



## FINDING OF NO SIGNIFICANT IMPACT

### Proposed Eel Ladder Construction at Dams 4 and 5 on the Potomac River

December 2010

The National Park Service (NPS), Chesapeake and Ohio Canal National Historical Park (NHP), has evaluated impacts to the park's cultural and natural resources that could occur as a result of a proposed project to install an eel ladder at both Dams 4 and 5 on the Potomac River. Dam 4 and the associated hydroelectric station are located on the Potomac River (Milepost 84) approximately 4 miles northwest of Shepherdstown, West Virginia and four miles south of Downsview, Maryland. Dam 5 and the associated hydroelectric station are on the Potomac River (Milepost 104) approximately five miles northeast of Hedgesville, West Virginia and five miles northwest of Williamsport, Maryland.

The American eel (*Anguilla rostrata*) is a catadromous species, meaning that it migrates out of rivers to spawn in the sea, with the juveniles returning to mature in fresh water. Historically, this species occurred in virtually every stream on the Eastern Seaboard, including the Potomac River above Dams 4 and 5. Juveniles will live and grow in fresh water for anywhere from 5 to 40 years before returning to the sea to spawn and die. American eels are important parts of riverine ecosystems; feeding on insects, mollusks, crustaceans, worms, and other fish at night; and providing food for larger fish, birds, and snakes. The American eel has been an economically important fishery at many points in our Nation's history.

The American eel population is declining throughout its range, primarily due to its exclusion from historic habitat by dams. Access to approximately 120 miles of historic habitat within the Potomac River above Dams 4 and 5 would be improved by the construction of the proposed eel ladders. Providing access to the important habitat between and above these dams will complement an effort already underway in the Potomac River watershed to reduce fragmentation of aquatic habitat used by the American eel and increase the connectivity of the riverine ecosystem. This action is needed because the American eel does not currently have adequate means of passage around either dam.

The purpose of this proposed action is to achieve the objectives of the Atlantic States Marine Fisheries Commission's (ASMFC) Interstate Fishery Management Plan (FMP) for American eels by working cooperatively with other partners to restore the American eel population throughout the entire Shenandoah and Potomac River watershed.

The NPS completed an environmental assessment/Assessment of Effects (EA/AoE) that provides an analysis of the environmental consequences of the alternatives considered for the resource protection and visitor accommodation projects. This EA/AOE was prepared in accordance with National Environmental Policy Act of 1969 (NEPA), as amended, its implementing regulations by the Council on Environmental Quality (CEQ) (40 CFR 1500-1508), and NPS Director's Order 12, Conservation Planning, Environmental Impact Analysis and Decision-making, and accompanying Handbook. The document also is intended to be used in fulfillment of responsibilities under Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended.

## **SELECTED ALTERNATIVE**

Based upon the analysis presented in the EA/AOE, the NPS identified Alternative B as the Preferred Alternative and selected it for implementation for both Dam 4 and Dam 5. The Selected Alternative includes the installation of eel ladders at Dams 4 and 5. The basic design of the eel ladders will be similar for each dam. The eels will enter the ascending ramp at the base of the dam. A screen, pump, and flow distribution nozzle will be used to draw the eels toward the ladder by providing operating flow and side channel attraction water flow. The pump will run during the American eel migratory period, which is typically March through October. Once the eels enter the ladder, they will swim up the angled ascending ramp and enter into a live well at the end of the exit pipe. Once in the live well, the eels will be monitored by project biologists, either from the U.S. Fish and Wildlife Service (USFWS) Maryland Department of Natural Resources (MDDNR), at least twice weekly for the first season to gauge the success of the eel ladder. Eels would either be hand released in the upstream impoundment or eels would swim out of the live well upstream. Key considerations at each location included: the ability to pass eels upstream; impacts to cultural resources and landscapes; impacts to visitor services; and impacts to wildlife and vegetation.

The Selected Alternative for Dam 4 will be located along the Maryland shoreline on NPS property. The eel ladder entrance will be placed at the corner of the dam on the east face of the stone abutment. The ascending ramp will be located underground of the stone abutment. The eels will exit the ladder via an exit pipe that will wrap behind the stone abutment. The exit pipe will be approximately 100 feet long. The eels will be monitored in a live well upstream of the dam.

The location and design of this alternative was first determined by identifying the most favorable conditions for eel attraction, and therefore the best conditions for program success. The impacts to the other project objectives were then evaluated.

### **Alternative B at Dam 4;**

- high ability to pass the eels upstream during variable flows
- river dynamics on the Maryland shoreline are naturally attractive to the eels.
- greatest protection of the cultural landscape with the eelway located underground, avoiding attachment of the structure to the historic dam and concealing most of the structure from view
- opportunity to provide visitor education/interpretation regarding eels since the eelway at Dam 4 will be located in the park,
- greatest protection of other wildlife and vegetation in the project area,
- most sustainable against vandalism and damage from floods due to underground design.

The Selected Alternative (Alternative B) for Dam 5 will be located along the West Virginia shoreline on the Allegheny Energy property. The entrance to the eel ladder will be placed in the tailrace waters just below the power house, with the ascending ramp attached to the power house. The eels will swim up the ascending ramp and enter into the exit pipe which will be approximately 300-feet long. The exit pipe will run along the stone abutment and forebay. The eels will be monitored in a live well upstream of the dam.

Like Dam 4, the location and design of this alternative was determined by first identifying the most favorable conditions for eel attraction and therefore the best conditions for program success. The impacts to the other project objects were then evaluated.

### **Alternative B at Dam 5:**

- very high ability to pass eels due to river dynamics and the natural attraction of the eels to the West Virginia shoreline
- some danger of entrapment in the power house turbines

- medium protection of cultural resources as the required non-overflow structure will not need to be attached to the historic dam
- high protection of the cultural landscape with the eel ladder being placed in the tailrace of the hydroelectric plant and attached to the abutment and fore bay of the plant
- minimal opportunity to provide education to visitors with the eel ladder located on the opposite side of the river from the park
- greatest protection of other wildlife and vegetation in the project area
- eel ladder will be retractable, and therefore sustainable against flood generated debris.

#### **OTHER ALTERNATIVES CONSIDERED**

In addition to the Selective Alternative, the NPS analyzed a No Action and two additional action alternatives each for Dams 4 and 5 in the EA/AoE.

##### No Action Alternative

Under the No Action Alternative (Alternative A) eel ladders at Dams 4 and 5 would not be constructed. Dams 4 and 5 would continue to obstruct the upstream migration of the American eel from the Sargasso Sea to their native freshwater habitats.

##### Action Alternatives

Two additional action alternatives (Alternatives C and D) were considered for each of the dams. The basic design for the eel ladders, as described above, would be the same for all action alternatives.

For Dam 4, Alternative C would include placing the eel ladder along the West Virginia shoreline on Allegheny Energy property. The entrance to the eel ladder would be placed in the tailwaters just below the dam. The eel ladder would be attached to the north face of the stone abutment. A short, non-overflow device constructed of locally sourced stone would be placed in the tailwaters to help attract the eel to the entrance of the ladder. The exit pipe for this alternative would be approximately 200 feet long and would run along the abutment and forebay. This alternative would have a low ability to attract eels due to river dynamics along the West Virginia shoreline. There would be a medium preservation of historic resources since the eel ladder would need a short non-overflow attached to the historic dam. There would be a high protection of the cultural landscape since the eel ladder would be located across the Potomac River from the park. The American eel would benefit from this alternative. Education/interpretation of the eels would be minimal since the eel ladder would be located away from the park. The alternative would neither benefit nor harm other wildlife or vegetation in the area. There would be some entrainment hazards from the hydro-plant turbines. The design for this alternative would allow for removal of the eel ladder during flood events.

Alternative D for Dam 4 would also be located along the West Virginia shoreline on Allegheny Energy property. The entrance to the eel ladder would be placed in the tailrace waters just below the powerhouse. The ladder would be attached to the powerhouse and the exit pipe would be approximately 200 feet long and would run along the shoreline, through the abutment, and along the fore bay. This alternative would have a medium ability to pass eels upstream of Dam 4 during normal river flows, less ability during high or low water events. There would be some entrainment hazards from the hydro-plant turbines. There would be medium protection of the cultural landscape with the eel ladder located on the West Virginia shoreline. There would be high protection of historic resources since no non-overflow structure would be needed. Education/interpretation of the eels would be minimal since the eel ladder would be located away from the park. The American eels would benefit from the eel ladder. The eel ladder would neither benefit nor harm other wildlife or vegetation in the area. The design for this alternative would allow for only a portion of the eel ladder to be removable during flood events.

For Dam 5, Alternative C would be located along the West Virginia shoreline on the Allegheny Energy property. The entrance to the eel ladder would be placed in the tailwaters just below the dam. The ladder

would be attached to the forebay and a non overflow device and low weir would be placed in the tailwaters to help attract the eels to the entrance. The exit pipe would be approximately 160 feet long and would run along the forebay. This alternative has a high ability to pass eels upstream. There would be some hazards from entrainment in hydro-plant turbines. It offers medium protection of historic resources due to the need for a short non-overflow in the tailwaters. There would be a high protection of cultural landscape since the eel ladder would be located on the West Virginia shoreline. Education for park visitors would be minimal since the eel ladder would be located away from park property. The configuration of the eel ladder would reduce the visibility of the ladder from the Maryland shoreline. American eels would benefit from the eel ladder. The ladder would neither benefit nor harm other wildlife or vegetation in the area. While this alternative had a high probability to pass eels upstream, the impacts to cultural resources with the need for physical alterations to the dam with the non-overflow made this alternative less desirable than the selected alternative.

Alternative D for Dam 5 would be located along the Maryland shoreline on NPS property. The eel ladder entrance would be located in the tailwaters and would be attached to the stone abutment. A short non overflow and low sill would be needed to help attract the eels to the entrance. The exit pipe would be approximately 60 feet long and would be placed across the dam and into the headpond. This alternative has a low ability to pass eels upstream due to river dynamics. There would be a low protection of cultural resources since the location on the Maryland shoreline and the design would be extensive. There would be low preservation of the historic resources due to the need for a non-overflow attached to the historic dam. This alternative would provide many educational and volunteer opportunities regarding eels since the structure would be located on park property. American eels would benefit from the ladder. The eel ladder would neither benefit nor harm other wildlife or vegetation in the area.

CEQ regulations for implementing NEPA require federal agencies to explore and objectively evaluate all reasonable alternatives, and to discuss the rationale for eliminating any alternatives that were not considered in detail. During internal scoping, 22 alternatives were considered but dismissed. These alternatives were dismissed due to low probability for attracting eels, or high level of impacts to cultural or natural resources. The alternatives retained for evaluation provided three action alternatives per site, to include alternatives on both shorelines, to meet CEQ regulations for objectivity.

### **ENVIRONMENTALLY PREFERABLE ALTERNATIVE**

The NPS is required to identify the environmentally preferable alternative in its NEPA document for public review and comment. The NPS, in accordance with the Department of the Interior policies contained in the Departmental Manual (516 DM4.10) and CEQ *NEPA's Forty Most Asked Questions*, defines the environmentally preferable alternative as one that "causes the least damage to biological and physical environment". It is the alternative "which best protects, preserves, and enhances historic, cultural, and natural resources" (Q6a).

After completing the environmental impact analysis, the NPS identified Alternative B, the Selected Alternative, as the EA/AoE's environmentally preferable alternative for each dam. Alternative B will meet park purposes and NEPA goals by protecting important cultural resources and visitor experience for each dam while meeting project goals to reestablish the historic habitat of the American eel.

The other action alternatives considered in the EA/AoE do not meet the criteria for the environmentally preferable alternative as fully as the Selected Alternative. These alternatives would not fully protect the visitor experience, historic structures, the historic viewshed of the area, or meet the objectives of providing successful eel passage upstream to re-connect natural portions of their habitat.

The No Action alternative would neither contribute nor meet the criteria for the environmentally preferable alternative.

## MITIGATION MEASURES FOR THE SELECTED ALTERNATIVE

The NPS places a strong emphasis on avoiding, minimizing, and mitigating potentially adverse environmental impacts. To help ensure the protection of natural and cultural resources and the quality of the visitor experience, the following protective measures will be implemented as part of the selected action alternatives.

Mitigation Measures of the Selected Alternatives	
Resource Area	Mitigation Measures
Visitor Use and Safety	<ul style="list-style-type: none"><li>• To prevent injuries from occurring, park visitors would be detoured around the construction zones.</li></ul>
Historic Viewshed	<ul style="list-style-type: none"><li>• Impacts on the historic viewshed would be mitigated through context sensitive design and by a public interpretation program such as a wayside exhibit that would explain the presence of the non-historic elements in the historic setting.</li><li>• Live wells and collection boxes would be camouflaged to minimize the impact to aesthetics and the visual landscape and reduce potential attractive nuisance.</li><li>• Design will take into account coloration and materials of the eel ladders to provide a harmonious element to the landscape.</li></ul>
Historic Resources	<ul style="list-style-type: none"><li>• The use of masonry joint anchors, rather than drilling into historic fabric, would be used when feasible to minimize the impact of the historic dams.</li><li>• Placing the majority of the eel ladder underground at Dam 4 reduces the amount of impacts to the historic structure. Initial alternative designs for the Maryland location had the eel structure attached to the dam for the entire length of the eel ladder. Non-overflows were also a component of the earlier design. Thus, the placement of the majority of the eel structure underground was, in essence, a mitigation to reduce the impacts to Dam 4.</li></ul>

## WHY THE SELECTED ALTERNATIVE WILL NOT HAVE A SIGNIFICANT EFFECT ON THE HUMAN ENVIRONMENT

As documented in the EA/AoE, the NPS has determined that the selected alternative can be implemented without significant adverse effects. As defined in 40 CFR §1508.27, significance is determined by examining the following criteria:

***Impacts that may have both beneficial and adverse aspects and which on balance may be beneficial, but that may still have significant adverse impacts which require analysis in an EIS:*** Air quality, noise, soils, water quality, wetlands, vegetation, wildlife, aquatic resources, historic resources, visitor use and experience, aesthetics, park operations, and energy resources will experience both beneficial and/or adverse impacts as a result of implementing the Selected Alternatives, however, no significant impacts were identified that will require analysis in an EIS.

**Air Quality:** The Selected Alternatives for Dams 4 and 5 will have short-term, negligible, adverse impacts to air quality during the construction period due to the generation of criteria air pollutants from the operation of equipment. Long-term, negligible, adverse impacts to air quality will result during the operation of the eel ladder from the generation of criteria pollutants from the use of the attractant flow pump.

**Noise:** The Selected Alternatives at Dams 4 and 5 will have short-term, minor, adverse impacts to noise during the construction period. Impacts to noise during the operation of the eel ladder will be long-term, negligible, and adverse due to the use of the attractant flow pump.

**Soils:** The selected alternative at Dam 4 will have short-term, minor, adverse impacts to soils due to the movement and displacement of soils during the installation of the underground exit pipe. The selected alternative at Dam 5 will have short-term, negligible, adverse impacts to soils during construction

activities. No long-term impacts to soils will be associated with the implementation of the eel ladders at Dams 4 and 5. The project will require best management practices for erosion and sediment controls per Maryland Department of the Environment regulatory review and permitting process.

**Water Quality and Flow:** The Selected Alternatives at Dams 4 and 5 will have short-term, minor, adverse impacts to water quality due to an increase in turbidity, sedimentation, and erosion during the construction period. In addition short-term, minor, adverse impacts to water flow will result if upstream water draw down is necessary to install the eel ladders. No long-term impacts to water quality and flow will result from the operation of the eel ladders. The project will follow state and federal guidelines to protect water quality and flow. Measures taken could include, but are not limited to, dewatering the immediate area surrounding the project site with the use of portable dams. The project will require review and permitting from Maryland Department of the Environment and the Army Corps of Engineers, a standard procedure.

**Wetlands and Deepwater Habitats:** The Selected Alternatives at Dams 4 and 5 will have long-term, minor, adverse impacts to deepwater habitats (the Potomac River) due to the placement of cobble stone or river rocks in the river to support the live well upstream of the dams. Additional long-term, minor, adverse impacts to the forested, emergent, and riverine wetlands along the shorelines of Dams 4 and 5 will result due to the placement of concrete footings to hold the exit pipe. The maximum extent of wetlands impacted under each selected alternative is 20 square feet. This project is considered an Excepted Action under Director's Order #77-1, Section 4.2.1 part h, actions designed for the purpose of restoring degraded aquatic habitats or ecological processes. The project will be reviewed by the Maryland Department of the Environment Non-tidal Wetland and Waterways division for wetland impacts, once design elements are developed. Any mitigations to wetlands will be specified at that time.

**Vegetation:** The Selected Alternatives at Dams 4 and 5 will have short-term, minor, adverse impacts to vegetation during the construction period. Vegetation may be disturbed or damaged due to the use of construction equipment. No long-term impacts to vegetation will occur during the operation of the eel ladders. The area will be revegetated with native plant species upon completion of the construction.

**Wildlife:** The Selected Alternatives at Dams 4 and 5 will have short-term, minor, adverse impacts during the construction period. The noise associated with construction activities may cause some wildlife to avoid the area during this period. No long-term impacts to wildlife will occur during the operation of the eel ladders.

**Aquatic Resources:** The Selected Alternatives at Dams 4 and 5 will have short-term, minor, adverse impacts to aquatic resources during the construction period. An increase in turbidity and a reduction of water flow may impact foraging and breeding of fish and macroinvertebrates. Long-term, beneficial impacts to the American eel population will result from restoring over 120 miles of native habitat and providing safe passage over the dams.

**Historic Resources:** The selected alternative at Dam 4 will result in moderate intensity, long-term, and indirect adverse impacts due to the alteration of the viewshed, which will be apparent from downstream vantage points. There will be no direct connection of the eel ladder to the historic dam. The selected alternative at Dam 5 will result in negligible to minor long-term, direct, adverse impacts due to the eel ladder being directly attached to the Dam 5 Hydroelectric Station. Long-term, adverse impacts will result from the addition of non-historic elements into the historic setting.

**Visitor Use and Safety:** The selected alternative at Dam 4 will have short-term, minor, adverse impacts to the health and safety of both park staff and visitors during the construction period. The operation of the eel ladder will have short-term, negligible to minor, adverse impacts to park staff due to the placement of the eel ladder over moving water. The selected alternative at Dam 5 will have no impact to visitor use and safety since the eel ladder would be placed off of NPS property.

**Visitor Experience:** The Selected Alternatives at Dams 4 and 5 will have short-term, negligible, adverse impacts to visitor experience during the construction period due to the potential water drawdown. Beneficial impacts to visitor experience are expected under the selected alternative at Dam 4 due to the additional educational opportunities on American eels available to park visitors.

**Aesthetic Resources:** The selected alternative at Dam 4 will have short-term, minor, adverse impacts to aesthetic resources due to the visibility of construction activities on park property. The selected alternative at Dam 5 will have short-term, negligible, adverse impacts since construction activities will be located off of NPS property. The operation of the eel ladders at both Dams 4 and 5 will have long-term, negligible, adverse impacts to aesthetic resources from the visibility of the eel ladder and associated structures.

**Park Operations:** The Selected Alternatives at Dams 4 and 5 will have short-term, minor, adverse impacts to park operations during the construction period and long-term, minor, adverse impacts to park operations during the operation of the eel ladder. Eel monitoring and maintenance of the eel ladders will be required.

**Energy Resources:** The Selected Alternatives at Dams 4 and 5 will have short-term, minor, adverse impacts to energy resources during the construction period due to the use of fuel and electricity to operate construction materials. During the operation of the eel ladder, long-term, minor, adverse impacts to energy resources will result from the electricity needed to operate the attractant flow pump.

**The degree to which the action affects public health and safety:** The Selected Alternative for Dam 4 will have short-term, minor, adverse impacts to the safety of park visitors and park employees. Park visitors will still be allowed within the vicinity of Dam 4 during the construction period. To minimize impacts to visitor safety the construction site will be fenced off from visitors. Impacts to park staff may result from participating in the construction activities. The operation of the eel ladder will have long-term, negligible impacts to the safety of park visitors and long-term, minor, adverse impacts to the safety of park staff. Impacts to park visitors will be negligible since visitors will not have access to the eel ladders. There may be a potential for increased safety risks for park staff since the eel ladder will be placed over moving, deep water.

The Selected Alternative for Dam 5 will have no impact on the public health and safety of park visitors and park staff because the eel ladder will not be located on NPS property. The eel ladder will be located on Allegheny Energy property so visitors will not have access to the area during construction or operation of the eel ladder. Park staff will not be responsible for the eel ladder since it will be located off of NPS property.

**Unique characteristics of the geographic area such as proximity to historic or cultural resources, parklands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas:** No prime farmlands, wild or scenic rivers, ecologically critical areas occur within or adjacent to the Project Area and none will be impacted by the proposed actions. Dams 4 and 5 and the associated hydroelectric stations are historic structures. In consultation with the West Virginia State Historic Preservation Office, it was determined that the proposed project would not have an adverse effect on the hydroelectric stations. This was documented in correspondence dated December 8, 2008. The eel ladder at Dam 4 will be attached to the stone abutment along the Maryland shoreline. Long-term, adverse impacts will result from the alteration of the views of Dam 4 and its viewshed, which will be apparent to visitors at downstream vantage points and from those standing atop the abutment. Direct impacts to the abutment will result due to the need to place the eel ladder through the abutment, but this must be considered in light of the fact that the abutment has already lost a degree of its historical integrity due to severe damage during a previous flood.

The eel ladder at Dam 5 will be attached to the powerhouse, which results in some loss of its historical material, which will be a direct, long-term, minor, adverse impact. By the introduction of non-historic

elements, the historical setting of the Dam 5 Hydroelectric Station will be slightly altered resulting in an indirect, long-term, minor, adverse impact. There will be no direct impact to any of the historic structures associated with the C&O Canal.

Wetlands are located within the project areas for Dams 4 and 5. The area downstream of both dams are considered riverine, deepwater habitat. There will be no impact to the deepwater habitat since the eel ladders will be attached to the abutment at Dam 4 and the powerhouse at Dam 5. The eel ladders will not be attached to the river bottom. The shorelines upstream of the dams are considered palustrine, forested wetlands. Small areas of palustrine emergent wetlands are also located within the project area of the Preferred Alternatives. The footings that will hold the exit pipe in place will create long-term, minor, adverse impacts to the wetlands. Approximately 20 square feet of wetlands will be impacted at each dam. This project is an excepted action under Section 4.2.1 part h of Director's Order #77-1 because the purpose of the project is to restore safe eel passage for the American eel. Under this excepted action up to 0.25 acres of new long-term, adverse impacts to wetlands are allowed if directly associated with and necessary for the restoration.

***Degree to which the effects on the quality of the human environment are likely to be highly controversial:*** No highly controversial effects in terms of scientific uncertainties as a result of the Selected Alternatives were identified during the preparation of the EA/AoE or by the public during the public comment period. One public comment supporting the installation of the eel ladders was received during the public review period.

***Degree to which the possible effects on the quality of human environment are uncertain or involve unique or unknown risks:*** No highly uncertain, unique, or unknown risks were identified during either preparation of the EA/AoE or through public comment.

***Degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration:*** The Selected Alternatives neither establish a NPS precedent for future actions with significant effects nor represent a decision in principle about a future consideration.

***Whether the action is related to other actions with individually insignificant but cumulatively significant impacts:*** Implementation of the Selected Alternatives will have no significant cumulative impacts. As described in the Chapter 4 of the EA/AoE, past, present, and future actions and projects within the project area of Dam 4 that could affect air quality, vegetation, aesthetics, and park operations include the Big Slackwater reconstruction and stabilization of towpath, boat ramp restoration, and eel passage. The Selected Alternative at Dam 4 will have negligible, adverse cumulative impacts to air quality, vegetation, and aesthetics when other park projects are considered. Minor, adverse impacts to park operations are also expected.

There will be no adverse cumulative impacts associated with the Selected Alternative at Dam 5 since no other projects have been identified in that area. The cumulative effect of the Dams 4 and 5 eel ladders, along with other ladders installed or planned to be installed within the Potomac River basin, will cause a beneficial cumulative impact to the American eel population in the basin.

**Air Quality** – There will be short-term, negligible, adverse impacts to air quality from construction activities. There will not be detectable amounts of pollutants in the regional area. There will not be cumulative impacts at Dam 4 when combined with the Big Slackwater towpath reconstruction, Dam 4 boat ramp restroom construction, and other eel passage construction. At Dam 5, there are no other projects planned in that area of the park.

**Noise** – Noise from the existing power generation plants and the dam overflow create regular noise within the project areas. Neither this project nor the Big Slackwater and boat ramp reconstruction will contribute to detectable increased noise in the area.



Soils – At Dam 4, there will be minor, short-term, and adverse impacts to soils due to the below grade installation of the eel ladder and electric line. There may be minor compaction of soils within both project areas due to construction equipment as well as within the Big Slackwater and boat ramp reconstruction project areas near Dam 4. However, implementation of these actions will not cause impairment to park resources nor any significant cumulative impacts.

Water Resources – There will be no cumulative impacts to water quality and water flow associated with this project at Dam 4 since the area of impact is relatively small when compared to the size and volume of the Potomac River. Other planned projects near Dam 4 will not have an impact on this project. Dam 5 will also be confined to a very small area and will not have any cumulative impacts.

Wetlands and Deepwater Habitat – At Dam 4, it is anticipated that only 20 square feet of wetlands will be lost due to this project. This is considered minor and no cumulative impacts associated with this project area anticipated. None of the projects in the Dam 4 area, ongoing or proposed, are expected to include the taking of wetlands. No wetlands are expected to be impacted at Dam 5.

Vegetation – The exit pipe at Dam 4 will require some permanent vegetation removal. It is likely that some other projects within the eel ladder project ladder will also have an impact on vegetation. At Dam 5, vegetation removal is expected to be minor and adverse but will not have a cumulative impact with other projects. Revegetation with native species is expected upon completion of all projects.

Wildlife – There will be minor short-term impacts to wildlife at both locations due to temporary construction activity. Impacts to wildlife from other projects are also expected to be temporary. There will not be any cumulative impacts with other projects.

Aquatic Resources - There will be short term, minor, adverse impacts to aquatic resources within the immediate vicinity of Dam 4. Impacts will be temporary and localized. The operation of the eel ladders will have a long-term beneficial impact to restore the American eel throughout the Potomac River Basin. This will be a beneficial cumulative impact to future project areas upstream of Dams 4 and 5.

Historic Structures – Considered in conjunction with the Big Slackwater Rehabilitation of the towpath and the boat ramp restroom project, the installation and operation of the eel ladder at Dam 4 will not result in any cumulative impacts to cultural resources in the Dam 4 area. There will not be any cumulative impacts to cultural resources within the Dam 5 project area.

Visitor Use and Safety – Cumulative impacts to park visitation will not occur at either location as a result of the project at either location. The project will not contribute to any cumulative safety concerns or issues.

Aesthetic Resources – When combined with other projects in the Dam 4 area, the eel ladder project will have negligible, adverse impacts to the aesthetics of the area. Impacts during construction will be short term. Camouflaging of the eel structures will minimize operations impacts. There will be no cumulative impacts with other projects at Dam 5.

***Degree to which the action may adversely affect districts, sites, highways, or objects listed on the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources:*** The C&O Canal NHP is listed in the National Register of Historic Places (NRHP) as a nationally significant historic district. In addition to the NRHP nomination form, which contains extensive photographic and narrative description of the canal, there is also important documentation of the C&O Canal in the Historic American Buildings Survey (HABS) and Historic American Engineering Record (HAER) files for many of the locks, bridges, culverts, tunnels, aqueducts, and associated industrial structures.

Both Dams 4 and 5 and their associated hydroelectric stations are listed on the NRHP. The placement of the eel ladder at Dam 4 along the Maryland shoreline will avoid adverse impacts to the hydroelectric station. The eel ladder will be attached to the stone abutment on NPS property, which avoids attachment

to the historic dam itself. The historic viewshed of the area will be altered by the placement of non-historic materials within the area.

The placement of the eel ladder at Dam 5 along the West Virginia shoreline will avoid impacts to the historic dam by attaching the eel ladder to the powerhouse. The attachment to the powerhouse will result in some loss of its historic fabric, which will create a long-term, adverse impact. The introduction of non-historic material will slightly alter the appearance of the historical setting.

Consultations with the SHPOs of Maryland and West Virginia, as mandated by the implementing regulations (36 CFR 800) for Section 106 of the NHPA of 1966, as amended, occurred in conjunction with the development of the EA/AoE. Formal consultation letters were sent to the Maryland Historical Trust and the West Virginia Division of Culture and History on November 13, 2008. The consultation letters included information about the proposed project, including the various alternatives that are evaluated in this EA/AoE. The West Virginia Division of Culture and History responded in a letter of December 8, 2008 in which it concluded that the project would have no adverse effect on cultural resources. NPS staff met with the MHT on October 16, 2008 to discuss the project and its effects, with specific attention to Dam No. 4 where some of the alternatives may have an adverse effect under Section 106.

On February 25, 2010, a second letter was sent to the Maryland Historic Trust further explaining the Preferred Alternatives for Dams 4 and 5. The NPS stated that the project may have adverse effects on historic properties; however the proposed mitigations satisfy Section 106 of the Historic Preservation Act. In August, 2010, the NPS, in consultation with the Maryland Historic Trust, and the USFWS developed an agreement to that minimizes and mitigates these adverse effects. The agreement was finalized on October 26, 2010, with the signature of the Maryland SHPO. The NPS signed the agreement on September 30, 2010, and the USFWS on September 1, 2010 (see attachment).

***Degree to which the action may adversely affect an endangered or threatened species or its critical habitat:*** The Selected Alternatives for Dams 4 and 5 would have no impact to endangered or threatened species or critical habitat. Protected species do occur within the park; however none occur within the project areas.

In accordance with the federal and state requirements for special status species, consultation letters were mailed to state and federal agencies on November 13, 2008, including the Maryland Department of Natural Resources (DNR) Wildlife and Heritage Service, West Virginia Department of Natural Resources (WVDNR) Wildlife Resource Section, USFWS Chesapeake Bay Field Office, and National Oceanic and Atmospheric Administration National Marine Fisheries Service (NOAA NMFS) Northeast Regional Office. Information about the proposed project was included in the consultation letter. Responses were received from all four agencies. The NOAA NMFS, in their letter dated November 26, 2009, stated that although a population of the endangered shortnose sturgeon (*Acipenser brevirostrum*) is recognized to exist in the Chesapeake Bay and in the Potomac River, no shortnose sturgeon are expected to occur within the proposed project area. The USFWS, on January 22, 2009, stated that except for the occasional transient individuals, no federally proposed or listed endangered or threatened species are known to exist within the proposed project area. Both agencies concurred that no consultation pursuant to Section 7 of the Endangered Species Act is required. The WVDNR identified the American eel as the only state species of special concern occurring within the project area on December 4, 2008. Additionally on January 31, 2007, the MDNR responded that they were in favor of the project and did not identify any special status species occurring in the project area. They suggested that construction be conducted outside of the fish spawning season. They had concerns with lowering the upstream pool levels to accomplish the project construction and the potential impacts to the recreational boating. They suggested that construction be planned to reduce the timeframe for the drawdown.

***Whether the action threatens a violation of federal, state, or local environmental protection law:*** The Selected Alternatives for Dams 4 and 5 violates no federal, state, or local environmental protection laws.

## **IMPAIRMENT STATEMENT**

In addition to reviewing the list of criteria for significant impacts, the Superintendent of the C&O Canal NHP has determined that implementation the Selected Alternatives will not constitute an impairment of park resources or values. This conclusion is based on a thorough analysis of the environmental impacts described in the EA/AoE, agency and public comments received, and the professional judgment of the decision makers in accordance with NPS *Management Policies 2006*.

Implementation of the Selected Alternative will not result in major adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the C&O Canal NHP (2) key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park, or; or (3) identified as a goal in the park's general management plan or other relevant NPS planning document.

While the Selected Alternatives will be implemented in a manner that respects and protects the historic and natural resources of the park, there will be short-term to long-term negligible to moderate adverse impacts on some of the park's resources as a result of providing eel passage over the dams. Adverse impacts will be mitigated to the greatest extent possible. Those impacts that cannot be fully mitigated, however, are not key to the overall natural or cultural resources of the park; will not hamper opportunities to enjoy the park; and will not deviate from the park's overall mission of preserving and protecting the natural, cultural, and historic resources of the C&O Canal NHP. Overall, the proposed projects will result in benefits to park resources and values, specifically to overall health of the American eel as a species.

## **PUBLIC INVOLVEMENT**

Both internal and external (public) scoping was conducted to inform various agencies and the public about the proposed construction of the eel ladders at Dams 4 and 5. A public scoping notice and brochure were posted on the NPS Planning, Environment, and Public Comment (PEPC) website: <http://parkplanning.nps.gov/choh> and a public scoping meeting was held on January 17, 2007 at Williamsport, Maryland. The public scoping period was conducted from January 8 through February 10, 2007. During the public scoping period, the NPS received a total of 10 pieces of correspondence, which contained 90 comments.

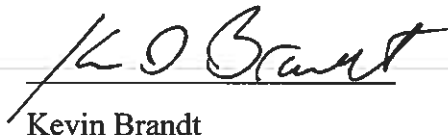
The EA/AoE was made available for public review from November 23, 2009 through January 8, 2010. A public meeting was held on December 8, 2009 at the park's Cushwa Basin's Trolley Barn. The EA/AoE was posted and made available on the PEPC website. No comments were received.

## CONCLUSION

The NPS has selected Alternative B for implementation at Dams 4 and 5, as described on pages 2-3 to 2-8 of the EA/AoE. In light of the impacts described in the EA/AoE for the project and with the guidance from NPS *Management Policies 2006*, natural and cultural resources information, professional judgment, and considering agency and public comments, the impacts that will result from the Selected Alternative will not impair any park resources and values. The Selected Alternative does not constitute an action that normally requires preparation of an EIS. The Selected Alternative will not have a significant adverse effect on the human environment. Negative environmental impacts that could occur are negligible to moderate in intensity. There are no significant impacts on physical resources, water resources, natural resources, cultural resources, or other unique resources within the region. No highly uncertain or controversial impacts, unique or unknown risks, significant cumulative effects, or elements of precedence were identified. Implementation of the Selected Alternatives will not violate any federal, state, or local environmental protection law.

Based on the foregoing, an EIS is not required for this action and thus will not be prepared. This is a finding of no significant impact.

Recommended:



Date:

1/11/11

Kevin Brandt  
Superintendent  
Chesapeake & Ohio Canal National Historic Park

Approved:



Date:

1/24/11

Margaret O'Dell  
Regional Director  
National Capital Region, NPS