



United States Department of the Interior

NATIONAL PARK SERVICE

North Cascades National Park
Lake Chelan National Recreation Area
Ross Lake National Recreation Area
810 State Route 20
Sedro-Woolley, Washington 98284-9394

July 13, 2017

Memorandum

To: Laura E. Joss, Director, Pacific West Region

From: Karen F. Taylor-Goodrich, Superintendent, North Cascades National Park Service Complex

Through: Stephen J. Mitchell, PE, Operations/Environmental Programs Branch Chief, Pacific West Region

Subject: Approval for CERCLA Time-Critical Removal Action at the Ladder Creek Settling Tank, Ross Lake National Recreation Area

1.0 PURPOSE AND AUTHORITY

The purpose of this Action Memorandum (AM) is to request approval of and document the basis for the proposed time-critical removal action (TCRA) described herein for the Ladder Creek Settling Tank (Site) located within Ross Lake National Recreation Area (managed jointly with North Cascades National Park and Lake Chelan National Recreation Area as North Cascades National Park Service Complex (NOCA)), Washington, in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act, as amended, (CERCLA), 42 U.S.C. §§ 9601 *et seq.* The President has delegated response authority under CERCLA Section 104 to the Secretary of the United States Department of the Interior (DOI) by Executive Order 12580, 52 Fed. Reg. 2923 (1987), as amended by Executive Order 13016, 61 Fed. Reg. 45871 (1996), to respond to the release or substantial threat of release of hazardous substances on or from land under the jurisdiction, custody, or control of DOI. The National Park Service (NPS) Pacific West Regional Director, through further delegations, has CERCLA Section 104 response authority for the Site. Funding for the TCRA is being provided by the Potentially Responsible Party (PRP), Seattle City Light (SCL). If this action is approved, on-Site work is anticipated to start in July or August 2017.

2.0 SITE CONDITIONS AND BACKGROUND

The following sections provide an overview of the Site's description, including the removal Site evaluation, physical location, site characteristics, and the potential release of hazardous contaminants.

2.1 Site Description

2.1.1 Removal Site Evaluation

The Site is comprised primarily of a steel settling tank which was historically used for sedimentation of creek water for the town of Newhalem's domestic water supply. This tank was previously enclosed within a corrugated aluminum-roofed protective structure, but in 2015, the Goodell wildfire burned through the area, completely destroying the housing structure and leaving a debris field in its wake. An assessment completed by the NPS following this wildfire found that the water tank, which was left intact but impacted with residue from the fire, is now uncovered and is collecting rainwater.

The assessment also found that the debris field on the ground surface surrounding the tank contains charred construction materials including paint, mastic coating, electrical cables/insulation, lighting, molten/re-solidified metal roof shards, and unidentified materials. Soil in approximately the same area as the debris field also was impacted by the fire, primarily by airborne fallout during the burning of the building structure. Post fire sampling results indicate concentrations of lead and arsenic within the water tank and arsenic, chromium, lead, and carcinogenic polycyclic aromatic hydrocarbons (cPAHs) within the surrounding soil.

The terrain surrounding the tank is steep, and access is limited to either walking/hiking along a rugged foot trail or using a helicopter to access the Site via longline (there is not sufficient space to land a helicopter). The building and tank were originally constructed using pack animals to carry materials into the Site.

2.1.2 Physical Location

The Site is located within Ross Lake National Recreation Area, in Whatcom County, Washington in a remote, forested area approximately 40 feet from Ladder Creek, a very steep and cascading stream, and approximately 100 yards upstream of the creek's confluence with the Skagit River. The Skagit River is the largest tributary to Puget Sound and supports all five native species of salmon (including federally threatened Puget Sound Chinook salmon), as well as federally listed (threatened) Puget Sound steelhead and bull trout. Ephemeral streams occur elsewhere in the general vicinity, but are not within the area affected by the TCRA.

The Site is also approximately ¼ mile from the Gorge Powerhouse and across the Skagit River from Newhalem, WA. SCL operates Gorge Dam, and its associated powerhouse, as one of three

Federal Energy Regulatory Commission (FERC) licensed hydroelectric dams along the Skagit River, managed together as the Skagit River Hydroelectric Project (FERC license #553).

The Site itself is situated on a flat bench surrounded by relatively steep slopes with occasional bedrock outcrops, approximately 300 feet in elevation above the Gorge Powerhouse. Ground access is limited to walking/hiking along a rugged foot trail that originates at a footbridge crossing Ladder Creek near the Ladder Creek Garden interpretive trail behind the Gorge Powerhouse. Public access to the trail is blocked by a locked gate on the footbridge, preventing access to the trail leading upslope to the Site.

Newhalem, a company town owned by SCL and comprised of approximately two dozen residences (populated entirely by employees of the Skagit River Hydroelectric Project or local county, state, or federal agencies), is located across the Skagit River from the Site. Newhalem averages 80 inches of precipitation annually, with 77% of total precipitation occurring between October and March. Newhalem's municipal water source is from a well located on the same side of the river as the town.

2.1.3 Site Characteristics

The Ladder Creek Settling Tank was originally constructed as part of the domestic water supply system for the town of Newhalem. Water was diverted from Ladder Creek into the tank, where silt and sand carried by the creek were settled out. Water then discharged from the tank and followed conveyance lines under gravity flow down to the Gorge Powerhouse and into Newhalem. The original tank structure included a two-story framed building with a corrugated aluminum roof that fully enclosed the tank and protected it from the elements. The protective building was completely burned during the 2015 wildfire; no portion of the structure was left standing. The tank remains open to the elements and continues to collect rainwater. As a result of the complete burning of the building, a debris field consisting of burn ash, charred construction materials, and metal roof shards surrounds the tank.

The settling tank and associated structures are located on approximately 0.09 acres of land that is owned by the United States and managed by the NPS, but the infrastructure is owned, operated, and maintained by SCL.

2.1.4 Release or Substantial Threat of Release into the Environment of a Hazardous Substance, or Pollutant or Contaminant

At the request of the NPS, SCL conducted an initial field reconnaissance soon after the wildfire in fall 2015. The reconnaissance preliminarily evaluated the debris field surrounding the tank, which was found to contain the charred construction materials described above. In addition to the debris, soil in the immediate area of the tank was suspected to possibly be contaminated by the airborne fallout during the burning of the building structure.

The October 2015 field investigation consisted of in-situ field screening soil with an X-ray Fluorescence (XRF) analyzer, collecting surface (0-3 inches in depth) soil samples for laboratory analysis, and collecting a water sample from the tank. The XRF analyzer was used at all transect locations to determine which locations should have soil samples taken for laboratory analysis. While XRF is a good field screening tool for this purpose, laboratory soil samples are considered more reliable for use in determining the nature and extent of contamination and potential risk.

Based on the XRF results, the investigation collected samples over multiple transects to determine extent (both width and depth) and analyzed samples for concentration of metals, semivolatiles (SVOCs), and cPAHs [Ladder Creek Settling Tank Soil Assessment; Newhalem, Washington (Hart Crowser, 2016)].

In order to discern the difference between natural background and impacts from burning of the building structure, six background samples also were collected in burned forested areas not known to be affected by anthropogenic sources, specifically, in the vicinity of the NPS' North Cascades Visitor Center approximately 1½ miles from the Site. Charred mastic paint still adhering to the settling tank was also tested by laboratory analysis [Laboratory Report; Ladder Creek Settling Tank (MDE Forensic Laboratories, 2015)].

Figure 2 from the Hart Crowser report (attached) shows the Site transect locations where soil samples were either screened by field XRF, collected for laboratory analyses, or both. The following samples were sent for laboratory analyses:

Transect	Locations	Analytes			
		SVOCs	PAHs	Metals	CrVI
1 and 2	-5, 0, 5, 10, 30, 50	at -5 and 5 only	X	X (except T-2 10)	at T-2, -5 only
3	5, 20	at 5 only	X	X	none
Total number of samples by analyte:		5	14	13	1

Six background locations were also analyzed for SVOCs, PAHs, and metals.

Table 1 summarizes Federal and State of Washington human health and ecological screening values and the Site data. SVOCs are not included on this table because only very minor and infrequent detections occurred both on the Site and in background. It should also be noted that the sample with the highest chromium value (T-2, -5) also was analyzed for chromium VI and that the result was below the detection limit. Based on this sample and the fact that chromium VI is usually the result of industrial processes, it was assumed that chromium VI is not present at the Site.

In making comparisons between Site data and screening values, it is important to note that screening values are 1) intended to identify contaminants of potential concern (COPCs) and 2) are based on specific exposure assumptions that may or may not be appropriate for a Site. For

example, residential screening levels assume full-time residential exposure at the Site for 24 hours per day and ecological screening values are based on the assumption that an ecological receptor is also exposed 24 hours per day at the Site. Once COPCs are identified, it is then important to consider how and when potential receptors may be exposed to Site contamination.

Table 2 provides a summary of Site soil data and screening value exceedances. Human health screening values are exceeded for arsenic and cPAHs for residential and industrial exposure scenarios for the mean and the range of values detected at the Site. For ecological receptors, arsenic exceeds both state and federal screening values for plants, and federal screening values for chromium, lead and PAHs are exceeded for other ecological receptors. Thus, the soil COPCs for human health are arsenic and cPAHs, and the soil COPCs for ecological receptors are arsenic, chromium (total), lead and cPAHs. Of note is that the maximum concentrations for arsenic, chromium and lead were all found at T-2, 0.

Environmental characterization of soil at the Site is complicated by naturally occurring pyrogenic chemicals that are the result of the burning of trees and vegetation in the Goodell wildfire. The background sampling showed that PAHs were found in all locations; however, carcinogenic PAH (cPAH) residues in soil found near the tank were not found elsewhere in the burned forest. The cPAHs therefore are considered likely to be the result of the burned building and/or tank coatings. Background sample results for metals may be used to establish cleanup levels when they exceed applicable ecological soil concentrations for protection of terrestrial plants and animals, as identified in Table 749-3 of the MTCA Cleanup Regulation.

Water from precipitation accumulates in the now-uncovered settling tank on an ongoing basis. A sample of this accumulated water collected during the October 2015 investigation contained total arsenic and lead concentrations exceeding their respective MTCA Method A cleanup levels. The metals in the tank water are assumed to be from residual airborne contamination that fell into the tank during the fire.

Charred coating material adhering to the exterior of the settling tank was sampled and forensic analysis was conducted by MDE Forensic Laboratories in Seattle. Results indicate that the material consists mostly of carbon with low concentrations of magnesium and silicone, which are consistent with charred asphalt that contains some mineral/clay filler.

The hazardous substances detected at the Site are described in more detail below:

Lead is considered a persistent, bio-accumulative and toxic (PBT) hazardous substance that has the potential to cause adverse impacts to human health and the environment. Soil lead concentrations at the Site range from 13-140 mg/kg. As shown in Table 1, these concentrations are well below both EPA and Ecology screening values for unrestricted land use. Soil lead concentrations do exceed NPS and Ecology ecological screening values for plants, birds and mammals. However, background concentrations also ranged as high as 87 mg/kg, exceeding the Ecology screening value for plants as well as the NPS screening values for birds and mammals.

The tank water total lead concentration of 30 ug/L exceeds the Ecology and EPA criterion of 15 ug/L for drinking water.

Arsenic is a known carcinogen and hazardous substance that has the potential to cause adverse impacts to human health and the environment. Soil arsenic concentrations at the Site range from 20-34 mg/kg. As shown in Table 1, these concentrations exceed both the EPA and Ecology screening values for unrestricted land use. Soil arsenic concentrations also exceed the NPS and Ecology ecological screening values for plants, but not any other screening values for ecological receptors.

The tank water total arsenic concentration of 21 ug/L exceeds the Ecology and EPA criterion of 5 ug/L for drinking water.

Polycyclic aromatic hydrocarbons (PAHs) are a broad class of substances (many of which are hazardous) found in fossil fuels and are produced during incomplete combustion of organic matter. Soil cPAH concentrations ranged from 0.02-7.0 mg/kg. Benzo(a)pyrene is the most toxic of the cPAHs with metabolites that are mutagenic and highly carcinogenic. When a mixture of cPAHs is present, the toxic equivalent of each cPAH, compared to benzo(a)pyrene, is calculated. The cPAH concentrations in Table 1 reflect this calculation. Site cPAH concentrations exceed the Ecology screening values of 0.1 for residential land use and the screening value of 2.0 for industrial land use. Site cPAH soil concentrations also exceed the EPA screening values for both residential and industrial land use.

Soil cPAH concentrations also exceed the NPS ecological screening value for mammals but not for soil invertebrates. NPS screening values for plants and birds are not available. Ecology screening values for plants and soil invertebrates are not available. Ecology ecological screening values to birds and mammals are not exceeded.

2.1.5 National Priorities List (NPL) Status

The Ladder Creek Settling Tank Site is not listed or proposed for listing on the NPL.

2.2 Previous and Current Actions to Date

Due to the close proximity of the Site to Ladder Creek and the Skagit River, the NPS took immediate action to install coir erosion logs around the structure to prevent or reduce mobilization of the debris field and surrounding soils and the associated contaminants of concern (arsenic and cPAHs).

In May 2016, SCL designed and installed a filtration system to treat, on an on-going basis, precipitation water that accumulates in the tank. Post-filtration sampling indicates that contaminants are removed by the system to well below Ecology criteria.

There have been no other government or private actions undertaken on Site since the 2015 Goodell Fire other than the erosion control, investigative, and water filtration activities described above.

2.3 State and Local Authorities Role and Actions to Date

The NPS is the lead agency for this Site. No State or local actions have been performed at the Site to date. The Washington State Department of Ecology has been notified of the TCRA.

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

As a result of the Goodell wildfire, a scattered debris field of charred remains of the burned building surrounds the settling tank. The materials include burned construction materials such as paint, mastic coating, electrical cables/insulation, lighting, molten/re-solidified metal roof shards, and unidentified materials. The scattered burned debris is primarily on the ground surface and remains a potential source of ongoing contamination to the soil and Ladder Creek, which is in very close proximity. The soil in generally the same area as the debris field also was impacted by the fire, likely by airborne deposition of hazardous substances resulting from the burning of the building structure.

Arsenic and cPAHs are the soil COPCs for human health, and arsenic, chromium, lead and cPAHs are the soil COPCs for ecological receptors. The inside of the settling tank was also impacted with residue from the fire and contains arsenic and lead above drinking water criteria, however the water in the tank is no longer used for drinking water and ecological receptors for this water are considered highly unlikely due to the location (no waterfowl in the vicinity) and the vertical walls of the tank (no “shoreline”).

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) is the implementing regulations for CERCLA, and 40 C.F.R. Section 300.415(b)(2) sets forth the factors the NPS shall consider to determine whether a removal action is appropriate. Those factors applicable to this TCRA include the following:

- **High levels of hazardous substances or pollutants or contaminants in soils largely at or near the surface that may migrate.**

Site contamination is largely concentrated in surface soil (0-3 inches) that has the potential and is likely to migrate. The settling tank is located on a relatively flat, forested topographic bench surrounded by steep terrain and alongside a very steep mountain stream that discharges into the Skagit River within 100 yards of the Site. The Skagit River system is one of the few remaining systems in the contiguous United States which supports significant numbers of all five native salmon species, two species of trout, and two species of char. It also provides essential habitat for three federally listed, threatened, species (Chinook salmon, bull trout, and steelhead) that spend a portion of their lives in the Skagit River. For these

reasons, the Skagit is also one of the most important rivers for natural fishery stocks in Washington. Metals such as arsenic are toxic to fish and have negative growth impacts when digested and acute lethal impacts when concentrations in water approach 34 ppm. Soil disturbance and removal associated with this TCRA should be completed outside the season of heavy rains (between October and March) to prevent the migration of contaminated surface soils and potential exposure to sensitive aquatic species.

- **Weather conditions that may cause hazardous substances or pollutants or contaminants to migrate or be released.**

This Site receives an average of 80 inches of precipitation annually, with 77% of total precipitation occurring between October and March. Winter rains combined with nearby steep terrain and near-surface soil contamination likely will cause contaminants in disturbed soils and debris to migrate into surface water if excavation is conducted during the rainy season or if delayed through another winter. Action during the spring, summer, fall 2017 is necessary to reduce migration of contaminants.

4.0 ENDANGERMENT DETERMINATION

An actual release or substantial threat of release of hazardous substances at the Site, if not addressed by implementing the response action selected in this action memorandum, pose a threat to public health and the environment. This TCRA is necessary in order to abate, prevent, mitigate or eliminate the threat posed by the release or substantial threat of release of these substances.

Due to the steep terrain surrounding and very near the tank, there is, in particular, a potential for erosion and movement of disturbed contaminated soil downslope toward Ladder Creek. Ladder Creek passes within approximately 40 feet of the Site. The removal of debris and contaminated soil from the Site, is expected to mitigate, if not eliminate all threats to human health and the environment associated with the COPCs at this Site.

5. PROPOSED ACTIONS AND ESTIMATED COSTS

Due to the small size of the Site (0.09 acres), the area planned for debris and soil removal will be delineated based on the distribution of debris and soil contaminant concentrations exceeding the lowest of either the human health or ecological screening values from DOE, EPA and or NPS. When background values exceed the lowest screening value, background will determine the remediation goal, in accordance with WAC 173-340-740 (5)(c). The remediation goals will be the following:

Chemical	Remediation Goal (mg/kg)	Basis for Remediation Goal
Arsenic	10	DOE - Plants

Chemical	Remediation Goal (mg/kg)	Basis for Remediation Goal
Chromium (total)	42	DOE - Plants and soil invertebrates
Lead	50	DOE- Plants
cPAHs (HMW)	1.1	EPA – Eco SSL (mammals)

The basis for the remediation goals is also illustrated in Tables 1 and 2. For arsenic, 10 mg/kg for plants is the lowest of all the screening values. For total chromium, it should be noted that the background range for chromium (Table 2) exceeds the NPS screening values for plants, soil invertebrates and mammals (derivation of plant value incorporates CrVI), leaving the DOE plant screening value of 42 mg/kg as the lowest screening value. For lead, the lowest screening value is the DOE plant value of 50 mg/kg, except for the NPS value for birds (11 mg/kg). This bird value, however, is based strictly on ground feeding insectivores and the home ranges of these types of birds are considerably larger than the Site, meaning that, at most, they would only occasionally be exposed to this Site and not be at risk. Values for herbivorous and carnivorous birds are 46 and 510 mg/kg, respectively, and also have home ranges considerably larger than the Site, leaving the DOE plant value for lead of 50 mg/kg as the lowest screening value. For cPAHs, the NPS mammal screening value of 1.1 mg/kg is higher than most of the human health screening values. Due to the remote location of the Site, however, human exposure is anticipated to be very minimal, meaning that if a full risk assessment was conducted, the Site would not likely pose any risk to human health.

As part of the TCRA, SCL will clean and rinse (with filtration) the settling tank, remove burned debris scattered at the ground surface (which may contain contaminants), and will excavate near-surface soils (0-4 inches) contaminated with arsenic, chromium (total), lead, and cPAHs. The contractor will be required to remove all debris and contaminated soil from the Site and transport them first to a staging area in Newhalem, then to an approved disposal facility(s).

After completion of the TCRA, soil confirmation sampling will be conducted to ensure that the Site soil concentrations are at or below the remediation goals. In accordance with WAC 173-340-740 (7)(e), less than ten percent of the sample concentrations shall exceed the soil cleanup level, and no single sample concentration shall be greater than two times the soil cleanup level.

Filtration of settling tank water will continue until precipitation water from the tank no longer needs filtration and precipitation water can safely pass through the tank.

SCL will complete the TCRA by restoring the natural contours of the Site and monitoring Site re-vegetation to ensure that, over time, appropriate native vegetation associations and densities on-Site reflect pre-TCRA conditions.

Work is planned to be initiated in July or August 2017 after melt out of snow but prior to the next wet season to reduce the potential risk of contamination migrating off-Site. Overall construction, materials transport, and disposal is estimated to take approximately 6-8 weeks of

on-Site work, and is planned to occur between July and November 2017, though replanting of native species, if needed, may extend beyond this timeframe.

If at any point in time the NPS believes that the net environmental impacts of achieving the remediation goals outweighs the net environmental benefits, the remediation goals may be revised to reflect background or other defensible criteria.

5.1 Description of Proposed Action

Construction Project

SCL will work through a contractor to clean the inside of the settling tank, remove burned debris and contaminated soil from the Site, and undertake actions to restore the Site to its pre-removal contours and native vegetative conditions. The main elements of the TCRA include:

- Clean inside of settling tank with post-removal confirmation sampling (Phase I);
- Remove debris and shallow surface contaminated soil resulting from the 2015 Goodell Creek wildfire with post-removal confirmation sampling (Phase II);
- Load, transport, and properly dispose of burned debris and contaminated soil at an approved disposal facility (Phase III); and
- Restore Site to its pre-removal contours and vegetative conditions (Phase III and IV).

Removal of Impacted Water, Soil, and Debris

Sediment from the settling tank will be removed from the tank by hand and treated similarly to the soil and surrounding debris (see below). The settling tank then will be fully rinsed and treated with an active carbon filter. Subsequent rinses will be completed until post-confirmation sampling indicates that water from the tank no longer contains the COCs in this location, namely lead and arsenic. Once the post confirmation sampling indicates that COCs are no longer present within the tank, the existing filtration system can be removed from Site.

The burnt debris and approximately top four (4) inches of the soil across approximately 4,500 square feet, totaling approximately 60 cubic yards of material (including the sediment within the settling tank), are planned to be excavated largely by hand due the remote nature of the Site. Excavated debris and soil will be placed in small and large, bulk bags and temporarily stockpiled in the vicinity of the settling tank, which will likely require a temporary platform for staging prior to its transportation off-Site. During this staging and prior to hauling in materials to restore the pre-removal contours of the Site, appropriate erosion control measures shall be implemented to minimize erosion from exposed soils. Once accumulated, the bulk bags will be airlifted to Newhalem where they will be placed in trucks for ground transport to an approved disposal facility.

The area delineated for debris and soil removal is based both on visual evidence of debris, whereby visible debris will be removed from the ground surface, and soil chemistry results from the field investigation, whereby soil with concentrations exceeding MTCA cleanup thresholds or documented natural background concentrations will be removed. SCL will collect confirmatory samples to verify that soils remaining after the removal are at or below remediation goals.

Materials will be disposed of in an approved, USEPA-compliant landfill licensed to accept the material based on designation and classification of the contaminated materials. Removed material will be managed in accordance with all applicable federal, state, and local requirements.

Factors Affecting Removal

The Site presents significant challenges to the use of conventional heavy equipment for the debris and soil removal due to its remote nature and steep terrain. The only access to the Site is via a steep, unimproved trail. SCL will require the contractor to devise appropriate methods, likely including the use of manual methods such as hand-digging as well as helicopter flights. The contractor will be required to remove all debris and contaminated soil from the Site and transport them first to a staging area in Newhalem, then to an approved disposal facility(s).

Risks to Human Health and the Environment Associated with the Work

A small increase in short-term risk to human health and the environment may be encountered during the excavation and transport phase of this work. Work will be conducted in accordance with OSHA health and safety protocols for working with hazardous substances. Impacts associated with construction activities are considered short term, and should not significantly impact human health.

Short-term air quality impacts to the immediate vicinity may occur during removal of debris and contaminated soils. Control of fugitive dusts may be required on-Site and will be conducted by wetting soils as required. Additional TCRA activities that could cause the spread of contamination within or from the contaminated zone will need to be mitigated, including foot traffic on steep slopes, excavation activities, transport of materials for staging and other removal work activities.

All materials removed from the Site will be transported in covered trucks and/or containers once relocated to Newhalem by air. Air transport will be accomplished in bulk bags designed to fully contain the materials. The primitive trail leading to the tank area is closed to public access on a permanent basis and will remain closed throughout implementation of the TCRA.

5.2 Contribution to Remedial Performance

In evaluating the appropriateness of a TCRA, the 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 § 300.41 5(d)], as well as the availability of other appropriate federal or state response mechanisms to respond to the release of hazardous substances [NCP § 300.415(b)(2)(vii)]. This TCRA will entail excavation and disposal of burned debris and contaminated sediment within and soil located around the Ladder Creek Settling Tank, thereby minimizing risks to human health and the environment and mitigating, if not eliminating, the source of the contamination (determined based on post-removal confirmation sampling). Future response actions at the Site are not expected based upon available information.

5.3 Applicable or Relevant and Appropriate Requirements

In the context of a TCRA, off-site activities are subject to all applicable federal, state, and local laws and regulations, and all on-site project activities must attain “applicable or relevant and appropriate requirements” (ARARs) under federal and state environmental laws and facility siting laws that the NPS determines to be practicable considering the exigencies of the situation (CERCLA Section 121(d); NCP Section 300.415(j)).

In order to determine whether a particular ARAR is applicable under the exigencies of the situation, the NPS has considered the scope of the response action to be conducted, the urgency of the situation, and other appropriate factors (40 C.F.R. § 300.415(j)). The NPS has identified the federal and state ARARs set forth below for this TCRA and has advised SCL that additional federal and state ARARs may be identified and added to project requirements.

1. The TCRA must be conducted in compliance with the NPS Organic Act of 1916 (codified at 16 U.S.C. §§ 1-3), which requires management of units of the National Park System so as to leave them “unimpaired” for future generations. *See* the implementing regulations (36 CFR Parts 1-79), and in particular, *see* 36 CFR Part 2 regarding preservation of natural, cultural, and archeological resources.
2. Treatment, storage, and disposal of waste and excavated soils must comply with all applicable state and federal laws, including applicable provisions in the Resource Conservation and Recovery Act (42 U.S.C. §§ 7401-7642; 40 CFR §§ 264 and 265), Dangerous Waste Regulations (Revised Code of Washington (RCW) § 70.105; Washington Administrative Code (WAC) § 173-303), and provisions governing solid waste disposal in National Parks (codified at 16 U.S.C. §§ 4601-22(c) *et seq.*) and related implementing regulations (codified at 36 CFR Part 6). This project must comply with CERCLA Section 121(d)(3) (“off-site rule”), which requires that hazardous substances, pollutants, and contaminants that must be transferred off-site as a result of CERCLA response activities must be managed at a facility operating in compliance with federal and state laws. The NCP’s “off-site rule” implementing regulations (40 CFR § 300.440) define facility acceptability and create procedures for obtaining and reviewing acceptability determinations.
3. The Model Toxics Control Act (MTCA) requires that all cleanup actions comply with all legally applicable or relevant and appropriate requirements in applicable state and federal laws, as set forth in WAC § 173-340-710.
4. Laws and regulations protecting threatened and endangered species present at the Site, including the Endangered Species Act (e.g., 16 U.S.C. §§ 1531-1544, 50 CFR Part 402).
5. The TCRA is required to avoid, minimize, or mitigate impacts to historic sites or structures and must be conducted in compliance with the National Historic Preservation Act (16 U.S.C. § 470f; 36 CFR Parts 60, 63, and 800), the Archeological Resources Protection Act (43 CFR Part 7), the American Indian Religious Freedom Act (42 U.S.C.

§ 1996), the Native American Graves Protection and Repatriation Act (43 CFR Part 10), and Executive Order 13007.

Additionally, the following are other factors “to be considered” (TBCs) that provide useful standards or policy direction for this TCRA.

1. Section 4.1.5 of the *2006 NPS Management Policies* provides: “The Service will reestablish natural functions and processes in parks unless otherwise directed by Congress Impacts on natural systems resulting from human disturbances include the introduction of exotic species; the contamination of air, water, and soil; changes to hydrologic patterns and sediment transport; the acceleration of erosion and sedimentation; and the disruption of natural processes. The Service will seek to return such disturbed areas to the natural conditions and processes characteristic of the ecological zone in which the damaged resources are situated. The Service will use the best available technology, within available resources, to restore the biological and physical components of these systems, accelerating both their recovery and the recovery of the landscape and biological community structure and function.”
2. Section Section 4.8.2.4 of the *2006 NPS Management Policies* allows importation of off-site soil or soil amendments to restore damaged sites. It provides that “off-site soil normally will be salvaged soil, not soil removed from pristine sites, unless the use of pristine site soil can be achieved without causing any overall ecosystem impairment. Before using any off-site materials, parks must develop a prescription and select the materials that will be needed to restore the physical, chemical, and biological characteristics of original native soils without introducing exotic species.”
3. Section 9.1.3.2 of the *2006 NPS Management Policies* requires that, to the maximum extent possible, plantings selected for revegetation will consist of species that are native to the park, and that low water use practices should be employed. This provision also addresses use of fertilizers and other soil amendments.
4. NPS Reference Manual (RM) #77 offers comprehensive guidance to NPS employees responsible for managing, conserving, and protecting the natural resources found in park units. It addresses management of natural resources (including air; disturbed land; endangered, threatened and rare species; geologic resources; vegetation; etc.), resource uses, and planning (e.g., emergency management, and environmental compliance).
5. *NPS-28: Cultural Resource Management Guidelines* addresses park cultural resource management programs, compliance with Section 106 of the National Historic Preservation Act, and issues related to archaeological resources, cultural landscapes, structures, museum objects, and ethnographic resources.
6. The *Ross Lake National Recreation Area General Management Plan* (2012) identifies practicable and appropriate mitigation measures to avoid and/or minimize harm to natural

and cultural resources, visitors and the visitor experience, and socioeconomic resources within Ross Lake National Recreation Area. These mitigation measures have been developed using existing laws and regulations, best management practices, conservation measures, and other known techniques from past and present work in and around Ross Lake National Recreation Area.

7. *Invasive Non-Native Plant Management Environmental Assessment* (2011) identifies best management practices to reduce the spread and control populations of non-native vegetation within Ross Lake National Recreation Area.

5.4 Project Schedule

SCL plans to begin cleaning the settling tank and excavating the debris and soil in July or August 2017, depending on weather, but will schedule the transportation of the material off-Site for after Labor Day, 2017 to prevent impacts to the North Spotted Owl and visitors within the vicinity of Newhalem. Re-establishment of Site contours and final planting (if needed), which will rely on flown-in materials, is planned to be conducted as the last phase of the TCRA and will extend for a number of years following implementation.

5.5 Estimated Costs

Projected total costs for the TCRA, including design, contracting, oversight, and contingency, are estimated by SCL as \$525,000. This estimate does not include any cost of oversight by the NPS. The NPS is exercising its lead agency authority to perform or oversee performance of response actions under CERCLA, including this proposed TCRA, which is being conducted and funded by SCL. The NPS will seek to recover any response costs incurred in oversight of SCL's work, including TCRA management and oversight costs.

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

If the proposed TCRA is delayed or not taken, hazardous substances will continue to be released, or there is a substantial threat of such release, at the Site that continues to pose a risk to ecological receptors in particular, and, to a lesser extent due to the remote location, NPS employees or the public.

7.0 OUTSTANDING POLICY ISSUES

No outstanding policy issues exist for this TCRA.

The water supply system was evaluated for National Register of Historic Places eligibility following the 2015 Goodell wildfire. The report submitted to the Washington State Department of Archaeology and Historic Preservation (DAHP) entitled "Historic Property Survey for the Ladder Creek Water Supply Settling Tank System Post Wildfire Remediation Project Newhalem,

Skagit County, WA" recommended that the Ladder Creek water supply system is eligible as a "contributing resource" to the Skagit River and Newhalem Creek Hydroelectric Projects Historic District for its associations with the development of Newhalem and the Ladder Creek Falls Garden. An accompanying report entitled "Archaeological Investigation Report: Ladder Creek Water Supply Settling Tank System Post-Wildfire Remediation Project, Whatcom County, Washington" also recommended that remnant segments of stone trail/stairway and trees with overhead lights are also contributing elements to the water supply system and the overall Historic District.

DAHP reviewed this proposed TCRA and concurred with SCL's determination of "no adverse effect" for the temporary water filtration system and removal of contaminated soil. None of the infrastructure associated with the water system, including the settling tank, are planned for removal or alteration during the TCRA. The Upper Skagit Indian Tribe, the Sauk-Suiattle Indian Tribe, and the Swinomish Indian Tribal Community also have been consulted on the proposed action. The Swinomish Indian Tribal Community indicated that they have no concerns about the TCRA.

8.0 RECOMMENDATION

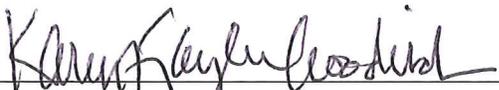
This decision document presents the selected TCRA for the Ladder Creek Settling Tank Site, located within Ross Lake National Recreation Area (managed as part of North Cascades National Park Service Complex), which was developed in accordance with CERCLA, as amended, and is not inconsistent with the NCP.

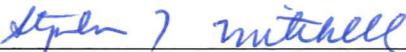
Conditions at the Site meet the NCP Section 300.415(b) criteria for a time-critical removal action and through this document, I am approving the proposed TCRA.

On the basis of the evaluation conducted and the factors outlined in the NCP, the NPS has determined that the release or substantial threat of release of hazardous substances at the Site pose a risk to human health and the environment, and that a TCRA is necessary and appropriate in order to abate, prevent, mitigate or eliminate the threat posed by the release or substantial threat of release of these substances. Because conditions at the Site meet all applicable CERCLA and NCP criteria for undertaking a TCRA, I recommend/concur/approve that the NPS implement the TCRA as proposed herein.

Recommended:  _____
Elizabeth L. Boerke
Environmental Protection Specialist
North Cascades National Park Service Complex

Date: 7/14/2017

Concurred:  Date: 07/14/2017
Karen F. Taylor-Goodrich
Superintendent
North Cascades National Park Service Complex

Concurred:  Date: 8/1/17
Stephen J. Mitchell, PE
Operations/Environmental Programs Branch Chief
National Park Service, Pacific West Region

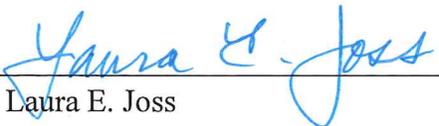
Approved:  Date: 8/7/17
Laura E. Joss
Regional Director
National Park Service, Pacific West Region

FIGURE 2 FROM LADDER CREEK SETTLING TANK SOIL ASSESSMENT; NEWHALEM, WASHINGTON (HART CROWSER, 2016)

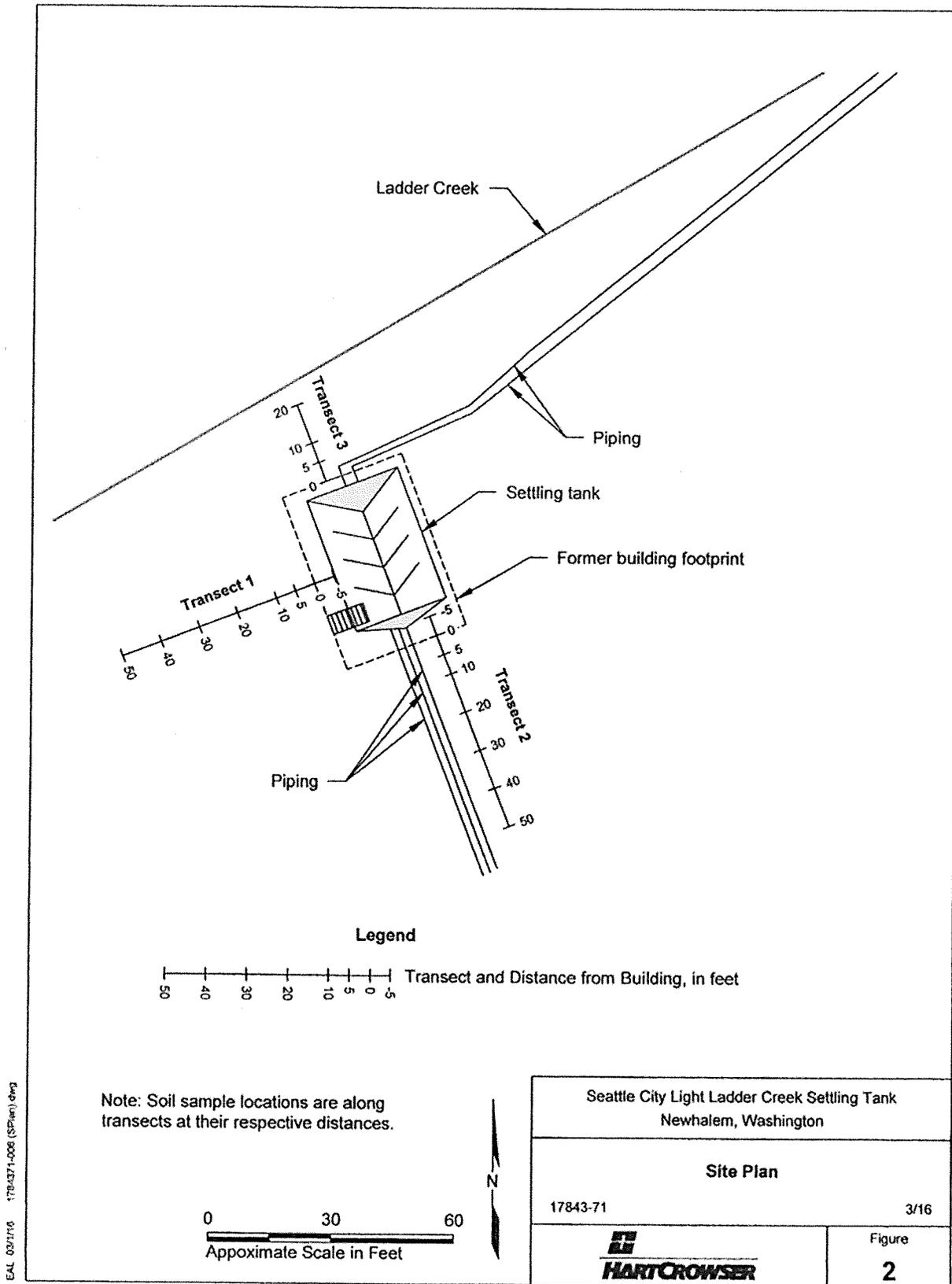


TABLE 1 – SITE DATA COMPARED TO STATE AND FEDERAL SCREENING LEVELS
Federal and Washington State Soil Screening Values (mg/kg)

Chemical	Screening Value Source	Ecological (Eco)						Human Health (HH)	
		Plants	Soil Invertebrates	Birds	Mammals	Residential	Industrial		
Arsenic	Washington DOE ¹	10	60	132	132	20	20		
Arsenic	NPS-Eco ² EPA-HH ³	18	60	46	43	0.68	3.0		
Chromium (total)	Washington DOE	42	42	67	67	Cr III 2000	Cr III 2000		
Chromium (total)	NPS-Eco EPA-HH	1	0.4	45	28	Cr III 12,000	Cr III 1,800,000		
Lead	Washington DOE	50	500	118	118	250	1000		
Lead	NPS-Eco EPA-HH	120	1700	56	11	400	800		
PAHs – HMW	Washington DOE	NA	NA	12	12	0.1	2.0		
PAHs – HMW	NPS/EPA Eco SSLs EPA-HH	NA	18	NA	1.1	0.016	0.29		

¹ Washington State Department of Ecology (DOE)

- Ecological Values: Ecological Indicator Soil Concentrations for Protection of Terrestrial Plants and Animals [WAC 173-340-7493(2)(A)(I)]
- Human Health Values: Model Toxics Control Act (MTCA) Method A Human Health Cleanup Goals

² NPS Protocol for the Selection and Use of Ecological Screening Values for Non-Radiological Analytes. National Park Service, Environmental Compliance and Response Branch, Contaminated Sites Program. January 13, 2014.

³ EPA Regional Screening Levels

TABLE 2 -- SUMMARY OF SITE SOIL DATA AND SCREENING VALUE EXCEEDANCES.

NOCA Site Analytical Soil Values (mg/kg)

Chemical	Number of Samples	Number of ND	Range of Detects	Mean of Detected Values	Max Value Location	Background Range (6 samples)	Site Data Exceeds Eco Screening Value?	Site Data Exceeds Human Health Screening Value?
Arsenic	13	9	20-34	26	T2-0	ND (DL=17)	DOE-Plants, NPS-Plants	DOE + EPA – Yes (residential and industrial)
Chromium (total)	13	0	4.7-69	34	T2-0	9.6-37	DOE-No NPS-Plant, Invert, Mammal	DOE + EPA (based on Cr III) - No
Chromium VI	1	1	ND	ND	ND	Not sampled	ND	ND
Lead	13	0	13-140	34	T2-0	8.9-87	DOE-No NPS-Mammals	DOE + EPA – No
PAHs - HMW	14	3	0.02-7.0	1.4	T1-10	ND	DOE-No NPS-Mammals	DOE-residential EPA-residential + industrial