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# FIELD SAMPLING PLAN ADDENDUM 9

## WEST LAKE LANDFILL SUPERFUND SITE OPERABLE UNIT 1

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**Prepared For:**

The United States Environmental Protection Agency Region VII



**Prepared on Behalf of:**

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# LIST OF ACRONYMS

<u>ACRONYM</u>	<u>Definition</u>
bml	below mud line
DI	Design Investigation
DIER	Design Investigation Evaluation Report
DIWP	Design Investigation Work Plan
DMP	Data Management Plan
DOE	U.S. Department of Energy
DPT	direct push technology
EPA	U.S. Environmental Protection Agency
FSP	Field Sampling Plan
NSWB	North Surface Water Body
OU	Operable Unit
pCi/g	picocurie/gram
QAPP	Quality Assurance Project Plan
RIA	Remedial Investigation Addendum
RIM	radiologically impacted material
Site	West Lake Landfill Superfund Site

# 1.0 ADDITIONAL SEDIMENT SAMPLING

## 1.1 Introduction

This Field Sampling Plan (FSP) Addendum 9 has been prepared on behalf of West Lake Landfill OU-1 Respondents Bridgeton Landfill, LLC, Cotter Corporation (N.S.L.), and the U.S. Department of Energy (DOE) (collectively, Respondents) for the design investigation for the selected Amended Remedy for Operable Unit-1 (OU-1) of the West Lake Landfill Superfund Site (Site). The United States Environmental Protection Agency (EPA) approved (with modifications) the FSP, with the associated Design Investigation Work Plan (DIWP), Quality Assurance Project Plan (QAPP), and Data Management Plan (DMP), in September 2020. The final version of the FSP is dated October 16, 2020.

Addendum 9 has been prepared in response to: (i) analytical results from sediment samples with greater than 7.9 picocuries per gram (pCi/g) for combined thorium and/or combined radium in a subset of the samples collected between July 2022 and September 2022 and (ii) in response to EPA's June 22, 2023, Design Investigation Evaluation Report (DIER) Comment letter. Historical aerial photography was evaluated in conjunction with recently collected data to develop a plan for the next phase of field work in the North Surface Water Body (NSWB).

Addendum 9 investigation results will be summarized in an addendum to the DIER which will include the data results and a figure depicting the revised extent of RIM based on those results if changes are warranted.

## 1.2 Summary of Design Investigation Findings

Sediment samples were collected as part of the initial phase of the DI from locations in and adjacent to the NSWB. Results from the sampling indicated that the concentration of combined thorium at one location in the NSWB (NWB-SED-03) was greater than 7.9 pCi/g from the depth interval of 1 to 2 feet below the mud line (bml), which was the deepest interval sampled during the initial investigation. Analytical results are presented in **Table A9-1** and on **Figure A9-1**.

Based on the initial sampling results, additional sampling was proposed in FSP Addendum 7 to assess the radionuclides in deeper sediments at these locations. Analytical data for the additional sampling locations are included in **Table A9-1**. NWB-SED-03-R was installed to assess the concentration of deeper sediments in the vicinity of the original location NWB-SED-03. Step-out borings NWB-SED-03-A and NWB-SED-03-B were also installed to the west and east, respectively, and offset towards the middle of the water body from the original location (NWB-SED-03). Combined thorium at NWB-SED-03-A ranged from 6.43 pCi/g at the surface to 15.1 pCi/g at 3.0 to 3.8 feet bml, the deepest interval sampled. Combined thorium at NWB-SED-03-B ranged from 4.35 pCi/g (0.5 to 1 foot bml) to 22.5 pCi/g (3 to 4 feet bml). Based on these samples and others, the vertical extent of RIM has not been delineated in the NSWB.

Step-out borings AC-SED-7-A, NWB-SED-01-R, NWB-SED-02-R, and NWB-SED-04-R1 were installed to further delineate the vertical extent of RIM. Combined thorium results at AC-SED-7-A were lowest (1.69 pCi/g) at the deepest interval sampled (2 to 3 feet bml), and below the definition of RIM. NWB-SED-01-R was sampled with a different methodology, since previous methods were not successful, that allowed sampling from deeper intervals (i.e., 2.7 to 3 feet and 3 to 3.9 feet bml) without collecting overlying sediments. Combined thorium results observed in these deeper intervals were lower (2.08 pCi/g and 2.67 pCi/g, respectively) than the results observed from 1 to 2 feet bml during the initial mobilization (i.e., 7.02 pCi/g at NWB-SED-01) and were below

the definition of RIM. The results in NWB-SED-02-R were highest (14.1 pCi/g) and exceeded the RIM definition in the deepest interval sampled (from 2 to 3 feet bml). NWB-SED-04-R1, which was offset from the originally planned location, had a combined thorium concentration of 12 pCi/g in the deepest interval sampled (3 to 3.5 feet bml), which is above the definition of RIM.

## 1.3 Review of Historic Aerial Imagery

The NSWB was constructed sometime before September 7, 1953 (**Figure A9-2**) based on review of historical aerial photographs. More than half of the basin extended into the current Meeks and St. Louis County properties located northeast of the Area 2 site boundary as shown in the September 19, 1973 and May 6, 1974 aerials (see **Figures A9-3** and **A9-4**, respectively). By 1981 (see **Figure A9-5**), the north and western side of the basin were partially filled. Otherwise, the basin dimensions remained relatively unchanged until February 25, 1995 (see **Figure A9-6**), when more filling on the northern and western edges is evident. By March 17, 2000, buildings and a surrounding asphalt parking lot had been constructed on the Meeks parcel adjacent to the NSWB and Area 2 (see **Figure A9-7**). The December 15, 2022 aerial photograph in **Figure A9-8** shows that the NSWB is generally unchanged from March 17, 2000. A building was later constructed in the 2000 parking lot area but the development footprint is also generally unchanged from 2000. **Figure A9-8** shows the dimensions of the NSWB footprint as outlined from review of the aerial photographs discussed above (September 19, 1973, to December 15, 2022).

## 1.4 Supplemental Sampling

Additional sediment sampling activities are proposed for the NSWB and surrounding fill areas. Most of the proposed sampling is located outside of the Bridgeton Landfill property. The timing of the proposed supplemental sampling is subject to negotiation of access agreements with the property owners of the Meeks property and the St. Louis County roadway. The following section describes the scope of work and expected procedures for these activities pending access agreements.

### 1.4.1 North Surface Water Body Additional Delineation Sampling

Additional sampling is proposed to further delineate the vertical and lateral extent of RIM within the NSWB and specifically at NWB-SED-02-R, NWB-SED-03-A, NWB-SED-03-B, NWB-SED-03-R and NWB-SED-04-R1. Analytical results in the deepest interval sampled at these locations, as discussed above, exceed 7.9 pCi/g. The analytical results of previously collected sediment samples are shown in **Table A9-1**.

**Figure A9-9** shows the locations of the additional sediment samples proposed for collection to complete the vertical and lateral extent of RIM in the NSWB. Samples will be collected continuously at 0–0.5 ft, 0.5–1 ft, and at 1-ft intervals thereafter. The last two samples will be collected at 1-ft intervals extending two ft into competent soil. The samples will be analyzed for radium and thorium isotopes to identify RIM. Assuming this extensive sampling program delineates the lateral and vertical extent of 7.9 pCi/g of combined thorium or combined radium, this sampling program is intended to both delineate and verify removal extents so that the removals would be verified during remedial action using geometric survey, not additional analytical chemistry sampling.

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### 1.4.2 Soil Sampling Adjacent to the Current Northern Surface Water Body Footprint

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Five borings (NWS-SB-001, NWB-SB-002, NWB-SB-003, NWB-SB-004 and NWB-SB-005) are proposed to be drilled adjacent to the current NSWB footprint in sediment areas filled in historically, as shown in **Figure A9-9**. Each of these borings will be drilled to elevations consistent with the sediment samples. Samples will be collected continuously at 0–0.5 ft, 0.5–1 ft, and at 1-ft intervals thereafter. The last two samples will be collected at 1-ft intervals at an elevation no less than two feet below the competent soil elevation beneath the water body. The component soil elevation is to be determined from the installation of the additional borings described in Section 1.4.1. These samples will also be analyzed for radium and thorium isotopes to identify RIM.

### 1.4.3 Soil Sampling Adjacent to the Area 2 Boundary and Upstream of the Current Northern Surface Water Body Footprint

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Two additional borings are proposed to be drilled on east side of historic boring WL-244-MH to confirm the placement of the 7.9 pCi/g boundary between DI borings A2-TH-126 and A2-TH-127, per the request of EPA during a meeting held November 8, 2023. The proposed borings are shown in **Figure A9-9**. Each of these borings will be hand augered to four feet below DI datum. Samples will be collected continuously at 0–0.5 ft, 0.5–1 ft, and at 1-ft intervals thereafter.

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## 1.5 Sampling Methods and Protocols

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The FSP describes standardized field procedures for the work performed during the design investigation activities for OU-1. The work proposed in this Addendum uses those standard methods and protocols provided in the FSP. The specific provisions in the FSP that will be used are described below. Proposed borings are summarized in Table A9-2.

Direct push technology (DPT), as described in Section 2.2.1.1 of the FSP, will be used to drill all the vertical and lateral borings within the current footprint of the NSWB. To access the proposed drilling locations with a track rig, crane mats will be utilized if the water level in the basin remains low. Construction of a temporary central road with spurs to each drilling location may also be considered as an alternative to crane mats. If the water level in the basin is greater than 30 inches, the track rig will be placed on a barge to maneuver to the proposed drilling locations. A DPT mounted Marsh Master may also be utilized. A combination of crane mats, barge, and Marsh Master may be needed to access all the proposed locations. Sediment samples will be logged and sampled following the procedures in FSP Section 2.4.2.6. Samples will be submitted for laboratory analysis of the parameters listed in FSP Section 2.4.5.2 in lieu of those listed in FSP Section 2.4.5.3 as discussed above.

DPT will be used to drill the proposed borings within the former NSWB footprint. The fill may contain construction debris, so if the target drill depths cannot be achieved using this technology, sonic drilling techniques will be employed in a separate mobilization. Soil samples will be logged and sampled following the procedures in FSP Section 2.4.2.6. Samples will be submitted for laboratory analysis of the parameters listed in FSP Section 2.4.5.2 in lieu of those listed in FSP Section 2.4.5.3 as discussed above.

Due the presence of overhead utilities, the two proposed borings on the east side of historic boring WL-MH-244 will be hand augered. Soil samples will be logged and sampled following the procedures in FSP Section 2.4.2.6. Samples will be submitted for laboratory analysis of the parameters listed in FSP Section 2.4.5.2.

The details regarding the proposed sediment and soil sample locations are summarized in Table **A9-2** and shown in **Figure A9-9**.

# TABLES

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TABLE A9-1 SEDIMENT ANALYTICAL DATA

Location ID	Sample Name	Sample Date	SDG	Start Depth	End Depth	Composite (Y/N)	Start_Depth_Below_DID	End_Depth_Below_DID	ACTINIUM 228 pci/g		BISMUTH-214 pci/g		CESIUM-137 pci/g		LEAD-210 pci/g		LEAD-212 pci/g	
									RESULT	QUALIFIERS	RESULT	QUALIFIERS	RESULT	QUALIFIERS	RESULT	QUALIFIERS	RESULT	QUALIFIERS
AC-SED-11	AC-SED-11-0-0.5-N	9/11/2022	593080	0	0.5	N	0	0.5	1.23		0.888				2.01	U	1.12	
AC-SED-11	AC-SED-11-0.5-1-N	9/11/2022	593080	0.5	1	N	0.5	1	1.04		0.811				0.852	U	1.04	
AC-SED-11	AC-SED-11-1-2-N	9/11/2022	593080	1	2	Y	1	2	0.787		0.8				1.1	U	0.864	
AC-SED-11	AC-SED-11-2-2.7-N	9/11/2022	593080	2	2.7	Y	2	2.7	1.35		0.923				0.788		1.52	
AC-SED-6	AC-SED-6-0-0.5-N	11/20/2020	528622	0	0.5	N	0	0.5	0.74		0.674				0.531		0.758	
AC-SED-6	AC-SED-6-0.5-1-N	11/20/2020	528622	0.5	1	N	0.5	1	0.618		0.516				0.601		0.692	
AC-SED-6	AC-SED-6-1-2-N	11/20/2020	528622	1	2	N	1	2	0.505		0.427				0.13	U	0.479	
AC-SED-7	AC-SED-7-0-0.5-N	11/20/2020	528622	0	0.5	N	0	0.5	0.785		0.769				1.68		0.803	
AC-SED-7	AC-SED-7-0.5-1-N	11/20/2020	528622	0.5	1	N	0.5	1	0.73		0.589				0.6		0.836	
AC-SED-7	AC-SED-7-1-2-N	11/20/2020	528622	1	2	N	1	2	0.872		0.751				0.957		0.993	
AC-SED-7-A	AC-SED-7-A-0-0.5-N	7/27/2022	588568	0	0.5	N	0	0.5	1.03		0.695				0.591	U	0.743	
AC-SED-7-A	AC-SED-7-A-0.5-1-N	7/27/2022	588568	0.5	1	N	0.5	1	0.909		0.745				0.81	U	0.787	
AC-SED-7-A	AC-SED-7-A-1-2-D	7/27/2022	588568	1	2	Y	1	2	0.999		0.704				-1.37	U	0.936	
AC-SED-7-A	AC-SED-7-A-1-2-N	7/27/2022	588568	1	2	Y	1	2	0.883		0.729				1.04		0.831	
AC-SED-7-A	AC-SED-7-A-2-3-N	7/27/2022	588568	2	3	Y	2	3	0.727		0.702				1.51	U	0.917	
FCC-SED-01	FCC-SED-01-0-0.5-N	9/11/2022	593080	0	0.5	N	0	0.5	1.15		0.87				1.24		1.37	
FCC-SED-01	FCC-SED-01-0.5-1-N	9/11/2022	593080	0.5	1	N	0.5	1	1.18		0.908		0.081		1.16		1.29	
FCC-SED-01	FCC-SED-01-1-2-N	9/11/2022	593080	1	2	Y	1	2	0.77		0.853				0.651	U	0.99	
FCC-SED-01	FCC-SED-01-2-3-N	9/11/2022	593080	2	3	Y	2	3	0.54		0.458				0	UJ	0.563	
FCC-SED-01	FCC-SED-01-3-3.3-N	9/11/2022	593080	3	3.3	N	3	3.3	0.657		0.46				0.245	U	0.64	
FCC-SED-02	FCC-SED-02-0-0.5-N	9/11/2022	593080	0	0.5	N	0	0.5	1.02		0.83				0.672	U	0.936	
FCC-SED-02	FCC-SED-02-0.5-1-N	9/11/2022	593080	0.5	1	N	0.5	1	1.17		0.941				-0.75	U	1.45	
FCC-SED-02	FCC-SED-02-1-2-D	9/11/2022	593080	1	2	Y	1	2	0.785		0.597				0.881		0.733	
FCC-SED-02	FCC-SED-02-1-2-N	9/11/2022	593080	1	2	Y	1	2	0.71		0.429				-0.686	U	0.658	
FCC-SED-02	FCC-SED-02-2-3-N	9/11/2022	593080	2	3	Y	2	3	0.425		0.34				0.555		0.438	
NWB-SED-01	NWB-SED-01-0-0.5-N	12/16/2020	530587	0	0.5	N	0	0.5	0.805		1				-1.21	U	0.734	
NWB-SED-01	NWB-SED-01-0.5-1-N	12/16/2020	530587	0.5	1	N	0.5	1	0.835		1.21				1.37		0.853	
NWB-SED-01	NWB-SED-01-1-2-N	12/16/2020	530587	1	2	N	1	2	1.05		1.23				0.246	U	1.05	
NWB-SED-01-R	NWB-SED-01-R-2.7-3-N	9/11/2022	593082	2.7	3	N	2.7	3	0.903		1.07				0.911	U	0.947	
NWB-SED-01-R	NWB-SED-01-R-3-3.9-N	9/11/2022	593082	3	3.9	Y	3	3.9	0.827		0.814				0.858	U	0.924	
NWB-SED-02	NWB-SED-02-0-0.5-N	12/16/2020	530587	0	0.5	N	0	0.5	1.06		0.987				1.45		0.982	
NWB-SED-02	NWB-SED-02-0.5-1-N	12/16/2020	530587	0.5	1	N	0.5	1	0.313		0.556				0.394	U	0.431	
NWB-SED-02	NWB-SED-02-1-2-N	12/16/2020	530587	1	2	N	1	2	1.1		1.2				2.99		1.21	
NWB-SED-02-R	NWB-SED-02-R-0-0.5-N	9/11/2022	593082	0	0.5	N	0	0.5	0.652		1.51				3.84		1.04	
NWB-SED-02-R	NWB-SED-02-R-0.5-1-N	9/11/2022	593082	0.5	1	N	0.5	1	1.48		1.15				7.25		1.28	
NWB-SED-02-R	NWB-SED-02-R-1-2-N	9/11/2022	593082	1	2	Y	1	2	1.04		0.908				1.16	U	0.933	
NWB-SED-02-R	NWB-SED-02-R-2-3-N	9/11/2022	593082	2	3	Y	2	3	1.24		1.38				2.1		1.18	
NWB-SED-02-R	NWB-SED-02-R-3-3.6-N	9/11/2022	593082	3	3.6	Y	3	3.6	1.39		1.32				1.59		1.27	
NWB-SED-03	NWB-SED-03-0-0.5-N	12/16/2020	530587	0	0.5	N	0	0.5	1.27		1.48				1.43		1.33	
NWB-SED-03	NWB-SED-03-0.5-1-N	12/16/2020	530587	0.5	1	N	0.5	1	1.26		1.41				0.419	U	1.26	
NWB-SED-03	NWB-SED-03-1-2-N	12/16/2020	530587	1	2	N	1	2	1.07		1.55				1.73		1.25	

TABLE A9-1 SEDIMENT ANALYTICAL DATA

Location ID	Sample Name	Sample Date	SDG	Start Depth	End Depth	Composite (Y/N)	Start_Depth_Below_DID	End_Depth_Below_DID	CHEMICAL_NAME RESULT_UNIT		LEAD-214 pci/g		POTASSIUM-40 pci/g		PROTACTINIUM 231 pci/g		RADIUM-226 pci/g		RADIUM-228 pci/g	
									RESULT	QUALIFIERS	RESULT	QUALIFIERS	RESULT	QUALIFIERS	RESULT	QUALIFIERS	RESULT	QUALIFIERS		
AC-SED-11	AC-SED-11-0-0.5-N	9/11/2022	593080	0	0.5	N	0	0.5	1.07		17.8		0.311	U	1.07		1.23			
AC-SED-11	AC-SED-11-0.5-1-N	9/11/2022	593080	0.5	1	N	0.5	1	1		18		0.00486	U	1		1.04			
AC-SED-11	AC-SED-11-1-2-N	9/11/2022	593080	1	2	Y	1	2	1.02		17.3		0	UJ	1.02		0.787			
AC-SED-11	AC-SED-11-2-2.7-N	9/11/2022	593080	2	2.7	Y	2	2.7	1.22		17.9		0	UJ	1.22		1.35			
AC-SED-6	AC-SED-6-0-0.5-N	11/20/2020	528622	0	0.5	N	0	0.5	0.814		14.8		0	UJ	0.674		0.74			
AC-SED-6	AC-SED-6-0.5-1-N	11/20/2020	528622	0.5	1	N	0.5	1	0.671		14.2		0	UJ	0.516		0.618			
AC-SED-6	AC-SED-6-1-2-N	11/20/2020	528622	1	2	N	1	2	0.45		14		0	UJ	0.427		0.505			
AC-SED-7	AC-SED-7-0-0.5-N	11/20/2020	528622	0	0.5	N	0	0.5	1		15		0	UJ	0.769		0.785			
AC-SED-7	AC-SED-7-0.5-1-N	11/20/2020	528622	0.5	1	N	0.5	1	0.747		14		0.205	U	0.589		0.73			
AC-SED-7	AC-SED-7-1-2-N	11/20/2020	528622	1	2	N	1	2	0.976		16.1		0	UJ	0.751		0.872			
AC-SED-7-A	AC-SED-7-A-0-0.5-N	7/27/2022	588568	0	0.5	N	0	0.5	0.964		14.4		0	UJ	0.695		1.03			
AC-SED-7-A	AC-SED-7-A-0.5-1-N	7/27/2022	588568	0.5	1	N	0.5	1	0.853		15.6		0	UJ	0.745		0.909			
AC-SED-7-A	AC-SED-7-A-1-2-D	7/27/2022	588568	1	2	Y	1	2	0.937		16.7		0	UJ	0.704		0.999			
AC-SED-7-A	AC-SED-7-A-1-2-N	7/27/2022	588568	1	2	Y	1	2	0.979		15.1		0	UJ	0.729		0.883			
AC-SED-7-A	AC-SED-7-A-2-3-N	7/27/2022	588568	2	3	Y	2	3	0.754		16.9		0.292	U	0.702		0.727			
FCC-SED-01	FCC-SED-01-0-0.5-N	9/11/2022	593080	0	0.5	N	0	0.5	1.05		18.1		0	UJ	1.05		1.15			
FCC-SED-01	FCC-SED-01-0.5-1-N	9/11/2022	593080	0.5	1	N	0.5	1	1.17		18.5		0.511	U	1.17		1.18			
FCC-SED-01	FCC-SED-01-1-2-N	9/11/2022	593080	1	2	Y	1	2	0.93		17.5		0	UJ	0.93		0.77			
FCC-SED-01	FCC-SED-01-2-3-N	9/11/2022	593080	2	3	Y	2	3	0.664		15.3		0.331	U	0.664		0.54			
FCC-SED-01	FCC-SED-01-3-3.3-N	9/11/2022	593080	3	3.3	N	3	3.3	0.436		14.6		0.105	U	0.436		0.657			
FCC-SED-02	FCC-SED-02-0-0.5-N	9/11/2022	593080	0	0.5	N	0	0.5	1.09		16.1		0	UJ	1.09		1.02			
FCC-SED-02	FCC-SED-02-0.5-1-N	9/11/2022	593080	0.5	1	N	0.5	1	1.14		18.8		0.325	U	1.14		1.17			
FCC-SED-02	FCC-SED-02-1-2-D	9/11/2022	593080	1	2	Y	1	2	0.549		15		0.0794	U	0.549		0.785			
FCC-SED-02	FCC-SED-02-1-2-N	9/11/2022	593080	1	2	Y	1	2	0.652		15.7		0	UJ	0.652		0.71			
FCC-SED-02	FCC-SED-02-2-3-N	9/11/2022	593080	2	3	Y	2	3	0.352		14.8		0.113	U	0.352		0.425			
NWB-SED-01	NWB-SED-01-0-0.5-N	12/16/2020	530587	0	0.5	N	0	0.5	1.09		14.3		0	UJ	1		0.805			
NWB-SED-01	NWB-SED-01-0.5-1-N	12/16/2020	530587	0.5	1	N	0.5	1	1.48		9.81		0.234	U	1.21		0.835			
NWB-SED-01	NWB-SED-01-1-2-N	12/16/2020	530587	1	2	N	1	2	1.29		13.4		0	UJ	1.23		1.05			
NWB-SED-01-R	NWB-SED-01-R-2.7-3-N	9/11/2022	593082	2.7	3	N	2.7	3	1.24		16		0	UJ	1.24		0.903			
NWB-SED-01-R	NWB-SED-01-R-3-3.9-N	9/11/2022	593082	3	3.9	Y	3	3.9	1.07		16.5		0	UJ	1.07		0.827			
NWB-SED-02	NWB-SED-02-0-0.5-N	12/16/2020	530587	0	0.5	N	0	0.5	1.19		13		0.226	U	0.987		1.06			
NWB-SED-02	NWB-SED-02-0.5-1-N	12/16/2020	530587	0.5	1	N	0.5	1	0.759		5.87		0.0869	U	0.556		0.313			
NWB-SED-02	NWB-SED-02-1-2-N	12/16/2020	530587	1	2	N	1	2	1.52		14.5		0.433	U	1.2		1.1			
NWB-SED-02-R	NWB-SED-02-R-0-0.5-N	9/11/2022	593082	0	0.5	N	0	0.5	1.12		11.9		-0.542	U	1.12		0.652			
NWB-SED-02-R	NWB-SED-02-R-0.5-1-N	9/11/2022	593082	0.5	1	N	0.5	1	1.45		16.6		0	UJ	1.45		1.48			
NWB-SED-02-R	NWB-SED-02-R-1-2-N	9/11/2022	593082	1	2	Y	1	2	1.39		14.2		0	UJ	1.39		1.04			
NWB-SED-02-R	NWB-SED-02-R-2-3-N	9/11/2022	593082	2	3	Y	2	3	1.48		16.1		0.0324	U	1.48		1.24			
NWB-SED-02-R	NWB-SED-02-R-3-3.6-N	9/11/2022	593082	3	3.6	Y	3	3.6	1.68		16.7		0	UJ	1.68		1.39			
NWB-SED-03	NWB-SED-03-0-0.5-N	12/16/2020	530587	0	0.5	N	0	0.5	1.77		16.1		0	UJ	1.48		1.27			
NWB-SED-03	NWB-SED-03-0.5-1-N	12/16/2020	530587	0.5	1	N	0.5	1	1.46		13.7		0	UJ	1.41		1.26			
NWB-SED-03	NWB-SED-03-1-2-N	12/16/2020	530587	1	2	N	1	2	1.77		13.3		0	UJ	1.55		1.07			



TABLE A9-1 SEDIMENT ANALYTICAL DATA

Location ID	Sample Name	Sample Date	SDG	Start Depth	End Depth	Composite (Y/N)	Start_Depth_Below_DID	End_Depth_Below_DID	THALLIUM-208 pci/g		THORIUM-230 pci/g		THORIUM-232 pci/g		THORIUM-234 pci/g		TOTAL RADIUM pci/g	
									RESULT	QUALIFIERS	RESULT	QUALIFIERS	RESULT	QUALIFIERS	RESULT	QUALIFIERS	RESULT	QUALIFIERS
AC-SED-11	AC-SED-11-0-0.5-N	9/11/2022	593080	0	0.5	N	0	0.5	0.287		1.66		1.14		1.19	U	2.30	
AC-SED-11	AC-SED-11-0.5-1-N	9/11/2022	593080	0.5	1	N	0.5	1	0.282		0.85		0.955		0	UJ	2.04	
AC-SED-11	AC-SED-11-1-2-N	9/11/2022	593080	1	2	Y	1	2	0.246		0.774		0.884		0.57	U	1.81	
AC-SED-11	AC-SED-11-2-2.7-N	9/11/2022	593080	2	2.7	Y	2	2.7	0.38		0.954		1.38		0.933		2.57	
AC-SED-6	AC-SED-6-0-0.5-N	11/20/2020	528622	0	0.5	N	0	0.5	0.21		1.39		0.755		0.86		1.41	
AC-SED-6	AC-SED-6-0.5-1-N	11/20/2020	528622	0.5	1	N	0.5	1	0.196		0.671		0.782		0.615		1.13	
AC-SED-6	AC-SED-6-1-2-N	11/20/2020	528622	1	2	N	1	2	0.151		0.551		0.82		0.535	U	0.932	
AC-SED-7	AC-SED-7-0-0.5-N	11/20/2020	528622	0	0.5	N	0	0.5	0.249		2.65		0.84	J	0	UJ	1.55	
AC-SED-7	AC-SED-7-0.5-1-N	11/20/2020	528622	0.5	1	N	0.5	1	0.253		1.97		0.127		0	UJ	1.32	
AC-SED-7	AC-SED-7-1-2-N	11/20/2020	528622	1	2	N	1	2	0.284		4.01	J	1.43		1.07		1.62	
AC-SED-7-A	AC-SED-7-A-0-0.5-N	7/27/2022	588568	0	0.5	N	0	0.5	0.243		1.48		0.744		0	UJ	1.73	
AC-SED-7-A	AC-SED-7-A-0.5-1-N	7/27/2022	588568	0.5	1	N	0.5	1	0.223		2.5		0.697		1.5		1.65	
AC-SED-7-A	AC-SED-7-A-1-2-D	7/27/2022	588568	1	2	Y	1	2	0.265		3.14		0.596		1.2	U	1.70	
AC-SED-7-A	AC-SED-7-A-1-2-N	7/27/2022	588568	1	2	Y	1	2	0.264		2.52		0.688		1.33		1.61	
AC-SED-7-A	AC-SED-7-A-2-3-N	7/27/2022	588568	2	3	Y	2	3	0.218		0.936		0.758		0.477	U	1.43	
FCC-SED-01	FCC-SED-01-0-0.5-N	9/11/2022	593080	0	0.5	N	0	0.5	0.304		1.05		1.07		1.52		2.20	
FCC-SED-01	FCC-SED-01-0.5-1-N	9/11/2022	593080	0.5	1	N	0.5	1	0.365		1.11		0.985		1.09		2.35	
FCC-SED-01	FCC-SED-01-1-2-N	9/11/2022	593080	1	2	Y	1	2	0.297		1.08		0.943		1.3		1.70	
FCC-SED-01	FCC-SED-01-2-3-N	9/11/2022	593080	2	3	Y	2	3	0.131		0.592		0.528		0.697	U	1.20	
FCC-SED-01	FCC-SED-01-3-3.3-N	9/11/2022	593080	3	3.3	N	3	3.3	0.171		0.444		0.591		0.725	U	1.09	
FCC-SED-02	FCC-SED-02-0-0.5-N	9/11/2022	593080	0	0.5	N	0	0.5	0.266		0.618		0.663		1.05	U	2.11	
FCC-SED-02	FCC-SED-02-0.5-1-N	9/11/2022	593080	0.5	1	N	0.5	1	0.355		1.07		1.14		0.954	U	2.31	
FCC-SED-02	FCC-SED-02-1-2-D	9/11/2022	593080	1	2	Y	1	2	0.211		0.663		0.494		0.797		1.33	
FCC-SED-02	FCC-SED-02-1-2-N	9/11/2022	593080	1	2	Y	1	2	0.236		0.559		0.432		0.65	U	1.36	
FCC-SED-02	FCC-SED-02-2-3-N	9/11/2022	593080	2	3	Y	2	3	0.0745		0.36		0.334		0.239	U	0.777	
NWB-SED-01	NWB-SED-01-0-0.5-N	12/16/2020	530587	0	0.5	N	0	0.5	0.193		2.4	J	0.654		0	UJ	1.81	
NWB-SED-01	NWB-SED-01-0.5-1-N	12/16/2020	530587	0.5	1	N	0.5	1	0.258		4.6		0.87		1.42		2.05	
NWB-SED-01	NWB-SED-01-1-2-N	12/16/2020	530587	1	2	N	1	2	0.309		6.18		0.843		1.03	U	2.28	
NWB-SED-01-R	NWB-SED-01-R-2.7-3-N	9/11/2022	593082	2.7	3	N	2.7	3	0.289		1.25		0.83		1.06	U	2.14	
NWB-SED-01-R	NWB-SED-01-R-3-3.9-N	9/11/2022	593082	3	3.9	Y	3	3.9	0.233		1.96		0.708		1.97		1.90	
NWB-SED-02	NWB-SED-02-0-0.5-N	12/16/2020	530587	0	0.5	N	0	0.5	0.275		2.09		0.297	UJ	0	UJ	2.05	
NWB-SED-02	NWB-SED-02-0.5-1-N	12/16/2020	530587	0.5	1	N	0.5	1	0.111		1.17		0.032	U	0	UJ	0.869	
NWB-SED-02	NWB-SED-02-1-2-N	12/16/2020	530587	1	2	N	1	2	0.413		5.89		1.19		0	UJ	2.30	
NWB-SED-02-R	NWB-SED-02-R-0-0.5-N	9/11/2022	593082	0	0.5	N	0	0.5	0.325		3.42		1.09		1.87		1.77	
NWB-SED-02-R	NWB-SED-02-R-0.5-1-N	9/11/2022	593082	0.5	1	N	0.5	1	0.391		8.34		1.29		1.82	U	2.93	
NWB-SED-02-R	NWB-SED-02-R-1-2-N	9/11/2022	593082	1	2	Y	1	2	0.307		4.9		0.944		0.497	U	2.43	
NWB-SED-02-R	NWB-SED-02-R-2-3-N	9/11/2022	593082	2	3	Y	2	3	0.355		13		1.14		0.608	U	2.72	
NWB-SED-02-R	NWB-SED-02-R-3-3.6-N	9/11/2022	593082	3	3.6	Y	3	3.6	0.414		6.77		1.17		1.3		3.07	
NWB-SED-03	NWB-SED-03-0-0.5-N	12/16/2020	530587	0	0.5	N	0	0.5	0.34		6.77		1.12		1.16		2.75	
NWB-SED-03	NWB-SED-03-0.5-1-N	12/16/2020	530587	0.5	1	N	0.5	1	0.371		4.85		1.05		1.13	U	2.67	
NWB-SED-03	NWB-SED-03-1-2-N	12/16/2020	530587	1	2	N	1	2	0.433		7.92		1.28		1.82		2.62	



TABLE A9-1 SEDIMENT ANALYTICAL DATA

Location ID	Sample Name	Sample Date	SDG	Start Depth	End Depth	Composite (Y/N)	Start_Depth_Below_DID	End_Depth_Below_DID	CHEMICAL_NAME RESULT_UNIT		Total Thorium pci/g		URANIUM pci/g		URANIUM 233 AND 234 pci/g		URANIUM 235 AND 236 pci/g	
									RESULT	QUALIFIERS	RESULT	QUALIFIERS	RESULT	QUALIFIERS	RESULT	QUALIFIERS		
AC-SED-11	AC-SED-11-0-0.5-N	9/11/2022	593080	0	0.5	N	0	0.5	2.80		0.694		0.657		0.0464	U		
AC-SED-11	AC-SED-11-0.5-1-N	9/11/2022	593080	0.5	1	N	0.5	1	1.81		0.787		0.732		0.0421	U		
AC-SED-11	AC-SED-11-1-2-N	9/11/2022	593080	1	2	Y	1	2	1.66		0.751		0.735		0.0568			
AC-SED-11	AC-SED-11-2-2.7-N	9/11/2022	593080	2	2.7	Y	2	2.7	2.33		0.593		0.453		0.055			
AC-SED-6	AC-SED-6-0-0.5-N	11/20/2020	528622	0	0.5	N	0	0.5	2.15		0.468		0.505		0.0448	U		
AC-SED-6	AC-SED-6-0.5-1-N	11/20/2020	528622	0.5	1	N	0.5	1	1.45		0.56		0.495		0.00761	U		
AC-SED-6	AC-SED-6-1-2-N	11/20/2020	528622	1	2	N	1	2	1.37		0.384		0.339		0.0201	U		
AC-SED-7	AC-SED-7-0-0.5-N	11/20/2020	528622	0	0.5	N	0	0.5	3.49	J	0.8		0.634		0.0519			
AC-SED-7	AC-SED-7-0.5-1-N	11/20/2020	528622	0.5	1	N	0.5	1	2.10		0.486	J	0.469		0.0182	U		
AC-SED-7	AC-SED-7-1-2-N	11/20/2020	528622	1	2	N	1	2	5.44	J	0.81		0.754	J	0.0549			
AC-SED-7-A	AC-SED-7-A-0-0.5-N	7/27/2022	588568	0	0.5	N	0	0.5	2.22		0.81		0.727		0.0379	U		
AC-SED-7-A	AC-SED-7-A-0.5-1-N	7/27/2022	588568	0.5	1	N	0.5	1	3.20		0.729		0.605		0.0716			
AC-SED-7-A	AC-SED-7-A-1-2-D	7/27/2022	588568	1	2	Y	1	2	3.74		0.699		0.585		0.0487	U		
AC-SED-7-A	AC-SED-7-A-1-2-N	7/27/2022	588568	1	2	Y	1	2	3.21		0.613		0.559		0.0456	U		
AC-SED-7-A	AC-SED-7-A-2-3-N	7/27/2022	588568	2	3	Y	2	3	1.69		0.573		0.503		0.0623			
FCC-SED-01	FCC-SED-01-0-0.5-N	9/11/2022	593080	0	0.5	N	0	0.5	2.12		0.89		0.807		0.0596			
FCC-SED-01	FCC-SED-01-0.5-1-N	9/11/2022	593080	0.5	1	N	0.5	1	2.10		0.814		0.758		0.0335	U		
FCC-SED-01	FCC-SED-01-1-2-N	9/11/2022	593080	1	2	Y	1	2	2.02		0.547		0.582		0.0229	U		
FCC-SED-01	FCC-SED-01-2-3-N	9/11/2022	593080	2	3	Y	2	3	1.12		0.408		0.237		0.0172	U		
FCC-SED-01	FCC-SED-01-3-3.3-N	9/11/2022	593080	3	3.3	N	3	3.3	1.04		0.336		0.327		0.0189	U		
FCC-SED-02	FCC-SED-02-0-0.5-N	9/11/2022	593080	0	0.5	N	0	0.5	1.28		0.797		0.755		0.0361	U		
FCC-SED-02	FCC-SED-02-0.5-1-N	9/11/2022	593080	0.5	1	N	0.5	1	2.21		0.82		0.793		0.0338	U		
FCC-SED-02	FCC-SED-02-1-2-D	9/11/2022	593080	1	2	Y	1	2	1.16		0.406		0.266		0.0105	U		
FCC-SED-02	FCC-SED-02-1-2-N	9/11/2022	593080	1	2	Y	1	2	0.991		0.362		0.321		0.0149			
FCC-SED-02	FCC-SED-02-2-3-N	9/11/2022	593080	2	3	Y	2	3	0.694		0.259		0.317		0.0246			
NWB-SED-01	NWB-SED-01-0-0.5-N	12/16/2020	530587	0	0.5	N	0	0.5	3.05	J	0.915		0.906	J	0.0662			
NWB-SED-01	NWB-SED-01-0.5-1-N	12/16/2020	530587	0.5	1	N	0.5	1	5.47		0.925		1.02		0.0263	U		
NWB-SED-01	NWB-SED-01-1-2-N	12/16/2020	530587	1	2	N	1	2	7.02		1.16		1.09		0.0263	U		
NWB-SED-01-R	NWB-SED-01-R-2.7-3-N	9/11/2022	593082	2.7	3	N	2.7	3	2.08		0.977		0.928		0.0455			
NWB-SED-01-R	NWB-SED-01-R-3-3.9-N	9/11/2022	593082	3	3.9	Y	3	3.9	2.67		1.03		1.12		0.0751			
NWB-SED-02	NWB-SED-02-0-0.5-N	12/16/2020	530587	0	0.5	N	0	0.5	2.39		0.686		0.681		-0.00402	U		
NWB-SED-02	NWB-SED-02-0.5-1-N	12/16/2020	530587	0.5	1	N	0.5	1	1.20		0.484		0.389		0.00377	U		
NWB-SED-02	NWB-SED-02-1-2-N	12/16/2020	530587	1	2	N	1	2	7.08		0.955		0.987		0.0475			
NWB-SED-02-R	NWB-SED-02-R-0-0.5-N	9/11/2022	593082	0	0.5	N	0	0.5	4.51		1.23		0.997		0.0345	U		
NWB-SED-02-R	NWB-SED-02-R-0.5-1-N	9/11/2022	593082	0.5	1	N	0.5	1	9.63		1.17		0.993		0.063			
NWB-SED-02-R	NWB-SED-02-R-1-2-N	9/11/2022	593082	1	2	Y	1	2	5.84		1.27		1.01		0.0598			
NWB-SED-02-R	NWB-SED-02-R-2-3-N	9/11/2022	593082	2	3	Y	2	3	14.1		0.882		0.88		0.0337	U		
NWB-SED-02-R	NWB-SED-02-R-3-3.6-N	9/11/2022	593082	3	3.6	Y	3	3.6	7.94		0.988		1.02		0.0181	U		
NWB-SED-03	NWB-SED-03-0-0.5-N	12/16/2020	530587	0	0.5	N	0	0.5	7.89		1.11		0.832		0.0793			
NWB-SED-03	NWB-SED-03-0.5-1-N	12/16/2020	530587	0.5	1	N	0.5	1	5.90		1.01		0.883		0.0841			
NWB-SED-03	NWB-SED-03-1-2-N	12/16/2020	530587	1	2	N	1	2	9.20		1.32		1.27		0.0731			

TABLE A9-1 SEDIMENT ANALYTICAL DATA

Location ID	Sample Name	Sample Date	SDG	Start Depth	End Depth	Composite (Y/N)	Start_Depth_Below_DID	End_Depth_Below_DID	CHEMICAL_NAME	ACTINIUM 228	BISMUTH-214	CESIUM-137	LEAD-210	LEAD-212
									RESULT_UNIT	pci/g	pci/g	pci/g	pci/g	
									RESULT	QUALIFIERS	RESULT	QUALIFIERS	RESULT	QUALIFIERS
NWB-SED-03-A	NWB-SED-03-A-0-0.5-N	9/11/2022	593082	0	0.5	N	0	0.5	1.13		1.37		2.85	
NWB-SED-03-A	NWB-SED-03-A-0.5-1-N	9/11/2022	593082	0.5	1	N	0.5	1	1.48		1.35		4.13	
NWB-SED-03-A	NWB-SED-03-A-1-2-N	9/11/2022	593082	1	2	Y	1	2	1.43		1.18		3.26	U
NWB-SED-03-A	NWB-SED-03-A-2-3-N	9/11/2022	593082	2	3	Y	2	3	1.17		1.31		0.964	U
NWB-SED-03-A	NWB-SED-03-A-3-3.8-N	9/11/2022	593082	3	3.8	Y	3	3.8	0.83		1.47		0	UJ
NWB-SED-03-B	NWB-SED-03-B-0-0.5-N	9/11/2022	593080	0	0.5	N	0	0.5	1.35		1.22		3.63	
NWB-SED-03-B	NWB-SED-03-B-0.5-1-N	9/11/2022	593080	0.5	1	N	0.5	1	0.893		1.17		3.32	
NWB-SED-03-B	NWB-SED-03-B-1-2-N	9/11/2022	593080	1	2	Y	1	2	1.24		1.02		1.99	
NWB-SED-03-B	NWB-SED-03-B-2-3-N	9/11/2022	593080	2	3	Y	2	3	1.45		1.24		6.88	
NWB-SED-03-B	NWB-SED-03-B-3-4-N	9/11/2022	593080	3	4	Y	3	4	1.23		1.7		1.61	
NWB-SED-03-R	NWB-SED-03-R-0-0.5-N	9/11/2022	593082	0	0.5	N	0	0.5	1.32		1.12		2.71	U
NWB-SED-03-R	NWB-SED-03-R-0.5-1-N	9/11/2022	593082	0.5	1	N	0.5	1	1.64		1.47		1.78	U
NWB-SED-03-R	NWB-SED-03-R-1-2-D	9/11/2022	593082	1	2	Y	1	2	1.18		1.18		0.541	U
NWB-SED-03-R	NWB-SED-03-R-1-2-N	9/11/2022	593082	1	2	Y	1	2	1.07		1.03		1.82	
NWB-SED-03-R	NWB-SED-03-R-2-3-N	9/11/2022	593082	2	3	Y	2	3	1.42		1.06		1.09	U
NWB-SED-03-R	NWB-SED-03-R-3-3.9-N	9/11/2022	593082	3	3.9	Y	3	3.9	1.57		1.71		2.09	
NWB-SED-04	NWB-SED-04-0-0.5-N	12/16/2020	530587	0	0.5	N	0	0.5	0.317		0.678		3.12	U
NWB-SED-04	NWB-SED-04-0.5-1-N	12/16/2020	530587	0.5	1	N	0.5	1	0.534		0.718		1.1	
NWB-SED-04	NWB-SED-04-1-2-D	12/16/2020	530587	1	2	N	1	2	1.21		1.29		0	UJ
NWB-SED-04	NWB-SED-04-1-2-N	12/16/2020	530587	1	2	N	1	2	1.12		1.26		3.29	U
NWB-SED-04-R1	NWB-SED-04-R1-0-0.5-N	9/11/2022	593082	0	0.5	N	0	0.5	1.27		1.25		3.24	
NWB-SED-04-R1	NWB-SED-04-R1-0.5-1-N	9/11/2022	593082	0.5	1	N	0.5	1	1.88		1.41		2.66	
NWB-SED-04-R1	NWB-SED-04-R1-1-2-N	9/11/2022	593082	1	2	Y	1	2	1.16		1.08		0	UJ
NWB-SED-04-R1	NWB-SED-04-R1-2-3-N	9/11/2022	593082	2	3	Y	2	3	1.69		1.19		3.19	U
NWB-SED-04-R1	NWB-SED-04-R1-3-3.5-N	9/11/2022	593082	3	3.5	N	3	3.5	1.18		1.37	0.0727	3.69	U
NWB-SED-05	NWB-SED-05-0-0.5-N	12/16/2020	530587	0	0.5	N	0	0.5	0.342		0.364		-0.657	U
NWB-SED-05	NWB-SED-05-0.5-1-N	12/16/2020	530587	0.5	1	N	0.5	1	0.603		0.481	UJ	2.73	U
NWB-SED-05	NWB-SED-05-1-2-N	12/16/2020	530587	1	2	N	1	2	0.622		0.476		0.804	
NWB-SED-06	NWB-SED-06-0-0.5-N	11/20/2020	528623	0	0.5	N	0	0.5	0.93		0.909		0	UJ
NWB-SED-06	NWB-SED-06-0.5-1-N	11/20/2020	528623	0.5	1	N	0.5	1	0.802		1.4		1.27	U
NWB-SED-06	NWB-SED-06-1-2-N	11/20/2020	528623	1	2	N	1	2	0.769		1.27		0.974	
NWB-SED-07	NWB-SED-07-0-0.5-N	11/20/2020	528623	0	0.5	N	0	0.5	1.11		1.02		1.22	U
NWB-SED-07	NWB-SED-07-0.5-1-N	11/20/2020	528623	0.5	1	N	0.5	1	1.02		1.03		0	UJ
NWB-SED-07	NWB-SED-07-1-2-N	11/20/2020	528623	1	2	N	1	2	0.614		0.822	0.144	0.96	
NWB-SED-08	NWB-SED-08-0-0.5-N	11/20/2020	528623	0	0.5	N	0	0.5	1.14		1.01		0.975	
NWB-SED-08	NWB-SED-08-0.5-1-N	11/20/2020	528623	0.5	1	N	0.5	1	1.09		1.16		1.69	
NWB-SED-08	NWB-SED-08-1-1.8-N	11/20/2020	528623	1	1.8	N	1	1.8	0.848		0.871		0.362	U
NWB-SED-09	NWB-SED-09-0-0.5-N	11/20/2020	528622	0	0.5	N	0	0.5	0.974		0.964		1.2	
NWB-SED-09	NWB-SED-09-0.5-1-N	11/20/2020	528622	0.5	1	N	0.5	1	1.06		0.894	0.0548	0.837	U
NWB-SED-09	NWB-SED-09-1-1.9-N	11/20/2020	528622	1	1.9	N	1	1.9	1.08		0.997		0.645	
SED4	SED4-0-0.5-N	11/20/2020	528622	0	0.5	N	0	0.5	0.962		0.887		1.59	
SED4	SED4-0.5-1-N	11/20/2020	528622	0.5	1	N	0.5	1	1.03		0.83		1.17	
SED4	SED4-1-2-D	11/20/2020	528622	1	2	N	1	2	0.624		0.608		0.557	
SED4	SED4-1-2-N	11/20/2020	528622	1	2	N	1	2	0.554		0.588		0.228	U
SEDIMENT 2016-03-16A	SEDIMENT 2016-03-16A-0-0.5-N	3/23/2021	540994	0	0.5	N	0	0.5	0.478		1.11		4.89	U
SEDIMENT 2016-03-16A	SEDIMENT 2016-03-16A-0.5-1-N	3/23/2021	540994	0.5	1	N	0.5	1	0.917		1.05		2.42	U
SEDIMENT 2016-03-16A	SEDIMENT 2016-03-16A-1-2-N	3/23/2021	540994	1	2	N	1	2	0.584		0.909		0	UJ

TABLE A9-1 SEDIMENT ANALYTICAL DATA

Location ID	Sample Name	Sample Date	SDG	Start Depth	End Depth	Composite (Y/N)	Start_Depth_Below_DID	End_Depth_Below_DID	LEAD-214 pci/g		POTASSIUM-40 pci/g		PROTACTINIUM 231 pci/g		RADIUM-226 pci/g		RADIUM-228 pci/g	
									RESULT	QUALIFIERS	RESULT	QUALIFIERS	RESULT	QUALIFIERS	RESULT	QUALIFIERS	RESULT	QUALIFIERS
NWB-SED-03-A	NWB-SED-03-A-0-0.5-N	9/11/2022	593082	0	0.5	N	0	0.5	1.67		15.5		0.613	U	1.67		1.13	
NWB-SED-03-A	NWB-SED-03-A-0.5-1-N	9/11/2022	593082	0.5	1	N	0.5	1	1.59		16.7		0	UJ	1.59		1.48	
NWB-SED-03-A	NWB-SED-03-A-1-2-N	9/11/2022	593082	1	2	Y	1	2	1.34		16.4		0	UJ	1.34		1.43	
NWB-SED-03-A	NWB-SED-03-A-2-3-N	9/11/2022	593082	2	3	Y	2	3	1.48		17.4		0	UJ	1.48		1.17	
NWB-SED-03-A	NWB-SED-03-A-3-3.8-N	9/11/2022	593082	3	3.8	Y	3	3.8	1.43		14.7		0	UJ	1.43		0.83	
NWB-SED-03-B	NWB-SED-03-B-0-0.5-N	9/11/2022	593080	0	0.5	N	0	0.5	1.47		16.5		0	UJ	1.47		1.35	
NWB-SED-03-B	NWB-SED-03-B-0.5-1-N	9/11/2022	593080	0.5	1	N	0.5	1	1.33		12.4		0.665	U	1.33		0.893	
NWB-SED-03-B	NWB-SED-03-B-1-2-N	9/11/2022	593080	1	2	Y	1	2	1.41		16.1		0	UJ	1.41		1.24	
NWB-SED-03-B	NWB-SED-03-B-2-3-N	9/11/2022	593080	2	3	Y	2	3	1.25		18.4		0.967	U	1.25		1.45	
NWB-SED-03-B	NWB-SED-03-B-3-4-N	9/11/2022	593080	3	4	Y	3	4	2.09		16.1		0	UJ	2.09		1.23	
NWB-SED-03-R	NWB-SED-03-R-0-0.5-N	9/11/2022	593082	0	0.5	N	0	0.5	1.33		14.9		0.301	U	1.33		1.32	
NWB-SED-03-R	NWB-SED-03-R-0.5-1-N	9/11/2022	593082	0.5	1	N	0.5	1	1.64		17.2		0.382	U	1.64		1.64	
NWB-SED-03-R	NWB-SED-03-R-1-2-D	9/11/2022	593082	1	2	Y	1	2	1.31		16.3		0	UJ	1.31		1.18	
NWB-SED-03-R	NWB-SED-03-R-1-2-N	9/11/2022	593082	1	2	Y	1	2	1.46		15.6		0	UJ	1.46		1.07	
NWB-SED-03-R	NWB-SED-03-R-2-3-N	9/11/2022	593082	2	3	Y	2	3	1.45		18.3		0	UJ	1.45		1.42	
NWB-SED-03-R	NWB-SED-03-R-3-3.9-N	9/11/2022	593082	3	3.9	Y	3	3.9	2.01		17.3		0	UJ	2.01		1.57	
NWB-SED-04	NWB-SED-04-0-0.5-N	12/16/2020	530587	0	0.5	N	0	0.5	0.809		6.39		0.0893	U	0.678		0.317	
NWB-SED-04	NWB-SED-04-0.5-1-N	12/16/2020	530587	0.5	1	N	0.5	1	0.783		7.33		0	UJ	0.718		0.534	
NWB-SED-04	NWB-SED-04-1-2-D	12/16/2020	530587	1	2	N	1	2	1.45		12.2		0	UJ	1.29		1.21	
NWB-SED-04	NWB-SED-04-1-2-N	12/16/2020	530587	1	2	N	1	2	1.61		13.8		0	UJ	1.26		1.12	
NWB-SED-04-R1	NWB-SED-04-R1-0-0.5-N	9/11/2022	593082	0	0.5	N	0	0.5	1.44		14.6		0	UJ	1.44		1.27	
NWB-SED-04-R1	NWB-SED-04-R1-0.5-1-N	9/11/2022	593082	0.5	1	N	0.5	1	1.45		18.4		-0.0428	U	1.45		1.88	
NWB-SED-04-R1	NWB-SED-04-R1-1-2-N	9/11/2022	593082	1	2	Y	1	2	1.31		15.2		0	UJ	1.31		1.16	
NWB-SED-04-R1	NWB-SED-04-R1-2-3-N	9/11/2022	593082	2	3	Y	2	3	1.34		20.2		0	UJ	1.34		1.69	
NWB-SED-04-R1	NWB-SED-04-R1-3-3.5-N	9/11/2022	593082	3	3.5	N	3	3.5	1.61		16		-0.06	U	1.61		1.18	
NWB-SED-05	NWB-SED-05-0-0.5-N	12/16/2020	530587	0	0.5	N	0	0.5	0.423		14.9		0.0813	U	0.364		0.342	
NWB-SED-05	NWB-SED-05-0.5-1-N	12/16/2020	530587	0.5	1	N	0.5	1	0.518		14.5		0.531	UJ	0.481	UJ	0.603	
NWB-SED-05	NWB-SED-05-1-2-N	12/16/2020	530587	1	2	N	1	2	0.552		15		0.143	U	0.476		0.622	
NWB-SED-06	NWB-SED-06-0-0.5-N	11/20/2020	528623	0	0.5	N	0	0.5	1.29		15.6		0	UJ	0.909		0.93	
NWB-SED-06	NWB-SED-06-0.5-1-N	11/20/2020	528623	0.5	1	N	0.5	1	1.68		14.4		0	UJ	1.4		0.802	
NWB-SED-06	NWB-SED-06-1-2-N	11/20/2020	528623	1	2	N	1	2	1.4		14.5		0	UJ	1.27		0.769	
NWB-SED-07	NWB-SED-07-0-0.5-N	11/20/2020	528623	0	0.5	N	0	0.5	1.21		15.9		0	UJ	1.02		1.11	
NWB-SED-07	NWB-SED-07-0.5-1-N	11/20/2020	528623	0.5	1	N	0.5	1	1.18		14.7		0	UJ	1.03		1.02	
NWB-SED-07	NWB-SED-07-1-2-N	11/20/2020	528623	1	2	N	1	2	0.965		13.2		0	UJ	0.822		0.614	
NWB-SED-08	NWB-SED-08-0-0.5-N	11/20/2020	528623	0	0.5	N	0	0.5	1.21		14.3		0.272	U	1.01		1.14	
NWB-SED-08	NWB-SED-08-0.5-1-N	11/20/2020	528623	0.5	1	N	0.5	1	1.16		14.5		0	UJ	1.16		1.09	
NWB-SED-08	NWB-SED-08-1-1.8-N	11/20/2020	528623	1	1.8	N	1	1.8	1.07		15.3		0	UJ	0.871		0.848	
NWB-SED-09	NWB-SED-09-0-0.5-N	11/20/2020	528622	0	0.5	N	0	0.5	1.15		16.2		0	UJ	0.964		0.974	
NWB-SED-09	NWB-SED-09-0.5-1-N	11/20/2020	528622	0.5	1	N	0.5	1	1.07		16.4		0	UJ	0.894		1.06	
NWB-SED-09	NWB-SED-09-1-1.9-N	11/20/2020	528622	1	1.9	N	1	1.9	1.31		16.7		0	UJ	0.997		1.08	
SED4	SED4-0-0.5-N	11/20/2020	528622	0	0.5	N	0	0.5	1.02		14.4		0.544	U	0.887		0.962	
SED4	SED4-0.5-1-N	11/20/2020	528622	0.5	1	N	0.5	1	0.96		14.7		0	UJ	0.83		1.03	
SED4	SED4-1-2-D	11/20/2020	528622	1	2	N	1	2	0.764		15.5		0	UJ	0.608		0.624	
SED4	SED4-1-2-N	11/20/2020	528622	1	2	N	1	2	0.804		15.1		0	UJ	0.588		0.554	
SEDIMENT 2016-03-16A	SEDIMENT 2016-03-16A-0-0.5-N	3/23/2021	540994	0	0.5	N	0	0.5	1.5		12.3		0	UJ	1.11		0.478	
SEDIMENT 2016-03-16A	SEDIMENT 2016-03-16A-0.5-1-N	3/23/2021	540994	0.5	1	N	0.5	1	1.44		14.2		0.6	U	1.05		0.917	
SEDIMENT 2016-03-16A	SEDIMENT 2016-03-16A-1-2-N	3/23/2021	540994	1	2	N	1	2	1.17		12.3		0.32	U	0.909		0.584	

TABLE A9-1 SEDIMENT ANALYTICAL DATA

Location ID	Sample Name	Sample Date	SDG	Start Depth	End Depth	Composite (Y/N)	Start_Depth_Below_DID	End_Depth_Below_DID	THALLIUM-208 pci/g		THORIUM-230 pci/g		THORIUM-232 pci/g		THORIUM-234 pci/g		TOTAL RADIUM pci/g	
									RESULT	QUALIFIERS	RESULT	QUALIFIERS	RESULT	QUALIFIERS	RESULT	QUALIFIERS	RESULT	QUALIFIERS
NWB-SED-03-A	NWB-SED-03-A-0-0.5-N	9/11/2022	593082	0	0.5	N	0	0.5	0.365		5.35		1.08		2.23		2.80	
NWB-SED-03-A	NWB-SED-03-A-0.5-1-N	9/11/2022	593082	0.5	1	N	0.5	1	0.44		9.67		1.54		1.67		3.07	
NWB-SED-03-A	NWB-SED-03-A-1-2-N	9/11/2022	593082	1	2	Y	1	2	0.356		7.08		1.23		0.868	U	2.77	
NWB-SED-03-A	NWB-SED-03-A-2-3-N	9/11/2022	593082	2	3	Y	2	3	0.333		7.19		1.35		1.63		2.65	
NWB-SED-03-A	NWB-SED-03-A-3-3.8-N	9/11/2022	593082	3	3.8	Y	3	3.8	0.327		14.1		0.954		1.64		2.26	
NWB-SED-03-B	NWB-SED-03-B-0-0.5-N	9/11/2022	593080	0	0.5	N	0	0.5	0.42		7.86		1.2		0.787	U	2.82	
NWB-SED-03-B	NWB-SED-03-B-0.5-1-N	9/11/2022	593080	0.5	1	N	0.5	1	0.254		3.55		0.804		1.98		2.22	
NWB-SED-03-B	NWB-SED-03-B-1-2-N	9/11/2022	593080	1	2	Y	1	2	0.401		5.16		1.16		1.87		2.65	
NWB-SED-03-B	NWB-SED-03-B-2-3-N	9/11/2022	593080	2	3	Y	2	3	0.495		5.58		1.2		0.99	U	2.70	
NWB-SED-03-B	NWB-SED-03-B-3-4-N	9/11/2022	593080	3	4	Y	3	4	0.365		21.2		1.27		0.928		3.32	
NWB-SED-03-R	NWB-SED-03-R-0-0.5-N	9/11/2022	593082	0	0.5	N	0	0.5	0.293		4.67		1.01		0.894	U	2.65	
NWB-SED-03-R	NWB-SED-03-R-0.5-1-N	9/11/2022	593082	0.5	1	N	0.5	1	0.438		10.1		1.72		2.56		3.28	
NWB-SED-03-R	NWB-SED-03-R-1-2-D	9/11/2022	593082	1	2	Y	1	2	0.355		4.55		1.11		1.31		2.49	
NWB-SED-03-R	NWB-SED-03-R-1-2-N	9/11/2022	593082	1	2	Y	1	2	0.269		4.86		1.28		1.06		2.53	
NWB-SED-03-R	NWB-SED-03-R-2-3-N	9/11/2022	593082	2	3	Y	2	3	0.455		6.63		1.45		0.479	U	2.87	
NWB-SED-03-R	NWB-SED-03-R-3-3.9-N	9/11/2022	593082	3	3.9	Y	3	3.9	0.401		25.7		1.59		2		3.58	
NWB-SED-04	NWB-SED-04-0-0.5-N	12/16/2020	530587	0	0.5	N	0	0.5	0.0849		1.41		-0.0998	U	0.211	U	0.995	
NWB-SED-04	NWB-SED-04-0.5-1-N	12/16/2020	530587	0.5	1	N	0.5	1	0.122		1.54		0.181	UJ	0.884		1.25	
NWB-SED-04	NWB-SED-04-1-2-D	12/16/2020	530587	1	2	N	1	2	0.271		5.45		1.01		0	UJ	2.50	
NWB-SED-04	NWB-SED-04-1-2-N	12/16/2020	530587	1	2	N	1	2	0.344		5.37		0.946		0.158	U	2.38	
NWB-SED-04-R1	NWB-SED-04-R1-0-0.5-N	9/11/2022	593082	0	0.5	N	0	0.5	0.401		6.88		1.4		1.57		2.71	
NWB-SED-04-R1	NWB-SED-04-R1-0.5-1-N	9/11/2022	593082	0.5	1	N	0.5	1	0.464		9.54		1.65		1.29		3.33	
NWB-SED-04-R1	NWB-SED-04-R1-1-2-N	9/11/2022	593082	1	2	Y	1	2	0.408		7.16		1.17		0.86	U	2.47	
NWB-SED-04-R1	NWB-SED-04-R1-2-3-N	9/11/2022	593082	2	3	Y	2	3	0.473		5.89		1.7		1.39	U	3.03	
NWB-SED-04-R1	NWB-SED-04-R1-3-3.5-N	9/11/2022	593082	3	3.5	N	3	3.5	0.367		10.9		1.06		1.15	U	2.79	
NWB-SED-05	NWB-SED-05-0-0.5-N	12/16/2020	530587	0	0.5	N	0	0.5	0.13		0.392		0.26		0	UJ	0.706	
NWB-SED-05	NWB-SED-05-0.5-1-N	12/16/2020	530587	0.5	1	N	0.5	1	0.139		0.697		0.474		3.74	UJ	1.08	
NWB-SED-05	NWB-SED-05-1-2-N	12/16/2020	530587	1	2	N	1	2	0.163		1.1		0.564		0	UJ	1.10	
NWB-SED-06	NWB-SED-06-0-0.5-N	11/20/2020	528623	0	0.5	N	0	0.5	0.285		3.17		0.855		0	UJ	1.84	
NWB-SED-06	NWB-SED-06-0.5-1-N	11/20/2020	528623	0.5	1	N	0.5	1	0.275		2.3		0.844		0	UJ	2.20	
NWB-SED-06	NWB-SED-06-1-2-N	11/20/2020	528623	1	2	N	1	2	0.347		2.45		0.745		0	UJ	2.04	
NWB-SED-07	NWB-SED-07-0-0.5-N	11/20/2020	528623	0	0.5	N	0	0.5	0.353		3.64		0.862		1.03	U	2.13	
NWB-SED-07	NWB-SED-07-0.5-1-N	11/20/2020	528623	0.5	1	N	0.5	1	0.272		4.92		0.703		0.816	U	2.05	
NWB-SED-07	NWB-SED-07-1-2-N	11/20/2020	528623	1	2	N	1	2	0.224		2.8		0.81		0.968		1.44	
NWB-SED-08	NWB-SED-08-0-0.5-N	11/20/2020	528623	0	0.5	N	0	0.5	0.349		5.85		1.05		0.0913	U	2.15	
NWB-SED-08	NWB-SED-08-0.5-1-N	11/20/2020	528623	0.5	1	N	0.5	1	0.298		3.92		1.04		1.24		2.25	
NWB-SED-08	NWB-SED-08-1-1.8-N	11/20/2020	528623	1	1.8	N	1	1.8	0.301		2.82		0.814		0.438	U	1.72	
NWB-SED-09	NWB-SED-09-0-0.5-N	11/20/2020	528622	0	0.5	N	0	0.5	0.295		1.79		1.15		1.04		1.94	
NWB-SED-09	NWB-SED-09-0.5-1-N	11/20/2020	528622	0.5	1	N	0.5	1	0.335		1.18		1.03		1.03		1.95	
NWB-SED-09	NWB-SED-09-1-1.9-N	11/20/2020	528622	1	1.9	N	1	1.9	0.328		1.79		1.29		1.51		2.08	
SED4	SED4-0-0.5-N	11/20/2020	528622	0	0.5	N	0	0.5	0.281		2.51		0.846		1.27		1.85	
SED4	SED4-0.5-1-N	11/20/2020	528622	0.5	1	N	0.5	1	0.269		3.52		0.748		0	UJ	1.86	
SED4	SED4-1-2-D	11/20/2020	528622	1	2	N	1	2	0.221		1.77		0.807		1.02		1.23	
SED4	SED4-1-2-N	11/20/2020	528622	1	2	N	1	2	0.17		1.67		0.646		0.682		1.14	
SEDIMENT 2016-03-16A	SEDIMENT 2016-03-16A-0-0.5-N	3/23/2021	540994	0	0.5	N	0	0.5	0.219		4.99		0.744		1.98		1.59	
SEDIMENT 2016-03-16A	SEDIMENT 2016-03-16A-0.5-1-N	3/23/2021	540994	0.5	1	N	0.5	1	0.22		5.71		0.646		2		1.97	
SEDIMENT 2016-03-16A	SEDIMENT 2016-03-16A-1-2-N	3/23/2021	540994	1	2	N	1	2	0.184		4.36		0.35	UJ	0	UJ	1.49	

TABLE A9-1 SEDIMENT ANALYTICAL DATA

Location ID	Sample Name	Sample Date	SDG	Start Depth	End Depth	Composite (Y/N)	CHEMICAL_NAME RESULT_UNIT		Total Thorium pci/g		URANIUM pci/g		URANIUM 233 AND 234 pci/g		URANIUM 235 AND 236 pci/g	
							Start_Depth_Below_DID	End_Depth_Below_DID	RESULT	QUALIFIERS	RESULT	QUALIFIERS	RESULT	QUALIFIERS	RESULT	QUALIFIERS
NWB-SED-03-A	NWB-SED-03-A-0-0.5-N	9/11/2022	593082	0	0.5	N	0	0.5	6.43		1.36		1.15		0.0616	
NWB-SED-03-A	NWB-SED-03-A-0.5-1-N	9/11/2022	593082	0.5	1	N	0.5	1	11.2		1.26		1.09		0.0389	
NWB-SED-03-A	NWB-SED-03-A-1-2-N	9/11/2022	593082	1	2	Y	1	2	8.31		1.21		0.991		0.0684	
NWB-SED-03-A	NWB-SED-03-A-2-3-N	9/11/2022	593082	2	3	Y	2	3	8.54		1.17		0.924		0.0712	
NWB-SED-03-A	NWB-SED-03-A-3-3.8-N	9/11/2022	593082	3	3.8	Y	3	3.8	15.1		1.18		1.02		0.0421	U
NWB-SED-03-B	NWB-SED-03-B-0-0.5-N	9/11/2022	593080	0	0.5	N	0	0.5	9.06		1.38		1.18		0.0459	U
NWB-SED-03-B	NWB-SED-03-B-0.5-1-N	9/11/2022	593080	0.5	1	N	0.5	1	4.35		1.39		1.42		0.0737	
NWB-SED-03-B	NWB-SED-03-B-1-2-N	9/11/2022	593080	1	2	Y	1	2	6.32		1.15		0.946		0.0615	U
NWB-SED-03-B	NWB-SED-03-B-2-3-N	9/11/2022	593080	2	3	Y	2	3	6.78		1.25		0.998		0.0504	
NWB-SED-03-B	NWB-SED-03-B-3-4-N	9/11/2022	593080	3	4	Y	3	4	22.5		1.01		0.998		0.0727	
NWB-SED-03-R	NWB-SED-03-R-0-0.5-N	9/11/2022	593082	0	0.5	N	0	0.5	5.68		1.32		1.29		0.0808	
NWB-SED-03-R	NWB-SED-03-R-0.5-1-N	9/11/2022	593082	0.5	1	N	0.5	1	11.8		1.38		1.12		0.0484	
NWB-SED-03-R	NWB-SED-03-R-1-2-D	9/11/2022	593082	1	2	Y	1	2	5.66		1.09		1.06		0.0646	U
NWB-SED-03-R	NWB-SED-03-R-1-2-N	9/11/2022	593082	1	2	Y	1	2	6.14		1.08		0.974		0.0406	U
NWB-SED-03-R	NWB-SED-03-R-2-3-N	9/11/2022	593082	2	3	Y	2	3	8.08		0.956		0.89		0.093	
NWB-SED-03-R	NWB-SED-03-R-3-3.9-N	9/11/2022	593082	3	3.9	Y	3	3.9	27.3		1.23		1.04		0.0266	U
NWB-SED-04	NWB-SED-04-0-0.5-N	12/16/2020	530587	0	0.5	N	0	0.5	1.41		0.553		0.493		0.0243	U
NWB-SED-04	NWB-SED-04-0.5-1-N	12/16/2020	530587	0.5	1	N	0.5	1	1.72		0.505		0.329		0.0314	U
NWB-SED-04	NWB-SED-04-1-2-D	12/16/2020	530587	1	2	N	1	2	6.46		0.956		0.843		0.0404	
NWB-SED-04	NWB-SED-04-1-2-N	12/16/2020	530587	1	2	N	1	2	6.32		0.761		0.631		0.0459	
NWB-SED-04-R1	NWB-SED-04-R1-0-0.5-N	9/11/2022	593082	0	0.5	N	0	0.5	8.28		1.37		1.28		0.0485	
NWB-SED-04-R1	NWB-SED-04-R1-0.5-1-N	9/11/2022	593082	0.5	1	N	0.5	1	11.2		1.37		1.13		0.0549	U
NWB-SED-04-R1	NWB-SED-04-R1-1-2-N	9/11/2022	593082	1	2	Y	1	2	8.33		1.08		0.941		0.0368	U
NWB-SED-04-R1	NWB-SED-04-R1-2-3-N	9/11/2022	593082	2	3	Y	2	3	7.59		0.985		0.841		0.0757	U
NWB-SED-04-R1	NWB-SED-04-R1-3-3.5-N	9/11/2022	593082	3	3.5	N	3	3.5	12.0		1.09		0.9		0.0797	
NWB-SED-05	NWB-SED-05-0-0.5-N	12/16/2020	530587	0	0.5	N	0	0.5	0.652		0.312		0.385		0.0187	U
NWB-SED-05	NWB-SED-05-0.5-1-N	12/16/2020	530587	0.5	1	N	0.5	1	1.17		0.469		0.609		0.00721	U
NWB-SED-05	NWB-SED-05-1-2-N	12/16/2020	530587	1	2	N	1	2	1.66		0.734		0.654		0.0359	U
NWB-SED-06	NWB-SED-06-0-0.5-N	11/20/2020	528623	0	0.5	N	0	0.5	4.03		0.989		0.937		0.0717	
NWB-SED-06	NWB-SED-06-0.5-1-N	11/20/2020	528623	0.5	1	N	0.5	1	3.14		1.27		1.36		0.073	
NWB-SED-06	NWB-SED-06-1-2-N	11/20/2020	528623	1	2	N	1	2	3.20		0.848		0.928		0.026	
NWB-SED-07	NWB-SED-07-0-0.5-N	11/20/2020	528623	0	0.5	N	0	0.5	4.50		0.947		1.03		0.0353	
NWB-SED-07	NWB-SED-07-0.5-1-N	11/20/2020	528623	0.5	1	N	0.5	1	5.62		0.774		0.794		0.0656	
NWB-SED-07	NWB-SED-07-1-2-N	11/20/2020	528623	1	2	N	1	2	3.61		0.56		0.646		0.0636	
NWB-SED-08	NWB-SED-08-0-0.5-N	11/20/2020	528623	0	0.5	N	0	0.5	6.90		0.885		0.733		0.027	U
NWB-SED-08	NWB-SED-08-0.5-1-N	11/20/2020	528623	0.5	1	N	0.5	1	4.96		0.797		0.771		0.0645	
NWB-SED-08	NWB-SED-08-1-1.8-N	11/20/2020	528623	1	1.8	N	1	1.8	3.63		0.65		0.727		0.0629	
NWB-SED-09	NWB-SED-09-0-0.5-N	11/20/2020	528622	0	0.5	N	0	0.5	2.94		1.22		0.998		0.123	
NWB-SED-09	NWB-SED-09-0.5-1-N	11/20/2020	528622	0.5	1	N	0.5	1	2.21		0.922		0.99		0.0992	
NWB-SED-09	NWB-SED-09-1-1.9-N	11/20/2020	528622	1	1.9	N	1	1.9	3.08		1.15		1.06		0.0299	
SED4	SED4-0-0.5-N	11/20/2020	528622	0	0.5	N	0	0.5	3.36		0.79		0.896		0.0524	
SED4	SED4-0.5-1-N	11/20/2020	528622	0.5	1	N	0.5	1	4.27		0.54		0.84		0.0666	
SED4	SED4-1-2-D	11/20/2020	528622	1	2	N	1	2	2.58		0.475		0.371		0.0306	
SED4	SED4-1-2-N	11/20/2020	528622	1	2	N	1	2	2.32		0.397		0.463		0.0301	U
SEDIMENT 2016-03-16A	SEDIMENT 2016-03-16A-0-0.5-N	3/23/2021	540994	0	0.5	N	0	0.5	5.73		1.45		1.82		0.0782	
SEDIMENT 2016-03-16A	SEDIMENT 2016-03-16A-0.5-1-N	3/23/2021	540994	0.5	1	N	0.5	1	6.36		1.32		1.59		0.0763	
SEDIMENT 2016-03-16A	SEDIMENT 2016-03-16A-1-2-N	3/23/2021	540994	1	2	N	1	2	4.71		0.963		1.21		0.0476	

TABLE A9-2 PROPOSED ADDENDUM 9 SOIL BORING AND SEDIMENT SAMPLING LOCATIONS

LOCATION ID	NORTHING (MOEAST/NAD83)	EASTING (MOEAST/NAD83)	LOCATION ID	NORTHING (MOEAST/NAD83)	EASTING (MOEAST/NAD83)
<b>Proposed Sediment Sampling Locations</b>			<b>Proposed Sediment Sampling Locations</b>		
NWB-SED-10-A	1071108.8137'	835303.2611'	NWB-SED-18-A	1071309.7287'	834867.3994'
NWB-SED-10-B	1071089.5590'	835293.9775'	NWB-SED-18-B	1071297.6382'	834861.7443'
NWB-SED-10-C	1071070.3818'	835281.9543'	NWB-SED-18-C	1071286.3868'	834855.2954'
NWB-SED-10-D	1071047.0510'	835272.1635'	NWB-SED-18-D	1071276.8360'	834850.7857'
NWB-SED-11-A	1071138.8438'	835250.8165'	NWB-SED-19-A	1071349.0053'	834775.9945'
NWB-SED-11-B	1071117.4766'	835237.5318'	NWB-SED-19-B	1071336.0948'	834770.2615'
NWB-SED-11-C	1071096.7549'	835225.6363'	NWB-SED-19-C	1071320.5807'	834761.7709'
NWB-SED-11-D	1071069.8473'	835212.7522'	NWB-SED-19-D	1071304.7411'	834752.9356'
NWB-SED-12-A	1071147.8176'	835199.8330'	NWB-SED-20-A	1071388.1207'	834661.0149'
NWB-SED-12-B	1071131.5647'	835193.3760'	NWB-SED-20-B	1071375.2101'	834655.2819'
NWB-SED-12-C	1071112.0115'	835182.5417'	NWB-SED-20-C	1071359.6960'	834646.7913'
NWB-SED-12-D	1071089.0987'	835172.0291'	NWB-SED-20-D	1071343.8564'	834637.9560'
NWB-SED-13-A	1071178.9444'	835142.9093'	NWB-SED-21-A	1071414.7262'	834502.4015'
NWB-SED-13-B	1071159.2308'	835131.8986'	NWB-SED-21-B	1071409.8203'	834581.1067'
NWB-SED-13-C	1071138.9509'	835119.4215'	NWB-SED-21-C	1071396.7170'	834570.3357'
NWB-SED-13-D	1071116.9853'	835110.4131'	NWB-SED-21-D	1071384.2266'	834561.5950'
NWB-SED-14-A	1071204.7783'	835095.1745'	<b>Proposed Soil Boring Locations</b>		
NWB-SED-14-B	1071182.5104'	835088.4143'	NWB-SB-01	1071396.3963'	834472.3215'
NWB-SED-14-C	1071162.3403'	835079.6697'	NWB-SB-02	1071361.2539'	834562.2309'
NWB-SED-14-D	1071139.8542'	835066.2220'	NWB-SB-03	1071324.3270'	834673.2145'
NWB-SED-15-A	1071239.1030'	835040.1493'	NWB-SB-04	1071286.1821'	834762.4643'
NWB-SED-15-B	1071216.6655'	835028.8032'	NWB-SB-05	1071258.5920'	834835.3731'
NWB-SED-15-C	1071198.3452'	835019.3786'	<b>Proposed Soil Boring Locations by WL-MH-244</b>		
NWB-SED-15-D	1071175.8867'	835008.5258'	WL-244-MH-A	1071003.714	835393.2242
NWB-SED-16-A	1071259.7457'	834988.8248'	WL-244-MH-B	1070983.502	835427.5252
NWB-SED-16-B	1071231.8810'	834977.8191'			
NWB-SED-16-C	1071214.6017'	834967.9301'			
NWB-SED-16-D	1071194.4432'	834958.7772'			
NWB-SED-17-A	1071274.4413'	834931.2012'			
NWB-SED-17-B	1071258.1950'	834923.2860'			
NWB-SED-17-C	1071242.6808'	834914.7954'			
NWB-SED-17-D	1071226.8412'	834905.9601'			



## FIGURES

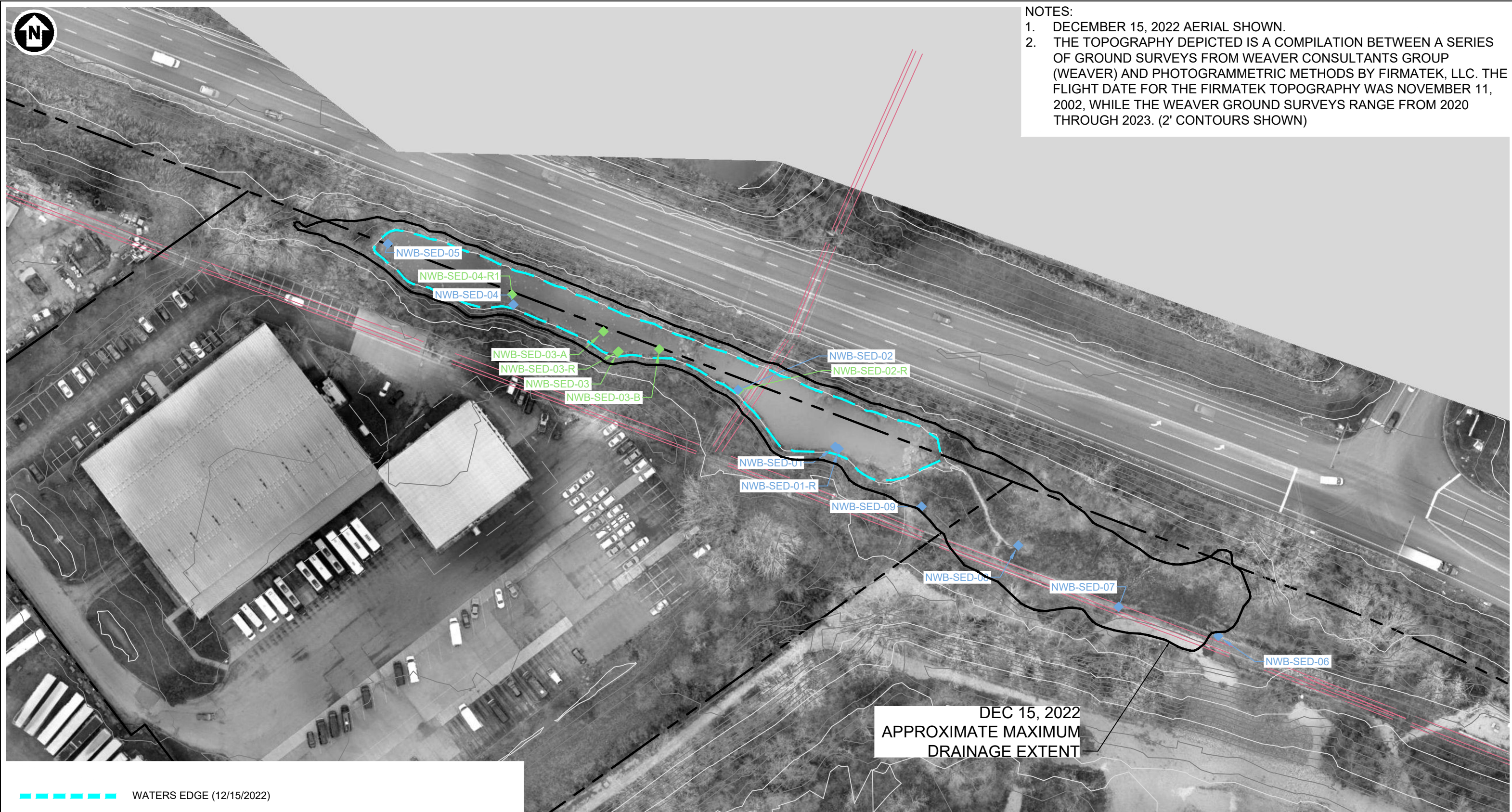
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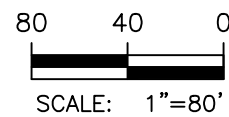


NOTES:

1. DECEMBER 15, 2022 AERIAL SHOWN.
2. THE TOPOGRAPHY DEPICTED IS A COMPILATION BETWEEN A SERIES OF GROUND SURVEYS FROM WEAVER CONSULTANTS GROUP (WEAVER) AND PHOTOGRAMMETRIC METHODS BY FIRMATEK, LLC. THE FLIGHT DATE FOR THE FIRMATEK TOPOGRAPHY WAS NOVEMBER 11, 2002, WHILE THE WEAVER GROUND SURVEYS RANGE FROM 2020 THROUGH 2023. (2' CONTOURS SHOWN)



- WATERS EDGE (12/15/2022)
- APPROXIMATE MAXIMUM DRAINAGE EXTENT (12-15-2022)
- OVERHEAD UTILITY LINES
- PROPERTY BOUNDARY
- MAXIMUM RESULT IS LESS THAN OR EQUAL TO 7.9 pCi/g
- MAXIMUM RESULT IS GREATER THAN 7.9 pCi/g AND LESS THAN 52.9 pCi/g



301 Plainfield Rd, Ste 350, Syracuse, NY 13212  
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3377 Hollenberg Dr, Bridgeton, MO 63044  
Ph: 217-483-3118  
Missouri State Certificate of Authority #: E-200912211

PROJECT  
WEST LAKE LANDFILL  
SUPERFUND SITE  
OU-1 REMEDIAL DESIGN  
BRIDGETON, ST. LOUIS COUNTY, MO

PREPARED FOR  
THE UNITED STATES ENVIRONMENTAL  
PROTECTION AGENCY REGION VII  
ON BEHALF OF  
WEST LAKE LANDFILL OU-1  
RESPONDENTS



FIGURE #  
**A9-1**

DRAWN BY: JR  
APPROVED BY: GV  
DATE: 08/01/23

FIGURE TITLE  
**NORTHERN SURFACE WATER BODY  
SEDIMENT SAMPLE ANALYTICAL RESULTS**

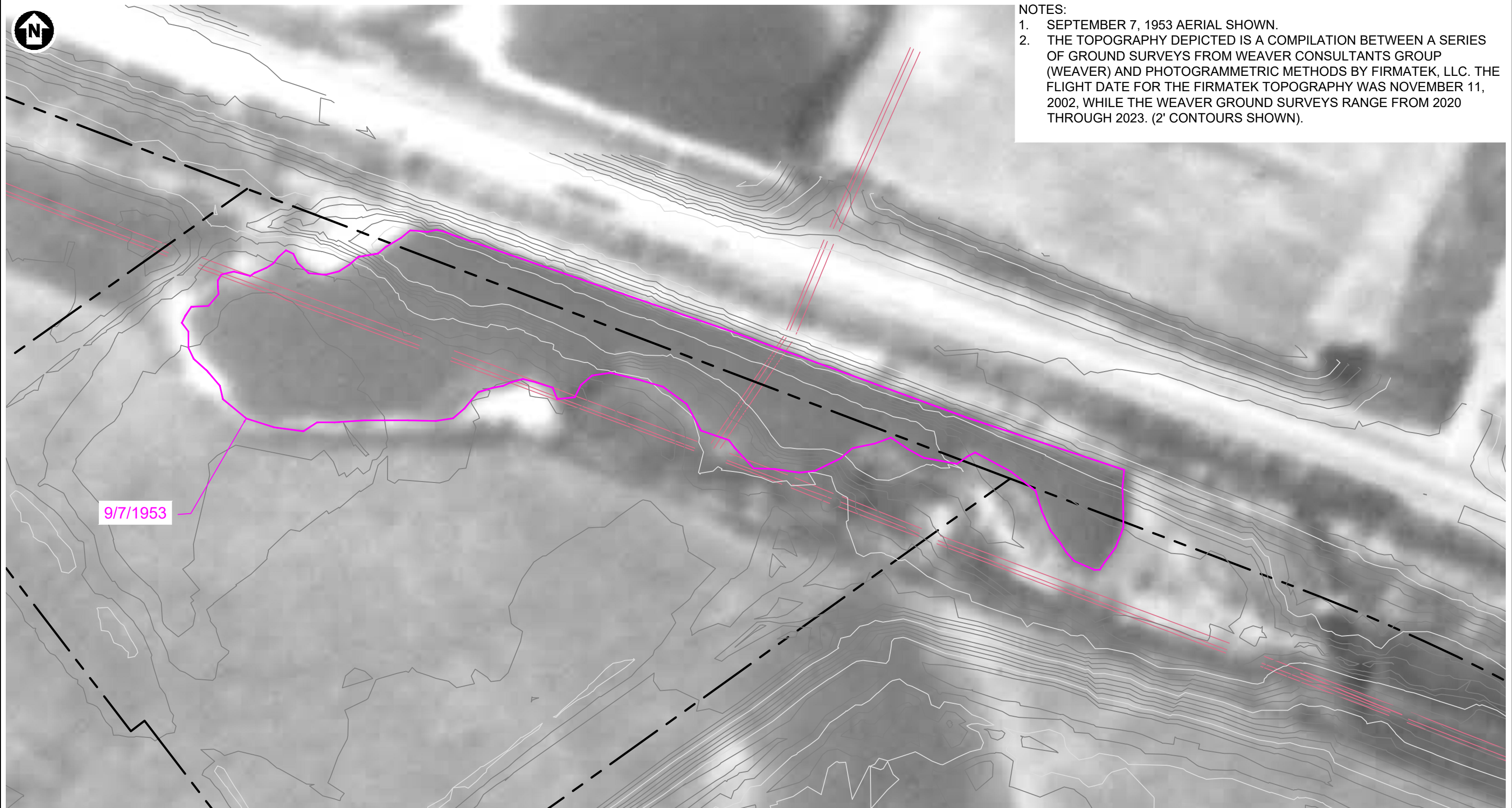
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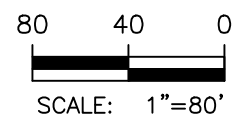
NOTES:

1. SEPTEMBER 7, 1953 AERIAL SHOWN.
2. THE TOPOGRAPHY DEPICTED IS A COMPILATION BETWEEN A SERIES OF GROUND SURVEYS FROM WEAVER CONSULTANTS GROUP (WEAVER) AND PHOTOGRAMMETRIC METHODS BY FIRMATEK, LLC. THE FLIGHT DATE FOR THE FIRMATEK TOPOGRAPHY WAS NOVEMBER 11, 2002, WHILE THE WEAVER GROUND SURVEYS RANGE FROM 2020 THROUGH 2023. (2' CONTOURS SHOWN).



9/7/1953

- APPROXIMATE MAXIMUM DRAINAGE EXTENT (9-7-1953)
- OVERHEAD UTILITY LINES
- PROPERTY BOUNDARY



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Ph: 217-483-3118  
Missouri State Certificate of Authority #: E-200912211

PROJECT  
WEST LAKE LANDFILL  
SUPERFUND SITE  
OU-1 REMEDIAL DESIGN  
BRIDGETON, ST. LOUIS COUNTY, MO

PREPARED FOR  
THE UNITED STATES ENVIRONMENTAL  
PROTECTION AGENCY REGION VII  
ON BEHALF OF  
WEST LAKE LANDFILL OU-1  
RESPONDENTS



FIGURE #  
**A9-2**

DRAWN BY: JR  
APPROVED BY: GV  
DATE: 08/01/23

FIGURE TITLE  
**NORTHERN SURFACE WATER BODY  
SEPTEMBER 1953**

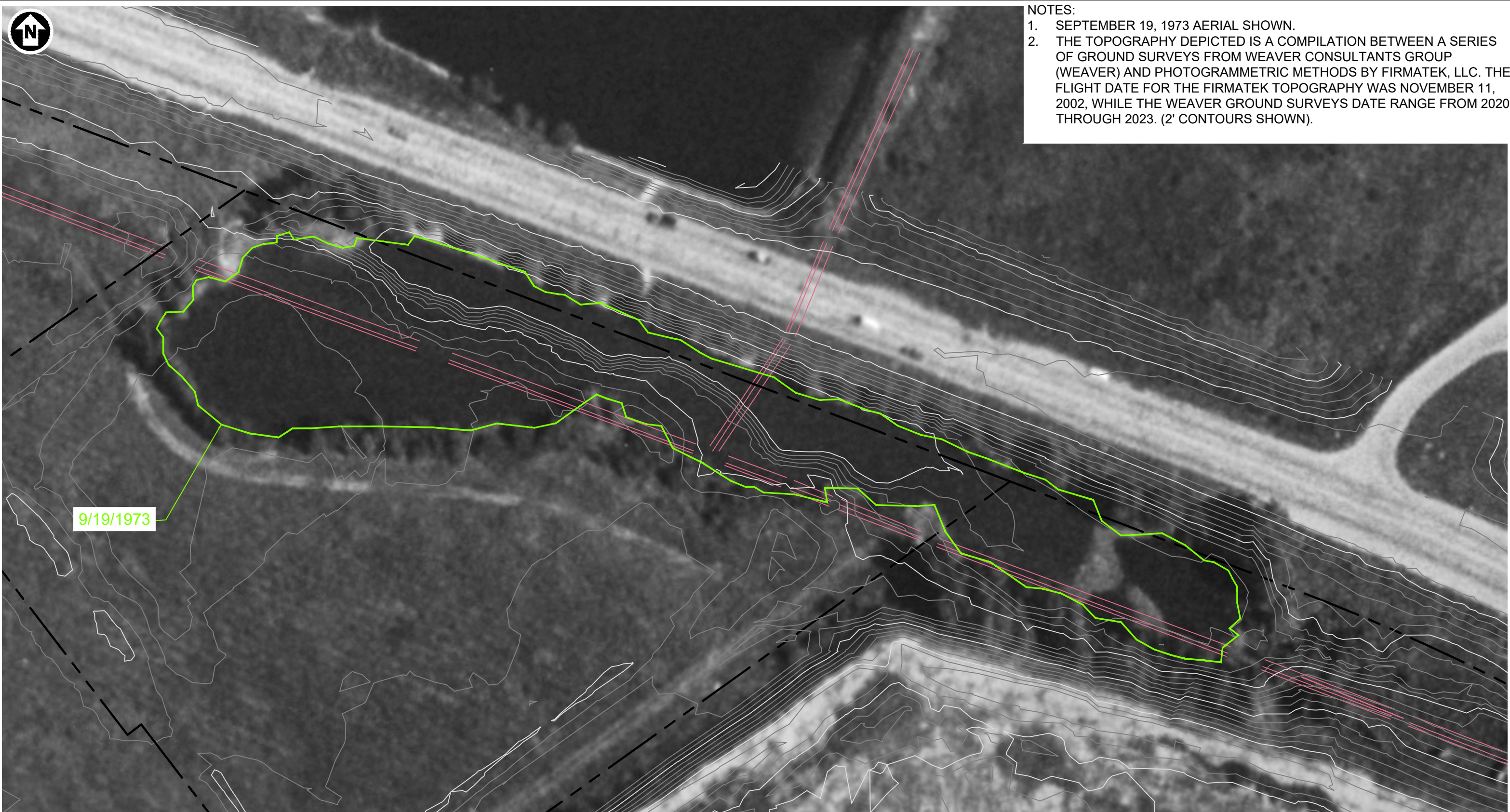
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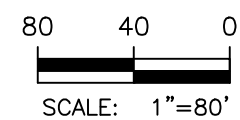
NOTES:

1. SEPTEMBER 19, 1973 AERIAL SHOWN.
2. THE TOPOGRAPHY DEPICTED IS A COMPILATION BETWEEN A SERIES OF GROUND SURVEYS FROM WEAVER CONSULTANTS GROUP (WEAVER) AND PHOTOGRAMMETRIC METHODS BY FIRMATEK, LLC. THE FLIGHT DATE FOR THE FIRMATEK TOPOGRAPHY WAS NOVEMBER 11, 2002, WHILE THE WEAVER GROUND SURVEYS DATE RANGE FROM 2020 THROUGH 2023. (2' CONTOURS SHOWN).



9/19/1973

- APPROXIMATE MAXIMUM DRAINAGE EXTENT (09-19-1973)
- OVERHEAD UTILITY LINES
- PROPERTY BOUNDARY



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 RESPONDENTS



FIGURE #  
**A9-3**

DRAWN BY: JR  
 APPROVED BY: GV  
 DATE: 08/01/23

FIGURE TITLE  
**NORTHERN SURFACE WATER BODY  
 SEPTEMBER 1973**

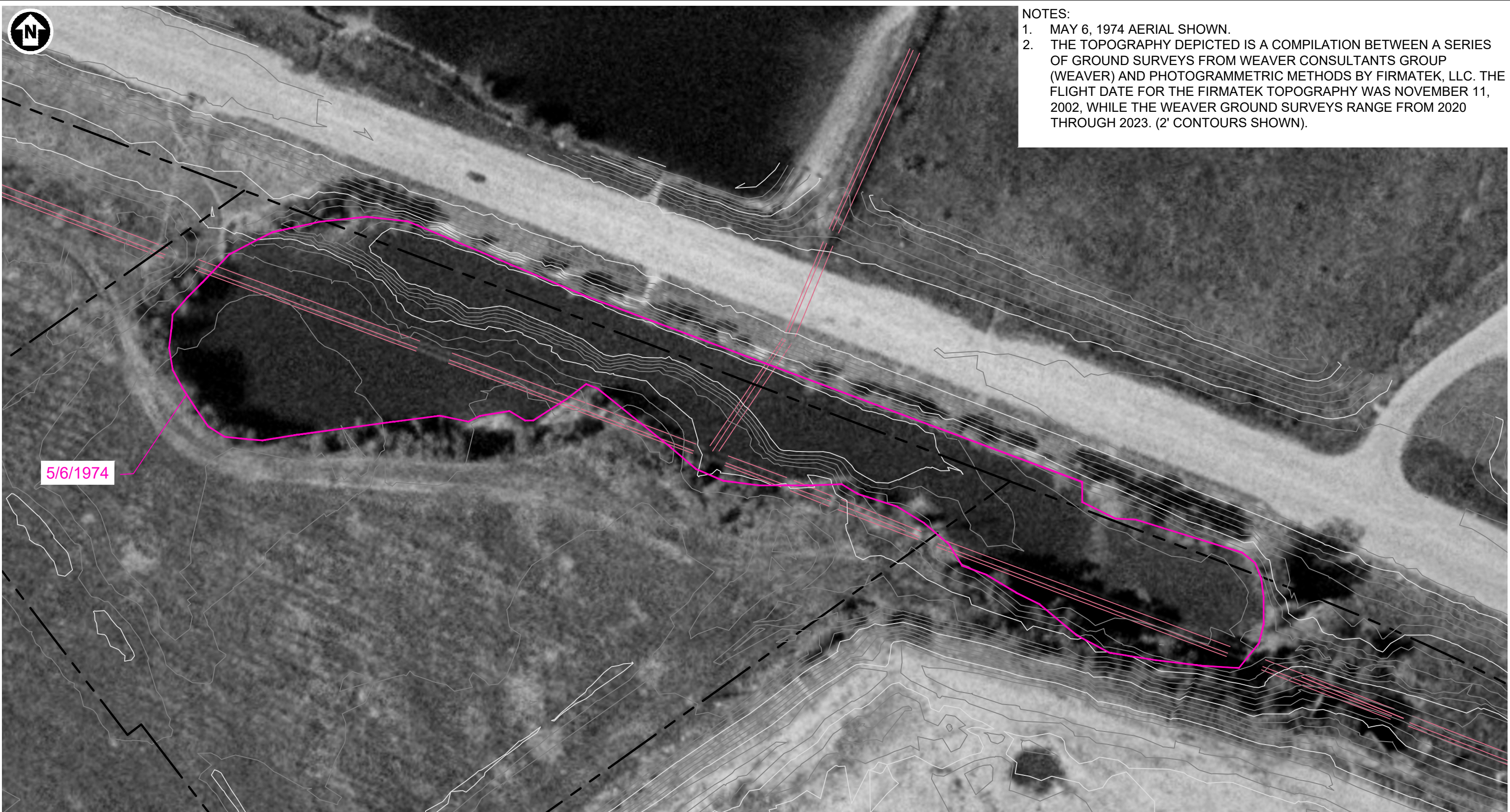
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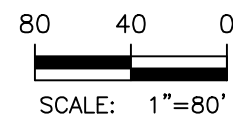
NOTES:

1. MAY 6, 1974 AERIAL SHOWN.
2. THE TOPOGRAPHY DEPICTED IS A COMPILATION BETWEEN A SERIES OF GROUND SURVEYS FROM WEAVER CONSULTANTS GROUP (WEAVER) AND PHOTOGRAMMETRIC METHODS BY FIRMATEK, LLC. THE FLIGHT DATE FOR THE FIRMATEK TOPOGRAPHY WAS NOVEMBER 11, 2002, WHILE THE WEAVER GROUND SURVEYS RANGE FROM 2020 THROUGH 2023. (2' CONTOURS SHOWN).



5/6/1974

- APPROXIMATE MAXIMUM DRAINAGE EXTENT (5-6-1974)
- OVERHEAD UTILITY LINES
- PROPERTY BOUNDARY



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 RESPONDENTS



FIGURE #  
**A9-4**

DRAWN BY: JR  
 APPROVED BY: GV  
 DATE: 08/01/23

FIGURE TITLE  
**NORTHERN SURFACE WATER BODY  
 MAY 1974**

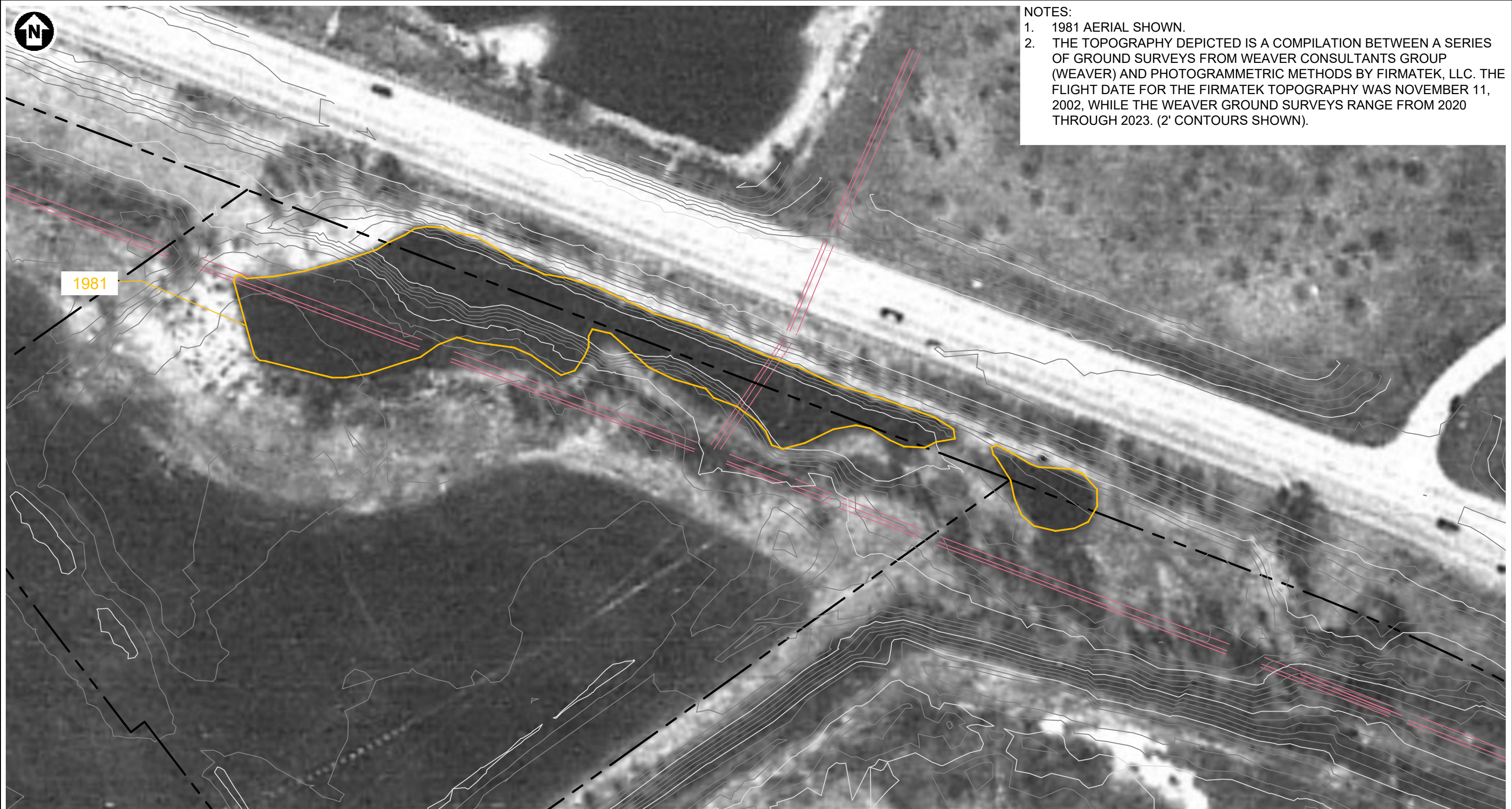
source filename:TRACINGS\_NWB.dwg plot date:10/16/2023 10:20:57 AM





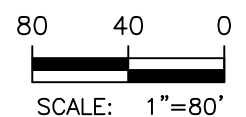
NOTES:

1. 1981 AERIAL SHOWN.
2. THE TOPOGRAPHY DEPICTED IS A COMPILATION BETWEEN A SERIES OF GROUND SURVEYS FROM WEAVER CONSULTANTS GROUP (WEAVER) AND PHOTOGRAMMETRIC METHODS BY FIRMATEK, LLC. THE FLIGHT DATE FOR THE FIRMATEK TOPOGRAPHY WAS NOVEMBER 11, 2002, WHILE THE WEAVER GROUND SURVEYS RANGE FROM 2020 THROUGH 2023. (2' CONTOURS SHOWN).



1981

- APPROXIMATE MAXIMUM DRAINAGE EXTENT (1981)
- OVERHEAD UTILITY LINES
- PROPERTY BOUNDARY



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PROJECT  
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 RESPONDENTS



FIGURE #  
**A9-5**

DRAWN BY: JR  
 APPROVED BY: GV  
 DATE: 08/01/23

FIGURE TITLE  
**NORTHERN SURFACE WATER BODY  
 1981**

source filename:TRACINGS\_NWB.dwg plot date:10/16/2023 10:20:15 AM



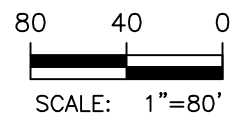


2/25/1995

NOTES:

1. FEBRUARY 25, 1995 AERIAL SHOWN.
2. THE TOPOGRAPHY DEPICTED IS A COMPILATION BETWEEN A SERIES OF GROUND SURVEYS FROM WEAVER CONSULTANTS GROUP (WEAVER) AND PHOTOGRAMMETRIC METHODS BY FIRMATEK, LLC. THE FLIGHT DATE FOR THE FIRMATEK TOPOGRAPHY WAS NOVEMBER 11, 2002, WHILE THE WEAVER GROUND SURVEYS RANGE FROM 2020 THROUGH 2023. (2' CONTOURS SHOWN).

- APPROXIMATE MAXIMUM DRAINAGE EXTENT (2-25-1995)
- OVERHEAD UTILITY LINES
- PROPERTY BOUNDARY



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RESPONDENTS



FIGURE #  
**A9-6**

DRAWN BY: JR  
APPROVED BY: GV  
DATE: 08/01/23

FIGURE TITLE  
**NORTHERN SURFACE WATER BODY  
FEBRUARY 1995**

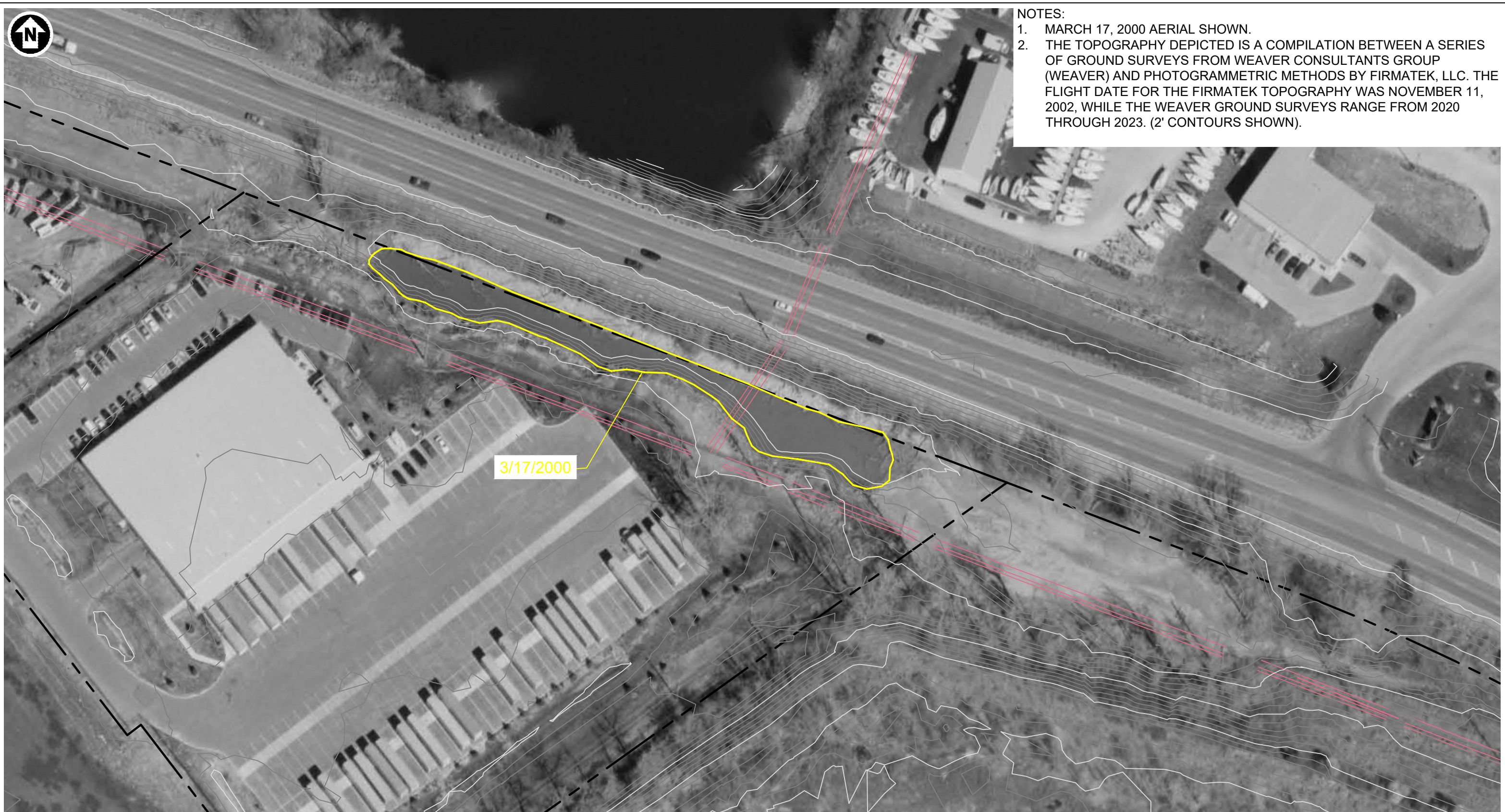
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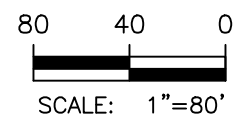


NOTES:

1. MARCH 17, 2000 AERIAL SHOWN.
2. THE TOPOGRAPHY DEPICTED IS A COMPILATION BETWEEN A SERIES OF GROUND SURVEYS FROM WEAVER CONSULTANTS GROUP (WEAVER) AND PHOTOGRAMMETRIC METHODS BY FIRMATEK, LLC. THE FLIGHT DATE FOR THE FIRMATEK TOPOGRAPHY WAS NOVEMBER 11, 2002, WHILE THE WEAVER GROUND SURVEYS RANGE FROM 2020 THROUGH 2023. (2' CONTOURS SHOWN).



- APPROXIMATE MAXIMUM DRAINAGE EXTENT (3-17-2000)
- OVERHEAD UTILITY LINES
- - - PROPERTY BOUNDARY



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RESPONDENTS



FIGURE #  
**A9-7**

DRAWN BY: JR  
APPROVED BY: GV  
DATE: 08/01/23

FIGURE TITLE  
**NORTHERN SURFACE WATER BODY  
MARCH 17, 2000**

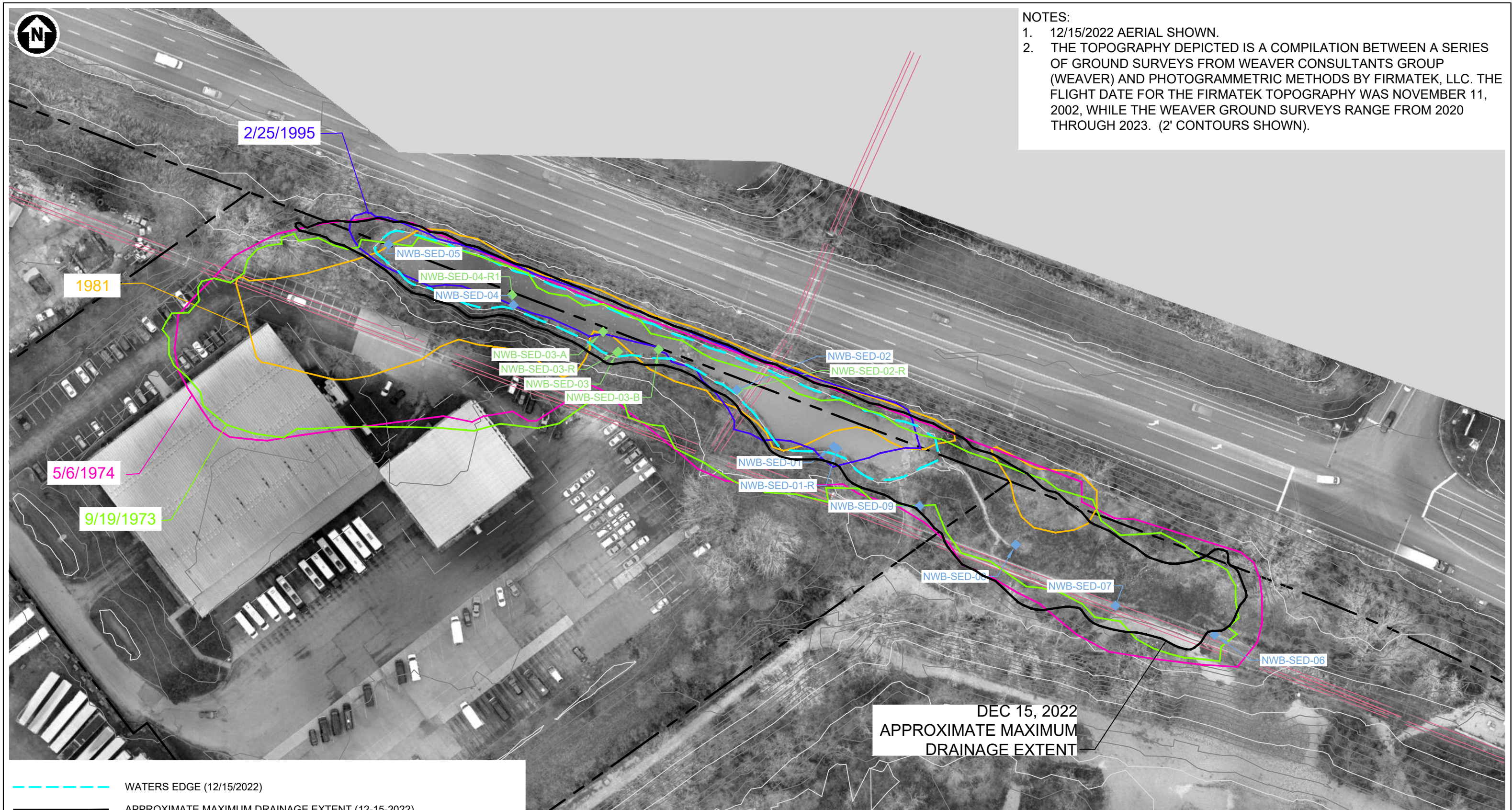
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NOTES:

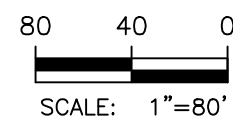
1. 12/15/2022 AERIAL SHOWN.
2. THE TOPOGRAPHY DEPICTED IS A COMPILATION BETWEEN A SERIES OF GROUND SURVEYS FROM WEAVER CONSULTANTS GROUP (WEAVER) AND PHOTOGRAMMETRIC METHODS BY FIRMATEK, LLC. THE FLIGHT DATE FOR THE FIRMATEK TOPOGRAPHY WAS NOVEMBER 11, 2002, WHILE THE WEAVER GROUND SURVEYS RANGE FROM 2020 THROUGH 2023. (2' CONTOURS SHOWN).



--- WATERS EDGE (12/15/2022)  
--- APPROXIMATE MAXIMUM DRAINAGE EXTENT (12-15-2022)

--- OVERHEAD UTILITY LINES  
--- PROPERTY BOUNDARY

◆ MAXIMUM RESULT IS LESS THAN OR EQUAL TO 7.9 pCi/g  
◆ MAXIMUM RESULT IS GREATER THAN 7.9 pCi/g AND LESS THAN OR EQUAL TO 52.9 pCi/g  
◆ MAXIMUM RESULT IS GREATER



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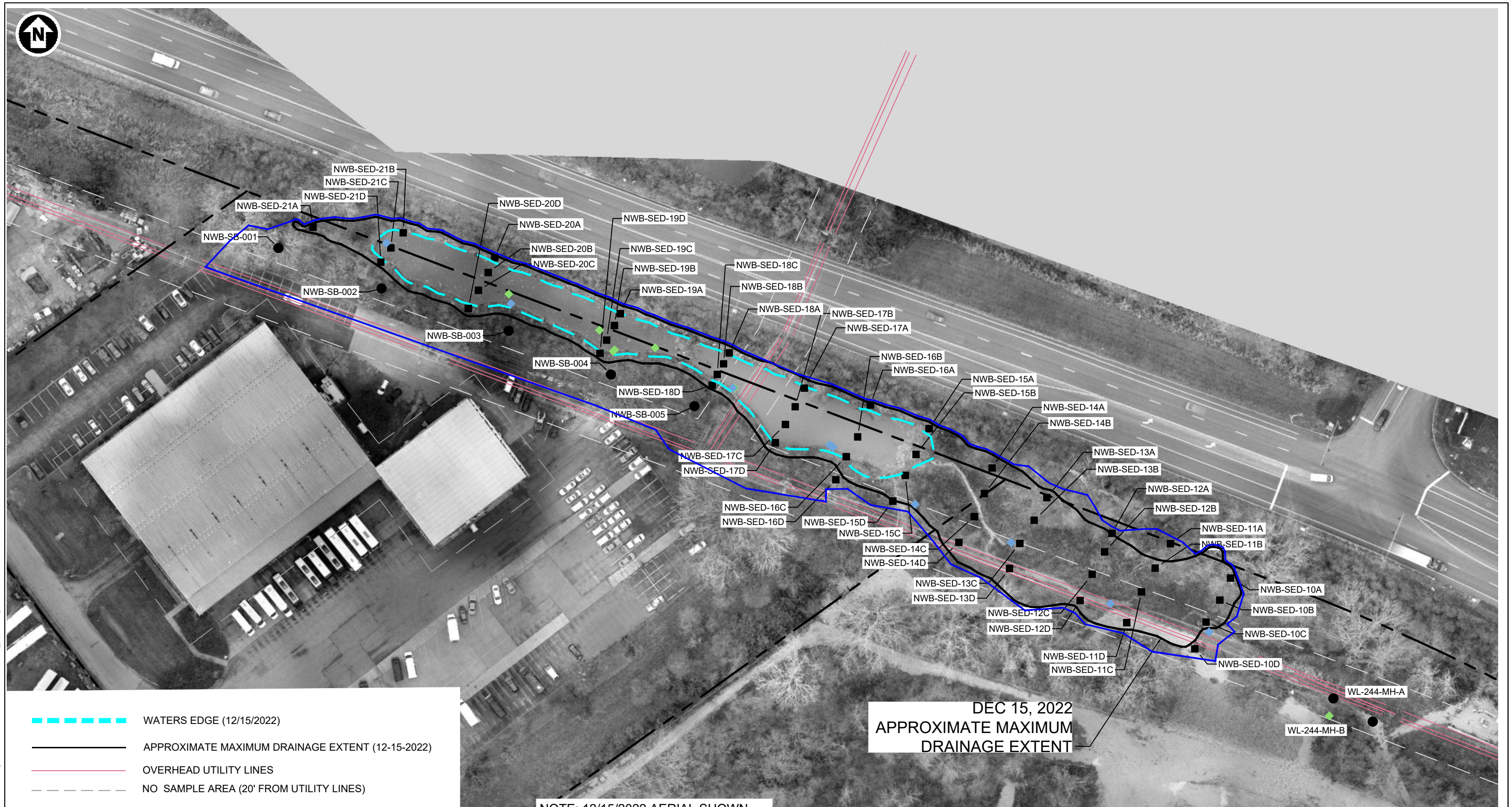
FIGURE #  
**A9-8**

DRAWN BY: JR  
APPROVED BY: GV  
DATE: 08/01/23

FIGURE TITLE  
**NORTHERN SURFACE WATER BODY  
1973 THROUGH 2022**

source filename:TRACINGS\_NWB.dwg plot date:10/16/2023 10:17:09 AM



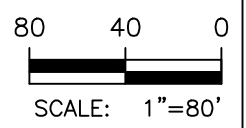


DEC 15, 2022  
APPROXIMATE MAXIMUM  
DRAINAGE EXTENT

NOTE: 12/15/2022 AERIAL SHOWN.

- WATERS EDGE (12/15/2022)
- APPROXIMATE MAXIMUM DRAINAGE EXTENT (12-15-2022)
- OVERHEAD UTILITY LINES
- NO SAMPLE AREA (20' FROM UTILITY LINES)
- PROPERTY BOUNDARY
- SAMPLE SUB-AREAS

- PROPOSED SEDIMENT SAMPLE
- PROPOSED SOIL SAMPLE
- MAXIMUM RESULT IS LESS THAN OR EQUAL TO 7.9 pCi/g
- MAXIMUM RESULT IS GREATER THAN 7.9 pCi/g AND LESS THAN OR EQUAL TO 52.9 pCi/g
- MAXIMUM RESULT IS GREATER THAN 52.9 pCi/g



**PARSONS**

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**FEEZOR ENGINEERING**

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FIGURE #  
**A9-9**  
DRAWN BY: JR  
APPROVED BY: GV  
DATE: 08/02/23

FIGURE TITLE  
**NORTHERN SURFACE WATER BODY FOOTPRINT  
PROPOSED SOIL BORING AND SEDIMENT SAMPLING LOCATIONS**

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