
Overview of the Second Quarter 2016 Surveillance and Maintenance Report for the LM Rocky Flats Site

April–June 2016

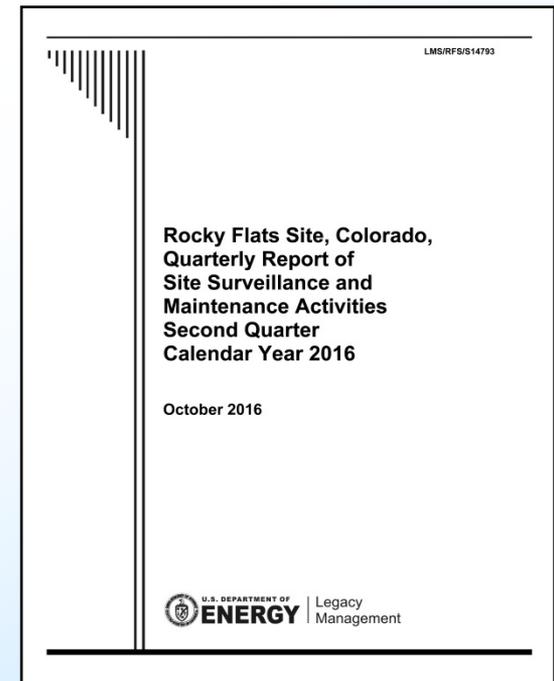


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Quarterly Monitoring and Reporting

- Quarterly reports are required under the *Rocky Flats Legacy Management Agreement* (RFLMA), to document that the CERCLA remedy continues to be protective
 - Primary goal: Surface-water protection
- Response action under the final remedy for Rocky Flats
 - Maintain two landfill covers
 - Maintain four groundwater treatment systems
 - Monitor surface water and groundwater
 - Maintain physical controls
 - Signage
 - Access restriction
 - Enforce institutional controls
 - No building construction or occupation
 - Excavation and soil-disturbance restrictions
 - No surface-water consumption or agricultural use
 - No groundwater wells, except for monitoring
 - Landfill covers and engineered remedy-components protection



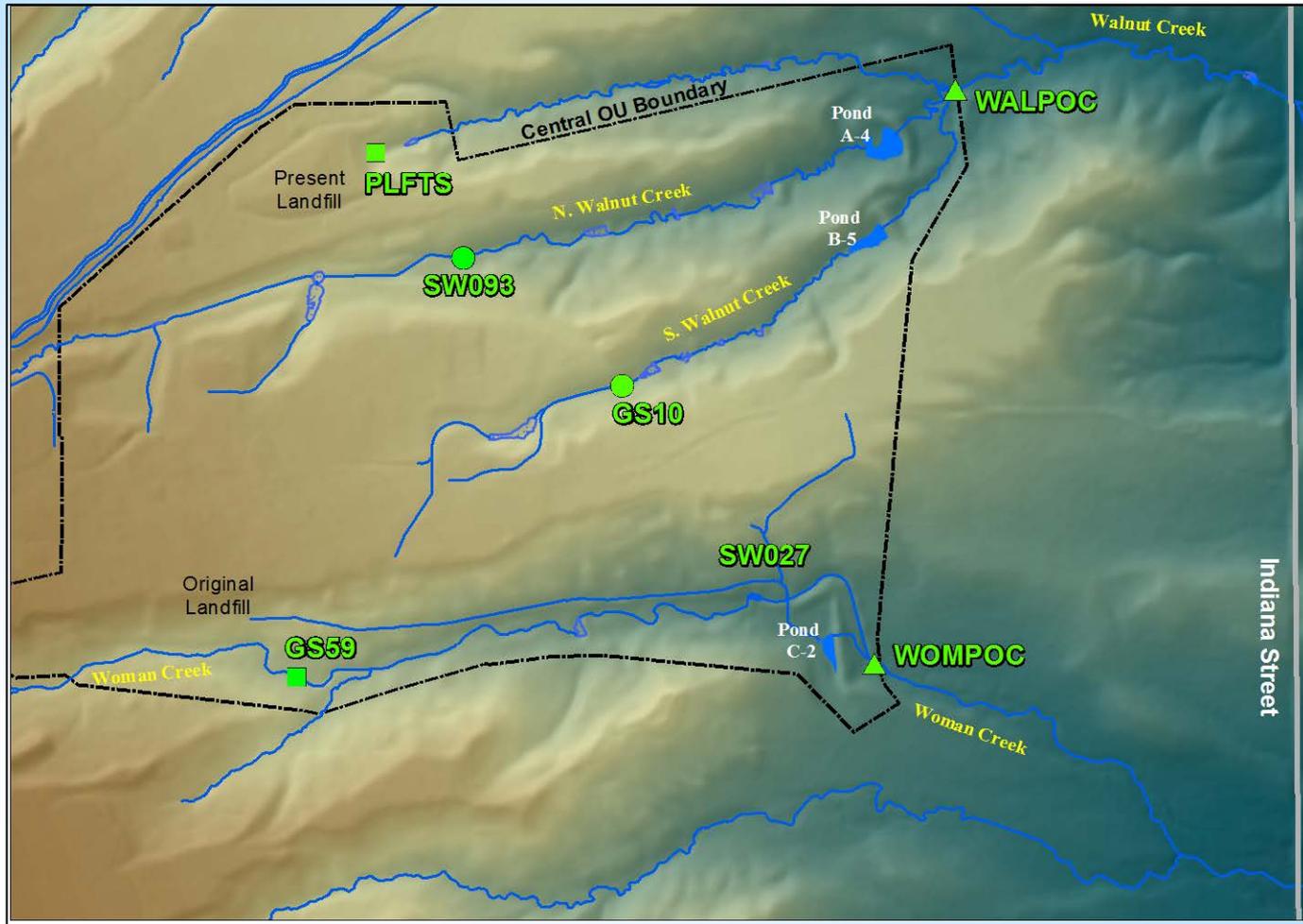
Surface-Water Monitoring



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Select RFLMA Surface-Water Monitoring Locations



Original Landfill (OLF) Performance Monitoring

- OLF (location GS59)
 - During the 2016 second quarter, when routine surface-water sampling was performed in Woman Creek, downstream of the OLF (GS59), the mean concentrations for all analytes were below the applicable surface-water standards



Present Landfill (PLF) Performance Monitoring

- PLF (location PLFSYSEFF)
 - Routine second-quarter sampling showed one analyte above the applicable RFLMA standard
 - Vinyl chloride concentration was 0.27 µg/L, exceeding the practical quantitation limit of 0.2 µg/L
 - Per RFLMA evaluation protocols, the result triggered a sampling frequency increase from quarterly to monthly
 - For the following monthly sample, vinyl chloride was not detected
 - Per RFLMA evaluation protocols, sampling frequency returned to quarterly



Point of Evaluation (POE) Monitoring

- Location SW027: 12-month rolling averages for plutonium (Pu) and americium (Am): Reportable as of April 30, 2015, and June 30, 2015, respectively
 - As of the end of the second quarter 2016, 12-month rolling averages were:
 - Pu 0.18 pCi/L and Am 0.20 pCi/L; standard is 0.15 pCi/L
 - Very little flow during the second quarter of 2016
 - RFLMA Contact Record (CR) 2015-05 (July 8, 2015); mitigating actions included enhancing upstream erosion controls
 - Concentrations at downstream location WOMPOC are not reportable
- No other RFLMA POE analyte concentrations were reportable during the second quarter of 2016



POC Monitoring

- All RFLMA POC analyte concentrations remained below reportable levels throughout the second quarter of 2016



Questions?



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Groundwater Monitoring and Operations



Second Quarter 2016



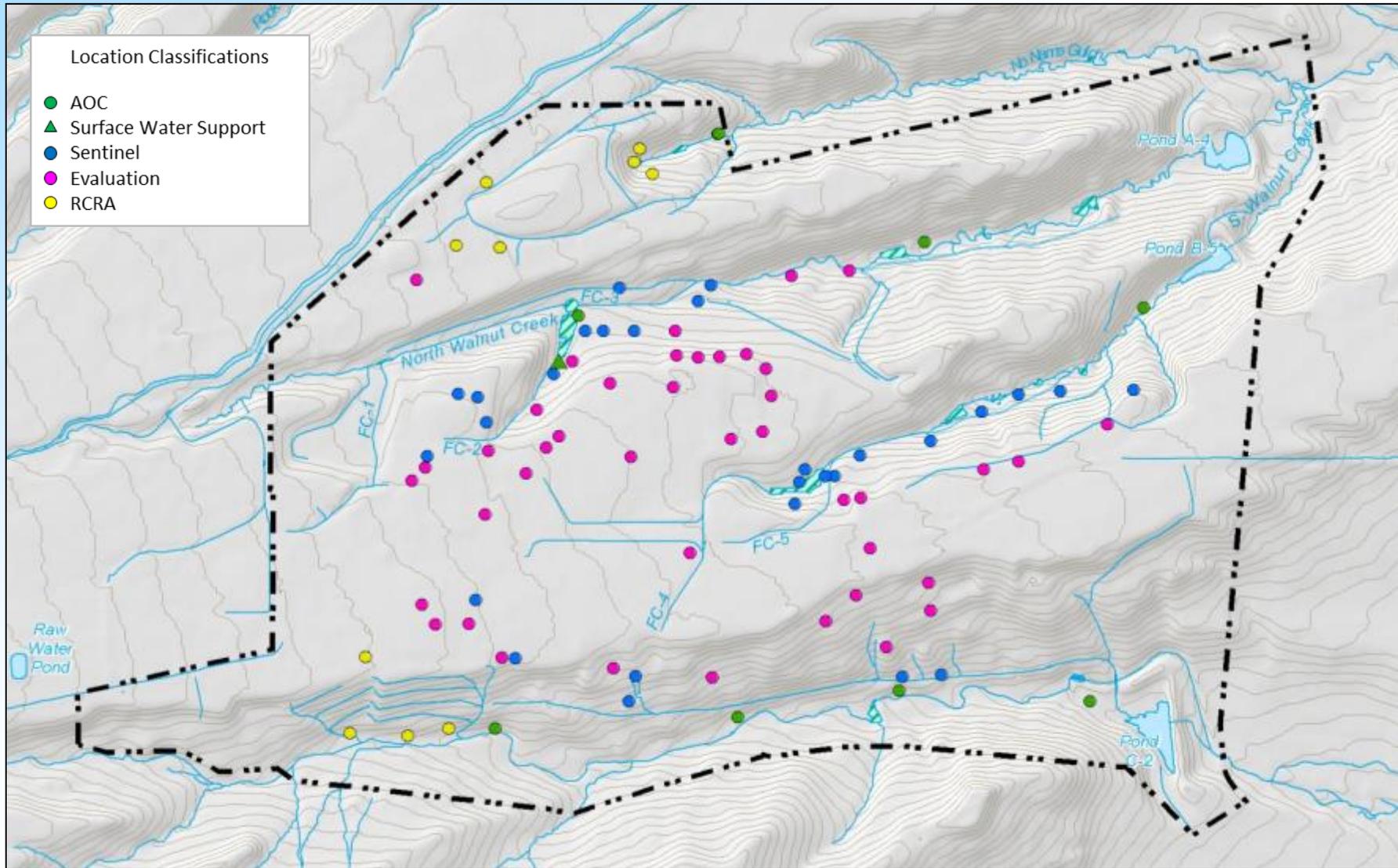
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RFLMA Monitoring

- Heaviest sampling period: Second quarter of even-numbered years
 - 10 Resource Conservation and Recovery Act (RCRA) wells (quarterly)
 - Evaluate for impacts from OLF, PLF
 - 9 Area of Concern (AOC) wells and 1 Surface-Water Support location (semiannually)
 - Drainages downstream of contaminant plumes
 - Evaluate for plumes discharging to surface water
 - 27 Sentinel wells (semiannually)
 - Downgradient of treatment systems, edges of plumes, in drainages
 - Look for plume migrating to surface water, treatment system problems
 - 42 Evaluation wells (biennially)
 - Within plumes, near source areas, interior of Central Operable Unit (COU)
 - Evaluate whether monitoring of an area/plume can cease
 - 9 treatment system locations (semiannually)
 - PLF Treatment System (PLFTS) discussed separately





NOTE: Groundwater treatment system locations omitted for clarity.

RFLMA Monitoring (continued)

- RCRA wells
 - Results consistent with previous data
 - Will be evaluated as part of the 2016 annual report
- AOC wells
 - Results consistent with previous data except at one well
 - Well 10304 (Woman Creek) remains reportable for trichloroethene (TCE)
 - RFLMA standard is 2.5 µg/L
 - Concentration in second quarter 2016 sample: 49 µg/L
 - Reportable since fourth quarter 2015—See CR 2015-10
 - Woman Creek location SW10200 sampled at same time, per CR 2015-10
 - TCE not detected in surface-water sample
 - SW10200 will continue to be sampled with well 10304 until the well is no longer reportable for TCE
 - More discussion will be provided in the 2016 annual report



RFLMA Monitoring (continued)

- Surface-Water Support location SW018
 - Results consistent with previous data
- Sentinel wells
 - Results generally consistent with previous data
 - Will be evaluated as part of the 2016 annual report
- Evaluation wells
 - Results generally consistent with previous data
 - More discussion will be provided in the 2016 annual report



RFLMA Monitoring (continued)

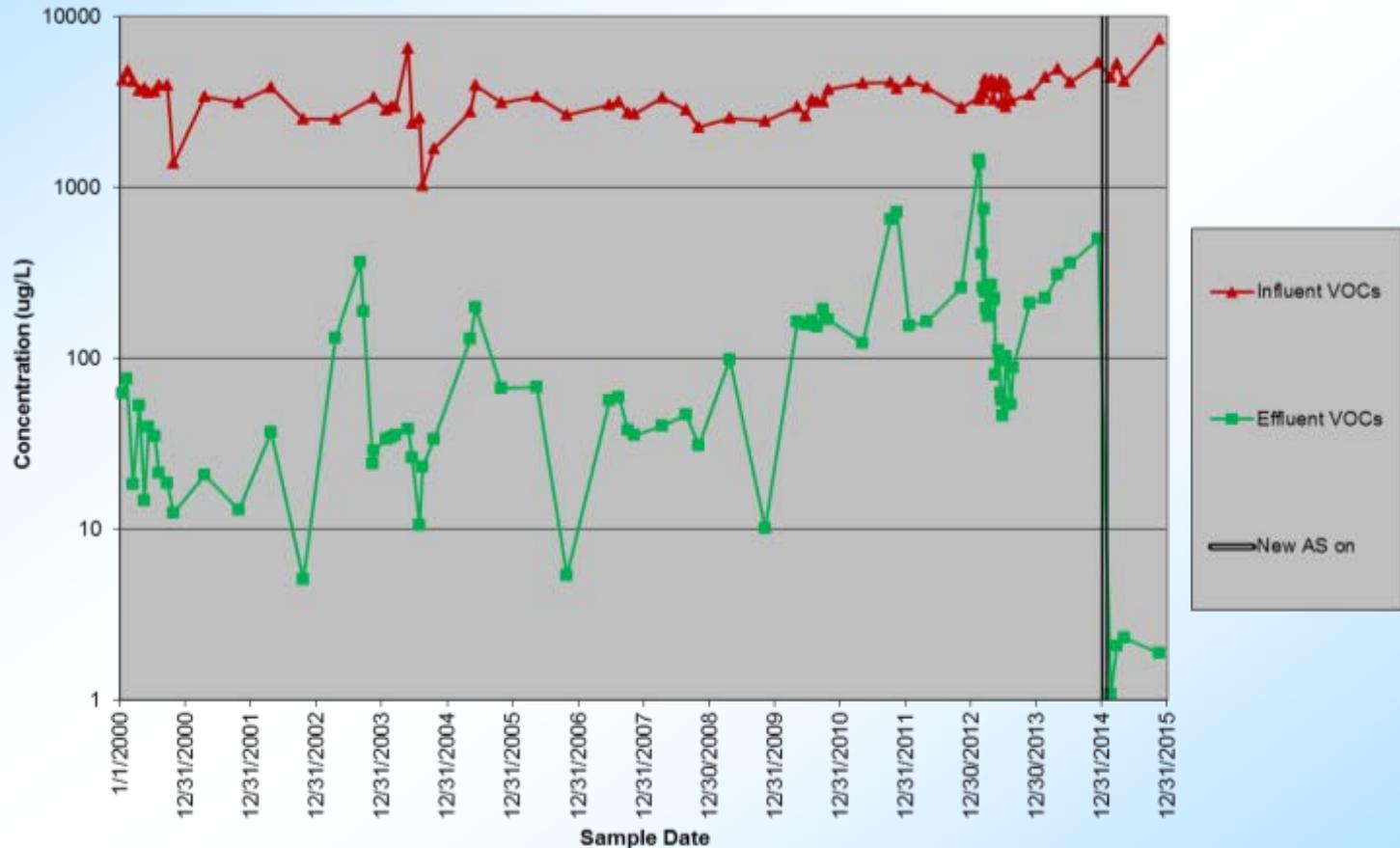
■ Treatment system locations

- Influent, effluent, and surface water performance locations
 - Solar Ponds Plume Treatment System (SPPTS)
 - Sampled and then taken offline for reconfiguration project (April–July)
 - Results showed a need for reconfiguration
 - Mound Site Plume Treatment System (MSPTS)
 - Sampled and then taken offline for reconfiguration project (June–September)
 - Results showed reduced effectiveness (oxidized zero-valent iron [ZVI], shortened residence time due to higher spring flows)
 - East Trenches Plume Treatment System (ETPTS)
 - Results showed excellent treatment
 - TCE in effluent slightly above target (3.1 µg/L vs. 2.5 µg/L)
 - No volatile organic compounds (VOCs) detected in sample from performance location POM2
 - Adjusted, resampled in third quarter; met RFLMA targets



RFLMA Monitoring (continued)

- ETPTS: Total VOCs detected in influent vs. effluent through 2015



- Second quarter 2016 data: Influent 6633 $\mu\text{g/L}$, 6381 $\mu\text{g/L}$ (2nd, 4th highest ever); effluent 4.21 $\mu\text{g/L}$, 3.34 $\mu\text{g/L}$ (lower than all pre-reconfiguration results)

Treatment System Activities

- SPPTS Reconfiguration Project
 - SPPTS taken offline April 11, 2016
 - “Big Box” and Phase II uranium treatment cell emptied
 - Big Box converted to full-scale, interim test lagoon for nitrate treatment
 - New “sidecar” vault installed to support uranium treatment testing
 - Identified probable subsurface plumbing leak outside Big Box during the project
 - Faulty pipe connection
 - Not related to the reconfiguration project
 - Excavated and replaced
 - Project completed and flow through Big Box lagoon established on July 28, 2016 (third quarter)



Treatment System Activities (continued)

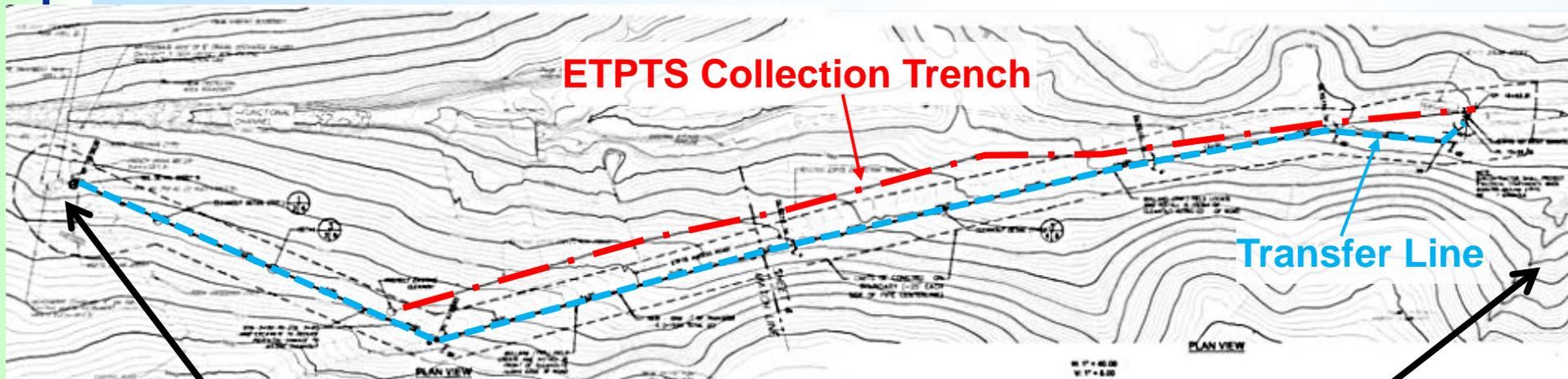
■ MSPTS Reconfiguration Project

- MSPTS taken offline June 27, 2016
- Project to include work at MSPTS, ETPTS, and in between
 - Remove ZVI from MSPTS treatment cells, convert cells to backup storage tanks
 - Remove unnecessary MSPTS plumbing, replace with simplified configuration
 - Remove MSPTS effluent manhole, replace with lift station
 - Install transfer pipeline from lift station at MSPTS to ETPTS influent manhole
 - Replace battery box and batteries at MSPTS
 - Install pump and instrumentation in lift station
 - Install additional solar capacity and batteries at ETPTS to provide additional power during wet years
 - Replace ETPTS effluent pump with higher-flow unit to keep up with greater volume of water treated



Treatment System Activities (continued)

- MSPTS transfer pipeline: Design overview



MSPTS cells

ETPTS cells
(off the edge
of the drawing)



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Treatment System Activities (continued)

■ ETPTS

- Routine maintenance
 - Power-facility checks
 - Air-stripper checks
 - Effluent pumping
- Work to support MSPTS Reconfiguration Project
- Adjustments to improve treatment
 - Reconfigured ETPTS allows operational adjustments
 - Original ZVI-based treatment did not allow similar adjustments
 - Could only adjust flow rates and flow configuration, replace media, construct additional treatment cells
 - Even with fresh ZVI media, did not consistently achieve treatment to all RFLMA standards



Questions?



Site Operations



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Annual Inspection

- Scope: Inspect the site and monitor for evidence of significant erosion and violation of institutional controls
- Conducted on April 13, 2016
- No evidence of institutional or physical controls violations
- Minor, insignificant depressions noted
- Debris and trash picked up
- On March 28, 2016, it was verified that the Environmental Covenant for the COU remains in the *Administrative Record* and on file with Jefferson County



Quarterly Sign Inspections

- RFLMA physical control
- All signs are in good condition



Site Operations – OLF

- Performed three monthly inspections
 - April 20, May 18, and June 21, 2016
 - One weather-related inspection coincided with the April 20 monthly inspection due to a precipitation event producing more than 1 inch of rain in a 24-hour period
- Monitored eight settlement monuments
 - Vertical settling at each monument within limits
- National Renewable Energy Laboratory (NREL) reported 5.85 inches of precipitation for second quarter of 2016
- OLF cover showed signs of movement in approximately the same locations as those repaired in 2015
 - Southeast corner below the eastern end of Berm 6
 - Much less movement than observed in 2015
 - Most movement well outside of the waste footprint



Site Operations – PLF

- Performed one quarterly inspection (June 21, 2016) and one weather-related inspection for precipitation events producing more than 1 inch of rain in a 24-hour period (April 20, 2016)
 - No issues were observed during inspections



Former Building Areas 371, 771, 881, and 991

- Former building areas routinely inspected (quarterly and during weather-related inspections) for subsidence
- After significant precipitation event in April, additional subsidence noted in former B881 area
 - Location where subsidence had been previously filled
 - Approximately 4 feet in diameter, 3 to 4 feet deep
 - Subsidence area was backfilled with soil



Questions?



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Ecology Activities

- Weed mapping
- Wetland delineations/mapping
- Conducted nest-box and prairie dog surveys
- Conducted wetland water-level and weed surveys
- Installed and irrigated 150 woody plants as habitat enhancement
- Treated approximately 140 acres with herbicides for weed control
 - Conducted hand-control and spot herbicide applications at some locations
- Prepared for third-quarter revegetation, wetland, and Preble's mouse mitigation monitoring

