	GMW-59	GW-13	PZ-3
GMW-7	GMW-40	GMW-60	GW-14	TF-8
GMW-12	GMW-41	GMW-61	GW-15	TF-9
GMW-15	GMW-42	GMW-62	GW-16	TF-15
GMW-16	GMW-43	GMW-63	MW-13	TF-16
GMW-17	GMW-44	GMW-64	MW-16	TF-17
GMW-18	GMW-45	GMW-65	MW-17	TF-18
GMW-19	GMW-47	GMW-66	MW-22 MID	TF-20
GMW-21	GMW-48	GW-2	MW-24	TF-21
GMW-31	GMW-56	GW-3	MW-26	TF-23
GMW-32	GMW-57	GW-6	MW-27	TF-24
Note: All the wells to be sampled above will also be gauged.				
Wells Only to be Gauged Semiannually				
GMW-20	GW-1	GW-5	MW-14	TF-19
GMW-54	GW-4	GW-7	MW-28	
Wells to be Sampled Annually				
Uppermost Aquifer:				
GMW-6	GW-8	MW-16		
GMW-56	MW-13	MW-17		

DLA Energy Proposed Groundwater Monitoring Program



Five-Year Action Plan Progress Report

- Free product recovery
  - Historically 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 the most recent events
  - In April 2013 free product was detected in eight wells in the north-central area, two wells in the north-eastern area, two wells in the truck fueling area
  - For the 1st semiannual 2013 period, 193 gallons of free product was recovered
  - 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 first semiannual period in 2013, approximately 27.7 pounds of contaminant mass has been destroyed by SVE and approximately 1.53 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
  - During the first semiannual period in 2013, approximately 0.054 pound of contaminant mass has been destroyed by GWE and approximately 9,912 pounds since April 1996

Remedial Action Plan Update

- ***Soil Remediation Schedule***
  - SVE &/or bioventing operation: January 2012 – December 2014
  - Conduct soil excavation to areas where impacts are above the approved soil cleanup goals down to 10 feet below surface grade: first semiannual period 2014
  - Remedial solution for deeper impacted soil from greater than 10 feet below ground surface to groundwater: TBD
  - Soil confirmation sampling and reporting and request for NFA: TBD

Remedial Action Plan Update

- ***Groundwater Remediation Schedule***
  - GWE for containment will continue
  - Evaluate groundwater remediation technologies
  - Remedial action will be proposed and implemented

Planned Activities

- Continue operation, weekly system inspections, required sampling, evaluation and optimization of GWE and SVE systems
- Conduct 2nd semiannual 2013 event (October) and prepare the site-wide semiannual report
- Prepare and submit NPDES DMR and remediation system progress reports for 2nd, 3rd, and 4th quarters 2013
- Prepare and submit the CSM

Questions?

DEFENSE LOGISTICS AGENCY

AMERICA'S COMBAT LOGISTICS SUPPORT AGENCY