

The following is a summary of changes to the Field Survey and Dose Assessment Plan (FSDP) issued on 10/1/15, and reasons or basis for the changes:

1. Area 1 Field Survey Operations:

The FSDAP called for the collection of direct radiation measurements and soil samples from 4 discrete locations (1.1, 1.2, 1.3, and 1.4). The survey team was not able to access location 1.4 because the property owner declined to provide permission to access the property, and therefore it was not surveyed.

2. Area 1 RESRAD Based Dose Assessment:

The FSDAP indicated that if the soil concentrations measured in Area 1 exceeded the decay corrected 1995 Data (Reference 3 - 1995 Western New York Nuclear Service Center Off-Site Radiation Investigation Summary Report) by more than 10% that further analysis by RESRAD or other generally accepted methodologies may be appropriate. Since the soil concentrations did exceed this level, a dose assessment was performed. Although not strictly a change from the FSDAP, it was initially anticipated that such a calculation if necessary would be performed using a Recreational Hiker scenario and as a consequence the annual exposure time for dose assessments based upon aerial survey data and direct readings would be 100 hours per year. Based on further discussion and analysis the RESRAD calculation was based upon a Resident Homemaker scenario which assumes that an individual is present in the contaminated area for 8,760 hours per year as opposed to the recreational hiker scenario basis of 100 hours per year. MJW determined that this was a more conservative and representative basis to determine the dose.

3. Area 2.1 - Not Able Collect all Samples

The FSDAP called for collection of a sample in sampling location 2.1.4 from the 15-100 cm depth. Due to the extreme slope of this location it was not feasible to collect this sample.

4. Area 2 and Area 3 – Revision of Sampling and Analysis Strategy

- On October 15, 2015 Table 3 of the FSDAP “Sub-Area Description, Number of Sample Locations, Maximum Depth and Total Number of Samples” for areas 2 and 3 were revised. The area sizes were reduced; however the number of sub-area samples and quality control samples remained the same. (revised table provided below)
- On October 29, 2015 Table 3 was again revised to reflect changes in the sampling parameters for area 4 and area 5. These changes were made based on further analysis of the aerial survey data by RSL. Simultaneously new figures were incorporated to describe the sub areas to be sampled and surveyed in area 4 and area 5. Within these areas “polygon” shapes were introduced that surrounded each sub area. These polygons were designated to be the boundaries of the walkover GPS surveys. (revised table and figures provided below)

5. Determination of Background Dose Rates and Soil Concentrations for Comparison to Data from Areas 1, 2 and 3.

As is describe in the body of this report, the initial intent was to compare data from areas 1, 2 and 3 to background levels established in the 2015 DOE Background Study (Reference 4). Because this study did not provide background concentrations for gross alpha and gross beta activity, the two site background areas were surveyed and sampled as described in the report, and this data was used to subtract background from the area 1, area 2, and area 3 data.

6. Revision of Sample Analysis Strategy

Section 10 e) IV of the FSADAP called for the scanning of samples from the 30-100 cm depth to determine which elevation was the highest, so that sample could be sent to the lab for analysis. By default if an elevated sample was not identified the 30 to 45 cm depth samples were to be sent for analysis. This step was not performed. There were no samples collected from the 30 to 45 cm depth. Samples were submitted to the lab for analysis based upon the revised table 3 requirements.

7. Changes to the location of two SNI Background Locations

- The location of SNI Background Location 20 was relocated because a building was under construction in the area, and it was determined that this location was not suitable for determination of unperturbed background conditions. A new location was selected and incorporated into the Field Guide.
- Similarly when the original SNI Background Location 24 was sampled, subsurface building debris was encountered, so this location was also relocated to a more appropriate place. The SNIB Background locations map was updated and incorporated into the project report.

8. Additional analysis of Sample 3.1.1E4

Sample 3.1.1E4 was located in Area 3.1 in a region identified by GPS survey to be elevated compared to other areas within 3.1. It was collected from the 60-100 cm elevation. This sample exhibited elevated gross alpha concentrations that were contrary to expectations. A split field duplicate of this sample, did not show elevated activity. Two additional aliquots were drawn and analyzed by Gel laboratories, and neither sample showed elevated gross alpha activity. As a consequence it was determined that the initial elevated assay was invalid, and the alternative data was utilized.

Table 3 – Revision October 15, 2015

General Description of Area	Approximate Size of Area (m2)	Total Sample Locations	Maximum Sample Depth	Number of Samples: Elevated (E), Random (R), or Confirmatory (C) and Depths (m)	Total Samples Collected
Cesium Prong – Sub-Area 1.1	NA	1	30 cm	3 C Samples: 0-5 cm 5-15 cm 15-30 cm	3
Cesium Prong – Sub-Area 1.2	NA	1	30 cm	3 C Samples: 0-5 cm 5-15 cm 15-30 cm	3
Cesium Prong – Sub Area 1.3	NA	1	30 cm	3 C Samples: 0-5 cm 5-15 cm 15-30 cm	3
Cesium Prong – Area 1.4 was deleted as the property owner denied access	NA	1	30 cm	3 C Samples: 0-5 cm 5-15 cm 15-30 cm	3
Possible Cesium Prong Extension – Sub-Area 2.1	42 22	4	1 m	3 E or R Samples: 1 - 0-5 cm (all sent for gross alpha/beta and gamma) 1 - 5-15 cm 1 – 15 cm – 1m Archive Total 4 – Remaining 5-15 cm 4 – Remaining 15 cm – 1m	12
					Sent for Analysis 4 – 0-5 cm for standard analysis 2 - QC Samples for Expanded Analysis (0-5 cm and 5-15 cm)

Appendix A – Summary of Changes to Field Survey and Dose Assessment Plan, Rev. 0

General Description of Area	Approximate Size of Area (m2)	Total Sample Locations	Maximum Sample Depth	Number of Samples: Elevated (E), Random (R), or Confirmatory (C) and Depths (m)	Total Samples Collected
					6 Total
Possible Cesium Prong Extension – Sub-Area 2.2 (NYS DOT location)	350 194	4	1 m	<p>3 E or R Samples: 1 - 0-5 cm (all sent for standard analysis) 1 - 5-15 cm 1 - 15 cm – 1m</p> <p>Archive Total 4 – 5-15 cm 4 - 15 cm – 1m</p>	12 <u>Sent for Analysis</u> 4 – 0-5 cm for standard analysis 2 - QC Samples for Expanded Analysis (0-5 cm and 15 cm – 1m) 6 Total
Field at Confluence of Buttermilk and Cattaraugus Creeks – Sub-Area 3.1	46,933 25833	24	1 m	<p>24 E or R Samples: 1 - 0-15 cm (all sent for standard analysis)</p>	60

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				<p>1 - 15-30 cm (4 sent for standard analysis)</p> <p>6 E or R Samples Total 6 - 30 – 60 cm 6 – 60 cm – 1m (4 sent for standard analysis)</p> <p>Archive Total 20 - Remaining 15 – 30 cm 6 – 30 – 60cm 2- Remaining 60 cm – 1 m</p>	<p>Sent for Analysis 24 – 0-15 cm for standard analysis 4 – 15-30 cm sent for standard analysis 4 – 60 cm – 1m sent for standard analysis</p> <p>4 – QC Samples for Expanded Analysis (2 – 0-15 cm 1 – 15 – 30 cm 1 – 60 cm – 1m)</p> <p>36 Total</p>
Elevated sub-area on Farm – Sub-Area 3.2	<p>1,028 511</p>	4	1 m	<p>4 E or R Samples/location: 1 - 0-15 cm (all sent for standard analysis) 1 - 15 -30 cm</p> <p>1 E or R Sample Total 30 – 60 cm</p>	10

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				60 cm – 1 m (1 sent for standard analysis) <u>Archive:</u> 4 – 15 – 30 cm 1 – 30-60 cm	<u>Sent for Analysis</u> 4 – 0-15 cm for standard analysis 1 – 60cm – 1m sent for standard analysis 2 – QC Samples for Expanded Analysis (1 – 0-15 cm 1 – 60 cm – 1m) 7 Total

Table 3 – Revision October 28, 2015

General Description of Area	Approximate Size of Area (m ²)	Total Sample Locations	Maximum Sample Depth	Number of Samples: Elevated (E), Random (R), or Confirmatory (C) and Depths (m)	Total Samples Collected
AREA 4					
BOX 1					
4.1a	886				
4.1b	5,948				
4.1c	6,781				
4.1d	4,936				
TOTAL	18,551	24	1 m	<p>24 E or R Samples: 1 - 0-15 cm (all sent for standard analysis) 1 - 15-30 cm (4 sent for standard analysis)</p> <p>6 E or R Samples Total 6 - 30 – 60 cm 6 – 60 cm – 1m (4 sent for standard analysis)</p> <p>Archive Total 20 - Remaining 15 – 30 cm 6 – 30 – 60cm 2- Remaining 60 cm – 1 m</p>	<p>Sent for Analysis 24 – 0-15 cm for standard analysis 4 – 15-30 cm sent for standard analysis 4 – 60 cm – 1m sent for standard analysis 6 – QC Samples for Expanded Analysis (2 – 0-15 cm 2 – 15 – 30 cm 1- 30-60 cm 1 – 60 cm – 1m)</p> <p>38 Total</p>
BOX 2					
4.2a	1,466				
4.2b	8,375				

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4.2c	232				
TOTAL	10,073	24	1 m	<p>24 E or R Samples: 1 - 0-15 cm (all sent for standard analysis) 1 - 15-30 cm (4 sent for standard analysis)</p> <p>6 E or R Samples Total 6 - 30 – 60 cm 6 – 60 cm – 1m (4 sent for standard analysis)</p> <p>Archive Total 20 - Remaining 15 – 30 cm 6 – 30 – 60cm 2- Remaining 60 cm – 1 m</p>	<p>Sent for Analysis 24 – 0-15 cm for standard analysis 4 – 15-30 cm sent for standard analysis 4 – 60 cm – 1m sent for standard analysis 6 – QC Samples for Expanded Analysis (2 – 0-15 cm 2 – 15 – 30 cm 1- 30-60 cm 1 – 60 cm – 1m)</p> <p>38 Total</p>
BOX 3					
4.3a	1,896				
4.3b	23,822				
TOTAL	25,718	24	1 m	<p>24 E or R Samples: 1 - 0-15 cm (all sent for standard analysis) 1 - 15-30 cm (4 sent for standard analysis)</p> <p>6 E or R Samples Total 6 - 30 – 60 cm</p>	<p>Sent for Analysis 24 – 0-15 cm for standard analysis 4 – 15-30 cm sent for standard analysis 4 – 60 cm – 1m sent for standard</p>

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				6 – 60 cm – 1m (4 sent for standard analysis) Archive Total 20 - Remaining 15 – 30 cm 6 – 30 – 60cm 2- Remaining 60 cm – 1 m	analysis 6 – QC Samples for Expanded Analysis (2 – 0-15 cm 2 – 15 – 30 cm 1- 30-60 cm 1 – 60 cm – 1m) 38 Total
BOX 4					
4.4a	323				
4.4b	245				
4.4c	2,254				
4.4d	1,916				
TOTAL	4,738	15	1 m	15 E or R Samples: 1 - 0-15 cm (all sent for standard analysis) 1 - 15-30 cm (2 sent for standard analysis) 4 E or R Samples Total 4 - 30 – 60 cm 4 – 60 cm – 1m (2 sent for standard analysis) Archive Total 13 - Remaining 15 – 30 cm 4 – 30 – 60cm 2- Remaining 60 cm – 1 m	Sent for Analysis 15 – 0-15 cm for standard analysis 2 – 15-30 cm sent for standard analysis 2 – 60 cm – 1m sent for standard analysis 4 – QC Samples for Expanded Analysis (2 – 0-15 cm 1 – 15 – 30 cm 1 – 30 cm – 60 cm)

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					23 Total
BOX 5					
4.5a	4,391				
4.5b	5,123				
4.5c	6,188				
TOTAL	15,702	24	1 m	<p>24 E or R Samples: 1 – 0-15 cm (all sent for standard analysis) 1 – 15-30 cm (4 sent for standard analysis)</p> <p>6 E or R Samples Total 6 - 30 – 60 cm 6 – 60 cm – 1m (4 sent for standard analysis)</p> <p>Archive Total 20 – Remaining 15 – 30 cm 6 – 30 – 60cm 2- Remaining 60 cm – 1 m</p>	<p>Sent for Analysis 24 – 0-15 cm for standard analysis 4 – 15-30 cm sent for standard analysis 4 – 60 cm – 1m sent for standard analysis 6 – QC Samples for Expanded Analysis (2 – 0-15 cm 2 – 15 – 30 cm 1- 30-60 cm 1 – 60 cm – 1m)</p> <p>38 Total</p>
AREA 5					
BOX 1					
5.1a	778				
5.1b	546				
TOTAL	1,324	4	1m	4 E or R Samples/location:	Sent for Analysis

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				1 - 0-15 cm (all sent for standard analysis) 1 - 15 -30 cm <u>1 E or R Sample Total</u> 30 – 60 cm (1 sent for standard analysis) 60 cm – 1 m <u>Archive:</u> 4 – 15 – 30 cm 1 – 60 cm - 1 m	4 – 0-5 cm for standard analysis 1 – 30-60 cm for standard analysis 2 - QC Samples for Expanded Analysis (0-5 cm and 60 cm – 1m) 7 Total
BOX 2					
5.2a	3,071				
5.2b	3,533				
TOTAL	6,604	15	1m	<u>15 E or R Samples:</u> 1 - 0-15 cm (all sent for standard analysis) 1 - 15-30 cm (2 sent for standard analysis) <u>4 E or R Samples Total</u> 4 - 30 – 60 cm 4 – 60 cm – 1m (2 sent for standard analysis) <u>Archive Total</u> 13 - Remaining 15 – 30 cm 4 – 30 – 60cm 2- Remaining 60 cm – 1 m	<u>Sent for Analysis</u> 15 – 0-15 cm for standard analysis 2 – 15-30 cm sent for standard analysis 2 – 60 cm – 1m sent for standard analysis 4 – QC Samples for Expanded Analysis (2 – 0-15 cm, 1 – 15 – 30 cm, 1 – 30 cm – 60 cm)

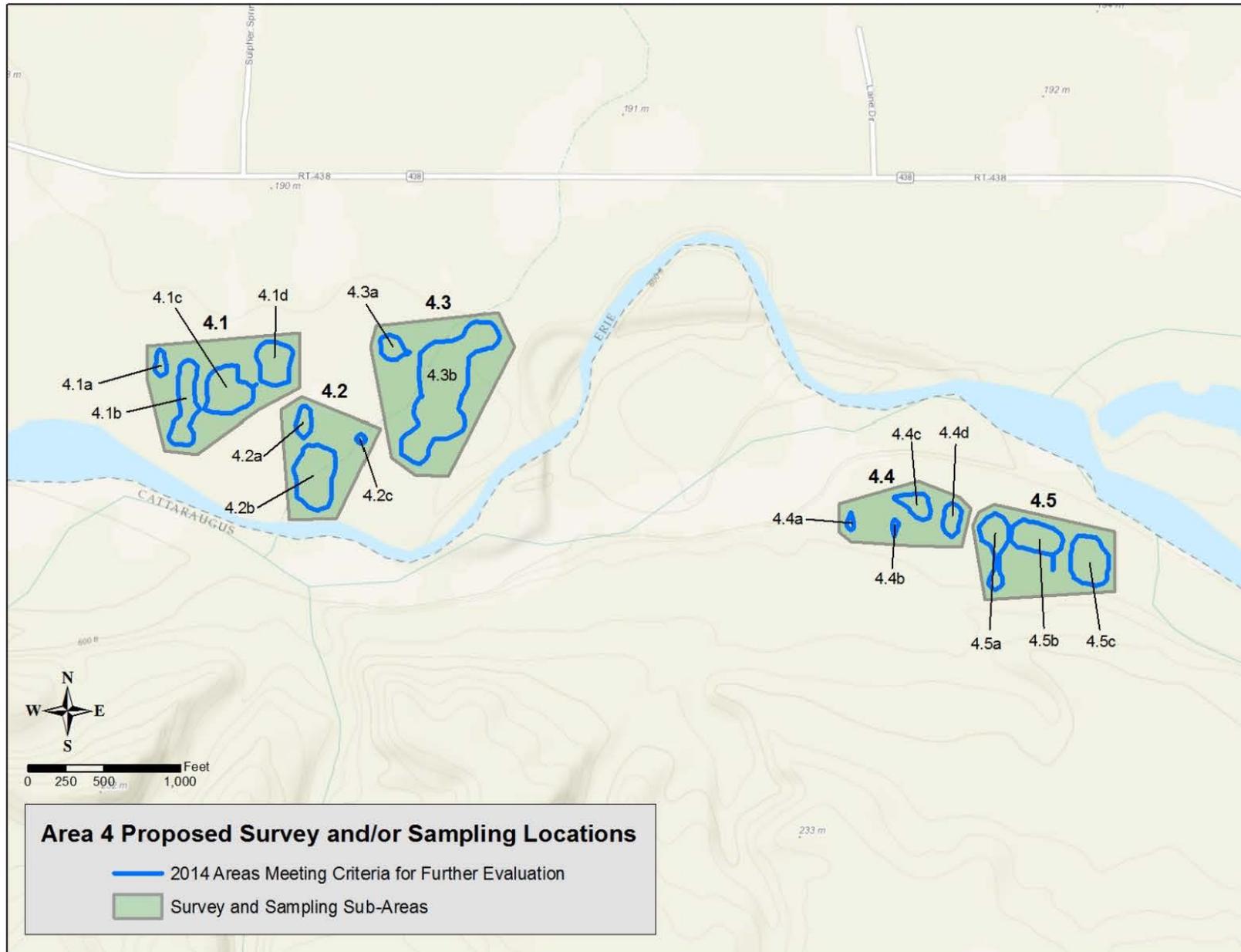
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					23 Total
Box 5.3 (5.3a)	573	4	1m	<p>4 E or R Samples/location: 1 - 0-15 cm (all sent for standard analysis) 1 - 15 -30 cm</p> <p>1 E or R Sample Total 30 – 60 cm (1 sent for standard analysis) 60 cm – 1 m</p> <p>Archive: 4 – 15 – 30 cm 1 – 60 cm - 1 m</p>	<p>Sent for Analysis 4 – 0-5 cm for standard analysis 1 – 30-60 cm for standard analysis</p> <p>2 - QC Samples for Expanded Analysis (0-5 cm and 60 cm – 1m)</p> <p>7 Total</p>
Box 5.4 (5.4a)	1791	4	1m	<p>4 E or R Samples/location: 1 - 0-15 cm (all sent for standard analysis) 1 - 15 -30 cm</p> <p>1 E or R Sample Total 30 – 60 cm (1 sent for standard analysis) 60 cm – 1 m</p> <p>Archive: 4 – 15 – 30 cm 1 – 60 cm - 1 m</p>	<p>Sent for Analysis 4 – 0-5 cm for standard analysis 1 – 30-60 cm for standard analysis</p> <p>2 - QC Samples for Expanded Analysis (0-5 cm and 60 cm – 1m)</p> <p>7 Total</p>
Box 5.5 (5.5a)	312	4	1m	<p>4 E or R Samples/location: 1 - 0-15 cm (all sent for standard</p>	<p>Sent for Analysis 4 – 0-5 cm for</p>

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				analysis) 1 - 15 -30 cm <u>1 E or R Sample Total</u> 30 – 60 cm (1 sent for standard analysis) 60 cm – 1 m <u>Archive:</u> 4 – 15 – 30 cm 1 – 60 cm - 1 m	standard analysis 1 – 30-60 cm for standard analysis 2 - QC Samples for Expanded Analysis (0-5 cm and 60 cm – 1m) 7 Total
Box 5.6 (5.6a)	888	4	1m	<u>4 E or R Samples/location:</u> 1 - 0-15 cm (all sent for standard analysis) 1 - 15 -30 cm <u>1 E or R Sample Total</u> 30 – 60 cm (1 sent for standard analysis) 60 cm – 1 m <u>Archive:</u> 4 – 15 – 30 cm 1 – 60 cm - 1 m	<u>Sent for Analysis</u> 4 – 0-5 cm for standard analysis 1 – 30-60 cm for standard analysis 2 - QC Samples for Expanded Analysis (0-5 cm and 60 cm – 1m) 7 Total

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