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Quarterly Coordination Meeting

NYSDEC / USEPA Region 2
Northrop Grumman Systems Corporation
NAVFAC

December 14, 2016

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Northrop Grumman Discussion Topics

- Status of Northrop Grumman/Navy Cooperation
  - Technical Exchange Meeting was held on November 16, 2016
  - Navy Wells sampled by Northrop Grumman
- Update on Northrop Grumman OU2 Activities
  - ONCT System OM&M/Effectiveness
- Update on Northrop Grumman OU3 Activities
  - Off-Site RW-21 Project Area Groundwater Investigation/Remediation
  - Park Soils
  - Hydraulic Effectiveness Study
  - Residential Properties

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RE-117D1 and RE-117D2 wells were taken back by Navy for sampling in fourth quarter 2016 and until further notice

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Update on Northrop Grumman OU2 Activities

- ONCT System OM&M
- ONCT System Effectiveness

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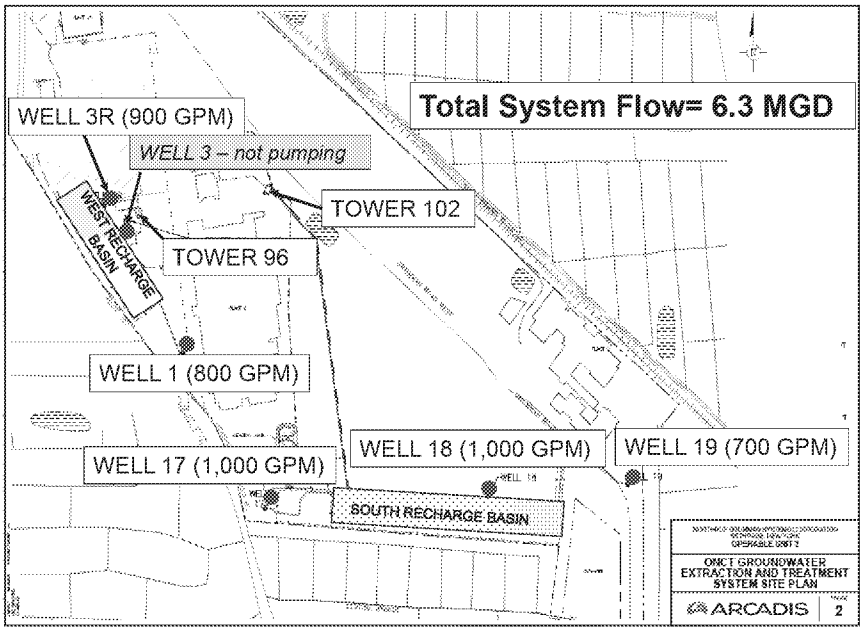
Total System Flow= 6.3 MGD
WELL 3R (900 GPM)
WELL 3 – not pumping
TOWER 102
TOWER 96
WEST RECHARGE BASIN
WELL 1 (800 GPM)
WELL 17 (1,000 GPM)
WELL 18 (1,000 GPM)
WELL 19 (700 GPM)
SOUTH RECHARGE BASIN
OMCT GROUNDWATER EXTRACTION AND TREATMENT SYSTEM SITE PLAN
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ONCT System OM&M

- Uptime & Performance for 3Q 2016
  - **T96 System: 99.5% uptime**

	% Uptime	% Design Flow Volume
• Well 1:	97	100
• Well 3R:	97	138

  - **T102 System: 99.9% uptime**

	% Uptime	% Design Flow Volume
• Well 17:	95	100
• Well 18:	94	157
• Well 19:	90	99

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ONCT System OM&M – cont'd

- Downtime due to alarm conditions, periodic system/well maintenance, and electrical and communications disruptions
  - Maintenance activities included: T96 blower repair and meter calibration, Well 19 VFD fan replacement
  - Repair of treated water distribution pipeline
  - Northrop Grumman has installed new communications system for more reliable and uninterrupted communications (August)
  - >99% treatment efficiency, discharge is compliant
- Cumulative Mass Removal
  - ~197,700 lbs VOCs removed from start up of ONCT System in 4Q 1998 through 3Q 2016

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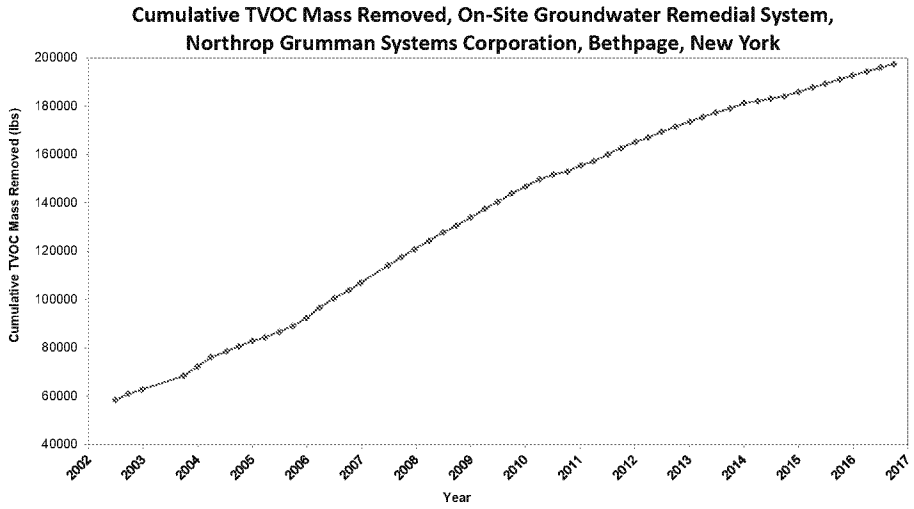
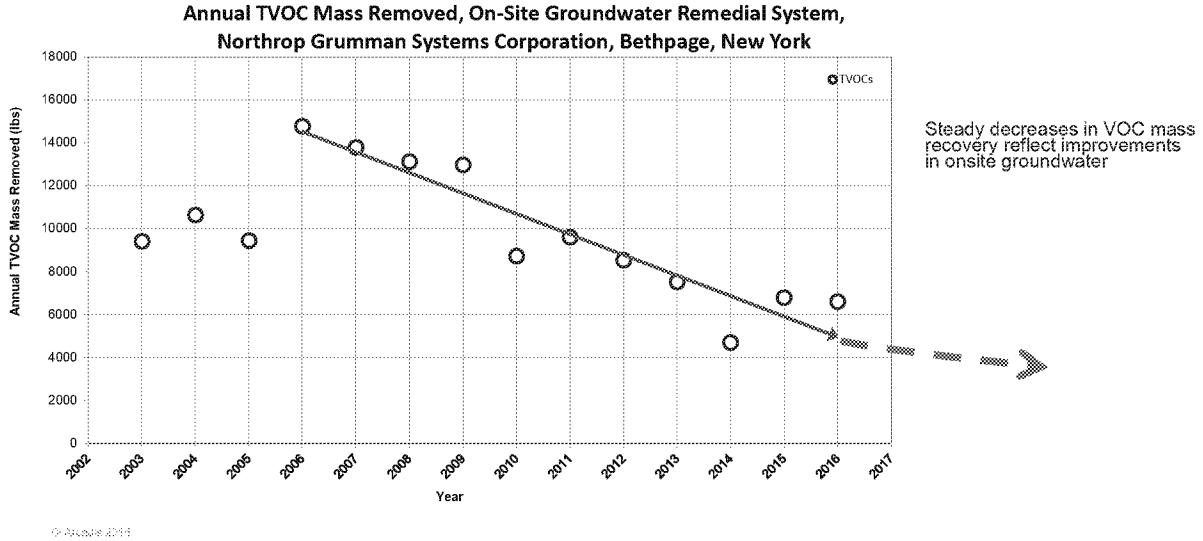
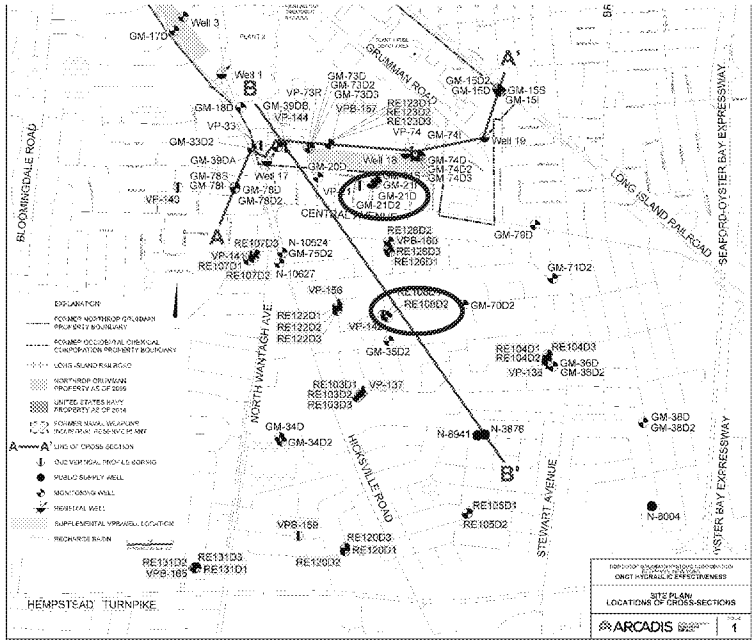

Cumulative TVOC Mass Removed, On-Site Groundwater Remedial System,
Northrop Grumman Systems Corporation, Bethpage, New York
Cumulative TVOC Mass Removed (lbs)
200000
180000
160000
140000
120000
100000
80000
60000
40000
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
Year

VOC Mass Removal ONCT (OU2)

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Well 3
GM-170
Well 1
GM-18D
GM-39DB
VP-144
VP-33
GM-33D2
GM-39DA
GM-78S
GM-78I
GM-78D
GM-78D2
VP-140
GM-73D
GM-73D2
GM-73D3
VP-73R
VPB-157
RE123D1
RE123D2
RE123D3
VP-74
GM-74I
GM-15D2
GM-15D
GM-15S
GM-15I
Well 19
Well 18
GM-74D
GM-74D2
GM-74D3
GM-20D
GM-21D
GM-21D2
CENTRAL
RE107D3
N-10524
GM-75D2
VP-141
RE107D1
RE107D2
N-10627
RE126D2
VPB-160
RE126D3
RE126D1
GM-79D
GM-71D2
VP-156
RE108D2
GM-70D2
RE122D1
RE122D2
RE122D3
GM-35D2
RE104D1
RE104D2
RE104D3
GM-36D
GM-38D2
VP-138
RE103D1
RE103D2
RE103D3
VP-137
GM-34D
GM-34D2
N-8941
N-3876
GM-38D
GM-38D2
RE105D1
RE105D2
N-8004
VPB-159
RE120D3
RE120D1
RE120D2
RE131D2
VPB-165
RE131D3
RE131D1
HEMPSTEAD TURNPIKE
BLOOMINGDALE ROAD
GRUMMAN ROAD
NORTH WANTAGH AVE
HICKSVILLE ROAD
STEWART AVENUE
LONG ISLAND RAILROAD
SEAFORD-OYSTER BAY EXPRESSWAY
OYSTER BAY EXPRESSWAY
A
A'
B
B'
EXPLANATION
LINE OF CROSS SECTION
PUBLIC SUPPLY WELL
MONITORING WELL
PERIMETER WELL
SITE PLAN
LOCATIONS OF CROSS-SECTIONS
1

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GM-21D2 Study

- Well GM-21D2 (January – October 2016)
  - GM-21D2 TVOCs continuing to decrease since February 2016
  - Since July 2016, rate of decline is less but still decreasing
  - Variability in GM-21D2 TVOCs inconsistent with nearby wells and is localized
  - GM-21D2 within ONCT capture zone
- Study results support continuing ONCT Effectiveness

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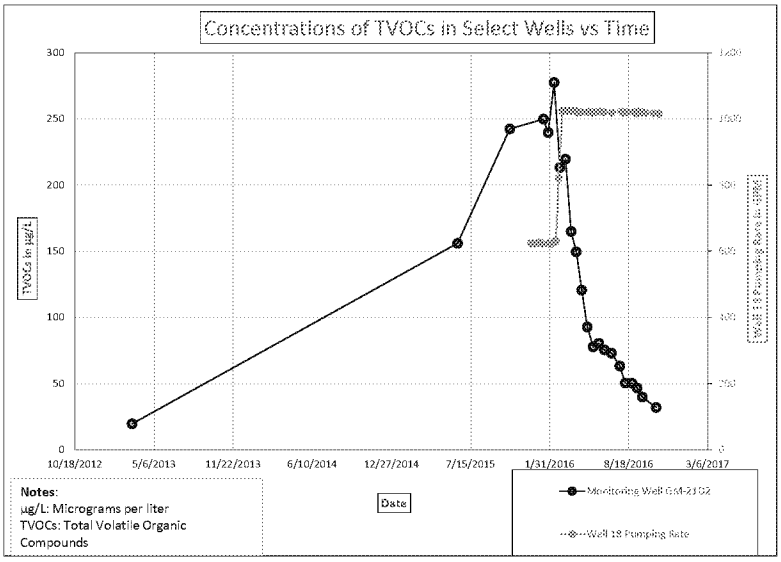
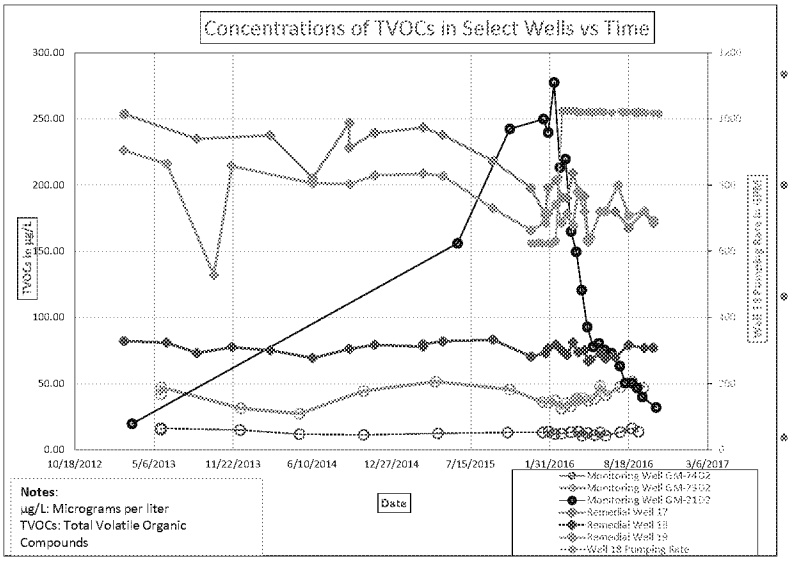
TVOC Trends in GM-21D2



Notes:
µg/L: Micrograms per liter
TVOCs: Total Volatile Organic Compounds

- TVOCs in GM-21D2 continuing to decrease since February 2016
- Since June 2016, rate of TVOC decline is less but still decreasing

TVOC Trends in GM-21D2/nearby wells



- TVOCs in GM-21D2 continuing to decrease since February 2016
- Since June 2016, rate of TVOC decline is less but still decreasing
- Water Quality Changes in GM-21D2 inconsistent with nearby wells and are localized
- GM-21D2 within ONCT capture zone

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GM-21D2 – Continued Monitoring

- Plan for continued monitoring following study
  - Changes in monitoring frequency:
    - Return to quarterly for Remedial Wells 17, 18, and 19
    - Return to semiannually for Monitoring Wells GM-73D2 and GM-74D2
    - Adjust GM-21D2 from biweekly to monthly
  - Well 18 flow rate maintained at 1000 gpm at this time

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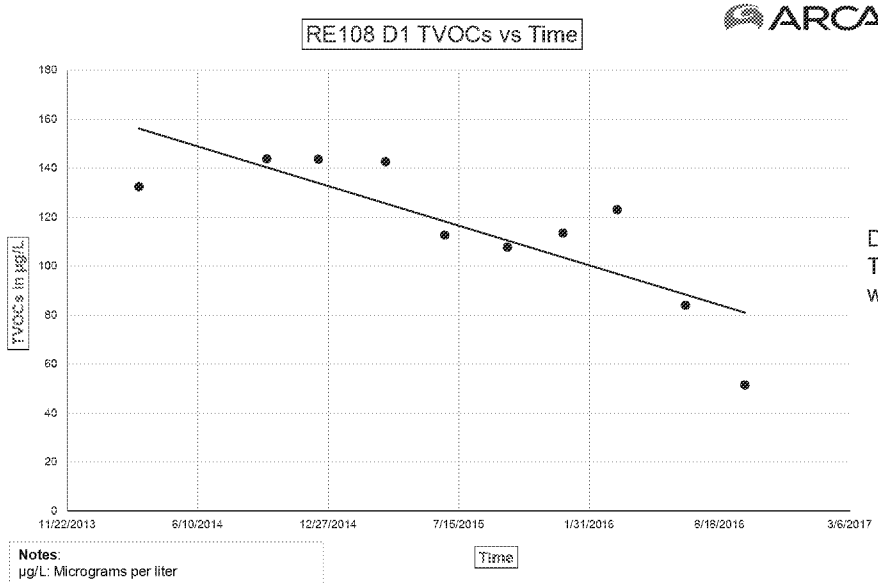

Declining trend of TVOCs at RE-108D1 well location

Notes:
µg/L: Micrograms per liter
TVOCs: Total Volatile Organic Compounds

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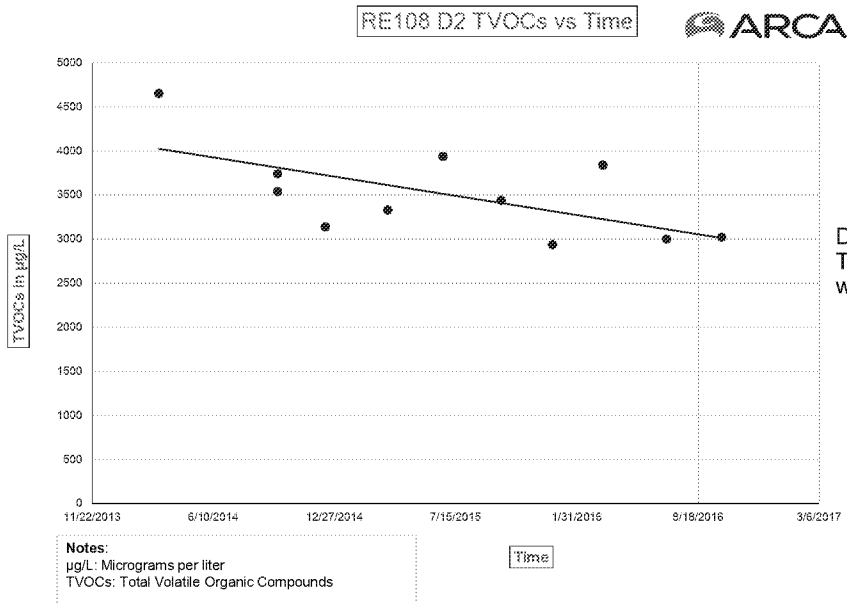

Declining trend of TVOCs at RE-108D2 well location

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Groundwater Monitoring

- Summary of TVOCs and 1,4-dioxane results for 2Q-2016 by Hydrogeologic Zone (73 wells sampled)

Range of TVOCs and 1,4-dioxane in samples collected in Second Quarter 2016		
Hydrogeologic Zone	**Range of TVOCs (µg/L)**	**Range of 1,4-dioxane (µg/L)**
Shallow	ND - 6.6	ND - 7.34
Intermediate	ND - 49.0	ND - 4.2
Deep	ND - 160	ND - 8.63
Deep 2	ND - 460	ND - 10.9
Deep 3	ND - 67.0	ND - 4.54

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Q2 2016 was an annual event

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Update on Northrop Grumman OU3 Activities

- Off-Site RW-21 Project Area
- OU-3 Activities (Park Soils)
- Other

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RW-21 Project Area Overview

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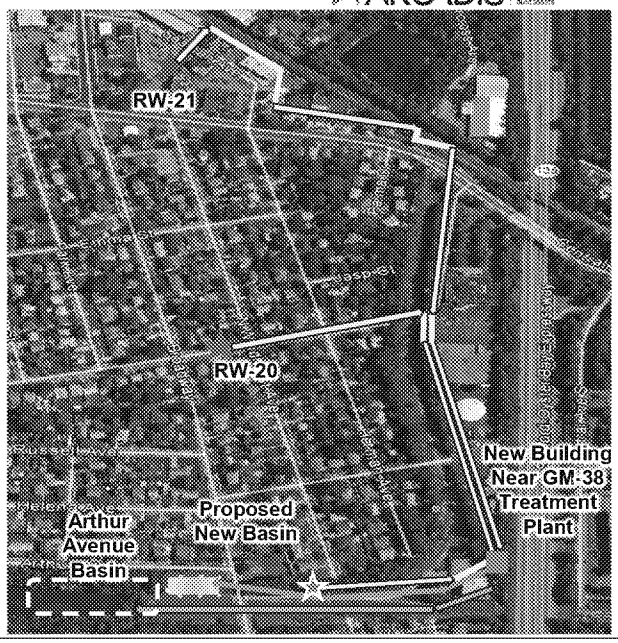
- NYSDEC- approved, TOB permitted well
- NYSDEC-approved, TOB permit-pending well
- Proposed treatment building
- Proposed buried treated water line and flow direction
- Proposed buried water line and flow direction
- Existing Navy GM-38 buried treated water line and flow direction



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Additional OU3 Activities (RW-21 Area Groundwater)

- Continue to communicate with residents and Town of Oyster Bay regarding upcoming work
- Remedial Well RW-20 approved by NYSDEC and waiting for TOB permit
- Remedial Well RW-21 installed and developed
- Remedial Well RW-22 installed and being developed
- VPBs 13, 14, 15 and 16 drilled/sampled
- MW 13, 14, 15 and 16 installed and sampled

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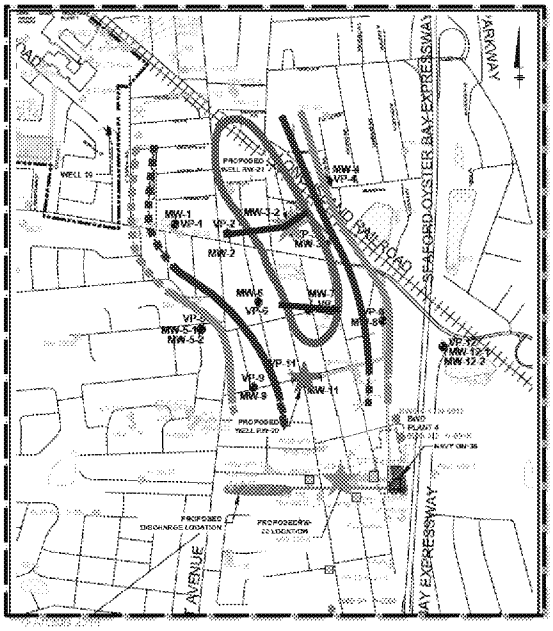

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RW-21 Project Area

Width of Area of Highest VOC Mass Discharge

Proposed Remedial Well

Approved Remedial Well

Approved Boring/Monitoring Well

Plume Contours, ug/L
500
1,000
5,000

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Key Elements of the RW 21 System

Three Groundwater Remedial Wells

- Below-ground vaults for wells installed to extract groundwater
- Groundwater pumped to treatment system in buried pipes

Treatment System

- Removes contamination from the groundwater
- Includes water and air treatment, and other required equipment

Discharge Pipe

- Clean water from treatment system pumped to new recharge basin near Arthur Avenue or to the existing basin on Arthur Avenue

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Additional OU3 Activities

- Hydraulic Effectiveness Study
  - Inspected two offsite wells, plan to abandon and replace
  - Drill additional VPBs and MWs as a follow up to first phase
- Residential Properties

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