Air Force Civil Engineer Center

FORMER
WILLIAMS AIR FORCE BASE

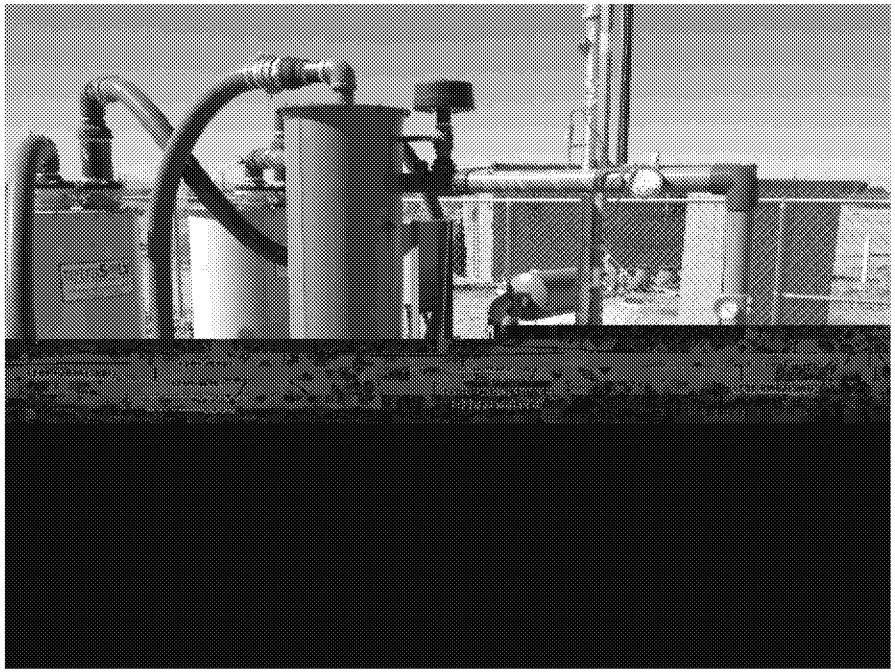
Site LF004 Landfill Remedial Action

BCT Conference Call
17 November 2016

Site LF004
Former AST SVE System Update

Operations Summary through 4 Nov 2016

- Installed vapor monitoring probe (VMP11-D) south of SVE6-D in Aug 2016.
- A groundwater sample collected approximately 5 ft. below the air water interface during drilling of VMP11-D indicated TCE concentrations of 0.24 µg/l in groundwater.
- Analytical data (Sep 2016) indicates TCE and PCE concentration remained below soil vapor goals (SVSLs) in all SVE wells and VMPs except SVE6-D (2.7 mg/m^3 vs 2 mg/m^3) and VMP11-D (13 mg/m^3 vs 2 mg/m^3)
- SVE6-D reconnected to SVE system in Oct 2016
- VMP11-D connected to SVE system on 12 Oct 2016. Initial PID reading decreased from 1,053 ppmv to 27 ppmv. Performance samples collected for laboratory analysis. 0.4 pounds removed since 12 Oct 2016



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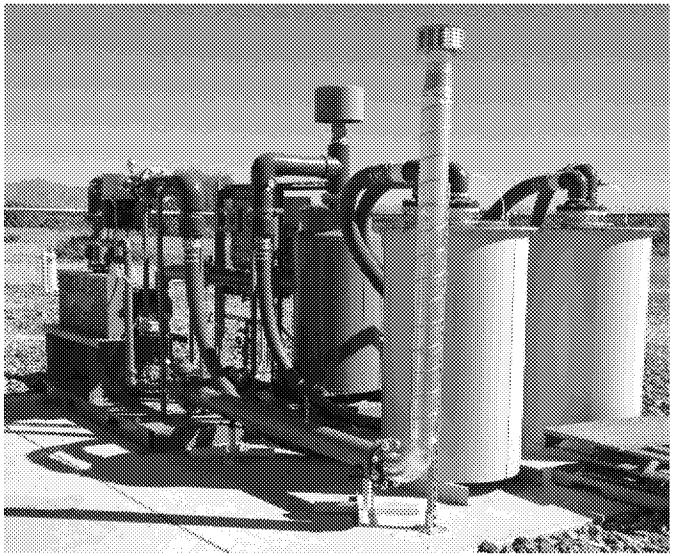
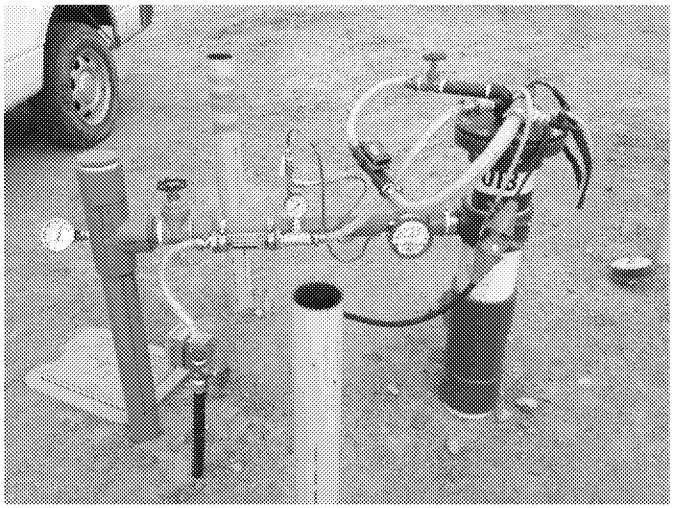
Site LF004
LF01-W17 Area IWAS System Update

Operations Summary through 4 Nov 2016

- Began operation 29 Aug 2014 (approximately 22 months of operation)
- Average 99% operational uptime for reporting period
- TCE and PCE concentrations in extracted vapor are 710 and 110 micrograms per cubic meter ($\mu g/m^3$), respectively (Sep 2016); extracted vapor concentrations remain low.
- Estimated 10.2 pounds of TCE and PCE removed by vapor extraction
- Oxidant injection at LF01-W30M completed in Aug 2016. Oxidant screening indicates residual oxidant concentrations of approximately 30 mg/L.
- All remediation wells operating except RW01A which is undergoing repairs

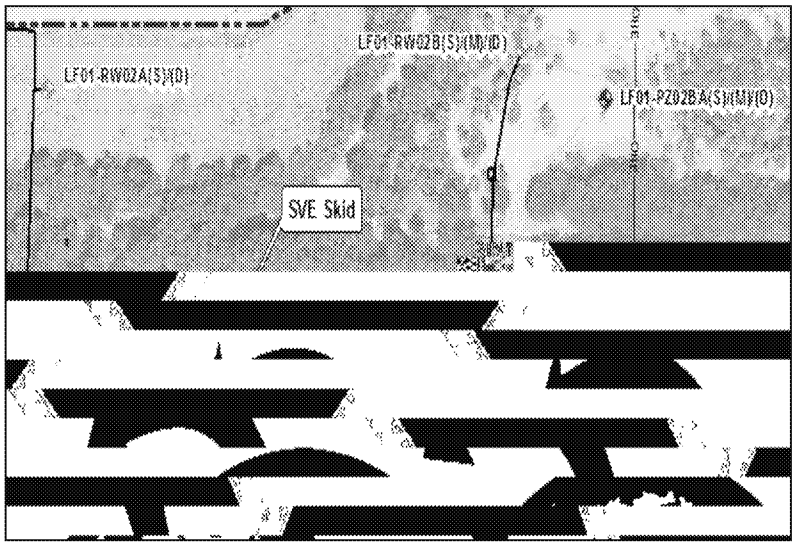




Site LF004
Southern Area Oxidant Injection

Activity Summary through 4 Nov 2016

- Began operation 15 Sep 2014 (approximately 22 months of operation)
- Field screening of residual oxidant ongoing
- Last injection completed week of 27 Feb 2016 at LA06-S and W19-S
- Oxidant concentrations continue to range from 1 to 125 mg/L in LF01-W19 area and 1 to 200 mg/L in LF01-W17 area



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LF004 Remediation System Recent and Upcoming Activities

- Operation of IWAS and Southern Area remediation wells will continue
- Focused extraction at SVE6-D and VMP11-D (AST) by SVE system
- Completed quarterly soil vapor sampling in Nov 2016
- Groundwater semi-annual sampling event complete in Nov 2016
- Posting of analytical data to Sharepoint will continue as results are available (last update – 25 Oct 2016)
- LF004 Operating Properly and Successfully report under AF review. Anticipated submittal is Nov 2016.

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Site ST012

Former Liquid Fuel Storage Area

BCT Conference Call

17 November 2016

Site ST012 Outline

- **Summary of Activities Since October BCT Call**
- **LNAPL Monitoring Update**
  - **LNAPL Gauging/Removal**
- **Field Variance Memorandum Status/ Implementation**
  - **FVM4 - Additional Characterization Status**
  - **FVM5 - Containment Status**

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Site ST012 Activities Since October

- Continued SVE operation
- Continued LNAPL screening in accessible SEE wells and newly installed EBR wells
- Eductors removed from remaining wells. Initial LNAPL screening and removal ongoing
- Began installation of additional characterization locations
- Began construction of containment system

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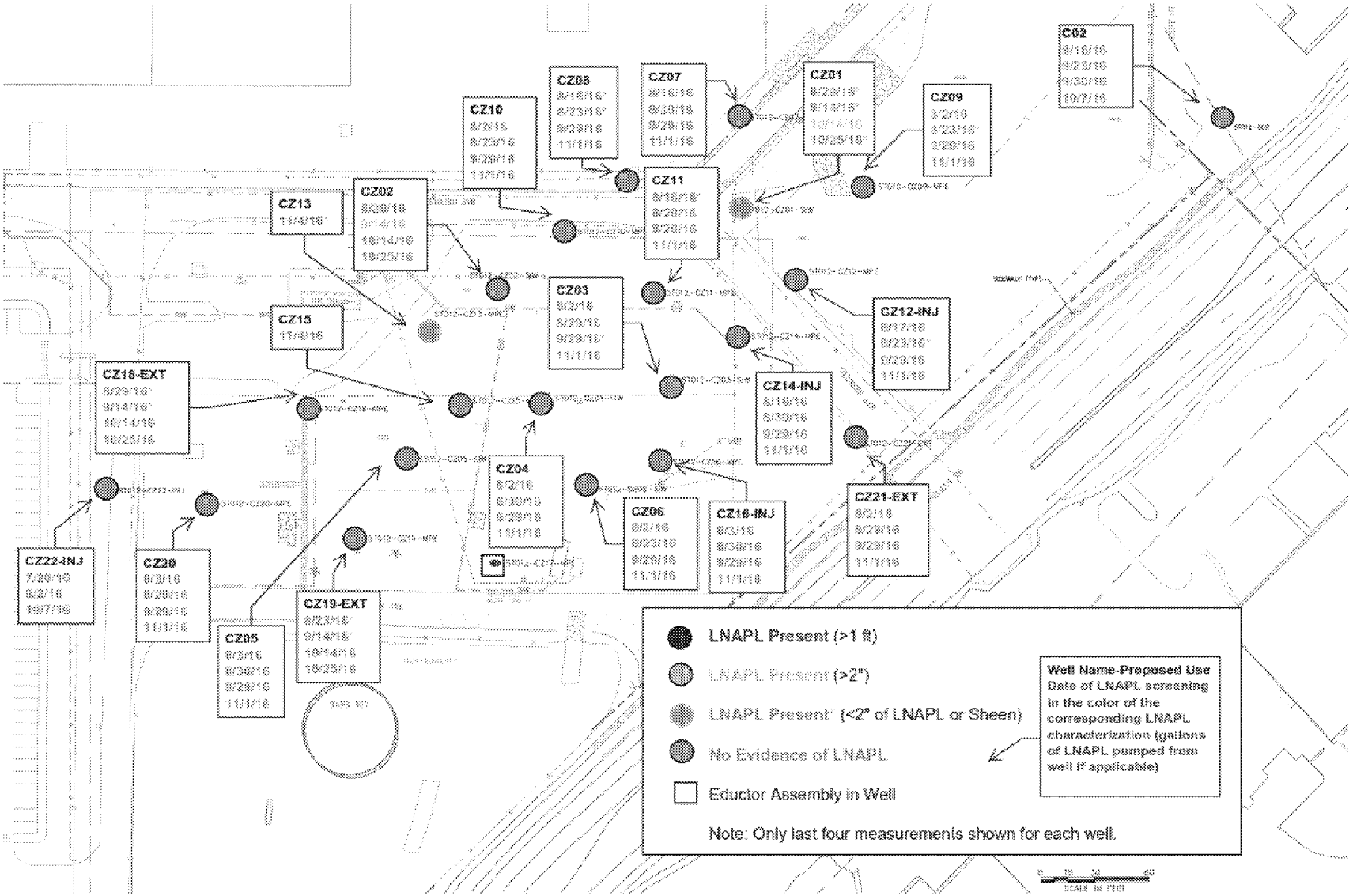
LNAPL Monitoring Update

LNAPL Monitoring/Removal Status Cobble Zone (as of Nov 4, 2016)



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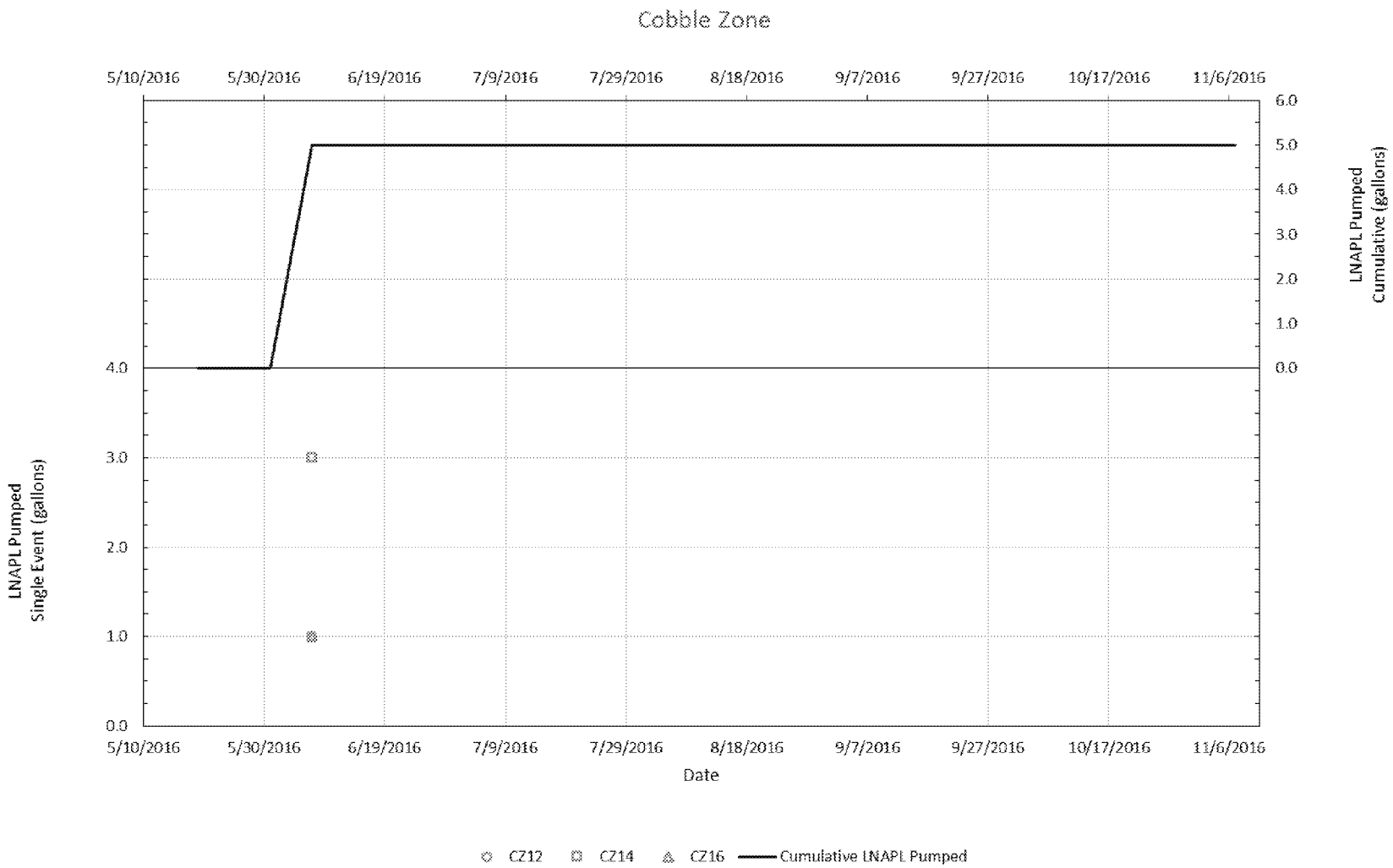
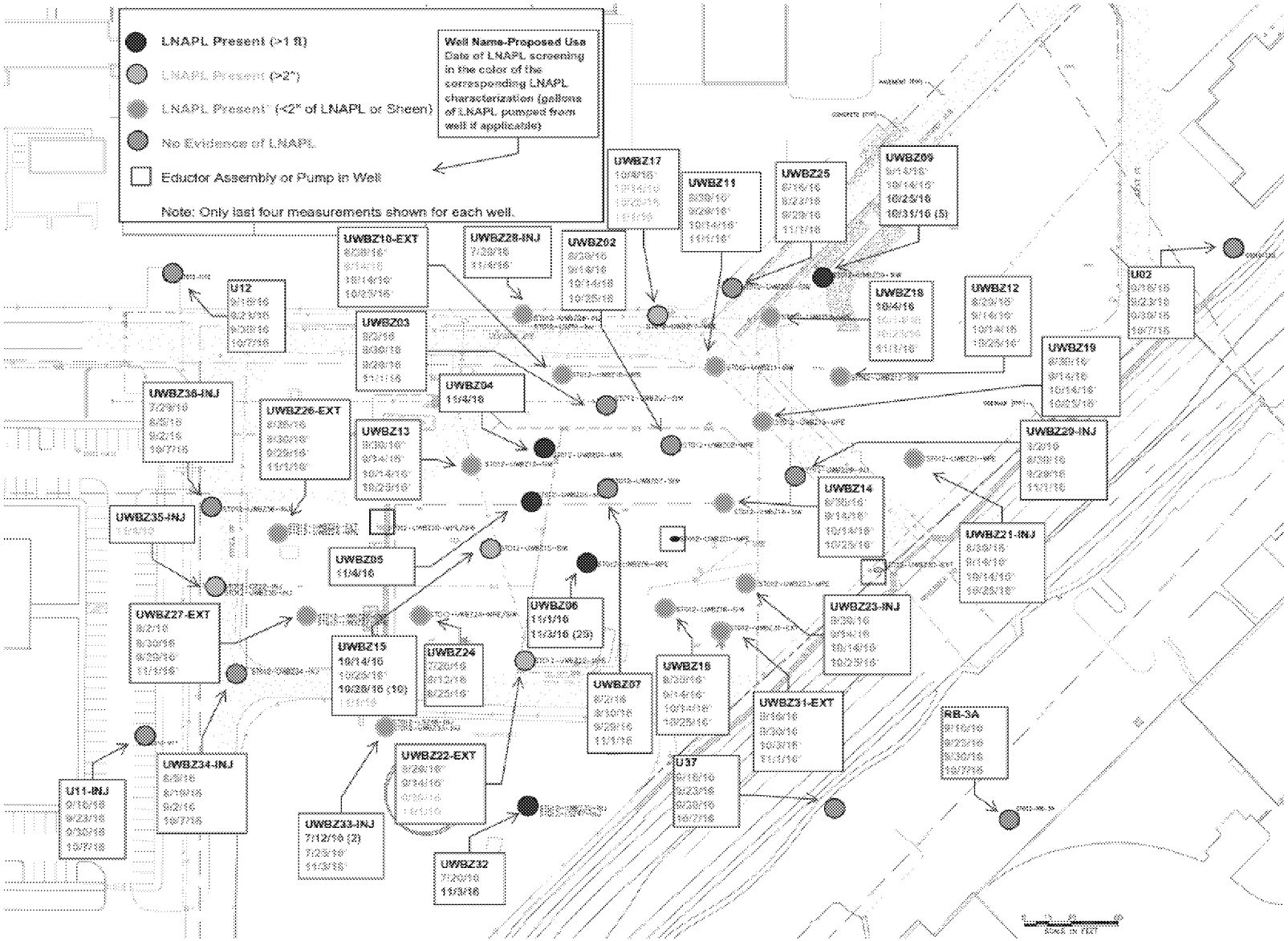
LNAPL Monitoring/Removal Status Cobble Zone (as of Nov 4, 2016)



LNAPL Monitoring/Removal Status Upper Water Bearing Zone (as of Nov 4, 2016)



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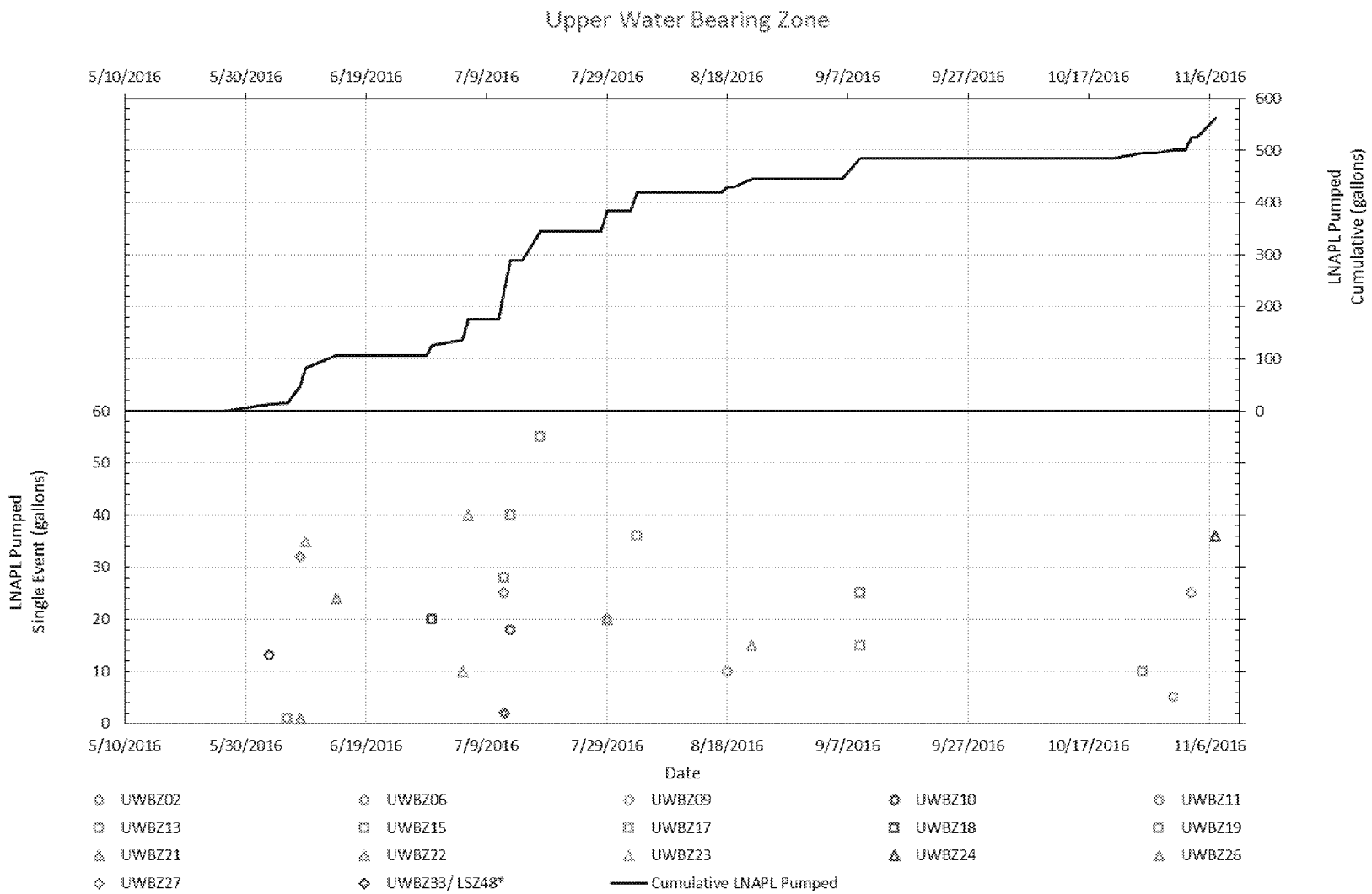
LNAPL Monitoring/Removal Status Upper Water Bearing Zone (as of Nov 4, 2016)



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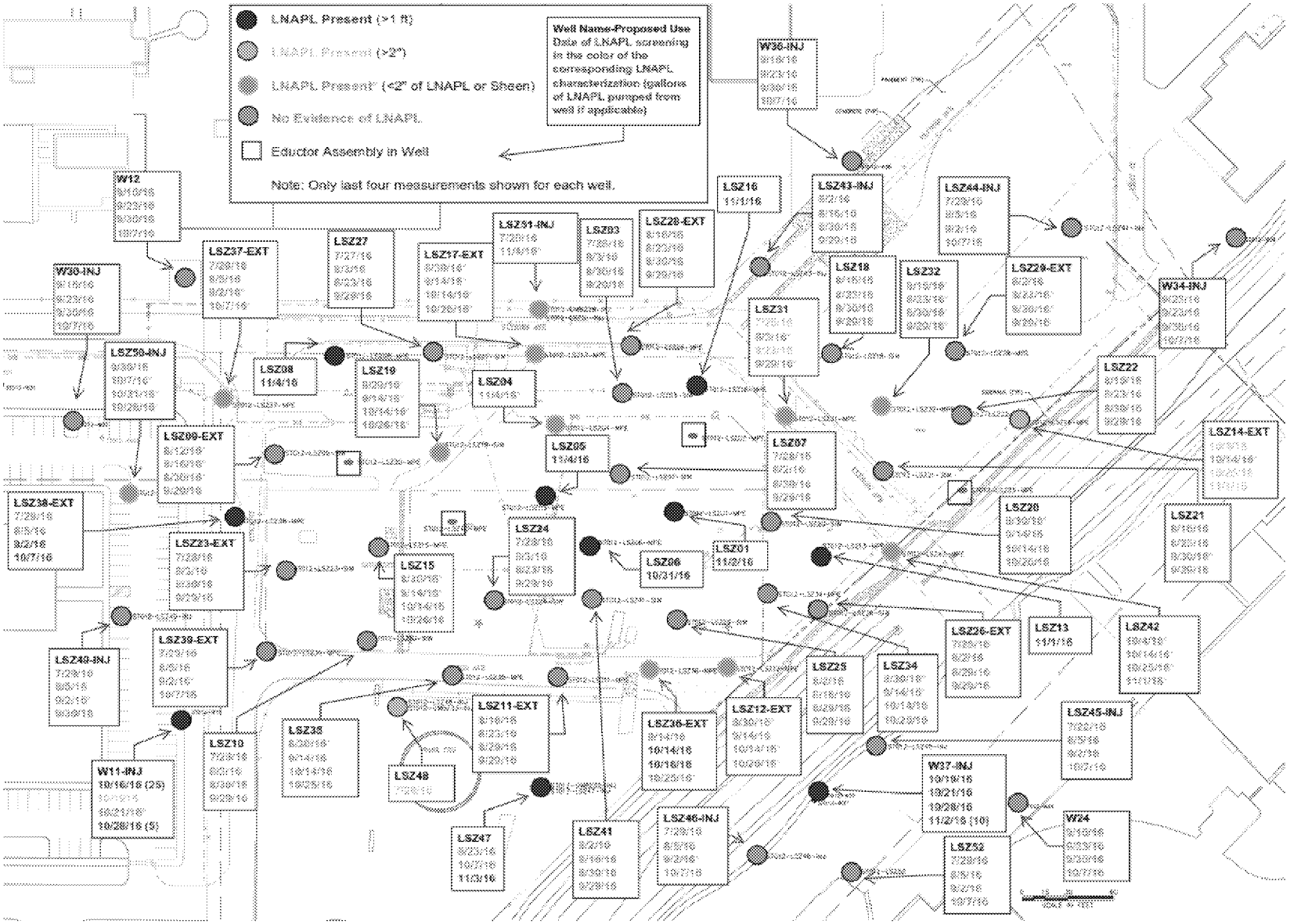
LNAPL Monitoring/Removal Status Lower Saturated Zone (as of Nov 4, 2016)



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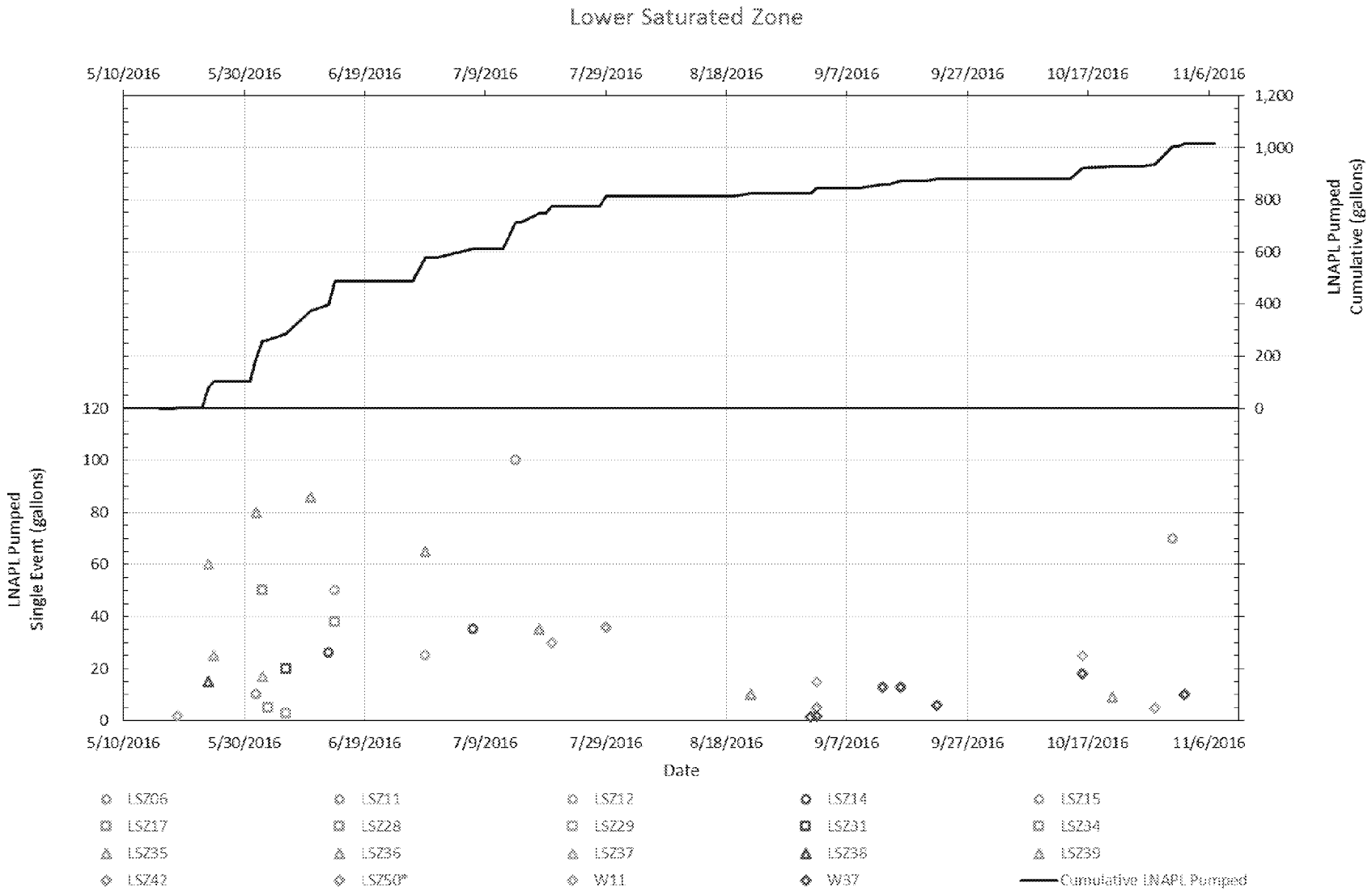
LNAPL Monitoring/Removal Status Lower Saturated Zone (as of Nov 4, 2016)



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ST012 LNAPL Monitoring/Removal Summary

- CZ – ~5 gallons of LNAPL removed. None removed since early June
- UWBZ - ~575 gallons of LNAPL removed. Most LNAPL was removed during initial screening (through July) with a recent increase following eductor removals (~100 gallons).
- LSZ - ~1,000 gallons of LNAPL removed. Most LNAPL was removed during initial screening (through July) with a recent increase following eductor removals (~150 gallons).

ST012
Field Variance Memorandum Status

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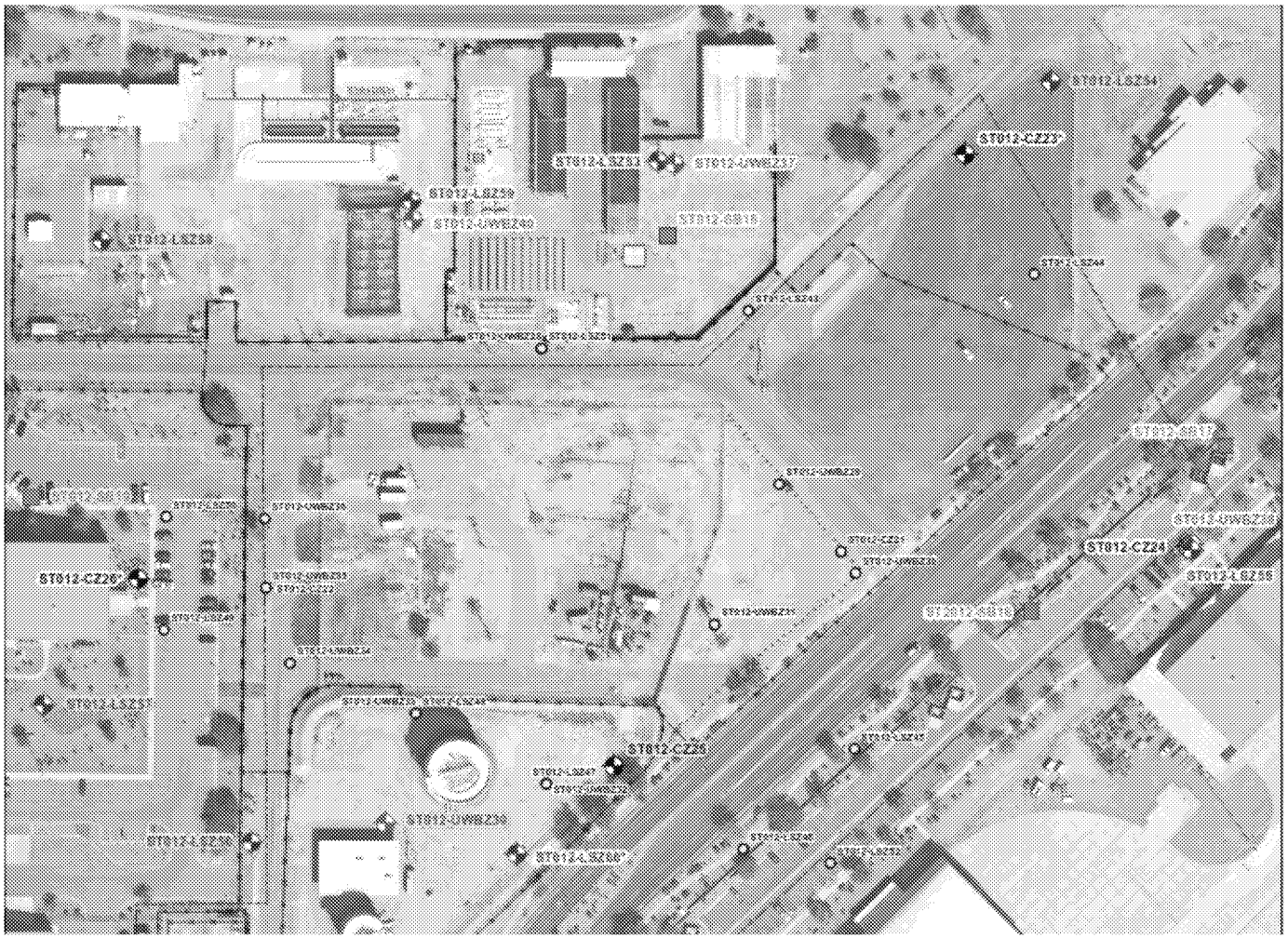
ST012 Field Variance Memorandum Status

- Final FVMs being prepared with Responses to Comments
- Mobilization and field activities started on 24 October 2016; regulatory comments will be accommodated or further evaluated based on Phase 2 results

ST012 FVM4 - Additional Characterization

- Driller selected
- Notices of Intent obtained
- Arizona Blue Stake and private utility clearances completed
- Air knifing started on 21 October 2016 and is being completed in batches
- Drilling started on 24 October 2016

Additional Characterization Drilling Status



Legend

Proposed Characterization Investigation

- Upper Water-Bearing Zone Groundwater Monitoring Well Location
- Cobble Zone Groundwater Monitoring Well Location
- Lower Saturated Zone Groundwater Monitoring Well Location
- Soil Boring Location

Existing Features

- EBR Well Location
- Fence Line
- ST012 Site Boundary

Notes:

* Installation of well is contingent on additional sampling. See Drilling Plan table for details.

ST012-LSZ43 Well Identification

EBR Enhanced Bioremediation

Yellow highlighted wells have been installed

ST012 FVM4 - Additional Characterization

- **The following locations have been completed**
  - **ST012-CZ25 – No significant PID readings; well installed as planned (145-160 ft bgs)**
  - **ST012-UWBZ39 – Highest PID reading at bottom of CZ (160 ft bgs, 17.8 ppmv in low permeability geology); no significant PID readings in UWBZ well installed as planned (175-195 ft bgs)**
  - **ST012-LSZ54 – No significant PID readings; well installed as planned (205-230 ft bgs)**
  - **ST012-LSZ56 - No significant PID readings; well installed as planned (205-230 ft bgs)**
  - **ST012-LSZ57 – Low level PID readings > 15 ppmv suspect; well installed as planned (205-230 ft bgs)**
  - **ST012-LSZ58 - No significant PID readings; well installed as planned (205-230 ft bgs)**
  - **ST012-SB19 - PID readings as high as 1,426 ppmv and positive dye tests; well not installed**

ST012 FVM5 - Containment

- **Construction Progress**
  - **Construction contractor remobilized week of 24 Oct 2016**
  - **Control panel/instrumentation shipment received**
  - **Field piping to wells completed and pressure tested**

ST012 FVM5 - Containment

- **Construction Progress**
  - Variable Frequency Drives installed at wellheads
  - Treatment equipment positioned on concrete pad
  - Submersible pump installation in progress

ST012
Path Forward

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Site ST012 Path Forward

- Continue SVE operation with flame oxidizer and thermal oxidizer
- Continue monitoring/pumping of LNAPL in SEE and perimeter wells (focus on removal of LNAPL from wells that had eductors)
- Continue with additional characterization
  - Soil borings/well installation ongoing (drilling plan on next slide)
  - Well development - estimated well development complete by mid to late December
  - Well sampling - groundwater sample collection in early January

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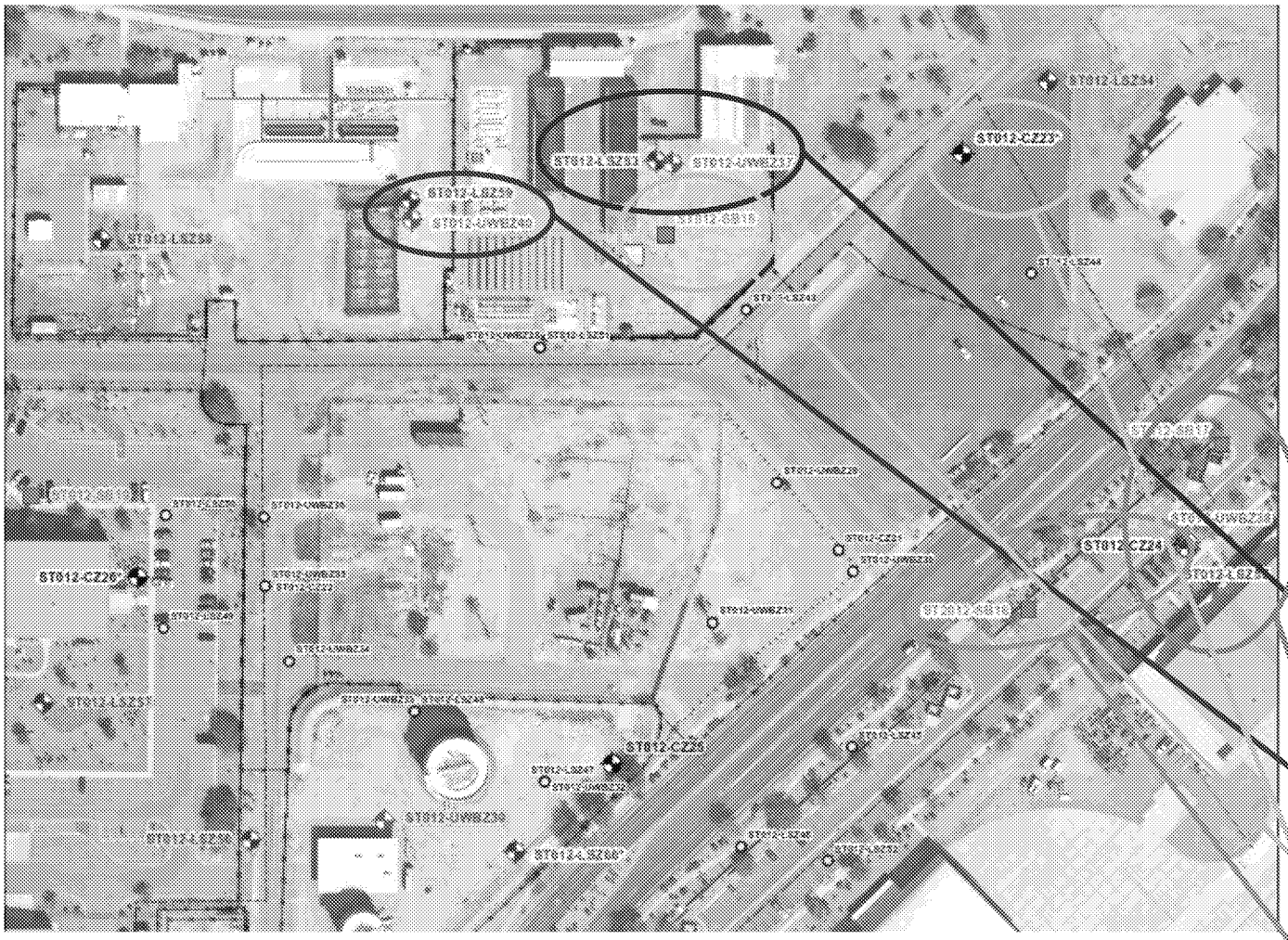
Additional Characterization Drilling Plan



Legend

Proposed Characterization Investigation

- Upper Water-Bearing Zone Groundwater Monitoring Well Location
- Cobble Zone Groundwater Monitoring Well Location
- Lower Saturated Zone Groundwater Monitoring Well Location
- Soil Boring Location

Existing Features

- EBR Well Location
- Fence Line
- ST012 Site Boundary

Notes:

* Installation of well is contingent on additional sampling. See Drilling Plan table for details.

ST012-LSZ43 Well Identification

EBR Enhanced Bioremediation

Yellow highlighted wells have been installed

Installing Now:

- **UWBZ37/LSZ53**

Installing week of 19 Nov

- UWBZ38/LSZ55,SB-17

Installing week of 28 Nov

- **UWBZ40/LSZ59**

Installing week of 3 Dec

- SB-16

Installing week of 20 Dec

- CZ-24, SB-18

1. Drilling order may be modified.

Site ST012 Path Forward

- **Construct containment**
  - **Finish plumbing treatment equipment**
  - **Complete pump installation**
    - Relocate pumps if necessary base on temperature evaluations
  - **Complete electrical/control system**
  - **Commissioning**
  - **Estimated to be operational by early to mid Jan 2017**

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2016 BCT MEETINGS/CONFERENCE CALLS SCHEDULE

BCT Conference Call

17 November 2016

ACTION ITEMS

BCT Conference Call

17 November 2016