

---

# **ACTION MEMORANDUM**

**Kalaloch Firing Range  
Olympic National Park  
Kalaloch, Washington**

**May 8, 2012**

**Prepared for:**

**Olympic National Park  
600 East Park Avenue  
Port Angeles, WA 98362-9757**

**Prepared by:**

**Resource Environmental Management Consultants, Inc.  
8138 South State Street, Ste. 2A  
Midvale, Utah 84047  
801-255-2626**

---

## **ABBREVIATIONS & ACRONYMS FORMER KALALOCH FIRING RANGE**

AM	Action Memorandum
ARAR	Applicable or Relevant and Appropriate Requirement
Baker	Michael Baker, Inc.
BTAG	EPA Region 3 Biological Technical Assistance Group
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
COPC	Constituent Of Potential Concern
EE/CA	Engineering Evaluation/Cost Analysis
ERE	Streamlined Ecological Risk Evaluation
EPA	Environmental Protection Agency
ESA	Endangered Species Act
HHRE	Streamlined Human Health Risk Evaluation
MTCA	State of Washington Model Toxics Control Act
NAAQS	National Ambient Air Quality Standards
NCP	National Oil Pollution and Hazardous Substances Contingency Plan
NPL	National Priorities List
NPS	National Park Service
ORNL	Oak Ridge National Laboratory
PRG	Preliminary Remedial Goal
RBC	Risk-Based Concentrations
RCRA	Resource Conservation and Recovery Act
RMC	Resource Management Consultants, Inc.
TCLP	Toxicity Characteristic Leaching Procedure
USC	United States Code
U.S. EPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
WAC	Washington Administrative Code
WaDOE	Washington Department of Ecology

## Contents

<b>1.0</b>	<b>PURPOSE</b> .....	<b>1</b>
<b>2.0</b>	<b>SITE CONDITIONS AND BACKGROUND</b> .....	<b>1</b>
2.1	SITE DESCRIPTION.....	2
2.1.1	<i>Removal Site Evaluation</i> .....	2
2.1.2	<i>Physical Location</i> .....	2
2.1.3	<i>Site Characteristics</i> .....	2
2.1.4	<i>Release or Threatened Release into the Environment of a Hazardous Substance, or Pollutant or Contaminant</i> .....	3
	<i>Surface and Shallow Groundwater</i> .....	4
2.1.5	<i>National Priorities List (NPL) Status</i> .....	4
2.1.6	<i>Maps, Pictures and Other Graphic Representations</i> .....	4
2.2	OTHER ACTIONS TO DATE.....	4
2.2.1	<i>Previous Actions</i> .....	4
2.2.2	<i>Current Actions</i> .....	5
2.3	STATE AND LOCAL AUTHORITIES ROLE .....	5
2.3.1	<i>State and Local Actions to Date</i> .....	5
2.3.2	<i>Potential for Continued State/Local Response</i> .....	5
<b>3.0</b>	<b>THREATS TO PUBLIC HEALTH OR WELFARE OR THE ENVIRONMENT AND STATUTORY AND REGULATORY AUTHORITIES</b> .....	<b>5</b>
<b>4.0</b>	<b>ENDANGERMENT DETERMINATION</b> .....	<b>7</b>
<b>5.0</b>	<b>PROPOSED ACTIONS AND ESTIMATED COSTS</b> .....	<b>7</b>
5.1	PROPOSED ACTIONS .....	7
5.1.1	<i>Description of Proposed Action</i> .....	7
5.1.2	<i>Contribution to Remedial Performance</i> .....	9
5.1.3	<i>Engineering Evaluation/Cost Analysis</i> .....	9
5.1.4	<i>ARARS (Applicable or Relevant and Appropriate Requirements)</i> .....	9
5.1.5	<i>Project Schedule</i> .....	14
5.2	ESTIMATED COSTS .....	14
<b>6.0</b>	<b>EXPECTED CHANGE IN SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN</b> ...	<b>14</b>
<b>7.0</b>	<b>OUTSTANDING POLICY ISSUES</b> .....	<b>15</b>
<b>8.0</b>	<b>RECOMMENDATION</b> .....	<b>15</b>

---

## **TABLES**

Table 5-1	Potential Chemical Specific ARARs
Table 5-2	Estimated Costs for Excavation and Disposal

## **APPENDICES**

Appendix A	Figures
Appendix B	References

## 1.0 PURPOSE

The purpose of the Action Memorandum (AM) is to request approval of and document the proposed non-time critical removal action described herein for the Former Firing Range (Site) located in the Kalaloch Area of Olympic National Park in Jefferson County, Washington. Figures 1-1 and 1-2 in Appendix A depict the location and layout of the Site, respectively.

This AM was prepared according to the guidelines proposed in *Superfund Removal Guidance for Preparing Action Memoranda* (U.S. Environmental Protection Agency (U.S. EPA, 2009). This AM is supported by the *Engineering Evaluation/Cost Analysis* (EE/CA, RMC, 2012).

The AM is organized as follows:

**Section 1 - Purpose.** Includes the purpose and organization of this memorandum, and the type of action being recommended.

**Section 2 - Site Conditions and Background.** Describes the background of the Site and provides historical and characterization information associated with the contamination.

**Section 3 - Threats to Public Health, Welfare or the Environment, and Statutory and Regulatory Authorities.** Includes a description of potential threats to the public and environment, and possible routes of exposure and contaminant migration.

**Section 4 - Endangerment Determination.** Provides a determination of the threat classification from hazardous substance releases.

**Section 5 - Proposed Actions and Estimated Costs.** Proposes removal actions, defines applicable or relevant and appropriate requirements (ARARs), and presents estimated costs.

**Section 6 – Expected Change in the Situation Should Action Be Delayed or Not Taken.** Describes the expected change in the actual or potential threats to sensitive receptors should the proposed action be delayed or not taken.

**Section 7 – Outstanding Policy Issues.** States that there are no outstanding policy issues.

**Section 8 –Recommendation.** Describes the recommended action for the Site.

## 2.0 SITE CONDITIONS AND BACKGROUND

The following section provides an overview of the Site's history and current characteristics, describes the Site and its historical uses, discusses the nature and extent of surface soil contamination and describes the information obtained in the Engineering EE/CA (RMC, 2012).

## **2.1 Site Description**

The Site is a former firing range used by the NPS Law Enforcement Rangers from 1975 until 2001. Various types of small arms were believed to have been used at the range. The range consisted of eleven metal target stands, roughly seven to ten feet apart. No visible signs of spent bullets or lead were noted during the site visit documented in the Technical Review Report (Baker, 2007). This is consistent with the results of Site characterization performed as part of the EE/CA(RMC, 2012).

### **2.1.1 Removal Site Evaluation**

Two Site Evaluations were conducted:

Technical Review Report (Baker, 2007) documented an initial Site investigation in which seven soil samples were collected with reported lead concentrations ranging from 12 to 5,200 parts per million (ppm) (Baker, 2007).

The EE/CA (RMC, 2012) site investigation collected soil, surface and shallow groundwater samples. The EE/CA was completed in 2012 in accordance with the *U.S. EPA Guidance on Conducting Non-Time-Critical Removal Actions Under CERCLA (U.S. Environmental Protection Agency [EPA], 1993)*. The results of this investigation are described in Section 2.14.

### **2.1.2 Physical Location**

The former Kalaloch Firing Range is located approximately 0.25 miles east of Highway 101 in Jefferson County, Washington. A Site Location Map is presented in Figure 1-1. The elevation of the Site is approximately fifty feet above mean sea level (Baker, 2007). The Site is owned by the National Park Service and is within Olympic National Park.

There are no schools, daycare facilities, or people living within one mile of the Site.

### **2.1.3 Site Characteristics**

The site was used by NPS Law Enforcement Rangers from 1975 until 2001. The Site is located in an unpopulated area and consists of a small clearing in the surrounding forest at the terminus of a dirt access road. The Site consisted of approximately eleven target stands. There is no backstop or berm present although natural topography presents a significant rise downrange. The area behind the stands is heavily vegetated, overgrown and wet in many places.

The Site is located on federal property and currently operated by the NPS. No state or local government body has been an owner or operator at the Site. The removal action proposed in this AM is the first removal for the Site.

#### **2.1.4 Release or Threatened Release into the Environment of a Hazardous Substance, or Pollutant or Contaminant**

##### Soil

Based on available Site data, lead concentrations on-Site exceed State of Washington Model Toxics Control Act (MTCA) soil screening criteria (WaDOE, 2007) of 50 ppm for plants, which are more conservative than the typical EPA human health risk criteria of 400 ppm.

Lead concentrations in laboratory samples ranged from 9.8 to 3,190 ppm. Six surface samples contained lead concentrations greater than the EPA residential screening level of 400 ppm. Thirteen surface samples contained lead concentrations greater than the State of Washington Model Toxics Control Act soil screening criteria for plants of 50 ppm. Two at-depth samples, collected at depth of 0 to 6-inches, contained lead concentrations of 68.9-138 ppm.

One sample was analyzed to determine if it would be characterized as "hazardous waste" if disposed of off-Site using the Toxicity Characteristic Leaching Procedure (TCLP). The sample had TCLP lead concentrations of 11.2 ppm, which is above the regulatory level of 5 ppm. This result requires the waste to be treated or disposed of as hazardous waste.

The extents of soil impacts are presented on Figure 2-1. The area of impacted soils encompasses approximately 26,091 ft<sup>2</sup>. Elevation varies significantly at the Site (Figure 1-2), there is approximately a 30-foot rise in the ground from the firing line to KSL-2 approximately 200 feet downrange of the targets. Elevated lead concentrations at KSL-2 appear to be fragments of lead or a random ricochet. Nearby sample results at KSL-4, SHT 12, SHT 13 and SHT 14 are more indicative of downrange lead concentrations. The greatest lead concentrations are within 100 feet downrange of the targets. Based on the results of the two at-depth samples, a conservative estimate of the maximum depth required to remove lead contamination is six inches. Based on the area presented in Figure 2-1, the total volume of in-situ soil to be removed is 13,046 ft<sup>3</sup>. Soil removal volume calculations will include a swell factor of 25%. Soil tonnage was calculated using a weight of 1.22 tons per yd<sup>3</sup>. Soil volume calculations are presented below:

$$\underline{\text{Area (ft}^2\text{) * Depth (ft) = Volume (ft}^3\text{) = Volume (yd}^3\text{) * Swell Factor = Final Volume (yd}^3\text{)}}$$

$$26,091 \text{ ft}^2 \text{ (area) * 0.5 foot (depth) = 13,046 ft}^3 = 483 \text{ yd}^3 * 1.25 \text{ (swell factor) = 604 yd}^3$$

One cubic yard of moist soil weighs approximately 1.22 tons. 604 yd<sup>3</sup> will weigh approximately 737 tons. This is the estimated soil mass for removal purposes.

### Surface and Shallow Groundwater

Two surface water and one groundwater sample were collected during the EE/CA investigation (RMC, 2012). Surface water samples were collected at up and down gradient locations. The two surface water samples did not contain detectable concentrations of total or dissolved lead. The total groundwater sample contained 40 parts per billion (ppb) total lead as determined by EPA method 6020 and 57.5 ppb lead as determined by EPA Method 6010. Both of these concentrations exceed the Federal and State drinking water standard of 15 ppb. The groundwater sample did not contain detectable quantities of dissolved lead. The total lead may be related to the general turbidity of the sample which was collected in a temporary micropiezometer. The sample was collected at a depth of approximately one to two feet in a shallow groundwater zone that is not used for any consumptive purposes.

#### **2.1.5 National Priorities List (NPL) Status**

The Site is not listed on the NPL

#### **2.1.6 Maps, Pictures and Other Graphic Representations**

Figures 1-1 and 1-2 in Appendix A present the Site location, and Site layout with analytical results, respectively.

### **2.2 Other Actions to Date**

#### **2.2.1 Previous Actions**

A Technical Review Report (Baker, 2007) was prepared in 2007. The Technical Review Report documented an initial Site investigation in which seven soil samples were collected with reported lead concentrations ranging from 12 to 5,200 parts per million (ppm) (Baker, 2007).

Technical Review determined it to be likely that a release of lead to soil has occurred from the former firing range.

The EE/CA was conducted in 2011. An EE/CA report was prepared for the Site (RMC, 2012). The purpose of the EE/CA is to characterize the nature and extent of contamination at the Site, conduct comparative analysis of the alternatives for cleaning up or removing hazardous



substances released to the environment and for eliminating or reducing the potential risk to human health and the environment. The EE/CA report is comprised of a Site characterization summary, identification and evaluation of removal alternatives, and a description of the recommended alternative.

The EE/CA report was made available to the public and notice of the EE/CA report was posted in two local newspapers. The notice period was March 15, 2012 through April, 15, 2012. No comments were received.

### **2.2.2 Current Actions**

No cleanup actions have been performed at the Site to date. Actions proposed in this AM will comprise the final cleanup for the Site.

### **2.3 State and Local Authorities Role**

The NPS is the lead agency for the Site. The NPS has not requested assistance from the EPA, State or local governments.

#### **2.3.1 State and Local Actions to Date**

No State or local actions have been performed at the Site to date.

#### **2.3.2 Potential for Continued State/Local Response**

Site activities have a low potential for State and/or local response.

### **3.0 THREATS TO PUBLIC HEALTH OR WELFARE OR THE ENVIRONMENT AND STATUTORY AND REGULATORY AUTHORITIES**

The constituent of potential concern (COPC) for the Site is lead. Based on available Site data, lead concentrations exceed the EPA residential screening level of 400 ppm and the State of Washington Model Toxics Control Act soil screening criteria for plants of 50 ppm. Lead concentrations are present at hazardous levels and any work performed in these areas should follow health and safety protocols for working with hazardous waste.

Streamlined Human and ecological risk evaluations were performed as part of the EE/CA (RMC, 2012)

The Streamlined Human Health Risk Evaluation (HHRE) based human health risk-related criteria for lead on the following:

- EPA Region 9 Residential Preliminary Remediation Goal (PRG) of 400 ppm (EPA, 2010);
- EPA Region 3 Residential Risk-Based Concentration (RBC) of 400 ppm (EPA, 2010);
- Regional Screening Levels (RSL) for Chemical Contaminants at Superfund Sites of 400 ppm (EPA, 2010); and
- State of Washington Model Toxics Control Act (MTCA) soil screening criteria of 250 ppm for unrestricted use (WaDOE, 2007).

This Streamlined HHRE compared onsite concentrations of lead in soils to the above described values. The maximum lead concentration of 3,190 ppm as determined by analytical laboratory methods exceeded all of the above screening values, thus the Site “failed” and it can go directly into the corrective action process.

This Streamlined Ecological Risk Evaluation (ERE) based ecological risk-related criteria for lead on the following:

- EPA Region 3 Biological Technical Assistance Group (BTAG) Freshwater Screening Levels of 35.8 ppm for sediments and 0.025 ppm for water (EPA, 2006);
- Oak Ridge National Laboratory (ORNL) Toxicological Benchmarks for Screening Contaminants of Potential Concern of 500 ppm for earthworms and 900 ppm for soil microorganisms and microbial processes (ORNL, 1997); and
- State of Washington Model Toxics Control Act (MTCA) soil screening criteria (WaDOE, 2007) of 50 ppm for plants, 500 ppm for soil biota and 118 ppm for wildlife.

The Streamlined ERE compared on-Site concentrations of lead in soils to values listed in the above-described tables. The maximum lead concentration of 3,190 ppm as determined by analytical laboratory methods exceeded all of the above screening values, thus the site “failed” and it can go directly into the corrective action process.

Threats to public health or welfare are summarized as they relate to the pertinent NCP factors (from section 300.415(b)(2)) below:

- ***Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances or pollutants or contaminants.***
  - *For Human receptors, the primary migration pathway would be ingestion of contaminated media (e.g. soil). The primary human receptor would be site workers and recreational users. Exposure is minimized by the isolated location of the Site.*
  - *For ecological receptors, the primary migration pathway is the consumption of lead through ingestion or adsorption from other media (e.g., soil) into biological tissue. Lead is a toxin that primarily affects the nervous system but can affect nearly every organ.*

- ***Actual or potential contamination of drinking water supplies or sensitive ecosystems.***
  - *Lead has the potential to reach shallow groundwater by downward leaching caused by precipitation infiltration.*
  - *Elevated concentrations of lead are proximal to an un-named creek. The lead may end up in a natural receiving water body (un-named creek) which may lead to fish and wildlife species being adversely affected.*
- ***High levels of hazardous substances or pollutants or contaminants in soils largely at or near the surface that may migrate.***
  - *The firing range target area containing lead contaminated soils is approximately 26,091 ft<sup>2</sup> with a depth of six-inches. The target area is a hillside with no barriers or linings used to prevent a release to the soil at the Site. Migration of lead is limited by the vegetated nature of the Site.*
- ***Weather conditions that may cause hazardous substances or pollutants or contaminants to migrate or be released.***
  - *Due to the heavy vegetation at the Site. An extreme storm event would be required to cause the off-Site migration of contaminants.*

#### **4.0 ENDANGERMENT DETERMINATION**

The endangerment determination for the Site, based on the identified exceedances, is that actual or threatened releases of hazardous substances from this Site may present an imminent and substantial endangerment to public health, or welfare, or the environment.

#### **5.0 PROPOSED ACTIONS AND ESTIMATED COSTS**

##### **5.1 Proposed Actions**

Based on the ARARs and conclusions of the risk evaluations presented in the EE/CA report, excavation and disposal of contaminated soils at a hazardous waste facility is the recommended alternative. The excavation and off-site disposal is easy to implement, provides maximum protection to human health and the environment, and is cost effective

##### **5.1.1 Description of Proposed Action**

The Proposed Action is waste removal and offsite disposal at a hazardous waste facility. This alternative involves the removal of contaminated soils and was selected due to effectiveness and implementability. The soils will be excavated and transported to a hazardous waste facility. The following work tasks are summarized below:

1. The site will be cleared of vegetation (some large trees may be left in place);
2. Contaminated soil will be excavated;
3. Soils will be disposed of at a hazardous waste facility;
4. Confirmation sampling (to confirm that all contaminated soils have been removed); and
5. Site reclamation.
6. Installation of up to three groundwater monitoring well.
7. Quarterly analyses from the monitoring wells (for a period of not less than four quarters).

Excavation and disposal involve the removal of the contaminated materials, final classification of the material as RCRA Subtitle C or other regulated hazardous material, and subsequent disposal at a facility licensed to accept the materials. The type of facility is dependent on the class and concentration of hazardous components in the materials as well as compliance with the EPA "Off-Site Rule" (NCP Section 300.440). The "Off-Site Rule" requires that CERCLA wastes only be sent to off-site facilities that meet EPA's acceptability criteria. Excavated material found to exceed State or Federal guidelines for hazardous material must be transported to an EPA-compliant RCRA landfill for disposal. Excavated material not exceeding the guidelines can be placed in any EPA-compliant landfill licensed to accept the material. All excavated material will be managed in accordance with all applicable federal, state and local requirements.

The process involves the delineation, excavation, transport and disposal at a facility licensed to accept contaminated soils. While the soil has not yet been fully characterized for disposal, the identified concentrations of lead in portions of the Firing Range Area meet the criteria for RCRA hazardous waste. Soils will be characterized prior to disposal. The soils would likely be required to be disposed of in a RCRA Subtitle C 1 landfill. The nearest RCRA Subtitle C landfill is located in Arlington, Oregon. Confirmation samples will be collected to determine that all contamination has been removed.

Removal to an off-site facility would provide the highest level of protection to human health and the environment as all contaminated materials would be removed.

A small increase in short-term risk to human health would be encountered during the excavation and transport phase of this work due to the high number of truck trips required and the potential for an increase in fugitive dust generation. Impacts associated with construction activities are considered short term, and should not significantly impact human health. Additionally, short-term air quality impacts to the immediate environment may occur during excavation of contaminated soils. Control of fugitive dusts may be required on-site and will be conducted by wetting soils as required. All soils will be transported in covered trucks.

---

### **5.1.2 Contribution to Remedial Performance**

In evaluating the appropriateness of a removal action, NPS must consider whether the removal action would contribute to the efficient performance of any anticipated long-term remedial action with respect to the release concerned (NCP Section 300.415(d)). The removal action described herein is intended to constitute the final CERCLA response action at the Site; no additional remedial action is contemplated.

### **5.1.3 Engineering Evaluation/Cost Analysis**

An EE/CA report (RMC, 2012) has been prepared, approved by NPS and placed in the Administrative Record. The EE/CA report includes a discussion of alternative actions considered for non-time-critical removal actions. Portions of the EE/CA report are incorporated by reference into this AM. No public comments have been received concerning the EE/CA report.

### **5.1.4 ARARS (Applicable or Relevant and Appropriate Requirements)**

Consistent with CERCLA Section 121(d) and in compliance with NCP Section 300.415(j), CERCLA removal actions must, to the extent practicable considering the exigencies of the situation, attain ARARs under federal environmental or state environmental or facility siting laws at the completion or during the implementation of the removal action, or both depending on the nature of the requirements.

Pursuant to its delegated CERCLA lead agency authority, NPS has identified applicable or relevant and appropriate requirements (ARARs) in the Kalaloch Firing Range EE/CA. The results of the ARAR analysis, including state ARARs, are summarized in the EE/CA report. ARARs are divided into contaminant-specific, location-specific and action-specific requirements.

Contaminant-specific ARARs govern the release of material containing specific contaminants. In the case of the Kalaloch Firing Range, contaminants are limited to lead.

---

Location-specific ARARs relate to the geographic or physical location of the Site, rather than the nature of contaminants. These ARARs place restrictions, such as the concentration of hazardous substances or the conduct of cleanup activities, due to their location in the environment.

Action-specific ARARs are usually technology- or activity-based requirements on actions taken with respect to hazardous substances. A particular remedial activity will trigger an action-specific ARAR. Unlike contaminant- or location-specific ARARs, action-specific ARARs do not determine the remedial alternative to be used, but rather how the selected remedy must be achieved.

The following requirements, presented in Table 5-1 were found to be applicable or relevant and appropriate.

**Table 5-1: Potential Chemical Specific ARARs**

<b>Requirement</b>	<b>Citation</b>	<b>Description</b>	<b>Determination</b>	<b>Comment</b>
Site Cleanup	Chapter 173-350 WAC	Model Toxics Control Act (MTCA).  The State of Washington Model Toxics Control Act soil screening criteria for plants of 50 parts per million (ppm) was used as the soil PRG by the EE/CA.	Applicable	MTCA establishes administrative processes and standards to identify, investigate, and clean up facilities where hazardous substances have come to be located.
Washington Surface Water Quality Standards	Chapter 173-201A WAC	Establishes surface water quality standards. Washington has received approval from EPA to adopt standards more stringent than federal standards.  Lead was not detected at concentrations above laboratory detection levels, therefore PRGs for surface water are not required.	Potentially Applicable	Potentially applicable for Site surface water and discharges.
Groundwater Quality Standards	Chapter 173-201A WAC	Establishes state groundwater quality standards.  Groundwater PRGs are based on EPA and State of Washington Drinking Water Standards of 15 parts per billion (ppb) lead.	Potentially Relevant and Appropriate	Potentially relevant and appropriate to any discharges of contaminants to ground water (if any).
Storm Water Rules - Water Pollution Control Act	Chapter 90.48 RCW	Establishes state storm water requirements.	Applicable	Applicable during any Removal Action that requires construction.

**Table 5-1 (continued): Potential Location Specific ARARs**

<b>Requirement</b>	<b>Citation</b>	<b>Description</b>	<b>Determination</b>	<b>Comment</b>
Protection of Wetlands	33 USC § 1344	Prohibits discharge of dredged or fill materials into waters of the United States.	Potentially Applicable	Measures will be developed to avoid, restore, or mitigate impacts to jurisdictional wetlands, if any.
Historic Sites, Building and Antiquities Act	16 USC §§ 461-467	Requires protection of landmarks listed on National Registry	Applicable	Proposed activities will not adversely affect natural landmarks
National Historic Preservation	16 USC § 470	Requires protection of district, site, building, structure or object eligible for inclusion in national register of historic places	Applicable	Proposed activities will not adversely affect any such district, site, building, structure or object
Archeological and Historic Preservation Act	16 USC § 469	Requires preservation of significant historical and archeological data	Applicable	Proposed activities will not adversely affect archeological data or landmarks
Fish and Wildlife Coordination Act	16 USC § 1531 <i>et seq</i>	Requires that actions taken in areas that may affect streams and rivers be undertaken in a manner that protects fish and wildlife	Applicable	USFWS will be contacted if required.
Endangered Species Act	16 USC § 1531	Requires protection of endangered and threatened species	Applicable	USFWS will be contacted if required.
Migratory Bird Treaty Act	16 USC § 703 <i>et seq</i>	Requires protection of migratory nongame birds	Applicable	USFWS will be contacted if required.
Solid Waste Handling Standards	Chapter 173-350 WAC	Establishes requirements for handling of solid wastes.	Applicable	Applicable to material handling and treatment.



**Table 5-1 (continued): Potential Action Specific ARARs**

<b>Requirement</b>	<b>Citation</b>	<b>Description</b>	<b>Determination</b>	<b>Comment</b>
Site Cleanup	Chapter 173-350 WAC	Model Toxics Control Act (MTCA)	Applicable	MTCA establishes administrative processes and standards to identify, investigate, and clean up facilities where hazardous substances have come to be located
Air Pollution	Chapter 173-470 WAC	General requirements for compliance with National Ambient Air Quality Standards (NAAQS)	Potentially Applicable	Potentially applicable to earth moving, grading, and excavating activities that may result in release of contaminants to air.
Fugitive Dust Control	Chapter 173-400 WAC	Establishes requirements for fugitive dust, construction activities, and roadways associated with Site cleanup.	Potentially Applicable	Potentially applicable to earth moving, grading, and excavating activities that may result in dust.
Solid Waste Handling Standards	Chapter 173-350 WAC	Establishes requirements for handling of solid wastes.	Applicable	Applicable to material handling and treatment.

### 5.1.5 Project Schedule

This removal action alternative would be completed in a relatively short period of time, estimated at 60 days, and no permanent facilities would be required.

### 5.2 Estimated Costs

The estimated capital cost to implement the removal action is approximately \$287,994.28. Post-construction maintenance will be limited to reclamation confirmation. The estimated volume of soil requiring removal to meet U.S. EPA Eco-SSL for lead is 604 cubic yards (equivalent to 757 tons). Site restoration will be required following excavation of contaminated soils for off-Site disposal. A detailed cost breakdown is presented in Table 4-3 of the EE/CA Report (RMC, 2012). The following table presents a summary of the estimated costs for excavation and disposal.

**Table 5-2: Estimated Costs for Excavation and Disposal**

<b>Task</b>	<b>Description</b>	<b>Cost</b>
Direct Capital Costs	Excavate and dispose of 604 cubic yards of soil. Soil and groundwater sampling. Site reclamation.	\$174,446.00
Long-Term Operation and Maintenance.	Confirm Reclamation, collect groundwater water samples.	\$8,600.00
Indirect Capitol Costs	Project management, design, plan preparation, health and safety. Includes a contingency based on 15% of capital costs.	104,948.28
<b>Total Costs</b>		<b>287,994.28</b>

### 6.0 EXPECTED CHANGE IN SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN

A delay in the action, or no action at this Site would prolong exposure to receptors present in the nearby environment.


## 7.0 OUTSTANDING POLICY ISSUES

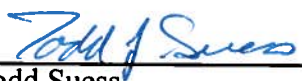
None.

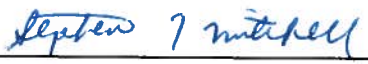
## 8.0 RECOMMENDATION

This decision document represents the selected removal action for the Former Kalaloch Firing Range Site in Olympic National Park, developed in accordance with CERCLA as amended, and is not inconsistent with the NCP. This decision is based on the administrative record for the Site.

Conditions at the Site meet the NCP Section 300.415(b) criteria for a removal action and through this document I am approving the proposed removal action.

Recommended:  Date 5/24/2012  
Michael Sorenson  
Project Manager and Community Involvement Coordinator

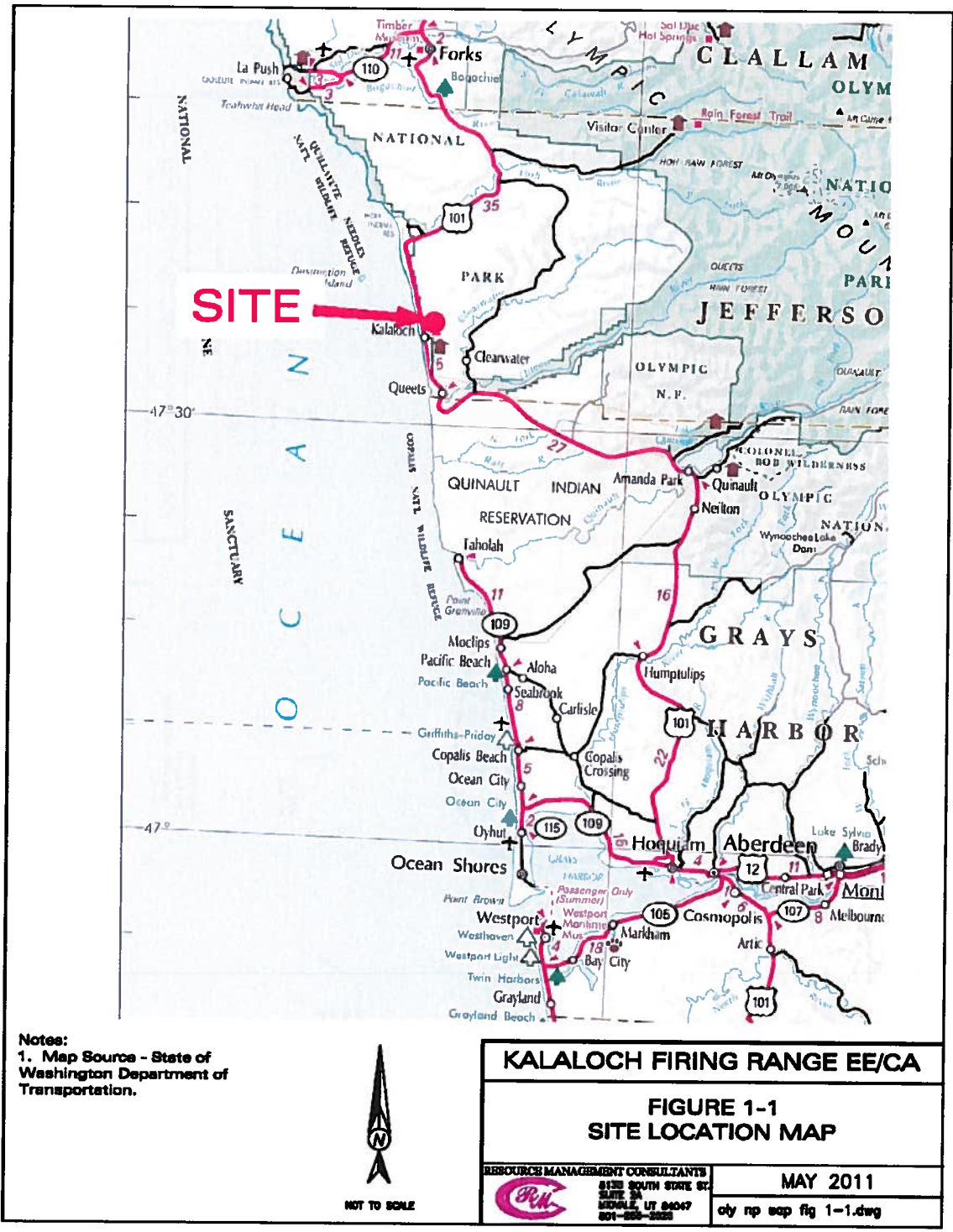
Concurred:  Date 5-29-12  
Todd Suess  
Acting Superintendent  
Olympic National Park

Concurred:  Date 4 JUNE 2012  
Stephen J. Mitchell, PE  
Environmental Engineer

Approved:  Date 06/05/12  
Christine S. Lehmertz  
Regional Director  
Pacific West Region

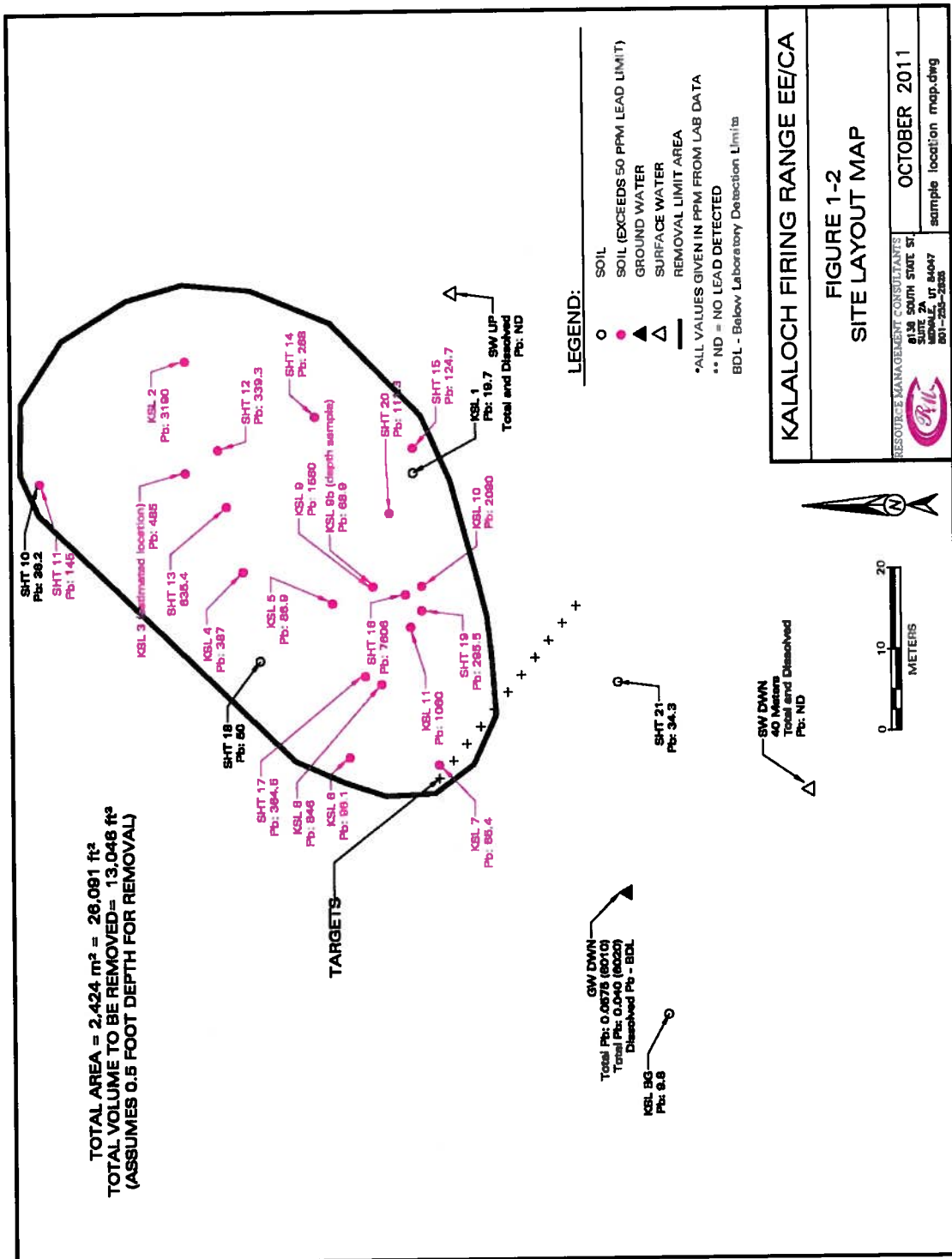
---

**APPENDIX A**  
**FIGURES**



TOTAL AREA = 2,424 m<sup>2</sup> = 26,091 ft<sup>2</sup>  
 TOTAL VOLUME TO BE REMOVED = 13,048 ft<sup>3</sup>  
 (ASSUMES 0.5 FOOT DEPTH FOR REMOVAL)

TARGETS



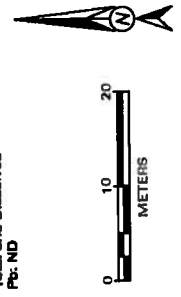
**KALALOCH FIRING RANGE EE/CA**

**FIGURE 1-2  
 SITE LAYOUT MAP**

RESOURCE MANAGEMENT CONSULTANTS  
**RM**  
 6138 SOUTH STATE ST  
 SUITE 2A  
 MESA, UT 84047  
 801-225-3388

OCTOBER 2011

sample location map.dwg



---

## **APPENDIX B REFERENCES**

Michel Baker Jr. Inc, (Baker), 2007, Final Technical Report, Kalaloch Firing Range, ECL Site No. 1475, Olympic National Park, Port Angeles, Washington

EPA, 1993, Guidance on Conducting Non-Time Critical Removal Action Under CERCLA, EPA 540-R-93-057.

EPA, 1998, Guidance for Quality Assurance Project Plans”, EPA QA/G5 EPA/600/R98.

EPA. 2009 *Superfund Removal Guidance for Preparing Action Memoranda*. OSWER. September.

EPA, 2010, Regional Screening Levels (RSL) for Chemical Contaminants at Superfund Sites.

EPA, 2006, Region III Biological Technical Assistance Group (BTAG) Freshwater Screening Benchmarks,  
<http://www.epa.gov/reg3hwmd/risk/eco/btag/sbv/fw/screenbench.htm>

Resource Environmental Management Consultants Inc. (RMC), 2012, Engineering Evaluation/Cost Analysis (EE/CA) Work Plan, Kalaloch Firing Range, Olympic National Park.

State of Washington Department of Ecology (WaDOE), 2007, Model Toxics Control Act (MTCA), Chapter 173-340 WAC

