SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT

for

Klondike Dam Removal
Lehigh River, Lehigh Township, PA

Supplemental to the Final Amendment to the Palmerton Zinc Final Natural Resources Restoration Plan, Environmental Assessment, and Environmental Impact Evaluation, March 2011

Prepared by:
U.S. Fish & Wildlife Service
The Wildlands Conservancy
On behalf of the Palmerton Zinc Restoration Trustee Council

Issued:
April 2019

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This Supplemental Environmental Assessment becomes a Federal document when evaluated and signed by the responsible Federal Official.

Date

Wendi Weber
Regional Director
Northeast Region
U.S. Fish and Wildlife Service
Department of the Interior Authorized Official
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Introduction
This Supplemental Environmental Assessment (SEA) has been developed by the U.S. Fish and Wildlife Service (Service) and The Wildlands Conservancy (Wildlands) on behalf of the Palmerton Zinc Restoration Trustee Council (Trustees). The Trustees are represented by the Service and the National Park Service (on behalf of the Department of the Interior), the National Oceanic and Atmospheric Administration of the Department of Commerce, and the Commonwealth of Pennsylvania, acting by and through its Departments of Environmental Protection (PA DEP), Department of Conservation and Natural Resources (PA DCNR), the Pennsylvania Fish and Boat Commission (PFBC), and the Pennsylvania Game Commission (PGC). The Trustees are responsible for implementing restoration for the Palmerton Zinc Natural Resource Damage Settlement.

The SEA has been prepared to analyze and assess the environmental effects of removing the Klondike Dam on the upper Lehigh River (River) in Lehigh, Clifton, and Sterling Townships, Lackawanna and Wayne Counties, Pennsylvania. The SEA ensures that the environmental effects of the dam removal project being proposed and funded by the PFBC, on behalf of the Trustees, are fully considered. It is "supplemental" because in March 2011, the Palmerton Zinc Final Natural Resources Restoration Plan, Environmental Assessment, and Environmental Impact Evaluation (the Restoration Plan) was published (USFWS 2011). At the time the Restoration Plan was released, there was not enough information available about the proposed dam removal project to adequately assess its environmental effects. Therefore, the Service is now publishing this SEA to provide that additional information and analysis to the public.

The Klondike Dam is located in the upper Lehigh River (River) in Lehigh, Clifton, and Sterling Townships, Lackawanna and Wayne Counties, Pennsylvania (Figure 1). Through a cooperative project including NRDAR resources, the property including the dam is now publicly owned and managed by the PGC. Records indicate that the dam was built in 1960. The dam is an earthen fill embankment about 1,450-feet long with a maximum embankment height of 15-feet and a 138-feet wide concrete spillway. The dam is the final barrier preventing upstream passage for aquatic organisms in the upper Lehigh River and reduces the quality of the exceptional value wetlands associated with the river’s headwaters. The removal of the dam will restore over 2.5 miles of the upper Lehigh River and its tributaries to aquatic organism passage.

The Restoration Plan was developed as part of a public process to determine the best way to utilize natural resource damage settlement funds ($9.875 million) received by the Trustees to restore injured natural resources and services resulting from the release of hazardous substances, primarily metals (cadmium, lead, and zinc), from the Palmerton Zinc smelters in Palmerton, Pennsylvania. Under the Restoration Plan, the Trustees distributed funds to four categories of projects, including Aquatic Natural Resources ($1.83 million), Upland Ecological Resources ($ 3.7 million), Recreational Trails ($1.28 million), and Recreational Fishing ($2.84 million). Under the Aquatic Natural Resources category, funds ($0.8 million) were allocated to improve fish passage on the Lehigh River.
Figure 1. Klondike Dam (SW corner of property) on Lehigh River, Lackawanna and Wayne Counties, PA.
In 2013, a significant seepage deficiency was discovered in the Klondike Dam. The Bureau of Waterways, Engineering and Wetlands of the PA DEP provided a Remediation Update of the 2013 Inspection (Attachment A). This update identified the dam as a “high-hazard” structure in need of rehabilitation to prevent risk to inhabitants downstream. The engineers advised that in the absence of rehabilitation, the dam should be breached to eliminate risk. The water level was lowered in the impoundment in 2013 to reduce stress on the failing dam. More recently, options to provide fish passage and restore the river, and address the weakened dam, water quality and public safety concerns were evaluated by Wildlands and PGC. Options included complete dam removal, partial breach of the dam, and the installation of a fish passage structure. Complete dam removal was identified as the preferred alternative. Wildlands and PGC will implement the dam removal project with funding from the Trustees and the Pennsylvania Growing Greener program.

![Klondike Dam, looking across the River from the southeast side.](image)

At the time the Restoration Plan was written, details concerning the feasibility of dam removal were unknown. In particular, the Trustees had limited information about the owner’s willingness to sell this property, the structural stability of the dam, and the potential for effects to wetland resources and endangered species. This SEA provides details about these conditions. As this document is supplemental to the original Restoration Plan, only new and additional information relevant to the project is included.

**CONCLUSION**

Project will have no significant adverse effects on the human environment (includes ecological, socioeconomic, historic and cultural resources).
Taking into account all of the information, this SEA concludes that the dam removal will have no significant negative effect on the human environment. Accordingly, the Trustees have issued a Finding of No Significant Impact (FONSI) in conjunction with this SEA.

**Timeline**
Provided necessary permits are secured and a qualified contractor is available, the Klondike Dam will be removed during 2019.

**Purpose and Need**
The purpose and need for the removal of the Klondike Dam are the same as those described in the original Restoration Plan and Amendment and are summarized below.

The need for this dam removal project is that the structure currently prevents fish passage and negatively affects the natural function of a flowing waterway, including associated floodplain and wetland ecosystems. Dams fragment rivers and cause adverse impacts to riverine function and floodplain health, including altering flow regimes, impairing physical habitat, and negatively affecting water quality such as increasing water temperatures. If changes are severe, the aquatic community can shift from organisms favoring lotic (flowing) environments to those favoring lentic (lake-like) habitat. Dams also restrict movement of aquatic species, including migratory and resident fish that spawn in upstream and tributary habitats. Dams left unmaintained can also cause risks to downstream properties and infrastructure. Should a dam catastrophically fail, it can also cause loss of life.

The entire upper Lehigh River is classified by the PA DEP as Exceptional Value according to Chapter 93 stream designations. It is also classified by the PFBC as a Wild Trout Water that supports the natural reproduction of Salmonids (Brown Trout). In addition to blocking passage of fish, this dam has created a chronic problem by accumulating sand and silt, which has filled the impoundment and led to a ponded area with higher water temperatures and lower water quality.

Reestablishing connectivity between upstream and downstream habitats often reunites previously isolated populations of aquatic organisms, restores access to habitats necessary for feeding, reproduction and growth, and improves river functions such as sediment and nutrient transport and water quality (temperature). These factors combine to make a river and the species living in it more resilient, improving the watershed's productivity and ability to support a greater diversity of species. Removal of this fish passage barrier will restore access for fish and other aquatic organisms in the upper Lehigh River to 2.5 miles of river and stream habitat and will allow the surrounding riparian area and wetlands to function naturally.

The purpose of the proposed dam removal project is to restore fish passage and natural riverine function in the upper Lehigh River. It will compensate for natural resources and services similar to those injured due to the release of hazardous substances from the Palmerton Zinc smelters in Palmerton, Pennsylvania. Under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, restoration efforts are intended to restore, rehabilitate, replace, or acquire the equivalent of the natural resources and services injured or lost due to the release.

**Public Involvement**
The Draft Restoration Plan was available for public comment in 2011. Stakeholders from the affected watershed, government agencies, non-profit organizations, and the general public provided comments to the Restoration Plan. Comments ranged from endorsements of the
overall Draft Restoration Plan to endorsements with additional considerations and/or suggested reprioritizations, as well as additional project ideas, and general concerns regarding the watershed.

The Trustee have developed the action proposed in this SEA since completion of the original Restoration Plan. Specifically, the preferred approach to restore the upper Lehigh River includes restoring fish passage on the recently acquired Klondike property.

Removal of the Klondike Dam is the proposed alternative. PGC will submit plans for the removal project for PA DEP review and approval via restoration waiver under the provisions of 25 Pa. Code, Section 105.12(a)(16) due to the restoration of naturally free-flowing conditions. Section 106 review will be coordinated through the State Historic Preservation Office, the Pennsylvania Historical and Museum Commission. PA DEP will also determine the need for Act 14 notification letters to local municipalities and, as warranted, property owners. Additionally, this SEA will be available for public comment until May 10, 2019.

Affected Environment
The affected environment is the upper Lehigh River watershed, which is described in the Plan (USFWS 2011). Wildlands evaluated wetlands' functions and values and consulted with State and Federal experts about potential impacts to threatened and endangered species prior to acquisition of the property and transfer to PGC.

Wetland resources
Since the dam was installed, very limited wetland habitat surrounded the river. Due to concerns about dam stability, water levels were drawn down 83% from full capacity in 2013 following the PA DEP dam inspection. This draw down created over 36 acres of wetland habitat on the periphery of the remaining open water. Additionally, removal of the dam is expected to add more wetland habitat to this complex wetland ecosystem. Expected results from this project will include an established stream channel for the river, flowing through the wetland with a forested buffer shading and stabilizing the banks. Riparian habitat previously submerged by the impoundment will now also serve as an enhanced wildlife corridor along the river channel and will help to absorb flood flows during heavy rain events.

Threatened and endangered species
As the wetland has recovered with lowered water levels, DCNR has documented the occurrence of several rare bog plants. Complete restoration of these headwater wetlands via dam removal is expected to further expand this unique bog plant community. DCNR approved the project and will provide guidance on protection of these species during planting.

Northern bulrush habitat exists in the adjacent county. The Service has no records of it occurring near this project; the closest location is more than 22 km away. DCNR biologists have surveyed the developing wetlands and reported no evidence of northern bulrush. Therefore, the Service does not expect that the project will affect federally listed northern bulrush.

Bog turtles occupy wetlands along streams. Currently, the Service has no records of bog turtles in the upper Lehigh River. The closest location is approximately 28 km away near the Delaware River. Project management will include protection strategies to ensure no
turtles are harmed during the removal of the dam or placement of sediment from the stream by following PFBC and Service recommendations.

Potential habitat for two federally listed bats (northern long-eared bat and Indiana bat) occurs near the Klondike Dam site. However, the closest known hibernacula and/or maternity roosts are approximately 14 km and 38 km for northern long-eared bat and Indiana bat, respectively. Bats can be adversely affected by the removal of trees, which provide roosting and maternity habitat. Removal of the dam will not require tree removal and will not affect roosting or foraging habitat. Therefore, the Service does not expect that the project will affect federally listed bats.

Alternatives Analysis
The National Environmental Policy Act (NEPA) requires that Federal agencies consider a reasonable range of alternatives to their proposed actions. On a broad scale, the Restoration Plan evaluated as alternatives completely different types of aquatic resources restoration projects, including dam removal, fish passage structures, boating access, angler access, and riparian habitat protection. The Restoration Plan and Amendment identified some restoration projects as preferred alternatives and others as non-preferred alternatives. The restoration of the upper Lehigh River was one of the preferred alternatives.

In the upper Lehigh, the Restoration Plan supported development of an alternatives analysis to assess potential pros and cons of different means for restoring the River and providing fish passage, including complete dam removal, partial breach of the dam, and the installation of a technical fishway. After evaluation, PGC engineers, PFBC fish passage experts, and Wildlands selected complete dam removal as the preferred method because it provides the greatest ecological benefits, is self-sustainable, and is the most cost effective option.

Project partners determined that the removal of the dam and restoration of the riparian habitat are feasible and can be accomplished in a way that will have no significant effect on the environment. The proposed project will be reviewed by PA DEP and a “Letter of Authorization” to proceed will be issued under the provisions of 25 Pa. Code, Section 105.12(a)(16) due to the restoration of naturally free-flowing conditions. None of these reviews is expected to uncover new information that would alter the Restoration Plan and FONSI. Therefore, complete removal of the dam is the preferred alternative and is the only alternative being analyzed in this SEA.

Project Description
The Klondike Dam Removal and Restoration project will involve the removal of a dam, stream restoration work, and a riparian buffer planting. The project team will implement stream restoration BMP’s such as dam removal, in-stream habitat placement, stream bank grading, and riparian buffer planting. The PGC engineering program is designing the dam removal to minimize disturbance and downstream sediment migration. Once the dam is removed, the streambanks will be graded to their natural slope and seeded with native plants to stabilize them during periods of high flow. Wildlands will oversee planting the banks with trees and shrubs to create a native riparian buffer. PFBC and Wildlands will monitor the stream once it stabilizes to determine if in-stream habitat structures are warranted.

Environmental Consequences
The original Restoration Plan preliminarily evaluated the environmental and socioeconomic consequences of restoring the upper Lehigh River. The Trustees intend that this discussion of environmental
consequences will supplement that original analysis in the Restoration Plan. It provides additional details about the dam removal process, analysis of the environmental effects of the dam removal process, and information about what measures will be taken to ensure that implementation of the project will cause no significant adverse effects to the environment.

The Trustees have outlined the beneficial and adverse environmental effects of removing the dam (Table 1). None of the anticipated effects, whether beneficial or adverse, are considered significant. It should be noted that the term "significant" has a very particular definition within the context of NEPA (40 CFR 1508.27). Stating that a beneficial or adverse effect is "insignificant" does not mean that the effect is unimportant or not meaningful, just that the effect does not rise to the level of significance within the context of NEPA.

The vast majority of environmental effects associated with the dam removal will be long-term and beneficial. It is anticipated that improvements to fish habitat and restoration of natural flow through this river reach will improve populations of resident fish and other native aquatic organisms. In addition, restoration of a broader floodplain (currently submerged by the impoundment) will enhance wetland recovery and provide additional habitat for rare bog plants and animals.

Another beneficial effect of removing the dam is the restoration of the sediment and nutrient transport processes in the upper Lehigh River, allowing sediments and woody debris in the watershed to move downstream. Natural movement of sediment is critical to maintaining instream river habitats such as riffles and pools, upon which aquatic invertebrates, fish and wildlife rely. Removing the dam will also benefit the upstream floodplain/wetland ecosystem by restoring more natural flooding regimes (timing and duration) and increasing the width of the riparian buffer. Removing instream barriers not only improves fish passage and instream function, it sustains and promotes healthy native floodplain ecosystems.

The proposed design is expected to increase wetland acreage and diversity of wetland habitats. Currently, the wetlands surrounding the existing open water experience high water levels during snowmelt, but otherwise have fairly consistent hydrology. Under proposed conditions, a gradation in hydrologic regimes will occur from the forest edge down gradient to the river channel. This variation in hydrology will result in diverse wetland plant types from facultative to obligate. The wetland will continue to receive groundwater emitting from the surrounding hillslopes, as well as over-bank flood flows from the channel during snowmelt and large storm events.

Removal of the dam improves public safety concerns and removes the risk of dam failure. According to the PA DEP Bureau of Waterways, Engineering and Wetlands, the dam is currently classified as B3 or Moderate Hazard Classification. A 2013 Dam Safety Inspection concluded that the dam was in poor condition, with spillway deterioration, undermining, seepage, and inadequate spillway capacity. If maintenance and repairs to the dam are not completed in the near future, the continued decline of the dam's condition increases the risk of catastrophic failure during a large flood event, which could affect Papermill Road and the Van Car Road Bridge, and public and private infrastructure downstream.
Removal of the dam increases public access to high quality stream habitat. This change will allow PGC and PFBC to pursue their missions of educating and engaging young people in outdoor sporting activities, sound conservation practices, and learning about the flora, wildlife and sustainable stream management practices that this property can provide. Several chapters of Trout Unlimited and the New Milford Boy Scout Troops have expressed their support for the project.

The dam removal is not expected to have any significant adverse effects on the human environment. Rather, the project is anticipated to have biological, physical, and socioeconomic benefits and will help compensate the public for injuries to natural resources caused by contamination from the Palmerton Zinc site.

**Cumulative Effects**
The cumulative effects of this project are expected to be beneficial, but not significant. Under NEPA, cumulative effects are considered within the context of the affected environment, which is the upper Lehigh River watershed. The Trustees anticipate that emergent and scrub-shrub wetland habitat historically associated with the River, prior to modifications caused by the construction of the dam, will regenerate following dam removal. River connectivity will be improved, habitat will be restored for fish and other wildlife, and access will be improved for people recreating on the river. This cumulative beneficial effect, as defined under NEPA, is insignificant, given how altered the Lehigh River watershed is overall and given that several dams along the Lehigh River (downstream) still currently prevent passage of migratory fish to upstream habitats.

There are no adverse cumulative effects associated with this project.

**Consultation and Coordination**

The following individuals, Federal, State and local agencies, Tribes, and non-governmental organizations has been or will be consulted during the development of this SEA:

- Clifton, Sterling, and Lehigh Townships (planned)
- Wayne and Lackawanna Counties (planned)
- U.S. Fish and Wildlife Service (completed)
• National Oceanic and Atmospheric Administration (completed)
• Pennsylvania State Historic Preservation Office (ongoing)
• Private landowners (if warranted)
• PA DEP (ongoing)
• PA DCNR (completed)
• PGC (completed)
• PFBC (completed)

The proposed project has been evaluated for consistency with applicable Federal, State, and local laws, regulations and programs. In addition to this SEA, the following permits, applications and/or consultations are also required by local, State and Federal agencies:

• Federal Water Pollution Control Act Section 401
• PA State Programmatic General Permit-5 (PASPGP-5)
• 25 Pa. Code, Section 105.12(a)(16)
• State Historic Preservation Office consultation
• PA Natural Diversity Inventory Review

References
ATTACHMENT A

PA DEP LETTER TO TIGHE SCOTT
August 13, 2014

Mr. Tighe J. Scott  
Mr. Neil A. Scott  
1052 East Mountain Avenue  
Par Argyll, PA  18072

Re: Remediation Update  
2013 Annual Inspection Report  
DEP File No. D64-175

Dear Messrs. Scott:

This letter is regarding the current condition of Lower Klondike Dam located across the Lehigh River in Lehigh Township, Wayne County.

On October 24, 2012, a significant seepage deficiency was discovered at Lower Klondike Dam. Since that time, the impoundment has been successfully drained, exploration excavation was performed, and dye testing confirmed the seepage was piping beneath the spillway. Some discussion had occurred during the course of 2013 as to possible rehabilitation projects to resolve the seepage problem; however, no such project was ever formally submitted for approval.

At this time, the exploration excavation area along the right spillway training wall remains open and one-third of the dam embankment material is removed. The Department requests the excavated area be backfilled and compacted with suitable material to the pre-excavation dimensions as a temporary measure until the dam is rehabilitated. The Department also requests that a schedule to remediate this dam in the 2015 calendar year be provided to our office in writing by October 30, 2014. Even though the impoundment behind this dam is drained, it remains a high-hazard dam and can be a risk to inhabitants downstream should the reservoir fill during a significant rainfall event or if the drawdown structure becomes inoperable or clogged. If repair to the dam cannot be made in this time frame, a temporary breach of the dam must be considered to eliminate this risk.

In addition to the seepage concern, the Department has reviewed the 2013 Annual Inspection Report received from Carbon Engineering, Inc. on December 31, 2013 and concurs with the recommendations explained in it. You should review these recommendations with your engineer and implement any necessary maintenance and repairs. These results should be documented by your engineer in the 2014 Annual Inspection Report.

If you or your engineer has any questions regarding this letter, please contact Curtis Brown at 717.783.7917 or by email at cbrown@dep.state.pa.us.

Sincerely,

Roger F. Adams, P.E.  
Chief  
Division of Dam Safety

c: Ronald M. Tiptak, P.E., Carbon Engineering Inc.