RECLAMATION

Managing Water in the West

RECORD OF DECISION

Minidoka Dam Spillway Replacement
Minidoka Project, Idaho
Final Environmental Statement

U.S. Department of the Interior
Bureau of Reclamation
Pacific Northwest Region
Snake River Area Office
Boise, Idaho

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U.S. Department of the Interior

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Mission of the Bureau of Reclamation

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

Bureau of Reclamation
Pacific Northwest Region
Record of Decision

Minidoka Dam Spillway Replacement

I. INTRODUCTION

The Bureau of Reclamation (Reclamation) is proposing to correct structural problems at the Minidoka Dam spillway and canal headworks on Lake Walcott, Idaho. The existing spillway and canal headworks are showing considerable signs of degradation. Following construction, Reclamation also proposes to modify current operations to increase power production since correction of the structural problems will allow the reservoir to be held at a higher level during the winter.

In addition to correcting the structural problems of the existing spillway and canal headworks, Reclamation is also proposing to designate Special Use Areas at the project site in accordance with 43 CFR Part 423 *Regulations, Public Conduct on Bureau of Reclamation Facilities, Lands, and Waterbodies*. These Special Use Areas will define what public uses are allowed in close proximity to the dam, spillway, and other facilities.

II. BACKGROUND

Purpose and Need

The purpose of the Proposed Action is to prevent structural failure of the Minidoka Dam spillway and canal headworks (proposed action area). After 103 years of continual use, the 2,237-foot-long concrete spillway has reached the end of its functional lifespan. The concrete that forms the spillway crest and stoplog structure piers has suffered extensive deterioration at numerous locations. Additionally, previous ice damage to the overflow section of the spillway requires that the reservoir water level be dropped each winter. The headworks at the North Side and South Side canals also show serious concrete deterioration similar to the spillway conditions. The current conditions of the Minidoka Dam spillway and headworks present increasingly difficult reliability and maintenance problems. Reclamation must be able to continue to meet its contractual obligations for water delivery, power generation, and commitments to provide flow augmentation water under the Nez Perce Settlement Agreement

and the Endangered Species Act (ESA). A partial or complete failure of the spillway or canal headworks could threaten Reclamation's ability to meet those obligations.

Currently, in accordance with 43 CFR Part 423 Regulations, *Public Conduct Rules on Bureau of Reclamation Facilities, Lands, and Waterbodies*, certain public activities are restricted on Reclamation lands, facilities, and waterbodies. Specifically, Subpart C, Section 423.36 Swimming, states in part that, (a) You may swim, wade, snorkel, scuba dive, raft, or tube at your own risk in Reclamation waters, except:

> (1) Within 300 yards of dams, powerplants, pumping plants, spillways, stilling basins, gates, intake structures, and outlet works.

In addition, Section 423.37 Winter Activities, states in part that, (b) You must not ice skate, ice fish, or ice sail within 300 yards of dams, powerplants, pumping plants, spillways, stilling basins, gates, intake structures, or outlet works.

The 43 CFR Part 423 rules and regulations restrict certain historic recreational uses on Reclamation lands, facilities, and waterbodies associated with the proposed action area. In order to allow traditional uses that are appropriate but are not currently allowed, Reclamation has determined that it would be in the best public interest to identify Special Use Areas for some of these traditional uses as provided under the rules and regulations. Therefore, Reclamation will restrict uses which affect public safety.

III. ALTERNATIVES CONSIDERED

Alternative A – No Action

The No Action alternative represents continuation of the current conditions that will leave the existing spillway and headworks in their present configuration and state of extensive deterioration. Under the No Action alternative, it will be necessary to continue the seasonal 5-foot drawdown. As the concrete in the existing spillway and headworks continue to deteriorate, maintenance requirements will increase, subsequently increasing annual maintenance costs. As the existing spillway concrete deteriorates further, a program for pier replacement will become necessary. The pier replacement program will involve ongoing replacement of piers to maintain the existing spillway in a usable condition. Eventually, annual concrete repairs on the headworks will also become necessary. These repairs will continue until the existing headworks reach the end of their service life at which time full replacement becomes necessary.

Reclamation will allow the existing public use restrictions under 43 CFR Part 423 to remain in effect. No Special Use Areas will be created. The historic uses that will be most affected by these sections include wading, float tubing, and ice fishing.

Operations will continue as they currently exist. Minidoka Dam is operated as a run-of-the-river project with a few seasonal variations. Water is routed through turbines in the two powerplants, through existing radial gates, and over the existing spillway. The minimum flow released over the existing spillway is 1,300 cubic feet per second (cfs) from April 15 to June 30 and from September 1 to September 15. From July 1 through August 31, the minimum flow is increased to 1,900 cfs. Water operations from April 1 to April 14 and again from September 16 until October 31, deliver the first 5,035 cfs of flow through the powerplant. The next available 1,300 cfs is discharged over the existing spillway. Flows in excess of 6,335 cfs are routed through the powerplant until it reaches its hydraulic capacity before additional flows are released over the existing spillway. There are no controlled spillway releases during the winter months.

Existing spillway releases travel through a wetland area, which consists of natural wetlands as well as a constructed wetland built as mitigation for the Allen Inman Powerplant (Inman Powerplant). Subsurface seepage, locally enhanced by the reservoir as well as seepage through the existing spillway structure, provides a portion of the water supplying the wetlands. Water to the constructed wetland is supplied by a pipeline from the Inman Powerplant headworks.

During the irrigation season (April through October), the reservoir is maintained at full pool (elevation 4245.0 feet). After irrigation season and during the winter months, the reservoir is held between elevation 4239.5 and 4240.0 (5.5 feet to 5.0 feet below full) to prevent further deterioration of the existing spillway.

Alternative B – Spillway and Headworks Replacement (Preferred Alternative)

This alternative involves partial removal of the existing spillway and headworks and construction of a new spillway, headworks, and other features. In addition, Special Use Areas will be designated to accommodate some of the historic uses of the area. This alternative consists of the following new structures and improvements:

- Spillway
  - Overflow, Sections 1 and 2
  - Radial Gate Section
  - Dike, Sections 1 and 2
- South Side Canal Headworks
- North Side Canal Headworks
- Public Use Improvements
- Special Use Areas

Spillway

Overflow Section

New overflow sections will be constructed entirely downstream of the existing spillway. By constructing downstream, the existing spillway can be used as a cofferdam during construction and until completion of the new spillway. The new overflow sections will have a total length of up to 1,326 feet with a uniform crest elevation of 4245.0 feet and be constructed of roller-compacted concrete. Following completion of the new spillway, partial demolition of the existing spillway will be completed. The demolition will include removal of the metal walkway and handrails, and removal of the concrete piers above the ogee section. Portions of the pier removal may occur in wet conditions, depending on the reservoir elevation and the elevation of the surrounding ground surface. Total removal of the existing spillway will be necessary in certain areas such as upstream of the new radial gate sections and will likely require in-water blasting. Best management practices (BMPs), such as the use of silt curtains or other appropriate sediment control actions, will be employed to control sediment releases during removal in order to protect water quality and endangered snail habitat.

It is anticipated that construction of the new spillway may reduce the current rate of structural leakage to the spillway area. Therefore, as part of the new design to satisfy mitigation commitments associated with construction of the Inman Powerplant, a total of four water release point features with slide gates and steel pipes will be constructed. The maximum design flow through each of the water release point features is 100 cfs. In addition, at least 300 cfs will be released through one of the new radial gates during irrigation season as part of the downstream irrigation deliveries. Up to 100 cfs may be released from the water release points during the winter should the new spillway ultimately have a negative impact on subsurface seepage in the south pool. Details on the proposed water releases are discussed under *Operations*.

Radial Gate Sections

New radial gate sections will be constructed entirely downstream of the existing spillway, which will serve as a cofferdam during construction. The new radial gate sections have been modeled after the existing radial gates at Minidoka Dam and consist of twelve 20-foot 8-inches-wide by 17-foot-high gated sections separated by 5-foot-wide piers and 4-foot-wide endwalls. It is anticipated that blasting will be required to remove rock for the foundation of the new radial gate sections and to improve the channel upstream and downstream. As discussed above, to help satisfy mitigation commitments associated with construction of the Inman Powerplant, at least 300 cfs will be released through one of the new radial gates during irrigation season as part of the downstream irrigation deliveries.

Dike

New dike sections will be constructed downstream of the existing spillway which will serve as the cofferdam during construction. The new dike sections will be constructed of roller-compacted concrete faced with structural concrete.

Section 1 of the new dike section will extend up to 201 feet from the southern end of the new radial gate sections and will connect to a new South Side Canal headworks structure. Section 2 of the new dike section will extend up to 334 feet southeast from the new South Side Canal headworks structure toward the existing south dike.

South Side Canal Headworks

The new South Side Canal headworks will be reconstructed in the existing canal about 300 feet downstream of the existing headworks. The majority of the work will be performed during the non-irrigation season (October to March). The existing South Side Canal headworks gates will be closed during construction, serving as the upstream cofferdam while providing operational flexibility during the subsequent irrigation seasons. Following completion of the new headworks, the majority of the existing structure, including metalwork, will be removed. The southern-most bay will remain as support for the embankment endwall.

North Side Canal Headworks

The new North Side Canal headworks will be reconstructed in the existing canal about 115 feet downstream of the existing headworks. Work will be performed during the non-irrigation season (October to March). The existing North Side Canal headworks gates will be closed during construction, serving as the upstream cofferdam while providing operational flexibility during the subsequent irrigation seasons. Following completion of the new headworks, all metalwork will be removed from the existing headworks and the existing concrete structure will be permanently abandoned in place.

The construction of the new North Side Canal headworks structure will require the removal of the existing bridge, which spans the North Side Canal.

Public Use Improvements

Currently, substantial fishing and birding opportunities exist in association with the existing spillway. Under Alternative B, some fishing and birding opportunities will be eliminated as a result of structural limitations and the closure of the new spillway and canal headgates to public access. Reclamation proposes to alter the existing spillway access bridge to meet current accessibility standards. This bridge crosses the pool below where the new radial gate sections will be located and is currently open to non-vehicular public use such as fishing and birding. Additionally, a parking area that is accessible to people with disabilities will be provided near the south end of the bridge.

Special Use Areas

Reclamation is proposing to designate Special Use Areas as provided for in 43 CFR Part 423 in order to allow historic recreational uses to continue that will otherwise be prohibited. Reclamation will restrict uses which affect public safety. The Special Use Areas will allow for wading and float tubing associated with fishing and birding, and ice fishing within specific portions of the 300-yard zone currently closed to such activities. Other existing restrictions as described in 43 CFR Part 423, Subpart C, will remain in effect.

Construction

Construction is expected to take up to 31 months. Due to the large size of the construction zone, the contractor will most likely require multiple staging and waste areas. Five staging and/or waste areas have been identified, three on the north end of the construction zone and two on the south end. A new service road will be located just downstream of the new overflow section and will be constructed in two sections. The first section will run from the existing Inman Powerplant headworks south to the existing radial gates. The second section will run from the existing spillway access bridge north to the existing radial gates. The service road will be constructed using roller-compacted concrete and will be used by the contractor as the test section. In addition, the contractor will be required to remove the existing asphalt surface from the present access bridge due to deterioration. After construction, the service road will be open to the public for pedestrian traffic only.

Operations

After construction of the new spillway, Lake Walcott's water surface will no longer be constrained to elevation 4240.0 feet, or below, in winter. This drawdown occurs every year under current conditions. Reservoir operation under this alternative will allow for increased power generation, comply with the requirements of the current Biological Opinion (BiOp), and maintain recreational opportunities. Water rights, provisions of spaceholder contracts, commitments to implement BiOps, and Total Maximum Daily Loads (TMDL) will not change under this alternative.

Reclamation generally intends to maintain Lake Walcott at its full operational level throughout the year. However, it is anticipated that in between 25 to 50 percent of years, irrigation demand, facility maintenance needs, and environmental concerns may require that the reservoir be drawn down to elevation 4240.0 feet as the end of irrigation season approaches and subsequently maintained at that elevation through the winter months. The drawdown of Lake Walcott will usually be initiated when water deliveries from American Falls Reservoir create a low pool condition (100,000 acre-feet of storage) at American Falls. When low pool conditions exist, or appear imminent at American Falls, the Minidoka pool will be drawn down to meet irrigation demands in order to maintain adequate storage in American Falls Reservoir to manage water quality concerns. When required, the drawdown

of Lake Walcott will most likely occur late in the irrigation season (beginning as early as mid-August and lasting through the end of October) by making deliveries to Burley Irrigation District (BID) and Minidoka Irrigation District (MID) in addition to other miscellaneous irrigation deliveries below Minidoka. Once Lake Walcott has been drawn down, it is anticipated that the reservoir elevation will remain at the reduced level until mid-March, or as soon as upstream flood operations begin. Lake Walcott will be refilled to its normal full capacity by increased releases from American Falls Reservoir once water is available for storage, absent any other extraordinary needs. Among water rights for irrigation storage, Lake Walcott has the earliest priority date below Jackson Lake, allowing the early refill of Lake Walcott once the storage season commences.

If needed to replace leakage and subsurface seepage, which currently exist along the existing structure outside of irrigation season, Reclamation will provide flows through the new spillway structure. A non-irrigation season flow of up to 100 cfs may be maintained in the spillway. The non-irrigation season flows will consist of a combination of subsurface seepage and controlled releases. Flows through the spillway will be determined by subtracting powerplant flows from flow data measured at the downstream U.S. Geological Survey (USGS) gage at Howells Ferry (USGS 13081500). During irrigation season (approximately April 1 to October 15), Reclamation's target minimum spillway release flow will be 500 cfs. Spillway flows could be increased during the irrigation season, when sufficient water is available after powerplant hydraulic capacity is met.

Based on changes to the spillway, operational flows through the facility will also be changed. Operation of the new radial gates in the spillway will be multipurpose consisting of:

- Downstream deliveries beyond the capacity of the powerplants including salmon flow augmentation.
- Flows as a result of flood operation.
- Flow passage during load rejection at the powerplants if the existing radial gates become disabled or go off-line for maintenance.

An adaptive management approach will be taken to pursue an adjusted minimum flow of 500 cfs through the spillway area during the irrigation season. The target minimum flow of 500 cfs will be incrementally arrived at over a period of 4 years. This will allow Reclamation to assess potential impacts to the biological resources within the spillway area. The proposed incremental reduction in spillway flows will be as follows:

- Year 1 – 1,900 cfs
- Year 2 – 1,500 cfs
- Year 3 – 1,000 cfs
- Year 4 – 500 cfs

Reclamation will monitor biological resources and collect water quality information at each flow in order to assess potential impacts associated with the reduction in flow. While increased power generation is the intent of this change in spillway operations, ultimately the new minimum spillway flow will be established based on the results of the adaptive management process. Reclamation will establish a Technical Team to determine monitoring protocols, impact thresholds, and critical minimum-flow criteria. The Technical Team will consist of representatives from State and Federal agencies as well as academia. This team will be established as soon as practicable after the Record of Decision (ROD) is signed. All data pertaining to ecological resources associated with this project will be provided to this team. Critical minimum-flow criteria will be established to determine the adequate minimum flow though the spillway area necessary to maintain the existing biological community as intended by the mitigation for Inman Powerplant. The proposed incremental reduction schedule could be altered by recommendations from the Technical Team each successive year, based on the previous year's findings. Should changes in water quality parameters occur that will negatively impact the biological communities of the spillway area, Reclamation will adopt a higher minimum spillway discharge up to 1,900 cfs.

During the non-irrigation season, there will be no planned release of water through the spillway. However, due to the presence of ESA-listed snails inhabiting the spillway area, and the unknown potential changes in subsurface seepage, some limited releases, as discussed above, may be necessary to avoid impacts to ESA-listed snails. How this level of flow impacts the area inhabited by ESA-listed snails is unknown. It is not expected that flows in excess of 100 cfs will be necessary to protect ESA-listed snails. Similar to the adaptive management approach proposed for spillway flows during irrigation season, Reclamation will, in cooperation with U.S. Fish and Wildlife Service (USFWS), establish monitoring protocols and criteria which will determine what flows, if any, are needed to avoid impacts to ESA-listed snails. If it is determined that non-irrigation season flows are required, Reclamation will provide flows up to 100 cfs through the new spillway structure at release point 3 which will be located just north of the new radial gate section.

With construction of the new spillway, the minimum flow through the project will increase to 525 cfs during dry water type years and to 600 cfs for average to high water type years. These minimum flows are typically experienced during the winter months and are comprised of both powerplant and spillway flows measured at the downstream USGS gage (USGS 13081500 Snake River near Minidoka Idaho, at Howells Ferry).

Alternative C – Spillway Replacement

This alternative is the similar to Alternative B except that it does not involve removal and construction of the North Side and South Side canal headworks, and therefore has a slightly different spillway alignment.

The construction of the new spillway would be the same as described for Alternative B, except for a slightly different alignment in the southern section where it would follow the existing spillway alignment to the existing South Side Canal headworks. Construction of the new spillway is identical to that described for Alternative B.

Under Alternative C, the new dike section would be constructed of roller-compacted concrete material to effectively widen the crest to allow for loading and crane equipment to access the new spillway. The new dike would extend up to 150 feet from the southern end of the new spillway continuing south to the existing South Side Canal, then extend east, paralleling the canal, until it ties into the existing South Side Canal headworks.

The Public Use Improvements and Special Use Areas designation would be the same as described in Alternative B.

Construction would be the same as described in Alternative B, except that the staging area and the rock and soil waste area near the existing North Side Canal headworks would not be needed. A new service road would also be constructed as described in Alternative B.

Operations for Alternative C are the same as those described for Alternative B.

Environmentally-preferred Alternative

Alternative B is considered to be the environmentally-preferred alternative. It accomplishes the purpose of the project in one construction effort instead of having maintenance and replacement actions occur over a long period of time in several efforts. Therefore, environmental impacts related to construction occur only once during the accomplishment of the Proposed Action. Because of this, and with the environmental commitments to adaptively manage the change in spillway flows, this alternative is environmentally preferred.

IV. PUBLIC INVOLVEMENT

Scoping

Reclamation published a "Notice of Intent to Prepare an Environmental Impact Statement" in the Federal Register on November 13, 2008 (FR 73 67206). A scoping letter was mailed to 106 individuals, organizations, agencies, and congressional delegates. The letter discussed the project and served as notification of the future public scoping meetings. A similar letter was sent to 28 tribal governments.

Public scoping meetings were held in Burley and Idaho Falls in December 2008 to provide information to the public and to solicit input on the alternatives developed to address replacement of the Minidoka Dam spillway and associated structures. Reclamation also held

a meeting in April 2009 with the Fort Hall Business Council of the Shoshone-Bannock Tribes at the Fort Hall Reservation followed by a public meeting in the evening.

Responses to scoping efforts were minimal; Reclamation received only five written letters of comment as a result of the public scoping meeting and no written comments from meetings with the Tribes. Written comments were accepted through December 19, 2008. A Scoping Report was furnished to those providing comments and was included in the Draft and Final EISs. It was also posted to Reclamation's web site for this project.

Review and Comment

In December 2009, the Draft EIS was mailed to 95 individuals, organizations, agencies, and congressional delegates for their review and comment. A similar letter was sent to 28 tribal governments. Written comments were accepted through February 5, 2010. Twelve letters of comment were received. The letters, with Reclamation's responses to the comments, are located in Appendix H of the Final EIS.

Public meetings were held at the following locations to obtain both written and oral comments.

- January 12 – Idaho Falls, Idaho
- January 13 – Pocatello, Idaho
- January 14 – Burley, Idaho

Six individuals provided oral comments at the meeting in Burley, Idaho. No oral comments were provided at the other meetings. Four written comments were provided for inclusion into the Public Meetings Report. This report includes transcripts of the oral comments taken by a court reporter during the meetings, and written comments provided during the meeting or those received within a week following the meetings. The report is available for review at the Snake River Area Office in Boise, Idaho and the Upper Snake Field Office, Burley, Idaho. A summary of both oral and written comments received at the public meetings, including Reclamation's responses, is also included in Appendix H of the Final EIS following Reclamation's responses to the letters of comment. Refer to Section VII of this document for a discussion of the major environmental issues identified during the NEPA process.

V. COORDINATION AND CONSULTATION

Cooperating Agencies

Early in the NEPA process, Reclamation requested that the Idaho Fish and Game (IDFG), USFWS, Idaho Department of Environmental Quality (IDEQ), Environmental Protection Agency (EPA), and the U.S. Army Corps of Engineers (Corps) participate as cooperating

agencies in the spillway replacement project. The USFWS responded that they would participate as a cooperating agency since they have jurisdictional responsibilities under the Fish and Wildlife Coordination Act (FWCA), ESA, and the Clean Water Act (CWA). The EPA and the Corps declined to participate as cooperating agencies. However, they indicated they would be involved in accordance with the Clean Air Act and/or the CWA. IDFG and IDEQ decided not to participate as cooperating agencies.

Under the Council on Environmental Quality (CEQ) regulations (40 CFR 1501.6), an agency may request that the lead agency designate it as a cooperating agency. Following issuance of the Draft EIS, the U.S. Department of Agriculture Rural Development (USDA-RD) requested that they be a cooperating agency in the preparation of this Final EIS so that they could use the environmental analyses of the EIS as part of their evaluation of the Minidoka Dam Spillway Replacement Project for direct loans to the BID and MID. The proposed USDA-RD action is to fund up to 42 percent (16.3 percent BID and 25.7 percent MID) of the Minidoka Dam Spillway Replacement Project's total project costs, which are estimated to be $7.9 million for the BID and $14.8 million for the MID. The USDA-RD will sign a separate ROD for their action.

Endangered Species Act

Section 7 (a)(2) of the ESA of 1973 requires Federal agencies to consult with USFWS and the NOAA Fisheries Service when a Federal action may affect an ESA-listed threatened or endangered species or its critical habitat. This is to ensure that any action authorized, funded, or carried out by a Federal agency is not likely to jeopardize the continued existence of an ESA-listed species or result in the destruction or adverse modification of its critical habitat.

USFWS was contacted to obtain a list of ESA-listed species potentially present within and adjacent to the proposed action area. The list provided by the USFWS indicated that the Utah valvata (snail) and the Snake River physa (snail) are both listed as endangered and may occur in or adjacent to the proposed action area. The Yellow-billed Cuckoo is listed as a candidate species and the bald eagle, although no longer listed, is under a 20-year post de-listing monitoring plan.

Because the proposed project would likely adversely affect both the Utah valvata and Snake River physa, Reclamation initiated formal consultation by submitting a Biological Assessment (BA) analyzing the effects of construction[1] of the proposed project on ESA-listed and candidate species to the USFWS. The USFWS reviewed the BA and prepared a BiOp for the proposed project, which was submitted to Reclamation on August 13, 2010. Reclamation will comply with the Terms and Conditions and Reasonable and Prudent Measures identified in the BiOp. These are listed under Section VIII as environmental commitments.

[1] During construction, operations will remain the same as those analyzed in the 2005 BiOp on Minidoka Project operations.

On August 25, 2010, the USFWS published in the Federal Register their final rule to remove the Utah valvata snail from the Federal List of Endangered and Threatened Wildlife effective September 24, 2010. No Terms and Conditions were identified for monitoring Utah valvata or Snake River physa in the BiOp Reclamation received from USFWS for this project; however, a recommendation to monitor each species was included. Since Utah valvata is now delisted, and no post-delisting monitoring is required, Reclamation will not monitor as was recommended by USFWS. Monitoring of the Snake River physa is also not a requirement for this action; therefore, Reclamation will not monitor as was recommended.

Reclamation is currently consulting with the USFWS on a final Term and Condition for its operational BiOp (2005); therefore, monitoring of Snake River physa will be addressed in this Term and Condition.

The USFWS and Reclamation agreed that additional consultation and a separate BA would be prepared for operational changes associated with the new spillway prior to completion of construction. Reclamation is currently engaged in informal consultation and preparing to enter into formal consultation with USFWS for Reclamation operations in the upper Snake River. This consultation will include the change in operations described in the Final EIS.

Fish and Wildlife Coordination Act

The FWCA of 1934, as amended 1946, 1977 (16 U.S.C. 661-667e), requires Federal agencies to coordinate with USFWS and state wildlife agencies when planning new projects or modifying existing projects so that wildlife resources receive equal consideration and are coordinated with other project objectives and features.

Coordination activities associated with the FWCA were conducted with the USFWS. Reclamation entered into an Interagency Acquisition with USFWS in May 2009 for the purpose of providing funds to USFWS to assist Reclamation with meeting compliance activities for Reclamation's Minidoka Dam Spillway Replacement project. Appendix E of the Final EIS contains the Final Coordination Act Report, which includes the USFWS Recommendations. At the beginning of the Appendix is a list of the Recommendations with Reclamation's responses. The recommendations to which Reclamation agreed are listed as environmental commitments in Section VIII of this document.

National Historic Preservation Act

Pursuant to 36 CFR 800 regulations, Reclamation is required to consult with the National Advisory Council on Historic Preservation (ACHP) for the spillway replacement project due to potential adverse effects. Official consultation with the State Historic Preservation Office (SHPO) concerning the archaeological and historical features of Minidoka Dam began on November 25, 2008, during which SHPO attended a field tour with Reclamation of the Minidoka spillway. In a letter dated February 3, 2009, Reclamation formally notified ACHP

and SHPO that we would be using the process and documentation required under NEPA to comply with the requirements of Section 106 NHPA. Reclamation subsequently met with the SHPO on April 21, 2009, to discuss project impacts and to develop mitigation for the historic features that would be adversely affected. Impacts to the archaeological features were addressed in a separate meeting between Reclamation and the SHPO on April 27, 2009.

On June 4, 2009, Reclamation sent a follow-up letter to the ACHP detailing project impacts and proposed mitigation. At that time, the ACHP was invited to be a participant in the development of a memorandum of agreement that will stipulate the mitigation measures for dealing with adverse effects. The ACHP informed Reclamation that their participation in the consultation to resolve adverse effects is not needed at this time. These mitigation measures developed by Reclamation, in coordination with the SHPO, have been listed in Section VIII of this document as environmental commitments. The mitigation measures were outlined in a Memorandum of Agreement (MOA) signed by both parties on August 14, 2009, completing the SHPO consultation on the project.

Clean Water Act

Sections 404 of the CWA regulate the discharge of dredge and fill materials into waters of the United States, including wetlands. The Corps evaluates applications for Section 404 permits and requires mitigation for unavoidable impacts to the aquatic environment. Reclamation has worked with the Corps and USFWS on these requirements.

As mitigation, wetland habitat would be replaced as appropriately determined by the Corps through the Section 404 permitting process of the CWA. A wetland functional assessment would be completed and wetlands replaced on a one-to-one basis, prior to project completion.

In addition, an adaptive management approach, which includes monitoring of effects resulting from reductions in spillway releases, will be implemented. These changes will be made, and biological resources monitored, over a 4-year period. A Technical Team consisting of Federal and State agency and academia representatives will be formed. If monitoring indicates adverse impacts to biological resources as a result of changes to spillway releases, the Technical Team will assist Reclamation in determining modifications, including adopting a higher minimum spillway discharge up to 1,900 cfs.

These mitigation actions are listed as environmental commitments in Section VIII of this document.

VI. PUBLIC RESPONSE TO THE FINAL EIS

No comments were received on the Final EIS.

VII. ENVIRONMENTAL IMPACTS AND MAJOR ENVIRONMENTAL ISSUES

A table summarizing the impacts of each alternative is attached as Attachment A.

The following list identifies the major environmental issues identified during the NEPA process.

- Potential impacts to ESA-listed snails resulting from a decrease in spillway flows.
- Potential impacts to spillway wetlands resulting from reduction in spillway flows.
- Potential impacts to water fowl and shoreline vegetation resulting from keeping the reservoir at full level following construction.
- Potential impacts to water quality during construction.

These issues resulted in incorporating changes to the action alternatives in the Final EIS. These changes commit Reclamation to: 1) development and use of a Technical Advisory Team that will make recommendations on appropriate monitoring needs and resultant mitigation if needed; 2) a 4-year incremental reduction in spillway releases, combined with monitoring, using an adaptive management approach to determining appropriate changes in spillway releases; and 3) retain the flexibility to draft reservoir levels to elevation 4240.0 feet during the winter to address irrigation demand, facility maintenance needs, and environmental concerns.

VIII. ENVIRONMENTAL COMMITMENTS

The following mitigation actions are considered to be commitments being made by Reclamation. In addition, the recommendations provided in the FWCA Report (Appendix E of the Final EIS) to which Reclamation agreed, are also considered commitments.

Coordination Act Report Recommendations Agreed to by Reclamation

Reclamation has included an adaptive management approach to reservoir operations for each action alternative, within Reclamation's operational flexibility, addressing the outcomes of cooperative monitoring activities. Reclamation will establish a Technical Team, consisting of representatives from State and Federal agencies as well as academia, to assist in developing specific monitoring plans. If monitoring determines that mitigation is necessary, it will also be developed cooperatively.

Reclamation intends to monitor the response of muskrats and beavers using the USFWS refuge's data sources. Cottonwood trees will be protected with fencing. Willow and cattail

species should not be significantly affected by a slight increase in muskrat and beaver populations.

Reclamation has included for each action alternative an adaptive management approach to reservoir operations regarding leopard frogs, within Reclamation's operational flexibility, addressing the outcomes of cooperative monitoring activities. As noted above, Reclamation will establish a Technical Team, consisting of representatives from State and Federal agencies as well as academia, to assist in developing specific monitoring plans. If monitoring determines that mitigation is necessary, it will also be developed cooperatively

Reclamation will utilize, and modify if needed, its current invasive species management program to monitor for increased invasive species establishment as may be influenced by this project. With the revised operations, Reclamation has retained the flexibility, if needed, to adjust operations to help control, or deter establishment of, invasive species.

On August 25, 2010, the USFWS published in the Federal Register their final rule to remove the Utah valvata snail from the Federal List of Endangered and Threatened Wildlife effective September 24, 2010. The only specific recommendation in the BiOp for this project specific to this species was for monitoring. Since it is now delisted, Reclamation will not monitor as was recommended by the USFWS. Monitoring of the Snake River physa is also not a requirement for this action; therefore, Reclamation will not monitor as was recommended. However, Reclamation is currently consulting with the USFWS on a final Term and Condition for its operational BiOp (2005); therefore, monitoring of Snake River physa will be addressed in this Term and Condition.

The Technical Team will assist in determining the appropriate minimum flow in the spillway. Rather than immediately implementing a minimum spillway flow of 500 cfs, Reclamation will incrementally reduce the spillway flows over a 4-year period, monitoring for potential impacts as changes are made. Based on monitoring results and assistance from the Technical Team, Reclamation will adjust operations accordingly, up to 1900 cfs, to avoid impacts, or provide mitigation if required.

A monitoring program will be established, with assistance from the Technical Team, to address the spillway trout fishery as well as spillway and reservoir impacts to other fish and wildlife species.

Hydrology Reservoir and Spillway Operations

Reclamation's operation flexibility is regulated and constrained by Federal water delivery contracts, State water rights law, timing of irrigation demand, facility maintenance needs, flood control operations, and certain environmental requirements and concerns. However, Reclamation will have the physical flexibility and will adjust the normal reservoir water

surface between elevations 4245.0 feet (full pool) and 4240.0 feet as conditions warrant, within legal constraints, to address environmental concerns.

Under Alternatives B and C, Reclamation is proposing to reduce irrigation-season spillway flows from the current 1,300 to 1,900 cfs flow range down to a minimum flow of 500 cfs. However, Reclamation recognizes the potential that impacts may occur to some natural resources at spillway flows between 500 and 1,300 cfs. Consequently, Reclamation will establish a Technical Team to assist in determining the appropriate minimum flow in the spillway. In addition, in each action alternative, instead of immediately implementing a minimum spillway flow of 500 cfs, Reclamation will incrementally reduce the spillway flows over a 4-year period, monitoring impacts as changes are made. Based on monitoring results and in consultation with the Technical Team, Reclamation will, within Reclamation's operational flexibility, adjust operations to avoid impacts or provide mitigation.

Groundwater

Due to a potential increase of subsurface seepage from the sand layer downstream of the North Side Canal, slope stabilization or drainage mitigation may be required. Mitigation would depend on the location of any new subsurface seepage. If the new subsurface seepage can be captured by existing measurement devices (flumes), then no mitigation would be necessary. However, if additional subsurface seepage daylights in new areas, channelization or installation of new measurement devices will be required as appropriate.

Water Quality

Onsite actions are incorporated or required under several water quality permitting and certification processes. These include CWA Section 404 dredge and fill permits issued by the Corps, Section 401 water quality certification by the State of Idaho, and stormwater discharge National Pollution Discharge Elimination System (NPDES) permit issued by EPA. Other activities that are incorporated into Alternatives B and C include the use of the existing spillway and headworks as bulkheads or cofferdams during construction.

Reclamation will use an adaptive management approach to determining minimum summer time spillway discharge. Temperature and other water quality parameters will be measured in response to ramping summer time spillway discharges down during the 4-year period. Should temperature increases occur that would impact the biological communities of the spillway area, the Technical Team will assist Reclamation in determining modifications, including adopting a higher minimum spillway discharge up to 1,900 cfs.

Aquatic Biota

Reclamation will require that contractors comply with the following mitigation requirements:

Construction Practices

1. Use appropriate construction methods to isolate in-channel construction areas from flowing water to minimize turbidity and sediment released from site.

2. Insure that petroleum products, chemicals, or other harmful materials are not allowed to enter the water.

3. Perform as much machine work as possible from the streambanks to minimize disturbance to the streambed.

4. Minimize disturbance to riparian vegetation.

5. Restore the site to near-original conditions/grade. Remove spoils from the construction area when it is not possible to shape them to near-original conditions.

6. Dispose of construction spoils and waste materials at proper sites away from the stream channel.

7. Use silt screens to minimize the overland flow of fine sediments from construction sites into the stream during precipitation events.

8. Capture game fish that are inadvertently trapped in sections of ditch or river isolated for construction, and liberate them into adjacent flowing water.

9. Obtain all required Federal, State, and local permits.

10. Enumerate game fish incidentally killed during blasting operations and replace in kind after construction is completed.

Site Recovery

1. Stabilize disturbed upland riparian and wetland areas with native grasses and vegetation.

2. Vacate construction sites leaving a positive visual impact blending with the natural landscape.

Terrestrial Biota

Reclamation will adopt an adaptive management approach to reservoir operations, within Reclamation's operational flexibility, addressing the outcomes of cooperative monitoring activities. Specific monitoring plans will be cooperatively developed with USFWS and IDFG. If monitoring determines that mitigation is necessary, it will be developed cooperatively.

Avian Species

Mitigation measures for the following species will be addressed for this project:

Western and Clark's Grebes: Effects of the new operation on emergent vegetation will be monitored according to published or approved scientific research protocol to determine impacts to these species. If it is determined that the species is being impacted, appropriate mitigation measures will be implemented.

Great Blue Heron: The proposed operation would allow higher winter water levels, which would favor increased beaver population. Since beavers like to eat cottonwood bark, the grove of cottonwoods that supports the great blue heron colony will be protected with wire to prevent girdling by beavers after construction.

Franklin's Gull: There should be no effect on the birds from construction or operation if new flow through the dam does not affect the caddisfly population. The caddis hatch will be monitored according to published or approved scientific research protocol to determine affects to the gull's food source. If it is determined that the species is being impacted, appropriate mitigation measures will be considered.

Trumpeter Swan: There should be no effect on the trumpeter swan from construction or proposed operations. The emergent vegetation will be monitored according to published or approved scientific research protocol to determine if the proposed operations will affect trumpeter swans. If it is determined that the species is being impacted, appropriate mitigation measures will be considered.

Bald Eagle: The proposed operation would allow higher winter water levels, which would favor increased beaver population. Beavers like to eat cottonwood bark, and since there is only one tall tree suitable for nesting on one of the islands on the reservoir, it will be protected from beavers with wire.

Mammalian Communities

Recent attempts to increase the number of cottonwoods by planting cuttings failed, primarily because of beaver predation on the cuttings before they could root. Existing trees will be protected with wire as discussed above.

Wetlands

Due to spillway operational changes, Reclamation will complete a functional assessment prior to completion of construction to establish a baseline for adaptive management monitoring. A monitoring plan will be developed with the assistance of the Technical Team, which includes the establishment of impact thresholds, and if it is concluded that negative impacts occur to the wetland habitats, the spillway flows will be increased appropriately to protect the impacted wetland habitat.

Reclamation will mitigate on a one-to-one basis for wetland losses due to construction activities. After completing a wetlands functional assessment, a total of 3 acres of appropriate functioning wetland will be constructed on the southwest edge of the spillway.

The site of mitigation for these wetland habitats will be located on the southwest edge of the spillway. This area currently supports a vegetative community of predominately sagebrush and cheatgrass. Immediately northwest of this area, in a solid stand of cheatgrass, appropriate native plants (including sagebrush) will be planted on a one-to-one basis to replace the lost sagebrush community.

Additionally, the extent of aquatic macrophytes and species composition of those stands along the littoral zone of the reservoir (which serves critical habitat functions for both fish as well as wildlife species) will be monitored.

Threatened and Endangered Species

Under Alternative B, Reclamation is proposing to reduce irrigation season spillway flows from the current 1,300 to 1,900 cfs flow range incrementally, over a 4-year period, down to a fixed target flow as low as 500 cfs. The new spillway flow will be established largely based on flow requirements of the two ESA-listed snails known to occur within the spillway area, as well as biological factors. This flow will be determined by Reclamation managers with input from the Technical Team. The proposed adaptive management approach to establishing spillway flows is intended to reduce irrigation season spillway flows without having a negative effect on ESA-listed species known to occur within the spillway area. In addition, the new structure would likely reduce or eliminate structural leakage and potentially alter subsurface seepage as currently exists. If it is determined through monitoring that this condition negatively affects ESA-listed snails, Reclamation will provide non-irrigation season flows up to 100 cfs as mitigation for the potential reduction or elimination of the existing subsurface seepage. This mitigation would result in year-round flows through the spillway area for ESA-listed snails.

Under each action alternative, construction activities would be conducted upstream of the spillway pool containing ESA-listed snails. Reclamation will maintain flows to the pool containing ESA-listed snails throughout the duration of the construction project consistent

with current operations. Further, Reclamation will require contractors to implement standard BMPs to ensure construction materials do not enter the pool containing ESA-listed snails. Table 1 summarizes mitigation measures for each alternative.

Table 1. Mitigation measures for the No Action and action alternatives.

Spillway		
Alternatives	**Action**	**Associated Mitigation**
A – No Action	None	None
B – Spillway and Headworks Replacement	Reduce spillway flows, reduce or eliminate structural leakage. Potential alteration of subsurface seepage rates.	Reclamation will implement a 4-year flow reduction schedule to be monitored by a Technical Team. The determined flow will be sufficient to maintain the ESA-listed snails. Reclamation will also provide over-winter flows through the spillway area if needed.
C – Spillway Replacement	Reduce spillway flows, reduce or eliminate structural leakage. Potential alteration of subsurface seepage rates.	Reclamation will implement a 4-year flow reduction schedule to be monitored by a Technical Team. The determined flow will be sufficient to maintain the ESA-listed snails. Reclamation will also provide over-winter flows through the spillway area if needed.
Reservoir (Lake Walcott)		
Alternatives	**Action**	**Associated Mitigation**
A – No Action	None	None
B – Spillway and Headworks Replacement	Earlier pre-irrigation season fill	None
C – Spillway Replacement	Earlier pre-irrigation season fill	None
Construction		
Alternatives	**Action**	**Associated Mitigation**
A – No Action	None	None
B – Spillway and Headworks Replacement	Work above snail pool	Implement BMPs; maintain flows consistent with current operations
C – Spillway Replacement	Work above snail pool	Implement BMPs; maintain flows consistent with current operations

Per Reclamation's standard construction contract requirements, sediment and spill control structures will be required at all locations along the new spillway where construction activities have the potential to contact or reach wetted channels.

Reclamation personnel will routinely monitor construction activities to ensure flows are sustained though the south channel and that contract requirements are fulfilled.

In addition to the above commitments, Reclamation commits to implementing the Reasonable and Prudent Measures and Terms and Conditions as listed in the USFWS BiOp dated August 13, 2010. These are:

Reasonable and Prudent Measures

1. Reclamation will ensure the new spillway structure and associated water-release structures will be constructed in such a fashion as to ensure the accurate quantification of flows through the structure and into the spillway area.

2. Reclamation will implement steps to help ensure the current flow regime and adequate water quality is maintained in the spillway area to provide suitable habitat for the Snake River physa.

Terms and Conditions

1. The spillway structure will be constructed to ensure that accurate quantification of instantaneous flows through any of the structure release points can be obtained. Methods to implement this term and condition could include: installing permanent stage gauges or comparable stage height; installing flow measurement devices at the new spillway release points; or designing the new structure(s) to allow operators to accurately estimate direct water releases from those locations. This will allow for more precise measurement of flow releases than is currently available by using plant operational capacity and the existing USGS gage at Howell's Ferry (USGS 13081500) that is currently in practice (Assessment, p. 15). Greater precision of water releases will help provide assurances that the wetland habitats within the bypass reach will receive adequate flows for federally listed, aquatic species.

2. Prior to the Action, Reclamation shall investigate the flow dynamics of the Lower Wetland Pool (snail pool) in order to quantify possible subsurface accretion into the pool. To accomplish this, Reclamation will monitor the inflow and corresponding outflow to/from that pool. These data will be collected from October 15, 2010 to April 15, 2011. Starting no later than October 15, 2010, Reclamation shall also deploy no fewer than three temperature data loggers at appropriate locations throughout the Lower Wetland Pool to collect data on seasonal temperature conditions of Snake River physa habitat within that pool. The deployed loggers should collect temperature measurements at least twice daily for a period of no less than five years. Both flow and temperature data will be used to determine the needed release flows to keep the Lower Wetland Pool sufficiently watered, and of sufficient water quality, throughout the non-irrigation season, during and after construction, to ensure its suitability as

habitat for Snake River physa. These data will be provided to the Service as prescribed in the Reporting and Monitoring section below.

3. If the Service finds the resulting data are inconsistent or inconclusive, Reclamation will work with the Service to provide the necessary non-irrigation season flows up to and including a minimum of 100 cfs over the spillway into the Lower Wetland Pool during the non-irrigation season. The release of these flows can be manipulated to accommodate the phased construction of the Action, but must be directed into the Lower Wetland Pool to ensure this habitat is receiving flows equivalent to or greater than those under current (pre-Action) operations. Modification of these flows after completion of the Action will require a separate formal Section 7 consultation.

Reporting and Monitoring Requirements

The water quality and quantity data required in Term and Condition 2 (above) will be provided to the Service no later than May 15, 2011. After that time, Reclamation and the Service shall use the available information to collaboratively develop a regimen of water delivery to the Lower Wetland Pool that will protect the resident listed snails during the non-irrigation season. This regimen will need to be in place during and after the construction period.

On August 25, 2010, the USFWS published in the Federal Register their final rule to remove the Utah valvata snail from the Federal List of Endangered and Threatened Wildlife effective September 24, 2010. The only specific recommendation in the BiOp for this project specific to this species was for monitoring. Since it is now delisted, Reclamation will not monitor as was recommended by the USFWS. Monitoring of the Snake River physa is also not a requirement for this action; therefore, Reclamation will not monitor as was recommended. However, Reclamation is currently consulting with the USFWS on a final Term and Condition for its operational BiOp (2005); therefore, monitoring of Snake River physa will be addressed in this Term and Condition.

Any violation of the BMPs during the Proposed Action or deviations from the action as proposed will be reported to the Service within 2 working days of the event.

Geology, Soils, and Flood Plain

Following the abandonment of the staging and waste areas after construction of Alternative B, some reclamation effort would be necessary to prevent wind erosion of soil and permit re-vegetation. If needed, heavily compacted areas of soil would be scarified to break up the surface prior to reseeding with natural vegetation.

Excavation of canal and road embankments may generate reusable fill materials. Some stockpiling of the fill material is anticipated. High winds could produce dust that would call

for dust abatement procedures through the construction period. The piles of unconsolidated fill will be covered or kept damp if necessary.

Cultural Resources

Archaeological Resources

No mitigation would be necessary under any of the alternatives. Mitigation for adverse effects resulting from future Reclamation undertakings at Minidoka Dam will be addressed on a case-by-case basis through Section 106 consultation.

Historical Resources

Alternative A – No Action

No mitigation will be required under the No Action alternative. Mitigation for adverse effects resulting from future Reclamation undertakings at Minidoka Dam will be addressed on a case-by-case basis through Section 106 consultation.

Alternative B – Spillway and Headworks Replacement

Consultation pursuant to the 36 CFR 800 regulations has been initiated with the Idaho SHPO over effects of the spillway replacement on the historic features of Minidoka Dam. Reclamation and the SHPO concur that the undertaking, as proposed under Alternative B, would have direct and indirect adverse effects on the Minidoka Dam historic site, requiring specific action by Reclamation to mitigate those effects. The mitigation measures enumerated below have been developed by Reclamation in coordination with the SHPO. These measures have been formalized in a Memorandum of Agreement (MOA) between Reclamation and the SHPO. The National ACHP has chosen not to participate in the development of the MOA.

Reclamation agrees to perform the following actions to mitigate the adverse effects of the proposed project to the Minidoka Dam historic property:

1. Prepare large-format (4 X 5) black and white contact prints, archival processed, of the historic bridge that crosses the North Side Canal, early 20th century concrete lining and Civilian Conservation Corps (CCC) period lining along the North Side Canal, and close-up views of existing spillway piers and bays and action views of the process of pulling and placing stoplogs;

2. Create a publically accessible informational display near Minidoka Dam (possibly in the State Park), using salvaged sections of piers, bays, stoplogs, walkway, and ogee, removed from the original spillway, if possible. The display will inform visitors about the history, construction, and function of the overflow spillway being replaced.

Blueprint drawings, historic photographs, and narrative text will supplement the spillway display;

3. Retain, as agency museum property, the traditional hand tools used in the process of manually pulling and placing stoplogs.

Alternative C – Spillway Replacement

Same as Alternative B, except that large-format prints of the historic North Side Canal Bridge and North Side Canal lining would not be necessary. These features will remain unaltered under Alternative C.

Sacred Sites

If sacred sites are located within the reservoir and are exposed during drawdown, the tribes would be notified immediately.

Recreation

During construction, signs will be posted with maps showing the availability of recreation opportunity alternatives outside the construction zone.

Noise

Section 24 of Reclamation's Safety and Health Standards (RSHS) provides general requirements for blasting operations. Section 24.1.8 Vibration and Damage Control requires precautions be taken to minimize earth vibration, air blast, and thrown fragments. Where vibration and blast damage is possible, a vibration and damage control section is to be included in the site blasting plan. A method of accurately measuring and documenting earth vibration and effects on nearby facilities or structures are to be established. The maximum peak particle velocity as recorded at the designated structure or location must not exceed 1 inch per second. The air blast is to be controlled so that it does not exceed 128 decibel linear-peak at designated locations or structures.

In addition to the items required by RSHS Section 24.1.3, the blasting plan will include the following measures to assure those in the area of Minidoka Dam are aware of the blasting operations and the peak limits for blasting are not exceeded:

- Notification of the date and time of blasting will be provided no less than 10 days in advance of commencing any blasting work to nearby residents, local law enforcement, newspapers, and sensitive receptors located within 1,000 feet of blasting including the refuge and park.
- Pre-blast alarms will be sounded. Immediately before blasting, the construction contractor will be required to sound a signal announcing the blast. Construction

contractors will follow the construction safety plan that will provide for these measures.

- Best available practices will be employed to limit air blast from blasting to 128 dB and vibration to less than 1 inch per second at the nearest noise sensitive land uses.
- Noise and vibration monitoring will be performed at nearby residences and sensitive receptors to ensure that air blast from blasting is limited to 128 dB and that vibration is limited to less than the 1 inch per second criteria.

Air Quality

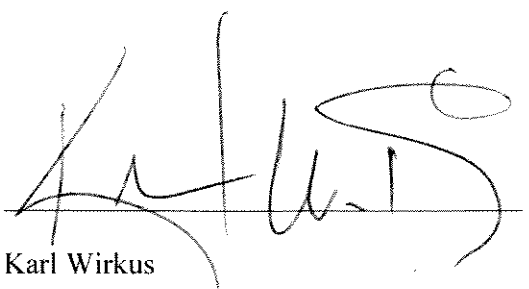
DEQ requires air quality permits for the operation of portable rock crushers and concrete/asphalt batch plants and prescribes specific BMPs. DEQ also requires the use of specific BMPs to control fugitive dust at all construction sites (IDAPA 58.01.01.650-651) (DEQ 2008b). Other short-term emissions from construction sites are exempt from air quality permitting requirements. DEQ also requires the use of specific BMPs to control fugitive dust (IDAPA 58.01.01.650-651) (DEQ 2008b). Reclamation will comply with all DEQ requirements.

Construction hours will likely range from 8 to 12 hours per day, 5 days per week; 24/7 work days are not anticipated.

IX. DECISION

Based upon the above discussion, Alternative B, as described in the Final EIS and this ROD, including all Environmental Commitments contained in this ROD, is selected for implementation. It most effectively achieves the purpose and need of the project in an environmentally-sensitive manner.

Approved:



27 September 2010

Karl Wirkus
Regional Director
Pacific Northwest Region

Date

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Attachment A

Summary Table – Comparison of Alternatives

Resource	Alternative A – No Action	Alternative B – Spillway and Headworks Replacement	Alternative C – Spillway Replacement
Hydrology and Reservoir Operations			
• Lake Walcott Target Elevations	4245.0 feet (April through October) 4240.0 feet (November through March)	Dry water type years: 4245.0 feet (March through August) Dry water type years: 4240.0 feet (September through February)	Same as Alternative B.
• Target Flows below Minidoka Dam (includes both powerplant and spillway flows measured at the USGS gage)	500 cfs	Average/wet water type years: 4245.0 feet (year round) Dry water type years: 525 cfs. Average/wet water type years: 600 cfs	Same as Alternative B.
• Spillway Flow Targets	April 15 through June 30 – 1,300 cfs July 1 through August 31 – 1,900 cfs September 1 through September 15 – 1,300 cfs April 1 through April 14 and September 16 through October 31 - first 5,035 cfs through the powerplant Next 1,300 cfs over the existing spillway additional flows above a total of 6,335 cfs through powerplant until hydraulic capacity reached, then excess flow is discharged over the existing spillway November through March – 0 cfs	April through October - minimum of at least 500 cfs up to 1,900 cfs based upon monitoring; to be established Year 4 after spillway construction. An adaptive management approach would be taken to establish the minimum flow within the spillway area. The target minimum spillway flow of 500 cfs would be incrementally pursued at over a 4-year period. This would allow Reclamation to assess potential impacts to the biological resources within the spillway area. The proposed incremental reduction in spillway flows would be as follows: • Year 1 – 1,900 cfs • Year 2 – 1,500 cfs • Year 3 – 1,000 cfs • Year 4 – 500 cfs November through March – up to 100 cfs) if determined to be needed.	Same as Alternative B.

Resource	Alternative A – No Action	Alternative B – Spillway and Headworks Replacement	Alternative C – Spillway Replacement
Groundwater	Continuation of current groundwater conditions, groundwater levels, and subsurface seepage flows.	In years when Lake Walcott is held full during the winter months, total measured subsurface seepage volume would increase by about 4 percent downstream of the north abutment (maximum measured seepage is 860 gpm). Water levels in the sand interbed would increase by about 1.5 feet and basalt water levels would increase by about a foot. Water levels in the regional basalt aquifer would remain below the elevation of the Snake River so there would be no change of flow between the river and aquifer.	Same as Alternative B.
Water Quality	Reservoir bank erosion and upstream reach (in-channel) suspension of sediment during drawdown would continue. No change in downstream reach.	Brief periods of elevated turbidity in the spillway area due to construction activities; no change in downstream reaches. Slight sediment delivery reduction from upstream reaches.	Same as Alternative B.
Minidoka Hydropower Generation	No change.	Increase in gross generation and economic value.	Same as Alternative B.
Aquatic Biota			
Reservoir Fish Community	Extensive areas of aquatic macrophytes along the littoral zone of Lake Walcott provide good spawning and rearing habitat and protection from predation. However the lengthy drawdown period during winter can force juveniles from the cover of aquatic macrophytes, as well as lava rock and boulders, increasing their exposure to predation. While this can increase prey availability for large predators, it can reduce overall juvenile survival of species such as smallmouth bass.	The change in reservoir operations would not adversely affect aquatic macrophytes which provide spawning and rearing habitat and cover from predation. Juvenile fish that rely on the cover of aquatic macrophytes or lava rock and boulder habitat for predator escape would benefit through the reduced period of reservoir drawdown. Overall there would be a benefit to the fish community in general and smallmouth bass in particular because of the reduction in drawdowns and improved juvenile survival. Approximately 5.2 acres of reservoir habitat would be created.	Same as Alternative B.
Spillway Fish Community	No effect to the fish species present in the spillway area will occur.	With proper implementation of BMPs there would be no adverse construction impacts. Replacing the flows that occur as a result of leakage with pipes that would deliver a minimum of 500 cfs in summer and flows provided in winter would allow a similar fish population to continue in the spillway area. Spillway target flows to be established Year 4 after spillway	Same as Alternative B.

Resource	Alternative A – No Action	Alternative B – Spillway and Headworks Replacement	Alternative C – Spillway Replacement
		construction based upon monitoring. Minimum 500 cfs up to 1,900 cfs. Fish entrainment rates would be similar to the present condition.	
Terrestrial Biota			
Vegetation	Existing upland and riparian vegetation will not change and will not be disturbed by construction except for maintenance and the gradual replacement of piers.	Little or no change to existing upland and riparian vegetation although cottonwoods would be at risk due to an increase in muskrat and beaver populations. More stable water levels would allow better control of trespass grazing on the Minidoka Refuge by reducing the opportunity for cattle to go around fences during reservoir drawdown. No effects to noxious weed control efforts with the exception of Eurasian milfoil which may increase because of the reduced winter drawdown and subsequent freezing. Spring full pool may allow better survival of riparian plantings. Drawdowns are generally beneficial for emergent vegetation which exists in the drawdown zone of the reservoir. Overall extent of emergent vegetation should not be affected. Reduction of approximately 5.2 acres of spillway habitat. Reservoir wetlands – 5-foot winter draft 25 to 50 percent of years with April refill and year-round full pool operation rest of years would not adversely affect emergent vegetation in the reservoir littoral zone. Creation of approximately 5.2 acres of reservoir habitat.	Same as Alternative B.
Spillway Wetlands	There will be no changes in wetland function or extent.	Spillway area habitat would be sustained by utilizing the 4 new pipes and the radial gates to provide a minimum spillway flow between 500 and 1,900 cfs in summer and some potential over-winter flows up to 100 cfs, as determined by monitoring results and adaptive management. The construction of the new headgates would primarily be completed outside the wetland so would have little impact Three acres of wetland habitat in the spillway area would be eliminated with the construction of the new spillway and service road. Reclamation will mitigate on a one-to-one basis for wetland losses	Same as Alternative B.

Resource	Alternative A – No Action	Alternative B – Spillway and Headworks Replacement	Alternative C – Spillway Replacement
		due to construction activities.	
Avian, Mammalian, Amphibian, and Reptile Communities	No changes in the wildlife community would occur.	Little or no effect to avian communities, except temporary disturbance of birds in the construction area. No effect to large mobile wildlife such as deer and antelope. Muskrat and beaver populations would likely increase. Increasing beaver populations may put the few cottonwoods at risk. Elimination of winter drawdown would likely benefit amphibians. Wildlife species would be temporarily disturbed during the approximate 31 months of construction and may experience some increased mortality due to collisions with heavy equipment on the haul road, or as a result of displacement to already occupied habitats. The presence of humans may also cause some wildlife species to avoid the area while construction is taking place. Avoidance of the area by some species should change when construction is completed and the construction noise stops. Blasting to remove rock in the spillway area is likely to result in temporary adverse impacts to reptiles and amphibians including mortality of any individuals in the immediate area of the blasting activities.	Under Alternative C the new headworks would not be built only the existing spillway sections would be constructed. These would primarily be completed outside the wetland and should have no impact.
Threatened and Endangered Species Spillway Flow	Operations – No winter release; 1,300 to 1,900 cfs irrigation season No change in habitat for, ESA-listed snails, bald eagle, or Yellow-billed Cuckoo habitat. No construction.	Operations – Provide potential winter flows of up to 100 cfs; 500 cfs to 1,900 minimum in summer, based on monitoring and adaptive management. 2005 BiOp operations – Summer reduction. Construction – Flows maintained consistent with current operations; increased sediments possible. 5.2 acres converted from spillway habitat to permanently watered reservoir habitat. ESA-listed snail – Likely to adversely affect.	Same as Alternative B.

Resource	Alternative A – No Action	Alternative B – Spillway and Headworks Replacement	Alternative C – Spillway Replacement
		Eagle habitat – No change. Yellow-billed Cuckoo – Summer improvement. Unquantifiable impacts to Snake River physa resulting from water turbidity and sedimentation associated with construction activities. Possible impacts to Utah valvata associated with blasting.	
Reservoir	Operations – 5-foot winter draft; April refill No change in habitat for, ESA-listed snails, wetland acres, bald eagle, or Yellow-billed Cuckoo habitat. No construction.	Operations – 5-foot winter draft 25 to 50 percent of years with April refill; year-round full pool operation rest of years. 2005 BiOp operations – Altered winter reservoir management. 5.2 acres converted from spillway habitat to permanently watered reservoir habitat. ESA-listed snail – Likely to adversely affect. Eagle habitat –No change. Yellow-billed Cuckoo – No change. Construction – Flows maintained consistent with current operations. Increased sediments possible.	Same as Alternative B.
Geology Soils	Weathering and erosion of the exposed rock would continue at a very slow rate. Over time some of the foundation areas below the existing spillway will be affected by erosion from spillway discharges and require treatment such as concrete aprons over the rock. Normal operations and maintenance would have no impacts on soils in the project area.	Rock excavation and soil concrete fill would be required along the new spillway alignment and in the foundation of the new headworks. Staging and waste areas are required for using and disposal of construction materials. Construction activities would cause disturbance of vegetation and compaction of soil from traffic, stockpiled material, and construction supplies. Dust abatement at stockpiles is necessary.	Rock excavation and soil concrete fill would be required along the new spillway alignment. Potential staging and waste areas may not be used or perhaps reduced in size. Construction activities would cause disturbance of vegetation and compaction of soil from traffic, stockpiled material, and construction supplies. Dust abatement at stockpiles is necessary. Potential staging and waste areas may not be used or perhaps reduced in size.

Resource	Alternative A – No Action	Alternative B – Spillway and Headworks Replacement	Alternative C – Spillway Replacement
Flood Plain	Under continuance of existing spillway and powerplant operating conditions at the site no new impacts on the existing flood plain are anticipated.	During flood control releases that result in higher spillway flows the increased discharge may redistribute bedload sediments in the river but would not adversely impact the flood plain areas.	Similar impacts as Alternative B.
Cultural Resources	Spillway replacement will not be implemented; no immediate effect on the historic dam. However, no action could result in major changes later from repairs that will affect the dam's National Register status. There will be no effect on archaeological sites.	Impacts from removal of original components of the historic dam would include: the existing spillway, the historic bridge at the North Side Canal, the South Side Canal headworks, and the historic lining material on the North Side Canal. Additional impacts would result from introducing new elements: new overflow sections downstream of the existing spillway; new North Side Canal and South Side Canal headworks structures; new North Side Canal lining; a new radial gate section with 12 radial gate bays; accessible parking area and security fences; new service roads; and new concrete dikes. These new elements adversely affect the integrity and historic environment of the dam. Of the three alternatives, Alternative B would have the greatest impact to the dam's historic integrity. There would be no effect on archaeological sites.	Impacts to dam integrity would be at a reduced scale relative to Alternative B. Impacts from removal of original components of the historic dam would include removal of the existing spillway. Impacts from introducing new elements would include: new overflow sections; a new radial gate section; accessible parking area and security fences; new service roads; and new concrete dikes. These new elements would adversely affect the integrity and historic environment of the dam. There would be no effect on archaeological sites.
Indian Trust Assets (ITAs)	No change, assets will not be affected.	Alternative B would temporarily affect fishing and hunting rights in the direct vicinity of the new spillway and canal headworks during construction. These fishing and hunting rights would be restored at project completion	Same as Alternative B.
Sacred Sites	No known sites in the area; therefore, sacred sites will not be affected.	There are no known Indian sacred sites in the area of the existing spillway or the adjacent area surrounding the project. There is potential of uncovering a sacred location if the water is dropped below normal management levels for the spillway replacement. No impacts are expected from the construction work when replacing the headworks.	Same as Alternative B.
Recreation	Use restrictions in 43 CFR Part 423 would be in place indefinitely.	Ice fishing use would be permitted but would shift northeastward; bank fishing from the existing dike would cease if private landowner denied public access; no access	Same as Alternative B.

Resource	Alternative A – No Action	Alternative B – Spillway and Headworks Replacement	Alternative C – Spillway Replacement
		would be provided to the new dike; all recreation using spillway catwalk access would cease; fishing would be available from banks immediately below outflow points of both the existing radial gates and the new radial gates; more difficult to access south side of river; public access to the south half of area below the new spillway including existing radial gates improved; accessible parking constructed and fishing access improved for people with disabilities, which could result in increased visitation below the new spillway.	
Aesthetics	No change except short-term impacts during occasional pier replacement construction.	Short-term impacts associated with construction of the new spillway and headworks. New spillway would have less visual impact than existing spillway.	Same as Alternative B.
Noise	Temporary noise and groundborne vibration generated by equipment and machinery associated with pier replacement and headworks maintenance will attenuate to acceptable levels at the park and private residences. The pier replacement program will involve ongoing replacement of piers to maintain the existing spillway in a usable condition. The ongoing maintenance period will likely last a few weeks to months. Noise impacts associated with implementation will be temporary and less than significant. Following maintenance noise levels will be the same as the current condition; therefore, there would be no operational noise impact. Noise impacts are localized in nature and decrease substantially with distance. No other construction projects are currently located or expected in the immediate vicinity of Minidoka Dam. Therefore, pier replacement and headworks maintenance will not contribute to	Potential temporary noise and groundborne vibration impacts generated by equipment and machinery used during construction of the new spillway and headworks replacement would attenuate to acceptable levels at the park and private residences. Replacement of the spillway and headworks would take approximately 31 months. Noise impacts associated with implementation would be temporary and less than significant. Following construction noise levels would be the same as the current condition; therefore, there would be no operational noise impact. Noise impacts are localized in nature and decrease substantially with distance. No other construction projects are currently located or expected in the immediate vicinity of Minidoka Dam. Therefore, replacement of the existing spillway and headworks would not contribute to cumulative construction noise impacts.	Same as Alternative B.

Resource	Alternative A – No Action	Alternative B – Spillway and Headworks Replacement	Alternative C – Spillway Replacement
	cumulative construction noise impacts.		
Air Quality	Potential air quality impacts would be associated with pier replacement and headworks maintenance under the No Action alternative over the life of the project. Compliance with all applicable DEQ emission standards and BMPs would reduce potential impacts to less than significant levels. Air quality impacts associated with pier replacement and existing headworks maintenance are localized in nature and decrease substantially with distance. No other construction projects are currently located or expected in the immediate vicinity of Minidoka Dam. Air quality following maintenance would be the same as the current condition; therefore, there would be no operational air quality impact.	Potential air quality impacts would be associated with construction of the new spillway and headworks during the construction period of approximately 31 months. Compliance with all applicable DEQ emission standards and BMPs including those for operation of portable rock crushers, and concrete and/or asphalt batch plants would reduce potential impacts to less than significant levels. Thus air quality impacts associated with Alternative B would be temporary and less than significant. Air quality impacts associated with the construction of the new spillway and headworks are localized in nature and decrease substantially with distance. No other construction projects are currently located or expected in the immediate vicinity of Minidoka Dam. Air quality following construction would be the same as the current condition; therefore, there would be no operational air quality impact.	Same as Alternative B.
Socioeconomics	No construction related impacts. Annual O&M related expenditures will increase resulting in 3 jobs, $292,300 of output, and $111,700 of labor income.	Construction-related expenditures, mainly due to wage earners spending, result in 291 jobs, $28.5 million in output, and $10.0 million in labor income. These impacts are spread over the construction period. Annual O&M expenditures result in 1 job, $74,600 output, and $28,500 labor income; all categories of impacts are less than No Action.	Construction-related expenditures, mainly due to wage earners spending, result in 204 jobs, $20 million in output, and $7.0 million in labor income. These impacts are spread over the construction period. Annual O&M expenditures result in 1 job, $86,000 output, $32,900 and labor income, all categories of impacts are less than No Action.
Environmental Justice	No disproportionate adverse human health or environmental impacts on minority and/or low-income populations have been identified.	Same as Alternative A.	Same as Alternative B.