BUREAU OF RECLAMATION

Boise River Basin Feasibility Study

# Specialist Report:

# Recreation

**Boise Project, Idaho**

**Interior Region 9: Columbia Pacific Northwest**

**U.S. Department of the Interior** May 2020

# Mission Statements

The Department of the Interior (DOI) conserves and manages the Nation's natural resources and cultural heritage for the benefit and enjoyment of the American people, provides scientific and other information about natural resources and natural hazards to address societal challenges and create opportunities for the American people, and honors the Nation's trust responsibilities or special commitments to American Indians, Alaska Natives, and affiliated island communities to help them prosper.

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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# 1. Introduction

The Boise River Basin Feasibility Study is a feasibility study to evaluate increasing water storage opportunities within the Boise River basin by expanding Anderson Ranch Reservoir. The project is located at Anderson Ranch dam and reservoir, the farthest upstream of the three reservoirs within the Boise River system and located 28 miles northeast of the city of Mountain Home in Elmore County, Idaho. Anderson Ranch Dam is a zoned earth fill embankment structure that provides irrigation water, flood control, power generation, and recreation benefits. The reservoir also provides a permanent dead storage pool for silt control and the preservation and propagation of fish and wildlife. Anderson Ranch Dam is operated by the Bureau of Reclamation (Reclamation). Reclamation, in partnership with the Idaho Water Resource Board (IWRB), proposes to raise Anderson Ranch Dam. New water storage would provide the flexibility to capture additional water when available, for later delivery when and where it is needed to meet existing and future demands. The alternatives analyzed in this document include the No-Action Alternative (Alternative A), a 6-foot raise of Anderson Ranch Dam (Alternative B), and a 3-foot raise of Anderson Ranch Dam (Alternative C).

Alternative A provides a basis for comparison with the two action alternatives, Alternative B and Alternative C. Under Alternative A, current baseline conditions would continue, without increasing Anderson Ranch Dam height or constructing associated reservoir rim projects, access roads, or facilities. The expected project duration of Alternative B is approximately 51 months and Alternative C is 44 months. Reclamation would continue existing operations of Anderson Ranch Dam. Alternative B proposes to raise the dam by 6 feet from the present elevation of 4196 feet to 4202 feet to capture and store approximately 29,000 additional acre-feet of water. Alternative B would inundate an estimated 146 acres of additional land around the reservoir above the current full pool elevation of 4196 feet. Alternative C proposes to raise the dam by 3 feet to 4199 feet, allowing for the ability to capture and store approximately 14,400 additional acre-feet of water. Alternative C would inundate an estimated 73 acres of additional land around the reservoir above the current full pool elevation of 4196 feet.

Each of the two action alternatives, Alternative B and Alternative C, includes two separate, but similar, structural construction methods for the dam raise, downstream embankment raise, or mechanically stabilized earth wall raise. Otherwise, the only difference is the dam raise elevations of 6 feet for Alternative B and 3 feet for Alternatives C. Project areas and construction durations for each method are nearly identical, except for a 200-foot difference in approach road length at the right abutment and an approximate 1-month difference in construction duration. The longer road length is within the dam footprint on previously disturbed ground. Because these differences are negligible, they are not differentiated within the analysis of each alternative. Alternative analysis assumes the longer road length and

construction duration; however, a final construction method will be chosen during later phases of engineering evaluation.

Chapter 1 and Chapter 2 of the Boise River Basin Feasibility Study Environmental Impact Statement (EIS) provide a detailed description of the proposed action, project's purpose and need, project area, and alternatives including design features applicable to the action alternatives. This specialist report supports the analysis of expected impacts on recreation as described in the EIS.

## 1.1 Regulatory Framework

### 1.1.1 Federal

#### U.S.D.A. Forest Service

Activities on National Forest System lands are guided by land and resource management plans, or Forest Plans. Forest Plans describe management goals and objectives, standards and guidelines, resource protection methods, desired resource conditions, and the availability and suitability of lands for various types of resource uses. The original Boise National Forest (BNF) Forest Plan was prepared in 1990. In 2003, this Forest Plan was revised as a part of joint effort with the Payette and Sawtooth national forests. In 2010, BNF formally amended its Forest Plan to incorporate a large-scale wildlife conservation strategy and to update various items that had arisen since the 2003 revision. This compilation of direction, which includes components of the 2003 Forest Plan and the 2010 updates, constitutes the current BNF Forest Plan (BNF Forest Plan, 2010) and can be found on the BNF website.

Management actions in National Forests are required to conform to standards and direction provided in Forest Plans. With respect to recreation and the project area, the following Forest Plan direction is potentially relevant to the alternatives.

- Provide for public recreation use on the South Fork Boise River to maintain river-related recreation opportunities (Management Area 1 Objective 0141).
- Improve developed sites around Anderson Ranch Reservoir, emphasizing Curlew Campground and launch site, and paving the parking area at Elk Creek boat ramp to enhance recreation experiences and to reduce impacts on other resources (Management Area 1 Objective 0142).
- Provide toilet facilities along the South Fork Boise River below Anderson Ranch Dam to reduce resource impacts from dispersed recreation use (Management Area 1 Objective 0145).

At broader the level, the U.S. Forest Service (USFS) is required to comply with a large number of laws, regulations and policies and these can be found at the national website (USFS, 2020).

#### Bureau of Reclamation

The Federal lands surrounding the Anderson Ranch Reservoir area managed by Reclamation and the USFS under a Master Interagency Agreement (Master Agreement). The Master Agreement, dated April 6, 1987, covers Reclamation Authorized projects within or adjacent to Nation al Forest System (NFS) lands. Through the Master Agreement, USFS has management and administration jurisdiction of Federal lands with the exception of the Reclamation Zone, which is the area that Reclamation designates as necessary for the operation of the project (Figure 4 in the EIS). Reclamation controls and is responsible for water-release operations and maintenance of the dam and ancillary facilities. The Reclamation Manual contains agency standards and directives the agency uses to guide its activities (Reclamation, 2020).

### 1.1.2 State

#### Idaho Department of Parks and Recreation (IDPR)

Idaho Department of Parks and Recreation (IDPR) manages the registration programs for boats, snowmobiles, and other off-highway vehicles. Money from these registration programs develops and maintains trails, facilities, and programs. These funds also provide free education courses and administer several outdoor grant programs to help provide facilities and services for recreationists. In addition, IDPR has developed requirements under the Idaho Safe Boating Rules (Idaho Administrative Code 26.01.30) that govern the use of watercraft in the state and address registration, personal floatation devices, signage, and onboard safety equipment (IDPR, 2019).

### 1.1.3 Local

#### Elmore County

Use of and development on unincorporated land in Elmore County must comply with the Elmore County Amended Zoning and Development Ordinance (Elmore County, 2018). USFS special use authorizations require the holder to comply with applicable county legal requirements, such as building and health and safety codes. The Elmore County Comprehensive Plan outlines goals and objectives related to recreation (Elmore County, 2014). These include general support for: 1) water-based recreation, 2) developing both public and private recreation facilities, 3) improving recreation access, 4) constructing an off-roadway, multi-use pathway in various locations around Anderson Ranch Reservoir, and 5) establishing a recreation zone to facilitate recreation and tourism in communities around the reservoir.

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# 2. Affected Environment

For the purpose of this Recreation Specialist Report, the affected environment is focused on that which occurs in and around Anderson Ranch Reservoir and the South Fork Boise River. This report describes recreational activities and facilities at Anderson Ranch Reservoir and the South Fork Boise River between the dam and the pool of Arrowrock Reservoir.

## Anderson Ranch Reservoir

The reservoir is popular year-round for fishing, however, most of the recreational use occurs from Memorial Day (last weekend of May) through Labor Day (first weekend of September) as the warmer/dryer weather encourages overnight camping. There are seven developed campgrounds along the reservoir rim (Figure 1). Nester's Private Campground is privately owned and operated, and the Fall Creek Resort and Marina is authorized by the USFS through a Special Use Permit. General access to recreational facilities at the reservoir is described in the Transportation and Infrastructure Specialist Report (Appendix B of the EIS).

**Table 1. Developed campgrounds and amenities at Anderson Ranch Reservoir**

| Campground (Figure 1) | No. of Sites | Potable Water | Toilet | Comments |
|---|---|---|---|---|
| Curlew Creek Campground | 9 | Yes | Vault | Has a well with hand pump for water. 18-day use parking spaces for vehicles and trailers are also located here. Concrete boat ramp access. USFS provided trash bins. |
| Pine Campground | 7 | No | Vault | Ramadas are provided for shade at each campsite. Concrete boat ramp access. USFS provided trash bins. |
| Evans Creek Campground | 8 | No | Vault | Unmaintained dirt boat launch access. |
| Castle Creek Campground | 2 | No | No | Sites are located on a small bench and accessed by a short, steep road. Unmaintained dirt boat launch access. |
| Spillway Campground | 3 | No | Vault | |
| Nester's Private Campground and Pine Resort RV Park | 34 | Yes | Yes | 13 sites at Nester's Private Campground. Lower elevation sites are at Nester's Campground. |
| Fall Creek Resort and Marina Campground | 45 | Yes | Yes | Most sites have hook-ups. 12 are tent sites. Nearby concrete boat ramp access. |

All developed campsites are focused near the full pool surface water elevation of 4196 feet. Maximum pool for any given year is typically achieved in the spring, between March and April, with drawdowns to satisfy downstream water obligations beginning in May. When full pool is achieved, on average it is maintained for 14 days. As the water depletes over the summer months, the shoreline surface area greatly increases along the reservoir rim. The increase in shoreline invites dispersed camping activities in the exposed undeveloped areas around the rim, more heavily concentrated near Curlew Campground and upstream toward the Pine Bridge (Figure 1). In addition to RV camping, the undeveloped shoreline areas are popular for recreational all-terrain and utility vehicles.

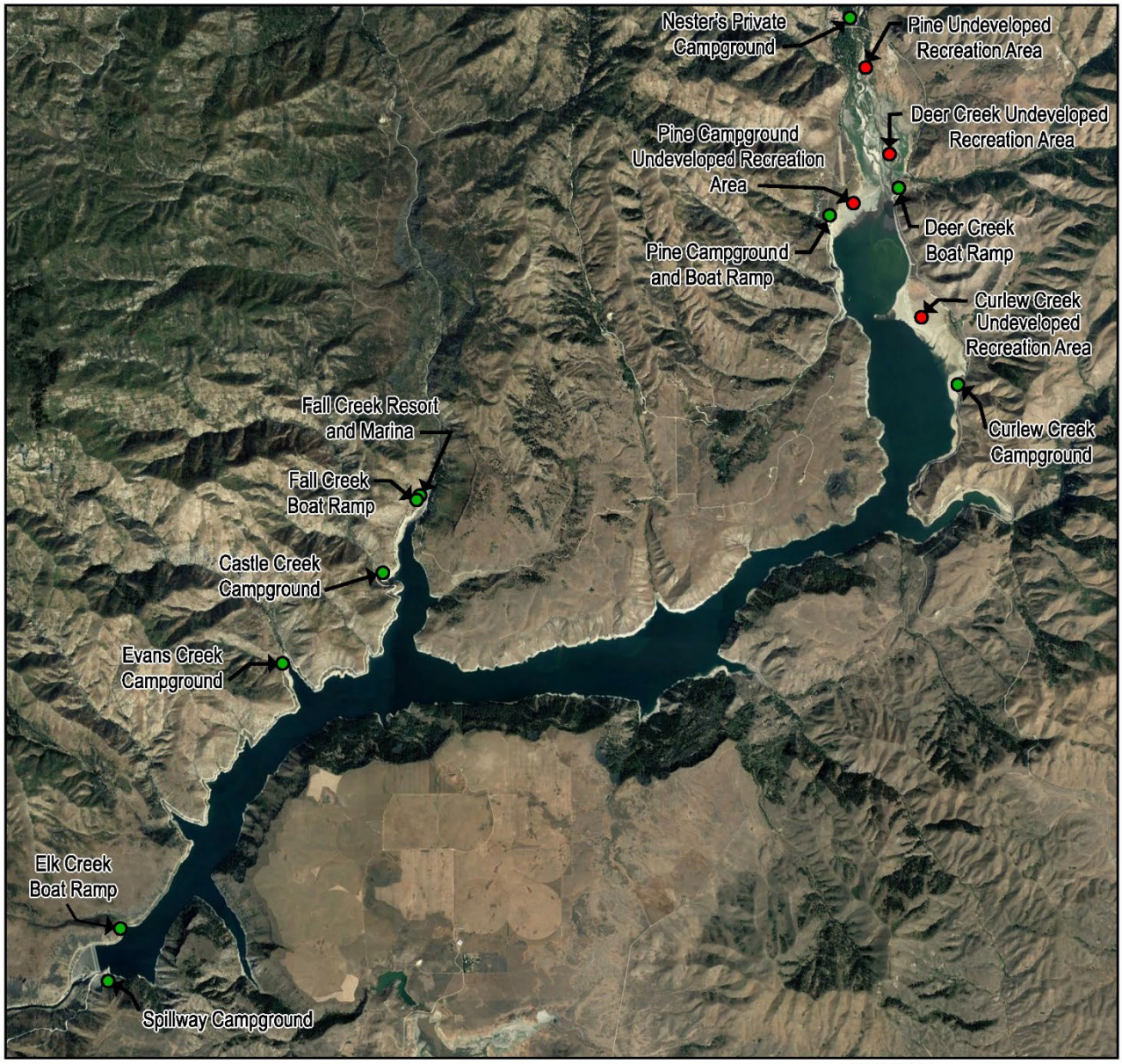
The four main undeveloped recreational areas are identified on Figure 2 in the Recreation Specialist Report (Appendix B), depicting areas where dispersed camping activity occurs along the reservoir. These areas become increasingly exposed, providing hundreds of acres for group camping recreation as the reservoir is drafted throughout the summer months.

Fishing from watercraft is popular year-round on the water's surface. Summer watersports, including pleasure boats and jet skis, are also popular. Access for watercraft is provided by five public boat ramps. All boat ramps are concrete, four of the five are accompanied by a floating dock and vary in length and elevation.

Under current operations, the median baseline low water elevation is 4130 feet. An elevation of 4039.5 feet is the lowest surface water elevation that can occur under current operational restrictions and if reached would either be due to extremely low carryover from the previous year or an extremely large water year in the current year that required FRM drafting. The baseline median surface water elevation of 4130 feet. maintains Curlew Creek and Elk Creek boat ramps for year-round reservoir access in most years. The reservoir reached elevations below 4130 feet. in 4 of the last 20 years with 4067 feet. being the lowest in 2002.

**Table 2. Developed boat ramps at Anderson Ranch Reservoir**

| Boat Ramp Name | Total Ramp Length (feet) | End of Ramp Elevation (feet) | Dock Length (feet) |
|---|---|---|---|
| Deer Creek Boat Ramp | 480 | 4159 | No dock |
| Pine Campground Boat Ramp | 364 | 4151 | 352 |
| Fall Creek Boat Ramp | 187 | 4133 | 160 |
| Curlew Creek Boat Ramp | 503 | 4103 | 256 |
| Elk Creek Boat Ramp | 510 | 4078 | 160 |



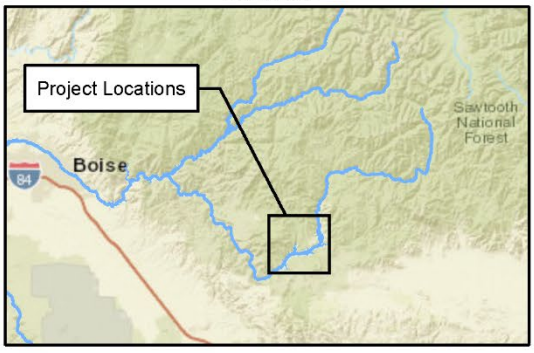

**LEGEND**

- Recreation Facilities
- Dispersed Recreation Areas

N

0 1.0 Miles

VICINITY MAP




Notes:
1. This map is provided as-is and may contain representations of property boundaries. It is intended for general references only. None of the parties involved in preparing this map or data contained herein warrant or represent information to be complete and accurate and cannot be held responsible for errors or omissions.

**Figure 1: Recreation Facilities and Undeveloped Areas**
**Boise Project - Arrowrock Division**
Boise River Basin Feasibility Study

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The Elmore County Sheriff's Office estimated that on an average weekend an officer might conduct 25 to 40 boat inspections (Elmore County, 2019). Reclamation maintains the Hydromet website https://www.usbr.gov/pn/hydromet/ramps/anderson/anderson.html for recreationists to check daily reservoir levels and boat ramp accessibility as the surface water elevation fluctuates. Boat ramp lengths and elevations are described in Table 3.

### South Fork Boise River

The South Fork Boise River, known for its renowned Blue Ribbon trout fishery, is popular for shoreline fishing and, as conditions accommodate, wading and float boat fishing as well. The river is also popular for whitewater rafting, accessed by three formal boat launches: Tailwaters, Village, and Danskin. Vault toilets and a parking area are provided at each of these access points. Additional vault toilets are available at Indian Point and Cow Creek. Twelve undeveloped camping areas are identified along the approximate 11-mile stretch of river from the Tailwaters boat launch to the Danskin launch. From Danskin, it is approximately 18 river miles to the Neal Bridge takeout. This section of the river is commonly referred to as the Canyon Section because of narrow and steep 600-foot-high canyon cliffs. This section is popular for whitewater rafting with more than 10 class II and class III rapids identified. Four additional camping areas are identified within this section, accessed from the river by floaters. This area is not easily accessed by road and few formal roads exist. (Idaho Department of Fish and Game [IDFG], 2011a and IDFG, 2011b)

Access to the upstream portion of the river from the dam to the general area of Danskin Bridge is provided by Highway District (HD) Road 121 and includes a system of short road/trail spurs that typically reach the river and offer fishing and dispersed camping opportunities. Most of these roads/trails lack a gravel surface and drainage. In many areas these road/trails are only a few feet vertically above the river's high-water line. Past flood events have damaged these roads and facilities have been exposed to flood waters.

General access to South Fork Boise River amenities is described in the Transportation and Infrastructure Specialist Report (Appendix B of the EIS). Additional information regarding the fisheries of the South Fork Boise River and Anderson Ranch Reservoir are included in the Fish Specialist Report (Appendix B of the EIS). More information regarding water use authorizations and operating water levels is included in the Hydrology and Water Operations Specialist Report (Appendix B of the EIS).

### Hiking, ATV and Motorcycle Trails

Multiple popular hiking trails are accessed immediately adjacent to the roads surrounding the reservoir. All trails lead away from the reservoir, into the surrounding hills and mountains. One managed trailhead, Wilson Flats Trailhead, is identified on the USFS Motor Vehicle Use Map (MVUM) at the junction of Wilson Creek and HD road 120.

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# 3. Environmental Consequences

## 3.1 Methods for Evaluating Impacts

Issues for evaluation were identified based on-site visits, multiple discussions with USFS staff, and input from the public submitted during the scoping period. Additionally, Google Earth satellite imagery, LiDAR remote sensing data collected by Reclamation, and MVUMs were used for evaluation.

**Assumptions**

The following assumptions were considered to assess impacts to recreation.

- Regulatory framework for management of Recreational activities and facilities would remain constant.
- Reservoir operations would remain consistent within existing Flood Risk Management (FRM) operational scenarios and downstream minimum flow requirements would continue to be met.
- Dam raise and reservoir rim projects were evaluated based on data provided in the 6-foot Dam Raise Engineering Summary (Appendix C of the EIS) and 3-foot Dam Raise Engineering Summary Report (Appendix D of the EIS).

## 3.2 Significance Criteria

Potential short-term impacts were identified if construction activities would temporarily limit, disrupt, or displace recreation facilities or activities in the project area (Table 3). Long-term impacts were identified if project components and operational conditions could permanently limit, disrupt, or displace recreation facilities or activities. Adverse impacts were identified if changes would diminish public or private recreational use of or access to developed recreation sites and undeveloped recreation areas in the project area.

**Table 3. Recreation indicators and significance criteria**

| Impact Indicator | Significance Criteria |
|---|---|
| **REC 1** - Reduction in, or loss of access to, developed recreational facilities | Permanent loss of developed campsites and boat ramps not accommodated elsewhere at Anderson Ranch Reservoir or on the South Fork Boise River<br>Permanent loss of access to reservoir rim trailheads<br>Permanent loss of South Fork Boise River boat ramp access not accommodated with similar availability elsewhere<br>Temporary closure of South Fork Boise River boat ramp access during peak season, Memorial Day to Labor Day |
| **REC 2** - Reduction in recreational opportunity | Temporary reduction of recreational opportunity at developed campsites and boat ramps during peak season, Memorial Day to Labor Day<br>Temporary loss of recreational opportunity at developed campsites and boat ramps not accommodated with similar availability elsewhere<br>Increase in peak flows of South Fork Boise River permanently reducing recreational opportunity<br>Permanent loss of undeveloped areas used for dispersed recreation. |
| **REC 3** - Reduction in recreational experience | Increase of noise, dust and traffic levels during construction such that users avoid areas during peak season, Memorial Day to Labor Day<br>Increase in developed campsite or boat ramp recreational density |

## 3.3 Direct, Indirect and Cumulative Impacts

### 3.3.1 Alternative A – No Action

Under the No Action Alterative, Alternative A, Anderson Ranch Dam would not be modified to increase storage capacity. The recreational amenities and activities would remain consistent with current access, opportunities and experience on and around the reservoir and South Fork Boise River due to the existing current operations remaining consistent. Access to recreational amenities and activities would not be disrupted, and public access would remain consistent with current availability. As the Treasure Valley population continues to grow, increasing demands on Anderson Ranch Reservoir and South Fork Boise River recreational facilities would continue to put stress on the capacity of the reservoir and downstream fishery. Opportunity and experience are likely to continue to degrade as the developed facilities and undeveloped areas see an increase in demand and the higher use increases facility wear-and-tear.

### 3.3.2 Alternative B – Anderson Ranch Dam Six-foot Raise

Recreation facility projects included in Alternative B are described for each developed campground and boat ramp. Projects affecting general access to recreation activities and facilities within the project area are further described in the 6-foot Dam Raise Engineering Summary (Appendix) and in the Transportation and Infrastructure Specialist Report (Appendix B).

#### Curlew Creek Campground and Boat Ramp

The Curlew Creek Campground includes nine existing campsites, eight of which would be impacted raising the level of Anderson Ranch Reservoir. A day-use picnic site would also be impacted. Two campsites would be abandoned and relocated on site to areas outside of the new reservoir inundation extents. Fill material would be imported to raise the elevation of the other six campsites and one day-use site. The imported fill material would be designed to resist wave erosion from the reservoir pool. Existing picnic tables and fire rings would be removed, and new infrastructure would be installed at the new campsite locations. Approximately 60 trees more than 6 inches in diameter would be removed to facilitate placing the fill material needed to increase the elevation of campsites. The removed trees would be replaced with 60 2-inch caliper trees planted to provide shade at the modified sites.

The existing boat dock infrastructure would be reset to accommodate the new pool elevation, and two additional 16-foot dock sections would be required to maintain the current overall length of the dock. Signage at the existing boat dock would also be relocated. A new concrete dock abutment/access ramp would be installed at the top of the ramp.

The existing road loop at the boat ramp would be abandoned (approximately 2,000 square feet), and a new road and boat ramp would be constructed to align with the proposed extension of the boat dock.

The campground includes a drinking water well that would be relocated to maintain a minimum 50 feet of separation from surface water as required by the Idaho Department of Environmental Quality. The existing vault toilet would not be impacted.

#### Castle Creek Campground

The two existing campsites at Castle Creek would both be impacted by raising the level of the Anderson Ranch Reservoir. The campground would be abandoned, and the two campsites would be relocated to the Pine Campground. Existing picnic tables, fire rings, and other appurtenances would be removed. No earthwork is required at the Castle Creek Campground site and the unmaintained dirt boat ramp would continue to be accessible to recreationists. Two new campsites would be added to the Pine Campground before construction begins at this site.

#### Pine Campground and Boat Ramp

The seven existing campsites at Pine Campground would be impacted by the pool elevation increase. One campsite would be relocated and would require limited site grading. Imported

fill material would be required to raise the elevation of the other six campsite locations. The fill material would be designed to resist wave erosion from the reservoir pool. Additionally, two new campsites would be created to replace the abandoned campsites at Castle Creek Campground. Existing picnic tables, fire rings, and other campsite appurtenances would be removed, and new in-kind infrastructure would be installed at the nine new campsite locations. Picnic shelters similar to what is available at the existing sites would also be installed at each of the new campsites.

The existing boat dock infrastructure would be adjusted to accommodate the new full pool elevation, and four additional 16-foot dock sections would be required to maintain the current in-water useable length. The boat ramp would also be extended, requiring placing approximately 1,600 square feet of concrete. A new concrete dock abutment/access ramp would be installed at the top of the adjusted dock. The existing vault toilet would not be impacted. Per the requirements set forth in USFS Handbook 2309.13 Chapter 10, the additional campground capacity due to the two new campsites relocated from the Castle Creek Campground requires installing a second vault toilet at the campground. The new vault toilet would be located to provide convenient facility access to the new campsites.

### Evans Creek Campground

Six of the eight campsites at Evans Creek would be impacted by the pool elevation increase. Imported fill material would be required to raise the elevation of the impacted campsites. The fill material would be designed to resist wave erosion from the reservoir pool. Additionally, an existing seasonal stream channel passing through the campground would be retained. The adjacent campsites and imported fill material would be protected from erosion during runoff events with rock riprap as necessary. Existing picnic tables, fire rings, and other campsite appurtenances would be removed, and new infrastructure would be installed at the new campsite locations. Approximately 25 trees more than 6 inches in diameter would be removed to allow placing the fill material needed to increase the elevation of campsites. To compensate for the loss of shade resulting from the tree removal, picnic shelters would be installed at each of the six new campsites. The removed trees would also be replaced with 25 2-inch caliper trees. The existing vault toilet, access roads, and compacted dirt boat ramp are not expected to be impacted.

### Spillway Campground

The Spillway Campground would be closed for the duration of the project, approximately 51 months. The proposed road closures for construction described in the Transportation and Infrastructure Specialist Report (Appendix B of the EIS) would temporarily eliminate access to this site. Additionally, it would be used as a staging area for the contractor. Post-construction, the access and site would be restored, and the three campsites would remain in their existing condition.

### Fall Creek Boat Ramp

The Fall Creek Boat Ramp is located on Federal land managed by USFS under the Master Agreement. The Federally owned Fall Creek Boat Ramp is identified as being impacted by the proposed increase in surface water elevation of Anderson Ranch Reservoir.

The existing boat ramp would be abandoned, and the existing concrete dock abutment/access ramp would be demolished. A proposed 250-foot long concrete boat ramp would be installed and re-oriented to better work with the higher reservoir pool elevation. Rock riprap would be placed along the ramp perimeter for scour protection. The existing floating dock would be removed from its current location and re-anchored to the new concrete ramp with four additional 16-foot sections. A new concrete dock abutment/access ramp would be installed.

Fill material would be required to raise the elevation of the parking area around the boat ramp and the ramp approach. An information sign and life jacket loaner station would be replaced at the new boat ramp location. The existing vault toilet at the boat ramp would not be impacted.

### Elk Creek Boat Ramp

The identified construction haul routes proposed to use the Elk Creek Boat Ramp parking lot for a truck turnaround. Minor regrading of the parking lot would be required to accommodate the truck traffic. For public safety, the Elk Creek Boat Ramp would be closed for the duration of construction, approximately 51 months.

During year one of construction, the Elk Creek Boat Ramp would be extended to maintain ramp usability at the increased full pool elevation. This would require placing approximately 16 cubic yards of concrete and imported fill material. The fill material would be designed to resist wave erosion from the reservoir pool. The location of a number of existing boulders on the eastern side of the ramp would be adjusted to accommodate the ramp extension. The existing boat dock would be realigned to work with the new boat ramp extension, a new concrete dock access ramp would be installed, and an existing bollard would be removed and replaced at the top of the ramp. Additionally, three new 16-foot sections of boat dock would be required to maintain the in-water useable length of the dock. The existing vault toilet would not be impacted.

### Deer Creek Boat Ramp

The concrete boat ramp at Deer Creek currently has an exposed length extending approximately 190 feet beyond the current full pool elevation of 4196 feet. With the pool elevation increase, the existing boat ramp would continue to extend 120 feet beyond the new full pool elevation (4202 feet) and 95 feet beyond the minimum 3-foot freeboard elevation of 4205 feet. This appears to maintain sufficient exposed length to ensure functionality of the boat ramp; therefore, no work is proposed at this site. The existing vault toilet and parking areas are also not expected to be impacted, and no earthwork is required at the site. Deer Creek Boat Ramp is not analyzed further in this specialist report.

### Nester's Private Campground

Nester's Private Campground is located upstream of the Pine Bridge and is privately owned and operated. The campground is within a Special Flood Hazard Area Zone AE (AE indicates areas at high risk for flooding) relative to potential South Fork Boise River flooding per Flood Insurance Rate Map #1602120325B for Elmore County, Idaho, effective June 19, 1989.

A hydraulic modeling effort was completed to analyze potential adverse flooding effects at the campground due to the increase in reservoir pool elevation. Further discussion of this modeling effort is provided in the Floodplains Specialist Report in Appendix B of the EIS and the 6-foot Dam Raise Summary in Appendix C of the EIS. The hydraulic model demonstrated that post-project flooding at the 50-year event leads to an increase in campground inundation of less than 1%, which is well within the margin of error for the modeling effort. Therefore, no improvements or modifications are required or proposed for the facilities at this campground. Nester's Private Campground is not analyzed further.

### Fall Creek Resort and Marina

Fall Creek Resort is located on Federal land managed by the U.S. Forest Service and authorized under a Special Use Permit.

Analysis of the proposed raise of Anderson Ranch Dam identifies an impact to five existing campsites at the outlet of Fall Creek, three campsites at the Fall Creek Boat Ramp, and the Fall Creek Marina as a result of the increased water surface elevation. These impacted buildings and appurtenances, along with other non-impacted buildings and appurtenances, are privately owned by the Fall Creek Resort and Marina permittee. Fall Creek Resort and Marina are depicted in Figure 12 in the 6-foot Dam Raise Engineering Summary (Appendix C).

Impacts of this proposed action to the non-Federal real property will be mitigated during project implementation, should the project be determined feasible and the Special Use Permit still be in effect. Potential mitigation activities may include:

Rebuild existing features to their existing condition

Relocate existing features to a suitable location

Compensation

The existing restroom located near the impacted campsites at the Fall Creek Boat Ramp would not be impacted. The Fall Creek Resort building across Anderson Dam Road from the reservoir will also not be impacted.

Impacts to Fall Creek Resort and Marina are not analyzed further in this report.

### Undeveloped Areas

Alternative B includes no improvements to undeveloped areas used for dispersed camping.

#### 3.3.2.1 Direct and Indirect Impacts

### REC 1 – Reduction in access to recreation facilities or activities.

During construction, minor adverse effects would be expected to recreation facilities and activities due to the construction schedule of the accompanying road and facility construction activities within the project area. Construction duration and timing is described in Table 4, summarized from the 6-foot Dam Raise Engineering Summary (Appendix C of the EIS). Analysis of general access to the project area and recreational facilities is included the Transportation and Infrastructure Specialist Report (Appendix B of the EIS). At Anderson Ranch Reservoir, multiple rim projects affecting access to roadways, campgrounds and boat ramps would be required to accommodate an increased full pool elevation. Elk Creek Boat Ramp and the Spillway Campground would be closed for the entire project duration of approximately 51 months. The temporary closure at the Elk Creek Boat Ramp is for public safety because heavy equipment and trucks would use the parking area as a turnaround. The road across the dam and HD 121would be closed for approximately 45 months, making the Elk Creek Boat Ramp the furthest and most difficult for recreationists to access during construction. The Spillway Campground would not be accessible for the duration of construction due to the road closures required for construction at the dam. Access to other boat ramps and camping sites around the reservoir would be available during construction.

All developed campground and boat ramp projects would be scheduled to avoid the peak season of Memorial Day through Labor Day, maintaining access to developed campsites and boat ramps as surface water levels allow. Single lane traffic would be open during construction of all roadway improvements, allowing continued to access to undeveloped areas as well. It would also be expected that the time it takes for the undeveloped areas to adequately dry, and higher water levels rescind, in order to be suitable for driving recreational vehicles on the ground surface would be extended, delaying access to undeveloped areas.

The cofferdam required during construction would restrict the maximum surface water level between 12 feet and 22 feet below the current surface water elevation of 4196 for approximately 42 months. Reclamation developed model results (Figure 2) indicated that the median draft, the lowest likely surface water elevation, would be approximately 4112 feet. This would allow the Curlew Creek boat ramp to remain open year-round during construction. Seasonal reservoir depletion during construction would be similar to existing conditions.

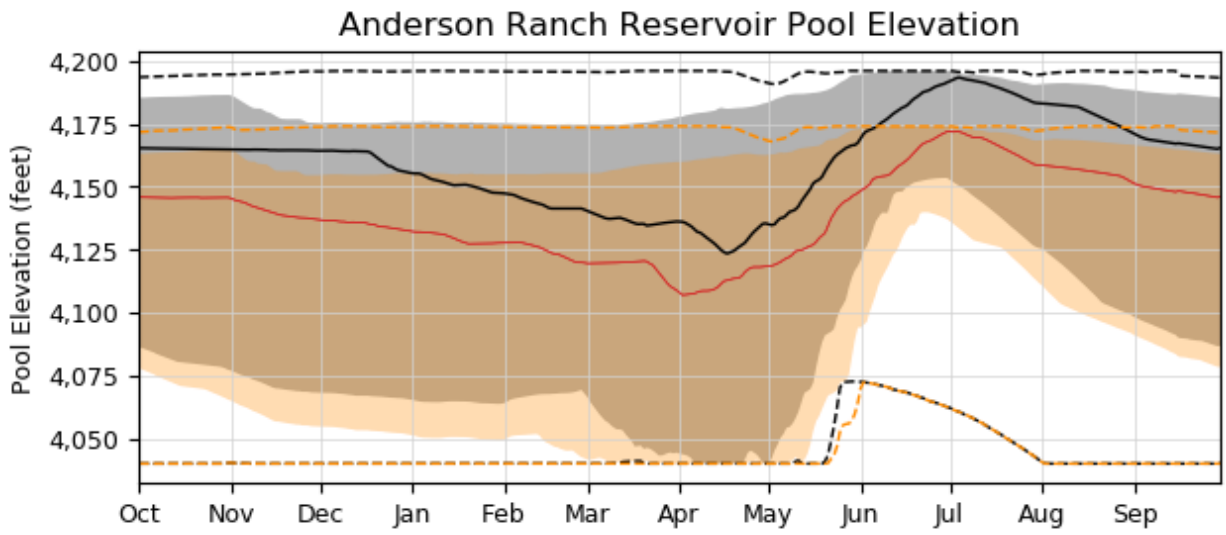



**Figure 2. Anderson Ranch Reservoir pool elevation plot depicting the daily median pool elevation range for the restriction (red line) and No-Action Alternative (black line). The shaded orange region and shaded gray region represent the 10th-percentile to 90th-percentile range while the dashed lines represent the maximum and minimum values captured by the restriction and the No-Action Alternative, respectively.**

No road closures are proposed along the South Fork Boise River; however, HD 121 is identified as a haul route during construction. Access to all facilities and activities along the South Fork Boise River would be accessible to the public during construction.

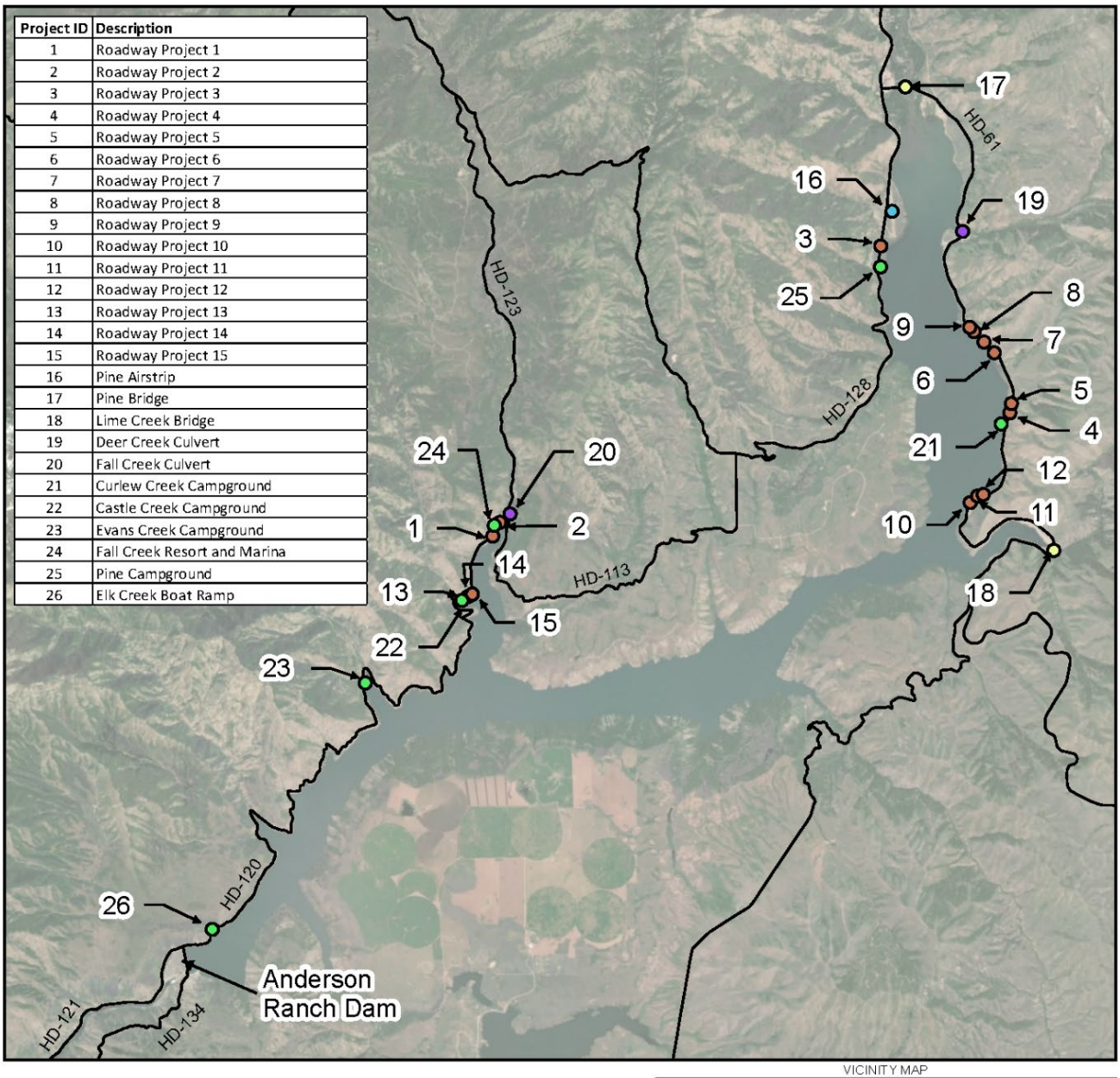
**Table 4. Construction duration and timing by project type.**

| Project | Project IDs (Figure 3) | Timing | Duration (days) |
|---|---|---|---|
| Roadway MSE Wall Projects | 10, 11, 12, 14 | August – October | 9 (average for each) |
| Roadway Riprap Projects | 4, 5, 6, 7, 8, 9, 1, 2, 13, 15 | July – October[1] | 9 (average for each) |
| Pine Bridge (only if necessary) | 17 | July – November[1] | 87 |
| Lime Creek Bridge | 18 | July – August[1] | 16 |
| Lester Creek Roadway Project | 3 | March – April | 25 |
| Pine Airstrip | 16 | March – April | 32 |
| Curlew Creek Campground & Boat Ramp | 21 | October – December | 45 |
| Pine Campground & Boat Ramp | 25 | March – April | 30 |
| Evans Creek Campground | 23 | April – May[1] | 29 |
| Castle Creek Campground | 22 | May – June[2] | 13 |
| Elk Creek Boat Ramp[3] | 26 | September – October[1] | 19 |
| Fall Creek Boat Ramp | 24 | October – December | 57 |

*[1] Would commence before or after holidays of Memorial Day, July 4, and Labor Day.*

*[2] Castle Creek sites would be decommissioned and moved to Pine Campground before construction.*

*[3] Elk Creek Boat Ramp would be closed for the duration of the dam construction for public safety. Improvements are scheduled during that closure.*




| Project ID | Description |
|---|---|
| 1 | Roadway Project 1 |
| 2 | Roadway Project 2 |
| 3 | Roadway Project 3 |
| 4 | Roadway Project 4 |
| 5 | Roadway Project 5 |
| 6 | Roadway Project 6 |
| 7 | Roadway Project 7 |
| 8 | Roadway Project 8 |
| 9 | Roadway Project 9 |
| 10 | Roadway Project 10 |
| 11 | Roadway Project 11 |
| 12 | Roadway Project 12 |
| 13 | Roadway Project 13 |
| 14 | Roadway Project 14 |
| 15 | Roadway Project 15 |
| 16 | Pine Airstrip |
| 17 | Pine Bridge |
| 18 | Lime Creek Bridge |
| 19 | Deer Creek Culvert |
| 20 | Fall Creek Culvert |
| 21 | Curlew Creek Campground |
| 22 | Castle Creek Campground |
| 23 | Evans Creek Campground |
| 24 | Fall Creek Resort and Marina |
| 25 | Pine Campground |
| 26 | Elk Creek Boat Ramp |

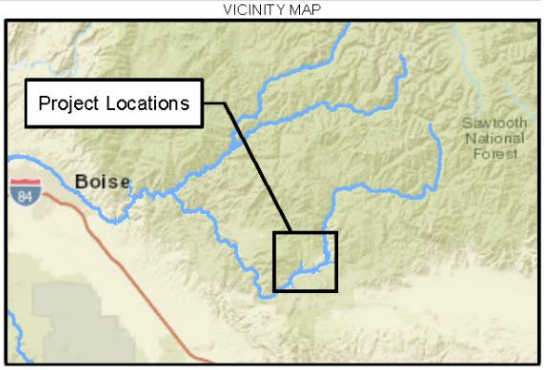
**LEGEND**
**Rim Projects**

- Aviation Project
- Bridge Project
- Culvert Project
- Recreation Project
- Roadway Project
- Road

N

0 1.5 Miles

VICINITY MAP




Notes:
1. This map is provided as-is and may contain representations of property boundaries. It is intended for general references only. None of the parties involved in preparing this map or data contained herein warrant or represent information to be complete and accurate and cannot be held responsible for errors or omissions.

**Figure 3. Anderson Ranch Reservoir Rim Project Locations**
**Boise Project - Arrowrock Division**
Boise River Basin Feasibility Study

Except for Castle Creek Campground campsites, post-construction, access to all facilities and activities within the project area would be restored to existing, and in some places, improved conditions. The two Castle Creek campsites would be moved to the Pine Campground ahead of peak season camping and all access to the Pine Campground would be open during and after construction. The rim projects that are included in Alternative B provide elevated, permanent access to all developed recreation facilities, above the proposed new full pool inundation elevation of 4202 feet.

Considering duration and timing of construction, the reduction in recreational access to facilities or activities is considered a short-term minor direct impact. However, because there is no permanent loss of access to recreational facilities or activities, the impact is not considered significant. Long-term, recreationists would benefit from improved roadways where sections are widened, allowing for safer passage. Additionally, improved boat ramp access at Fall Creek and Curlew Creek would also be a long-term beneficial impact because the angled approach for trailers is improved. Trailhead access would not be affected by the Alternative B.

### REC 2 – Reduction in recreational opportunity.

During peak season (Memorial Day through Labor Day) within the first year of construction, 26 of the existing 29 USFS managed developed campsites would remain open. After the first summer season and post-construction, all 29 developed campsites would be available. Of the five USFS managed boat ramps, four of the five would remain accessible during the entire 51-month project duration. Seasonal reservoir inundation fluctuations will continue to limit boat ramp use during construction fall and winter months, similar to existing conditions. As modeled, the lowest likely surface water elevation, would be approximately 4112 feet. Curlew Creek boat ramp would be anticipated to remain open year-round during construction to provide continued recreational opportunity.

Post-construction, all five USFS managed boat ramps would be seasonally inundated and available for use. The increased inundation above existing full pool would be for approximately 18 days, based on hydrologic conditions from 1958-2008. Boat ramps may see extended inundation times for those 18 days as the additional 29,000 acre-feet of water is depleted. Reservoir operations would remain consistent with current operational objectives. Seasonal inundation would persist, providing recreational opportunities on the reservoir similar to what exists now. Curlew Creek and Elk Creek boat ramps would continue to provide late season recreational opportunity.

Developed campground and boat ramp facilities and amenities affected by Alternative B, as previously described, are summarized in Tables 5 to 10. Exhibits 1-6 show the approximate disturbance areas and identify project features for each proposed campsite and boat ramp discussed in Section 3.3.2.

**Table 5. Curlew Creek Campground and Boat Ramp existing infrastructure and proposed features (Exhibit 1).**

| Feature | Existing | Alternative B Proposed |
|---|---|---|
| Campsites | 9 | 9; 6 elevated, 2 relocated onsite |
| Tables | 10 | 10 |
| Fire Rings | 8 | 8 |
| Day Use Area | 2 | 1 to be elevated |
| Shade Structures | 0 | 0 |
| Trees | Cottonwood and pine trees | Remove approximately 60, >6-in. diameter and replace with 60, 2-in. caliper trees |
| Potable Water | Public hand-pump well | Abandon existing and replace onsite with required 50-ft. surface water setback |
| Restroom | Vault Style | Not Impacted |
| Dock and Boat Launch | 16 – 16-foot sections | Add 2 – 16-foot sections |
| Access | Loop road for boat dock access | New alignment accommodating dock realignment |

**Table 6. Castle Creek Campground existing infrastructure and proposed features (Exhibit 3).**

| Feature | Existing | Alternative B Proposed |
|---|---|---|
| Campsites | 2 | 0 |
| Tables | 2 | 0 |
| Fire Rings | 2 | 0 |
| Day Use Area | 0 | 0 |
| Shade Structures | 0 | 0 |

**Table 7. Pine Campground and Boat Ramp existing infrastructure and proposed features (Exhibit 3).**

| Feature | Existing | Alternative B Proposed |
|---|---|---|
| Campsites | 7 | 9; elevate 6 existing, relocate 1 and add 2 |
| Tables | 7 | 9 |
| Fire Rings | 7 | 9 |
| Day Use Area | None | None |
| Shade Structures | 6 | 6 |
| Trees | Cottonwood and pine trees | None |
| Potable Water | None | None |
| Restroom | 1; Vault style | 2; Vault style |
| Dock and Boat Launch | 352-foot long floating dock and concrete pavement ramp | Extend concrete ramp, add dock sections for 416-foot total length. |
| Access | Parking area at boat ramp and dirt, loop access road | Not Impacted |

**Table 8. Evans Creek Campground existing infrastructure and proposed features (Exhibit 4).**

| Feature | Existing | Alternative B Proposed |
|---|---|---|
| Campsites | 8 | 8; 6 elevated |
| Tables | 8 | 8 |
| Fire Rings | 6 | 6 |
| Day Use Area | 0 | 0 |
| Shade Structures | 0 | 6; to mitigate for shade |
| Trees | Cottonwood and pine trees | Remove approximately 25, >6-in. diameter and replace with 25, 2-in. caliper trees |
| Potable Water | None | None |
| Restroom | Vault Style | Not Impacted |
| Dock and Boat Launch | Compact dirt | Not Impacted |
| Access | Dirt access roads | Not Impacted |

**Table 9. Fall Creek Boat Ramp existing infrastructure and proposed features (Exhibit 5).**

| Feature | Existing | Alternative B Proposed |
|---|---|---|
| Trees | Cottonwood trees | Remove several >6-in. diameter and replace with several 2-in. caliper trees |
| Potable Water | None | None |
| Restroom | Vault Style | Not Impacted |
| Dock and Boat Launch | 160-foot long floating dock and ramp | Demolish existing ramp, reorient, reattach existing dock and add new sections for 250-foot total length. Rip rap ramp perimeter for scour protection |
| Access | Parking area at boat ramp | Elevate parking area around boat ramp and ramp approach. |

**Table 10. Elk Creek Boat Ramp existing infrastructure and proposed features (Exhibit 6).**

| Feature | Existing | Alternative B Proposed |
|---|---|---|
| Trees | None | None |
| Potable Water | None | None |
| Restroom | Vault Style | Not Impacted |
| Dock and Boat Launch | 160-foot long floating dock and ramp | Demolish existing dock abutment, reorient, reattach existing dock and add new sections for 208-foot total length. Rip rap ramp perimeter for scour protection |
| Access | Minor grading to accommodate truck traffic. Closed for 51-months | Not Impacted |

Undeveloped areas would continue to provide dispersed recreational opportunities during construction. Due to the cofferdam and required decrease in water surface elevation during construction, these undeveloped areas would likely be available earlier in the summer season providing for increased dispersed recreational opportunity. Post-construction, the additional 29,000 acre-feet of water would inundate approximately an additional 146 acres of land area around the reservoir rim at full pool. This equates approximately 3% of increased inundation acreage. Inundation above the existing full pool elevation would be expected for up to 18 days in the spring and early summer months, based on hydrologic conditions from 1958-2008. Total increased acres across the four undeveloped recreation areas is shown in Table 11. Due to the extended inundation, opportunity to use the undeveloped areas for dispersed

recreation would typically be delayed later into the peak season due to higher water levels and wetter ground surface conditions unsuitable for driving recreational vehicles on. The timing of the delay would depend on the individual water year, however, in a full pool year would be expected to shift the modeled trend lines in Figure 2 by approximately 18 days.

**Table 11. Additional increased inundation acres for surface water elevation of 4202.**

| Undeveloped Recreation Area | Acres at Full Pool (4196 feet) | Additional Inundated Acres at New Full Pool (4202 feet) |
|---|---|---|
| Pine Bridge Area | 243 | 7.29 |
| Pine Airstrip Campground Area | 54 | 1.62 |
| Curlew Creek Area | 41 | 1.23 |
| Deer Creek Area | 14 | 0.42 |
| **Total** | **352** | **10.56** |

Existing operations of the reservoir system would remain in place post-construction and shoreline would continue to be exposed in the late summer and early fall.

Considering temporary closure of developed campground and boat ramp facilities at the reservoir during construction, and construction on developed recreation facilities being scheduled outside of peak season, the reduction in developed recreation facilities is considered a short-term minor direct impact. However, because there is not a permanent reduction of developed recreation facilities or activities, and similar developed recreation facilities provide continued opportunity for recreational activities during construction around the reservoir and along the South Fork Boise River, the impact is not considered significant. Trailhead opportunities are not impacted by Alternative B.

Recreation activities on the South Fork Boise River, including whitewater rafting, kayaking, floatboat fishing, and bank or wader fishing may experience minor indirect effects from changes in annual peak flow. Water modeling predicts the flow below Anderson Ranch Dam to be 710 cfs less during April when compared to the No Action alternative. In large runoff volume years that would equate to a 1 to 7-day reduction in peak flow due to additional capacity to store the water within the reservoir rather than discharging it. The South Fork Boise River is closed annually to fishing from April 1 to the start of Memorial Day weekend at the end of May. April is also the when the reservoir begins drafting for downstream uses, increasing flows, until September 15 when flows are ramped back down. Under Alternative B, timing of releases may change at the end of the irrigation season (September), when the flows are typically held near powerplant capacity (1,600 cfs) until they are reduced to the minimum flow targets. With the proposed dam raise and additional water demands, the releases at Anderson Ranch Dam may be held at the powerplant flow of 1,600 cfs for up to

10 days longer. After this time, flows would decrease to either 600 cfs or 300 cfs depending on the target minimum flow at that time. (Water Operations and Hydrology Specialist Report, Appendix B)

The lower flows in April would not affect fishing opportunity due to the seasonal closure. Late season irrigation flows being held near 1,600 cfs for an additional 10 days would delay the transition from floatboat fishing to bank and wader fishing. There would be no increase in peak flows and the flow operations are not expected to deviate from historical operations (Water Operations and Hydrology Report, Appendix B, FRM Operation Analysis Appendix G). Due to peak flows not increasing and no reduction in recreational opportunity to whitewater rafting, kayaking, floatboat fishing, and bank or wader fishing, these impacts are considered negligible.

### REC 3 – Reduction in recreational experience.

Noise, dust and traffic levels associated with construction would cause minor temporary adverse impacts on recreational users that are recreating near construction activity around the reservoir. These impacts would not be significant because they would be short term and localized, typically lasting a few weeks or less in any one location (Table 4) and would not likely cause users to avoid recreational areas during peak season. Impacts to the recreational experience during construction activities are anticipated to be most noticeable along the one to two mile stretch of HD 121, between the proposed borrow pit locations and the dam due to an increase in heavy truck traffic during the 42-month construction period. These impacts would be moderately adverse to recreationists along the banks of the river during construction; however, it is not anticipated that users would avoid using the river for the popular uses of fishing and whitewater rafting so the impact is not considered significant.

Construction along the reservoir rim is not scheduled to happen near all areas available for recreation at the same time (Table 5), so recreation areas (both developed and undeveloped) would be available for use away from construction activity and recreational activities would not be condensed. Recreationists in the vicinity of construction may hear elevated noise, but noise increases would be minor because work would occur in previously developed areas (Noise Specialist Report, Appendix B). Increased dust at reservoir campsites due to rim construction traffic and activity would be minor due to construction being scheduled outside of peak season (Air Quality Specialist Report, Appendix B). Because public access would be restricted near the dam, construction noise is not likely to affect the quality of user experience in that vicinity. In addition, public information regarding timing of construction would reduce recreational use of these areas and reduce the potential for conflict. Post-construction, minor beneficial effects would be expected to the recreational experience in some locations due to new campsite appurtenances (fire rings, tables, and shade structures) and improved boat ramp facilities. However, the removal of numerous trees would be a direct adverse impact due to the loss of shade at Curlew, Pine, and Evans Campgrounds. The loss of shade is not considered significant because it is not permanent with new trees being planted.

### 3.3.3 Alternative C – Anderson Ranch Dam Three-foot Raise

The 3-foot Dam Raise Engineering Summary (Appendix D) provides an overview of the conceptual design completed by Reclamation for this alternative. While multiple rim projects effecting recreation are reduced in footprint, Pine Campground is the only site with a reduced impact to existing recreation amenities. A description of recreational facility design features required for Alternative C are described below.

#### Curlew Creek Campground and Boat Ramp

Eight of Curlew Creek Campground's nine campsites and a day use picnic site would be impacted by the 3-foot raise and modified to accommodate the increased inundation as described in Section 3.3.2 for the 6-foot raise. Approximately 30% less fill material would be required to elevate six of the campsites and impacted day use site. The imported fill material would be designed to resist wave erosion from the reservoir pool. Approximately 60 trees more than 6 inches in diameter would be removed to facilitate campground improvements. The removed trees would be replaced with 60 2-inch caliper trees planted to provide shade at the modified sites.

The boat dock, ramp infrastructure, and approach road will be extended and realigned as described in Section 3.3.2. The public drinking water well would also be abandoned and reinstalled on site as described for Alternative B. The existing vault toilet would not be impacted.

#### Castle Creek Campground

Both campsites would be impacted by the 3-foot inundation increase and require relocation to Pine Campground as described for the 6-foot raise in Section 3.3.2. There is no change between Alternative B and C for Castle Creek Campground.

#### Pine Campground and Boat Ramp

At Pine Campground, only one of the seven existing campsites would be impacted by the 3-foot inundation increase. The single campsite currently south of the boat ramp, would be relocated to the upper loop as described in Alternative B. This relocated campsite would be next to the two new campsites relocated from the Castle Creek Campground abandonment as described in Section 3.3.2 and shown in Exhibit 3. At the boat ramp, three new 16' boat dock sections would be required, one less than Alternative B. The boat ramp would also be extended and a new concrete dock abutment/access ramp installed as described for Alternative B. Approximately 30% less fill would be required for all onsite work as compared to Alternative B. The existing vault toilet would not be impacted, however due to the two new relocated campsites, a second vault toilet is required as described in Section 3.3.2.

#### Evans Creek Campground

Six of the eight campsites at Evans Creek Campground would be impacted by the 3-foot inundation increase and would be elevated as described in Section 3.3.2. Tables and fire rings

would be replaced at all six campsites. Picnic shelters would also be installed at each of the six campsites to compensate for the lost shade due to approximately 25 trees being removed to accommodate the required fill material. Trees will also be replaced with 25 2-inch caliper trees. Approximately 23% less fill would be required for all onsite work as compared to Alternative B. The existing vault toilet, access roads, and compacted dirt boat ramp would not be impacted.

### Spillway Campground

The Spillway Campground would remain closed for duration of the project, approximately 44 months. Other than duration of closure, there are no changes to the Spillway campground use during construction as a staging area, access, or post-construction availability and condition as described in Section 3.3.2.

### Fall Creek Boat Ramp

The existing boat ramp would be abandoned and re-oriented as described in Section 3.3.2 however would be approximately 25 feet less in length. Rock riprap would be placed along the ramp perimeter for scour protection. The existing floating dock would be removed from its current location and re-anchored to the new concrete ramp with three additional 16-foot sections, one less than Alternative B. A new concrete dock abutment/access ramp would be installed. Fill material would be required to raise the elevation of the parking area around the boat ramp and the ramp approach. There would be an approximate 24% reduction in earthen fill and riprap along the shoreline as compared to Alternative B.

### Elk Creek Boat Ramp

As described for Alternative B, the Elk Creek Boat Ramp parking lot is proposed as a truck turn around and would be closed for the duration of the approximate 44-month construction period.

During year one of construction, the ramp would be realigned and extended as described in Section 3.3.2. The floating dock would also require realignment; however, it would not require any new extensions. The existing vault toilet would not be impacted. There would be approximately 30% less earthen fill and approximately 25% less concrete required for the onsite work.

### Deer Creek Boat Ramp

Consistent with Alternative B, no work is required for this site.

### Nester’s Private Campground

As described in Section 3.3.2, no improvements or modifications are required or proposed for the facilities at this campground. Nester’s Private Campground is not analyzed further.

### Undeveloped Areas

Alternative C includes no improvements to undeveloped areas used for dispersed camping.

#### 3.3.3.1 Direct and Indirect Impacts

### REC 1 - Reduction in access to recreation facilities or activities.

During construction, minor adverse effects would be expected to recreation facilities and activities due to the construction schedule of the accompanying road and facility construction activities within the project area. The multiple rim projects affecting access to roadways, campgrounds and boat ramps described in Section 3.3.2 for Alternative B would also be required to accommodate the 3-foot inundation increase. All project features for Alternative C outside of the structural dam components will be completed in year one of construction as described in Table 4 for Alternative B. While Alternative C would remove two projects scheduled for construction for approximately 30 days each in March – April (Table 5), no changes in access to recreation facilities or activities are expected. Elk Creek Boat Ramp and the Spillway Campground would be closed for the entire project duration of approximately 44 months, 7 months less than Alternative B. The Elk Creek Boat Ramp will remain closed for the 44-month construction duration due to public safety concerns. The road across the dam and HD 121would be closed for approximately 38 months under Alternative C, making the Elk Creek Boat Ramp the furthest and most difficult for recreationists to access during construction. The Spillway Campground would not be accessible for the duration of the project due to the road closures required for construction at the dam. Similar to Alternative B, access to other boat ramps and camping sites around the reservoir would be available seasonally during construction.

All developed campground and boat ramp projects described in Section 3.3.3 for Alternative C would be scheduled to avoid the peak season of Memorial Day through Labor Day, maintaining access to developed campsites and boat ramps as surface water levels allow. Single lane traffic would be open during construction of all roadway improvements, allowing continued to access to undeveloped areas as well. For conservative analysis purposes, the cofferdam required during construction is assumed to require a reservoir restriction between 12 feet and 22 feet below the current surface water elevation of 4196 as described for Alternative B. Reservoir restriction would be required for approximately 35 months under Alternative C, 7 months less than Alternative B Reclamation developed model results indicated that the median draft, the lowest likely surface water elevation, would be approximately 4112 feet. This would allow the Curlew Creek Boat Ramp to remain open year-round during construction. Seasonal reservoir depletion during construction would be similar to existing conditions as shown in Figure 1.

Similar to Alternative B, no road closures are proposed along the South Fork Boise River; however, HD 121 is identified as a haul route during construction. Access to all facilities and activities along the South Fork Boise River would be accessible to the public during construction and would be approximately 7 months less in duration as compared to Alternative B.

As described for Alternative B, post-construction, access to all recreational amenities within the project area would be restored. The two Castle Creek campsites would be moved to the

Pine Campground ahead of peak season camping and all access to the Pine Campground would be open during and after site construction. The rim projects that are included in Alternative C provide elevated, permanent access to all developed recreation facilities, above the proposed Alternative C full pool inundation elevation of 4199 feet.

Similar to Alternative B, considering the duration and timing of construction, the reduction in recreational access to facilities or activities is considered a short-term minor direct impact. However, because there is no permanent loss of access to recreational facilities or activities, the impact is not considered significant under Alternative C. Long-term, recreationists would benefit from improved roadways where sections are widened, allowing for safer passage. Additionally, improved boat ramp access at Fall Creek and Curlew Creek would also be a long-term beneficial impact because the angled approach for trailers is improved. Trailhead access would not be affected by the Alternative B.

### REC 2 – Reduction in recreational opportunity.

Similar to Alternative B, the identified rim projects would be commence in the first year of construction and be completed in approximately 23 months. During peak season (Memorial Day through Labor Day) within the first year of construction, 26 of the existing 29 USFS managed developed campsites would remain open. After the first summer season and post-construction, all 29 developed campsites would be available. Also similar, four of the five USFS managed boat ramps would remain accessible during the 44-month total project duration. Seasonal reservoir inundation fluctuations will continue to limit boat ramp use during construction fall and winter months, similar to existing conditions. Curlew Creek boat ramp would be anticipated to remain open year-round during construction to provide continued recreational opportunity.

Post-construction, all five USFS managed boat ramps would be seasonally inundated and available for use. The increased inundation above existing full pool would be for approximately 9 days, based on hydrologic conditions from 1958-2008. Boat ramps may see extended inundation times for those 9 days as the additional 14,400 acre-feet of water is depleted. Reservoir operations would remain consistent with current operational objectives. Seasonal inundation would persist, providing recreational opportunities on the reservoir similar to what exists now. Curlew Creek and Elk Creek boat ramps would continue to provide late season recreational opportunity.

Developed campground and boat ramp facilities and amenities affected by Alternative C are similar to Alternative B, and are described Tables 12 to 17. Disturbance areas for Alternative C would be similar to those shown in Exhibits 1-6 for Alternative B and are previously described in this section.

**Table 12. Curlew Creek Campground and Boat Ramp existing infrastructure and proposed features (Exhibit 1).**

| Feature | Existing | Alternative B Proposed | Alternative C Proposed |
|---|---|---|---|
| Campsites | 9 | 9; 6 elevated, 2 relocated onsite | Same as B |
| Tables | 10 | 10 | Same as B |
| Fire Rings | 8 | 8 | Same as B |
| Day Use Area | 2 | 1 to be elevated | Same as B |
| Shade Structures | 0 | 0 | Same as B |
| Trees | Cottonwood and pine trees | Remove approximately 60, >6-in. diameter and replace with 60, 2-in. caliper trees | Same as B |
| Potable Water | Public hand-pump well | Abandon existing and replace onsite with required 50-ft. surface water setback | Same as B |
| Restroom | Vault Style | Not Impacted | Same as B |
| Dock and Boat Launch | 624-foot sections | Add 2 – 16-foot sections, 656-foot total length | Same as B |
| Access | Loop road for boat dock access | New alignment accommodating dock realignment | Same as B |

**Table 13. Castle Creek Campground existing infrastructure and proposed features (Exhibit 3).**

| Feature | Existing | Alternative B Proposed | Alternative C Proposed |
|---|---|---|---|
| Campsites | 2 | 0 | Same as B |
| Tables | 2 | 0 | Same as B |
| Fire Rings | 2 | 0 | Same as B |
| Day Use Area | 0 | 0 | Same as B |
| Shade Structures | 0 | 0 | Same as B |

**Table 14. Pine Campground and Boat Ramp existing infrastructure and proposed features (Exhibit 3).**

| Feature | Existing | Alternative B Proposed | Alternative C Proposed |
|---|---|---|---|
| Campsites | 7 | 9; elevate 6 existing, relocate 1 and add 2 | 9, relocate 1 and add 2 |
| Tables | 7 | 9 | Same as B |
| Fire Rings | 7 | 9 | Same as B |
| Day Use Area | None | None | Same as B |
| Shade Structures | 6 | 6 | Same as B |
| Trees | Cottonwood and pine trees | None | Same as B |
| Potable Water | None | None | Same as B |
| Restroom | 1; Vault style | 2; Vault style | Same as B |
| Dock and Boat Launch | 352-foot long floating dock and concrete pavement ramp | Extend concrete ramp, add dock sections for 416-foot total length. | 400-foot total length |
| Access | Parking area at boat ramp and dirt, loop access road | Not Impacted | Same as B |

**Table 15. Evans Creek Campground existing infrastructure and proposed features (Exhibit 4).**

| Feature | Existing | Alternative B Proposed | Alternative C Proposed |
|---|---|---|---|
| Campsites | 8 | 8; 6 elevated | Same as B |
| Tables | 8 | 8 | Same as B |
| Fire Rings | 6 | 6 | Same as B |
| Day Use Area | 0 | 0 | Same as B |
| Shade Structures | 0 | 6; to mitigate for shade | Same as B |
| Trees | Cottonwood and pine trees | Remove approximately 25, >6-in. diameter and replace with 25, 2-in. caliper trees | Same as B |
| Potable Water | None | None | Same as B |
| Restroom | Vault Style | Not Impacted | Same as B |
| Dock and Boat Launch | Compact dirt | Not Impacted | Same as B |
| Access | Dirt access roads | Not Impacted | Same as B |

**Table 16. Fall Creek Boat Ramp existing infrastructure and proposed features (Exhibit 5).**

| Feature | Existing | Alternative B Proposed | Alternative C Proposed |
|---|---|---|---|
| Trees | Cottonwood trees | Remove several >6-in. diameter and replace with several 2-in. caliper trees | Same as B |
| Potable Water | None | None | Same as B |
| Restroom | Vault Style | Not Impacted | Same as B |
| Dock and Boat Launch | 160-foot long floating dock and ramp | Demolish existing dock abutment, reorient, reattach existing dock and add new sections for 250-foot total length. Rip rap ramp perimeter for scour protection | Add new sections for 234-foot total length |
| Access | Parking area at boat ramp | Elevate parking area around boat ramp and ramp approach. | Same as B |

**Table 17. Elk Creek Boat Ramp existing infrastructure and proposed features (see Exhibit 6).**

| Feature | Existing | Alternative B Proposed | Alternative C Proposed |
|---|---|---|---|
| Trees | None | None | Same as B |
| Potable Water | None | None | Same as B |
| Restroom | Vault Style | Not Impacted | Same as B |
| Dock and Boat Launch | 160-foot total length floating dock and ramp | Demolish existing dock abutment, reorient, reattach existing dock and add new sections for 208-foot total length. Rip rap ramp perimeter for scour protection | No extension, 160-foot total length |
| Access | Parking area at boat ramp | Parking area at boat ramp. Minor grading to accommodate truck traffic. Closed for 51-months | Same grading and closed for 44-months |

## Undeveloped Areas

Similar to Alternative B, undeveloped areas would continue to provide dispersed recreational opportunities during construction. Due to the cofferdam and required decrease in water surface elevation during construction, these undeveloped areas would likely be available earlier in the summer season providing for increased dispersed recreational opportunity. Post-construction, the additional 14,400 acre-feet of water would inundate approximately an additional 73 acres of land area around the reservoir rim at full pool. This equates approximately 1.5% of increased inundation acreage. Inundation above the existing full pool elevation would be expected for up to 9 days.

Due to the extended inundation, opportunity to use the undeveloped areas for dispersed recreation would typically be delayed later into the peak season due to higher water levels and wetter ground surface conditions unsuitable for driving recreational vehicles on. The timing of the delay would depend on the individual water year, however, in a full pool year would be expected to shift the modeled trend lines in Figure 2 by approximately 9 days.

Total increased acres across the four undeveloped recreation areas is shown in Table 18.

**Table 18. Additional increased inundation acres for surface water elevation of 4199.**

| Undeveloped Recreation Area | Acres at Full Pool (4196 feet) | Additional Inundated Acres at New Full Pool (4199 feet) |
|---|---|---|
| Pine Bridge Area | 243 | 3.645 |
| Pine Airstrip Campground Area | 54 | 0.81 |

| Undeveloped Recreation Area | Acres at Full Pool (4196 feet) | Additional Inundated Acres at New Full Pool (4199 feet) |
|---|---|---|
| Curlew Creek Area | 41 | 0.62 |
| Deer Creek Area | 14 | 0.21 |
| **Total** | **352** | **5.28** |

Similar to existing reservoir operational regimes would remain in place post-construction and shoreline would continue to be exposed in the late summer and early fall. Considering temporary closure of developed campground and boat ramp facilities at the reservoir during construction, and construction on developed recreation facilities being scheduled outside of peak season, the reduction in developed recreation facilities is considered a short-term minor direct impact. However, because there is not a permanent reduction of developed recreation facilities or activities, and similar developed recreation facilities provide continued opportunity for recreational activities during construction around the reservoir, the impact is not considered significant. Trailhead opportunities are not impacted by Alternative C.

Recreation activities on the South Fork Boise River, including whitewater rafting, kayaking, floatboat fishing, and bank or wader fishing may experience minor indirect effects from changes in annual peak flow. Water modeling predicts the flow below Anderson Ranch Dam to be 380 cfs less during April when compared to the No Action alternative. In large runoff volume years that would equate to a 1 to 5-day reduction in peak flow due to additional capacity to store the water within the reservoir rather than discharging it. The South Fork Boise River is closed annually to fishing from April 1 to the start of Memorial Day weekend at the end of May. April is also the when the reservoir begins drafting for downstream uses, increasing flows, until September 15 when flows are ramped back down. Similar to Alternative B, timing of releases may change at the end of the irrigation season (September), when the flows are typically held near powerplant capacity (1,600 cfs) until they are reduced to the minimum flow targets. With the proposed 3-foot dam raise and additional water demands, the releases at Anderson Ranch Dam may be held at the powerplant flow of 1,600 cfs for up to 4.5 days longer. After this time, flows would decrease to either 600 cfs or 300 cfs depending on the target minimum flow at that time. (Water Operations and Hydrology Specialist Report, Appendix B)

Similar to Alternative B, the lower flows in April would not affect fishing opportunity due to the seasonal closure. Late season irrigation flows being held near 1,600 cfs for an additional 4.5 days would delay the transition from floatboat fishing to bank and wader fishing. There would be no increase in peak flows and the flow regime is not expected to deviate from historical operations (Water Operations and Hydrology Report, Appendix B, FRM Operation Analysis Appendix G). Due to peak flows not increasing and no reduction in recreational

opportunity to whitewater rafting, kayaking, floatboat fishing, and bank or wader fishing, these impacts are considered negligible.

### REC 3 – Reduction in recreational experience.

Impacts to recreational experience for Alternative C are similar to those described for Alternative B. Noise, dust and traffic levels associated with construction of the rim projects would not be significant because they would be short term and localized, typically lasting a few weeks or less in any one location and would not likely cause users to avoid recreational areas during peak season. The most noticeable impacts would along the 1 to 2 mile stretch of HD 121, between the proposed borrow pit locations and the dam due to an increase in heavy truck traffic during the 35-month construction period. These impacts would be moderately adverse to recreationists along the banks of the river during construction; however, it is not anticipated that users would avoid using the river for the popular uses of fishing and whitewater rafting so the impact is not considered significant.

Similar to Alternative B, construction along the reservoir rim is not scheduled to happen near all areas available for recreation at the same time, so recreation areas (both developed and undeveloped) would be available for use away from construction activity and recreational activities would not be condensed. Recreationists in the vicinity of construction may hear elevated noise, but noise increases would be minor because work would occur in previously developed areas (Noise Specialist Report, Appendix B). Increased dust at reservoir campsites due to rim construction traffic and activity would be minor due to construction being scheduled outside of peak season (Air Quality Specialist Report, Appendix B). Because public access would be restricted near the dam, construction noise is not likely to affect the quality of user experience in that vicinity. In addition, public information regarding timing of construction would reduce recreational use of these areas and reduce the potential for conflict. Post-construction, minor beneficial effects would be expected to the recreational experience in some locations due to new campsite appurtenances (fire rings, tables, and shade structures) and improved boat ramp facilities. However, the removal of numerous trees would be a direct adverse impact due to the loss of shade at Curlew, Pine, and Evans Campgrounds. The loss of shade is not considered significant because it is not permanent with new trees being planted.

## 3.3.4 Cumulative Impacts

Cumulative impacts are analyzed for the Alternative B and C. Cumulative impacts are those which result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions. The cumulative effects analysis considers projects, programs, and policies that are not speculative; and are based upon known or reasonably foreseeable long-range plans, regulations, operating agreements, or other information that establishes them as reasonably foreseeable. Reclamation has identified two past projects: Pine Bridge replacement and the 4-foot Anderson Ranch Dam crest raise for security enhancement. Reclamation has also identified two potential future projects to be considered for the cumulative impact analysis: The Cat Creek Energy Project and South Fork Boise

River Diversion Project. Additional project proposal information for these, as known by Reclamation to date, is provided in Chapter 2 of the EIS.

The 2018 construction of the Pine Bridge and 2010 crest raise are well removed in time from the proposed 2025 rim projects and dam construction. Any potential direct or indirect impacts from construction of the new Pine Bridge or dam raise would not be additive. No other potential direct or indirect impacts to noise are recognized and no cumulative effects are identified for past actions.

If the South Fork Boise River Diversion Project and Cat Creek Energy projects were to happen in conjunction with a the Anderson Ranch Dam raise, it would be anticipated that the surface water elevation of the reservoir would minimally fluctuate based on pumping operations by one or both of the projects. Using the diversion rates from the water right permits (Table 2 in the Water Rights Specialist Report, Appendix B), for each project, it can be assumed that diverting water from the reservoir would have minimal impact on the surface water elevation of the reservoir. Timing of the diversion would coincide with spring inflows into the reservoir would allow for boat ramps to continue to be functional. Undeveloped areas would continue to be saturated in the spring and exposed in the late summer.

Because the water drafted by South Fork Boise River Diversion or Cat Creek Energy projects would be flood control water, it would be assumed that in high water years, downstream flows would be closer to average water year flow levels. This may provide the opportunity for bank and wader fisherman to fish earlier in high-water years.

In summary, due to the water right permit stipulations limiting the diversion rates of each project, water only being drafted in years flood control water would be spilled, and timing of drafting likely being limited to spring and early summer, any cumulative impacts to recreation would be negligible.

### 3.3.5 Mitigation

No significant impacts as a result of the Alternative B or C are identified, therefore, no mitigation is required.

The Fall Creek Resort and Marina would be affected by inundation. Impacts of the proposed action to the non-Federal real property would be mitigated during project implementation, should the project be determined feasible and the Special Use Permit still be in effect. Potential mitigation could include: rebuild existing features to their existing condition, relocate existing features to a suitable location, or compensatory mitigation.

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# 4. References

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**Exhibit 1. Curlew Creek Campground and Boat Ramp**


EXHIBIT 1

CURLEW CREEK CAMPGROUND

— BUREAU OF — RECLAMATION

**Exhibit 2. Castle Creek Campground**


EXHIBIT 2

CASTLE CREEK
CAMPGROUND

— BUREAU OF —
RECLAMATION

**Exhibit 3. Pine Campground and Boat Ramp**

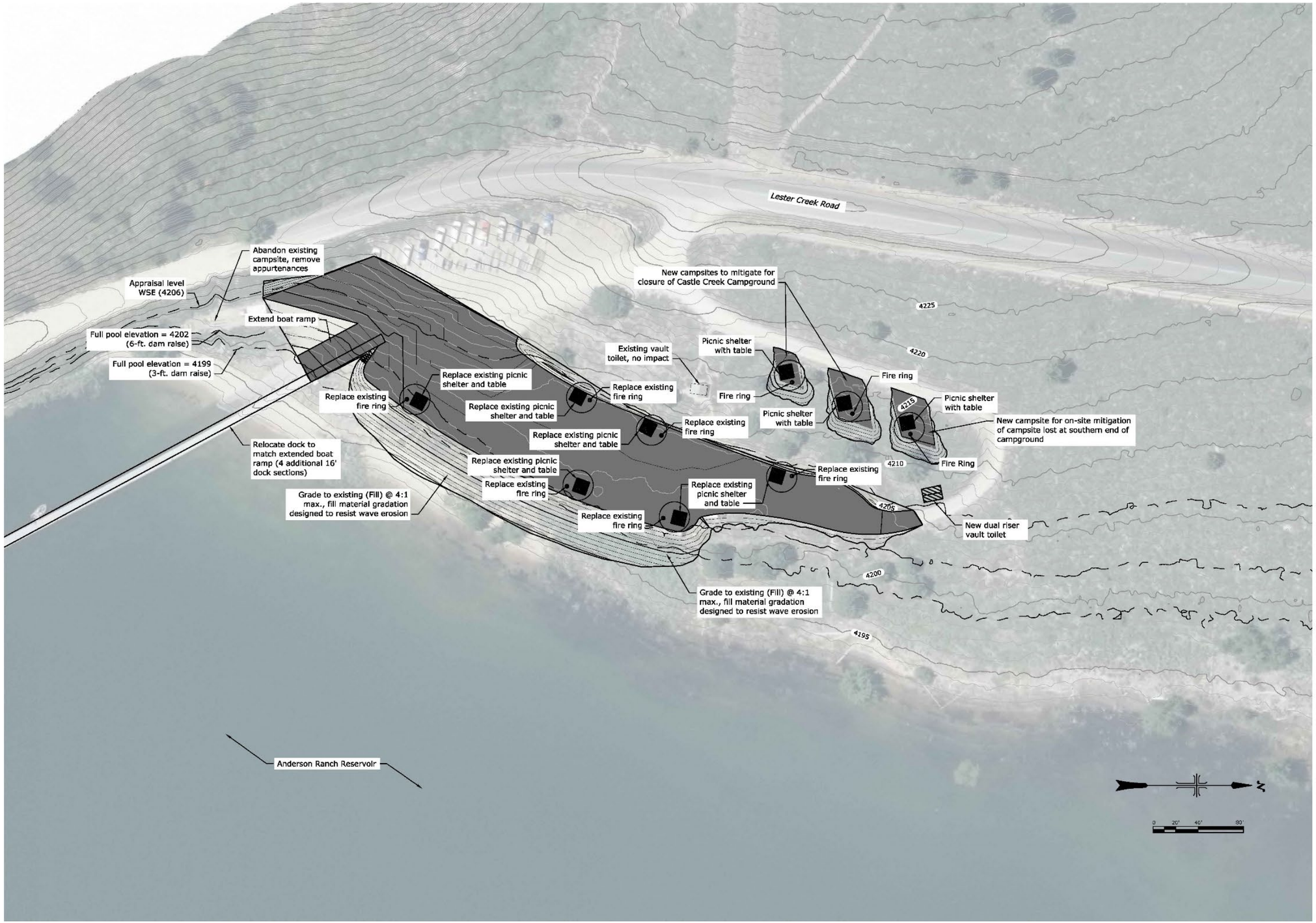


EXHIBIT 3

PINE AIRPORT CAMPGROUND

BUREAU OF RECLAMATION

**Exhibit 4. Evans Creek Recreation**

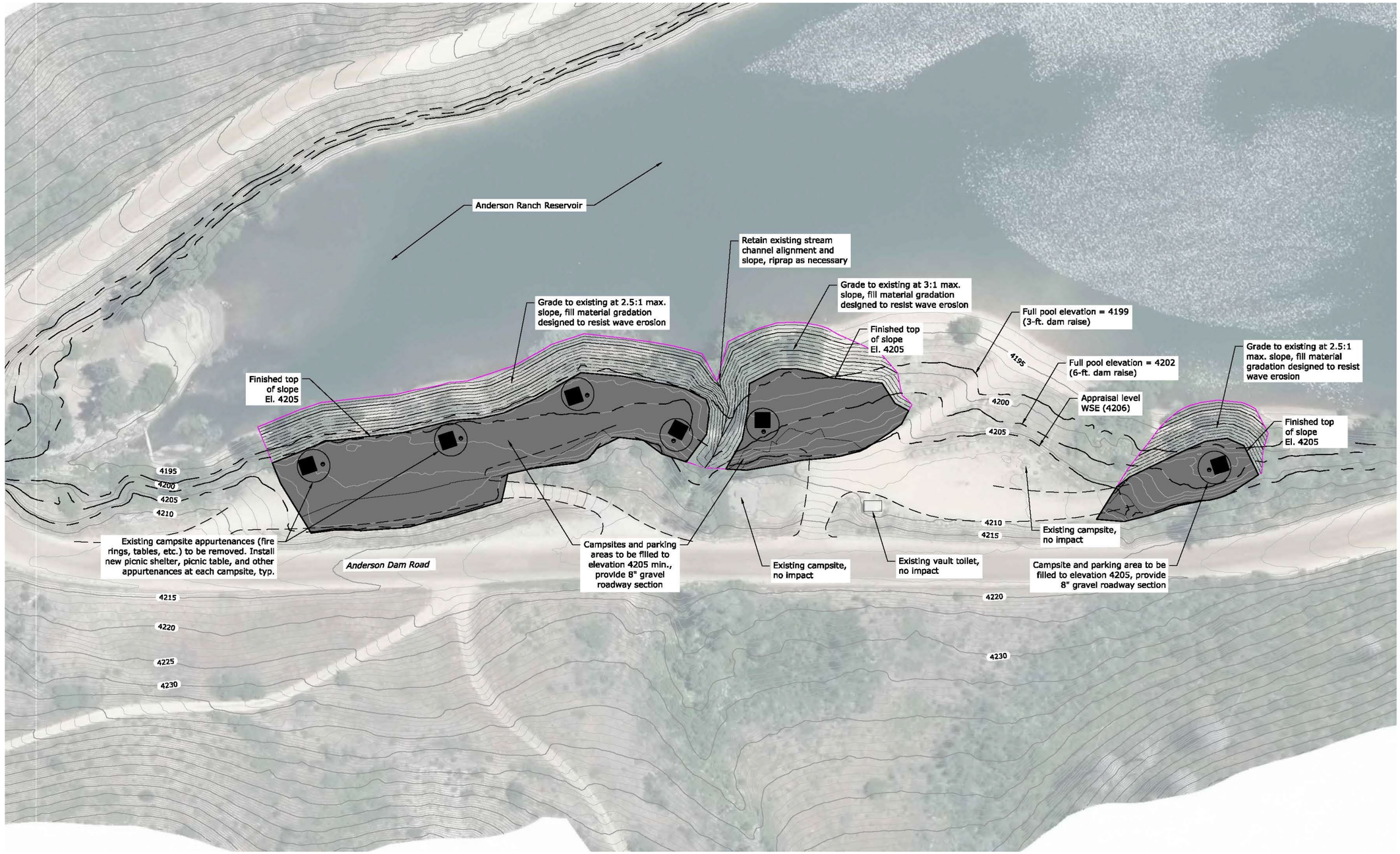


EXHIBIT 4

EVANS CREEK CAMPGROUND

BUREAU OF RECLAMATION

**Exhibit 5. Fall Creek Boat Ramp**

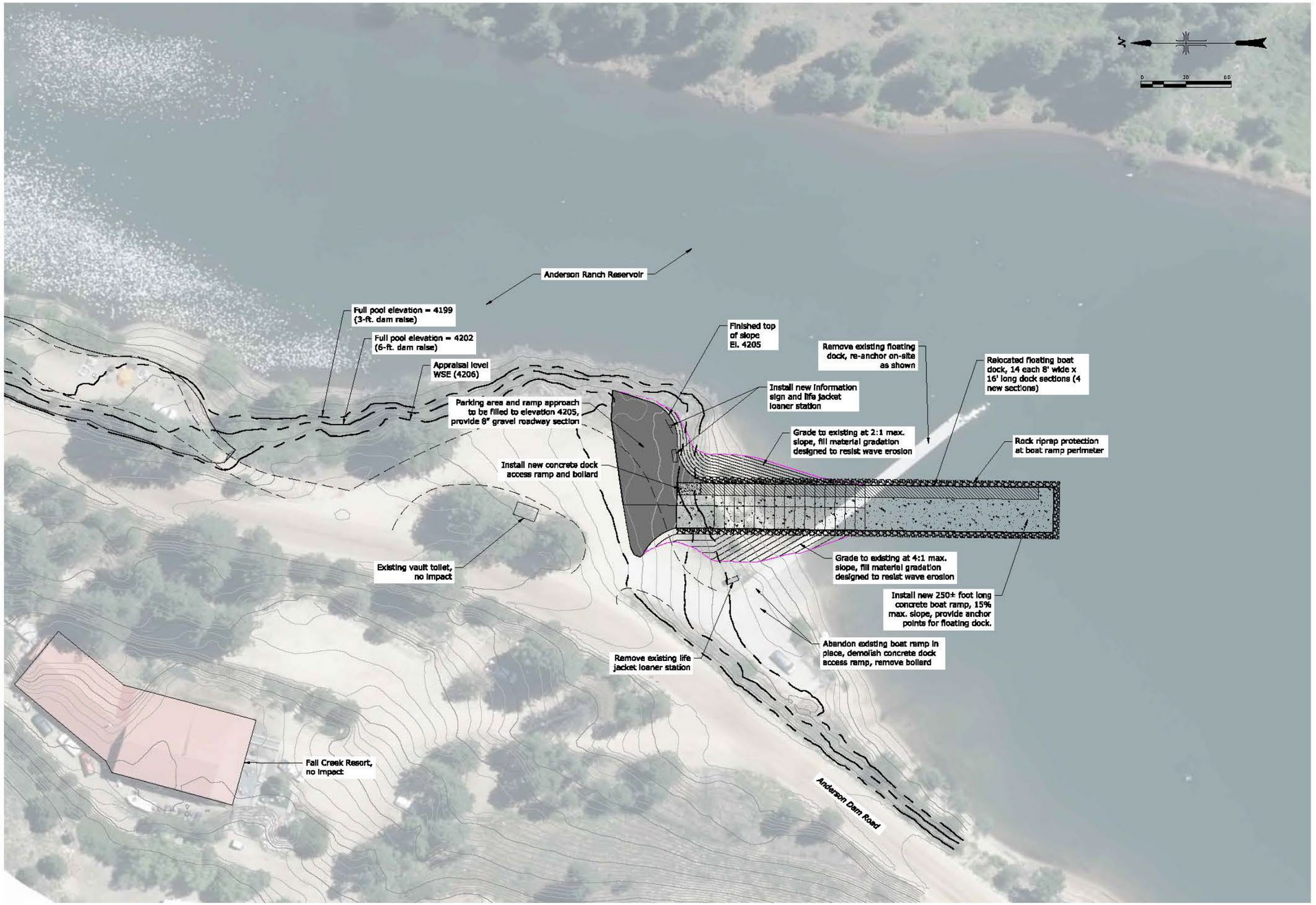


EXHIBIT 5

FALL CREEK BOAT RAMP

— BUREAU OF —
RECLAMATION

**Exhibit 6. Elk Creek Boat Ramp**


EXHIBIT 6

ELK CREEK
BOAT RAMP

BUREAU OF RECLAMATION

**Exhibit 7. Photo Log**

Pine Campground camp sites and shelters.

Castle Creek Campground campsite.

Evan’s Creek Campground at low water.

Hand pump public drinking water well at Curlew Creek Campground and boat ramp.

Elk Creek boat ramp at 4165 ft surface water elevation.

Fall Creek boat ramp at 4165 ft surface water elevation.

Fall Creek boat ramp at near full pool.

Deer Creek near existing full pool of 4196 ft.

Dispersed recreation use near Curlew Creek at low water in the fall.

Low water mud deposits between pine bridge and Deer Creek.

Dispersed recreation use along South Fork Boise River.

South Fork Boise River below Tailwaters boat launch.