

MEETING NOTES

WMA A-AX Focus Area 1 Sample Interval Selection Meeting –C9396

Meeting Date: March 19, 2019

Location: 2440 Stevens Center Boulevard, Room 1600, Richland, WA

ATTENDEES:

Cindy Tabor (WRPS)
Dave Becker (WRPS)
Jan Bovier (DOE-ORP)
Rod Lobos (DOE-ORP)
Mike Barnes (Ecology)
Marysia Skorska (Ecology)
Kim Schuyler (Freestone)

BACKGROUND:

This meeting was part of the continuing effort to ensure communication between the Washington State Department of Ecology (Ecology), the U.S. Environmental Protection Agency (EPA), the U.S. Department of Energy Office of River Protection (DOE-ORP), and Washington River Protection Solutions (WRPS) representatives regarding characterization activities in Waste Management Area A-AX. Specifically RPP-PLAN-62041, *Sampling and Analysis Plan for WMA A-AX Focus Area 1 (Tanks 241-A-104 and 241-A-105)* states that “geophysical logging data along with any available quick turnaround analysis results (“quick turn”) for two mobile contaminants (technetium-99 and nitrate) will be used to aid in determining subsurface sample depths. The subsurface sampling horizons will be selected in an open meeting to which WRPS staff, DOE, Ecology, U.S. Environmental Protection Agency (EPA), and other site contractors shall be invited.”

Purpose of Meeting: This meeting was called to provide a brief update on field status, review geophysical logging data results from direct push locations C9395, discuss the sample depth selection process, and agree upon sample depth intervals for C9396.

Discussion: Ecology was provided information on one direct push locations in A Farm (exploratory direct push location C9395). This location had been pushed and geophysically logged. Logging results, which included total gamma, moisture, temperature, and spectral gamma (potassium, uranium, and thorium data, and historical information were used to select sample depths. Ecology was also briefed on the status of field work for WMA A-AX Focus Area 1. A map of WMA A-AX was presented and Cindy Tabor identified C9395/C9396 as the location in which sample depths are to be selected. The 241-A-105 Tank is the target of characterization.

Field Work Status:

Ms. Tabor provided a brief summary of field activities. Ms. Tabor identified that a more detailed field status had been previously provided to meeting attendees during the “Waste Management Area A-AX: Briefing on Focus Area 2 and Field Updates on Focus Area 1” meeting held on March 5, 2019.

- All work at location C9385/C9386 is complete.
- Location C9391 is being geophysically logged.
- Location C9393 been logged and Location C9394 was being sampled.
- Location C9395 has been logged.
- Work has not started at C9387/C9388.

Mike Barnes requested draft geophysical logging from C9391 but Ms. Tabor stated that the location was still being logged. She also noted that inclement winter weather had impacted logging schedule.

Sample Selection:

It was noted that the sample depth selection process is slightly different than described in the A-AX DQO (RPP-RPT-60227, Rev. 0, *Data Quality Objectives for Vadose Zone Characterization at Waste Management Area A-AX* [DQO]). A set of sample depths identified using a random selection process were available to be selected in lieu of strictly judgmental sample depths. A hard copy plot of C9395 gross gamma and moisture geophysical logging data was presented. The plots show sample depths, judgmental and random depths, overlain on the geophysical data plot. The meeting attendees were given the opportunity to decide if random sample depths, judgmental sample depths, or a combination of both should be selected. Ecology decided against using the randomly-generated sample depths.

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Ms. Tabor noted that sample depths are measured in ft length of piperun as opposed to ft below ground surface. The piperun measurement is the reference point used by the field sampling crew identify sample depth intervals in the field. Figure 1-3 from RPP-PLAN-62041 was displayed on the screen to facilitate the discussion of sample depths with respect to sample depth intervals. Ms. Tabor noted that this is the most shallow push location, extending to 139 ft below ground surface (bgs) (197 ft piperun). This location did not encounter the Hanford formation unit 3 or the Cold Creek Unit.

Per RPP-PLAN-62041, three shallow depths will be collected: surface, 10 to 12 ft of piperun (equivalent to 7 to 9 ft bgs), and 17 to 19 ft of piperun (equivalent to 12 to 14 ft bgs).

Ms. Tabor noted the first sample interval is below a pipeline show on the location map. Marysia Skorska inquired about the use of the pipeline (200-E-143-PL). Ms. Schuyler stated that it supplied waste to the WMA A-AX tanks and this sample depth was not selected due to a suspected leak. The first sample depth selected was **97-99 ft piperun** due to its unusual gamma signature. Ms. Tabor briefly discussed all of the sample depths identified Table 1 of Attachment A. Mr. Barnes inquired about the straightness of the push; Ms. Schuyler stated there was approximately 4 ft of offset at deeper depths. Mr. Barnes indicated that was an acceptable deviation.

Mr. Barnes indicated that the area beneath the southeastern edge of the corner (identified as Area "C" in Figure Figure 1-3 from RPP-PLAN-62041) should absolutely be sampled (**162-164 ft piperun**). This area saw cesium-137 contamination in the laterals after an aggressive sluicing campaign in 1970. It is unknown if the cesium-137 was remobilized from a previous leak or if this represented a new leak from Tank A-105. The attendees discussed adding a new sample depth, 99-101 ft piperun below the 97-99 ft piperun sample due to a lack of other features of interest. The attendees agreed to the sample depth **78-80 ft piperun**.

Mr. Barnes inquired about the temperature profile and notes that the plot is in °F but the data appear to be in °C. Ms. Schuyler took the action to discuss the inconsistency with the logging contractor. Mr. Barnes stated that he still expected the temperatures to be higher at this direct push location due to the extreme temperatures seen at the 216-A-106 Tank. In the past, temperature distribution was used as the initial indicator of a leak (before drywells or laterals were logged).

The attendees agree to sample depths **99-101** and **176-178 ft piperun**. Meeting attendees were not interested in sample collected at 66-68 or 192-194 ft piperun. Ms. Skorska was interested in collecting the 105-107 ft piperun sample due to its location below the gross gamma anomaly at ~94 to 104 ft piperun. Mr. Barnes identified that he thought the cesium-137 contamination seen in drywell 10-05-02 was caused by “dragged down” at the time the drywell was installed. Ms. Schuyler pointed out that this would be a good opportunity to verify contamination is not present in the area. The attendees agreed to the **105-107 ft piperun** sample depth. The attendees agreed that it is ok to collect three samples (97-99, 99-101, and 105-107 ft piperun) over a limited spatial range. The attendees discussed and agreed to collect only six deep samples at this location and agreed that an additional sample may be collected at another location.

Rod Lobos inquired about the sampling methodology with the direct push. Ms. Tabor explained sampling is conducted using a dual-string sampling system consisting of inner and outer strings deployed by small-diameter push rods. A sampler is attached to the inner string, returned to the bottom of the outer casing/push tubing, where it is “pushed” through the sample interval. Ms. Tabor also discussed the strategy of using the twin borehole approach: one push to geophysical log, the second push location (for sampling) is adjacent to the logging hole.

Ms. Skorska discussed a tool (beta probe) that was developed for the tank farms, which could quantify radionuclides and potentially reduce analytical testing. Ms. Tabor suggested discussing further in the next Tri-Party Agreement Milestone M-045-56 (Interim Measures) annual meeting.

The list of sample depths were re-read to the meeting attendees and all parties concurred with the list of sample depths identified in Table 1.

Table 1. Sample Depths Selected for C9395/C9396

Sample depth (ft piperun)	Reason	Stratigraphy
78-80	Increased moisture and gamma peak (near transition backfill/H1)	H1
97-99	Gamma peak increased (near area of casing corrosion at drywell 10-05-02, ~64 ft bgs)	
99-101*	Additional characterization in the unusual gamma spike	
105-107	Below area of contamination seen in drywell 10-05-02	
162-164	Below area of contamination seen in laterals, area of increased moisture and total gamma	H2
176-178	Highest moisture peak in apparent fine-grained material	

*This depth was not originally identified in Attachment 1

The following is the information was presented to Ecology during the meeting:

- Handout "Attachment 1"
- Summary of rationale and general notes to support sample depth selection for C9396 (see Tables 1 in Attachment 1).
- Copy of Figure 5-1 ("Direct Push Locations for WMA A-AX Focus Area 1") from RPP-PLAN-62041.
- Draft Spectra Gamma & Moisture Surveys (geophysical logs) in piperun depth for C9395. The logs show the proposed sample depths along with lithologic/stratigraphic unit information.
- One cross sections showing the relative location of the C9395/C9396 borehole path and sample depths with respect to the 241-A-105 Tank.
- Hard copies of Draft field geophysical logging results (gamma, moisture, temperature) from C9395.

Action Items:

- Ms. Schuyler check with the geophysical logging contractor and verify the units on the temperature log profile. Mr. Tabor will provide the answer to meeting attendees via email. [Completed 3/19/19].

Rodrigo Lobos

DOE Project Manager (print)



DOE Project Manager (signature)

4/10/19

Date

Michael Barnes

Ecology Project Manager (print)

Michael W Barnes

Ecology Project Manager (signature)

4-11-19

Date

Attachment 1

**WMA A-AX Focus Area Sample Depth Meeting – C9396
March 19, 2019**

Sampling Hole

C9396: Surface and Surface Duplicate, 7-9 ft bgs, and 12-14 ft bgs sample collected.

Data Evaluated to Help Determine Possible Sample Depths:

- Gamma, moisture, and temperature data for C9395 (45° angle push)
- Note: Plots are available in Vertical Depth (ft bgs) and Piperun Depth for C9395 since this is angle push.
- Vertical profile and cross section view of sample depths for C9395 (for depth perspective and relationship to tank)
- Relevant available dry well logging information (10-05-02)
- Sample depth information from C9386 and C9394.

General Notes:

- The basis for standard sampling is described in RPP-RPT-60227, DQO Report WMA A-AX, Rev. 0 (Focus Area 1), which indicates that these samples are to be collected from:
 - Recommending 10 sample depths: 3 sample depths of - surface, 7-9, and 12-14 ft bgs (vertical depths) and 7 deeper samples (intervals recommended are identified in Table 1).
 - Specific information on shallower intervals for the 45° angle of C9396:
 - 7 to 9 ft bgs is equivalent to 10 to 12 ft of piperun
 - 12 to 14 ft bgs is equivalent to 17 to 19 ft of piperun

Table 1: Sample Depth Recommendations for C9395/C9396

Recommended Sample Depth (ft <u>piperun</u>)	Judgmental	Stratigraphy	Random
	Reason		Recommended Sample Depth (ft <u>piperun</u>)
NA	NA	Backfill	25-27
66-68	Below pipeline		27-29
78-80	Increased moisture and gamma peak (near transition backfill/H1)		45-47
97-99	Gamma peak increased (near area of casing corrosion at drywell 10-05-02, ~64 ft bgs)	H1	81-83
105-107	Below area of contamination seen in drywell 10-05-02		117-119
162-164	Below area of contamination seen in laterals, area of increased moisture* and total gamma		142-144
176-178	Highest moisture peak in apparent fine-grained material	H2	163-165
192-194	Bottom of sampling hole		

Note: The following are the stratigraphic units identified from logging hole C9395 (in ft bgs):

Backfill = 0-52, H1 = 52-104, H2 = 104-124.

NA = not applicable

*Moisture reading approximately 18%.