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memorandum

Richland Operations Office

DATE: JUN 0 9 2015

REPLY TO ATTN OF: AMRP:ETG\15-AMRP-0224

SUBJECT: MISCELLANEOUS RESTORATION REPORT: 100-K AREA DEBRIS REMOVAL

TO: Memo to File

The purpose of this memo is to transmit the subject document to the Administrative Record. If you have any questions, please contact me at (509) 376-5828.

Ellwood T. Glossbrenner, Project Lead
for the 100 Area Field Remediation

Attachment

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Miscellaneous Restoration Report: 100-K Area Debris Removal

Prepared for the U.S. Department of Energy by Washington Closure Hanford

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ACRONYMS

CERCLA	*Comprehensive Environmental Response, Compensation, and Liability Act of 1980*
DOE-RL	U.S. Department of Energy, Richland Operations Office
ERDF	Environmental Restoration Disposal Facility
MR	miscellaneous restoration
MSA	Mission Support Alliance
RCCC	River Corridor Closure Contract
WCH	Washington Closure Hanford
WIDS	Waste Information Data System

1.0 INTRODUCTION

1.1 PURPOSE AND SCOPE

This document summarizes the miscellaneous restoration (MR) activities that were performed by Washington Closure Hanford (WCH) within the 100-K Area (Figure 1). The coverage area described in this report (approximately 329 ha [813 ac]) does not include the 100-K Exclusion Area (Figure 2). The scope was performed per the River Corridor Closure Contract (RCCC) statement of work, Section C.2.10 Activity 10: Miscellaneous Restoration.

Miscellaneous restoration activities involve removal and disposal of materials from the River Corridor lands that have the potential for contamination with *Comprehensive Environmental Response, Compensation, and Liability Act of 1980* (CERCLA) hazardous substances. Washington Closure Hanford has implemented the MR work scope within the RCCC in two distinct components: (1) large-scale features and (2) small, isolated scattered debris. The large-scale features typically consist of engineered features that extend into multiple areas of the Hanford Site. These include abandoned railroad lines, abandoned above-grade utilities, and abandoned fencing. The small, isolated scattered debris typically consist of potentially hazardous surface debris that is identified during orphan sites evaluations and includes items such as large concrete debris that stands out above the natural terrain, empty drums, large stockpile areas of wood and debris, transite piping, and isolated piping. Other non-CERCLA debris is documented and identified as stewardship elements as a part of the orphan sites evaluation processes. Stewardship elements include items such as glass, electrical components, metal, wiring, or wood. General trash/garbage and small, isolated pieces of debris are scattered throughout the Hanford Site and are not typically recorded as either MR or stewardship elements. Debris items subject to cleanup were removed and disposed to the Environmental Restoration Disposal Facility (ERDF).

1.2 REMOVAL REQUIREMENTS

Removal and disposal of miscellaneous items to support site completion was selected in DOE/RL-2010-22, *Action Memorandum for General Hanford Site Decommissioning Activities*, and is further described in Sections 2.5 and 2.6 of DOE/RL-2010-34, *Removal Action Work Plan for River Corridor General Decommissioning Activities*. As specified in DOE/RL-2010-34, debris will be removed from any given area using industry standard methods (e.g., front-end loaders, dump truck). Completion documentation for removal and disposal of miscellaneous debris is required to be documented in a report and to include a description of the work performed, quantity of material removed and disposed, and cost information.

Figure 1. Location of the 100-K Area Within the River Corridor.

Figure 2. 100-K Miscellaneous Restoration Debris Locations.

1.3 HISTORICAL ACTIVITIES

The 100-K Area is located in the northwestern portion of the Hanford Site, adjacent to the Columbia River, and contains many cultural resources ranging from early prehistoric times up to the Manhattan Project (Figure 1). Historically, Native Americans fished and hunted in this area. There are several locations within the 100-K Area that contain remnants of native cultural activities such as cobble tools, fire-cracked rock, shallow house pits, and a cemetery.

The predominant Pre-Manhattan Project activities at these locations involved the livestock industry and agriculture. A portion of the Hanford ditch (irrigation canal) ran through the 100-K Area, which also supplied water to two homesteads. In 1943, the U.S. Government acquired the Hanford Site in support of the Manhattan Project's plutonium production mission, thus ending public use.

1.4 KEY TERMS AND DEFINITIONS

Miscellaneous Restoration (MR): An RCCC scope element that includes removing abandoned railroad lines, abandoned above-grade utilities, abandoned fences, and surface debris such as concrete that are not otherwise addressed by the CERCLA decision documents and that are considered contaminated or potentially contaminated with CERCLA hazardous waste. All below-ground debris and structures are excluded from the MR scope. Miscellaneous restoration also excludes de minimis volumes of non-CERCLA debris (small, scattered nonhazardous surface debris).

Orphan Sites Evaluation: A systematic approach involving historical review and field investigation activities to identify new source unit waste sites within the **River Corridor** that are not identified for characterization or cleanup within the existing CERCLA decision documents (records of decision). Results of each orphan sites evaluation are presented in a summary report including a description of the process and a listing of identified orphan sites. Listings of **MR** items and stewardship elements that are captured during the course of the evaluation are also included in the summary report. Orphan sites evaluations are performed for the reactor/operational areas and for the inter-areas of the River Corridor.

Reactor/Operational Areas: The primary activity areas within the **River Corridor** that supported the Hanford Manhattan Project and subsequent Hanford Cold War Era. An **orphan sites evaluation** is conducted for each identified reactor/operational area including the 100-B/C, 100-D, 100-F, 100-H, 100-K, 100-N, 100-IU-2, 100-IU-6, 300, and 400 Areas. Collectively, the reactor/operational areas consist of approximately 6,880 ha (17,000 ac).

River Corridor: A portion of the Hanford Site that is defined by the RCCC. The River Corridor is more than 56,296 ha (139,000 ac) in size and is bounded on one side by the Columbia River.

Stewardship Elements: Manmade features, items, or activity areas within the **River Corridor** that (1) do not meet the Tri-Party Agreement TPA-MP-14 criteria for waste site identification (RL-TPA-90-0001), (2) are not part of **MR** scope, and (3) are anticipated to remain after completion of the RCCC. Examples may include, but are not limited to, groundwater wells, building foundations, and physical hazards. Stewardship elements also include unsubstantiated historical research artifacts that were investigated.

Stewardship Information System: A WCH relational database consisting of four components: waste sites, facilities, MR items, and stewardship elements. The Stewardship Information

System is a primary WCH resource for capturing information in support of closure for **River Corridor** waste sites, facilities, reactors, miscellaneous debris items, and stewardship elements.

2.0 MISCELLANEOUS RESTORATION ACTIVITIES

The following section describes the debris removal activities performed in the 100-K Area. Specific summary reports regarding individual MR debris item removal, including photographs, are accessible from the WCH Stewardship Information System database.

2.1 MISCELLANEOUS DEBRIS REMOVAL

The 100-K surface debris items were identified based on a review of the features recorded during the orphan sites evaluation process. Site evaluations conducted from 2007 through 2011 were documented in reports OSR-2008-0003, *100-K Area Orphan Sites Evaluation Report*, and OSR-2011-0001, *100-F/IU-2/IU-6 – Segment 4 Orphan Sites Evaluation Report*. Ten MR debris items identified for removal in this area was provided in correspondence from WCH to the U.S. Department of Energy, Richland Operations Office (DOE-RL) in Letter 158712, "Identification of Miscellaneous Restoration Debris Items for the 100-BC, 100-D, 100-H, 100-K, 100-N, 300, and 400 Areas." Two additional MR debris removal items were also provided in correspondence from WCH to DOE-RL in Letter 166371 "Identification of Miscellaneous Restoration Items for IU 2 and IU 6 Including Segment 4 and Segment 5."

Table 1 describes the 12 MR surface debris item locations that required removal action within the 100-K Area. Locations of these debris items are shown in Figure 2. Debris removal was performed by use of track-hoe, rubber-tired back-hoe, and hand methods. Examples of 100-K MR debris items and removal are shown in Figures 3 through 8.

Table 1. 100-K Miscellaneous Restoration Debris Items. (2 Pages)

Orphan Site Evaluation Identification [a]	Date Removed (mo/yr)	Description	Debris Quantity (US tons)
K-025	10/12	The identified item is a 208-L (55-gal) drum filled with concrete and two 1.5-m (5-ft) railroad rails protruding from it.	74 [b]
K-026	10/12	This site is an approximate 10-m (33-ft)-diameter area covered with potential mechanical fishing seine.	b
K-027	10/12	The identified item is a wooden artifact that appears to be part of an old mechanical fishing seine.	b
K-029	10/12	The site consists of approximately 2 to 3 m^3 (2.5 to 5 yd^3) of concrete debris in a 5-m (16-ft)-diameter area.	b
K-030	10/12	The site consists of approximately 0.5 m^3 (0.67 yd^3) of concrete debris that was dumped over an embankment.	b
K-031	10/12	The site consists approximately 5 m^3 (6.5 yd^3) of concrete that was dumped to the ground.	b

Table 1. 100-K Miscellaneous Restoration Debris Items. (2 Pages)

Orphan Site Evaluation Identification [a]	Date Removed (mo/yr)	Description	Debris Quantity (US tons)
K-036	11/12	The site consists of a 25-cm (10-in.)-diameter cast iron pipe segment 8 m (25 ft) long and metal rods protruding from the ground.	[b]
K-052	01/12	Dump area, mostly concrete, area ~ 4,400 m². NOTE: Removed during 600-29 remedial action.	Not included
K-087	01/12	The site consists of a concrete pad and fenced enclosure in a 30-m (100-ft)-diameter area. NOTE: Removed during 600-29 remedial action.	Not included
K-131	11/12	Two sections of 8-in. carbon steel pipe approximately 15 m long.	[b]
SG4K-001	02/13	1- by 3-m sheet of aluminum.	[b]
SG4K-002	04/11	Approximately 50-m area of railroad components.	Not included; removed by MSA for reuse

[a] Source from OSR-2008-0003, *100-K Area Orphan Sites Evaluation Report*, and OSR-2011-0001, *100-F/IU-2/IU-6 – Segment 4 Orphan Sites Evaluation Report.*
[b] All quantities combined from the100-K Area are estimated to equal 74 US tons.
MSA = Mission Support Alliance

Figure 3. 100-K-30 Debris Prior to Removal.

Figure 4. 100-K-30 Debris Removal Activity.

Figure 5. 100-K-30 Debris Site After Removal.

Figure 6. 100-K-131 Debris Site Prior to Removal.

Figure 7. 100-K-131 Debris Site After Removal.

Figure 8. Collection of Debris for Disposal Into Roll-Offs.

Debris from two MR sites (K-052 and K-087), identified during the orphan site evaluation, was removed in January 2012 during the remedial action of the 600-29 Waste Information Data System (WIDS) site. These debris sites were located within the bounds of the WIDS site and were incorporated into the overall site characterization and removal activities. These sites were not included in the labor and cost calculations associated with this report.

Miscellaneous Restoration location SG4K-002, "Railroad Components," consisted of rail pieces; tie and splice plates; and miscellaneous nuts, bolts, spikes, and ties. These items were removed by Mission Support Alliance in April 2011 through inter-contractor transfer order for use at the 100-B Reactor Historical Museum. Items from SG4K-002 were not included in the cost summary of this report.

2.2 MISCELLANEOUS RESTORATION FENCE REMOVAL

The 100-K fencing as identified in Letter 157277, "Identification of Miscellaneous Restoration Fence Removal Scope," has been removed. Fencing associated with the 118-K-1 WIDS site was removed during remedial activities in 2012 and is not included in this report.

2.3 MISCELLANEOUS RESTORATION DEBRIS DISPOSAL

Collected debris from the remaining MR locations within the 100-K Area had a combined total weight of 74 US tons. The debris was collected into ERDF roll-off containers using back-hoes

and/or track-hoes. Material removed from the 100-K debris locations were transported to ERDF for final disposal in January 2012 and February 2013.

2.4 VERIFICATION OF REMOVAL

Upon completion of most of the removal activities a field walkdown was performed to verify removal of the surface debris items. The DOE-RL area representative accompanied the WCH project manager into the field and observed selected locations where debris items had been removed. The walkdown was performed in December 2012 and documented in CCN 0640580, "Management Walkthrough Observation Sheet for Field Remediation 100-K."

3.0 PROJECT COST SUMMARY

This section presents a summary of the project costs associated with the removal and disposal of the 100-K MR debris items. These removal activities created minimal surface disturbance; therefore, no revegetation costs were incurred. The total combined cost of work performed for these MR activities was approximately $70,800. As shown in Table 2, the average unit rate for work performed was approximately $960/US ton.

Table 2. Cost Summary for Removal and Disposal of Miscellaneous Restoration Debris Items.

Debris Area	Waste Quantity (US tons)	Removal ($K)	Disposal ($K)	Total ($K)	Average Cost ($K/US ton)
100-K	74	69.9	0.9	70.8	0.96

The removal cost data represent the fully-burdened labor, equipment, and materials cost for the work performed. Data presented in this summary include project costs for removal and load out, waste transportation, and disposal at ERDF. The cost data do not include costs associated with removal action work plan document development or other work control documentation.

Details for the ERDF disposal costs (provided in Table 2) are based on an average unit rate of $12.89/US ton (fiscal year 2012 disposal rate). Transportation costs to ERDF are included in the removal costs.

4.0 REFERENCES

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