



# Rocky Flats Site, Colorado, Annual Report Summary

Calendar Year 2023

# 2023 Annual Report Overview

- Remedy is performing as expected
- 18 years since the cleanup was completed
- Annual report completed per the Rocky Flats Legacy Management Agreement (RFLMA)
- All necessary field activities to maintain and operate the site, as required by the RFLMA (CDPHE et al. 2007), and supporting documents, were conducted safely and successfully
- No RFLMA Surface Water Point of Compliance analyte concentrations were reportable during 2023
- The 2023 Roads Maintenance Project was completed on selected roads in June 2023



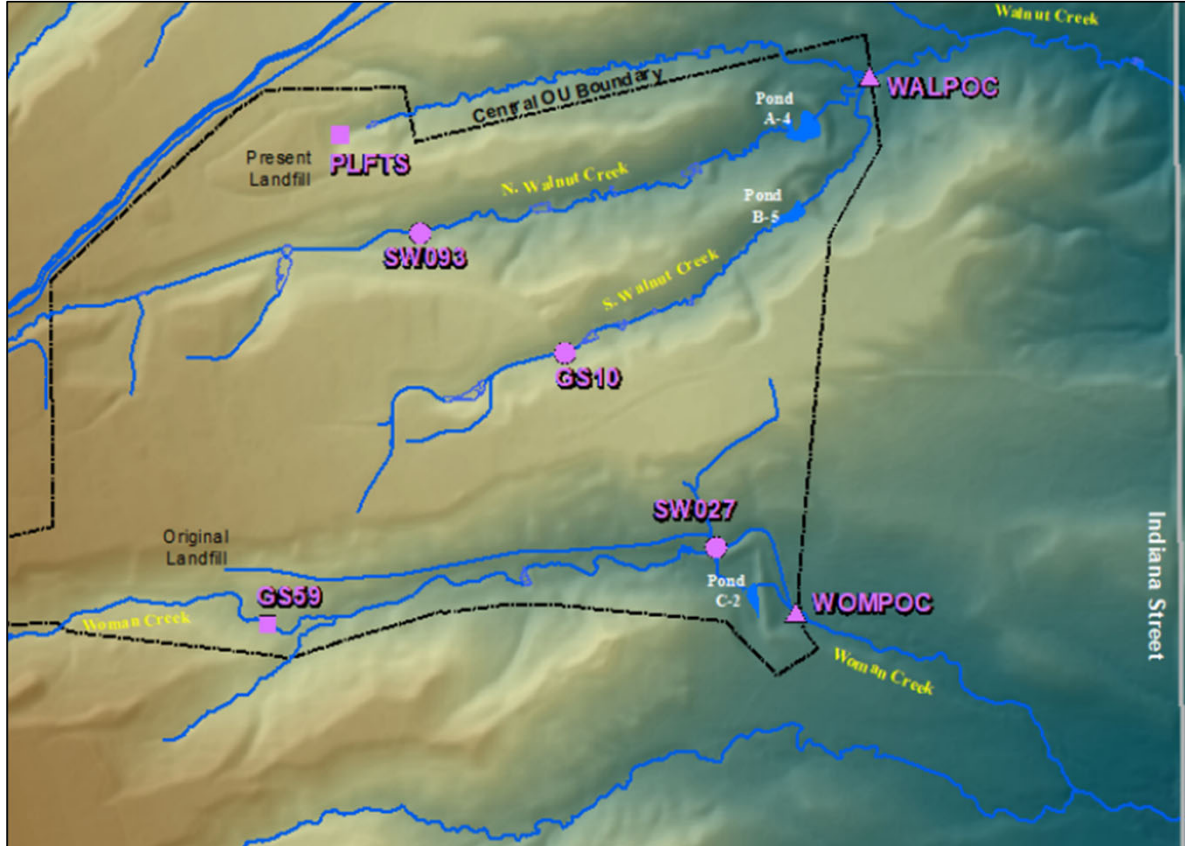
# Surface Water Monitoring



Walnut Creek Point of Compliance



# Select RFLMA Surface Water Monitoring Locations



# Original Landfill Performance Monitoring

- Original Landfill (OLF) — Woman Creek Location GS59
  - Third quarter 2023 mean chromium concentration: 95.1  $\mu\text{g/L}$ 
    - Above the 10  $\mu\text{g/L}$  Rocky Flats Legacy Management Agreement (RFLMA) standard
    - Triggered increased monthly sampling frequency
  - Monthly sampling continued into fourth quarter
  - Fourth quarter 2023 mean chromium concentration: 1.83  $\mu\text{g/L}$ 
    - Sampling frequency returned to quarterly
- Quarterly concentrations for all other analytes at GS59 were below applicable RFLMA standards during full CY 2023



# Present Landfill Performance Monitoring

- Present Landfill (PLF) Treatment System (PLFTS)
- Monitoring location PLFSYSEFF (treatment system effluent)
  - System is not intended to treat boron and the concentration regularly exceeds the 750  $\mu\text{g/L}$  RFLMA standard
  - Through the third quarter of 2023, the RFLMA parties collected additional boron samples downstream from the treatment system
  - The RFLMA parties are in the process of determining a path forward; see Contact Record (CR) 2006-02 and CR 2022-02
- Quarterly concentrations for all other analytes at the PLFTS effluent were below applicable RFLMA standards during full CY 2023



# 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 March 2023
  - A reportable condition under RFLMA
    - See RFLMA CR 2023-01
    - Reportable condition concentrations were 18.4-19.2  $\mu\text{g/L}$
    - Uranium no longer reportable as of May 31, 2023
  - Concentrations at Walnut Creek Point of Compliance (WALPOC, downstream of GS10) remained well below 16.8  $\mu\text{g/L}$
- No other reportable conditions were triggered by concentrations of other analytes at the Points of Evaluation



# Point of Compliance Monitoring



Woman Creek Point of Compliance

- No RFLMA POC analyte concentrations were reportable during 2023

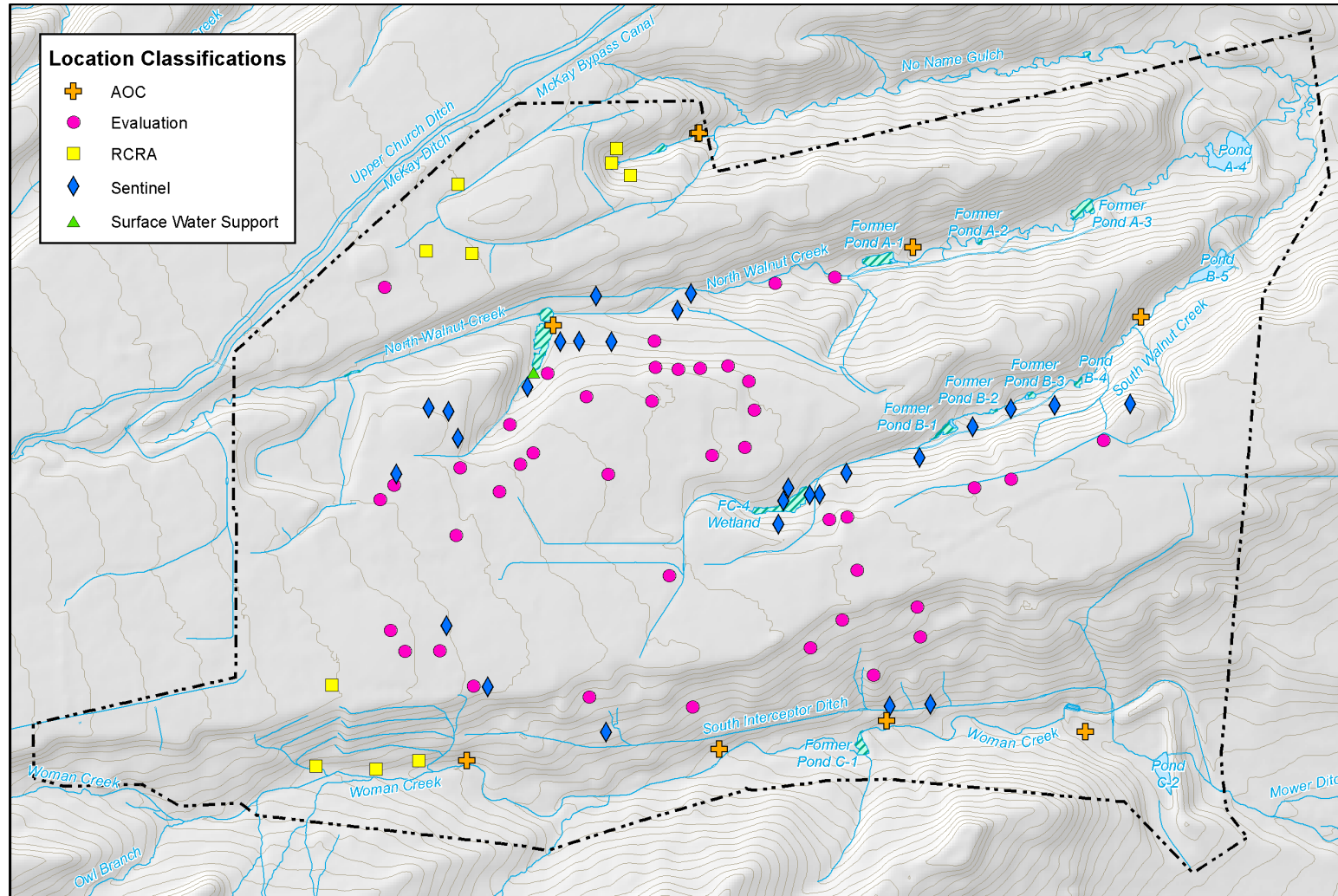




# Groundwater Monitoring and Operations



# RFLMA Groundwater Monitoring Network



# RFLMA Groundwater Monitoring Network Overview

- No changes to the monitoring network in 2023
  - 10 Resource Conservation and Recovery Act (RCRA) wells (quarterly)
    - Evaluate potential impacts from OLF and PLF
  - Nine Area of Concern (AOC) 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 plumes, treatment systems, and in drainages
    - Look for evidence of plume migration and treatment system problems
  - 42 Evaluation wells (every two years)
    - Within plumes, near source areas, and interior of Central Operable Unit (COU)
    - Evaluate whether monitoring of an area or plume can cease
  - Nine treatment system locations (seven semiannually, two quarterly)



# RFLMA Groundwater and Treatment System Effluent Monitoring in 2023



Present Landfill Treatment System



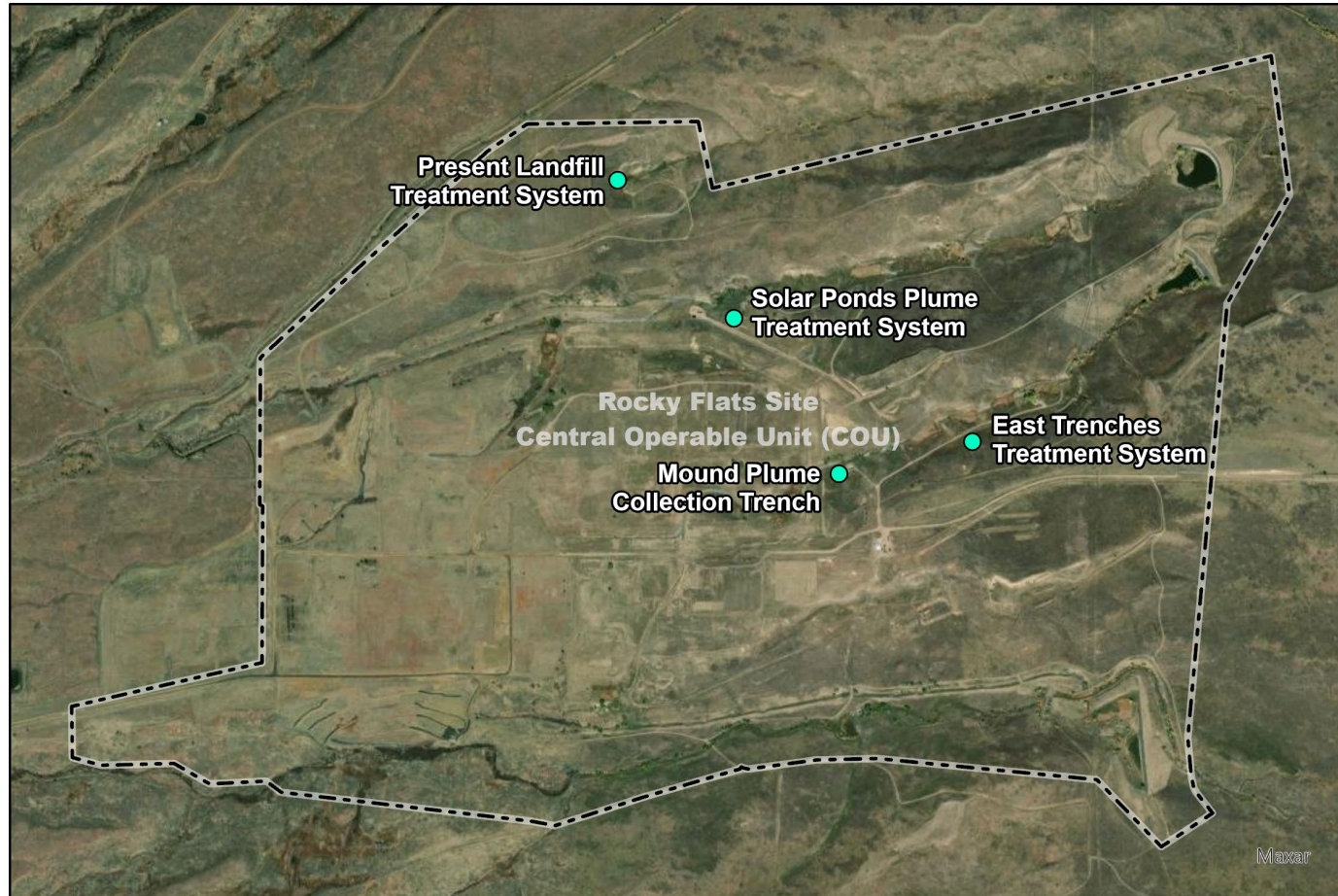
Solar Ponds Plume Treatment System



East Trenches Plume Treatment System



# Locations of Treatment Systems



047814



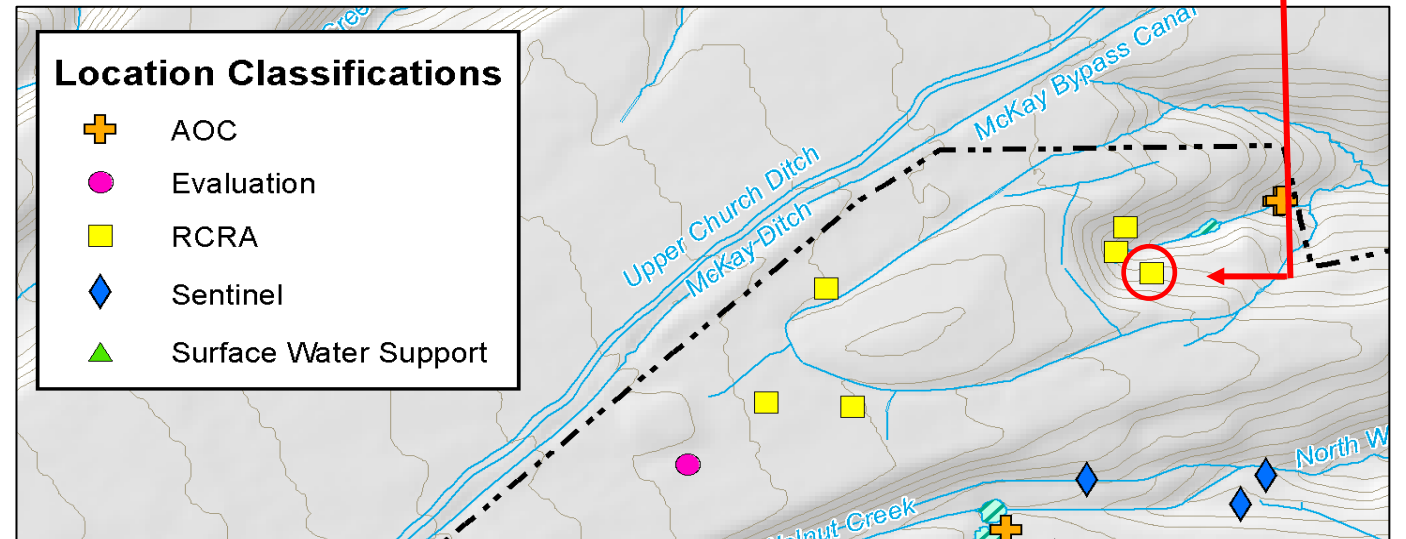
# RFLMA Groundwater and Treatment System Effluent Monitoring in 2023

- Evaluation wells not sampled on odd numbered years
  - Exception for one Evaluation well (B210489)
- Results were consistent with previous data
- Groundwater treatment systems continued to remove contaminants
  - Total volume treated was similar to 2022: lower than average
  - East Trenches Plume Treatment System (ETPTS)
    - Met all treatment objectives for both collection/treatment systems (Mound and East Trenches)
  - Solar Ponds Plume Treatment System (SPPTS)
    - Met nitrate treatment objectives
    - Removed slightly less than 50% of the incoming uranium
  - Present Landfill Treatment System (PLFTS)



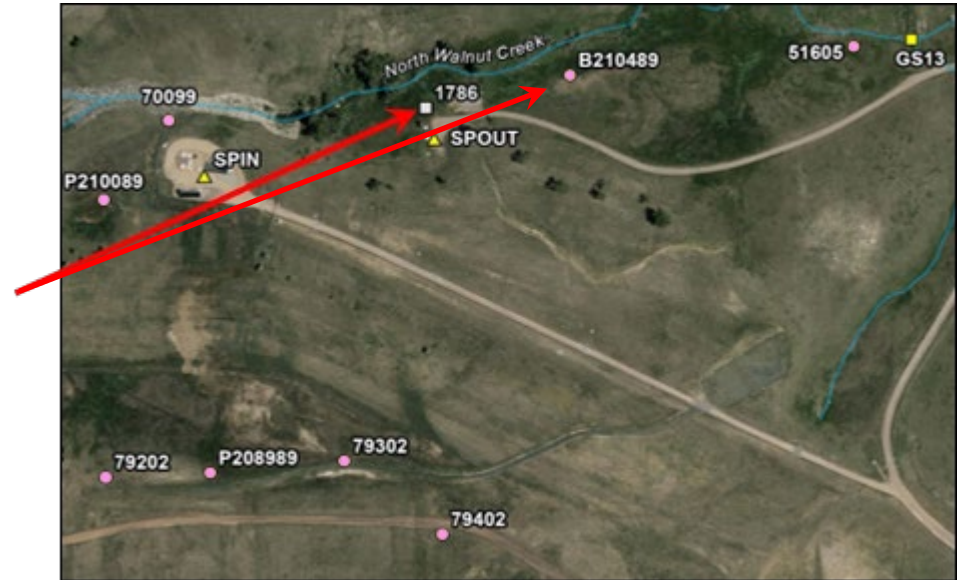
# RFLMA Monitoring in 2023

- Results of statistical evaluations of OLF and PLF data were also consistent with previous results
  - Comparisons of downgradient water quality with upgradient water quality — and whether downgradient groundwater shows increasing concentration trends — were nearly identical to results in previous years
  - Uranium source for downgradient PLF RCRA well 73205 will be evaluated in 2024
    - Sample will be collected and assessed for natural versus anthropogenic uranium content



# Other Activities in 2023

- SPPTS
  - Installed new effluent discharge gallery
  - Completed uranium treatment testing
    - Design of full-scale uranium treatment component began in late 2023
    - Construction is planned for 2024-2025
- Evaluation well B210489
  - Threatened by toe of North Walnut Creek Slump
  - Comparing with nearby non-RFLMA well 1786
    - Both sampled quarterly and exhibit statistically comparable water quality
    - Working with state and federal regulators to determine a path forward



Locations of wells 1786 and B210489







# Site Operations



2023 Roads Maintenance Project

# 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 19, 2023)
- Annual site inspection completed April 12, 2023
  - 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 second quarter 2023
- 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
- Additional weather-related inspections in April and May
- 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 material





# Ecological Monitoring



Bobcat — captured by game camera



Native sedges in wetland area

# Vegetation Management and Monitoring

- Noxious weed control
  - Herbicide application targeted to 175 acres
- Revegetation and vegetation enhancement
  - SPPTS discharge gallery project disturbance
  - Willow stake planting, interseeding, mowing
  - 903 Hillside interseeding and woodstraw application
- Vegetation monitoring
  - Revegetation monitoring
  - Preble's meadow jumping mouse habitat monitoring
  - Wetland mitigation monitoring



Monarch caterpillar on showy milkweed



Swamp milkweed in PLF ditch

# 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

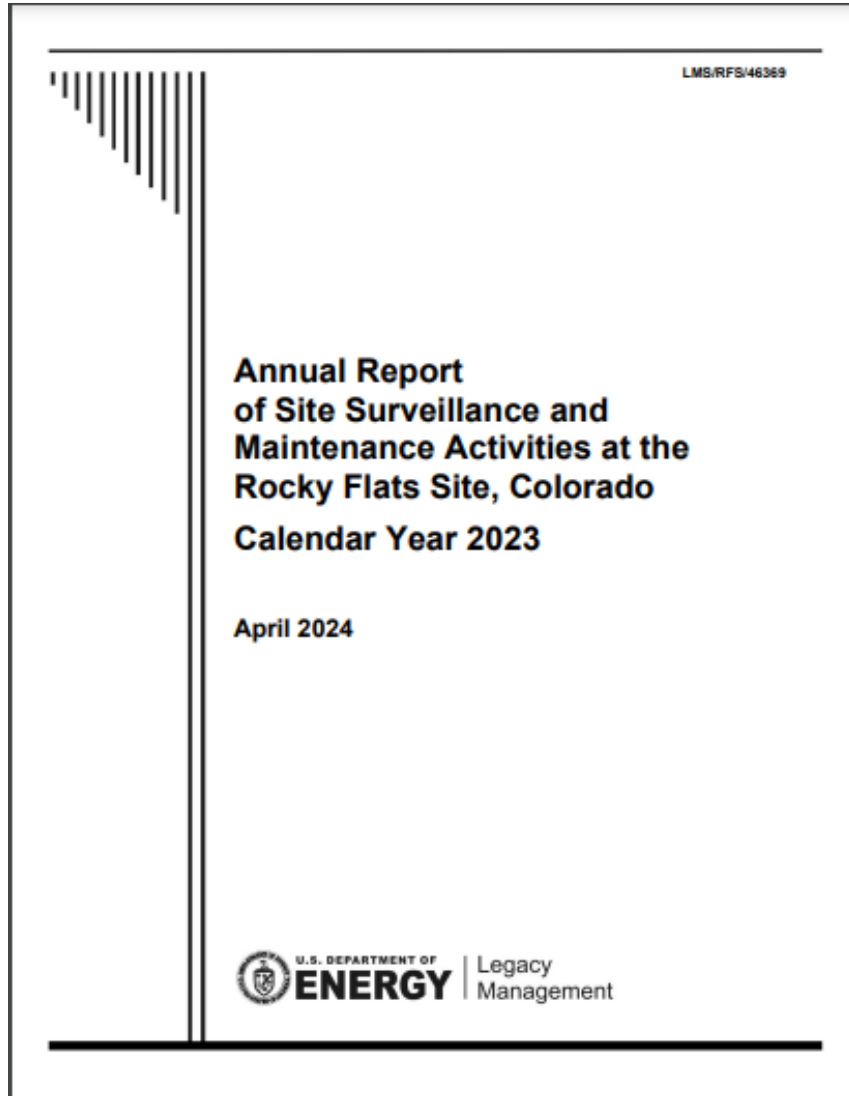


Elk investigating wire on equipment



Nest and eggs of ground-nesting bird





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 2023 annual report at:  
[https://lmpublicsearch.lm.doe.gov/lmsites/46369\\_rfs\\_cy23\\_annual\\_final.pdf](https://lmpublicsearch.lm.doe.gov/lmsites/46369_rfs_cy23_annual_final.pdf)

