Habitat Mitigation Monitoring Plan

SID COMMONS APARTMENTS PROJECT
PETALUMA, SONOMA COUNTY, CALIFORNIA

Prepared on Behalf of:

Gary Johnson
Acclaim Homes
125 Willow Road
Menlo Park, CA 94025

Prepared By:

WRA, Inc.
2169-G East Francisco Boulevard
San Rafael, California 94901

Contacts:

Brian Freiermuth
freiermuth@wra-ca.com

Bianca Clarke
clarke@wra-ca.com

Date:

June 2016
Revised July 2021

WRA Project No. 10036

This page intentionally blank

TABLE OF CONTENTS

1.0 INTRODUCTION 1
1.1 Project Purposes and Description 2
1.2 Responsible Parties 3
2.0 EXISTING CONDITIONS 3
2.1 Existing Conditions of Jurisdictional Areas 4
2.1.2 Sid Commons 5
2.2.2 Sid Commons 6
3.0 Proposed Project Activities 6
3.1 Description of Proposed Activities 6
3.2 Project Avoidance and Impacts to Jurisdictional Features 7
4.0 HABITAT REPLACEMENT AND MITIGATION IMPLEMENTATION PLAN 8
4.1 Wetland Mitigation Soils 10
4.2 Grading Plan 10
4.3 Created Wetland Hydrology 10
4.4 Planting Plan 10
4.5 Maintenance Specifications 11
4.6 As-Built Conditions 12
5.0 SUCCESS CRITERIA AND MONITORING 12
5.1 Success Criteria 12
5.2 Monitoring 1
5.2.1 Methods 1
5.2.2 Monitoring Schedule 2
6.0 MAINTENANCE DURING MONITORING PERIOD 2
6.1 Maintenance Activities 2
6.1.1 Contingency Measures 2
6.1.2 Invasive Species Control 2
7.0 MONITORING REPORTS 3
7.1 As-Built Plan 3
7.2 Annual Reports 3
7.3 Notification of Completion 3
8.0 REFERENCES 3

LIST OF TABLES

Table 1. Project Impacts to Jurisdictional Features 7
Table 2. Section 404 Mitigation Features within the Project Area 8
Table 3. Section 401 Mitigation Features within the Project Area 9
Table 4. Section 1602 Mitigation Features within the Project Area 9
Table 5. Summary of Monitoring and Success Criteria 13

LIST OF FIGURES

Figure 1. Project Location Map
Figure 2. River Terrace and Sid Commons Site Plan
Figure 3. Corps Jurisdictional Determination Map
Figure 4. Vegetation along the Petaluma River
Figure 5. Project Planting Plan

1.0 INTRODUCTION

This Habitat Mitigation Monitoring Plan (HMMP) has been prepared in support of completing a combined habitat replacement and mitigation plan for temporary and permanent impacts that will be caused to riparian habitat by a river terracing project intended to remediate flooding along the Petaluma River by the City of Petaluma (City), and permanent impacts to seasonal wetlands by the Sid Commons (Applicant) residential development in Petaluma, CA (Figure 1). However, the flood control river terracing and residential development will be completed together for which a Final Environmental Impact Report (FEIR; Lamphier-Gregory 2019) has been prepared. This plan is needed for meeting environmental review requirements for the City of Petaluma under CEQA and for completing regulatory permit applications for the United States Army Corps of Engineers (Corps) Section 404 Clean Water Act, Regional Water Quality Control Board (RWQCB) Section 401 Water Quality Certification, and California of Department Fish and Wildlife (CDFW) Code Section 1602 Notification of Streambed Alteration Agreement (SAA). This HMMP incorporates input received from the City and agency staff as a result of a site visit in 2015 to determine appropriate mitigation measures. In accordance with the City of Petaluma's February 3, 2020 Resolution certifying the Sid Commons Apartment Project, no impacts to the Petaluma River below the ordinary high-water mark is proposed.

The Project Area is within the watershed of the Petaluma River (HUC 180500020801). The Petaluma River is a named blue-line stream on the Cotati USGS 7.5-minute quadrangle (USGS 1980) and has perennial flow; it flows southerly to San Pablo Bay approximately 17 miles downstream. One storm water detention basin is present in the Project Area that collects storm runoff from adjacent areas to the west and south. This basin has controlled outflow through a standpipe and accumulated sediment is occasionally removed as a maintenance activity.

The primary objectives of this HMMP are to describe the habitat preservation and mitigation enhancement and creation activities designed to benefit the existing habitats to satisfy on-site mitigation for proposed project impacts. The HMMP therefore addresses the estimated impacts of the proposed projects, the proposed replacement and mitigation creation goals and activities, habitat preservation and mitigation enhancement and creation implementation and planting plans, and maintenance and monitoring of the enhanced and created habitats. In addition, the project was designed to preserve existing native riparian habitat along the Petaluma River while siting terracing within non-native invasive Himalayan blackberry (*Rubus armeniacus*) thickets targeted for removal and restoration.

On-site habitat replacement and creation will result in a net increase in the amount of potentially jurisdictional habitat than what is currently present; therefore, no additional off-site mitigation is proposed. Additional temporary impacts will occur to other non-sensitive habitat features due to construction and re-contouring of the western bank of the Petaluma River along the Sid Commons reach.

The HMMP has been designed with the following objectives:

- To increase the acreage of aquatic habitat within the Project Area
- Increase the functions and values of the existing habitat
- To improve flood capacity of the Petaluma River
- Preserve existing native riparian "high value" habitat where practicable

1.1 Project Purposes and Description

The Project has two purposes: one is the flood control river terracing to improve flood attenuation and conveyance along the river that will also improve habitat values, preserve existing high-value riparian and wetland habitat[1], and create additional habitat that provides ecological function and value along the Petaluma River. The other purpose is development of the Sid Commons Apartments that will provide much needed housing for residents of Petaluma and Sonoma County (Figure 2). While the two purposes are related geographically, they are independent projects because the terracing is one part of an overall City sponsored flood control project and the Sid Commons will be constructed above the 100-year flood elevation.

For the river terracing component, the Applicant will re-contour the western bank of the Petaluma River to improve flood water attenuation and conveyance during floods, and this work is in conjunction with the overall Petaluma River Flood Control Project initiated by the Corps of Engineers. Riparian habitat will be unavoidably impacted during this process, however areas of non-native stands of plants, such as Himalayan blackberry were targeted for vegetation removal while existing high-value native willow (*Salix* spp.) riparian habitat was avoided as much as practicable and will be preserved. Disturbed and re-contoured areas will be replanted with native riparian and wetland species of plants. The Sid Commons Apartments component of the project will construct apartment buildings west of the river in an area that was disturbed in the past by topsoil removal and continues to be disturbed annually for fire control.

After the FEIR was completed in 2019 the adoption of the Navigable Waters Protection Rule (NWPR), which was published April 21, 2020, and became effective June 22, 2020 (Federal Register Vol. 85, No. 77), changed the definition of “waters of the United States”. As a result of the adoption of the NWPR, approximately 0.01 acre of seasonal wetland below top of bank and directly adjacent to the Petaluma River which is likely considered jurisdictional by the Corps of Engineers will be permanently impacted by the Project.

The grading and development of the Project, including the Sid Commons apartments, and flood control river terracing will result in temporary impacts to 0.01 acre of Corps and RWQCB jurisdictional seasonal wetland located below the top of the existing stream bank. Isolated wetland depressions which lack exhibit a direct, above ground connection of concentrated flow to a jurisdictional Waters of the U.S. are not subject to regulation by the Corps under Section 404 of the CWA are present within the Project Area. The flood control terracing portion of the Project will temporarily impact approximately 0.92 acre of riparian woodland of which 0.58 acre will be enhanced in place and 0.34 acre will be restored to riparian wetland. The Project will permanently impact 0.05 acre of riparian woodland which will be converted to a newly established river access trail.

Mitigation for the impacted seasonal wetlands will be provided on-site. The Project is to begin in the summer of 2021 with work expected to occur only during the dry season. Specific Project tasks related to this HMMP will include the following:

[1] High-value riparian habitat was determined by presence of native woody species of plants, such as willows, that were well established and in good health and structure. High-value seasonal wetlands habitat was based on wetlands with long inundation or saturation duration, occupied by native wetland plant species or non-native species that provide wildlife value, relatively undisturbed, and in proximity to other high value natural habitat.

- Grading/re-contouring of western bank of the Petaluma River through Sid Commons reach
- Removal of invasive Himalayan blackberry patches
- Creation of floodplain terraces
- Creation and restoration of riparian habitat to provide at a minimum the same beneficial functions and values
- Creation of perennial and seasonal wetlands habitat within the terrace and Sid Commons project areas as mitigation for impacted wetlands that will augment habitat value and increase habitat complexity along the river,
- Revegetating the graded and re-contoured terrace area with native riparian vegetation; and
- Preservation of seasonal wetland and riparian habitat.

The Project has been designed to avoid, preserve, or minimize impacts to sensitive habitats and species.

1.2 Responsible Parties

The Applicant is solely responsible for developing, implementing, maintaining and monitoring the proposed habitat restoration and creation activities associated with the Project. This includes providing the land, property management, compliance with local, state, and federal laws and regulations, implementation of habitat improvements, and monitoring and reporting on the success of the mitigation.

The Applicant: Gary Johnson
Acclaim Homes
125 Willow Road
Menlo Park, CA 94025
Phone: (650) 324-9021

The preparer of this plan:

WRA, Inc.
2169-G East Francisco Boulevard
San Rafael, California 94901
Contact: Bianca Clarke
Phone: (415) 524-7255

2.0 EXISTING CONDITIONS

The Project will involve work in two areas, the Petaluma river terrace construction which involves the area immediately adjacent to the river and the Sid Commons residential development which will affect areas west of the river consisting of mostly uplands but with some isolated seasonal wetlands which are waters of the State. Therefore, habitats considered sensitive and jurisdictional and uplands considered non-sensitive will be affected.

No special-status plant species are known to be present in the Project Area and none are likely to be present based on past disturbances and the presence of extensive non-native weedy

species, and protocol-level surveys conducted in 2020 (WRA 2020). Special-status wildlife that have potential to occur in the Project Area include Central California Coast Steelhead (*Oncorhynchus mykiss*), California red-legged frog (*Rana draytonii*), western pond turtle (*Actinemys marmorata*), and others. Potential impacts to special-status wildlife species are provided in the Biological Assessment for the Project (WRA 2021).

2.1 Existing Conditions of Jurisdictional Areas

2.1.1 River Terrace

A routine protocol-level wetland delineation and biological resources assessment for the Project Area was conducted by WRA, Inc. (WRA) in 2013, and a wetlands delineation was approved by the Corps the same year which was valid until 2018. The jurisdictional determination of the Corps at the time concluded that all seasonal wetlands present within the Project Area exhibited a significant nexus to the Petaluma River and were therefore all considered jurisdictional to the Corps. The delineation was re-verified by the Corps in 2019 with a total of 0.62 acre of jurisdictional wetlands and 0.92 acre of jurisdictional waters (Petaluma River). However, with the adoption of the NWPR, which was published April 21, 2020, and became effective June 22, 2020 (Federal Register Vol. 85, No. 77), the significant nexus determination is null and void, and wetlands need to exhibit a direct, above ground connection of concentrated flow (i.e. sheet flow is excluded) to a jurisdictional waters of the U.S. within a normal year to be considered jurisdictional to the Corps under the CWA. As a result of the adoption of the NWPR, wetlands on-site were re-verified by the Corps under an Approved Jurisdictional Determination (AJD) on January 4, 2021 (Figure 3. AJD Map). This determination is valid through January 4, 2026. The Project Area contains 0.01 acre of seasonal wetland below top of bank and 0.28 acre of seasonal wetland directly adjacent to the Petaluma River which is jurisdictional to the Corps and RWQCB. The remaining 0.32 acre of seasonal wetlands do not contain an above ground connection to the Petaluma River are considered isolated wetlands which are subject to RWQCB jurisdiction, but not subject to Corps jurisdiction.

The river terrace area also contains 1.02 acres[2] (1,606 linear feet) of open water of the Petaluma River which is jurisdictional to the Corps, RWQCB, and CDFW, and 1.41 acres of riparian woodland which is jurisdictional to the RWQCB and CDFW. River terracing will temporarily impact approximately 0.92 acre of riparian woodland of which 0.58 acre will be enhanced in place and 0.34 acre will be restored to riparian wetland. An additional 0.05 acre of riparian woodland will be permanently impacted and converted to a newly established river access trail.

Three general vegetation types are present in riparian habitat along the river (Figure 4. Vegetation Along the Petaluma River). Red willow (*Salix laevigata*) riparian thickets are situated on and above the banks of the Petaluma River and may contain other riparian species including sandbar willow (*S. exigua*), arroyo willow (*S. lasiolepis*), box elder (*Acer negundo*), and blue elderberry (*Sambucus nigra* ssp. *caerulea*). In areas adjacent to willow riparian thicket, non-native Himalayan blackberry (*Rubus armeniacus*) is dominant and forms homogenous stands along the river. In more permanent water of the river there are occasional patches of tules that include hardstem bulrush (*Schoenoplectus acutus*), California bulrush (*Schoenoplectus californicus*), and cattail (*Typha* sp.).

[2] Habitat acreage differences reflected in this HMMP that may differ from previous estimates are due to changes in the Project Area extent along the Petaluma River, not increases or decreases in actual habitat area.

The functions and values of the riparian habitat along the river range from low to high. Under existing conditions the flood attenuation during flooding conditions is low for habitats (and their topography) along the river, thus the purpose of the terracing project. The dense vegetation along the river does rate high for river bank protection and preventing erosion, and the dense vegetation also acts to improve water quality by reducing toxicants and excess nutrients in the water. As habitat value, the patches of non-native Himalayan blackberry rate lower because of the homogeneous stands that it creates and becomes nearly impenetrable to most species of wildlife.

Willows and other native vegetation along the river have been targeted to be preserved and avoided for the river terracing portion of the Project to the maximum extent practicable due to its high value for wildlife habitat, forage, and streambank stabilization. The dense vegetation also contributes a high amount of primary production with gradual decomposition that provides a steady food chain source in the Project area and downstream.

2.1.2 Sid Commons

Seasonal wetlands present in the Project Area outside of the riparian river terracing zone, exist as isolated depressions and swales covering 0.32 acre, and generally hold low volumes of direct precipitation (i.e. storm water) that contributes, albeit not substantially, to flood attenuation. These seasonal wetland depressions and swales are enclosed features that do not contain an above ground connection to the Petaluma River, and they are therefore isolated per the NWPR and non-jurisdictional per the CWA. The development of the Sid Commons apartments will permanently impact 0.29 acre of these isolated seasonal wetlands which are considered jurisdictional to the RWQCB.

The vegetation in these seasonal wetlands is dominated by non-native FAC to FACW grasses and herbs, with native species typically not represented as dominant species. The most frequently observed species included Mediterranean barley (*Hordeum marinum*), Italian rye grass (*Festuca perennis*), and fiddle dock (*Rumex pulcher*, FAC).

The functions and values of the seasonal wetlands rate low to moderate. There is some floodflow storage in one of the deeper seasonal wetlands, but for the most part the seasonal wetlands are shallow and do not contribute substantially to floodflow attenuation, giving them a low rating. These wetlands are also relatively isolated from the river and above the 100-year flood elevation and do not provide the opportunity for contributing to river water quality improvement through toxicant and/or excess nutrient removal. The seasonal wetlands are dry most of the year and subject to discing as part of the non-native grassland fire control which reduces their value to wildlife, both aquatic and terrestrial species.

2.2 Existing Conditions of Mitigation Sites

2.2.1 River Terrace

Replacement of riparian and wetland habitat and created mitigation for habitat impacts will be along the Petaluma River from the ordinary high-water mark (OHWM) and farther into existing uplands areas west of the river within the footprint of the terrace grading plan. As described in jurisdictional areas section above, wide areas of existing non-native Himalayan blackberry along the river will be removed for terrace grading and also some native vegetation which cannot be avoided. However, some higher value native willow thickets along the river will be avoided and preserved. Terrace grading will impact one small (0.01 acre) seasonal wetland situated below top of bank.

2.2.2 Sid Commons

In the portion of the Sid Commons area where 0.23 acre of seasonal wetlands will be created for RWQCB mitigation purposes, the existing condition is non-native grassland. Within the non-native annual grasslands there are scattered oak trees, including Coast live oak (*Quercus agrifolia*) and valley oak (*Quercus lobata*), and a few depressions where rain water collects and seasonal wetlands have formed. Non-native grassland plants include soft chess (*Bromus hordeaceus*), ripgut brome (*Bromus diandrus*), Italian rye grass, Mediterranean barley (*Hordeum marinum* ssp. *gussoneanum*, FAC), and mouse barley (*Hordeum murinum*). The area was subjected to soil excavation and removal in the past and continues to be disturbed annually by discing for fire control. Existing oak trees in this area will be avoided and will remain.

3.0 PROPOSED PROJECT ACTIVITIES

The goals of the wetland and riparian mitigation activities include:

- Preservation of existing on-site high-quality wetlands and riparian habitat;
- Restoration and enhancement of existing on-site wetlands and riparian habitat;
- Creation of additional high-quality wetlands and riparian habitat;
- Increase the overall functions and values of the wetlands and riparian habitat present in the Project Area; and
- Improve flood capacity of reach of Petaluma River along the Sid Commons project.

3.1 Description of Proposed Activities

The Applicant proposes to re-contour four discrete areas along the western bank of the Petaluma River from the OHWM up to and beyond the top of bank to improve flood capacity and flow efficiency, and create a more diverse assemblage of riparian and wetland habitats. The proposed Project design will restore and create new seasonal and perennial wetlands and riparian habitat while further enhancing the existing riparian habitat within the Project Area that will be preserved (Figure 5. Planting Plan). The Project is expected to be commence construction in 2021 with work only occurring during the dry season.

Construction activities will entail removal of existing Himalayan blackberry and tree removal via tree cutting, grinding, and grubbing followed by bank grading and re-contouring to achieve a floodway and floodplain terrace adequate to attenuate flood flows along the Petaluma River as well as replace and create seasonal and perennial wetlands and riparian habitat. Following grading activities, native plantings will be installed consistent with the planting plan included on Sheet L-1 in the Engineering Design Drawings and attached to this HMMP (Figure 5. Planting Plan).

Grading for each of the four terrace areas generally includes a gradual (5%) slope beginning just above the OHWM of the Petaluma River and rising between 5 to 10 feet in elevation with a steeper, banked (2:1) slope, meeting existing grade at the upland portion of the site. Temporary equipment staging areas will be established in upland areas during construction phases of the project.

The seasonal wetlands mitigation area on the northern portion of the Sid Commons development will be graded/excavated to form a seasonal wetland. After grading, both will be planted and

seeded with native wetland plants suitable to seasonal wetlands habitat. Grading and planting plans are provided on Sheet L-1 in the Engineering Design Drawings and attached to this HMMP. Temporary equipment staging areas will be established in upland areas during construction phases of the project.

3.2 Project Avoidance and Impacts to Jurisdictional Features

Project impacts to jurisdictional features are summarized below in Table 1. The Project will avoid permanent impacts to the Petaluma River, and will avoid 0.32 acres of seasonal wetland, of which 0.28 acre of seasonal wetland is jurisdictional to the Corps and RWQCB and 0.04 acre is isolated and only jurisdictional to the RWQCB. The flood control terracing will avoid 0.5 acre of riparian woodland in the Project Area including approximately 0.30 acre which was originally identified as high-quality native riparian vegetation prioritized for preservation. The 0.92 acre of riparian habitat which will be impacted during grading, is considered lower quality non-native Himalayan blackberry vegetation. Areas occupied by native willows that were considered high value were prioritized for avoidance where it was practicable to do so without severely diminishing the hydraulic floodflow calculations, the main purpose of the terracing project.

Table 1. Project Impacts to Jurisdictional Features

Feature	Section 404 Jurisdictional Areas		Section 401 Jurisdictional Areas		Section 1602 Jurisdictional Areas	
	Temporary Impacts	Permanent Impacts	Temporary Impacts	Permanent Impacts	Temporary Impacts	Permanent Impacts
	(acres / linear feet)					
Seasonal wetland	0.01	-	0.01	-	-	-
Isolated seasonal wetland	-	-		0.29	-	-
Petaluma River (below OHWM)	-	-	-	-	-	-
Riparian woodland	-	-	-	-	0.92	0.05
TOTAL	**0.01**	**0.00**	**0.01**	**0.29**	**0.92**	**0.05**

Tree removal in uplands areas will entail the removal of some trees from the Project Area as indicated in the Project arborist report (Duckles 2020) including coast live oak, valley oak, and coast redwood (*Sequoia sempervirens*) which will be replaced according to the Petaluma City Tree Ordinance. However, to augment existing trees that will be avoided and preserved, replacement of removed trees will include installing new trees and shrubs in positions in the ecotone between the Sid Commons development uplands and the riparian and wetlands mitigation habitat areas that will create a transition between the two habitat areas. This transition is shown on the attached Figure 5. Planting Plan (Sheet L-1) of the Engineering Design Drawings of this HMMP.

The grading and development of the Project, including the Sid Commons apartments and flood control river terracing will result in temporary impacts to 0.01 acre of Corps and RWQCB jurisdictional seasonal wetland located below the top of the existing stream bank and 0.92 acre of most non-native invasive riparian habitat. The Project will fill 0.29 acre of seasonal wetland

depressions which are only considered Waters of the State. Those features are isolated wetland depressions which lack a direct, above ground connection of concentrated flow to a jurisdictional waters of the U.S., and therefore they are not subject to regulation by the Corps under Section 404 of the CWA. The majority of seasonal wetland impacts are associated with the construction of the apartment complex and entirely above the 100-year flood elevation. Additionally, 0.05 acre of riparian habitat will be permanently impact for the construction of the pedestrian riverside trail. The 0.01 acre of seasonal wetland situated below top of bank of the Petaluma River, will be restored in place, and is therefore considered a temporary impact.

4.0 HABITAT REPLACEMENT AND MITIGATION IMPLEMENTATION PLAN

Wetland and riparian replacement and mitigation creation construction is tentatively scheduled to begin in spring/summer 2022, concurrent with expected impacts to existing habitats, and be completed by fall. Planting of the habitat replacement and mitigation creation areas will occur in the late fall to take advantage of soil moistening by fall and winter rains and to increase the probability for successful plant establishment. If planting occurs prior to the fall rains and the planting areas are not naturally moistened, installed plants will be irrigated to increase probability of proper establishment. A person qualified in wetland restoration will oversee construction and planting to ensure specifications in the final detailed construction drawings are met. Created and restored/enhanced aquatic resources are summarized in Tables 2 – 4 below.

Table 2. Section 404 Mitigation Features within the Project Area

Feature	Existing Jurisdictional Areas (acres)	Section 404 Jurisdictional Areas (acres)			Total Jurisdictional Area [net gain] (acres)
		Preservation	Restoration/ Enhancement	Creation	
Seasonal wetland	0.29	0.28	0.01	0.76	**1.05 [+0.76]**
Petaluma River (below OHWM)	1.02	1.02	-	-	**1.02**
TOTAL	**1.31**	**1.30**	**0.01**	**0.76**	**2.07 [+0.76]**

Table 3. Section 401 Mitigation Features within the Project Area

Feature	Existing Jurisdictional Areas (acres)	Section 401 Jurisdictional Areas (acres)			Total Jurisdictional Area [net gain] (acres)
		Preservation	Enhancement	Creation	
Seasonal wetland	0.29	0.28	-	0.76	**1.04 [+0.75]**
Isolated seasonal wetland	0.32	0.04	-	0.23	**0.27 [-0.05]**
Petaluma River (below OHWM)	1.02	1.02	-	-	**1.02**
TOTAL	**1.63**	**1.34**	**-**	**0.99**	**2.33 [+0.7]**

Table 4. Section 1602 Mitigation Features within the Project Area

Feature	Existing Jurisdictional Areas (acres)	Section 1602 Jurisdictional Areas (acres)			Total Jurisdictional Area [net gain] (acres)
		Preservation	Enhancement	Creation	
Petaluma River (below OHWM)	1.02	1.02	-	-	**1.02**
Riparian woodland	1.41	0.49	0.58	0.92	**1.99 [+0.58]**
TOTAL	**2.43**	**1.49**	**0.58**	**0.92**	**3.02 [+0.58]**

Riparian woodland habitat impacted by terrace grading, which mostly consists of non-native, invasive Himalayan blackberry thickets, will be restored in place to higher quality native riparian trees and shrubs. Additional riparian habitat will be created in adjacent upland as indicated in Table 4. Riparian plantings are expected to not only replace the ecological functions and values that the removed riparian shrubs provided to the Petaluma River, but increase the habitat in area and functional value. At completion, the Project will result in a 0.58 acre increase of CDFW Section 1600 riparian woodland jurisdiction within the Project Area (a 11.6 to 1 ratio of acres restored to acres impacted). The new riparian habitat will be of higher quality as the tree composition will be similar to existing tree riparian but be expanded in areas and will greatly reduce invasive monocultures of non-native invasive species, such as Himalayan blackberry.

Wetland restoration and creation within the Project Area will occur in the graded terrace floodway area, and in adjacent uplands to the south of the riparian area as mitigation for impacts to seasonal wetland and isolated seasonal wetlands as a result of the Sid Commons Project. A total of 0.29 acre of isolated seasonal wetland (Section 401 only) will be permanently impacted by the Project and 0.01 acre of seasonal wetland (Section 404/401) will be temporarily impacted and restored in place. At completion, the Project will result in a net 0.70 acre increase of wetland habitat resulting in a 2.4 to 1 acres created to acres impacted for RWQCB jurisdictional wetlands. Since the isolated wetlands are not considered jurisdictional to the Corps, the Project will result in a 0.76 acre increase of wetland habitat jurisdictional to the Corps.

Given that created wetlands have been designed to ensure appropriate wetland hydrology and native wetland plant establishment, the creation of approximately 0.76 acre of wetland habitat will

replace and/or exceed the functions and values of the approximately 0.29 acre of isolated seasonal wetland permanently impacted within the Sid Commons Project Area through increased area and volume to better attenuate floodflows, increased coverage by native vegetation, protection from disturbances that will increase wildlife habitat value, and closer proximity to the Petaluma River for increased habitat complexity and sustainability as well as improvement of water quality.

4.1 Wetland Mitigation Soils

All soil used for Project activity will be native soil excavated from the Project Area or quarried material, and no soil will be imported. Because the reach of the Petaluma River along the Sid Commons Project was once more tidal than it is now and because there are still plants in the area that are known to be halophytes (e.g., salt tolerant gum plant), there may still be residual salt in subsurface soils despite installation of a weir by the Corps of Engineers across the river downstream as a flood control measure that limits tidal action upstream of the weir.

4.2 Grading Plan

A grading plan will be developed prior to commencement of mitigation actions. All mitigation enhancement and creation areas will be graded the appropriate elevations to support and sustain their respective habitats. Equipment used will include standard construction equipment such as a long-arm excavator and a front-end loader. Erosion control measures, such as silt fencing, straw wattles, and hay bales, will be implemented that will conform to BMPs as required by the RWQCB.

Soil will be excavated from the upland areas west of the Petaluma River and either used on the site or hauled off-site to a suitable location.

4.3 Created Wetland Hydrology

The created and restored wetland habitat will be graded to the elevations appropriate for wetland formation and sustainability within the Project Area. The proposed seasonal wetland creation areas will be excavated to a depth sufficient to inundate for a duration that will support a seasonal wetland community from ground water, direct precipitation, and/or treated, clean storm water from the Sid Commons development. Flow from Petaluma River during peak flows will also possibly provide additional hydrologic contribution to the low-lying wetland habitat areas.

4.4 Planting Plan

Enhancement and creation activities will involve the planting of native vegetation known to locally establish successfully within wetlands and along non-wetland waters. Plant materials include seeds and container plants of native grasses, forbs, shrubs, and trees. Additionally, riparian plantings will be salvaged from removed vegetation and replanted or may be sourced for live staking (such as willows (*Salix* spp.) in the riparian areas after grading is completed. This will help to control erosion of any newly disturbed soils on the upland side of the wetlands and reduce the invasion of non-native vegetation onto the site.

Plants expected to grow in the created wetlands and riparian habitat after restoration will consist of native and non-native vegetation characteristic of the area, with native seasonal wetland plant species similar to those found in similar habitats in the region. Suitable habitat for these species is expected to be present within the created/restored wetlands and riparian habitat following grading to an elevation appropriate for the site. Plants expected to grow in upland areas after

restoration will consist of native and non-native vegetation, with native upland species planted similar to those found in existing upland habitat in the vicinity.

Details on Figure 5. Planting Plan give planting specifics including species, seed rate, size, and installation spacing. The plant material type, size, and spacing is planned to encourage quick establishment of native wetland species and discourage colonization by invasive species, exclusive of non-native annual grasses and forbs found currently in the Project vicinity that are ubiquitous to the naturalized California landscape. Species are expected to spread vegetatively and by seed once planted. The plant palette provided in this plan is preliminary and may be refined as Project details are finalized. Additionally, species and planting quantities may be adjusted as Project details are finalized but will be sufficient to ensure the successful establishment of each habitat.

The overarching goal of planting is to establish coverage of native vegetation and for riparian areas to re-establish to the existing percent coverage of riparian canopy. Some planted species listed may not establish and/or may be outcompeted by other native species. Replacement plant materials, if needed, would include those species that have been most successful in establishment. Habitat-specific planting requirements are discussed in further detail below:

The restored and created seasonal wetland areas will be irrigated on an as-needed basis by a temporarily installed irrigation system in case of wintertime drought or prolonged spring and summer drought. The seasonal wetlands will be excavated to a depth to provide adequate inundation for seasonal wetland establishment during normal rainfall years and will be augmented by treated and clean storm water from the Sid Commons development. However, seasonal wetland and upland plantings may require irrigation during establishment if seasonal precipitation and runoff is not initially adequate. If irrigated, seasonal and upland plantings will be irrigated until they become established and are self-sufficient. Irrigation will be provided by an automated irrigation system, or by hand as needed through a 5-year establishment period. Riparian plantings will be planted at elevations adequate to provide access to groundwater; however, some plantings may require irrigation for the first few years following installation until sufficient root development occurs.

4.5 Maintenance Specifications

Maintenance activities in the creation areas during the five-year monitoring period following planting will include the following tasks as needed: (1) erosion control and repair should an extreme storm event occur; (2) inspection for signs of vandalism or other disturbance of the created and enhanced wetland and riparian areas by people; (3) inspections for colonization of problematic non-native plants and action to control their spread. Removal of non-native species in the created and created and enhanced wetland and riparian areas will be conducted as needed and recommended in the annual Monitoring Report (see Section 7.2 below). Removal of non-native species may be conducted by a qualified wetland plant biologist or by Applicant maintenance personnel as directed by a qualified wetland plant biologist. However, upland and wetland habitats within the Project Area currently support predominantly non-native grasses and forbs with occasional native species. These non-native annual grasses have become ubiquitous throughout California such that they are considered to be part of the naturalized landscape. Therefore, plants considered by the California Invasive Plant Council (Cal-IPC) Inventory List (2021) as “Moderate,” including non-native annual grasses, are expected to be present following plant installation due to their prolific nature in adjacent lands and would be impractical to eradicate completely.

4.6 As-Built Conditions

A brief letter report outlining the as-built conditions of the creation and restoration area will be prepared and submitted to the RWQCB, Corps, CDFW, and other interested agencies within 45 days of mitigation implementation completion. The report shall document construction activities, report final impact acreages, provide final drawings of construction for the created and restored areas, explain any substantive changes made from the plan, and include before and after photographs.

5.0 SUCCESS CRITERIA AND MONITORING

5.1 Success Criteria

Monitoring of the habitat replacement and mitigation areas will occur annually over a period of five years beginning after one full rainy season following construction and planting. Data will be collected each year in order to assess the successful creation of wetland hydrology and establishment of native vegetation.

Methods for monitoring the performance of the Project Area to evaluate success criteria are described below and summarized in Table 5. Monitoring will be performed by a qualified wetland biologist with experience in created and restored wetland monitoring, with the exception of hydrology monitoring, which may be conducted by Applicant personnel as discussed below.

The monitoring will measure and evaluate changes in functional condition as a result of specific habitat enhancement and creation interventions. If the project results in an improved functional condition at the end of the monitoring period, then it will be concluded that the project was effective and successful. The criteria that will be used to determine the success of the HMMP are described in detail after Table 5.

Table 5. Summary of Monitoring and Success Criteria

Success Criteria	Methods	Year 1	Year 3	Year 5	Year 7	Year 10
Wetlands Hydrology – Duration of Surface Saturation/Inundation	Visual assessment; photo-monitoring	14 consecutive days of surface saturation or inundation	14 consecutive days of surface saturation or inundation	14 consecutive days of surface saturation or inundation	--	-
Wetlands Soils – Hydric Soil Indicators	Soil sampling for hydric soil indicators	-		Meets Corps' hydric soils criteria	-	-
Wetlands Vegetation – Dominance of Hydrophytes	Random quadrat sampling; Site-wide photo-monitoring	-	Wetland vegetation will meet the Corps 50/20 dominance rule	Wetland vegetation will meet the Corps 50/20 dominance rule	-	-
Wetlands Vegetation – Native and Naturalized Plant Components	Random quadrat sampling; Site-wide photo-monitoring	Native and naturalized target plant species in the herb strata ≥ 25% average absolute cover	Native and naturalized target plant species in the herb strata ≥ 50% average absolute cover	Native and naturalized target plant species in the herb strata ≥ 50% average absolute cover	-	-
Riparian Vegetation – Survival of Installed Plantings	Visual assessment of health and survival	Recommended ≥ 85% survival target	Recommended ≥ 80% survival target	Survivorship of tree, shrub, and herb strata container plants ≥ 75%	Survivorship of tree, shrub, and herb strata container plants ≥ 75%	Survivorship of tree, shrub, and herb strata container plants ≥ 75%
Exotic Vegetation – Control of Exotics	Random quadrat sampling; Site-wide photo-monitoring	≤10% absolute cover of non-graminoids considered highly invasive per Cal-IPC or equivalent	≤10% absolute cover of non-graminoids considered highly invasive per Cal-IPC or equivalent	≤10% absolute cover of non-graminoids considered highly invasive per Cal-IPC or equivalent	-	-

Year 1

- The created wetlands will be inundated and/or saturated for 14 consecutive days during the rainy season.
- Vegetation percent cover in the created seasonal wetland and riparian areas should average at least 25 percent absolute cover of the appropriate target native plant species.
- Survival of trees, shrubs, and herb strata container plants will be 85 percent of plantings. This is not a required agency standard but is intended to be a guideline to help ensure that the Project meets final success criteria.
- Invasive weeds, exclusive of non-native annual forbs that are ubiquitous to the area, found on the Cal-IPC Inventory List (2021) with rating of High will not exceed ten percent cover within the created wetland sites. Invasive plant species with a Moderate rating are expected to be present due to their prolific nature in adjacent lands.

Year 3

- The created wetlands will be inundated and/or saturated for 14 consecutive days during the rainy season.
- Vegetation percent cover in the created seasonal wetland and riparian areas should average at least 50 percent absolute cover of the appropriate target native plant species.
- Survival of trees, shrubs, and herb strata container plants will be 80 percent of the original number of plantings. This is not a required agency standard but is intended to be a guideline to help ensure that the Project meets final success criteria.
- Within created wetlands, vegetation will meet the Corps 50/20 rule for hydrophytic vegetation.
- Invasive weeds, exclusive of non-native annual forbs that are ubiquitous to the area, found on the Cal-IPC Inventory List (2021) with rating of High will not exceed ten percent cover within the created wetland sites. Invasive plant species with a Moderate rating are expected to be present due to their prolific nature in adjacent lands.

Year 5

- The created wetland will be inundated and/or saturated for 14 consecutive days during the rainy season.
- Vegetation percent cover in the seasonal wetland and riparian areas should average at least 50 percent absolute cover of the appropriate target native plant species.
- Survival of trees, shrubs, and herb strata container plants will be 75 percent of plantings.
- Within created wetlands, vegetation will meet the Corps 50/20 rule for hydrophytic vegetation.
- Invasive weeds, exclusive of non-native annual forbs that are ubiquitous to the area, found on the Cal-IPC Inventory List (2021) with rating of High will not exceed ten percent cover within the created wetland sites. Invasive plant species with a Moderate rating are expected to be present due to their prolific nature in adjacent lands.
- At the end of five years, vegetation cover will be examined to determine if it meets the Corps' wetland criteria of more than 50 percent of the dominant species being classified as either obligate (OBL), facultative-wetland (FACW), or facultative (FAC) (Corps 2018).

Year 7

- Survival of trees, shrubs, and herb strata container plants will be 75 percent of plantings.

Year 10

- Survival of trees, shrubs, and herb strata container plants will be 75 percent of plantings.

Monitoring in Years 2 and 4 will consist of a site visit to inspect conditions and take annual photographs for reporting purposes, to ensure that the created and restored habitats are on trajectory to meet the performance criteria established. If necessary, appropriate recommendations will be identified for adaptive management practices.

5.2 Monitoring

5.2.1 Methods

Hydrology

Each year of the monitoring period, hydrology of the created wetlands and riparian habitat will be monitored approximately twice a month during the rainy season to ensure that the sites are functioning hydrologically. Based on methodologies outlined in the *1987 U.S. Army Corps of Engineers Wetland Delineation Manual: Arid West Region* (Corps 2008), the wetlands will be monitored to ensure that soils are either inundated (visual observation of ponding) or saturated within the root zone (12 inches from the soil surface). Observations of surface ponding and duration of inundation will be conducted on a semi-monthly basis during the winter and spring rainy season. Soils within the created wetland areas will be saturated for 14 consecutive days during the rainy season. Photographs will be taken as necessary to document hydrologic conditions within the created sites.

Vegetation

Vegetation monitoring involves two components: (1) making an estimate of overall plant establishment and cover and (2) surveying for the presence of invasive exotic herbaceous weeds.

The overall plant establishment within the created wetlands and riparian habitat will be estimated by determining percent plant cover. Transects will be established throughout the created and restored wetland site. Plant species percent cover will be measured using percent cover classes within a 0.5 square meter quadrat set distances along the transect. Sufficient transects will be established to obtain a statistically significant sampling size. These data will be tabulated and analyzed to assess whether or not vegetation coverage is meeting the performance criteria goals outlined in Section 5.1. Photographs will be taken at selected permanent photo-points during the vegetation monitoring visit each monitoring year for year-to-year comparison. Monitoring will be conducted at the end of the growing season for these wetland plant species, typically late spring (June) or summer (July-August).

Results of the vegetation sampling will be used to compare plant establishment with specific vegetative performance criteria outlined in Section 5.1. Specifically, the created wetlands should be dominated by native and naturalized seasonal wetland plant species. In addition, at the end of five years, vegetation cover will be examined in the created wetland site to determine if it meets the Corps' wetland criteria of greater than 50 percent of the dominant plant species being classified as OBL, FACW, or FAC (Corps 2018). For installed trees and shrubs, plants will be counted and their condition and health evaluated (e.g., good, fair, poor, dead). Those with good and fair ratings will be considered to meet performance for that year.

Surveying for the presence of invasive exotic plant species within the habitat areas will occur annually during the vegetation monitoring visit. Weeds identified on the Cal-IPC list as "High" invasive will be controlled if these species are observed within these areas and at frequencies that exceed performance criteria. Methods of control will include hand removal, if feasible, however other more efficient methods, such as mechanized or approved chemical, may be used, if necessary.

Soils

Soil profiles in wetlands will be examined to confirm development of hydric soil conditions. This may be represented by redoximorphic features such as oxidized rhizospheres, gleying, or redoximorphic features. Any excessive sediment deposition or erosion occurring will also be noted, and remediation measures will be recommended if the problem is deemed severe.

5.2.2 Monitoring Schedule

Monitoring of the wetland restoration and creation will occur over a period of 5 years to document habitat development and determine if habitat performance criteria have been met. Monitoring will be conducted for seasonal wetlands and riparian areas in years 1, 2, 3, 4, and 5.

6.0 MAINTENANCE DURING MONITORING PERIOD

6.1 Maintenance Activities

6.1.1 Contingency Measures

If annual or final success criteria are not met, the Applicant will prepare an analysis of the cause(s) of failure to meet success criteria and, if determined necessary by the agencies and the Applicant, propose remedial action for approval. The Applicant will be responsible at that time for reasonably funding the contingency procedures necessary for completion of the restoration project.

6.1.2 Invasive Species Control

After construction, weed maintenance will focus on invasive species with a Cal-IPC rating of High. Weed removal activity will be conducted using methods specifically identified as effective for those target species.

Surveying for the presence of invasive exotic plant species will occur during the spring or summer monitoring visit. Removal by hand will occur if possible wherever these species are observed on the restoration site. Invasive non-native plant species monitoring will occur once per year concurrent with vegetation monitoring.

7.0 MONITORING REPORTS

7.1 As-Built Plan

A letter report outlining the as-built conditions of the post-construction Project Area will be prepared and submitted to the Corps and other interested agencies within 45 days of completion of creation and restoration planting plan implementation.

7.2 Annual Reports

Annual reports will be prepared that discuss monitoring methodology and results. Reports may be prepared by Applicant staff or consultants. Full annual reports will be provided for each monitoring year, which will be submitted to the Corps and other interested agencies by December 31st of each monitoring year. If habitats within the Project Area demonstrate that they are successfully meeting established performance criteria early into the monitoring period, the Applicant will request early signoff from the agencies. A qualified biologist with experience in biological monitoring will supervise the report preparation. These reports will assess progress in meeting success criteria and identify any problems with flooding, sedimentation, vandalism, and/or other general causes of poor survival or wetland degradation. If necessary, recommendations or improvements will be made to ensure the success criteria will be met during the monitoring period.

7.3 Notification of Completion

Upon completion of five years of monitoring, a final report will be sent to the RWQCB, Corps, CDFW, and other interested agencies detailing the results of the final year of monitoring. If the created and restored area has met the success criteria outlined in Section 5.0 by the end of the five-year period, then the proposed action in the final report will be for no further action. If the habitat areas have not met the success criteria outlined in Section 5.0 by the end of the five-year period, then the final report may recommend additional corrective measures and/or extending the monitoring period. When the created and restored area has met the success criteria outlined in Section 5.0 or revised criteria agreed to by the regulatory agencies, the Applicant will submit a signed Notice of Completion to the RWQCB, Corps, CDFW, and other interested agencies to confirm successful completion of the habitat replacement and creation effort.

8.0 REFERENCES

[Cal-IPC] California Invasive Plant Council. 2021. California Invasive Plant Inventory Database. Online at: http://www.cal-ipc.org/paf/; most recently accessed: April 2021.

Duckles, B. 2020. Sid Commons Revised Arborist's Report & Tree Survey. ISA Certified Consulting Arborist #WE-0796A, Sebastopol, CA.

Lamphier-Gregory. 2019. Sid Commons Apartments Project Final Environmental Impact Report. SCH #2007072041. Prepared for City of Petaluma Planning Division, 11 English Street, Petaluma, CA.

U.S. Geological Survey (USGS). 1954 (Photorevised 1980). Cotati, California. 7.5-minute quadrangle topographic map.

U.S. Army Corps of Engineers (Corps). 2018. National Wetland Plant List, version 3.4. Engineer Research and Development Center. Cold Regions Research and Engineering Laboratory, Hanover, NH. Online at: http://wetland_plants.usace.army.mil/; most recently accessed January 2020.

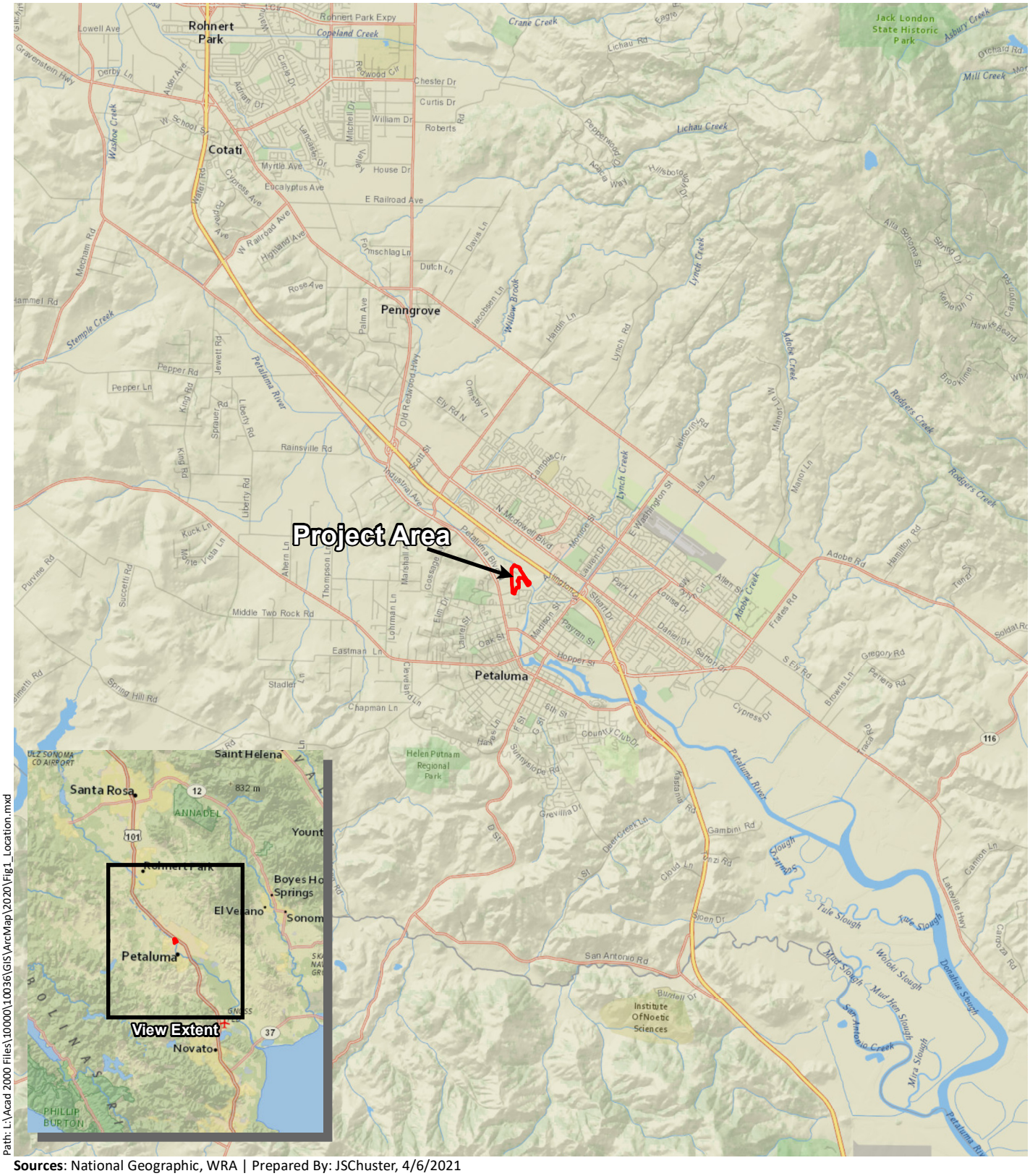
WRA, Inc. 2013. Delineation of Jurisdictional Areas for Sid Commons Project - Petaluma, Sonoma County, California. WRA, Inc, San Rafael, CA.

WRA, Inc. 2020. Sid Commons Plant Survey Update 2020. Petaluma, Sonoma County, California. Prepared for: J. Cyril Johnson Investment Group.

WRA, Inc. 2021. Biological Assessment, Sid Commons Apartment Project. Petaluma, Sonoma County, California. Prepared for: J. Cyril Johnson Investment Group.

This page intentionally left blank.

Figures



Sources: National Geographic, WRA | Prepared By: JSChuster, 4/6/2021

Figure 1. Project Area and Regional Location Map

Sid Commons Apartment Project
Petaluma, Sonoma County, California

0 1 2 Miles

N

wra
ENVIRONMENTAL CONSULTANTS

Figure 2. Site Plans

EARTHWORK QUANTITIES

DESCRIPTION	CUT	FILL	NET
ON-SITE	15,764 CY	22,432 CY	6,668 CY <FILL>
OFF-SITE (TERRACING/UPLAND)	18,361 CY	11 CY	18,350 CY <CUT>
OVEREXCAVATE TERRACE (ALLOW 18")	5,865 CY	5,865 CY	0
TRENCH SOILS	3,000 CY	-	3,000 CY <CUT>
FOUNDATION SPOILS	(A)	(A)	(A)
SHRINKAGE (ALLOW 10%)	-	2,831 CY	2,831 CY <FILL>
TOTAL	42,990 CY	31,139 CY	11,851 CY <EXPORT>

EARTHWORK QUANTITY NOTES:
1. EARTHWORK QUANTITIES ARE PRELIMINARY AND MAY VARY FROM FINAL EARTHWORK QUANTITIES BASED ON DETAILED IMPROVEMENT PLANS.
2. ADJUSTMENTS TO THE PRELIMINARY GRADING PLAN MAY BE UNDERTAKEN IN ORDER TO GET CLOSER TO A BALANCED SITE.
3. THE SUPPLEMENTAL GEOTECHNICAL INVESTIGATION IDENTIFIED A WILSON GROVE FORMATION BEDROCK SOIL THAT COULD IMPACT THE HABITAT MITIGATION MONITORING PLAN. WITHIN THE RIVER TERRACE AND THE ONSITE CREATION OF WETLANDS THE WILSON GROVE MATERIAL WILL BE OVEREXCAVATED 18" BELOW FINISH GRADE AND REPLACED WITH ONSITE MATERIAL SUITABLE FOR PLANTING AND WETLAND CREATION.
4. (A) INCLUDED IN ON-SITE QUANTITIES
5. QUANTITIES ARE BASED ON DIFFERENCE BETWEEN FINISH GRADE/SURFACE AND EXISTING GRADE.
6. FILL QUANTITY ADJUSTED BUILDING FF LESS 12" TO SUBGRADE, PAVEMENT FG LESS 12" TO SUBGRADE, AND HARDSCAPE FINISH SURFACE LESS 8" TO SUBGRADE.

Graphic Scale (in feet)
50 0 50 100
1 inch = 50 ft.

LEGEND

- PROPOSED CONDITION 100 YEAR FLOOD BOUNDARY (REFERENCE: SID COMMONS HYDRAULIC EVALUATION MEMO, DATED FEBRUARY 22, 2017)
- EXISTING CONDITION 100 YEAR FLOOD BOUNDARY (REFERENCE: FIRM 06097C0982G MAP REVISED 10/02/2015 & FIRM 06097C0894F MAP REVISED 12/19/2014)
- RIVER PLAN CORRIDOR
- FLOODWAY AREA
- WETLAND
- EXTENT OF CDFW JURISDICTION
- TERRACING AREAS WITHIN CDFW JURISDICTION

Note: Project Plans depict contour lines below the OHWM. Since preparation of Project Plans, the Project can no longer work below the OHWM per City of Petaluma Resolution on the subject of the FEIR for Sid Commons Apartment Project (dated February 3, 2020). Therefore, contour lines depicted below the OHWM will not be constructed. However, terrace grading as depicted on Project Plans above OHWM is still allowed and feasible as proposed in Project Plans.

TREE LEGEND

QTY.		
26	#15	EXISTING TREE WITH INVENTORY NUMBER
50	#24	EXISTING PROTECTED TREE (OAK)
22	#77	EXISTING PROTECTED TREE (REDWOOD)
12	#30	EXISTING TREE (GONE / BURNED / DEAD)
110		TOTAL TREES INVENTORIED
		EXISTING TREE TO BE REMOVED TO ACCOMMODATE SITE PLAN & RECOMMENDATIONS PROVIDED BY ARBORIST.

TREE NOTES:

1. REFER TO "OAK CREEK II TREE INVENTORY & EVALUATION" BY BECKY DUCKLES, ARBORIST, DATED DECEMBER 13, 2003, REVISED SEPTEMBER 15, 2004, SID COMMONS ARBORIST'S REPORT AND TREE INVENTORY DATED AUGUST 3, 2015 AND SID COMMONS TREE REMOVAL & MITIGATION CALCULATIONS DATED DECEMBER 7, 2015 AND SUBSEQUENT INFORMATION AND RESPONSES TO COMMENTS.
2. TREE LOCATIONS BASED ON FIELD SURVEY PERFORMED BY CSW/ STUBER-STROEH ON SEPTEMBER 17, 2004 AND SUBSEQUENT SUPPLEMENTAL INFORMATION PROVIDED BY THE ARBORIST.
3. TREE DRIPLINE INFORMATION BASED ON INFORMATION PROVIDED BY CINQUINI & PASSARINO AERIAL SURVEY, DATED MARCH 18, 2003 AND SUBSEQUENT SUPPLEMENTAL INFORMATION PROVIDED BY THE ARBORIST.

WETLAND NOTES:

1. INFORMATION BASED ON DEIR EXCERPT FROM APPENDIX 6B HABITAT MITIGATION AND MONITORING PLAN, SID COMMONS AND PETALUMA RIVER TERRACE PROJECT, WRA, JUNE 2016
2. WETLAND INFORMATION IS BASED ON FIGURE 2 WETLAND DELINEATION MAP, SID COMMONS RIVER TERRACE PROJECT, PREPARED BY WRA ENVIRONMENTAL CONSULTANTS DATE 2012, WHICH INCLUDES ADDED TITLE FIGURE 3 FINAL JURISDICTIONAL WETLANDS DETERMINATION APPROVED BY ARMY CORPS OF ENGINEERS.
3. DELINEATION AREAS ON THIS MAP ARE APPROXIMATE OVERLAYS FROM THE DELINEATION MAP.

Terracing 4 area: 9,059 SF(0.21 ac); Cut 2,487 cy

Terracing 3 area: 11,974 SF(0.27 ac); Cut 2,210 cy

Terracing 2 area: 18,767 SF(0.43 ac): Cut 1442 cy

Terracing 1 area: 1,006 SF(0.023 ac): Cut 116 cy

Wetland 1 area: 10,345 SF(0.24 ac) fill to finish grade 1582 cy

Wetland 2 area: 752 SF(0.017 ac) fill to finish grade 137 cy

Wetland 3 area: 460 SF(0.011 ac) fill to finish grade 78 cy

Wetland 4 area: 727 SF(0.017ac) fill to finish grade 123 cy

Seasonal wetland creation up to the elevation of the overflow weir.

PROPOSED 3' WIDE PUBLIC ACCESS TRAIL TO RIVER EDGE

200' SETBACK

FLOOD EASEMENT

FLOODWAY AREA

PETALUMA RIVER

CENTERLINE OF PETALUMA RIVER INTERPRETED

CENTERLINE OF PETALUMA RIVER APRIL 16, 1991

BOARDWALK OR REINF. CONC. AT GRADE TO PROTECT TREE. HAND DIG FOOTINGS AS NECESSARY TO PROTECT TREE.

2' SHOULDER

WETLAND AREA

RIPRAP SD OUTLET

TOP BERM EL. 5.0

BOTTOM EL. 3.0 (0.26 ± ac.)

BIORETENTION AREA

OVERFLOW WEIR

OVERFLOW SLOPE 1% MIN.

TOP OF BANK BEFORE TERRACE

BOTTOM EL. 11.0 (0.09± ac.)

OVERFLOW WEIR EL. 12.5

BOTTOM EL. 12.0 (0.12± ac.)

BIORETENTION AREA

LANDS OF CITY OF PETALUMA

JESS AVENUE

GRAYLAWN AVE.

BERNICE COURT

BLDG 1 FF 23.0
BLDG 2 FF 23.0
BLDG 3 FF 23.0
BLDG 4 FF 24.0
BLDG 5 FF 23.0
BLDG 6 FF 23.5
BLDG 7 FF 24.0
BLDG 8 FF 23.0
BLDG 9 FF 23.0
BLDG 10 FF 24.5
BLDG 11 FF 25.0
CLUB/LEASE FF 22.5
POOL EL 22.5
COVERED PARKING (TYP.)
T.E.

RAILROAD R/W

RAILROAD R/W

C4.3

ANDERSON
048-142-16
Doc No 81014720

Rev	Date	Description	Designed	Drawn	Checked
	09/29/2020	PROGRESS PLOT			
-	5/22/2020	SPAR SUBMITTAL			

CSW | ST2
CSW/Stuber-Stroeh Engineering Group, Inc.
Civil & Structural Engineers | Surveying & Mapping | Environmental Planning
Land Planning | Construction Management
45 Leveroni Court
Novato, CA 94949
tel: 415.883.9850
fax: 415.883.9835
http://www.cswst2.com

© 2013

City: Petaluma
County: Sonoma
State: California

SID COMMONS

PRELIMINARY GRADING AND DRAINAGE PLAN - OVERALL

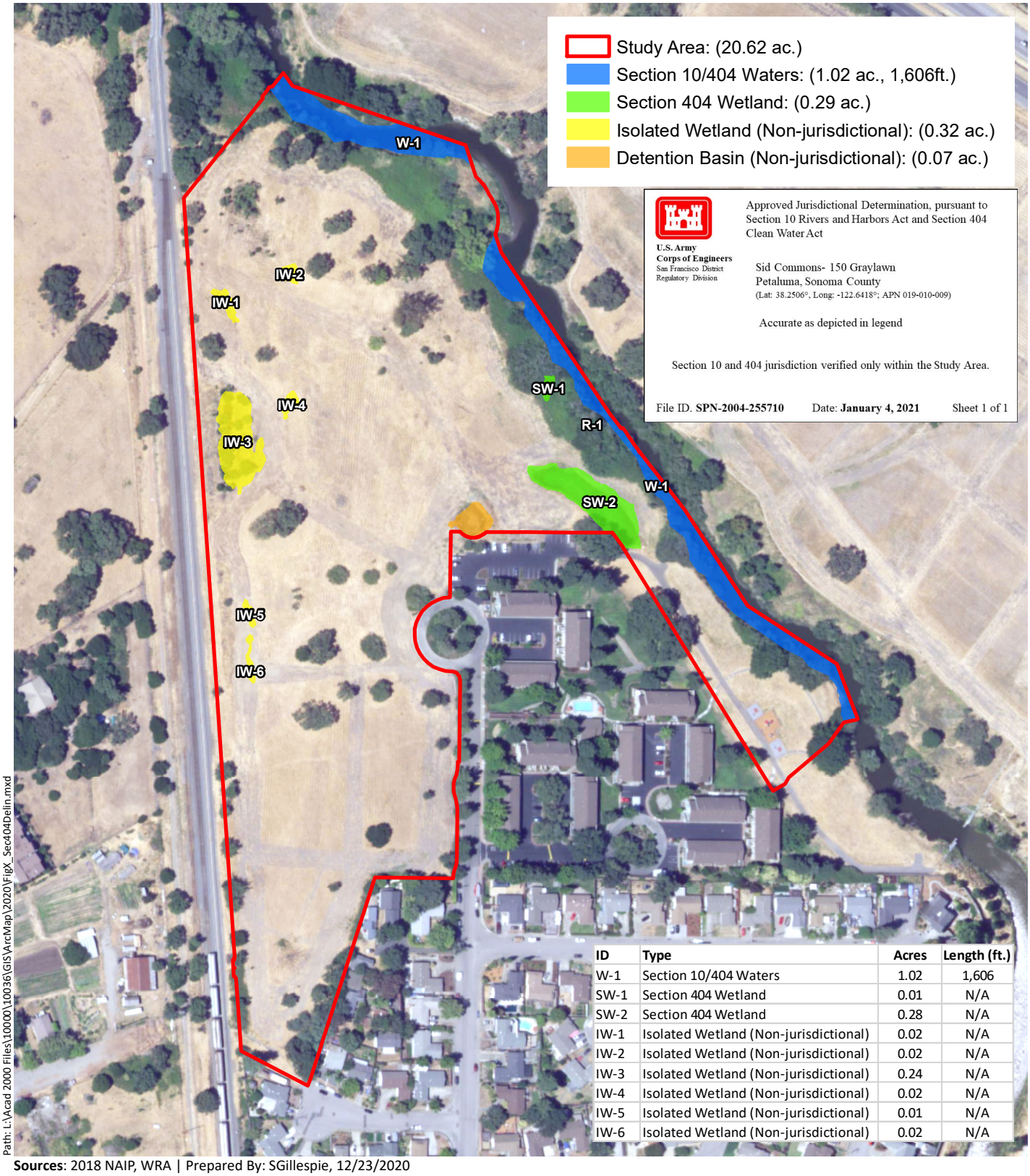
J. CYRIL JOHNSON INVESTMENT CORP.

Prepared Under the Direction of:

Sheet C4.0

Scale:	1"=50'
Date:	04/09/2019
Project Number:	5.1037.00
Plan File:	D-5254.08

P:\05\51\07\00\CW\Sheet_Drawings\C4.0 - GRADING & DRAINAGE PLAN.dwg 5/22/2020 - 12:44 PM ksarf 11:58



ID	Type	Acres	Length (ft.)
W-1	Section 10/404 Waters	1.02	1,606
SW-1	Section 404 Wetland	0.01	N/A
SW-2	Section 404 Wetland	0.28	N/A
IW-1	Isolated Wetland (Non-jurisdictional)	0.02	N/A
IW-2	Isolated Wetland (Non-jurisdictional)	0.02	N/A
IW-3	Isolated Wetland (Non-jurisdictional)	0.24	N/A
IW-4	Isolated Wetland (Non-jurisdictional)	0.02	N/A
IW-5	Isolated Wetland (Non-jurisdictional)	0.01	N/A
IW-6	Isolated Wetland (Non-jurisdictional)	0.02	N/A

Path: L:\Acad 2000 Files\10000\10036\GIS\ArcMap\2020\FigX_Sec404Delin.mxd

Sources: 2018 NAIP, WRA | Prepared By: SGillespie, 12/23/2020

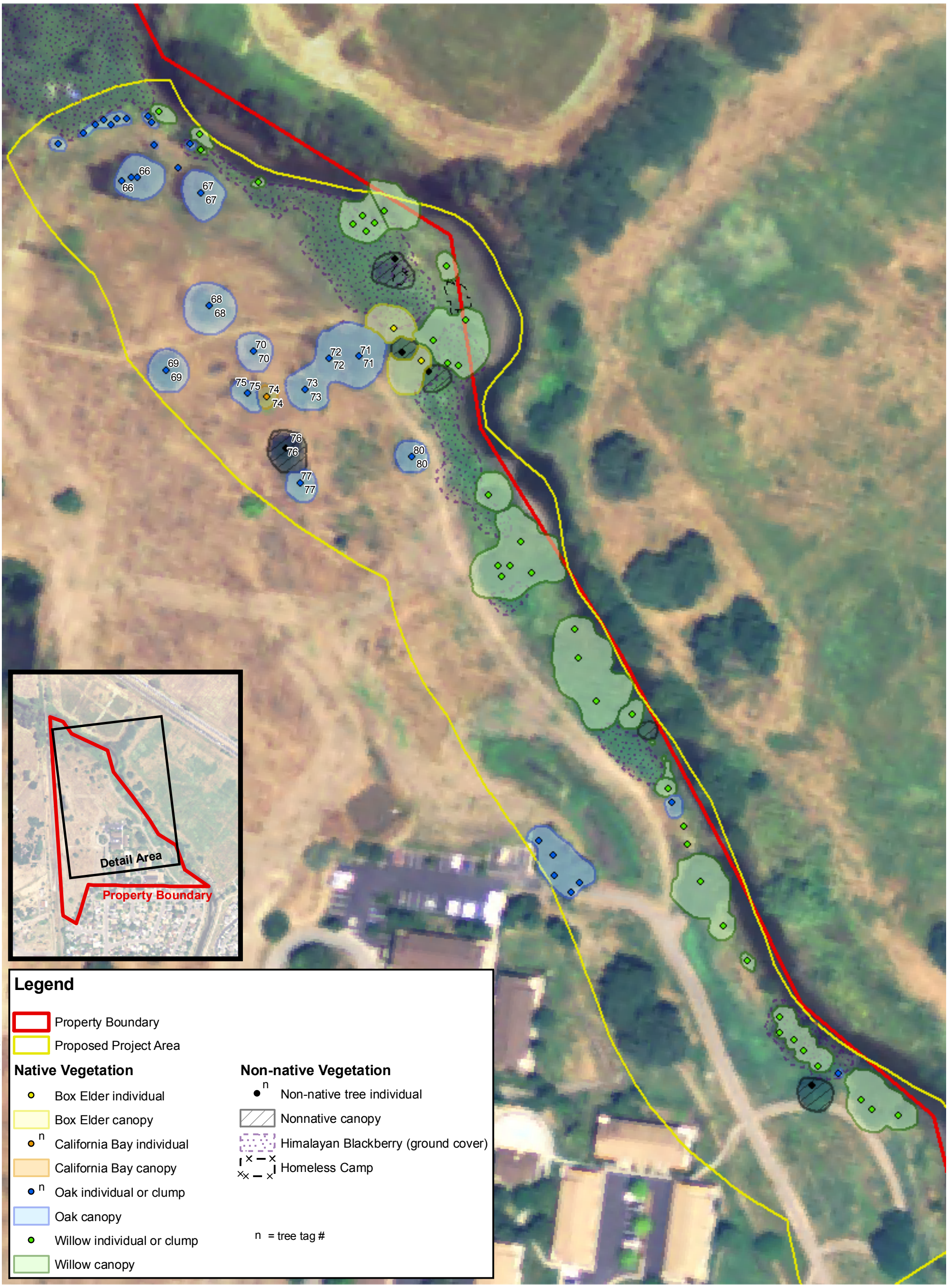
Figure 3. Section 10/404 Jurisdictional Features within the Project Area

Sid Commons
Apartment Project
Petaluma, California

0 250 500 Feet

N

wra
ENVIRONMENTAL CONSULTANTS



Path: L:\Acad 2000 Files\10000\10036\GIS\ArcMap\Fig2_Veg_20090324.mxd

Sources: NAIP, 2005 | Prepared By: Derek Chan, March 2009

Figure 4. Vegetation along the Petaluma River

N W E S

wra
ENVIRONMENTAL CONSULTANTS

Sid Commons Apartment Project
Petaluma, Sonoma County, California

0 50 100 200 Feet

PLANTING LEGEND

PLANT ZONE	SYMBOL
ZONE A - UPPER RIPARIAN	
ZONE B- MIDDLE RIPARIAN	
ZONE C- MARSH	
ZONE D- SEASONAL WETLAND- ISOLATED	
ZONE E- SEASONAL WETLAND- TERRACE	
ZONE F- RIPARIAN SEEDING ONLY	
ZONE G- HIMALAYAN BLACKBERRY REMOVAL AND NATIVE ENHANCEMENT	

SEEDING NOTES

ZONE A (UPPER RIPARIAN) TO BE SEEDED WITH RIPARIAN SEED MIX

ZONE B (MIDDLE RIPARIAN) TO BE SEEDED WITH RIPARIAN SEED MIX

ZONE C (MARSH) NO SEED MIX

ZONE D (SEASONAL WETLAND- ISOLATED) TO BE SEEDED WITH WETLAND SEED MIX

ZONE E (SEASONAL WETLAND- TERRACE) TO BE SEEDED WITH WETLAND SEED MIX

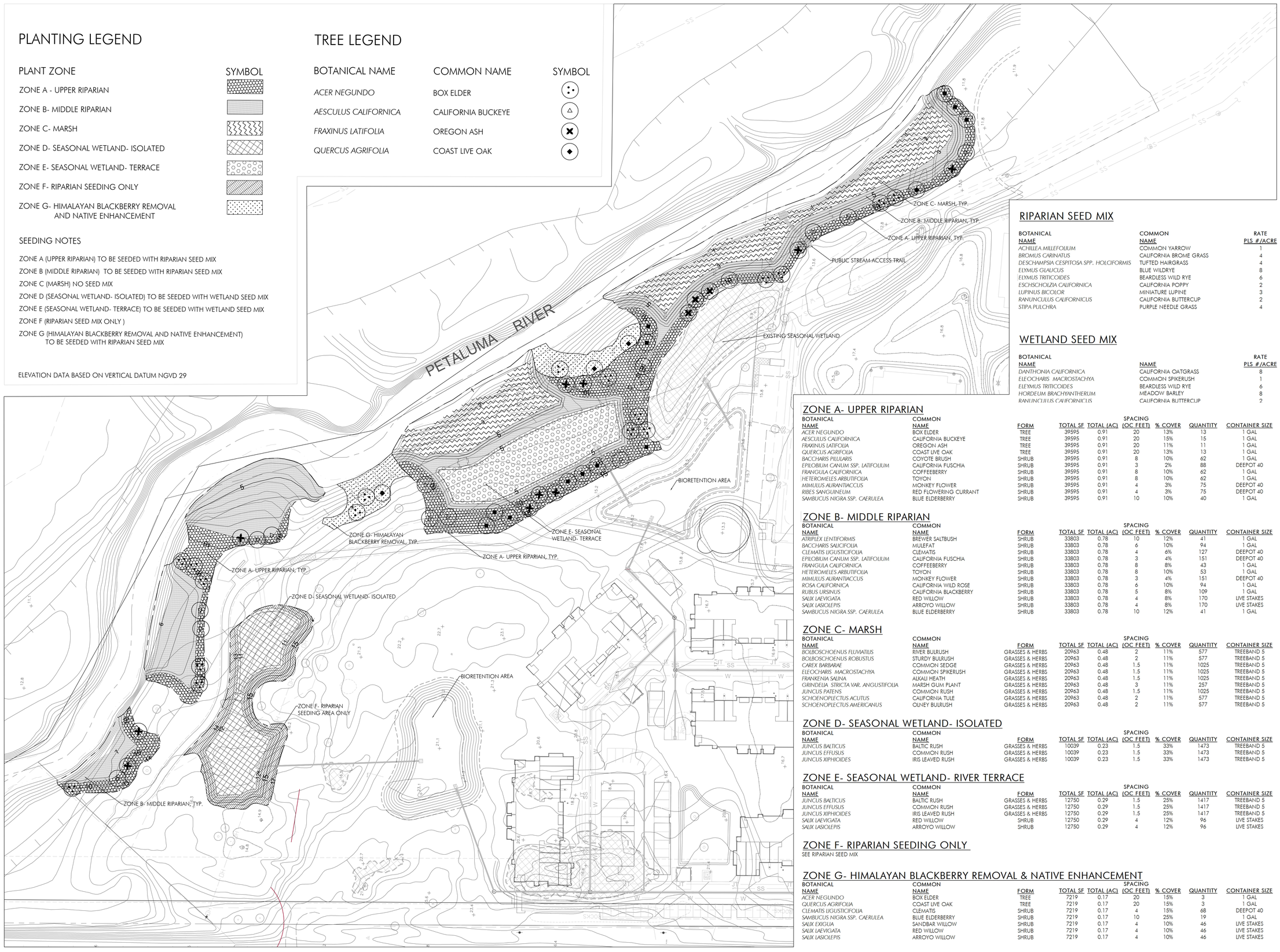
ZONE F (RIPARIAN SEED MIX ONLY)

ZONE G (HIMALAYAN BLACKBERRY REMOVAL AND NATIVE ENHANCEMENT) TO BE SEEDED WITH RIPARIAN SEED MIX

ELEVATION DATA BASED ON VERTICAL DATUM NGVD 29

TREE LEGEND

BOTANICAL NAME	COMMON NAME	SYMBOL
ACER NEGUNDO	BOX ELDER	
AESCULUS CALIFORNICA	CALIFORNIA BUCKEYE	
FRAXINUS LATIFOLIA	OREGON ASH	
QUERCUS AGRIFOLIA	COAST LIVE OAK	



RIPARIAN SEED MIX

BOTANICAL NAME	COMMON NAME	RATE PLS #/ACRE
ACHILLEA MILLEFOLIUM	COMMON YARROW	1
BROMUS CARINATUS	CALIFORNIA BROME GRASS	4
DESCHAMPSIA CESPITOSA SPP. HOLCIFORMIS	TUFTED HAIRGRASS	4
ELYMUS GLAUCUS	BLUE WILDRYE	8
ELYMUS TRITICOIDES	BEARDLESS WILD RYE	6
ESCHSCHOLZIA CALIFORNICA	CALIFORNIA POPPY	2
LUPINUS BICOLOR	MINIATURE LUPINE	3
RANUNCULUS CALIFORNICUS	CALIFORNIA BUTTERCUP	2
STIPA PULCHRA	PURPLE NEEDLE GRASS	4

WETLAND SEED MIX

BOTANICAL NAME	NAME	RATE PLS #/ACRE
DANTHONIA CALIFORNICA	CALIFORNIA OATGRASS	8
ELEOCHARIS MACROSTACHYA	COMMON SPIKERUSH	1
ELEYMUS TRITICOIDES	BEARDLESS WILD RYE	6
HORDEUM BRACHYANTHERUM	MEADOW BARLEY	8
RANUNCULUS CALIFORNICUS	CALIFORNIA BUTTERCUP	2

ZONE A- UPPER RIPARIAN

BOTANICAL NAME	COMMON NAME	FORM	TOTAL SF	TOTAL (AC)	SPACING (OC FEET)	% COVER	QUANTITY	CONTAINER SIZE
ACER NEGUNDO	BOX ELDER	TREE	39595	0.91	20	13%	13	1 GAL
AESCULUS CALIFORNICA	CALIFORNIA BUCKEYE	TREE	39595	0.91	20	15%	15	1 GAL
FRAXINUS LATIFOLIA	OREGON ASH	TREE	39595	0.91	20	11%	11	1 GAL
QUERCUS AGRIFOLIA	COAST LIVE OAK	TREE	39595	0.91	20	13%	13	1 GAL
BACCHARIS PILULARIS	COYOTE BRUSH	SHRUB	39595	0.91	8	10%	62	1 GAL
EPILOBIUM CANUM SSP. LATIFOLIUM	CALIFORNIA FUSCHIA	SHRUB	39595	0.91	3	2%	88	DEEPOT 40
FRANGULA CALIFORNICA	COFFEEBERRY	SHRUB	39595	0.91	8	10%	62	1 GAL
HETEROMELES ARBUTIFOLIA	TOYON	SHRUB	39595	0.91	8	10%	62	1 GAL
MIMULUS AURANTIACCUS	MONKEY FLOWER	SHRUB	39595	0.91	4	3%	75	DEEPOT 40
RIBES SANGUINEUM	RED FLOWERING CURRANT	SHRUB	39595	0.91	4	3%	75	DEEPOT 40
SAMBUCUS NIGRA SSP. CAERULEA	BLUE ELDERBERRY	SHRUB	39595	0.91	10	10%	40	1 GAL

ZONE B- MIDDLE RIPARIAN

BOTANICAL NAME	COMMON NAME	FORM	TOTAL SF	TOTAL (AC)	SPACING (OC FEET)	% COVER	QUANTITY	CONTAINER SIZE
ATRIPLEX LENTIFORMIS	BREWER SALTBUSH	SHRUB	33803	0.78	10	12%	41	1 GAL
BACCHARIS SALICIFOLIA	MULEFAT	SHRUB	33803	0.78	6	10%	94	1 GAL
CLEMATIS LIGUSTICIFOLIA	CLEMATIS	SHRUB	33803	0.78	4	6%	127	DEEPOT 40
EPILOBIUM CANUM SSP. LATIFOLIUM	CALIFORNIA FUSCHIA	SHRUB	33803	0.78	3	4%	151	DEEPOT 40
FRANGULA CALIFORNICA	COFFEEBERRY	SHRUB	33803	0.78	8	8%	43	1 GAL
HETEROMELES ARBUTIFOLIA	TOYON	SHRUB	33803	0.78	8	10%	53	1 GAL
MIMULUS AURANTIACCUS	MONKEY FLOWER	SHRUB	33803	0.78	3	4%	151	DEEPOT 40
ROSA CALIFORNICA	CALIFORNIA WILD ROSE	SHRUB	33803	0.78	6	10%	94	1 GAL
RUBUS URSINUS	CALIFORNIA BLACKBERRY	SHRUB	33803	0.78	5	8%	109	1 GAL
SALIX LAEVIGATA	RED WILLOW	SHRUB	33803	0.78	4	8%	170	LIVE STAKES
SALIX LASIOLEPIS	ARROYO WILLOW	SHRUB	33803	0.78	4	8%	170	LIVE STAKES
SAMBUCUS NIGRA SSP. CAERULEA	BLUE ELDERBERRY	SHRUB	33803	0.78	10	12%	41	1 GAL

ZONE C- MARSH

BOTANICAL NAME	COMMON NAME	FORM	TOTAL SF	TOTAL (AC)	SPACING (OC FEET)	% COVER	QUANTITY	CONTAINER SIZE
BOLBOSCHOENUS FLUVIATILIS	RIVER BULRUSH	GRASSES & HERBS	20963	0.48	2	11%	577	TREEBAND 5
BOLBOSCHOENUS ROBUSTUS	STURDY BULRUSH	GRASSES & HERBS	20963	0.48	2	11%	577	TREEBAND 5
CAREX BARBARAE	COMMON SEDGE	GRASSES & HERBS	20963	0.48	1.5	11%	1025	TREEBAND 5
ELEOCHARIS MACROSTACHYA	COMMON SPIKERUSH	GRASSES & HERBS	20963	0.48	1.5	11%	1025	TREEBAND 5
FRANKENIA SALINA	ALKALI HEATH	GRASSES & HERBS	20963	0.48	1.5	11%	1025	TREEBAND 5
GRINDELIA STRICTA VAR. ANGUSTIFOLIA	MARSH GUM PLANT	GRASSES & HERBS	20963	0.48	3	11%	257	TREEBAND 5
JUNCUS PATENS	COMMON RUSH	GRASSES & HERBS	20963	0.48	1.5	11%	1025	TREEBAND 5
SCHOENOPLECTUS ACUTUS	CALIFORNIA TULE	GRASSES & HERBS	20963	0.48	2	11%	577	TREEBAND 5
SCHOENOPLECTUS AMERICANUS	OLNEY BULRUSH	GRASSES & HERBS	20963	0.48	2	11%	577	TREEBAND 5

ZONE D- SEASONAL WETLAND- ISOLATED

BOTANICAL NAME	COMMON NAME	FORM	TOTAL SF	TOTAL (AC)	SPACING (OC FEET)	% COVER	QUANTITY	CONTAINER SIZE
JUNCUS BALTICUS	BALTIC RUSH	GRASSES & HERBS	10039	0.23	1.5	33%	1473	TREEBAND 5
JUNCUS EFFUSUS	COMMON RUSH	GRASSES & HERBS	10039	0.23	1.5	33%	1473	TREEBAND 5
JUNCUS XIPHIOIDES	IRIS LEAVED RUSH	GRASSES & HERBS	10039	0.23	1.5	33%	1473	TREEBAND 5

ZONE E- SEASONAL WETLAND- RIVER TERRACE

BOTANICAL NAME	COMMON NAME	FORM	TOTAL SF	TOTAL (AC)	SPACING (OC FEET)	% COVER	QUANTITY	CONTAINER SIZE
JUNCUS BALTICUS	BALTIC RUSH	GRASSES & HERBS	12750	0.29	1.5	25%	1417	TREEBAND 5
JUNCUS EFFUSUS	COMMON RUSH	GRASSES & HERBS	12750	0.29	1.5	25%	1417	TREEBAND 5
JUNCUS XIPHIOIDES	IRIS LEAVED RUSH	GRASSES & HERBS	12750	0.29	1.5	25%	1417	TREEBAND 5
SALIX LAEVIGATA	RED WILLOW	SHRUB	12750	0.29	4	12%	96	LIVE STAKES
SALIX LASIOLEPIS	ARROYO WILLOW	SHRUB	12750	0.29	4	12%	96	LIVE STAKES

ZONE F- RIPARIAN SEEDING ONLY

SEE RIPARIAN SEED MIX

ZONE G- HIMALAYAN BLACKBERRY REMOVAL & NATIVE ENHANCEMENT

BOTANICAL NAME	COMMON NAME	FORM	TOTAL SF	TOTAL (AC)	SPACING (OC FEET)	% COVER	QUANTITY	CONTAINER SIZE
ACER NEGUNDO	BOX ELDER	TREE	7219	0.17	20	15%	3	1 GAL
QUERCUS AGRIFOLIA	COAST LIVE OAK	TREE	7219	0.17	20	15%	3	1 GAL
CLEMATIS LIGUSTICIFOLIA	CLEMATIS	SHRUB	7219	0.17	4	15%	68	DEEPOT 40
SAMBUCUS NIGRA SSP. CAERULEA	BLUE ELDERBERRY	SHRUB	7219	0.17	10	25%	19	1 GAL
SALIX EXIGUA	SANDBAR WILLOW	SHRUB	7219	0.17	4	10%	46	LIVE STAKES
SALIX LAEVIGATA	RED WILLOW	SHRUB	7219	0.17	4	10%	46	LIVE STAKES
SALIX LASIOLEPIS	ARROYO WILLOW	SHRUB	7219	0.17	4	10%	46	LIVE STAKES

wra
ENVIRONMENTAL CONSULTANTS
2169-G East Francisco Blvd.
San Rafael, CA 94901
(415) 454-8868 Phone
(415) 454-0129 Fax

SID COMMONS

HABITAT MITIGATION AND MONITORING PLAN

J. CYRIL JOHNSON INVESTMENT CORP.

SONOMA COUNTY
PETALUMA, CALIFORNIA

Figure 5. Planting Plan

Date	Issues And Revisions	No.
12/22/20	HMMP	

PROJECT #10036
DRAWN BY:CHL
CHECKED BY:ICM
ORIGINAL DRAWING SIZE: 24 X 36

N

0 50
SCALE: 1 " = 50'

Sheet

L-1