ROCKY FLATS SITE REGULATORY CONTACT RECORD 2018-05

Purpose: Minor Modification of *Rocky Flats Legacy Management Agreement* (RFLMA) Attachment 2, "Legacy Management Requirements."

Contact Record Approval Date: December 4, 2018

Site Contact(s)/Affiliation(s): Scott Surovchak, U.S. Department of Energy (DOE); Linda Kaiser, Patty Gallo, David Ward, Navarro Research & Engineering, Inc. (Navarro)

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

Date of Consultation Meetings: September 21, 2017; January 25, 2018; May 14, 2018; July 31, 2018; October 16, 2018

Consultation Meeting Participants: Carl Spreng, Lindsay Masters, David Walker, Vera Moritz, Scott Surovchak, Linda Kaiser, George Squibb, John Boylan, David Ward, Patty Gallo

Introduction: Approval of this contact record (CR) will indicate that the RFLMA parties agree that RFLMA Attachment 2 should be modified to reflect changes since the last modifications to this attachment in December 2012. In summary, these changes will include:

- Incorporation of minor modifications approved by CR 2014-02, CR 2014-07, and CR 2015-04.
- Removal of references to "environmental covenant." The 2011 environmental covenant was superseded in April 2017 by a restrictive notice (also referred to as Environmental Use Restrictions) issued under *Colorado Revised Statutes* §25-15-318.5.
- Modification to RFLMA Attachment 2, Table 1, "Surface Water Standards" that includes a targeted list of analytes based on closure decisions and post-closure analytical data evaluation as discussed below, and updates to select metals standards and practical quantitation limits (PQLs).
- Modification of RFLMA Attachment 2, Table 2, "Water Monitoring Locations and Sampling Criteria" to delete obsolete monitoring locations and update monitoring location nomenclature.

Modification of Table 1: The original Table 1 list of analytes was included in Attachment 2 of RFLMA when the agreement was signed in 2007. The list came from a number of sources, including State of Colorado surface water quality standards and cleanup action levels for accelerated actions established in the *Rocky Flats Cleanup Agreement*. Extensive effort was not

made at the time to tailor the list of analytes to expected post-closure site conditions. Since that time, modifications to Table 1 have been limited to changes in surface water standards identified in the Rocky Flats five-year reviews. The list of analytes has not been updated since 2007.

DOE has been monitoring surface water and groundwater in accordance with RFLMA since 2007 and now has over 10 years of post-closure monitoring data. These monitoring data, in conjunction with identified site contaminants, were used in an evaluation of potential Table 1 modifications. The process for identifying modifications to Table 1 consisted of a two-part evaluation. The first part of the evaluation compared the analytes found on Table 1 to (1) analytes of interest (AOIs) identified in the *RCRA Facility Investigation-Remedial Investigation/Corrective Measures Study – Feasibility Study* (RI/FS) and (2) contaminants of concern (COCs) identified in the *Comprehensive Risk Assessment* (Appendix A to the RI/FS). If this CR is approved, all analytes found on Table 1 that were identified as AOIs or COCs for soil, surface water, sediment, and/or groundwater will be retained.

The second part of the evaluation used the decision logic in the existing flowcharts in RFLMA Attachment 2 and post-closure analytical data to determine if any monitoring objectives should be modified or discontinued. This review utilized a post-closure dataset that consists of all data collected from RFLMA surface water and groundwater monitoring locations over the time period April 1, 2007 through December 31, 2017. This dataset represents the post-closure period beginning with the first full calendar quarter after the effective date of RFLMA and ending with the last calendar quarter of 2017. If this CR is approved, all analytes found on the current Table 1 that were detected at any concentration, even if not identified as AOIs or COCs in the RI/FS, will be retained. The only analytes that will be removed from the current Table 1 are analytes that met both of the following criteria: (1) were not AOIs or COCs, and (2) were not detected in the post-closure dataset or for which no data were available (i.e., these were not targeted analytes and therefore no post-closure samples were analyzed for these analytes).

In order to ensure that Table 1 includes the most up to date information, all analytes retained as a result of the evaluation described above were further reviewed against current surface water quality standards and PQLs.

Standards. The most recent changes to numerical standards in Table 1 occurred during the third five-year review for the Rocky Flats Site and were adopted into RFLMA shortly thereafter. The basis for some of the metals standards in Table 1 (i.e., Table Value Standards [TVS]), are derived from equations. Some of these equations have been updated since RFLMA was signed. Therefore, these metals standards were recalculated using the most current toxicity equations for chronic exposure of aquatic life and a water hardness value of 143 mg/L (see 5 CCR 1002-38, Appendix 38-1 Section 38.6(3)). Based on these calculations, the standards for five metals (cadmium, copper, lead, nickel, and zinc) will be revised in RFLMA Attachment 2, Table 1 as follows:

Analyte	Previous Standard (mg/L)	New Standard (mg/L)
Cadmium, dissolved	1.50E-03	5.60E-04
Copper, dissolved	1.60E-02	1.20E-02
Lead, dissolved	6.50E-03	3.70E-03
Nickel, dissolved	1.23E-01	7.00E-02
Zinc, dissolved	1.41E-01	1.68E-01

Practical Quantitation Limits. Table 1 will be revised to include new PQLs, when appropriate and as agreed to by the RFLMA parties. The RFLMA parties adopted the lowest, reliably achieved PQL based on the analyte, CDPHE Hazardous Waste Corrective Action Unit experience at other Colorado sites, the 2014 Water Quality Control Division Implementation Policy for Practical Quantitation Limits, advancements in analytical method capabilities, and analytical results from over 10 years of RFLMA monitoring at the Rocky Flats Site.

As a result of the Table 1 revisions described above, LM will need to replace some analytical methods currently in use with methods that can attain lower detection limits. RFLMA does not require the use of specific analytical methods, except in the Original Landfill (OLF) and the Present Landfill (PLF) Monitoring and Maintenance Plans (M&M Plans). These Plans are incorporated by reference as enforceable requirements of RFLMA (RFLMA, Attachment 2, Section 5.3). In order to facilitate the changes approved in this minor modification, the RFLMA parties agree that LM may use any EPA-approved analytical method to analyze RFLMA monitoring samples collected in accordance with the OLF and PLF M&M Plans. Approval of this CR does not formally modify the landfill M&M Plans; however, the RFLMA parties agree that the requirement to use specific analytical methods should be removed during the next revision of the Plans.

A new column will be added to Table 1 (Surface Water Standards) titled "Analyte Category." This column will assign each Table 1 analyte to a category (metals, volatile organic compounds [VOCs], semivolatile organic compounds [SVOCs], or other) that can be directly tied to the required monitoring listed for each location in Table 2 (Water Monitoring Locations and Sampling Criteria). The 'other' analyte category is meant to capture analytes that are called out individually in Table 2 (e.g., plutonium, nitrate), as opposed to being part of a group of analytes. For example, samples from well 4087 are to be analyzed for VOCs, uranium (U), and nitrate according to Table 2. The VOC results in groundwater samples collected at well 4087 will be evaluated for each analyte marked 'VOCs' in the Table 1 "Analyte Category" column. The nitrate and uranium results from these samples will be evaluated using the individual nitrate and uranium standards in Table 1, which are categorized as 'other' in the last column. Several of the footnotes to Table 1 and Table 2 will be modified. The majority of these modifications will be editorial in nature (e.g., renumbering or removing obsolete language). However, some will be modified to clarify how the standards are evaluated with respect to analytical data. Specifically, these clarifying changes will include:

- Table 1, footnote [d] will be modified to read, "Specific analyte categories are referenced in Table 2 for the RFLMA monitoring locations. Analytes categorized as 'other' are specified individually in Table 2, if targeted for that location." This modification was necessary to describe the purpose of the "Analyte Category" described in the paragraph above.
- Table 1, footnote [e] will be modified to read, "Groundwater samples collected from monitoring wells for analysis of metals, Pu, Am, and U will be field-filtered. Analytical results will be evaluated against the corresponding Table 1 value whether the standard is listed as dissolved or total." This modification clarifies that the metals, Pu, Am, and U results associated with RFLMA groundwater samples collected from wells represent the dissolved fraction. Because the designated groundwater use classification at the site is surface water protection, these dissolved fraction concentrations better represent the groundwater that ultimately reaches surface water. Particulates that would be present in an unfiltered sample are naturally impeded as groundwater moves through the subsurface before it reaches surface water. In addition, from a practical standpoint, some of the RFLMA groundwater monitoring wells yield very little water and would not allow collection of the extra samples needed to analyze for both total and dissolved analytes. Therefore, the RFLMA groundwater data collected at wells is appropriate.
- Table 1, footnote [i] will be modified to read, "Chromium analyses for RFLMA monitoring locations are reported as the total concentration of chromium, which includes both trivalent (Cr-III) and hexavalent (Cr-VI) forms. These data are evaluated against the chromium water supply standard of 50 µg/L established for those waters classified for domestic water use."
 [5 CCR 1002-38.6(3), table footnote 5]
- Table 1, footnote [j] will be modified to read, "Nitrate analyses are reported as nitrate + nitrite (as Nitrogen) and are evaluated against the nitrate standard." The RFLMA parties agree that this practice is appropriate because surface water and groundwater at the site typically present aerobic conditions, which favor the presence of nitrate and not nitrite. The RI/FS states, "Nitrites are particularly unstable in aerobic environments, such as those generally observed at [Rocky Flats], which facilitate the oxidation and conversion of nitrites to nitrates. Therefore...the vast majority of the combined nitrite/nitrate concentration can typically be attributed to nitrate." The RI/FS further states that because the groundwater at the site is generally well oxygenated, it is likely that the predominant dissolved nitrogen species is nitrate (RI/FS 2006).

Pursuant to RFLMA paragraph 66, the RFLMA parties do not consider that these changes constitute a significant change from existing requirements of RFLMA, and this contact record provides public notice of the proposed minor modifications. Approval of this CR authorizes DOE to modify RFLMA Attachment 2.

Discussion: The specific minor modifications are described in detail below. Several RFLMA Attachment 2 subsections, tables, and figures will be modified. The minor modifications

approved by CR 2014-02, CR 2014-07, and CR 2015-04 are included in this CR for completeness. Text to be deleted is shown in single-line strikethrough, and new text is in bold. Modifications to tables and figures are summarized.

RFLMA Attachment 2

• Section 2.1, "Surface Water Standards"

Second paragraph: The remedy performance standards for surface water at the Rocky Flats Site are found in Table 1 and are based on the tables found in the WQCC Regulation No. 31: Basic Standards and Methodologies for Surface Water (5 CCR 1002-31) and on the site-specific standards in the WQCC Regulations No. 38 (5 CCR 1002-38). **The Table 1 standards are tailored to the conditions at the Rocky Flats Site and their use is limited to the evaluation of environmental monitoring data required by this agreement. The Table 1 standards do not supplant state of Colorado water quality standards applicable to surface waters at the site, which are named in the CAD/ROD. If the numeric values from the basic standards and the site-specific standards differ, the site-specific standard applies. In addition to Revisions to the practical quantitation levels limits (PQLs) allowed by the WQCC regulations, site-specific PQLs in Table 1** may be proposed to Colorado Department of Public Health and Environment (CDPHE) for approval. The RFLMA parties should consider PQL guidance, applicable regulations, site-specific conditions, and other relevant information in establishing PQL values. Any changes to the standards will be discussed in the annual legacy management report.

• Section 4.0, "Institutional Controls"

First paragraph: ... These controls are embodied in an environmental covenant granted by DOE to the CDPHE or by a restrictive notice issued by CDPHE instead of an environmental covenant, and are listed in Table 4. Prior to the restrictive notice, an environmental covenant was in place for the Central OU. The environmental covenant was superseded by the restrictive notice in April 2017 when the restrictive notice was with Jefferson County in April 2017. The environmental covenant or restrictive notice is recorded in the land records in Jefferson County, Colorado. DOE will annually verify the environmental covenant or the restrictive notice is on file in accordance with Section 5.3.6.

• Section 5.0, "Monitoring Requirements"

Second paragraph:...DOE will submitted the QAPP to CDPHE and EPA within two months of execution of the RFLMA.

• Section 5.1, "Monitoring Surface Water"

First sentence: Compliance with the surface-water standards in Table 1 will be measured at the Points of Compliance (POCs) downstream of the terminal ponds and consider groundwater in alluvium.

First bullet: Points of Compliance (POCs): Located in Woman and Walnut Creeks at the downstream Central OU boundary. These locations are used to demonstrate compliance with the surface-water standards in Table 1 and are identified as WOMPOC and WALPOC respectively. WALPOC, which replaced former POCs GS08 and GS11 on September 28, 2011, and

WOMPOC, which replaced former POC GS31 on September 9, 2011, will also replace GS03 and GS01 respectively upon DOE notification to EPA and CDPHE certifying that WALPOC and WOMPOC have been functioning as POCs for at least 2 years. EPA or CDPHE may extend the 2-year period by requiring DOE to submit a modification to this attachment in accordance with RFLMA paragraph 65 if either determines that such modification is necessary to ensure protection of human health and the environment.

• Section 5.3.6, "Monitoring Institutional Controls"

The effectiveness of the institutional controls described in Table 4 of this attachment and in the environmental covenant or restrictive notice required by Section 4.0 will be determined by inspecting the Central OU at least annually for any evidence of violations of those controls. DOE will also annually verify that the environmental covenant or restrictive notice for the Central OU remains in the Administrative Record and is recorded in Jefferson County.

• Section 5.4.2, "Pre-discharge Pond Sampling

First sentence: DOE will collect pre-discharge samples from Pond A-4, Pond B-5, and or Pond C-2, and as needed from any other pond upstream of a POC temporarily functioning as a terminal pond when said pond is operated in batch and release mode.

• Section 7.1, "Quarterly Legacy Management Reports"

Delete fourth bullet: Ecological sampling data

• Section 7.2, "Annual Legacy Management Reports"

Delete fourth bullet: Discussion of ecological sampling data

Ninth bullet: Verification of the Environmental Covenant restrictive notice and evaluation of the effectiveness of institutional controls;

- Modify Table 1, "Surface Water Standards" list of analytes based on closure decisions and post-closure analytical data; update select metals standards and practical quantitation limits (PQLs); revise and renumber footnotes as necessary to reflect changes.
- Add "Analyte Category" column to Table 1 that assigns each Table 1 analyte to a category (metals, VOCs, SVOCs, or other) that can be directly tied to the required monitoring listed for each location in Table 2, "Water Monitoring Locations and Sampling Criteria".
- Modify Table 2, "Water Monitoring Locations and Sampling Criteria" to remove monitoring locations that have been deleted and update monitoring location nomenclature.
 - Table 2, footnote (2) will be modified to read, "Laboratory analytes are limited to those listed in Appendix C of the Present Landfill Monitoring and Maintenance Plan and Post-Closure Plan. Where noted for surface water samples, flow rate is required to pace the automatic samplers."
 - Table 2, footnote (3) will be modified to read, "Laboratory analytes are limited to those listed in Appendix C of the Landfill Monitoring and Maintenance Plan, RFETS Original

Landfill. Groundwater samples collected from monitoring wells for analysis of metals, Pu, Am, and U will be field-filtered."

- Table 2, footnote (4) will be modified to read, "Analysis and evaluation of metals, and VOCs, and SVOCs will be performed for some or all of the analytes within the corresponding Analyte Category listed in Table 1."
- Table 2, footnote (5) will be modified to read, "Results for POCs are evaluated using Figure 5. POCs GS01 and GS03 will be replaced by WALPOC and WOMPOC per Section 5.1.
- Table 2, footnote (7) will be modified to read, "Results from AOC wells and SW018 are evaluated using Figure 7.
- Table 2, footnote (11) will be modified to read, "Results from Treatment System locations are evaluated using Figure 11. GWISINFNORTH and GWISINFSOUTH may be used for investigative purposes."
- Table 2, asterisk will be deleted: *Samples of ground water collected for U, Pu and Am analysis will be filtered in the field using a 0.45 um in-line filter.
- Table 3, "Present and Original Landfill Inspection and Maintenance Requirements"
 - Original Landfill: first row, second column, second dash: "visually inspect surface of landfill cover for cracks, depressions, heaving, sinkholes; visually inspect diversion berms; measure height and gradient if indicated (employ inclinometer monitoring results and topographic surveys as described in OLF M&M Plan).

Note regarding deletion above: Seven inclinometers were installed in 2008 as part of a geotechnical investigation at the OLF. The movement of the inclinometers was monitored monthly from July 2008 until May 2015, when it was observed that the majority of the inclinometers were broken and could no longer generate reliable data. With the approval of the RFLMA parties, as documented in a June 5, 2015 email, inclinometer monitoring at the OLF was discontinued.

- Figure 1, "Water Monitoring at Rocky Flats":
 - Delete locations GS01, GS03, GWISINFNORTH, GWISINFSOUTH, Sentinel well 88104, and MOUND R2-E
 - Rename locations ET EFFLUENT to MSETEF and ET INFLUENT to MSETINF
 - Delete within legend: WALPOC and WOMPOC will replace POC locations GS01 and GS03 as described in Section 5.1
- Figure 2, "Composite Plume Map," update to reflect changes to ponds as a result of previous dam breaches and update treatment system nomenclature.
- Figure 5, "Points of Compliance," footnote 1:

Calculated values for determining Reportable Condition and exceedances of remedy performance standards at POCs.

- Reportable conditions (according to Section 6.0):
 - \blacktriangleright plutonium, americium, uranium, nitrate \rightarrow 30-day average²

- Reportable Conditions and evaluation of compliance with remedy performance standards in Table 1:
 - > plutonium, americium, uranium, nitrate \rightarrow 12-month rolling average³ for POCs inside COU; 30-day average for GS01 and GS03.
- Figure 11, "Groundwater Treatment Systems":
 - Notes 2, 3, 4, 5 and 6: Change MSPTS to MSPCS
 - Note 4, "Influent locations," rename ET INFLUENT to MSETINF
 - Note 5, "Effluent locations,"
 - ► Replace R2-E with MSETEF
 - ➢ Rename ET EFFLUENT to MSETEF
 - Note 6, "Performance locations," rename GS10 to POM2
- Figure 13, "Pre-discharge Pond Sampling", top of flowchart:

Terminal Pond A-4, B-5, or C-2 (or other pond upstream of a POC serving as a terminal pond) operated in batch and release and conditions warrant routine non-emergency discharge

Actions Complete: The actions approved by this CR will be considered complete when this CR is approved, the minor modifications to RFLMA Attachment 2 have been made, and the modified RFLMA Attachment 2 is posted to the LM website.

Resolution: CDPHE, after reviewing the proposed minor modifications to RFLMA Attachment 2 and after consultation with EPA, has approved the modifications detailed in this CR. CDPHE has determined that the proposed modifications will not compromise or impair the function of the remedy.

Changes to the standards and PQLs in Table 1, as approved by this CR, will become effective on January 1, 2019, in order to synchronize with the RFLMA monitoring and reporting schedule. Because some of the analytical methods required to meet these revised standards and PQLs will require existing laboratory contracts to be revised, those methods will be used as they become available, but no later than April 1, 2019.

Contact Record Prepared by: Patty Gallo and David Ward

Distribution:

Lindsay Masters, CDPHE Vera Moritz, EPA Scott Surovchak, DOE Linda Kaiser, Navarro Rocky Flats Contact Record File