100-HR-3 Groundwater Operable Unit Well Installation Sampling and Analysis Plan, Addendum 6: Wells 699-97-47B, and 199-H1-46

Prepared for the U.S. Department of Energy
Assistant Secretary for Environmental Management

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1 Introduction

Addendum 6 for DOE/RL-2013-35, 100-HR-3 Groundwater Operable Unit Well Installation Sampling and Analysis Plan, contains site-specific field sampling plans for extraction Wells 699-97-47B, and 199-H1-46. The objectives and requirements of these wells are defined in SGW-57571 (Plume Containment and Remediation Utilization Plan), and described below. General well construction information is found in Section 3.2.5 and Figures 3-1 and 3-2 of DOE/RL-2013-35. The following figures and tables are included in this addendum:

- Figure 1. Locations for Extraction Wells 699-97-47B, and 199-H1-46
- Figure 2. Generalized Well Construction Diagram for Extraction Wells 699-97-47B, and 199-H1-46
- Figure 3. Extraction Well 699-97-47B (C9485) General Stratigraphy and Split Spoon Sample Collection Intervals
- Figure 4. Extraction Well 199-H1-46 (C9486) General Stratigraphy and Split Spoon Sample Collection Intervals
- Table 1. Technical Justification Summary
- Table 2. Extraction Well 699-97-47B (C9485) Sample Collection
- Table 3. Extraction Well 199- H1-46 (C9486) Sample Collection

Extraction wells will be transitioned to the 100-HR-3 groundwater monitoring schedule for sampling on a quarterly basis to establish baseline conditions. Samples will be collected for the same list of parameters as described for post-development. Post-development samples will be analyzed on a 5 day turnaround time to ensure that the contaminant concentrations are as expected. The wells will also be added to the Interim Action Monitoring Plan for the 100-HR-3 and 100-KR-4 Operable Units (DOE/RL-96-90), and the 100-HR-3 Groundwater Operable Unit Monitoring Plan (DOE/RL-2013-30), following approval.

2 Technical Justification Summary

The technical justification for the wells identified above are as follows:

<table>
<thead>
<tr>
<th>Proposed Well</th>
<th>Technical Justification</th>
<th>Well Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>699-97-47B</td>
<td>Higher concentrations are present to the west of 100-H, but migrating to the east. Wells would be located in an apparent paleochannel, where increased flows are anticipated. Wells placed in areas of higher concentrations focusing on mass removal. The nearest waste site is approximately 200 meters downgradient of the proposed location (600-383; segment 4 battery remnant area #2 - dumping area).</td>
<td>Extraction</td>
</tr>
<tr>
<td>199-H1-46</td>
<td>Higher concentrations are present to the west of 100-H, but migrating to the east. Wells would be located in an apparent paleochannel, where increased flows are anticipated. Wells placed in areas of higher concentrations focusing on mass removal. The nearest waste site is approximately 20 meters north of the proposed location. Soil sampling during drilling was included to address any concerns associated with the waste site (600-151; dumping area).</td>
<td>Extraction</td>
</tr>
</tbody>
</table>
3 References


Figure 1. Locations for Extraction Wells 699-97-47B (C9485) and 199-H1-46 (C9486)
If sand or gravel is encountered within the RUM during drilling, that section of the well will be completed with a standard sump.

Figure 2. Generalized Well Construction Diagram for Extraction Wells 699-97B and 199-H1-46
Figure 3. Extraction Well 699-97-47B (C9485) General Stratigraphy and Split Spoon Intervals
Table 2. Extraction Well 699-97-47B (C9485) Sample Collection

<table>
<thead>
<tr>
<th>Sample Location</th>
<th>699-97-47B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Estimated Depth to Water</td>
<td>25 ft (7.6 m)</td>
</tr>
<tr>
<td>Projected Total Depth</td>
<td>45 ft (13.7 m)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Media</th>
<th>Sample Type</th>
<th>Comments</th>
<th>Estimated Depth (ft)</th>
<th>Analytes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soil/Geologic</td>
<td>Grab</td>
<td>Archival Purposes</td>
<td>Every 5 ft (1.5 m) and at lithology changes</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>Screen Selection</td>
<td>Every 5 ft (1.5 m) of screened interval within unconfined aquifer AND one from below the RUM contact (not composited with others)</td>
<td>Grain Size (Field Measurement)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Split Spoon</td>
<td>Mid-depth of Unconfined Aquifer</td>
<td>32 to 34.5 ft (9.7 to 10.5 m)</td>
<td>Hydraulic Conductivity</td>
</tr>
<tr>
<td>Water</td>
<td>During Drilling</td>
<td>Mid-depth of Unconfined Aquifer</td>
<td>32 (9.7 m)</td>
<td>Hexavalent Chromium (Field Measurement)</td>
</tr>
<tr>
<td></td>
<td>Pumped</td>
<td>After Well Development</td>
<td>Screened Interval</td>
<td>Bicarbonate, Carbonate, Calcium, Hexavalent Chromium (filtered and unfiltered), Total Chromium (filtered and unfiltered), Magnesium, Nitrate, Potassium, Strontium-90, and Sulfate</td>
</tr>
</tbody>
</table>

Note: Depths are approximate. Field conditions need to be considered for actual collection depth.

ft = feet
m = meters
Figure 4. Extraction Well 199-H1-46 (C9486) General Stratigraphy and Split Spoon Intervals

Notes:
Table 3. Extraction Well 199-H1-46 (C9486) Sample Collection

<table>
<thead>
<tr>
<th>Media</th>
<th>Sample Type</th>
<th>Comments</th>
<th>Estimated Depth (ft)</th>
<th>Analytes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soil/Geologic</td>
<td>Grab</td>
<td>Archival Purposes</td>
<td>Every 5 ft (1.5 m) and at lithology changes</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Screen Selection</td>
<td>Every 5 ft (1.5 m) of screened interval within unconfined aquifer AND one from below the RUM contact (not composited with others)</td>
<td>Grain Size (Field Measurement)</td>
</tr>
<tr>
<td></td>
<td>Split Spoon</td>
<td>Mid-depth of Vadose Zone</td>
<td>20 to 22.5 ft (6.1 to 6.9 m)</td>
<td>Hexavalent Chromium, Metals, VOA, Semi-VOA, TPH, PAH, Mercury, Pesticides</td>
</tr>
<tr>
<td></td>
<td>Split Spoon</td>
<td>Mid-depth of Unconfined Aquifer</td>
<td>35 to 37.5 (10.7 to 11.4 m)</td>
<td>Hydraulic Conductivity</td>
</tr>
<tr>
<td>Water</td>
<td>During Drilling</td>
<td>Mid-depth of Unconfined Aquifer</td>
<td>35 (10.7 m)</td>
<td>Hexavalent Chromium (Field Measurement)</td>
</tr>
<tr>
<td></td>
<td>Pumped</td>
<td>After Well Development</td>
<td>Screened Interval</td>
<td>Bicarbonate, Carbonate, Calcium, Hexavalent Chromium (filtered and unfiltered), Total Chromium (filtered and unfiltered), Magnesium, Nitrate, Potassium, Strontium-90, and Sulfate</td>
</tr>
</tbody>
</table>

Note: Depths are approximate. Field conditions need to be considered for actual collection depth.

ft = feet
m = meters