

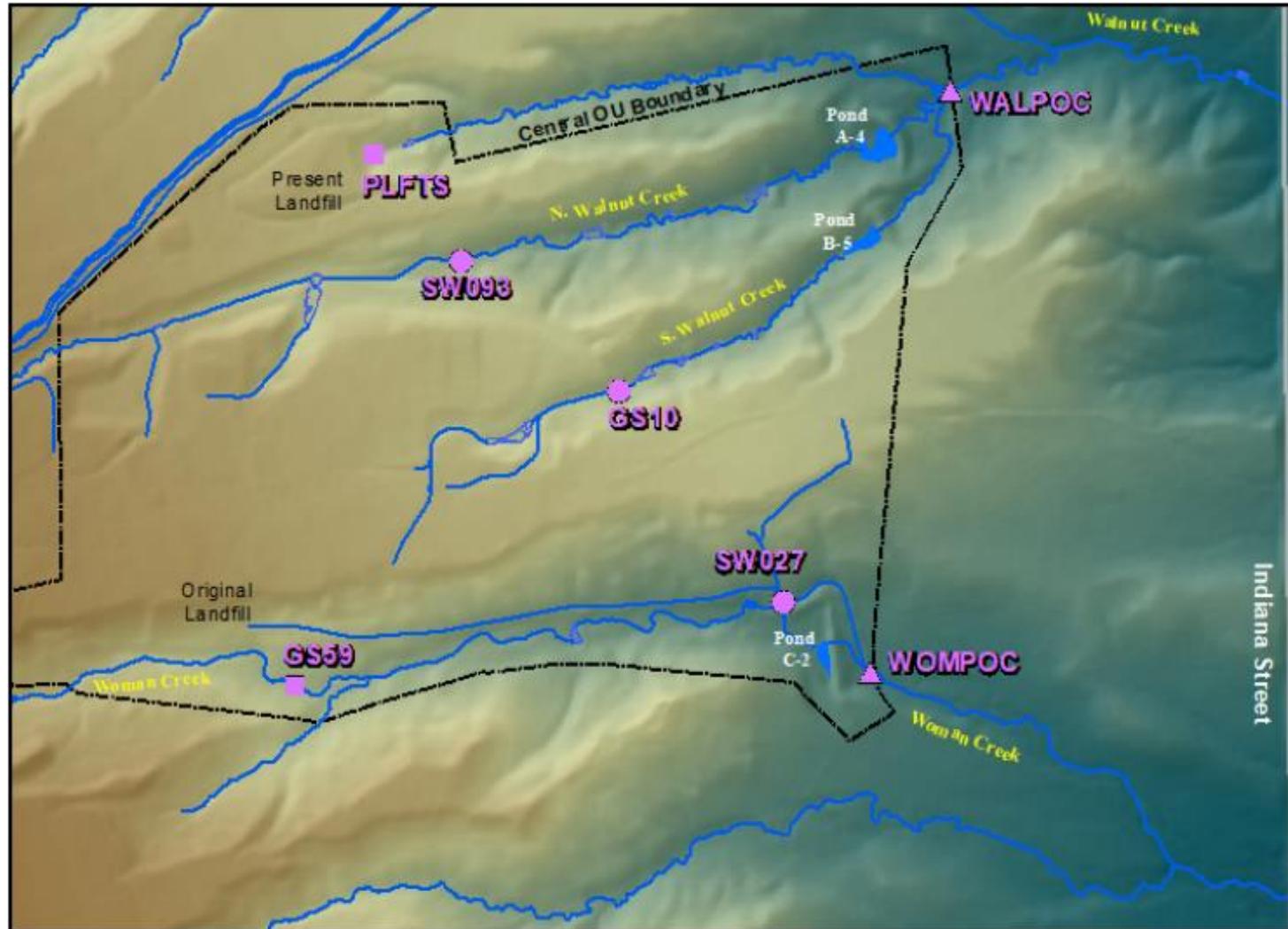


Rocky Flats Site, Colorado, Annual Report Summary

Calendar Year 2022



Selected Rocky Flats Legacy Management Agreement Surface Water Monitoring Locations



Original Landfill Performance Monitoring

- Original Landfill — Woman Creek location GS59
 - Third quarter 2022 mean arsenic concentration – 12.5 $\mu\text{g/L}$
 - Above the 10 $\mu\text{g/L}$ RFLMA standard
 - Triggered increased monthly sampling frequency
- Monthly sampling continued through fourth quarter
 - Fourth quarter 2022 mean arsenic concentration – 2.28 $\mu\text{g/L}$
 - Sampling frequency returned to quarterly
 - All other quarterly concentrations below applicable RFLMA standards during full CY 2022



Present Landfill Performance Monitoring

- Present Landfill — location PLFSYSEFF (system effluent)
 - Arsenic concentration for first quarter 2022 sample – 20 $\mu\text{g/L}$
 - Above the 10 $\mu\text{g/L}$ RFLMA standard
 - Triggered monthly sampling frequency
 - Arsenic concentration for first monthly sample (February 2022) – 4.1 $\mu\text{g/L}$
 - Sampling frequency returned to quarterly
 - All other quarterly concentrations below applicable RFLMA standards during full CY 2022



Point of Evaluation Monitoring

- 12-month rolling average uranium concentrations at location GS10 were above the RFLMA standard of 16.8 $\mu\text{g/L}$ starting in August 2022
 - A reportable condition under RFLMA
 - See RFLMA Contact Record 2022-03
 - Reportable condition concentrations were 17.4–18.3 $\mu\text{g/L}$
 - Uranium no longer reportable as of Dec. 31, 2022
 - Concentrations at Walnut Creek Point of Compliance (downstream of GS10) remained well below 16.8 $\mu\text{g/L}$



Point of Evaluation Monitoring (continued)

- 12-month rolling average plutonium concentrations at location SW027 were above the RFLMA standard of 0.15 pCi/L starting in May 2022
 - A reportable condition under RFLMA
 - See RFLMA Contact Record 2022-04
 - Reportable condition concentration was 0.18 $\mu\text{g/L}$
 - There was no flow at SW027 in 2022
 - The reportable condition only includes a sample from 2021
 - Plutonium was no longer reportable as of July 31, 2022
 - Concentrations at Woman Creek Point of Compliance (downstream of SW027) remained well below 0.15 pCi/L



Point of Compliance Monitoring

- No RFLMA POC analyte concentrations were reportable during 2022



Woman Creek Point of Compliance.



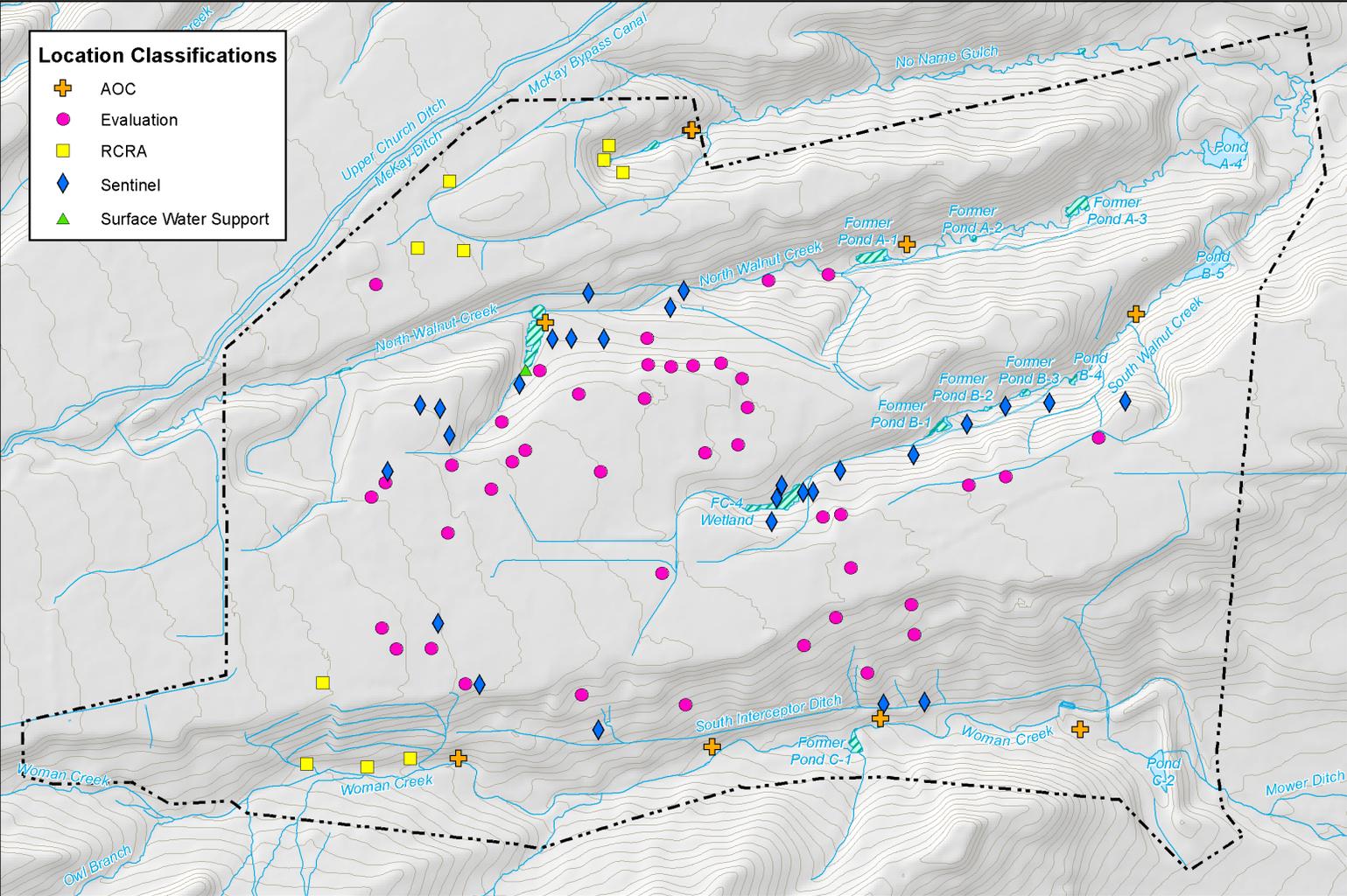
Groundwater Monitoring and Operations

RFLMA Groundwater Monitoring Network Overview

- No changes to the monitoring network in 2022
- 10 Resource Conservation and Recovery Act wells (quarterly)
 - Evaluate potential impacts from OLF and PLF
- 9 Area of Concern wells and one Surface Water Support location (semiannually)
 - Located in drainages downstream of contaminant plumes
 - Evaluate for plumes discharging to surface water
- 27 sentinel wells (semiannually)
 - Downgradient of treatment systems, near plume edges, and in drainages
 - Look for problems from plumes migrating to surface water and treatment system
- 9 treatment system locations (seven semiannually, two quarterly)



RFLMA Groundwater Monitoring Network



**Groundwater treatment system locations omitted for clarity*



RFLMA Monitoring in 2022

- All wells were scheduled for sampling in 2022
- Results were generally consistent with previous data
- Statistical evaluation results of OLF and PLF data were also generally consistent with previous results
 - Downgradient water quality with upgradient water quality comparisons — and whether downgradient groundwater shows increasing concentration trends — were identical, or nearly so, to results in previous years
- Groundwater treatment systems continued to remove contaminants
 - Total volume treated was significantly lower than average
 - East Trenches Plume Treatment System
 - Met all treatment objectives for both collection/treatment systems (Mound and East Trenches)
 - Solar Ponds Plume Treatment System
 - Met nitrate treatment objectives
 - Removed approximately 30% of the uranium



Other Activities in 2022

- SPPTS
 - Installed new solar/battery power facility
 - Began uranium treatment testing
 - Completed bench-scale tests
 - Pilot-scale testing will be completed in 2023
 - Design of full-scale uranium treatment component scheduled to begin in late 2023



New power facility at the SPPTS.



Uranium treatment component testing lab at the SPPTS.





Site Operations

North Walnut Creek Hillside.

Quarterly Sign Inspections

- RFLMA physical control
- Signs inspected quarterly
 - Signs reattached or replaced as needed

Additional Inspections and Records Confirmations

- Annual Verification of Restrictive Notice (former Environmental Covenant)
 - Confirmed in Administrative Record and on file in Jefferson County records (April 4, 2022)
- Annual site inspection completed April 4, 2022
 - No evidence that institutional or physical controls were violated
 - No adverse biological conditions were noted
- Additional inspections of former building areas (B371, B771, B881, and B991) as a best management practice
 - Conducted quarterly and as a response to significant precipitation



Site Operations: Present Landfill

- Performed quarterly inspections and weather-related inspections in 2022 second and third quarters
- Landfill is in good condition
 - No significant issues identified during inspections
- Settlement monuments surveyed annually
 - Vertical settling at each monument was within design limits



PLF east face.



Site Operations: Original Landfill

- Monthly inspections performed
- Routine maintenance performed on berms, channels, and erosion controls
- Additional weather-related inspections
 - June 2, 2022
- Landfill in good condition
 - No slumping observed
- Settlement monuments surveyed monthly
 - Vertical settling at each monument was within design limits



*OLF Berm Seven with
Turf Reinforcement Mat.*



North Walnut Creek Slump

- Groundwater elevation measurements in the functioning piezometers continued in 2022
- Slump monitoring points surveyed monthly as a best management practice
 - Data from visual observations and monitoring show slope creep (approximately 5 feet lateral movement since August 2017)
 - Most movement occurs between May and July
- Data continue to be collected and evaluated to develop a more comprehensive path forward for the hillside area





Ecological Monitoring

Native grass species included in site seed mixes in revegetation area.

Vegetation Management and Monitoring

- Noxious weed control
 - Herbicide application targeted to 113 acres
- Revegetation and vegetation enhancement
 - ETPTS discharge gallery project disturbance
 - Willow stake planting, interseeding, milkweed seeding
 - 903 Hillside interseeding and woodstraw application
- Vegetation monitoring
 - Revegetation monitoring
 - Preble's Meadow Jumping Mouse habitat monitoring
 - Wetland mitigation monitoring
 - Forb nursery monitoring



One-sided penstemon with insect.



Wildlife Monitoring

- Prairie dog
 - No active prairie dog towns within the COU
- Bird monitoring
 - Bird nest pre-construction surveys
 - Nest box surveys
 - Incidental bird and raptor observations
- Elk observations
- Wildlife game cameras



Praying mantis in revegetation area.



**Annual Report of Site
Surveillance and Maintenance
Activities at the
Rocky Flats Site, Colorado**

Calendar Year 2022

April 2023

For more information, visit:
<https://www.energy.gov/lm/rocky-flats-site-colorado>

**For additional details on any items
noted here, please view the
Rocky Flats 2022 annual report at:**
https://lmpublicsearch.lm.doe.gov/lmsites/43570_rfs_cy22_annual_final.pdf

