



3.5 RI/FS Investigation Sample Result Summary

Based upon the results of the RI sampling and comparison of the results to applicable cleanup criteria (BCRRT, 2007b), it was determined that further action was required at 9 of the small arms ranges:

- 25 Meter M60 Range/Pistol Range
- Rifle Ranges 1 & 2
- Field Fire Rifle Ranges 1 & 2
- Field Firing Ranges 1 & 2 & Pistol Range
- Undocumented Pistol Range
- 1,000 Foot Range, Machine Gun & Moving Target Range
- Combat Pistol Range
- 25 Meter and Machine Gun Range
- 25 M Record Fire Field/Field Firing Range

The results of the RI/FS Sample Results and the Small Arms Ranges Addressed in this CAP are summarized on **Table 3-3** and **3-4** and the ranges being addressed in this CAP is shown in **Figure 3-12**.

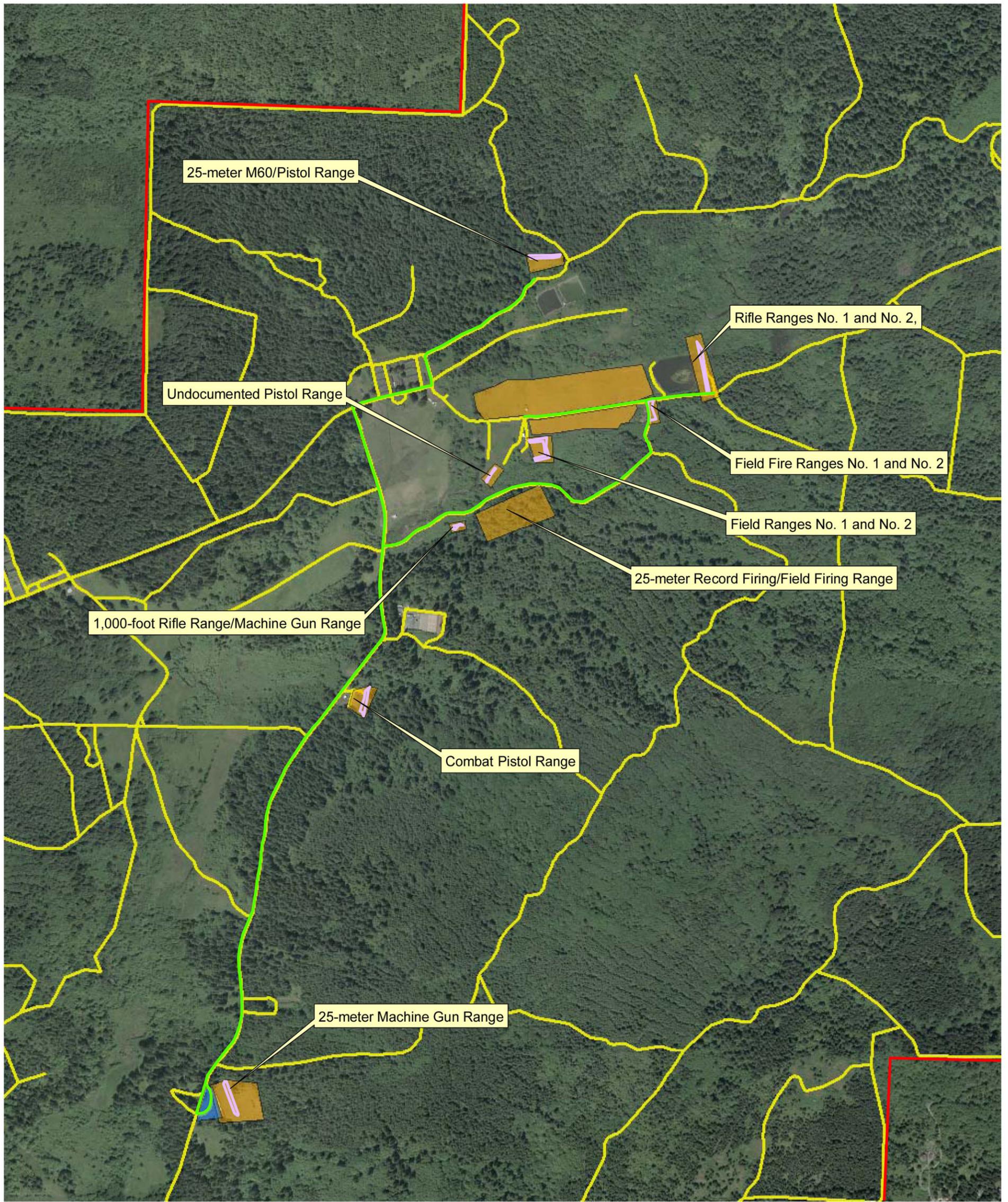
Table 3-3 RI/FS Sample Results and Small Arms Ranges Addressed in This Cleanup Action Plan (CAP) (Shaded)

Small Arms Range	Number of Samples From each Range	Number of Samples > 50	Number of Samples > 118	Number of Samples > 250	Number of Samples > 500	Number of Samples > 1,000
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Close Combat Range	120	1	0	0	0	0
25 Meter M60 Range/Pistol Range	20	5	2	0	0	0
Sub Machine Gun Range	35	0	0	0	0	0
TF Range	40	0	0	0	0	0
Rifle Ranges 1 & 2	160	50	18	9	6	5
Field Fire Rifle Ranges 1 & 2	110	14	2	1	1	1
Infiltration Course North	20	0	0	0	0	0
Field Firing Ranges 1 & 2 & Pistol Range	70	10	8	4	2	1
Undocumented Pistol Range	5	2	1	0	0	0
1,000 Foot Range, Machine Gun & Moving Target Range	150	39	24	13	8	6
Combat Pistol Range	85	6	2	1	1	0
Machine Gun Range North	165	11	1	0	0	0
Machine Gun Range South	130	2	2	1	0	0
M31 Sub-Caliber Ranges 1 & 2	125	1	0	0	0	0
25 Meter and Machine Gun Range	65	20	11	7	6	4
Infiltration Course South	35	2	1	0	0	0
25 M Record Fire Field/Field Firing Range	200	16	6	3	2	1
Total	1,535	179	78	39	26	18
Totals for Ranges Addressed in this CAP (Shaded)	865	162	74	38	26	18

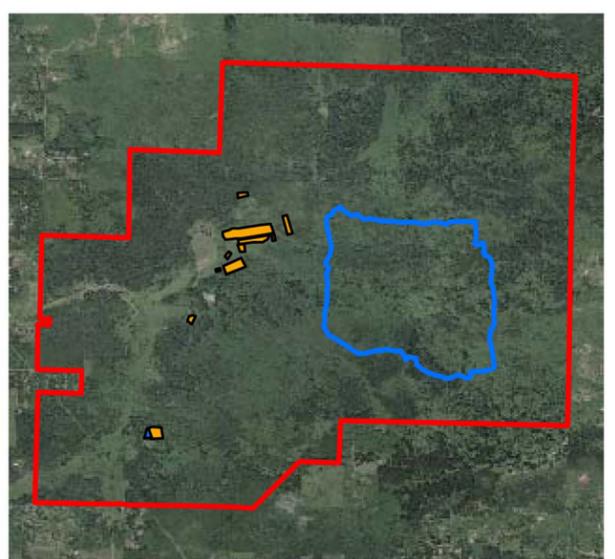


**Table 3-4 Number of Grids with Samples Exceeding Screening Levels
 (Ranges Subject to Cleanup Are Shaded)**

Small Arms Range Designation	Number of Grids with Lead Concentrations				
	> 50 mg/kg	> 118 mg/kg	> 250 mg/kg	> 500 mg/kg	> 1,000 mg/kg
Close Combat Range	1	0	0	0	0
25 Meter M60 /Pistol Range	3	1	0	0	0
Sub Machine Gun Range	0	0	0	0	0
TF Range	0	0	0	0	0
Rifle Range 1 & 2	16	8	4	3	2
Field Fire Rifle Ranges 1 & 2	10	2	1	1	1
Infiltration Course North	0	0	0	0	0
Field Firing Range & Pistol	4	3	2	1	1
Undocumented Pistol Range	1	1	0	0	0
1,000 ft Range, 1,000 Machine	11	8	5	3	3
Combat Pistol Range	4	2	1	1	0
Machine Gun Range North	6	1	0	0	0
Machine Gun Range South	2	2	1	0	0
M31 Sub-Caliber Ranges 1 & 2	1	0	0	0	0
25 m & Machine Gun Range	7	6	3	3	2
Infiltration Course South	2	1	0	0	0
25M Record Fire Field Range/Field Fire Range	7	3	2	2	1
Total Number of Grids	75	38	19	14	10
Percent of Grids with Samples Above Screening Levels	24%	12%	6%	5%	3%



- Legend**
- Camp Bonneville Property Perimeter
 - Central Impact Target Area Perimeter
 - Roads and Trails
 - Access Route
 - Firing Ranges Boundary
 - Processing Area 1
 - Berm




 MKM Engineers, Inc.
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 Stafford, TX 77477

Figure 3-12
Geographic Locations of Small Arms
Ranges Addressed in this CAP

Drawn On: 4/18/2007 Drawn By: QX Reviewed By: SS



3.5.1. Feasibility Study Analyses and Recommendations

The criteria used for evaluating the alternatives in the Feasibility Study included the requirements established under MTCA (WAC 173-340-360) for evaluation of remedial alternatives. The criteria include four threshold factors: protection of human health and the environment, compliance with cleanup standards, compliance with applicable state and federal laws, and provision for compliance monitoring. The other requirements for the selected alternative were: use permanent solutions to the maximum extent practicable, provide for a reasonable restoration time frame, and consider public concerns.

Identification of Cleanup Action Alternatives

Based on evaluation of candidate technologies, five alternative cleanup actions were identified for the Small Arms Ranges. These alternatives consist of the following:

- **Alternative 1** - No Action.
- **Alternative 2** - Institutional Controls.
- **Alternative 3** - Containment (Capping).
- **Alternative 4** - Consolidation and Containment (Capping)
- **Alternative 5** - Excavation and Off-site Disposal or Recycling

Procedure for Selection of Cleanup Actions

The MTCA Rules specify the procedure to be used to select the cleanup action from the identified alternatives at WAC 173-340-360. This rule specifies Minimum Requirements for Cleanup Actions at WAC 173-340-360 (2). The Minimum Requirements are further divided into two categories, as follows:

- Threshold requirements (WAC 173-340-360 (2) (a))
 - Protection human health and the environment
 - Compliance with applicable cleanup standards
 - Compliance with applicable state and federal laws
 - Provisions for compliance monitoring
- Other requirements (WAC 173-340-360 (2) (b))
 - Use permanent solutions to the maximum extent practical
 - Provide for a reasonable restoration time frame
 - Consider public concerns

The MTCA Rules also set forth a specific procedure to determine whether a cleanup action uses permanent solutions to the maximum extent possible. This procedure is found at WAC 173-340-360 (3) and provides evaluation criteria to determine the permanence of the candidate cleanup action approaches:

These seven evaluation criteria are as follows:

- Protectiveness
- Permanence
- Cost
- Effectiveness over the long term



- Management of short-term risks
- Technical and administrative implementability
- Consideration of public concerns

The evaluation of the five candidate alternative action resulted in the following conclusions:

- **Alternative 1** – No Action does not meet the threshold requirements.
- **Alternative 2** – Institutional Controls partially meets the threshold requirements and is ranked very low in terms of permanence.
- **Alternative 3** - Containment – meet the threshold requirements except for consideration of public concerns and ranks lower in terms of permanence than Alternative 5.
- **Alternative 4** - Consolidation and Containment – meet the threshold requirements except for consideration of public concerns and ranks lower in terms of permanence than Alternative 5.
- **Alternative 5** – Excavation and Off-site Disposal or Recycling meets the threshold requirements, addresses public concerns, and ranks highest in terms of permanence.

Therefore, the FS recommended Alternative 5, Excavation and removal of contaminated soil for remediation of the Small Arms Ranges.

When the work described in this CAP is completed, it will have satisfied all the remedial activities contemplated in the Interim Cleanup Action Work Plan for the Small Arms Ranges Berms and Fire Support Areas (Calibre, 2005), the RI/FS Report for the Small Arms Firing Range Floors (BCRRT, 2007b), the PPCD, and the Army's ESCA as it relates to the small arms ranges.

Estimated volumes for excavation during the implementation of Alternative 5 are shown in the following **Table 3-5** and the Range locations were shown on the previous **Figure 3-12**. Detailed Range Floor Grid Sampling Analysis for total lead for all grids at all Small Arms Ranges are located in **Appendix A**.



**TABLE 3-5
Grid Data Analysis Summary**

Range	RAU	Individual Sample Summary			Grid Category Summary					Waste Volumes	
		51 - 118 (ppm)	119- 250 (ppm)	251 and > (ppm)	Cat 1 Grids	Cat 2 Grids	Cat 3 Grids	Cat 4 Grids	Cat 5 Grids	MTCA Volumes (yds3)	RCRA Volumes (yds3)
Combat Pistol Range	2A-4	4	1	1	13	2	1	1	0	60.75	81.00
Undocumented Pistol Range	2A-15	1	1	0	0	0	1	0	0	40.50	0.00
1,000-inch Rifle Range/Machine Gun Range	2A-16	16	11	13	19	3	2	3	2	1,377.00	1,134.00
25-meter M60/Pistol Range	2A-17	3	2	0	1	2	1	0	0	20.25	0.00
25-meter Machine Gun Range	2A-18	9	4	7	6	2	2	1	2	546.75	567.00
25-meter Record Firing Ranges	2A-19	10	3	3	33	3	2	1	1	526.50	243.00
Field Firing Ranges	2A-20	2	4	4	10	2	1	1	1	344.25	324.00
Rifle Ranges No. 1 & No. 2	2A-21	19	9	9	16	7	4	1	3	1,073.25	729.00
Field Fire Ranges No. 1 & No.2	2A-22	12	1	1	13	7	1	0	1	40.50	81.00
Totals		76	36	38	111	28	15	8	10	4,029.75	3,159.00

Assumptions

- Grid size is 130-foot x 130-foot.
- Volumes are based upon a fluff factor of 1.3.
- The entire grid will be excavated Category 5. Category 5 volume removed is 405 cubic yards.
- A 58-foot x 58-foot x 0.5-foot area would be excavated around each sample location when the grid is Category 4.
- A 29-foot x 29-foot x 0.5-foot area would be excavated around each sample location when the grid is Category 3.
- Category 4 volume removed for estimate is 81 cubic yards per hot spot.
- Category 3 volume removed for estimate is 20.25 cubic yards per hot spot.



4.0 APPLICABLE LAWS, REGULATIONS, STANDARDS, AND CLEANUP STANDARDS

4.1 Applicable Laws, Regulations, and Standards

4.1.1 Washington State Model Toxics Control Act

Washington's hazardous sites cleanup law is titled the MTCA [Chapter 70.105D Revised Code of Washington (RCW)]. Taken together, this statute, and the regulations promulgated under it [Washington Administrative Code (WAC) Chapter 173-340] govern cleanups at hazardous waste and other contaminated sites in the State of Washington and mandate that those cleanup be done in a manner that is adequately protective of the public and the environment. Accordingly, this statute and these regulations constitute the principal framework defining this cleanup action at RAU 2A – Small Arms Ranges. The regulations specifically address and govern the design and implementation of the current cleanup action and pertinent, applicable sections of these regulations include the following:

- Selection of the cleanup action (WAC 173-340-360)
- Content of the CAP (WAC 173-340-380)
- Implementation of the cleanup action (WAC 173-340-400)
- Compliance with monitoring requirements (WAC 173-340-410)
- Public notice and participation (WAC 173-340-600)
- Cleanup standards (WAC 173-340-700 et seq.)
- Worker safety and health (WAC 173-340-810)
- Sampling and analysis plans (WAC 173-340-820)
- Analytical procedures (WAC 173-340-830)
- General submittal requirements (WAC 173-340-840)
- Recordkeeping requirements (WAC 173-340-850)
- Other sections of this regulation as applicable and relevant to the current cleanup action

The specific cleanup levels applicable to this cleanup action are found in Tables 740-1 for human health protection and Table 749-3 for protection of ecological receptors.

This CAP and the implementation thereof will comply with and be governed by the applicable and relevant sections of the MTCA statute and regulations.

4.1.2 Comprehensive Environmental Response, Compensation, and Liability Act

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) is the Federal statute which establishes requirements concerning closed hazardous waste sites. This statute is specifically applicable to cleanup funded, directly or indirectly, by the Army. The cleanup action at RAU 2A – Small Arms Ranges at



CBMR is being funded by the Army under the ESCA that was part of the conveyances from the Army to the County and from the County to BCRRT (U.S. Army, 2006). The provisions of CERCLA applicable to this cleanup action are procedural and require certification that the applicable provisions of state law (in this case, MTCA) have been met. At that time, a CERCLA Liability Release will be issued by the Army to Clark County and BCRRT.

4.1.3 Resources Conservation and Recovery Act

The Resources Conservation and Recovery Act (RCRA) is the Federal statute controlling hazardous waste management from "cradle-to-grave" – that is from generation through transportation, treatment, storage, to final disposition of hazardous waste. RCRA also sets forth the framework for the management of non-hazardous or solid wastes. RCRA amendments (know as the Hazardous and Solid Waste Amendments (HSW) specify treatment levels for hazardous wastes (including lead) before land disposal is permissible. RCRA and the amendments thereto are applicable to the offsite disposal of lead-contaminated soils and other wastes resulting from this cleanup action.

Under RCRA, the USEPA is authorized to delegate hazardous and solid waste disposal regulatory enforcement authority to states with their own regulatory programs meeting or exceeding RCRA standards. Washington and Oregon – the two states likely to be the sites of the disposal facilities receiving the soils and other wastes from this cleanup action – are "delegated states" under these provisions of RCRA. Accordingly, the hazardous and solid waste management regulations of those states will govern waste disposal activities for this cleanup action.

4.1.4 Host-State Hazardous and Solid Waste Management Acts

As noted above, the hazardous and solid wastes produced during this cleanup action may be disposed in either Washington or Oregon. Both of these potential host states have hazardous and solid waste management statutes and regulation. These statutes will govern any hazardous or solid waste disposal in those states under this cleanup action. The applicable and relevant portions of these statutes and regulations in provisions governing the following:

- Hazardous and solid waste acceptance criteria at disposal facilities in each state,
- Sampling and analytical procedures required to demonstrate compliance with those acceptance criteria,
- Waste shipping and documentation procedures, and
- Waste disposal operations.



4.1.5 Explosives Safety Programs

Federal explosives safety regulations and guidance are applicable to all military munitions including those remaining at CBMR. Compliance with these regulations is being addressed through the development of an Explosives Safety Submittal (ESS; MKM, 2006) along with the Interim Action Work Plan (IAWP; BCRRT, 2007a) for the Roads and Trails and Small Arms Ranges. This IAWP has been approved by WDOE. The ESS has been reviewed and approved by the United States Army Technical Center for Explosives Safety (USATCES). This IAWP will have been implemented before this lead-related cleanup action is initiated. Therefore, explosives safety is not anticipated to be an issue during implementation of the cleanup action covered by the current work plan.

4.1.6 Occupational Safety and Health Act (OSHA)

This Cleanup Action at RAU 2A – Small Arms Ranges will comply with the applicable provisions of the Federal Occupational Safety and Health Act (as amended) and the regulations thereunder. This includes, but is not limited to, the OSHA Construction and Hazardous Waste Operations and Emergency Response (HAZWOPER) standards found in the OSHA regulations in the Code of Federal Regulation (CFR). The applicable regulations include the following:

- OSHA General Industry Standards (29 CFR 1910),
- OSHA Construction Industry Standards (29 CFR 1926), and
- OSHA HAZWOPER Standards (29 CFR 1910.120 and 1926.120).

In addition, this cleanup action will follow the procedures of the National Institute of Occupational Safety and Health publication titled “Occupational Safety and Health Guidance for Hazardous Site Activities (NIOSH, 1985).

4.1.7 Washington State Environmental Policy Act

The Washington State Environmental Policy Act (SEPA) [Chapter 43.21C RCW] is the state statutory program to prevent or control and mitigate ecological impacts arising from public or private actions, specifically including cleanup actions conducted under MTCA. It requires any agency of state government to assess possible environmental impacts that may result from its decision or actions. SEPA clearly applies to the Cleanup Action at RAU 2A – Small Arms Ranges. However, this Cleanup Action Plan provides adequate and appropriate safeguards and/or restoration of potentially impacted ecological resources at and around the nine small arms ranges subject to this cleanup action. SEPA provides for a “Determination of Nonsignificance (DNS)” for cleanup actions under MTCA where the absence of significant negative ecological impact is demonstrated by



the party conducting the cleanup. BCRRT has submitted the SEPA Environmental Checklist to the Clark County Department of Environmental Services (CCDES) with a request for a DNS finding (see **Appendix B**).

4.1.8 Clean Water Act

Several portions of the Federal Clean Water Act (as variously amended and updated since original enactment and codification) and the state and county clean water programs thereunder are applicable to the implementation of the Cleanup Action Plan for RAU 2A – Small Arms Ranges. These provisions include the following:

- **Sedimentation and Erosion Control:** This cleanup action will include appropriate measures to prevent erosion or sediment migration to streams, wetlands, or other surface water bodies adjacent to the excavation areas at the nine small arms ranges being cleaned up under this plan. The required Grading and Erosion Control Plan has been submitted to the CCDES for approval before work is initiated as required by the applicable laws, regulations, and ordinances (see **Appendix B**).
- **Wetlands Management:** This cleanup action will temporarily disturb certain wetlands that are in and immediately adjacent to the excavation areas. Under Section 404 of the Federal Clean Water Act, the United States Army Corps of Engineers (USACE) has established Nationwide Permit No. 38 authorizing cleanup action work to be conducted in regulated wetlands. This permit is applicable to the implementation of this cleanup action. The required pre-construction notification has been submitted to USACE, Ecology, and CCDES. These wetlands have been mapped and will be restored at the completion of this cleanup action (see **Appendix B**).
- **Stormwater Management:** The Federal Clean Water Act and the paralleling state law and regulations and county ordinances governing stormwater management during excavation and related activities are applicable to this cleanup action and are addressed in the Grading and Erosion Control Plan mentioned above.
- **Pollution Prevention:** The Federal Clean Water Act and the paralleling state law and regulations and county ordinances governing pollution prevention during excavation and related activities are applicable to this cleanup action. The principal contaminant of concern is lead, which is present at this site in non-soluble metallic form. The erosion and sedimentation control measures described in the Grading and Erosion Control Plan mentioned above will effectively meet these applicable pollution prevention requirements.



4.1.9 Clean Air Act

Portions of the Federal Clean Water Act (as variously amended and updated since original enactment and codification) and the state and county clean water programs thereunder are applicable to the implementation of the Cleanup Action Plan for RAU 2A – Small Arms Ranges. The applicable provisions govern emissions of fugitive dust and airborne lead at the perimeter of the work area during excavation and soil handling. Compliance with these provisions is addressed in this Cleanup Action Plan which includes the following:

- Worker breathing zone monitoring for dust and airborne lead
- Work area perimeter monitoring for dust and airborne lead
- Measures, to be implemented on an as-needed basis depending on weather and dust monitoring results for dust suppression
- A requirement to temporarily stop excavation and soil handling activities should the dust suppression measures be inadequate during times of dry weather and/or low humidity.

4.1.10 Protection of Rare, Threatened or Endangered Species and Sensitive Habitat

Federal and state laws and regulations mandate protection of Rare, Threatened, or Endangered Species and sensitive habitat areas. No Federal or state endangered species have been identified at CBMR. State threatened plant species have been identified at the CBMR. However, no special-status species have been observed in the areas to be impacted by the Cleanup Action at RAU 2A – Small Arms Ranges. The areas to be impacted may include up to 5.6 acres of riparian habitat, although the actual area of riparian habitat impacted by the planned cleanup is expected to be less. Any riparian habitat impacts will be mitigated by regrading and replanting after the cleanup action has been completed.

4.1.11 Archaeological, Cultural, and Historic Resources Protection

As required by the PPCD (Section X-E, Paragraph 112), BCRRT prepared a Cultural and Historical Resources Protection Plan (Michael Baker Jr., Inc. 2006b) This Plan will be in effect during throughout the implementation of the cleanup actions detailed in this CAP. This plan includes information and guidance to prepare workers in identifying and protecting any cultural and historical resources which may be encountered during CAP implementation.

All workers involved in implementing this CAP will receive review videotapes of Cultural and Historical Resources Protection training previously provided to BCRRT by representatives of the Cowlitz tribe and associated archaeological experts. This training addressed the history of Native American cultures at the CBMR and provided guidance



relating to identification and protection of any cultural or historical artifacts which might have been encountered during CAP implementation.

4.2 Controlling Documents

- Prospective Purchaser Consent Decree (PPCD; WDOE, 2006) and the attached Conceptual Remedial Action Plan (CRAP), including the following specific sections:
 - Section 57 (B)(1) – Definition of RAU 2A – Small Arms Ranges
 - Sections 67, 68 and 69 – Status of RAU 2A
 - Section 96 – Deliverables and Schedules for the Final Action at RAU 2A
 - Section titled “Remedial Action Unit 2A” in the CRAP

- Environmental Services Cooperative Agreement (ESCA; U.S. Army, 2006a)
 - Table 1 of the Technical Specifications and Requirements Statement, which is Attachment E.1 to the ESCA, establishes the Army’s specification and requirements for the Cleanup Action at RAU 2A – Small Arms Ranges.

- Accident Prevention Plan (APP; Michael Baker) and attachments as follows:
 - Site-Wide Health and Safety Plan (HASP)
 - Site-Wide Explosives Safety Submittal (ESS)
 - Project Hazard Analysis (PHA) attached thereto.

Note 1: A task-specific health and safety plan is included with this Cleanup Action Plan (see **Section 6**).

Note 2: Explosives safety at these small arms ranges will have been addressed before work is initiated under this Cleanup Action Plan. Explosives safety will have been addressed by a munitions and explosives of concern clearance program conducted at all nine small arms ranges under the Interim Action Work Plan for Roads and Trails and Small Arms Ranges.



5.0 CLEANUP ACTION DESIGN AND METHODS

5.1 Cleanup Action Objectives

The proposed cleanup actions at the Small Arms Ranges at CBMR have the overall objective of preventing the potential exposure of human and ecological receptors to lead contamination at concentrations greater than cleanup standards to support the proposed re-use and/or redevelopment of the CBMR. Potential human receptors at the Small Arms Ranges include on-site workers, visitors to the CBMR, and adjacent residents. Potential ecological receptors at the Small Arms Ranges include plants and wildlife that may use affected areas.

5.1.1 Protection of Human Health – Residential Standards (MTCA)

Cleaning up a Small Arms Range to MTCA Method A residential land use cleanup standards will provide protection of human health because they provide the most protective cleanup levels. A quantitative human health risk assessment is not required under MTCA if a site is cleaned up to residential land use standards. The cleanup action proposed for the Small Arms Ranges will meet these criteria. Therefore, the cleanup action proposed for the ranges will be protective of human health if the ranges are cleaned up to residential land use cleanup standards or 250 mg/kg.

5.1.2 Protection of Ecological Receptors (MTCA)

MTCA requires the soil cleanup levels be based on estimates of the reasonable maximum exposure expected under both current and future site use conditions. Historically, the CBMR was a Army military reservation with controlled access and used for short-term, small unit training exercises. Future uses proposed for the CBMR may include development of a regional park and wildlife management area. The proposed future land uses may include educational activities, hiking, camping, horse and bicycle riding and public recreation. The possible public uses may involve short-term camping and group use of existing or new structures for overnight programs.

Based on these potential future land uses, the appropriate cleanup level for lead was selected from MTCA Table 749-3, Ecological Soil Concentrations (mg/kg) for Protection of Terrestrial Plants and Animals and presented here as **Table 5-1**. Therefore, the proposed cleanup level for lead in soil at the Small Arms Ranges is 50 mg/kg for plant protection. If future land use at CBMR differs from the proposed land use, the appropriate cleanup level should be reevaluated at that time.



Table 5-1. MTCA Ecological Indicator and Cleanup Levels for Lead in Soil

	Ecological Indicator for Plants ¹	Ecological Indicator for Wildlife ²	Ecological Indicator for Soil Biota	Unrestricted Land Use ³	Industrial Properties
Lead Concentration (mg/kg)	50	118	500	250	1,000

Notes:

- 1 From MTCA Table 749-3, Ecological Soil Concentrations (mg/kg) for Protection of Terrestrial Plants and Animals:
 - § A lead concentration of 50 mg/kg is specified for or protection of plants.
 - § A lead concentration of 118 mg/kg is specified for protection of wildlife.
 - § A lead concentration of 500 mg/kg is specified for soil biota.
- 2 From MTCA Table 740-1, Method A Soil Cleanup Levels for Unrestricted Land Uses. The lead cleanup level is based on preventing unacceptable blood lead levels.
- 3 From MTCA Table 745-1, Method A Soil Cleanup Levels for Industrial Properties, the cleanup level is based on direct contact.

In developing Method A cleanup levels for unrestricted land use, MTCA [(WAC 173-340-740 (2))] requires that the cleanup level must be as stringent as the following:

- Concentrations in MTCA Table 740-1 and compliance with the corresponding footnotes (this table specifies a lead cleanup level of 250 mg/kg for unrestricted land use);
- Concentrations established under applicable state and federal laws;
- Concentrations that result in no significant adverse effects on the protection and propagation of terrestrial ecological receptors using the procedures specified in WAC 173-340-7490 through 7493 (tables in this section specify ecological indicator soil lead concentrations for plants, soil biota, and wildlife at 50, 500, and 118 mg/kg, respectively).
- Concentrations that are protective of groundwater [Method A cleanup levels were designed to be protective of groundwater, that is, lead concentrations in soil less than 3,000 mg/kg (WDOE, 2001)].



5.1.3 Protection of Surface Water and Erosion Prevention (CWA)

Stormwater and/or erosion could transport contaminated soil particles to surface water bodies. Investigations of potential groundwater and surface water contamination at Camp Bonneville have been conducted. There is no evidence of lead impacting surface water or groundwater at CBMR. Appropriate precautions will be taken during cleanup of the small arms ranges to protect surface water and prevent erosion (see Appendix B for draft stormwater and erosion control permits).

5.1.4 Protection of Worker and Public Safety (OSHA)

A site-wide APP has been developed for the Camp Bonneville project to cover all remedial activities required to achieve site closure as defined in the PPCD (Michael Baker, 2006a). A Health and Safety Plan (HASP) was part of the APP developed in compliance with WDOE and OSHA requirements and was submitted under separate cover to Ecology. The requirements of the HASP will be followed throughout the implementation of the actions defined in this CAP.

5.1.5 Protection of Natural Resources

A number of plant and vertebrate animal species that are either federally or state-listed as endangered or threatened, or are candidates for such listing, have either been documented at CBMR or are likely to occur there. These species are described in **Section 4.1.10**. Therefore, care will be required to avoid unnecessary disruption of such species should they be present (see also **Appendix B**).

5.1.6 Protection of Cultural and Historic Resources

As required by the PPCD (Section X-E, Paragraph 112), BCRRT prepared a Cultural and Historical Resources Protection Plan (Michael Baker, 2006b) This Plan will be in effect throughout the implementation of the cleanup actions detailed in this CAP. This plan includes information and guidance to prepare workers in identifying and protecting any cultural and historical resources which may be encountered during CAP implementation.

All workers involved in implementing this CAP will receive review videotapes of Cultural and Historical Resources Protection training previously provided to BCRRT by representatives of the Cowlitz tribe and associated archaeological experts. This training addressed the history of Native American cultures at the CBMR and provided guidance relating to identification and protection of any cultural or historical artifacts which might have been encountered during CAP implementation.

5.1.7 Appropriate Management of Solid and Hazardous Waste (RCRA)

RCRA protocols will be followed for all eligible waste materials excavated during the cleanup of RAU-2A. In addition, Washington State solid waste management regulations will be followed, as applicable, for handling and disposal of soils in Washington.



Host state disposal site regulations will be followed for any soil disposed outside of the State of Washington.

5.2 Cleanup Action Design

The design of this cleanup action is based on excavation, screening, and off-site disposal of lead-containing soils exceeding the applicable cleanup criteria. This is the cleanup action recommended by the Final RI/FS Report (BCRRT, 2007b).

Cleanup action implementation for the small arms ranges will be organized and conducted in two major elements based on the differing requirements and approaches of the Draft Final Work Plan for Interim Actions at Small Arms Range Berms and Fire Support Areas (Calibre, 2005) and the Final RI/FS Report for RAU-2A (BCRRT, 2006). The Draft Final Work Plan for Interim Actions focuses on the berms, and the Final RI/FS Report focuses on the range floor areas. (As noted above, the fire support areas or firing points are actually addressed as parts of the range floor areas where applicable.)

Excavated soils will be managed in three categories, depending on lead content as observed in the field or as confirmed by laboratory test results. These three categories are summarized as follows:

- Category I soil waste contains Toxicity Characteristic Leaching Procedure (TCLP) extractable lead at levels that make the soils subject to management as hazardous waste under RCRA.
- Category II soil waste contains TCLP levels below the hazardous criteria but contains total lead at levels that require management under MTCA.
- Category III soil waste contains total lead at lower levels allowing reuse within the site.

Management of the waste soil in each category is described in **Section 5.5**, and in **Figures 5-8** and **5-9** below.

5.2.1 Firing Range Berms

The cleanup action design for the firing range berms and the fire support areas includes four scenarios depending to the physical conditions at each of the Small Arms Ranges. These scenarios are identified as follows:

- Scenario 1 – Removal of Freestanding Earthen Berm
- Scenario 2 – Removal of Pop-Up Target Berm
- Scenario 3 – Excavation of Hillside Face Berm
- Scenario 4 – Excavation of Impact Zones Located Behind Berm



Table 5-2 summarizes which of these four scenarios are to be applied at each of the nine small arms ranges where cleanup is required. **Table 5-3** provides estimated excavation volumes for the berms. Berm excavation is required only at seven of the nine small arms ranges identified for cleanup; two small arms ranges – the Undocumented Pistol Range (RAU 2A-15) and the 25-Meter Record Firing Range/Field Firing Range – require range floor cleanup only. Each of these four scenarios is briefly described below in terms of applicability and methodology. A schematic diagram of each scenario is also provided on the following pages.

Scenario 1 – Removal of Freestanding Earthen Berm is applicable only at the 25-Meter Machine Gun Range (Range RAU 2A-18). **Figure 5-1** presents a schematic profile of the excavation procedure for this berm. This approach is based on previous experience at other ranges and also on the history of the range in question. The freestanding earthen berm will be removed in three phases or work areas, as follows:

- The face of this berm is Work Area 1 which is anticipated to be the area of highest lead impact. Initial excavation of this berm will be the face of the berm, from the surface to two feet deep. Initial excavation will be completed in two one-foot lifts. For planning purposes, the material generated by the initial excavation of the berm face is assumed to be Category I waste. If no visible lead impact is identified during excavation, the excavated materials will be considered Category II wastes.
- The next layer of the berm face and the top of the berm are Work Area 2. This area is anticipated to have some lead impact, but to be Category II waste. Work Area 2 will include a two foot additional depth of the berm face, to be removed in two lifts of one foot each, and a one foot depth from the berm top.
- The balance of the berm is Work Area 3. Because of the history of this berm, which is reported to include prior use of these soils in other berms, it is possible that this soil may have some lead impact. Based on sampling results, this soil will either be included in the Category II wastes for offsite disposal or retained for use as fill and grading at Camp Bonneville.

Scenario 2 – Removal of Pop-Up Target Berms is applicable to the Combat Pistol Range (Range RAU 2A-4) and the Field Fire Ranges No. 1 and No. 2 (Range RAU 2A-22). These berms are soil mounds placed to protect the pop-up target mechanism including the electric power supplies. **Figure 5-2 and 5-3** presents a schematic plan and profile of the removal approach to these berms. It is anticipated that the front side of each berm – the segment between the berm and the firing line – will have greater lead contents than the sides. Therefore, these berms will be excavated in two work areas, as follows:

- The front of each berm, consisting of the soil in front of the concrete structure, will be excavated and examined for visible lead. It is anticipated that this soil will be Category I waste. However, if the soil does not appear to contain significant lead (as evidenced by the presence of lead bullets), it will be tested for



potential management as Category II waste. This material will be excavated in a single lift due to the shallow vertical height of these berms.

- The sides of each berm, consisting of the soils off of the direct line of fire at each berm, will be excavated and examined separately from the fronts of these berms. It is anticipated that this soil will be Category II waste. This material also will be excavated in a single lift due to the shallow vertical height of these berms.

Scenario 3 – Excavation of Hillside Face Berms applies to five ranges – the Combat Pistol Range (Range RAU 2A-4), the 1,000-Inch Rifle Range and Machine Gun Range (Range RAU 2A-16), the 25-Meter M60 and Pistol Range (Range RAU 2A-17), the Field Fire Ranges No. 1 and No. 2 (Range RAU 2A-20), and the Rifle Ranges No. 1 and No. 2 (Range RAU 2A-21). **Figure 5-4** present a generalized schematic profile of the excavation of the hillside face berms. As with the freestanding earthen berm, it is anticipated that lead levels will decrease with depth as excavation proceeds into each hillside face. Therefore, these berms will be excavated in two work areas as follows:

- The first two feet of the surficial soils at each hillside berm will be excavated in two lifts of one foot each. For planning purposes, the material generated by the initial excavation of the berm face is anticipated to be Category I waste. However, if the soil does not appear to contain significant lead, it will be tested for potential management as Category II waste.
- The next two feet will be excavated in two lifts of one foot each. It is anticipated that this material will be Category II waste.
- If necessary based on observations and analytical results, the grid excavation approach defined for the small arms range floors in Section 5.2.2 will be applied to portions or all of the face of a hillside berm after the initial excavation has been conducted.

Scenario 4 – Excavation in Impact Zone behind Berm applies only to the 25-Meter Machine Gun Range (Range RAU 2A-18). **Figure 5-5 and 5-6** presents a schematic profile of the excavation approach in the impact zone behind the berm. The initial excavation in this area will be a single six-inch scraping lift. It is anticipated that this material will be Category II waste. Also, if necessary based on observations and analytical results, the grid excavation approach defined for the small arms range floors in Section 5.2.2 will be applied to portions or all of the face of a hillside berm after the initial excavation has been conducted.



Table 5-2 Remediation Scenarios for Berms by Small Arms Range Number

RAU 2A Subunit Number	Range Designation/Description	Scenario 1 Removal of Freestanding Earthen Berm	Scenario 2 Removal of Pop-Up Target Berms	Scenario 3 Excavation of Hillside Face Berm	Scenario 4 Excavation in Impact Zone Behind Berm
4	Combat Pistol Range		X	X	
15	Undocumented Pistol Range	Range Floor Excavation Only			
16	1,000-Inch Rifle Range & Machine Gun Range			X	
17	25-Meter M60 & Pistol Range			X	
18	25-Meter Machine Gun Range	X			X
19	25-Meter Record Firing Range & Field Firing Range	Range Floor Excavation Only			
20	Field Ranges 1 & 2			X	
21	Rifle Ranges 1 & 2			X	
22	Field Fire Ranges 1 & 2		X		

Source: Table 5-1 Draft Final Work Plan for Interim Actions at Small Arms Ranges Berm and Fire Support Areas at Camp Bonneville (Calibre, March 2005)

Table 5-3 Estimated Excavation Volumes for Berms and Small Arms Range

RAU 2A Range Number	Range Designation/Description	Estimated Excavation Volumes in Cubic Yards				Totals
		Scenario 1 Removal of Freestanding Earthen Berm	Scenario 2 Removal of Pop-Up Target Berms	Scenario 3 Excavation of Hillside Face Berm	Scenario 4 Excavation of Impact Zone Behind Berm	
4	Combat Pistol Range		84	576		660
15	Undocumented Pistol Range	Range Floor Excavation Only				0
16	1,000-Inch Rifle Range and Machine Gun Range			850		850
17	25-Meter M60 and Pistol Range			800		800
18	25-Meter Machine Gun Range	4,032			796	4,828
19	25-Meter Record Firing Range and Field Firing Range	Range Floor Excavation Only				0
20	Field Ranges 1 and 2		84			84
21	Rifle Ranges 1 and 2 (Long Berm and Short Berm)			1,850		1,850
22	Field Fire Ranges 1 and 2			500		500
	TOTALS	4,032	168	4,576	796	9,572

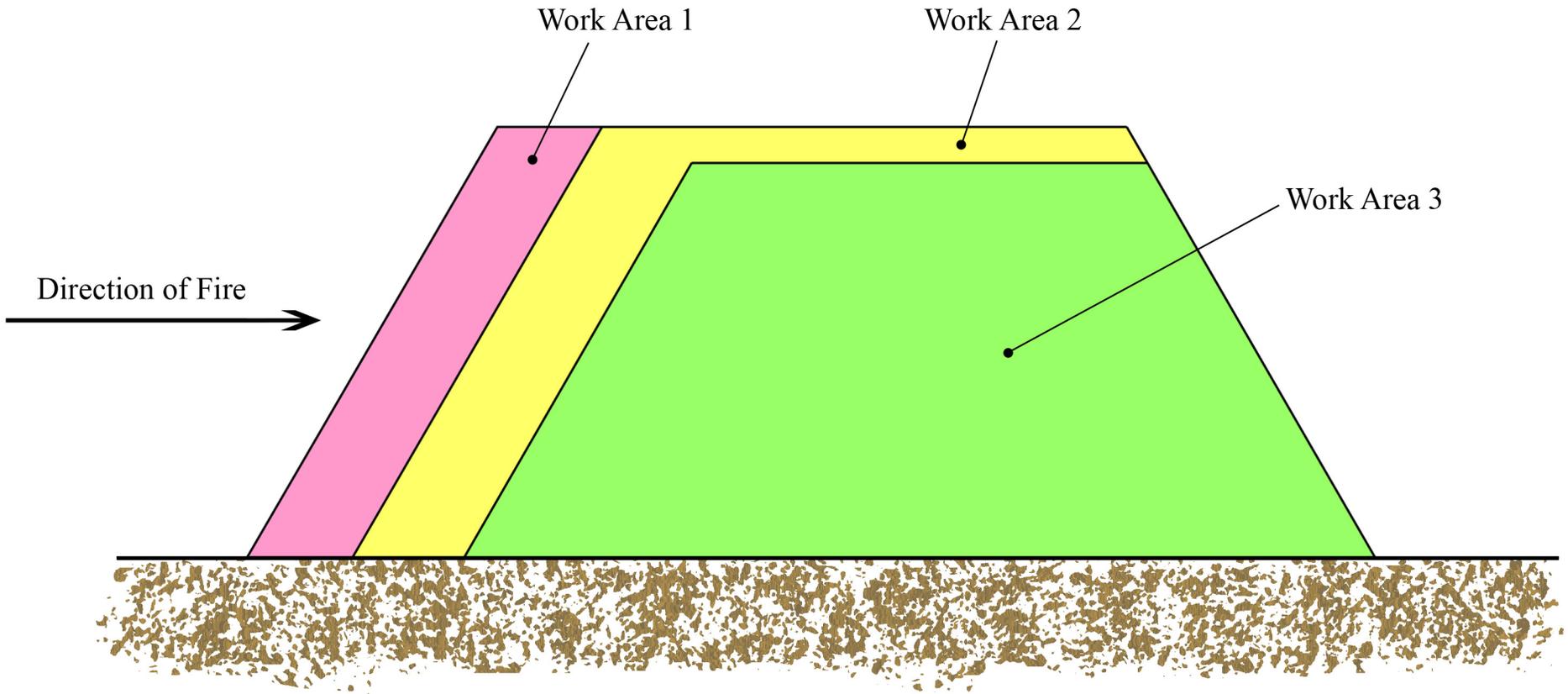


Figure 5-1
Schematic of Scenario 1 – Removal of Freestanding Earthen Berm
(Not to scale)

Figure 5-2
Schematic of Scenario 2 - Removal of Pop-up Target Berm (Plan View)

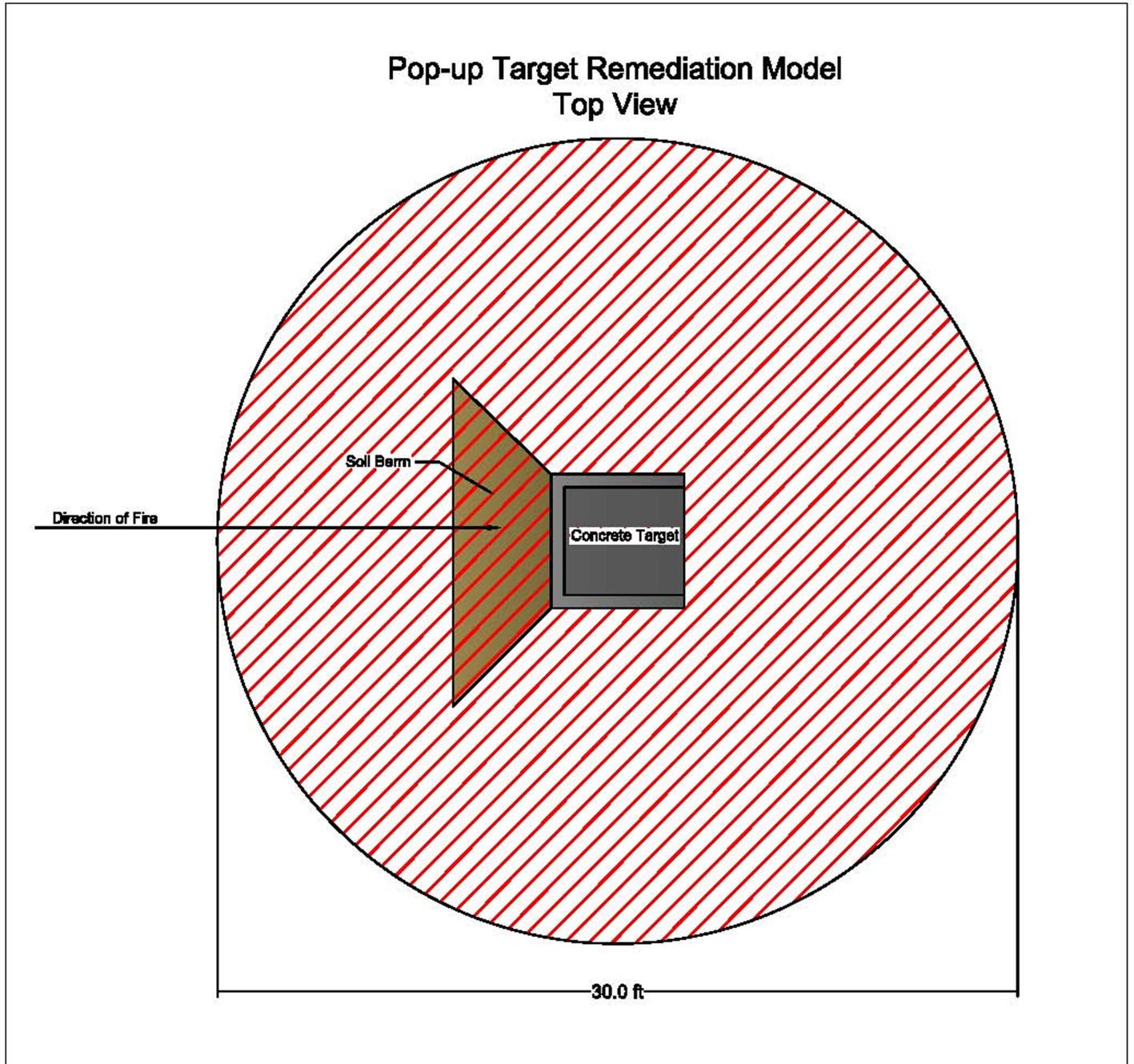


Figure 5-3
Schematic of Scenario 2 - Removal of Pop-up Target Berm (Profile View)

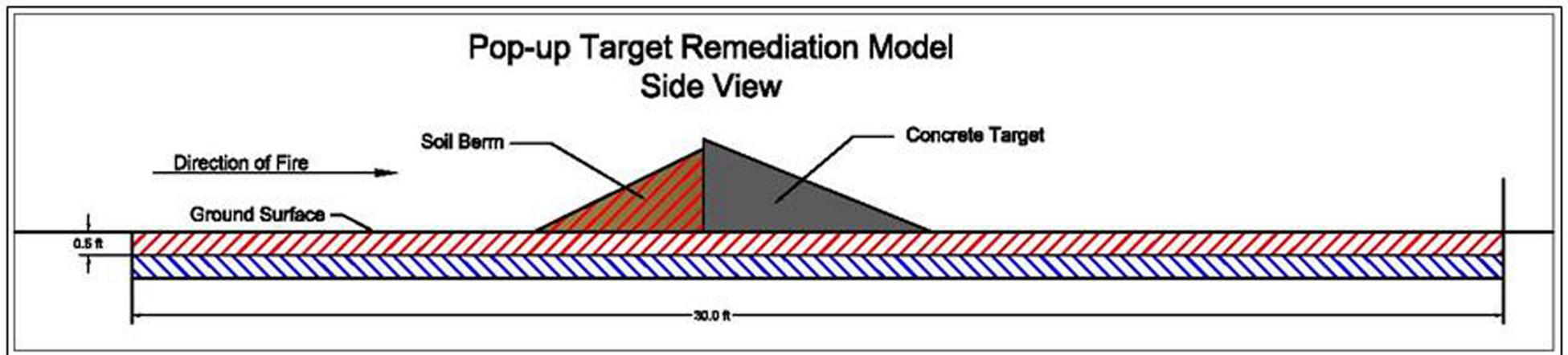


Figure 5-4
Schematic of Scenario 3 - Excavation of Hillside Berm

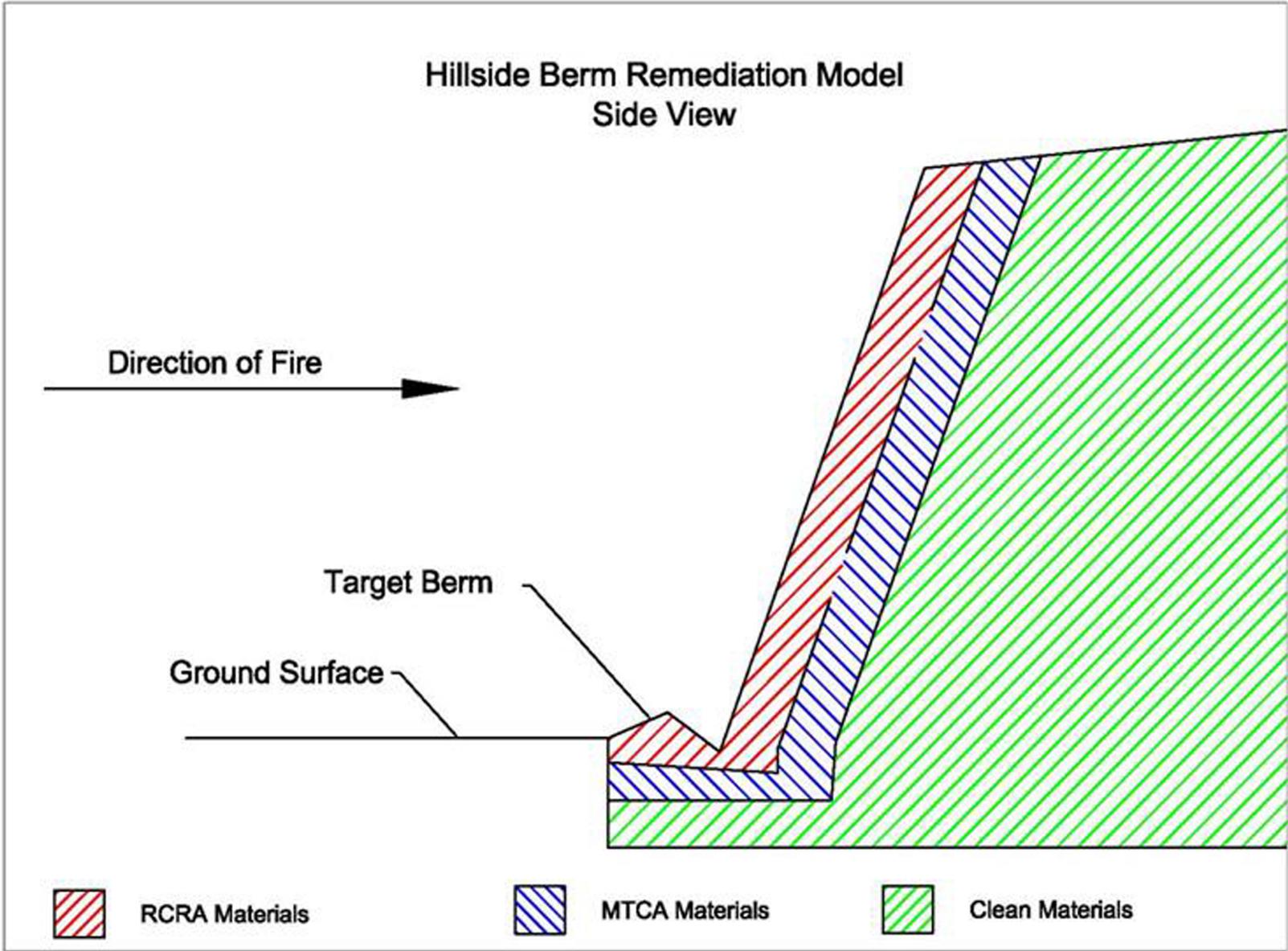


Figure 5-5
Schematic of Scenario 4 - Excavation of Impact Zone behind Berm (Overview)

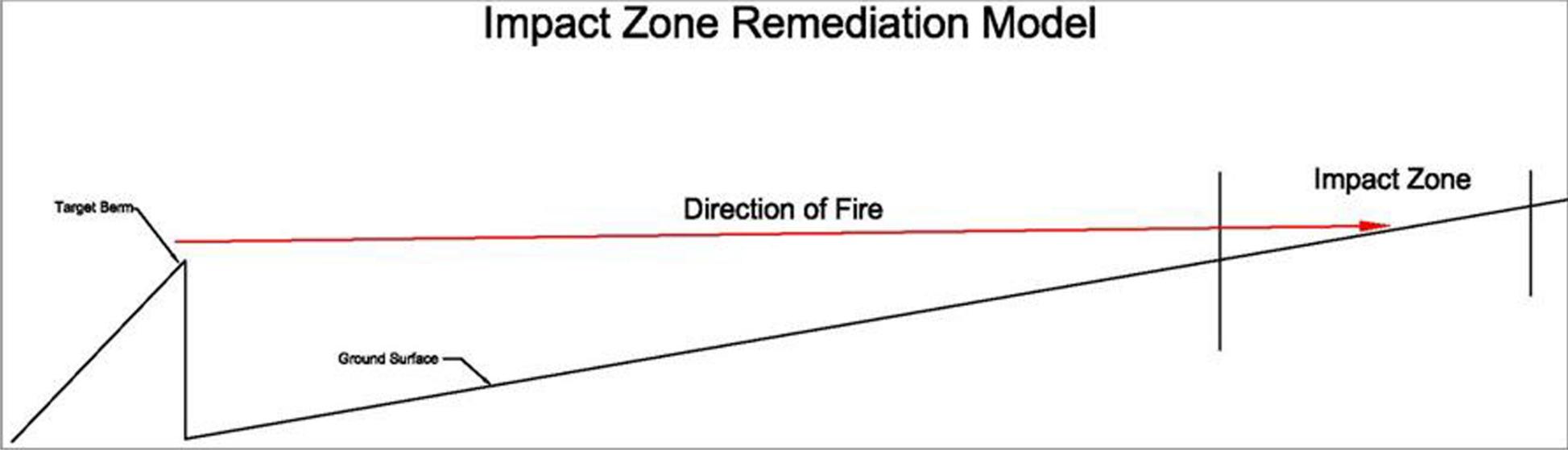
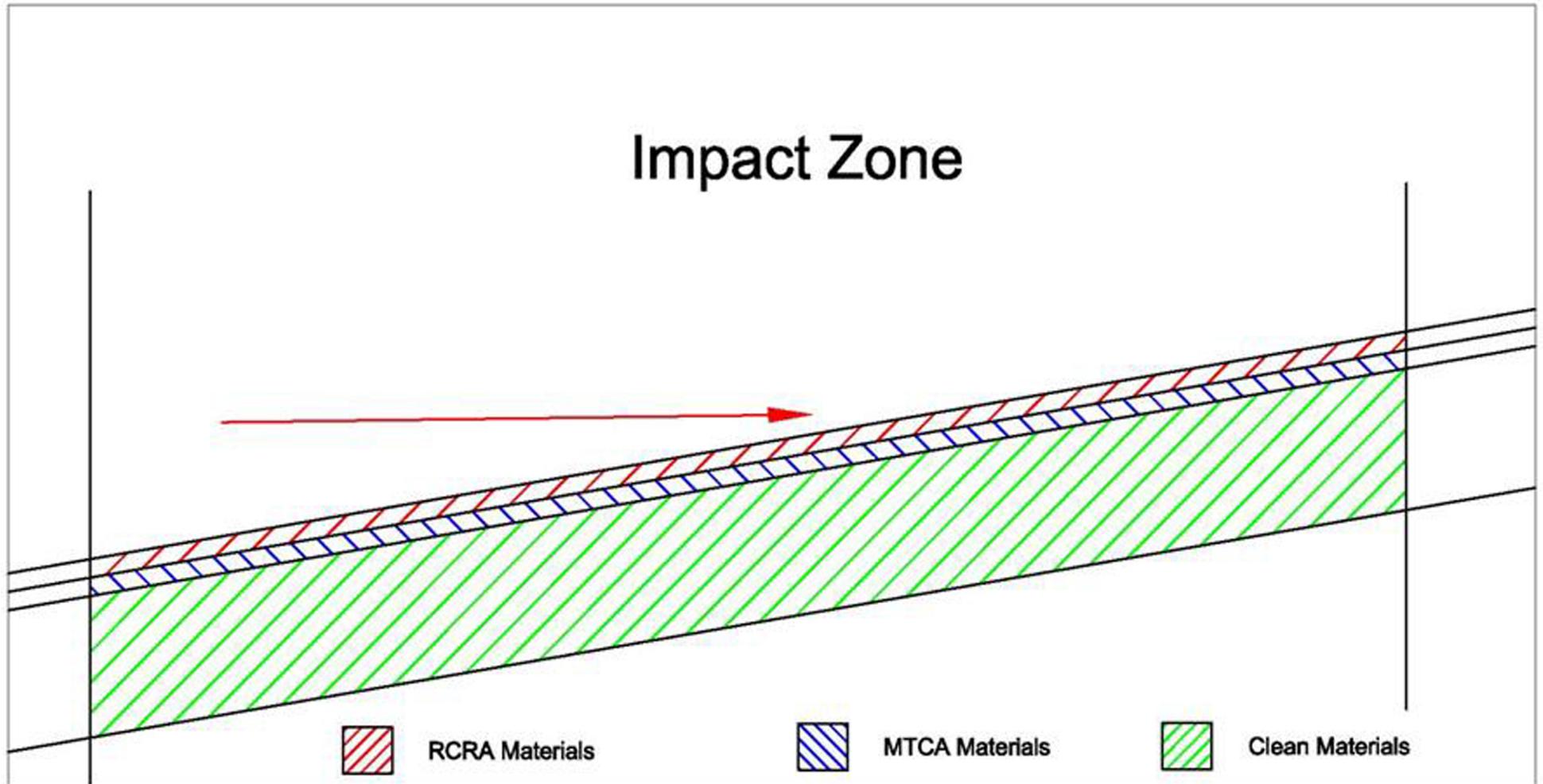


Figure 5-6
Schematic of Scenario 4 - Excavation of Impact Zone behind Berm (Detail)





5.2.2 Firing Range Floors

Areas identified as contaminated based upon previous investigations will be excavated from surface to 6-inches below ground surface (bgs) in accordance with the following technical approach to soils management in the small arms range floors:

5.2.2.1 Previous Investigation Data Summary and General Interpretation:

At the nine small arms firing ranges where cleanup is required in the range floors, the analysis results identified sampling grids were for one or more soil samples contained total lead at a concentration exceeding 50 mg/kg. **Table 5-4** presents the summary of the sampling results for these eight small arms firing ranges in terms of the number of grids sampled, number of samples collected, and the number of results exceeding each of several relevant evaluation levels as determined by the investigation mentioned above:

Table 5-4 Summary of Historic Sampling Results for Total Lead

Small Arms Range	# of Grids Sampled	# of Samples Collected	# of Samples >50 mg/kg	# of Samples >118 mg/kg	# of Samples >250 mg/kg	# of Samples >500 mg/kg	# of Samples >1000 mg/kg
Combat Pistol Range	17	85	6	2	1	1	0
Undocumented Pistol Range	1	5	2	1	0	0	0
1000-ft Rifle Range/Machine Gun Range	30	150	39	24	13	8	6
25-meter M60/Pistol Range	4	20	5	2	0	0	0
25-meter Machine Gun Range	13	65	20	11	7	6	4
25-meter Record Firing/Field Firing Range	40	200	16	6	3	2	1
Field Ranges No. 1 and No. 2	14	70	10	8	4	2	1
Rifle Ranges No. 1 & No. 2	32	160	50	18	9	6	5
Field Fire Rifle Ranges No. 1 and No. 2	22	110	14	2	1	1	1
TOTAL	173	865	162	74	38	26	18
Percent Above SL			19%	9%	4%	3%	2%



- In terms of individual sample results, this data set is summarized further as follows:
 - Analytical results for 703 samples (81%) were less than 50 mg/kg.
 - Analytical results for 88 samples (10%) were greater than 50 but less than 118 mg/kg.
 - Analytical results for 36 samples (5%) were greater than 118 but less than 250 mg/kg.
 - Analytical results for 12 samples were greater than 250 mg/kg but less than 500 mg/kg.
 - Analytical results for 8 samples were greater than 500 mg/kg but less than 1,000 mg/kg.
 - Analytical results for 18 samples exceeded 1,000 mg/kg.
 - In terms of results by grid, this data set is summarized as follows:
 - A total of 36 grids had only one sample containing greater than 50 mg/kg lead.
 - One-third of the samples from these grids contained less than 60 mg/kg lead and two-thirds of the samples contained less than 100 mg/kg lead.
 - Analysis of grids containing two samples greater than 50 mg/kg showed that 63% of these grids had lead levels of 100 mg/kg or less.
 - In most cases, the elevated lead level in sample or samples in one and two sample grids are not significantly higher than that of the remaining samples.
 - When three or more soil samples contained greater than 50 mg/kg lead, lead concentrations seem to be increasing.

5.2.2.2 Proposed Technical Approach:

- BCRRT will apply the 50 mg/kg Total Lead specified Washington State MTCA Regulations [Washington Administrative Code Chapter 173-340] for ecological risk (plants) as the cleanup criteria. A direct approach to remediation of the contaminated soil in the remaining range floor grids will be to excavate the soil around the locations showing elevated lead concentrations (>50 mg/kg) until the exposed soil is rendered clean.
- Tables 749-2 and 749-3 of the MTCA Regulations [WAC 173-340] identify five levels of concern based on soil concentrations of total lead, as follows:
 - Industrial or commercial use: 1,000mg/kg
 - Unrestricted land use: 250 mg/kg
 - Ecological indicator – soil biota: 500 mg/kg
 - Ecological indicator – wildlife: 118 mg/kg
 - Ecological indicator – plants: 50 mg/kg



- Careful examination of the data sets from the individual grids indicates a general and consistent pattern as follows:
 - Higher exceedances – sample results over 250 mg/kg – tend to occur in groups affecting most or all of the impacted grid.
 - Low exceedances – sample results between 50 mg/kg and 250 mg/kg – tend to occur in isolated locations involving a single sample or a pair of samples and affect only non-contiguous parts of a single grid.
- Given the differing potential impact and spatial distribution of the soils with relatively low lead concentration exceedance, it is reasonable to remediate these soils by focused hot spot removal. Those grids with higher exceedance levels and broader spatial distribution will be remediated by more aggressive general excavation centered on those sample collection locations.
- Based on the soil analysis results data from the RI/FS Report and the MTCA soil cleanup criteria for lead, BCRRT has grouped the small arms ranges grids in five categories, as follows:
 - Category 1 – All individual sample concentrations are less than 50 mg/kg (112 grids)
 - Category 2 – All individual sample results are less than 118 mg/kg and the average concentration of all samples from that grid is less than 50 mg/kg (27 grids)
 - Category 3 – All individual sample results are less than 250 mg/kg and the average concentration is between 50 mg/kg and 118 mg/kg (16 grids)
 - Category 4 – The average concentration is between 118 mg/kg and 250 mg/kg (8 grids)
 - Category 5 – The average concentration is greater than 250 mg/kg (4 grids)
- The distribution of grids in these five categories by small arms range is presented in **Table 5-5**, below.



Table 5-5 Distribution of Grids by Category for Each Range

Range Designation	Category 1	Category 2	Category 3	Category 4	Category 5
Combat Pistol Range	13	2	1	1	0
Undocumented Pistol Range	0	0	1	0	0
1,000-inch Rifle & Machine Gun Ranges	19	3	2	3	3
25-meter M-60 & Pistol Range	1	2	1	0	0
25-meter Machine Gun Range	6	2	2	1	2
25-meter Record Firing Ranges	33	3	2	1	1
Field Firing Ranges	10	1	1	1	1
Rifle Ranges No. 1 & No. 2	16	7	4	2	3
Field Fire Ranges No. 1 & No. 2	13	7	1	0	1
Totals	111	27	15	9	11

BCRRT will conduct remediation in these five grid categories as follows:

- General grid excavation in Category 5 grids, which present some potential human health risk and ecological concerns.
- Focused hot spot excavation with confirmatory sampling and “step-out” and “step-down” procedures where appropriate in Category 4 grids, which present some ecological concerns but no human health risk.
- Focused hot spot excavation in Category 3 grids, which present a very low level of ecological concern.
- Category 2: **No further action** as these grids do not present no measurable human health or ecological concern.
- Category 1: **No further action** as these grids present no measurable human health or ecological concern

These remediation procedures are described more fully in the following three paragraphs.

- **General grid excavation (Category 5)** will consist of the removal and appropriate management all surfacial soils (i.e., 0-6 inches bgs) in a grid. This excavation will be followed by confirmatory sampling in the floor and perimeter of this excavation and by additional excavation as determined by the results for these confirmatory samples. (This process is described more fully in the next section.) This excavation area is equivalent to the proportion of the entire grid represented by the sample in question. (These grids are approximately 130 feet square or 16,900 square feet.
- **Focused hot spot excavation with confirmatory sampling (Category 4)** also will consist of the removal and appropriate management of the



soils in a square area 58 feet by 58 feet (58-foot square contains 3,364 square feet) centered on the sample location of concern to a depth of six inches bgs. This excavation will be followed by confirmatory sampling in the floor and perimeter of this excavation and by additional excavation as determined by the results for these confirmatory samples. (This process is described more fully in the next section.) This approach provides more rigorous management of these grids reflecting the higher level of ecological concern and the absence of any human health risk.

- Focused hot spot excavation (Category 3)** will consist of the removal and appropriate management of the soils in a square area 29 feet by 29 feet centered on the sample location of concern to a depth of six inches. This excavation will be followed by confirmatory sampling in the floor and perimeter of this excavation and by additional excavation as determined by the results for these confirmatory samples. This approach reflects the limited spatial distribution and low level of ecological concern associated with the soils in this category.

This approach to remediation of the floors of the small arms ranges is summarized in the following table.

Table 5-6 Proposed Remedial Actions by Grid Categories

Description		Action Required
Category 5 – Average concentration is > 250 mg/kg	Excavate the entire grid to a depth of 6 inches bgs with confirmation sampling along grid boundaries and excavation floor and “step-out/step-down” procedures	
Category 4 – Average concentration > 118 mg/kg but < 250 mg/kg	Focused 58’ x 58’ area excavation to a depth of 6 inches bgs over elevated sampling points with confirmation sampling along excavation boundaries and floor and “step-out/step-down” procedures	
Category 3 – Average concentration > 50 mg/kg but < 118 mg/kg and no individual sample concentration > 250 mg/kg	Focused 29’ x 29’ area excavation over sampling point with confirmation sampling along excavation boundaries and floor and “step-out/step-down” procedures	
Category 2 – Average concentration < 50 mg/kg and no individual sample concentration > 118 mg/kg	No further action	
Category 1 – Average and all individual sample concentrations < 50 mg/kg	No further action	

5.2.2.3 Procedure for Excavation of “Hot Spots” Within Grid Area

The location of each hot spot identified for removal will be staked out in the field. These proposed excavation sites will be reviewed for both ecological and cultural/historic resources concerns by appropriate professionals. Where potential ecological and cultural/historic resources impacts are thought to exist, if any, those locations will be reviewed with appropriate WDOE and County



personnel to determine if the impact from excavation would be greater than leaving areas intact.

Excavation will be conducted using appropriate mechanical equipment and the excavated soils will be removed to a stockpile area for management and disposition. It is anticipated that most, if not all, excavated soils will be disposed offsite at appropriately licensed facilities. Excavated soils categorized as hazardous wastes under RCRA and Washington's HWMA will be treated, as required by applicable law and regulation, prior to disposal.

5.2.2.4 Confirmatory Sampling and Further Action:

At Category 5 grid excavations, seventeen (17) confirmatory samples will be collected after the initial excavation. Three samples will be collected at 30-foot intervals along each wall of the excavation. At the excavation floor, one sample will be collected at the center of the floor and an additional sample in each of the four cardinal compass directions 40 feet from the center

At Category 4 grid excavations, twelve (12) confirmatory samples will be collected after excavating the initial hotspot. Two samples, 20-feet apart (10 feet from the center of each side) will be collected along each wall of the excavation and four samples will be collected from the excavated floor; one sample in each of the four cardinal compass directions 20 feet from the center

At Category 3 grid excavations, six (6) confirmatory samples will be collected after excavating the initial hotspot. Samples will be collected on the perimeter, at the center, of each wall of the excavation and two samples; 10 feet apart will be collected at the center of the excavated floor.

In all categories, if any one of the perimeter confirmatory samples has a concentration greater than 118 mg/kg, a step-out, covering one-half of the initial excavation dimensions, will be made in that direction along the entire side of the excavation to a depth of 6 inches bgs. Confirmatory sampling for a particular category also applies for step-out excavation conducted at that category.

If the floor confirmatory sample has a concentration greater than 118 mg/kg, an additional 6-inch step-down will be excavated from the entire excavation floor. Applicable confirmatory sampling for excavation floor, depending on the category will be conducted after a step-down excavation.

The process of confirmatory sampling and excavation will be repeated until all confirmatory samples show lead concentrations less than 118 mg/kg.

The Final RI/FS for RAU-2A (BCRRT 2007b) identified areas needing remediation, presented remedial objectives, identified general response actions, identified specific cleanup technologies applicable to the site along with cleanup



action alternatives, evaluated those alternatives with respect to the requirements contained in WAC 173-340-360, and identified the preferred cleanup actions for Small Arms Ranges site soils as “excavation and removal of contaminated soil” for the nine ranges that warrant further action. This plan implements those mandates. When the work described in this CAP is completed, it will have satisfied all the remedial activities contemplated in the Interim Cleanup Action Work Plan for the Small Arms Ranges Berms and Fire Support Areas (Calibre, 2005) and the RI/FS Report for the Small Arms Firing Range Floors (BCRRT, 2007b). It also will have satisfied the applicable provisions of the PPCD and the Environmental Services Cooperative Agreement as those controlling documents relate to the small arms ranges.

5.3 Cleanup Action Implementation

The implementation of this clean up action is outlined graphically on the following three flowcharts. **Figure 5-7** presents a general excavation process flow diagram highlight those activities which are common to both the berms and the range floors. **Figure 5-8** is an excavation process flow diagram showing the activities which are specific to the cleanup of the berms. **Figure 5-9** is an excavation process flow diagram specific to the cleanup activities for the range floors.

5.3.1 Mobilization

After approval of this work plan and the completion of the permitting procedures and technical reviews, the team will mobilize the equipment and personnel needed to implement the cleanup actions for the small arms ranges. These tasks are identified in sequence on **Figure 5-7**.

As part of the cleanup action mobilization, the team will establish a working area for storage, categorization, screening, and loading of the excavated soils. The plot plan for this work area is show in **Figure 5-10**. This working area also will include space for mobile equipment storage and decontamination.

As work is initiated at each individual small arms range, appropriate work zones will be established and demarcated at that range. The work zones will include the following at each range:

- Exclusion Zone – the active work area where excavation will be conducted and lead-containing materials will be handled.
- Contamination Reduction Zone (CRZ) – the ingress and egress route for all personnel, equipment, and excavated material to provide access control and space and facilities for appropriate decontamination of personnel and vehicles exiting the exclusion zone.



- Support zone – the area outside the other two zones when clean tools and incoming supplies can be marshaled for use inside the zones at each small arms range

The erosion and sedimentation control measures will be installed at each small arms range prior to initiation of cleanup activities at that range (see also **Appendix B**). . . . Appropriate erosion and sedimentation control measures also will be installed at the soil storage and screening area. These measures will comply with all applicable federal, state and county regulations for the protection of surface waters.

To prevent the potential spread of contamination to currently uncontaminated soils underlying the equipment laydown and soil storage, liners will be placed before these activities are initiated at a given location. These liners will be heavy duty polyethylene with a minimum thickness of 10 millimeters. These liners will be checked frequently during active cleanup operations and any breaches or tears will be promptly repaired.

Before cleanup field activities and excavation are begun, the team will conduct task-specific training for the cleanup personnel. This training will include the cleanup methods and health and safety issues (see **Section 6**). It also will include awareness training for ecological resources and for cultural and historic resources.

5.3.2 Munitions and Explosives of Concern (MEC) Clearance

All MEC surface clearance activities required at the small arms ranges will have been completed before any activities defined in this CAP are initiated. The necessary MEC clearance activities are currently being conducted under a WDOE-approved IAWP for MEC Clearances for the Roads and Trails and the Small Arms Ranges (BCRRT 2007a) and a USATCES-approved ESS (MKM 2006) for these MEC clearance activities. Therefore MEC clearance issues are not included in this CAP.

5.3.3 Excavation

Excavation will be conducted at each of the nine small arms ranges as described in **Section 5.2**, above. The Excavation Process Flow Diagram for the Berm (**Figure 5-8**) and the Excavation Process Flow Diagram for the Range Floors (**Figure 5-9**) illustrate the excavation and soils handling programs. The excavation will be done in lifts as follows:

- The faces of the freestanding berm and the hillside berms will be excavated in one-foot lifts for the first four feet. If excavation proceeds deeper than four feet at any of these berms, it will continue in six-inch lifts employing the gridding and sampling protocol outlined in **Section 5.2**.
- The top of the free standing berm will be excavated in a single one-foot lift. If excavation proceeds deeper than one foot at this location, it will continue in six-inch lifts employing the gridding and sampling protocol outlined in **Section 5.2**.



- The balance of the freestanding berm and the pop-up berms will be excavated in bulk as described in **Section 5.2**.
- The area behind the freestanding berm and the range floors (including the fire support areas) will be excavated (if necessary) in six-inch lifts following the protocol outlined in **Section 5.2.2**.

All excavation will be done using a Trackhoe™ or Gradall™ style mobile excavator with a smooth-bladed bucket. A smooth-bladed bucket allows for cleaner cuts and greater excavation depth control precision.

Dust control methods will be implemented during excavation operations to minimize fugitive airborne contamination. These controls will be done by watering active excavation areas and stored excavated materials during periods of dry weather.

At CBMR, wet weather is more frequent than dry weather. Accordingly, erosion and sedimentation control will be maintained and inspected daily during excavation and material handling activities.

All excavations will be conducted in full compliance with applicable regulations and site-wide agreements, permits, and plans including the following:

- County grading and building permit procedures
- Applicable provisions of the Washington SEPA for the protection of ecological resources, habitat, and species of concern
- Applicable rules governing soil erosion and sedimentation control and runoff management and the task-specific Erosion and Sedimentation Control Plan
- Applicable Federal and state rules protecting wetlands including USACE National Wetlands Permit No. 38
- Programmatic Agreement and the Camp Bonneville Cultural and Historic Resources Preservation Plan.
- Camp Bonneville Conservation APP and attachments

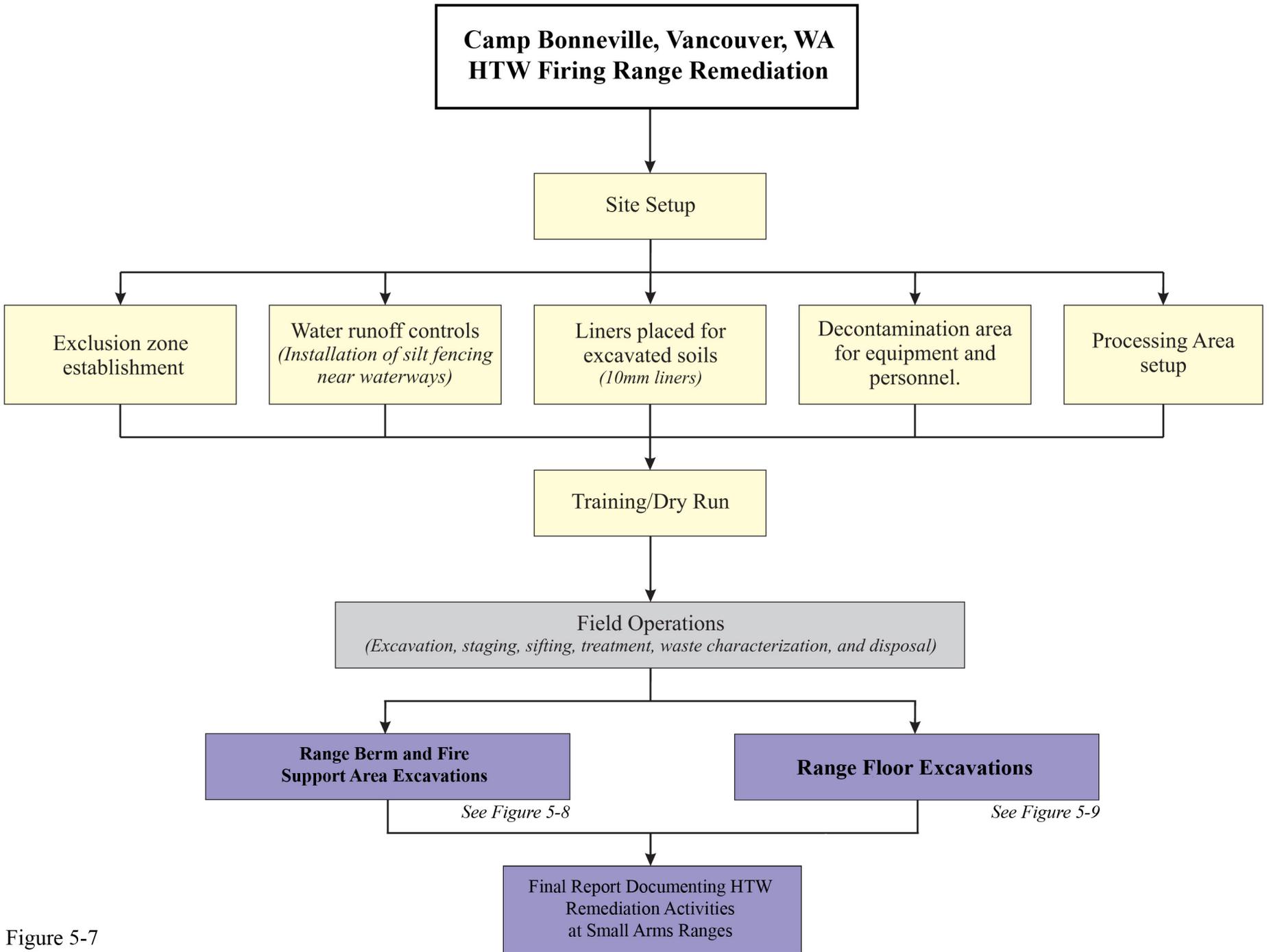


Figure 5-7
General Excavation Process Flow Diagram

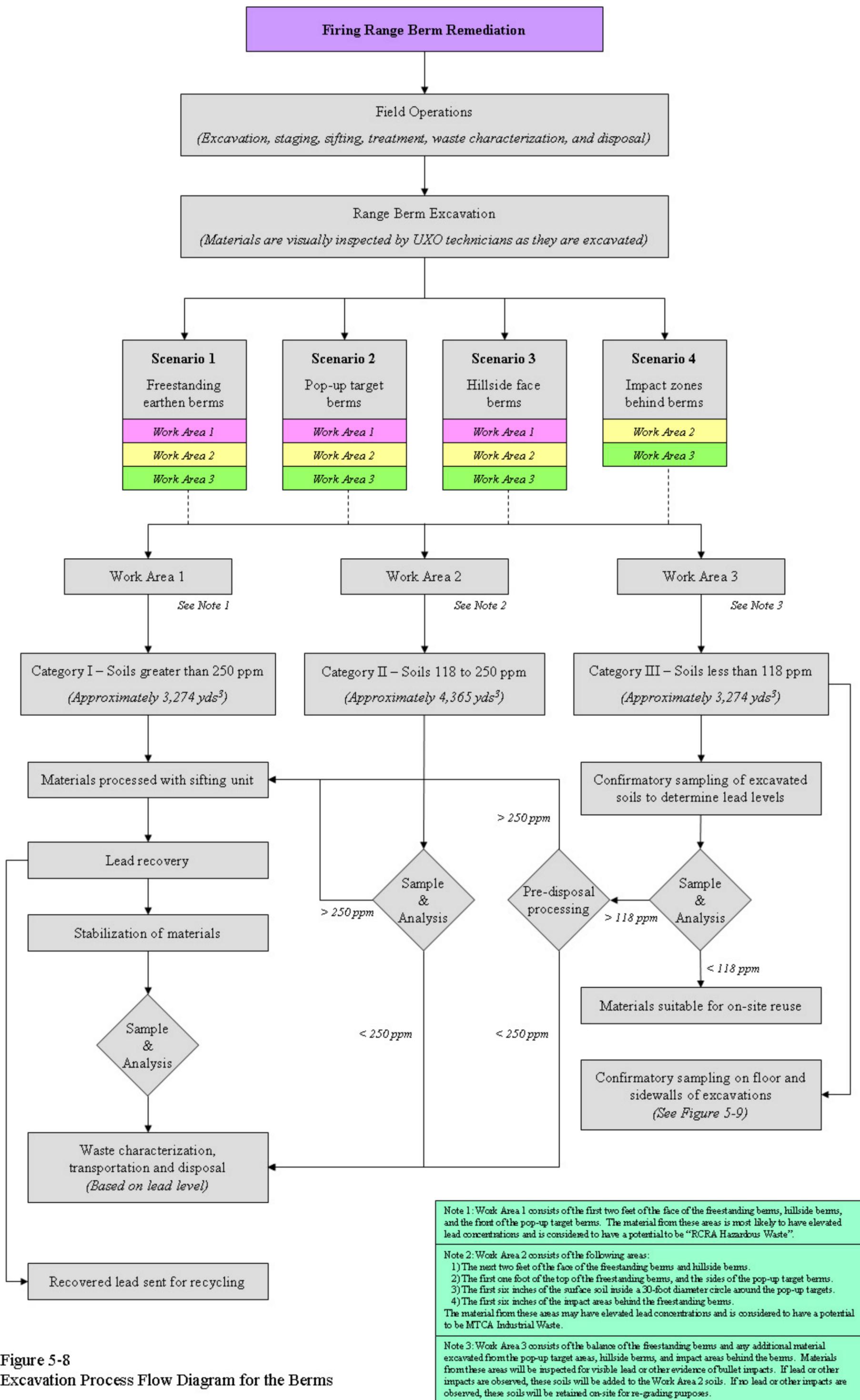
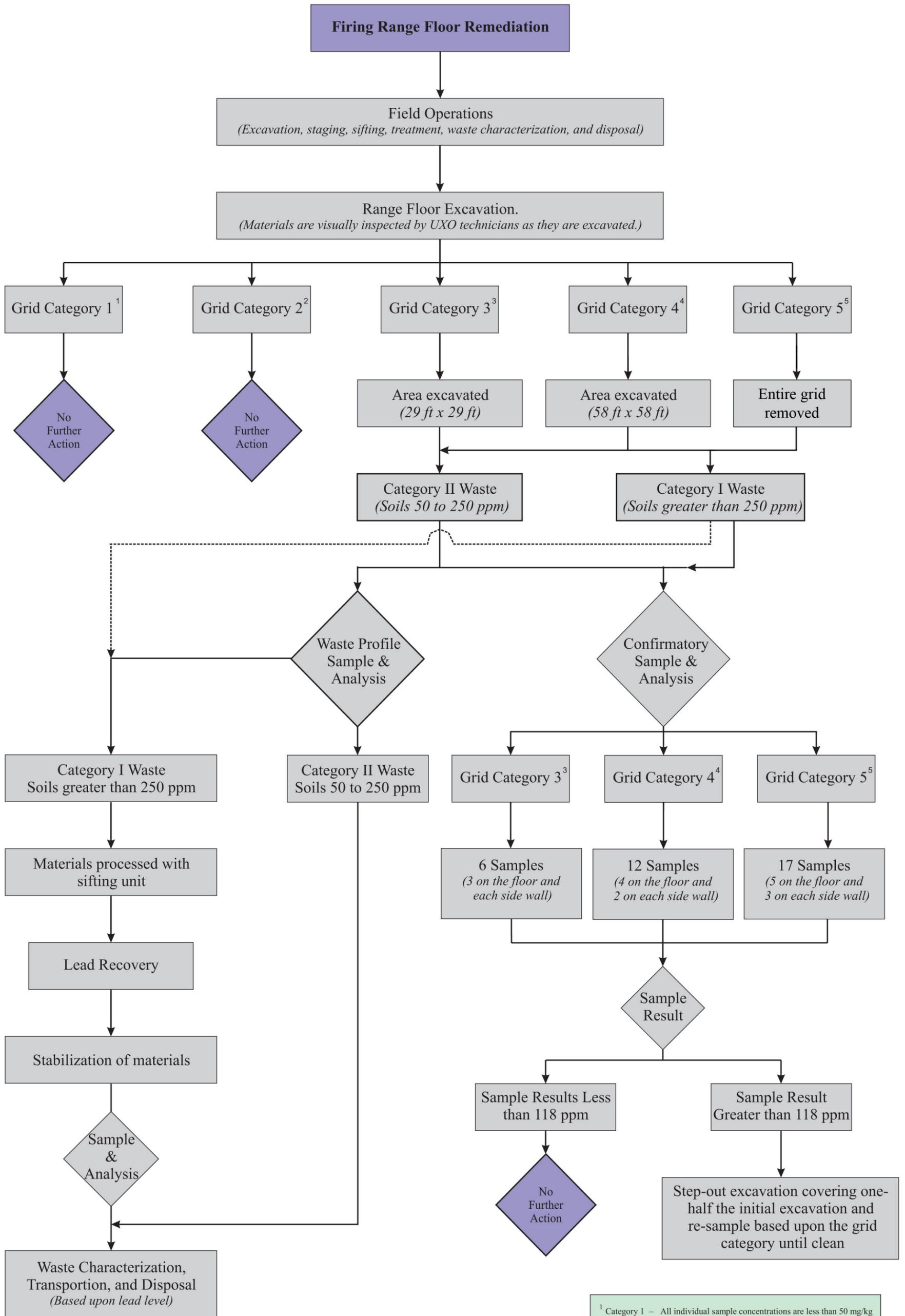


Figure 5-8
Excavation Process Flow Diagram for the Berms

Note 1: Work Area 1 consists of the first two feet of the face of the freestanding berms, hillside berms, and the front of the pop-up target berms. The material from these areas is most likely to have elevated lead concentrations and is considered to have a potential to be "RCRA Hazardous Waste".

Note 2: Work Area 2 consists of the following areas:
 1) The next two feet of the face of the freestanding berms and hillside berms.
 2) The first one foot of the top of the freestanding berms, and the sides of the pop-up target berms.
 3) The first six inches of the surface soil inside a 30-foot diameter circle around the pop-up targets.
 4) The first six inches of the impact areas behind the freestanding berms.
 The material from these areas may have elevated lead concentrations and is considered to have a potential to be MTCA Industrial Waste.

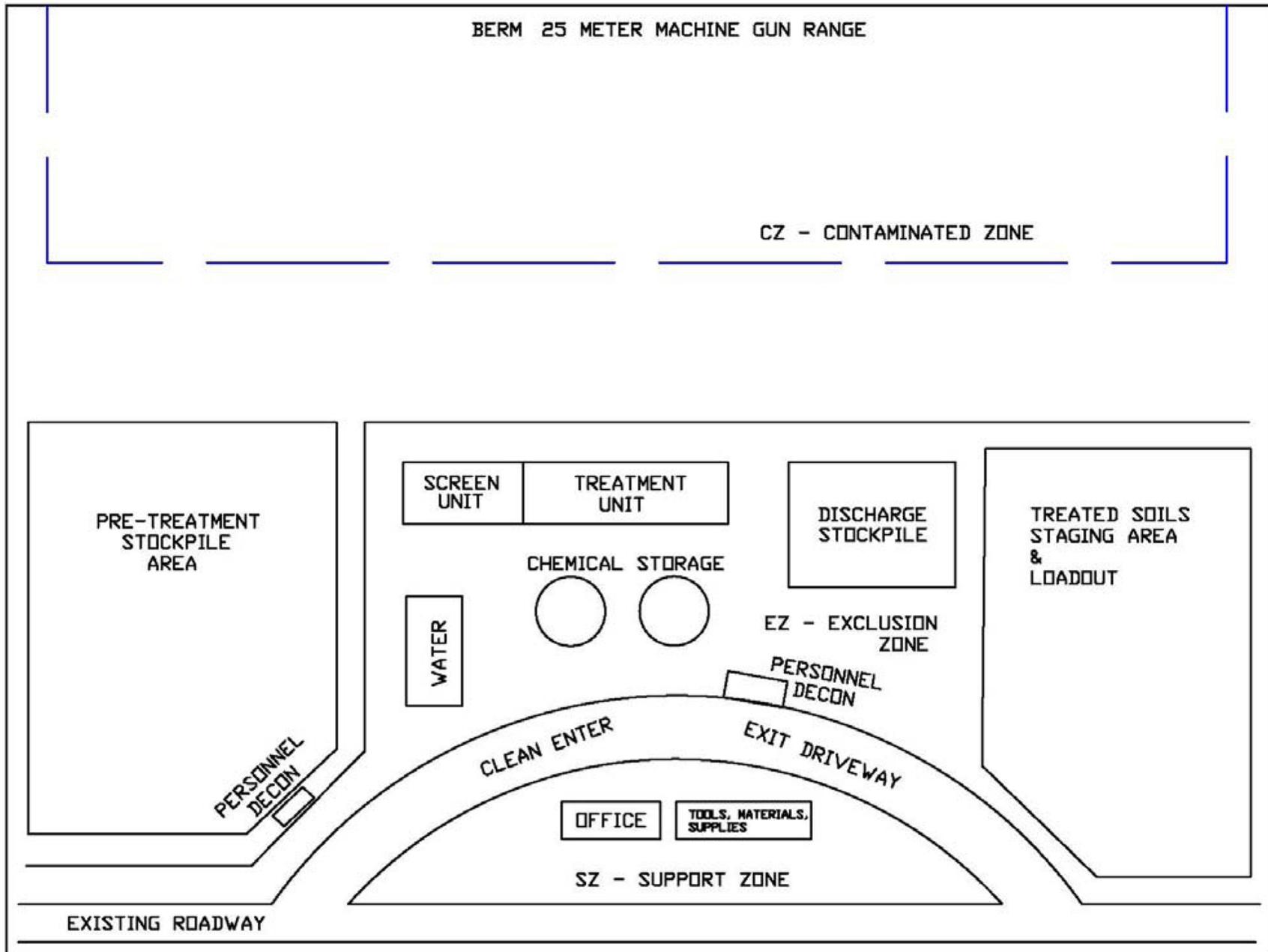
Note 3: Work Area 3 consists of the balance of the freestanding berms and any additional material excavated from the pop-up target areas, hillside berms, and impact areas behind the berms. Materials from these areas will be inspected for visible lead or other evidence of bullet impacts. If lead or other impacts are observed, these soils will be added to the Work Area 2 soils. If no lead or other impacts are observed, these soils will be retained on-site for re-grading purposes.



- ¹ Category 1 – All individual sample concentrations are less than 50 mg/kg (112 grids)
- ² Category 2 – All individual sample results are less than 118 mg/kg and the average concentration of all samples from that grid is less than 50 mg/kg (27 grids)
- ³ Category 3 – All individual sample results are less than 250 mg/kg and the average concentration is between 50 mg/kg and 118 mg/kg (16 grids)
- ⁴ Category 4 – The average concentration is between 118 mg/kg and 250 mg/kg (8 grids)
- ⁵ Category 5 – The average concentration is greater than 250 mg/kg (4 grids)

Figure 5-9
Excavation Process Flow Diagram for the Range Floors

Figure 5-10
Excavated Soil Holding, Screening, Processing, and Loading Area Layout Diagram





5.3.4 Stockpiling

As soils are excavated at each small arms range, they will be placed in stockpiles at that range. Soils will be segregated in separate stockpiles based specific excavation locations within each small arms range as outlined in Section 5.2 and based on lead-related visual observations of the as-excavated soils.

All stockpiles – both at the excavation sites and at the screening/loading facility – will be placed on polyethylene liners (10 millimeters thick) to prevent contaminant migration or additional soils contamination.

All soil stockpiles will be covered daily. As noted above, dust control methods will be implemented during excavation and soils handling operations to minimize fugitive airborne contamination.

The individual stockpiles will be sampled and these samples will be analyzed at an off-site laboratory for total and TCLP extractable lead. These analytical results will determine the final categorization, treatment, and disposition of the excavated soils. The stockpiled soil will be treated and handled in three categories depending on these analytical results, as follows:

- Category I – RCRA Hazardous Waste: Soils with TCLP extractable lead levels greater than 5 mg/l regardless of total lead concentration or total lead concentrations greater than 1,000 mg/kg
- Category II – MTCA Industrial Waste: Soils with TCLP extractable lead levels less than 5 mg/l and total lead concentrations less than 1,000 mg/kg but greater than 50 mg/kg
- Category III – Non-Regulated Soils: Soils with TCLP extractable lead levels less than 5 mg/l and total lead concentrations less than 50 mg/kg.

These category assignments will be maintained throughout onsite handling, treatment (if any), loading, and final disposition.

After the categorization sample analysis results are returned by the off-site laboratory, the soils will be scheduled for transport to the screening/loading station.

5.3.5 Screening, Stabilization, and Loading

As part of the mobilization, the work area for excavated soil screening, stabilization, storage and loading will be established as shown on **Figure 5-10** – Excavated Soil Holding, Screening Processing, and Loading Area Layout Diagram. The screening and stabilization equipment will be delivered to the site and installed as shown on **Figure 5-10**. The soils handling and treatment activities are outlined as follows:



- Soil in Categories I and II will be screened to recover discrete lead particles in the form of bullets and larger bullet fragments. These recovered materials will be recycled as described below.
- Soil in Category I may be treated (if necessary) with a stabilizing agent to meet the RCRA Land Disposal Restrictions (LDRs) to be eligible for off-site disposal at an appropriately permitted RCRA Hazardous Waste Treatment, Storage, and Disposal Facility (TSDF). Treatment will be accomplished by the addition chemical reagent that is proven to bind the lead to the soil particles and prevent lead mobilization under normal environmental conditions or under TCLP extraction procedures. It is currently anticipated that this stabilization will be done by the addition, mixing, and curing of the Category 1 soils by the proprietary Apatite™ crystallization process. After treatment, the Category 1 soils will be discharged to a dedicated stockpile and held for loading and transport to the off-site TSDF. These treated soils will be sampled and analyzed to confirm that they meet the applicable TSDF acceptance criteria and the RCRA LDRs.
- After screening, the Category II soil will be placed in a separate dedicated stockpile and held for loading and transport to an appropriately permitted industrial or municipal waste disposal facility. These soils will be resampled and analyzed to confirm that they meet acceptance criteria for use as daily cover at this disposal facility.
- Those Category III soils which are excavated will be held at the originating excavation site for use in filling and grading the excavated areas as part of site restoration.

5.4 Sample Analysis and Data Management

Soil sampling and analysis will be conducted for two purposes, as follows:

- To confirm that the limits of excavation as defined by total lead concentration have been attained as specified in **Section 5.2.2**.
- To categorize the excavated soils for appropriate treatment and disposal of for on-site use.

Sample collection and analysis will be conducted and documented as specified in USEPA procedures and Washington State Regulations. The specific procedures set forth in the SAP for Site Soils (AEM, 2003a and Michael Baker Standard Operating Procedures) for CBMR will be applied to these sampling, analysis, and documentation activities.

These analytical results will be reported in the Cleanup Action Report for RAU 2A – Small Arms Ranges utilizing appropriate table and figures to organize this data. In addition, the waste categorization analysis results will be submitted to the disposal facilities on the appropriate forms



to document attainment of the waste acceptance criteria those waste soils sent to each of these facilities.

5.5 Waste Management

Recovered lead and waste soils will be managed as follows:

- Recovered lead will be sent to a lead smelter or other approved lead recycling facility as specifically approved by USEPA and Washington regulations. To confirm that the limits of excavation as defined by total lead concentration have been attained as specified in **Section 5.2.2**.
- Category I soil (after stabilization to meet the LDRs, if necessary) will be sent to an approved RCRA-permitted hazardous waste TSDF. It currently is anticipated that this facility will be in the state of Oregon.
- Category II soil will be sent to an approved, host-state-licensed industrial and/or municipal waste disposal facility. It is anticipated that these soils will be used for daily cover at the receiving facility. This facility may be in Washington or Oregon depending on availability and transportation costs.

The WDOE will be notified in writing on the final waste disposal locations before any wastes are sent to the selected facilities.

5.6 Restoration

After completion of excavation of the berms, the range floors, and any related areas and after receipt of confirmatory sample analysis results demonstrating that the cleanup criteria have been achieved, restoration of the excavation areas will be conducted. In general, excavation areas will be filled and graded to approximate original contours. The area of the freestanding earthen berm at the former 25-Meter Machine Gun Range will be graded to approximate the surrounding contours. This restoration will be done using soils from the following sources:

- Category III soils to the extent they are available and acceptable for this use.
- Borrow from other on-site sources to the extent such material is available
- Borrow from known, clean off-site sources
- Top soil from known, clean off-site sources

If appropriate and prudent, samples will be collected from any off-site soil sources and tested for total metals before any soil from these sources is delivered to CBMR.

Following excavation filling and contouring, exposed soils will be seeded with a Clark County-approved seed mixture.



5.7 Cleanup Action Support Activities

5.7.1 Erosion and Sedimentation Control Measures

This cleanup action will be conducted in conformance with the task-specific Erosion and Sedimentation Control Plan (see **Appendix B**). Silt fencing will be placed to control runoff, erosion, and sedimentation for the active excavation areas and from the screen/loading area. In addition, silt fencing will be placed along and adjacent to any streams, ponds, or wetlands within 200 feet of an active excavation area.

5.7.2 Wetlands Management

BCRRT has conducted a wetlands inventory of the nine small arms ranges addressed in this CAP (PBS, 2007). Based on this inventory, portions of five of these small arms ranges were found to be wetlands as shown on **Figure 5-11 – Wetlands Delineation Overview Map**. These five ranges are:

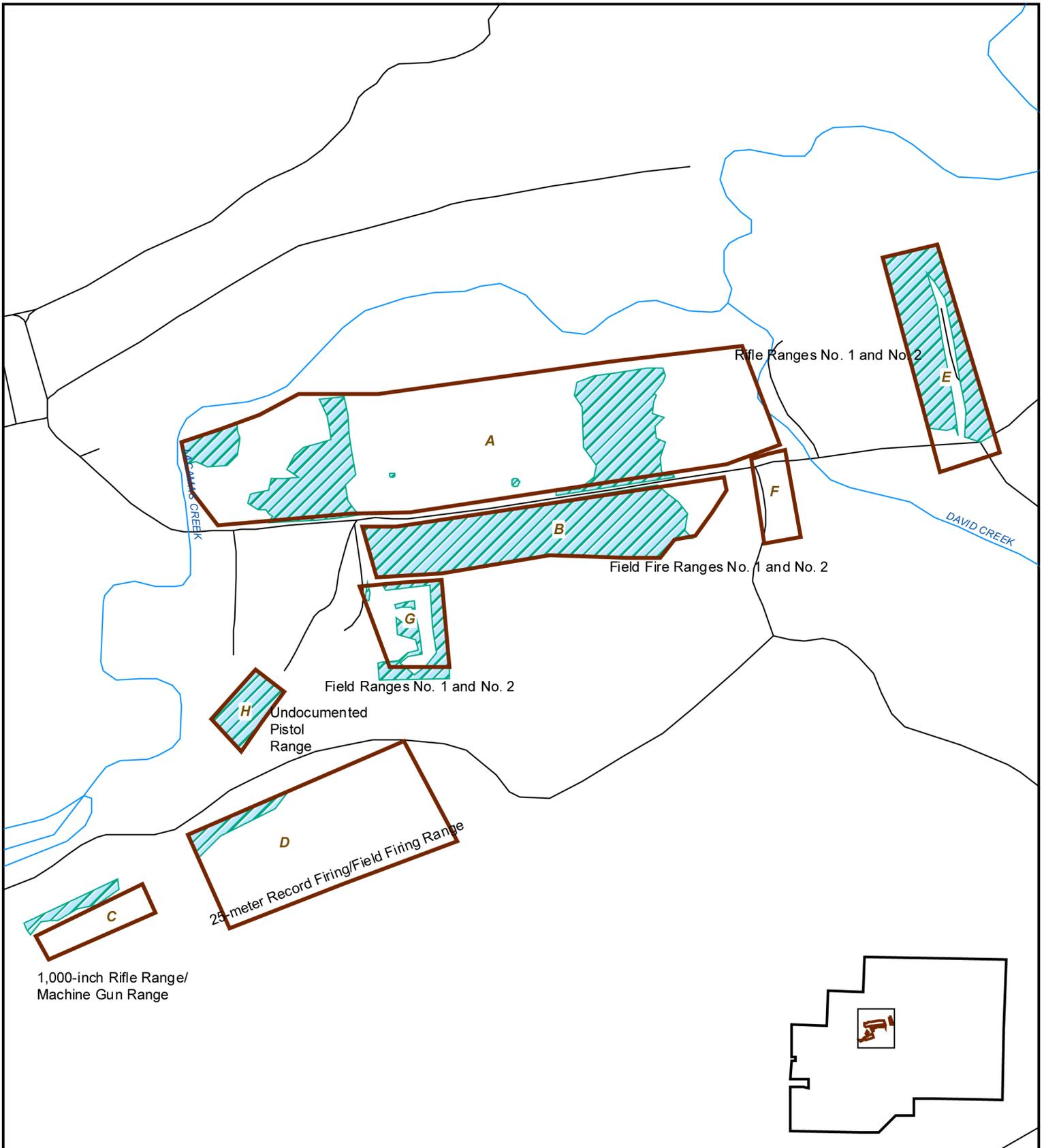
- Field Fire Ranges 1 and 2 (Areas A, B, and E on Figure 5-10)
- 1,000-Inch Rifle Range/Machine Gun Ran (Area C)
- 25-Meter Record Firing/Field Firing Range (Area D)
- Field Ranges 1 and 2 (Area G)
- Undocumented Pistol Range (Area H)

United States Army Corps of Engineers Nationwide Permit No. 38 specifically allows cleanups of hazardous and toxic wastes from wetlands. The preconstruction notification required under this Nationwide Permit has been submitted to the appropriate authorities.

Mitigation of the temporary disturbance of these wetlands is required under the Nationwide Permit. The disturbances associated with this cleanup action will be temporary and the wetlands will be restored as part of the work area restoration activities after the soil excavations are complete. The wetlands areas will be regraded and restored to their approximate pre-excavation contours and the wetlands area will be reseeded to reestablish the native wetlands plant communities.

5.7.3 Access Control

Access to all of the former CBMR is controlled while MEC clearance activities are ongoing. The perimeter fences were repaired and the perimeter warning signs were replaced as part of the initial cleanup activities after BCRRT accepted stewardship of the site. Site access is controlled by security guards and visitors access monitoring/logging on a 24-hour per day, seven-day per week basis. These controls will be in effect throughout implementation of this cleanup action.



Source: Clark County GIS Data, August 2006. Wetland boundaries, sample plot locations, and transects mapped by PBS using a Trimble GeoXT. The GeoXT has sub-meter post processing accuracy.



- Study Areas
- Wetlands
- Streams
- Roads and Trails



Project #:
70489.000

Date:
JULY 2007

Schematic Wetlands Delineation Map for Small Arms Ranges Requiring Remediation
Camp Bonneville
23201 NE Pluss Road
CLARK COUNTY, WASHINGTON

FIGURE
5-11



5.7.4 Decontamination of Personnel and Equipment

Personnel leaving any Exclusion Zone for this cleanup action, including both active excavation areas and the screening/loading area will self-decontaminate in the CRZ. This personnel decontamination will be accomplished by removing their PPCE (boot covers, Tyvek coveralls, respirators (if any), and gloves, in that order, in the CRZ. All of those items will be left in that CRZ for later reuse by the same person or for appropriate disposal as contaminated trash. Pre-moistened towelettes will be provided in each CRZ for use in cleaning the respirators and for any incidental cleaning of exposed skin.

Equipment leaving any Exclusion Zone will be decontaminated using dry methods. Potentially contaminated exterior surfaces of this equipment will be wiped with dry or pre-moistened rags to remove dust or soil particles.

Haul trucks will not enter the Exclusion Zone for loading. They will be loaded by a track hoe or front-end loader reaching across and over the line between the Exclusion Zone and the Support Zone. Haul truck exteriors should not require decontamination under this approach. The interiors of the truck beds will be decontaminated using the dry methods whenever a truck leaves the site without a contaminated soil load.

5.8 Demobilization after this Cleanup Action

At the completion of all soil excavation and handling activities under this Cleanup Action Plan, these work areas will be demobilized as follows:

- Mobile and stationary equipment will be decontaminated as described in the preceding section and removed from Camp Bonneville.
- The haul truck beds will be decontaminated as described in the preceding section and released from the project.
- The soil stockpile liners and covers will be placed in appropriate containers (e.g. roll-off boxes) and sent to the industrial/municipal waste landfill for disposal.
- The erosion control items and the zone fences/barriers will be removed.
- Any wastes related to sampling, analysis, and decontamination activities will be disposed in an appropriate and legally compliant manner.
- Equipment will be decontaminated. Removal of erosion control methods, barriers, decontamination materials, and Investigation Derived Wastes (IDW) will be completed.



6.0 TASK-SPECIFIC HEALTH AND SAFETY PLAN

The cleanup action for the small arms ranges will be conducted in full accordance with the previous established Camp Bonneville Conservation Conveyance APP (Michael Baker, 2006a). This APP is currently being applied to the work being done at CBMR. This plan has four principal elements as follows:

- Accident Prevention Plan (APP)
- Health and Safety Plan (HASP)
- Explosives Safety Submittal (ESS)
- Project Hazard Analysis (PHA)

Each of these elements is related to the work to be done for the cleanup of RAU 2A – Small Arms Ranges. The general procedural specifications of each element will be fully enforced and applied to the small arms ranges cleanup action as those specifications are relevant and appropriate.

The elements of the APP and the program being implemented on a site-wide basis there under are fully compliant with the applicable OSHA rules and guidance for hazardous site work and for general construction work. The APP and its component elements address all relevant topics, including the following:

- Health and Safety Policies
- Site Characteristics
- Site and Task Related Hazards
- Training
- Personal Protective Equipment
- Medical Surveillance
- Exposure Monitoring and Air Sampling Programs
- Physical Hazards
- Site Controls and Work Practices
- Site Operations
- Personal Hygiene and Decontamination
- Emergency Responses
- Accident Reporting
- Documentation and Safety-Related Recordkeeping

In addition to this task-specific health and safety plan, all workers employed in the cleanup of the small arms ranges will be trained in and required to follow the applicable portions of the general site wide APP and its component parts.

6.1 Munitions-Related Hazards

The small arms ranges will have been surface cleared of MEC before implementation of this cleanup action is initiated. Therefore, MEC avoidance is not expected to be an issue during implementation of this Cleanup Action Plan. However, as an additional safety precaution, the



personnel conducting this cleanup action will undergo MEC Awareness Training as outlined below in Section 6.4 and as described more fully in the APP and ESS. In addition, fully qualified, fully qualified and equipped MEC and unexploded ordnance (UXO) management personnel will be available onsite throughout this project in the unlikely event any suspected MEC items or Munitions Debris (MD) are encountered during any of the activities related to the cleanup of the nine small arms ranges. These MEC personnel will be in radio communications with the personnel conducting the small arms ranges cleanup to provide rapid response to any MEC or MD issues that may potentially arise.

6.2 Chemical Hazards

Based on soil sampling conducted for the RI/FS (Calibre, 2005), the following hazardous substances were detected in soils at one or more of the small arms ranges:

- Arsenic: maximum reported level of 22.9 mg/kg, slightly above the ecological threshold but below the human health risk criteria
- Barium: maximum reported level of 227 mg/kg, slightly above the ecological threshold but below the human health risk criteria
- Lead; maximum reported level of 26,300 mg/kg exceeding the human health and ecological protection criteria and, thus, the target of this cleanup action
- 2,4-Dinitrotoluene; maximum reported of 20 mg/kg which is below regulatory criteria
- Soil dust as a particulate nuisance for worker safety and health with threshold limit values (TLVs) of 10 mg/cubic meter inhaleable and 3 mg/cubic meter respirable

Based on threshold limit values for worker breathing zones, a maximum permissible total dust level has been established for each of the nine small arms ranges being addressed under this cleanup action. These values are as follows:



Table 6-1 RAU 2A Maximum Permitted Airborne Dust Levels

Range Name	Maximum Permitted Total Dust Level	Resulting Maximum Airborne Lead Concentration	Percent of Lead Exposure Limit
	(mg/m ³)	(mg/m ³)	(%)
Combat Pistol Range	10	0.008	16
Undocumented Pistol Range	10	0.002	3
1,000-Inch Rifle and Machine Gun Range	4	0.025	50
25-Meter M60 Machine Gun and Pistol Range	10	0.002	4
25-Meter Machine Gun Range	1	0.026	53
25-Meter Record Firing Range & Field Firing Range	4	0.036	71
Field Ranges 1 and 2	10	0.023	46
Field Fire Ranges 1 and 2	4	0.029	57
Rifle Ranges 1 and 2	4	0.017	35

6.3 Physical Hazards

Excavation depths will be less than four feet at the nine small arms ranges. Therefore, confined space entry and trenching rules are not issues for this cleanup action.

The excavations will require the use of heavy equipment. Workers must be alert to equipment movements and swing radii. In addition, hauling and maintenance vehicles will be moving on and around the work sites; therefore traffic is potential physical hazard. As noted above, the exclusion zones will be delineated with rope or snow fence and will be posted with warning signs.

As discussed in **Section 6.2**, airborne dust is a potential physical, as well as chemical hazard at the excavation points and at the screening/loading station. As discussed in **Section 6.5** below, airborne dust will be the controlling factor in selection of Personal Protective Equipment. RAU 2A work Site perimeter and worker breathing zone air monitoring will be conducted throughout excavation and soils handling operations. If appropriate, dust control and mitigation measures will be conducted by spraying the areas of concern areas with water. In addition, worker breathing zone air samples will be collected using low-volume filter pumps. This information will be monitored by the Site Health and Safety Officer and may used to revise the level of respiratory protection depending upon results.

Whenever the ground is penetrated by excavation, there is potential to encounter underground utilities. Based on site history, existing documentation, and observed site conditions, there is a low probability of encountering underground utilities during excavation operations at the nine small arms ranges. Before starting excavations, site personnel will confirm the absence of underground utilities at the planned excavation locations by further review of site map, conversations with site personnel, and contact with the appropriate underground utilities locator services. This topic will be addressed in the site specific training to alert excavation personnel of the appropriate course of action in the unlikely event any underground utility line is encountered.



Stockpiles at each small arms range and at the holding and screening area will be placed on plastic and sloped to maintain pile stability.

The excavated soil holding and screening area presents several physical hazards, as follows:

- Moving machinery parts such as conveyor and vibrating screens
- Mobile equipment and haul vehicles
- Trips and falls from elevated working or maintenance locations
- Electric power and hydraulic mechanisms
- Dust
- Access by visitors delivering fuel and supplies
- Truck operators removing soil for off site disposal

6.4 Task-Specific Training

As specified by Section 5.1 of the HASP, all personnel assigned to the small arms ranges cleanup will have received OSHA specified hazard site worker training before they begin work on this task. This training will have included the following

- ✓ OSHA-mandated hazardous waste operations (HAZWOPER) training (40 hours)
- ✓ OSHA-mandated site specific training (24 hours of actual on-site work under the direct supervision of a trained and experienced supervisor)
- ✓ Supervisors are required to have eight additional hours of HAZWOPER Supervisor training before assuming supervisory duties
- ✓ All personnel will be up-to-date on the OSHA required annual renewal training

Workers assigned to this small arms ranges cleanup task will receive tas-specific training in accordance with the following:

- ✓ Site-specific health and safety training as outlined in Section 5.2 of the HASP
- ✓ MEC awareness training as described in Section 5.3 of the HASP

Before work is initiated on the small arms ranges cleanup, the workers will receive task-specific training on the following topics:

- ✓ Review of the relevant OSHA Standards
- ✓ The content of this work plan including the specific nature of the planned operations and the potentials for chemical hazard exposure and the nature of the physical hazards associated with this task
- ✓ A review of the APP and the task-specific health and safety issues
- ✓ Review of the purpose, limitations, selection, fitting, use, and maintenance of half-face respirators and worker breathing zone air monitors
- ✓ Review of the medical surveillance program
- ✓ Communication of lead-related health hazards



- ✓ Communication of hazards, if any, potentially associated with any stabilizing agents to be used in performing this task
- ✓ Applicable engineering controls and safe-work practices
- ✓ Review of employee right-of-access to records under Federal law
- ✓ Recognition of underground utilities and procedures to follow (i.e. stopping work in the affected area) if such utilities are encountered

6.5 Personal Protective Clothing and Equipment

Initial operations at both the excavation sites and the screening/loading station will be conducted wearing Level C Personal Protective Clothing and Equipment (PPCE). Level C PPCE will consist of the following protective items:

- Protective coveralls made of Tyvek™ or other appropriate material
- Steel toed work shoes/boots with thick (one inch) soles
- Boot covers (either disposable polyethylene or non-disposable rubber)
- Rubber gloves
- Hard hats
- Safety glasses with side shields
- Hearing protection
- Half-face air purifying respirator with dust cartridges

If justified by dust monitoring results, the task health and safety officer has the authority to reduce the protection level to Modified Level D PPCE (also known as Level D+) for either excavation area workers, screening/loading station workers, or both. In this event, dust monitoring will continue and the higher level of protection will be reinstated if made necessary by soil types, weather conditions, or other factors.

Modified Level D PPCE will consist of the following protective items:

- Normal work clothes or coveralls
- Steel toed work shoes/boots with thick (one inch) soles
- Boot covers (either disposable polyethylene or non-disposable rubber)
- Rubber gloves
- Hard hats
- Safety glasses with side shields
- Hearing protection



7.0 SCHEDULE

Figure 7-1 Project Schedule

ID		Task Name	Duration
1		7000 HTW Remdiation Field Operations	40 days
2		RAU 2A-4 (Combat Pistol Range)	40 days
3		Soil Excavation/Transport	4 days
4		Soil Processing/Treatment	16 days
5		Disposal of Soil	5 days
6		RAU 2A-15 (Undocumented Pistol Range)	37 days
7		Soil Excavation/Transport	1 day
8		Soil Processing/Treatment	16 days
9		Disposal of Soil	5 days
10		RAU 2A-16 (1,000ft Rifle/Machine Gun Range)	37 days
11		Soil Excavation/Transport	2 days
12		Soil Processing/Treatment	16 days
13		Disposal of Soil	5 days
14		RAU 2A-17 (25m M60/Pistol Range)	37 days
15		Soil Excavation/Transport	3 days
16		Soil Processing/Treatment	16 days
17		Disposal of Soil	5 days
18		RAU 2A-18 (25m Machine Gun Range)	37 days
19		Soil Excavation/Transport	11 days
20		Soil Processing/Treatment	16 days
21		Disposal of Soil	5 days
22		RAU 2A-19 (25m Record Firing/Field Firing Range)	28 days
23		Soil Excavation/Transport	3 days
24		Soil Processing/Treatment	16 days
25		Disposal of Soil	5 days
26		RAU 2A-20 (Field Ranges Nos. 1 & 2)	25 days
27		Soil Excavation/Transport	2 days
28		Soil Processing/Treatment	13 days
29		Disposal of Soil	5 days
30		RAU 2A-21 (Rifle Ranges Nos. 1 & 2)	25 days
31		Soil Excavation/Transport	2 days
32		Soil Processing/Treatment	13 days
33		Disposal of Soil	5 days
34		RAU 2A-22 (Field Fire Ranges)	25 days
35		Soil Excavation/Transport	2 days
36		Soil Processing/Treatment	13 days
37		Disposal of Soil	5 days



8.0 COMPLIANCE MONITORING AND CLEANUP ACTION REPORTING

8.1 Draft Compliance Monitoring Plan

Within 30 days of the issuance of the final CAP for RAU-2A, a Draft Compliance Monitoring Plan (CMP) will be prepared and submitted to WDOE for review, as per the requirements of the PPCD. In this instance, the CMP will be confirmational in nature (WAC173-340-410). That is, the sampling work detailed in the CMP will be intended to confirm that the cleanup standards defined in this CAP have been met by the proposed cleanup methods, confirming the effectiveness of the cleanup action in protecting human health and the environment.

After WDOE's comments are received and considered, a Final CMP will be prepared.

8.2 Draft Cleanup Action Report

As per the requirements of the PPCD (WDOE, 2006), a Draft Cleanup Action Report (CAR) will be prepared and submitted to WDOE for review within 30 calendar days of completion of the excavation, screening, stabilization, disposal, and restoration activities outlined in the final CAP for RAU-2A.

This report will conform to the specifications and format requirements set forth in the MTCA regulations and in the PPCD. This report will include the following information:

- ✓ A narrative description of the work done including:
 - Summary of any remedial investigations conducted (if any are required for RAU-2A);
 - Summary of cleanup actions conducted;
 - Results of any cleanup actions conducted;
 - Results of any compliance monitoring conducted;
 - Description of each item of MEC encountered during the investigation and cleanup of RAU-2A, but not limited to the following information:
 - Identification of the MEC item;
 - Description of the fusing condition of the MEC item;
 - Description of the location and depth of the MEC item.
- ✓ Explanations of any deviations from this Cleanup Action Plan
- ✓ Photographs of the work in progress
- ✓ Maps of the final excavation areas and depths
- ✓ Confirmatory sampling locations and analytical results
- ✓ Waste disposal documentation

This report, in draft form, will be submitted to the WDOE in the timeframe specified in the PPCD. Review comments from WDOE will be addressed and a Final CAR will be prepared..



8.3 Draft Long-Term Operation and Monitoring Plan.

While the lead removal action detailed in this CAP will not result in the construction of any facility or monitoring wells requiring long-term operations and maintenance, a Draft Long-Term Operation and Monitoring Plan (OMP) will be prepared for RAU-2A, if required. To comply with the requirements of the PPCD, the Draft OMP will be submitted to WDOE for review within 60 calendar days of completion of the work required in the final CAP for RAU-2A.



9.0 REFERENCES

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**APPENDIX A -
RANGE FLOOR GRID SAMPLE ANALYSIS RESULTS
FOR TOTAL LEAD FOR ALL GRIDS SAMPLED AT ALL
SMALL ARMS RANGES**



Grid Data Analysis Summary (Volume Estimates Based on Hotspot Removal)

Range	RAU	Individual Sample Summary			Grid Category Summary					Waste Volume	
		51-118 (ppm)	119-250 (ppm)	251 and > (ppm)	Cat 1 Grids	Cat 2 Grids	Cat 3 Grids	Cat 4 Grids	Cat 5 Grids	MTCA Volume (yds ³)	RCRA Volume (yds ³)
Combat Pistol Range	2A-4	4	1	1	13	2	1	1	0	60.75	81.00
Undocumented Pistol	2A-15	1	1	0	0	0	1	0	0	40.50	0.00
1,000-inch Rifle Range/Machine Gun Range	2A-16	16	11	13	19	3	2	3	2	1,377.00	1,134.00
25-meter M60/Pistol Range	2A-17	3	2	0	1	2	1	0	0	20.25	0.00
25-meter Machine Gun Range	2A-18	9	4	7	6	2	2	1	2	546.75	567.00
25-meter Record Firing Ranges	2A-19	10	3	3	33	3	2	1	1	526.50	243.00
Field Firing Ranges	2A-20	2	4	4	10	2	1	1	1	344.25	324.00
Rifle Ranges No. 1 & No. 2	2A-21	19	9	9	16	7	4	1	3	1,073.25	729.00
Field Fire Ranges No. 1 & No. 2	2A-22	12	1	1	13	7	1	0	1	40.50	81.00
Totals		76	36	38	111	28	15	8	10	4,029.75	3,159.00

Assumptions

- Grid size is 130-foot x 130-foot.
- Volumes are based upon a fluff factor of 1.3.
- The entire grid will be excavated for Category 5. Category 5 volume removed is 405 cubic yards.
- A 58-foot x 58-foot x 0.5-foot area would be excavated around each sample location when the grid is Category 4.
- A 29-foot x 29-foot x 0.5-foot area would be excavated around each sample location when the grid is Category 3
- Category 4 volume removed for estimate is 81 cubic yards per hot spot.
- Category 3 volume removed for estimate is 20.25 cubic yards per hot spot.



Combat Pistol Range (RAU 2A-4) Grid Data Analysis

Range	RAU	Grid	Location	Result	Unit	Berm	Avg.	Grid Category	MTCA	RCRA
Combat Pistol Range	2A-4	1	C	17.2	mg/Kg		21.20	1		
Combat Pistol Range	2A-4	1	N	15.5	mg/Kg					
Combat Pistol Range	2A-4	1	E	23.3	mg/Kg					
Combat Pistol Range	2A-4	1	S	16.7	mg/Kg					
Combat Pistol Range	2A-4	1	W	33.3	mg/Kg					
Combat Pistol Range	2A-4	2	C	16	mg/Kg		25.52	1		
Combat Pistol Range	2A-4	2	N	39.5	mg/Kg					
Combat Pistol Range	2A-4	2	E	16.3	mg/Kg					
Combat Pistol Range	2A-4	2	S	24.1	mg/Kg					
Combat Pistol Range	2A-4	2	W	31.7	mg/Kg					
Combat Pistol Range	2A-4	3	C	16.2	mg/Kg		21.34	1		
Combat Pistol Range	2A-4	3	N	15.9	mg/Kg					
Combat Pistol Range	2A-4	3	E	15.7	mg/Kg					
Combat Pistol Range	2A-4	3	S	43	mg/Kg					
Combat Pistol Range	2A-4	3	W	15.9	mg/Kg					
Combat Pistol Range	2A-4	4	C	29.6	mg/Kg		70.08	3	60.75	
Combat Pistol Range	2A-4	4	N	15.5	mg/Kg					
Combat Pistol Range	2A-4	4	E	81.8	mg/Kg					
Combat Pistol Range	2A-4	4	S	165	mg/Kg					
Combat Pistol Range	2A-4	4	W	58.5	mg/Kg					
Combat Pistol Range	2A-4	5	C	46.1	mg/Kg		28.54	1		
Combat Pistol Range	2A-4	5	N	17.2	mg/Kg					
Combat Pistol Range	2A-4	5	E	16.8	mg/Kg					
Combat Pistol Range	2A-4	5	S	29.5	mg/Kg					
Combat Pistol Range	2A-4	5	W	33.1	mg/Kg					
Combat Pistol Range	2A-4	6	C	14.4	mg/Kg		17.76	1		
Combat Pistol Range	2A-4	6	N	14.9	mg/Kg					
Combat Pistol Range	2A-4	6	E	23.2	mg/Kg					
Combat Pistol Range	2A-4	6	S	13.4	mg/Kg					
Combat Pistol Range	2A-4	6	W	22.9	mg/Kg					
Combat Pistol Range	2A-4	7	C	19.8	mg/Kg		18.88	1		
Combat Pistol Range	2A-4	7	N	14.2	mg/Kg					
Combat Pistol Range	2A-4	7	E	27.6	mg/Kg					
Combat Pistol Range	2A-4	7	S	20.3	mg/Kg					
Combat Pistol Range	2A-4	7	W	12.5	mg/Kg					
Combat Pistol Range	2A-4	8	C	12	mg/Kg		11.72	1		
Combat Pistol Range	2A-4	8	N	12.6	mg/Kg					
Combat Pistol Range	2A-4	8	E	10.1	mg/Kg					
Combat Pistol Range	2A-4	8	S	12.7	mg/Kg					

* Sample location on the berm and not included in the average.

Yellow = 51 to 118 mg/kg

Blue = 119 to 250 mg/kg

Red = 251mg/Kg and greater

Category 1: Average and Individual Sample Concentrations < 50 mg/Kg.

Category 2: Average Concentration is < 50 mg/Kg and no individual sample concentration is >118 mg/Kg.

Category 3: Average Concentration is > 50 mg/Kg but < 118 mg/Kg and no individual sample concentration is > 250 mg/Kg

Category 4: Average Concentration is > 118 mg/Kg but < 250 mg/Kg

Category 5: Average Concentration is > 250 mg/Kg.



Combat Pistol Range (RAU 2A-4) Grid Data Analysis

Range	RAU	Grid	Location	Result	Unit	Berm	Avg.	Grid Category	MTCA	RCRA
Combat Pistol Range	2A-4	8	W	11.2	mg/Kg					
Combat Pistol Range	2A-4	9	C	11	mg/Kg		11.98	1		
Combat Pistol Range	2A-4	9	N	17.7	mg/Kg					
Combat Pistol Range	2A-4	9	E	10.2	mg/Kg					
Combat Pistol Range	2A-4	9	S	12.3	mg/Kg					
Combat Pistol Range	2A-4	9	W	8.7	mg/Kg					
Combat Pistol Range	2A-4	10	C	16.4	mg/Kg		15.58	1		
Combat Pistol Range	2A-4	10	N	12.2	mg/Kg					
Combat Pistol Range	2A-4	10	E	20.5	mg/Kg					
Combat Pistol Range	2A-4	10	S	13.5	mg/Kg					
Combat Pistol Range	2A-4	10	W	15.3	mg/Kg					
Combat Pistol Range	2A-4	11	C	13.1	mg/Kg		14.52	1		
Combat Pistol Range	2A-4	11	N	14.3	mg/Kg					
Combat Pistol Range	2A-4	11	E	15.2	mg/Kg					
Combat Pistol Range	2A-4	11	S	14.1	mg/Kg					
Combat Pistol Range	2A-4	11	W	15.9	mg/Kg					
Combat Pistol Range	2A-4	12	C	23.8	mg/Kg		24.36	1		
Combat Pistol Range	2A-4	12	N	27.6	mg/Kg					
Combat Pistol Range	2A-4	12	E	14.4	mg/Kg					
Combat Pistol Range	2A-4	12	S	20.5	mg/Kg					
Combat Pistol Range	2A-4	12	W	35.5	mg/Kg					
Combat Pistol Range	2A-4	13	C	21.4	mg/Kg		44.48	2		
Combat Pistol Range	2A-4	13	N	25.3	mg/Kg					
Combat Pistol Range	2A-4	13	E	24.2	mg/Kg					
Combat Pistol Range	2A-4	13	S	35.5	mg/Kg					
Combat Pistol Range	2A-4	13	W	116	mg/Kg					
Combat Pistol Range	2A-4	14	C	18.1	mg/Kg		24.50	2		
Combat Pistol Range	2A-4	14	N	54	mg/Kg					
Combat Pistol Range	2A-4	14	E	22.2	mg/Kg					
Combat Pistol Range	2A-4	14	S	16.9	mg/Kg					
Combat Pistol Range	2A-4	14	W	11.3	mg/Kg					
Combat Pistol Range	2A-4	15	C	11.5	mg/Kg		169.00	4		81
Combat Pistol Range	2A-4	15	N	12	mg/Kg					
Combat Pistol Range	2A-4	15	E	19.5	mg/Kg					
Combat Pistol Range	2A-4	15	S	17	mg/Kg					
Combat Pistol Range	2A-4	15	W	785	mg/Kg	*				
Combat Pistol Range	2A-4	16	C	11.5	mg/Kg		16.60	1		
Combat Pistol Range	2A-4	16	N	39.3	mg/Kg					

* Sample location on the berm and not included in the average.

Yellow = 51 to 118 mg/kg

Blue = 119 to 250 mg/kg

Red = 251 mg/Kg and greater

Category 1: Average and Individual Sample Concentrations < 50 mg/Kg.

Category 2: Average Concentration is < 50 mg/Kg and no individual sample concentration is > 118 mg/Kg.

Category 3: Average Concentration is > 50 mg/Kg but < 118 mg/Kg and no individual sample concentration is > 250 mg/Kg

Category 4: Average Concentration is > 118 mg/Kg but < 250 mg/Kg

Category 5: Average Concentration is > 250 mg/Kg.



Combat Pistol Range (RAU 2A-4) Grid Data Analysis

Range	RAU	Grid	Location	Result	Unit	Berm	Avg.	Grid Category	MTCA	RCRA
Combat Pistol Range	2A-4	16	E	9.5	mg/Kg					
Combat Pistol Range	2A-4	16	S	11.4	mg/Kg					
Combat Pistol Range	2A-4	16	W	11.3	mg/Kg					
Combat Pistol Range	2A-4	17	C	12.3	mg/Kg		11.16	1		
Combat Pistol Range	2A-4	17	N	9.2	mg/Kg					
Combat Pistol Range	2A-4	17	E	12.2	mg/Kg					
Combat Pistol Range	2A-4	17	S	9.3	mg/Kg					
Combat Pistol Range	2A-4	17	W	12.8	mg/Kg					
								Totals	60.75	81

* Sample location on the berm and not included in the average.
 Yellow = 51 to 118 mg/kg
 Blue = 119 to 250 mg/kg
 Red = 251mg/Kg and greater
Category 1: Average and Individual Sample Concentrations < 50 mg/Kg.

Category 2: Average Concentration is < 50 mg/Kg and no individual sample concentration is >118 mg/Kg.
Category 3: Average Concentration is > 50 mg/Kg but < 118 mg/Kg and no individual sample concentration is > 250 mg/Kg
Category 4: Average Concentration is > 118 mg/Kg but < 250 mg/Kg
Category 5: Average Concentration is > 250 mg/Kg.



Undocumented Pistol Range (RAU 2A-15) Grid Data Analysis

Range	RAU	Grid	Location	Result	Unit	Berm	Avg.	Grid Category	MTCA	RCRA
Undocumented Pistol Range	2A-15	1	C	34.6	mg/Kg		64.8	3	40.5	
Undocumented Pistol Range	2A-15	1	N	86	mg/Kg					
Undocumented Pistol Range	2A-15	1	S	27	mg/Kg	*				
Undocumented Pistol Range	2A-15	1	E	154	mg/Kg					
Undocumented Pistol Range	2A-15	1	W	22.6	mg/Kg					
								Totals	40.5	0

* Sample location on the berm and not included in the average.
 Yellow = 51 to 118 mg/kg
 Blue = 119 to 250 mg/kg
 Red = 251mg/Kg and greater
Category 1: Average and Individual Sample Concentrations < 50 mg/Kg.

Category 2: Average Concentration is < 50 mg/Kg and no individual sample concentration is >118 mg/Kg.
Category 3: Average Concentration is > 50 mg/Kg but < 118 mg/Kg and no individual sample concentration is > 250 mg/Kg
Category 4: Average Concentration is > 118 mg/Kg but < 250 mg/Kg
Category 5: Average Concentration is > 250 mg/Kg.



1,000-inch Rifle Range/Machine Gun Range (RAU 2A-16)

Grid Data Analysis

Range	RAU	Grid	Location	Result	Unit	Berm	Avg.	Grid Category	MTCA	RCRA
1,000-inch Rifle Range	2A-16	1	C	6.3	mg/Kg		10.5	1		
1,000-inch Rifle Range	2A-16	1	N	15.3	mg/Kg					
1,000-inch Rifle Range	2A-16	1	E	0.0	mg/Kg					
1,000-inch Rifle Range	2A-16	1	S	14.5	mg/Kg					
1,000-inch Rifle Range	2A-16	1	W	16.5	mg/Kg					
1,000-inch Rifle Range	2A-16	2	C	16.4	mg/Kg		15.8	1		
1,000-inch Rifle Range	2A-16	2	N	16.6	mg/Kg					
1,000-inch Rifle Range	2A-16	2	E	15.5	mg/Kg					
1,000-inch Rifle Range	2A-16	2	S	16.7	mg/Kg					
1,000-inch Rifle Range	2A-16	2	W	13.8	mg/Kg					
1,000-inch Rifle Range	2A-16	3	C	10.0	mg/Kg		11.8	1		
1,000-inch Rifle Range	2A-16	3	N	9.3	mg/Kg					
1,000-inch Rifle Range	2A-16	3	E	22.6	mg/Kg					
1,000-inch Rifle Range	2A-16	3	S	7.8	mg/Kg					
1,000-inch Rifle Range	2A-16	3	W	9.1	mg/Kg					
1,000-inch Rifle Range	2A-16	4	C	3,450.0	mg/Kg	*	3,297.5	5		405
1,000-inch Rifle Range	2A-16	4	N	10,200.0	mg/Kg	*				
1,000-inch Rifle Range	2A-16	4	E	438.0	mg/Kg	*				
1,000-inch Rifle Range	2A-16	4	S	49.6	mg/Kg	*				
1,000-inch Rifle Range	2A-16	4	W	2,350.0	mg/Kg	*				
1,000-inch Rifle Range	2A-16	5	C	58.0	mg/Kg		23.0	2		
1,000-inch Rifle Range	2A-16	5	N	14.8	mg/Kg					
1,000-inch Rifle Range	2A-16	5	E	12.5	mg/Kg					
1,000-inch Rifle Range	2A-16	5	S	12.7	mg/Kg					
1,000-inch Rifle Range	2A-16	5	W	17.2	mg/Kg					
1,000-inch Rifle Range	2A-16	6	C	10.1	mg/Kg		11.1	1		
1,000-inch Rifle Range	2A-16	6	N	11.7	mg/Kg					
1,000-inch Rifle Range	2A-16	6	E	12.3	mg/Kg					
1,000-inch Rifle Range	2A-16	6	S	11.5	mg/Kg					
1,000-inch Rifle Range	2A-16	6	W	9.9	mg/Kg					
1,000-inch Rifle Range	2A-16	7	C	21.5	mg/Kg		31.3	2		
1,000-inch Rifle Range	2A-16	7	N	56.7	mg/Kg					
1,000-inch Rifle Range	2A-16	7	E	4.7	mg/Kg					
1,000-inch Rifle Range	2A-16	7	S	63.7	mg/Kg					
1,000-inch Rifle Range	2A-16	7	W	10.1	mg/Kg					
1,000-inch Rifle Range	2A-16	8	C	871.0	mg/Kg	*	1,250.2	5	162	243
1,000-inch Rifle Range	2A-16	8	N	55.8	mg/Kg					
1,000-inch Rifle Range	2A-16	8	E	4,560.0	mg/Kg	*				
1,000-inch Rifle Range	2A-16	8	S	198.0	mg/Kg	*				

* Sample location on the berm and not included in the average.
 Yellow = 51 to 118 mg/kg
 Blue = 119 to 250 mg/kg
 Red = 251 mg/Kg and greater
Category 1: Average and Individual Sample Concentrations < 50 mg/Kg.

Category 2: Average Concentration is < 50 mg/Kg and no individual sample concentration is > 118 mg/Kg.
Category 3: Average Concentration is > 50 mg/Kg but < 118 mg/Kg and no individual sample concentration is > 250 mg/Kg
Category 4: Average Concentration is > 118 mg/Kg but < 250 mg/Kg
Category 5: Average Concentration is > 250 mg/Kg.



1,000-inch Rifle Range/Machine Gun Range (RAU 2A-16) Grid Data Analysis

Range	RAU	Grid	Location	Result	Unit	Berm	Avg.	Grid Category	MTCA	RCRA
1,000-inch Rifle Range	2A-16	8	W	566.0	mg/Kg	*				
1,000-inch Rifle Range	2A-16	9	C	16.0	mg/Kg		19.5	1		
1,000-inch Rifle Range	2A-16	9	N	25.3	mg/Kg					
1,000-inch Rifle Range	2A-16	9	E	24.8	mg/Kg					
1,000-inch Rifle Range	2A-16	9	S	14.2	mg/Kg					
1,000-inch Rifle Range	2A-16	9	W	17.4	mg/Kg					
1,000-inch Rifle Range	2A-16	10	C	15.5	mg/Kg		14.9	1		
1,000-inch Rifle Range	2A-16	10	N	10.0	mg/Kg					
1,000-inch Rifle Range	2A-16	10	E	25.0	mg/Kg					
1,000-inch Rifle Range	2A-16	10	S	12.6	mg/Kg					
1,000-inch Rifle Range	2A-16	10	W	11.6	mg/Kg					
1,000-inch Rifle Range	2A-16	11	C	0.0	mg/Kg		9.4	1		
1,000-inch Rifle Range	2A-16	11	N	8.8	mg/Kg					
1,000-inch Rifle Range	2A-16	11	E	11.4	mg/Kg					
1,000-inch Rifle Range	2A-16	11	S	10.9	mg/Kg					
1,000-inch Rifle Range	2A-16	11	W	16.0	mg/Kg					
1,000-inch Rifle Range	2A-16	12	C	30.1	mg/Kg		17.7	1		
1,000-inch Rifle Range	2A-16	12	N	10.8	mg/Kg					
1,000-inch Rifle Range	2A-16	12	E	19.6	mg/Kg					
1,000-inch Rifle Range	2A-16	12	S	12.4	mg/Kg					
1,000-inch Rifle Range	2A-16	12	W	15.5	mg/Kg					
1,000-inch Rifle Range	2A-16	13	C	32.2	mg/Kg		24.3	1		
1,000-inch Rifle Range	2A-16	13	N	11.5	mg/Kg					
1,000-inch Rifle Range	2A-16	13	E	19.8	mg/Kg					
1,000-inch Rifle Range	2A-16	13	S	18.6	mg/Kg					
1,000-inch Rifle Range	2A-16	13	W	39.6	mg/Kg					
1,000-inch Rifle Range	2A-16	14	C	15.3	mg/Kg		13.2	1		
1,000-inch Rifle Range	2A-16	14	N	14.8	mg/Kg					
1,000-inch Rifle Range	2A-16	14	E	15.2	mg/Kg					
1,000-inch Rifle Range	2A-16	14	S	13.1	mg/Kg					
1,000-inch Rifle Range	2A-16	14	W	7.5	mg/Kg					
1,000-inch Rifle Range	2A-16	15	C	9.3	mg/Kg		12.9	1		
1,000-inch Rifle Range	2A-16	15	N	11.9	mg/Kg					
1,000-inch Rifle Range	2A-16	15	E	13.5	mg/Kg					
1,000-inch Rifle Range	2A-16	15	S	12.2	mg/Kg					
1,000-inch Rifle Range	2A-16	15	W	17.4	mg/Kg					
1,000-inch Rifle Range	2A-16	16	C	12.6	mg/Kg		13.9	1		
1,000-inch Rifle Range	2A-16	16	N	22.1	mg/Kg					

* Sample location on the berm and not included in the average.

Yellow = 51 to 118 mg/kg

Blue = 119 to 250 mg/kg

Red = 251 mg/Kg and greater

Category 1: Average and Individual Sample Concentrations < 50 mg/Kg.

Category 2: Average Concentration is < 50 mg/Kg and no individual sample concentration is > 118 mg/Kg.

Category 3: Average Concentration is > 50 mg/Kg but < 118 mg/Kg and no individual sample concentration is > 250 mg/Kg

Category 4: Average Concentration is > 118 mg/Kg but < 250 mg/Kg

Category 5: Average Concentration is > 250 mg/Kg.



1,000-inch Rifle Range/Machine Gun Range (RAU 2A-16)

Grid Data Analysis

Range	RAU	Grid	Location	Result	Unit	Berm	Avg.	Grid Category	MTCA	RCRA
1,000-inch Rifle Range	2A-16	16	E	14.3	mg/Kg					
1,000-inch Rifle Range	2A-16	16	S	7.4	mg/Kg					
1,000-inch Rifle Range	2A-16	16	W	13.3	mg/Kg					
1,000-inch Rifle Range	2A-16	17	C	17.0	mg/Kg		23.5	2		
1,000-inch Rifle Range	2A-16	17	N	63.3	mg/Kg					
1,000-inch Rifle Range	2A-16	17	E	13.7	mg/Kg					
1,000-inch Rifle Range	2A-16	17	S	9.7	mg/Kg					
1,000-inch Rifle Range	2A-16	17	W	13.6	mg/Kg					
1,000-inch Rifle Range	2A-16	18	C	7.5	mg/Kg		11.8	1		
1,000-inch Rifle Range	2A-16	18	N	14.3	mg/Kg					
1,000-inch Rifle Range	2A-16	18	E	15.2	mg/Kg					
1,000-inch Rifle Range	2A-16	18	S	10.4	mg/Kg					
1,000-inch Rifle Range	2A-16	18	W	11.4	mg/Kg					
1,000-inch Rifle Range	2A-16	19	C	9.9	mg/Kg		13.1	1		
1,000-inch Rifle Range	2A-16	19	N	22.8	mg/Kg					
1,000-inch Rifle Range	2A-16	19	E	15.0	mg/Kg					
1,000-inch Rifle Range	2A-16	19	S	11.7	mg/Kg					
1,000-inch Rifle Range	2A-16	19	W	6.2	mg/Kg					
1,000-inch Rifle Range	2A-16	20	C	16.6	mg/Kg		15.0	1		
1,000-inch Rifle Range	2A-16	20	N	11.3	mg/Kg					
1,000-inch Rifle Range	2A-16	20	E	11.9	mg/Kg					
1,000-inch Rifle Range	2A-16	20	S	12.4	mg/Kg					
1,000-inch Rifle Range	2A-16	20	W	22.9	mg/Kg					
1,000-inch Rifle Range	2A-16	21	C	12.1	mg/Kg		11.1	1		
1,000-inch Rifle Range	2A-16	21	N	10.0	mg/Kg					
1,000-inch Rifle Range	2A-16	21	E	9.4	mg/Kg					
1,000-inch Rifle Range	2A-16	21	S	10.4	mg/Kg					
1,000-inch Rifle Range	2A-16	21	W	13.8	mg/Kg					
1,000-inch Rifle Range	2A-16	22	C	29.8	mg/Kg		27.2	1		
1,000-inch Rifle Range	2A-16	22	N	39.1	mg/Kg					
1,000-inch Rifle Range	2A-16	22	E	25.5	mg/Kg					
1,000-inch Rifle Range	2A-16	22	S	14.9	mg/Kg					
1,000-inch Rifle Range	2A-16	22	W	26.6	mg/Kg					
1,000-inch Rifle Range	2A-16	23	C	22.8	mg/Kg		24.7	1		
1,000-inch Rifle Range	2A-16	23	N	20.6	mg/Kg					
1,000-inch Rifle Range	2A-16	23	E	15.2	mg/Kg					
1,000-inch Rifle Range	2A-16	23	S	45.0	mg/Kg					
1,000-inch Rifle Range	2A-16	23	W	20.1	mg/Kg					

* Sample location on the berm and not included in the average.
 Yellow = 51 to 118 mg/kg
 Blue = 119 to 250 mg/kg
 Red = 251mg/Kg and greater
Category 1: Average and Individual Sample Concentrations < 50 mg/Kg.

Category 2: Average Concentration is < 50 mg/Kg and no individual sample concentration is >118 mg/Kg.
Category 3: Average Concentration is > 50 mg/Kg but < 118 mg/Kg and no individual sample concentration is > 250 mg/Kg
Category 4: Average Concentration is > 118 mg/Kg but < 250 mg/Kg
Category 5: Average Concentration is > 250 mg/Kg.



1,000-inch Rifle Range/Machine Gun Range (RAU 2A-16)

Grid Data Analysis

Range	RAU	Grid	Location	Result	Unit	Berm	Avg.	Grid Category	MTCA	RCRA
1,000-inch Rifle Range	2A-16	24	C	90.7	mg/Kg		82.8	3	60.75	
1,000-inch Rifle Range	2A-16	24	N	128.0	mg/Kg					
1,000-inch Rifle Range	2A-16	24	E	28.2	mg/Kg					
1,000-inch Rifle Range	2A-16	24	S	21.2	mg/Kg					
1,000-inch Rifle Range	2A-16	24	W	146.0	mg/Kg					
1,000-inch Rifle Range	2A-16	25	C	10.0	mg/Kg		22.7	1		
1,000-inch Rifle Range	2A-16	25	N	48.3	mg/Kg					
1,000-inch Rifle Range	2A-16	25	E	13.4	mg/Kg					
1,000-inch Rifle Range	2A-16	25	S	13.9	mg/Kg					
1,000-inch Rifle Range	2A-16	25	W	28.1	mg/Kg					
1,000-inch Rifle Range	2A-16	26	C	63.4	mg/Kg		146.2	4	324	81
1,000-inch Rifle Range	2A-16	26	N	115.0	mg/Kg					
1,000-inch Rifle Range	2A-16	26	E	98.4	mg/Kg					
1,000-inch Rifle Range	2A-16	26	S	282.0	mg/Kg					
1,000-inch Rifle Range	2A-16	26	W	172.0	mg/Kg					
1,000-inch Rifle Range	2A-16	27	C	241.0	mg/Kg		176.6	4	324	81
1,000-inch Rifle Range	2A-16	27	N	91.7	mg/Kg					
1,000-inch Rifle Range	2A-16	27	E	346.0	mg/Kg					
1,000-inch Rifle Range	2A-16	27	S	68.5	mg/Kg					
1,000-inch Rifle Range	2A-16	27	W	136.0	mg/Kg					
1,000-inch Rifle Range	2A-16	28	C	334.0	mg/Kg	*	2,156.6	5	81	324
1,000-inch Rifle Range	2A-16	28	N	279.0	mg/Kg					
1,000-inch Rifle Range	2A-16	28	E	7,610.0	mg/Kg	*				
1,000-inch Rifle Range	2A-16	28	S	2,350.0	mg/Kg	*				
1,000-inch Rifle Range	2A-16	28	W	210.0	mg/Kg					
1,000-inch Rifle Range	2A-16	29	C	51.9	mg/Kg	*	82.2	3	20.25	
1,000-inch Rifle Range	2A-16	29	N	15.1	mg/Kg	*				
1,000-inch Rifle Range	2A-16	29	E	19.2	mg/Kg					
1,000-inch Rifle Range	2A-16	29	S	216.0	mg/Kg					
1,000-inch Rifle Range	2A-16	29	W	109.0	mg/Kg	*				
1,000-inch Rifle Range	2A-16	30	C	120.0	mg/Kg		121.5	4	405	
1,000-inch Rifle Range	2A-16	30	N	115.0	mg/Kg					
1,000-inch Rifle Range	2A-16	30	E	96.4	mg/Kg					
1,000-inch Rifle Range	2A-16	30	S	170.0	mg/Kg					
1,000-inch Rifle Range	2A-16	30	W	106.0	mg/Kg					
								Totals	1,377.00	1,134.00

* Sample location on the berm and not included in the average.
 Yellow = 51 to 118 mg/kg
 Blue = 119 to 250 mg/kg
 Red = 251mg/Kg and greater
Category 1: Average and Individual Sample Concentrations < 50 mg/Kg.

Category 2: Average Concentration is < 50 mg/Kg and no individual sample concentration is >118 mg/Kg.
Category 3: Average Concentration is > 50 mg/Kg but < 118 mg/Kg and no individual sample concentration is > 250 mg/Kg
Category 4: Average Concentration is > 118 mg/Kg but < 250 mg/Kg
Category 5: Average Concentration is > 250 mg/Kg.



25-meter M60 Range/Pistol Range (RAU 2A-17) Grid Data Analysis

Range	RAU	Grid	Location	Result	Unit	Berm	Avg.	Grid Category	MTCA	RCRA
25-meter M60	2A-17	1	C	29.9	mg/Kg		49.1	2		
25-meter M60	2A-17	1	N	108	mg/Kg					
25-meter M60	2A-17	1	S	21.9	mg/Kg					
25-meter M60	2A-17	1	E	64.6	mg/Kg					
25-meter M60	2A-17	1	W	21.1	mg/Kg					
25-meter M60	2A-17	2	C	21.8	mg/Kg		20.3	1		
25-meter M60	2A-17	2	N	21.1	mg/Kg					
25-meter M60	2A-17	2	S	22.2	mg/Kg					
25-meter M60	2A-17	2	E	11.8	mg/Kg					
25-meter M60	2A-17	2	W	24.8	mg/Kg					
25-meter M60	2A-17	3	C	37.2	mg/Kg	*	92.4	3	20.25	
25-meter M60	2A-17	3	N	136	mg/Kg					
25-meter M60	2A-17	3	S	34.6	mg/Kg					
25-meter M60	2A-17	3	E	219	mg/Kg	*				
25-meter M60	2A-17	3	W	35.3	mg/Kg	*				
25-meter M60	2A-17	4	C	68.3	mg/Kg		33.9	2		
25-meter M60	2A-17	4	N	13.8	mg/Kg					
25-meter M60	2A-17	4	S	44.9	mg/Kg					
25-meter M60	2A-17	4	E	8.7	mg/Kg					
25-meter M60	2A-17	4	W	33.7	mg/Kg	*				
								Totals	20.25	0

* Sample location on the berm and not included in the average.
 Yellow = 51 to 118 mg/kg
 Blue = 119 to 250 mg/kg
 Red = 251mg/Kg and greater
Category 1: Average and Individual Sample Concentrations < 50 mg/Kg.

Category 2: Average Concentration is < 50 mg/Kg and no individual sample concentration is >118 mg/Kg.
Category 3: Average Concentration is > 50 mg/Kg but < 118 mg/Kg and no individual sample concentration is > 250 mg/Kg
Category 4: Average Concentration is > 118 mg/Kg but < 250 mg/Kg
Category 5: Average Concentration is > 250 mg/Kg.



25-meter Machine Gun Range (RAU 2A-18) Grid Data Analysis

Range	RAU	Grid	Loc	Result	Unit	Berm	Avg.	Grid Category	MTCA	RCRA
25-meter Machine Gun Range	2A-18	1	C	12.00	mg/Kg		33.44	2		
25-meter Machine Gun Range	2A-18	1	N	10.90	mg/Kg					
25-meter Machine Gun Range	2A-18	1	E	13.70	mg/Kg					
25-meter Machine Gun Range	2A-18	1	S	14.60	mg/Kg					
25-meter Machine Gun Range	2A-18	1	W	116.00	mg/Kg					
25-meter Machine Gun Range	2A-18	2	C	16.20	mg/Kg		22.22	1		
25-meter Machine Gun Range	2A-18	2	N	19.00	mg/Kg					
25-meter Machine Gun Range	2A-18	2	E	43.60	mg/Kg					
25-meter Machine Gun Range	2A-18	2	S	22.70	mg/Kg					
25-meter Machine Gun Range	2A-18	2	W	9.60	mg/Kg					
25-meter Machine Gun Range	2A-18	3	C	31.10	mg/Kg		22.98	1		
25-meter Machine Gun Range	2A-18	3	N	19.10	mg/Kg					
25-meter Machine Gun Range	2A-18	3	E	29.30	mg/Kg					
25-meter Machine Gun Range	2A-18	3	S	17.20	mg/Kg					
25-meter Machine Gun Range	2A-18	3	W	18.20	mg/Kg					
25-meter Machine Gun Range	2A-18	4	C	27.00	mg/Kg		22.66	1		
25-meter Machine Gun Range	2A-18	4	N	17.20	mg/Kg					
25-meter Machine Gun Range	2A-18	4	E	25.20	mg/Kg					
25-meter Machine Gun Range	2A-18	4	S	31.70	mg/Kg					
25-meter Machine Gun Range	2A-18	4	W	12.20	mg/Kg					
25-meter Machine Gun Range	2A-18	5	C	214.00	mg/Kg		514.14	5	324	81
25-meter Machine Gun Range	2A-18	5	N	2,180.00	mg/Kg	*				
25-meter Machine Gun Range	2A-18	5	E	49.10	mg/Kg	*				
25-meter Machine Gun Range	2A-18	5	S	61.00	mg/Kg					
25-meter Machine Gun Range	2A-18	5	W	66.60	mg/Kg					
25-meter Machine Gun Range	2A-18	6	N	42.70	mg/Kg		40.15	1		
25-meter Machine Gun Range	2A-18	6	E	25.10	mg/Kg					
25-meter Machine Gun Range	2A-18	6	S	28.50	mg/Kg					
25-meter Machine Gun Range	2A-18	6	W	37.60	mg/Kg					
25-meter Machine Gun Range	2A-18	7	C	45.40	mg/Kg		44.02	2		
25-meter Machine Gun Range	2A-18	7	N	31.60	mg/Kg					
25-meter Machine Gun Range	2A-18	7	E	126.00	mg/Kg					
25-meter Machine Gun Range	2A-18	7	S	5.70	mg/Kg					
25-meter Machine Gun Range	2A-18	8	W	11.4	mg/Kg					
25-meter Machine Gun Range	2A-18	8	C	26,300.00	mg/Kg	*	6,714.60	5		405
25-meter Machine Gun Range	2A-18	8	N	1,330.00	mg/Kg	*				
25-meter Machine Gun Range	2A-18	8	E	964.00	mg/Kg					
25-meter Machine Gun Range	2A-18	8	S	429.00	mg/Kg	*				
25-meter Machine Gun Range	2A-18	8	W	4,550.00	mg/Kg	*				

* Sample location on the berm and not included in the average.
 Yellow = 51 to 118 mg/kg
 Blue = 119 to 250 mg/kg
 Red = 251 mg/Kg and greater
Category 1: Average and Individual Sample Concentrations < 50 mg/Kg.

Category 2: Average Concentration is < 50 mg/Kg and no individual sample concentration is > 118 mg/Kg.
Category 3: Average Concentration is > 50 mg/Kg but < 118 mg/Kg and no individual sample concentration is > 250 mg/Kg
Category 4: Average Concentration is > 118 mg/Kg but < 250 mg/Kg
Category 5: Average Concentration is > 250 mg/Kg.



25-meter Machine Gun Range (RAU 2A-18) Grid Data Analysis

Range	RAU	Grid	Loc	Result	Unit	Berm	Avg.	Grid Category	MTCA	RCRA
25-meter Machine Gun Range	2A-18	9	C	204.00	mg/Kg		73.18	3	60.75	
25-meter Machine Gun Range	2A-18	9	N	64.30	mg/Kg					
25-meter Machine Gun Range	2A-18	9	E	62.10	mg/Kg					
25-meter Machine Gun Range	2A-18	9	S	24.70	mg/Kg					
25-meter Machine Gun Range	2A-18	9	W	10.80	mg/Kg					
25-meter Machine Gun Range	2A-18	10	C	120.00	mg/Kg		80.94	3	81	
25-meter Machine Gun Range	2A-18	10	N	75.30	mg/Kg					
25-meter Machine Gun Range	2A-18	10	E	40.40	mg/Kg					
25-meter Machine Gun Range	2A-18	10	S	105.00	mg/Kg					
25-meter Machine Gun Range	2A-18	10	W	64.00	mg/Kg					
25-meter Machine Gun Range	2A-18	11	C	38.20	mg/Kg		182.16	4	81	81
25-meter Machine Gun Range	2A-18	11	N	708.00	mg/Kg					
25-meter Machine Gun Range	2A-18	11	E	13.00	mg/Kg					
25-meter Machine Gun Range	2A-18	11	S	37.60	mg/Kg					
25-meter Machine Gun Range	2A-18	11	W	114.00	mg/Kg					
25-meter Machine Gun Range	2A-18	12	C	13.80	mg/Kg		13.06	1		
25-meter Machine Gun Range	2A-18	12	N	10.60	mg/Kg					
25-meter Machine Gun Range	2A-18	12	E	25.00	mg/Kg					
25-meter Machine Gun Range	2A-18	12	S	6.10	mg/Kg					
25-meter Machine Gun Range	2A-18	12	W	9.80	mg/Kg					
25-meter Machine Gun Range	2A-18	13	C	7.60	mg/Kg		16.68	1		
25-meter Machine Gun Range	2A-18	13	N	25.50	mg/Kg					
25-meter Machine Gun Range	2A-18	13	E	33.80	mg/Kg					
25-meter Machine Gun Range	2A-18	13	S	11.00	mg/Kg					
25-meter Machine Gun Range	2A-18	13	W	5.50	mg/Kg					
								Totals	546.75	567

* Sample location on the berm and not included in the average.
 Yellow = 51 to 118 mg/kg
 Blue = 119 to 250 mg/kg
 Red = 251 mg/Kg and greater
Category 1: Average and Individual Sample Concentrations < 50 mg/Kg.

Category 2: Average Concentration is < 50 mg/Kg and no individual sample concentration is > 118 mg/Kg.
Category 3: Average Concentration is > 50 mg/Kg but < 118 mg/Kg and no individual sample concentration is > 250 mg/Kg
Category 4: Average Concentration is > 118 mg/Kg but < 250 mg/Kg
Category 5: Average Concentration is > 250 mg/Kg.



25-meter Record Firing Range (RAU 2A-19) Grid Data Analysis

Range	RAU	Grid	Loc	Result	Unit	Berm	Avg.	Grid Category	MTCA	RCRA
25-meter Record Firing Range	2A-19	1	C	11.9	mg/Kg		9.3	1		
25-meter Record Firing Range	2A-19	1	N	8.3	mg/Kg					
25-meter Record Firing Range	2A-19	1	S	9.7	mg/Kg					
25-meter Record Firing Range	2A-19	1	E	8.9	mg/Kg					
25-meter Record Firing Range	2A-19	1	W	7.7	mg/Kg					
25-meter Record Firing Range	2A-19	2	C	11.8	mg/Kg		9.7	1		
25-meter Record Firing Range	2A-19	2	N	7.7	mg/Kg					
25-meter Record Firing Range	2A-19	2	S	9.1	mg/Kg					
25-meter Record Firing Range	2A-19	2	E	11.0	mg/Kg					
25-meter Record Firing Range	2A-19	2	W	8.8	mg/Kg					
25-meter Record Firing Range	2A-19	3	C	7.6	mg/Kg		10.0	1		
25-meter Record Firing Range	2A-19	3	N	13.2	mg/Kg					
25-meter Record Firing Range	2A-19	3	S	10.3	mg/Kg					
25-meter Record Firing Range	2A-19	3	E	10.5	mg/Kg					
25-meter Record Firing Range	2A-19	3	W	8.2	mg/Kg					
25-meter Record Firing Range	2A-19	4	C	14.2	mg/Kg		11.2	1		
25-meter Record Firing Range	2A-19	4	N	10.2	mg/Kg					
25-meter Record Firing Range	2A-19	4	S	12.2	mg/Kg					
25-meter Record Firing Range	2A-19	4	E	8.7	mg/Kg					
25-meter Record Firing Range	2A-19	4	W	10.5	mg/Kg					
25-meter Record Firing Range	2A-19	5	C	12.9	mg/Kg		13.8	1		
25-meter Record Firing Range	2A-19	5	N	21.0	mg/Kg					
25-meter Record Firing Range	2A-19	5	S	15.9	mg/Kg					
25-meter Record Firing Range	2A-19	5	E	11.9	mg/Kg					
25-meter Record Firing Range	2A-19	5	W	7.4	mg/Kg					
25-meter Record Firing Range	2A-19	6	C	8.1	mg/Kg		10.7	1		
25-meter Record Firing Range	2A-19	6	N	12.7	mg/Kg					
25-meter Record Firing Range	2A-19	6	S	10.4	mg/Kg					
25-meter Record Firing Range	2A-19	6	E	10.9	mg/Kg					
25-meter Record Firing Range	2A-19	6	W	11.5	mg/Kg					
25-meter Record Firing Range	2A-19	7	C	13.0	mg/Kg		10.6	1		
25-meter Record Firing Range	2A-19	7	N	9.5	mg/Kg					
25-meter Record Firing Range	2A-19	7	S	10.5	mg/Kg					
25-meter Record Firing Range	2A-19	7	E	9.3	mg/Kg					
25-meter Record Firing Range	2A-19	7	W	10.5	mg/Kg					
25-meter Record Firing Range	2A-19	8	C	14.3	mg/Kg		13.0	1		
25-meter Record Firing Range	2A-19	8	N	9.1	mg/Kg					
25-meter Record Firing Range	2A-19	8	S	19.3	mg/Kg					
25-meter Record Firing Range	2A-19	8	E	12.9	mg/Kg					

* Sample location on the berm and not included in the average.

Yellow = 51 to 118 mg/kg

Blue = 119 to 250 mg/kg

Red = 251 mg/Kg and greater

Category 1: Average and Individual Sample Concentrations < 50 mg/Kg.

Category 2: Average Concentration is < 50 mg/Kg and no individual sample concentration is > 118 mg/Kg.

Category 3: Average Concentration is > 50 mg/Kg but < 118 mg/Kg and no individual sample concentration is > 250 mg/Kg

Category 4: Average Concentration is > 118 mg/Kg but < 250 mg/Kg

Category 5: Average Concentration is > 250 mg/Kg.



25-meter Record Firing Range (RAU 2A-19) Grid Data Analysis

Range	RAU	Grid	Loc	Result	Unit	Berm	Avg.	Grid Category	MTCA	RCRA
25-meter Record Firing Range	2A-19	8	W	9.3	mg/Kg					
25-meter Record Firing Range	2A-19	9	C	9.6	mg/Kg		19.3	2		
25-meter Record Firing Range	2A-19	9	N	6.6	mg/Kg					
25-meter Record Firing Range	2A-19	9	S	13.9	mg/Kg					
25-meter Record Firing Range	2A-19	9	E	55.2	mg/Kg					
25-meter Record Firing Range	2A-19	9	W	11.2	mg/Kg					
25-meter Record Firing Range	2A-19	10	C	8.8	mg/Kg		9.6	1		
25-meter Record Firing Range	2A-19	10	N	12.0	mg/Kg					
25-meter Record Firing Range	2A-19	10	S	8.8	mg/Kg					
25-meter Record Firing Range	2A-19	10	E	8.5	mg/Kg					
25-meter Record Firing Range	2A-19	10	W	9.8	mg/Kg					
25-meter Record Firing Range	2A-19	11	C	20.8	mg/Kg		11.2	1		
25-meter Record Firing Range	2A-19	11	N	11.3	mg/Kg					
25-meter Record Firing Range	2A-19	11	S	9.0	mg/Kg					
25-meter Record Firing Range	2A-19	11	E	6.8	mg/Kg					
25-meter Record Firing Range	2A-19	11	W	8.0	mg/Kg					
25-meter Record Firing Range	2A-19	12	C	0.0	mg/Kg		9.3	1		
25-meter Record Firing Range	2A-19	12	N	10.6	mg/Kg					
25-meter Record Firing Range	2A-19	12	S	10.4	mg/Kg					
25-meter Record Firing Range	2A-19	12	E	25.3	mg/Kg					
25-meter Record Firing Range	2A-19	12	W	0.0	mg/Kg					
25-meter Record Firing Range	2A-19	13	C	12.1	mg/Kg		13.1	1		
25-meter Record Firing Range	2A-19	13	N	7.6	mg/Kg					
25-meter Record Firing Range	2A-19	13	S	21.5	mg/Kg					
25-meter Record Firing Range	2A-19	13	E	12.1	mg/Kg					
25-meter Record Firing Range	2A-19	13	W	12.4	mg/Kg					
25-meter Record Firing Range	2A-19	14	C	11.9	mg/Kg		12.3	1		
25-meter Record Firing Range	2A-19	14	N	15.2	mg/Kg					
25-meter Record Firing Range	2A-19	14	S	22.9	mg/Kg					
25-meter Record Firing Range	2A-19	14	E	11.5	mg/Kg					
25-meter Record Firing Range	2A-19	14	W	0.0	mg/Kg					
25-meter Record Firing Range	2A-19	15	W	13.8	mg/Kg		14.7	1		
25-meter Record Firing Range	2A-19	15	C	19.9	mg/Kg					
25-meter Record Firing Range	2A-19	15	N	15.7	mg/Kg					
25-meter Record Firing Range	2A-19	15	S	10.3	mg/Kg					
25-meter Record Firing Range	2A-19	15	E	13.8	mg/Kg					
25-meter Record Firing Range	2A-19	16	C	5.9	mg/Kg		7.9	1		
25-meter Record Firing Range	2A-19	16	N	12.4	mg/Kg					

* Sample location on the berm and not included in the average.

Yellow = 51 to 118 mg/kg

Blue = 119 to 250 mg/kg

Red = 251mg/Kg and greater

Category 1: Average and Individual Sample Concentrations < 50 mg/Kg.

Category 2: Average Concentration is < 50 mg/Kg and no individual sample concentration is >118 mg/Kg.

Category 3: Average Concentration is > 50 mg/Kg but < 118 mg/Kg and no individual sample concentration is > 250 mg/Kg

Category 4: Average Concentration is > 118 mg/Kg but < 250 mg/Kg

Category 5: Average Concentration is > 250 mg/Kg.



25-meter Record Firing Range (RAU 2A-19) Grid Data Analysis

Range	RAU	Grid	Loc	Result	Unit	Berm	Avg.	Grid Category	MTCA	RCRA
25-meter Record Firing Range	2A-19	16	S	9.3	mg/Kg					
25-meter Record Firing Range	2A-19	16	E	6.7	mg/Kg					
25-meter Record Firing Range	2A-19	16	W	5.4	mg/Kg					
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25-meter Record Firing Range	2A-19	17	C	12.7	mg/Kg		11.5	1		
25-meter Record Firing Range	2A-19	17	N	12.5	mg/Kg					
25-meter Record Firing Range	2A-19	17	S	11.7	mg/Kg					
25-meter Record Firing Range	2A-19	17	E	9.0	mg/Kg					
25-meter Record Firing Range	2A-19	17	W	11.4	mg/Kg					
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25-meter Record Firing Range	2A-19	18	C	11.8	mg/Kg		10.6	1		
25-meter Record Firing Range	2A-19	18	N	12.0	mg/Kg					
25-meter Record Firing Range	2A-19	18	S	9.3	mg/Kg					
25-meter Record Firing Range	2A-19	18	E	8.9	mg/Kg					
25-meter Record Firing Range	2A-19	18	W	10.9	mg/Kg					
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25-meter Record Firing Range	2A-19	19	C	13.2	mg/Kg		62.1	3	60.75	
25-meter Record Firing Range	2A-19	19	N	77.5	mg/Kg					
25-meter Record Firing Range	2A-19	19	S	44.9	mg/Kg					
25-meter Record Firing Range	2A-19	19	E	90.3	mg/Kg					
25-meter Record Firing Range	2A-19	19	W	84.5	mg/Kg					
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25-meter Record Firing Range	2A-19	20	C	13.6	mg/Kg		22.3	1		
25-meter Record Firing Range	2A-19	20	N	22.7	mg/Kg					
25-meter Record Firing Range	2A-19	20	S	17.5	mg/Kg					
25-meter Record Firing Range	2A-19	20	E	31.7	mg/Kg					
25-meter Record Firing Range	2A-19	20	W	25.9	mg/Kg					
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25-meter Record Firing Range	2A-19	21	C	18.2	mg/Kg		16.7	1		
25-meter Record Firing Range	2A-19	21	N	18.6	mg/Kg					
25-meter Record Firing Range	2A-19	21	S	10.0	mg/Kg					
25-meter Record Firing Range	2A-19	21	E	12.9	mg/Kg					
25-meter Record Firing Range	2A-19	21	W	23.6	mg/Kg					
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25-meter Record Firing Range	2A-19	22	C	11.5	mg/Kg		12.8	1		
25-meter Record Firing Range	2A-19	22	N	13.2	mg/Kg					
25-meter Record Firing Range	2A-19	22	S	12.0	mg/Kg					
25-meter Record Firing Range	2A-19	22	E	15.2	mg/Kg					
25-meter Record Firing Range	2A-19	22	W	12.3	mg/Kg					
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25-meter Record Firing Range	2A-19	23	C	11.0	mg/Kg		12.2	1		
25-meter Record Firing Range	2A-19	23	N	11.6	mg/Kg					
25-meter Record Firing Range	2A-19	23	S	14.0	mg/Kg					
25-meter Record Firing Range	2A-19	23	E	13.6	mg/Kg					
25-meter Record Firing Range	2A-19	23	W	10.7	mg/Kg					

* Sample location on the berm and not included in the average.
 Yellow = 51 to 118 mg/kg
 Blue = 119 to 250 mg/kg
 Red = 251mg/Kg and greater
Category 1: Average and Individual Sample Concentrations < 50 mg/Kg.

Category 2: Average Concentration is < 50 mg/Kg and no individual sample concentration is >118 mg/Kg.
Category 3: Average Concentration is > 50 mg/Kg but < 118 mg/Kg and no individual sample concentration is > 250 mg/Kg
Category 4: Average Concentration is > 118 mg/Kg but < 250 mg/Kg
Category 5: Average Concentration is > 250 mg/Kg.



25-meter Record Firing Range (RAU 2A-19) Grid Data Analysis

Range	RAU	Grid	Loc	Result	Unit	Berm	Avg.	Grid Category	MTCA	RCRA
25-meter Record Firing Range	2A-19	24	C	26.3	mg/Kg		34.8	2		
25-meter Record Firing Range	2A-19	24	N	23.2	mg/Kg					
25-meter Record Firing Range	2A-19	24	S	22.8	mg/Kg					
25-meter Record Firing Range	2A-19	24	E	13.5	mg/Kg					
25-meter Record Firing Range	2A-19	24	W	88.2	mg/Kg					
25-meter Record Firing Range	2A-19	25	C	44.3	mg/Kg		28.4	1		
25-meter Record Firing Range	2A-19	25	N	14.1	mg/Kg					
25-meter Record Firing Range	2A-19	25	S	24.3	mg/Kg					
25-meter Record Firing Range	2A-19	25	E	25.5	mg/Kg					
25-meter Record Firing Range	2A-19	25	W	33.7	mg/Kg					
25-meter Record Firing Range	2A-19	26	C	9.7	mg/Kg		26.8	2		
25-meter Record Firing Range	2A-19	26	N	14.4	mg/Kg					
25-meter Record Firing Range	2A-19	26	S	78.4	mg/Kg					
25-meter Record Firing Range	2A-19	26	E	18.5	mg/Kg					
25-meter Record Firing Range	2A-19	26	W	13.2	mg/Kg					
25-meter Record Firing Range	2A-19	27	C	10.7	mg/Kg		12.2	1		
25-meter Record Firing Range	2A-19	27	N	14.1	mg/Kg					
25-meter Record Firing Range	2A-19	27	S	14.8	mg/Kg					
25-meter Record Firing Range	2A-19	27	E	11.9	mg/Kg					
25-meter Record Firing Range	2A-19	27	W	9.7	mg/Kg					
25-meter Record Firing Range	2A-19	28	C	11.2	mg/Kg		13.6	1		
25-meter Record Firing Range	2A-19	28	N	19.2	mg/Kg					
25-meter Record Firing Range	2A-19	28	S	13.8	mg/Kg					
25-meter Record Firing Range	2A-19	28	E	11.5	mg/Kg					
25-meter Record Firing Range	2A-19	28	W	12.5	mg/Kg					
25-meter Record Firing Range	2A-19	29	C	21.0	mg/Kg		21.9	1		
25-meter Record Firing Range	2A-19	29	N	18.5	mg/Kg					
25-meter Record Firing Range	2A-19	29	S	26.0	mg/Kg					
25-meter Record Firing Range	2A-19	29	E	32.8	mg/Kg					
25-meter Record Firing Range	2A-19	29	W	11.4	mg/Kg					
25-meter Record Firing Range	2A-19	30	C	163.0	mg/Kg	*	70.3	3	60.75	
25-meter Record Firing Range	2A-19	30	N	76.5	mg/Kg					
25-meter Record Firing Range	2A-19	30	S	27.3	mg/Kg					
25-meter Record Firing Range	2A-19	30	E	33.9	mg/Kg					
25-meter Record Firing Range	2A-19	30	W	51.0	mg/Kg	*				
25-meter Record Firing Range	2A-19	31	C	31.7	mg/Kg		25.9	1		
25-meter Record Firing Range	2A-19	31	N	24.8	mg/Kg					
25-meter Record Firing Range	2A-19	31	S	30.6	mg/Kg					
25-meter Record Firing Range	2A-19	31	E	23.0	mg/Kg					

* Sample location on the berm and not included in the average.

Yellow = 51 to 118 mg/kg

Blue = 119 to 250 mg/kg

Red = 251 mg/Kg and greater

Category 1: Average and Individual Sample Concentrations < 50 mg/Kg.

Category 2: Average Concentration is < 50 mg/Kg and no individual sample concentration is > 118 mg/Kg.

Category 3: Average Concentration is > 50 mg/Kg but < 118 mg/Kg and no individual sample concentration is > 250 mg/Kg

Category 4: Average Concentration is > 118 mg/Kg but < 250 mg/Kg

Category 5: Average Concentration is > 250 mg/Kg.



25-meter Record Firing Range (RAU 2A-19) Grid Data Analysis

Range	RAU	Grid	Loc	Result	Unit	Berm	Avg.	Grid Category	MTCA	RCRA
25-meter Record Firing Range	2A-19	31	W	19.5	mg/Kg					
25-meter Record Firing Range	2A-19	32	C	10.5	mg/Kg		16.9	1		
25-meter Record Firing Range	2A-19	32	N	20.5	mg/Kg					
25-meter Record Firing Range	2A-19	32	S	16.2	mg/Kg					
25-meter Record Firing Range	2A-19	32	E	13.6	mg/Kg					
25-meter Record Firing Range	2A-19	32	W	23.8	mg/Kg					
25-meter Record Firing Range	2A-19	33	C	94.9	mg/Kg	*	180.7	4	162	81
25-meter Record Firing Range	2A-19	33	N	647.0	mg/Kg					
25-meter Record Firing Range	2A-19	33	S	34.6	mg/Kg	*				
25-meter Record Firing Range	2A-19	33	E	19.9	mg/Kg	*				
25-meter Record Firing Range	2A-19	33	W	107.0	mg/Kg					
25-meter Record Firing Range	2A-19	34	C	150.0	mg/Kg	*	1,921.9	5	243	162
25-meter Record Firing Range	2A-19	34	N	45.3	mg/Kg					
25-meter Record Firing Range	2A-19	34	S	238.0	mg/Kg					
25-meter Record Firing Range	2A-19	34	E	296.0	mg/Kg	*				
25-meter Record Firing Range	2A-19	34	W	8,880.0	mg/Kg	*				
25-meter Record Firing Range	2A-19	35	C	12.9	mg/Kg		12.7	1		
25-meter Record Firing Range	2A-19	35	N	12.3	mg/Kg					
25-meter Record Firing Range	2A-19	35	S	16.3	mg/Kg					
25-meter Record Firing Range	2A-19	35	E	13.7	mg/Kg					
25-meter Record Firing Range	2A-19	35	W	8.5	mg/Kg					
25-meter Record Firing Range	2A-19	36	C	8.0	mg/Kg		10.4	1		
25-meter Record Firing Range	2A-19	36	N	10.0	mg/Kg					
25-meter Record Firing Range	2A-19	36	S	12.9	mg/Kg					
25-meter Record Firing Range	2A-19	36	E	12.6	mg/Kg					
25-meter Record Firing Range	2A-19	36	W	8.7	mg/Kg					
25-meter Record Firing Range	2A-19	37	C	12.8	mg/Kg		10.7	1		
25-meter Record Firing Range	2A-19	37	N	12.6	mg/Kg					
25-meter Record Firing Range	2A-19	37	S	7.5	mg/Kg					
25-meter Record Firing Range	2A-19	37	E	10.3	mg/Kg					
25-meter Record Firing Range	2A-19	37	W	10.2	mg/Kg					
25-meter Record Firing Range	2A-19	38	C	8.7	mg/Kg		10.1	1		
25-meter Record Firing Range	2A-19	38	N	7.2	mg/Kg					
25-meter Record Firing Range	2A-19	38	S	7.2	mg/Kg					
25-meter Record Firing Range	2A-19	38	E	19.0	mg/Kg					
25-meter Record Firing Range	2A-19	38	W	8.5	mg/Kg					
25-meter Record Firing Range	2A-19	39	C	12.8	mg/Kg		17.4	1		
25-meter Record Firing Range	2A-19	39	N	10.1	mg/Kg					

* Sample location on the berm and not included in the average.
 Yellow = 51 to 118 mg/kg
 Blue = 119 to 250 mg/kg
 Red = 251mg/Kg and greater
Category 1: Average and Individual Sample Concentrations < 50 mg/Kg.

Category 2: Average Concentration is < 50 mg/Kg and no individual sample concentration is >118 mg/Kg.
Category 3: Average Concentration is > 50 mg/Kg but < 118 mg/Kg and no individual sample concentration is > 250 mg/Kg
Category 4: Average Concentration is > 118 mg/Kg but < 250 mg/Kg
Category 5: Average Concentration is > 250 mg/Kg.



25-meter Record Firing Range (RAU 2A-19) Grid Data Analysis

Range	RAU	Grid	Loc	Result	Unit	Berm	Avg.	Grid Category	MTCA	RCRA
25-meter Record Firing Range	2A-19	39	S	10.9	mg/Kg					
25-meter Record Firing Range	2A-19	39	E	11.6	mg/Kg					
25-meter Record Firing Range	2A-19	39	W	41.5	mg/Kg					
25-meter Record Firing Range	2A-19	40	C	8.5	mg/Kg		9.2	1		
25-meter Record Firing Range	2A-19	40	N	9.9	mg/Kg					
25-meter Record Firing Range	2A-19	40	S	7.4	mg/Kg					
25-meter Record Firing Range	2A-19	40	E	9.1	mg/Kg					
25-meter Record Firing Range	2A-19	40	W	11.1	mg/Kg					
								Totals	526.50	243.00

* Sample location on the berm and not included in the average.

Yellow = 51 to 118 mg/kg

Blue = 119 to 250 mg/kg

Red = 251mg/Kg and greater

Category 1: Average and Individual Sample Concentrations < 50 mg/Kg.

Category 2: Average Concentration is < 50 mg/Kg and no individual sample concentration is >118 mg/Kg.

Category 3: Average Concentration is > 50 mg/Kg but < 118 mg/Kg and no individual sample concentration is > 250 mg/Kg

Category 4: Average Concentration is > 118 mg/Kg but < 250 mg/Kg

Category 5: Average Concentration is > 250 mg/Kg.



Field Ranges No. 1 No. 2 (RAU 2A-20) Grid Data Analysis

Range	RAU	Grid	Loc	Result	Unit	Berm	Avg.	Grid Category	MTCA	RCRA
Field Ranges No. 1 & No. 2	2A-20	1	C	9.6	mg/Kg		9.9	1		
Field Ranges No. 1 & No. 2	2A-20	1	N	8.8	mg/Kg					
Field Ranges No. 1 & No. 2	2A-20	1	S	11.2	mg/Kg					
Field Ranges No. 1 & No. 2	2A-20	1	E	9.9	mg/Kg					
Field Ranges No. 1 & No. 2	2A-20	1	W	10.1	mg/Kg					
Field Ranges No. 1 & No. 2	2A-20	2	C	8.6	mg/Kg		9.5	1		
Field Ranges No. 1 & No. 2	2A-20	2	N	6.9	mg/Kg					
Field Ranges No. 1 & No. 2	2A-20	2	S	9.9	mg/Kg					
Field Ranges No. 1 & No. 2	2A-20	2	E	8.1	mg/Kg					
Field Ranges No. 1 & No. 2	2A-20	2	W	13.8	mg/Kg					
Field Ranges No. 1 & No. 2	2A-20	3	C	68.1	mg/Kg		101.7	4	162	81
Field Ranges No. 1 & No. 2	2A-20	3	N	17.1	mg/Kg					
Field Ranges No. 1 & No. 2	2A-20	3	S	259.0	mg/Kg					
Field Ranges No. 1 & No. 2	2A-20	3	E	154.0	mg/Kg					
Field Ranges No. 1 & No. 2	2A-20	3	W	10.4	mg/Kg					
Field Ranges No. 1 & No. 2	2A-20	4	C	11.5	mg/Kg		13.0	1		
Field Ranges No. 1 & No. 2	2A-20	4	N	11.9	mg/Kg					
Field Ranges No. 1 & No. 2	2A-20	4	S	15.2	mg/Kg					
Field Ranges No. 1 & No. 2	2A-20	4	E	13.6	mg/Kg					
Field Ranges No. 1 & No. 2	2A-20	4	W	13.0	mg/Kg					
Field Ranges No. 1 & No. 2	2A-20	5	C	8.8	mg/Kg		10.8	1		
Field Ranges No. 1 & No. 2	2A-20	5	N	9.2	mg/Kg					
Field Ranges No. 1 & No. 2	2A-20	5	S	13.6	mg/Kg					
Field Ranges No. 1 & No. 2	2A-20	5	E	11.7	mg/Kg					
Field Ranges No. 1 & No. 2	2A-20	5	W	10.6	mg/Kg					
Field Ranges No. 1 & No. 2	2A-20	6	C	17.7	mg/Kg		22.2	2		
Field Ranges No. 1 & No. 2	2A-20	6	N	58.5	mg/Kg					
Field Ranges No. 1 & No. 2	2A-20	6	S	9.2	mg/Kg					
Field Ranges No. 1 & No. 2	2A-20	6	E	13.9	mg/Kg					
Field Ranges No. 1 & No. 2	2A-20	6	W	11.9	mg/Kg					
Field Ranges No. 1 & No. 2	2A-20	7	C	9.2	mg/Kg		8.4	1		
Field Ranges No. 1 & No. 2	2A-20	7	N	8.1	mg/Kg					
Field Ranges No. 1 & No. 2	2A-20	7	S	8.2	mg/Kg					
Field Ranges No. 1 & No. 2	2A-20	7	E	5.8	mg/Kg					
Field Ranges No. 1 & No. 2	2A-20	7	W	10.7	mg/Kg					
Field Ranges No. 1 & No. 2	2A-20	8	C	21.0	mg/Kg		17.8	1		
Field Ranges No. 1 & No. 2	2A-20	8	N	16.0	mg/Kg					
Field Ranges No. 1 & No. 2	2A-20	8	S	25.9	mg/Kg					
Field Ranges No. 1 & No. 2	2A-20	8	E	12.7	mg/Kg					

* Sample location on the berm and not included in the average.
 Yellow = 51 to 118 mg/kg
 Blue = 119 to 250 mg/kg
 Red = 251mg/Kg and greater
Category 1: Average and Individual Sample Concentrations < 50 mg/Kg.

Category 2: Average Concentration is < 50 mg/Kg and no individual sample concentration is >118 mg/Kg.
Category 3: Average Concentration is > 50 mg/Kg but < 118 mg/Kg and no individual sample concentration is > 250 mg/Kg
Category 4: Average Concentration is > 118 mg/Kg but < 250 mg/Kg
Category 5: Average Concentration is > 250 mg/Kg.



Field Ranges No. 1 No. 2 (RAU 2A-20) Grid Data Analysis

Range	RAU	Grid	Loc	Result	Unit	Berm	Avg.	Grid Category	MTCA	RCRA
Field Ranges No. 1 & No. 2	2A-20	8	W	13.5	mg/Kg					
Field Ranges No. 1 & No. 2	2A-20	9	C	13.1	mg/Kg		39.5	3	20.25	
Field Ranges No. 1 & No. 2	2A-20	9	N	11.8	mg/Kg					
Field Ranges No. 1 & No. 2	2A-20	9	S	17.2	mg/Kg					
Field Ranges No. 1 & No. 2	2A-20	9	E	136.0	mg/Kg					
Field Ranges No. 1 & No. 2	2A-20	9	W	19.6	mg/Kg					
Field Ranges No. 1 & No. 2	2A-20	10	C	13.9	mg/Kg		17.4	1		
Field Ranges No. 1 & No. 2	2A-20	10	N	13.7	mg/Kg					
Field Ranges No. 1 & No. 2	2A-20	10	S	20.3	mg/Kg					
Field Ranges No. 1 & No. 2	2A-20	10	E	18.7	mg/Kg					
Field Ranges No. 1 & No. 2	2A-20	10	W	20.3	mg/Kg					
Field Ranges No. 1 & No. 2	2A-20	11	C	10.6	mg/Kg		14.3	1		
Field Ranges No. 1 & No. 2	2A-20	11	N	11.7	mg/Kg					
Field Ranges No. 1 & No. 2	2A-20	11	S	20.4	mg/Kg					
Field Ranges No. 1 & No. 2	2A-20	11	E	14.8	mg/Kg					
Field Ranges No. 1 & No. 2	2A-20	11	W	13.8	mg/Kg					
Field Ranges No. 1 & No. 2	2A-20	12	C	7,150.0	mg/Kg		1,691.4	5	162	243
Field Ranges No. 1 & No. 2	2A-20	12	N	125.0	mg/Kg					
Field Ranges No. 1 & No. 2	2A-20	12	S	267.0	mg/Kg					
Field Ranges No. 1 & No. 2	2A-20	12	E	728.0	mg/Kg					
Field Ranges No. 1 & No. 2	2A-20	12	W	187.0	mg/Kg					
Field Ranges No. 1 & No. 2	2A-20	13	C	15.8	mg/Kg		23.7	1		
Field Ranges No. 1 & No. 2	2A-20	13	N	49.0	mg/Kg					
Field Ranges No. 1 & No. 2	2A-20	13	S	13.1	mg/Kg					
Field Ranges No. 1 & No. 2	2A-20	13	E	24.6	mg/Kg					
Field Ranges No. 1 & No. 2	2A-20	13	W	16.0	mg/Kg					
Field Ranges No. 1 & No. 2	2A-20	14	C	10.0	mg/Kg		10.6	1		
Field Ranges No. 1 & No. 2	2A-20	14	N	11.4	mg/Kg					
Field Ranges No. 1 & No. 2	2A-20	14	S	10.7	mg/Kg					
Field Ranges No. 1 & No. 2	2A-20	14	E	10.5	mg/Kg					
Field Ranges No. 1 & No. 2	2A-20	14	W	10.4	mg/Kg					
								Totals	344.25	324.00

* Sample location on the berm and not included in the average.
 Yellow = 51 to 118 mg/kg
 Blue = 119 to 250 mg/kg
 Red = 251mg/Kg and greater
Category 1: Average and Individual Sample Concentrations < 50 mg/Kg.

Category 2: Average Concentration is < 50 mg/Kg and no individual sample concentration is >118 mg/Kg.
Category 3: Average Concentration is > 50 mg/Kg but < 118 mg/Kg and no individual sample concentration is > 250 mg/Kg
Category 4: Average Concentration is > 118 mg/Kg but < 250 mg/Kg
Category 5: Average Concentration is > 250 mg/Kg.



Rifle Ranges No. 1 No. 2 (RAU 2A-21) Grid Data Analysis

Range	RAU	Grid	Location	Result	Unit	Berm	Avg.	Grid Category	MTCA	RCRA
Rifle Ranges No. 1 & No. 2	2A-21	1	C	< 10.5	mg/Kg		11.3	1		
Rifle Ranges No. 1 & No. 2	2A-21	1	N	< 10.1	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	1	S	11.4	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	1	E	10.7	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	1	W	11.8	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	2	C	25.9	mg/Kg		20.3	1		
Rifle Ranges No. 1 & No. 2	2A-21	2	N	19.2	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	2	S	18.4	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	2	E	16.2	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	2	W	21.9	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	3	C	17.5	mg/Kg		14.5	1		
Rifle Ranges No. 1 & No. 2	2A-21	3	N	17.3	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	3	S	15.5	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	3	E	15.6	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	3	W	6.8	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	4	C	10.7	mg/Kg		12.4	1		
Rifle Ranges No. 1 & No. 2	2A-21	4	N	15.6	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	4	S	11.2	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	4	E	13.2	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	4	W	11.2	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	5	C	32.9	mg/Kg		33.4	2		
Rifle Ranges No. 1 & No. 2	2A-21	5	N	22.5	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	5	S	55.8	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	5	E	34.4	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	5	W	21.3	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	6	C	27.9	mg/Kg		27.6	1		
Rifle Ranges No. 1 & No. 2	2A-21	6	N	31.8	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	6	S	17.1	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	6	E	21.6	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	6	W	39.4	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	7	C	17.0	mg/Kg		23.7	1		
Rifle Ranges No. 1 & No. 2	2A-21	7	N	24.4	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	7	S	16.3	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	7	E	31.4	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	7	W	29.6	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	8	C	11.3	mg/Kg		24.9	2		
Rifle Ranges No. 1 & No. 2	2A-21	8	N	25.5	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	8	S	10.5	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	8	E	52.8	mg/Kg					

* Sample location on the berm and not included in the average.

Yellow = 51 to 118 mg/kg

Blue = 119 to 250 mg/kg

Red = 251mg/Kg and greater

Category 1: Average and Individual Sample Concentrations < 50 mg/Kg.

Category 2: Average Concentration is < 50 mg/Kg and no individual sample concentration is >118 mg/Kg.

Category 3: Average Concentration is > 50 mg/Kg but < 118 mg/Kg and no individual sample concentration is > 250 mg/Kg

Category 4: Average Concentration is > 118 mg/Kg but < 250 mg/Kg

Category 5: Average Concentration is > 250 mg/Kg.



Rifle Ranges No. 1 No. 2 (RAU 2A-21) Grid Data Analysis

Range	RAU	Grid	Location	Result	Unit	Berm	Avg.	Grid Category	MTCA	RCRA
Rifle Ranges No. 1 & No. 2	2A-21	8	W	24.2	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	9	C	37.3	mg/Kg		32.5	2		
Rifle Ranges No. 1 & No. 2	2A-21	9	N	35.4	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	9	S	19.5	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	9	E	51.6	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	9	W	18.7	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	10	C	16.1	mg/Kg		29.7	2		
Rifle Ranges No. 1 & No. 2	2A-21	10	N	15.5	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	10	S	80.7	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	10	E	13.6	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	10	W	22.7	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	11	C	15.6	mg/Kg		23.5	1		
Rifle Ranges No. 1 & No. 2	2A-21	11	N	10.5	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	11	S	49.3	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	11	E	26.0	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	11	W	16.2	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	12	C	16.4	mg/Kg		17.1	1		
Rifle Ranges No. 1 & No. 2	2A-21	12	N	32.8	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	12	S	15.3	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	12	E	6.9	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	12	W	14.2	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	13	C	8.7	mg/Kg		9.3	1		
Rifle Ranges No. 1 & No. 2	2A-21	13	N	5.3	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	13	S	10.3	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	13	E	7.9	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	13	W	14.5	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	14	C	9.0	mg/Kg		14.4	1		
Rifle Ranges No. 1 & No. 2	2A-21	14	N	19.3	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	14	S	14.0	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	14	E	18.9	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	14	W	11.0	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	15	C	67.0	mg/Kg		53.4	3	40.5	
Rifle Ranges No. 1 & No. 2	2A-21	15	N	108.0	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	15	S	25.4	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	15	E	24.6	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	15	W	41.8	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	16	C	< 3.9	mg/Kg		14.4	1		
Rifle Ranges No. 1 & No. 2	2A-21	16	N	25.0	mg/Kg					

* Sample location on the berm and not included in the average.
 Yellow = 51 to 118 mg/kg
 Blue = 119 to 250 mg/kg
 Red = 251mg/Kg and greater
Category 1: Average and Individual Sample Concentrations < 50 mg/Kg.

Category 2: Average Concentration is < 50 mg/Kg and no individual sample concentration is >118 mg/Kg.
Category 3: Average Concentration is > 50 mg/Kg but < 118 mg/Kg and no individual sample concentration is > 250 mg/Kg
Category 4: Average Concentration is > 118 mg/Kg but < 250 mg/Kg
Category 5: Average Concentration is > 250 mg/Kg.



Rifle Ranges No. 1 No. 2 (RAU 2A-21) Grid Data Analysis

Range	RAU	Grid	Location	Result	Unit	Berm	Avg.	Grid Category	MTCA	RCRA
Rifle Ranges No. 1 & No. 2	2A-21	16	S	12.5	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	16	E	< 3.7	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	16	W	5.8	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	17	C	17.0	mg/Kg		29.3	2		
Rifle Ranges No. 1 & No. 2	2A-21	17	N	21.3	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	17	S	19.3	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	17	E	18.9	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	17	W	69.9	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	18	C	8.1	mg/Kg		11.6	1		
Rifle Ranges No. 1 & No. 2	2A-21	18	N	11.1	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	18	S	15.1	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	18	E	12.0	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	18	W	< 5.9	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	19	C	17.2	mg/Kg		23.4	2		
Rifle Ranges No. 1 & No. 2	2A-21	19	N	52.1	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	19	S	19.2	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	19	E	14.4	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	19	W	14.2	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	20	C	12.5	mg/Kg		14.9	1		
Rifle Ranges No. 1 & No. 2	2A-21	20	N	14.2	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	20	S	6.5	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	20	E	6.4	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	20	W	34.8	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	21	C	21.1	mg/Kg		69.7	4		81
Rifle Ranges No. 1 & No. 2	2A-21	21	N	5.8	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	21	S	17.4	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	21	E	290.0	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	21	W	14.0	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	22	C	< 5.0	mg/Kg		8.8	1		
Rifle Ranges No. 1 & No. 2	2A-21	22	N	17.8	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	22	S	4.9	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	22	E	6.7	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	22	W	5.6	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	23	C	11.7	mg/Kg		36.8	3	20.25	
Rifle Ranges No. 1 & No. 2	2A-21	23	N	11.2	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	23	S	19.1	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	23	E	130.0	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	23	W	12.2	mg/Kg					

* Sample location on the berm and not included in the average.
 Yellow = 51 to 118 mg/kg
 Blue = 119 to 250 mg/kg
 Red = 251mg/Kg and greater
Category 1: Average and Individual Sample Concentrations < 50 mg/Kg.

Category 2: Average Concentration is < 50 mg/Kg and no individual sample concentration is >118 mg/Kg.
Category 3: Average Concentration is > 50 mg/Kg but < 118 mg/Kg and no individual sample concentration is > 250 mg/Kg
Category 4: Average Concentration is > 118 mg/Kg but < 250 mg/Kg
Category 5: Average Concentration is > 250 mg/Kg.



Rifle Ranges No. 1 No. 2 (RAU 2A-21) Grid Data Analysis

Range	RAU	Grid	Location	Result	Unit	Berm	Avg.	Grid Category	MTCA	RCRA
Rifle Ranges No. 1 & No. 2	2A-21	24	C	92.3	mg/Kg		75.6	3	60.75	
Rifle Ranges No. 1 & No. 2	2A-21	24	N	9.6	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	24	S	36.0	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	24	E	108.0	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	24	W	132.0	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	25	C	51.3	mg/Kg		119.1	4	324	
Rifle Ranges No. 1 & No. 2	2A-21	25	N	145.0	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	25	S	212.0	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	25	E	172.0	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	25	W	15.2	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	26	C	22.4	mg/Kg		14.2	1		
Rifle Ranges No. 1 & No. 2	2A-21	26	N	3.6	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	26	S	21.2	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	26	E	9.5	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	26	W	< 4.5	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	27	C	7.4	mg/Kg		15.6	1		
Rifle Ranges No. 1 & No. 2	2A-21	27	N	11.3	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	27	S	29.2	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	27	E	21.6	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	27	W	8.3	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	28	C	9.3	mg/Kg	*	49.6	2		
Rifle Ranges No. 1 & No. 2	2A-21	28	N	87.6	mg/Kg	*				
Rifle Ranges No. 1 & No. 2	2A-21	28	S	< 4.7	mg/Kg	*				
Rifle Ranges No. 1 & No. 2	2A-21	28	E	95.8	mg/Kg	*				
Rifle Ranges No. 1 & No. 2	2A-21	28	W	5.6	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	29	C	65.0	mg/Kg		64.6	3	60.75	
Rifle Ranges No. 1 & No. 2	2A-21	29	N	137.0	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	29	S	23.0	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	29	E	23.0	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	29	W	74.8	mg/Kg					
Rifle Ranges No. 1 & No. 2	2A-21	30	C	273.0	mg/Kg	*	1,978.6	5		405
Rifle Ranges No. 1 & No. 2	2A-21	30	N	1,690.0	mg/Kg	*				
Rifle Ranges No. 1 & No. 2	2A-21	30	S	1,750.0	mg/Kg	*				
Rifle Ranges No. 1 & No. 2	2A-21	30	E	1,850.0	mg/Kg	*				
Rifle Ranges No. 1 & No. 2	2A-21	30	W	4,330.0	mg/Kg	*				
Rifle Ranges No. 1 & No. 2	2A-21	31	C	199.0	mg/Kg	*	468.1	5	324	81
Rifle Ranges No. 1 & No. 2	2A-21	31	N	94.5	mg/Kg	*				
Rifle Ranges No. 1 & No. 2	2A-21	31	S	96.8	mg/Kg	*				
Rifle Ranges No. 1 & No. 2	2A-21	31	E	180.0	mg/Kg	*				

* Sample location on the berm and not included in the average.

Yellow = 51 to 118 mg/kg

Blue = 119 to 250 mg/kg

Red = 251 mg/Kg and greater

Category 1: Average and Individual Sample Concentrations < 50 mg/Kg.

Category 2: Average Concentration is < 50 mg/Kg and no individual sample concentration is >118 mg/Kg.

Category 3: Average Concentration is > 50 mg/Kg but < 118 mg/Kg and no individual sample concentration is > 250 mg/Kg

Category 4: Average Concentration is > 118 mg/Kg but < 250 mg/Kg

Category 5: Average Concentration is > 250 mg/Kg.



Rifle Ranges No. 1 No. 2 (RAU 2A-21) Grid Data Analysis

Range	RAU	Grid	Location	Result	Unit	Berm	Avg.	Grid Category	MTCA	RCRA
Rifle Ranges No. 1 & No. 2	2A-21	31	W	1,770.0	mg/Kg	*				
Rifle Ranges No. 1 & No. 2	2A-21	32	C	82.4	mg/Kg	*	289.7	5	243	162
Rifle Ranges No. 1 & No. 2	2A-21	32	N	59.1	mg/Kg	*				
Rifle Ranges No. 1 & No. 2	2A-21	32	S	417.0	mg/Kg	*				
Rifle Ranges No. 1 & No. 2	2A-21	32	E	670.0	mg/Kg	*				
Rifle Ranges No. 1 & No. 2	2A-21	32	W	220.0	mg/Kg	*				
								Totals	1,073.25	729.00

* Sample location on the berm and not included in the average.
 Yellow = 51 to 118 mg/kg
 Blue = 119 to 250 mg/kg
 Red = 251mg/Kg and greater
Category 1: Average and Individual Sample Concentrations < 50 mg/Kg.

Category 2: Average Concentration is < 50 mg/Kg and no individual sample concentration is >118 mg/Kg.
Category 3: Average Concentration is > 50 mg/Kg but < 118 mg/Kg and no individual sample concentration is > 250 mg/Kg
Category 4: Average Concentration is > 118 mg/Kg but < 250 mg/Kg
Category 5: Average Concentration is > 250 mg/Kg.



Field Fire Ranges No. 1 No. 2 (RAU 2A-22) Grid Data Analysis

Range	RAU	Grid	Loc	Result	Unit	Berm	Avg.	Grid Category	MTCA	RCRA
Field Fire Ranges No. 1 & No. 2	2A-22	1	C	6.4	mg/Kg		6.7	1		
Field Fire Ranges No. 1 & No. 2	2A-22	1	N	0.0	mg/Kg					
Field Fire Ranges No. 1 & No. 2	2A-22	1	S	7.4	mg/Kg					
Field Fire Ranges No. 1 & No. 2	2A-22	1	E	11.2	mg/Kg					
Field Fire Ranges No. 1 & No. 2	2A-22	1	W	8.6	mg/Kg					
Field Fire Ranges No. 1 & No. 2	2A-22	2	C	23.6	mg/Kg		17.3	1		
Field Fire Ranges No. 1 & No. 2	2A-22	2	N	14.2	mg/Kg					
Field Fire Ranges No. 1 & No. 2	2A-22	2	S	17.5	mg/Kg					
Field Fire Ranges No. 1 & No. 2	2A-22	2	E	23.6	mg/Kg					
Field Fire Ranges No. 1 & No. 2	2A-22	2	W	7.4	mg/Kg					
Field Fire Ranges No. 1 & No. 2	2A-22	3	C	48.8	mg/Kg		21.0	1		
Field Fire Ranges No. 1 & No. 2	2A-22	3	N	16.8	mg/Kg					
Field Fire Ranges No. 1 & No. 2	2A-22	3	S	14.6	mg/Kg					
Field Fire Ranges No. 1 & No. 2	2A-22	3	E	13.5	mg/Kg					
Field Fire Ranges No. 1 & No. 2	2A-22	3	W	11.2	mg/Kg					
Field Fire Ranges No. 1 & No. 2	2A-22	4	C	11.0	mg/Kg		10.4	1		
Field Fire Ranges No. 1 & No. 2	2A-22	4	N	9.4	mg/Kg					
Field Fire Ranges No. 1 & No. 2	2A-22	4	S	15.4	mg/Kg					
Field Fire Ranges No. 1 & No. 2	2A-22	4	E	16.2	mg/Kg					
Field Fire Ranges No. 1 & No. 2	2A-22	4	W	0.0	mg/Kg					
Field Fire Ranges No. 1 & No. 2	2A-22	5	C	97.0	mg/Kg		41.8	2		
Field Fire Ranges No. 1 & No. 2	2A-22	5	N	7.4	mg/Kg					
Field Fire Ranges No. 1 & No. 2	2A-22	5	S	23.7	mg/Kg					
Field Fire Ranges No. 1 & No. 2	2A-22	5	E	69.9	mg/Kg					
Field Fire Ranges No. 1 & No. 2	2A-22	5	W	11.2	mg/Kg					
Field Fire Ranges No. 1 & No. 2	2A-22	6	C	62.4	mg/Kg		24.1	1		
Field Fire Ranges No. 1 & No. 2	2A-22	6	N	15.2	mg/Kg					
Field Fire Ranges No. 1 & No. 2	2A-22	6	S	7.4	mg/Kg					
Field Fire Ranges No. 1 & No. 2	2A-22	6	E	6.1	mg/Kg					
Field Fire Ranges No. 1 & No. 2	2A-22	6	W	29.4	mg/Kg					
Field Fire Ranges No. 1 & No. 2	2A-22	7	C	18.7	mg/Kg		17.3	1		
Field Fire Ranges No. 1 & No. 2	2A-22	7	N	15.2	mg/Kg					
Field Fire Ranges No. 1 & No. 2	2A-22	7	S	20.8	mg/Kg					
Field Fire Ranges No. 1 & No. 2	2A-22	7	E	19.6	mg/Kg					
Field Fire Ranges No. 1 & No. 2	2A-22	7	W	12.3	mg/Kg					
Field Fire Ranges No. 1 & No. 2	2A-22	8	C	10.7	mg/Kg		9.7	1		
Field Fire Ranges No. 1 & No. 2	2A-22	8	N	11.1	mg/Kg					
Field Fire Ranges No. 1 & No. 2	2A-22	8	S	11.5	mg/Kg					
Field Fire Ranges No. 1 & No. 2	2A-22	8	E	8.9	mg/Kg					

* Sample location on the berm and not included in the average.
 Yellow = 51 to 118 mg/kg
 Blue = 119 to 250 mg/kg
 Red = 251mg/Kg and greater
Category 1: Average and Individual Sample Concentrations < 50 mg/Kg.

Category 2: Average Concentration is < 50 mg/Kg and no individual sample concentration is >118 mg/Kg.
Category 3: Average Concentration is > 50 mg/Kg but < 118 mg/Kg and no individual sample concentration is > 250 mg/Kg
Category 4: Average Concentration is > 118 mg/Kg but < 250 mg/Kg
Category 5: Average Concentration is > 250 mg/Kg.



Field Fire Ranges No. 1 No. 2 (RAU 2A-22) Grid Data Analysis

Range	RAU	Grid	Loc	Result	Unit	Berm	Avg.	Grid Category	MTCA	RCRA
Field Fire Ranges No. 1 & No. 2	2A-22	8	W	6.1	mg/Kg					
Field Fire Ranges No. 1 & No. 2	2A-22	9	C	26.2	mg/Kg		14.0	1		
Field Fire Ranges No. 1 & No. 2	2A-22	9	N	19.0	mg/Kg					
Field Fire Ranges No. 1 & No. 2	2A-22	9	S	5.1	mg/Kg					
Field Fire Ranges No. 1 & No. 2	2A-22	9	E	9.4	mg/Kg					
Field Fire Ranges No. 1 & No. 2	2A-22	9	W	10.2	mg/Kg					
Field Fire Ranges No. 1 & No. 2	2A-22	10	C	0.0	mg/Kg		6.6	1		
Field Fire Ranges No. 1 & No. 2	2A-22	10	N	10.7	mg/Kg					
Field Fire Ranges No. 1 & No. 2	2A-22	10	S	6.0	mg/Kg					
Field Fire Ranges No. 1 & No. 2	2A-22	10	E	7.7	mg/Kg					
Field Fire Ranges No. 1 & No. 2	2A-22	10	W	8.5	mg/Kg					
Field Fire Ranges No. 1 & No. 2	2A-22	11	C	13.4	mg/Kg		19.8	2		
Field Fire Ranges No. 1 & No. 2	2A-22	11	N	10.1	mg/Kg					
Field Fire Ranges No. 1 & No. 2	2A-22	11	S	61.0	mg/Kg					
Field Fire Ranges No. 1 & No. 2	2A-22	11	E	6.9	mg/Kg					
Field Fire Ranges No. 1 & No. 2	2A-22	11	W	7.5	mg/Kg					
Field Fire Ranges No. 1 & No. 2	2A-22	12	C	6.8	mg/Kg		12.8	1		
Field Fire Ranges No. 1 & No. 2	2A-22	12	N	11.7	mg/Kg					
Field Fire Ranges No. 1 & No. 2	2A-22	12	S	19.1	mg/Kg					
Field Fire Ranges No. 1 & No. 2	2A-22	12	E	7.6	mg/Kg					
Field Fire Ranges No. 1 & No. 2	2A-22	12	W	18.7	mg/Kg					
Field Fire Ranges No. 1 & No. 2	2A-22	13	C	17.1	mg/Kg		19.5	1		
Field Fire Ranges No. 1 & No. 2	2A-22	13	N	8.2	mg/Kg					
Field Fire Ranges No. 1 & No. 2	2A-22	13	S	28.2	mg/Kg					
Field Fire Ranges No. 1 & No. 2	2A-22	13	E	5.4	mg/Kg					
Field Fire Ranges No. 1 & No. 2	2A-22	13	W	38.8	mg/Kg					
Field Fire Ranges No. 1 & No. 2	2A-22	14	C	8.0	mg/Kg		467.2	5		81
Field Fire Ranges No. 1 & No. 2	2A-22	14	N	10.8	mg/Kg					
Field Fire Ranges No. 1 & No. 2	2A-22	14	S	7.9	mg/Kg					
Field Fire Ranges No. 1 & No. 2	2A-22	14	E	2,300.0	mg/Kg					
Field Fire Ranges No. 1 & No. 2	2A-22	14	W	9.3	mg/Kg					
Field Fire Ranges No. 1 & No. 2	2A-22	15	C	8.4	mg/Kg		18.0	1		
Field Fire Ranges No. 1 & No. 2	2A-22	15	N	9.1	mg/Kg					
Field Fire Ranges No. 1 & No. 2	2A-22	15	S	20.6	mg/Kg					
Field Fire Ranges No. 1 & No. 2	2A-22	15	E	44.4	mg/Kg					
Field Fire Ranges No. 1 & No. 2	2A-22	15	W	7.4	mg/Kg					
Field Fire Ranges No. 1 & No. 2	2A-22	16	C	59.1	mg/Kg		40.8	2		
Field Fire Ranges No. 1 & No. 2	2A-22	16	N	23.1	mg/Kg					

* Sample location on the berm and not included in the average.

Yellow = 51 to 118 mg/kg

Blue = 119 to 250 mg/kg

Red = 251mg/Kg and greater

Category 1: Average and Individual Sample Concentrations < 50 mg/Kg.

Category 2: Average Concentration is < 50 mg/Kg and no individual sample concentration is >118 mg/Kg.

Category 3: Average Concentration is > 50 mg/Kg but < 118 mg/Kg and no individual sample concentration is > 250 mg/Kg

Category 4: Average Concentration is > 118 mg/Kg but < 250 mg/Kg

Category 5: Average Concentration is > 250 mg/Kg.



Field Fire Ranges No. 1 No. 2 (RAU 2A-22) Grid Data Analysis

Range	RAU	Grid	Loc	Result	Unit	Berm	Avg.	Grid Category	MTCA	RCRA
Field Fire Ranges No. 1 & No. 2	2A-22	16	S	95.4	mg/Kg					
Field Fire Ranges No. 1 & No. 2	2A-22	16	E	17.7	mg/Kg					
Field Fire Ranges No. 1 & No. 2	2A-22	16	W	8.5	mg/Kg					
Field Fire Ranges No. 1 & No. 2	2A-22	17	C	32.3	mg/Kg		38.4	2		
Field Fire Ranges No. 1 & No. 2	2A-22	17	N	0.0	mg/Kg					
Field Fire Ranges No. 1 & No. 2	2A-22	17	S	37.0	mg/Kg					
Field Fire Ranges No. 1 & No. 2	2A-22	17	E	53.3	mg/Kg					
Field Fire Ranges No. 1 & No. 2	2A-22	17	W	69.3	mg/Kg					
Field Fire Ranges No. 1 & No. 2	2A-22	18	C	35.6	mg/Kg		41.5	2		
Field Fire Ranges No. 1 & No. 2	2A-22	18	N	23.6	mg/Kg					
Field Fire Ranges No. 1 & No. 2	2A-22	18	S	47.4	mg/Kg					
Field Fire Ranges No. 1 & No. 2	2A-22	18	E	22.5	mg/Kg					
Field Fire Ranges No. 1 & No. 2	2A-22	18	W	78.5	mg/Kg					
Field Fire Ranges No. 1 & No. 2	2A-22	19	C	114.0	mg/Kg		64.4	3	40.5	
Field Fire Ranges No. 1 & No. 2	2A-22	19	N	29.3	mg/Kg					
Field Fire Ranges No. 1 & No. 2	2A-22	19	S	15.0	mg/Kg					
Field Fire Ranges No. 1 & No. 2	2A-22	19	E	149.0	mg/Kg					
Field Fire Ranges No. 1 & No. 2	2A-22	19	W	14.9	mg/Kg					
Field Fire Ranges No. 1 & No. 2	2A-22	20	C	25.9	mg/Kg		18.2	1		
Field Fire Ranges No. 1 & No. 2	2A-22	20	N	17.7	mg/Kg					
Field Fire Ranges No. 1 & No. 2	2A-22	20	S	9.4	mg/Kg					
Field Fire Ranges No. 1 & No. 2	2A-22	20	E	8.1	mg/Kg					
Field Fire Ranges No. 1 & No. 2	2A-22	20	W	29.8	mg/Kg					
Field Fire Ranges No. 1 & No. 2	2A-22	21	C	52.3	mg/Kg		25.2	2		
Field Fire Ranges No. 1 & No. 2	2A-22	21	N	23.8	mg/Kg					
Field Fire Ranges No. 1 & No. 2	2A-22	21	S	13.9	mg/Kg					
Field Fire Ranges No. 1 & No. 2	2A-22	21	E	11.2	mg/Kg					
Field Fire Ranges No. 1 & No. 2	2A-22	21	W	24.7	mg/Kg					
Field Fire Ranges No. 1 & No. 2	2A-22	22	C	5.8	mg/Kg		24.6	2		
Field Fire Ranges No. 1 & No. 2	2A-22	22	N	47.3	mg/Kg					
Field Fire Ranges No. 1 & No. 2	2A-22	22	S	8.2	mg/Kg					
Field Fire Ranges No. 1 & No. 2	2A-22	22	E	9.0	mg/Kg					
Field Fire Ranges No. 1 & No. 2	2A-22	22	W	52.6	mg/Kg					
								Totals	40.50	81.00

* Sample location on the berm and not included in the average.
 Yellow = 51 to 118 mg/kg
 Blue = 119 to 250 mg/kg
 Red = 251mg/Kg and greater
Category 1: Average and Individual Sample Concentrations < 50 mg/Kg.

Category 2: Average Concentration is < 50 mg/Kg and no individual sample concentration is >118 mg/Kg.
Category 3: Average Concentration is > 50 mg/Kg but < 118 mg/Kg and no individual sample concentration is > 250 mg/Kg
Category 4: Average Concentration is > 118 mg/Kg but < 250 mg/Kg
Category 5: Average Concentration is > 250 mg/Kg.