Minor
OPERATION AND MAINTENANCE
Activity Plan

A Line Sink Hole Investigation and Repair

Sherman C. Powell
Environmental Compliance Authority
NMD - H Area

12/13/18
Date

1. INTRODUCTION

An Operations and Maintenance (O&M) Plan was required because Construction Services will excavate to uncover the reason for a sink hole on the east side of A-Line. The sink hole is located northeast of the EUS Tank. Work Order No. 01671568 will investigate and determine the cause of the sinkhole.

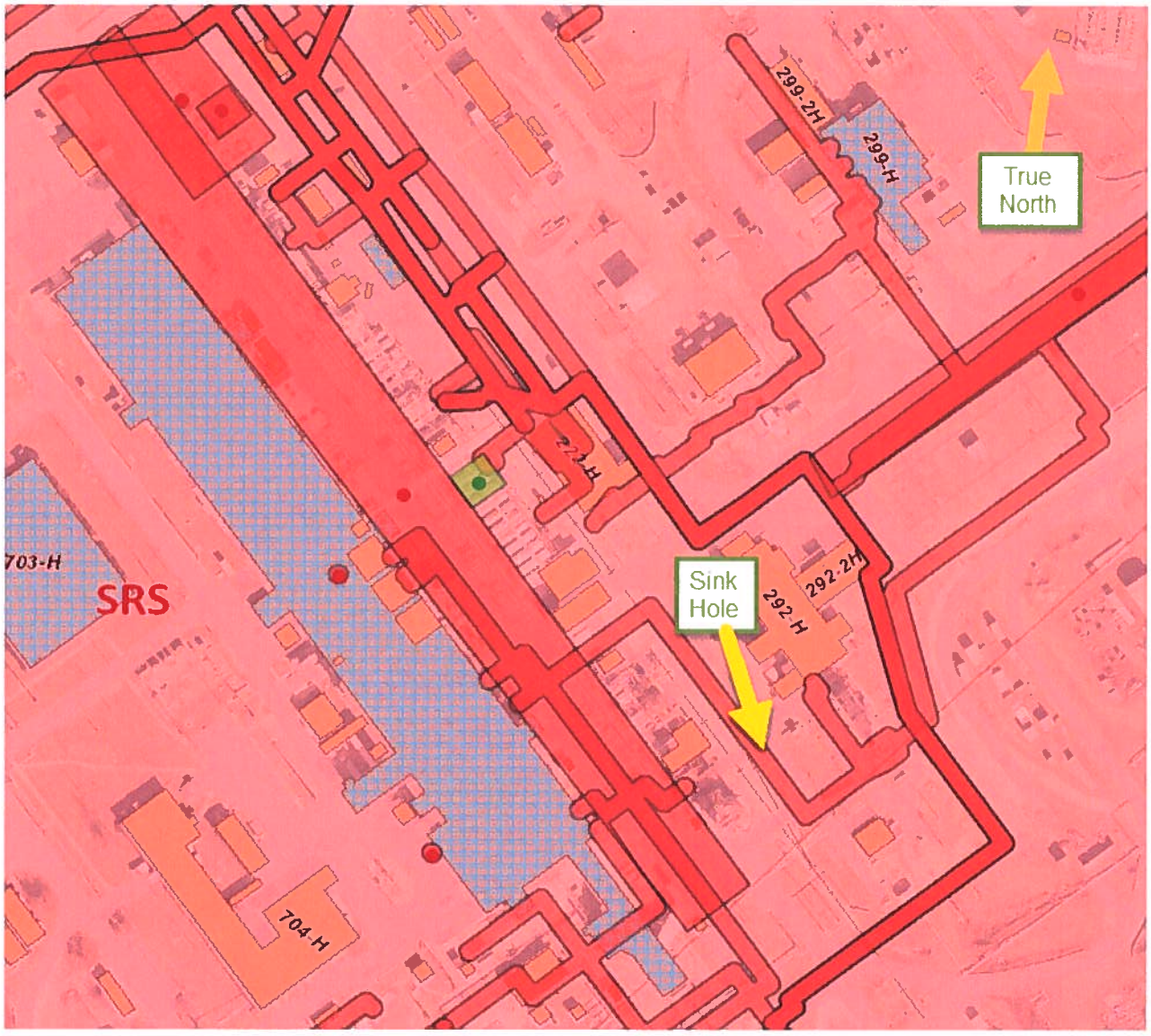


This activity is within Site Indexes (SI) 549 (General Separations Area Eastern Groundwater Operable Unit, No Building Number (NBN) and 591 (H Area Process Sewer Lines as Abandoned, NBN) (Federal Facilities Agreement, Reference 1). It is also within 200 feet of SIs 344 (Sand Blast Area CMH-001, NBN). SIs are also called RCRA/CERCLA Units. These SIs are in the FFA because of possible radiological contamination from past releases from H-Area operations. To date, there has been no remediation of these units.

This plan is characterized as "minor intrusive activity" based on the soil excavation meeting the definition of both "minor" and "intrusive" as defined in Reference 2.

2. AREA DESCRIPTION AND CONDITIONS

The area to be excavated is located on the east side of H Canyon near the Enriched Uranium Storage Tank EUS). The excavation will be performed to explore or discover the cause of the sinkhole.



3. O & M ACTIVITY

A. O&M Activity Description

The scope of the activity is to hand dig wide excavation for excavation of the H Area A-Line sink hole. SRNS Construction Services will perform the work in accordance with the provisions of Asset Suite Work Order #1671568 and AHA #HCA-23160. The activity occurs within a general SI and adjacent to several identified SIs.

ALL EXCAVATED SOIL IS EXPECTED TO BE RETURNED TO THE ORIGINAL LOCATION OF SOIL DISTURBANCE. THE DISPOSAL OF ANY SOIL WILL BE PER THE ENVIRONMENTAL COMPLIANCE AUTHORITY (ECA) AND RADIOLOGICAL PROTECTION (RP) DIRECTION.

B. O&M Activity Sampling and Monitoring for Health and Safety

The identified units are in the FFA because of possible radiological contamination from past releases from H-Area operations.

Radiological surveys were performed at the excavation site located northeast of the EUS Tank. The survey results (Survey CANY-I-20181024-7) are attached to and are a part of this O&M Plan.

Worker health and safety will be directed and controlled as required in the Assisted Hazard Analysis (AHA).

C. Health and Safety Plan

The health and safety concerns involve worker exposure to potential radiological contamination. RP shall provide for radiological monitoring during the excavation activities.

The work will be completed in accordance with the requirements stated in the AHA. The safety requirements and personal protective equipment described in the AHA are appropriate for the potential hazards related to the RCRA/CERCLA units.

D. Characterization and Sampling Plan for the Affected Area within the Unit

RP has prepared a sampling plan for work in this area and will conduct sampling of the soil excavated during this activity. If unexpected contamination is found, the SRNS On-Scene Coordinator (OSC) may request additional work scope and sampling from soil disturbed by the activity. Material removed as part of the excavation will be returned as backfill when the activity is completed.

E. Contaminated Materials Management and/or Disposal

Based on previous excavations in the vicinity, radiological contamination is not expected in the excavated soil. All waste will be disposed in accordance with guidance from RP, the

Generation Certification Official (GCO), and the ECA. Clean soil will be returned to the excavation once the investigation and remedy if necessary are complete.

F. Environmental Plans and Permit Modification Requests

This activity is not expected to involve other environmental plans / permits, required maintenance and inspections, or erosion control practices.

4. CONTINGENCY PLAN

During implementation of the activity, if the conditions change at any time such that the activity is no longer considered "minor" (as defined in Reference 2) or any other unanticipated event occurs, the Project Manager, the Project Construction Manager, or the ECA shall:

- Immediately notify the SRNS-OSC. If necessary, the SRNS-OSC will notify the DOE-OSC.
- Stop work, secure the area, contain and stabilize the area, and determine any necessary change to the activity plan.
- Notify the SRNS-OSC of the findings and proposed path forward. The SRNS-OSC will communicate the information to the DOE-OSC and obtain concurrence on the path forward.

5. DOCUMENTATION & REPORTING

H Canyon will transmit the following documentation to the SRNS-OSC within twenty days of the completion of the activity:

- The signed O&M plan
- Any sampling and characterization data collected

The following information is not expected to be generated by this activity, but, if generated, will be forwarded to the SRNS-OSC:

- The quantity (if any) of any contaminated materials generated, and
- The disposal location of any contaminated material, if generated.

Attachments

Attachment 1. Radiological Survey CANY-I-20181024-7, "Performed Soil Sampling for Construction NE of the EUS Tank to Determine Cause of Sinkhole".

References

1. SRNS-OS-94-42, Federal Facility Agreement for the Savannah River Site, Administrative Document Number 89-05-FF, effective August 16, 1993, Revision 0 of Appendix C for Fiscal Year 2017.

2. SRNS-RP-96-45, *Savannah River Site Plan for Performing Maintenance in Federal Facility Agreement Area (O&M) Plan (U)*, December 15, 1996.

Attachment 1: Radiological Survey CANY-I-20181024-7

VSDS Itemized RSLS

Survey CANY-I-20181024-7

General Information

Title: HOF- PERFORMED SOIL SAMPLING FOR CONSTRUCTION NE OF EUS TANK TO DETERMINE CAUSE OF SINKHOLE

Survey Date/Time: 10/24/2018 10:00 Lead Inspector: YOUNG, PENNY MORRIS

Location: NORTH EAST OF THE EUS TANK/A-LINE Work Order/Task #: 1671568

RWP #: N/A ID: W1402

Purpose: Job Coverage

Facility: HOF

Status: Approved by: LENDERMAN, JEWEL ELAINE, 10/29/2018 13:01:36 ID: W0069

Ready for Review by: YOUNG, PENNY MORRIS, 10/29/2018 11:51:52 ID: W1402

Instruments Used

#	Instrument Model	Instrument Serial #
1	12-110	CMC003606
2	12-Alpha	CMC006317
3	RO-20	CMC007943
4	HandECount	CMC004658
5	Micro Rem LE	CMC007817
6	HandECount	CMC013972

Comments:

RPD obtained two Composite soil samples on the NE side of the EUS tank for Construction to excavate Sink hole. (Back-hoe was used to break up concrete). Construction dug 4 ft in each sample point.
Soil Samples probe results were ND dpm/100cm2 (T) alpha and beta-gamma. Surveyed soil sample packages and mortar/pestle and tools.
Dose Rate for soil sample package was ND mrem/hr W,S and Ext. Bicron reading at sample locations was 20 urem/hr.
All Probe results ND dpm/100cm2 alpha and beta-gamma. Smear results <20 dpm alpha/100cm2 and <200 dpm beta-gamma/100cm2.
All soil sample results were < Minimum Detectable (MD) alpha, beta-gamma.
There were no RPD issues.
See attached Soil Sample Analysis Worksheets and Soil Grid Survey Sheet.

Itemized Details - Items

#	Item Location/Description	Comments
1	Soil Sample Packages	
2	Soil samples	
3	Mortar/pestle	
4	Tools	
5	BACK ho (SRO 1826)	

Alpha Smear

#	Data Value	Data Units	Comment
1	<20	DPM/100 cm2	2 smears
2	N/A	N/A	
3	<20	DPM/100 cm2	2 smears
4	<20	DPM/100 cm2	4 smears
5	<20	DPM/100 cm2	10 smears (scoop, tires)

Alpha Probe

#	Data Value	Data Units	Comment
1	ND	DPM/100 cm2 (T)	
2	ND	DPM/100 cm2 (T)	
3	ND	DPM/100 cm2 (T)	
4	ND	DPM/100 cm2 (T)	
5	ND	DPM/100 cm2 (T)	

Alpha LAW

#	Data Value	Data Units	Comment
1	ND	DPM/Wipe	
2	N/A	N/A	
3	ND	DPM/Wipe	
4	ND	DPM/Wipe	
5	ND	DPM/Wipe	

B/G Smear

#	Data Value	Data Units	Comment
1	<200	DPM/100 cm2	2 smears
2	N/A	N/A	
3	<200	DPM/100 cm2	2 smears
4	<200	DPM/100 cm2	4 smears
5	<200	DPM/100 cm2	10 smears (scoop,tires)

B/G Probe

#	Data Value	Data Units	Comment
1	ND	DPM/100 cm2 (T)	
2	ND	DPM/100 cm2 (T)	
3	ND	DPM/100 cm2 (T)	
4	ND	DPM/100 cm2 (T)	
5	ND	DPM/100 cm2 (T)	

B/G LAW

#	Data Value	Data Units	Comment
1	ND	DPM/Wipe	
2	N/A	N/A	
3	ND	DPM/Wipe	
4	ND	DPM/Wipe	
5	ND	DPM/Wipe	

DR Extremity

#	Rad Value	Rad Units	Comment
1	ND	mrem/hr	
2	N/A	N/A	
3	N/A	N/A	
4	N/A	N/A	
5	ND	mrem/hr	

DR Skin

#	Rad Value	Rad Units	Comment
1	ND	mrem/hr	
2	N/A	N/A	
3	N/A	N/A	
4	N/A	N/A	
5	ND	mrem/hr	

DR Whole Body

#	Rad Value	Rad Units	Comment
1	ND	mrem/hr	
2	N/A	N/A	
3	N/A	N/A	
4	N/A	N/A	
5	ND	mrem/hr	

Attachments

Order	Filename	Description	Pages
1	OSR 4-816.pdf	Soil Grid Survey Sheet	1
2	OSR 4-770.pdf	Soil Sample Analysis Worksheet	2

OSR 4-816 (Rev 3-16-2005)

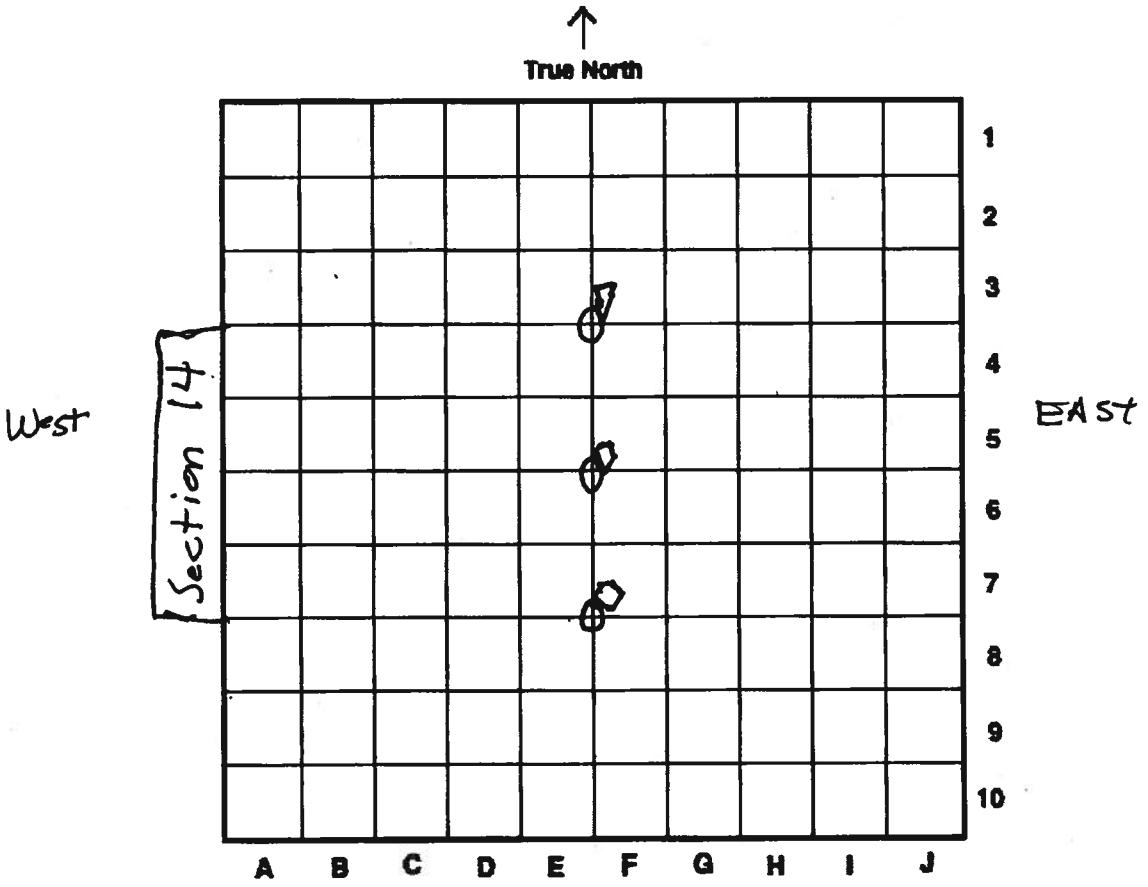
Soil Grid Survey Sheet

Ref SQ1.2, 485 Rev 10

Attachment to Survey No.
CAN4-I-20180910-12

Scale of this grid = 5ft per block

Average Background 15 µrem/hr



Legend
- ○ Location Gamma dose rate obtained
- ⬡ Location soil sample obtained

Survey Location Description
221-H West Wall Section 14

Remarks
NONE

CAN4-1-20181024-7

OSR 4-770 (Rev 8-22-2006)

Soil Sample Analysis Worksheet

Proc. Ref. 5Q1.2-303, Rev 12

Sample Information			
RCO Tracking No. 18-211-H-054	Requestor ID Z1892	Date 10-24-18	Time 1100

Portable Instrument Survey	
Portable Instrument ID α 6317	Portable Instrument ID β 3606

Initial Survey Data		Alpha	Beta
Exterior of Sample Container	Probe	ND dpm	ND dpm
	Removable	420 dpm/100 cm²	1200 dpm/100 cm²
Open Sample Container	Before Drying	ND dpm	ND dpm
Sample Drying Dish	After Drying	ND dpm	ND dpm

Visual Inspection: red clay with gravel Sample #1

Soil Type (Check One): ○ Sand ● Clay

Sample Analysis	
Counting System ID(s) A 4658 B N/A	Calibration Due Date(s) A 5-22-19 B N/A

Note: If counting system used provides results in gross cpm, manual calculations for determination of dpm must be shown in appropriate section provided

Non-HandECount

$$MDA = \left[\left(\frac{2.71}{T_s} \right) + 3.29 \sqrt{\frac{B}{T_s} + \frac{B}{T_b}} \right] \times CF_{Scaler} \times CF_{Soil}$$

HandECount

$$MDA = \left[MDA_{HandECount} \right] \times CF_{Soil}$$

Soil Correction Factors

Beta 1.82
Alpha 26.12

Alpha: 10 minute (10 min. minimum) Count Time provides an Alpha MDA of 3.0 dpm (less than 250 dpm/gm) 10/24/18

☑ N/A - OR - Gross Counts ÷ Count Time - Bkg (cpm) x CF = dpm

Sample Alpha Activity 6 dpm x 26.12 = 157 dpm/gm ÷ 2.22 = 71 pCi/gm

Beta: 10 minute (10 min. minimum) Count Time provides an Beta MDA of 41.0 dpm (less than 100 dpm/gm)

☑ N/A - OR - Gross Counts ÷ Count Time - Bkg (cpm) x CF = dpm

Sample Beta Activity 69 dpm x 1.82 = 126 dpm/gm ÷ 2.22 = 57 pCi/gm

Analyzed By (Print Name)	Signature	Date	Time
P.M. Young	P.M. Young	10-24-18	1355
Reviewed By (Print Name)	**Signature**	**Date**	
J.E. Lenderman	J.E. Lenderman	10.24.18	

CAN4-1-20181024-7

OSR 4-770 (Rev 8-22-2006)

Soil Sample Analysis Worksheet

Proc. Ref. 5Q1.2-303, Rev 12

Sample Information			
RCO Tracking No. 18-211-H-055	Requestor ID Z1892	Date 10-24-18	Time 1100

Portable Instrument Survey

Portable Instrument ID α 6317	Portable Instrument ID β 3606

Initial Survey Data		Alpha	Beta
Exterior of Sample Container	Probe	ND dpm	ND dpm
	Removable	420 dpm/100 cm²	4200 dpm/100 cm²
Open Sample Container	Before Drying	ND dpm	ND dpm
Sample Drying Dish	After Drying	ND dpm	ND dpm

Visual Inspection: red clay with gravel Sample #2

Soil Type (Check One): ○ Sand ● Clay

Sample Analysis

Counting System ID(s): A 4658 B N/A

Calibration Due Date(s): A 5-22-19 B N/A

Note: If counting system used provides results in gross cpm, manual calculations for determination of dpm must be shown in appropriate section provided.

Non-HandECount

$$MDA = \left[\left(\frac{2.71}{T_s} \right) + 3.29 \sqrt{\frac{B}{T_s} + \frac{B}{T_b}} \right] \times CF_{Scaler} \times CF_{Soil}$$

HandECount

$$MDA = \left[MDA_{HandECount} \right] \times CF_{Soil}$$

Soil Correction Factors

Beta 1.82
Alpha 26.12

Alpha: 10 minute (10 min. minimum) Count Time provides an Alpha MDA of 3.0 dpm (less than 250 dpm/gm)

☑ N/A - OR - Gross Counts ÷ Count Time - Bkg (cpm) x CF = dpm

Sample Alpha Activity 9 dpm x 26.12 = 235 dpm/gm ÷ 2.22 = 106 pCi/gm

Beta: 10 minute (10 min. minimum) Count Time provides an Beta MDA of 41.0 dpm (less than 100 dpm/gm)

☑ N/A - OR - Gross Counts ÷ Count Time - Bkg (cpm) x CF = dpm

Sample Beta Activity 72 dpm x 1.82 = 131 dpm/gm ÷ 2.22 = 59 pCi/gm

Analyzed By (Print Name)	Signature	Date	Time
P.M. Young	P.M. Young	10-24-18	1345
Reviewed By (Print Name)	**Signature**	**Date**	
J.E. Lenderman	Jared Lenderman	10-24-18	