



Low-Effect Habitat Conservation Plan

South River Pump Station Flood Protection Project

Prepared for:

Regional San

8521 Laguna Station Road

Elk Grove, California 95758

Prepared by:

Madrone Ecological Consulting, LLC

2617 K Street, Suite 175

Sacramento, California 95816

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EXECUTIVE SUMMARY

The Sacramento Regional County Sanitation District (Regional San) is applying for a permit pursuant to Section 10(a)(1)(B) of the Endangered Species Act of 1973 as amended (16 U.S.C. 153101544, 87 Stat. 884), from the U.S. Fish & Wildlife Service (USFWS) for the incidental take of the threatened Valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*) (VELB) and the threatened giant garter snake (*Thamnophis gigas*) (GGS). The potential taking would occur incidental to construction of a new flood protection levee and raised all-weather access road around the existing South River Pump Station, within a 136.4 -acre site located at 30030 South River Road in Sacramento County, CA. This Project may affect individual VELB and individual GGS, but will not affect Critical Habitat for VELB (USFWS 1980). Critical Habitat has not been designated for GGS.

The Project site currently supports the existing South River Pump Station, a leveled agricultural field, a railroad embankment, and several levees. Construction of a new flood protection levee and raised all-weather access road will result in the permanent removal of 23 blue elderberry (*Sambucus nigra* ssp. *cerulea*) shrubs, considered potential habitat for the VELB, and temporary impacts to 10.775 acres of riparian scrub, ruderal, annual grassland, agricultural crop, and urban vegetation communities considered upland habitat for GGS. The closest reported occurrence of VELB in the (California Natural Diversity Data Base (CNDDDB) occurs approximately 0.75 mile north of the Project Area (CNDDDB 2016). The closest documented occurrence of GGS in the CNDDDB is approximately 1.5 miles northwest of the Project Area (CNDDDB 2016).

Regional San is applying for a Section 10(a)(1)(B) permit for a period of five (5) years, and proposes to implement the habitat conservation plan (HCP) described herein, which provides for measures for avoiding, minimizing, and mitigating adverse effects on the VELB and the GGS for activities associated with construction of the new flood protection levee and raised all-weather access road.

This HCP summarizes information about the Project and identifies the responsibilities of the USFWS and Regional San for implementing the actions described herein to benefit the VELB and upland habitat for GGS. Regional San will satisfy the mitigation requirements by purchasing 55 VELB credits from a USFWS-approved conservation bank and transplanting the removed elderberry shrubs to the conservation bank, and by restoring temporarily impacted GGS habitat to pre-Project conditions within the same calendar year (Option 1). If final restoration of a portion of the temporarily impacted GGS habitat occurs the calendar year following the initial impact, Regional San will satisfy additional mitigation requirements by dedicating 0.780 acre of created GGS habitat at the South Stone Lake Giant Garter Snake Mitigation Preserve or through the purchase of mitigation credits from a USFWS-approved conservation/mitigation bank (Option 2) This HCP also describes measures to minimize take of individual VELB and GGS, and ensure the elements of the HCP are implemented in a timely manner. Funding sources for implementation of the HCP, actions to be taken for changed and unforeseen events, alternatives to the proposed permit

action, and other measures required by the USFWS are also discussed. Regional San will minimize and mitigate for any effects caused by the authorized activity, which will offset or reduce the significance of adverse effects.

1.0 INTRODUCTION AND BACKGROUND

1.1 Overview and Background

This Habitat Conservation Plan (HCP) has been prepared for the Sacramento Regional County Sanitation District's (Regional San) South River Pump Station (SRPS) located in Yolo County, California. It has been prepared pursuant to the requirements of Section 10(a) of the Federal Endangered Species Act, as amended (ACT). The HCP is intended to provide the basis for issuance of a Section 10(a)(1)(B) permit to Regional San to authorize incidental take of the federally threatened Valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*) (VELB) and the federally threatened giant garter snake (*Thamnophis gigas*) (GGS) likely to result from construction of a ring levee and access road around the SRPS. Construction of a new flood protection levee and raised all-weather access road will result in the permanent removal of 23 blue elderberry (*Sambucus nigra* ssp. *cerulea*) shrubs considered potential habitat for the VELB, and temporary impacts to 10.775 acres of riparian scrub, ruderal, annual grassland, agricultural crop, and urban vegetation communities considered upland habitat for GGS. The USFWS has determined that the SRPS qualifies for a low-effect determination. Low-effect determinations are given to projects that have minor or negligible effects on federally-listed, proposed or candidate species and the habitat, and minor or negligible effects on other environmental values or resources. Consequently low-effect HCPs are given categorical exclusion under NEPA (USFWS 1996b).

SRPS is located at 30030 South River Road in rural Yolo County, just south of the southern West Sacramento city limit, as shown on **Figure 1**. Construction of the SRPS began in 2004 and service began in 2007 as part of the Lower Northwest Interceptor Project (LNWI) for Regional San. The LNWI services thousands of residences and businesses in the Natomas area of the City of Sacramento, unincorporated areas of the County of Sacramento, the City of Citrus Heights, and the City of West Sacramento.

SRPS was constructed within Reclamation District 765, in an area protected on four sides by levees. At one time the levees were thought to provide 400-year protection. However, a study conducted by the United States Army Corps of Engineers (USACE) in 2002 led to additional evaluation of Sacramento area levees. Subsequent studies indicated that the levees do not meet the state or federal flood protection criteria. Likewise, planned flood protection improvements do not extend past the city limits of West Sacramento. Should a significant flood event, 100-year storm or greater, occur at the SRPS, sewer service could be impacted for thousands of customers in the communities served by the LNWI. This project aims to protect the SRPS against a potential flood event by constructing a ring levee and access road around the station.

1.2 Permit Holder/Permit Duration

Regional San is applying for a Section 10(a)(1)(B) permit, for a period of five (5) years.

1.3 Permit Area/Covered Lands

The proposed South River Pump Station Flood Protection Project (Project) is located at 30030 South River Road in rural Yolo County, just south of the southern limit of the City of West Sacramento. The Project area is located within an unsectioned portion of Township 8 North, Range 4 East (MDBM) of the "Sacramento West, California" and "Clarksburg, California" 7.5-minute USGS topographic quadrangles (**Figure 1**).

The Permit Area includes those areas that could be directly or indirectly affected by the proposed Project. Since the federally-listed species that may be affected by the Project are VELB and GGS, the Permit Area should include those areas containing habitat or potential habitat for VELB and GGS that could be affected. The USFWS typically requires avoidance and minimization measures to avoid indirect effects to elderberry shrubs within 100 feet of construction; therefore, the Permit Area extends 100 feet into all upland areas adjacent to the Project (**Figure 2**). The 156.0-acre Permit Area shown in **Figure 2** is comprised of 136.4 acres within the Project area, and 19.6 acres within the indirect impact buffer.

1.4 Species to be Covered by Permit

The following species are referred to as "covered species" related to the Incidental Take Permit if it is issued:

- Valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*) (federal threatened / no state status)
- Giant garter snake (*Thamnophis gigas*) (federal threatened / state threatened)

1.5 Regulatory Framework

1.5.1 Federal Endangered Species Act

Section 9 of the Endangered Species Act (Act) and Federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm is further defined by the USFWS to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Harass is defined by the USFWS as intentional or negligent actions that create the likelihood of injury to listed species by annoying them to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity.

Pursuant to section 11(a) and (b) of the Act, any person who knowingly violates this section 9 of the Act or any permit, certificate, or regulation related to section 9, may be subject to civil penalties of up to \$25,000 for each violation or criminal penalties up to \$50,000 and/or imprisonment of up to one year.

Individuals and State and local agencies proposing an action that is expected to result in the take of federally listed species are encouraged to apply for an incidental take permit under section 10(a)(1)(B) of the Act to be in compliance with the law. Such permits are issued by the USFWS when take is not the intention of and is incidental to otherwise legal activities. An application for an incidental take permit must be accompanied by a habitat conservation plan, commonly referred to as an HCP. The regulatory standard under section 10(a)(1)(B) of the Act is that the effects of authorized incidental take must be minimized and mitigated to the maximum extent practicable. Under section 10(a)(1)(B) of the Act, a proposed project also must not appreciably reduce the likelihood of the survival and recovery of the species in the wild, and adequate funding for a plan to minimize and mitigate impacts must be ensured.

Section 7 (a)(2) of the Act requires Federal agencies to ensure that their actions, including issuing permits, do not jeopardize the continued existence of listed species or destroy or adversely modify listed species' critical habitat. "Jeopardize the continued existence of..." pursuant to 50 CFR 402.2, means to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species. Issuance of an incidental take permit under section 10(a)(1)(B) of the Act by the USFWS is a Federal action subject to section 7 of the Act. As a Federal agency issuing a discretionary permit, the USFWS is required to consult with itself (i.e., conduct an internal consultation). Delivery of the HCP and a section 10(a)(1)(B) permit application initiates the section 7 consultation process within the USFWS.

The requirements of section 7 and section 10 substantially overlap. Elements unique to section 7 include analyses of impacts on designated critical habitat, analyses of impacts on listed plant species, if any, and analyses of indirect and cumulative impacts on listed species. Cumulative effects are effects of future State, tribal, local or private actions that are reasonably certain to occur in the action area, pursuant to section 7(a)(2) of the Act. The action area is defined by the influence of direct and indirect impacts of covered activities. The action area may or may not be solely contained within the HCP boundary. These additional analyses are included in this HCP to meet the requirements of section 7 and to assist the USFWS with its internal consultation.

1.5.2 The Section 10(a)(1)(B) Process - Habitat Conservation Plan Requirements and Guidelines

The Section 10(a)(1)(B) process for obtaining an incidental take permit has three primary phases: (1) the HCP development phase; (2) the formal permit processing phase; and (3) the post-issuance phase.

During the HCP development phase, the project applicant prepares a plan that integrates the proposed project or activity with the protection of listed species. An HCP submitted in support of an incidental take permit application must include the following information:

- impacts likely to result from the proposed taking of the species for which permit coverage is requested;
- measures that will be implemented to monitor, minimize, and mitigate impacts; funding that will be made available to undertake such measures; and procedures to deal with unforeseen circumstances;
- alternative actions considered that would not result in take; and
- additional measures USFWS may require as necessary or appropriate for purposes of the plan.

The HCP development phase concludes and the permit processing phase begins when a complete application package is submitted to the appropriate permit-issuing office. A complete application package consists of 1) an HCP, 2) an Implementing Agreement (IA) if applicable, 3) a permit application, and 4) a \$100 fee from the applicant. The USFWS must also publish a Notice of Availability of the HCP package in the Federal Register to allow for public comment. The USFWS also prepares an Intra-USFWS Section 7 Biological Opinion and prepares a Set of Findings, which evaluates the Section 10(a)(1)(B) permit application in the context of permit issuance criteria (see below). An Environmental Action Statement, Environmental Assessment, or Environmental Impact Statement serves as the USFWS's record of compliance with the National Environmental Policy Act (NEPA), which has been published for a 30-day, 60-day, or 90-day public comment period. The Environmental Action Statement is a brief document that serves as the USFWS's record of compliance with NEPA for categorically excluded actions such as Low Effect HCPs. An implementing agreement is required for HCPs unless the HCP qualifies as a low-effect HCP. A Section 10(a)(1)(B) incidental take permit is granted upon a determination by the USFWS that all requirements for permit issuance have been met. Statutory criteria for issuance of the permit specify that:

- the taking will be incidental;
- the impacts of incidental take will be minimized and mitigated to the maximum extent practicable;
- adequate funding for the HCP and procedures to handle unforeseen circumstances will be provided;
- the taking will not appreciably reduce the likelihood of survival and recovery of the species in the wild;
- the applicant will provide additional measures that the USFWS requires as being necessary or appropriate; and
- the USFWS has received assurances, as may be required, that the HCP will be implemented.

During the post-issuance phase, the Permittee and other responsible entities implement the HCP, and the USFWS monitors the Permittee's compliance with the HCP as well as the long-term progress and success of the HCP. The public is notified of permit issuance by means of the Federal Register.

1.5.3 National Environmental Policy Act

The purpose of the National Environmental Policy Act (NEPA) is two-fold: to ensure that Federal agencies examine environmental effects of their actions (in this case deciding whether to issue an incidental take permit) and to utilize public participation. The NEPA process helps federal agencies make informed decisions with respect to the environmental consequences of their actions and ensures that measures to protect, restore, and enhance the environment are included, as necessary, as a component of their actions. NEPA serves as an analytical tool on direct, indirect, and cumulative impacts of the proposed project. NEPA analysis must be done by the USFWS for each HCP as part of the incidental take permit application process. Low-effect HCPs, as defined in the USFWS Habitat Conservation Planning Handbook, are categorically excluded under NEPA, as defined by the Department of Interior Manual 516DM2, Appendix 1, and Manual 516DM6, Appendix 1.

1.5.4 National Historic Preservation Act

All Federal agencies are required to examine the cultural impacts of their actions (e.g. issuance of a permit). This requires consultation with the State Historic Preservation Office (SHPO) and appropriate American Indian tribes. All incidental take permit applicants are required to submit a Request for Cultural Resources Compliance form to the USFWS.

1.5.5 Other Introductory or Background Topics as Appropriate

Other relevant laws to the ITP process include Migratory Bird Treaty Act, Clean Water Act, State Endangered Species Act, California Environmental Quality Act, and other state and local legislation.

1.5.5.1 Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) prohibits the take, possession, import, export, transport, selling, purchase, barter, or offering for sale, purchase or barter, any native migratory bird, their eggs, parts, and nests, except as authorized under a valid permit (50 CFR 21.11.). Likewise, Section 3513 of the California Fish & Game Code prohibits the "take or possession" of any migratory non-game bird identified under the MBTA. Therefore, activities that may result in the injury or mortality of native migratory birds, including eggs and nestlings, would be prohibited under the MBTA.

1.5.5.2 California Endangered Species Act

The California Endangered Species Act generally parallels the main provisions of the Act and provides for the designation of native species or subspecies of plants, fish, and wildlife as endangered or threatened. Section 2080 prohibits the take of state listed as endangered or threatened species but allows for the incidental take of such species as a result of otherwise lawful development projects under section 2081(b) and (c).

1.5.5.3 California Environmental Quality Act

The California Environmental Quality Act (CEQA) is a state statute that is generally analogous to NEPA on the Federal level in requiring the completion of an environmental review for projects that may impact environmental resources. It requires public agencies to review the environmental impacts of proposed projects, prepare and review negative declarations, mitigated negative declarations or environmental impact reports, and to consider feasible alternatives and mitigation measures that would substantially reduce significant adverse environmental effects. It applies to a broad range of environmental resources including any state- and federally-listed wildlife and plant species, as well as sensitive natural communities. Impacts to such species and natural communities must be evaluated under the CEQA.

2.0 PROJECT DESCRIPTION/ACTIVITIES COVERED BY PERMIT

2.1 Project Description

The proposed Project consists of constructing a new flood protection levee and raised all-weather access road around the existing South River Pump Station (**Figure 3** – Project Overview Map). The flood protection system is designed to provide a minimum of 200-year level of protection. An earthen ring levee with a top width of 20 feet and 3H:1V side slopes would be constructed around the SRPS, and an access road would extend from the proposed levee eastward to South River Road. A new 20-foot-wide ring road with aggregate base surface would be constructed on top of the new ring levee, and a 20-foot-wide paved access road with 5-foot aggregate base shoulders would be constructed to connect the ring road to South River Road. The new driveway from South River Road would be in the same location and would replace the existing driveway. Lighting would be installed along the access road. Additionally, 10-foot wide aggregate base maintenance roads would be constructed at the toe of the levee inside the ring levee, and around the outside toe of the levee on the south and east sides. Access ramps would connect the two roads. Lime treatment of the soil may be required under the road to stabilize the soils prior to construction. The primary access road from South River Road into the station would be paved with asphalt concrete, while the remaining levee and toe maintenance roads would be surfaced with aggregate base. The reconstructed access road would match the existing access driveway at South River Road. The access road to the existing agricultural property to the south would be improved. The existing SRPS access gate would be moved to the west to allow for construction of a new 24-foot-wide asphalt concrete paved access road to serve the adjacent agricultural property.

The top of the new ring levee would be approximately 22 feet above existing ground, with a top elevation of 33 feet NAVD 88. The new levee would be approximately 4,850 feet long. The embankments adjacent to the entrance driveway (approximately 900 feet) and approximately 2,600 feet of the existing railroad levee beginning at the City of West Sacramento boundary south around the north side of the SRPS would be fully degraded to field level. The existing entrance road and railroad embankment material would be removed and stockpiled in the construction staging area and would then be used as the outer shell of the zoned levee embankment. Material excavated from the borrow sites would be used to construct the new levee core. The shell material for the new levee would be a minimum of 4 feet thick. To control seepage under the levee, relief wells, as described below, may be used in conjunction with the ring levee.

An 8-foot-tall chain-link security fence would be constructed around the access road with three strands of barbed wire attached to the top of the chain-link fence. The fence would be constructed on both sides of the entrance road and around the outside of the ring levee. The fence would be constructed at the top of the levee on the outer hinge of the levee prism on the north and west sides of the ring levee and at the toe of the field access road on the south and east sides of the ring levee.

2.1.1 Relief wells

Relief wells would be constructed near the inside toe of the ring levee to bring the safety factors for levee stability within regulatory limits. They provide a lower resistance pathway allowing for the controlled release of underseepage, thereby lowering risk of ground failure. The relief wells effectively lower the subsurface water pressure induced by high water, which minimizes the potential for soil material movement on the dry side of levee. Without relief wells, the high pressures increase potential for sand boils or piping of levee foundation materials that would impair the levee stability. Relief wells are constructed using drilling equipment to bore a hole vertically through the fine-grained blanket layer and into the coarse-grained aquifer layer beneath. Pipe casings and filters are installed to allow the pressurized water to flow to the ground surface, thereby relieving the pressures beneath the clay blanket. Relief wells generally are spaced at 50- to 100-foot intervals. Approximately 35 relief wells are planned. The wells will be connected to two concrete lined relief well channels consisting of a 24-inch wide bottom and 1:1.25 side slopes. The relief ditches will flow to the north end of the site and discharge into the sewage junction structure. The wells require regular maintenance to ensure proper operation.

2.1.2 Drainage Improvements

Stormwater runoff within the existing SRPS drains into three connected detention basins at the perimeter of the facility. A small pump station on the north side of the site has the ability to pump stormwater from the station into Glide Lake to the west of the station. As part of the levee construction, a portion of the existing 8-inch stormwater discharge pipe into Glide Lake beneath the proposed levee footprint would be removed. The pipe would be cut and capped at the proposed levee toe, as shown on **Figure 3**. Runoff would be directed into the pump station well that eventually discharges to Regional San's treatment system. Removal of the discharge pipe would require the excavation of an access trench.

2.1.3 Borrow Site

To construct the proposed levee, an estimated 400,000 cubic yards (CY)¹ of material would be required. The existing railroad embankment would be degraded and the material reused in the construction of the proposed ring levee and access road for SRPS. The levee degrade would yield approximately 100,000 CY of material; however, the majority of the levee material will come from a borrow site. The borrow site is located directly adjacent to the south and east sides of the SRPS on what is known as the Watermark Farms Property. This property is currently in agricultural use. A portion of this property would be used for the construction of the proposed levee and access road, and approximately 75 acres would be excavated

¹ The geometry of the levee requires 260,000 CY of compacted borrow. To account for shrinkage, the Project engineers estimated 25% (325,000 CY) more borrow material than the required levee volume. To account for potential loss and unsuitable materials, the borrow site would then need to provide an additional 25% (400,000CY).

for use as a borrow site. Areas not excavated would be used for construction and staging. The average depth of excavation would be 3 to 3.5 feet, which would generate up to 412,000 CY of potential borrow material. The topsoil material would be stripped, stockpiled, and re-spread on the site following excavation. The 75-acre borrow site would be returned to field crops following excavation. Hauling distance from the Watermark site would be minimal, since it is adjacent to the proposed levee construction site. Scrapers would be used to move material from the borrow site to the levee construction area. No additional land acquisition would be required for hauling borrow materials.

2.1.4 Construction

The primary construction staging area would be located east of the site between SRPS and South River Road, south of the existing access road. The remainder of the construction area would be fenced and used for the contractor's and engineer's construction trailers, parking for personnel, machine maintenance tools and parts, water trucks, and the storage of fuels and other materials to be used for construction. The Project right-of-way along the construction area also would be used to stage construction materials and equipment. Personnel, equipment, and imported materials such as aggregate base and asphalt concrete, would be transported to the Project area using South River Road. Materials would come from local quarries identified by the contractor. To provide access to the SRPS during construction, a temporary access road to the SRPS would be constructed south of the existing access road. Likewise, installation of a temporary overhead electrical line may be required to maintain power to the SRPS. Dewatering of construction areas is likely to be required.

The levee improvements would be constructed from May through 31 October.. The construction crew size during its peak is estimated at 20 people per shift working 8- hour shifts. No nighttime work is anticipated. The construction activities would be sequenced as follows:

- **Construction mobilization:** Mobilization would include setting up construction offices and transporting heavy construction equipment to the work site, and possible borrow site preparation. A construction staging area would be established within the Project right-of-way.
- **Site preparation (demolition, tree removal, clearing, grubbing, and stripping):** Site preparation would entail demolition of asphalt pavement, concrete debris, and drainage infrastructure from the levee footprint. The buried stormwater drainage pipe which discharges into Glide Lake will be completely removed from within the levee footprint. Site clearing would include removing trees and other large vegetation from the construction area and stripping up to 1 foot of material from the levee footprint to remove and stockpile top soil. Large roots, tree stumps, and deleterious material would be grubbed from the working area. Excess earth materials (organic soils, roots, and grass from borrow areas and excavated soil material that does not meet levee embankment criteria) would be used in the reclamation of borrow areas and levee slopes or

hauled offsite to landfills. Cleared vegetation (i.e., trees, stumps, brush) and debris would be hauled off site to landfills or a biorecycling facility.

- **Levee degrade and excavation of inspection trench:** Prior to the construction of the levee, the existing entrance road and railroad embankments within the Project footprint would be degraded to field level. The materials would be stockpiled in the staging area for use in construction the levee shell. A 6-foot-deep inspection trench would be excavated along the proposed length, to expose or intercept undesirable underground features such as old drain tile, water or sewer lines, other debris, animal burrows, buried logs, or pockets of unsuitable material (e.g., sand lenses, backfilled former drainage ditches, uncontrolled fills). After inspection, the trench would backfilled and compacted as part of the embankment construction. The material from the inspection trench would be stockpiled and used either in the levee, toe road, or disposed of offsite.
- **Construction of levee:** Borrow material would be delivered to the levee construction sites by scrapers or haul trucks where it would be spread by motor graders and compacted by sheepsfoot rollers to build the levee. Depending upon the soil types of available borrow materials, a zoned levee embankment section would be constructed. The center of the levee section would be constructed with high plasticity clay borrow material to provide an impermeable core, which would then be covered with low plasticity engineered fill material to reduce surface cracking, improve stability, and allow for plant establishment. The existing railroad embankment would be removed and stockpiled for use as the shell of the zoned levee embankment. The shell material would be a minimum of 4 feet in thickness (measured perpendicularly to the finished levee slope). To account for the additional load from the levee on the SRPS pipes, jet grouting of the sanitary force mains may be required.
- **Installation of relief wells and monitoring wells:** In some areas, relief wells may be installed adjacent to the toe of the levee. Relief wells would be spaced at 50- to 100-foot intervals if only relief wells are used.
- **Road construction, site restoration and demobilization:** Upon completion of construction activities, the levee slopes would be hydroseeded with a native grass mix. An asphalt concrete road would be constructed to connect South River Road to the entrance of the SRPS. An aggregate base road would be constructed on the crown of the remainder of new levee. Aggregate base maintenance roads would also be constructed along the toe of the levee. A chain-link fence would be constructed along the entire length of the access and ring road. Electrical for lighting and the access gate operator would be installed in the access road alignment. Any construction debris would be hauled to an appropriate waste or recycling facility. Equipment and materials would be removed from the site, and staging areas and any temporary access roads would be restored to pre-Project conditions.

2.1.5 Construction Implementation Options

There are two potential options for Project construction, summarized below as Option 1 and Option 2. These options have been developed to expedite Project construction as much as possible, due to the hazard to human life and public infrastructure posed by the potential overtopping of the Sacramento River levee, and subsequent flooding of the pump station. The option to be implemented will be determined based on the timing of elderberry shrub dormancy in fall 2016, and whether the USFWS authorizes work within GGS upland habitat between 1 October and 31 October.

2.1.5.1 Option 1 (preferred)

During late July through 1 September (or when elderberry shrubs enter dormancy), the ring levee surrounding the SRPS and the permanent access ramp to the adjacent agricultural field will be constructed. During this time period, construction may occur within GGS upland habitat and all other areas at least 20' away from elderberry shrubs. Construction of the access ramp will involve work within 10' of one small elderberry shrub; in addition to the standard VELB avoidance and minimization measures, a biological monitor will be present during all work that occurs less than 20' from the shrub to ensure that the shrub is not adversely effected.

From 1 September (or later, depending on the timing of elderberry dormancy) through 1 October, work may occur within GGS habitat (an extension to 31 October may be granted with specific approval from the USFWS), and elderberry shrubs may be transplanted without increased mitigation ratios. Immediately following the commencement of elderberry dormancy, the elderberry shrubs will be transplanted to Sacramento River Ranch VELB Conservation Bank or other USFWS-approved conservation/mitigation bank. Once the elderberry shrubs are removed, the existing access road embankment would be degraded, and the new embankment and access road would be constructed.

2.1.5.2 Option 2

This option would be triggered if elderberry dormancy does not occur by 25 September 2016, or the USFWS does not provide prior approval for work within GGS upland habitat between 1 October and 31 October. Under this option, construction of the permanent access ramp would be postponed until the summer of 2017, and a temporary access ramp to the SRPS would be constructed as shown in **Figure 4**. The temporary access ramp would have a roughly 8% grade and would connect the northeast corner of ring levee to the existing access road. The new permanent access driveway to the adjacent agricultural field to the south will disrupt the existing gate and access driveway to the plant. Thus, to accommodate construction of the agricultural property's access driveway, a second temporary access ramp will connect the existing access road to the South River Road driveway. A temporary security gate would be placed on the existing access road to control access to the SRPS and the new ring levee.

The elderberry shrubs would be transplanted in November 2016 through mid-February 2017. Trees that are located in areas that will need to be disturbed by the activities detailed below would be topped following elderberry shrub transplanting and prior to site winterization.

Construction in the summer (May – October) of 2017 would then involve the following activities (**Figure 5**):

- Degrade and reconstruction of the access road embankment;
- Reopening a portion of borrow site for suitable soil source;
- Spoil disposal of organic soils;
- Tree stump clearing and grubbing;
- Off haul of debris encountered for degrade;
- Removal of temporary access ramps;
- Access road subgrade preparation and surfacing with aggregate base and asphalt concrete;
- Completion of fencing; and
- Replacement of access gate at entrance.

2.2 Activities Covered by the Permit

The following are the activities requested to be covered by this Plan:

- Site preparation
- Tree removal
- Transplanting elderberry shrubs
- Embankment degrade
- Excavation of inspection trench
- Excavation of borrow material
- Construction of levee
- Construction and removal of temporary access road (if needed)
- Construction of access roads, maintenance roads, and a permanent access road for the borrow site
- Site restoration

These activities are anticipated to include ground disturbance, grading, the use of heavy equipment, vegetation removal, trampling of vegetation, stormwater discharge pipe removal, installation of electrical components (lighting and automatic gate opener), compaction of soils, creation of dust, stockpiling of soils, digging trenches and wells, placement of road aggregate, paving, installation of fencing, and hydroseeding. Duration, frequency and location of each of these activities is detailed in Section 2.1 above.

3.0 ENVIRONMENTAL SETTING/BIOLOGICAL RESOURCES

3.1 Environmental Setting

3.1.1 Climate

The climate of Sacramento County is mild. The climate has a bimodal seasonal pattern with respect to rainfall and temperature. It is characterized by hot, dry summers that are often moderated by the “Delta breeze,” and cool, moist winters. Average rainfall is approximately 18 inches per year (NRCS 1993), with most rain occurring between October and March. Average daytime temperatures in the vicinity of the Project area range from 93 in the summer to 53 in the winter.

3.1.2 Topography/Geology

The Permit Area is located at an elevational range of approximately 12 feet to 18 feet above mean sea level. It is situated in the Sacramento River delta, and is surrounded by levees to protect it from up to a 100-year flood. The Natural Resources Conservation Service (NRCS) has mapped five soil units within the Permit Area (NRCS 2015) (**Figure 6**), most of which have developed in association with alluvial deposition: Merritt silty clay loam; Valdez silt loam, deep; Sycamore silt loam; Sacramento silty clay loam; and Tyndall very fine sandy loam. The soils are not described in detail here, as the federally-listed species considered by this document are not soil-dependent.

3.1.3 Hydrology/Streams, Rivers, Drainages

The Permit area is located between Glide Lake, which is immediately adjacent to the west, and the Sacramento River, which is immediately adjacent to the east. An unnamed slough that is tributary to Glide Lake is present immediately to the north of the Permit area. Glide Lake and the unnamed slough drain west to the Sacramento River Deep Water Ship Channel, a tributary to the Sacramento River.

3.1.4 Existing and Surrounding Land Uses

The Permit Area is located generally south of Sacramento, California, between the Sacramento River and the Sacramento River Deep Water Ship Channel, within the Sacramento Valley region of the Great Central Valley (Baldwin et. al 2012). The Permit Area is located within the historic floodplain of the Sacramento River, but has been isolated from the river by the levees that are common in the area.

The Permit Area is comprised of the existing SRPS (approximately 14.6 acres), a leveled agricultural field (approximately 116.2 acres), an abandoned railroad embankment that wraps around the west and north sides of the SRPS and levees for Glide Lake to the west, an unnamed slough to the north, and the

Sacramento River to the east. South River Road forms the northeastern boundary of the Permit Area, and separates the Permit Area from the Sacramento River. The agricultural field within the Project area is utilized annually for growing a variety of row crops.

The majority of the surrounding lands to the south, west, and north are similar active agricultural fields, although the property immediately to the north is a rural residence located within a large fallow field. East of the Project area, on the other side of the Sacramento River, is an urban residential area.

3.1.5 Terrestrial Vegetation Communities

Seven terrestrial vegetation communities occur within the Permit Area: agricultural cropland, annual grassland, riparian scrub, riparian woodland, ruderal, urban, and Valley oak woodland (**Figure 7**). All of the terrestrial vegetation communities apart from urban provide habitat for a number of common plant and wildlife species. Each of the communities, including associated common plant species observed, are described below.

3.1.5.1 Agricultural Cropland

The agricultural fields within the Permit Area are actively used to grow a variety of crops, including wheat, corn, alfalfa, and tomatoes. The fields themselves are monoculture crops, but the edges typically support non-native, ruderal vegetation. Several species of rodents and songbirds feed in these croplands and use the vegetation as cover. Hawks, kites, and owls hunt in the croplands, feeding on insects, rodents, and other birds.

3.1.5.2 Annual Grassland

Annual grassland occurs in a few isolated patches within the Permit Area: on the spoils pile in the middle of the agricultural field; along a portion of the northern side of the railroad embankment; and a small patch just northeast of the agricultural field. The annual grassland is primarily occupied by non-native annual grasses, including wild oats (*Avena fatua*), ripgut brome, (*Bromus diandrus*), soft chess (*B. hordeaceus*), and rattail fescue (*Festuca myuros*). Non-native forbs that dominate the ruderal community such as peppery white top (*Lepidium latifolium*) and prickly wild lettuce (*Lactuca serriola*) are interspersed with the grasses. Isolated shrubs and small trees are scattered throughout this community. Average non-native species cover within this community is approximately 100%.

3.1.5.3 Riparian Scrub

Riparian scrub occurs on both sides of the southern portion of the railroad embankment. The riparian scrub is dominated by Valley oak (*Quercus lobata*) saplings, poison-oak (*Toxicodendron diversilobum*), and

low-growing Himalayan blackberry (*Rubus armeniacus*). Other common species in this community are California blackberry (*Rubus ursinus*), wild rose (*Rosa* species), elderberry (*Sambucus nigra* ssp. *caeruleus*), poison hemlock (*Conium maculatum*), Italian thistle (*Carduus pycnocephalus*), and naturalized Mediterranean grasses. A few isolated black willow (*Salix gooddingii*) and sandbar willow (*S. exigua*) shrubs occur within this community, but there are no large contiguous stands of willows. Some locust (*Robinia pseudoacacia*) trees/shrubs occur in this community as well. Where this community occurs adjacent to Glide Lake, there are also a number of large senescing Valley oaks, suggesting that the area has converted from riparian woodland to a scrub community.

Approximately 3.447 acres of riparian scrub habitat is present within the Permit area. Approximately 0.520 acre of riparian scrub habitat will be impacted within the Project area, and approximately 2.927 acres of riparian scrub will be avoided.

3.1.5.4 Riparian Woodland

A riparian woodland occurs along the edges of Glide Lake. The riparian woodland is dominated by large Valley oak and black willow trees, with a shrub layer comprised almost exclusively of poison oak. Other species that occur in this community (but primarily in the portions that are just outside of the Permit Area) include elderberry, locust, poison hemlock, and milk thistle. One major difference between the woodland and the scrub, apart from the presence of stands of large trees, is the absence (except in a few locations) of a grass/forb understory. Leaf litter covers the areas below the poison oak and in any clearings around it.

Because they are multi-layered and diverse, riparian habitats provide high-value habitat for many wildlife species, including some special-status species. Invertebrates, amphibians and reptiles often use the understory of the riparian habitat. Raptors, herons, egrets, and woodpeckers nest in the mid- to upper canopy. Many species of songbirds use the multi-layered vegetation for foraging and nesting. Many species of migratory songbirds use riparian habitats as a stopover for feeding and resting. Wildlife species observed within the riparian woodland during field surveys include California quail (*Callipepla californica*), red-tailed hawk (*Buteo jamaicensis*), Nuttall's woodpecker (*Picooides nuttallii*), western kingbird (*Tyrannus verticalis*), ash-throated flycatcher (*Myiarchus cinerascens*), house wren (*Troglodytes aedon*), spotted towhee (*Pipilo maculatus*), California towhee (*Melospiza crissalis*), Bullock's oriole (*Icterus bullockii*), and western gray squirrel (*Sciurus griseus*).

Approximately 0.898 acre of riparian woodland is present within the Permit area. Approximately 0.012 acre of riparian woodland will be impacted within the Project area, and approximately 0.886 acre of riparian woodland will be avoided.

3.1.5.5 Ruderal

Ruderal vegetation occurs throughout much of the northern portion of the Permit Area, and occupies a patch in the southwestern of the Permit Area. This community consists of a dense cover of weedy plant species typical of disturbed situations. In most areas within this community, the plants are approximately 6 feet tall, and there are very few areas where the ground is visible. Dominant plant species in this community include such species as poison hemlock (*Conium maculatum*), yellow star-thistle (*Centaurea solstitialis*), milk thistle (*Silybum marianum*), Italian thistle (*Carduus pycnocephalus*), black mustard, prickly lettuce, medusahead grass (*Elymus caput-medusae*), and riggut brome. Isolated shrubs, such as coyote brush, and small trees are scattered intermittent throughout this community. Average non-native species cover within this community is approximately 100%.

Despite the density of the herbaceous layer and the low diversity of this community, many wildlife species use ruderal areas as travel corridors or foraging habitats. Wildlife species observed within the ruderal areas during the field surveys include the western kingbird, American goldfinch (*Spinus tristis*), house finch (*Haemorhous mexicanus*), and western fence lizard (*Sceloporus occidentalis*).

3.1.5.6 Urban

The urban community is comprised of the paved areas, buildings/facilities, and a strip of native trees that was planted along the eastern and southern boundaries of the pump station. The existing pump station and access road are currently surrounded by an 8-foot tall chain-link fence reinforced with wood slats that precludes access for most terrestrial wildlife.

3.1.5.7 Valley Oak Woodland

A narrow strip of Valley Oak woodland occurs along the eastern edge of the Permit Area, outside of the Project area. This woodland is located on the western slope of the Sacramento River levee, and appears to have been planted historically with a row of Valley oaks and Northern California black walnut trees (*Juglans hindsii*). These trees are now large and mature, and the understory is primarily annual grassland vegetation, although several elderberry shrubs and tree of heaven (*Ailanthus altissima*) occur in this community as well.

3.1.6 Waters of the U.S.

A delineation of Waters of the U.S. within a portion of the Permit Area was conducted by Gibson & Skordal (G&S) in 2010. The USACE issued a preliminary jurisdictional determination (PJD) for the delineation on 16 August, 2011. In January 2012, G&S submitted a revised delineation map that included the remainder of the Project Area (the borrow area). The USACE issued a PJD for this revised delineation

map on 16 February, 2012. Per this PJD, no Waters of the U.S. occur within the Permit Area. Portions of Glide Lake outside of the PJD but within 200 feet of the Project area were delineated via aerial interpretation for the purposes of determining the extent of GGS upland habitat within the Permit Area.

3.2 Covered Wildlife Species

3.2.1 Valley Elderberry Longhorn Beetle

3.2.1.1 Status and Distribution

The VELB is federally listed as threatened. Critical habitat was designated by the USFWS on 8 August, 1980 (45 Federal Register [FR] 52803). The Project area is not located within critical habitat for the VELB (USFWS 1980). On 22 October, 2012, the USFWS issued a proposed rule to remove the designation of the VELB as a threatened species; however, on 29 August, 2014, the USFWS formally withdrew the proposed rule (79 FR 55879).

Population densities of the VELB are probably naturally low (USFWS 1984). The substantial reduction in Central Valley riparian vegetation in the last 150 years suggests that the beetle's range has contracted and that remaining populations are discontinuous (USFWS 1984). It has been suggested based on the spatial distribution of occupied shrubs (Barr 1991), that the VELB has limited dispersal capabilities. Low density and limited dispersal capability may cause the VELB to be vulnerable to the adverse effects of the isolation of small subpopulations due to habitat fragmentation.

VELB was first described in 1921 from specimens collected in Sacramento (USFWS 1984). By 1984, VELB was known from only three Central Valley drainages: the Merced River, Putah Creek, and the American River. However, subsequent surveys have indicated that the species has a much broader (although still sparse) distribution (Barr 1991).

VELB's current range extends throughout the Central Valley and associated foothills from about the 3,000-foot elevation contour on the east to the watersheds of the Central Valley on the west (USFWS 1999a). Because the information on VELB population and distribution is limited, it is not possible to accurately assess the species' population status. However, based on the extent of habitat loss in the Central Valley, it is likely that populations have declined. The closest VELB occurrence in the CNDDDB is located approximately 0.75 mile north of the Permit Area (Occurrence #208) (**Figure 8**). This record is of an adult male VELB observed in 2005 on an elderberry shrub adjacent to an agricultural ditch (CNDDDB 2016).

3.2.1.2 Habitat Characteristics / Habitat Use

VELB's life history is assumed to follow a sequence of events similar to those of related taxa. Female beetles deposit eggs in crevices in the bark of living elderberry plants. Presumably, the eggs hatch shortly after they are laid and the larvae bore into the pith of the trunk or stem. When larvae are ready to pupate, they move through the pith of the plant, open an emergence hole through the bark, and return to the pith for pupation. Adults exit through the emergence holes and can sometimes be found on elderberry foliage, flowers, or stems or on adjacent vegetation. Although adult VELBs can fly, they are considered poor fliers. The entire life cycle of VELB is thought to encompass 2 years from the time eggs are laid and hatch until adults emerge and die (USFWS 1984, Barr 1991).

The presence of exit holes in elderberry stems indicates previous use by VELBs. Exit holes are cylindrical and approximately 0.25 inch in diameter. Exit holes can be found on stems that are 1-8 inches in diameter. The holes may be located on the stems from a few inches to about 9-10 feet above the ground (Barr 1991).

3.2.1.3 Occurrences in the Permit Area

Gibson and Skordal (G&S) biologists surveyed the Permit Area for elderberry shrubs on 17 March and 1 July, 2015. A total of 30 elderberry shrubs were identified, mapped, and surveyed for evidence of VELB presence within the Permit Area (**Figure 9**). None the shrubs are located in riparian areas, and none exhibited the characteristic exit holes of the beetle. Most of these shrubs were also surveyed in May 2010 and June 2011 as part of an earlier permitting effort (M. Greene pers. comm.). No VELB exit holes were observed during either of those surveys. Field visits by Service personnel also noted that the elderberry cluster was isolated from other elderberry shrub clusters and that they were not likely within suitable dispersal distance for VELB to occupy the shrubs in the Project area.

3.2.2 Giant Garter Snake

3.2.2.1 Status and Distribution

The GGS is listed as a threatened species by the USFWS and CDFG. This species is endemic to emergent wetlands in the Central Valley (USFWS 1999b). The Permit Area falls within the Mid Valley Recovery Unit as defined in the *Draft Recovery Plan for the Giant Garter Snake (Thamnophis gigas)* (USFWS 1999b).

A search of the CNDDDB was conducted to determine the locations of recent and historical occurrences of GGS within a 10-mile radius of the Project site. In addition, the results of field surveys conducted at nearby sites in this portion of Yolo County were reviewed. Researchers familiar with the species were contacted to determine whether any new information was available in this portion of the snake's known range (E).

Hansen pers. comm., D. Feliz pers. comm.). The closest documented occurrence (CNDDDB #185) is approximately 1.5 miles from the Permit Area, in the Yolo Basin Wildlife Area (YBWA) south of Interstate 80 and west of the Sacramento River Deep Water Ship Channel and Toe Drain (CNDDDB 2016).

Other occurrences in Yolo County are all separated from the Permit Area by major roadways, the Deep Water Ship Channel, Toe Drain, and other manmade barriers. Occurrences within 10 miles of the Project site in Sacramento County (e.g., Natomas Basin) are separated from the subject property by the Sacramento River and major highways. These represent formidable barriers to GGS migration, and there is no connectivity between populations on the east and west sides of the Sacramento River. Surveys of other aquatic habitats (irrigation canals, drainage ditches) in this portion of Yolo County (between the Sacramento River and Deep Water Ship Channel) over the last 15 years by E. Hansen and M. Green have all yielded negative results for giant garter snakes (E. Hansen pers. comm., M. Green pers. comm.).

3.2.2.2 Habitat Characteristics / Habitat Use

Habitats occupied by GGS contain permanent or seasonal water, mud bottoms, and vegetated dirt banks (Fitch 1940, Hansen and Brode 1980). Prior to reclamation, these wetlands probably consisted of freshwater marshes and low gradient streams. Open areas and grassy banks are required for basking. Small mammal burrows and other small crevices at higher elevations provide winter hibernation sites and refuge from floodwaters (58 FR 54053 20 October, 1993). In some rice-growing areas, GGS have adapted well to vegetated, artificial waterways and the rice fields they supply (Hansen and Brode 1993).

GGS are associated with aquatic habitats characterized by the following features: (1) sufficient water during the snake's active season (typically early spring through mid-fall) to supply cover and food such as small fish and amphibians; (2) emergent, herbaceous wetland vegetation, such as cattails (*Typha* spp.) and bulrushes (*Scirpus* spp.), accompanied by vegetated banks to provide basking and foraging habitat and escape cover during the active season; (3) upland habitat (e.g. bankside burrows, holes, and crevices) to provide short-term refuge areas during the active season; and (4) high ground or upland habitat above the annual high water mark to provide cover and refuge from flood waters during the snake's inactive overwintering period (Hansen and Brode 1980, Hansen 1998). The nature of the home range of GGS in California is not well known; there is likely considerable overlap in the home ranges of neighboring individuals.

GGS typically emerge from winter retreats from late March to early April and remain active through October. The USFWS considers the active season for this species to be from 1 May through 1 October (USFWS 1997). The timing of annual GGS activity is subject to varying seasonal weather conditions. Cool winter months are spent in dormancy or periods of reduced activity. While the GGS is strongly associated with aquatic habitats, individuals have been noted using burrows as far as 50 meters (164 feet) from marsh edges during the active season, and retreating as far as 820 feet from the edge of wetland habitats

while overwintering (Wylie *et al.* 1997, USFWS 1999b). The USFWS considers suitable upland areas within 200 feet of suitable aquatic habitats to be GGS upland habitat (USFWS 1997). Suitable upland habitats include grassy banks and other vegetation communities that have ample openings for basking, as well as shrubs such as saltbush (*Atriplex* species) and willows (*Salix* species)] which provide cover from predation (USFWS 1999b).

Irrigation canals and drainage ditches, together with their associated levees and adjacent embankments, are an essential components of GGS habitat in the Central Valley. Irrigation canals provide an essential habitat component, but also create dispersal corridors allowing GGS to move from one area to another in search of mates, new territories, summer habitat, etc.

This species appears to be absent from most permanent waters such as large rivers or ponds that support established populations of predatory game fishes. Introduced bass, sunfish, and catfish compete with GGS for prey and undoubtedly prey upon the snake as well (Hansen 1988). Because of the lack of basking areas and the lack of prey populations, riparian woodlands usually do not support GGS (Hansen and Brode 1980). The species also appears to be absent from natural or artificial waterways that undergo routine mechanical or chemical weed control or compaction of bank soils (Hansen 1988, Hansen and Brode 1993). Highly aquatic, GGS forage primarily in and along streams taking fish and amphibians and amphibian larvae (Fitch 1940).

3.2.2.3 Presence in the Permit Area

Suitable aquatic habitat is present for this species in the waterways adjacent to the Permit Area (Glide Lake and the unnamed slough); however, it is unlikely that GGS actually occupy these aquatic features, as discussed above. Annual grassland, agricultural crop, riparian scrub, ruderal, and accessible urban habitat within 200 feet of the aquatic habitat is considered suitable upland habitat. The ruderal habitat is marginal, due to the density and height of the vegetation. Some urban habitats can be considered suitable due to the ample availability of basking areas; however, most urban areas within 200 feet of aquatic habitat are considered highly unfavorable to snakes because of obstructions to movement from man-made structures and high levels of disturbance from human activity. Riparian woodlands do not provide suitable habitat because of excessive shade, lack of basking sites, and absence of prey populations (Hansen 1980). A map of suitable GGS upland habitat within the Permit Area is provided as **Figure 10**. A total of 18,190 acres of upland habitat is present within the Permit Area.

4.0 POTENTIAL BIOLOGICAL IMPACTS/TAKE ASSESSMENT

4.1 Direct Impacts

4.1.1 Direct Impacts to Valley Elderberry Longhorn Beetle

As discussed in detail above in Section 3.2.1, elderberry shrubs provide the exclusive habitat for the VELB. Thirty elderberry shrubs were identified and surveyed within the Permit Area during recent surveys. None of the elderberry shrubs were located in a riparian area, and none of the shrubs exhibited evidence of VELB use (exit holes) during surveys in 2010, 2011 or 2015. Of the 30 elderberry shrubs that are present within the Permit Area, 23 will need to be removed during construction (**Figure 9**). The remaining 7 shrubs are located more than 20 feet from the construction area, and will be avoided and protected as described below in Section 5.2.1. A summary of the characteristics of the 23 impacted shrubs, as well as proposed mitigation plantings in compliance with the *Conservation Guidelines for the Valley Elderberry Longhorn Beetle* (Conservation Guidelines, USFWS 1999a) are detailed in Table 1, below.

Table 1. Proposed Impacts and Mitigation for Elderberry Shrubs within the Permit Area

Stem diameter at ground level	Impacted Stems	Elderberry Seedling Mitigation Ratio	Proposed Mitigation Elderberry Seedlings	Associated Native Plant Seedling Ratio	Proposed Mitigation Native Plant Seedlings
Stems ≥ 1" and < 3"	139	1:1	139	1:1	139
Stems ≥ 3" and < 5"	35	2:1	70	1:1	70
Stems ≥ 5"	21	3:1	63	1:1	63
Total	195		272		272

The USFWS developed the Conservation Guidelines to assist federal agencies and non-federal project applicants needing incidental take authorization through a section 7 consultation or a section 10(a)(1)(B) permit in developing measures to avoid and minimize adverse effects on the VELB (USFWS 1999a). These guidelines address avoidance, transplanting, planting of additional native species, and monitoring. Based on the minimization recommendations in the Conservation Guidelines, Regional San is proposing to mitigate for the removal of the 23 shrubs within the impact area with planting of 272 elderberry plantings and 272 associated native plantings at Sacramento River Ranch VELB Conservation Bank or other USFWS-approved conservation/mitigation bank. As each VELB credit at a conservation/mitigation bank includes five plantings, Regional San is proposing to purchase 55 VELB credits to mitigate for direct impacts to the 23 elderberry shrubs.

The removal of the 23 elderberry shrubs may be considered "take" under the federal Endangered Species Act. Therefore, the Proposed Action may affect the VELB. Incorporation of the proposed avoidance,

minimization, and conservation measures detailed in Section 5.2 will minimize the amount of take caused by the proposed Project.

4.1.2 Direct Impacts to Giant Garter Snake

Glide Lake and the unnamed slough are suitable GGS aquatic habitat, and all annual grassland, agricultural crop, riparian scrub, ruderal, and accessible urban habitat within 200 feet of those waterways are suitable GGS upland habitat. Levee and road construction, elderberry transplanting, equipment noise, vibration, and increased human activity within upland habitat areas and implementation of the restoration plan, could potentially result in direct harassment, injury, or mortality of individual GGS brumating underground during the winter months, aestivating during extremely hot days during their active period, or basking in open areas during the summer months. However, restoration of the construction area following completion of construction could result in an overall improvement in upland habitat quality, given the currently marginal nature of the upland habitat. Project-related construction will result in temporary impacts to 10.775 acres of GGS upland habitat (**Figure 10**). While the proposed Project may affect the GGS, incorporation of the avoidance and minimization measures detailed in Section 5.2.2 will minimize the potential for take of GGS during construction activities.

4.2 Indirect Impacts

With the incorporation of the avoidance and minimization measures detailed in Section 6.0, indirect impacts to VELB are not anticipated, since the VELB relies primarily on the host plant as habitat, all effects are assumed to be direct to individuals from construction disturbance and the eventual transplantation of the elderberry shrubs.

With the incorporation of the avoidance and minimization measures, indirect impacts to GGS will be minimized. Potential indirect effects on GGS (i.e. those impacts that may occur at a different time than the direct impacts but still as a result of Project implementation) include: 1) temporary loss of suitable upland habitat upon Project completion that could impair movement/dispersal, 2) temporary loss of suitable upland habitat immediately upon Project completion that could interfere with potential upland foraging or sheltering.

4.3 Anticipated Take on Covered Wildlife Species

4.3.1 Valley Elderberry Longhorn Beetle

Individual VELB may be taken (killed, injured, harmed, or harassed) within the 23 elderberry shrubs that are proposed for removal and transplanting as a result of realignment of the entry road and levee upgrades.

4.3.2 Giant Garter Snake

Individual GGS may be taken (killed, injured, harmed, or harassed) within the boundaries of the Project area. A 10.775-acre area of upland habitat will be subject to disturbance and modification during grading and construction operations including, but not limited to the use of equipment, vegetation removal, trampling of vegetation, compaction of soils, ground disturbance, grading, or creation of dust. These grading and construction operations will be occurring in areas of railroad embankment removal and subsequent levee construction.

The Project area and some surrounding areas are developed and have frequent levels of disturbance which are likely to deter GGS from being present in the Project area; however, snakes are known to traverse through disturbed environments in search of other more suitable habitats to occupy and one occurrence was documented within 1.5 miles. Therefore, the USFWS anticipates that there is a low probability that GGS will occur within the Project area and therefore the actual number of GGS subject to incidental take is expected to be low.

4.4 Effects on Critical Habitat

There is no Critical Habitat for federally-listed species within the Permit Area. Therefore, implementation of the proposed Project will not result in modification or destruction of Critical Habitat.

4.5 Cumulative Impacts

In contrast with the analysis of cumulative impacts under section 7 of the Act, Section 10 of the Act and HCP's analyze impacts as incremental impacts of the action on the environment when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. The geographic area for analysis may be defined by the manifestation of direct or indirect impacts as a result of covered activities. Cumulative impacts under Section 10 of the Act can result from individually minor but collectively significant actions taking place over a period of time.

Cumulative effects to the VELB and GGS include continuing and future conversion and removal of suitable breeding, foraging, sheltering, and dispersal habitat resulting from urban development and agricultural activities. Additional urbanization may result in the removal of elderberry shrubs and suitable GGS upland habitat. This could result in GGS basking on new roads, thereby potentially increasing road-kill while reducing in size and further fragmenting the remaining upland habitat patches. Agricultural activities could negatively impact VELB through "maintenance" or removal of elderberry shrubs, or the use of pesticides and herbicides on fields adjacent to the elderberry shrubs. Depending on the timing of

application, this could result in direct mortality of VELB through pesticide drift, or damage of the host elderberry plant following herbicide applications.

Even though this Project includes the permanent removal of elderberry shrubs, these losses are not expected to affect the long-term, range-wide survival of the VELB due to the occurrence of other elderberry shrubs in the vicinity of the Project area, and elsewhere throughout its geographic range, as well as the current regional conservation planning efforts that cover this species. The loss of GGS upland habitat from the proposed Project is not expected to affect the long-term, range-wide survival of the GGS in this portion of its range because the restoration of the construction area following completion of construction could result in an overall improvement in upland habitat quality within the Project area; there is extensive GGS upland habitat available in the vicinity of the Project area, and elsewhere throughout its geographic range; and current regional conservation planning efforts cover this species.

4.6 Anticipated Impacts of the Taking

4.6.1 Valley Elderberry Longhorn Beetle

The incidental take of the VELB that is anticipated to result from implementation of those actions necessary for the proposed Project is expected to have negligible effects on the species overall survival and should not hinder its recovery. Impacts to VELB habitat associated with the Project are restricted to 23 elderberry shrubs that are not in a riparian area and that have been surveyed for VELB presence several times, and have never exhibited evidence of VELB use (M. Greene pers. comm.). Elderberry shrubs are also common in the immediate vicinity of the Project area. The Project is not located in Critical Habitat for VELB, the number of elderberry shrubs affected is very small relative to the species' entire geographic range, and the impact area's relative importance to the species, both regionally and throughout its range is thought to be minor. For these reasons, the impact of any take of VELB resulting from implementation of the Project is expected to be negligible.

4.6.2 Giant Garter Snake

The incidental take of the GGS that is anticipated to result from implementation of those actions necessary for the proposed Project is expected to have negligible effects on the species overall survival and should not hinder its recovery. The restoration of the construction area following completion of construction could result in an overall improvement in upland habitat quality, GGS sightings are very rare within several miles of the Project area and the Project is a significant distance from the more robust populations north in the Sacramento Valley. There is extensive available upland habitat for GGS adjacent to ditches in agricultural fields within the Project vicinity and surrounding areas. The actual number of GGS subject to incidental take is expected to be very low; the percentage of the species' upland habitat affected, 10.775 acres, is very small relative to the species' entire geographic range; and the impact area's

relative importance to the species, both regionally and throughout its range is thought to be minor. As a result, the impact of any take resulting from temporary impacts to GGS upland habitat is expected to be negligible.

5.0 CONSERVATION PROGRAM

5.1 Biological Goals and Objectives

Section 10(a)(2)(A) of the Act requires that an HCP specify the measures that the permittee will take to minimize and mitigate to the maximum extent practicable the impacts of the taking of any federally listed animal species as a result of activities addressed by the plan.

As part of the "Five Point" Policy adopted by the Services in 2000, HCPs must establish biological goals and objectives (65 *Federal Register* 35242, 1 June, 2000). In the context of HCPs, biological goals form the guiding principle behind the operating conservation program. Biological goals are the rationale behind minimization and mitigation strategies, and should support species recovery goals. Biological objectives are the different components needed to achieve the biological goal such as preserving sufficient habitat, managing the habitat to meet certain criteria, or ensuring the persistence of a specific minimum number of individuals. The biological goals and objectives of an HCP are commensurate with the specific impacts and the duration of the proposed covered activities. Low-effect HCPs generally have simple measurable biological goals (65 FR 35242). The goals are also intended to provide to the applicant an understanding of why these actions are necessary. These goals are developed based upon the species' biology, threats to the species, the potential effects of the Covered Activities, and the scope of the HCP.

5.1.1 VELB Biological Goals and Objectives

5.1.1.1 VELB Biological Goal

Contribute to the protected habitat acreage and increase the number of protected host plants within the range of the VELB.

5.1.1.2 VELB Objective

Protect occupied VELB habitat and contribute to a regional preserve design through the purchase of 55 VELB credits at Sacramento River Ranch VELB Conservation Bank or other USFWS-approved conservation bank.

5.1.2 GGS Biological Goals and Objectives

5.1.2.1 GGS Biological Goals

Project Construction Option 1

Restore temporarily removed GGS upland habitat to pre-Project conditions of equal or greater habitat values.

Project Construction Option 2

Restore temporarily-removed GGS upland habitat to pre-Project conditions of equal or greater habitat values.

Contribute to the protected habitat acreage within the range of the GGS

5.1.2.2 GGS Objectives

Project Construction Option 1

Restore 10.775 acres of temporarily-impacted upland habitat within the Project area to pre-Project condition within the same season or, at most, the same calendar year.

Conduct monitoring with photo documentation reports due one year from the restoration implementation and at the end of the permit term showing pre-and post-Project area photos.

Project Construction Option 2

Restore 9.995 acres of temporarily-impacted upland habitat within the Project area to pre-Project condition within the same season or, at most, the same calendar year. Restore 0.780 acre of temporarily-impacted GGS habitat the calendar year following the initial impact.

Conduct monitoring with photo documentation reports due one year from the final restoration implementation and at the end of the permit term showing pre-and post-Project area photos.

Protect occupied GGS habitat and contribute to a regional preserve design through the dedication of 0.780 acre of created GGS habitat at the South Stone Lake Giant Garter Snake Mitigation Preserve or through the purchase of 0.780 mitigation credits at a USFWS-approved GGS conservation/mitigation bank.

5.2 Avoidance, Minimization, and Mitigation Measures

5.2.1 Valley Elderberry Longhorn Beetle

5.2.1.1 Avoidance and Minimization Measures

The Project has been designed to avoid as many elderberry shrubs as possible. In addition, Regional San is proposing to implement the avoidance and minimization measures outlined in the *Formal Programmatic Consultation for Projects with Relatively Small Effects on the VELB* (USFWS 1996a) and the *Conservation Guidelines for the VELB* (USFWS 1999a) as part of the Proposed Action to minimize effects to VELB. These measures will be implemented to avoid and minimize potential effects of the Project on VELB that could occur in any avoided elderberry shrubs within the Permit Area or those shrubs that are awaiting transplant. Measures in these documents that are applicable to this Project are summarized below:

- Fence and flag all elderberry shrubs to be avoided during construction activities. In areas where encroachment on the 100-foot buffer is necessary for construction, provide a minimum setback of at least 20 feet from the dripline of each elderberry plant.
- Construction and maintenance personnel will participate in an USFWS-approved worker environmental awareness-training program explaining the life history of the VELB and the importance of maintaining the barriers to protect the elderberry shrubs.
- Put up signs every 50 feet along the edge of the VELB avoidance areas with the following information: "This area is habitat of the Valley elderberry longhorn beetle, a threatened species, and must not be disturbed. This species is protected by the Endangered Species Act of 1973, as amended. Violators are subject to prosecution, fines, and imprisonment." These signs should be clearly readable from a distance of 20 feet and must be maintained for the duration of construction.
- No insecticides, herbicides, fertilizers, or other chemicals that might harm the beetle or its host plant should be used in the buffer areas, or within 100 feet of any elderberry plant with one or more stems measuring 1.0 inch or greater in diameter at ground level.
- Implement dust control measures during the construction phase so that excessive dust does not harm elderberry shrubs.
- Avoid construction close to avoided elderberry shrubs from April through June, which coincides with the flight season of adult VELB. Minimize construction in the vicinity of elderberry shrubs proposed for impact prior to transplantation.
- All areas within 100 feet of an elderberry shrub that are disturbed during construction will be restored following construction. This will include erosion control as necessary and hydroseeding with a native or other regionally-appropriate seed mix.
- The avoided elderberry shrubs will continue to be protected after construction from adverse effects of the project. It is not anticipated that mowing or any other activities will occur in the vicinity of the elderberry shrubs, but if mowing is proposed to reduce fire hazard, it may occur

from July through April. No mowing should occur within five (5) feet of elderberry plant stems. Mowing must be done in a manner that avoids damaging plants (e.g., stripping away bark through careless use of mowing/trimming equipment).

- All avoided elderberry shrubs and those awaiting transplant will be fenced and avoided by a minimum of 20 feet with the exception of one small elderberry shrub. Construction of the access ramp will involve grading work within 10 feet of this shrub before it can be transplanted. In addition to the avoidance and minimization measures detailed above, a biological monitor will be present during all work that occurs less than 20 feet from the shrub to ensure that the shrub is not adversely effected.

5.2.1.2 Measures to Mitigate Unavoidable Impacts

Regional San is proposing to mitigate for the unavoidable impacts to 23 elderberry shrubs within the Permit Area in accordance with the *Formal Programmatic Consultation for Projects with Relatively Small Effects on the VELB* (USFWS 1996). This will entail purchase of 55 VELB credits at Sacramento River Ranch VELB Conservation Bank or other USFWS-approved conservation/mitigation bank (as detailed above in Section 4.1.1). In addition, the elderberry shrubs will be transplanted to the conservation/mitigation bank.

5.2.2 Giant Garter Snake

5.2.2.1 Avoidance and Minimization Measures

Regional San is proposing to implement the avoidance, minimization, and conservation measures specified in Appendix C of the *Programmatic Formal Consultation for U.S. Army Corps of Engineers 404 Permitted Projects with Relatively Small Effects on the Giant Garter Snake within Butte, Colusa, Glenn, Fresno, Merced, Sacramento, San Joaquin, Solano, Stanislaus, Sutter and Yolo Counties, California* (USFWS 1997) as part of the Proposed Action to minimize effects to this species. Standard measures specified by USFWS, which are applicable to this project, include the following:

- All work within potential GGS habitat, including activities within aquatic habitat and activities within 200 feet of supporting upland habitat, will occur between 1 May and 1 October of any year, with exceptions made to extend this window during periods of warm or temperate conditions, subject to the discretion of regulatory agencies.
- Any dewatered habitat will remain dry for at least 15 consecutive days after 15 April and prior to excavating or filling of dewatered habitat.
- Construction and maintenance personnel will participate in an USFWS-approved worker environmental awareness-training program. Under the guidelines of this program, workers shall be informed about the potential for presence of GGS, habitat associated with the species, and that unlawful take of the animal or destruction of its habitat is a violation of the Endangered Species Act. Prior to construction activities, a qualified biologist approved by the USFWS shall

instruct construction personnel about: (1) the life history of the GGS; (2) the importance of irrigation canals, marshes/wetlands, and seasonally flooded areas, such as rice fields, to the species; and (3) the terms and conditions of the biological opinion. Colored photographs of the GGS shall be handed out during the training session for posting on the job site. Proof of this instruction shall be submitted to the USFWS, Sacramento Field Office.

- No more than 24 hours prior to the commencement of certain construction activities (i.e., clearing, grading, excavation, etc.) in GGS habitat, a pre-construction survey will be undertaken by a qualified biologist. The biologist will prepare a field report documenting the monitoring efforts and submit a copy to the USFWS Sacramento Field Office.
- The monitoring biologist will be available thereafter on an on-call basis. If a snake is encountered during construction activities, the biologist shall have the authority to halt work until appropriate corrective measures have been implemented or it is determined that the snake shall not be harmed. GGS encountered during construction activities shall be allowed to move away from construction activities on their own. Capture and relocation of trapped or injured individuals can only be attempted by personnel or individuals with current USFWS recovery permits pursuant to Section 10(a)1(A) of the federal ESA.
- Vegetation clearing will be confined to the minimal area necessary to complete the construction activity.
- During construction operations, the number of access routes, number and size of staging areas, and the total area of the proposed Project activity will be limited to the minimum necessary. Routes and boundaries will be clearly demarcated. Movement of heavy equipment to and from the Project site will be restricted to established roadways to minimize habitat disturbance. Project-related vehicles shall observe a 10-mile-per-hour speed limit within construction areas, except on County roads and on state and federal highways. This is particularly important during periods when the snake may be sunning or moving on roadways. All heavy equipment, vehicles, and supplies will be stored at the designated staging area at the end of each work period.
- During construction operations, stockpiling of construction materials, portable equipment, vehicles, and supplies will be restricted to the designated construction staging areas.
- The Project proponents shall ensure that the temporary loss of GGS habitat is confined to the Project site.
- To eliminate an attraction to predators of the snake, all food-related trash items, such as wrappers, cans, bottles, and food scraps, must be disposed of in closed containers and removed at the end of each workday from the entire Project site.
- All construction debris shall be removed following the completion of construction activities and all disturbed areas shall be restored to pre-Project conditions.
- Tightly woven fiber netting or similar material shall be used for erosion control and other purposes at the Project site to prevent the entanglement of GGS that may occur with monofilament or jute netting. This limitation shall be communicated to the contractor using special provisions included in the bid solicitation package.

- Construction activities shall be scheduled to provide for dewatering, clearing, grading, and any earthmoving activities to coincide with the warm conditions associated with active GGS behavior.
- If any work is proposed within portions of the Permit Area after 1 October (as discussed in Section 2.1.6), exclusionary fencing would be installed between potential aquatic habitat and the construction area prior to 1 October. The fence would wrap around the potential construction area such that both ends of the fence are located at least 200 feet from potential aquatic habitat. This fence would be monitored daily prior to and during construction to ensure that there were no holes or other breaches that would allow a snake to pass through the fencing.

5.2.2.2 Measures to Mitigate Unavoidable Impacts

Unavoidable impacts to GGS habitat within the Permit Area include temporary impacts to 10.775 acres of upland habitat. These impacts are within riparian scrub, ruderal, annual grassland, agricultural crop, and urban habitats that will be modified during construction, but will be restored to a similar or better condition following construction. Some portions (0.58 acre) of these temporarily impacted areas will be paved, but as 1.04 acres of existing paved areas are being considered potential GGS upland habitat due to their utility as basking areas, paving is considered a temporary impact. The 1.04 acres of existing pavement will be removed by the project, resulting in a net increase of pervious surfaces within the GGS upland habitat. Every attempt will be made to minimize the return of the currently prevalent weedy, invasive forbs such as milk thistle, star thistle, and poison hemlock following construction. As a result, GGS upland habitat within much of the temporarily impacted area may be improved as a result of construction.

The temporarily impacted habitat will be restored following construction in three different ways. Within the new roadways (0.58 acre), pavement or aggregate base will be installed. Within the agricultural fields, agricultural activities will recommence, and the field will be planted with a crop. All of the remaining areas will be hydroseeded with a native seed mix. All of the seeded areas will be monitored for compliance with the success criteria detailed in Section 5.5.

Mitigation for unavoidable impacts will be slightly different depending on whether construction Option 1 or Option 2 (as defined above in Section 2.1.6) is implemented. If Option 1 is implemented, all work within GGS upland habitat will occur within one construction season, and mitigation will consist exclusively of restoration of that habitat. If Option 2 is implemented, approximately 0.780 acre of GGS habitat would be temporarily impacted in two construction seasons (**Figure 11**). To compensate for the repeated impacts to GGS habitat, 0.780 acre of created GGS habitat would be dedicated at the South Stone Lake Giant Garter Snake Mitigation Preserve, or 0.780 GGS mitigation credits would be purchased at a USFWS-approved conservation/mitigation bank in addition to the restoration of the 10.775 acres of temporarily impacted habitat.

5.3 Responsibilities

As specified in the USFWS Habitat Conservation Planning Handbook (1996b), an Implementing Agreement (IA) is not required for low-effect HCPs unless requested by the permit applicant. Regional San understands that they are responsible for implementing this HCP in accordance with the specifications for mitigation, monitoring, reporting, and funding described herein, and will perform all obligations assigned to them within the Section 10 permit and the HCP. Regional San will purchase VELB mitigation credits from a USFWS-approved conservation bank. Regional San will be responsible for the funding, implementation, monitoring, and reporting of the on-site restoration of GGS upland habitat. If Option 2 is implemented, Regional San will dedicate created GGS habitat at the South Stone Lake Giant Garter Snake Mitigation Preserve or purchase GGS mitigation credits from a USFWS-approved conservation/mitigation bank. The conservation/mitigation banks and/or South Stone Lake Giant Garter Snake Mitigation Preserve will assume all responsibilities for annual monitoring, maintenance, and reporting for the created VELB and GGS mitigation, and will complete all obligations assigned to it within the Section 10 permit and the HCP.

5.4 Monitoring

Monitoring tracks compliance with the terms and conditions of the HCP, Implementing Agreement (IA), and permit. There are three types of monitoring: (1) compliance monitoring tracks the permit holder's compliance with the requirements specified in the HCP, IA, and permit; (2) effects monitoring tracks the impacts of the covered activities on the covered species; and (3) effectiveness monitoring tracks the progress of the conservation strategy in meeting the HCP's biological goals and objectives (includes species surveys, reproductive success, etc.). Monitoring provides information for making adaptive management decisions.

The monitoring measures that will be implemented to ensure compliance and/or determine if the biological goals and objectives are being met include those previously discussed above in Section 5.2 (Avoidance, Minimization, and Mitigation Measures). Furthermore, documentation of compliance with the terms and conditions of the HCP will be provided in annual and final reports as described in Section 5.6 (Reporting).

5.4.1 VELB

Monitoring for VELB at the off-site conservation bank will be conducted as described in the USFWS approved conservation bank agreement.

5.4.2 GGS

Monitoring of the restored GGS habitat on-site will occur for the duration of the permit term, and will include one monitoring visit immediately following completion of restoration to document post-Project conditions, a second monitoring visit during the spring or summer of the following year to document compliance with success criteria, and a final visit at the end of the permit term to document continued compliance with success criteria. During each visit, representative photographs of the restored habitat will be taken, and data to document compliance with the success criteria will be collected during the second and third visits. Monitoring results will be included in the annual reports following each visit as detailed in Section 5.6 below.

Monitoring of the GGS upland habitat (if Option 2 is implemented) at the off-site conservation/mitigation bank or South Stone Lake Mitigation Preserve will be conducted as described in the USFWS approved conservation/mitigation Bank Enabling Agreement or Preserve's USFWS-approved Long-Term Management Plan.

5.5 Performance and Success Criteria

5.5.1 VELB

Regional San's VELB mitigation requirements will be satisfied by the purchase of 55 VELB credits from Sacramento River Ranch VELB Conservation Bank or other USFWS-approved conservation bank. It will be the responsibility of the conservation bank operator to insure that the performance criteria are successfully achieved. If necessary, the conservation bank operator will employ appropriate adaptive management strategies to meet the biological goals and objectives of this HCP.

5.5.2 GGS

Regional San is proposing to restore the on-site GGS upland habitat in three ways; the existing agricultural field will return to agricultural use, 0.58 acre of roads will be constructed, and the remainder of the area will be hydroseeded with native grass seed. No success criteria are proposed for the agricultural area and roadways; however, the following success criteria are established for the hydroseeded areas:

1. The site shall achieve a minimum of 70% vegetative cover of native or naturalized grass and forb species.
2. Non-native plant species cover in non-road areas shall not exceed the pre-Project condition.

These success criteria are applicable to all GGS habitat restored on-site, whether or not Option 1 or Option 2 is implemented.

If Option 2 is implemented, and GGS created habitat is dedicated, or GGS mitigation credits are purchased, it will be the responsibility of the conservation/mitigation bank/preserve operator to insure that the performance criteria are successfully achieved. If necessary, the conservation/mitigation bank/preserve operator will employ appropriate adaptive management strategies to meet the biological goals and objectives of this HCP.

5.6 Reporting

Annual Reports will be submitted to the USFWS for the duration of 5 year Permit at the following address: Assistant Field Supervisor, Endangered Species Division, U.S. Fish and Wildlife Service, Bay-Delta Fish and Wildlife Office, 650 Capitol Mall, Suite 8-300, Sacramento, CA 95814. These reports will be submitted to the USFWS by December 31st of each year, and will include at a minimum the items listed below. The annual reports prepared following on-site GGS upland habitat restoration, implementation and monitoring and the final report at the end of the permit term will discuss the success of this restoration, as discussed below. For years in which no construction, restoration, or monitoring activities occurred, a letter stating this will be submitted to the USFWS in lieu of an annual report.

Annual report components:

1. Brief summary or list of Project activities accomplished during the reporting year (e.g. this includes development/construction activities, and other covered activities)
2. Project impacts / progress (e.g. number of acres graded, number of buildings constructed, etc.)
3. Description of any take that occurred for each covered species (includes cause of take, form of take, take amount, location of take and time of day, and deposition of dead or injured individuals)
4. Brief description of conservation strategy implemented
5. Pre-construction survey and construction monitoring results (compliance with avoidance and minimization measures, any species detections)
6. Description of circumstances that made adaptive management necessary (if any) and how it was implemented. Include a table including the cumulative totals, by reporting period, of all adaptive management changes to the HCP, including a very brief summary of the actions.
7. Description of any changed or unforeseen circumstances that occurred and how they were dealt with
8. Funding expenditures, balance, and accrual
9. Description of any minor or major amendments
10. The annual report following implementation of on-site GGS upland habitat restoration will also include the following items: photo documentation, when the restoration was completed, what materials and seed mix were used, and justification of any substitutions to the USFWS recommended guidelines.

11. The annual report following the 1-year monitoring visit and at the end of the permit term will also include photo documentation, and success monitoring results. If remedial actions appear necessary to comply with success criteria, recommendations for remedial actions and a request for approval from the USFWS may also be included.

Monitoring reports for off-site mitigation will be prepared by the conservation/mitigation bank/Preserve operator(s) and submitted to the USFWS per the conservation/mitigation bank/Preserve's reporting requirements.

5.7 Adaptive Management Strategy

USFWS broadly defines adaptive management as *a method for examining alternative strategies for meeting measurable biological goals and objectives and then, if necessary, adjusting future conservation management actions according to what is learned*. USFWS believes that either active or passive adaptive management can be appropriately applied to HCPs. Active adaptation involves testing a range of alternative strategies, whereas passive adaptation uses information gathered to determine the single best course of action (65 FR 35242–35257). This HCP employs active adaptive management because mitigation and adaptive management will be occurring at an approved conservation/mitigation bank.

5.7.1 VELB

The following has been excerpted from the Sacramento River Ranch Conservation Bank Management Plan, where the VELB mitigation is proposed to be implemented:

"Adaptive Management" means an approach to natural resource management which incorporates changes to management practices, including corrective actions as determined to be appropriate by the Interagency Review Team (IRT) in discussion with the Bank Sponsor and/or the Property Owner, as appropriate, based upon Bank annual report results and IRT review of overall Bank performance and compliance.

Adaptive Management Objective: Maintain flexibility to modify management strategies and methods to ensure that the protected wetland and upland habitats are maintained in good condition such that they will continue to support the flora and fauna of the protected habitats in perpetuity. Task A.6-1: The Land Manager shall consider new technologies and practices to achieve the goal of protecting the habitats in perpetuity. Adaptation of the methods described in this Plan must be agreed upon by the Land Manager, Monitoring Biologist, and IRT. Techniques to address management of the new conditions, if not addressed in this Plan, may be implemented by the Land Manager upon review and written approval by the IRT.

5.7.2 GGS

Regional San will adaptively manage the restored habitat to make sure that the Biological Goals and Objectives are met. The main adaptive management component for GGS would be to monitor that success criteria have been met. If the restored habitat does not meet the success criteria, Regional San will be responsible for identifying, receiving USFWS approval for, and implementing remedial actions so that the success criteria are met.

5.8 Funding

Regional San is responsible for the purchase of 55 VELB credits, elderberry transplanting; restoration, monitoring, and reporting associated with on-site restoration of the GGS upland habitat, and purchase of any GGS mitigation dedications or credits, if required for Option 2, and for funding all of the avoidance and minimization measures, monitoring, and reporting detailed in this Plan. A receipt for the purchase of the VELB credits and any GGS mitigation dedications or credits, if required will be provided to USFWS prior to commencement of Project construction. The USFWS-approved conservation/mitigation bank will assume all responsibilities for funding of annual maintenance of the Conservation/mitigation Bank/Preserve's, and the fulfillment of all monitoring and reporting activities associated with the VELB mitigation and any GGS mitigation, if required.

6.0 PLAN IMPLEMENTATION

6.1 No Surprises Assurances

Section 10 regulations [(69 *Federal Register* 71723, 10 December, 2004 as codified in 50 Code of Federal Regulations (C.F.R.), Sections 17.22(b)(2) and 17.32(b)(2))] require that an HCP specify the procedures to be used for dealing with changed and unforeseen circumstances that may arise during the implementation of the HCP. In addition, the HCP No Surprises Rule [50 CFR 17.22 (b)(5)-(6) and 17.32 (b)(5)-(6); 63 F.R. 8859] defines “unforeseen circumstances” and “changes circumstances” and describes the obligations of the permittee and the USFWS. The purpose of the No Surprises Rule is to provide assurances to non-Federal landowners participating in habitat conservation planning under the Act that no additional land restrictions or financial compensation will be required for species adequately covered by a properly implemented HCP, in light of changed or unforeseen circumstances, without the consent of the permittee.

6.1.1 Changed Circumstances

Changed circumstances are defined in 50 CFR 17.3 as changes in circumstances affecting a species or geographic area covered by an HCP that can reasonably be anticipated by plan developers and the USFWS and for which contingency plans can be prepared (e.g., the new listing of species, a fire, or other natural catastrophic event such as flood). If additional conservation and mitigation measures are deemed necessary to respond to changed circumstances and these additional measures were already provided for in the plan’s operating conservation program (e.g., the conservation management activities or mitigation measures expressly agreed to in the HCP or IA), the permittee will implement those measures as specified in the plan. However, if additional conservation management and mitigation measures are deemed necessary to respond to changed circumstances and such measures were not provided for in the plan’s operating conservation program, the USFWS will not require these additional measures absent the consent of the permittee, provided that the HCP is being “properly implemented” (properly implemented means the commitments and the provisions of the HCP and the IA have been or are fully implemented). The purchase of credits at a USFWS approved conservation/mitigation bank includes contingency funds that assure that the bank will deal with such circumstances.

The following potential changed circumstances have been identified for the Project area: (1) newly listed species, (2) fire, and (3) flooding.

6.1.1.1 Newly Listed Species

If a new species that is not covered by the HCP but that may be affected by activities covered by the HCP is listed under the Act during the term of the section 10(a)(1)(B) permit, the section 10 permit will be reevaluated by the USFWS and the HCP covered activities may be modified, as necessary, to insure that

the activities covered under the HCP are not likely to jeopardize or result in the take of the newly listed species or adverse modification of any newly designated critical habitat. Regional San shall implement the modifications to the HCP covered activities identified by the USFWS as necessary to avoid the likelihood of jeopardy to or take of the newly listed species or adverse modification of newly designated critical habitat. Regional San shall continue to implement such modifications until such time as the Permittee has applied for and the USFWS has approved an amendment of the Section 10(a)(1)(B) permit, in accordance with applicable statutory and regulatory requirements, to cover the newly listed species or until the USFWS notifies Regional San in writing that the modifications to the HCP covered activities are no longer required to avoid the likelihood of jeopardy of the newly listed species or adverse modification of newly designated critical habitat.

6.1.1.2 Fire

Grass fires are common in the region, and it is reasonable that an uncontained grass fire could burn the restored GGS upland habitat within the 5 year Permit period. If this occurs immediately following restoration, Regional San may choose to reseed all or a portion of the burned area; however, if at least a year has elapsed since restoration, it is anticipated that sufficient seed bank should be available to appropriately revegetate the area the following season, and no remedial action would be necessary. Regional San will be responsible for monitoring for continued compliance with success criteria and submitting a report with the compliance monitoring results following any fire within restored GGS habitat that occurs within the permit term. If the restored habitat does not meet the success criteria during the monitoring visit, Regional San will be responsible for identifying, receiving USFWS approval for, and implementing remedial actions.

6.1.1.3 Flood

This Project has been designed to protect the SRPS from a flood resulting from a 100-year or greater return-interval storm. Based on the USACE 2002 review of the levees around the site, a storm of this magnitude could result in levee overtopping and flooding of the site. A hydrologic study conducted by Regional San indicates that if that were to occur, the flood water could be approximately 20 feet deep in portions of the restoration area. If flood waters remain for an extended period, the anaerobic soil conditions could kill the upland vegetation. If this occurs and flood waters recede during the 5-year Permit period, Regional San would reseed the site after the flood waters recede.

Regional San will be responsible for monitoring for continued compliance with success criteria and submitting a report with the compliance monitoring results following any extended-duration flood within restored GGS habitat that recedes during the permit term. If the restored habitat does not meet the success criteria during the monitoring visit, Regional San will be responsible for identifying, receiving USFWS approval for, and implementing remedial actions.

6.2 Unforeseen Circumstances

Unforeseen circumstances are defined in 50 CFR 17.3 as changes in circumstances that affect a species or geographic area covered by the HCP that could not reasonably be anticipated by plan developers and the USFWS at the time of the HCP's negotiation and development and that result in a substantial and adverse change in status of the covered species. The purpose of the No Surprises Rule is to provide assurances to non-Federal landowners participating in habitat conservation planning under the Act that no additional land restrictions or financial compensation will be required for species adequately covered by a properly implemented HCP, in light of unforeseen circumstances, without the consent of the permittee.

In case of an unforeseen event, the permittee shall immediately notify the USFWS staff who have functioned as the principal contacts for the proposed action. In determining whether such an event constitutes an unforeseen circumstance, the USFWS shall consider, but not be limited to, the following factors: size of the current range of the affected species; percentage of range adversely affected by the HCP; percentage of range conserved by the HCP; ecological significance of that portion of the range affected by the HCP; level of knowledge about the affected species and the degree of specificity of the species' conservation program under the HCP; and whether failure to adopt additional conservation measures would appreciably reduce the likelihood of survival and recovery of the affected species in the wild.

If the USFWS determines that additional conservation and mitigation measures are necessary to respond to the unforeseen circumstances where the HCP is being properly implemented, the additional measures required of the permittee must be as close as possible to the terms of the original HCP and must be limited to modifications within any conserved habitat area or to adjustments within lands or waters that already set-aside in the HCP's operating conservation program. Additional conservation and mitigation measures shall involve the commitment of additional land or financial compensation or restrictions on the use of land or other natural resources otherwise available for development or use under original terms of the HCP only with the consent of the permittee.

6.3 Amendments/Renewal Process

6.3.1 Permit Amendments

Amendments to the permit are required for changes that affect the scope of the HCP and conservation strategy, increase the amount of take, add new species, or change significantly the boundaries of the HCP. Major amendments often require amendments to the USFWS's decision documents, including the NEPA document, the biological opinion, and findings and recommendations document. Major amendments will often require additional public review and comment.

At this time there is no reason to expect that an amendment to the Section 10(a)(1)(B) permit will be needed to complete the Project. However, during the specified permit period an amendment of the Section 10(a)(1)(B) permit for the Project would be required for any change in the following:

- significant revision of the permit area boundary;
- the listing under the ESA of a new species not currently addressed in the HCP that may be taken by Project activities;
- modification of any important Project action or mitigation component under the HCP, including funding, that may significantly affect authorized take levels, effects of the Project, or the nature or scope of the mitigation programs; and
- any other modification of the Project likely to result in significant adverse effects to VELB or GGS not addressed in the original HCP and permit application.

Amendment of the Section 10(a) permit would be treated in the same manner as an original permit application. Low-effect HCP permit amendments typically require a revised HCP, a permit application form and application fee, and a 30-day public comment period; as well as amendments to the USFWS's decision documents, including the NEPA document, the biological opinion, and findings and recommendations document. However, the specific documentation needed in support of a permit amendment may vary, depending on the nature of the amendment.

6.3.2 HCP Amendments

An HCP may, under certain circumstances, be amended without amending the associated permit, provided that such amendments are of a minor or technical nature and that the effect on the species involved and the levels of take resulting from the amendment are not significantly different than those described in the original HCP.

To amend the HCP without amending the permit, Regional San must submit to the USFWS, in writing, a description of: (1) the proposed amendment, (2) an explanation of why the amendment is necessary or desirable, and (3) an explanation of why Regional San believes the effects of the proposed amendment would not be significantly different than those described in the original HCP. The HCP amendment shall be considered effective upon the date of the USFWS's written authorization.

6.4 Suspension/Revocation

The USFWS may suspend or revoke their respective permits if Regional San fails to implement the HCP in accordance with the terms and conditions of the permits or if suspension or revocation is otherwise required by law. Suspension or revocation of the Section 10(a)(1)(B) permit, in whole or in part, by the USFWS shall be in accordance with 50 CFR 13.27-29, 17.32 (b)(8).

6.5 Permit Renewal

Upon expiration, the Section 10(a)(1)(B) permit may be renewed without the issuance of a new permit, provided that the permit is renewable, and that biological circumstances and other pertinent factors affecting covered species are not significantly different than those described in the original HCP. To renew the permit, Regional San shall submit to the USFWS, in writing:

- a request to renew the permit; reference to the original permit number;
- certification that all statements and information provided in the original HCP and permit application, together with any approved HCP amendments, are still true and correct, and inclusion of a list of changes;
- a description of any take that has occurred under the existing permit; and
- a description of any portions of the Project still to be completed, if applicable, or what activities under the original permit the renewal is intended to cover.

If the USFWS concurs with the information provided in the request, it shall renew the permit consistent with permit renewal procedures required by Federal regulation (50 CFR 13.22). If Regional San files a renewal request and the request is on file with the issuing USFWS office at least 30 days prior to the permit's expiration, the permit shall remain valid while the renewal is being processed, provided the existing permit is renewable. However, Regional San may not take listed species beyond the quantity authorized by the original permit or change the scope of the HCP. If Regional San fails to file a renewal request within 30 days prior to permit expiration, the permit shall become invalid upon expiration. Regional San and the conservation/mitigation bank operator (if applicable) must have complied with all annual reporting requirements to qualify for a permit renewal.

6.6 Permit Transfer

Although the sale or transfer of ownership of the property is not expected to occur during the life of the permit, in the event of a sale or transfer of ownership of the property during the life of the permit, the following will be submitted to the USFWS by the new owner(s): a new permit application, permit fee, and written documentation providing assurances pursuant to 50 CFR 13.25 (b)(2) that the new owner will provide sufficient funding for the HCP and will implement the relevant terms and conditions of the permit, including any outstanding minimization and mitigation. The new owner(s) will commit to all requirements regarding the take authorization and mitigation obligations of this HCP unless otherwise specified in writing and agreed to in advance by the USFWS.

7.0 FUNDING

ESA and its implementing regulations (50 CFR 17 and 222) require that HCPs specify the measures permittees will adopt to ensure adequate funding for the HCP. Regional San would be responsible for funding all aspects of HCP implementation. Regional San understands that failure to provide adequate funding and/or failure to implement the terms of this HCP in full could result in temporary permit suspension or permit revocation. Funding details for the species mitigation components of the HCP are provided below.

7.1 Avoidance and Minimization Measures

Regional San is responsible for funding all of the avoidance and minimization measures for VELB and GGS that are detailed in Section 5.2.

7.2 VELB Mitigation

Regional San is responsible for the purchase of 55 VELB credits and associated elderberry transplanting, as detailed in Section 5.2.1. A receipt for the purchase of the VELB credits will be provided to USFWS prior to commencement of Project construction. The USFWS-approved conservation bank will assume all responsibilities for funding of annual maintenance of the conservation bank, and the fulfillment of all monitoring and reporting activities associated with the VELB mitigation.

7.3 GGS Upland Habitat Restoration

Regional San will be responsible for funding the restoration of 10.775 acres of temporarily-impacted GGS habitat. In addition, Regional San is responsible for funding all of success monitoring and reporting for the restored habitat that is detailed in Sections 5.4 and 5.6, and for any additional restoration, monitoring, and reporting that may be required as a result of changed circumstances, as detailed in Section 6.1.1.

7.4 GGS Mitigation (if required)

If Option 2 is implemented, Regional San will be responsible for the dedication of 0.780 acre of created GGS habitat at the South Stone Lake Giant Garter Snake Mitigation Preserve or the purchase of 0.780 mitigation credits at a USFWS-approved GGS conservation bank, as detailed in Section 5.2.2. A receipt for the dedication or GGS acreage, or the purchase of the GGS credits will be provided to USFWS prior to commencement of Project construction for Phase 2 of Option 2. The USFWS-approved mitigation preserve or conservation/mitigation bank will assume all responsibilities for funding of annual maintenance of the mitigation preserve or conservation bank, and the fulfillment of all monitoring and reporting activities associated with the GGS mitigation.

8.0 ALTERNATIVES

8.1 Summary

Section 10(a)(2)(A)(iii) of the Endangered Species Act of 1973, as amended, [and 50 CFR 17.22(b)(1)(iii) and 17.32(b)(1)(iii)] requires that alternatives to the taking of species be considered and reasons why such alternatives are not implemented be discussed.

Two alternatives to the proposed Project were considered: (1) the No Action Alternative; and (2) the Western Borrow Site Alternative. The effects of the proposed Project were previously discussed; a discussion of the No Action and the Western Borrow Site Alternatives is provided below.

8.2 No Action Alternative

Under the No Action Alternative, the Project would not be constructed, and as a result, an HCP and incidental take permit would not be necessary. Under the No Action Alternative, the ring levee would not be built, and as a result, should a significant flood event (100-year storm or greater) occur along the Sacramento River, sewer service could be impacted for thousands of customers in the communities served by the LNWI. This represents an unreasonable level of risk to property and the environment, and is therefore an infeasible alternative.

8.3 West Borrow Site Alternative

Under the West Borrow Site Alternative, the borrow material necessary to construct the ring levee would be procured from the agricultural field west of Glide Lake instead of the agricultural field south of South River Pump Station. This was the original proposed alternative prior to successful negotiations with the owner of the property to the south. Under this alternative, a temporary haul road would have been constructed across Glide Lake to allow conveyance of the borrow material from the west side of Glide Lake into the construction area (see **Figure 12**).

8.3.1 Haul Road Construction

The haul road crossing with a 40-foot top width would need to be constructed by placing culverts and earth fill in the Glide Lake channel. The earth and pipe crossing would require 3:1 side slopes for stability, making the total footprint of the Glide Lake crossing approximately 80 feet wide. A sheet pile cofferdam wall could be installed on either side of the proposed haul route to dewater Glide Lake during haul road construction. Alternatively, if the water level is low, the haul road fill could be placed directly in the channel. A geotextile fabric would be placed underneath the fill material to facilitate removal of the fill during restoration. Scrapers would be used to move material from the borrow site to the levee construction area. Following construction, the haul road would be restored to pre-Project conditions.

8.3.2 Potential Take Associated with the West Borrow Site Alternative

The West Borrow Site Alternative would impact the same number of elderberry shrubs and acreage of GGS upland habitat to the east of Glide Lake as the Proposed Alternative. In addition to those impacts, there would be 0.422 acre of GGS aquatic habitat impacts associated with construction of the haul road through Glide Lake, as well as an additional 19.577 acres of GGS upland habitat impacts west of Glide Lake and south of Lake Shangri-La. The significant additional impacts to GGS habitat and Waters of the U.S. associated with the Western Borrow Site Alternative make it more damaging to GGS and Waters of the U.S. as compared to the proposed Project.

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Figures

Figure 1. Site and Vicinity Map

Figure 2. Permit Area

Figure 3. Project Overview Map

Figure 4. Project Overview – Option 2, Phase 1

Figure 5. Project Overview – Option 2, Phase 2

Figure 6. Natural Resources Conservation Service Soils

Figure 7. Vegetation Communities

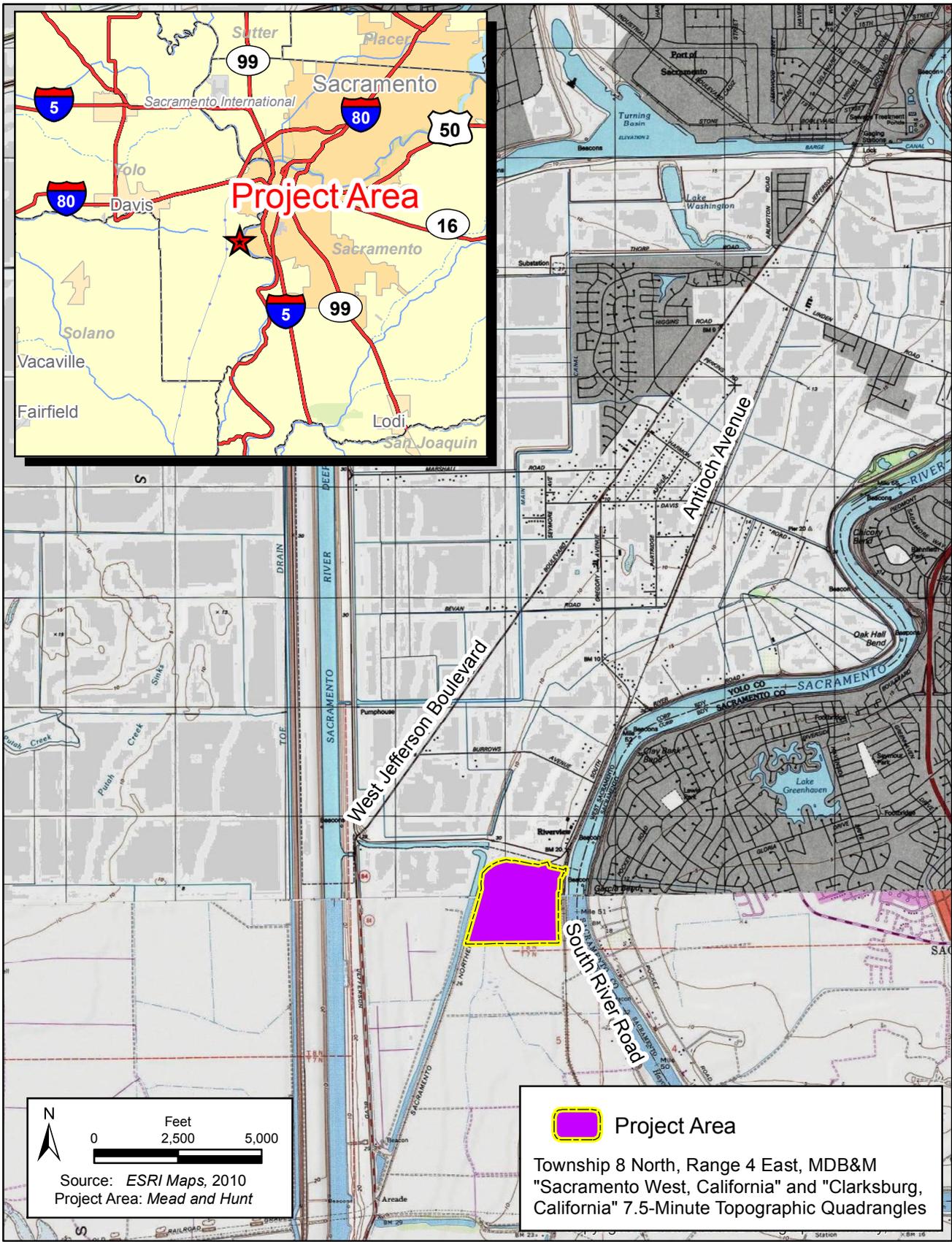
Figure 8. California Natural Diversity Database Occurrences of Federally-Listed Species and
Critical Habitat

Figure 9. Elderberry Shrub Impacts and Avoidance within the Permit Area

Figure 10. Giant Garter Snake Habitat Impacts and Avoidance within the Permit Area

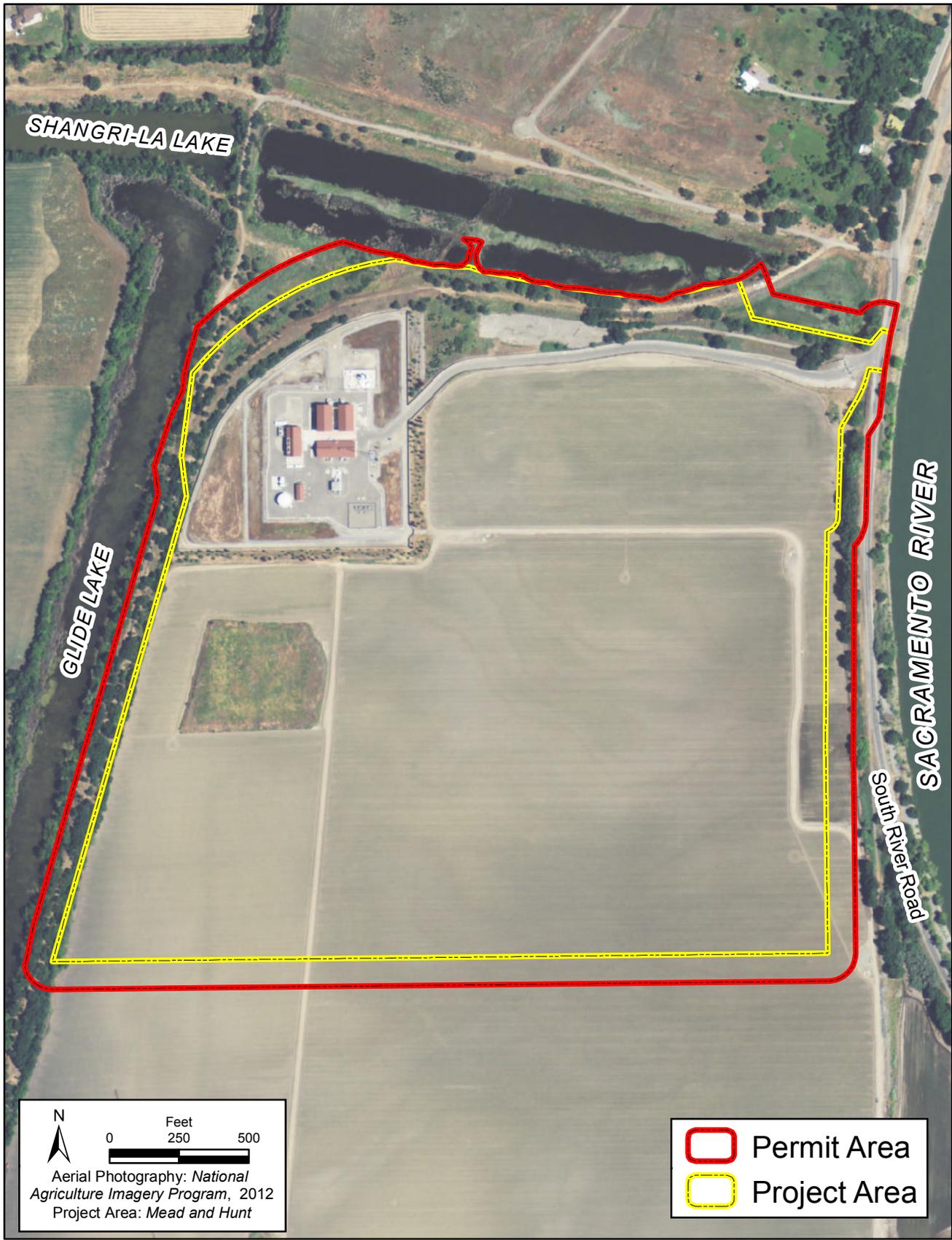
Figure 11. Temporary Impacts to Giant Garter Snake Upland Habitat by Construction Phase for
Option 2

Figure 12. West Borrow Site Alternative



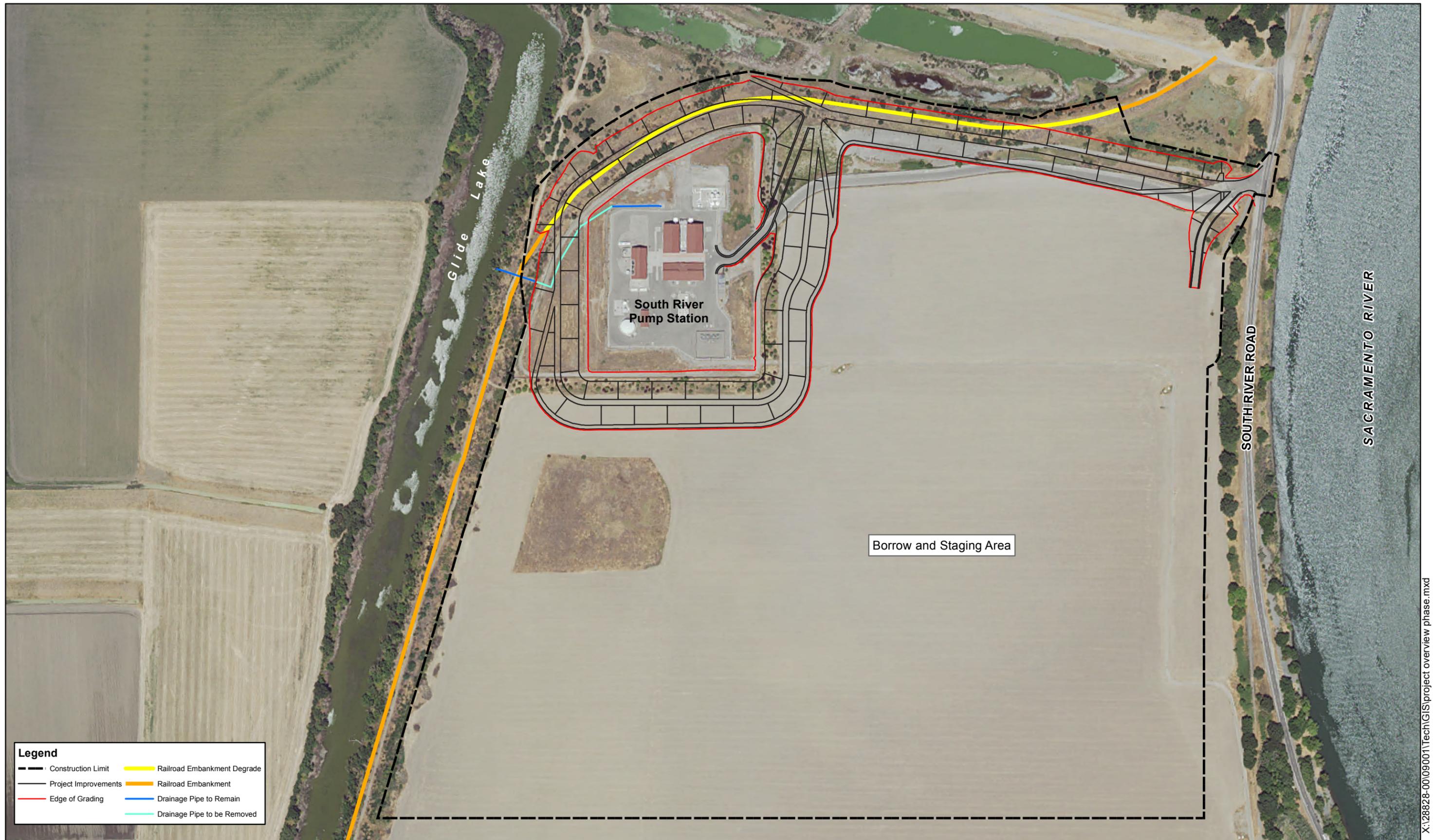
South River Pump Station
 Flood Protection Project

Figure 1
 Site & Vicinity Map



South River Pump Station
Flood Protection Project

Figure 2
Permit Area



Legend

	Construction Limit		Railroad Embankment Degrade
	Project Improvements		Railroad Embankment
	Edge of Grading		Drainage Pipe to Remain
			Drainage Pipe to be Removed

Source: National Agriculture Imagery Program, Madrone Ecological Consulting

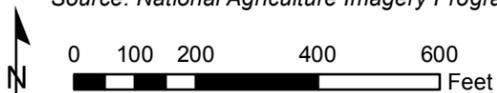
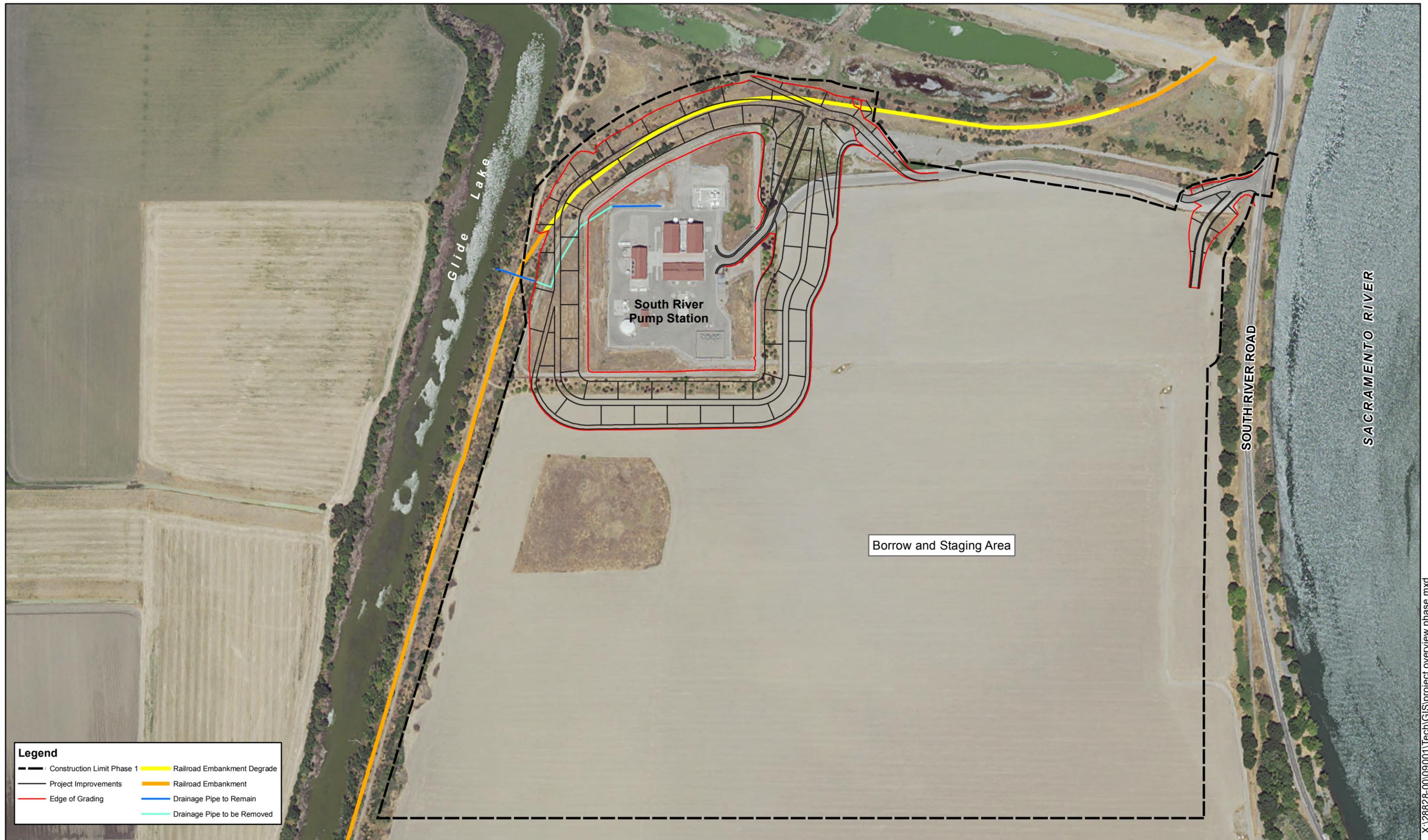


Figure 3. Project Overview
 South River Pump Station Flood Protection Project
 SACRAMENTO REGIONAL COUNTY SANITATION DISTRICT

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Legend

--- Construction Limit Phase 1	Yellow Railroad Embankment Degrade
--- Project Improvements	Orange Railroad Embankment
Red Edge of Grading	Blue Drainage Pipe to Remain
Cyan Drainage Pipe to be Removed	

Source: National Agriculture Imagery Program, Madrone Ecological Consulting

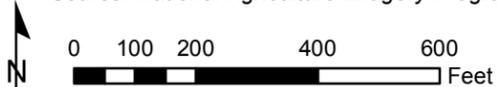
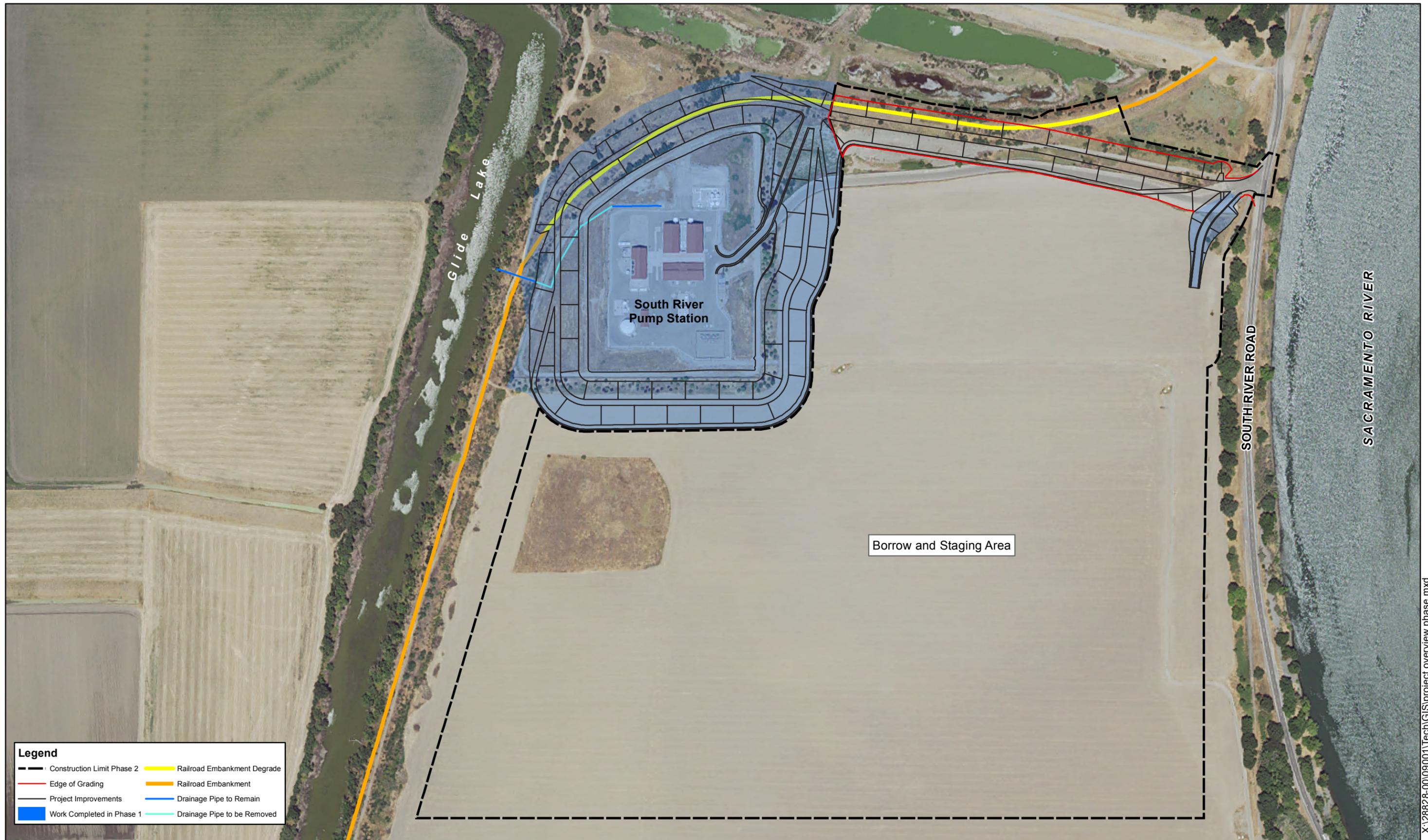


Figure 4. Project Overview - Option 2, Phase 1
 South River Pump Station Flood Protection Project
 SACRAMENTO REGIONAL COUNTY SANITATION DISTRICT

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Source: National Agriculture Imagery Program, Madrone Ecological Consulting

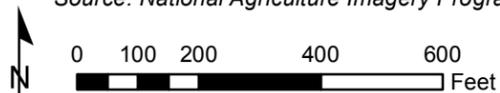
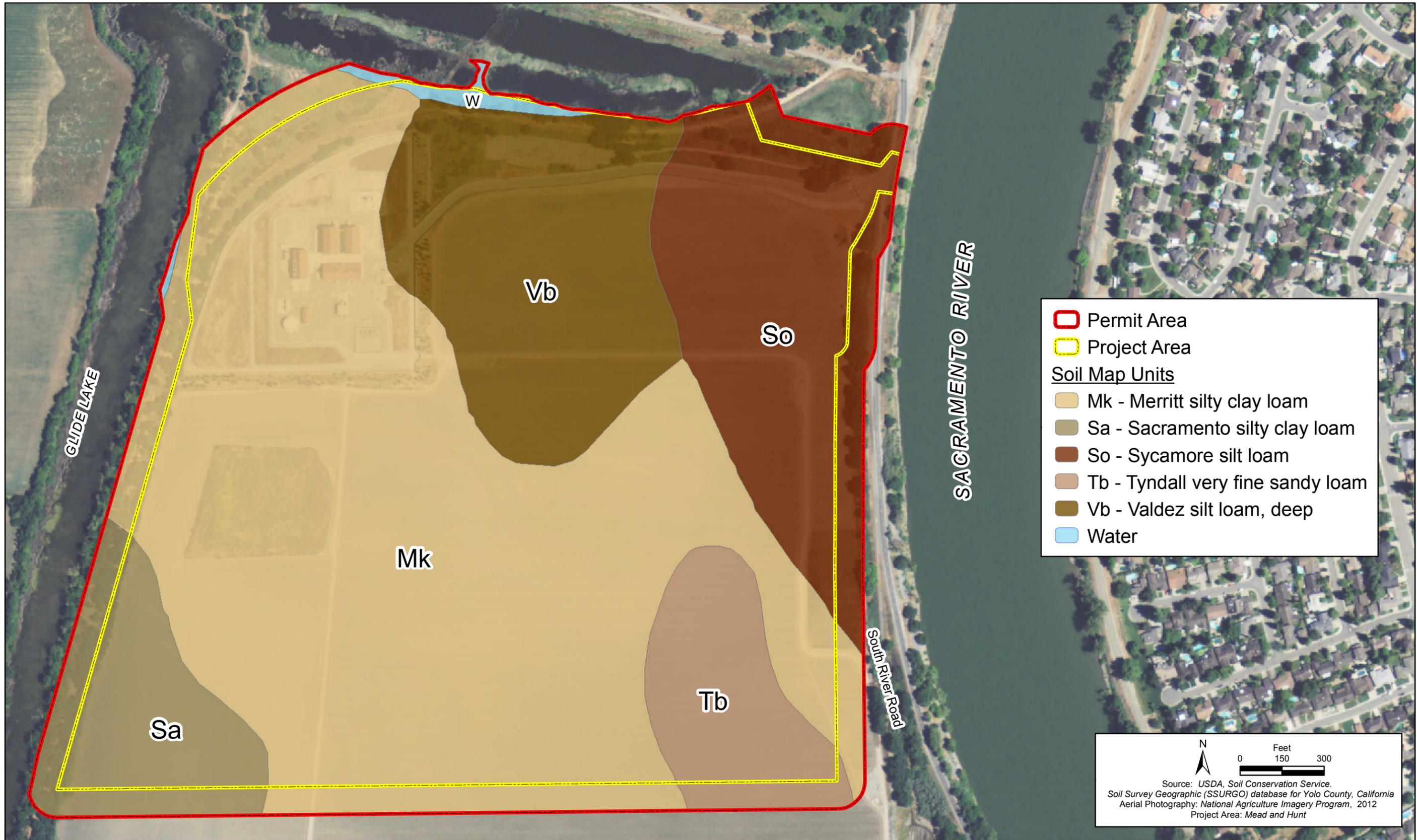


Figure) . Project Overview - Option 2, Phase 2
 South River Pump Station Flood Protection Project
 SACRAMENTO REGIONAL COUNTY SANITATION DISTRICT

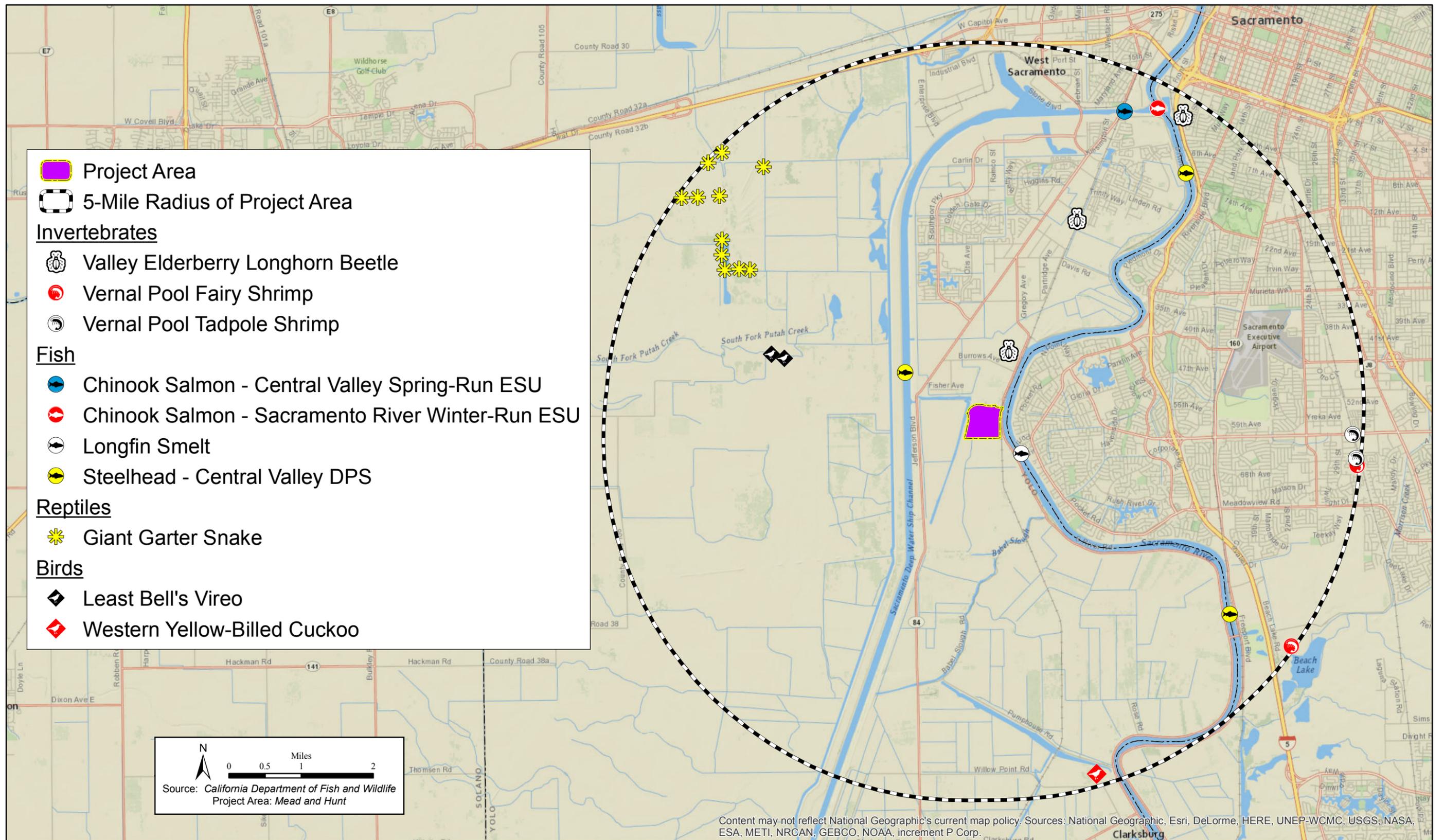
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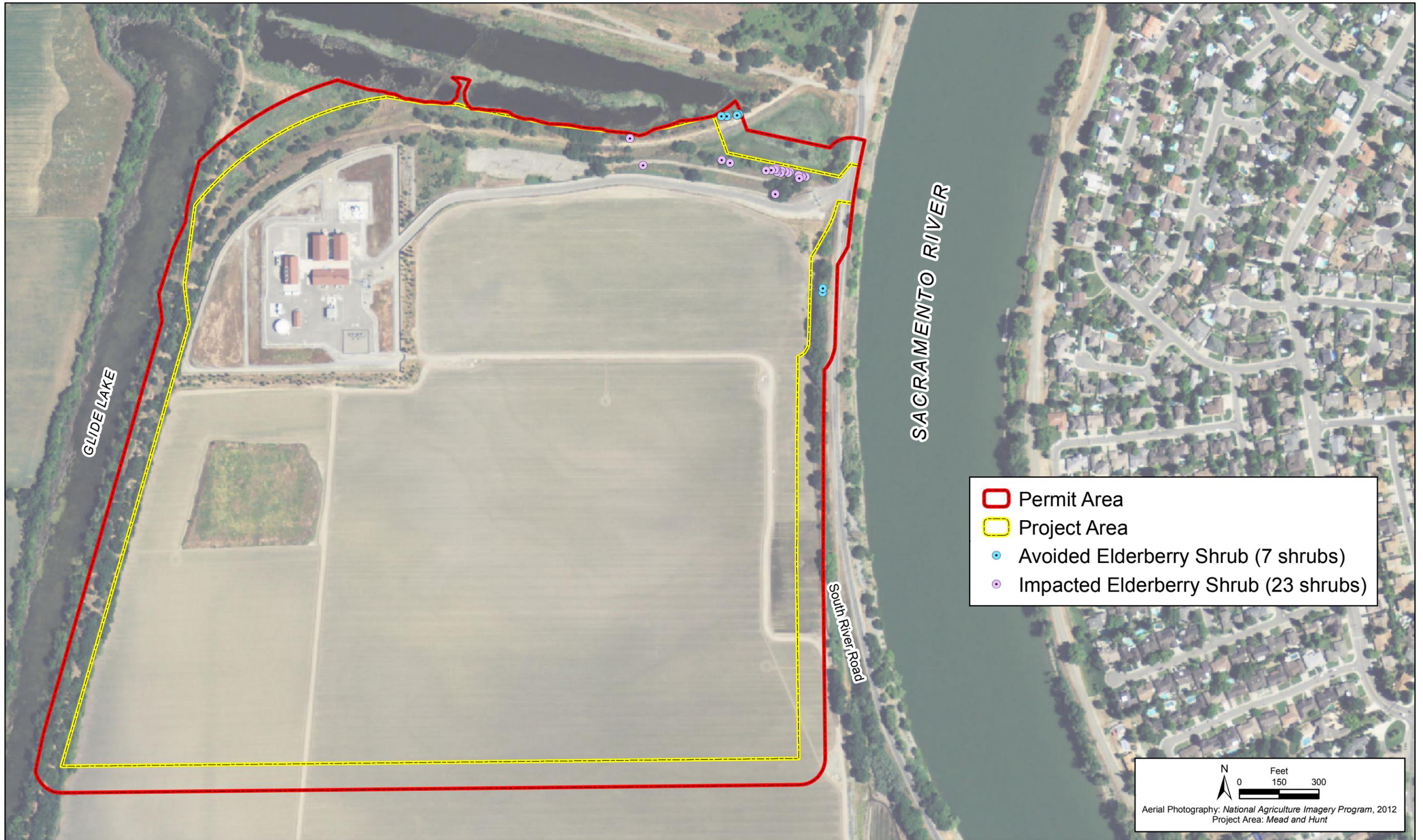




South River Pump Station
Flood Protection Project

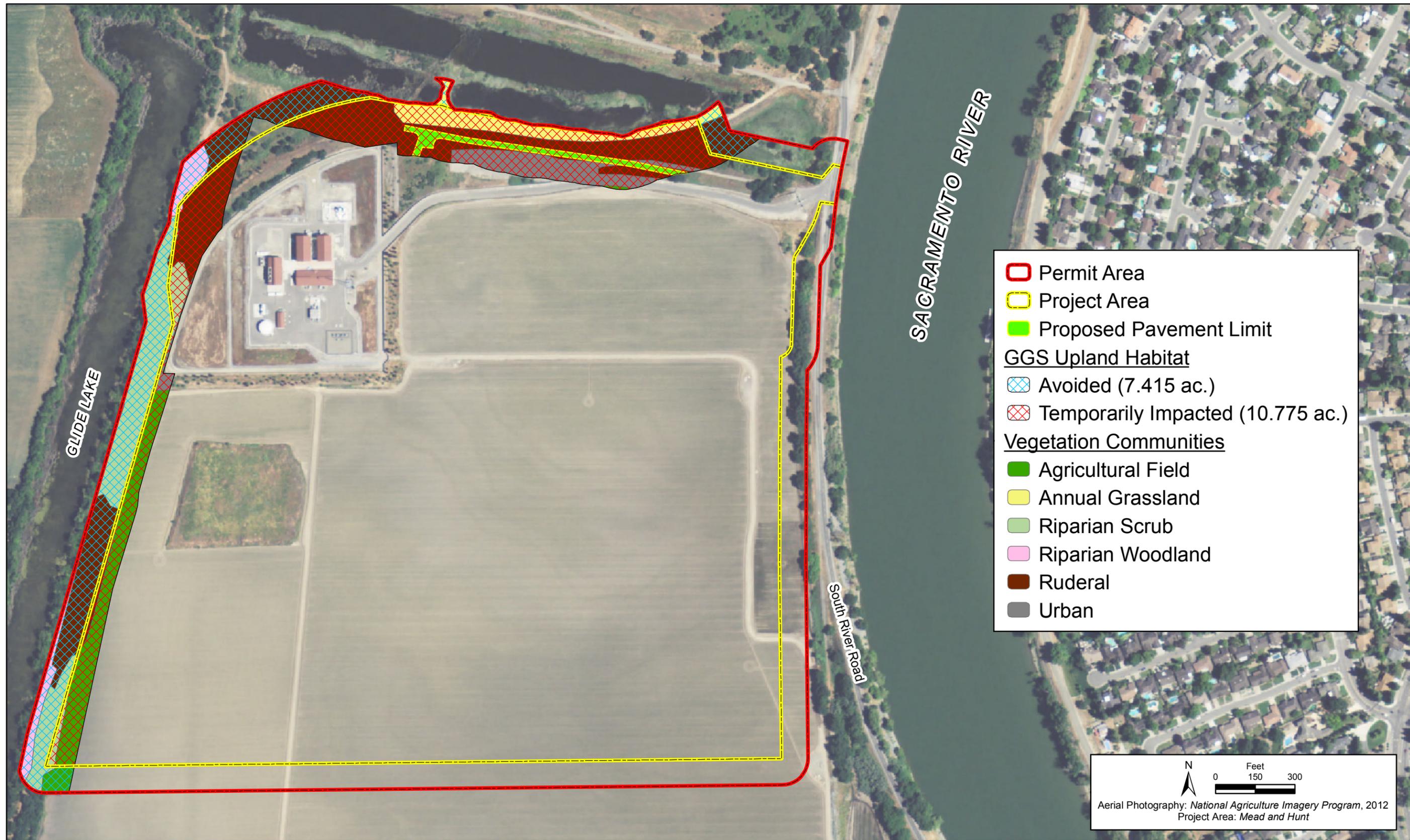
Figure 7
Vegetation Communities





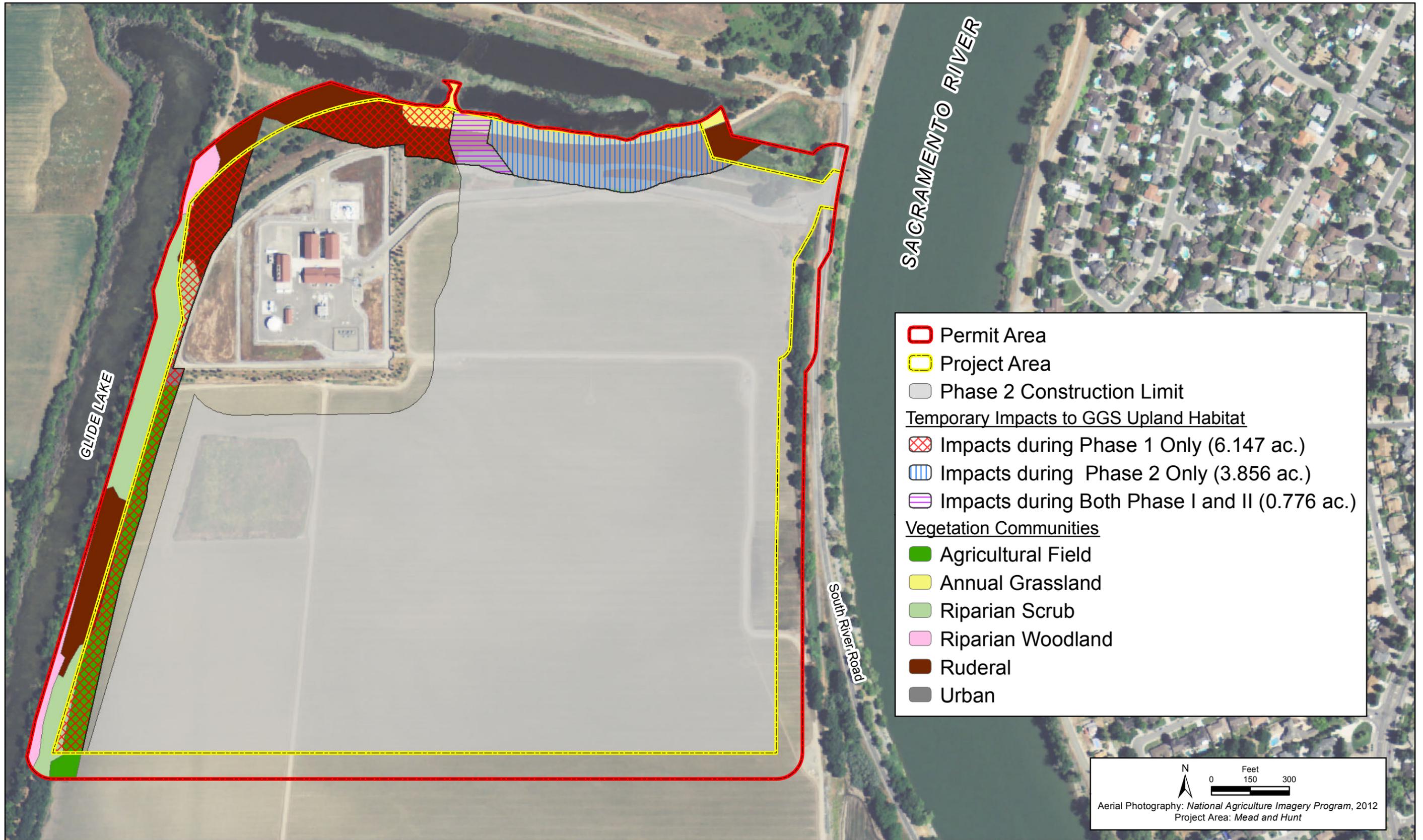
South River Pump Station
Flood Protection Project

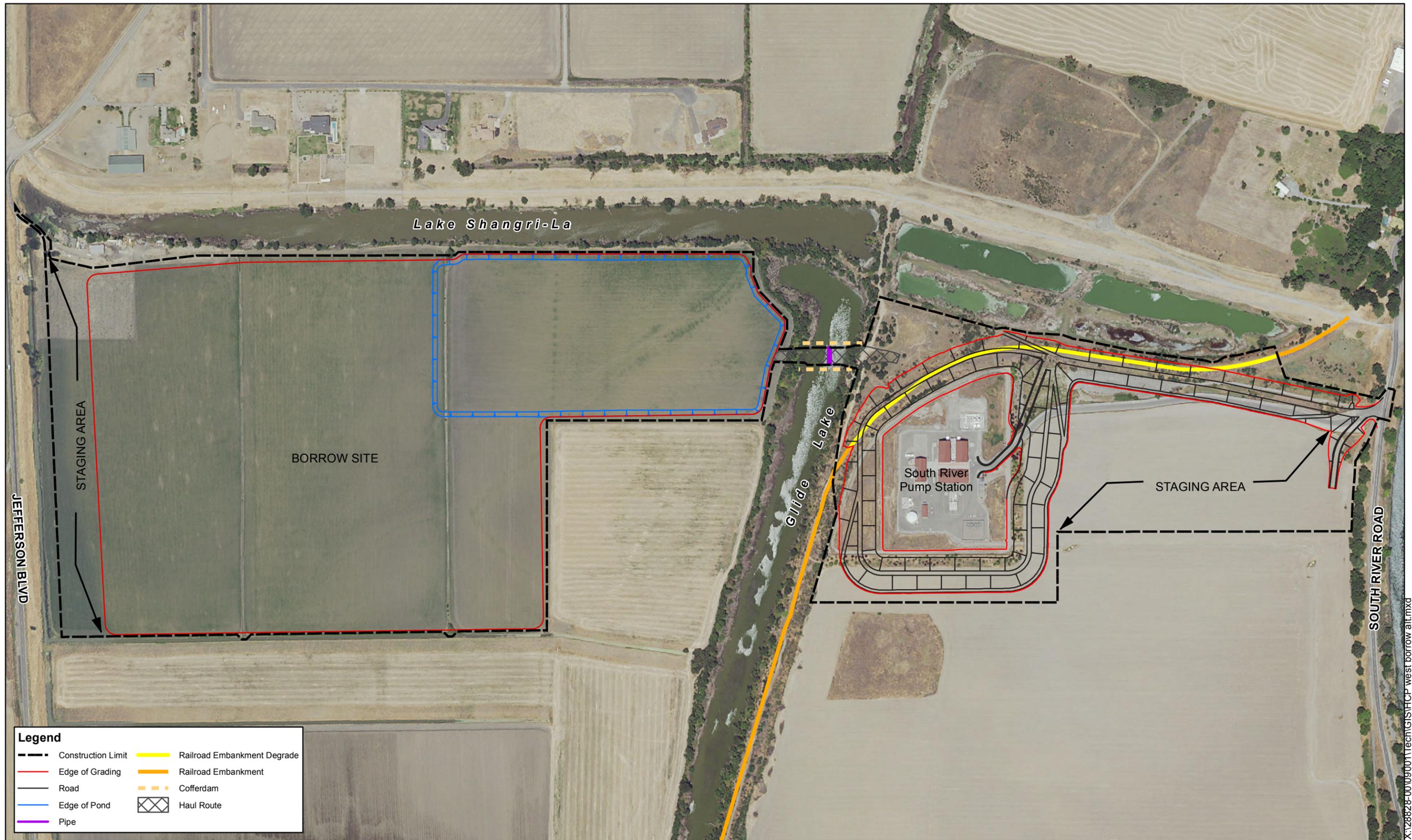
Figure 9
Elderberry Shrub Impacts &
Avoidance within the Permit Area



South River Pump Station
Flood Protection Project

Figure 10
Giant Garter Snake Habitat Impacts &
Avoidance within the Permit Area





Legend	
	Construction Limit
	Edge of Grading
	Road
	Edge of Pond
	Pipe
	Railroad Embankment Degrade
	Railroad Embankment
	Cofferdam
	Haul Route



Figure 12. West Borrow Site Alternative
 South River Pump Station Flood Protection Project
 SACRAMENTO REGIONAL COUNTY SANITATION DISTRICT

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