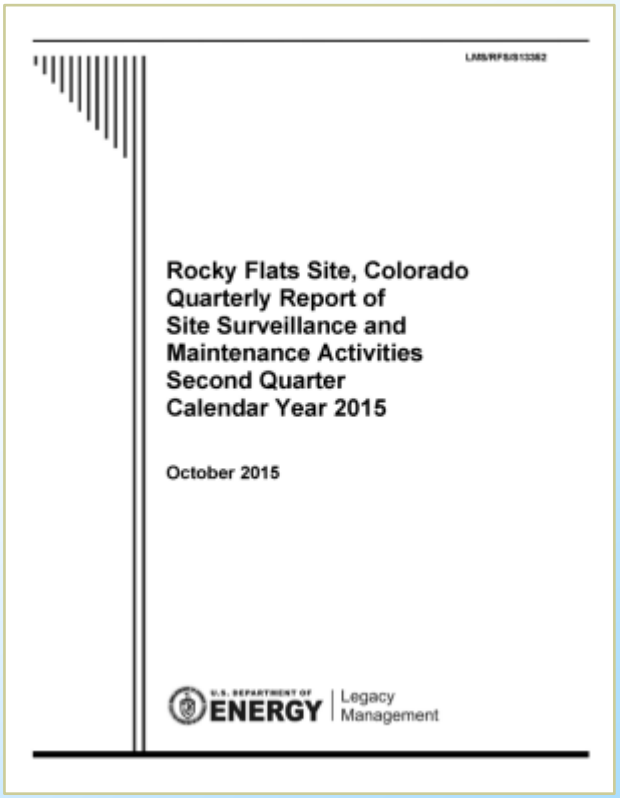
Overview of the Second Quarter 2015 Surveillance and Maintenance Report for the LM Rocky Flats Site

April–June 2015

U.S. DEPARTMENT OF ENERGY | Legacy Management

Quarterly Monitoring and Reporting

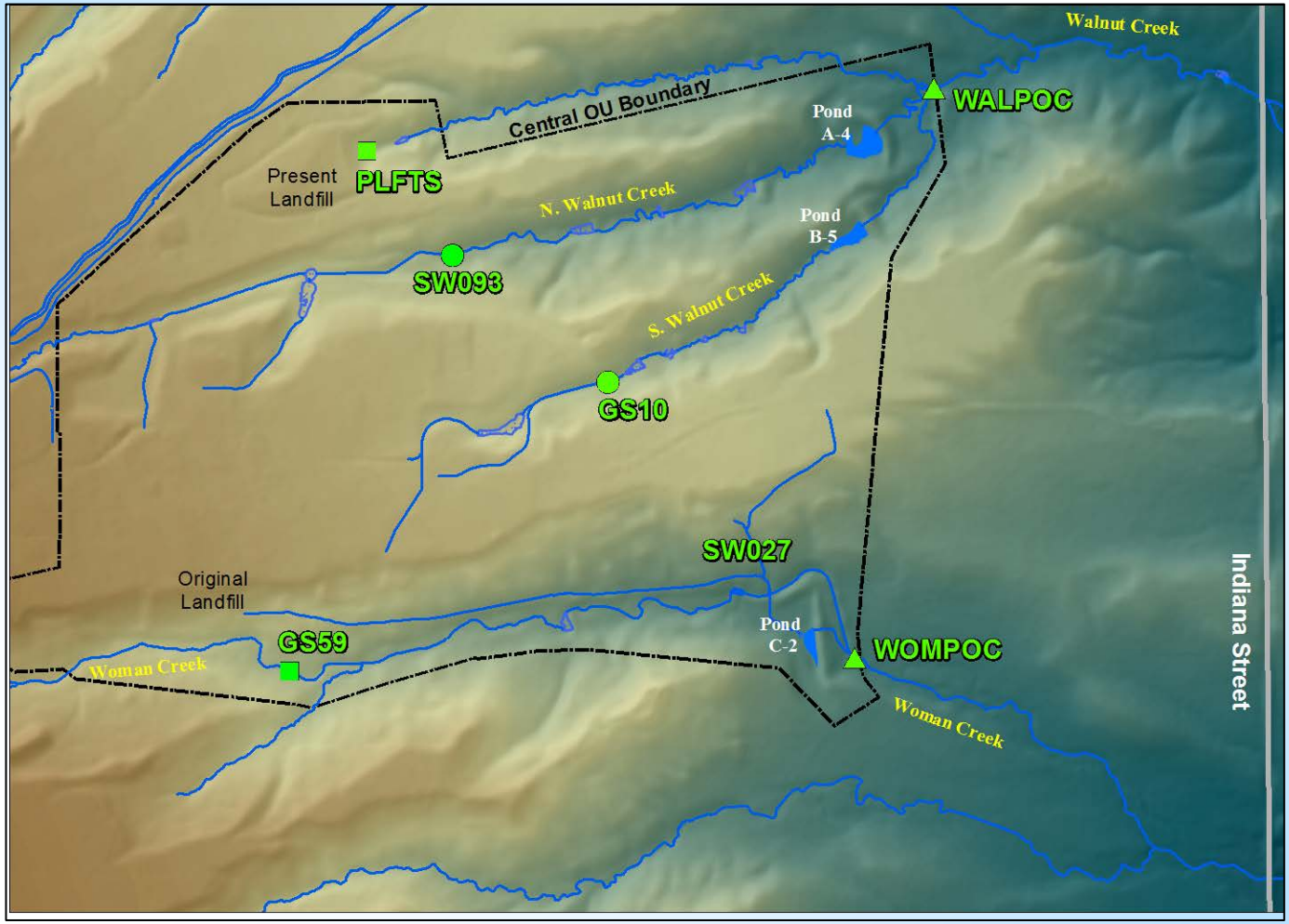
- Quarterly reports are required under the Rocky Flats Legacy Management Agreement (RFLMA), to document that the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) remedy continues to be protective
  - Primary goal: Surface water protection
- Response action under the final 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

U.S. DEPARTMENT OF ENERGY | Legacy Management

Select RFLMA Surface-Water Monitoring Locations



Original Landfill (OLF) Performance Monitoring

- OLF (Woman Creek – location GS59)
  - April 21 through 30, 2015 – Composite sampling results for lead and selenium above RFLMA standard
    - Lead 6.8 μg/L (RFLMA standard is 6.5 μg/L); Selenium 5.5 μg/L (RFLMA standard is 4.6 μg/L)
      - Prompted increased sampling frequency (monthly), per RFLMA evaluation protocols
    - Neither lead nor selenium were detected in the subsequent composite sample
  - June 12 through July 7, 2015 – Composite sampling results for selenium above RFLMA standard
    - Selenium 5.8 μg/L (RFLMA standard is 4.6 μg/L)
      - Prompted increased sampling frequency (monthly), per RFLMA evaluation protocols
    - Selenium was not detected in the subsequent composite sample

Present Landfill (PLF) Performance Monitoring

- PLF (System effluent – location PLFSYSEFF)
  - Routine first quarter sampling result for vinyl chloride was 0.23 μg/L
    - Above RFLMA 0.2 μg/L standard
    - Prompted increased sampling frequency (monthly), per RFLMA evaluation protocols
  - Three consecutive monthly sampling results during the second quarter were above standard at 0.24 – 0.26 μg/L
    - Prompted former PLF Pond outfall to No Name Gulch (location NNG01) sampling
  - Vinyl chloride was not detected at NNG01; sampling frequency reverted to quarterly, per RFLMA protocols

Point of Evaluation (POE) Monitoring

- Location SW027 – 12-month rolling average for plutonium, reportable as of April 30, 2015
  - Standard is 0.15 pCi/L
  - 12-month rolling averages 0.22 through 0.72 pCi/L
  - RFLMA Contact Record 2015-05 (July 8, 2015)
  - Mitigating actions include enhancing upstream erosion controls
  - All results from downstream WOMPOC are less than applicable standards
- No other RFLMA POE analyte concentrations were reportable throughout second quarter calendar year (CY) 2015

Point of Compliance (POC) Monitoring

- All RFLMA POC analyte concentrations remained below reporting levels throughout second quarter CY 2015

Questions?

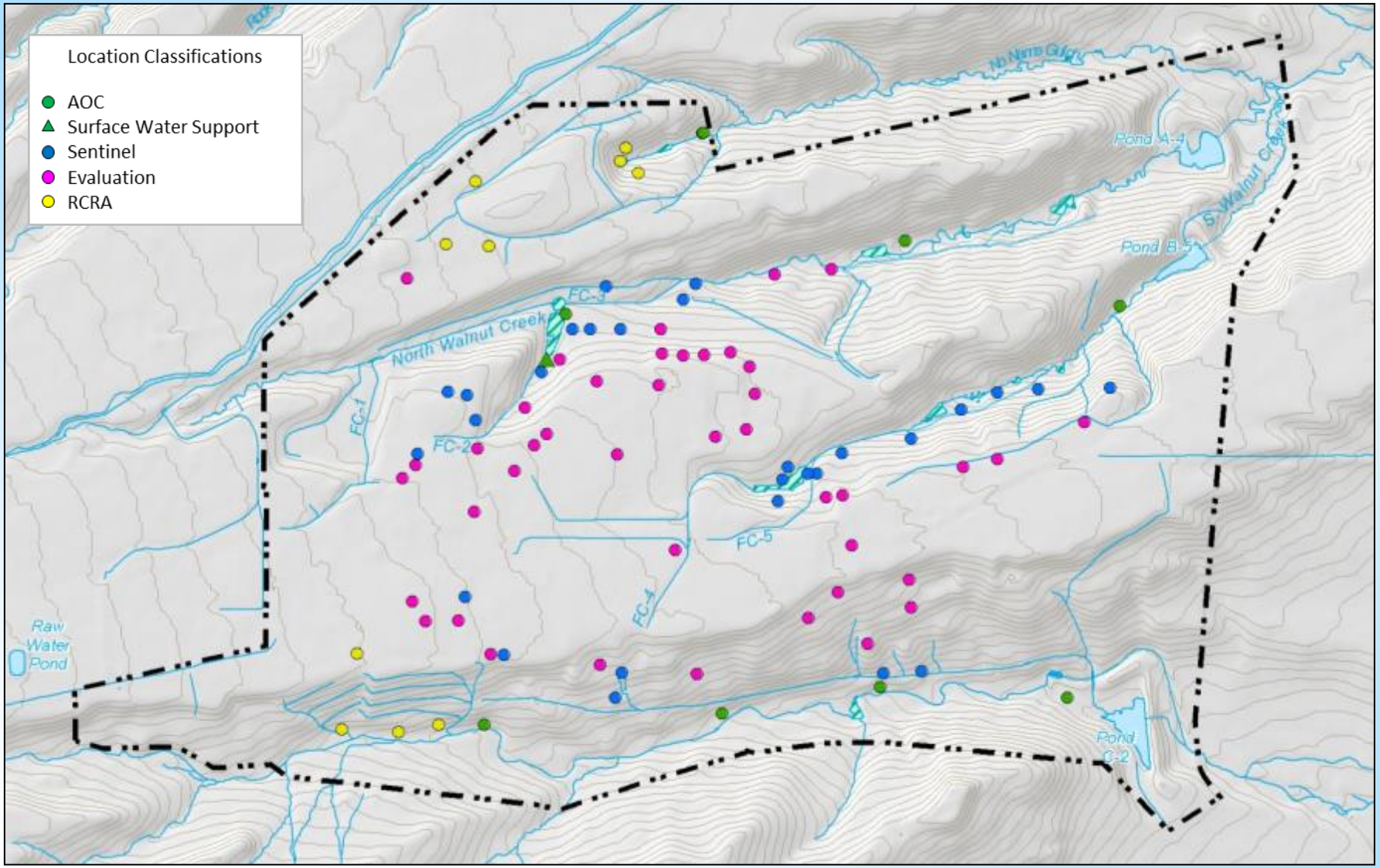
Groundwater Monitoring and Operations

Second Quarter 2015

U.S. DEPARTMENT OF ENERGY | Legacy Management

RFLMA Monitoring

- Heavy sampling quarter
  - 10 RCRA wells (quarterly)
  - 9 AOC wells and 1 Surface Water Support location (semiannual)
  - 27 Sentinel wells (semiannual)
  - 9 treatment system locations (semiannual)
- Results will be evaluated in the annual report

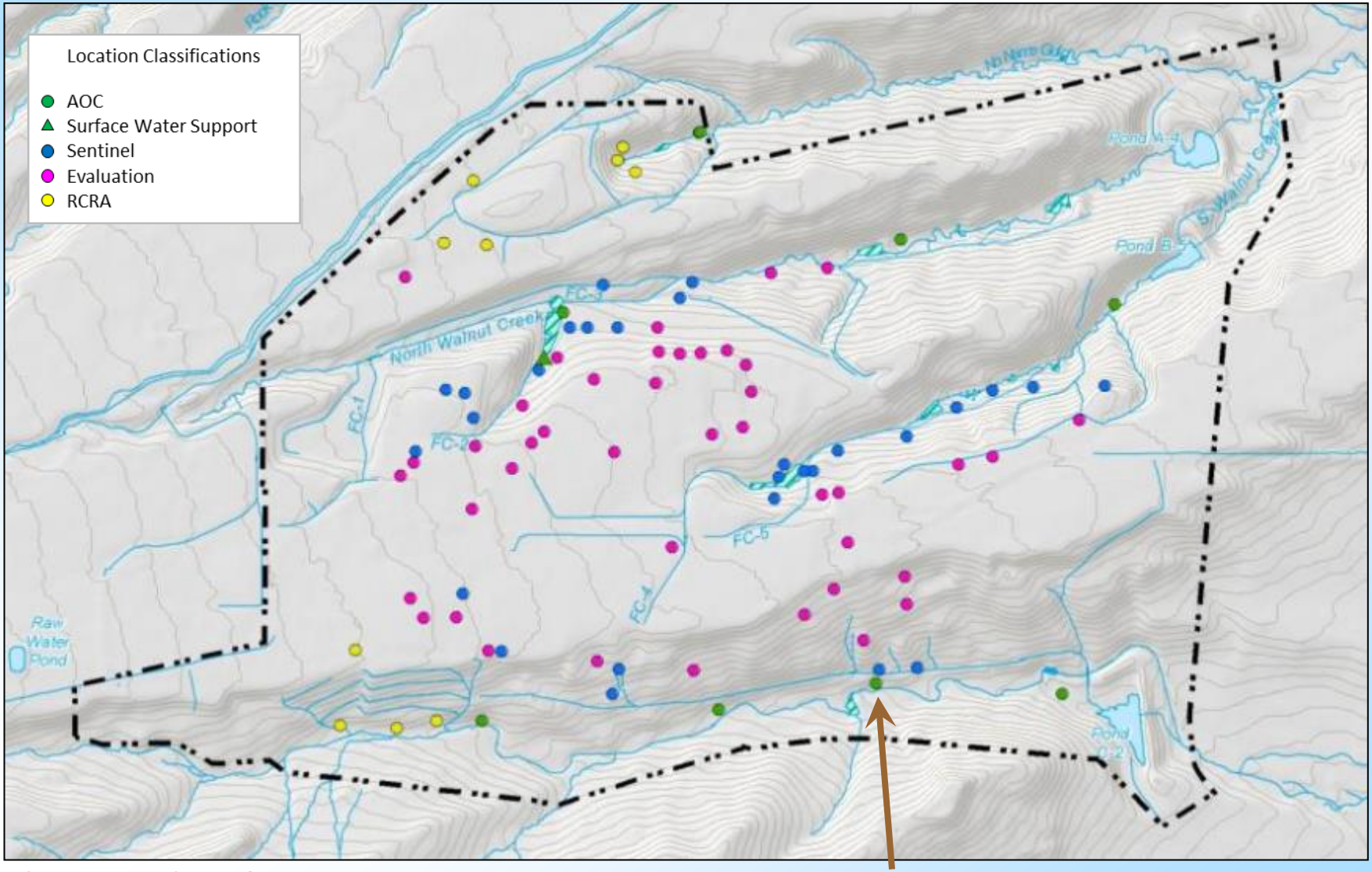


NOTE: Groundwater treatment system locations omitted for clarity

RFLMA Monitoring

- Groundwater quality generally consistent with previous results
  - AOC well 10304 was one exception
    - Located in Woman Creek valley downgradient of Ryan's Pit Plume
    - TCE reported at 15 µg/L (RFLMA level is 2.5 µg/L)
    - First result above RFLMA level at this location
    - RFLMA defines reportable conditions for AOC wells
      - No other well categories have RFLMA reportable conditions defined

Location of AOC Well 10304



AOC well 10304 (green symbol)

U.S. DEPARTMENT OF ENERGY | Legacy Management

RFLMA Monitoring

- Heavy spring 2015 precipitation
  - Groundwater levels measured in monitoring wells were higher in many cases
    - One historically dry Sentinel well provided samples for the first time on record
  - Treatment systems received higher than normal flows
    - Treatment system flows during this quarter were comparable to a normal year's entire flow volume
    - Higher flows correspond to shorter residence times in treatment media at MSPTS and SPPTS
      - Result is reduced treatment effectiveness
    - Elevated VOCs in MSPTS effluent and at performance location GS10 (2.6 µg/L TCE at GS10, compared to RFLMA level of 2.5 µg/L)
    - Elevated nitrate, uranium in SPPTS effluent
    - Designs are in process to reconfigure the MSPTS and interim SPPTS

Non-RFLMA Monitoring

- Selected Evaluation wells
  - Most to support geochemistry study
  - Most locations associated with former Solar Evaporation Ponds
  - Several samples submitted to LBNL for high-resolution uranium isotopes analysis to determine natural versus anthropogenic content
- SPPTS
  - Microcell and lagoon testing
  - Bench tests of lagoon effluent clarifying and filtration

Treatment System Activities

- All treatment systems experienced above-average flows
- MSPTS
  - Routine air stripper and other system maintenance
  - Designing system reconfiguration
    - Will route MSPTS influent to ETPTS air stripper for treatment
    - Scheduled for construction in FY 2016
- ETPTS
  - Reconfiguration project completed in first quarter 2015, routine RFLMA sampling begun in second quarter
  - Added temporary, second pump in effluent tank to keep up with treated influent

Treatment System Activities

- SPPTS
  - Continued microcell tests
  - Continued pilot-scale lagoon tests (including sampling)
  - Replaced components damaged by rising groundwater in metering vault after prolonged heavy rainfall
  - Installed automated sump pump in vault to manage shallow groundwater
    - Pumped water to treatment cells
  - Began developing Statement of Work to empty original "Big Box" structure
    - Will convert to interim configuration early in FY 2016
      - Includes full-scale lagoon

Questions?

Site Operations

Quarterly Sign Inspections

- RFLMA physical control
- All signs are in good condition

Site Operations – OLF (continued)

- Performed three monthly inspections
  - One weather-related inspection occurred in April, two in May, and three in June
  - All weather-related inspections were due to precipitation events producing more than 1 inch of rain in a 24-hour period
- Monitored eight settlement monuments
- Cracking and slumping more pronounced on OLF east and west sides, compared to March observations
- Carried out multiple efforts to minimize ponding and route water away from affected areas using heavy equipment and hand labor throughout the second quarter
- CDPHE and EPA inspected the landfill on May 14 and 20
- The geotechnical engineer inspected the landfill on April 23, May 12, and May 20

Site Operations – OLF (continued)

Site Operations – OLF (continued)

East Perimeter Channel slumps, June 2015

West Perimeter Channel slumps, June 2015

Site Operations – PLF

- Performed one quarterly inspection and six weather-related inspections for precipitation events producing more than 1 inch of rain in a 24-hour period
  - No issues were observed during inspections

Former Building Areas 371, 771, 881, and 991

- Inspected former building areas
  - Observed and filled subsidence areas at 881 and 771
    - Subsidences ranged from 1 to 5 feet wide, and 1 to 3 feet deep

Questions?

Ecology Activities

- Weed mapping
- Wetland delineations/mapping
- Conducted nest-box and prairie-dog surveys
- Conducted wetland water-level surveys
- Installed and irrigated 45 woody plants as habitat enhancement
- Treated approximately 194 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