Appendix I

404(b) EVALUATION

SECTION 404(b)(1) EVALUATION
SUPPLEMENTAL ENVIRONMENTAL IMPACT
STATEMENT BLUESTONE DAM SAFETY
MODIFICATION PROJECT
HINTON, WEST VIRGINIA

I. INTRODUCTION

As required by Section 404(b)(1) of the Clean Water Act, this evaluation assesses the short- and long-term impacts associated with the discharge of dredged and fill materials into waters of the United States resulting from this project. This evaluation summarizes the detailed impact discussion provided in the Bluestone Dam Safety Modification Project Supplemental Draft Environmental Impact Statement (SDEIS).

II. PROJECT DESCRIPTION

A. <u>LOCATION</u>. The Bluestone Dam is located on the New River in West Virginia, just upstream of the town of Hinton and community of Bellepoint. The site is developed for the existing project, and is currently undergoing construction associated with modifications authorized under the 1998 Dam Safety Assurance Study Final Environmental Impact Statement. See SDEIS Figure 2-3.

B. <u>GENERAL DESCRIPTION OF PROJECT PLAN</u>. The project plan proposes to address a potential dam failure mode identified during risk analysis by modifying the existing stilling basin to prevent scour that could result in spillway monolith instability, and thus dam failure, during extreme flood events.

The Tentatively Selected Plan (TSP) involves various features and risk management measures formulated to ensure stability of the stilling basin and the dam during extreme flood events, some of which would be constructed within jurisdictional waters.

Under the TSP, the modified stilling basin would remain a two stage system within the same footprint with the following modifications and features would be constructed within jurisdictional waters (See SDEIS Figure 3-4):

- A protective concrete apron overlay for the approximately 180+ feet of natural riverbed in the first stage between the dam and the existing stilling weir
- Demolition of the existing first stage baffle blocks, endsill and a portion of the existing apron slab and construction of new, larger, anchored blocks and resurfacing of the existing apron.
- Anchors in both the existing and new concrete slabs to stabilize against uplift pressures in the foundation created by underseepage from the reservoir
- Construction of new drainage features within the dam or first stage basin to relieve some of the uplift pressures

- Installation of stabilization anchors in the stilling weir and stilling basin training walls
- Installation of ten-foot high extensions of the existing spillway right and left training walls
- Addition of scour protection behind both stilling basin training walls
- Demolition/reconstruction and anchoring of the second stage concrete endsill and baffle blocks within their existing footprint to ensure stability and satisfactory performance
- Installation of means to remotely operate crest gates in order to reduce the life safety risk of dam operators during a flood event.
- Construction of a permanent divider wall to bisect stilling basin

In order to dewater the first and second stage stilling basin, a temporary cofferdam would be built across the downstream end of the second stage stilling basin. Several possible configurations for this cofferdam are under consideration. Regardless of the type of cofferdam used, this work would be accomplished in two stages, with half of the cofferdam being built and utilized for dewatering at one time. The right side (facing downstream) of the cofferdam would be built first, tying into the right penstock training wall, cross the channel downstream of the second stage baffle blocks, and tie into the cofferdam wall running perpendicular to the dam face. Once construction of the TSP is complete on the right side of the stilling basin, the right half of the cofferdam would be removed and the left side cofferdam would be built and utilized to dewater the left side of the stilling basin for construction of the TSP, tying into the left descending bank and the new divider wall.

One possible cofferdam design includes a series of steel sheet pile coffer-cells (Figure 3-7). In this configuration, the sheetpile face of the coffer-cells would not be driven below the ground surface; instead, the bottom of the pile cells would be placed on the surface of the riverbottom and filled with rock, the weight of which would aid against the sheetpile from moving up or downstream. To ensure that water is not able to seep under the sheetpiles, grout bags or a shallow layer of tremie concrete would be placed along the seam where the sheetpile meets the riverbed to seal any existing gaps. Between the end sill of the existing stilling basin and the interior portion of the cofferdam cells, a rock causeway would likely be placed first in advance of the cofferdam cells to facilitate construction of the cofferdam cells. The rock causeway would be within the footprint of the construction work limits on the upstream side of the cofferdam cells.

A second possible configuration of the cofferdam would be a rock causeway. Once one half of the first stage stilling basin is dewatered and flow is restricted, stone would be pushed out into the riverbed, starting from the dry land of either the right descending bank or existing phase 3 penstock cofferdam. Equipment would travel along the top of the causeway to continue the construction of the causeway until it connects to the cofferdam wall running perpendicular to the dam face. The downstream face of the rock causeway would be made watertight through the use of material such as a geomembrane, rip rap, or polypropylene bags filled with sand or rock. This reinforcement would also prevent erosion of the causeway, so that the material does not move downstream, The rock for the causeway would likely be durable orthoquartzite from excavation of the bedrock from the spillway floor and/or durable limestone from a commercial source. This 404 (b)(1) evaluation is based on the second possible configuration, using rock and rip rap, as this configuration would have a wider direct impact footprint and represents the maximum adverse impact.

The TSP will also include the construction of a new fishing pier somewhere within the vicinity of the dam tailwaters. Once a location and design are determined, this 404(b)(1) evaluation may be amended if the construction of the pier requires the placement of fill material within waters of the U.S.

PURPOSE AND AUTHORITY. The purpose of the project is to address a possible failure mechanism to reduce the risk of failure of Bluestone Dam to achieve acceptable risk levels. A risk assessment was performed on the Bluestone Dam, including physical modeling and expert analysis, which classified Bluestone Dam as a Dam Safety Action Class (DSAC) II project. Class II is assigned to dams where failure could begin during normal operations or be initiated by the consequence of an event. Currently a Dam Safety Modification Study (DSMS) is underway.

Bluestone Dam and Reservoir was authorized by Executive Order (EO) 7183 in 1935 and the Flood Control Acts of 1936 and 1938 for the purposes of flood control, low flow augmentation, and hydroelectric power development. The purposes were later expanded to include recreation activities under the Flood Control Act of 1944 and fish and wildlife enhancement under the Fish and Wildlife Coordination Act of 1958. Recreation provides visitors with water related activities including fishing, hunting, boating, water skiing, and picnicking. The goals under the Fish and Wildlife Coordination Act of 1958, to include fish and wildlife conservation, are intended to promote the long-term wellbeing of populations of the plant and animal species native to the project area and the maximum sustained enjoyment of these populations by the public. More recently, Section 102(ff) of the Water Resource Development Act (WRDA) of 1992, as amended by Section 357 of WRDA 1996, further modified the original project authorization to address the accumulation and disposal of drift and debris at the dam. The National Dam Safety Act (Public Law [PL] 92-367) of August 1978 authorized USACE to review its projects for dam safety.

C. GENERAL DESCRIPTION OF DREDGED OR FILL MATERIAL

1. General Characteristics of Material. Fill material used in construction of the temporary cofferdam, divider wall, aprons and enlarged baffle blocks include concrete and rock. The rock would not be permanent fill; they would be used temporarily during construction (eight to ten years).

2. Quantity of Material. The following quantities of materials are estimated to be used in construction of the TSP.

Fill Type	Estimated Quantity	Temporary or Permanent Fill
Rock (2”-8”)	19,000 cy	Temporary
Rip Rap	3,000 cy	Temporary
Concrete	100,000	Permanent

3. Source of Material. Rock for the causeway would likely be durable orthoquartzite from excavation of the bedrock from the spillway floor and/or durable limestone from a commercial source.. Concrete components will be sourced from existing commercial sources, and a batch plant will be utilized on-site to produce the concrete.

D. DESCRIPTION OF THE PROPOSED DISCHARGE SITES

1. Location. The permanent fill material would be placed within the existing stilling basin and baffle footprint of the Bluestone Dam. The temporary fill material would be placed approximately 105 feet downstream of the existing stilling weir.

2. Size. The permanent concrete fill would occupy approximately 6.35 acres within the existing first-stage apron and baffle block, first stage stilling basin and second stage apron and baffle blocks. The footprint of the temporary cofferdam downstream of the first-stage stilling basin would fill and dewater approximately 2.5 acres of riverine habitat, with only 1.25 acre being filled and dewatered at one time, as the cofferdam will only be built and utilized one half at a time.

3. Types of Sites. The area to be filled with concrete for the apron within the stilling weir is natural riverbottom, consisting primarily of flat bedrock and silt. Some concrete will be placed on demolished concrete. The area to be filled temporarily with rock and consists of sand, silt, gravel, cobble and boulder substrate.

4. Types of Habitat. Aquatic, riverine habitat would be impacted by placement of the fill material

5. Timing and Duration of Discharge. Half of the cofferdam would be constructed and remain in place for four to five years, during which time half of the concrete would be placed. This first half would be removed and the second half of the cofferdam would be constructed and remain in place for an additional four to five years while the second half of the concrete is placed. Exact timing of construction of the enlarged baffles is not known at this time, but it would be within the eight to ten-year construction period of the cofferdam and stilling weir apron.

DESCRIPTION OF DISPOSAL METHOD. Once one half of the first stage stilling basin is dewatered and flow is restricted, stone would be pushed out into the riverbed, starting from the dry land of either the right descending bank or existing phase 3 penstock cofferdam. Equipment would travel along the top of the causeway to continue the construction of the causeway until it connects to the cofferdam wall running perpendicular to the dam face. Several methods for conveyance of concrete necessary to construct the various features of the TSP are under consideration, any of which could be used during construction. The construction site would likely include a concrete batch plant on site, built in the location of the current plant on the right descending bank of the river. In order to transport concrete from an onsite batch plant to locations within the project site, one or several options may be used. An access road currently exists between the right descending bank of the river and the right training wall, on an earthen berm just downstream of the penstock area. Although this berm was scheduled for removal after completion of current construction on the penstocks, the removal could be delayed to allow for use of the access road for some portion of construction of the TSP. Use of this access road would allow for hauling to the right half of the stilling basin. One option is construction of a braced mechanical conveyance system, which would run diagonally from the batch plant on the right descending bank to the left half of the stilling basin. This braced system could include temporary supports placed within the tailwater area. Consideration is also being given to construction of a batch plant on the left side of the stilling basin within the construction work limits outside of waters (river).

III. FACTUAL DETERMINATIONS

A. PHYSICAL SUBSTRATE DETERMINATIONS

1. Substrate Elevation and Slope. The existing bottom of the stilling basin, baffles and riverbottom sits at elevation 1368. Average gradient of the New River between Bluestone Dam and Sandstone is 10 feet per mile.

2. Sediment Type. The riverbottom is primarily comprised of sand, silt, gravel, cobble and boulder.

3. Dredged/Fill Material Movement. Any movement of fill material would be insignificant. Best Management Practices (BMPs) would be used to minimize the risk of concrete entering the downstream area of the dam, outside of the cofferdam. Rock would be placed during low or no flow to minimize material displacement. Also, the downstream face of the rock causeway would be made watertight through the use of material such as a geomembrane, rip rap, or polypropylene bags filled with sand or rock. This reinforcement would prevent erosion of the causeway, so that the material does not move downstream.

4. Physical Effects on Benthos. Direct mortality of aquatic macrophytes, benthic invertebrates, mussels, and crayfish would occur during the placement of the cofferdam and subsequent dewatering. Habitat would be filled and dewatered for eight to ten years, causing a significant long-term, but non-permanent, reduction in riffle-run habitat. While BMPs would be implemented and strictly followed during construction, some turbidity could be caused by construction of the cofferdam, which could lead to sedimentation within habitats downstream of the cofferdam. Sedimentation would have the greatest effect on benthic invertebrates and mussels, smothering those individuals on which the sediment settles and causing stress and/or direct mortality. Excess sediments fill spaces between gravels, cobbles and boulders that normally serve as habitat for macroinvertebrates and spawning fish. As USACE will restore the area after construction completion, the habitat could recover over time.

5. Other Effects. No other effects are expected.

6. Actions Taken to Minimize Impacts. The footprint of temporary impact has been minimized to the maximum extent practical. Temporarily disturbed areas would be restored as soon as practical. Additionally, during construction of the TSP, the USACE would implement erosion and sedimentation BMPs within the construction area to minimize downstream impacts from sedimentation. BMPs include, but are not limited to, the following: installation of sediment and erosion control devices (e.g. silt fences, filter socks, temporary sediment control basins, erosion control matting); adequate and continued maintenance of sediment and erosion control devices to insure their effectiveness; siting of equipment staging, fueling, and maintenance areas outside of wetlands, streams, and riparian areas to the maximum extent practicable; and preventing sediment, debris, and pollutants from entering the New River as much as possible. Rock would be placed during low or no flow to minimize material displacement and suspension of riverbottom sediment. Also, the downstream face of the rock causeway would be made watertight through the use of material such as a geomembrane, rip rap, or polypropylene bags filled with sand or rock. This reinforcement would prevent erosion of the causeway, so that the material does not move downstream,

B. WATER CIRCULATION, FLUCTUATION, CHEMICAL, AND PHYSICAL DETERMINATIONS

1. Water. Placement of rock on the riverbottom could re-suspend waterbottom silts and sands, temporarily increasing turbidity. Aside from turbidity, the placement of fill material would not change the water quality within the project area. Concrete will be placed in dewatered areas, so no water quality impact from this placement is anticipated.

a. Salinity. No impacts anticipated.

b. Water Chemistry. No impacts anticipated.

c. Clarity. Increased turbidity and suspended solids would reduce the clarity of surface water in the immediate vicinity of fill material placement. This would be a temporary and localized condition. Clarity would return to preexisting conditions shortly after placement of temporary fill. Concrete fill would be placed within the stilling basin during a dewatered condition, so increased turbidity from concrete fill is not anticipated.

d. Color. Any changes in color would be temporary and minor, and would result from increased turbidity.

e. Odor. No impacts anticipated.

f. Taste. Drinking water is sourced from groundwater in this area of West Virginia rather than surface water, and the placement of fill will have no impact on groundwater resources.

g. Dissolved gas levels. Placement of temporary fill materials could result in decreases in dissolved oxygen in the immediate area as a direct response to increases in suspended solids and turbidities. However, turbidity is expected to subside shortly after placement and thus dissolved oxygen levels would return to preconstruction levels shortly afterward.

h. Nutrients. No introduction of nutrients is expected from placement of fill material.

i. Eutrophication. No eutrophication is anticipated.

j. Current pattern and circulation. The tailwater area downstream of the cofferdam could see an increase in the areas experiencing dry conditions during the lowest flow through the dam during construction. Under current operating conditions, the banks of the in-stream island near the right descending bank experience drying at low flows ranging from 610 to 2,500 cfs. A slightly larger area around the island would experience drying when either side of the cofferdam is in place during construction during low flow conditions. The greatest drying impact is predicted when the right side cofferdam is in place, with drying patterns emerging not only around the island but also downstream of the cofferdam between the cofferdam and the island. Based on hydrology modeling, it is anticipated that within the 75-acre area between the dam and the State Route 3 Bridge, the area of influence potentially impacted by altered flow regimes at a given time is 37.5 acres (approximately half of the area). According to hydraulic modeling, approximately 8.54 acres of indirect and non-permanent impacts within these 37.5 acres, such as drying, may occur downstream of the cofferdam due to altered flows regimes. USACE is designing a bypass system that would transmit water from the left-side (west-side) of the stilling basin to the non-operational side of the stilling basin to evenly disperse water downstream of the non-operational side, which would lessen the impact of flow alteration during the lowest flow allowed through the dam (610 cfs).

k. Velocity. Under current operating conditions, in which flow is released downstream evenly across the stilling weir, the area immediately downstream of the stilling weir experiences velocities ranging from 2 to 5 feet per second during flows ranging from 610 to 10,000 cfs, which is the most common flow range seen in most years. During flows ranging from 20,000 to 60,000 cfs, velocities downstream can reach as high as 9 feet per second.

Velocities would increase slightly at lower range flows during construction as compared to the current operating conditions due to the reduced weir length over which water would flow. For example, when the left cofferdam is in place, the tailwater area would be expected to start experiencing velocities of 6 feet per second or more during 10,000 cfs flows, whereas velocities would likely reach approximately 5 feet per second at that flow under normal conditions. The downstream area would be expected to start seeing velocities reaching 10 feet per second during 30,000 cfs flows during closure of the left cofferdam, whereas velocities would reach only approximately 9 feet per second during higher flows under current operating conditions. When the right cofferdam is in place, velocities would increase at lower flows than when the left cofferdam is in place; for example, velocities as high as 15 feet per second would be expected in some parts of the flow during extreme events (50,000 to 60,000 cfs) when the left cofferdam is closed, and at flows of 30,000 to 60,000 cfs when the right cofferdam is closed. These higher velocities, which could cause direct mortality of less mobile aquatic species or younger individuals of more mobile species, would be a slightly more common occurrence due to placement of the temporary fill.

l. Stratification. Stratification is not anticipated

m. Hydrologic regime. Placement of temporary fill material will alter the hydrologic regime, as described in sections (j) and (k) above. This alteration would cease after completion of construction.

n. Normal water level fluctuation. Placement of temporary fill will not directly impact normal water fluctuation in the New River downstream of the dam. However, the placement of the temporary fill material is part of an overall construction scheme, namely dewatering of half of the cofferdam and thus reduction in the number of sluice gates used to pass water through the dam, that could have an impact on the water level fluctuation on the upstream side of the dam. Bluestone Lake may experience an increased frequency, duration and/or elevation of “out of pool” conditions for eight to ten years.

o. Salinity gradients. No effect.

p. Actions Taken to Minimize Impacts. BMPs would be utilized to minimize the risk of inadvertent discharge of material into the New River. Concrete would be poured when the cofferdam is dewatered.

C. SUSPENDED PARTICULATE/ TURBIDITY DETERMINATIONS

1. Placement of rock on the riverbottom could re-suspend waterbottom silts and sands, temporarily increasing turbidity. However, rock would be placed during low and no flow, so this impact will be minimized.

a. Light penetration. Short-term reductions in light penetration are likely to occur during placement of temporary fill material. These reductions in light penetration are anticipated to be short term and localized to the area adjacent to construction operations.

b. Dissolved oxygen (DO). Placement of temporary fill material and the resulting increased turbidity could cause localized decreases in DO; however because placement would take place during low or low flow, this impact is expected to be insignificant.

c. Toxic metals and organisms. No toxic metals or organisms would be discharged during placement of fill material.

d. Pathogens. While coliform and enterococci bacteria may be present in project waters, project construction would not affect this condition.

e. Aesthetics. Area aesthetics would be temporarily degraded during the construction phase of the proposed project; however, the construction would occur within the industrial setting of the Bluestone Dam.

f. Pesticides. No toxic metals or organisms would be discharged during placement of fill material.

g. Effects on biota. Impacts to benthic species are discussed in section II.A.4. Additionally, the direct loss of prey species within the footprint of the temporary cofferdam could result in lower food abundance for fish species that normally inhabit the tailwater area. Based on hydrology modeling, it is anticipated that within the 75-acre area between the dam and the State Route 3 Bridge, the area of influence potentially impacted by altered flow regimes at a given time is 37.5 acres (approximately half of the area). According to hydraulic modeling, approximately 8.54 acres of indirect and non-permanent impacts within these 37.5 acres, such as drying, may occur downstream of the cofferdam due to altered flows regimes. . This drying temporarily reduces available aquatic habitat in the tailwater area, including instream and riparian cover such as rock outcrops, boulders, and cobble/pebble riffles. The altered flow regime could lead to the loss of emergent water willow and could cause stress and/or mortality of benthic invertebrates, macrophytes and mussels, some of which could be state-listed rare species. This drying could also cause displacement of species that use the riffle microhabitats found in these areas, such as bigmouth chub. Fish could also be trapped in small pools and, in warmer months, suffer from increased temperature and depleted oxygen stress. The altered flows could alter water quality, turbidity, and total organic carbon or biological oxygen demand. However, if low flow periods can be limited to no more than 24 hours at a time, impacts to downstream aquatic habitat from such drying would not be significant. Additionally, USACE is designing a bypass system that would transmit water from the left-side (west-side) of the stilling basin to the non-operational side of the stilling basin to evenly disperse water downstream of the non-operational side, which would lessen the impact of flow alteration during the lowest flow allowed through the dam (610 cfs). This bypass system at low flow will reduce the likelihood of indirect impacts from altered flows during low-flow conditions. All impacts to natural river bottom aquatic habitat from the small pipe support structures for the bypass system would occur within the 2.5 acres already directly impacted by the cofferdam.

h. Suspension/filter feeders. Larval and juvenile forms of suspension and filter feeding organisms would be adversely affected on a localized and temporary basis, as the feeding structures could be damaged or the individuals could be smothered.

i. Sight feeders. No significant effects. These organisms are generally highly mobile and would avoid or escape areas of high turbidity during fill placement; however because placement would take place during low or low flow, this impact is expected to be insignificant.

j. Actions taken to minimize impacts. BMPs would be utilized to minimize the risk of inadvertent discharge of material into the New River. Rock will be placed during low or no flow, and concrete will be placed in dewatered areas.

D. CONTAMINATION DETERMINATIONS

The risk of contamination of waters resulting from the placement of fill material into waters located within the project area is low. Excavation and filling operations associated with this project are not expected to significantly affect the water chemistry of waters within the project area.

E. AQUATIC ECOSYSTEM AND ORGANISM DETERMINATIONS

1. Effects on Plankton. Any existing plankton in the immediate area of the placement of temporary fill operation would be adversely impacted due to elevated turbidity levels. The impacts would be localized and short- term. Because placement would take place during low or low flow, this impact is expected to be insignificant.

2. Effects on Benthos. Benthic impacts are discussed in item II.A.4.

3. Effects on Nekton. Alteration in the flow regime and the resulting drying of limited areas within the tailwater during low flows as a result of placement of temporary fill could cause displacement of species that use the riffle microhabitats found in these areas. Fish could also be trapped in small pools and, in warmer months, suffer from increased temperature and depleted oxygen stress. Increased velocity of water passing through the stilling basin during high flow events due to the placement of the temporary fill material could cause direct mortality of younger fish species, but such flows would not be common occurrences.

4. Effects on Aquatic Food Web. The loss of benthic species due to placement of the temporary fill material would reduce food abundance for fish and other species in the immediate tailwater area, but food is readily available further upstream and downstream.

5. Effects on Special Aquatic Sites. The tailwater area of the New River, just downstream of the stilling weir, is considered by USFWS as a Resource Category 1 habitat, which is defined under USFWS (Mitigation Policy 501 FW 2) as "high value for evaluation species and is unique and irreplaceable on a national basis or in the ecoregion section." Approximately 2.5 acres of this high value habit would be filled and dewatered. This area will be restored after removal of the cofferdam, and off-site mitigation will be completed to off-set the impacts.

a. Wetlands. No direct adverse impacts to wetland resources under the TSP are anticipated. Within the New River downstream of the dam, there are water willow beds which could be directly impacted by placement of the non-permanent cofferdam. Impacts to these resources are included as part of the overall aquatic impacts and would also be mitigated as part of the aquatic mitigation plan.

b. Mudflats. Not applicable.

c. Vegetated shallows. Within the New River downstream of the dam, there are water willow beds which could be directly impacted by placement of the non-permanent cofferdam. Impacts to these resources are included as part of the overall aquatic impacts and would also be mitigated as part of the aquatic mitigation plan. Upon completion of construction the fill material would be removed and would be restored.

d. Coral reefs. Not applicable.

e. Riffle and pool complexes. The tailwater area is a riffle-run area with a gravel, cobble and boulder substrate. This area would be filled and dewatered for eight to ten years, after which time it will be restored and should return to pre- existing conditions.

6. Threatened and endangered species. No effect as none are known to exist within the footprint of the fill placement, and no critical habitat exists within the fill placement area.

7. Other wildlife. No wildlife aside from the aquatic species discussed in earlier sections would be directly impacted by fill placement.

8. Actions to minimize impacts. The footprint of the temporary fill has been minimized to the maximum extent practicable.

F. PROPOSED DISPOSAL SITE DETERMINATIONS

1. Mixing Zone Determinations. No water quality criteria would be exceeded by the placement of fill material as all material would be free of toxic pollutants; therefore, no mixing zone rule is applicable.

2. Determinations of Compliance with Applicable Water Quality Standards. Only temporary short-term impacts to water quality in the form of increased turbidity are anticipated as a direct result of temporary fill placement. These impacts include temporary increases in suspended solids and increases in turbidity levels which would occur during placement, but would subside for the remainder of the construction period. Because placement would take place during low flow, this impact is expected to be insignificant

3. Potential Effects on Human Use Characteristics.

a. Municipal and private water supply. No effects.

b. Recreational and commercial fisheries. Placement of the temporary fill material would require removal of the existing tailwater fishing pier on the left descending bank, as well as restrictions on fishing within 200 feet of the cofferdam. However, an alternative fishing pier in the immediate area would be constructed to minimize the recreational impact of temporary fill placement. The impact to aquatic species due to fill placement is not expected to have a significant impact on the abundance of fish within the project area.

c. Water-related recreation. Aside from the impact to recreational fishing, additional adverse effects to recreation resources may potentially occur upstream of Bluestone Dam during the construction. Because the number of sluice gates available to drain Bluestone Lake would be reduced by half during construction of the TSP, the rate at which floodwater is transferred from the upstream side of the dam to the downstream side would be reduced. As a result, recreation facilities along the shoreline of Bluestone Lake may experience more frequent inundation periods of longer duration, and with higher water levels than that which is typically experienced during current conditions. Additionally, when drift and debris passes through the sluice gates during construction of the TSP, it would be more likely to be deposited lower on the river banks and within the channel, which could cause temporary obstacles to recreational users until higher flows dislodge and redistribute deposited debris. Debris behind the dam could also potentially settle out on recreational lands upstream of the dam, which may further impede recreational activities during construction.

G. DETERMINATION OF CUMULATIVE EFFECTS ON THE AQUATIC ECOSYSTEM

a. The impacts caused by the placement of temporary fill would be in addition to any impacts to the aquatic ecosystem that has been caused by the previous and current construction at the Bluestone Dam. As BMPs have been used during such construction, thus minimizing impacts to the aquatic ecosystem, the cumulative impact of the placement of fill would not be expected to be greater than those discussed in earlier sections of this evaluation and the SFEIS.

H. DETERMINATION OF SECONDARY EFFECTS ON THE AQUATIC ECOSYSTEM

a. No secondary effects are anticipated aside from the indirect impacts to the aquatic food web discussed in Section II.E.4.

IV. FINDING OF COMPLIANCE OR NONCOMPLIANCE WITH THE RESTRICTIONS ON DISCHARGE

A. No significant adaptations of the Section 404(b)(1) guidelines were made relative to this evaluation.

B. Unavoidable project-induced adverse impacts to nine aquatic Habitat Units of aquatic habitat would be fully mitigated by restoration of temporarily impacted habitat as well as off-site mitigation, as recommended by the U.S. Fish and Wildlife Service. Detailed recommendations for this mitigation are provided in the U.S. Fish and Wildlife Service’s Draft Mitigation Plan and Final Coordination Act Report in Appendix H of the SFEIS.

C. The planned deposition of fill material would not violate applicable State Water Quality Standards (47CRS2, Requirements Governing Water Quality Standards for West Virginia; 9 VAC 25-260, Water Quality Standards for

Virginia). Further, the planned fill action would not violate the Toxic Effluent Standards of Section 307 of the Clean Water Act.

D. No endangered species or their critical habitat will be adversely impacted by the planned action, as none are known to exist within the footprint of the fill placement.

E. The proposed deposition of fill material would not result in unacceptable permanent adverse effects on human health and welfare, including municipal and private water supplies, recreation and commercial fishing, plankton, fish, shellfish, wildlife, and special aquatic sites. Further, as detailed in the SDEIS, the proposed discharges would not result in unacceptable permanent adverse effects on the life stages of aquatic or semiaquatic organisms, the aquatic ecosystem, diversity, productivity, stability, recreation and esthetic resources, and economic values. While impacts to water-related recreation may be significant, the impacts are not permanent.

F. Appropriate steps to minimize potential adverse impacts of the fill action on aquatic systems include placement of concrete when the cofferdam is dewatered, use of BMPs and avoidance of discharges into open water where possible.

G. On the basis of the Section 404(b)(1) guidelines, the proposed sites for the deposition of fill material are specified as complying with the requirements of these guidelines.