Chapter 2
Project Description

2.1 Introduction

This chapter describes the Oroville Wildlife Area Flood Stage Reduction Project (proposed project), which has been designed to reconnect the Oroville Wildlife Area (OWA) D-Unit to the Feather River and would decrease flood stages within the main channel, restore riparian and fish habitat, and reduce post-flood maintenance and repairs. The proposed project consists of augmenting the existing system of inflow and outflow weirs to safely divert additional floodwaters from the main channel through the OWA. The proposed project also features ecosystem restoration, recreation improvements, and the reconnection of the Feather River to its historic floodplain.

2.2 Project Location

The project area consists of the D-Unit in the OWA. The OWA encompasses approximately 11,869 acres on the east side of the Feather River in Butte County, California and is subdivided into eight areas, or units, that are named A through H. The project area is the D-Unit, which covers approximately 1,500 acres and is just west of State Route (SR) 70 and across the river from the Thermalito Afterbay outlet.

2.3 Project Description

2.3.1 Overview

The proposed project consists of three components: vegetation management and restoration, hydraulic improvements, and recreation enhancement. The project footprint and location of constructed features are shown in Figure 2-1.

Vegetation management and restoration would include:

- Removal of approximately 500 acres of invasive water primrose and approximately 200 acres of other invasive plant species.
- Installation of approximately 150 acres of riparian woodland plantings around the interior channels (approximately 70 acres of riparian woodland, 48 acres of riparian scrub and gravel understory plantings, and approximately 32 acres of riparian scrub and wetland plantings).

Hydraulic improvements would include:

- Construction of a new approximately 400-foot-long **rock gabion inflow weir** (northeast boundary).
- Construction of a new **notch connection to the Feather River** (southwest boundary).

- Placement of **rock fill along the existing outflow weir** and installation of a **concrete road crossing**.
- Construction of a **fish barrier berm** north of the Pit 2 pond (southern project area).
- Regrading sections of the existing interior channel system.
- Replacement of the **existing culvert** at the low flow crossing near the Pit 2 pond and installation of a **new earthen culvert** crossing in the northeastern part of the project area.
- Degrading of the existing Pit 2 pond berm, removal of the existing culvert, and installation of a **concrete road crossing**.

Recreation features would include:

- **Regrading of the northern parking area** across from the Thermalito Afterbay outlet.
- **Regrading of the parking area south** of the Pit 2 pond (southern project area).
- Pouring of a new **concrete pad for the existing portable restrooms** across from the Thermalito Afterbay outlet.
- Construction of one emergency **vehicle/footbridge channel crossing** and two footbridge channel crossings (**footbridge 1 and footbridge 2**).
- Grading of two **river access areas** (north and south).

These components are described in further detail in the following sections.

2.3.2 Vegetation Management and Restoration

2.3.2.1 Mechanical Removal of Invasive Species

The proposed project would remove approximately 500 acres of water primrose and approximately 200 acres of other invasive plant species, including tree-of-heaven, Himalayan blackberry, yellow star-thistle, broom, scarlet wisteria, giant reed, and purple loosestrife. Areas targeted for invasive species removal are shown in Figure 2-2. Mechanical removal is described in detail in the *Invasive Species Management Plan Oroville Wildlife Area D Unit* (California Department of Fish and Wildlife 2016) (Appendix 2-A).

Mechanical or hand removal treatments would be used for water primrose, giant reed, and scarlet wisteria. Mechanical removal of invasive plant species would involve cutting and removal of invasive plants by hand or by machines. Hand crews would use clippers, loppers, weed wrenches, shovels, and chainsaws to pull or remove weeds. Machines such as backhoes, excavators, and brush hogs are desired in large areas with mature plants, especially where hand removal is infeasible.

In areas of large infestations of water primrose, mechanical treatment would include using a long-armed excavator to remove water primrose from channels and pile biomass in upland areas (along the eastern boundary away from wetland areas) to desiccate and decompose. Biomass may also be hauled offsite.

Mechanical removal of invasive plant species would be coordinated with chemical removal, which is described in Section 2.5.

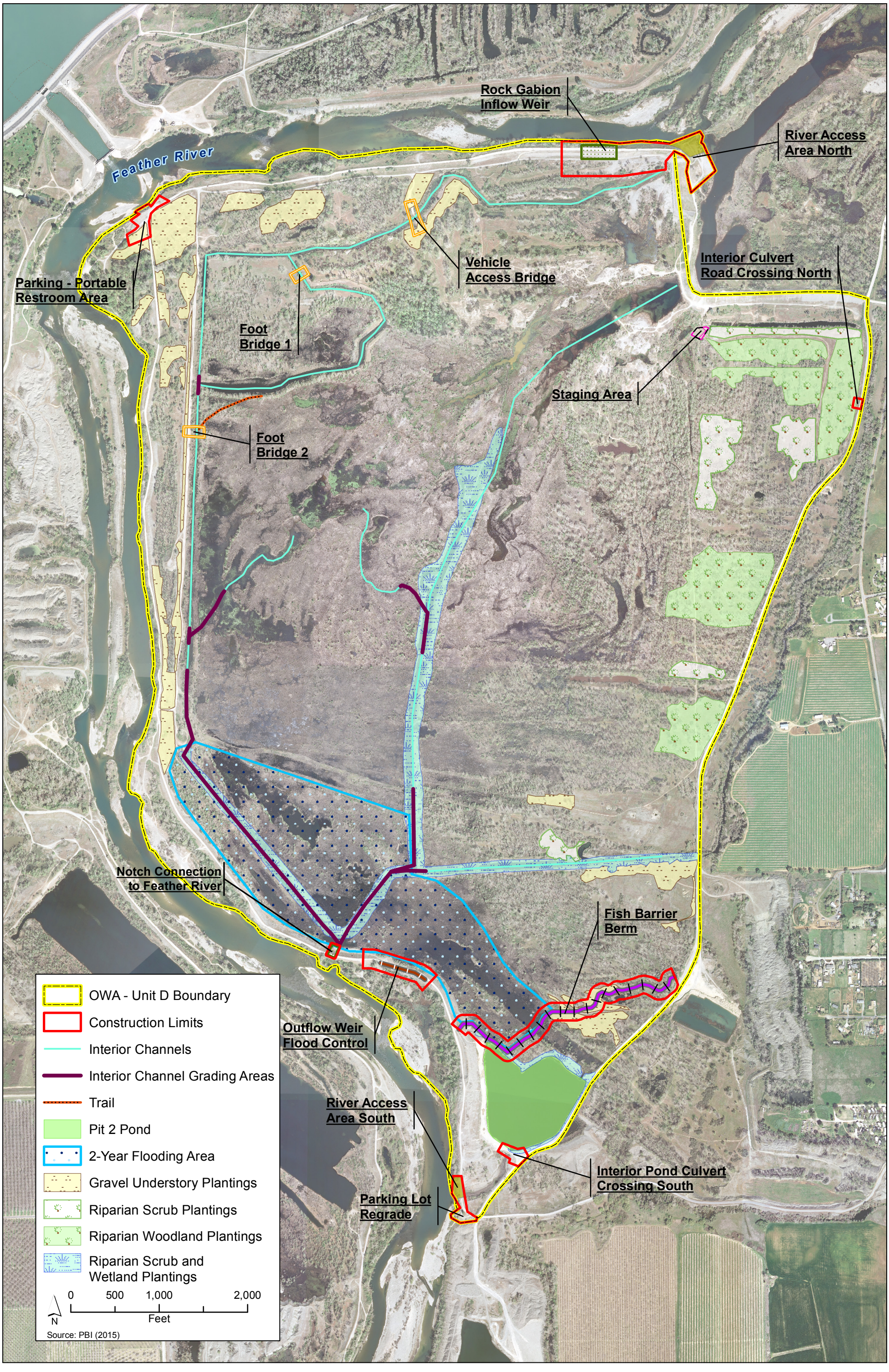

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Figure 2-1
Project Overview

Notes:
1. These are estimated areas based upon best available information known at the time of publication and do not represent the full or exact extents of infestation.
2. Areas for Water Primrose are not shown on this figure.

Legend

Interior Channels

Invasive Species

Purple loosestrife

Giant reed

Brooms

Scarlet wisteria

Tree-of-heaven

0 500 1,000
Feet

N

Source: Peterson Brustad 2016.

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Figure 2-2
Areas Targeted for Invasive Species Removal

2.3.2.2 Planting of Native Riparian Vegetation

The proposed project would install approximately 150 acres of new riparian woodland plantings that would be concentrated around the interior channels. The plantings would create native habitat and also discourage recolonization by invasive plant species. Approximately 70 acres of riparian woodland and 48 acres of riparian scrub and gravel understory plantings would be planted on the western and eastern margins of the project area and approximately 32 acres of riparian scrub and wetland vegetation would be planted along the Pit 2 Pond and interior channels (Figure 2-1). Monitoring of these plantings is described in Section 2.3.6.

Riparian Woodland Plantings

The riparian woodland planting would be planted in areas that do not flood as frequently as the lowest elevation sites in the project area. Plant composition would enhance the existing overstory and emphasize a combination of fast-growing and slow-growing species that are relatively tolerant of dry summer conditions, with occasional short duration floods in winter. A diverse mix of shrub species such as coyote brush (*Baccharis pilularis*), elderberry (*Sambucus* sp.), California blackberry (*Rubus ursinus*), and California rose (*Rosa californica*) would be included to provide structural diversity, especially in the lower canopy.

Riparian Scrub Plantings

Riparian scrub, open to dense, broad-leafed, winter-deciduous shrubby streamside thicket dominated by any of several willow (*Salix* sp.) species, are found along the major rivers and most of the smaller streams throughout the Central Valley, including the Feather River watershed. Tall riparian trees, such as Fremont cottonwood (*Populus fremontii*), Oregon ash (*Fraxinus latifolia*), and box elder (*Acer negundo*) will add vertical structure diversity. Lianas of wild grape (*Vitis californica*) and stinging nettle (*Urtica* sp.) will intertwine with lower canopy species, California blackberry, California rose, and golden currant (*Ribes aureum*), to provide abundant food sources and nesting habitats for targeted wildlife species.

Gravel Understory Plantings

Gravel understory plantings would consist of native forb species planted in areas with thin soils that are unable to support woody vegetation. A native herbaceous understory comprised of telegraph weed (*Heterotheca grandiflora*), gumplant (*Grindelia* sp.), mugwort (*Artemisia douglasiana*), Wright's buckwheat (*Eriogonum wrightii*), silver bush lupine (*Lupinus albifrons*) and vinegar weed (*Trichostema lanceolatum*) would provide cover for wildlife and aid in aggressively competing with weeds.

Riparian Scrub and Wetland Plantings

Riparian scrub and wetland vegetation would be planted along the Pit 2 Pond and interior channels. These plantings would be similar to the planned riparian scrub community but would also include buttonbush (*Cephalanthus occidentalis*), Baltic rush (*Juncus balticus*), iris-leaved rush (*J. xiphioides*), and common rush (*J. effusus*) near the interior channels.

2.3.3 Hydraulic Improvements

The proposed project would increase the frequency and duration of flooding. The existing inflow/outflow weir system only allows flooding into the project area when flows in the main channel are approximately 43,000 cubic feet per second (cfs). Degrading the berm along the eastern boundary would allow backwater to enter and flood the project area at events lower than 43,000 cfs. The area of inundation would increase for the lower (i.e., 2-year) flood events. However, the area of inundation would not change for the higher (i.e., 100-year or 200-year) events because, under existing conditions, the area is already fully inundated (Figures 2-3 and 2-4). Monitoring of floodplain inundation is described in Section 2.3.6, *Monitoring*.

2.3.3.1 Construction of Rock Gabion Inflow Weir

The proposed project would construct a 400-foot-long rock gabion inflow weir at the northeast end of the project area. The weir is essentially a notch in the existing berm that will allow flows from Feather River to enter the OWA to reduce flood stages within the main channel of the Feather River. The new weir will convey approximately 12,000 cfs during a 200-year flood event and provide a main channel stage reduction of approximately 0.7 feet. Prior to start of work, the entire project area would be fenced along the construction limit. The area would then be cleared and grubbed before stripping away the top 6 inches of substrate. Stripped material may be spoiled onsite or hauled offsite for disposal. The existing berm would be degraded to an elevation of 130 feet above mean sea level. Degrade material may be spoiled onsite or hauled offsite for disposal. Gabion rock baskets and mattresses would be placed throughout the weir footprint, along the landside slope, and for 50 feet past the landside toe of the berm. Rock slope protection (RSP) would then be placed at either side of the weir. A new access road would be constructed using onsite fill material and would include two new ramps on the landside of the weir. An existing sewer line owned and operated by Sewerage Commission–Oroville Region (SCOR) runs through the project area and would remain in place. Disturbed areas, excluding RSP and gabion mattresses/baskets, would be hydroseeded.

2.3.3.2 Construction of Notch Connections to the Feather River

The proposed project would construct a notch connection or connections through the existing berm to connect the Feather River to the interior of the OWA, reconnecting the river to its historic floodplain and address existing fish stranding issues (Figure 2-5). The proposed project would create approximately 150 acres of 2-year shallow floodplain salmonid habitat. The permanent connection would be a box culvert, or series of box culverts, with sluice gate(s) intended to convey flows. Grading is anticipated to remove the existing berm. Because grades along the interior of the OWA are lower than the Feather River, it is anticipated that grading in the river would be required to facilitate the construction of the new permanent notch connection and to create a new channel that connects the Feather River to the interior of the OWA. Prior to the start of construction, the area would be fenced, cleared, and grubbed, with the top 6 inches of substrate being stripped off if necessary. Stripped material would be spoiled onsite or disposed of offsite. Grading would be completed to remove a portion of the existing berm. Temporary cofferdams or similar structures may be constructed to allow the area adjacent to the box culvert to be pumped out and to facilitate construction of the new channel. It is anticipated that box culverts would be prefabricated and lifted into place, followed by the construction of wing walls. Disturbed areas, except for the box culvert/s and channel, would be hydroseeded after construction and grading operations to connect the new channel.

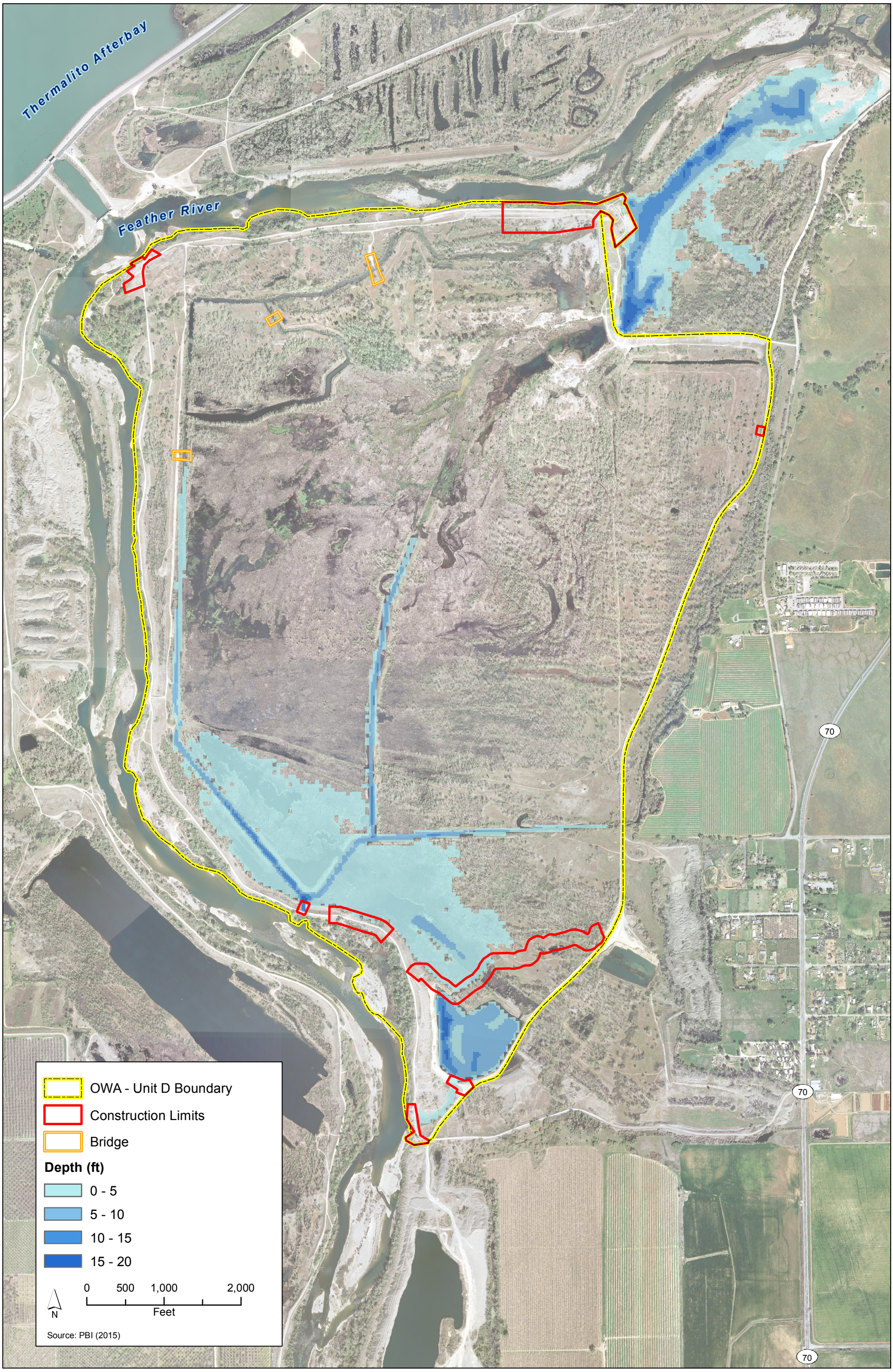

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Figure 2-3
Maximum Water Depths Under With-Project Conditions for the 2-year Design Flow Event

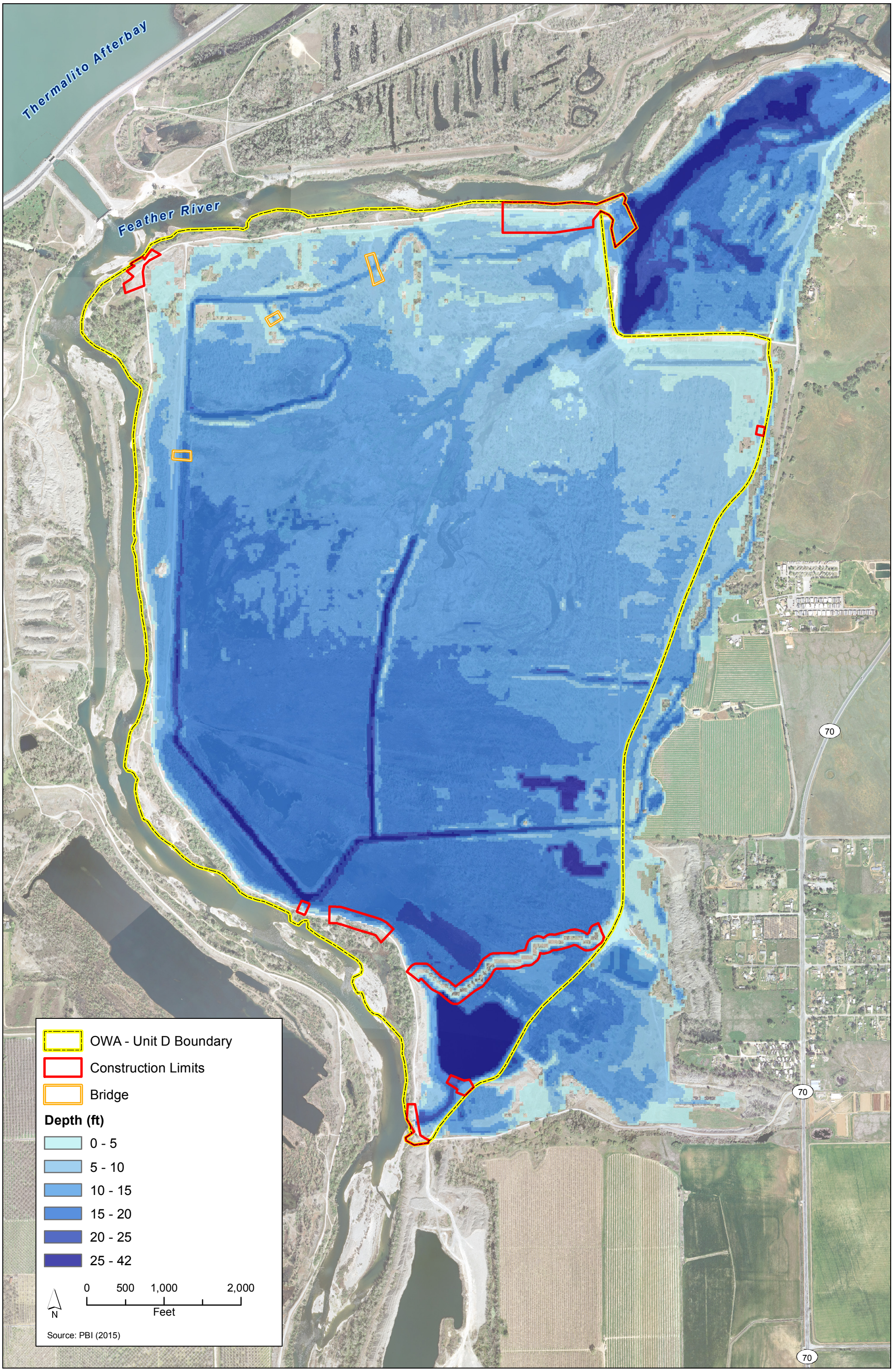

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Figure 2-4
Maximum Water Depths Under With-Project Conditions for the 100-Year Design Flow Event

Source: Peterson, Burstad, Inc. 2016.

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Figure 2-5
Notch Connection to the Feather River

2.3.3.3 Improvement of Outflow Weir Flood Control

The proposed project would construct improvements along the existing sheet pile weir. Improvement would consist of placing RSP along the northern and southern sides of the sheet pile wall and a concrete access road along the northern side of the sheet pile wall. The RSP would be keyed into existing grade and would match the elevations of the tops of existing sheet pile walls. The concrete access road would be constructed at grade and may incorporate the use of gabion mattresses or cobbles from within the OWA. Disturbed areas, excluding RSP and the concrete access road, would be hydroseeded.

2.3.3.4 Construction of Fish Barrier Berm

The proposed project would construct approximately 3,000 linear feet of berm improvements along the north side of Pit 2 pond. The sole purpose of the new berm is to prevent fish access into the Pit 2 pond (in the southern part of the project area), which has been identified as a fish-stranding hazard. The berm will also maintain existing wildlife habitat and recreational use of Pit 2 pond. The berm would be constructed using borrow material obtained from within the OWA. The area would be fenced, cleared, and grubbed prior to the start of construction, with the top 6 inches of material stripped if necessary. Stripped material would be spoiled onsite or disposed of offsite. The berm would then be constructed with a 12-foot-wide crown and side slopes ranging from three horizontal to one vertical (3H:1H) to 5H:1H. Disturbed areas would be hydroseeded upon completion of berm improvements.

2.3.3.5 Construction of Interior Channel Grading Improvements

The proposed project would provide improvements to approximately 7,500 linear feet of existing channels in the interior of the OWA that are isolated from the Feather River (Figure 2-6). The purpose of the improvements is to connect isolated ponds to the existing interior channel system to convey floodwaters back to the main channel, enhance fish passage in and out of the area, provide new fish rearing/wetland habitat, and reduce the establishment of invasive plant species. Portions of berms would remain to provide refugia during flood events. Improvements are anticipated to include grading within the channels to connect them, removing high berms along either side of the channels, and installing restoration plantings. Prior to start of construction, the area would be fenced, cleared, and grubbed, with the top 6 inches of material stripped if necessary. Stripped material may be spoiled onsite or disposed of offsite. Grading would be completed to remove berms along the channels and flatten channel slopes. Disturbed areas would be hydroseeded upon completion of construction.

2.3.3.6 Improvement of Interior Road Culvert Crossings

Improvement of the interior road culvert crossings would include temporary culverts, berm improvements, and a concrete road crossing. Prior to start of construction for each of these features, the area would be fenced, cleared, and grubbed, with the top 6 inches of material stripped if necessary. Stripped material would be spoiled onsite or disposed of offsite.

Temporary culverts would be placed along the existing access at the southwest of the OWA. Culverts would also be placed within the project area to facilitate vehicular access. Culvert placement would match existing channel grades when the roadway was reconstructed. Access would be limited during placement of the culverts. Disturbed areas would be hydroseeded.

The proposed project would remove the existing earth berm and culvert at the southern end of the Pit 2 pond and construct a concrete access road. The concrete access road would be constructed at grade. Disturbed areas, excluding RSP and the concrete access road, would be hydroseeded.

2.3.4 Recreation Enhancement

2.3.4.1 Improvement of Public Parking Areas

The proposed project would regrade two existing parking areas: one at the northwest corner of the OWA and one at the southern tip of the OWA. The intent of the parking area improvements is to upgrade the existing vehicle parking and pedestrian access to the Feather River. The work area would be fenced, cleared, and grubbed prior to the start of construction, with the top 6 inches of material stripped if necessary. Stripped material may be spoiled onsite or disposed of offsite. The area would be flat graded and topped with a minimum of 6 inches of aggregate base. Approximately 350 linear feet of 3-feet-diameter boulders would be placed along the northern perimeter of the northwest site and along the western border of the southwest site to act as vehicular barriers. Existing paths that allow pedestrian access from the parking areas to the Feather River would be maintained. Disturbed areas, excluding areas that receive aggregate base, would be hydroseeded. These minor enhancements are not expected to increase recreational visitation at the OWA (Fritz pers. comm.).

2.3.4.2 Installation of Concrete Pad for Portable Restroom Facilities

The proposed project would construct a concrete pad for the existing portable restrooms. This work would occur in conjunction with construction of the parking area improvements. The concrete pad would be located at the northwest parking site, would be constructed on existing grade, and would include tie downs for the portable restrooms.

2.3.4.3 Construction of Recreational Footbridges and Recreational Footbridge/Emergency Vehicle Access Bridge

The proposed project would construct two footbridges and one emergency vehicle/footbridge in the OWA. It is currently anticipated that the footbridges would span the existing channels, and the vehicle bridge would be a cast-in-place or precast pre-stressed slab bridge and a steel girder with concrete deck. These structure types prevent the need for in-channel work, which minimizes environmental impacts, and have lower maintenance than wooden structures. Manufactured weathering steel truss bridges would be used for the pedestrian bridges. Prior to the start of construction, the area would be fenced, cleared, and grubbed, with the top 6 inches of material stripped if necessary. Stripped material may be spoiled onsite or disposed of offsite. Footings for the bridges would be excavated, forms constructed, and concrete placed, and then the bridges would be constructed. Disturbed areas would be hydroseeded after bridge construction.

2.3.4.4 Grading of Terrain to Improve Feather River Access

The proposed project would construct improvements along the northeast and southwest sides of the OWA to allow for parking and access to the Feather River. Construction operations would proceed as described for the parking lot improvements. The existing river access would be graded to reduce the slope of the access to the Feather River. The grading for the access areas could include work below the OHWM.

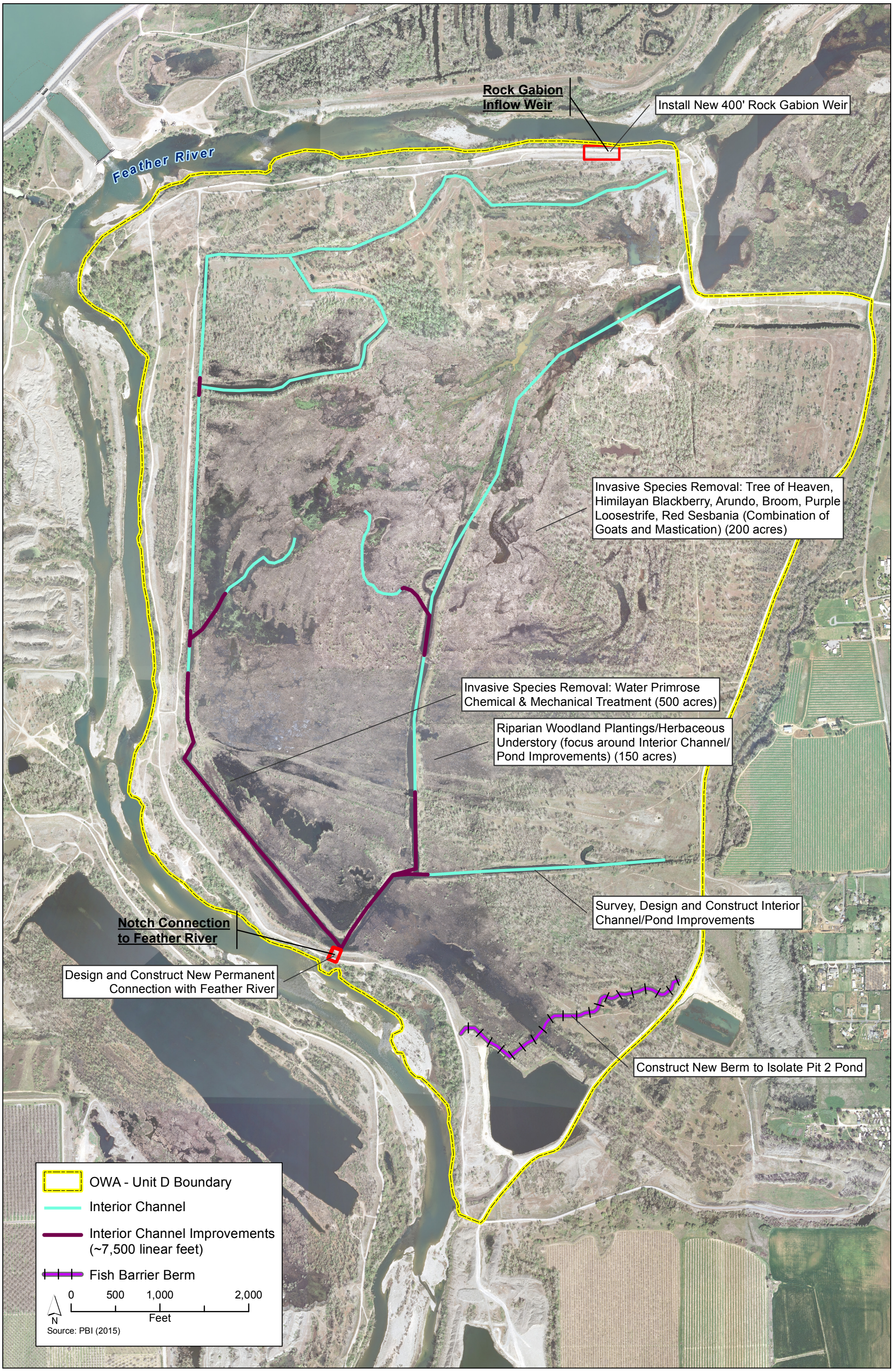

Figure 2-6
Interior Channel Improvements

2.3.5 Construction

2.3.5.1 Schedule

The anticipated construction schedule is shown in Table 2-1. Typical construction activities are expected to occur up to 14 hours per day, Monday through Saturday, between 6:00 a.m. and 8:00 p.m. Equipment clean up and maintenance would occur on Sundays. Year 2 of construction would be limited to the hand-removal treatment of invasive plant species and the continued planting of native riparian vegetation.

Table 2-1. Construction Schedule

Construction Year	Construction Start/End Date	Construction Duration (number of work days)
Year 1 - (vegetation management and restoration, construction of all hydraulic improvements and recreation enhancements)	April 15 – November 1, 2017	6 days a week for construction activities with Sunday used for equipment clean up.
Year 2 - (vegetation management and restoration)	April 15 – November 1, 2018	120 total working days

2.3.5.2 Equipment

The anticipated phases of construction, the type of equipment needed for each phase, the count for each piece of equipment, and the duration of each phase are listed in Table 2-2 below. Most equipment will stay onsite for the duration of the phase. The exception is the private vehicles driven by crew and the haul trucks.

Table 2-2. Construction Phases, Equipment, and Anticipated Work Durations

Construction Phase	Anticipated Number and Type of Equipment That May Be Utilized by the Contractor	Anticipated Number and Daily Usage	Anticipated Duration of Use	Total Phase Duration
Phase 1 – Clearing, Grubbing and Stripping	(2) Water Trucks	2 at 80%	45 Days	45 Days
	(2) Front-End Loaders	2 at 50%	45 Days	
	(2) Pickup Trucks	2 at 80%	45 Days	
	(2) Haul Trucks	2 at 25%	45Days	
Phase 2 – Construction Activities (Lags behind Phase 1 by approximately 1 week or more)	(4) Motor Graders	4 at 100%	45 Days	80 Days
	(2) Pickup Trucks	2 at 80%	80 Days	
	(1) Concrete Truck	1 at 100%	15 Days	
	(1) Crane	1 at 50%	15 Days	
	(4) Tractors with Discing Equipment	4 at 50%	35 Days	
	(4) Vibratory Rollers	4 at 50%	45 Days	
	(2) Water Trucks	2 at 80%	45 Days	
	(10) Haul Trucks	10 at 50%	20 Days	
Phase 3 – Hydroseeding (Begins after Phase 2)	(2) Hydroseeding Trucks	2 at 50%	10 Days	10 Days
	(2) Pickup Trucks	2 at 50%	10 Days	
Phase 4 – Demobilization & Site Cleanup (Begins after Phase 3)	(2) Extended Boom Pallet Loader	2 at 25%	20 Days	20 Day
	(2) Pickup Trucks	2at 50%	20 Days	
	(2) Haul Trucks	2 at 50%	Days	

2.3.5.3 Earth Disturbance and Haul Trucking

This section describes the earth-disturbance activity, sources of fill material, and approximate haul truck activity.

- The maximum acreage to be disturbed will be approximately 120 acres. This disturbance will result mainly from interior channel grading, parking lot grading, and construction of berms, bridges, gabions, and weirs. This acreage includes the staging/stockpile and borrow areas, ingress and egress points, and all temporary drive-around and equipment storage areas adjacent to the site.
- Most of the material needed for construction is expected to come from within the OWA. Approximately 5,200 cubic yards of cobble is anticipated for the construction of the gabion weir and approximately 21,000 cubic yards of top soil for construction will be obtained from onsite sources. Aggregate base (AB), RSP material, and concrete will be imported. Table 2-3 provides approximate quantities of materials that will be needed for the construction of each of the project components.

  - AB can come from local commercial sources up to 1 hour away. AB borrow sources are not known but likely haul routes include SR 99 and SR 70. Approximately 35,500 cubic yards of borrow are anticipated to be needed for construction.
  - RSP is anticipated to come from the Parks Bar Quarry, located at SR 20 and Parks Bar Road in Smartsville. Haul routes for RSP from Park Bar would be along SR 20 to north along SR 70 and then along Pacific Heights Road. Approximately 9,000 cubic yards of RSP is anticipated to be needed for construction of the sheet pile weir and Pit 2 pond spillway channel improvements.

- Imported materials will come from either Parks Bar Quarry or from other commercially available sources within approximately 1 hour, or 60 miles, of the project area.
- The total quantity of construction materials needed is estimated to be 200,000 cubic yards.
- Paving will be limited to 0.6 acre for the two concrete access roads, one at the sheet pile weir and one at the southern end of Pit 2 pond. Approximately 535 cubic yards of concrete is anticipated to be needed for construction of the access roads and new portable restroom pad.
- Trucks are anticipated to haul 12 to 15 cubic yards of material per trip.
- Road construction would be limited to the OWA. These roads would be dirt roads with possible AB and concrete located within the construction limits shown in Figure 2-1.
- The deepest excavation below ground surface is expected to be 5 feet deep at the permanent notch connections to the Feather River. Other deep excavation would be onsite borrow taken from the above ground surface tailings mounds.

Table 2-3. Approximate Quantities of Construction Materials during Phase 2

Description	Top Soil – On-site (CY)	Soil Hauling – On-site (CY)		Concrete (CY)	AB from off-site (CY)	Cobbles from on-site (CY)	RSP from off-site (CY)
		Cut	Fill				
400-foot Gabion Weir	11,350	7,100	4,100	0	12,200	5,200	0
Parking and Restroom Pad Improvements	1,670	0	0	30	1420	0	0
River Access Area	0	2,640	1,450	0	12,000	0	0
River Access, road/temp culvert, and parking Improvements	1,350	1,450	1,200	0	2,800	0	0
Sheet Pile Weir Improvements	3,300	3,000	950	335	6,000	0	8,000
Temporary Culvert	200	0	60	0	450	0	0
Remove berm and construct concrete road crossing	900	1,850	0	120	0	0	900
Vehicular Bridge	1,000			4-footings @ 5 CY each	0	0	0
Pedestrian Bridges	1,000			4-footings @ 5 CY each	0	0	0
New Berm near the North Side of the Pit 2 Pond			135,000	0	600	0	0
Grading Improvements to the Interior Channel	0	0		0	0	0	0

AB=aggregate base, CY=cubic yards, RSP=rock slope protection

Erosion control would include use of grassland seed mix. After earth-disturbing activities are completed, wildflower species would be included in the seed mix used for erosion control. SBFCA would require construction contractors to use wildflower seed in erosion control measures. Only native wildflower species would be incorporated into the seed mix and applied to all exposed slopes and areas where invasive species are removed in terrestrial areas. Wildflowers would provide seasonal variation. Species selected would be native and indigenous to the area and appropriate for the surrounding habitat. If not appropriate for the surrounding habitat, wildflowers should not be included in the seed mix. Under no circumstances would invasive plant species be used in any erosion control measures.

2.3.5.4 Activity below Ordinary High Water Mark

Activity below the ordinary high water mark (OHWM) would be limited to grading for the access improvements to the Feather River and the notch connections to the river. Neither of these would result in new permanent fill in the channel. As a part of constructing the permanent notch connection, it is anticipated that grading within the Feather River would be needed. The intent of that grading would be to tie grades at the interior of the OWA with the grades of the Feather River. Canal grading is not directly connected to the Feather River and is therefore not considered as work within the wetted Feather River channel. A cofferdam may be needed for the notch connection work to the river. Approximately 500 cubic yards of material of temporary fill would be placed below the wetted channel's OHWM. No cofferdam is expected to be needed for the river access improvements. No dredging would be necessary for any project feature.

2.3.5.5 Employee Vehicle Travel

Employee vehicle travel in pickup trucks is estimated to be 40 to 50 employees each construction year. These employees would likely work 14-hour shifts Monday through Saturday. Equipment cleanup would occur on Sundays. No night work is anticipated. Employee parking would be within the OWA D-Unit.

2.3.5.6 Construction Utilities

The utilities required by the proposed project would be electricity and water. The electrical needs of the project are not known but are expected to be met by generators. It is estimated that two 50 horsepower generators will be needed 2 hours a day during the grading, construction and site cleanup phases. Water sources for construction are the contractor's responsibility. The contractor may opt to use surface water from within the OWA D-Unit or bring water in from offsite sources, such as Rain for Rent, or similar, or from fire hydrants in the Oroville area.

Although no night work is expected, some construction lighting may be necessary. SBFCA would require construction contractors to minimize project-related light and glare to the maximum extent feasible given safety considerations. Color-corrected halide lights would be used. Portable lights would be operated at the lowest allowable wattage and height (no greater than 20 feet). All lights would be screened and directed downward toward work activities and away from the night sky and nearby residents to the maximum extent possible. The number of lights used would be minimized to the greatest extent feasible.

2.3.5.7 Road Closures and Disruptions to Utilities or Adjacent Land Owners

No road closures would be necessary for construction of the project. One utility line, the SCOR's treated sewer outfall line, runs through the project area (Figure 2-1). Although this utility is present in the construction footprint, it is not anticipated to be disturbed by the project. No disruptions to adjacent landowners (physical access, emergency services, or utility service) are expected.

2.3.5.8 Project Area Closures

Portions of the project area will be closed during construction. Construction at the outflow weir, southwest parking area, and permanent notch connection would prohibit through access along the perimeter road. However, access to the project area would be maintained from either the northern

or southern entrances. It is anticipated that construction at these three sites would be completed concurrently so as to limit the amount of time through access is prohibited. If possible, through access will be restored by July 16. Work in November through April will be weather dependent. Any closures would be coordinated with DFW and DWR.

2.3.6 Monitoring

Monitoring efforts would focus on:

- Extent of floodplain inundation.
- Native fish use of the reconnected floodplain.
- Control of both terrestrial and aquatic invasive plant species.

Monitoring of floodplain inundation would be needed to determine the extent and duration of inundation resulting from flood events. This data would be important in quantifying project benefits, testing hydraulic models associated with the project reach of the Feather River, predicting floodplain inundation in future flooding events, evaluating fish use of the floodplain, and understanding the benefits of floodplain access and inundation for native fish. Fish monitoring is also necessary to ensure that the project minimizes stranding of native fish as floodwaters recede and interact with modified interior channels and ponds.

Invasive species monitoring would be needed to determine treatment effectiveness and inform long-term management of the project area. Adaptive management of invasive species requires collection and analysis of pre- and post-treatment monitoring data to evaluate the efficacy of control actions and any impacts associated with these actions. In addition, effective monitoring is a critical component of the "early detection and rapid response" (EDRR) approach to weed management, in which immediate and aggressive actions are taken to identify and eliminate incipient populations of exotic plants in a given area (California Invasive Plant Council 2016).

Monitoring of floodplain reconnection, native fish, and invasive species would inform an adaptive management approach to provide a framework to evaluate project progress and respond to new information. Maintaining feedback between project planning, implementation, monitoring, and evaluation is essential to making recommendations on future restoration activities, site management (short- and long-term), and ultimately, project success. The effectiveness of site-scale invasive species treatments would be monitored using field surveys in combination with conservation technologies such as survey-grade Global Positioning System receivers, Geographic Information System software, and high-resolution aerial imagery. Native fish monitoring would be conducted using a suite of techniques designed to estimate fish abundance, habitat usage, and potential stranding in complex environments.

2.4 Regulatory Commitments

SBFCA would prepare the following plans as part of their regulatory commitments.

2.4.1 Storm Water Pollution Prevention Plan

SBFCA would prepare a Storm Water Pollution Prevention Plan (SWPPP) for the proposed project, as required by the Central Valley Regional Water Quality Control Board (RWQCB). The SWPPP

would identify erosion and sediment control measures to be implemented during construction activities to ensure land disturbance activities do not cause erosion that would increase sedimentation in the Feather River. Site-specific erosion and sediment control measures would be developed by a qualified SWPPP developer as part of a SWPPP. A SWPPP typically includes erosion and sedimentation control measures, site management practices, materials and waste management, and general preventive maintenance and inspection. These measures would prevent excavated and eroded soils, construction materials, or debris from being transported to receiving waters.

Chapter 3.3, *Hydrology and Water Quality*, lists some of anticipated measures to be included in the SWPPP.

2.4.2 Turbidity Monitoring Plan

SBFCA would prepare a turbidity monitoring plan for the proposed project, as required by the Central Valley RWQCB. The plan would require SBFCA or its contractor to monitor turbidity to determine whether turbidity is being affected by in-water construction and ensure that construction does not result in a substantial rise in turbidity levels above ambient conditions, in accordance with the Basin Plan turbidity objectives. The monitoring program would include monitoring ambient turbidity conditions at least 200 feet upstream and 200 feet downstream of construction activities. Grab samples would be collected at a downstream location that is representative of the flow near the construction site. If construction is creating a visible sediment plume, the sample would represent the plume. During all in-water construction activities, samples would be collected hourly to ensure compliance. During all other construction activities, samples would be collected on a random weekly basis.

Chapter 3.3, *Hydrology and Water Qua*lity, lists some of anticipated measures to be included in the turbidity monitoring plan.

2.4.3 Spill Prevention, Control, and Countermeasure Plan

A spill prevention, control, and countermeasure plan (SPCCP) is intended to prevent discharge of petroleum products into navigable water or adjoining shorelines. SBFCA or its contractor will develop and implement an SPCCP to minimize the potential for and effects from spills of hazardous, toxic, and petroleum substances during construction and operation activities, as well as minimize the effects of unearthing previously undocumented hazardous materials.

Chapter 3.3, *Hydrology and Water Quality*, lists some of anticipated measures to be included in the SPCCP.

2.5 Related Actions

Two actions related to the proposed project that were not evaluated in this IS/MND are the herbicide treatment of invasive plant species and project maintenance.

2.5.1 Herbicide Treatment

Herbicide treatment of invasive plant species in the project area will occur annually for 3 years, starting in 2017, as described in the *Oroville Wildlife Area D Unit Invasive Species Management Plan* (Appendix 2-A). Herbicide application is covered under DFW's National Pollutant Discharge Elimination System permit.

2.5.2 Maintenance

The project area is owned by the State of California and managed by DFW. Post-project maintenance of the project area will consist of SBFCA maintaining the restoration plantings for 3 years. Postproject monitoring will help inform the maintenance plan and the types of activities conducted during plan implementation.