MEETING NOTES
WMA S-SX Sample Interval Selection Meeting – D0640

Meeting Date: December 4, 2025

Location: Virtual Meeting via Microsoft Teams

Attendees:

Deanna Klages (H2C)
Richard Mahood (H2C)
Carly Nelson (H2C)
Kristin Singleton (H2C)
Rebecca Blackwell (HFO)
Jackson Davis (Ecology)
Cathrene Glick (Ecology)
Amie Green (Ecology)
George Peck (Ecology)
Johnathan Rogers (Ecology)
Noe'l Smith-Jackson (Ecology)
Ashley Roy (Freestone)
Kim Schuyler (Freestone)

Background:
This meeting was part of the continuing effort to ensure communication between representatives of the Washington State Department of Ecology (Ecology), the U.S. Department of Energy, Hanford Field Office (HFO), and Hanford Tank Waste Operations & Closure (H2C) regarding the field work associated with RPP-PLAN-65977, *Phase 2 RCRA Facility Investigation/ Corrective Measures Study Work Plan for Waste Management Area S-SX*, Appendix D, *Sampling and Analysis Plan.*

Purpose of Meeting:
This meeting was called to provide field status information, review geophysical logging data results from direct push D0639, and to select judgmental sampling depths for direct push D0640. D0639 and D0640 are located south of 241-SX Tank Farm (SX Farm).

Discussion:
Kristin Singleton (H2C) started the meeting by discussing that field work had already been completed in 241-S Tank Farm (S Farm) and the East Polygon, and that fieldwork is continuing in SX Farm. K. Singleton stated that in SX Farm there will be one deep (>15 ft below ground surface [bgs]) and nine shallow (≤15 ft bgs) sampling locations outside of the interim surface barrier, and seven deep sampling locations beneath the interim surface barrier, for a total of 17 locations.

K. Singleton provided an updated map of the planned and actual field locations for all locations at SX Farm (Attachment 1), then presented the agenda (Attachment 2) and provided a field status update:

<u>SX Farm (Exposure Area 2):</u>

- Sampling is expected to begin the week of 12/08/2025.
- Logging has been completed for 2 of 8 deep pushes as of 12/04/2025.
- Sample depth meeting for D0645 will be postponed due to detector over-saturation, caused by high radiological activity (i.e., contamination). Re-logging of the over-saturated zone will be performed to provide quantitative activity levels at a higher resolution to aid in identifying planned sample depths for health and safety purposes.

Sample Selection at D0640:

K. Singleton provided the reasons for deep sample collection at D0640:

- Determine if contamination in vadose zone soil is present in the WMA S-SX study area.
- Investigate UPR-200-W-146 (Tank 241-SX-115 Waste Loss Event).
- Supplement existing information from B8809 and C7170 (81-152 ft bgs).

K. Singleton displayed the geophysical logging data from D0639 (Attachment 3) with the proposed sample depths for D0640. Logging data included moisture (blue line), gross gamma (dark red line), temperature (bright red), cesium-137, and natural background radionuclide results for potassium, uranium, and thorium. K. Singleton stated that the preplanned shallow sample depths are 0-1 ft, 4-6 ft, and 12-14 ft per the SAP (RPP-PLAN-65977, Appendix D). Shallow sample intervals were increased by 1 ft, resulting in a sample depth interval of 3 ft. Over-driving the sampling tool helps to recover more sample material. Four deep samples per deep location will be collected at lithologic changes and within targeted lithologic units: (1) backfill/Hf2 contact, 2) bottom of Hf2, 3) Hf2/CCUz contact, 4) CCUz/CCUc). Up to two additional samples will be collected based on geophysical logging results.

The recommended sample intervals and rationale (identified in Table 2 of Attachment 2) were provided.

K. Singleton opened the discussion with the meeting attendees on whether any changes to the proposed sampling intervals are needed.

- Cathrene Glick (Ecology) asked why the location of D0639 was moved further south than anticipated and pointed out that the location is outside the tank farm excavation footprint, which meant drilling occurred in the side wall of the tank farm excavation. Richard Mahood (H2C) explained that the location was moved due to the impediment of the tank farm fence line and an uneven slope where drilling was planned. Kim Schuyler (Freestone) noted that even though drilling would occur in the side wall of the tank farm excavation, the purpose of drilling in this location was to determine if contamination from the 241-SX-115 tank leak (between 50 and 60 ft bgs) spread further south.

- C. Glick asked about the purpose of the proposed 18 to 20 ft bgs sample interval. K. Schuyler stated that per the SAP (RPP-PLAN-65977, Appendix D) a sample is to be collected at the backfill/Hf2 contact. C. Glick pointed out that since there is a limited number of samples, it would be more useful to pick a more interesting depth interval. K. Schuyler stated that the proposed 18 to 20 ft bgs sampling interval could be moved but it would be documented as a deviation from the SAP (RPP-PLAN-65977, Appendix D). C. Glick proposed moving one of the shallow sampling intervals to 32 to 34 ft bgs to capture the peak in moisture, gross gamma, and natural uranium. K. Schuyler stated that the shallow samples (those collected ≤15 ft bgs) could not be moved because results will be used to support the human health risk assessment, but the 18 to 20 ft bgs interval could be moved. C. Glick stated that since there was no indication of surface spills at this location, the prescribed backfill/Hf2 sampling interval had less significance and should be moved to 32 to 34 ft bgs. K. Singleton asked if the meeting attendees agreed on the proposed sample depth change from 18 to 20 ft bgs to 32 to 34 ft bgs. All concurred.

- K. Singleton identified that two additional samples were proposed. C. Glick asked what the reasoning was behind picking the extra samples. K. Schuyler said that the additional sampling interval from 56 to 58 ft bgs was to target an increase in gross gamma, and the sampling interval from 63 to 65 ft bgs was to target an increase in gross gamma and moisture. K. Schuyler added that the bottom of the tanks are expected to be around 50 ft bgs, so sampling within these intervals would show if there was any lateral spreading from the 241-SX-115 tank leak. C. Glick concurred with both additional sampling intervals.

- K. Singleton presented the remaining proposed sampling depths. C. Glick asked about the purpose of the 110 to 112 ft bgs sampling interval. K. Schuyler stated that it fulfills the SAP prescribed "lower Hf2" sampling interval, but that it can be moved, as the lithologic contacts were not obvious on this geophysical log. C. Glick concurred with the formation contacts identified in Attachment 3 but suggested moving the 110 to 112 ft bgs interval slightly to 111 to 113 ft bgs to capture the peak in gross gamma, natural potassium, and thorium. K. Singleton asked if the attendees at the meeting agreed on the proposed sample depth change from 110 to 112 ft bgs to 111 to 113 ft bgs. All concurred.

- C. Glick asked about the over-saturation identified in the D0645 geophysical log and if it was possible to sample within that interval. R. Mahood stated that the Radiological Work Permit will be updated, and re-logging the over-saturated interval will provide more details on the maximum concentration and dose rates expected. This information will be used to determine if it is safe for the workers to collect the sample. C. Glick expressed excitement over getting to review the D0645 geophysical log as it should be interesting.

K. Singleton asked if the meeting attendees agreed on all the proposed sample depths. All concurred.

Table 1. Sample Depths Selected for D0639/D0640

Recommended Sample Depth (ft bgs)	Reason	Stratigraphy
0-1	Preplanned surface sample	Backfill
3.5-6.5	Preplanned shallow sample interval	
11.5-14.5	Preplanned shallow sample interval	
32-34[a]	Target increase in gross gamma, moisture, and uranium	Hf2
56-58[b]	Additional sample to target increase in gross gamma	
63-65[b]	Additional sample to target increase in moisture and gross gamma	
111-113	Predetermined sample in the lower Hf2	
131-133	Predetermined sample at the Hf2/CCUz contact	CCUz
152-154	Predetermined sample at the CCUz/CCUc contact	CCUc

Backfill = 0-20; Hf2 = 20-131; CCUz=131-152; CCUc= 152- total depth

a. Sampling within this interval was decided instead of sampling at the predetermined backfill/ Hf2 contact.

b. Additional sampling interval based on geophysical logging results.

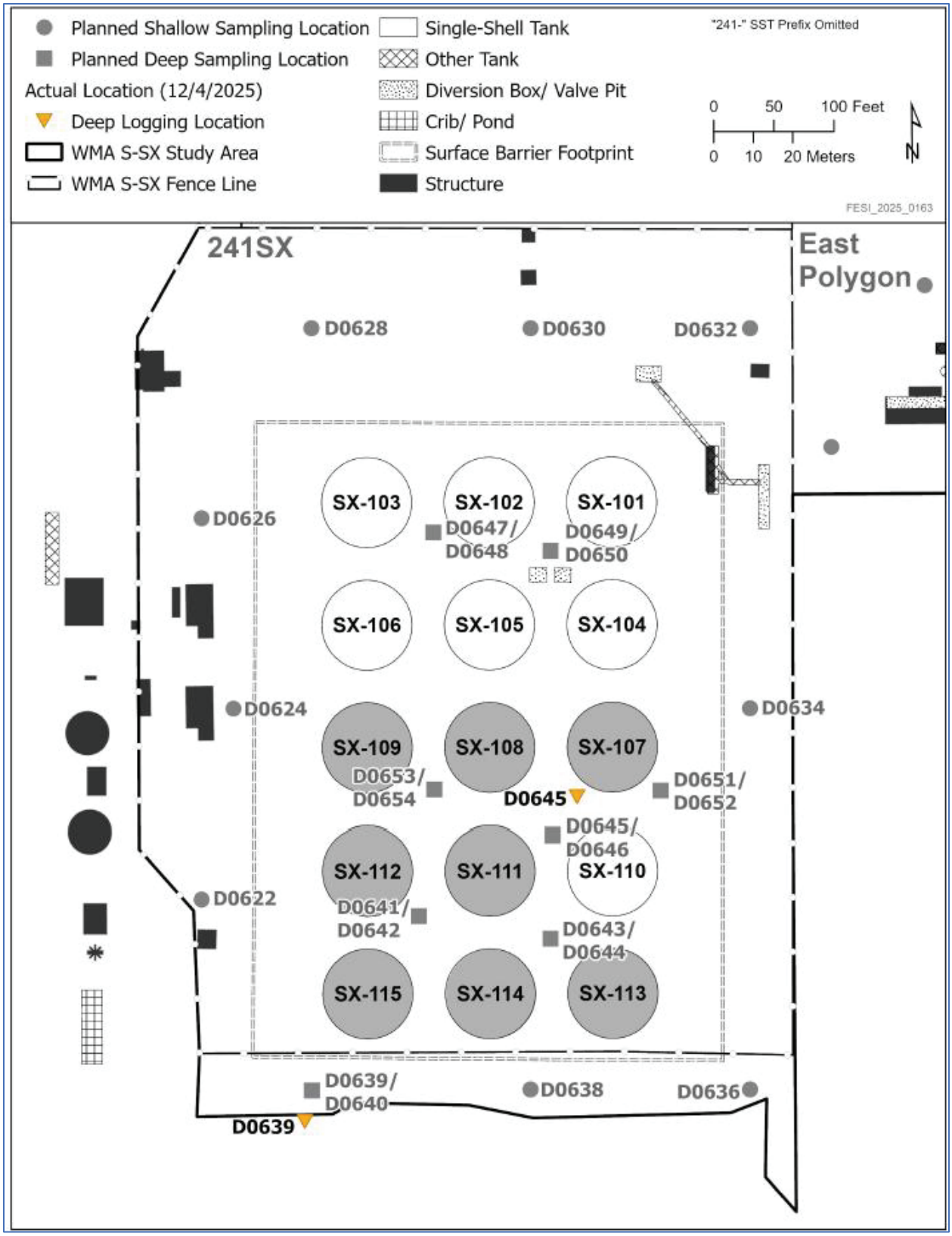
bgs = below ground surface
Hf2 = Hanford formation unit 2
CCUz = Cold Creek unit silt
CCUc = Cold Creek unit caliche

REBECCA BLACKWELL	Digitally signed by REBECCA BLACKWELL Date: 2026.04.29 08:52:44 -07'00'	
DOE Project Manager (print)	DOE Project Manager (signature)	Date
Amie Green	Digitally signed by amgr461@ecy.wa.gov Date: 2026.05.07 06:43:30 -07'00'	
Ecology Project Manager (print)	Ecology Project Manager (signature)	Date

Attachment 1

Map of Planned and Actual Field Locations within the 241-SX Tank Farm

(2 pages including cover sheet)


Planned Shallow Sampling Location
Planned Deep Sampling Location
Actual Location (12/4/2025)
Deep Logging Location
WMA S-SX Study Area
WMA S-SX Fence Line
Single-Shell Tank
Other Tank
Diversion Box/ Valve Pit
Crib/ Pond
Surface Barrier Footprint
Structure
"241-" SST Prefix Omitted
0 50 100 Feet
0 10 20 Meters
N
FESI_2025_0163
241SX
East Polygon
D0628
D0630
D0632
D0626
D0624
D0634
D0622
D0639
D0638
D0636
SX-103
SX-102
SX-101
SX-106
SX-105
SX-104
SX-109
SX-108
SX-107
SX-112
SX-111
SX-110
SX-115
SX-114
SX-113
D0647/ D0648
D0649/ D0650
D0653/ D0654
D0645
D0651/ D0652
D0645/ D0646
D0641/ D0642
D0643/ D0644
D0639/ D0640

Attachment 2

Agenda

(4 pages including cover sheet)

WMA S-SX Sample Depth Meeting
[D0639/D0640]
[12/4/2025]

Purpose of this Meeting:

- Field status summary
- Select judgmental sampling depths for D0640

Background Information:

This characterization is being performed to collect samples for the WMA S-SX study area according to RPP-PLAN-65977, *Phase 2 RCRA Facility Investigation/ Corrective Measures Study Work Plan for Waste Management Area S-SX*, Appendix D, *Sampling and Analysis Plan.* RPP-PLAN-65977 identifies 39 sampling locations.

- **S-Farm (Exposure Area 1) – 15 sample locations**
  - At every sample location, one surface sample and two additional shallow samples will be collected. Three shallow samples will be collected at every sample location.
  - Five of the 15 locations, four deep samples will be collected down to a depth of ~150 ft bgs or refusal, with up to two additional samples based on geophysical logging.
- **SX-Farm (Exposure Area 2) – 17 sample locations**
  - Ten surface samples will be collected at the 10 locations outside of the interim surface barrier. Two shallow samples will be collected at every location.
  - Eight of the 17 locations, four deep samples will be collected down to a depth of ~150 ft bgs or refusal, with up to two additional samples based on geophysical logging.
- **East Polygon (Exposure Area 3) – 7 sample location**
  - At every sample location, one surface sample and two additional shallow samples will be collected. Three shallow samples will be collected at every sample location.
  - One of the 7 locations, four deep samples will be collected down to a depth of ~150 ft bgs or refusal, with up to two additional samples based on geophysical logging.

WMA S-SX Sample Depth Meeting
[D0639/D0640]
[12/4/2025]

Field Status Summary:

Sampling:
Not started.

Logging:

Table 1: Direct Push Logging Holes Information

Location	Proposed Depth*	Actual Depth*	Logged	Decommissioned
SX-Farm (Exposure Area 2)				
D0639	~150	158	Complete 11/18/2025	Not Started
D0641	~150	--	--	--
D0643	~150	--	--	--
D0645	~150	159	Complete 11/24/25	Not Started
D0647	~150	In progress	--	--
D0649	~150	160	--	--
D0651	~150	159.5	--	--
D0653	~150	--	--	--

-- = to be determined
*Information is in feet below ground surface (ft bgs).

General Notes:

The preplanned shallow sample depths are 0-1 ft, 4-6 ft, and 12-14 ft per the SAP. Shallow sample intervals were increased by 1 ft. Rationale will be discussed during sample depth interval discussion for D0640.

Four deep samples per location will be collected at lithologic changes and within targeted lithologic units: 1) (backfill/Hf2 contact, 2) bottom of Hf2, 3) Hf2/CCUz contact, 4) CCUz/CCUc). Up to two additional samples will be collected based on geophysical logging results.

WMA S-SX Sample Depth Meeting
[D0639/D0640]
[12/4/2025]

SELECTION OF SAMPLING DEPTHS FOR D0640

Information Evaluated to Help Determine Possible Sample Depths at D0640:

- Geophysical logging data from D0639. Data includes gross gamma, moisture, spectral gamma, temperature and cesium-137 concentrations.

Reason for Deep Sampling:

- Determine if contamination in vadose zone soil is present in the Waste Management Area (WMA) S-SX study area.
- Investigate UPR-200-W-146 (Tank 241-SX-115 Waste Loss Event) and supplement existing information from B8809 and C7170 (81-152 ft bgs).

Table 2: Sample Depth Recommendations for D0639/D0640

Judgmental		Stratigraphy
Recommended Sample Depth (ft bgs)	Reason	
0-1	Preplanned surface sample	Backfill
3.5-6.5	Preplanned sample interval	
11.5-14.5	Preplanned sample interval	
18-20	Predetermined sample at backfill- Hf2 contact/ Gross gamma peak	
56-58*	Increase in gross gamma	Hf2
63-65*	Gross gamma and moisture	
110-112	Predetermined sample at bottom of the Hf2	
131-133	Predetermined sample at the Hf2-CCUz contact	
152-154	Predetermined sample at the CCUz-CCUc contact	CCUz

Note: The SAP outlines four predetermined samples per sampling location that will be collected at lithologic changes and within targeted lithologic units (backfill/Hf2 contact, bottom of Hf2, Hf2/CCUz contact, and the CCUz/CCUc contact).

* Additional sampling interval based on geophysical logging results

Backfill = 0-20; H2 = 20-131; CCUz=131-152; CCUc= 152- total depth

bgs = below ground surface
Hf2 = Hanford formation unit 2
CCUz = Cold Creek Unit silt
CCUc – Cold Creek Unit caliche

Attachment 3

Draft Geophysical Logs for 241-SX Farm Location D0639

(3 pages including cover sheet)

ITDC-PRES-25-6192

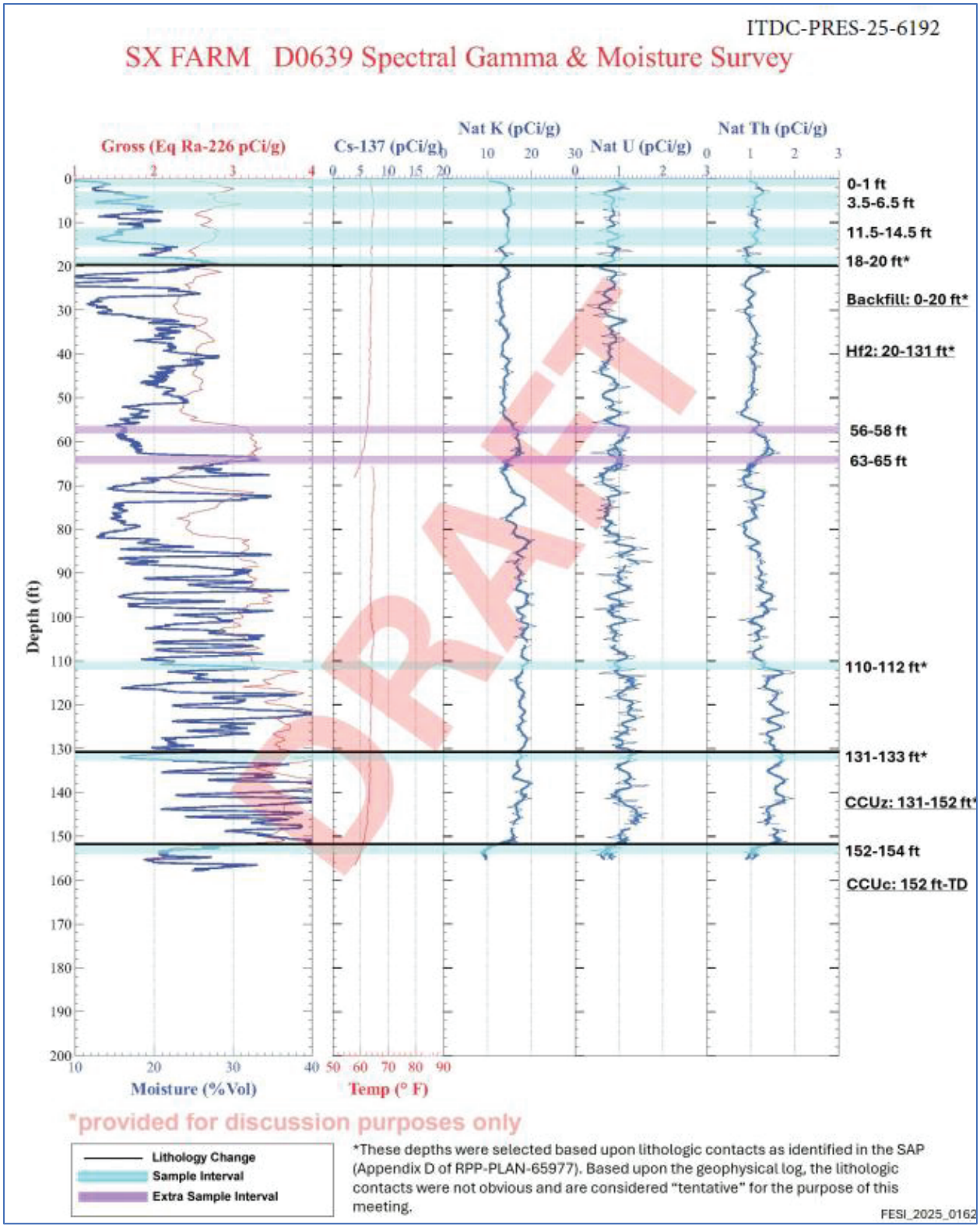
Draft Spectral Gamma and Moisture Survey

WMA S-SX D0639

The attached draft geophysical logging data is associated with WMA S-SX direct push sampling and RPP-PLAN-65977, *Phase 2 RCRA Facility Investigation/ Corrective Measures Study Work Plan for Waste Management Area S-SX*.

The draft spectral gamma and moisture survey data for D0639 is for discussion purposes only. The final geophysical logging data can be found in the associated completion report after the completion of this direct push sampling effort.

Approved for Public Release;
Further Dissemination Unlimited


ITDC-PRES-25-6192
SX FARM D0639 Spectral Gamma & Moisture Survey
Gross (Eq Ra-226 pCi/g)
Cs-137 (pCi/g)
Nat K (pCi/g)
Nat U (pCi/g)
Nat Th (pCi/g)
Depth (ft)
Moisture (%Vol)
Temp (° F)
0-1 ft
3.5-6.5 ft
11.5-14.5 ft
18-20 ft*
Backfill: 0-20 ft*
Hf2: 20-131 ft*
56-58 ft
63-65 ft
110-112 ft*
131-133 ft*
CCUz: 131-152 ft*
152-154 ft
CCUc: 152 ft-TD
DRAFT
*provided for discussion purposes only
Lithology Change
Sample Interval
Extra Sample Interval
*These depths were selected based upon lithologic contacts as identified in the SAP (Appendix D of RPP-PLAN-65977). Based upon the geophysical log, the lithologic contacts were not obvious and are considered "tentative" for the purpose of this meeting.
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