

ROCKY FLATS SITE REGULATORY CONTACT RECORD 2015-06

Purpose: Original Landfill (OLF) Implementation of Interim Action to Reestablish Surface Water Management on Portions of the OLF, with Soil Disturbance Review Plan

Contact Record Approval Date: July 28, 2015

Site Contact(s)/Affiliation(s): Scott Surovchak, U.S. Department of Energy (DOE); Kurt Franzen, Linda Kaiser, David Ward, John Boylan, George Squibb, Stoller Newport News Nuclear, Inc. (SN3), a wholly owned subsidiary of Huntington Ingalls Industries, Inc.

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

Date of Consultation Meeting: July 22, 2015

Consultation Meeting Participants: Carl Spreng, CDHPE; Scott Surovchak, DOE; Vera Moritz, EPA; Linda Kaiser, David Ward, George Squibb, John Boylan, SN3; Jody Nelson, Michelle Hansen, JG Management Systems, Inc.

Introduction: Contact Record (CR) 2015-03 approved immediate action to address areas of subsidence and the resulting standing water on portions of the OLF. This subsidence was caused by several weeks of precipitation in the spring of 2015. (May 2015 has been noted as the wettest May in Colorado's recorded history.) The immediate action has been successful in improving drainage of water on the surface of the OLF.

Localized instability of the East Perimeter Channel (EPC) of the OLF first occurred as the result of the rain event from September 9 through September 16, 2013, and was identified as a reportable condition in CR 2013-02, dated September 18, 2013. The efforts to repair, reconfigure, and stabilize the EPC that are listed in CR 2013-03 and modified in CR 2014-09 were postponed due to continuing moisture and weather conditions, and were ultimately completed in January 2015. Since that time, the site has received over 20 inches of precipitation. The subsidence has begun to slow in most areas and stopped in some areas.

Discussion: A qualified geotechnical engineer with prior experience at the OLF visited the OLF several times and made several recommendations to address the need to reestablish surface water flow off the OLF cover over the short term. Recommendations included "laying back" the ground at the top of the largest scarp to achieve a more gentle and uniform slope. This will require cutting up to 6 feet off the top of the scarp and placing the cut material at the base of the scarp, which will lessen the potential for excess erosion on the steep face and the resulting potential for deposits of eroded soil that could hamper the flow of water. To achieve this slope, a "field fit" approach will be used rather than detailed engineered designs. Re-grading this area would also reduce safety concerns presented by the steep scarp (see Figure 1).

Re-grading was also recommended to manage run on, requiring 3-foot cuts at the edge of the waste boundary and creating a series of smaller, but steeper than existing, berms as continuations of berms 4 through 7. Piping will also be added to convey water from the west end of the distressed area to the EPC. As part of the initial action (CR 2015-03), each of the berms was dammed and a pipe was installed to drain the water from the pools formed by the areas of subsidence off the landfill surface and down the slope. This existing piping can be repurposed to extend down the invert of the channels created by the new berms. The soil dams should remain to discourage water from bypassing the pipe. A series of rock dams can be placed over the pipe at intervals of 30 to 50 feet to ensure that piping remains in place until a longer-term solution is designed and implemented. The pipe and berms should slope approximately 10 percent or more to rapidly convey water across the distressed area to the EPC. In areas where relatively large flows have been observed following storm events, larger diameter pipe or multiple 4-inch diameter pipes could be used. Although these aboveground pipes will be subject to freezing for a short time during winter months, that risk should be offset by the ability to monitor pipe performance and correct issues over a comparatively long period of time during the remainder of the year. In addition, with the recommended slope there should be little water remaining in the pipes to freeze.

The area near the northeast edge of the OLF cover, where a rock drain was installed as a part of the OLF closure project, is very wet at the ground surface (see Figure 1). Observations by Rocky Flats staff and exploration using an excavator have shown that this drain appears to be at least partially blocked or clogged, hampering its effectiveness. The wet ground suggests the drain may be full of water that feeds permeable, low-strength lenses in the shallow soils. Excavation in the area to try to provide an outlet for water that may be collecting in the buried rock, thus providing a water source to the distressed areas, will be completed and will require an excavation of approximately 25 feet.

Cracks or voids observed at the ground surface will continue to be filled, tamped, or sealed off at the ground surface using heavy equipment or hand methods, as appropriate, to reduce infiltration of precipitation and snow melt. The ground surface will not be covered with an impermeable barrier, which would be subject to damage by high winds. Impermeable sheeting would also trap moisture and reduce evapotranspiration, potentially causing an increase in water content in the shallow subsurface.

Although distress has been less extensive on the western side of the OLF, local instabilities and distress have been noted (see Figure 1). These areas will be mitigated in a similar manner for the short term (but will not require intrusive work focusing on a subsurface drain, as planned on the eastern side). Scarps, hummocky surfaces, and other slope irregularities can be smoothed and drain pipes installed to more rapidly convey water across the distressed areas until the subsoils have dried and a longer-term solution has been designed.

Disturbed areas, both east and west, will be revegetated using a seed mixture that has proven successful in the area.

The important concept here is to not add any more weight to the OLF cover or water-management structures during this interim action. Therefore, the designed berm heights and cover thickness will not be maintained in these areas during this action. This is consistent with CR 2015-03, Original Landfill Immediate Response to Recent Precipitation, dated May 26, 2015.

DOE plans to start the work in August 2015 and complete it in September 2015. The longer-term approach to the stabilization of the OLF cover by a qualified geotechnical engineer is continuing.

Sampling of the Resource Conservation and Recovery Act wells that monitor the OLF is performed quarterly, and was most recently completed in May 2015. A composite sample at the surface water monitoring location downstream of the OLF in Woman Creek (GS59) was collected on May 18, 2015. This composite sample covers the period from May 9 to May 18. Results of the analysis of this sample will be available on GEMS (Geospatial Environmental Mapping System) after they are validated and will be reported in the corresponding quarterly report.

The soil disturbance, filling, and grading on the OLF cover are subject to the requirements of Rocky Flats Legacy Management Agreement (RFLMA) institutional controls (ICs) as discussed below. An approved Soil Disturbance Review Plan (SDRP) is required, and the RFLMA parties agree that the geotechnical engineer's recommendation provides sufficient information for the SDRP for the proposed work.

IC Evaluation: The soil disturbance work is subject to ICs 2, 3 and 6. Table 1 recaps these ICs.

Table 1. Institutional Controls

IC 2	Excavation, drilling, and other intrusive activities below a depth of three feet are prohibited, without prior regulatory review and approval pursuant to the Soil Disturbance Review Plan in RFLMA Attachment 2.
	Objective: Prevent unacceptable exposure to residual subsurface contamination. Rationale: Contaminated structures, such as building basements, exist in certain areas of the Central Operating Unit, and the Comprehensive Risk Assessment did not evaluate the risks posed by exposure to this residual contamination. Thus, this restriction eliminates the possibility of unacceptable exposures. Additionally, it prevents damage to subsurface engineered components of the remedy.
IC 3	No grading, excavation, digging, tilling, or other disturbance of any kind of surface soils is permitted, except in accordance with an erosion control plan (including Surface Water Protection Plans submitted to EPA under the Clean Water Act) approved by CDPHE or EPA. Soil disturbance that will not restore the soil surface to preexisting grade or higher may not be performed without prior regulatory review and approval pursuant to the Soil Disturbance Review Plan in RFLMA Attachment 2.
	Objective: Prevent migration of residual surface soil contamination to surface water. Rationale: Certain surface soil contaminants, notably plutonium-239/240, were identified in the fate and transport evaluation in the Remedial Investigation as having complete pathways to surface water if disturbed. This restriction minimizes the possibility of such disturbance and resultant impacts to surface water. Restoring the soil surface to preexisting grade maintains the current depth to subsurface contamination or contaminated structures.
IC 6	Digging, drilling, tilling, grading, excavation, construction of any sort (including construction of any structures, paths, trails, or roads), and vehicular traffic are prohibited on the covers of the Present Landfill and the Original Landfill, except for authorized response actions.
	Objective: Ensure the continued proper functioning of the landfill covers. Rationale: This restriction helps ensure the integrity of the landfill covers.

The required SDRP is in Attachment 1. The *Erosion Control Plan for Rocky Flats Property Central Operable Unit*, which has been approved by CDPHE and EPA, provides erosion control best-management practices that meet the IC 3 requirements.

Resolution: CDPHE, after reviewing information regarding the proposed soil disturbance and excavation and after consultation with EPA, will approve, approve with modification, or disapprove the proposed activity. CDPHE will determine whether the proposed activity: (1) will not compromise or impair the function of the remedy or (2) will result in an unacceptable release or exposure to residual subsurface contamination. CDPHE will also determine whether the proposed project meets the rationale and objectives of IC 2, 3 and 6.

CDPHE approved the proposed activity stated in this CR on July 28, 2015.

The work will be conducted after CDPHE's approval, but DOE will not conduct the approved soil disturbance until 10 calendar days after this Contact Record is posted on the Rocky Flats site's website and stakeholders are notified of the posting in accordance with the RFLMA Public Involvement Plan.

Progress and the completion of the work will be reported by DOE in RFLMA quarterly and annual reports of surveillance and maintenance activities for the period(s) in which these activities occur.

Closeout of Contact Record: This CR will be closed when the work is completed, post-construction reseedling has been performed, and post-construction erosion controls are in place.

Contact Record Prepared by: David Ward, John Boylan, and Kurt Franzen.

Distribution:

Carl Spreng, CDPHE
Vera Moritz, EPA
Scott Surovchak, DOE
Linda Kaiser, SN3
Rocky Flats Contact Record File

Attachment 1

Rocky Flats Legacy Management Agreement Soil Disturbance Review Plan

Proposed Project: Soil Disturbance Review Plan (SDRP) for Implementation of Interim Action to Reestablish Surface Water Management on Portions of the Original Landfill (OLF)

This SDRP provides information required by Rocky Flats Legacy Management Agreement (RFLMA) Attachment 2, "Legacy Management Requirements," Section 4.1, "Soil Disturbance Review Plan," regarding the work proposed by DOE.

Description of the proposed project, including the purpose, the location, and the lateral and vertical extent of excavation.

The purpose of the proposed project is to regrade portions of the OLF cover and East Perimeter Channel (EPC) and to reduce the slope grades in this area to improve slope stability and improve or reestablish drainage features to minimize the potential for infiltration of precipitation in the short term.

Contact Record (CR) 2015-06 Figure 1 shows the location and the lateral extent of the planned regrading, excavation, and soil disturbance. Laying back the largest scarp to achieve a shallower and more uniformly sloping configuration will require a cut of approximately 6 feet. Regrading the face of the cover as noted on CR 2015-06 Figure 1 will require a 3-foot cut at the edge of the waste footprint and in the EPC. The pothole indicated on CR 2015-06 Figure 1 will be approximately 25 feet deep.

Information about any remaining subsurface structures in the vicinity of the proposed project (or state that there are none if that is the case).

There are no remaining subsurface structures in the vicinity of the proposed project. An abandoned buried natural gas line operated by Xcel Energy is in the utility easement corridor north of the OLF. The location and alignment of this abandoned line is well known and marked with signs. It is well outside of the soil disturbance area.

Information about any former Individual Hazardous Substance Sites (IHSSs), Potential Areas of Concern, or other known or potential soil or groundwater contamination in the vicinity of the proposed project.

The OLF is former IHSS 115. The OLF design had a 2-foot-thick soil cover over the location of the disposed waste materials and clean Rocky Flats Alluvium fill surrounding the waste materials for the placement and configuration of storm water and seep water management features. Limits of the waste area are shown in Contact Record 2015-06 Figure 1.

The project area is in the Upper Woman Drainage Exposure Unit (EU) evaluated in the Comprehensive Risk Assessment, Appendix A, of the Remedial Investigation/Feasibility Study. The only contaminants of concern (COCs) identified for this EU are benzo[a]pyrene and dioxins/furans for surface soil/surface sediment.

Dioxin/furan concentrations were converted to 2,3,7,8-tetrachlorodibenzo-*p*-dioxin (TCDD) toxicity equivalents (TEQs) for COC screening and risk characterization. Noncancer risks for benzo[a]pyrene and 2,3,7,8-TCDD TEQ were not evaluated because those COCs do not have noncancer toxicity values. Risks were calculated for benzo[a]pyrene and 2,3,7,8 TCDD TEQ. The estimated Tier 1 total excess lifetime cancer risk to the wildlife refuge worker at the EU is 8E-06, and the Tier 2 risk is 4E-06.

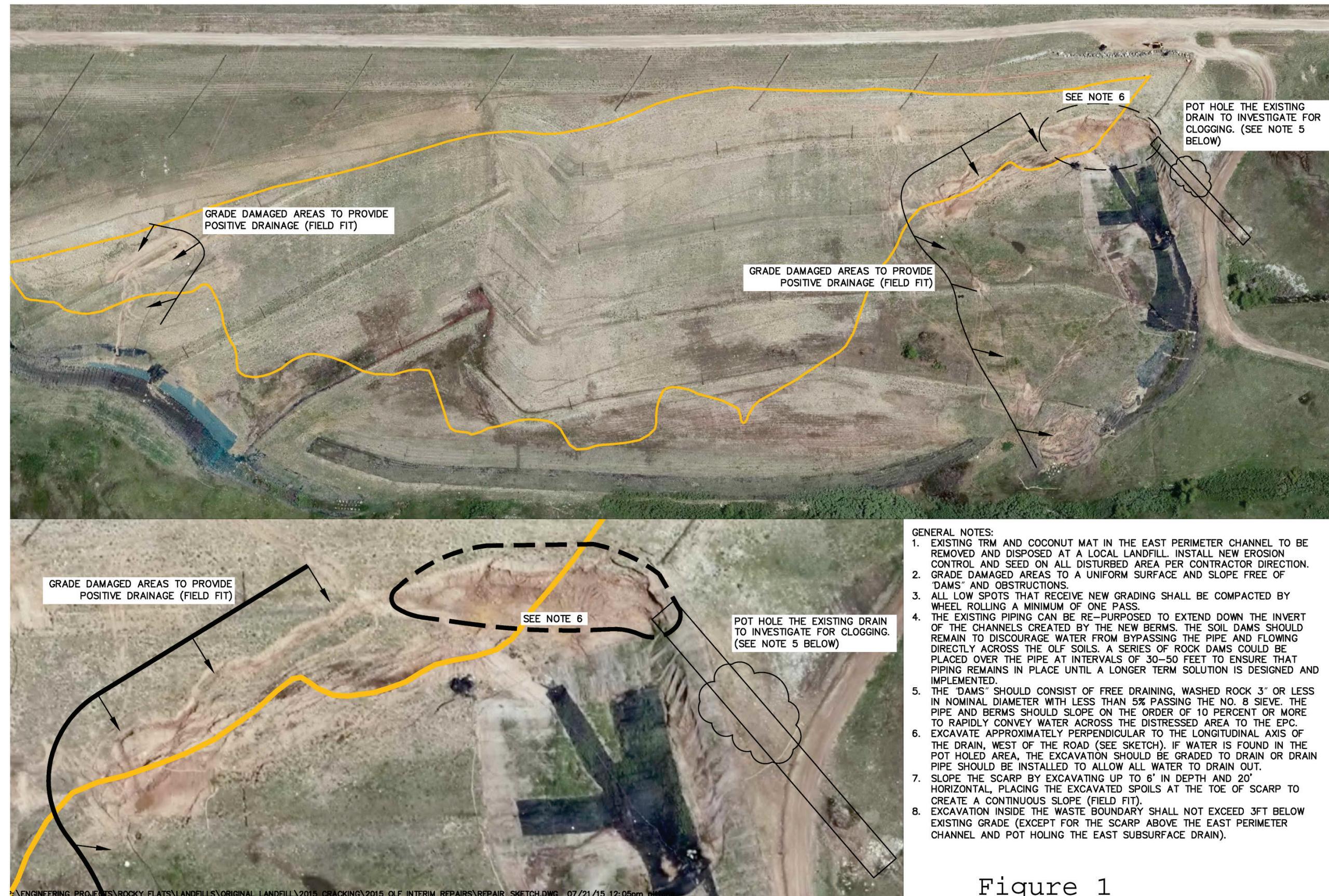


Figure 1