

# ROCKY FLATS SITE REGULATORY CONTACT RECORD

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**Purpose:** Update for Reportable Condition for Uranium at Point of Evaluation GS10

**Contact Record Approval Date:** October 4, 2011

**Site Contact(s)/Affiliation(s):** Scott Surovchak, U.S. Department of Energy (DOE); Gwen Hooten, DOE; John Boylan, S.M. Stoller Corporation (Stoller); Rick DiSalvo, Stoller; Linda Kaiser, Stoller; George Squibb, Stoller

**Regulatory Contact(s)/Affiliation(s):** Carl Spreng, Colorado Department of Public Health and Environment (CDPHE); Vera Moritz, U.S. Environmental Protection Agency (EPA)

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**Discussion:** This Contact Record documents DOE's consultation with CDPHE and EPA on September 12, 2011 regarding the evaluation of the reportable condition at surface water Point of Evaluation GS10. All sampling locations discussed in this Contact Record 2011-05 are shown on Figure 1 at the end of this document.

The reportable condition was determined based on an evaluation of validated analytical results for uranium from the composite sample collected during the period from 10:50 a.m. on April 11, 2011, to 11:39 a.m. on May 4, 2011. The initial consultation regarding the reportable condition is documented in Contact Record 2011-04, approved July 8, 2011. Contact Record 2011-04 describes the **Plan and Schedule to Address the Reportable Condition**.

All of the planned actions described in Contact Record 2011-04 have been implemented, as follows:

- The following samples have been sent to Los Alamos National Laboratory (LANL) for isotopic analysis to determine the percentages of natural and anthropogenic uranium to compare with percentages in pre-closure and post-closure samples previously analyzed by LANL:
  - Flow-paced surface water sample collected June 3 through 13, 2011, from GS10. Historically, samples from this location have contained approximately 70 percent natural uranium.
  - Groundwater sample from upgradient well 99405, which is on the southeast side of former Building 991. Historically, this location has reported uranium concentrations ranging from 98 to 712 µg/L that have been 99.9 to 100 percent natural uranium.
- Non-Rocky Flats Legacy Management Agreement (RFLMA) sampling and analysis of uranium downstream of GS10 at sampling location B5INFLOW is continuing. Contact Record 2010-03 describes the non-RFLMA sampling project that includes B5INFLOW.

- Two temporary surface water sample locations upstream of GS10 were established for biweekly uranium grab sampling. The RFLMA Parties will determine the duration of the grab sampling for these upstream locations, based on an evaluation of the results. These locations are:
  - FC4750 in Functional Channel 4, east of the former location of the 750 Pad.
  - FC4991 in Functional Channel 4, at the east end of the wetland south of former Building 991.

The results of the LANL analysis were informally reported by LANL to Stoller staff while the formal LANL report is being prepared:

- The signature results for GS10 do not match the historical natural uranium percentage of approximately 70 percent. Natural uranium was reported as 49 percent. The uranium concentration was 21.6 µg/L. The previous LANL sample, taken on March 17, 2010, was 24.1 µg/L and 71.7 percent natural uranium.
- The results for well 99405 were 411.1 µg/L uranium, with a 100 percent natural uranium signature. These results are consistent with historical data.

Results for samples from GS10 and relevant upstream and downstream surface water locations collected in 2011 are provided below in Tables 1 through 3, and a map illustrating these locations is attached as Figure 1. A sample for the analysis of uranium was also collected on December 21, 2010, from the Mound Site Plume Treatment System (MSPTS) effluent, and uranium was not detected at a detection limit of 1 µg/L. The MSPTS effluent discharge gallery is upstream of GS10.

The downstream monitoring results continue to indicate that the remedy remains protective, since uranium results are below the RFLMA surface water standard, 16.8 µg/L.

While the uranium concentration at GS10 appears to be decreasing from the levels that triggered the reportable condition, the 12-month rolling average uranium concentration is still above the RFLMA surface water standard. As stated in Contact Record 2011-04, the plan and schedule to address the reportable condition may be modified based on the outcome of RFLMA Party consultation related to the evaluation.

Table 1. Recent Uranium Grab Sample Results

Locations (upstream → downstream)	FC4750	FC4991	GS10	B3OUTFLOW	B5INFLOW	B5 POND
Sample Date	Result (µg/L)					
1/12/2011	NA	NA	18.0	25.0	14.0	7.2
1/26/2011	NA	NA	20.0	26.0	15.0	7.0
2/10/2011	NA	NA	18.0	20.0	10.0	7.1
2/24/2011	NA	NA	24.0	15.0	11.0	6.1
3/9/2011	NA	NA	22.0	18.0	9.1	7.4
3/23/2011	NA	NA	9.8	17.0	11.0	6.8
4/6/2011	NA	NA	13.0	16.0	9.7	7.9
4/19/2011	NA	NA	18.0	14.0	8.9	8.3
5/4/2011	NA	NA	79.0	14.0	8.2 <sup>a</sup>	8.3
5/18/2011	NA	NA	19.0	17.0	10.0	7.7
6/1/2011	NA	NA	14.0	14.0	7.8	7.3
6/15/2011	NA	NA	12.0	11.0	9.2	8.0
6/30/2011	24.0	6.3	9.6	8.0	7.4	7.5
7/13/2011	14.0	9.7	12.0	6.3	5.5	6.8
7/27/2011	14.0	8.7	8.7	6.2	3.9	6.5
8/10/2011	21.0	4.8	6.6	6.5	No Flow	5.6
8/15/2011 Pre-discharge samples					DOE	5.5
					CDPHE	5.4

Notes: Some results are preliminary and subject to revision.

<sup>a</sup> The result returned from the lab for this sample was 72 µg/L. However, it appears that this sample was accidentally switched with the sample collected at location A2EFF. This determination is supported by patterns in both grab and composite samples at GS10, B3OUTFLOW, B5INFLOW, and A2EFF. The table above shows the result that is assumed to be correct.

NA = not sampled

Table 2. Recent Uranium Flow-Paced Composite Sample Results

Locations (upstream → downstream)	GS10		B5INFLOW		GS08	
	Sample Period	Result (µg/L)	Sample Period	Result (µg/L)	Sample Period	Result (µg/L)
	1/3–2/16/2011	21.8	1/18–4/11/2011	13.5		
	2/16–4/11/2011	89.2	4/11–5/4/2011	9.1	3/24 – 3/26/2011	7.9
	4/11–5/4/2011	71.0	5/4–5/13/2011	14.6	3/26 – 3/28/2011	7.5
	5/4–5/13/2011	46.5	5/13–5/18/2011	11.9	3/28 – 3/30/2011	7.9
	5/13–5/20/2011	18.6	5/18–5/19/2011	8.0		
	5/20–6/3/2011	35.8	5/19–5/20/2011	10.3		
	6/3–6/13/2011	20.1	5/20–6/3/2011	10.5		
	6/13–7/1/2011	10.6	6/3–7/1/2011	6.2		
	7/1–7/8/2011	7.8	7/1–7/10/2011	5.3		
	7/8–7/10/2011	4.4	7/10–7/11/2011	4.7		
	7/10–7/11/2011	6.1	7/11–7/14/2011	<sup>a</sup>		
	7/11–7/21/2011	<sup>a</sup>	7/14–7/21/2011	<sup>a</sup>		
	7/21–8/24/2011	<sup>a</sup>	7/21–8/24/2011	<sup>a</sup>		
	8/24/2011–	<sup>a</sup>	8/24/2011–	<sup>b</sup>		

Notes: Some results are preliminary and subject to revision.

<sup>a</sup> Analysis pending

<sup>b</sup> Sample in progress

Table 3. Summary of Recent 12-Month and 30-Day Average Uranium Concentrations (µg/L)

Locations (upstream → downstream)	GS10		B5INFLOW		GS08	
	30-Day	12-Month	30-Day	12-Month	30-Day	12-Month
Date						
1/31/2011	21.4	14.2	9.8	<sup>a</sup>	No Flow	9.4
2/28/2011	47.3	14.1	13.5	<sup>a</sup>	No Flow	9.4
3/31/2011	89.2	14.1	13.5	<sup>a</sup>	No Flow	9.2
4/30/2011	77.1	18.8	10.0	<sup>a</sup>	No Flow	8.8
5/31/2011	28.1	21.5	10.9	<sup>a</sup>	No Flow	7.8
6/30/2011	17.1	22.8	6.5	9.8	No Flow	7.8
7/31/2011	NA	NA	NA	NA	No Flow	7.8
8/31/2011	NA	NA	NA	NA	No Flow	7.8

Notes: Some values are preliminary and subject to revision.

NA = calculation pending receipt of analytical results

<sup>a</sup> B5INFLOW not yet operating for 12 months

No Flow = 30-day averages are not calculated for days with no flow

Based on the LANL results for GS10, the RFLMA Parties agreed the following additional sampling data will help inform the ongoing evaluation.

- The following samples will be collected and sent to LANL for isotopic analysis to determine the percentages of natural and anthropogenic uranium.
  - Flow-paced surface water sample from GS10 to help confirm the previous sample results.

- Grab sample at surface water locations FC4750 and FC4991.
- Flow-paced surface water sample from B5INFLOW. This location does not have a previous LANL sample.
- Grab sample at a surface water location B3OUTFLOW in South Walnut Creek, which is between GS10 and B5INFLOW. One post-closure LANL sample was taken at B3OUTFLOW. The result was a 74.3 percent natural uranium signature.
- Wells 45608, 91203, 91305, and 15699, which are upgradient of GS10, will be sampled for uranium, and a sample from one of these wells will be selected for LANL analysis based on the uranium concentration. Of these, only well 91305 includes uranium as a routine RFLMA analyte.

These data will assist in the possible identification of a source that may have contributed to elevated uranium levels at GS10. Samples from the drainage area will also help determine if and where further evaluation samples may be taken.

- Wells 15699, 45608, and 91203 are not required under RFLMA to be sampled for uranium, but they will be sampled for uranium as a part of this evaluation to determine if the groundwater uranium concentrations are above the concentration at GS10 that triggered the reportable condition.
- The following wells that are required under RFLMA to be sampled for uranium and were most recently sampled before the reportable condition occurred will be sampled again to determine current groundwater uranium concentrations for comparison to historical data: 00203, 79502, and 79605, which are generally south and east of the former Solar Evaporation Ponds. Each of these evaluation wells was last sampled in April 2010. Wells in the former Building 991 area that are typically evaluated for uranium (including sentinel wells 91305, 99305, and 99405) were each sampled in the second half of April 2011, and the reported uranium concentrations were consistent with previous data. However, due to its location with respect to FC4991 and other Mound-area wells described previously, well 91305 again will be sampled for uranium as a part of this evaluation.

To keep the public informed, the outcome of continuing RFLMA Party consultation regarding the evaluation will be reported in RFLMA quarterly and annual reports of surveillance and monitoring activities or in subsequent Contact Records.

**Closeout of Contact Record:** This Contact Record will be closed when the evaluation is completed.

**Resolution:** Carl Spreng, CDPHE, approved this Contact Record.

**Contact Record Prepared By:** John Boylan, George Squibb, and Rick DiSalvo

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**Distribution:**

Carl Spreng, CDPHE  
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 Rocky Flats Contact Record File

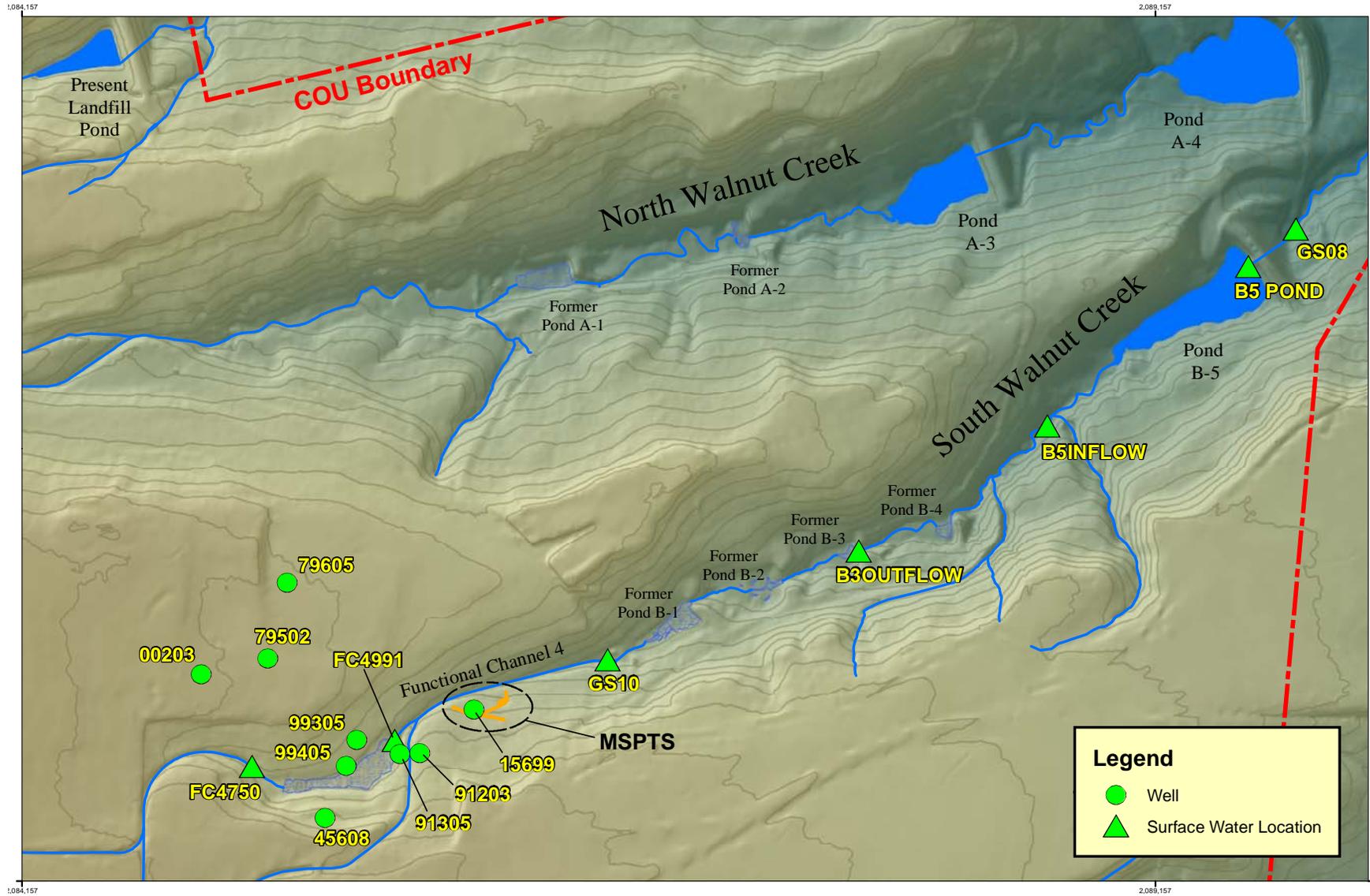


Figure 1. Sampling Location Map