

**INDEPENDENT VERIFICATION
SURVEY REPORT FOR THE OPERABLE
UNIT-1 LANDFILL TRENCHES,
MIAMISBURG CLOSURE PROJECT,
MIAMISBURG, OHIO**

W.C. Adams

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Oak Ridge Institute for Science and Education



May 24, 2010

Mr. Paul Lucas
Federal Project Director
Mound Remedial Project Manager
U.S. Department of Energy
175 Tri-County Pkwy.
Springdale, OH 45246

DOE CONTRACT NO. DE-AC05-06OR23100
SUBJECT: INDEPENDENT VERIFICATION SURVEY REPORT FOR THE
OPERABLE UNIT-1 LANDFILL TRENCHES, MIAMISBURG CLOSURE
PROJECT, MIAMISBURG, OHIO DCN: 0468-SR-02-0

Dear Mr. Lucas:

Oak Ridge Institute for Science and Education (ORISE) personnel visited the Miamisburg Closure Project (MCP) Site's Operable Unit-1 (OU-1) Landfill in Miamisburg, Ohio on April 14 and 15, 2010 to perform independent verification activities at the OU-1 Landfill Area excavated trenches (Figures 1, 2 and 3). Verification activities were conducted in accordance with the ORISE Independent Environmental Assessment and Verification (IEAV) Program's Project-Specific Verification Plan, Survey Procedures, and Quality Program Manuals (ORISE 2007 and 2008, and ORAU 2009). The collective site areas verified consisted of four trenches; of which, three trenches were along the southeast portion of the Landfill Area (Trenches 30, 31, and 32; Figure 3) and one along the northwest portion of the Landfill Area (Trench 53; Figure 3).

Due to the depth of the trenches and the potential for cave in, final status surveys (FSS) by the site decommissioning contractor and verification surveys by ORISE personnel, were conducted on the excavated soil piles. The bottom of the trenches and the excavated soil piles were inspected for evidence of any landfill wastes. ORISE did not observe any visible wastes within the soil piles or trenches.

High density scans for gamma radiation were performed on accessible surfaces of the trench soil piles and in the immediate vicinity of the trench openings using NaI and FIDLER scintillation detectors. Gross gamma radiation scans ranged from 3,200 to 5,100 counts per minute (cpm) with the NaI scintillation detectors and 400 to 720 cpm with the FIDLER. Background gamma measurements were approximately 3,000 cpm for the NaI detectors and approximately 400 cpm with the FIDLER detectors.

A random sequence generator (Random.org) was used to generate random sample locations in the four trenches. ORISE collected twelve random samples from among the site decommissioning contractor's soil sample locations. A static gamma count rate measurement was performed at each location prior to collecting a sample. A judgmental soil sample was collected from the east end of Trench 31 based on a slightly elevated FIDLER gamma reading. Sampling locations are provided in Figure 3.

Soil samples and data were returned to the ORISE laboratory in Oak Ridge, Tennessee for analysis and interpretation. Sample analyses were performed in accordance with the ORISE Laboratory Procedures Manual (ORISE 2010). Soil samples were analyzed by gamma spectroscopy for the radionuclides of concern (ROC). The spectra were also reviewed for other identifiable photopeaks that would not be expected at this site and none were identified.


Gamma spectroscopy results were reported in units of picocuries per gram (pCi/g) and were compared with the approved release criteria established for the OU-1 (Table 2). The concentration ranges for the primary ROCs have been provided in Table 1.

TABLE 1 ORISE RADIONUCLIDE CONCENTRATION RANGES IN SOIL SAMPLES SUMMARY RESULTS FOR OPERABLE UNIT 1 LANDFILL TRENCHES MIAMISBURG CLOSURE PROJECT MIAMISBURG, OHIO					
Trench	Radionuclide Concentrations (pCi/g)				
	Ra-226	Th-230	Th-232	U-235	U-238
All Trenches	0.58 to 0.93	-0.8 to 1.90	0.37 to 0.60	0.02 to 0.06	0.57 to 0.96

Because the gamma spectroscopy results indicated that soil radionuclide concentrations were at background levels and with the approval of the Department of Energy site representative, Mr. Paul Lucas, ORISE did not perform alpha spectroscopy to determine isotopic abundances for plutonium or uranium in the soil samples.

Individual soil sample radionuclide concentrations are reported in Table 3. All values were below the site cleanup objectives established for the ROCs as reported in Table 2.

Please contact me at 865.576.0065, Tim Vitkus at 865.576.5073 or Phyllis Weaver at 865.576.5321 should you have any questions.




Sincerely,

 Wade C. Adams
 Health Physicist/Project Leader
 Independent Environmental Assessment
 & Verification

WCA:jc

Enclosures:

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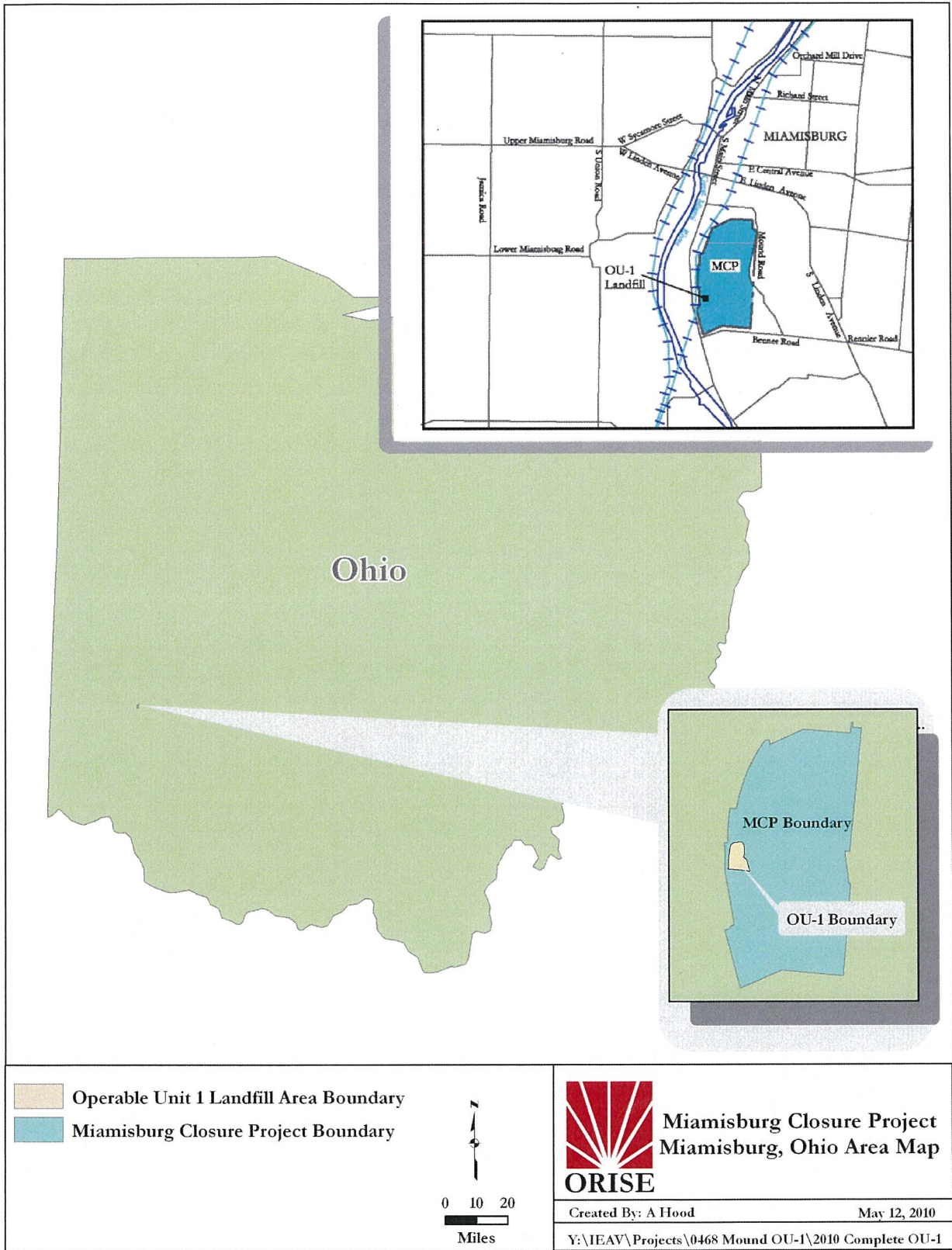
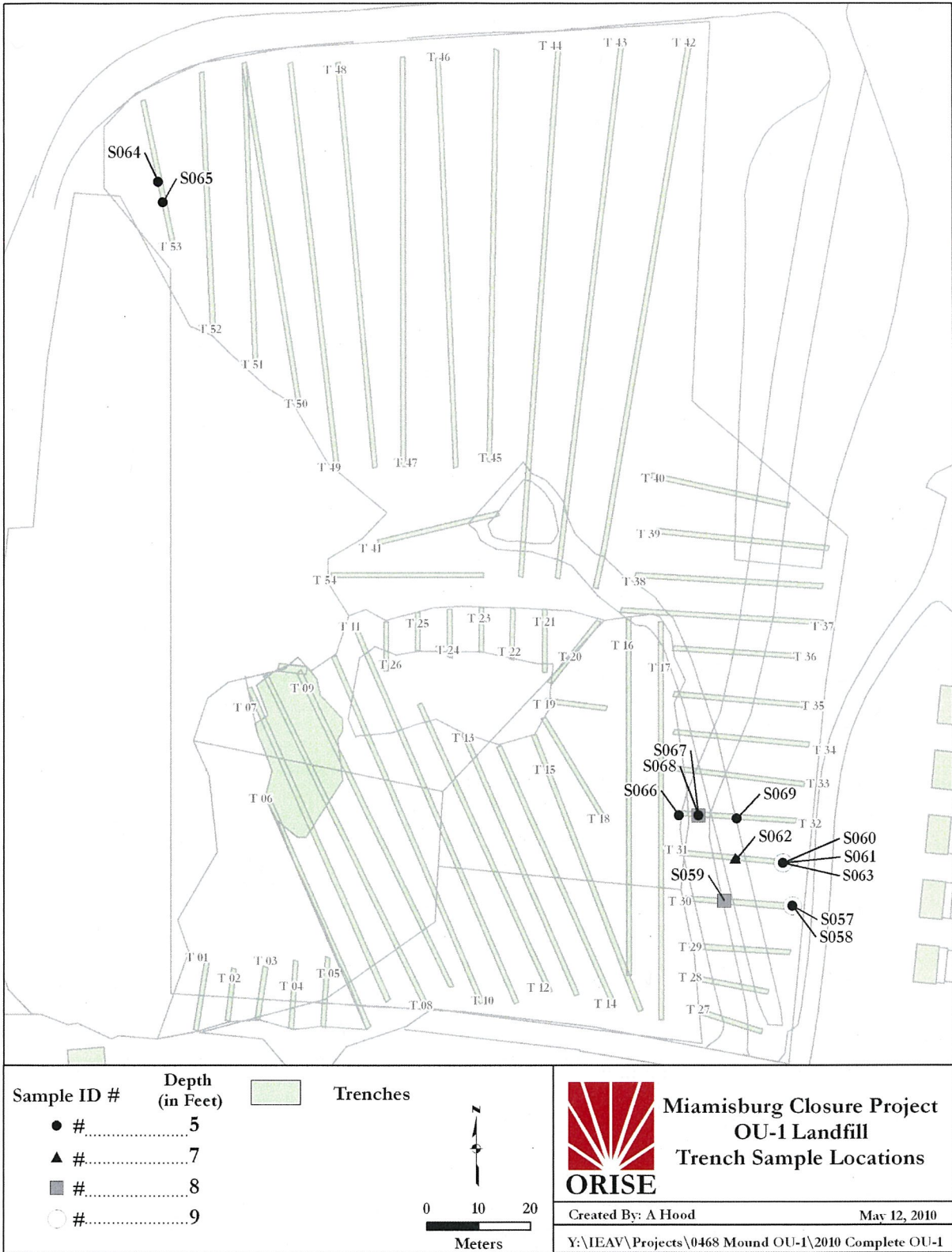


Figure 1: Map of Miamiisburg, Ohio Area — Miamiisburg Closure Project



Figure 2: Miamiisburg Closure Project Operable Unit 1 Landfill Area Plot Plan



**Figure 3: Miamisburg Closure Project Operable Unit 1 Landfill Area
Trench Soil Sample Locations**

TABLE 2
RADIOLOGICAL CONTAMINANTS OF CONCERN CLEANUP OBJECTIVES^a
OPERABLE UNIT 1 LANDFILL TRENCHES
MIAMISBURG CLOSURE PROJECT
MIAMISBURG, OHIO

Radionuclide	Cleanup Objective (pCi/g)	Hot Spot Criteria (pCi/g)
Ra-226	2.9	4.7
Th-230	2.8	4.6
Th-232	2.1	3.5
U-233/234	2.0	-- ^b
U-235	3.2	9.6
U-238	2.2	4.2
Pu-238	55.0	165.13

^aCleanup objectives from Soils Verification Sampling & Analysis Plan (ARC 2009).

^bValue not provided.

TABLE 3
RADIONUCLIDE CONCENTRATION IN SOIL SAMPLES
OPERABLE UNIT 1 LANDFILL TRENCHES
MIAMISBURG CLOSURE PROJECT
MIAMISBURG, OHIO

Sample ID/Location ^a	Sample Coordinates ^b		Radionuclide Concentrations (pCi/g)				
	Northing	Easting	Ra-226	Th-230	Th-232	U-235	U-238
Trench 30							
S057	597053	1464432	0.80 ± 0.06 ^c	-0.5 ± 1.2	0.44 ± 0.05	0.04 ± 0.02	0.72 ± 0.08
S058	597053	1464432	0.78 ± 0.05	0.60 ± 0.88	0.47 ± 0.05	0.02 ± 0.02	0.72 ± 0.09
S059	597056	1464389	0.81 ± 0.05	0.75 ± 0.21	0.44 ± 0.05	0.06 ± 0.01	0.82 ± 0.07
<i>Average</i>			<i>0.80</i>	<i>0.28</i>	<i>0.45</i>	<i>0.04</i>	<i>0.75</i>
Trench 31							
S060	597080	1464426	0.80 ± 0.05	1.36 ± 0.63	0.50 ± 0.05	0.05 ± 0.01	0.79 ± 0.08
S061	597080	1464426	0.78 ± 0.05	0.57 ± 0.68	0.45 ± 0.05	0.04 ± 0.01	0.74 ± 0.08
S062	597083	1464396	0.80 ± 0.07	1.11 ± 0.59	0.49 ± 0.06	0.04 ± 0.02	0.78 ± 0.09
S063 ^d	597080	1464425	0.78 ± 0.04	0.7 ± 1.1	0.60 ± 0.07	0.05 ± 0.01	0.77 ± 0.07
<i>Average</i>			<i>0.79</i>	<i>0.94</i>	<i>0.51</i>	<i>0.05</i>	<i>0.77</i>
Trench 53							
S064	597510	1464033	0.88 ± 0.06	1.1 ± 2.6	0.49 ± 0.05	0.05 ± 0.01	0.69 ± 0.08
S065	597497	1464036	0.58 ± 0.03	-0.8 ± 1.1	0.37 ± 0.05	0.04 ± 0.02	0.57 ± 0.07
<i>Average</i>			<i>0.73</i>	<i>0.15</i>	<i>0.43</i>	<i>0.05</i>	<i>0.63</i>
Trench 32							
S066	597110	1464361	0.84 ± 0.07	0.89 ± 0.60	0.47 ± 0.06	0.05 ± 0.02	0.85 ± 0.10
S067	597110	1464373	0.84 ± 0.05	0.67 ± 0.47	0.46 ± 0.05	0.06 ± 0.01	0.88 ± 0.08
S068	597109	1464373	0.93 ± 0.06	1.9 ± 1.2	0.48 ± 0.05	0.05 ± 0.01	0.96 ± 0.09
S069	597108	1464397	0.85 ± 0.05	1.23 ± 0.10	0.43 ± 0.05	0.05 ± 0.01	0.75 ± 0.07
<i>Average</i>			<i>0.87</i>	<i>1.17</i>	<i>0.46</i>	<i>0.05</i>	<i>0.86</i>

^aRefer to Figure 3.

^bSample coordinates provided by DeNuke.

^cUncertainties are at the 95% confidence level based on total propagated uncertainties.

^dJudgmental soil sample collected based on FIDLER gamma scan reading.

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