ROCKY FLATS SITE
REGULATORY CONTACT RECORD 2019-01

Purpose: Reportable condition for plutonium 12-month rolling average at Point of Evaluation (POE) SW027

Contact Record Approval Date: March 20, 2019

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Date of Consultation Meetings: January 30, 2019; February 4, 2019

Consultation Meeting Participants: Lindsay Masters and Rob Beierle, CDPHE; Vera Moritz, EPA; Scott Surovchak and Andy Keim, DOE; Jody Nelson, George Squibb, and Patty Gallo, Navarro

Introduction. Based on the 12-month rolling average for plutonium (Pu), a reportable condition exists at surface water Point of Evaluation (POE) SW027 at the Rocky Flats Site, Colorado. DOE performed the Pu water sample data evaluation in accordance with Attachment 2, Figure 6, "Points of Evaluation," of the *Rocky Flats Legacy Management Agreement* (RFLMA), which resulted in a 12-month rolling average value of 0.16 picocurie per liter (pCi/L) Pu. The applicable RFLMA Table 1 standard for Pu is 0.15 pCi/L. DOE provided notification of this reportable condition to the agencies and public via email on January 17, 2019. RFLMA Attachment 2, Figure 6 defines the 'agencies' as the EPA, CDPHE, and U.S. Fish and Wildlife Service and the 'public' as the Rocky Flats Stewardship Council and the cities of Broomfield, Northglenn, Thornton, and Westminster. Figure 1 shows the location of SW027 and the surrounding features discussed in this contact record (CR).

Discussion. The last continuous flow-paced composite sample collected at SW027 was retrieved from the field on May 4, 2018. Validated analytical results for this sample were received on June 18, 2018, and showed a result of 0.142 pCi/L Pu in the primary sample and 0.175 pCi/L Pu in the duplicate sample. These composite sample results are representative of water flowing between 9:01 a.m. May 3, 2018, and 12:28 p.m. May 4, 2018. Notification that an individual sample result from SW027 exceeded the RFLMA standard of 0.15 pCi/L for Pu was provided in a routine data exchange email on June 19, 2018. The subsequent composite sampling at SW027 was started immediately on May 4, 2018, at 12:28 p.m. At that time—and until results for the May 4, 2018, composite sample were received or the May 4, 2018, composite was discarded due to insufficient quantity for analysis—the May 31, 2018, and subsequent 12-month rolling average values could not be calculated.

The surface water sampling program at the Rocky Flats Site is designed to automatically collect a volume of water (a "grab sample" of typically 200 milliliters), with the frequency of collection based on the flow of surface water at that location. As a result, the total volume of water collected will be less during dry periods or periods of low flow than during times of higher flow. A minimum volume of water is required to analyze a sample for the RFLMA-required analytes. If this minimum volume of water is not available, a sample cannot be collected and analyzed. Due to dry conditions at SW027, only a small volume of water was collected after May 4, 2018. In fact, only five grab sample volumes were collected; 23 grab sample volumes are necessary to complete the required RFLMA analytical suite. At the end of the year, if an insufficient volume of water is available to analyze a RFLMA sample, DOE consults with CDPHE and EPA to determine a course of action. DOE met with CDPHE and EPA on December 6, 2018, to discuss surface water locations, including SW027, where insufficient volumes of water were available to run the required analyses. The RFLMA Parties agreed that sample volumes at surface water sample locations where an insufficient volume of water was collected, would be discarded. On January 3, 2019, the volume of water collected at SW027 since May 4, 2018, was discarded to close out calendar year 2018. Once the composite sample started on May 4, 2018, was discarded and it was known that results would not be forthcoming, the 12-month rolling averages for May 31, 2018, through December 31, 2018, could be calculated.

Sampling data for SW027 are evaluated in accordance with RFLMA, as described in Attachment 2, Figure 6, "Points of Evaluation." The 12-month rolling averages for the last day of the particular month are calculated and compared to the applicable values in RFLMA Attachment 2, Table 1, "Surface Water Standards." These values represent a volume-weighted average for a period covering the previous 12 months. With the absence of sample data at SW027 from May 4, 2018, forward, the calculation of the 12-month rolling average for May 31, 2018, resulted in a concentration of 0.16 pCi/L for Pu. This value exceeds the RFLMA Attachment 2, applicable Table 1 standard for Pu of 0.15 pCi/L, resulting in a reportable condition. Notice of this reportable condition was provided on January 17, 2019, since it was not confirmed until January 3, 2019, that there would be no additional flow at SW027 and the sample volume collected during the second half of calendar year 2018 would be of insufficient volume to analyze.

Nearby Sampling Locations. Flow-through operations at Pond C-2 (see Figure 1) were initiated on November 7, 2011, and continue today. All 2018 Pu results from downstream location GS31 (Pond C-2 outlet) are well below 0.15 pCi/L. Among the 2018 samples from GS31, a storm-event composite sample from May 3, 2018 (2:49 p.m. – 9:49 p.m.) was collected during the same runoff event as the SW027 composite sample (May 3–4, 2018). The Pu concentration in this sample was 0.006 pCi/L. No samples were analyzed from upstream sampling location GS51 during calendar year 2018 due to low runoff and subsequent insufficient sample volume for analysis.

In addition, the 30-day and 12-month averages at monitoring location WOMPOC, the RFLMA Point of Compliance downstream of SW027, did not exceed the RFLMA standard for Pu or any other RFLMA analyte at any time during calendar year 2018. The highest sample result for Pu at WOMPOC during all of 2018 was 0.021 (± 0.017) pCi/L for the composite sampling period May 21, 2018, to July 2, 2018.

Erosion Control Measures. In response to the previous reportable condition for Pu at SW027 in 2015 (see CR 2015-03), additional erosion control measures were established in the SW027 drainage and on the hillside above GS51. These measures included installation of erosion matting, wattles, GeoRidge berms, woodstraw, and seeding. Periodic inspection of these measures indicate that they are still in place and functional. The progress of vegetation cover in the area is another measure of erosion control success. Since 2015, the vegetation within the green hatched area in Figure 1 has been monitored annually as a best management practice (BMP). During that time, the vegetation cover in this area has ranged between 68% and 84% depending on the year; it averaged 70% in 2018. Environmental variation in the amount and timing of precipitation plays a large role in the annual fluctuation. A better measure of soil protection is total absolute ground cover. This is a measure of basal vegetation cover (a measure of the plant stem coverage per unit area), plant litter cover, and rock cover (see the *Annual Report of Site Surveillance and Maintenance Activities at the Rocky Flats Site, Colorado* Calendar Year 2017, Ecology Volume). These three factors determine how much of the soil is protected from raindrop impact. Since 2015, when additional seeding and erosion controls were installed, the average total absolute ground cover on the 903 hillside has increased from 86% to 98%. Looked at a different way, this means the amount of bare ground has decreased on the hillside during that time from 14% to 2%. That is, there is much less bare ground in 2018 in this area as compared to 2015. Figure 1 illustrates the general location on the 903 hillside where these data are collected.

These data suggest that the erosion controls installed on the hillside after 2015 continue to function and slow water movement off the hillside. Although Pu concentrations at SW027 were reportable during 2018, these concentrations were less than 15% of the concentrations observed in 2015, further suggesting continued effectiveness of erosion controls.

Pursuant to RFLMA Attachment 2, Section 6.0, "Action Determinations," a reportable condition necessitates the following actions:

- DOE must submit a plan and schedule to the regulators for an evaluation to address the condition within 30 days of receiving the validated data for the reportable condition.
- DOE will consult with CDPHE and EPA to determine if mitigating actions are necessary.
- The objective of consultation will be determining a course of action (if necessary) to address the reportable condition and ensure that the remedy remains protective.
- Results of consultation will be documented in CRs and/or written correspondence.

Plan and Schedule to Address the Reportable Condition: Representatives of CDPHE, EPA, and DOE discussed this reportable condition on January 30, 2019, and February 4, 2019, and developed a path forward. The RFLMA Parties agreed that the steps described in this CR shall serve as the plan and schedule for the evaluation of this reportable condition. These steps include:

- Mitigating actions are not currently necessary. Data from downstream sample locations indicate Pu concentrations well below 0.15 pCi/L. Based on the most recent inspections of the hillside, existing erosion control measures continue to function, and the erosion control measures continue to protect the hillside.

- In addition to the BMP vegetation monitoring area currently monitored on the hillside above GS51 and upstream of SW027, DOE, EPA, and CDPHE will assess an expanded area of the hillside to the east and south (beige hatched area in Figure 1). This assessment will take place during the 2019 growing season, when the full extent of vegetation will be visible. DOE will coordinate the assessment date and time with EPA and CDPHE regulators at least ten calendar days in advance.
- DOE will continue to monitor the vegetation within the BMP vegetation monitoring area in Figure 1 as part of the normal revegetation monitoring that is conducted in July. The erosion controls will continue to be evaluated annually as a BMP in the spring and fall, although they may be evaluated at other times during the year as warranted (e.g., after heavy precipitation events). DOE will repair and/or replace existing erosion control measures and revegetate the areas, as necessary, to maintain their function.
- Surface water sampling will continue as currently scheduled when surface water runoff is available.
- Status of the above items will be reported in quarterly or annual reports, or both, depending on when the activities occur.

Resolution: CDPHE, after consultation with EPA, approves this CR.

Evaluation Complete: The evaluation of the SW027 reportable condition for Pu will be considered complete when the results from the evaluation have been shared with the RFLMA Parties and the reportable condition at SW027 no longer exists.

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Rocky Flats Contact Record File

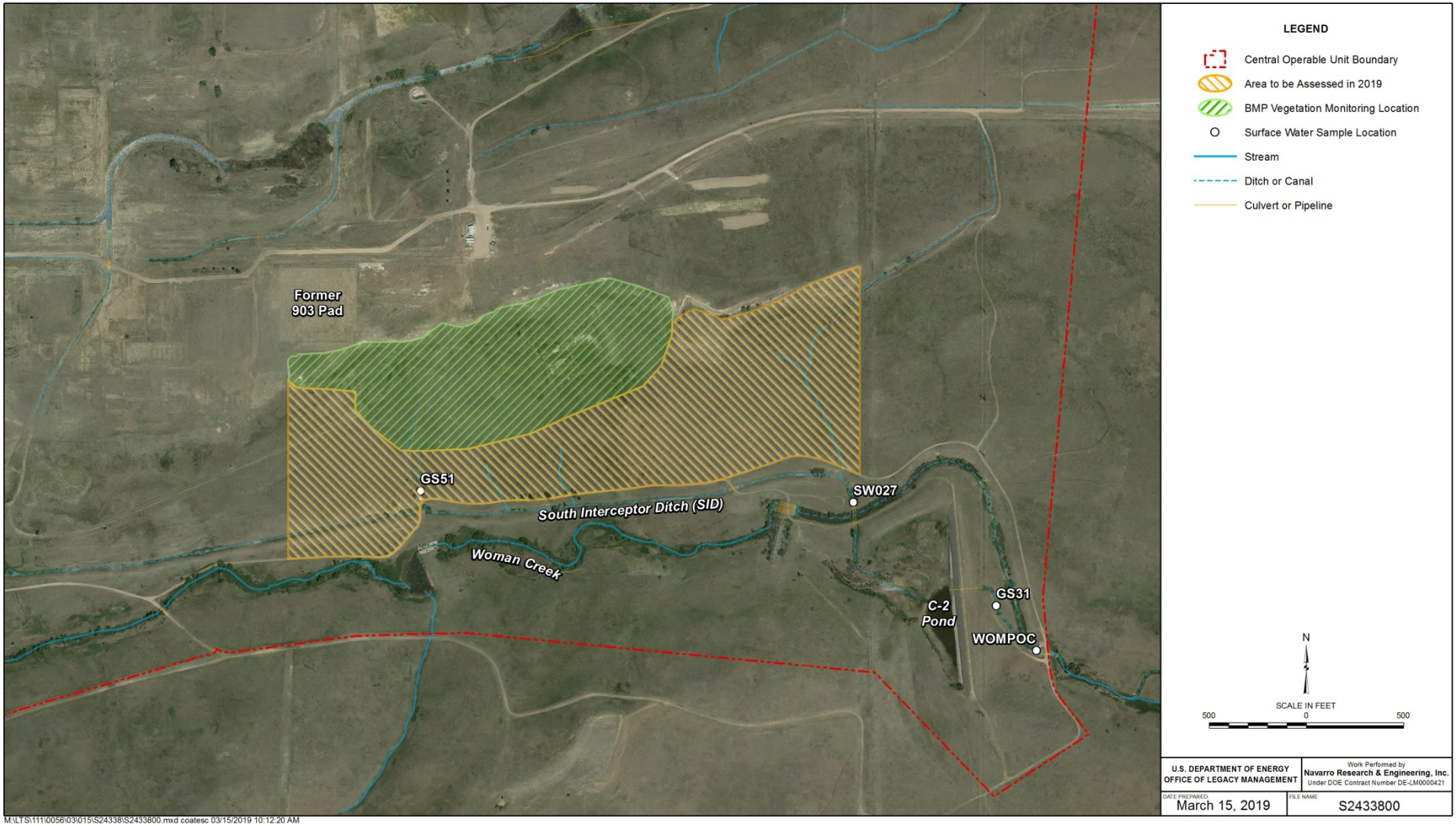

Figure 1. SW027 Location and Surrounding Features