



DEPARTMENT OF HEALTH & HUMAN SERVICES

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Nuclear Materials Licensing Branch
U.S. Nuclear Regulatory Commission, Region IV
1600 East Lamar Blvd.
Arlington, TX 76011-4511

RE: NRC Information Notice 2021-1: Buried Waste Vault

Dear Dr. Roldan-Otero,

This letter is in regard to the buried waste vault that was discovered at the Rocky Mountain Laboratories (RML) in August 2021. Initial discussions between RML and yourself about this vault were conducted by phone on August 20 (w/ Barri Twardoski) and September 7, 2021 (w/ Aaron Bestor).

In summary, a buried waste vault was discovered on the RML campus on August 8, 2021 while excavating for new construction. Only the southeast corner of the vault was initially exposed (Figs. 1-2). In the exposed area of the vault was found vials, glassware, plasticware, absorbent pads, gloves, planchets, and other common lab waste articles (Fig. 3). Some of the vials had "Radioactive Material" stickers on them and have subsequently been identified as I-131 vials used by Squibb and Sons from 1952-1968. No readings above background were found by Geiger-Mueller detector, scintillating NaI, or liquid scintillation counting (LSC). Although RML had six other historic low-level radioactive waste (LLRW) vault/pits that were used as acceptable methods of LLRW disposal from 1956-1978, there is no record of the existence of this vault. The six historic pits were decommissioned in 1996 as part of a Voluntary Cleanup Program (VCP). Characterization of the VCP vault/pits at the time determined that isotopes were not present above the NRC standards defining radioactive waste (10 CFR 20.2005) and were therefore excavated and disposed of as non-radioactive waste in accordance with all applicable regulations.

Historical analysis of the discovered waste vault has determined that it was likely used for waste associated with a specific group of research programs as early as 1955 and was abandoned between 1965-1968. These studies utilized radioimmunolabeling (RIL) of antigens with ^{32}P and ^{131}I . Other isotopes historically used at RML include ^{14}C , ^{45}Ca , ^{51}Cr , ^{59}Fe , ^3H , ^{125}I and ^{35}S . Of these isotopes, only ^{14}C and ^3H would still be detectable in the buried material.

The buried vault is relatively small, internal dimensions are 3 ft. x 3 ft. x 12 in. deep. As described above, no radiological activity was detected by field instrumentation. Soil, water and swab samples taken from the pit and analyzed by LSC indicated there was no radiological activity at levels detectable by RML equipment. RML contracted with Tetra Tech Environmental Consulting and Engineering to conduct sampling of the vault and surrounding soil (Fig. 4) for laboratory analysis of radionuclides, TCLP metals, petroleum hydrocarbons, and other environmental constituents of concern (COCs). Reported test results from material and liquid within vault were below the NRC standards (10 CFR 20.2005) defining radioactive waste (Table 1). Additionally, test results from surrounding soil indicate

that ^{14}C and ^3H are not present above the Environmental Protection Agency's (EPA) soil or drinking water standards.

RML, with concurrence and funding from the Office of Research Facilities and the National Institute of Allergy and Infectious Diseases, and in coordination with the Montana Dept. of Environmental Quality (MT DEQ), Groundwater Remediation Program, contracted with Tetra Tech to coordinate and execute the excavation, removal, and disposal of the materials within this vault. Removal of the waste, concrete vault and approximately 45 cu.yds. of over-excavated surrounding soil was completed on September 27-28, 2021 in accordance with all applicable regulations and safety considerations. Approximately 0.5 cu.yds. of vault waste was contained within 55-gallon steels drums and the over-excavated surrounding soil was placed into lined waste containers. At over-excavated extents, composite field samples were taken from soil surrounding and underlying the vault and sent for laboratory analysis to confirm COCs are not present above EPA or MT DEQ standards. Additional samples from the waste and removed soil overburden were also sent for laboratory analysis to determine the appropriate final disposal of this material. Following the receipt of these field screening results, RML will coordinate with the MT DEQ if any additional investigations are required before formally closing this project.

Thank you. Please advise if further information will be required.

Sincerely,



Aaron Bestor
Radiation Safety Officer

Attachment 1:

- Figures 1-2: Photos of Site and Vault
- Figure 3: Example of Waste Found in Vault
- Figure 4: Site Characterization Sample Locations
- Table 1: Site Characterization Analytical Results

ATTACHMENT 1

FIGURE 1: AERIAL VIEW OF VAULT SITE



FIGURE 2: CLOSE-UP OF WASTE VAULT



FIGURE 3: EXAMPLES OF WASTE FOUND IN VAULT



FIGURE 4: SITE CHARACTERIZATION SAMPLE LOCATIONS

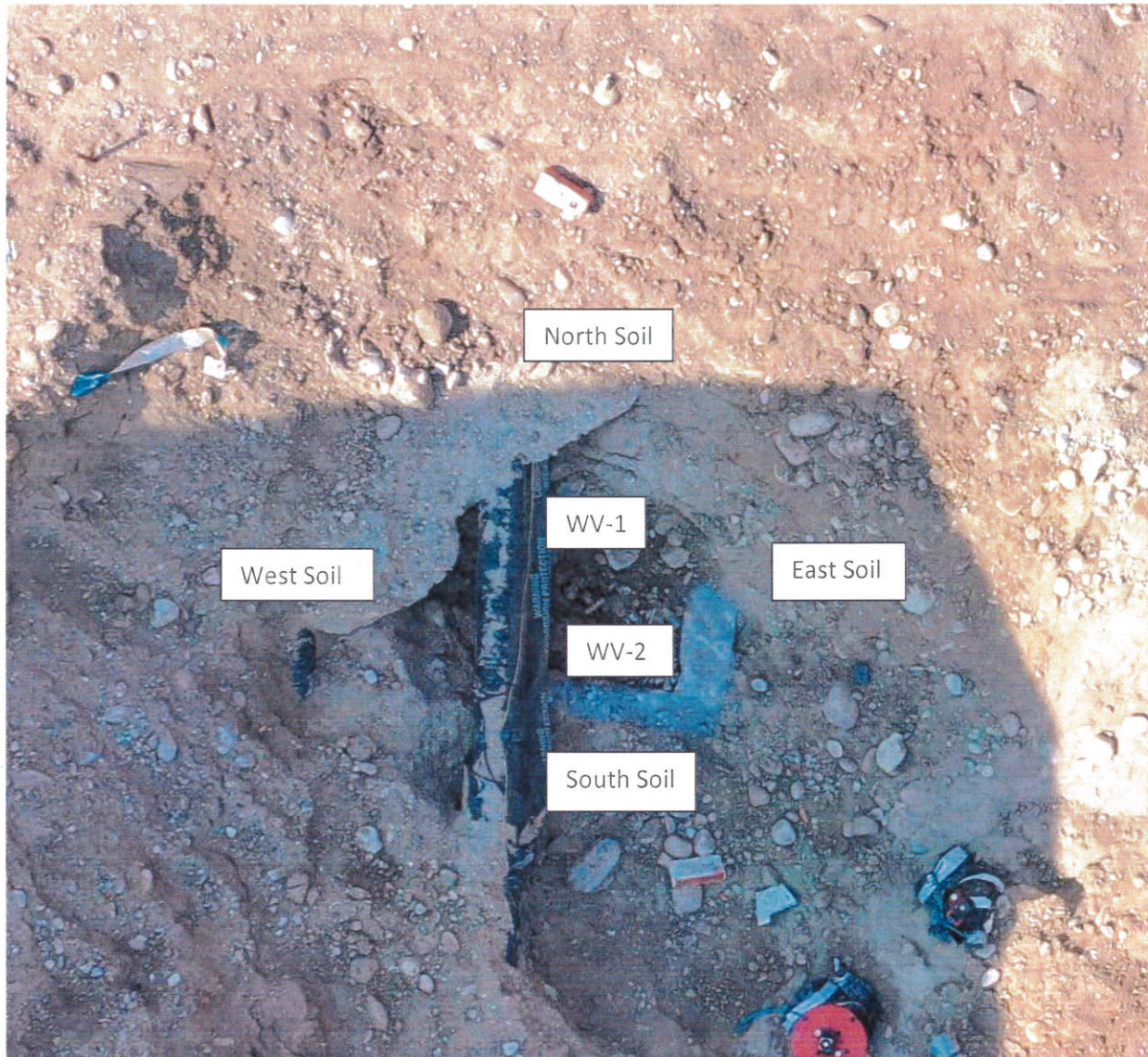


TABLE 1
SITE CHARACTERIZATION ANALYTICAL RESULTS

Sample ID	Sample Medium	Detected Constituents and Units									
		Carbon-14	Tritium	Gross Alpha	Gross Beta	Total Lead	Xylenes	Toluene	Total Extractable Hydrocarbons		
		pCi/g					mg/kg-dry				
WV-1	Waste (material/sludge)	40.4 ± 4.58	0.375 ± 0.235	-	-	186	0.13	< 0.07	2820		
WV-2	Liquid	1.56 ± 0.171	0.946 ± 0.293	0.052 ± 0.021	0.086 ± 0.014	-	-	-	-		
North Soil	Soil	0.64 ± 0.834	0 ± 0.238	11.4 ± 5.49	21.2 ± 3.25	7	-	-	-		
South Soil	Soil	1.71 ± 0.911	0.0606 ± 0.246	9.11 ± 4.91	27.3 ± 4.17	24	-	-	-		
West Soil	Soil	0.884 ± 0.825	0 ± 0.237	8.75 ± 4.32	22.9 ± 3.52	5	-	-	-		
East Soil	Soil	3.62 ± 1.04	0.0215 ± 0.258	10.5 ± 5.34	39.7 ± 5.79	844	-	-	-		
Soil Overburden	Soil	1.02 ± 0.850	0.104 ± 0.264	14.0 ± 5.49	24.7 ± 3.81	10	< 0.05	< 0.05	43		
Background	Soil	0 ± 0.696	0 ± 0.219	13.1 ± 5.70	26.7 ± 4.08	7	-	-	-		

pCi/g = picocurie per gram
mg/kg-dry = milligram per kilogram (parts per million)