

# RECLAMATION

*Managing Water in the West*

## **Deer Flat Dam Lower Embankment Security Enhancement Project Draft Environmental Assessment**

Canyon County, Idaho



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

December 2009

## MISSION STATEMENTS

The mission of the Department of the Interior is to protect and provide access to our Nation's natural and cultural heritage and honor our trust responsibilities to Indian tribes and our commitments to island communities.

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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.

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# Acronyms and Abbreviations

Bureau of Indian Affairs	BIA
Best Management Practices	BMPs
Boise Project Board of Control	BOC
Civilian Conservation Corps	CCC
Code Federal Register	CFR
Comprehensive Conservation Plan	CCP
Deer Flat National Wildlife Refuge	Refuge
Endangered Species Act	ESA
Environmental Assessment	EA
Executive Order	E.O.
finding of no significant impact	FONSI
Homeland Security Presidential Directives	HSPD
Interstate 84	I-84
Memorandum of Agreement	MOA
Migratory Bird Treaty Act	MBTA
miles per hour	mph
National Environmental Policy Act	NEPA
National Historic Preservation Act	NHPA
National Pollutant Discharge Elimination System	NPDES
National Register of Historic Places	NRHP
Operations and maintenance	O&M
Particulate matter 2.5 microns in diameter or less	PM 2.5
Particulate matter 10 microns in diameter or less	PM 10
Public Law	P.L.
Safety of Dams	SOD
State Historic Preservation Office	SHPO
Stormwater Pollution Prevention Plan	SWPPP
Total Maximum Daily Load	TMDL
U.S. Bureau of Reclamation	Reclamation
U.S. Code	USC
U.S. Environmental Protection Agency	EPA
U.S. Fish and Wildlife Service	USFWS
U.S. Geological Survey	USGS

# Chapter 1 – Purpose and Need for Action

This draft environmental assessment (EA) evaluates the Deer Flat Dam Lower Embankment Security Enhancement Project proposed by the Bureau of Reclamation (Reclamation). Reclamation proposes to address security vulnerabilities associated with the dam's Lower Embankment, one of four earthfill embankments that impound Lake Lowell, a water storage reservoir near Nampa, Idaho.

In response to the attacks of September 11, 2001, Reclamation has completed in-depth security assessments of its facilities and a full-scale evaluation of potential vulnerabilities to terrorist attacks at certain facilities. Reclamation's Safety, Security, and Law Enforcement Office identified vulnerabilities at a number of Reclamation dams, including the Deer Flat Dams. The studies determined that motor vehicles traveling across the crest of the Lower Embankment on Riverside Road are a security risk and public safety concern because an explosion could compromise the structural integrity of the dam.

The security enhancement project is divided into two phases. Phase I addresses short-term security concerns, including purchasing mobile security gates for the Lower Embankment that can be deployed if necessary in response to an elevated security event or direct threat against the dam. Reclamation completed National Environmental Policy Act (NEPA) compliance for Phase I and the mobile gates have been purchased. Phase II, the focus of this EA, addresses a permanent solution to reduce the vulnerability of the dam.

## 1.1 Authority

This project was authorized under the Reclamation Act of 1902, the USA Patriot Act of 2001 (P.L. 107-56), Homeland Security Act of 2002 (P.L.107-296) and directed by Department Manual (Parts 440-446) and several Homeland Security Presidential Directives (including HSPD-7, December 17, 2003), and Executive Orders (E.O. 10450, 10577, 12958, as amended).

## 1.2 Proposed Federal Action

The proposed Federal action (proposed action) is to remedy security vulnerabilities at the Deer Flat Dam Lower Embankment related to motor vehicles using the access road (Riverside Road) across the crest of the dam.

## 1.3 Purpose and Need for Action

The purpose of the proposed action is to address security vulnerabilities at Deer Flat Dam Lower Embankment. Action is needed because the dam is vulnerable to explosives that could be carried by a vehicle traveling on Riverside Road across the dam crest.

This EA is being prepared to assist Reclamation in finalizing a decision on a preferred alternative and to determine whether to issue a finding of no significant impact (FONSI) or a notice of intent to prepare an environmental impact statement. Environmental analysis is required by NEPA for any Federal action that may have a significant impact on the environment.

NEPA requires Reclamation to explore a reasonable range of alternatives and analyze the environmental effects of these actions. Several alternatives are evaluated and compared in this document, including the No Action Alternative. The impacts of each alternative were evaluated considering specific issues of

public concern, including transportation and access, cultural resources, water quality, vegetation, fish and wildlife, threatened and endangered species, noise, recreation, Indian Trust Assets, and cumulative impacts. These issues are covered in detail in this EA.

## 1.4 Project Location, Background, and History

The proposed project is located southwest of the City of Nampa in Canyon County Idaho (see Figure 1-1, page 1-3). The Lower Embankment is one of four zoned-earthfill embankments, collectively called the Deer Flat Dams that impound Lake Lowell. The Upper and Lower embankments are the main embankments with structural heights of 73 feet and 49 feet, respectively. The Deer Flat Dams were constructed by Reclamation as part of the Boise Project, Arrowrock Division from 1906 to 1911.

Lake Lowell is an off-stream reservoir formed in a natural depression between the Snake and Boise rivers. Water diverted from the Boise River at the Diversion Dam flows through the 40-mile New York Canal and into Lake Lowell. The total capacity of Lake Lowell is 173,100 acre-feet at full pool elevation 2,531.2 feet. Irrigation water is released from Lake Lowell through four canal outlets. The Caldwell and Nampa canal outlets are located in the Upper Embankment while the Low Line and North canals are located in the Lower Embankment. Lake Lowell is operated by the Boise Project Board of Control (BOC).

The Lower Embankment, also known as the Lower Deer Flat Dam, is located at the west end of the reservoir (see Figures 1-1, 1-2, and 1-3). The Deer Flat Low Line Canal outlet is located on the left abutment and the Deer Flat North Canal outlet is located on the right abutment (see Figure 1-1).

Riverside Road, the access road that crosses the Lower Embankment, is the focus of the proposed security enhancement project. This route serves traffic traveling south of Karcher Road in the general project area.



Figure 1- 2. Photo shows Deer Flat right abutment upstream slope, right abutment parapet walls, and the dam crest roadway.



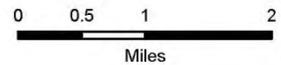
Figure 1-3. Photo shows left abutment upstream soil cement slope and Low Line Canal outlet works intake structure.



**Figure 1-1 - Project Area Map**  
 Deer Flat Dam Lower Embankment Security Enhancement Project

Disclaimer: This map is intended for general informational and planning purposes only. The Bureau of Reclamation makes no warranty, expressed or implied, as to the completeness, accuracy, or utility of these data and will in no event be liable for their use beyond the above expressed purpose.

Data Sources: Canyon County, Bureau of Reclamation  
 Map Date: July, 2009



Deer Flat National Wildlife Refuge (Refuge), established in 1909 and managed by the U.S. Fish and Wildlife Service (USFWS), surrounds and includes Lake Lowell. Large numbers of wintering waterfowl and nesting Canada geese use the Refuge. The reservoir and surrounding area support excellent warm-water fishing, upland game bird and waterfowl hunting, boating, picnicking, wildlife viewing, swimming, and sightseeing. Lake Lowell receives an estimated 100,000 recreation visits annually.

## 1.5 Scoping

Scoping is an early and open process used to obtain information that helps identify issues and concerns related to a proposed action, the affected public and geographical area, alternatives, and constraints in the NEPA process.

Reclamation first announced its proposal to implement security measures at Deer Flat Dam Lower Embankment through a news release on July 16, 2008 that stated the road across the crest of the Lower Embankment would be closed to traffic and alternative access would be identified. The news release also stated there would be opportunity for public involvement in the coming stages of the NEPA process for the project. That same day a series of meetings were held between Reclamation and Federal, state and local government officials to present and discuss the proposed security enhancement measures.

On October 21, 2008 Reclamation mailed a Scoping Document to more than 1,300 potentially affected agencies, Tribes, organizations, and individuals requesting written comments on the proposed security enhancement project. The Scoping Document was also posted on Reclamation's website. The public comment period was open for 30 days, and comments were accepted via mail or email. Reclamation received a total of 42 written comments; six from agencies or local governments and 36 from individuals.

Several alternatives for a long-term solution to vehicle access across the crest of the Lower Embankment are being evaluated as part of this EA. Feasibility-level alternatives that were identified and presented during scoping include:

- Raise and widen the crest of the dam or make other structural modifications to the embankment that would allow traffic to continue to safely use the existing road across the dam
- Permanently close the access road across the dam and develop an alternate access road below the dam on the downstream side
- Permanently close the road across the dam and reroute the traffic on existing Canyon County roads

During public scoping activities the public was invited to comment on potential impacts of the alternatives and provide additional suggestions or comments. Participants at the first open house on September 25, 2008 generally opposed closing access across the crest of the dam.

A range of viewpoints have been expressed about potential alternatives for the Lower Embankment project (see Section 1.6). The public involvement process is summarized in Chapter 4, Consultation and Coordination. The Scoping Report is provided in Appendix A.

## 1.6 Summary of Issues from Scoping

As stated in Section 1.5, Reclamation received 42 written comments in response to the October 21, 2008, scoping document. Of the comments received, similar issues and concerns about the project were identified. The primary issues and concerns expressed are:

- General project opposition suggesting overstatement of security threat
- Possible economic impacts on businesses
- General support for modification of the dam to allow traffic to continue to travel across the crest or the toe of the dam
- Concerns with traffic volumes, safety, and travel times
- Longer emergency response times
- Limitations to recreational access

## 1.7 Authorizing Actions, Permits, and Licenses

The following table lists the agencies, permits and approvals that may be required to implement the proposed action.

<b>Table 1-1 Permits and Approvals that may be Required for the Proposed Action</b>		
<b>Agency/Department</b>	<b>Permit/Approval</b>	<b>Required for</b>
<b><i>Federal Agencies</i></b>		
U.S. Army Corps of Engineers	General Permit 404 (Clean Water Act, 33 USC 1341)	Discharge of dredge/fill into waters of the United States, including wetlands
U.S. Environmental Protection Agency	General construction activity stormwater permit	Stormwater discharges associated with construction activity
U.S. Fish and Wildlife Service	Section 7 Consultation (Endangered Species Act, 16 USC 1531-1544)	Ensures Endangered Species Act compliance
<b><i>State Agencies</i></b>		
Idaho State Historic Preservation Office	Section 106 Consultation (National Historic Preservation Act, 16 USC 470)	Historic, architectural, archeological or cultural characteristics of properties that meet National Register criteria (State Historic Preservation Officer responsible for administration). Note: also refer to National Landmarks Program (36 CFR and National Historic Landmarks Program [36 CFR 65])

## 1.8 Interrelated Projects

### 1.8.1 Refuge Comprehensive Conservation Plan

The USFWS has initiated the preplanning stage for the development of a long-term management plan for the Refuge. The plan, called a Comprehensive Conservation Plan (CCP), will serve as a guide for managing the Refuge over the next 15 years. The plan is expected to be completed in 2010. The CCP is an essential part of the 1997 National Wildlife Refuge Improvement Act. This legislation, in addition to setting direction and establishing a well-defined mission for the National Wildlife Refuge System, calls for all refuges to complete a CCP with input from partners and the public.

Management issues identified in the preliminary draft CCP include: wetlands, riparian forest, upland shrub habitats, fire, mosquito control program, fisheries and fishing; deer herd management, boundary adjustments/land exchange, cropland management, inventory and monitoring, urban encroachment, water quality, public use affects on wildlife and habitat, and invasive species.

The proposed action to address security at the Lower Embankment is a Reclamation action and is separate from Refuge management issues and management plans identified in the CCP.

### **1.8.2 Previous Deer Flat Safety of Dams Projects**

In September 1989, Reclamation issued a final EA and FONSI for the Deer Flat Safety of Dams Project. The program included modifications to the Upper and Lower Embankments in 1990-1991 to reduce the risks associated with piping and liquefaction of the foundations and embankments. Studies had determined that corrective action was needed to control internal erosion of the embankments and their foundations and to prevent further erosion of the upstream face on the Lower Embankment. The project involved constructing filter/drain systems and counterbalance fills along the downstream toe of both the Upper and Lower Embankments and replacing riprap on the upstream side of the Lower Embankment with soil cement.

A 2001 investigation of the Caldwell Canal outlet of the Upper Embankment revealed that piping (the movement of foundation materials) was occurring along the outlet conduit. A risk analysis determined the risk of failure due to piping to be high and that corrective action was warranted. In June 2005 an emergency condition was declared for the Caldwell Canal conduit, and an emergency earthen berm was placed around the intake tower and over the upstream conduit to protect it from failure. A temporary maximum reservoir restriction to elevation 2,526.0 feet (5.2 feet below full pool) was also instituted.

An EA and FONSI evaluating replacement of the Caldwell Canal conduit were prepared in July 2006, and a new conduit and intake tower were constructed from September 2007 to May 2009. In addition to the replacement of the Caldwell Canal conduit, filter material was installed on the downstream side of the Nampa Canal and in the Upper Embankment to prevent similar piping of foundation material.

The outlets for the two canals in the Lower Embankment were also evaluated during this period since they were constructed similarly to the Upper Embankment canal outlets. The studies determined that no active piping was occurring and that immediate corrective action was not warranted.

## Chapter 2 – Description of Alternatives

Chapter 2 describes the alternatives being considered for implementation for the Deer Flat Dam Lower Embankment Security Enhancement Project. The No Action Alternative and four action alternatives are described in detail along with a comparative analysis and a summary of alternatives that were eliminated from consideration.

### 2.1 Alternative Development

Reclamation developed conceptual engineering designs for 13 alternatives that meet the purpose and need. Each of the 13 alternatives was evaluated against the following screening criteria:

- Scheduling
- Design
- Estimated construction costs
- Constructability
- Environmental concerns
- Land acquisition

Alternatives with the most environmental impacts, the most complicated construction requirements, and greatest construction costs were not evaluated in detail in this EA.

### 2.2 Alternatives Considered in Detail

Alternatives that were considered in detail in this EA include the No Action Alternative, as required by NEPA, and four action alternatives. Three action alternatives include dam crest closure and one action alternative includes a dam structural modification that keeps the existing road in place. Figure 2-1 (page 2-3) shows the new typical Riverside Road cross-section that would be constructed under two of the alternatives, and would include two 12-foot-wide traffic lanes, two 5-foot-wide shoulders, and guard rails. These alternatives and the estimated costs of the build alternatives are described in the following sections.

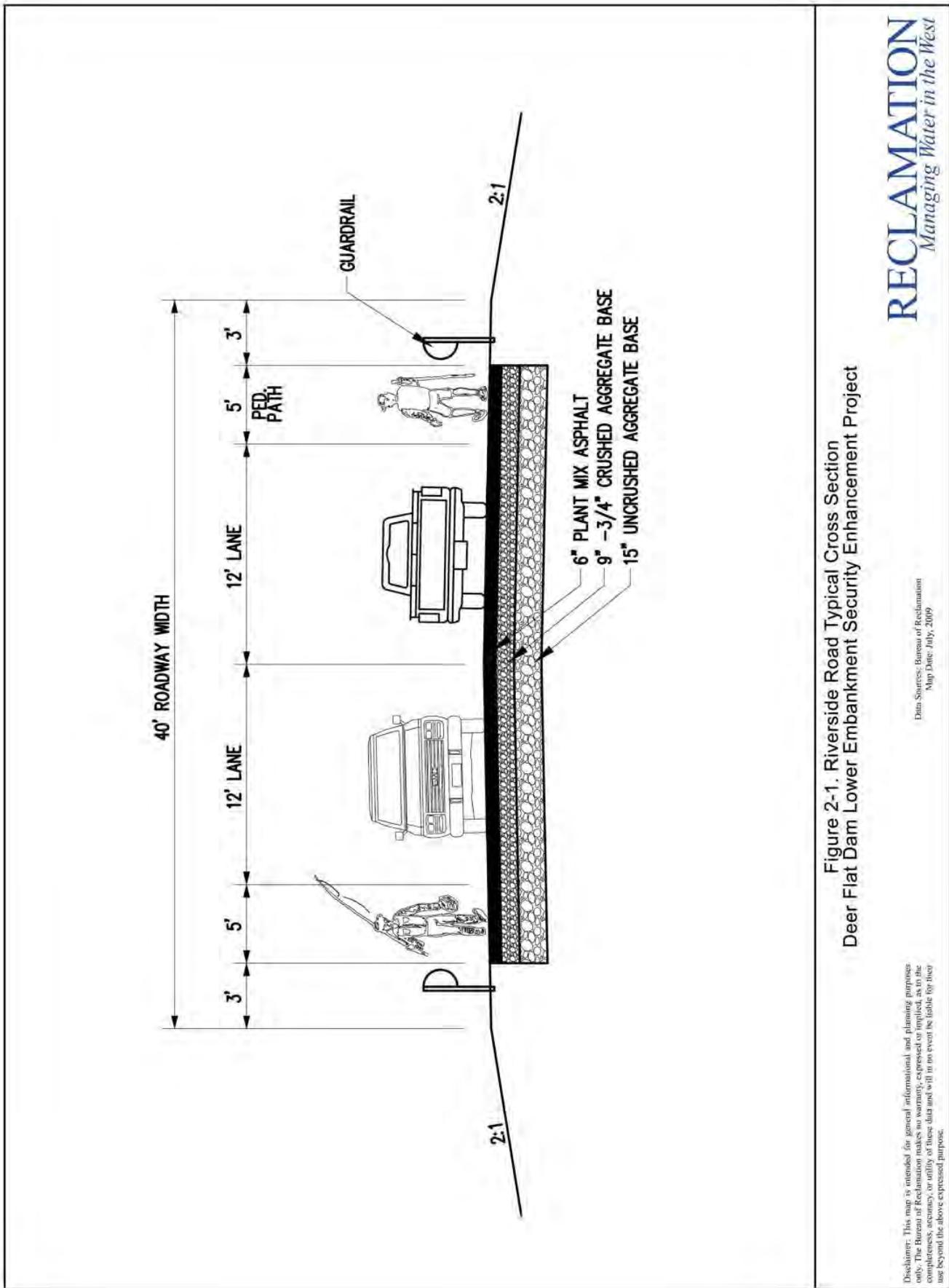
#### 2.2.1 Alternative A – No Action Alternative

Under the No Action Alternative, there would be no changes to the Lower Embankment and no alternative roadway would be constructed. Traffic would continue to cross the dam crest except during high security alerts or if direct threats to the facility are made. During those periods the road would be closed by a gate at each abutment and travelers would use existing county roads. This alternative does not meet the overall project purpose and need to provide dam security.

#### 2.2.2 Dam Crest Closure Alternatives

The objective of alternatives that would relocate Riverside Road downstream of the dam or redirect traffic is to remove traffic from the dam crest, making delivery of explosives to the crest prohibitively difficult, and reduce the threat to the dam.





In three of the alternatives, structural barriers would be installed to prevent vehicles from accessing the crest. No structural dam modifications would be required for these alternatives.

**2.2.2.1 Alternative B – Close Dam Crest/Reroute Traffic on Existing County Roads**

Under Alternative B, Reclamation would permanently close Riverside Road on the dam crest and install permanent barriers to prevent vehicular access to the crest except for operation and maintenance requirements (see Figure 2-2, page 2-5). Traffic would be rerouted onto existing Canyon County roads. Malt Road is the closest parallel road to Riverside Road and would see a large increase in traffic. Reclamation would agree to construct a new intersection at Malt Road and Riverside Road as part of this alternative. Canyon Highway District No. 4 may require additional improvements such as shoulder widening in some areas, seal coating, and lane striping.

Estimated construction costs for Alternative B (including improvements to Malt Road) are \$2 million.

**2.2.2.2 Alternative C – Close Dam Crest/Relocate Riverside Road to Downstream Toe**

Under Alternative C, Reclamation would permanently close Riverside Road on the crest, install permanent barriers to prevent access to the dam crest, and construct a new Riverside Road at the downstream toe as close to the dam as possible to stay within Reclamation right-of-way.

Starting at the right abutment and going southwest (see Figure 2-3, page 2-7); the new roadway would first cross over the existing Hoadley Road. At this intersection, the grade transition would be minor; but some grade work and modifications to Hoadley Road would be required. Proceeding southwest for about 1,300 feet, Riverside Road would continue at a 3 percent grade until passing upstream of the existing drain ditch and then continue along the dam's downstream toe. There would be no impact on the drain ditch. The upper portion of the alignment passes directly over one of the 1990-91 inspection wells and within about 20 feet of the toe drain pipe. These features would have to be removed and reconstructed. Much of the inspection well and instrumentation would be salvaged. This portion of the Riverside Road alignment also passes directly over about 1,000 feet of the Forest Siphon Pipe, most of which would have to be removed and replaced to allow highway construction. The remaining 2,400 lineal feet of roadway alignment would follow the toe of the dam without conflicts with existing features.

Continuing southwest (see Figure 2-3, page 2-7), Riverside Road would continue along the dam toe until reaching the Low Line Canal crossing. At this crossing a bridge would be constructed over the Low Line Canal or, as an alternative, Riverside Road could cross the canal over an extended outlet works conduit.

The outlet works conduit would need to be extended 110 feet and include a filter zone around the portal area of the outlet works. The extension is needed to allow for a crossing of the operations and maintenance (O&M) road over the Low Line Canal. The extension would also address safety of dams (SOD) concerns regarding seepage and potential piping. This work would be similar to that performed in 2007-2008 on the Nampa Canal outlet in the Upper Embankment.

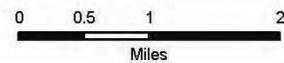
Continuing southwest along the toe of the dam for about 1,500 feet, Riverside Road would pass through the BOC yard (see Figure 2-4, page 2-6). Because this is the reach of the new Riverside Road that transitions back to the existing Riverside Road, at this location the new alignment would traverse up the side of the embankment's downstream slope.



**Figure 2-2 - Alternative B: Close Dam Crest/  
Reroute Traffic to Existing County Roads**  
Deer Flat Dam Lower Embankment Security Enhancement Project

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The slope fill material required for construction of the new roadway along the slope transition would encroach into the BOC yard, requiring removal and replacement of five BOC structures. The new alignment continues up the downstream slope of the dam then turns south until it ties into the existing pavement of Riverside Road.



Figure 2-4. Photo shows left abutment downstream slope, Boise Project Board of Control yard (note closeness of buildings to dam), and Low Line Canal outlet works intake area.

Estimated construction costs for Alternative C range from \$15.5 million to \$16.5 million.

### **2.2.2.3 Alternative D – Close Dam Crest/Construct Riverside Road 700 Feet Downstream from Toe**

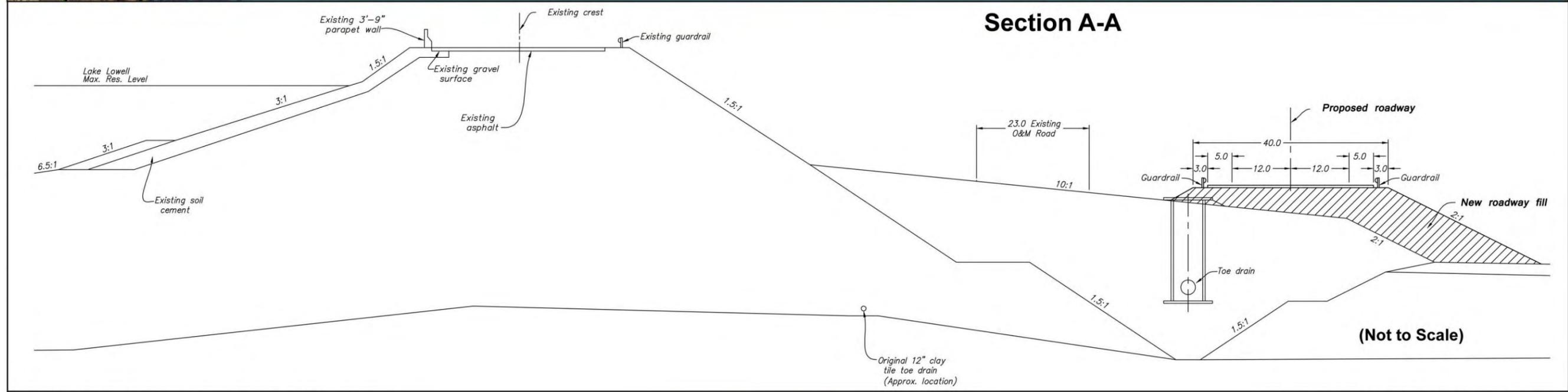
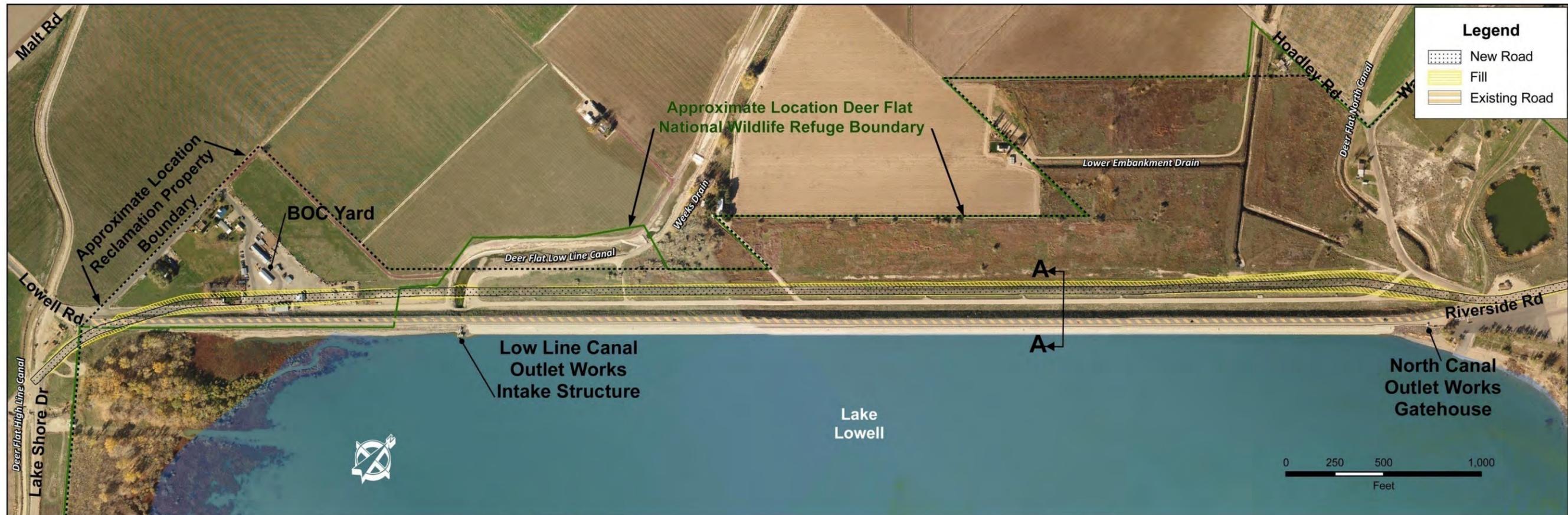
Under Alternative D, Reclamation would permanently close Riverside Road on the dam crest, install permanent barriers to prevent access to the crest, and relocate Riverside Road about 700 feet downstream of the existing dam centerline; which would involve basic highway design and construction methods that meet Canyon Highway District No. 4’s requirements (see Figure 2-1, page 2-3 and Figure 2-5, page 2-9). The objective of this alternative is to avoid existing drain structures and BOC buildings.

Construction of Alternative D would include stripping along the new roadway alignment. The stripped soils would be stockpiled for later use as topsoil for revegetating the side slopes of the roadway fill sections. Cut and fill sections would be determined and quantified after surveying the proposed alignment.

Based on preliminary engineering calculations, this alternative would require an estimated 14,000 cubic yards of soil excavation and 41,000 cubic yards of fill. Fill materials would have to be purchased from nearby commercial sources. Soils for the new Riverside Road would be placed and compacted under controlled conditions. The roadway alignment for Alternative D involves a 0.9-mile-long segment across privately owned land, requiring the acquisition of affected property or right-of-ways.

Starting at the right abutment and moving west about 600 feet, the new roadway would first cross over existing Hoadley Road at a grade of 3.9 percent. Some grade transition work would be required on Hoadley Road at this intersection because the new Riverside Road would be higher than Hoadley Road. Proceeding west for about 1,000 feet, Riverside Road would continue on a fairly steep grade, flatten out slightly, and then cross the existing drain ditch where a bridge would be constructed. Riverside Road would be completely within Reclamation right-of-way until this point. Continuing southwest, Riverside Road would transition to private land and continue on relatively flat ground until reaching the Low Line Canal crossing, about a 2,800-foot stretch of highway. A bridge would be constructed at this canal crossing. Continuing southwest for about 2,000 feet, Riverside Road would pass through Reclamation property at the corner of the BOC yard. Conflicts with BOC structures would be avoided under this alternative. Riverside Road would then turn south and run adjacent to the BOC yard until tying into the existing pavement at Riverside Road at the left dam abutment. At this left abutment intersection conflicts and grade issues with Lowell Road would have to be resolved during design.

Estimated construction costs for Alternative D are \$11.5 million (not including the cost of right-of-way that would need to be acquired).



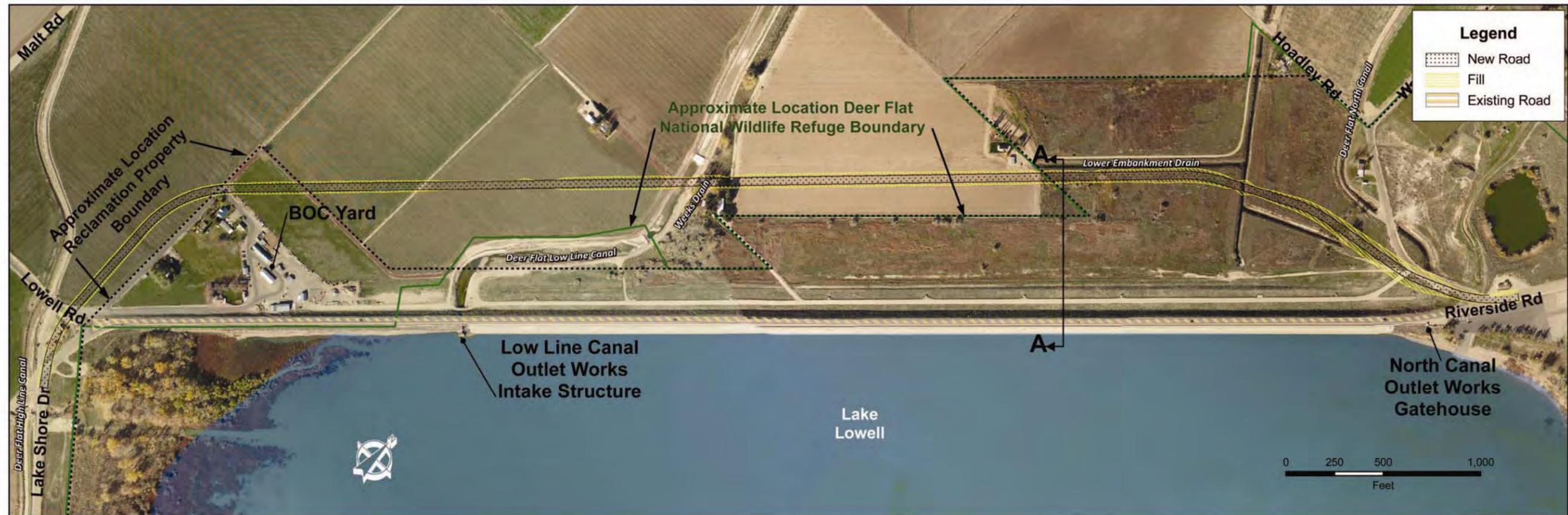
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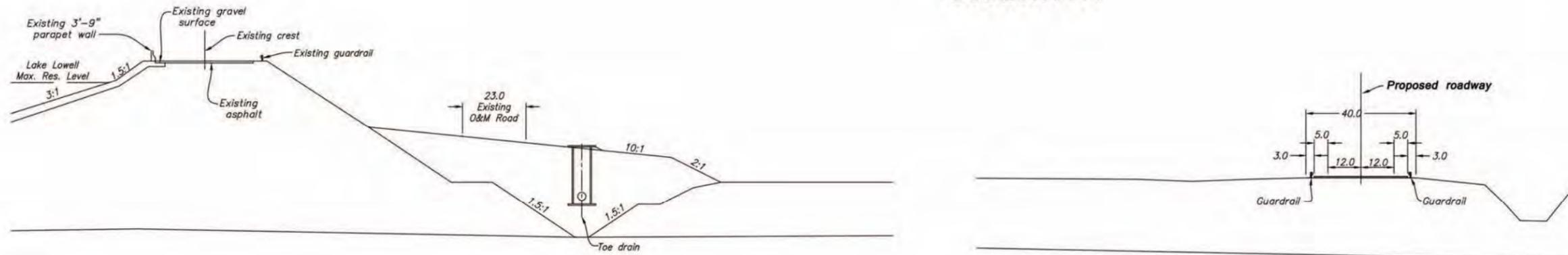


**Figure 2-3. Alternate C: Close Dam Crest/ Relocate Riverside Road to Downstream Toe**  
Deer Flat Dam Lower Embankment Security Enhancement Project





**Section A-A**



(Not to Scale)

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**Figure 2-5. Alternate D: Close Dam Crest/  
Construct River Road 700 Feed Downstream from Toe  
Deer Flat Dam Lower Embankment  
Security Enhancement Project**



### 2.2.3 Dam Structural Modification Alternative: Alternative E – Widen Downstream Crest

Under Alternative E, Riverside Road would remain unchanged but the dam crest would be widened to make the dam less susceptible to security incursions. Under this alternative, the existing O&M road would need to be relocated downstream and the outlet works conduit would be extended to allow placement of a filter zone and to address safety of dams concerns regarding seepage and piping (see Figure 2-6, page 2-13). Alternative E would not require changes to any of the existing intersections on either side of the embankment.

Widening of the downstream slope would involve basic embankment design and construction methods. Based on preliminary engineering calculations, this alternative would require an estimated 150,000 cubic yards of miscellaneous fill. The crest would be widened to about 58 feet from the dam centerline by placement of fill, and the widened embankment would transition to the slopes of the existing abutments (see Figure 2-6).

The fill material required for the crest widening would encroach into the BOC yard, requiring removal and replacement of three buildings. Alternative E would not affect the upstream parapet wall.

The estimated construction cost for Alternative E is \$8.4 million.

## 2.3 Alternatives Eliminated from Consideration

### 2.3.1 Construct Center Barrier on Dam Crest

Under this alternative, a barrier would be constructed at the center of the dam crest, allowing one-lane traffic on each side of the barrier. The barrier would have outside dimensions of 25 feet and would be 6 feet high. The objective of this alternative is to modify Riverside Road, with all construction taking place on Reclamation right-of-way, while avoiding impacts to the existing canal and drain features. This alternative would, however, require an extension of the outlet works conduit for the O&M road and include a filter zone around the portal area of the outlet works to address safety of dams needs.

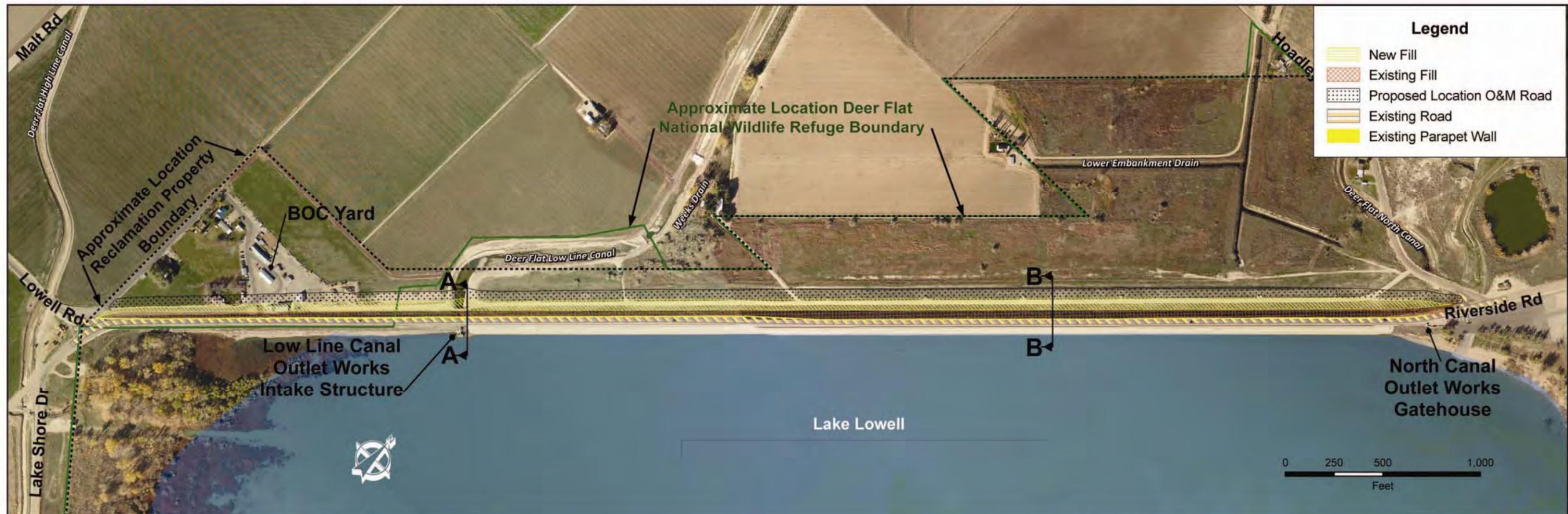


Figure 2-7. Photo shows left abutment rock parapet wall, basalt riprap, guardrails, and left abutment refuge area.

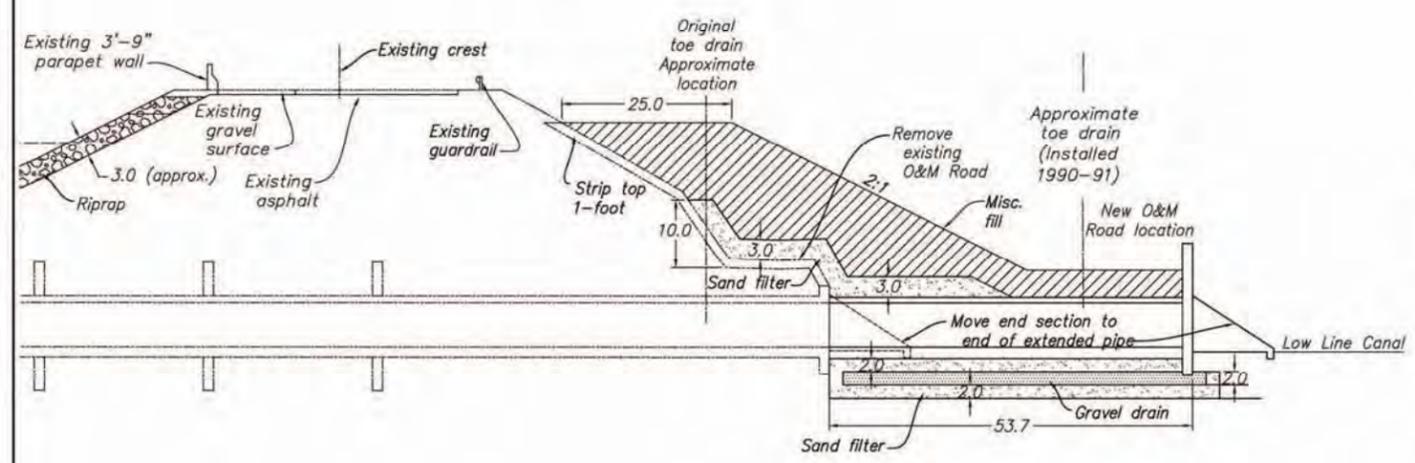
The existing upstream parapet walls would be removed and reconstructed on the widened upstream slope (see Figure 2-7). The downstream guardrails would be removed and reinstalled, or new guardrails would be provided.

The intersections between Riverside Road and Lowell Road and between Riverside Road and Hoadley Road would have to be modified to provide adequate grades and transitional improvements.

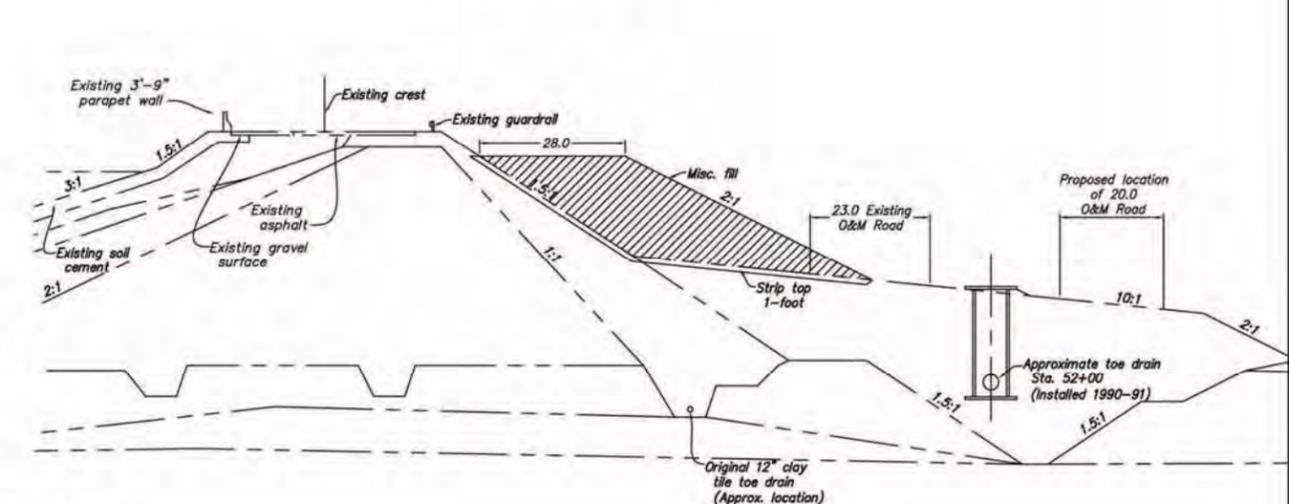




**Section A-A**



**Section B-B**



(Not to Scale)

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**Figure 2-6 - Alternative E: Widen Downstream Crest**  
 Deer Flat Dam Lower Embankment  
 Security Enhancement Project



Fill from the widened embankment would encroach into the BOC yard at the downstream side of the dam and require removal and replacement of two buildings. Access to the BOC buildings and house would also be affected. On the upstream side of the dam, fill would encroach into the left abutment reservoir area. The parking lot access at the right abutment would be affected and would have to be reconfigured. Several utility poles along the left abutment may have to be relocated.

Estimated construction costs for this alternative are \$20 million.

This alternative was eliminated from detailed evaluation because the design and construction costs are higher than other alternatives and it does not offer any additional benefits over downstream widening (Alternative E).

### 2.3.2 Widen Downstream Dam Crest/Realign Riverside Road

Under this alternative, the dam crest would be widened by about 40 feet on the downstream side, and Riverside Road would be reconstructed on the downstream extension. The existing upstream parapet wall and a concrete jersey barrier would serve as a retaining wall to contain miscellaneous fill to exclude vehicles. The surface of the existing road across the dam would not have to be modified. Fill materials would be dumped directly onto the existing gravel and asphaltic surfaces.

The modified crest roadway would transition into Riverside Road alignments and grades at both abutments. This alternative would impact the intersections of Riverside Road and Lowell and Hoadley roads. Fill from the widened embankment would encroach into the BOC yard at the downstream side of the dam, requiring the removal and replacement of two buildings. Access to the BOC buildings and an existing house would also be affected.

To accommodate the O&M road, this alternative could either (1) extend the outlet works conduit to accommodate the O&M road (Figure 2-8) or (2) construct a bridge over the outlet works. Either option would include construction of a filter zone around the portal area of the outlet works. Including a filter zone would address the SOD concerns regarding seepage and piping potential along the Low Line Canal Outlet Works conduit.



Figure 2-8. Photo shows outlet portal area of Low Line Canal outlet works.

Estimated construction costs for this alternative with option 1 is \$22 million. Estimated construction costs for this alternative with option 2 is \$21 million.

This alternative was eliminated from detailed evaluation because the design and construction costs are higher than other alternatives and it does not offer any additional benefits over Alternative E.

### 2.3.3 Widen Upstream Dam Crest

Under this alternative, the dam crest would be widened upstream using engineered, miscellaneous fill placed and compacted under controlled conditions. The design and construction of this alternative would include breaking up or roughening the outer surface of the upstream soil cement slope protection prior to the placement of the miscellaneous fill. Concrete jersey barriers would be installed at both sides of the crest to contain the miscellaneous fill. The existing upstream parapet wall would have to be removed

and reused, if possible, or replaced. Basalt block parapet walls on both sides of the existing concrete parapet wall are historic features and would have to be removed and rebuilt.

This alternative would result in impacts at existing road intersections that would be similar to those described for the *Widen Downstream Dam Crest/Realign Riverside Road* alternative. Impacts on the Low Line Canal outlet works structure would require an upstream extension of the outlet structure to clear the miscellaneous fill and erosion protection zone.

Because it would require work on the lake side of the dam, this alternative would require dewatering of the construction zone. The reservoir would have to be drawn down low enough to install a 20-foot-high coffer dam and 10 dewatering wells.

Estimated construction costs for this alternative are \$28 million.

This alternative was eliminated from detailed evaluation because design and construction costs are higher than other alternatives and it does not offer any additional benefit. Dewatering during construction would be a major issue.

### **2.3.4 Dam Crest Raise/Vertical Retaining Wall**

Under this alternative, the dam crest would be widened downstream and the entire dam would be raised. A vertical retaining wall would be constructed to accommodate the crest raise. Like the *Widen Downstream Dam Crest/Realign Riverside Road* alternative, this alternative would include stripping of the downstream slope and placement of miscellaneous fill.

Because the crest would be raised, the modified roadway would transition into the existing Riverside Road alignments and grades. Because the raised crest roadway would be higher, the transition to both abutments would be more severe under this alternative than the widening alternatives.

Estimated construction costs for this alternative are \$27 million.

This alternative was eliminated from detailed evaluation because the design and construction costs are higher than other alternatives and it does not offer any additional benefits.

### **2.3.5 Crest Raise with Widened Upstream and Downstream Embankment**

Except for modifications made to the crest, this alternative would be very similar to the *Widen Downstream Dam Crest/Realign Riverside Road* alternative. The crest raise could be completed without construction of a retaining wall. Instead of a retaining wall, soils would be placed on the slopes of the dam.

Access to the BOC yard would be affected by this alternative and two BOC buildings would have to be removed and replaced. On the upstream side of the dam, some fill would encroach into the left abutment reservoir area. This is the only alternative that requires an extension of the Low Line Canal outlet works conduit both upstream and downstream.

Estimated construction costs for this alternative range from \$28 million to \$33 million.

This alternative was eliminated from detailed evaluation because it could result in additional adverse impacts and construction issues compared to others, due to the addition of raising the crest and

extending the outlet works on both the up and downstream sides of the dam. Design and construction costs of this alternative are the highest of all alternatives and it does not offer any additional benefits.

## 2.4 Design and Cost Comparative Analysis of Alternatives

Table 2-1 compares the advantages, disadvantages and estimated construction costs of each alternative that is analyzed in detail in this EA. The affected environment and environmental consequences for each alternative are described in Chapter 3.

<b>Alternative</b>	<b>Advantages</b>	<b>Disadvantages</b>	<b>Estimated Construction Cost</b>
Alternative A – No Action	None	When considered with the potential loss of life and property, No Action would show a significant impact disadvantage	With no dam protection; if an incursion was successful, the loss of life and loss of property would result in a significant adverse economic impact
Alternative B – Close Dam Crest/Reroute Traffic on Existing County Roads	<ul style="list-style-type: none"> <li>▪ No structural dam modifications</li> <li>▪ Least expensive alternative</li> </ul>	<ul style="list-style-type: none"> <li>▪ Transportation impacts on county roads</li> <li>▪ Socioeconomic impacts</li> </ul>	\$2 million
Alternative C – Close Dam Crest/Relocate Riverside Road to Downstream Toe	<ul style="list-style-type: none"> <li>▪ No structural dam modifications</li> <li>▪ Minimal existing crest road traffic disruption during construction</li> <li>▪ Conventional construction methods</li> <li>▪ No land acquisition required</li> </ul>	<ul style="list-style-type: none"> <li>▪ Requires one bridge crossing or extension of Low Line Canal outlet works conduit</li> <li>▪ Impacts toe drain and siphon</li> <li>▪ Impacts three to five buildings in BOC yard</li> </ul>	\$15.5 million to \$16.5 million
Alternative D – Close Dam Crest/Construct Riverside Road 700 Feet Downstream from Toe	<ul style="list-style-type: none"> <li>▪ Conventional construction methods</li> <li>▪ No structural dam modifications</li> <li>▪ No impacts on BOC yard or structures</li> <li>▪ Less expensive than most alternatives</li> </ul>	<ul style="list-style-type: none"> <li>▪ Large cost for land acquisition</li> <li>▪ Requires two bridge crossings</li> <li>▪ Conflicts at existing intersections (Lowell and Hoadley roads)</li> <li>▪ Roadway transition grade issues</li> </ul>	\$11.5 million, plus costs for land acquisition
Alternative E – Widen Downstream Crest	<ul style="list-style-type: none"> <li>▪ Less expensive than most alternatives</li> <li>▪ Conventional construction methods</li> <li>▪ No land acquisition</li> <li>▪ No modifications to Riverside Road, no grade or intersection issues</li> <li>▪ No impact to upstream parapet wall</li> </ul>	<ul style="list-style-type: none"> <li>▪ Requires extension of Low Line Canal outlet works conduit</li> <li>▪ Impacts three buildings in BOC yard</li> </ul>	\$8.4 million



## Chapter 3 – Affected Environment and Environmental Consequences

This chapter describes existing conditions, environmental consequences and proposed mitigation for key resources in the project area. This is not a comprehensive discussion of every resource, rather this chapter focuses on aspects of the environment that were identified as issues during scoping or may be affected by alternatives being considered. This chapter compares the effects of the five alternatives described in Chapter 2:

Alternative A: No Action Alternative

Alternative B: Close Dam Crest/Reroute Traffic on Existing County Roads

Alternative C: Close Dam Crest/Relocate Riverside Road to Downstream Toe

Alternative D: Close Dam Crest/Construct Riverside Road 700 Feet Downstream from Toe

Alternative E: Widen Downstream Crest

Table 3-2 at the end of this chapter summarizes the potential environmental consequences, proposed mitigation and estimated construction costs of the action alternatives.

### 3.1. Transportation and Access

#### 3.1.1 Affected Environment

Traffic over and around the Lower Embankment dam crest is a mix of agricultural vehicles, commercial trucks that support commercial and industrial uses in the region, residential commuters, and recreation related traffic.

The road network in the area of the Lower Embankment is maintained by Canyon Highway District No. 4. Roads are rural and two-lanes with narrow shoulders (see Figure 3-1). Intersections are controlled by stop signs, with some roads having left-turn lanes. Local roads have adequate capacity to handle traffic even during busy summer weekends and holidays.

Riverside Road starts about one mile north of the Lower Embankment at Karcher Road and runs southwest across the Lower Embankment dam crest and continues south for about 5 miles where it ends at the intersection with Deer Flat Road (see Figure 2-2). Average daily traffic that crosses the Lower Embankment on Riverside Road was 3,109 vehicles per day in 2007 (Canyon Highway District No. 4, no date) compared to 348 vehicles per day on Malt Road, a north-south road 1.5 miles west of Riverside Road that also connects to Karcher Road (Canyon Highway District No. 4,



Figure 3-1. Photo shows a west view of Lowell Road and is an example of a typical rural road in the area.

no date). The speed limit on Karcher Road is 55 miles per hour (mph), and Riverside Road and Malt Road have a speed limit of 45 mph.

Although a transportation origin-destination study is not available for this area, traffic count numbers and information provided by Canyon Highway District No. 4 suggests that the highest traffic patterns are vehicles traveling west on Karcher Road, turning south on Riverside Road, crossing the Lower Embankment, and continuing on Riverside Road or turning east on Lake Shore Drive (and then return trips using the same roads). Traffic travels along Riverside Road until the Lower Embankment for about 1.66 minutes (about 100 seconds); then along the Lower Embankment for another 1.72 minutes (about 103 seconds); then connects to Lakeshore Drive in another 5.4 seconds.

Traffic on Riverside Road tends to be a mix of agricultural vehicles, commercial trucks, recreational-use traffic in and around Lake Lowell, and commuter traffic. Commuter traffic on Riverside Road is associated with rural residents living south and west of Lake Lowell and driving to and from the more populous Interstate 84 (I-84) corridor. About 432 sanitation trucks also travel across the Lower Embankment every week, hauling from Nampa, Caldwell, and Middleton to the Pickles Butte Sanitary County Landfill. The average round-trip length of sanitation trips accessing the landfill is 31 miles.

### **3.1.2 Environmental Consequences**

#### **3.1.2.1 Alternative A: No Action**

Under Alternative A, the existing transportation network would not be affected. Traffic would continue to access the section of Riverside Road that crosses the dam crest and other regional roads. As described in Chapter 2, the No Action Alternative includes the use of mobile security gates that would close the road across the Lower Embankment during a high-security alert, requiring drivers to use alternative routes, potentially the same roads described for Alternative B. Traffic on the alternative routes could increase during closures, but such impacts would likely be temporary and short-term.

Canyon County has not assigned zoning designations to most of the land in the project area (Canyon County 2009a) and the county's comprehensive plan shows a limited number of platted subdivisions in the area – three along Riverside Road northeast of the Lower Embankment and southwest of the Malt Road/Lowell Road intersection along Lowell Road (Canyon County 2005, 2009b, and 2009c). Because limited development is expected, future average daily traffic on local roads is expected to increase gradually along with development. Additional traffic related to temporary closures would not be expected to result in or contribute to traffic congestion in the region.

#### **3.1.2.2 Alternative B: Close Dam Crest/Reroute Traffic on Existing County Roads**

Alternative B would permanently close Riverside Road across the dam crest and reroute traffic to other local roads. Riverside Road currently serves as an access point connecting Karcher Road to points south of Lake Lowell. With the section of Riverside Road across the dam closed, vehicles on Karcher Road would need to use other north-south roads further west of Lake Lowell to travel from the north side to the south side of the lake. Malt Road is the closest north/south road off of Karcher Road that provides direct access back to Riverside Road and to Lake Shore Drive south of the dam (see Figure 2-2). Since traffic on Malt Road south of Karcher Road had 348 vehicles per day in 2007 compared to 3,109 for Riverside Road (Canyon Highway District No. 4, no date), Malt Road could have up to eight times as many vehicles per day (about 2,760 more vehicles) under this alternative, depending on the alternate route chosen. This additional traffic would include the 432 weekly round trips made by large trucks accessing the Pickles Butte landfill.

Rerouting of traffic to Malt Road would add about one mile to the current traffic pattern of vehicles using the Lower Embankment crossing. The new route would require travel of about 1.62 minutes (about 97 seconds) along Karcher Road and 2.85 minutes (about 171 seconds) on Malt Road to connect to Riverside Road and Lakeshore Drive. The intersection with Malt Road and Riverside Road would be a through movement so traffic would not be delayed additionally by a stop sign. Rerouting of traffic to Malt Road would add one minute to the current traffic pattern of vehicles.

Malt Road has sufficient roadway width and shoulders to handle this increased traffic. However, to allow free-flowing traffic near the southern end of Malt Road, this alternative would require construction of a new road segment (about 0.5 mile) that would connect Riverside Road south of the embankment and Malt Road (see Figure 3-2). This improvement would require acquiring right-of-way across about 0.3 miles of private land, which would total about 3.2 acres of active farmland. Access would still be provided to the BOC facility from the new Malt Road and Lowell Road intersection. Access to residences on Malt Road would continue, though they would experience increased traffic. Construction-related traffic impacts would be minimal and short-term because the new segment of road connecting Riverside Road and Malt Road would be constructed before closing the section of Riverside Road across the Lower Embankment.

Canyon County has not assigned zoning designations to land along Malt Road and there are no platted or planned subdivisions along Malt Road (Canyon County 2009a, 2009b, and 2009c). Even with improvements to Malt Road, this alternative would probably not induce development that could add even more traffic because of the area's rural nature and lack of services that would support dense development.

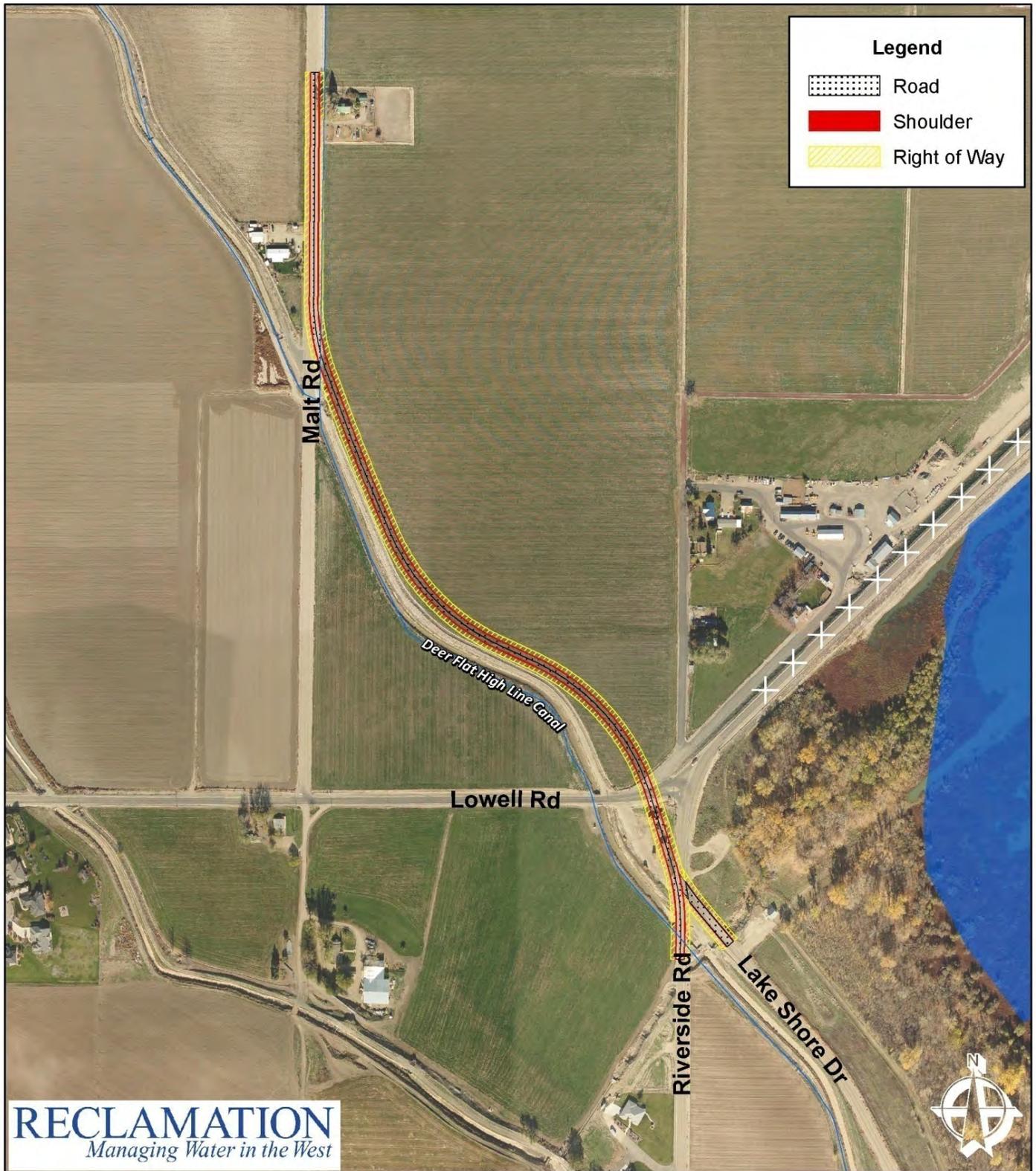
**Mitigation.** Reclamation would work with Canyon Highway District No. 4 to construct a new intersection connecting Malt Road to Riverside Road to improve traffic flow to and from Malt Road.

### **3.1.2.3 Alternative C: Close Dam Crest/Relocate Riverside Road to Downstream Toe**

Alternative C would re-align Riverside Road along the toe of the Lower Embankment (see Figure 2-3). The cross-section of the new road segment would be similar to that of the existing road (two lanes with guardrail barriers) and would be capable of carrying the same number of vehicles. The speed limit of the new road would be 45 mph. Construction of Alternative C would either require a new bridge across the Deer Flat Low Line Canal or extension of the Deer Flat Low Line Canal outlet works conduit.

The re-aligned road segment would pass through the existing BOC yard near the left embankment of the dam which is currently accessed from Lowell Road with two entry points into the yard (a south and north entrance). The new road would allow access to the yard from Lowell Road only at the north entrance; the south entrance would be eliminated. The new road would also cross Reclamation's maintenance road, which runs parallel near the toe of the dam at two locations – one near the BOC yard described above and the other on the right side of the embankment near Hoadley Road. Reclamation would need to have an access connection to the maintenance road on the east and west sides of the Deer Flat Low Line Canal. A rural residence just east of the Deer Flat Low Line Canal uses Reclamation's maintenance road for access. This alternative would include an access point for this residence from the realigned Riverside Road. Finally, this alternative would provide modifications to the intersection at Riverside and Hoadley roads to provide adequate grades and transitional improvements. These modifications would not affect intersection function.

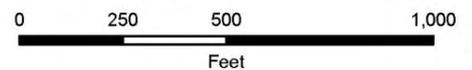




**Figure 3-2. Alternative B: Close Dam Crest  
with Potential Malt Road Improvements**  
Deer Flat Dam Lower Embankment Security Enhancement Project

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Data Sources: Carry on County, Bureau of Reclamation  
Map Date: July, 2009



Traffic during construction would be minimally impacted since the existing section of Riverside Road on the dam crest would remain open. Traffic would be disrupted during construction of the tie-in of the realigned (new) road to the existing road, but would only last a short time and would not prevent access to any adjacent properties.

**Mitigation.** Reclamation would ensure that the final design accommodates access to the BOC yard, an existing Reclamation maintenance road, a residence east of the Deer Flat Low Line Canal, and Hoadley Road. If feasible, during final design Reclamation would consolidate access points to reduce the number of accesses along the re-aligned roadway.

**3.1.2.4 Alternative D: Close Dam Crest/Construct Riverside Road 700 Feet Downstream from Toe**  
Alternative D would realign Riverside Road 700 feet downstream of the Lower Embankment (see Figure 2-5). The cross-section of the new road would be similar to that of the existing road (two lanes with guardrail barriers) and would be capable of carrying the same number of vehicles. The speed limit of the new road would be 45 mph. Construction of Alternative D would also require new structures across the Deer Flat Low Line Canal, Weeks Drain, and Lower Embankment drain.

The new alignment would cut off the northern access to the BOC yard but the southern access to the yard would remain open. It also would cut off access to the residence north of the Deer Flat Low Line Canal (see Figure 2-5). A new access off of the realigned Riverside Road would be provided to this residence. The realigned road also would have an access point to Reclamation's maintenance road east of the canal. Finally, this alternative would require modifications to the intersection at Riverside and Hoadley roads to provide adequate grades and transitional improvements. These modifications would not affect intersection function.

Traffic circulation through the area during construction would be minimally impacted since the existing section of Riverside Road on the dam crest would remain open. Traffic would be disrupted during construction of the tie-in of the realigned (new) road to the existing road, but would only last a short time and would not prevent access to any adjacent properties.

**Mitigation.** Reclamation would ensure that the final design accommodates access to the BOC yard, an existing Reclamation maintenance road, and a residence east of the Deer Flat Low Line Canal. If feasible, during final design Reclamation would consolidate access points to reduce the number of accesses along the new roadway.

**3.1.2.5 Alternative E: Widen Downstream Crest**

Alternative E would not structurally affect Riverside Road, allowing the road to continue to cross the Lower Embankment on the existing road surface. This alternative would not require modifications to the intersections of Riverside and Lowell roads and Riverside and Hoadley roads. Alternative E would carry the same volume of traffic as the existing road across the dam. This alternative would not affect the speed of traffic on Riverside Road.

Fill associated with the crest widening would encroach into the BOC yard (see Figure 2-6), but would not affect access to the yard during or after construction.

Traffic impacts would be greater during construction of this alternative than under Alternatives C and D since it would require temporary closure of the road across the dam and a traffic detour for about seven months.

**Mitigation.** No mitigation is proposed because this alternative would not affect any access points or traffic and circulation in the area.

## 3.2 Socioeconomics

### 3.2.1 Affected Environment

Lake Lowell is the diversion point for four irrigation canals that serve about 90 square miles, primarily in Canyon County. This area has some of the most productive lands within the Reclamation's Boise Project. The area includes such high-valued crops as hops, alfalfa seed, sugar beets, potatoes, and onions. The value of production for these irrigated lands is estimated to average nearly \$800 per acre (U.S. Department of Agriculture 2000). In addition to irrigated crop production, Lake Lowell and the Refuge accommodate many forms of recreation, including hunting, fishing, and wildlife viewing.

The Treasure Valley, specifically Canyon and Ada counties, has been growing at a recent rate of more than 2 percent per year (COMPASS 2009), including increased rural residential development around Lake Lowell. As a result, a considerable but not yet quantified percentage of residents commute to work from this area to the more populous I-84 corridor. Riverside Road is an arterial connecting this corridor with points south and west of Lake Lowell, such as the community of Marsing. Riverside Road is a scenic, well-used shortcut compared to Karcher Road (State Highway 55). Much of the traffic passing over the Lower Embankment is commuter and service oriented, connecting residences south and west of Lake Lowell to the more populous I-84 corridor.

Canyon Highway District No. 4 estimates that average daily traffic on Riverside Road, over the Lower Embankment, is about 3,100 vehicles. As described in Section 3.1, traffic on Riverside Road, in addition to commuter traffic, consists of a mix of agricultural vehicles; commercial trucks, including sanitation trucks traveling to Pickles Butte Sanitary County Landfill (Riverside Road provides a direct route to the landfill for local sanitation district trucks); and recreational traffic around Lake Lowell.

The general area is irrigated agriculture and rural residential. As noted in Section 3.1, there are some existing subdivisions in the project vicinity, including three along Riverside Road just northeast of the Lower Embankment and one south of Lowell Road and west of Malt Road (Canyon County 2009b). According to Canyon County, no other subdivisions have been platted in the area (Canyon County 2009c). Given the current zoning and planned land uses for the area, the project vicinity would probably experience large lot, rural-residential developments, but would remain mostly rural (Canyon County 2009a, 2009b, and 2009c). There are a few commercial businesses in the area, including a fruit stand at the corner of Karcher Road and Riverside Road; a fueling station and convenience store on Riverside Road, about 1/4 mile south of the Karcher Road and Riverside Road intersection; and a storage rental facility across Riverside Road from the fueling station and convenience store.

### 3.2.2 Environmental Consequences

#### 3.2.2.1 *Alternative A: No Action*

Under the No Action Alternative, the Lower Embankment would not be modified and Riverside Road would remain in its current configuration. The area would continue to experience rural-residential development that is consistent with Canyon County plans. Existing agricultural operations might continue or be phased out if market conditions favor different use of agricultural land (such as residential development). Travel time might be affected by ongoing development depending on the

development rate and pattern. Business operation and property values would continue to be influenced by market conditions.

### **3.2.2.2 Alternative B: Close Dam Crest/Reroute Traffic on Existing County Roads**

Under Alternative B, Riverside Road would be closed over the Lower Embankment and traffic would likely use Malt Road to connect from Karcher Road to points south of Lake Lowell. Alternative B would add about one mile to a traveler's route, or about one minute at prevailing speed limits. Based on a 3,100 average daily traffic, closure of the Lower Embankment and the use of Malt Road would add a total of about 3,100 minutes, or about 52 hours per day, to local travel times. At a value of motorists' time ranging from \$10 per hour to \$20 per hour (the potential range normally suggested by Federal Highway Administration guidelines, which are typically used for transportation projects), the one-mile, one-minute delay would amount to about \$520 to \$1,040 per day, or about \$190,000 to \$380,000 per year in increased travel time costs for all travelers combined. In addition to local access impacts, this alternative could result in potential delays for emergency response services compared to the No Action Alternative; additional emergency response travel distance would range from one to two miles, depending on the response area.

Under Alternative B, traffic would still pass the fruit and vegetable stand located near the Karcher Road and Riverside Road intersection. Since the business would remain visible to travelers, business at the stand would not be expected to decline due to closing a portion of Riverside Road.

Closure of the portion of Riverside Road over the dam would adversely affect the fuel station/convenience store located on Riverside Road due to reduced drive-by traffic. With this alternative, the main traffic passing the area would be local residents and vehicles that are traveling to and from the Lower Dam Recreation Area. Impacts to the fuel station and convenience store would be severe because this business relies heavily on drive-by, incidental traffic rather than destination-oriented traffic. The reduction in traffic on this portion of Riverside Road probably wouldn't affect the storage business since customers travel to the business as a destination.

Under Alternative B, residents living along Malt Road would likely feel that increases in noise and traffic affect the quality of their lifestyles and property values. As proposed, Alternative B could directly affect between five and ten properties. Eight residential structures along Malt Road are within about 200 feet of the roadway and would experience the most noise effects that would result from increased traffic.

While traffic would increase on Malt Road, traffic on the section of Riverside Road that would no longer be used for through travel would decrease and residents living along this section of Riverside Road might perceive beneficial effects to their quality of life and property values. Because most people living in this area of Canyon County travel north and east to the I-84 corridor for services, residents along this section of Riverside Road are not likely to experience as many inconveniences associated with an inability to travel over the dam as residents living on the south side of the Lower Embankment.

Improvements to Malt Road and associated facilities resulting from closing Riverside Road over the Lower Embankment would require acquisition of about 2.4 acres of adjacent irrigated farmland. Canyon Highway District No. 4, or whatever agency ultimately makes the property right-of-way purchase, would base the purchase price on current market values for irrigated cropland in accordance with Federal regulations. The value of annual production on irrigated farmland in Canyon County is about \$800 per acre (Canyon County Assessor's Office 2009), which means Alternative B would result in an

annual production loss of about \$1,900. The removal of 2.4 acres of agricultural land would also result in a loss of less than \$50 per year from the tax base. Overall, the farmland and fiscal impacts would affect less than one-tenth of 1 percent of total agricultural production and Canyon County revenues, respectively.

Construction could also result in beneficial economic effects by providing opportunities for local jobs and the purchase of construction materials from local vendors.

**Mitigation.** Improvements to Malt Road would lessen the impacts to the increased number of travelers who would have to use this route.

### **3.2.2.3 Alternative C: Close Dam Crest/Relocate Riverside Road to Downstream Toe**

Alternative C would not affect travel time, business operation, quality of life, property values, or agricultural production, but would cause temporary disruptions and associated minimal economic impacts.

Alternative C would require relocation or reconstruction of five structures on the BOC yard property. This would not affect the function of the property in the future but would result in additional construction-related costs. Construction activity would also result in temporary traffic detours, access disruption, noise, and dust in the immediate vicinity. BMPs for road construction would minimize socioeconomic effects related to construction.

Construction of Alternative C could result in beneficial economic effects by providing opportunities for local jobs and the purchase of construction materials from local vendors.

**Mitigation.** No mitigation is proposed for Alternative C because it would not result in any adverse socioeconomic effects.

### **3.2.2.4 Alternative D: Close Dam Crest/Construct Riverside Road 700 Feet Downstream from Toe**

Alternative D would not affect travel time, business operation, or quality of life and property values, and would not require relocation or reconstruction of structures in the BOC yard.

This alternative would result in the conversion of up to about 27 acres of agricultural land. One of the parcels that would be affected might require complete acquisition if the remaining area is not suitable for continued agricultural production. Reclamation and the landowner would address this issue at the time of acquisition. The conversion (loss) of up to 27 acres of agricultural land could result in a production loss of up to \$21,600 annually and a loss of \$560 per year from the tax base.

Construction activity would result in temporary traffic detours, access disruption, noise, and dust in the immediate vicinity. BMPs for road construction would minimize adverse socioeconomic effects related to construction.

Construction of Alternative D could result in beneficial economic effects by providing opportunities for local jobs and the purchase of construction materials from local vendors.

**Mitigation.** The acquisition of land for right-of-way for Alternative D would be conducted in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1978, as amended.

### **3.2.2.5 Alternative E: Widen Downstream Crest**

Alternative E would not affect travel time, business operation, quality of life, property values, or agricultural production over the long term.

Construction activity would result in temporary traffic detours (up to seven months), access disruption, noise, and dust in the immediate vicinity. BMPs for road construction would minimize socioeconomic effects related to construction activity.

Construction of Alternative E could result in beneficial economic effects by providing opportunities for local jobs and the purchase of construction materials from local vendors.

**Mitigation.** No mitigation is proposed for Alternative E because it would not result in any adverse socioeconomic effects.

## **3.3 Health and Safety**

### **3.3.1 Affected Environment**

As noted in Chapter 1, the proposed project is intended to address security concerns associated with the Lower Embankment. This section addresses other safety concerns in the project area.

The project area is rural and characterized by low ambient noise and relatively low traffic volume (except for the heavily traveled Riverside Road), which contributes to the livability and safety of the area. Because the area is dominated by agricultural production, local residents understand the safety concerns associated with the use of farm equipment both on the farm and on local roads. Visitors to the area might be surprised by slow-moving farm equipment on local roads, but such conflicts are rarely a problem in the project area.

The Treasure Valley, which includes part of Canyon County, is an “area of concern” for ozone and particulate matter 2.5 microns in diameter or less (PM 2.5) (Idaho Department of Environmental Quality 2007). Canyon County currently meets the Federal air quality standards for carbon monoxide and PM 10 (particulate matter 10 microns in diameter or less), although northern Ada County is designated as a PM10 nonattainment area by the U.S. Environmental Protection Agency (EPA) (Idaho Department of Environmental Quality 2009). Transportation-related air-quality violations are generally the result of slow-moving, congested traffic and traffic associated with controlled intersections.

The Federal Noise Control Act of 1972 (P.L. 92-574) requires that all Federal agencies administer their programs in a manner that promotes an environment free from noises that could jeopardize public health or welfare. Because noise levels were not measured in the project area, the conclusions presented in this EA are subjective. In general, the ambient noise environment is characterized by intermittent noise associated with agricultural production, low traffic noise volume, and noise associated with recreational use of Lake Lowell (boats, human voices).

### **3.3.2 Environmental Consequences**

#### **3.3.2.1 Alternative A: No Action**

Under Alternative A, the road across the dam would remain open, and the existing security risks, that could affect the safety of people living below the Lower Embankment, would not be addressed. Alternative A would not otherwise affect the overall safety or health of people living in the area.

### **3.3.2.2 Alternative B: Close Dam Crest/Reroute Traffic on Existing County Roads**

Alternative B would result in the closure of the road across the dam, which would address security concerns associated with open access to the dam. Improved security would enhance the general safety of the area for residents, commuters, and recreationalists downstream of the Lower Embankment.

This alternative would result in the rerouting of traffic, which would change the ambient air-quality environment of areas along Malt Road. People living closer to the Malt Road/Karcher Road intersections may experience a change in air quality.

Residences along Riverside Road would experience improvements in air quality, a lowering of ambient noise, and a reduction in traffic conflicts.

Rerouting of traffic associated with Alternative B would result in greater traffic on the rural Malt Road, which could lead to more traffic conflicts. Conflicts could be a result of slow-moving farm equipment that might travel on Malt Road and driveway accesses. The potential for conflicts would be greater when traffic volumes are higher, such as during busy weekends and holidays. Some residents who live along Karcher Road might also feel inconvenienced by additional traffic, even though the existing road network could safely accommodate the additional volume. See Section 3.1, Transportation and Access, for more information about traffic volumes on local roads.

Reconstruction would improve the operation and safety of the Malt Road/Riverside Road intersection.

Even though the roads could safely accommodate additional traffic, residents along Malt Road, and to a lesser degree along Karcher Road, would experience adverse changes related to air quality, the noise environment, and safety related to property access.

**Mitigation.** Reclamation would work with Canyon Highway District No. 4 to install signs warning travelers about the closure of Riverside Road over the Lower Embankment on roads that have historically been used to access the dam. The signs would include information about alternate routes.

Reclamation would encourage Canyon Highway District No. 4 to identify places where pullouts can be widened or constructed to enhance access to private driveways along Malt Road.

Reclamation would encourage Canyon Highway District No. 4 to install signs encouraging truck drivers to refrain from using engine brakes on Malt Road.

### **3.3.2.3 Alternative C: Close Dam Crest/Relocate Riverside Road to Downstream Toe**

Alternative C would result in a security improvement by closing the existing road across the dam. Improved security would enhance the general safety of the area for residents, commuters, and recreationalists downstream of the Lower Embankment.

Alternative C would not result in additional traffic that could affect the safety of driveway accesses, air quality, or the ambient noise environment. Existing traffic would occur in the same general area since the new road would parallel the existing road. Alternative C would simply reroute traffic to the toe of the dam rather than on the crest. The reconfigured intersections would continue to operate similar to current conditions and would be designed to operate safely.

**Mitigation.** No mitigation is proposed because this alternative would not result in any health or safety issues associated with the road or intersections and would not affect air quality or the ambient noise environment.

**3.3.2.4 Alternative D: Close Dam Crest/Construct Riverside Road 700 Feet Downstream from Toe**  
Alternative D would remove traffic from the section of Riverside Road that crosses the Lower Embankment. Improved security would enhance the general safety of the area for residents, commuters, and recreationalists downstream of the Lower Embankment.

This alternative would also not result in additional traffic that would affect the safety of driveway accesses, air quality, or the ambient noise environment. Existing traffic would occur in the same general area since the new road would parallel the existing road. Alternative D would require new or reconfigured intersections that would be designed to operate safely. Reclamation would work closely with Canyon Highway District No.4 to ensure that the new and reconfigured intersections are designed consistent with current county standards.

**Mitigation.** No mitigation is proposed because Alternative D would not result in any health or safety issues associated with the road or intersections and would not affect air quality or the ambient noise environment.

**3.3.2.5 Alternative E: Widen Downstream Crest**

Modification of the dam under Alternative E would allow the road across the dam crest to remain open while improving the security of the dam. Improved security would enhance the general safety of the area for residents, commuters, and recreationalists downstream of the Lower Embankment.

Alternative E would not result in additional traffic or a change in traffic patterns that could affect the safety of driveway accesses, air quality, or the ambient noise environment after completion of construction. During construction, traffic impacts would involve the temporary closure of the road across the dam and a traffic detour for about seven months.

**Mitigation.** No mitigation is proposed because this alternative would not result in any long-term health or safety issues associated with the road or intersections and would not affect air quality or the ambient noise environment.

## **3.4 Land Use**

### **3.4.1 Affected Environment**

Lake Lowell is owned by Reclamation but managed by the USFWS as part of the Refuge. Undeveloped land along the shoreline of Lake Lowell is also managed by USFWS. Most of the land that is not part of the Refuge is in agricultural production, idle, or used for rural residential development. Development is denser on the north side of the lake but remains a rural setting. Commercial establishments are limited in the area, with a fueling station/convenience store and storage businesses on Riverside Drive about ¼ mile from the right embankment and a fruit stand at the corner of Riverside Drive and Karcher Road.

The Canyon County zoning map does not assign zoning designations to the immediate area around Lake Lowell (Canyon County 2009a). The county's comprehensive plan shows a limited number of platted subdivisions in the area (three along Riverside Road northeast of the Lower Embankment and southwest of the Malt Road/Lowell Road intersection along Lowell Road) (Canyon County 2005, 2009b,

and 2009c). The zoning and land-use maps identify Federal land in the area, but do not prescribe permitted uses.

The area west of the Lower Embankment is irrigated agriculture and rural residential. Canyon County has received inquiries about residential development west of the Lower Embankment in the area of Malt Road, but no preliminary plat maps have been submitted to or approved by Canyon County. Thus, residential development in this area west of the Lower Embankment is speculative only.

For future land use for Lake Lowell and the Refuge, the USFWS has initiated the preplanning stage for development of a long-term management plan for Deer Flat National Wildlife Refuge. The CCP plan, identified in Chapter 1 of this EA, will serve as a guide for managing the Refuge over the next 15 years. The plan, expected to be completed in 2010, is an essential part of the 1997 National Wildlife Refuge Improvement Act. This legislation, in addition to setting direction and establishing a well-defined mission for the National Wildlife Refuge System, calls for all refuges to complete a CCP with input from partners and the public.

Management issues identified in the preliminary draft CCP include: wetlands, riparian forest, upland shrub habitats, fire, mosquito-control program; fisheries and fishing; deer-herd management, boundary adjustments/land exchange, cropland management, inventory and monitoring, urban encroachment, water quality, invasive species, and the effects of public use on wildlife and habitat. The proposed action to address security deficiencies at the Lower Embankment is a Reclamation action and is separate from management issues identified in the CCP.

### **3.4.2 Environmental Consequences**

#### **3.4.2.1 Alternative A: No Action**

Alternative A would not affect land use in the project area. Land around the lake and Refuge would continue to be used for agricultural production and support rural residential living, and regional development would continue consistent with the Canyon County zoning and land-use plans. The Refuge would continue to be managed by USFWS.

#### **3.4.2.2 Alternative B: Close Dam Crest/Reroute Traffic on Existing County Roads**

Alternative B would require the conversion of some active agricultural land to connect Malt Road to Riverside Road. The loss of 3.2 acres of agricultural land would not adversely affect regional agricultural production or future use of land in the area.

Improvements to local roads would not affect current land-use patterns along these roads. Agricultural production and rural residential development would continue to dominate the landscape. Regional development would continue consistent with the Canyon County zoning and land-use plans.

**Mitigation.** No mitigation is proposed because Alternative B would not affect existing or future land uses in the area.

#### **3.4.2.3 Alternative C: Close Dam Crest/Relocate Riverside Road to Downstream Toe**

Alternative C would result in the conversion of land associated with the BOC yard and undeveloped land at the toe of the dam to roadway. The new road would follow the southeastern edge of the BOC yard, which is owned by Reclamation, and impact five BOC structures, including a house. These five structures would be relocated or removed and replaced. Most of the parcel that supports the yard would remain intact, and the site could still be used for its intended purpose.

The new road would parallel existing maintenance roads at the toe of the dam and would not bisect any large areas of undeveloped land. The area is currently accessed by the maintenance roads, so the new road would not introduce new access to the area. Canyon County has not identified the area northwest of the embankment for future development and, while the new road might provide better access to the area, it would not change how the area could appropriately be used in the future given its location immediately below the Lower Embankment.

**Mitigation.** No mitigation is proposed because Alternative C would not result in long-term effects on use of the BOC yard and would not otherwise affect existing or future land uses in the area.

#### **3.4.2.4 Alternative D: Close Dam Crest/Construct Riverside Road 700 Feet Downstream from Toe**

Alternative D would result in the loss of about 27 acres of agricultural land. This land would be lost either by conversion to roadway or by affecting use in ways that would no longer allow irrigation (see Figure 2-5). While farmers would continue to have access to the land, placement of the road could make future farming of some portions of bisected parcels infeasible. The Federal Farmland Policy Protection Act directs Federal agencies to minimize project-related impacts on farmland. Reclamation would 1) carefully review the future use of affected agricultural parcels, 2) determine the amount of potential indirect conversion (acres remaining in a tract that are partially taken for right-of-way that could no longer be farmed because the remaining land is too small to support production or the project would restrict access), and 3) ensure that any required acquisition of farmland would be conducted consistent with applicable Federal regulations. See Section 3.3, Socioeconomics, for more information about the future financial feasibility of farming in these areas. The amount of farmland that would be converted is less than 0.1% of the farmland in the region. The conversion would not be expected to affect the pattern and amount of agricultural land in the region.

The new road would cross some existing maintenance roads that currently provide access to the undeveloped areas north of the canal and are not used for agricultural production. Access to this area would be maintained, and the land would remain in its current use. Canyon County has not identified this area for future development and, while the new road might provide better access to the area, it would not change how the area could appropriately be used in the future given its location near the Lower Embankment.

Conversion of undeveloped land below the dam would not affect existing or future land-use patterns of the region. Conversion of agricultural land might affect how farmers use their land in the future.

**Mitigation.** No mitigation is proposed because the conversion of 27 acres of farmland would not affect the regional distribution of farmland and the alternative would not otherwise affect existing or future land uses in the area.

#### **3.4.2.5 Alternative E: Widen Downstream Crest**

Alternative E would not affect any existing or future land-use patterns around the Lower Embankment. This option would allow Riverside Road to remain open in its current condition and would not change how people access and use the area.

Alternative E would require the relocation of three buildings in the BOC yard because fill material would encroach onto the property. Most of the parcel that supports the yard would remain intact, and the site could still be used for its intended purpose. The affected structures could be replaced or relocated on site.

**Mitigation.** No mitigation is proposed because Alternative E would not result in long-term effects to the BOC yard and would not otherwise affect existing or future land uses in the area.

## 3.5 Cultural Resources

### 3.5.1 Affected Environment

The affected cultural resources environment for each alternative was based on records from Reclamation, the Idaho State Historic Preservation Office (SHPO), historic maps from the United States Geological Survey (USGS), and aerial photographs. A comprehensive cultural resources survey will be completed when a final alternative is selected by Reclamation.

As part of this EA, Reclamation requested information from local Native American groups regarding areas or resources of concern to Native Americans in or near the project area.

Reclamation did not receive any responses to its inquiries, so it assumes that the project area does not contain any sacred sites or other areas of cultural importance to local tribes. Therefore,

sacred Native American sites are not considered to be a key resource and are not discussed in this EA.



Figure 3-3. Photo shows a rock masonry parapet wall built on the upstream embankment face by the CCC in the 1930s.

The Deer Flat Embankments, which includes the Lower Embankment, were listed on the National Register of Historic Places (NRHP) in 1976, in conjunction with the Boise Diversion Dam Project, as being important in the historic development of the Boise Basin. The embankments, which impound Lake Lowell, are significant as the first large storage feature built by Reclamation on the Boise Project, one of the largest of the early projects undertaken by the Federal government following passage of the Reclamation Act in 1902. The Deer Flat embankments are earthen fill structures, which represent conventional embankment design and construction methods of the early 20th Century.

Inadequate resistance to the erosive action of waves on the lake caused repeated deterioration of the upstream faces of the embankments, leading to construction activity by the Civilian Conservation Corps (CCC) in the 1930s. From 1935 to 1939, the CCC hand-placed riprap on the upstream embankment faces and constructed rock masonry parapet walls (see Figure 3-3).

At the Lower Embankment, large segments of the CCC-constructed riprap were destroyed by wave-induced erosion, and portions of the parapet wall collapsed or were removed. In the 1990s, portions of the Lower Embankment were reconstructed, and portions of the parapet wall were removed and replaced with a pre-formed concrete wall. As part of mitigation for this construction, a Historic American Buildings Survey/Historic American Engineering Record form was prepared on the embankments as part of the mitigation of adverse effects of the project on the historic property. Despite these recent impacts on the historic property, no attempt was made to re-evaluate the entire NRHP-listed site or to remove the Lower Embankment as a contributing element to the NRHP listing. Additionally, a fairly sizeable portion of the Lower Embankment (about 2,700 feet) is undisturbed and remains intact as a

contributing element. Reclamation manages the Lower Embankment as an eligible property (Ray Leicht, pers. comm. 2009).

A second NRHP-eligible property that could be affected by construction of the project is the Deer Flat Low Line Canal (27-019224). This canal (see Figure 3-4) was constructed prior to 1915 and extends 37.2 miles from Lake Lowell to the Snake River. This site was recommended eligible in 2003 because it has made a “significant contribution to the broad patterns of our history” (Criterion A of 36CFR60.4).



Figure 3-4. Photo shows part of the Deer Flat Low Line Canal, which was constructed prior to 1915.

Other possible historic properties that could be affected by the action alternatives include four to five historic buildings in the BOC yard on the southwest end of the Lower embankment (see Figure 3-5). Some of these structures are possibly related to the CCC work on the Lower Embankment and were moved to this location after the CCC work was completed in this area, including the Deer Flat North Canal, the Lower Embankment Drain, and possible historic structures along the Weeks Drain. Structures that would be affected by the chosen alternative would need to be evaluated to determine their eligibility to the NRHP.



Figure 3-5. Photo shows historic buildings in the BOC yard, on the southwest end of the Lower Embankment.

### 3.5.2 Environmental Consequences

When an alternative has been chosen for construction, a comprehensive cultural resources inventory will be completed to determine affected historic properties. Consultations pursuant to the National Historic Preservation Act (NHPA) (36 CFR 800) would then need to be initiated with the Idaho SHPO to address potential impacts and determine mitigation for any adverse effects. The expected impacts of each alternative (subject to verification) are described below.

#### 3.5.2.1 *Alternative A: No Action*

The No Action Alternative would have no adverse affects on historic properties, including the historic integrity of the Lower Embankment.

#### 3.5.2.2 *Alternative B: Close Dam Crest/Reroute Traffic on Existing County Roads*

Closing the section of Riverside Road across the dam crest could potentially have an adverse effect on the Lower Embankment, a historic property. The embankment has been used as a road since its construction, and closing the road to vehicular use could be considered an adverse effect on the historic property, since it would no longer be used as originally intended. However, this section of roadway would still be used by pedestrians and bicyclists, which may be interpreted as still meeting the historic intent of being a transportation corridor. If so, then this alternative may not result in an adverse effect.

**Mitigation.** Reclamation would complete a comprehensive cultural resources inventory of the area of potential effect to determine how the project would affect historic properties, including the Lower Embankment. An adverse effect on the Lower Embankment (an NRHP-listed structure) or on any NRHP-eligible property in the area of potential effect would require mitigation that would be determined through consultation with the SHPO pursuant to Section 106 of the NHPA. The Advisory Council on Historic Preservation would be invited to participate in the Section 106 consultation.

### **3.5.2.3 Alternative C: Close Dam Crest/Relocate Riverside Road to Downstream Toe**

Alternative C could also affect the NRHP-listed Lower Embankment similarly to Alternative B by abandoning the crest roadway as a transportation corridor. Additional historic properties that could be affected by construction of this alternative are the recommended-eligible Deer Flat Low Line Canal, four to five historic structures in the BOC yard, and potentially the North Deer Flat Canal (see Figure 2-3).

The four to five historic structures in the BOC yard would be directly affected by construction of the new road. These structures might have to be moved, destroyed, or otherwise affected. Potential impacts on the Deer Flat Low Line Canal and the North Deer Flat Canal would depend on the type of construction proposed for the canal crossings. The Deer Flat Low Line Canal crossing would either be by bridge or the outlet works would be extended, which would result in filling a portion of the canal and allowing construction of the new road on top of the fill. The North Deer Flat Canal would be crossed using a bridge. It can be assumed that the bridge crossing would be designed to have minimal impact on the historic canals (i.e., crossing canals at a 90-degree angle), resulting in minor effects on historic properties. If the outlet works is extended it would be considered an adverse effect to the canal and some form of mitigation would be required. Mitigation could include additional documentation of the canal, production of educational materials, drawings and large format photography, or additional historic research. If this alternative is selected, additional historic properties (archaeological sites) might be affected by construction if they are identified during a comprehensive cultural resources inventory of the area.

**Mitigation.** Reclamation would complete a comprehensive cultural resources inventory of the area of potential effect to determine how the project would affect historic properties, including the Lower Embankment, Deer Flat Low Line Canal, historic structures in the BOC yard, and the North Deer Flat Canal. An adverse effect on the Lower Embankment (an NRHP-listed structure) or on any NRHP-eligible property in the area of potential effect would require mitigation that would be determined through consultation with the SHPO pursuant to Section 106 of the NHPA. The Advisory Council on Historic Preservation would be invited to participate in the Section 106 consultation.

### **3.5.2.4 Alternative D: Close Dam Crest/Construct Riverside Road 700 Feet Downstream from Toe**

Alternative D could also affect the NRHP-listed Lower Embankment, as described for Alternative B, by abandoning the crest roadway as a transportation corridor. This alternative would also affect the Deer Flat Low Line Canal, Weeks Drain, Lower Embankment Drain, and the Deer Flat North Canal (see Figure 2-5).

Construction of the new road would require bridge crossings of the Deer Flat Low Line Canal, Weeks Drain, and Lower Embankment Drain, and might require a crossing of the Deer Flat North Canal. Effects on these historic canals would be determined based on how the crossings are designed and constructed. It can be assumed that bridge crossings would have minimal impacts on the historic canals, resulting in minor effects on the historic properties. If this alternative is selected, additional historic

properties (archaeological sites) might be affected by construction if they are identified during a comprehensive cultural resources inventory of the area.

**Mitigation.** Reclamation would complete a comprehensive cultural resources inventory of the area of potential effect to determine how the project would affect historic properties, including the Lower Embankment, Deer Flat Low Line Canal, Weeks Drain, Lower Embankment Drain, and the Deer Flat North Canal. An adverse effect on the Lower Embankment (an NRHP-listed structure) or on any NRHP-eligible property in the area of potential effect would require mitigation that would be determined through consultation with the SHPO pursuant to Section 106 of the NHPA. The Advisory Council on Historic Preservation would be invited to participate in the Section 106 consultation.

### **3.5.2.5 Alternative E: Widen Downstream Crest**

Alternative E would not affect use of the NRHP-listed Lower Embankment and would not disturb any of the historic features of the embankment (such as the parapet walls). This alternative would, however, affect three historic structures in the BOC yard. These structures would be directly affected by construction of the new road and might have to be moved, destroyed, or otherwise affected. If this alternative is selected, additional historic properties (archaeological sites) might be affected by construction if they are identified during a comprehensive cultural resources inventory of the area.

**Mitigation.** Reclamation would complete a comprehensive cultural resources inventory of the area of potential effect to determine how the project would affect historic properties, including the BOC yard structures. An adverse effect on any NRHP-eligible property in the area of potential effect would require mitigation that would be determined through consultation with the SHPO pursuant to Section 106 of the NHPA. The Advisory Council on Historic Preservation would be invited to participate in the Section 106 consultation.

## **3.6 Recreation**

### **3.6.1 Affected Environment**

Lake Lowell and the Refuge provide a variety of recreational opportunities to visitors. Lake Lowell receives about 100,000 recreation visits annually (U.S. Bureau of Reclamation 2006). Figure 3-6 shows designated recreational areas that surround the Lake and that are part of the Refuge.

Lake Lowell is open to boating from April 15 to September 30. Recreational activities on the lake, including boating, water skiing, and fishing, are regulated by the USFWS under an agreement with Reclamation. The upland areas of the Refuge along the lakeshore provide opportunities for wildlife observation and photography; upland game hunting; environmental education and interpretive activities; hiking, walking, and jogging; bicycling; and cross-country skiing.

The lake has four boat ramps, including one on the northeast end (right side of the dam) of the Lower Embankment called the Lower Dam Recreation Area (see Figure 3-6). This ramp area also accommodates access to, and day use of, the lakeshore, including picnicking and swimming. The South Side Recreation Area, located on the south end of Lake Lowell, has access points and parking along Lake Shore Drive that can be accessed just south of the Lower Embankment (left side of the dam). The closest parking area to the dam is referred to as the access and parking No. 8 (see Figure 3-6).

The Lower Embankment is used by pedestrians (walking, hiking and jogging) and bicyclists and for shoreline fishing. The westbound lane (downstream side) has a shoulder about 3 feet wide, making use

of this side of the road very limited and unsafe for bicyclists and pedestrians. The eastbound lane (upstream side) has a wide gravel shoulder about 15 feet wide. There are no designated bike lanes. Pedestrians are able to walk behind the parapet walls (on the upstream side) near the right abutment but have to cross over onto the road shoulder near the middle and left abutment areas.

## 3.6.2 Environmental Consequences

### 3.6.2.1 *Alternative A: No Action*

Alternative A would not affect recreational use of Lake Lowell or the Refuge. Recreational use of the area would continue to be guided by the Refuge's regulations and planning processes.

### 3.6.2.2 *Alternative B: Close Dam Crest/Reroute Traffic on Existing County Roads*

Alternative B would close the section of Riverside Road that crosses the Lower Embankment, but would not affect access to the Lower Dam Recreation Area near the right embankment or to access and parking No. 8 near the left embankment (see Figure 3-6). Users coming from the south side of Lake Lowell that want to access the Lower Dam Recreation Area would need to travel north on Malt Road to Karcher Road (this includes the new segment of road connecting to Malt Road), east on Karcher Road to Riverside Road, and then south on Riverside Road to the recreation area. From the point of closure on the south side (left side) of the dam, this new route would require users to travel about 1 mile farther than the route across the dam.

Recreational users of the Lower Dam Recreation Area and access and parking No. 8 would not be restricted and would have full access to the areas. Recreational users wanting to travel to the south side of Lake Lowell from the north side would also need to use alternative routes (likely Malt Road to Riverside Road). Some users might feel that the new route is an inconvenience, but it would not prevent them from using the area.

While the Lower Embankment would be closed to vehicles, the embankment would remain open to pedestrians and bicyclists and for shoreline fishing and wildlife observation. Removal of vehicular traffic from this section of Riverside Road would improve the recreational experience for pedestrians and bicyclists by providing greater access, improved safety (no shoulder restrictions and elimination of potential conflicts with vehicles), and less traffic noise.

**Mitigation.** No mitigation is proposed for Alternative B because it would not affect recreational facilities or use of the area.

### 3.6.2.3 *Alternative C: Close Dam Crest/Relocate Riverside Road to Downstream Toe*

Alternative C would not affect any of the Lower Dam Recreation Area, access and parking No. 8, or other existing recreation access points along the lakeshore. This alternative would also allow the crest area to remain open to pedestrians and bicyclists, which could result in an improved recreational experience.

**Mitigation.** No mitigation is proposed for Alternative C because it would not affect recreational facilities or use of the area.

### 3.6.2.4 *Alternative D: Close Dam Crest/Construct Riverside Road 700 Feet Downstream from Toe*

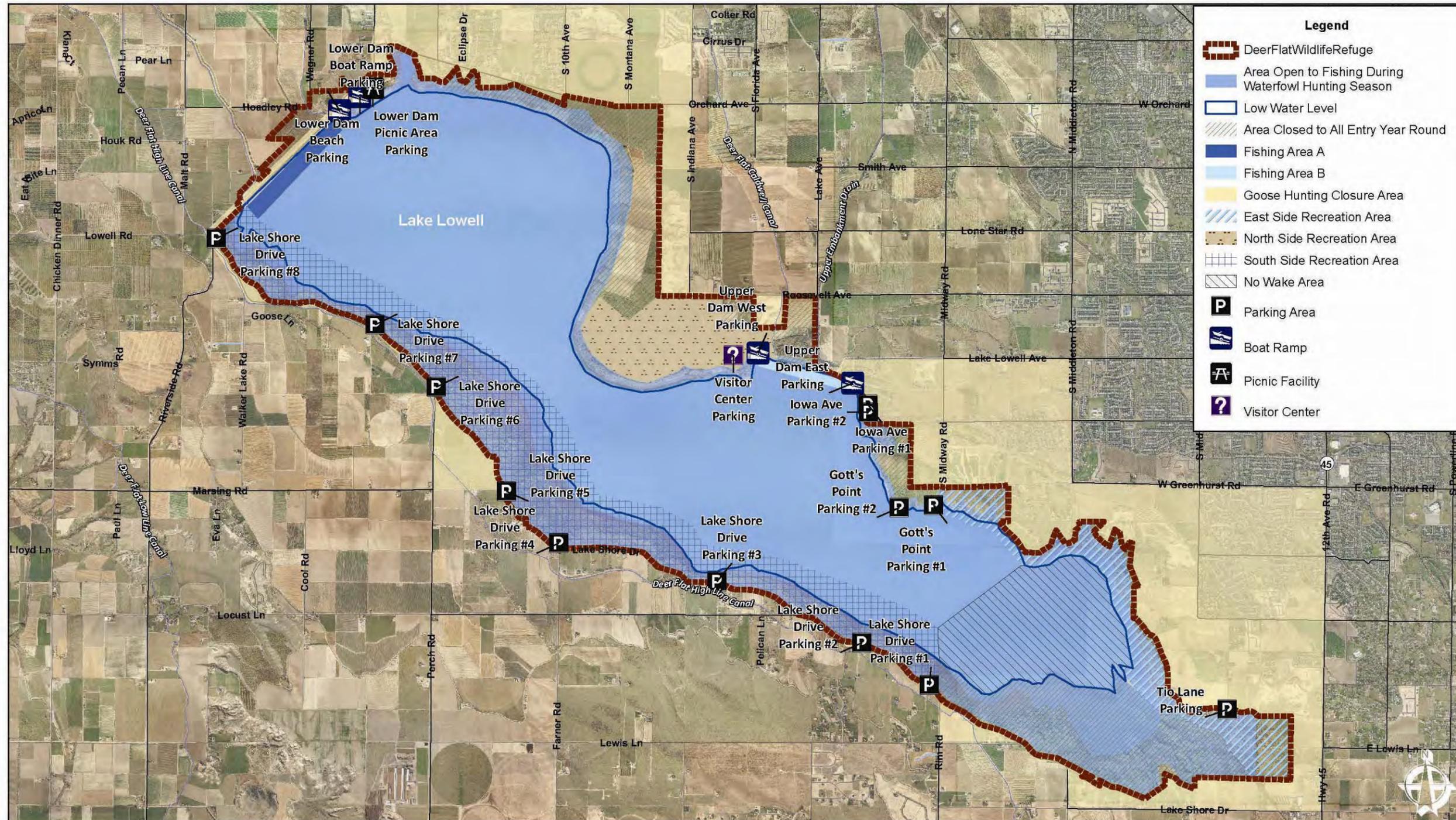
Alternative D would not affect the existing recreational travel patterns in the area since Riverside Road would continue to provide access to the north and south areas of Lake Lowell. Similar to Alternative B and C, the embankment would remain open to pedestrians and bicyclists.

**Mitigation.** No mitigation is proposed for Alternative D because it would not affect the recreational facilities or use of the area.

**3.6.2.5 Alternative E: Widen Downstream Crest**

Alternative E would not affect existing travel patterns of recreational users because the segment of Riverside Road across the dam would remain open. The public could still access the Lower Dam Recreation area, access and parking No. 8 area, and other recreation access points along the lakeshore. Pedestrians and bicyclists would continue to use the existing shoulders of Riverside Road to cross the embankment.

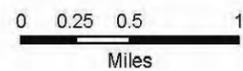
**Mitigation.** No mitigation is proposed Alternative E because it would not affect the recreational facilities or use of the area.



Disclaimer: This map is intended for general informational and planning purposes only. The Bureau of Reclamation makes no warranty, expressed or implied, as to the completeness, accuracy, or utility of these data and will in no event be liable for their use beyond the above expressed purpose.

Data Sources: Bureau of Reclamation, Canyon County, US Fish & Wildlife

Map Date: July, 2009



**RECLAMATION**  
Managing Water in the West

**Figure 3-6 Designated Recreation Facilities**  
Deer Flat Dam Lower Embankment Security Enhancement Project



## 3.7 Visual Resources

### 3.7.1 Affected Environment

The proposed project is in an area that contains a dam embankment and associated parapet walls and riprap on the upstream side, a paved roadway that crosses on top of the dam crest (which is a section of Riverside Road), Lake Lowell, maintenance roads, irrigation canals, drains and ditches, agricultural lands, rural residential homes, and the Refuge area to the east.

The section of Riverside Road that crosses the dam crest provides panoramic views of the area because the crest is elevated compared to surrounding lands

(see Figures 3-7 and 3-8). The view toward the west from Riverside Road is of irrigated agriculture, including fields, dirt roads, irrigation equipment, canals, drains and ditches, and rural residences. The BOC maintenance yard is also visible from the road. The view toward the east is of Lake Lowell and the shoreline area that includes riparian areas. It is typical to see migratory birds while looking toward the east. Because, Riverside Road sits on top of the crest, the view focus tends to be downward toward surrounding features.



Figure 3-7. This photo shows the view southwest from Riverside Road looking on the downstream side of embankment. Reclamation's maintenance road is to the right of the guardrail and the BOC facility is in background.



Figure 3-8. This photo shows the view southwest from the right embankment on the upstream side.

The views of Riverside Road across the crest would be of a typical rural two-lane road in the area. The upstream portion of the embankment is rip-rapped and contains a rock parapet wall. The view of the downstream portion is of an earthen embankment and guardrail.

### 3.7.2 Environmental Consequences

#### 3.7.2.1 *Alternative A: No Action*

Alternative A would not affect any views of or from the project area. The road across the dam would remain open and users of the road would continue to experience views of the valley and surrounding area.

### **3.7.2.2 Alternative B: Close Dam Crest/Reroute Traffic on Existing County Roads**

Alternative B would result in the closure of Riverside Road across the dam crest. Traffic would instead use county roads, including Malt Road. The new routes would be below the dam and would not provide panoramic views of the lake or surrounding area.

Parking and access areas are located near the left and right embankments of the dam (access and parking No. 8 is on the left side and the Lower Dam Recreation Area is on the right side). Visitors would be able to park their vehicles and walk to the shore to view Lake Lowell and areas to the east. Pedestrians and bicyclists would still be able to access the dam crest and experience the view offered from the crest.

**Mitigation.** No mitigation is proposed for Alternative B because travelers in motor vehicles could still access viewpoints on the right and left sides of the Lower Embankment and bicyclists and pedestrians could still use the closed roadway. Construction would not alter the viewshed at the intersection of Malt Road and Riverside Road.

### **3.7.2.3 Alternative C: Close Dam Crest/Relocate Riverside Road to Downstream Toe**

Alternative C would result in the closure of Riverside Road across the dam crest. The new road would be at the toe of the dam and would not provide views of the surrounding area for those traveling by motor vehicle since the road would not be elevated above the surrounding terrain.

As described for Alternative B, parking and access areas near the left and right embankments would allow travelers to stop and experience views of the area. The Lower Embankment would also remain open to pedestrians and bicyclists so they can access the dam crest and experience the view. There would be minor changes in the viewshed from construction of the new road.

**Mitigation.** No mitigation is proposed for Alternative C because travelers in motor vehicles could still access viewpoints on the right and left sides of the Lower Embankment and bicyclists and pedestrians could still use the closed roadway.

### **3.7.2.4 Alternative D: Close Dam Crest/Construct Riverside Road 700 Feet Downstream from Toe**

Alternative D would result in the closure of Riverside Road across the dam crest. As described for Alternative C, the new road associated with Alternative D would not provide a panorama view. As described for Alternative B, parking and access areas near the left and right embankments would allow travelers to stop and experience views of the area. The Lower Embankment would also remain open to pedestrians and bicyclists so they can access the dam crest and experience the views that define the project area.

The new road would introduce minor modifications to the characteristic landscape, including the line formed by the road itself. Slight color and texture modifications would occur since there is presently no road in this area.

**Mitigation.** No mitigation is proposed for Alternative D because travelers in motor vehicles could still access viewpoints on the right and left sides of the Lower Embankment and bicyclists and pedestrians could still use the closed roadway.

### **3.7.2.5 Alternative E: Widen Downstream Crest**

Alternative E would not result in the closure of the road along the dam crest and does not include any elements that would cause a change in views from the crest. The Lower Embankment would remain open to pedestrians and bicyclists so they would continue to access the dam crest and experience the

views that define the project area. This alternative would not affect access to viewpoints on the right and left sides of the Lower Embankment.

**Mitigation.** No mitigation is proposed for Alternative E because travelers in motor vehicles could still experience views from the dam crest and all travelers (including pedestrians and bicyclists) could access existing viewpoints.

## 3.8 Water Quality

### 3.8.1 Affected Environment

Lake Lowell is on Idaho's Clean Water Act Section 303(d) list of impaired water bodies due to recurring water-quality problems related to nutrients and dissolved oxygen. According to the Idaho Department of Environmental Quality, a total maximum daily load (TMDL) is in process for Lake Lowell (Sheppard 2009).

The study area includes two canals below the dam: Deer Flat North Canal and Deer Flat Low Line Canal. A third canal, Deer Flat High Line Canal, passes west of the dam in the study area. Because these canals are not waters of the state, they have not been considered for listing under Section 303(d). Other waterways in the area include a drain ditch, the Weeks Drain, and Lower Embankment Drain.

### 3.8.2 Environmental Consequences

#### 3.8.2.1 *Alternative A: No Action*

Alternative A would not affect the water quality of Lake Lowell, the Deer Flat North Canal, and Deer Flat Low Line Canal. There will likely be an improvement in water quality with implementation of the TMDL.

#### 3.8.2.2 *Action Alternatives*

None of the alternatives would affect Lake Lowell and therefore would not affect the water quality of this 303(d)-listed water body. Under all of the action alternatives, there will likely be an improvement in water quality with implementation of the TMDL.

Improvements to the local road system (including the existing O&M road) include the construction of bridges over the Deer Flat High Line Canal, Deer Flat Low Line Canal, Lower Embankment Drain, or Weeks Drain, depending on the alternative. None of the structures would affect the water quality of these features. Since construction associated with the improvements is expected to disturb more than one acre of ground, Federal law requires Reclamation to obtain a National Pollutant Discharge Elimination System (NPDES) permit from the EPA for construction-related stormwater discharges. Reclamation would develop a stormwater pollution prevention plan (SWPPP) and follow NPDES requirements for stormwater control. Reclamation would also coordinate with BOC stormwater discharge requirements for any discharge of stormwater to irrigation canals or drains and follow NPDES requirements for stormwater control.

**Mitigation.** No mitigation is proposed for any of the alternatives. Implementation of BMPs is expected to protect water quality during construction.

## 3.9 Environmental Justice

### 3.9.1 Affected Environment

Executive Order 12898 (Environmental Justice, 59 Federal Register 7629 [1994]) requires Federal agencies to achieve environmental justice by addressing “disproportionately high and adverse human health and environmental effects on minority and low-income populations.” To determine if environmental justice populations are present, the Federal agency examines the demographics of the affected area to determine if minority (including American Indians) and/or low-income populations are present. If such populations are present, the agency must determine if construction of the proposed project would cause disproportionately high and adverse human health or environmental effects on the populations.

#### 3.9.1.1 Racial Minorities

Table 3-1 summarizes the racial characteristics of Canyon County and the cities of Nampa and Caldwell, which are near the project area, in 2007. The data show racial distribution is similar in the three areas.

By definition from the Federal Office of Management and Budget, race and Hispanic or Latino origin are two separate categories. People who report themselves as Hispanic or Latino can be of any race. Therefore, in Table 3-1, the number of Hispanic or Latino is not added to the totals of the “race” columns. For example, Hispanics who are “white” are counted in the total of “white” in the race table; and Hispanics who are “black or African American” are counted in that race category.

More detailed information about racial distribution is not available because the U.S. Census Bureau’s American Community Survey data do not cover the immediate project area. However, race distribution data in the three census tracts (Tracts 218, 223, and 224) that include the project area (and other areas) in 2000 show that the racial distribution of the project area appears to be very similar to that of the county and cities, with “white alone” dominating in all areas. Census tract 224 is less diverse than the county and cities as a whole, having a white population of 93 percent (U.S. Census Bureau 2000a). The census tracts listed in Table 3-1 cover a very large area; racial minorities are scattered throughout the region and are not concentrated in any one area of the census tracts.

### 3.9.2 Low-Income Families

According to the Census Bureau, 5,171 families in Canyon County (about 11.6 percent) had income below the poverty level during the previous 12-month period in 2007, while 2,275 families (about 12.2 percent) in Nampa were below the poverty level. (2007 poverty data are not available for Caldwell).

<b>Race</b>	<b>Population</b>	<b>Percent of Total Population</b>
<b><i>Canyon County</i></b>		
White alone	152,146	88.70
Black or African American alone	1,256	0.01
American Indian and Alaska Native alone	708	<0.01
Asian alone	1,547	0.01

**Table 3-1  
Summary of Race in Canyon County, Idaho**

Race	Population	Percent of Total Population
Native Hawaiian and Other Pacific Islander alone	301	<0.01
Some other race alone	10,822	6.30
Two or more races	4,718	2.80
<b>City of Nampa</b>		
White alone	65,942	88.40
Black or African American alone	783	1.00
American Indian and Alaska Native alone	319	<0.01
Asian alone	786	1.00
Native Hawaiian and other Pacific Islander alone	287	<0.01
Some other race alone	4,706	6.30
Two or more races	1,735	2.30
<b>City of Caldwell</b>		
White alone	26,709	83.20
Black or African American alone	302	0.01
American Indian and Alaska Native alone	131	<0.01
Asian alone	348	1.10
Native Hawaiian and other Pacific Islander alone	14	<0.01
Some other race alone	3,548	11.10
Two or more races	1,067	3.30
Source: U.S. Census Bureau 2007		

Recent data for families living in poverty in the immediate project area are not available. However, year 2000 data for census tracts 218, 223, and 224 show that the percentage of families living in poverty in the project region appears to be lower than that of the county and Nampa for the same period (U.S. Census Bureau 2000b).

### **3.9.3 Environmental Consequences**

The information indicates, and a windshield survey of the area verified, that there are no environmental justice populations near any of the alternatives. The impacts associated with any alternative would affect persons of all races and incomes in the same manner and would not result in any disproportionately high and adverse impacts on particular low-income or minority populations.

**Mitigation.** No mitigation is proposed because there are no environmental justice populations in the area, and therefore no impact on any environmental justice populations.

## 3.10 Indian Trust Assets

### 3.10.1 Affected Environment

Indian Trust Assets are legal interests in property held in trust by the United States for Indian Tribes and individuals. The Secretary of the Interior, acting as trustee, holds many assets in trust for Indian Tribes and individuals. Examples of trust assets are lands, minerals, grazing, hunting and fishing, and water rights. While most Indian Trust Assets are on-reservation, they may also be found off-reservation.

The United States has a responsibility to protect and maintain rights reserved by or granted to Indian Tribes and Indian individuals by treaties, statutes and executive orders. These are sometimes further interpreted through court decisions and regulations.

Deer Flat Reservoir is located in an area historically used by many tribes. The Shoshone-Bannock Tribes, a Federally recognized Tribe located at the Fort Hall Indian Reservation in southeastern Idaho, has trust assets both on-reservation and off-reservation. The Fort Bridger Treaty was signed and agreed to by the Bannock and Shoshone headman on July 3, 1868. Article 4 of the 1868 Treaty states that members of the Shoshone-Bannock Tribe “shall have the right to hunt on the unoccupied lands of the United States.” This has been interpreted to mean unoccupied Federal lands.

The Fort Bridger Treaty for the Shoshone-Bannock has been interpreted in the case of *State of Idaho v. Tinno*, an off-reservation fishing case in Idaho. The Idaho Supreme Court determined that the Shoshone word for “hunt” also included to “fish.” Under *Tinno*, the Court affirmed the tribal members’ right to take fish off-reservation pursuant to the Fort Bridger Treaty (*Shoshone-Bannock Tribes 1994*).

The Nez Perce are a Federally recognized Tribe of the Nez Perce reservation in northern Idaho. The United States and the Tribes entered into three treaties (Treaty of 1855, Treaty of 1863, and Treaty of 1868) and one agreement (Agreement of 1893). The rights of the Nez Perce Tribes include the right to hunt, gather and graze livestock on open and unclaimed lands, and the right to fish in all usual and accustomed places (*Nez Perce Tribe 1995*).

The Northwestern Band of the Shoshone Indians, a Federally recognized Tribe without a reservation, has treaty-protected hunting and fishing rights that may be exercised on unoccupied lands within the area acquired by the United States pursuant to the 1868 Fort Bridger Treaty.

The Shoshone-Paiute Tribes are a Federally recognized Tribe located at the Duck Valley Reservation in southern Idaho and northern Nevada. The reservation was established by executive orders dated April 16, 1877; May 4, 1886; and July 1, 1910. The Shoshone-Paiute say the interests of the Tribes are also reflected in the Bruneau, Boise, Ft. Bridger, Box Elder, Ruby Valley, and other treaties and executive orders that the Tribes’ ancestors agreed to with the United States. The Tribe continues to observe these treaties and executive orders in good faith despite the fact that the Federal government failed to ratify some of them. Therefore, the Tribes assert they have aboriginal title and rights to those areas. All such treaties and executive orders recognize the need for the Tribes to continue having access to off-reservation resources because most of the reservations established were and continue to be incapable of sustaining their tribal populations. This need continues and has not diminished from the time of the first treaties and executive orders that established the Duck Valley Reservation (*Cherokee Nation of Oklahoma & Shoshone-Paiute Tribes of the Duck Valley Reservation v. Leavitt*, 543 U.S. 631, 2005).

### 3.10.2 Environmental Consequences

There is no universally accepted understanding of any specific tribal off-reservation treaty rights to hunt and fish in the vicinity of the Deer Flat Dam. Thus the Indian Trust Assets considered are tribal hunting and fishing rights that might exist.

*Mitigation.* None of the alternatives would affect hunting and fishing in the area. Therefore, none of the alternatives would affect any of the tribes' rights to hunt and fish that might exist.

## 3.11 Fish and Wildlife

### 3.11.1 Affected Environment

The fish and wildlife habitats of the project area are defined by the Refuge and Lake Lowell. Lake Lowell is managed as part of the Refuge, which was established to provide sanctuary for migratory and wintering waterfowl and provide a mix of wildlife habitats from the open waters and wetland edges of Lake Lowell to the sagebrush uplands around the lake. The Refuge supports an average of about 100,000 ducks and 12,000 geese annually, with birds beginning to congregate in late summer and reaching peak numbers at the end of December (ducks) and end of November (geese) (USFWS 2008). Smartweed, found in the shallow fringes of the lake, is an important food source for migrating waterfowl in the fall and winter. Waterfowl also feed on crops that are grown on the Refuge east of the project area. Pheasants, deer, and other wildlife feed and nest in the agricultural fields. The Lake Lowell portion of the Refuge receives regular use by migrating shorebirds, waterfowl, fish-eating wading and diving birds, and a wide array of avian and mammalian predators.

The sport fishery at Lake Lowell consists primarily of largemouth bass, smallmouth bass, yellow perch, black crappie, bullhead, bluegill, and channel catfish (Idaho Department of Fish and Game 2001). Suckers and carp are also plentiful. Lake Lowell is regarded as one of the best largemouth bass fisheries in the state. The BASS Federation's Western Divisional Championship was held at the lake in May 2006.

Lake Lowell is an important area for nesting and wintering bald eagles. The lake has abundant prey (fish and waterfowl); there are suitable nesting and perching trees along the shoreline; and the area is relatively free of human disturbance for much of the year. Bald eagles are protected by the Bald and Golden Eagle Protection Act, which prohibits the taking, sale, purchase, possession, barter, or transport, or offer to do any of the above, to either the bald or golden eagle.

Two bald eagle nesting territories located along the south and southeast shorelines have been documented for several years. These territories have been relatively unsuccessful recently, with no young being produced from 2002 to 2004, and one produced in 2005 (Reclamation 2004; Sallabanks 2005 and 2006). The reasons for the poor success are unknown. A new bald eagle nest was discovered in 2006 about one-half mile west of the Refuge headquarters (E. Johnson, Refuge Manager, pers. comm.). It is unknown whether this is a relocation of an existing nest or a third nesting territory.

Wintering bald eagles begin arriving at Lake Lowell in late October, averaging about 25 birds in recent years (E. Johnson Refuge manager pers. com.). The number of birds using Lake Lowell in the winter largely depends on ice conditions.

Taylor and Bechard (1991) studied habitat use by bald eagles during a previous safety of dams project at Lake Lowell in the winter of 1990-1991. They found wintering eagles roosting in the southeastern end

of the lake and east of the Lower Embankment prior to ice formation. Eagles perched in cottonwood trees and on mudflats in several concentrated areas around the reservoir. After ice forms on the lake, usually in December, eagle numbers decreased overall and the only area used heavily was the mudflats near the New York Canal inlet, nearly eight miles from the Lower Embankment area. After ice breakup in early spring, eagle distribution was similar to early winter.

Wintering eagles at Lake Lowell primarily prey on waterfowl with the remainder of their prey coming from fish (Taylor and Bechard 1991). Deteriorating water quality from agricultural return flows and other causes may also limit some kinds of fish in the lake. This can impair the lake's warm-water game fish populations, but other nongame species such as carp persist in high numbers. Taylor and Bechard (1991) observed resident adult and newly fledged eagles in August feeding mostly on carp and waterfowl.

Taylor and Bechard (1991) noted that construction activity associated with the previous safety of dams project had little effect on the distribution of wintering bald eagles. Bald eagles did not appear to avoid the construction site at the Upper Embankment nor did they move to less disturbed areas.

The cottonwood and willow forests around much of the lake provide valuable habitat for songbirds, and mudflats exposed during drawdown of the lake support numerous shorebirds, most of which are protected under the Migratory Bird Treaty Act (MBTA). The MBTA makes it unlawful to pursue, hunt, take, capture, kill, or sell protected migratory birds at any time, by any means, or in any manner. Federal Executive Order 13186 reiterates the MBTA and directs Federal agencies taking actions that are likely to have a measurable negative effect on migratory birds to undertake a number of actions in support of the MBTA.

The area immediately below the Lower Embankment is relatively bare and dominated by weedy annuals. Private lands northwest of the project are dominated by agriculture (see Figure 2-2). Common wildlife species such as Canada geese, pheasants and deer probably use the area. The canals below the dam might also provide limited benefit to common species such as raccoon and deer, but the canals and drains do not support fish. The canals are generally fast-flowing and have steep banks, characteristics that prevent many species from using them for resting or feeding.

### **3.11.2 Environmental Consequences**

#### **3.11.2.1 Alternative A: No Action**

Alternative A would not affect the habitats of fish and wildlife species. Existing, ongoing disturbance to wildlife associated with regional development and the road across the dam and associated traffic would continue.

#### **3.11.2.2 Alternative B: Close Dam Crest/Reroute Traffic on Existing County Roads**

With the closing of the section of Riverside Road that crosses the embankment, traffic is expected to primarily use Malt Road as the north-south connection between Karcher Road to areas south of Lake Lowell. The increased traffic on Malt Road could result in increased wildlife-vehicle collisions. The number of strikes could be off-set to some extent by the closing of the section of Riverside Road on the Lower Embankment, which could result in a reduction in wildlife-vehicle collisions for this section of road.

Alternative B would move vehicles away from the shoreline area, which would reduce noise and motion disruptions to wildlife in the Refuge near the Lower Embankment.

Alternative B would require construction of a new segment of road to connect Malt Road to Riverside Road (see Figure 3-2). This segment passes through an agricultural field that is routinely plowed, and crops are irrigated and harvested. Thus, direct effects such as disturbance of ground-nesting birds protected by the MBTA and disruption of migration patterns would be minimal since this ground is routinely disturbed by agricultural activities.

Closure of the road across the dam would not affect the existing Lake Lowell fishery. Construction of improvements to Malt Road would not affect habitat used by nesting or wintering bald eagles.

**Mitigation.** No mitigation is proposed for Alternative B because it would not substantially affect any fish or wildlife resources.

### **3.11.2.3 Alternative C: Close Dam Crest/Relocate Riverside Road to Downstream Toe**

The area that would be disturbed by project construction does not currently support high-quality wildlife habitat, especially compared to other areas of the Refuge. Heavy-equipment operations and other construction activities could temporarily disturb and displace some resident species to surrounding locations.

Following construction, common wildlife species accessing the area would need to cross a new road, which could lead to increased mortality. However, because the species that would use the agricultural fields and canal are common to the area, minor increases in mortality would not be expected to affect overall wildlife populations in the project region.

Construction of a bridge structure across the Deer Flat Low Line Canal would not result in any long-term effects to common wildlife species that might use the canal.

Closure of the road across the dam would not affect the existing Lake Lowell fishery. Construction of a new road below the dam would not affect habitat used by nesting or wintering bald eagles.

**Mitigation.** No mitigation is proposed for Alternative C because it would not substantially affect any fish or wildlife resources.

### **3.11.2.4 Alternative D: Close Dam Crest/Construct Riverside Road 700 Feet Downstream from Toe**

The area that would be disturbed under Alternative D does not currently support high-quality habitat, so wildlife that use the area would probably resume regular migration patterns following completion of construction.

Common wildlife species accessing the area would need to cross a new road following construction, which could lead to increased mortality. Minor increases in mortality of locally-common species would not be expected to affect overall wildlife populations in the project region.

Construction of structures across Deer Flat Low Line Canal, Weeks Drain, and Lower Embankment Drain would not result in any long-term effects to common species that might use these water conveyance features. Reclamation would use BMPs to ensure that construction-related water quality impacts are avoided or minimized. The structures would all be sized to pass expected high flows.

Closure of the road across the dam would not affect the existing fishery of Lake Lowell. Construction of a new road below the dam would not affect habitat used by nesting or wintering bald eagles.

**Mitigation.** No mitigation is proposed Alternative D because it would not substantially affect any fish or wildlife resources.

### **3.11.2.5 Alternative E: Widen Downstream Crest**

Alternative E would require widening of the dam crest by depositing fill material on the downstream (downslope) side of the dam.

The downstream slope of the dam does not support high-quality habitat. The area has little vegetation since fill material that supports the dam is maintained free of woody vegetation. Placement of fill material on this slope would not affect any high-quality vegetative habitat. Placement of fill on the upstream side of the dam is minimal and not expected to impact the lake of the shoreline. Reconstruction of the road across the crest of the dam would not affect the Lake Lowell fishery or habitat used by nesting or wintering bald eagles.

**Mitigation.** No mitigation is proposed for Alternative E because it would not substantially affect any fish or wildlife resources.

## **3.12 Threatened and Endangered Species**

### **3.12.1 Affected Environment**

According to the USFWS, Canyon County supports two species listed as threatened or endangered under the Endangered Species Act (ESA): the endangered Snake River physa snail (*Physa* [Physa] *natricina*) and the threatened slickspot peppergrass (*Lepidium papilliferum*) (USFWS 2009a). The USFWS recently listed the slickspot peppergrass as “threatened” October 2009 (U.S. Fed. Reg., 2009). The USFWS does not currently identify any candidate species in Canyon County (USFWS 2009a). Proposed species are candidate species that were found to warrant listing as either threatened or endangered and were officially proposed as such in a Federal Register Notice after completion of a status review and consideration of other protective conservation measures.

Snake River physa snail is a freshwater mollusk found in the middle Snake River of southern Idaho. The USFWS has identified a recovery area for the snail on the Snake River between Snake River mile 553 and Snake River mile 675 (USFWS 2009b). The snail is not known to inhabit any tributaries of the Snake River (Taylor 2003).

Slickspot peppergrass is a herbaceous annual or biennial plant that occurs in sagebrush steppe habitats in southwestern Idaho, including the Canyon County area. The plant is 4 to 12 inches high, with many tiny, white flowers that resemble the garden flower sweet alyssum. It typically grows in “slickspots,” which are small areas (microsites) within larger sagebrush habitat. There is no habitat for this species within the project area.

### **3.12.2 Environmental Consequences**

Because the project would not affect the Snake River, it would not affect the Snake River physa snail or its habitat, and no suitable habitat for slickspot peppergrass is found within the footprint of, or adjacent

to, the action alternatives. Thus, none of the alternatives would affect Snake River physa snail or slickspot peppergrass.

**Mitigation.** No mitigation is proposed because none of the alternatives would affect the Snake River physa snail or slickspot peppergrass.

### **3.13 Wetlands and Other Waters of the United States, Riparian Areas, and Floodplains**

#### **3.13.1 Affected Environment**

Parts of the Lake Lowell shoreline support wetland habitats that are managed by the USFWS as part of the Refuge. While Reclamation's responsibility is primarily irrigation management, the lake shoreline provides high-quality wetland habitat. No formal delineation is available for wetlands around Lake Lowell, but most of the shoreline area is comprised of palustrine forested and palustrine emergent wetlands.

The lake starts to fill in March and floods the emergent zone that typically extends into the riparian zone. The water level typically peaks around the beginning of May and then declines as irrigation demand increases through the growing season, reaching its low point in late August. In low-water years, the water level is below the emergent zone and mudflats are exposed. If water is still available for release from the New York Canal upstream in the fall, the lake level may rise, thus re-flooding all or part of the emergent zone.

The exposed mudflats provide habitat for moist-soil plants, including smartweed, which germinates during late summer. There are about 1,200 acres of emergent plants when the lake is low. Small areas of emergent vegetation (primarily bulrush) are also scattered throughout this shallow zone. Emergent plants are a valuable food source for migrating waterfowl during fall and spring.

Some of the canals and drains in the project area flow to the Boise River and may be waters of the United States. The canals provide limited habitat because they are generally fast-flowing, have steep sides, and are dry in the winter. The drains, which are primarily used for irrigation tailwater, and for accepting subsurface tile discharges, flow slower and year-round. Drains might support riparian vegetation and are probably used by wildlife more than the canals.

Riparian forests around Lake Lowell are comprised primarily of cottonwood and willows. The Refuge manages about 1,200 acres of palustrine forest on the Lake Lowell sector, including areas along the lakeshore on the north and south sides of the Lower Embankment. Invasive species within the palustrine forests include Russian olive, salt cedar, and indigo bush.

If the selected alternative appears to support wetlands or other waters of the United States, Reclamation will complete a formal wetland delineation of the project impact area prior to construction. A windshield site inspection and review of aerial photographs (see Figure 3-9) reveals that there are wetlands and riparian areas located on the upstream side of the left abutment. This area appears to support forested and emergent wetlands. The action alternatives do not encroach into this area, but fill could be placed nearby. BMPs that would normally be applied as described in the SWPPP, such as silt fences to prevent material from entering the wetlands, would protect the area from accidental discharges of fill material.

There are also emergent wetlands along the banks of the Lower Embankment Drain and in a few areas along the Deer Flat Low Line Canal and the Deer Flat North Canal.

There are no mapped floodplains in the project area.

### **3.13.2 Environmental Consequences**

#### **3.13.2.1 Alternative A: No Action**

Alternative A would not affect any wetlands, riparian areas, or floodplains.

#### **3.13.2.2 Alternative B: Close Dam Crest/Reroute Traffic on Existing County Roads**

Alternative B would require construction of a new segment of road between Lakeshore Drive and Malt Road, which is not expected to impact any wetlands or riparian habitat. Potential improvements to local roads such as stripping, signage, and widening are not expected to affect wetland or riparian habitat since construction would be confined to existing disturbed areas within the existing right-of-way. The new intersection of Malt Road and Riverside Drive would be designed to avoid the wetland and riparian areas on the upstream side of the left embankment. BMPs implemented as part of the NPDES SWPPP would prevent material from entering the wetlands and prevent direct impacts to the riparian area during construction.

Alternative B would not result in any floodplain impacts because there are no mapped or regulated floodplains in the project area.

**Mitigation.** No mitigation is proposed for Alternative B because it would not affect wetlands, other waters of the United States, riparian areas, or floodplains.





**3.13.2.3 Alternative C: Close Dam Crest/Relocate Riverside Road to Downstream Toe**

Alternative C would require construction of a new road at the toe of the dam, which does not support any wetlands or riparian areas.

The new roadway would pass near the wetlands and riparian vegetation located on the upstream side of the left embankment. BMPs implemented as part of the NPDES SWPPP would be installed during construction.

Alternative C would not result in any floodplain impacts because there are no mapped or regulated floodplains in the project area.

Alternative C would not directly affect wetlands, other waters of the United States, riparian areas, or floodplains. Construction activity would occur near an area that supports wetland and riparian vegetation.

**Mitigation.** The riparian and wetland area on the upstream side of the left embankment would be protected from accidental encroachment during construction. The construction contractor would install high-visibility, temporary fencing outside the drip line of the riparian canopy and ensure that no equipment encroaches into the protected area. If any part of the protected area is disturbed during construction, the contractor would restore the disturbed areas following the completion of construction.

**3.13.2.4 Alternative D: Close Dam Crest/Construct Riverside Road 700 Feet Downstream from Toe**

Alternative D would require construction of a new road 700 feet downstream of the toe. The new roadway would pass over or be adjacent to Deer Flat North Canal, Lower Embankment Drain, Weeks Drain, and Deer Flat Low Line Canal. A windshield survey of the alignment reveals some potential impacts to wetlands along the two drains, but impacts are estimated to be less than 0.2 acres of emergent wetlands since these areas are highly disturbed by livestock and irrigation activities.

Alternative D would not result in any floodplain impacts because there are no mapped or regulated floodplains in the project area.

**Mitigation.** Prior to construction, Reclamation would complete a wetland delineation of the project impact area. If wetlands or other waters subject to regulation under the Clean Water Act are present in the area and could be affected by construction, Reclamation would ensure that wetland impacts are avoided and minimized to the extent practicable; mitigate for any unavoidable impacts; and ensure that the discharge of fill material to any regulated wetlands complies with Section 404 of the Clean Water Act.

**3.13.2.5 Alternative E: Widen Downstream Crest**

Work associated with Alternative E would not affect any areas that support or appear to support wetlands and other waters of the United States. Fill used to widen the crest would not be placed in the area on the upstream side of the left embankment that supports wetlands and riparian areas, so construction activity would not affect these resources.

Alternative E would not result in any floodplain impacts because there are no mapped or regulated floodplains in the project area.

**Mitigation.** No mitigation is proposed for Alternative E because it would not affect wetlands, other waters of the United States, riparian areas, or floodplains.

## 3.14 Terrestrial Vegetation and Noxious Weeds

### 3.14.1 Affected Environment

Vegetation surrounding Lake Lowell within the Refuge ranges from mature native cottonwood/willow forests, emergent wetlands and smartweed beds around the lake fringes to sagebrush steppe on the higher dry sites. Non-wetland vegetation in the immediate project area is dominated by agricultural crops and disturbed areas. About 190 acres are irrigated on the Refuge under a cooperative farming agreement to raise alfalfa, corn, peas, beets, and wheat as a food source for geese in the fall and winter. None of these irrigated areas are located within the project area.

According to USFWS, Refuge upland habitats are plagued with a variety of noxious weeds and invasive species, including but not limited to cheatgrass, Canada thistle, Scotch thistle, rush skeletonweed, perennial pepperweed, hoary cress, and puncturevine. The Refuge works closely with the Canyon County Weed Control Board to address noxious weeds, using hand removal and herbicides to help control these species in the vicinity of Lake Lowell.

Invasive species in the riparian habitat include Russian olive, false indigo bush, and salt cedar. The USFWS has removed some Russian olive in the refuge.

### 3.14.2 Environmental Consequences

#### 3.14.2.1 *Alternative A: No Action*

Alternative A would not affect terrestrial vegetation.

#### 3.14.2.2 *Alternative B: Close Dam Crest/Reroute Traffic on Existing County Roads*

Alternative B would require construction of a new segment of road connecting Malt Road to Riverside Road and minor improvements to other local roads. The area through which the new road segment would be built is used for agriculture, so the vegetation that would be disturbed consists of planted crops. Construction would require removal (conversion) of this agricultural crop vegetation. This type of vegetation is common in the region and does not provide high-quality habitat for local wildlife species.

Minor amounts of weedy species are probably present in the work area, but weed control associated with the agricultural production has probably limited the spread of noxious weeds. However, special care would need to be exercised to ensure that construction activity would not introduce new noxious weeds or cause the spread of noxious weeds that might already be present in the project footprint. BMPs would need to be applied during construction to prevent weedy species from spreading through the work area during and following construction.

**Mitigation.** The construction contractor would apply appropriate BMPs to ensure that the work area is not subject to the introduction of new noxious weed sources and that it is managed to prevent the spread of noxious weeds already occurring in the area. Areas disturbed during construction would be revegetated. Erosion-control materials used would be weed-free and applied to disturbed areas that could easily be colonized by noxious weed species. Noxious weeds are species identified in Idaho's Noxious Weeds (Callihan and others 1999) and/or in USFWS Refuge management documents.

### **3.14.2.3 Alternative C: Close Dam Crest/Relocate Riverside Road to Downstream Toe and Alternative D: Dam Crest/Construct Riverside Road 700 Feet Downstream from Toe**

Alternatives C and D would result in construction of a realigned Riverside Road at the toe of the dam across both developed and undeveloped areas. Construction of either of these alternatives would result in loss of vegetation common to disturbed areas and planted vegetation associated with landscaping. Weedy species are present in the undeveloped area. None of the terrestrial vegetation in the area provides high-quality habitat.

BMPs would be applied during construction to prevent weedy species from spreading through the work area during and following construction.

**Mitigation.** The construction contractor would apply appropriate BMPs to ensure that the work area is not subject to the introduction of new noxious weed sources and that it is managed to prevent the spread of noxious weeds already occurring in the area. Areas disturbed during construction would be revegetated. Erosion-control materials used would be weed-free and applied to disturbed areas that could easily be colonized by noxious weed species.

### **3.14.2.4 Alternative E: Widen Downstream Crest**

Alternative E would require depositing fill on the downstream slope of the dam. This downslope area of the dam does not support significant amounts of vegetation, so impacts on native terrestrial vegetation would be minimal. There are some noxious weeds on the downslope area. BMPs would be implemented during construction to prevent weeds from spreading through the work area during and following construction.

**Mitigation.** The construction contractor would apply appropriate BMPs to ensure that the work area is not subject to the introduction of new noxious weed sources and that it is managed to prevent the spread of noxious weeds already occurring in the area. Areas disturbed during construction would be revegetated. Erosion control materials used would be weed-free and applied to disturbed areas that could easily be colonized by noxious weed species.

## **3.15 Cumulative and Indirect Impacts**

NEPA regulations define cumulative impacts as impacts that result from “the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such actions”.

No present or reasonably foreseeable future actions at Lake Lowell, the Refuge, or on private land would have additive or interactive impacts on the environmental resources affected by the proposed action. Residential development is occurring north of the lake around existing urban areas and may affect noise, transportation, and even wildlife that use that part of the Refuge along the northern lakeshore and maybe even the lake. Furthermore, Canyon County has received interest in potential residential development west of the Lower Embankment, but no development application, zoning changes, or re-platting has occurred. Because the scope, timing, and details of development and severity of impacts are unknown and unquantifiable, it cannot be concluded that cumulative impacts associated with development of this area are reasonably foreseeable.

The SOD modification at Deer Flat Dams in 1990 and 1991 resulted in extensive modification to the Lower Embankment and resulted in an adverse effect to a property listed on the NRHP. Mitigation

measures were developed and agreed to through a memorandum of agreement (MOA) with the SHPO and Advisory Council on Historic Preservation. The proposed action could likewise have an adverse effect on certain components of the Lower Embankment and diminish its historic integrity. However, mitigation measures developed in consultation with the SHPO, and formalized in an MOA, would be implemented to avoid impacts to the extent feasible, and rebuild and replace historic features using distinctive characteristics of the original structure.

The conversion of farmland is a national concern. The Deer Flat Dam Lower Embankment Security Enhancement Project could result in the conversion of farmland (up to 27 acres, depending on the alternative selected). While this conversion is not likely to result in local adverse effects, it would contribute to the overall loss of farmland being experienced nationwide. In recent years Idaho's rate of farmland conversion has been among the lowest in the nation. However, in Idaho, Canyon County has been one of the areas experiencing the most conversion (Natural Resources Conservation Service 2001).

**Table 3-2  
Summary of Impacts by Alternative**

Subject	B: Close Dam Crest and Reroute Traffic on Existing County Roads	C: Close Dam Crest and Relocate Riverside Road to Downstream Toe	D: Close Dam Crest and Construct Riverside Road 700 Feet Downstream from Toe	E: Widen Downstream Crest
<b>Transportation and Access</b>				
IMPACTS	<ol style="list-style-type: none"> <li>Increase of about 2,700 vehicles per day on Malt Road.</li> <li>Requires construction of a new intersection at Malt Road and Riverside Road.</li> </ol>	<ol style="list-style-type: none"> <li>Would affect access to the BOC yard, a Reclamation maintenance road, and one residence.</li> <li>Would affect the intersection of Riverside Road and Hoadley Road.</li> </ol>	Would affect access to the BOC yard, a Reclamation maintenance road, and one residence.	Temporary closure of Riverside Road across embankment during construction.
MITIGATION	Reclamation would work with Canyon County Highway District No. 4 to construct a new intersection connecting Malt Road to Riverside Road to improve traffic flow to and from Malt Road.	Reclamation would ensure that the final design accommodates access to the BOC yard, an existing Reclamation maintenance road, a residence east of the Deer Flat Low Line Canal, and Hoadley Road. If feasible, during final design Reclamation would consolidate access points to reduce the number of accesses along the re-aligned roadway.	Reclamation would ensure that the final design accommodates access to the BOC yard, an existing Reclamation maintenance road, and a residence east of the Deer Flat Low Line Canal. If feasible, during final design Reclamation would consolidate access points to reduce the number of accesses along the new roadway.	None proposed.
<b>Socioeconomics</b>				
IMPACTS	<ol style="list-style-type: none"> <li>Reroute would add a total of about 6,000 minutes, or 100 hours per day, to local travel times, costing about \$520 to \$1,040 per day.</li> <li>Decrease in drive-by traffic would affect commercial businesses on Riverside Road (fueling station and convenience store).</li> <li>Traffic increase on Malt Road could affect property values along Malt Road.</li> <li>Traffic increase would affect quality of life of residents living along the road.</li> <li>Traffic decrease on Riverside Road could result in beneficial effects to residences along that segment of road.</li> <li>Annual agricultural production loss of about \$1,900.</li> <li>Temporary construction-related impacts related to traffic disruption, noise, and dust.</li> <li>Provides opportunities for local jobs and the purchase of construction materials from local vendors associated with \$2 million estimated construction cost.</li> </ol>	<ol style="list-style-type: none"> <li>Removal and relocation/reconstruction of buildings in the BOC yard, resulting in fiscal impacts.</li> <li>Temporary construction-related impacts related to traffic disruption, noise, and dust.</li> <li>Provides opportunities for local jobs and the purchase of construction materials from local vendors associated with the estimated \$15.5 to 16.5 million construction cost.</li> </ol>	<ol style="list-style-type: none"> <li>Annual agricultural production loss of about \$21,600.</li> <li>Temporary construction-related impacts related to traffic disruption, noise, and dust</li> <li>Provides opportunities for local jobs and the purchase of construction materials from local vendors associated with the estimated \$11.5 million construction cost.</li> </ol>	<ol style="list-style-type: none"> <li>Temporary construction-related impacts related to traffic disruption, noise, and dust.</li> <li>Provides opportunities for local jobs and the purchase of construction materials from local vendors associated with the estimated \$8.4 million construction cost.</li> </ol>
MITIGATION	The acquisition of land for right-of-way for Alternative B would be conducted in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1978, as amended.	None proposed.	The acquisition of land for right-of-way for Alternative D would be conducted in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1978, as amended.	None proposed.

**Table 3-2  
Summary of Impacts by Alternative**

Subject	B: Close Dam Crest and Reroute Traffic on Existing County Roads	C: Close Dam Crest and Relocate Riverside Road to Downstream Toe	D: Close Dam Crest and Construct Riverside Road 700 Feet Downstream from Toe	E: Widen Downstream Crest
<b>Health and Safety</b>				
IMPACTS	<ol style="list-style-type: none"> <li>Increase security of dam and safety of people living below the dam.</li> <li>Residences along Malt Road might experience adverse changes to local air quality, an increase in ambient noise levels, and traffic conflicts.</li> <li>Residences along Riverside Road might experience improvements in air quality, a lowering of ambient noise, and a reduction in traffic conflicts.</li> <li>General local travel inconveniences associated with having to travel the new route.</li> <li>Improvements in the function of the Malt Road and Riverside Road intersection would improve emergency response time.</li> <li>Potential delays for emergency response services.</li> </ol>	Increase security of dam and safety of people living below the dam.	Same as described for Alternative C.	Same as described for Alternative C.
MITIGATION	<ol style="list-style-type: none"> <li>Reclamation would work with Canyon County Highway District No. 4 to install signs warning travelers about the closure of Riverside Road over the Lower Embankment on roads that have historically been used to access the dam. The signs would include information about alternate routes.</li> <li>Reclamation would encourage Canyon County Highway District No. 4 to identify places where pullouts can be widened or constructed to enhance access to private driveways along Malt Road.</li> <li>Reclamation would encourage Canyon County Highway District No. 4 to install signs encouraging truck drivers to refrain from using engine brakes on Malt Road.</li> </ol>	None proposed.	None proposed.	None proposed.
<b>Land Use</b>				
IMPACTS	Conversion of about 3.2 acres of agricultural land, but would not affect regional agricultural production.	Conversion of a portion of the BOC yard, but would not affect continued use of the property.	<ol style="list-style-type: none"> <li>Conversion of about 27 acres of agricultural land, but would not affect regional agricultural production.</li> <li>Conversion of undeveloped land between the new road and toe of dam.</li> </ol>	Same as described for Alternative C.
MITIGATION	None proposed.	None proposed.	None proposed.	None proposed.
<b>Cultural Resources</b>				
IMPACTS	Closing the section of Riverside Road across the dam crest could potentially have an adverse effect on the Lower Embankment, a historic property.	<ol style="list-style-type: none"> <li>Closing the section of Riverside Road across the dam crest could potentially have an adverse effect on the Lower Embankment, a historic property.</li> <li>Construction could directly affect the Deer Flat Low Line Canal, four to five historic structures in the BOC yard, and potentially the North Deer Flat Canal.</li> </ol>	<ol style="list-style-type: none"> <li>Closing the section of Riverside Road across the dam crest could potentially have an adverse effect on the Lower Embankment, a historic property.</li> <li>Construction could directly affect the Deer Flat Low Line Canal, Weeks Drain, Lower Embankment Drain, and potentially the North Deer Flat Canal.</li> </ol>	Construction could directly affect three historic structures in the BOC yard.

**Table 3-2  
Summary of Impacts by Alternative**

Subject	<b>B: Close Dam Crest and Reroute Traffic on Existing County Roads</b>	<b>C: Close Dam Crest and Relocate Riverside Road to Downstream Toe</b>	<b>D: Close Dam Crest and Construct Riverside Road 700 Feet Downstream from Toe</b>	<b>E: Widen Downstream Crest</b>
<b>Cultural Resources</b>				
MITIGATION	Reclamation would complete a comprehensive cultural resources inventory of the area of potential effect to determine how the project would affect historic properties, including the Lower Embankment. An adverse effect on the Lower Embankment (an NRHP-listed structure) or on any NRHP-eligible property in the area of potential effect would require mitigation that would be determined through consultation with the SHPO pursuant to Section 106 of the National Historic Preservation Act (NHPA). The Advisory Council on Historic Preservation would be invited to participate in the Section 106 consultation.	Reclamation would complete a comprehensive cultural resources inventory of the area of potential effect to determine how the project would affect historic properties, including the Lower Embankment, Deer Flat Low Line Canal, historic structures in the BOC yard, and the North Deer Flat Canal. An adverse effect on the Lower Embankment (a NRHP-listed structure) or on any NRHP-eligible property in the area of potential effect would require mitigation that would be determined through consultation with the SHPO pursuant to Section 106 of the NHPA. The Advisory Council on Historic Preservation would be invited to participate in the Section 106 consultation.	Reclamation would complete a comprehensive cultural resources inventory of the area of potential effect to determine how the project would affect historic properties, including the Lower Embankment, Deer Flat Low Line Canal, Weeks Drain, Lower Embankment Drain, and the Deer Flat North Canal. An adverse effect on the Lower Embankment (a NRHP-listed structure) or on any NRHP-eligible property in the area of potential effect would require mitigation that would be determined through consultation with the SHPO pursuant to Section 106 of the NHPA. The Advisory Council on Historic Preservation would be invited to participate in the Section 106 consultation.	Reclamation would complete a comprehensive cultural resources inventory of the area of potential effect to determine how the project would affect historic properties, including the BOC yard structures. An adverse effect on any NRHP-eligible property in the area of potential effect would require mitigation that would be determined through consultation with the SHPO pursuant to Section 106 of the NHPA. The Advisory Council on Historic Preservation would be invited to participate in the Section 106 consultation.
<b>Recreation</b>				
IMPACTS	Would close the dam crest to vehicular traffic (pedestrians and bicyclists would still be able to access the dam).	Same as described for Alternative B.	Same as described for Alternative B.	Would allow the dam crest to remain open to all visitors.
MITIGATION	None proposed.	None proposed.	None proposed.	None proposed.
<b>Visual Resources</b>				
IMPACTS	Visitors in motor vehicles would not be able to access the dam for panoramic views of the area, but would still be able to access by foot and would still be able to access other viewpoints around the lake.	Visitors in motor vehicles would not be able to access the dam for panoramic views of the area, but would still be able to access by foot and would still be able to access other viewpoints around the lake.	<ol style="list-style-type: none"> <li>1. Visitors in motor vehicles would not be able to access the dam for panoramic views of the area, but would still be able to access by foot and would still be able to access other viewpoints around the lake.</li> <li>2. New road would introduce minor modifications to the characteristic landscape.</li> </ol>	None identified; visitors would maintain full access to all view points.
MITIGATION	None proposed.	None proposed.	None proposed.	None proposed.
<b>Water Quality</b>				
IMPACTS	None identified; construction would not affect Lake Lowell and would be completed in accordance with NPDES requirements.	Same as described for Alternative B.	Same as described for Alternative B.	Same as described for Alternative B.
MITIGATION	None proposed.	None proposed.	None proposed.	None proposed.
<b>Environmental Justice</b>				
IMPACTS	None identified; there are no environmental justice populations in the project area.	Same as described for Alternative B.	Same as described for Alternative B.	Same as described for Alternative B.
MITIGATION	None proposed.	None proposed.	None proposed.	None proposed.
<b>Indian Trust Assets</b>				
IMPACTS	Would not affect hunting and fishing in the area and would not affect any tribal rights to hunt and fish that might exist.	Same as described for Alternative B.	Same as described for Alternative B.	Same as described for Alternative B.
MITIGATION	None proposed.	None proposed.	None proposed.	None proposed.

**Table 3-2  
Summary of Impacts by Alternative**

Subject	B: Close Dam Crest and Reroute Traffic on Existing County Roads	C: Close Dam Crest and Relocate Riverside Road to Downstream Toe	D: Close Dam Crest and Construct Riverside Road 700 Feet Downstream from Toe	E: Widen Downstream Crest
<b>Fish and Wildlife</b>				
IMPACTS	<ol style="list-style-type: none"> <li>Potential for increased vehicle-wildlife collisions on Malt Road but decreased potential on Riverside Road.</li> <li>Would move vehicles far away from Deer Flat National Wildlife Refuge, which would reduce noise and motion disruptions to wildlife.</li> <li>Disturbance of agricultural land, but that land does not provide high-quality habitat.</li> </ol>	<ol style="list-style-type: none"> <li>Would disturb area below the dam, but this land does not provide high-quality habitat.</li> <li>Would cross over Deer Flat Low Line Canal, but this section of the canal, does not provide habitat for aquatic species.</li> <li>Potential for increased mortality due to wildlife having to cross a new road.</li> </ol>	<ol style="list-style-type: none"> <li>Would disturb area below the dam, but this land does not provide high-quality habitat.</li> <li>Potential for increased mortality due to wildlife having to cross a new road.</li> <li>Would cross over Deer Flat Low Line Canal, Weeks Drain, and Lower Embankment Drains, but these canals do not provide habitat for aquatic species.</li> </ol>	Would disturb area below the dam, but this land does not provide high-quality habitat.
MITIGATION	None proposed	None proposed.	None proposed.	None proposed.
<b>Threatened and Endangered Species</b>				
IMPACTS	Would not affect any species listed under the ESA, proposed for listing, or candidate species.	Same as described for Alternative B.	Same as described for Alternative B.	Same as described for Alternative B.
MITIGATION	None proposed.	None proposed.	None proposed.	None proposed.
<b>Wetlands and Other Waters of the United States, Riparian Areas, and Floodplains</b>				
IMPACTS	None identified; no wetlands or other waters of the U.S., riparian areas, or floodplains in the project area.	New roadway would pass near the wetlands and riparian vegetation located on the upstream side of the left embankment.	New roadway would cross over an area that could support wetlands along the Weeks Drain and Lower Embankment Drain.	Same as described for Alternative B.
MITIGATION	None proposed.	The riparian and wetland area on the upstream of the left embankment would be protected from accidental encroachment during construction. The construction contractor would install high-visibility, temporary fencing outside the drip line of the riparian canopy and ensure that no equipment encroaches into the protected area. If any part of the protected area is disturbed during construction, the contractor would restore the disturbed areas following the completion of construction.	Prior to construction, Reclamation would complete a wetland delineation of the project impact area. If wetlands or other waters subject to regulation under the Clean Water Act are present in the area and could be affected by construction, Reclamation would ensure that wetland impacts are avoided and minimized to the extent practicable; mitigate for any unavoidable impacts; and ensure that the discharge of fill material to any regulated wetlands complies with Section 404 of the Clean Water Act.	None proposed.
<b>Terrestrial Vegetation and Noxious Weeds</b>				
IMPACTS	<ol style="list-style-type: none"> <li>Would disturb agricultural vegetation.</li> <li>Potential to spread noxious weeds in work area.</li> </ol>	<ol style="list-style-type: none"> <li>Would disturb locally-common, non-native and native vegetation along the toe of the dam.</li> <li>Potential to spread noxious weeds in work area.</li> </ol>	Same as described for Alternative C.	Potential to spread noxious weeds in work area.
MITIGATION	The construction contractor would apply appropriate BMPs to ensure that the work area is not subject to the introduction of new noxious weed sources and that it is managed to prevent the spread of noxious weeds already occurring in the area. Areas disturbed during construction would be revegetated. Erosion-control materials used would be weed-free and applied to disturbed areas that could easily be colonized by noxious weed species. Noxious weeds are species identified in Idaho's Noxious Weeds (Callihan and others 1999) and/or in USFWS Refuge management documents.	Same as described for Alternative B.	Same as described for Alternative B.	Same as described for Alternative B.
<b>Construction Cost</b>				
	\$2 million.	\$15.5 to \$16.5 million.	\$11.5 million, plus land acquisition.	\$8.4 million.

# Chapter 4 – Consultation and Coordination

## 4.1 Summary of Public and Agency Involvement

### 4.1.1 News Briefs

Reclamation first announced its proposal to implement security measures at Deer Flat Lower Embankment through a news release on July 16, 2008. The announcement stated that Deer Flat Lower Embankment would be closed to traffic once an alternate access has been provided. It also stated that there would be an opportunity for public involvement in the upcoming NEPA process.

From late July until mid September 2008 several news articles and opinion pieces appeared in the local newspaper, mostly in opposition to any closure of Riverside Road over the Deer Flat Lower Embankment. Reclamation also provided an information piece in the newspaper to clarify the proposed security enhancements. A project status update was posted on Reclamation's website and mailed to the distribution list on October 9, 2009.

### 4.1.2 Public Meetings/Workshops

Reclamation hosted a public open house on September 25, 2008 to provide information on the proposal to restrict access at the Deer Flat Lower Embankment, potential alternatives, and how the public would be involved in the NEPA process. The open house was attended by over 150 people. Although the intent of the open house was to provide information to the public, and no individual comments were recorded, those attending were overwhelmingly opposed to closing access across the crest of the dam.

### 4.1.3 Scoping Document

Reclamation mailed a Scoping Document to more than 1,300 potentially affected agencies, Tribes, organizations, and individuals on October 21, 2008, requesting written comments on the proposed security enhancement project. The Scoping Document was also posted on Reclamation's website. The public comment period was open for 30 days, and comments were accepted via mail or email. Reclamation received a total of 42 written comments; six from agencies or local governments and 36 from individuals.

## 4.2 Agency Consultation and Coordination

A series of meetings were held between Reclamation and Federal, state and local government officials on July 16, 2008, to present and discuss the proposed security enhancement measures.

Prior to the open house on September 25, 2008, Reclamation received a letter from Idaho State Senators John McGee and Patti Anne Lodge urging Reclamation to reconsider the proposal to close the dam to traffic and explore other alternatives to improve security.

Reclamation received a September 9, 2008 letter from U.S. Senator Larry Craig urging Reclamation to make the public aware of its plans and allow significant public input.

U.S. Representative Bill Sali and state legislators representing the area convened a public meeting on October 7, 2008, where the project was discussed and stakeholders voiced their concerns. Reclamation was not invited to the meeting and did not attend, however Reclamation and Senator Sali met to discuss

the project. Representative Sali conveyed his and his constituents' concerns in an October 28, 2008 letter to Reclamation.

Reclamation held a second agency meeting at the Snake River Area Office on July 7, 2009. A third agency meeting was conducted on December 9, 2009 at the Snake River Area Office.

### **4.3 Tribal Consultation and Coordination**

Reclamation presented the status of the project to the Shoshone Bannock Tribal Council during the annual update meetings in 2008 and 2009 and to the Tribal Council for Shoshone-Paiute from Duck Valley in 2008. The Tribes have provided no written or oral comment thus far.

### **4.4 Distribution List**

A copy of this draft EA was mailed to the following agencies, tribes, organizations and individuals:

#### **4.4.1 Federal Agencies and Elected Officials**

USFWS Deer Flat National Wildlife Refuge  
USFWS Snake River Fish and Wildlife Office  
USFWS Refuge Planning  
U.S. EPA Idaho Operations Office  
U.S. Army Corps of Engineers, Boise Regulatory Office  
BIA Fort Hall Agency  
BIA Eastern Nevada Agency  
BIA Northern Idaho Agency  
U.S. Senator Mike Crapo  
U.S. Senator Jim Risch  
U.S. Representative Walt Minnick  
U.S. Representative Mike Simpson

#### **4.4.2 State and Local Agencies and Officials**

Idaho Department of Fish and Game  
Idaho Department of Environmental Quality  
Idaho Department of Water Resources  
Idaho State Historic Preservation Office  
Governor, State of Idaho  
Idaho State Police  
Mayor, City of Caldwell  
Mayor, City of Nampa  
Canyon County Commissioners  
Canyon County Highway District No. 4  
Canyon County Sheriff's Office  
Caldwell Rural Fire Protection District  
State Senator John McGee  
State Senator Patti Ann Lodge

**4.4.3 Tribes**

Shoshone Bannock Tribes  
 Shoshone Paiute Tribes  
 Nez Perce Tribe

**4.4.4 Organizations**

Boise Project Board of Control  
 New York Irrigation District  
 Boise-Kuna Irrigation District  
 Nampa & Meridian Irrigation District  
 Wilder Irrigation District  
 Big Bend Irrigation District  
 Idaho Conservation League  
 Idaho Rivers United  
 Idaho Wildlife Federation  
 Trout Unlimited  
 Golden Eagle Audubon Society  
 Idaho BASS Federation  
 City of Caldwell Chamber of Commerce

**4.4.5 Individuals and Businesses**

Kathy Abel	Raymond Coon	LaDonna Gibbens	Kelly N. Perkin
Donna Abraham	Sandra Coon	Scott Gipson	Herb Prandl
Rick Abraham	Robert W. Crawford	Anita Harkrader	Morgan Reche'
Rosetta A. Anderson	Joyce Cuddeback	Chris Helfrich	Dave Reche'
Steven Anderson	Russ Cuddeback	Vanessa Helfrich	J. R. Rickman
Kenneth Archer	Dan Daniels	Pat Hoffer	Marty Schraer
Lily Archer	Lori Daniels	Milton C. Holcomb	Harry Schumachers
Albert P. Barker	Robert Davenport	Jim Holcomb	Mary Jo Schumachers
Jennifer Barrus	Anna Davis	Melvin A. Huter	Patrick Sevy
Nancy Baxter	John Davis	John C. Ineck	John Stattner
Jane Baxter	Simone DePonte	Betty Peters Jain	Thelma Stattner
Tom Baxter	Michael E. Devenport	Nathan Kangas	David Stattner
Barry Bean	Devin Dice	Ron Kinney	Dan Stevens
Karen Bean	Richard Dines	Chip Kinzler	Max Takasugi
Rene' Bine III	Dana Dorsey	Kelly Knee	Michiko Takasugi
Kenneth C. Birch	Tom Dorsey	Pat Knee	Gary Taylor
Nancy Bloxham	Kristie Dorsey	Glenn Koch	Julie Taylor
Robert Bloxham	Michael Everman	Bob Littler	Robert Troxel
Joy Boehmer	Brad Farner	Marge Littler	Brian Voortman
Darrell Bolz	Mary Finch	Richard Locket	Norman Webb
Ardel C. Bowen	Jim Frans	Jack Mayer McClaskey	Rob Willis
Dorran Bronstad	John Frerichs	Debbie McCune	William Young
Betty Bryant	Kaye Frerichs	Kathy McIntyre	Harald Zipprich
Dan Buck	Lisa Gabiola-Weitz	Dave Mills	Pastimes Antiques
John Campbell	Tony Gabiola-Weitz	Sheila Mills	Bown Floor Supply
Elaine Carpenter	Bill Gibbens	Brent Moylan	Lake Lowell Market



# Chapter 5 – References and Glossary

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## Glossary

**Acquired lands.** Lands that the Bureau of Reclamation has acquired by purchase, donation, exchange, or condemnation.

**Affected environment.** Existing biological, physical, social and economic conditions of an area subject to change, both directly and indirectly, as the result of a proposed human action. Also, the portion of an environmental document describing current environmental conditions.

**Alternative.** A proposition or situation offering a choice between two or more proposals, only one of which may be chosen; an opportunity for deciding between two or more courses or propositions.

**Archaeological site.** A discrete location that provides physical evidence of past human use.

**Archaeology.** The study of human cultures through the recovery and analysis of their material relics.

**Baseline.** The set of starting conditions from which changes and impacts are quantified.

**Best Management Practices (BMPs).** Activities that are added to typical operation, construction, or maintenance efforts that help protect environmental resources by avoiding or minimizing impacts of an action.

**Cultural resources.** Archaeological, historical, architectural, and traditional properties that reflect our heritage.

**Dewater.** To remove water from an area.

**Dominant species.** A plant species that exerts a controlling influence on or defines the character of the plant community.

**Endangered species.** Any species of plant or animal that is in danger of extinction throughout all or a significant portion of its range. Plant or animal species identified by the Secretary of the Interior as endangered in accordance with the 1973 Endangered Species Act.

**Federal lands.** Lands, or interests in lands (such as easements and rights-of-way), owned by the United States.

**Geographic Information System (GIS).** A system of computer hardware, software and data for collecting, storing, analyzing and disseminating information about areas of the earth. From this, GIS can display attributes such as roadway networks and analyze results electronically in a map form.

**Habitat.** Area where a plant or animal finds suitable living conditions.

**Indian sacred sites.** Defined in Executive Order 13007 as “any specific, discrete, narrowly delineated location on Federal land that is identified by an Indian tribe, or Indian individual determined to be an appropriately authoritative representative of an Indian religion, as sacred by virtue of its established religious significance to, or ceremonial use by, an Indian religion; provided that the tribe or appropriately authoritative representative of an Indian religion has informed the agency of the existence of such a site.”

**Indian Trust Assets (ITAs).** Legal interests in property held in trust by the United States for Indian tribes or individuals, such as lands, minerals, hunting and fishing rights, and water rights.

**Land use.** The way the land is used in terms of the types of activities allowed (e.g., agriculture, residences, industry) and the size of buildings and structures permitted. Certain types of pollution are often associated with particular land uses, such as sedimentation from construction or farming activities.

**Mitigation measures.** Action taken to avoid, reduce severity of, or eliminate an adverse impact. Mitigation can include one or more of the following: (1) avoiding impacts; (2) minimizing impacts by limiting the degree or magnitude of an action; (3) rectifying impacts by restoration, rehabilitation, or repair of the affected environment; (4) reducing or eliminating impacts over time; and (5) compensating for an unavoidable impact by replacing or providing substitute resources or environments to offset the loss.

**Monitor.** Systematically and repeatedly measure conditions to track changes.

**National Register of Historic Places (National Register).** A Federally maintained register of districts, sites, buildings, structures, and properties that meet the criteria of significance defined in 36 CFR 63.

**No Action Alternative.** The outcome expected from a continuation of current management practices.

**Noxious weeds.** A plant species that is undesirable, conflicts, restricts, or otherwise causes problems with intended land use goals and objectives.

**Preferred Alternative.** The primary alternative considered by Reclamation for implementation following analysis in the Environmental Assessment. This analysis, along with public input, could alter management actions described in the Preferred Alternative. If this occurs, any changes would be documented in the Final Environmental Assessment.

**Project purposes.** Lands are withdrawn and acquired for authorized purposes of the specific Reclamation project. These can include irrigation, flood control, recreation, and fish and wildlife.

**Proposed Action.** The proposal or proposed project by the sponsoring agent or proponent.

**Public involvement.** The systematic provision for affected publics to be informed about and participate in Reclamation decision-making. It centers around effective, open exchange and communication among the partners, agencies, organizations, and all the various affected public lands.

**Reclamation.** Returning disturbed land to a form and productivity that will be ecologically balanced and in conformity with a predetermined goal and land use objective.

**Reclamation Project Lands.** Federal lands or interests in lands under the jurisdiction of the Bureau of Reclamation. Includes withdrawn lands, acquired lands, and 1890 Act reserved rights-of-way that have been exercised.

*Note:* Reclamation Project Lands **are not** the same as public lands. Reclamation Project Lands were initially withdrawn, acquired, or exercised for specific project purposes, and are governed by different Federal land management laws and regulations than public lands. Public uses of Reclamation Project Lands can be suspended as necessary to protect project facilities, and Reclamation Project Lands are not open to off-road vehicles unless specifically opened for that use.

**Riparian area.** The area adjacent to flowing water (e.g., rivers, perennial or intermittent streams, seeps, or springs) that contains elements of both aquatic and terrestrial ecosystems, which mutually influence each other.

**Riprap.** Large, durable materials (usually fractured rocks; sometimes broken concrete, etc.) used to protect a stream bank or lake shore from erosion; also refers to the materials used for this purpose.

**Scoping.** Process established to incorporate public input regarding proposed activities disclosed in a NEPA document.

**Threatened species.** Any species that has the potential of becoming endangered in the near future and is listed as a threatened species under the Endangered Species Act.

**Upland.** Any area that does not qualify as a wetland because the associated hydrologic regime is not sufficiently wet to elicit development of vegetation, soils, and/or hydrologic characteristics associated with wetlands. Such areas occurring within floodplains are more appropriately termed non-wetlands.

**Water table.** The upper surface of groundwater or the level below which the soil is saturated with water. It is at least 6 inches deep and persists in the soil for more than a few weeks.

**Wetlands.** Lands transitional between aquatic and terrestrial systems where the water table is usually at or near the land surface or the land is covered by shallow water. Often called marshes or wet meadows.

**Wildlife Management Area.** A category of land use. An area of Bureau of Reclamation-owned land that is managed for wildlife habitat and preservation. The goal is to ensure that wildlife values are preserved as recreation use, residential use, and commercial development increases near recreation sites.



## Chapter 6 – List of Preparers

Name	Background	Responsibility
<b>Bureau of Reclamation</b>		
Steve Dunn	NEPA Specialist	NEPA Manager, Senior Review
Jerry Gregg	Agricultural Engineer	Manager Snake River Area Office
Ray Leicht	Archaeologist	Cultural Resources
John Tiedemann	Biological Sciences	Activity Manager
Lisa Wuttke, PE	Senior Engineer	Contracting Officer's Representative
<b>HDR Engineering, Inc.</b>		
Heather Carroll, PE	Civil Engineer	Transportation, Access
Ben Floyd	Geography	Public Involvement
Jed Glavin	Planner	Chapter 1- Purpose and Need, Author
Diane Holloran	GIS Specialist	GIS Mapping and Figures
Sue Lee	Planner	Chapter 3 – Affected Environment and Environmental Consequences, Author
Mike Murray, PhD	Soil Scientist	Review, Coordination and Soils
Bob Waldher	Landscape Designer	Revisions to Chapter 1 and 2
Christine Whittaker, RLA	Landscape Architect	EA Project Manager, Chapter 2 – Description of Alternatives, Author
<b>Honey Creek Resources</b>		
George Oamek	Economist	Socio-economics
<b>Menzel Higgins Communications</b>		
Tom Menzel	Journalist, Technical Writer	Technical Writing and Editor
<b>Sagebrush Consultants</b>		
Michael Polk	Archaeologist	Cultural Resources



# Appendix A – Scoping Report

Scoping is defined as *an early and open process for determining the scope of issues to be addressed and for identifying the significant issues related to a proposed action*. The purpose of scoping is to obtain information that helps identify significant issues, affected publics, affected geographical area, alternatives, and constraints in the NEPA process.

## Public Notification and Open House

Reclamation first announced its proposal to implement security measures at Deer Flat Lower Embankment, Anderson Ranch Dam, and Palisades Dam through a news release on July 16, 2008. The announcement stated that Deer Flat Lower Embankment would be closed to traffic once alternate access has been provided. It also stated that there would be an opportunity for public involvement in the upcoming NEPA processes for each facility. That same day a series of meetings were held between Reclamation and Federal, state and local government officials to present and discuss the proposed security enhancement measures.

From late July until mid September there were several news articles and opinion pieces in the local newspaper mostly in opposition to any closure of Riverside Road over the Deer Flat Lower Embankment. Reclamation also provided an information piece in the newspaper providing clarification of the proposed security enhancements.

Reclamation hosted a public open house on September 25, 2008 to provide information on the proposal to restrict access at the Deer Flat Lower Embankment, potential alternatives, and a how the public would be involved in the NEPA process. The open house was attended by over 150 people. Although the intent of the open house was to provide information to the public, and no individual comments were recorded; those attending were overwhelmingly opposed to closing access across the crest of the dam.

A petition with over 1,200 signatures of citizens to be included on the mailing list was delivered to Reclamation in early September. Signatures were collected at a convenience store located on Riverside Road approximately 1 mile north of the dam. Many of the citizens that signed the petition provided brief comments, and these were consistent with comments expressed informally at the open house and during the later written comment period. All citizens that provided valid mailing addresses on the petition were added to the mailing list.

## Involvement of Elected Officials

Prior to the open house, Reclamation received a letter from Idaho State Senators John McGee and Patti Anne Lodge urging Reclamation to reconsider the proposal to close the dam to traffic and explore other alternatives to improve security. Their primary concerns were:

- costs of any new or alternate roads to taxpayers
- emergency response time
- recreational access to Lake Lowell.

Reclamation received a September 9, 2008 letter from Senator Larry Craig urging Reclamation to make the public aware of its plans and allow significant public input.

Idaho Senator Bill Sali and state legislators representing the area convened a public meeting on October 7, 2008 where the project was discussed and stakeholders voiced their concerns. Reclamation was not invited to the meeting and did not attend, however Reclamation and Senator Sali met to discuss the project, and Senator Sali conveyed his and his constituents' concerns in an October 28, 2008 letter to Reclamation.

The issues and concerns expressed by Senator Sali were:

- The threat to the dam is overstated, but the potential loss of life must be given serious consideration.
- Favors an alternative to modify the dam to continue to allow traffic across the crest.
- Closing access would greatly increase travel time and cause safety problems on alternate roads.
- Economic effects to businesses and travelers must be considered.

## **Public Comment Period**

On October 21, 2008 Reclamation mailed a Scoping Document to more than 1,300 potentially affected agencies, Tribes, organizations, and individuals requesting written comments on the proposed security enhancement project. The Scoping Document was also posted on Reclamation's website. The public comment period was open for 30 days, and comments were accepted via mail or email.

Reclamation received a total of 42 written comments; six from agencies or local governments and 36 from individuals. The issues and concerns expressed in each letter or email were summarized and issues that were similar were combined.