COUNTY OF SAN MATEO
PLANNING AND BUILDING DEPARTMENT

DATE: September 6, 2018

TO: Zoning Hearing Officer

FROM: Planning Staff

SUBJECT: Consideration of a Resource Management Permit, Use Permit Renewal, and Amendment, pursuant to Sections 6313 and 6500, respectively, of the San Mateo County Zoning Regulations, and Certification of an Initial Study and Mitigated Negative Declaration pursuant to the California Environmental Quality Act (CEQA), to allow the continued operation of the Redwood Glen Christian Camp and Conference Center (Redwood Glen), a change of potable water source from County Memorial Park water system to surface streams, installation of approximately 3,400 linear feet of above ground piping, two (2) 2,500-gallon water storage tanks, and a 320 sq. ft. water filtration facility located at 100 Wright Drive, in the unincorporated Loma Mar area of San Mateo County.

County File Number: PLN 2001-00695 (Redwood Glen)

PROPOSAL

History

Since 1958, Redwood Glen has operated a Christian camp and conference center in the unincorporated Santa Cruz Mountains of San Mateo County. Services include, but are not limited to, summer youth and children's music and drama camp, on-site recreation activities, overnight facilities, and adult retreats.

From its opening in 1958 until 1995, Redwood Glen received its potable water (8 acre-feet of water per year) from surface streams (Hoffman and Piney Creeks) and multiple wells located throughout the Redwood Glen property. From 1995 until March 2016, Redwood Glen received its potable water from San Mateo County Memorial Park's water system while also diverting 180,000 - 250,000 gallons of water per year from surface streams for irrigation purposes. On March 1, 2016, Memorial Park discontinued service to Redwood Glen in order to maintain its transient non-community water system classification. To remain operational, and to meet their projected water demand of 4-acre-feet of water per year (1,305,953 gallons/year), Redwood Glen has elected to exercise their full water rights to Hoffman and Piney Creeks.

Current Proposal

The applicant proposes to renew and amend their Use Permit to upgrade their current water system infrastructure by installing a new 320 sq. ft. pre-fabricated water filtration

facility (housed within a shipping container), two 2,500-gallon water storage tanks, and 3,400 linear feet of above ground piping, and to change their source of potable water from County Memorial Park to Hoffman and Piney Creeks (in combination with an on-site well) to provide Redwood Glen with a sustainable source of potable water. All infrastructure improvements will be installed above ground and no trees will be removed as part of this project.

Redwood Glen possesses riparian water rights to Hoffman Creek that allows 8-acre feet/year of water to be diverted as well as up to 10,000 gallons of water to be stored on-site. Redwood Glen also holds appropriative water rights to Piney Creek which allows for 24-acre-feet/year of water to be diverted with unlimited on-site water storage.

RECOMMENDATION

That the Zoning Hearing Officer certify the Initial Study and Mitigated Negative Declaration, approve the Resource Management Permit and Use Permit Renewal and Amendment for County File Number PLN 2001-00695, by making the findings and imposing the conditions of approval listed in Attachment A of this staff report.

BACKGROUND

Report Prepared By: Laura Richstone, Project Planner, (650) 363-1829

Applicant: Larry Rice for Redwood Glen

Owner: Redwood Glen Christian Camp and Conference Center

Location: 100 Wright Drive, Loma Mar

APNs: 084-120-100, 084-120-060, 084-120-090, 084-071-100, 084-071-260 and 084-071-270

Size: 165 acres

Existing Zoning: Resource Management District (RM)

General Plan Designation: Private Recreation

Williamson Act: Not Contracted

Existing Land Use: Private Campgrounds and conference center

Water Supply: Redwood Glen was previously served by County Memorial Park's water system. They currently have no source of potable water. The current proposal to utilize the surface stream will provide Redwood Glen with a sustainable source of potable water.

Sewage Disposal: Existing septic systems

Flood Zone: Zone X (area of minimal flooding); FEMA FIRM Panel No. 06081C0395E: effective October 16, 2012.

Environmental Evaluation: Initial Study and Mitigated Negative Declaration issued with a public review period from July 10, 2018 through August 10, 2018.

Setting: Redwood Glen is located south of San Mateo County Memorial Park and west of San Mateo County Pescadero Creek Park on a heavily wooded 165-acre parcel. Pescadero Creek sits immediately outside the northern boundary of the parcel with Hoffman Creek along the western boundary of the camp area and Piney Creek along the eastern boundary of the parcel.

Chronology:

Date		Action
April 21, 1958	-	Planning Commission approved church camp (County File No. UP 1201).
May 7, 1992	-	County approved construction of a conference building and temporary installation of a one bedroom mobile home for use during construction of a conference facility (County File No. USE 92-0001).
February 17, 1994	-	Density Analysis conducted for this parcel (County File No. MNA 93 0091).
July 18, 1994	-	Amendment approved to enlarge conference building (County File No. USE 94-0010).
September 21, 1994	-	Letter of Assignment received to guarantee legalization of two-bedroom mobile home, allowed to be brought onto site.
June 15, 1995	-	Amendment approved for the permanent installation of two mobile homes for use as staff housing (County File Number USE 95 0004).
April 4, 2002	-	Use Permit Renewal and Amendment, to convert an existing mobile home to be used as dry storage and to install a new three-bedroom mobile home to be used as staff housing, approved.
March 1, 2016	-	Memorial Park ceased providing potable water to Redwood Glen. Potable water delivered to site while Redwood Glen explored alternative sources of potable water.
May 25, 2017	-	Received application for a use permit renewal and amendment to utilize Hoffman and Piney Creeks to meet project water demands and to construct a new water filtration

facility and associated infrastructure to make the water from the surface streams potable.

June 8, 2018 - Application deemed complete.

September 6, 2018 - Zoning Hearing Officer public hearing.

DISCUSSION

A. KEY ISSUES

1. Compliance with the General Plan

The subject parcel is designated Private Recreation - Rural by the General Plan. The proposed change of potable water source and water system improvements would allow for the continued operation of the parcel's existing private recreation facilities.

Staff has determined that the project complies with all applicable General Plan Policies including the following:

a. Vegetative, Water, Fish, and Wildlife Resources

Policy 1.23 (*Regulate Development to Protect Vegetative, Water, Fish, and Wildlife Resources*), Policy 1.26 (*Protect Water Resources*), and Policy 1.37 (*Protect the Productive Use of Water Resources*) seek to regulate land uses and development activities to prevent, and/or mitigate to the extent possible, significant adverse impacts on vegetative, water, fish, and wildlife resources. These policies also seek to ensure that land uses and development on or near water resources will not impair capacity, stream flow, or water quality for vegetative, fish, and wildlife habitats not impair the capacity of these resources. Additionally, Policy 1.28 (*Regulate Development to Protect Sensitive Habitats*) regulates land uses and development activities within and adjacent to sensitive habitats in order to protect critical vegetative, water, fish, and wildlife resources; protect rare, engendered, and unique plants and animals from reduction in their range or degradation of their environment; and protect and maintain the biological productivity of important plant and animal habitats.

Two parallel creeks (Hoffman and Piney) are located east and west of the campsite and are tributaries to Pescadero Creek. Both Hoffman and Piney creeks contain water diversion infrastructure by way of a stainless steel sink attached to a redwood log (Hoffman Creek) and small dam (Piney Creek). Both diversion systems allow for passive bypass of water flow. Due to the potential for adverse biological and hydrological impacts on the creeks resulting from the maintenance of the infrastructure and the proposed increase in water diversion from the creeks, a Biological Impact Report, prepared by

MIG Inc., (Attachment F) and hydrology report, prepared by Balance Hydrologics, Inc., (Balance) (Attachment G), were submitted.

In addition to the maintenance of the water diversion infrastructure, the project includes the placement of a water filtration facility (a shipping container) in a previously disturbed area within the camp grounds, and above ground linear piping located south of the campgrounds to connect water flows from Hoffman and Piney Creeks to the proposed water filtration facility.

A field survey was conducted by MIG biologists in September 2017, to assess the water diversion infrastructure, location of proposed water filtration system, water storage tanks, sediment filters, diversion pipes, water diversion structures in Hoffman and Piney Creeks, and potential water flow and habitat impacts downstream to Pescadero Creek. Plant and wildlife species and the surrounding habitat were inspected and documented. Special-status plant and animal species with a moderate or high potential to occur in the project area are outlined in the table below. The report also noted that steelhead salmon, western pond turtle, and the San Francisco garter snake were not observed in Hoffman or Piney Creeks or within the project area.

Special Status Species: Fauna	
Name	**Potential to Occur**
California red-legged frog	High
Santa Cruz black salamander	High
California giant salamander	High
Townsend's big-eared bat	High
Western red bat	High
Marbled murrelet	High
Foothill yellow-legged frog	Moderate

Special Status Species: Flora	
Name	**Potential to Occur**
Dudley's lousewort	High
Minute pocket moss	High
Western leatherwood	Moderate
White-flowered rein orchid	Moderate

California Red-legged frog; Foothill Yellow-legged Frog

The California red-legged frog is known to occur with the upper reaches of Pescadero Creek within the adjacent County parks. Suitable breeding habitat is located within Pescadero Creek near Redwood Glen and designated critical habitat is present within the project area. However, based on the field study site conditions, it has been determined that the project area does not support breeding habitat due to the lack of wetlands in the area. Hoffman and Piney Creeks provide suitable breeding and foraging habitat for the Foothill yellow-legged frog, however this species was not observed during the field study.

Santa Cruz Black Salamander; California Giant Salamander

Suitable habitat is available along Hoffman and Piney Creeks for both salamander species. There is a high potential for both species to occur though neither were observed during the field study.

Townsend's Big-eared Bat; Western Red Bat

Both species have been observed in the nearby La Honda Creek Open Space preserve and may roost in the redwood trees near Hoffman and Piney Creeks. Based on their habitat requirements, there is a high potential for these species to occur within the project area.

Marbled Murrelet

The marbled murrelet is known to nest in nearby Memorial and Pescadero Creek County Parks including a recent nest record on Piney Creek within Pescadero County Park. The Piney Creek water diversion site is also within the designated critical habitat for the marbled murrelet. As such, there is a high potential for this species to occur within the project area.

Special-Status Plants

Of the special-status plant species identified in the table above, the western leatherwood and white-flowered rein orchid were not observed in the project area. Dudley's lousewort and minute pocket moss have a high potential to occur based on suitable habitat within the project area.

Impacts on Sensitive Species and Habitats

The biologist report concluded that potential impacts to sensitive species and habitat(s) are less than significant and/or not expected. The proposed quantity of water to be diverted from the creeks is of a small enough quantity not to result in significant adverse effects on amphibian species. The expected increase in water diverted from Hoffman and Piney Creeks is not significant enough to impact steelhead salmon, which are known to occur downstream in Pescadero Creek (Hoffman and Piney Creeks do not provide suitable habitat for steelhead salmon). Furthermore, the project is not expected to impact special status roosting bats, nesting birds, plants or sensitive vegetation communities.

Impacts from Water Diversion Activities

Until 1995, Redwood Glen has diverted up to 8-acre feet of water/year (2,606,808 gallons/year) as allowed by their pre-1914 appropriative

and riparian water rights to Hoffman and Piney Creeks. After 1995, Memorial Park began providing potable water to Redwood Glen and the amount of water diverted from both creeks was reduced to approximately 180,000 to 250,000 gallons of water/year for irrigation purposes. Redwood Glen's current proposal will increase the amount of water diverted from surface streams to a total of 4-acre feet of water/year (approximately 1,305,953 gallons/year). The biological report, in conjunction with the hydrological assessment, conclude that the proposed increase in the amount of water diverted from Hoffman and Piney Creeks would not significantly impact special status species, habitat, or the base water flows in Hoffman Creek or Piney Creek due to the fact that: (1) the current water diversion systems are inefficient and allow most of the water in the creek systems to passively bypass diversion and continue to flow downstream, (2) dry-season base flow and wet-season runoff constitute less than one percent of the flow in Pescadero Creek, and (3) in extreme dry years most of the water in Hoffman Creek and Piney Creek will bypass the diversion structures and the existing 70,000-gallon raw water storage tank and other conservation measures (i.e., Conditions of Approval Nos. 18 and 25) would be used to ensure potable water demand was met.

Though the physical placement of the water filtration facility and above ground linear piping will have minimal effects on vegetative, water, fish, and wildlife resources, the increased amounts of water diverted from both Hoffman and Piney Creeks, in combination with the proposed maintenance activities required for the existing points of water diversion (POD) located within the creeks (i.e., equipment replacement and clearing leafy debris and sediment etc.,- see Section 2.c.4 below) have the potential to impact these resources without mitigation. The reports concluded that, with mitigation, the installation of the water filtration facility, maintenance activities, and increased water draw from the surface creeks would not have a significant impact on the biology or the hydrology of the area. The mitigation measures from the Negative Declaration have been included as Conditions of Approval Nos.14-35 in Attachment A of this staff report. See Sections 1.a. and 2.c.4 for further discussion regarding Redwood Glen's biology and hydrology.

b. Visual Quality

Policy 4.21 (*Utility Structures*), Policy 4.24 (*Rural Development Design Concept*), and Policy 4.25 (*Location of Structures*) seek to regulate development to promote and enhance good design, site relationships and other aesthetic considerations; minimize the adverse visual quality of utility structures; and protect and enhance the visual quality and scenic character of the landscape.

The water filtration facility is located in a previously developed area of the parcel, housed in a 320 sq. ft. shipping container, and is consistent with the scale of the surrounding development (which consists of several water storage tanks and storage containers). Minimal grading and no vegetation or tree removal is proposed. The water filtration facility and water storage tanks are currently painted a matte green and matte black color respectively to better blend in with the surrounding vegetation. Condition of Approval No. 12 which requires Redwood Glen to maintain the matte green and matte black colors of these structures for their lifetime is recommended. In addition, the water filtration facility and the above ground piping will be screened by existing trees and vegetation, are not visible from adjacent properties, and will not adversely affect the forested character of the surrounding landscape.

c. Historical and Archaeological Resources

Policy 5.5 (*Character of New Development*), Policy 5.20 (*Site Survey*), and Policy 5.21 (*Site Treatment*) seek to determine if sites proposed for development contain archaeological/paleontological resources and encourage the protection and preservation of identified archaeological/ paleontological resources.

A response from the California Historical Information System (CHRIS) noted that previous archaeological studies of the parcel had identified the presence of archaeological/historical resources and recommended that a new survey be conducted. A new archaeological survey was conducted by MIG and submitted to the County in June 2018. The survey noted the presence of one potential historical resource on the parcel and stated that the proposed project may have the potential to unearth previously undiscovered archaeological resources. Conditions of Approval Nos. 20-24, relating to archaeological monitoring for all ground disturbing activities, the use of specialized excavator machinery, and construction protocols if a resource is discovered, are recommended to preserve any existing or potential archaeological/historical resources of the site. See Section 2.c.5 below for further discussion.

d. Park and Recreation Resources

Policy 6.49 (*Role of Private Sector*) and Policy 6.29 (*Protection, Operation, and Maintenance*) encourage the private sector to provide park and recreation facilities and services and encourage all providers of park and recreation facilities to make provisions to protect, operate, and maintain existing park and recreation systems.

Redwood Glen Christian Camp and Conference has offered private recreation facilities since its opening in 1958. Due to a lack of potable water, Redwood Glen closed its doors in July 2018. Developed with

existing points of water diversion on both Hoffman and Piney Creeks, several large water storage tanks, and a system of above and below ground water piping, the proposed water filtration facility would be integrated into the existing water infrastructure on the property. The proposed project would allow Redwood Glen to reopen their doors, maintain existing park facilities, and continue to provide private recreation opportunities for the County at large.

e. Rural Land Use

Policy 9.23 (*Land use Compatibility in Rural Lands*), Policy 9.24 (*Determining Appropriate Development Densities for Rural Lands*), and Policy 9.38 (*Encourage Private Recreation Land Uses*) establish allowable densities for rural lands and encourage compatibility of land uses in order to promote the health, safety, and economy of rural lands, seek to maintain the scenic nature of these rural areas, cluster development so that large parcels can be retained for the protection and use of vegetative, visual, agricultural, and other resources, and encourage the continuation of private recreational land uses.

Surrounded by County Parks and forestland, Redwood Glen offers private recreation and camping facilities that are commensurate with the rural recreation land use designation of the property and surrounding area. Though Redwood Glen is composed of several different parcels, existing recreational, lodging, and camping facilities are centrally located on a small portion of Redwood Glen's property (approximately 0.78 acres). In a similar manner, Redwood Glen proposes to place the water filtration facility adjacent to an existing road and next to existing development. In addition, Redwood Glen is also proposing to place a majority of their above ground piping adjacent to existing trails and roads to reduce their development footprint. This clustering of development has allowed Redwood Glen to utilize the remainder of their land for timber harvest production activities (an allowed use in the RM Zoning District) and to allow for the further preservation of the scenic and vegetation resources of their parcels.

A 1994 Density Credit Analysis performed on the parcels that constitute Redwood Glen determined that a total of 13 density credits are available for the property. In the RM Zoning District, one density credit equates to one dwelling unit. As defined in Section 6102.33 of the Zoning Regulations, a dwelling unit is "a room or suite of two or more rooms which is designed for, intended, or is occupied by one family doing its own cooking therein and having only one kitchen." Using this definition Redwood Glen currently consumes 7 out of their 13 density credits.

f. Water Supply Policies

Policy 10.5 (*Water System*), Policy 10.7 (*Park and Recreation Water Supplies*), Policy 10.9 (*Potential Water Sources*), and Policy 10.17 (*Improving Existing Water Systems*) support the improvements to existing water systems, the creation of water supplies commensurate with the permitted level of development of a site, and encourage the provision of water supplies in parks and recreation areas.

From 1958 until 1995, Hoffman and Piney Creeks were the main source of Redwood Glen's potable water. Redwood Glen has maintained its original water infrastructure and has added to it through the years. Redwood Glen's current water infrastructure includes water rights to both Hoffman and Piney Creeks, two viable on-site wells, one point of water diversion (POD) on Hoffman Creek, one POD on Piney Creek, one 70,000-gallon, one 20,000-gallon, and two 5,000-gallon water storage tanks, and a series of water pipelines.

In an effort to find a sustainable source of water, Redwood Glen drilled two wells in an attempt to reach potable ground water. However, potable water was not found. As such, Redwood Glen is proposing to improve their existing water infrastructure by constructing a water filtration facility and associated infrastructure in order to once again utilize Hoffman and Piney Creeks as a potable water source.

A hydrology report prepared by Balance (Attachment G) assessed if Hoffman and Piney Creeks could provide enough water to meet Redwood Glen's projected water use of 4-acre feet/year. The hydrology report concluded that Hoffman Creek is sufficient to meet all of Redwood Glen's water needs from November to May, and from May to October, Piney Creek can provide enough supplemental water to match Redwood Glen's demands. Based off of historical data, Balance noted that a slight shortage of surface water (approximately 4,500 gallons) occurred in August during a single extreme dry-year scenario and concluded that the existing 70,000-gallon raw water storage tank would be able to provide an ample amount of water during the summer months and during an extreme dry-year scenario. The analysis also noted that even during extreme dry years, most of the water in Hoffman and Piney Creeks would passively bypass the water diversion structures and continue to flow downstream. The construction of the proposed project and its integration into the camp's existing water infrastructure will allow Redwood Glen to continue offering recreation facilities while still allowing adequate water to flow downstream.

2. Compliance with the Zoning Regulations

a. RM (Resource Management) Zoning District Regulations

Redwood Glen is located within the Resource Management (RM) Zoning District. The purpose of the RM Zoning District is to meet the County's objective for open space and conservation. Though not a principally permitted use in the RM Zoning District, commercial recreation (such as campgrounds) is allowed upon the issuance of a Use Permit. A Use Permit provides the County latitude in setting conditions on certain uses to ensure that the proposed use is not detrimental to the immediate neighborhood, the community at large, or the environment. The impacts associated with Redwood Glen's operation and the conditions required to mitigate those impacts are discussed in Section 2.

Located between County Memorial Park and Pescadero Creek Park, Redwood Glen offers a range of commercial recreational facilities, staff housing, and lodging for approximately 250 people. The 2016 average occupancy rates for the camp are detailed below:

2016 Occupancy Rates			
Facility	**Capacity (Beds)**	**Nights Per Year Occupied (2016 Average)**	**Average Number of Guests**
6 Guest Cabins/Lodges (Brookside, Sunshine, MacArthur, Moore, Retreat, Shepherd)	156	180	60 people/weekend; 100 campers per weeknight (when mid-week groups are booked
Siden Conference Center	66	165	26 people/night
6 Staff Residences (Creekside, Heiman House, Hodge House, Hillside House, Park Manor, United Mobile Home)	31	365	Average of 25 live in staff
RV Sites	40	36	40 people/night

Redwood Glen's density and intensity of use are regulated by the density credit system. As stated in Section 1.e. above, it was determined that Redwood Glen has a total of 13 density credits. In the RM Zoning District, one density credit equates to one dwelling unit[1]. A review of Redwood Glen's existing development inclusive of cabins, staff residences, lodges, and conference center, etc., determined that

[1] Defined in Section 6102.33 of the Zoning Regulations, a dwelling unit is *"a room or suite of two or more rooms which is designed for, intended for, or is occupied by, one family doing its own cooking therein and having only one kitchen."*

Redwood Glen currently consumes 7 out of their allotted 13 density credits. If Redwood Glen would like to expand their operations, Condition of Approval No. 11 which requires the submittal of an updated hydrology and biological report to demonstrate that the proposed development or expansion would not negatively impact Hoffman or Piney Creeks or the surrounding flora and fauna is recommended.

b. Development Standards

Redwood Glen and all past on-site development have been reviewed by the Planning Department to ensure that all development standards are adhered to. Redwood Glen meets all development standards for height, and front, rear, and side yard setbacks for the RM Zoning District. In a similar manner, the proposed water filtration facility complies with all RM Zoning District development standards as outlined below:

Resource Management Development Standards		
	Required	**Proposed**
Minimum Front Setback	50 feet	240 feet
Minimum Rear Setback	20 feet	>300 feet
Minimum Side Yard Setback	20 feet	86 feet
Maximum Height	36 feet	15 feet

c. Resource Management Development Review Criteria

Pursuant to Section 6313 and Section 6324 of the Zoning Regulations, all development proposed for parcels within the RM Zoning District are further subject to the Development Review Criteria found in Chapter 20.A.2 of the Zoning Regulations. Adherence to the Development Review Criteria reduces the environmental impacts of proposed development and promotes resource conservation by limiting development in environmentally sensitive areas. The primary development review criteria, and its application to the proposed Use Permit Renewal and Amendment to construct a water filtration facility and associated water infrastructure to provide Redwood Glen with a source of potable water, are discussed below:

(1) Environmental Quality Criteria

This criteria requires that development be designed and located to reduce the impacts of energy consumption on air, land, water and living resources.

Due to its small size, prefabricated nature, location adjacent to existing road infrastructure, and minimal grading, the delivery

and construction of the proposed project is not expected to impact the surrounding air quality or exceed emission standards. In addition, operation of the water filtration facility will utilize passive means (i.e., gravity) to move the water through the above ground piping wherever possible to reduce the energy consumption of the project. Similarly, the project will not generate noxious odors, as the facility will be powered by electricity, and the use of pesticides is prohibited at the water diversion sites to avoid impacting the creek and wildlife systems (Condition of Approval No. 13).

(2) Site Design Criteria

Development proposed within the RM Zoning District shall minimize grading, noise, and light impacts on adjacent properties and be located and designed to fit its environment.

The proposed water filtration structure and associated water tanks are located in a previously developed and cleared area of the property adjacent to an existing road and will not involve vegetation or tree removal. Similarly, the placement of the proposed above ground water piping will not involve vegetation or tree removal activities. A majority of the piping will be located adjacent to existing roadways and trails to avoid undue impacts to the environment. Minimal site disturbance (in the form of slight ground leveling for the water filtration facility's above ground foundation) is expected to occur for the construction of the water filtration facility and no site disturbance will occur for the laying of the above ground piping. The proposed placement of the water filtration facility and water tanks match the surrounding development in size and scale and will be subordinate to the surrounding forest canopy. Though not visible from adjacent parcels, these structures are painted a matte green and matte black color to better blend in with the surrounding vegetation.

The operation of the water filtration facility and increased water draw from Hoffman and Piney Creeks have also been assessed through various biology and hydrology reports to ensure that the project would not have a significant adverse environmental impact on wildlife and/or creek resources. Conditions of approval relating to pre-construction surveys, required water conservation measures, proper disposal of wastewater, and Best Management Practices for Hoffman and Piney Creeks POD maintenance procedures have been proposed to ensure that the continued operation of the water filtration facility and infrastructure will not adversely affect the surrounding environment.

(3) Utilities

The RM Zoning District requires all uses to have a sustainable source of water either through a public water supply or that the existence of an adequate amount of local water supply be demonstrated.

In March 2016, San Mateo County Parks discontinued water service to Redwood Glen. Due to a lack of available public water supply and a lack of on-site potable water, Redwood Glen has been trucking in water to meet their water demands since March 2016. However, at the prompting of the SWRCB and the County Environmental Health Division, Redwood Glen closed their doors and ceased operations as of July 2018 due to a lack of potable water. The construction of the proposed project and the utilization of surface streams would provide Redwood Glen with a sustainable on-site source of water (see below for water supply analysis). As discussed in Sections 2.c.1 and 2.c.2 above, the construction of the utility structures (i.e., the water filtration facility, water tanks, and above ground piping) will remain subordinate to the surrounding development and are of a minimum bulk and size necessary to meet Redwood Glen's demands.

(4) Water Resources Area Criteria

The RM Zoning District seeks to minimize impacts on water resources by maintaining surface water runoff levels, minimizing grading, and through the proper discharge of solid and liquid wastes.

History

From its opening in 1958 until 1995, Redwood Glen drew approximately 8-acre-feet of water per year from Hoffman and Piney Creeks to meet their water needs. Due to a lack of surrounding public water systems, Redwood Glen has elected to once again utilize their water rights to Hoffman and Piney Creeks to provide the camp with a sustainable source of water and to meet their projected water demand of 4-acre-feet of water per year (1,305,953 gallons/year).

Water Rights

Redwood Glen possesses riparian water rights to Hoffman Creek that allows 8-acre-feet of water per year to be diverted as well as up to 10,000 gallons of water to be stored on-site. Redwood Glen also holds appropriative water rights to Piney Creek which allows for 24-acre-feet of water per year to be

diverted with unlimited on-site water storage. These are tributary creeks that transect the Redwood Glen property and flow into Pescadero Creek.

Existing Water Infrastructure

In addition to water rights to both creeks, Redwood Glen also has existing points of water diversion (POD) on Hoffman Creek and Piney Creek. The proposed project would not require the construction of another POD and no such plans have been submitted to the County for review.

The Hoffman Creek diversion structure consists of a stainless-steel sink attached to a redwood log across the creek. Sediment and wood debris that are impounded behind the log have raised the creek bed to allow water to flow over the log and into the sink (See Attachment E). Underflow beneath the log and overflow when the sink is spilling allows a significant amount of water to bypass the diversion structure. For example, late dry-season measurements by Balance found that 0.73 gallons of water per minute (gpm) was diverted while 4.6 gpm was allowed to passively flow below the diversion structure.

The Piney Creek diversion structure consists of a small 4-ft. wide dam and includes a bypass port and diversion port. The bypass port is the same size and located at the same elevation of the diversion port and passively splits the flow of Piney Creek in half. This also allows a significant amount of water to bypass the diversion port and continue flowing downstream.

Water Supply and Hydrology Analysis

Located at the headwaters of Hoffman and Piney Creeks, the existing diversion structures can only divert a portion of the total creek base-flow at the mouths of the creeks. Other spring-flows downstream of the diversion structures are not diverted and are allowed to flow naturally recharging the groundwater supply, thus ensuring that the utilization of the creeks will maintain surface runoff at or near existing levels.

A supply versus demand analysis performed by Balance to determine if Redwood Glen's water demand could be entirely met by surface water sources determined that Hoffman Creek is sufficient to meet all of Redwood Glen's water needs from November to May and, that from May to October, Piney Creek can provide enough supplemental water to match Redwood Glen's demands. Balance also performed a single extreme dry-year and multi-dry year analyses to evaluate if the surface streams would still be sufficient to meet Redwood Glen's water

demand. These analyses concluded that there was no water deficiency during multiple dry-year scenarios but that a slight shortage of surface water (approximately 4,500 gallons) occurs in August during a single extreme dry-year scenario. Balance determined that existing 70,000-gallon and 20,000-gallon raw water storage tanks would be able to provide an ample amount of water during the summer months and during an extreme dry-year scenario. Even during extreme dry years, Balance noted that most of the water in Hoffman and Piney Creeks would still passively bypass the water diversion structures.

Though surface streams provide enough water to meet Redwood Glen's water demand and no additional water entitlements are required, Condition of Approval No. 18, which require Redwood Glen to enact certain water conservation measures, will ensure that Redwood Glen will have enough water to serve their needs while still allowing the maximum amount of water to flow downstream.

Maintenance Activities

Operation of the water filtration facility and upkeep of the existing PODs on Hoffman and Piney Creeks will require ongoing maintenance for the life of the project. In conjunction with the proposed conditions of approval listed below, these activities are not expected to have a significant adverse impact on the water resources of the area.

Operation

Operation of the water filtration facility will generate wastewater and insoluble solids which will be collected in a 2,500-gallon settling tank and a separate 2,500-gallon Clean In Place (CIP) settling tank. To ensure the proper disposal of the wastewater and settled solids, Condition of Approval No. 26, which prohibits on-site disposal of wastewater or settled solids and requires their off-site disposal at an appropriate facility, is recommended. Operation of the water filtration facility will also require the storage of bleach and citric acid. These chemicals are necessary to make the creek water potable. Though the water filtration facility is located more than 300 feet from the nearest water source (Pescadero Creek), Condition of Approval No. 27, which requires secondary containment of the chemicals and other chemical handling Best Management Practices, is recommended to ensure that these chemicals are not accidentally exposed to surrounding wildlife or introduced to the stream system.

Maintenance

Future repairs to the Hoffman Creek diversion structure may consist of resetting a stainless steel bolt or replacing a pipe flange. No chemicals/toxic substances would be involved in these repairs and all repair procedures, with the exception of bolt replacement, will occur outside of the creek channel. Condition of Approval No. 28 which requires all POD repairs to occur outside of the creek whenever possible will minimize impacts to biological and water resources.

Future repairs/maintenance activities for the Piney Creek diversion structure involve clearing leafy debris from the clogged ports by hand, the replacement of piping when necessary, and twice annual clearing of the sediment that accumulates behind the dam diversion structure. Sediment that has accumulated behind the diversion structure is flushed downstream once in mid-spring (March/April) and again following the first fall storm event (October/November). Approximately 2 cubic yards of sediment is flushed downstream per cleaning cycle. Any increase in turbidity resulting from these maintenance activities is very short in duration and localized at the discharge location. These maintenance activities would reintroduce the small quantities of sediment trapped behind the diversion structure to the creek system in order to maintain a healthy stream environment and morphology. Balance reviewed Redwood Glen's Diversion Point Maintenance Procedure Plan (Attachment J) and concluded that anticipated maintenance activities would not impact the hydrologic or geomorphic features of Piney or Hoffman Creeks. The proposed POD maintenance procedures were similarly reviewed by MIG to assess their possible impact on surrounding wildlife. With the implementation of Mitigation Measure 29 relating to returning trapped sediment into the creek system through natural filters to reduce turbidity, MIG concluded that these maintenance activities would not result in significant impacts to the surrounding biological resources.

(5) Cultural Resources Criteria

This project was referred to the Cultural Historical Resource Information System (CHRIS) and The Native American Heritage Council (NAHC) to determine possible impacts to cultural, historical, or paleontological resources. A Sacred Lands File search completed by the NAHC found no sacred lands on the project property. However, a response from CHRIS noted that previous studies of the Redwood Glen property had identified archaeological resources and recommended that a new archaeological survey be conducted for the proposed project.

An archaeological report was submitted to the County in June 2018. The new report assessed a 25-ft. buffer area on either side of the proposed above ground water pipeline and areas surveyed in past studies. No cultural/archaeological resources were noted in the 2018 archaeological report. However, one potential historical resource was noted on the parcel. Implementation of the proposed project will not have an impact on any identified historical resources nor affect the resources' potential eligibility for the California Register of Historical Resources (CRHR). Though the project's minimal grading activities are not considered to have an adverse change to any previously identified archaeological resources, grading activities may have the potential to unearth previously undiscovered subsurface archaeological resources. Adherence to Conditions of Approval Nos. 20-24 which relate to site monitoring by an archaeologist, the use of special excavator machinery and procedures to follow if an archaeological resource is found will ensure that potential undiscovered resources will not be negatively impacted by the proposed project.

3. Compliance with the Conditions of Last Approval

This permit was last amended and approved by the Zoning Hearing Officer on April 4, 2002. Conditions from the last approval are assessed below for their compliance, and if the conditions should be retained or revised. Staff recommends that some conditions, as indicated, be removed in instances where the condition: (1) has been complied with, or (2) is no longer deemed feasible or necessary.

a. This approval applies only to the proposal, documents, and plans described in this report and submitted to and approved by the Zoning Hearing Officer on April 4, 2002. Minor revisions or modifications to the project may be approved by the Community Development Director if they are consistent with the intent of and in substantial conformance with this approval.

Compliance with Condition? Yes. The construction of the 2002 staff housing was built according to the approved plans.

Recommended to Retain Condition? Yes, but modified to reflect the new hearing date.

b. The use permit shall be valid for a period of five (5) years. This will allow time for staff to evaluate the operation and intensity of the use. The applicant shall apply for renewal of the use permit and pay the applicable renewal fees six (6) months prior to expiration.

Compliance with Condition? No. The Use Permit expired on April 4, 2007 and no renewal was initiated.

Recommended to Retain Condition? Yes, but modified to reflect the new Use Permit terms and dates and incorporate two administrative reviews as follows:

This Use Permit shall be valid for seven (7) years following the date of final approval, valid through September 6, 2025. The applicant shall file for a renewal of this permit six (6) months (March 6, 2024) prior to expiration with the County Planning and Building Department if continuation of the use is desired. Two administrative reviews of this permit shall be required, one at "Year One" and one at "Year Three" following permit approval to assess compliance with these conditions.

c. Any change in use shall require an amendment to the use permit. Amendments to this use permit require an application for amendment, payment of applicable fees, and consideration at a public hearing.

Compliance with Condition? No. Modifications such as increasing the lodging capacity of the parcels and removing outdoor structures occurred without Planning Department approval.

Recommended to Retain Condition? Yes. But slightly modified as follows:

Any change in use or increase in intensity shall require a Use Permit Amendment and may require a Resource Management Permit. An increase in development intensity and water demand shall require the submittal of subsequent hydrological and biological reports to assess the impacts of increased water demand on water and wildlife resources. A Resource Management Permit (if needed) and Use Permit Amendment shall require the submittal of applicable forms and documents, payment of applicable fees, and consideration at a public hearing.

d. The applicant shall apply for and be issued a building permit within one (1) year from the date of this approval. The building permit shall be issued prior to the start of construction and developed in accordance with the approved plans.

Compliance with Condition? Yes.

Recommended to Retain Condition? Yes, but modified to reflect the following:

The applicant shall apply for and be issued a building permit within one (1) year from the date of this approval. The building permit shall be issued prior to the start of any further construction and developed

in accordance with the approved plans. Any extension of this permit shall require submittal of an application for permit extension and payment of applicable extension fees sixty (60) days prior to the expiration date.

e. The applicant is required to monitor the noise level at the sites so that the proposed construction activity will not exceed 80-dBA level at any one moment. All construction activity is limited to the hours of the County including 7:00 a.m. to 6:00 p.m. Monday through Friday and 9:00 a.m. to 5:00 p.m. on Saturday. Construction is prohibited on Sunday or any national holiday.

Compliance with Condition? Yes.

Recommended to Retain Condition? Yes, but modified to the following:

Noise sources associated with demolition, construction, repair, remodeling, or grading of any real property shall be limited to the hours from 7:00 a.m. to 6:00 p.m. weekdays and 9:00 a.m. to 5:00 p.m. Saturdays. Said activities are prohibited on Sundays, Thanksgiving and Christmas (San Mateo Ordinance Code Section 4.88.360).

f. The applicant shall submit color samples for the exterior wall finishes and the roof of the new three-bedroom mobile home prior to issuance of a building permit. The color(s) shall be compatible with the existing vegetation color(s).

Compliance with Condition? Yes.

Recommended to Retain Condition? No. The mobile home has been built and this condition has been fulfilled.

g. All new utility lines serving the new three-bedroom mobile home and the relocated mobile home that will be converted for use as a dry storage shall be installed underground.

Compliance with Condition? No. The utility lines that serve the three-bedroom mobile home and converted mobile home were not installed underground during construction.

Recommended to Retain Condition? No. The mobile home and utilities are already built. Installing underground utilities is not recommended as this action may impact potential undiscovered archaeological resources on the property.

h. The provisions of the San Mateo County Grading Ordinance shall govern all grading on and adjacent to this site. Unless exempted by

the Grading Ordinance, the applicant may be required to apply for a grading permit upon the County's completion of their review of the plans.

Compliance with Condition? Yes.

Recommended to Retain Condition? Yes.

i. All new utility lines serving these units shall be installed underground where possible.

Compliance with Condition? No. The utility lines that serve the three-bedroom mobile home and the converted dry storage mobile home were not installed underground.

Recommended to Retain Condition? No. This condition is redundant.

4. Additional Recommended Conditions of Approval

To reflect the project's potential significant impacts to water, biological, and cultural resource, etc., staff recommends the following conditions of approval and the mitigation measures contained in the Mitigated Negative Declaration to be added to this Use Permit:

a. The Department of Fish and Game has determined that this project is not exempt from the Department of Fish and Game California Environmental Quality Act filing fees per Fish and Game Section 711.4. The applicant shall pay to the San Mateo County Recorder's Office an amount of $2,280.75 plus a $75.00 recording fee at the time of filing for the Notice of Determination by the County Planning and Building Department staff within ten (10) business days of this approval (by October 4, 2018). Please be aware that the Department of Fish and Game environmental filing fee increases starting the 1st day of each new calendar year (i.e., January 1, 2019).

b. This permit does not allow for the removal of any trees. Removal of any tree with a circumference of 55 inches or greater, as measured 4.5 feet above the ground, shall require additional review by the Community Development Director prior to removal. Only the minimum vegetation necessary to accommodate the project shall be removed.

c. Redwood Glen shall secure a permit from the State Water Resources Control Board (SWRCB) for their community water system within 18 months of this permit approval. Redwood Glen shall not continue operations until the water filtration facility has been built, finalized by the Planning and Building Department, and permitted by the SWRCB.

d. The proposed community water system shall only supply water to Redwood Glen and its facilities. This water system shall not serve

adjacent properties nor supply water for users off-site of the Redwood Glen property.

e. Any future proposed expansion in operations shall require an updated hydrology report and biology report. These reports are necessary to adequately determine if the parcel will have enough water to support the proposal and to assess potential impacts to the hydrology of the creeks and the surrounding flora and fauna.

f. To blend in with the surrounding vegetation, Redwood Glen shall maintain the matte green and matte black colors of the proposed water filtration facility and associated water tanks for the life of these structures.

g. No pesticides shall be used at or around the points of diversion on Hoffman Creek or Piney Creek.

5. Compliance with the Use Permit Findings

Under the provisions of Section 6500 of the Zoning Regulations, commercial recreation facilities are permitted in the RM Zoning District subject to the issuance of a Use Permit. In order to approve the Use Permit Renewal and Amendment for Redwood Glen's continued operation, change of potable water source to surface streams, and improvements to their existing water system, the Zoning Hearing Officer must find that:

a. The establishment, maintenance, and/or conducting of the proposed use will not, under the circumstances of the particular case, result in a significant adverse impact to coastal resources, or be detrimental to the public welfare or injurious to property or improvements in said neighborhood.

The proposed project requires minimal grading and no tree removal. Staff has determined that due to its placement adjacent to existing roads and trails and its utilization of natural colors to blend in with the rural surroundings, the project will not substantially detract from the scenic and visual qualities of the area. The recommended conditions of approval, which require, pre-construction surveys, mandatory water conservation measures, and archaeological monitoring during construction, will ensure that the project will not impact these resources. Additionally, recommended conditions of approval which require any increase in water demand to be assessed for impacts to water and biological resources, as well as the applicable conditions from the previous Use Permit approval, will ensure that potential impacts from Redwood Glen's ongoing operations are reduced to less than significant levels and will not be detrimental to the public welfare or neighboring parcels.

B. ENVIRONMENTAL REVIEW

An Initial Study (IS) and Mitigated Negative Declaration (MND) have been prepared and circulated for this project, in compliance with the California Environmental Quality Act (CEQA). The public comment period commenced on July 10, 2018 and ended on August 10, 2018. No public comments were received during this period. Mitigation measures have been included as conditions of approval in Attachment A of this staff report. The IS/MND has been included as an attachment to this staff report (Attachment L). Please note that only select portions of Technical, Mechanical, and Financial Report (TMF), have been included in this staff report due to its length (Attachment G). The full TMF report can be viewed by following this link: https://planning.smcgov.org/ceqa-docs.

C. REVIEWING AGENCIES

Building Inspection Section
Department of Public Works
San Mateo County Fire Department
California Department of Fish and Game
California Office of Historic Preservation
State Water Resources Control Board

ATTACHMENTS

A. Recommended Findings and Conditions of Approval
B. Project Location Map
C. Site Plan
D. Project Plans
E. Photographs
F. Biological Impact Report, prepared by MIG, Inc., dated December 2017
G. Technical, Mechanical, Financial Report, dated May 16, 2017[2]
H. Maintenance Procedures of Hoffman and Piney Creeks Diversion Structures
I. Biological Evaluation of Proposed POD Maintenance Activities
J. Hydrological Evaluation of Proposed POD Maintenance Activities
K. Water Treatment Facility Waste Management Plan
L. Initial Study/Mitigated Negative Declaration

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[2] Only selected portions of this report relating to hydrology reports and water rights have been included. For the full TMF report, follow this link: https://planning.smcgov.org/ceqa-document/mitigated-negative-declaration-redwood-glen-camp-change-water-source-loma-mar and open Attachment D.

County of San Mateo
Planning and Building Department

RECOMMENDED FINDINGS AND CONDITIONS OF APPROVAL

Permit or Project File Number: PLN 2001-00695 Hearing Date: September 6, 2018

Prepared By: Laura Richstone, Project Planner For Adoption By: Zoning Hearing Officer

RECOMMENDED FINDINGS

For the Environmental Review, Find:

1. That the Initial Study and Mitigated Negative Declaration are complete, correct, adequate, and prepared in accordance with the California Environmental Quality Act (CEQA) and the applicable State and County Guidelines. An Initial Study and a Mitigated Negative Declaration were prepared and issued with a public review period from Tuesday, July 10, 2018 to Friday, August 10, 2018.

2. That, on the basis of the Initial Study and comments received hereto, there is no substantial evidence that the project, if subject to the mitigation measures contained in the Mitigated Negative Declaration, will have a significant effect on the environment. The Initial Study and Mitigated Negative Declaration identify potential significant impacts to air quality, biological resources, cultural resources, hazard and hazardous materials, utilities, hydrology, and water quality. The mitigation measures contained in the Mitigated Negative Declaration have been included as conditions of approval below. As proposed and mitigated, the project will not result in any significant environmental impacts.

3. That the mitigation measures identified in the Mitigated Negative Declaration, agreed to by the applicant, placed as conditions on the project, and identified as part of this public hearing, have been incorporated as conditions of project approval.

4. That the Initial Study and Mitigated Negative Declaration reflect the independent judgment of the County.

For the Resource Management Permit, Find:

5. That the project conforms to the Development Standards and Development Review Criteria contained in Chapter 20A and Chapter 20A.2 of the San Mateo County Zoning Regulations. The placement of the water filtration facility conforms to the minimum setbacks and maximum height limit allowed in the RM Zoning District. Additionally, the project conforms to Section 6324.1 (*Environmental*

Quality Criteria), Section 6324.4 (*Water Resources Criteria*), Section 6324.2 (*Site Design Criteria*), Section 6324.5 (*Cultural Resources*), and Section 6324.3 (*Utilities*) of the RM Development Review Criteria. The project, as proposed and conditioned, requires minimal grading, no tree removal, and will not substantially detract from the scenic and visual quality of the area as the structures utilize colors that blend into the natural surroundings. The project minimizes adverse impacts on wildlife, water, and archaeological resources by requiring pre-construction surveys, mandatory water conservation activities, and ensuring that proper measures are taken should any special-status species or unknown cultural resources are encountered or unearthed during construction or facility maintenance.

For the Use Permit, Find:

6. That the establishment, maintenance, and/or conducting of the proposed project will not, under the circumstances of the particular case, result in a significant adverse impact to environmental, cultural, or water resources, or be detrimental to the public welfare or injurious to property or improvements in said neighborhood. The conditions of approval, which include requiring pre-construction/pre-maintenance surveys, mandatory water conservation measures, and archaeological monitoring, will ensure that the potential impacts to these resources are reduced and that the project will not be detrimental to the public welfare or neighboring parcels.

RECOMMENDED CONDITIONS OF APPROVAL

Current Planning Section

General Conditions:

1. This approval applies only to the proposal, documents, and plans described in this report and submitted to and approved by the Zoning Hearing Officer on September 6, 2018. Minor revisions or modifications to the project may be approved by the Community Development Director if they are consistent with the intent of and in substantial conformance with this approval.

2. This Use Permit shall be valid for seven (7) years following the date of final approval, valid through September 6, 2025. The applicant shall file for a renewal of this permit six (6) months (March 6, 2024) prior to expiration with the County Planning and Building Department if continuation of the use is desired. Two (2) administrative reviews of this permit shall be required, one at "Year One" and one at "Year Three" following permit approval to assess compliance with these conditions.

3. Any change in use or increase in intensity shall require a Use Permit Amendment and may require a Resource Management Permit. An increase in development intensity and water demand shall require the submittal of subsequent hydrological and biological reports to assess the impacts of increased water demand on water and wildlife resources. A Resource Management Permit (if needed) and Use

Permit Amendment shall require the submittal of applicable forms and documents, payment of applicable fees, and consideration at a public hearing.

4. The applicant shall apply for and be issued a building permit within one (1) year from the date of this approval. The building permit shall be issued prior to the start of any further construction and developed in accordance with the approved plans. Any extension of this permit shall require submittal of an application for permit extension and payment of applicable extension fees sixty (60) days prior to the expiration date.

5. Noise sources associated with demolition, construction, repair, remodeling, or grading of any real property shall be limited to the hours from 7:00 a.m. to 6:00 p.m. weekdays and 9:00 a.m. to 5:00 p.m. Saturdays. Said activities are prohibited on Sundays, Thanksgiving and Christmas (San Mateo Ordinance Code Section 4.88.360).

6. The provisions of the San Mateo County Grading Ordinance shall govern all grading on and adjacent to this site. Unless exempted by the Grading Ordinance, the applicant may be required to apply for a grading permit upon the County's completion of their review of the plans.

7. The Department of Fish and Game has determined that this project is not exempt from the Department of Fish and Game California Environmental Quality Act filing fees per Fish and Game Section 711.4. The applicant shall pay to the San Mateo County Recorder's Office an amount of $2,280.75 plus a $75.00 recording fee at the time of filing for the Notice of Determination by the County Planning and Building Department staff within ten (10) business days of this approval (by October 4, 2018). Please be aware that the Department of Fish and Game environmental filing fee increases starting the 1st day of each new calendar year (i.e., January 1, 2019).

8. This permit does not allow for the removal of any trees. Removal of any tree with a circumference of 55 inches or greater, as measured 4.5 feet above the ground, shall require additional review by the Community Development Director prior to removal. Only the minimum vegetation necessary to accommodate the project shall be removed.

9. Redwood Glen shall secure a permit from the State Water Resources Control Board (SWRCB) for their community water system within 18 months of this permit approval. Redwood Glen shall not continue operations until the water filtration facility has been built, finalized by the Planning and Building Department, and permitted by the SWRCB.

10. The proposed community water system shall only supply water to Redwood Glen and its facilities. This water system shall not serve adjacent properties nor supply water for users off-site of the Redwood Glen property.

11. Any future proposed expansion in operations shall require an updated hydrology report and biology report. These reports are necessary to adequately determine if

the parcel will have enough water to support the proposal and to assess potential impacts to the hydrology of the creeks and the surrounding flora and fauna.

12. To blend in with the surrounding vegetation, Redwood Glen shall maintain the matte green and matte black colors of the proposed water filtration facility and associated water tanks for the life of these structures.

13. No pesticides shall be used at or around the points of diversion on Hoffman Creek or Piney Creek.

Mitigation Measures from the Mitigated Negative Declaration:

14. *Mitigation Measure 1:* The applicant shall require construction contractors to implement all the Bay Area Air Quality Management District's Basic Construction Mitigation Measures, listed below:

    a. Water all active construction areas at least twice daily.

    b. Apply water two times daily, or apply (non-toxic) soil stabilizers on all unpaved access roads, parking, and staging areas at construction sites. Also, hydroseed or apply non-toxic soil stabilizers to inactive construction areas.

    c. Sweep adjacent public streets daily (preferably with water sweepers) if visible soil material is carried onto them.

    d. Limit traffic speeds on unpaved roads within the project parcel to 15 miles per hour.

    e. All construction equipment shall be maintained and properly tuned in accordance with the manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.

    f. Idling times shall be minimized either by shutting the equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California Airborne Toxics Control Measure Title 13, Section 2485, of the California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points.

15. *Mitigation Measure 2:* Prior to the installation of the proposed above ground piping and prior to any scheduled maintenance, a pre-activity survey for special-status plant and animal species and communities will be conducted by a USFWS-approved biologist at the existing points of water diversion at Hoffman and Piney Creeks. The survey will consist of walking the site to ascertain the possible presence of these species. The USFWS-approved biologist will investigate all potential areas near the existing PODs that could be used by these species for feeding, breeding, sheltering, movement, or other essential behaviors. If any adults, seedlings, juveniles, eggs, or tadpoles are found, the USFWS-approved

biologist will contact the USFWS and/or California Fish and Wildlife Service to determine if the proposed maintenance or construction activities will negatively affect any identified species and if moving any of the individuals is appropriate. If the USFWS approves moving animals, the biologist and USFWS will identify a suitable relocation site, and the applicant will ensure that the USFWS-approved biologist is given sufficient time to move the animals from the work site before work is initiated. Only USFWS-approved biologists can capture, handle, and monitor the California red-legged frog, San Francisco garter snake, marbled murrelet, or steelhead salmon.

16. *Mitigation Measure 3:* Marbled murrelets nest from March to September. Scheduled maintenance (with the exception of emergencies) at the existing points of water diversion shall occur outside of the nesting season. If work cannot be scheduled outside the breeding season, then the applicant shall hire a qualified biologist to conduct pre-construction surveys for nesting birds no more than 14 days prior to the onset of construction or maintenance activities. If any active bird nests are observed within 50 ft. (or 250 ft. for raptors) of the new piping infrastructure or water filtration facility, the work shall be postponed until the biologist determines that all young have fledged the nest.

17. *Mitigation Measure 4:* The applicant shall not apply insecticides or herbicides at the project site during project implementation or long-term operational maintenance where there is the potential for these chemical agents to enter creeks, streams, waterbodies, or uplands that contain potential habitat for the identified special-status species.

18. *Mitigation Measure 5:* Redwood Glen shall implement the following water conservation measures to reduce potential significant impacts to sensitive habitats:

    a. Landscape and recreation fields shall be irrigated early in the day or late in the evening between the hours of 10:00 p.m. and 6:00 a.m.

    b. Water shall not be allowed to run off to the roadside ditch or gutter. Care shall be taken not to water past the point of saturation.

    c. Leaking pipes or faulty sprinklers shall be repaired within five (5) days or less if warranted by the severity of the problem.

    d. No hosing down of automobiles, boats, roadways, and/or driveways shall be permitted. All automobiles and/or equipment shall be washed on the lawn.

    e. Washing of streets, parking lots, and buildings shall be prohibited except as necessary for health, sanitary, or fire protection purposes.

    f. Attach automatic shut-off devices on any hose or filling apparatus in use. No water from the potable water system shall be used to fill or refill the swimming pool except as necessary for public health or fire protection.

g. No outdoor water use of any kind is permitted during power outages.

19. *Mitigation Measure 6:* Prior to building permit approval for the construction and utilization of Piney and Hoffman Creeks as a potable water source, coordinate with all state agencies to obtain applicable jurisdictional permits for the project, including the California Department of Fish and Wildlife (CDFW) to obtain a Streambed Alteration Agreement (if CDFW deems it necessary) and the State Water Resources Control Board (SWRCB) to obtain all required permits for the proposed potable water system. Prior to the issuance of a building permit for this project, the applicant shall submit evidence of these required permits.

20. *Mitigation Measure 7:* Archaeological monitoring shall be instigated for all ground disturbing activities. An archaeologist who meets the Secretary of the Interior's Standards for Archaeology shall be present at the project site during ground disturbing activities, including machine or hand excavation, or grubbing. No ground disturbing activities of any kind shall be allowed to take place if the archaeologist is not present. An archaeological report meeting the Secretary of the Interior's Standards detailing the findings of the monitoring will be submitted to the Northwest Information Center after monitoring has ceased.

21. *Mitigation Measure 8:* In the event that archaeological remains from either a historic or prehistoric period are discovered (or have been suspected to have been discovered) during project construction, all ground disturbing work on the site shall cease and the Planning Department shall be notified of any such findings. The archaeologist shall assess the discovery before any additional ground disturbing work within the site shall be allowed to continue. No further ground disturbing work shall be allowed to continue until the archaeologist has fully evaluated the find, recommended appropriate protection measures, and those measures have been approved by the Planning Department, and implemented by the project applicant. Dependent on the evaluation by the archaeologist, archaeological excavation and recordation may be required before construction can continue.

22. *Mitigation Measure 9:* All excavator machinery shall use toothless buckets during ground disturbing activity to allow the monitoring archaeologist to more clearly identify archaeological features, if present.

23. *Mitigation Measure 10:* If a newly discovered resource is, or is suspected to be, Native American in origin, the resource shall be treated as a significant Tribal Cultural Resource, pursuant to Public Resources Code 21074, until the County has determined otherwise with the consultation of a qualified archaeologist and local tribal representative.

24. *Mitigation Measure 11:* In the event of discovery or recognition of any human remains during project construction, there shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains. The applicant shall then immediately notify the County Coroner's Office and possibly the State Native American Heritage Commission to seek recommendations from a Most Likely Descendant (Tribal Contact) before

any further action at the location of the find can proceed. All contractors and sub-contractors shall be made aware of these requirements and shall adhere to all applicable laws including State Cultural Preservation laws.

25. *Mitigation Measure 12:* The water treatment and storage facilities shall be properly maintained at all times. The water filtration facility shall be supervised by a Wastewater Treatment Operator licensed by the State Water Resources Control Board.

26. *Mitigation Measure 13:* No wastewater or settled solids shall be discharged on-site. All wastewater and solids generated from the water filtration facility's CMF waste streams shall be hauled off-site and disposed at a licensed waste facility.

27. *Mitigation Measure 14:* The applicant shall use the following Best Management Practices to minimize potential adverse effects of the project to groundwater and soils from chemicals used during the operation of the water filtration facility:

    a. Follow the manufacturer's recommendations on use, storage, and disposal of chemicals used in the water filtration and cleaning process.

    b. Avoid overtopping storage containers.

    c. Provide secondary containment for any hazardous materials stored on-site.

    d. Personal Protective Equipment (PPE) warning signs shall be placed on all chemical storage containers.

    e. Appropriate chemical warning signs shall be placed on the exterior of the water filtration facility.

    f. Perform regular inspections of the water filtration system equipment and materials storage areas for leaks and maintain records documenting compliance with the storage, handling, and disposal of hazardous materials.

28. *Mitigation Measure 15:* All repair work for the Hoffman Creek diversion structure, with the exception of the bolt replacement, shall occur outside the creek channel.

29. *Mitigation Measure 16:* Sediment-laden water associated with Hoffman Creek maintenance activities shall be reintroduced to the creek system through a natural filter (such as rocks and creek bank vegetation) to reduce water turbidity.

30. *Mitigation Measure 17:* Any required PVC glue necessary for the Piney Creek diversion structure shall be added to the pipe outside the creek channel and shall fully cure prior to installing the pipe in the creek.

31. *Mitigation Measure 18:* In the event of an extreme storm event where significant amounts of sediment accumulates behind the Piney Creek diversion dam, Redwood Glen shall remove the accumulated sediment using hand tools and

spread the sediment outside the banks of the creek to prevent the reintroduction of the sediment into the creek system.

32. *Mitigation Measure 19:* The proposed above ground piping shall be inspected regularly for leaks. Upon discovery, all leaks shall be repaired within five (5) days or less.

33. *Mitigation Measure 20:* Should any traditionally or culturally affiliated Native American Tribe respond to the County's issued notification for consultation, such process shall be completed and any resulting agreed upon measures for avoidance and preservation of identified resources shall be taken prior to implementation.

34. *Mitigation Measure 21:* In the event that tribal cultural resources are inadvertently discovered during project implementation, all work shall cease until a qualified professional can evaluate the find and recommend appropriate measures to avoid and preserve the resources in place, or minimize adverse impacts to the resource. Those measures shall be approved by the County Planning Department prior to implementation and prior to continuing any work associated with the project.

35. *Mitigation Measure 22:* Any inadvertently discovered tribal cultural resources shall be treated with culturally appropriate dignity taking into account the tribal cultural values and meaning of the resource, including, but not limited to, protecting the cultural character and integrity of the resource, protecting the traditional use of the resource, and protecting the confidentiality of the resource.

Building Inspection Section

36. The proposed project requires a building permit.

37. The proposed project shall be designed and constructed based on the currently approved and locally amended California Building Standards Code, which as of this review is the 2016 version.

California Department of Fish and Wildlife

38. This project is subject to notification under CDFW's Lake and Streambed Alteration Program (Fish and Game Code Section 1602) as a substantial diversion of stream flow. The applicant may be subject to a Streambed Alteration Agreement.

Cal-Fire

39. Although not required, the Cal-Fire requests that a 2.5-inch FDC at the 70,000-gallon water tank be installed for emergency fire prevention. Please contact the Fire Marshal's Office at 650/573-3846 with questions.

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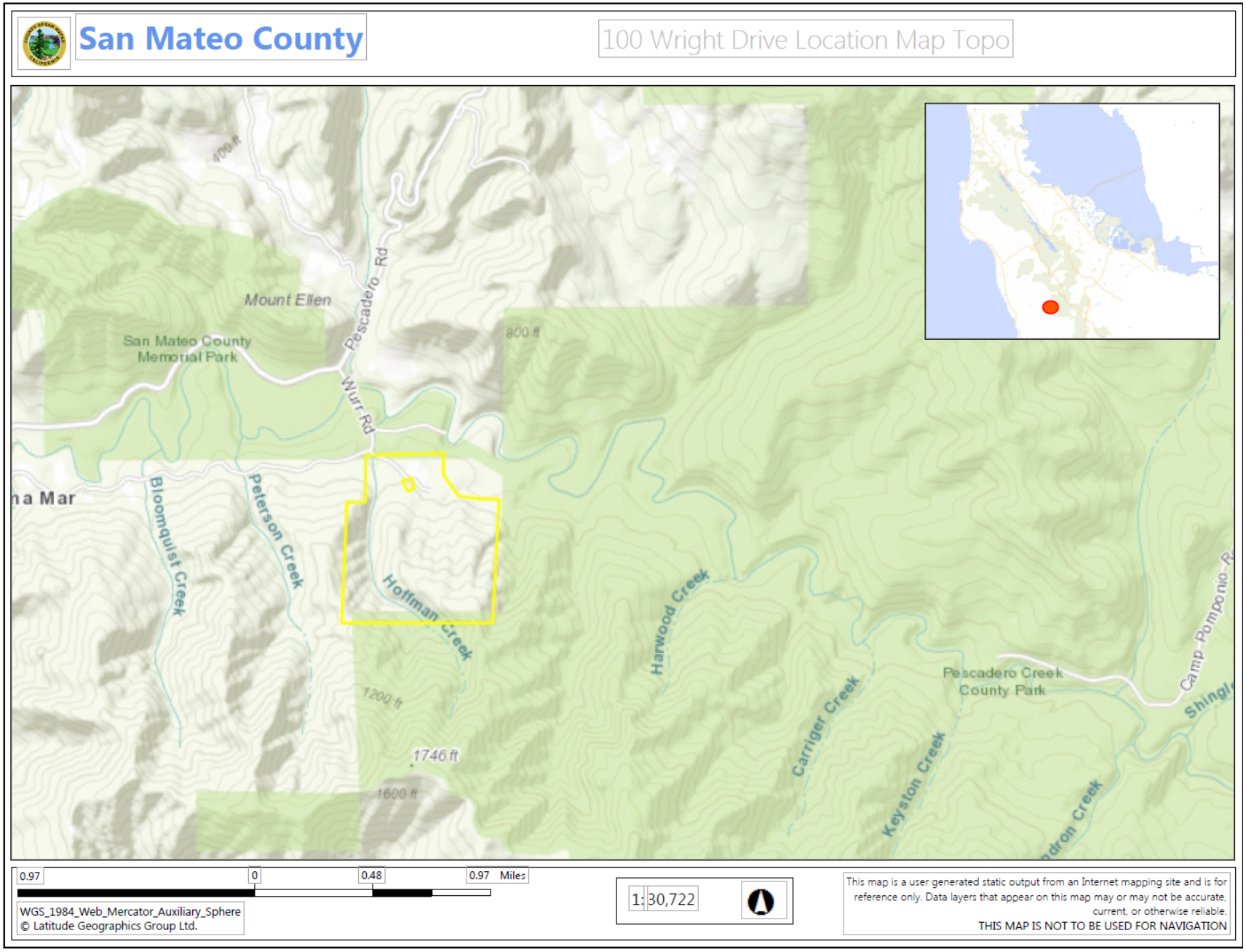


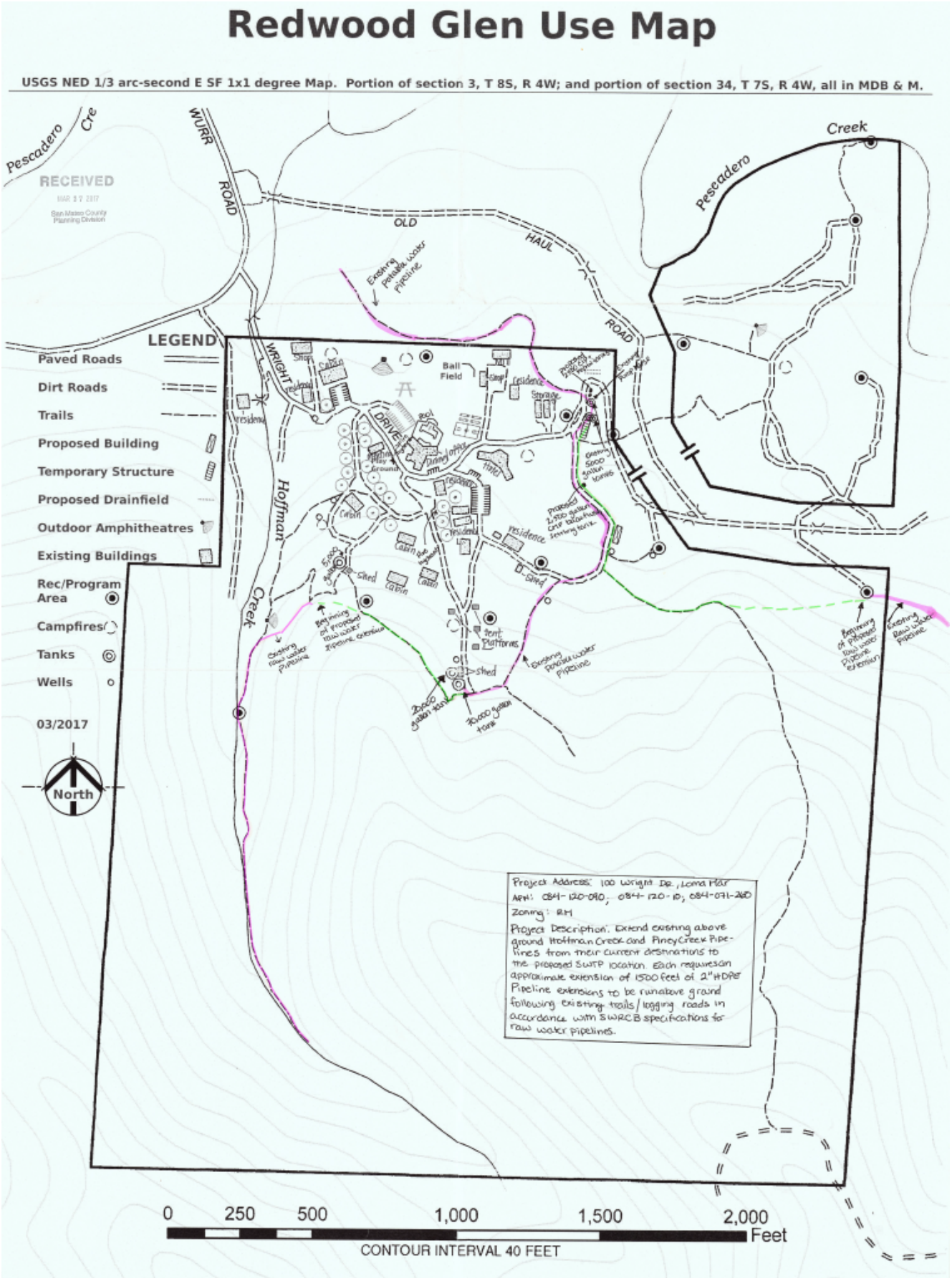
San Mateo County Zoning Hearing Officer Meeting

Owner/Applicant: **Larry Rice/Redwood Glen** Attachment: **B**

File Numbers: **PLN 2001-00695**

Redwood Glen Use Map

USGS NED 1/3 arc-second E SF 1x1 degree Map. Portion of section 3, T 8S, R 4W; and portion of section 34, T 7S, R 4W, all in MDB & M.



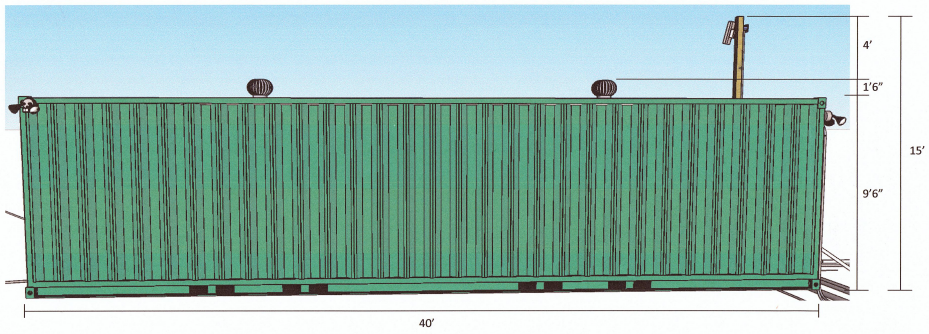
San Mateo County Zoning Hearing Officer Meeting

Owner/Applicant: **Larry Rice/Redwood Glen** Attachment: **C**

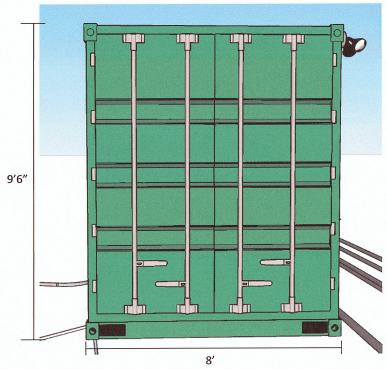
File Numbers: **PLN 2001-00695**

County of San Mateo - Planning and Building Department

ATTACHMENT D



West Elevation



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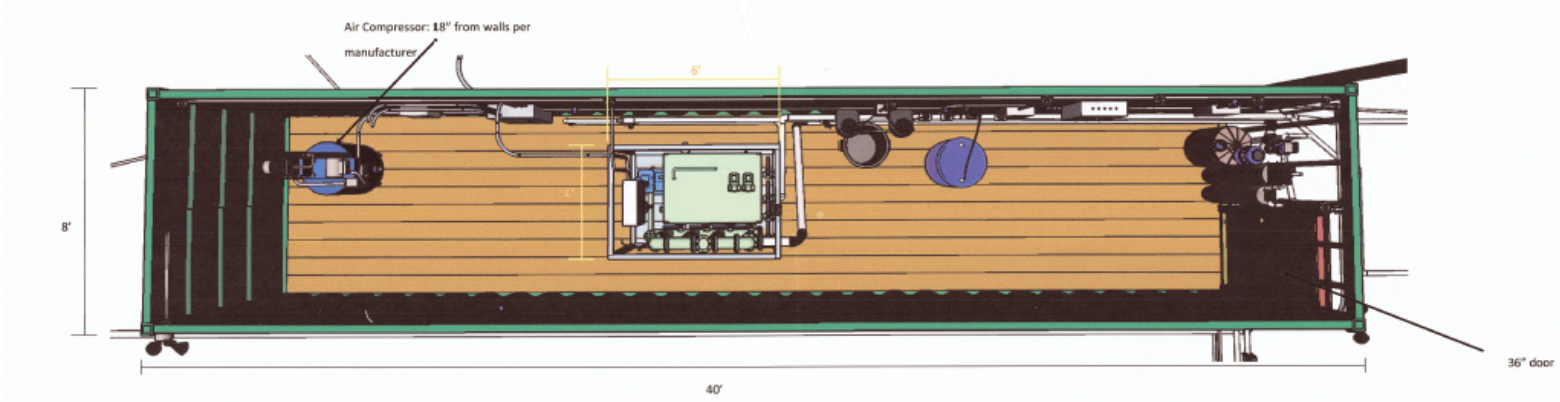
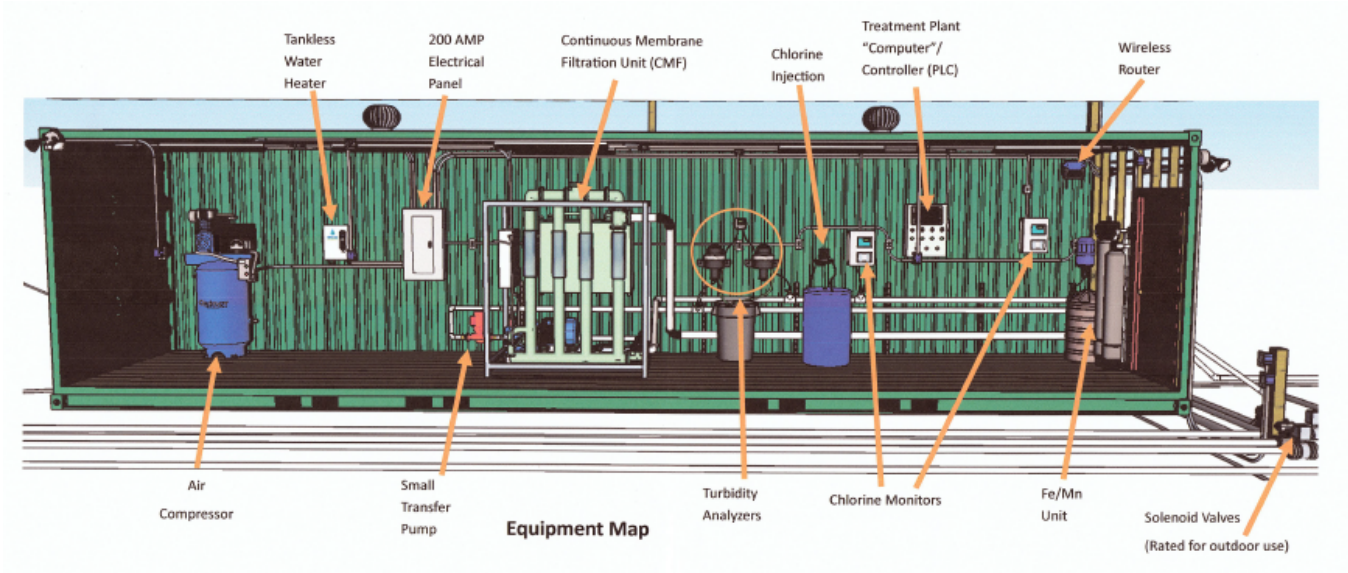


Floor Plan



Equipment Map

Water Filtration Facility

County of San Mateo - Planning and Building Department

ATTACHMENT E

Facility painted green to match surroundings

Water Filtration Facility and Above Ground Piping

70,000 Gallon Water Tank

20,000 Gallon Water Tank

There is an 8 to 10 foot drop from the diversion structure to the creek below

Water flows under, over, and around the log

Hoffman Creek Diversion Structure

Piney Creek Diversion Structure

Water Storage Tanks

County of San Mateo - Planning and Building Department

ATTACHMENT F

Redwood Glen Water Diversion Operation

Biological Resources Evaluation

Prepared for:
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Redwood Glen
100 Wright Drive
Loma Mar, CA 94021

Prepared by:
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December 2017
Project Number: 16122

[1] TRA Environmental Sciences was acquired by MIG in 2014 and participated in the preparation of this report.

Table of Contents

1 Introduction

This report presents the results of a biological resources evaluation and impact analysis of the Redwood Glen Water Diversion Project (project) located at Redwood Glen Camp and Conference Center in Loma Mar, California (Appendix A: Figures 1 and 2). The project includes existing water diversion sites in Hoffman and Piney creeks, existing gravity fed diversion pipes, and a water treatment plant. The biological resources evaluation and impact analysis identifies sensitive biological resources within and near the project as well as the potential impacts to those resources resulting from continued, but modified, operation of the water diversion. Specifically, this report provides the following:

- A general description of the project.
- A list of the federal, state, and local regulations that may pertain to project activities.
- A description of the environmental conditions in the project area, including vegetation communities and associated wildlife habitats present at the water diversion sites, diversion pipes, and water treatment plant (the project area).
- A discussion of special-status plant and animal species, as well as sensitive communities that are known to occur or that could potentially occur in the project area.
- An evaluation of the potential impacts to biological resources that may occur during project construction and/or operation.
- Responses to the California Environmental Quality Act (CEQA) Guidelines Appendix G questions related to biological resources.

This report will be used by San Mateo County when it considers the potential environmental impacts of issuing a permit for the project. Specifically, San Mateo County requested that Redwood Glen provide a report that:

- Provides an overview of the habitat that surrounds the creeks
- Identifies all creeks, sensitive habitats and riparian habitats that will be affected by the project
- Identifies any sensitive, threatened, or endangered species that are present on site and might be affected by the proposed project
- Report existing conditions
- Identify what types of creeks Hoffman and Piney are and if they flow into Pescadero Creek
- Assess the impact of the proposed water usage on the creeks, habitat, and Pescadero Creek
- Address how the water usage will affect spawning grounds for steelhead
- Provide mitigation measures and recommendations
- Explain project impacts in terms of both the dry and wet season, and during consecutive years of drought.

This report may also be used by State resource agencies, including the Water Resources Control Board, and the California Department of Fish and Wildlife, during project review.

2 Location

Redwood Glen is a non-profit camp, located at 100 Wright Drive Road in Loma Mar, San Mateo County, California. Redwood Glen is located on 165 acres in the Santa Cruz Mountains approximately ten miles from the Pacific Ocean, and is adjacent to San Mateo County Memorial Park and Pescadero Creek County Park. The camp has lodging, a large kitchen, and bathroom facilities, and can serve a maximum capacity of approximately 300 people.

3 Project Background

From 1958 to 1995, Redwood Glen had multiple sources of water that supplied both the potable water system, as well as irrigation and/or other, non-potable uses. During this time, Redwood Glen diverted up to 8-acre-feet of water/year or 2,606,808 gallons/year in accordance with their pre-1914 appropriate riparian water right. There are two existing on-site surface water diversion locations – Hoffman Creek and Piney Creek – and four existing wells (Appendix A: Figure 2). The Hoffman Creek source has been utilized since 1958, while the Piney Creek source was utilized beginning in the 1970s. Therefore, from 1958 to 1995, Redwood Glen used three existing surface water diversions to feed its potable water system, including Hoffman Creek, Piney Creek, and Pescadero Creek. Wells were drilled later in the 1990s. A description of each surface water supply source follows:

- **Hoffman Creek**: Hoffman Creek was used as the primary potable water source for Redwood Glen prior to 1995, and since 1995, Redwood Glen has continued diverting water from Hoffman Creek for irrigation purposes only. Redwood Glen has both pre-1914 appropriative and riparian rights to Hoffman Creek. There is a diversion structure located at an elevation of 526 feet, which diverts a portion of the water flow from Hoffman Creek water near the spring that feeds the creek. The diversion structure consists of a stainless-steel sink attached to a redwood log across the creek. Sediment and wood debris impounded behind the log has raised the channel bed to allow flow over the log and into the sink. Underflow beneath the log bypasses the diversion structure, as does overflow when the sink is spilling.
- **Piney Creek**: Appropriative rights License No. 11116 allows Redwood Glen to divert water from Piney Creek at a rate not to exceed 0.042 cubic feet per second from January 1 to December 31, and not to exceed 24 acre-feet per year. The point of diversion (POD) is located near the headwaters of Piney Creek. The diversion structure on Piney Creek was rehabilitated during 2017 to remove sediment and debris and restore its full functionality. It now includes a functioning bypass port and diversion port with the same diameter and set at the same elevation. If both ports are completely open,

then the flow is passively split in half. However, a significant proportion of baseflow still bypasses this diversion structure.

- **Four groundwater wells:** Well #1 was drilled in July 1992; it has a yield of 2.5 gallons per minute, and is acceptable as potable water with treatment for iron and manganese. It could potentially be used for irrigation instead of the current irrigation source (Hoffman Creek). Well #2 was drilled in January 1992. It is a substandard well for potable use, but can be used as a monitoring well or an irrigation well. Well #3 was drilled in July 1995. Its construction is substandard and it cannot be permitted as a potable water source, and the water quality is not acceptable for potable or irrigation use. Well #4 was drilled in July 2015. The water quality is unacceptable due to high total dissolved solids and other constituent. The wells were not pursued as a supply source due to low pumping yields, poor water quality, and additional treatment expenses.

Potable water was provided to Redwood Glen by San Mateo County Memorial Park from 1998 through March 2016; therefore, the Hoffman and Piney Creek sources were only used for irrigation purposes during this time. Based on the San Mateo County Statements of Diversion and Use, water diverted at Redwood Glen for irrigation purposes has ranged from 180,000 to 250,000 gallons/year.

In 2014, the State Water Resource Control Board (SWRCB) issued notice to the San Mateo County Parks Department that Memorial Park would lose its classification as a transient non-community water system and be re-classified as a community water system should the system continue to serve Redwood Glen. Redwood Glen attempted negotiations with the Parks Department to remain a customer of the water system, however, Memorial Park discontinued serving Redwood Glen water on March 1, 2016.

Since late 2014, Redwood Glen has explored alternatives for rehabilitating the existing water infrastructure to incorporate on-site water sources and additional facilities with the objective of designing and constructing an independent, permitted public water system to meet the projected annual average potable water demand for the camp, which is estimated to be 1,305,953 gallons per year (i.e., 4-acre-feet/year). After studying the alternatives, the selected option was to use the existing water diversion systems at Hoffman Creek and Piney Creek, to add piping to the end of the existing Hoffman Creek diversion line to extend it to a storage tank, and to replace the existing 2-inch raw water transmission line from Piney Creek and extend it to a water storage tank. A new surface water treatment plant, housed in a cargo container in a developed portion of the camp will provide the primary form of treatment. It does not involve new or increased diversions above historic use. A more detailed description of each project component follows.

Redwood Glen is currently installing a new surface water treatment plant and associated infrastructure (hereafter called the “water infrastructure site”). As part of the project, raw water from the Hoffman and Piney Creek water diversion sites will be delivered to the water

infrastructure site and a 70,000-gallon raw water storage tank via existing gravity-fed diversion pipes, which generally follow existing foot paths and hiking trails (Appendix B, Photos 1 to 5)

The water infrastructure site consists of an iron and manganese filtration unit, a surface water treatment plant located in a converted Conex shipping container, two 5,000-gallon raw water storage tanks, a 5,000-gallon treatment tank, and a 2,000-gallon backwash recycling settling tank. Additionally, there is an existing 70,000-gallon raw water storage tank and 20,000-gallon potable water storage tank located nearby. Water from the raw water storage tanks will be treated and then pumped to the 20,000-gallon potable water storage tank. These facilities are in already developed areas of the camp.

Throughout the wet season, the two 5,000-gallon tanks will be gravity fed by Hoffman Creek while the water from Piney Creek will fill the 70,000-gallon tank. Whenever Hoffman Creek is not able to supply Redwood Glen's full demand, an automated valve will allow Piney Creek to feed into the tanks. This set-up will also ensure that the total volume of stored water from Hoffman Creek is equal to or less than 10,000 gallons, a limit established through Redwood Glen's riparian rights to the creek (SWRCB 2017).

The project area discussed in this report includes the existing water diversion sites in Hoffman and Piney creeks, existing on-site gravity-fed diversion pipes, and the new surface water treatment plant and associated infrastructure (water diversion infrastructure site).

4 Regulatory Setting

Biological and water resources in California are protected under federal, state, and local laws. The laws that may pertain to the biological and water resources within the project area include the following:

4.1 Federal

4.1.1 Endangered Species Act

The federal Endangered Species Act (FESA) of 1973, as amended, provides the regulatory framework for the protection of plant and animal species (and their associated critical habitats), which are formally listed, proposed for listing, or candidates for listing as endangered or threatened under FESA. FESA has the following four major components: (1) provisions for listing species, (2) requirements for consultation with the United States (U.S.) Fish and Wildlife Service (USFWS) and the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NOAA Fisheries Service), (3) prohibitions against "taking" (i.e., harassing, harming, hunting, shooting, wounding, killing, trapping, capturing, or collecting, or attempting to engage in any such conduct) of listed species, and (4) provisions for permits that allow incidental "take". Specifically, Section 9 of the FESA prohibits the "taking" of a federally listed species.

Both the USFWS and the NOAA Fisheries share the responsibility for administration of the FESA. Section 7 requires federal agencies, in consultation with, and with the assistance of the

USFWS or NOAA Fisheries, as appropriate, to ensure that actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of threatened or endangered species or result in the destruction or adverse modification of critical habitat for these species. Non-federal agencies and private entities can seek authorization for take of federally listed species under Section 10 of FESA, which requires the preparation of a Habitat Conservation Plan.

The FESA also discusses recovery plans and the designation of critical habitat for listed species. A critical habitat designation generally has no effect on situations that do not involve a federal agency. A critical habitat designation does not necessarily restrict further development or trigger the need for non-federal agencies to consult with the USFWS.

4.1.2 Migratory Bird Treaty Act

Under the Migratory Bird Treaty Act (MBTA), it is unlawful to "pursue, hunt, take, capture or kill; attempt to take, capture or kill; possess, offer to or sell, barter, purchase, deliver or cause to be shipped, exported, imported, transported, carried or received any migratory bird, part, nest, egg or product, manufactured or not." Under the MBTA it is also illegal to disturb a nest that is in active use, since this could result in killing a bird or destroying an egg. The USFWS oversees implementation of the MBTA. With a few exceptions (e.g., European starling [*Sturnus vulgaris*] and rock pigeon [*Columba livia*]), most birds are considered migratory under the MBTA.

4.1.3 Clean Water Act

The Clean Water Act (CWA) is the primary federal law regulating water quality. The implementation of the CWA is the responsibility of the U.S. Environmental Protection Agency (EPA). However, the EPA depends on other agencies, such as the individual states and the U.S. Army Corps of Engineers (USACE), to assist in implementing the CWA. The objective of the CWA is to "restore and maintain the chemical, physical, and biological integrity of the Nation's waters." Section 404 and 401 of the CWA apply to activities that would impact waters of the U.S. The USACE enforces Section 404 of the CWA and the California SWRCB enforces Section 401.

Section 404

As part of its mandate under Section 404 of the CWA, the EPA regulates the discharge of dredged or fill material into "waters of the U.S.". "Waters of the U.S." include territorial seas, tidal waters, and non-tidal waters in addition to wetlands and drainages that support wetland vegetation, exhibit ponding or scouring, show obvious signs of channeling, or have discernible banks and high-water marks. Wetlands are defined as those areas "that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (33 CFR 328.3(b)). The discharge of dredged or fill material into waters of the U.S. is prohibited under the CWA except when it follows Section 404 of the CWA. Enforcement authority for Section 404 was given to the USACE, which it accomplishes under its

regulatory branch. The EPA has veto authority over the USACE's administration of the Section 404 program and may override a USACE decision with respect to permitting.

Substantial impacts to waters of the U.S. may require an Individual Permit. Projects that only minimally affect waters of the U.S. may meet the conditions of one of the existing Nationwide Permits, if other conditions of the permit are satisfied. A Water Quality Certification or waiver pursuant to Section 401 of the CWA is required for Section 404 permit actions.

Section 401

Any applicant for a federal permit to impact waters of the U.S. under Section 404 of the CWA, including Nationwide Permits where pre-construction notification is required, must also provide to the USACE a certification or waiver from the State of California. The "401 Certification" is provided by the SWRCB through the local Regional Water Quality Control Board (RWQCB).

The RWQCB issues and enforces permits for discharge of treated water, landfills, storm-water runoff, filling of any surface waters or wetlands, dredging, agricultural activities and wastewater recycling. The RWQCB recommends that the application for a Certification under Section 401 of the CWA be made at the same time as other applications are provided to other agencies, such as the USACE. It must include a description of the habitat that is being impacted, a description of how the impact is to be minimized, and proposed mitigation measures with goals, schedules, and performance standards. Mitigation must include a replacement of functions and values, and replacement of wetland, generally at a minimum ratio of 2:1, or twice as many acres of wetlands provided as are removed. The RWQCB prefers that mitigation be on site and in-kind, with functions and values as good as or better than the water-based habitat that is being removed or impacted. A higher mitigation ratio may be required, depending on site conditions and project impacts.

4.2 State

4.2.1 California Fish and Game Code

California Endangered Species Act

The California Endangered Species Act (CESA; Fish and Game Code 2050 et seq.) generally parallels the FESA. It establishes the policy of the State to conserve, protect, restore, and enhance threatened or endangered species and their habitats. Section 2080 of the California Fish and Game Code prohibits the take, possession, purchase, sale, and import or export of endangered, threatened, or candidate species, unless otherwise authorized by permit or by the regulations. "Take" is defined in Section 86 of the California Fish and Game Code as to "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." This definition differs from the definition of "take" under FESA, in that it is specific to take of an individual, whereas FESA considers harassment and modification of habitat as potentially resulting in take. CESA is administered by California Department of Fish and Wildlife (CDFW). CESA allows for take incidental to otherwise lawful projects, but mandates that State lead agencies consult with

the CDFW to ensure that a project will not jeopardize the continued existence of threatened or endangered species.

California Fish and Game Code Sections 4150-4155

Sections 4150-4155 of the California Fish and Game Code protects non-game mammals, including bats. Section 4150 states “A mammal occurring naturally in California that is not a game mammal, fully protected mammal, or fur-bearing mammal is a nongame mammal. A non-game mammal may not be taken or possessed except as provided in this code or in accordance with regulations adopted by the commission”. The non-game mammals for which “take” is typically authorized are primarily those that cause crop or property damage. All bats are classified as a non-game mammal and are protected under California Fish and Game Code.

California Fish and Game Code Sections 3503 and 3513

According to Section 3503 of the California Fish and Game Code, it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird. Section 3503.5 specifically protects birds in the orders Falconiformes and Strigiformes (birds-of-prey). Section 3513 essentially overlaps with the MBTA, prohibiting the take or possession of any migratory non-game bird. Disturbance that causes nest abandonment and/or loss of reproductive effort is considered “take” by the CDFW.

California Fish and Game Code Sections 1600-1607

Sections 1600-1607 of the California Fish and Game Code require that a Notification of Lake or Streambed Alteration Agreement (LSAA) application be submitted to CDFW for “any activity that may substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake.” CDFW reviews the proposed actions in the application and, if necessary, prepares a LSAA that includes measures to protect affected fish and wildlife resources.

The notification requirement applies to any work undertaken in or near a river, stream, or lake that flows at least intermittently through a bed or channel. This includes ephemeral streams, desert washes, and watercourses with a subsurface flow. The CDFW typically considers a river, stream, or lake to include its riparian vegetation, but it may also extend to its floodplain. The term “stream”, which includes creeks and rivers, is defined in the California Code of Regulations (CCR) as follows: “a body of water that flows at least periodically or intermittently through a bed or channel having banks and supports fish or other aquatic life”. This includes watercourses having a surface or subsurface flow that supports or has supported riparian vegetation (14 CCR 1.72). In addition, the term stream can include ephemeral streams, dry washes, watercourses with subsurface flows, canals, aqueducts, irrigation ditches, and other means of water conveyance if they support aquatic life, riparian vegetation, or stream-dependent terrestrial wildlife (CDFW 1994). Riparian is defined as “on, or pertaining to, the banks of a stream”; therefore, riparian vegetation is defined as, “vegetation which occurs in and/or adjacent to a stream and is dependent on, and occurs because of, the stream itself” (CDFW 1994).

Native Plant Protection Act

The Native Plant Protection Act (NPPA) was created in 1977 with the intent to preserve, protect, and enhance rare and endangered plants in California (California Fish and Game Code sections 1900 to 1913). The NPPA is administered by CDFW, which has the authority to designate native plants as endangered or rare and to protect them from "take." CDFW maintains a list of plant species that have been officially classified as endangered, threatened or rare. These special-status plants have special protection under California law.

Fully Protected Species and Species of Special Concern

The classification of California fully protected (CFP) species was the CDFW's initial effort to identify and provide additional protection to those animals that were rare or faced possible extinction. Lists were created for fish, amphibians and reptiles, birds, and mammals. Most of the species on these lists have subsequently been listed under CESA and/or FESA. The Fish and Game Code sections (§5515 for fish, §5050 for amphibian and reptiles, §3511 for birds, §4700 for mammals) deal with CFP species and state that these species "…may not be taken or possessed at any time and no provision of this code or any other law shall be construed to authorize the issuance of permits or licenses to take any fully protected species". "Take" of these species may be authorized for necessary scientific research. This language makes the CFP designation the strongest and most restrictive regarding the "take" of these species. In 2003, the code sections dealing with CFP species were amended to allow the CDFW to authorize take resulting from recovery activities for state-listed species.

California species of special concern (CSSC) are broadly defined as animals not currently listed under the FESA or CESA, but which are nonetheless of concern to the CDFW because they are declining at a rate that could result in listing, or historically occurred in low numbers and known threats to their persistence currently exist. This designation is intended to result in special consideration for these animals by the CDFW, land managers, consulting biologists, and others, and is intended to focus attention on the species to help avert the need for costly listing under FESA and CESA and cumbersome recovery efforts that might ultimately be required. This designation also is intended to stimulate collection of additional information on the biology, distribution, and status of poorly known at-risk species, and focus research and management attention on them. Although these species generally have no special legal status, they are given special consideration under CEQA during project review.

Sensitive Vegetation Communities

Sensitive vegetation communities are natural communities and habitats that are either unique in constituent components, of relatively limited distribution in the region, or of particularly high wildlife value. These communities may or may not necessarily contain special-status species. Sensitive natural communities are usually identified in local or regional plans, policies or regulations, or by the CDFW or the USFWS. The California Natural Diversity Database (CNDDB), which is maintained by the CDFW, identifies several natural communities as rare, which are given the highest inventory priority (Sawyer et. al. 2009; CDFW 2010). Impacts to sensitive natural communities and habitats must be considered and evaluated during CEQA review.

4.2.2 Porter-Cologne Water Quality Control Act

The intent of the Porter-Cologne Water Quality Control Act (Porter-Cologne) is to protect water quality and the beneficial uses of waters of the State, and it applies to both surface and ground water. Under this law, the SWRCB develops statewide water quality plans, and the RWQCBs develop basin plans, which identify beneficial uses, water quality objectives, and implementation plans. The RWQCBs have the primary responsibility to implement the provisions of both statewide and basin plans. Waters regulated under Porter-Cologne, referred to as “waters of the State,” include isolated waters that are not regulated by the USACE. Projects that require a USACE permit, or fall under other federal jurisdiction, and have the potential to impact waters of the State are required to comply with the terms of the Water Quality Certification Program. If a proposed project does not require a federal license or permit, any person discharging, or proposing to discharge, waste (e.g. dirt) to waters of the State must file a Report of Waste Discharge and receive either waste discharge requirements (WDRs) or a waiver to WDRs before beginning the discharge.

4.3 Local

4.3.1 San Mateo County Tree Ordinances

The San Mateo County Ordinance Code (Ordinance No. 2427) requires a permit from the San Mateo County Planning Department to cut down, destroy, move or trim any heritage tree growing on any public or private property within the unincorporated area of San Mateo County. Class 1 heritage trees are those trees designated by the County Board of Supervisors as heritage trees. Class 2 heritage trees are healthy trees of a certain species and size designated in the ordinance. There are currently 17 species of heritage trees described in the ordinance.

The Significant Tree Ordinance of San Mateo County (Part Three of Division VIII of the San Mateo County Ordinance Code) requires a permit for the cutting down, removing, poisoning or otherwise killing or destroying or causing to be removed any significant tree or community of trees, whether indigenous or exotic, on any private property (Section 12,020). A “Significant Tree” is any live woody plant rising above the ground with a single stem or trunk of a circumference of thirty-eight inches (38") (a 38-inch circumference is equivalent to a 12-inch

diameter), or more measured at four and one-half feet (4 1/2') vertically above the ground or immediately below the lowest branch, whichever is lower, and having the inherent capacity of naturally producing one main axis continuing to grow more vigorously than the lateral axes (Section 12,012). Additionally, a criterion for permit approval requires that significant trees that are removed be replaced by plantings approved by the Planning Director or Design Review Administrator, unless special conditions indicate otherwise (Section 12,023).

5 Methods

This section describes the methods used to complete the biological resources evaluation. Methods include a database and literature review, field survey, an assessment of plant communities and wildlife habitats, an assessment of sensitive habitats and aquatic features, a habitat evaluation for special-status species, and an assessment of wildlife corridors.

5.1 Database and Literature Review

MIG reviewed the following sources for information relevant to this biological resources evaluation:

- CDFW CNDDB record search (CDFW 2017).
- CNPS Rare Plant Program Inventory of Rare and Endangered Plants of California record search within a five-mile radius of parcel (CNPS 2017).
- USFWS Information for Planning and Consultation (IPaC) search for a list of endangered and threatened species and Critical Habitat for the property (USFWS 2017a).
- The Jepson Manual: Vascular Plants of California, Second Edition (Baldwin et al. 2012).
- U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) (USFWS 2017b).
- Aerial photographs of the property (Google Earth Pro 2017).

5.2 Field Survey

On September 14, 2017, MIG biologists Megan Kalyankar and David Gallagher conducted a reconnaissance-level biological survey of the project area. Redwood Glen staff showed the MIG biologists the existing water diversion infrastructure on the site, including the location of the proposed water treatment system, water storage tanks, sediment filters, diversion pipes, as well as the water diversion structures in Hoffman and Piney creeks. During the field visit, plant species, wildlife species, and habitats (including sensitive habitats) present in the project area were documented. The biologists also assessed habitat at the sites for the potential to support special-status species.

The botanical study for this assessment was not floristic in nature. A complete determination of the presence or absence of potentially occurring botanical resources would require focused surveys to be conducted during all appropriate blooming periods (CNPS 2001). Additionally, certain plant species, especially annuals, may not be present every year due to varying

flowering phenologies and life forms, such as bulbs, biennials, annuals as well as annual variations in temperature and rainfall, which influence plant phenology. Colonization of new populations within an area may also occur from year to year. Specific plant species identifications in this report are tentative due to the absence of morphological characters, resulting from immature reproductive structures or seasonal desiccation, which are required to make species level determinations.

5.3 Plant Communities and Wildlife Habitats

Plant communities were classified based on existing descriptions in “A Manual of California Vegetation, Second Edition” (Sawyer et. al. 2009).

5.4 Sensitive Habitats and Aquatic Features

The areas within and adjacent to the project area were inspected for the presence of wetlands, drainages, streams, and other aquatic features, including those that support stream-dependent (i.e., riparian) plant species that could be subject to jurisdiction by the USACE, RWQCB, or CDFW. Wetlands are defined for regulatory purposes in the 33 CFR 328.3 and 40 CFR 230.3 as areas inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal conditions do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.” To be considered subject to federal jurisdiction, a wetland must normally exhibit positive indicators for hydrophytic vegetation, hydric soil, and wetland hydrology. A formal jurisdictional delineation, including wetland delineation, was not conducted.

All plant communities observed within and adjacent to the project area were evaluated to determine if they have been defined as sensitive communities. Sensitive natural communities are communities that are especially diverse; regionally uncommon; or of special concern for local, state, and federal agencies.

5.5 Special-Status Species Habitat Evaluation

During the field survey, the biologist evaluated the suitability of the habitat to support special-status species documented to occur in and within the vicinity project area. For the purposes of this assessment, special-status species include:

- Species listed or proposed for listing as threatened or endangered under the FESA (50 CFR 17.12 [listed plants], 50 CFR 17.11 [listed animals], and various notices in the Federal Register [proposed species]).
- Species that are candidates for possible future listing as threatened or endangered under the FESA (73 Federal Register [FR] 75176, November 9, 2009).
- Species listed or proposed for listing by the state of California as threatened or endangered under the CESA (14 CCR 670.5).

- Species that meet the definitions of rare or endangered under CEQA (State CEQA Guidelines, Section 15380).
- Plants listed as rare under the California NPPA (California Fish and Game Code, Section 1900 et seq.).
- Plants considered by CNPS to be "rare, threatened, or endangered in California" (California Rare Plant Rank [CRPR] 1B and 2).
- Animal species listed as CSSC by the CDFW.
- Animals listed as CFP by the CDFW (California Fish and Game Code, Section 3511 [birds], 4700 [mammals], 5050 [amphibians and reptiles], and 5515 [fish]).

The potential occurrence of special-status plant and animal species within and adjacent to the project area was evaluated by developing a list of special-status species that are known to occur, or have the potential to occur, near the area based on a search of the CNDDB, CNPS, and USFWS databases. The potential for occurrence of those species included on the list were then evaluated based on the habitat requirements of each species relative to the conditions observed during the field survey. Each species was evaluated for its potential to occur on or in the immediate vicinity of the sites according to the following criteria:

No Potential: There is no suitable habitat present (i.e., habitats are clearly unsuitable for the species requirements [e.g., foraging, breeding, cover, substrate, elevation, hydrology, plant community, disturbance regime]). Additionally, there are no or few historical records known records of occurrence near of the site. The species has no potential of being found.

Low Potential: Limited suitable habitat is present (i.e., few of the habitat components meeting the species requirements are present and/or the majority of habitat is unsuitable or of very low quality). Additionally, there are no or few historical records of occurrence in the vicinity of the site. The species has a low probability of being found.

Moderate Potential. Suitable habitat is present (i.e., some of the habitat components meeting the species requirements are present and/or most of the habitat is suitable or of marginal quality). Additionally, there are few to many modern records of occurrences near the site. The species has a moderate probability of being found.

High Potential: Highly suitable habitat is present (i.e., all habitat components meeting the species requirements are present and/or the habitat is highly suitable or of high quality). Additionally, there are few to many records of occurrences within the last ten years near the site. This species has a high probability of being found.

Present or Assumed Present. Species was observed at the site or has a recent (within five years) recorded observation in the CNDDB or literature at the site.

The list of special-status animals and plants that have potential to occur near the project area, their habitat requirements, and the ranking of potential for occurrence in the project area is included in Appendix C.

6 Environmental Setting

6.1 Climate and Topography

The climate at Redwood Glen is Mediterranean, with most rain falling in the winter and spring. Mild cool temperatures are common in the winter. The summer is characterized by mild to hot temperatures. The average annual rainfall near the property (Skyline Ridge Open Space Preserve) from 1981 to 2010 was 45.2 inches (WRCS 2017). Topography within the property is hilly and slopes down towards Pescadero Creek. Elevations range from approximately 200 feet to 1,000 feet above mean sea level.

6.2 Hydrology

Hoffman and Piney creeks are perennial streams that flow down the north side of Butano Ridge toward Pescadero Creek (Appendix B: Photo 6). The water diversion sites on Hoffman Creek and Piney creeks are approximately 0.5 miles and 0.4 miles upstream of Pescadero Creek, respectively. Pescadero Creek is a perennial stream that is approximately 27 miles long. Its headwaters are located on the western edge of Castle Rock State Park and Portola Redwoods State Park. Pescadero Creek is one of the two principal streams that form the Pescadero-Butano watershed, which is the largest coastal watershed between the Golden Gate in San Francisco County and the San Lorenzo River in Santa Cruz County. Pescadero Creek joins Butano Creek at Pescadero Marsh, which is at the mouth of both creeks at the Pacific Ocean.

6.3 Plant Communities Observed in the Project Area

Vegetative communities are assemblages of plant species that occur together in the same area, which are defined by species composition and relative abundance. Only three vegetation communities and/or other habitats are present in the project area—developed habitat, redwood forest alliance, and perennial creek habitat. Vegetation communities and other habitats within the project area are described in more detail below. Photographs of the project area are provided in Appendix B.

6.3.1 Developed Habitat

Developed habitat includes areas where permanent structures and/or pavement have been placed, which prevents the growth of vegetation. The property contains a main area that has several buildings, paved roads and parking areas, and a swimming pool. The water diversion infrastructure site, including the surface water treatment plant and raw water holding tanks, is located within developed habitat.

6.3.2 Redwood Forest Alliance

This alliance contains forest stands where redwood is the dominant tree but other tree species often share the canopy. This alliance occurs on raised stream terraces and benches as well as upland areas in moist coastal areas with heavy summer fog, generally below 600 m in elevation from southern Oregon to Santa Lucia Mountains in central California.

The existing water diversion sites and existing on-site gravity-fed diversion pipes occur within the redwood forest alliance vegetation that forms the riparian area around the creeks. The water diversion infrastructure is surrounded by upland redwood forest alliance. Trees observed in the redwood forest alliance riparian and upland habitat include coast redwood (*Sequoia sempervirens*), Douglas fir, (*Pseudotsuga menziesii* var. *menziesii*), beaked hazelnut (*Corylus cornuta* var. *californica*), California bay (*Umbellularia californica*), and tanbark oak (*Lithocarpus densiflorus*). Shrubs observed include California huckleberry (*Vaccinium ovatum*), thimbleberry (*Rubus parviflorus*) and common snowberry (*Symphoricarpos albus*). Herbs observed include redwood sorrel (*Oxalis oregana*), Pacific trillium (*Trillium ovatum*), American trailplant (*Adenocaulon bicolor*), feathery false lily of the valley (*Maianthemum racemosum*), starry false lily of the valley (*Maianthemum stellatum*), and fringe cups (*Tellima grandiflora*).

6.3.3 Perennial Creek Habitat

Perennial creek habitat occurs in both Piney and Hoffman creeks, and consists of flowing water, rocky pools, and stream dependent vegetation (see above Section 6.3.2: Redwood Forest Alliance). It is part of the understory of the Redwood Forest Alliance.

6.4 Wildlife Observed in the Project Area

One invertebrate species was observed during the field survey: Pacific banana slug *(Ariolimax columbianus*).

Bird species observed during the field survey included acorn woodpecker (*Melanerpes formicivorus*), American crow (*Corvus brachyrhynchos),* dark-eyed junco (*Junco hyemalis*), Pacific wren (*Troglodytes pacificus*), red-shouldered hawk (*Buteo lineatus*), and Steller's jay (*Cyanocitta stelleri*).

No reptiles, fish, amphibians, or mammals were observed during the field survey.

6.5 Sensitive Habitats

The Redwood Forest Alliance within the project area is classified as a highly imperiled, sensitive natural community by CDFW (S3 – At moderate risk of extinction or elimination due to a restricted range, relatively few populations, recent and widespread declines, or other factors).

The water diversion sites in Hoffman and Piney creeks, and their associated riparian habitat, which is formed by the Redwood Forest Alliance, are subject to jurisdiction by CDFW (see section 5.8). Additionally, the USFWS NWI map data were reviewed for the project area as part of the evaluation for the presence of Waters of the U.S., including wetlands. NWI maps are based on interpretation of aerial photography, limited verification of mapped units, and/or

classification of wetland types using the classification system developed by Cowardin et al. 1979. Both Hoffman and Piney creeks are mapped in the NWI as Waters of the U.S., and both diversion sites are within the ordinary high-water mark (OHWM) of these creeks, based on field observation. The NWI documents both Hoffman and Piney creeks flowing into Pescadero Creek, which is also mapped as a Water of the U.S. (Appendix A: Figure 2).

Pescadero Creek[2] is designated as critical habitat for the federally listed Threatened Central California Coast steelhead (*Oncorhynchus mykiss irideus*) Distinct Population Segment (DPS). Critical habitat for the Central California Coast steelhead DPS was designated on September 2, 2005 and includes all river reaches and estuarine areas accessible to listed steelhead in coastal river basins from the Russian River in Sonoma County to Aptos Creek in Santa Cruz County. The San Mateo Hydrologic Unit includes the coastal streams in San Mateo County from San Pedro Creek near Pacifica to Butano Creek near Año Nuevo and the Santa Clara Hydrologic Unit includes South Bay creeks from San Francisquito Creek in Palo Alto eastward to Coyote Creek (NOAA 2005).

The entire property of Redwood Glen is within designated critical habitat (SNM-2) for the California red-legged frog (CRLF; *Rani draytonii*). Critical habitat for CRLF was designated in 2001 and expanded in 2010 to include over 1.6 million acres. The designation seeks to protect abundant, healthy frog populations and to provide connectivity between populations. It generally avoids areas that are not favorable for the species, which typically is land on the fringe of developed areas, fragmented habitat and intensively farmed areas. The new designation identifies upland habitat that generally protects watershed habitat up to a mile from water. The SNM-2 unit includes most of San Mateo County west of Highway 35 (Skyline Blvd.) and south of Highway 84 extending to the coast and to the Santa Cruz County line.

The water diversion site on Piney Creek is located within designated critical habitat for marbled murrelet. Critical habitat designations identify areas considered essential for the conservation of a species listed as threatened or endangered by the USFWS, and to develop a recovery plan for the species. The designation provides notice of the importance of these areas to the conservation of the species. Critical habitat for marbled murrelet was designated in 1996 and revised in 2011. The current designation consists of approximately 3,698,100 acres in Washington, Oregon, and California.

There are no other sensitive natural community types present within the project area.

6.6 Wildlife Migration and Movement Corridors

Habitat loss, fragmentation, and degradation resulting from land use changes or habitat conversion can alter the use and viability of wildlife movement corridors (i.e. linear habitats that naturally connect and provide passage between two or more otherwise disjunct larger habitats

[2] As stated previously, both Hoffman Creek and Piney Creek are tributaries to Pescadero Creek.

or habitat fragments). In general, studies suggest that habitat corridors provide connectivity for and are used by wildlife, and as such are an important conservation tool (Beier and Noss 1998). Wildlife habitat corridors should fulfill several functions. They should maintain connectivity for daily movement, travel, mate-seeking, and migration; plant propagation; genetic interchange; population movement in response to environmental change or natural disaster; and recolonization of habitats subject to local extirpation (Beier and Loe 1992)

Redwood Glen is surrounded by open space and rural-residential development. Much of Redwood Glen is undeveloped and features hiking trails. Several open space areas surround Redwood Glen, including the 8,000-acre Pescadero Creek Park to the south and 673-acre Memorial County Park Redwood to the north. The undeveloped open space within the Redwood Glen property is likely used by wildlife to travel between the two county parks by providing natural woodland, riparian, and aquatic (creek) habitat. Hoffman and Piney creeks flow to Pescadero Creek, and provide a connection to Pescadero Creek.

6.7 Special-Status Species

Based on a review of the CNDDB and CNPS databases, the biologist's knowledge of special-status species, and an assessment of the types of habitats in the project area, it was determined that eight special-status animal species and four special-status plant species are expected to occur in the project area (i.e., all special-status species ranked as "Moderate Potential" or "High Potential"). This determination was made due to the presence of essential habitat requirements, known occurrences close to the existing water diversion sites, known ranges, and connectivity with areas of suitable or occupied habitat. A list of special-status animal and plant species that have moderate or high potential to occur in the project area follows.

Animals

- CRLF, high potential;
- Foothill yellow-legged frog (*Rana boylii*), moderate potential;
- Santa Cruz black salamander (*Aneides niger*), high potential;
- California giant salamander (*Dicamptodon ensatus*), high potential;
- Marbled murrelet (*Brachyramphus marmoratus*), high potential;
- Townsend's big-eared bat (*Corynorhinus townsendii*), high potential; and
- Western red bat (*Lasiurus blossevillii*), high potential.

Plants

- Dudley's lousewort (*Pedicularis dudleyi*), high potential;
- Minute pocket moss (*Fissidens pauperculus*), high potential;
- Western leatherwood (*Dirca occidentalis*), moderate potential; and
- White-flowered rein orchid (*Piperia candida*), moderate potential.

Additionally, since the existing water diversion sites are located on Hoffman and Piney creeks, which are tributaries of Pescadero Creek, a habitat analysis is included in this report for species known to occur in Pescadero Creek, but are not expected to occur in the project area. These species are included in the event that operation of the diversions on Hoffman and Piney Creek could result in impacts to water flow and habitat downstream of the project area, including in Pescadero Creek. Special-status species that occur downstream of the Redwood Glen property in Pescadero Creek include steelhead, western pond turtle (WPT, *Emys marmorata*), and San Francisco garter snake (SFGS; *Thamophis sirtalis tetrataenia*).

Other special-status plant or animal species were determined to have low potential or no potential to occur in the project area due to the lack of essential habitat requirements for the species, the lack of known occurrences close to Redwood Glen, lack of connectivity with areas of suitable or occupied habitat, and/or because the project area is not within the species known range of distribution.

A complete list of all special-status species considered as part of this assessment, their regulatory status, habitat requirements, local distribution, and potential for occurrence are provided in Appendix C (Tables 1 and 2). Additional details on the special-status species with a moderate or high potential to occur in the project area, as well as for steelhead, Western pond turtle, and San Francisco garter snake, follow.

6.7.1 Special-Status Animals

California red-legged frog. CRLF is listed as a threatened species under the FESA and is designated a CSSC. CRLF is distributed throughout 26 counties in California, but is most abundant in the San Francisco Bay Area. CRLF predominantly inhabit permanent water sources such as streams, lakes, marshes, natural and man-made ponds, and ephemeral drainages in valley bottoms and foothills up to 1,500 meters in elevation (Jennings and Hayes 1994, Bulger et al. 2003, Stebbins 2003). CRLF breed between November and April in standing or slow-moving water at least 0.7 meters (2½ feet) in depth with emergent vegetation, such as cattails (*Typha* spp.), tules (*Schoenoplectus* spp.) or overhanging willows (*Salix* spp.) (Hayes and Jennings 1988). Egg masses containing 2,000 to 5,000 eggs are attached to vegetation below the surface and hatch after 6 to 14 days. Larvae undergo metamorphosis 3½ to 7 months following hatching and reach sexual maturity 2 to 3 years of age (Jennings and Hayes 1994). CRLF breed in a variety of aquatic habitats. Larvae and meta-morphs use streams, deep pools, backwaters of streams and creeks, ponds, marshes, sag ponds, dune ponds, and lagoons.

Breeding adults are commonly found in deep (more than 2 feet), still or slow-moving water with dense, shrubby riparian or emergent vegetation. Adult frogs have also been observed in shallow sections of streams that are not shrouded by riparian vegetation. Generally, streams with high flows and cold temperatures in spring are unsuitable for eggs and tadpoles. Stock ponds are frequently used by this species for breeding if they are managed to provide suitable hydro-period, pond structure, vegetative cover, and control of nonnative predators such as bullfrogs (*Rana catesbeiana*) and exotic fish. Most frogs move away from breeding ponds to non-

breeding areas. The distance moved is site dependent, though one recent study shows that only a few frogs move farther than the nearest suitable non-breeding habitat. In this Marin County study, the furthest distance traveled was 2.25 miles and most dispersing frogs moved through grazed pastures to reach the nearest riparian habitat (Fellers and Kleeman 2007). Bulger et al. (2003) did not observe habitat preferences among frogs moving between ponds. They did note that when breeding ponds dry, CRLF use moist microhabitats of dense shrubs and herbaceous vegetation within 350 feet of ponds.

CRLF is known to occur within the upper reaches of Pescadero Creek within Memorial, Sam McDonald, and Pescadero Creek County Parks. There is suitable breeding habitat within Pescadero Creek near Redwood Glen. In addition, designated critical habitat is present within the project area. However, based on a field assessment of site conditions and the lack of suitable wetlands in the area, it was determined the project area does not support breeding habitat for CRLF. There is a high potential for CRLF to move through, as well as to occupy both Hoffman and Piney creeks, including the associated Redwood Forest Alliance riparian habitat at or near the water diversion sites, since this area provides suitable upland refugia, dispersal, and foraging habitat. CRLF were not observed during the field survey, although this species can be cryptic and may not have been detected.

Foothill yellow-legged frog. Foothill yellow-legged frog is proposed to be listed as threatened under the CESA, and is a CSSC. The largest remaining populations in California are in the north coast range, particularly in the Smith River, tributaries of the Klamath River, the South Fork Trinity River, the South Fork Eel River, Redwood Creek, coastal tributaries in Mendocino County and Russian River tributaries. Foothill, yellow-legged frog is also known from Marin and Santa Clara counties. This species frequents rocky streams and rivers with rocky substrate and open, sunny banks, in forests, chaparral, and woodlands. It's sometimes found in isolated pools, vegetated backwaters, and deep, shaded, spring-fed pools. It needs at least some cobble-sized substrate for egg-laying, and at least 15 weeks to attain metamorphosis.

Foothill yellow legged frog is known from Pescadero Creek County Park. Both Hoffman and Piney creeks provide suitable breeding and foraging habitat for this species. There is a moderate potential for foothill yellow-legged frog to occupy both Hoffman and Piney creeks at or near the water diversion sites. Foothill yellow-legged frog were not observed during the field survey, although this species can be cryptic and may not have been detected.

Santa Cruz black salamander. Santa Cruz black salamander is designated as a CSSC. It is endemic to California with a limited range west of the San Francisco Bay and south of the San Francisco Peninsula from Santa Cruz County and western Santa Clara County, north to southern San Mateo County. It was formerly considered a subspecies of the black salamander (*Aneides flavipunctatus*). It is a medium-sized salamander measuring up to 5.5 inches long that is solid black with fine white specks. It is a member of the Plethodontidae or lungless salamanders. Plethodontid salamanders do not breathe through lungs but instead respire through their skin and mouth tissues. They are found in damp environments on land and move

only during periods of high humidity (e.g. rain events). The Santa Cruz black salamander is a terrestrial salamander; therefore, it does not live directly in bodies of water but is generally found in moist areas near streams and creeks in deciduous woodland, coniferous forest, and coastal grasslands. They are also adapted for climbing with long toes and a rounded prehensile tail. They may be active year-round along streams but will stay in moist underground burrows or under rocks, logs or other objects near streams during dry periods.

The Redwood Forest Alliance habitat near both Hoffman and Piney creeks provides suitable habitat for Santa Cruz black salamander. Santa Cruz black salamanders are known to occur within nearby areas of Redwood Glen. Based on the habitat requirements and nearby occurrences of Santa Cruz black salamander, there is a high potential for this salamander to occur in the project area. Santa Cruz black salamander was not observed during the field survey, although this species can be cryptic and may not have been detected.

California giant salamander. California giant salamander is designated as a CSSC. It is one of the largest terrestrial salamanders in North America and can grow up to one-foot in length. It is endemic to California, found in two or three isolated regions from Mendocino County to southern Santa Cruz County, and does not occur east of the San Francisco Bay. It occurs in wet coastal forests in or near clear, cold permanent or semi-permanent streams and seepages. The California giant salamander is light reddish brown with copper-colored marbling on the upper body. Larvae are born in the water where they swim using an enlarged tail fin and breathe with filamentous external gills. The aquatic larvae transform into terrestrial four-legged salamanders that breathe air with lungs. They are active on rainy nights and during daylight in wet periods during winter. They will eat other salamanders, small rodents, slugs, and lizards.

Both Hoffman and Piney creeks provide suitable habitat for California giant salamander. California giant salamanders are known to occur within nearby areas of Redwood Glen. Based on the habitat requirements and nearby occurrences of California giant salamander, there is a high potential for this salamander to occur at or near the water diversion sites. California giant salamander was not observed during the field survey, although this species can be cryptic and may not have been detected.

Marbled murrelet. Marbled murrelet is federally listed as threatened and state-listed as endangered. It feeds near-shore and nests inland along coast from Eureka to Oregon border and from Half Moon Bay to Santa Cruz. Marbled murrelet nests in old-growth redwood-dominated forests, up to six miles inland, often in Douglas-fir.

Marbled murrelet is known to nest in nearby Memorial and Pescadero Creek County Parks, including a recent nest record on Piney Creek within Pescadero County Park. Both County Parks are within federally-designated critical habitat for marbled murrelet. Based on the habitat requirements and nearby occurrences of marbled murrelet, there is a high potential for this species to occur in the project area. The Piney Creek water diversion site is also within critical habitat for marbeled murrelet.

Townsend's big-eared bat. Townsend's big-eared bat is designated as a CSSC. It is a medium-sized bat with extremely long, flexible ears, and small yet noticeable lumps on each side of the snout. They are found in a variety of habitats from forests to desert scrub. They prefer to roost in open caves. However, they will use a variety of other roost types, particularly abandoned buildings, mines, and tunnels. When roosting they do not tuck themselves into cracks and crevices like many bat species do, but prefer large open areas. This species is sensitive to disturbance and it has been documented that they will abandon roost sites after human interference.

Townsend's big-eared bat hibernates throughout its range during winter months when temperatures are between 0°C and 11.5 degrees Celsius (32-53 degrees Fahrenheit). While hibernating, it hangs alone or in small groups in the open, with fur erect to provide maximum insulation and with ears coiled back. These bats emerge late in the evening to forage and are swift, highly maneuverable fliers. Prey items include small moths, flies, lacewings, dung beetles, and sawflies.

Townsend's big-eared bat is known to occur in the Pescadero-Butano watershed and has been documented on the nearby La Honda Creek Open Space Preserve (MROSD 2012). This species may roost within large tree cavities present in the Redwood Forest Alliance in the project area. Based on the habitat requirements of the Townsend's big-eared bat and nearby occurrences, there is a high potential for this species to occur in the project area.

Western red bat. Western red bat is designated as a CSSC. The western red bat roosts primarily in tree foliage, especially in cottonwood, sycamore, and other riparian trees or orchards. The bat prefers habitat edges and mosaics with trees that are protected from above and open below with open areas for foraging, including grasslands, shrublands, and open woodlands. They are solitary by nature, but will gather in larger nursery roosts during the summer.

Western red bat is known to occur in the Pescadero-Butano watershed and has been documented on the nearby La Honda Creek Open Space Preserve (MROSD 2012). This species may roost in the trees associated with the Redwood Forest Alliance around Hoffman and Piney creeks. Based on the habitat requirements of the Western red bat and nearby occurrences, there is a high potential for western red bat to occur in the project area.

Steelhead. Central California Coast Steelhead DPS is designated Federal Threatened. Steelhead are anadromous forms of rainbow trout, spending some time in both fresh and salt water. The older juvenile and adult life stages occur in the ocean, until the adults ascend freshwater streams to spawn. Eggs (laid in gravel nests), alevins (gravel dwelling hatchlings), fry (juveniles newly emerged from stream gravels) and young juveniles all rear in freshwater until they become large enough to migrate to the ocean to finish rearing and maturing to adults. Coastal California steelhead usually live in freshwater for 2 years, then spend 1 or 2 years in the ocean before returning to their natal stream to spawn. Steelhead may spawn one to four times over their life.

Steelhead are known to occur in Pescadero Creek and its tributaries within the Pescadero-Butano watershed. The reach of Pescadero Creek near the confluence of Hoffman and Piney creeks likely functions as an important migratory connection to suitable upstream spawning and rearing habitat. Hoffman Creek was evaluated as part of a 2004 fish passage study (Ross Taylor and Associates 2004 as cited in Becker and Reining 2008) and was determined to be "Steep…Deemed not fish bearing." During the site visit of the project area on September 14, 2017, the biologists noted that both the water diversion sites on Hoffman and Piney creeks are located close to their respective headwaters where the creeks are shallow and lack deep water pools. Therefore, no suitable habitat was observed to be present for steelhead at these locations. However, steelhead are present in Pescadero Creek and could occur in the lower reaches of Hoffman and Piney Creek where they flow into Pescadero Creek. No steelhead or other fish species were observed in Hoffman or Piney creeks within or near the project area during the field visit.

Western pond turtle. WPT is designated as a CSSC. WPT is often seen basking above the water, but will quickly slide into the water when it feels threatened. The species is active from around February to November and may be active during warm periods in winter. Western pond turtle hibernates underwater, often in the muddy bottom of a pool and may estivate during summer droughts by burying itself in soft bottom mud. When creeks and ponds dry up in summer, some turtles that inhabit creeks will travel along the creek until they find an isolated deep pool, others stay within moist mats of algae in shallow pools while many turtles move to woodlands above the creek or pond and bury themselves in loose soil where they will overwinter.

Pond turtles are normally found in and along riparian areas, although gravid females have been reported up to a mile away from water in search of appropriate nest sites. The preferred habitat for these turtles includes ponds or slow-moving water with numerous basking sites (logs, rocks, etc.), food sources (plants, aquatic invertebrates, and carrion), and few predators (raccoons, introduced fishes, and bullfrogs). Typically, the female excavates a nest in hard-packed clay soil in open habitats (usually on south-facing slopes) within a few hundred yards of a watercourse.

WPT are known from Pescadero Marsh. The species is also known to occur in the San Gregorio and Waddell Creek watersheds, to the north and south of Pescadero Creek, respectively (MROSD 2012). This species has not been documented within the upper reaches of Pescadero Creek. Based on a field assessment, Pescadero Creek as well as Hoffman and Piney creeks could provide suitable high-quality aquatic habitat for WPT. However, based on the lack of nearby occurrences of WPT and the lack of suitable upland grassland habitat, there is a low potential for WPT to occur in the project area. WPT was not observed during the field survey.

San Francisco garter snake. SFGS is federal and state-listed as endangered and is a fully protected species under §5050 of the California Fish and Game Code. A highly aquatic subspecies of the common garter snake endemic to the San Francisco Bay Area, SFGS are distributed along the western San Francisco Peninsula from the southern San Francisco County

border south to Waddell Lagoon south of Año Nuevo and as far east as US 101 near the San Francisco Airport. It occurs sympatrically with its primary prey species, the California red-legged frog; however, it will opportunistically prey on a variety of species including frogs, tadpoles, egg masses, newts, small fish, salamanders, reptiles, small mammals, birds and their eggs and several small invertebrates (Stebbins 2003).

San Francisco garter snakes prefer dense habitats close to water and will retreat to it when disturbed (Stebbins 2003). The species often occurs near ponds, marshes, streams and other wetlands associated with cattails (*Typha* spp.), bulrushes (*Scirpus* spp.) and rushes (*Juncus* and *Eleocharis* spp.). Mating occurs shortly after they leave their winter retreats in May and females give birth to live young between June and September. Species may hibernate near the coastal areas in fossorial mammal burrows and other refuges, or remain active year-round, weather permitting.

SFGS are known to occur within Pescadero Marsh. Based on a field assessment, Pescadero Creek could provide suitable habitat for SFGS. However, SFGS has not been documented within the upper reaches of Pescadero Creek near Redwood Glen.

Based on the field assessment of site conditions and the lack of suitable wetlands and upland habitat at or near the project area, the project area does not support breeding or upland habitat for SFGS. Additionally, SFGS is not expected to use the creek habitat as a movement corridor within the project area due to the lack of connectivity of Hoffman and Piney creeks to suitable wetland habitat. Based on the habitat requirements and lack of nearby occurrences of SFGS, this species has a low potential to be present in the project area. SFGS were not observed during the field survey.

6.7.2 Special-Status Plants

Dudley's lousewort. Dudley's lousewort a CRPR 1B.2 plant, is a perennial herb in the broom rape family (Orobanchaceae). It is endemic to central coastal California from San Mateo county south to San Luis Obispo county. It grows in chaparral, valley and foothill grassland and North coast coniferous forest, particularly in deep shady woods and steep cut banks in older coast redwood forests and maritime chaparral. It blooms from April through June. Dudley's lousewort is threatened by foot traffic, trail maintenance, erosion, and potentially by development (CNPS 2017). Based on suitable habitat and nearby occurrences, Dudley's lousewort has a high potential to occur in the project area.

Minute pocket moss. Minute pocket moss, a CRPR 1B.2 plant, is found in Alameda, Butte, Del Norte, Humboldt, Mendocino, Marin, Santa Cruz, San Mateo, Sonoma, and Yuba counties. Minute pocket moss grows in damp, coastal soil in North Coast coniferous forest. Minute pocket moss is known from along Pescadero Creek near Redwood Glen. Based on suitable habitat and nearby occurrences, this species has a high potential to occur in the project area.

Western leatherwood. Western leatherwood, a CRPR 1B.2 plant, is a perennial deciduous shrub in the Daphne family (Thymelaeaceae). It is endemic to California and is found in

Alameda, Contra Costa, Marin, Santa Clara, San Mateo, and Sonoma counties. Western leatherwood is found in mesic habitats including broad-leafed upland forest, closed-cone coniferous forest, chaparral, cismontane woodland, north coast coniferous forest, and riparian forest and woodland. It blooms from January through April. It is possibly threatened by road and trail maintenance (CNPS 2017). Based on suitable habitat and nearby occurrences, western leatherwood has a moderate potential to occur in the project area. Western leatherwood was not observed during the field survey and the shrub would have been visible at the time the survey was conducted.

White-flowered rein orchid. White-flowered rein orchid, a CRPR 1B.2 plant, is a perennial herb in the Orchid family (Orchidaceae). It is found along the coast and coast ranges in California from the northern border of the state to the Santa Cruz mountains. White-flowered rein orchid grows in broad-leafed upland forest, lower montane coniferous forest, and North Coast coniferous forest, sometimes in serpentine soils. It blooms from May through September. It is threatened by logging, and populations often have small numbers (CNPS 2017).

Based on suitable habitat and nearby occurrences, white-flowered rein orchid has a moderate potential to occur in the project area. White-flowered rein orchid was not observed during the field survey, although the survey was conducted at the end of this species blooming period and may not have been easy to detect.

6.8 Migratory Birds and Raptors

The trees and dense vegetation found at and nearby the project area support potential nesting habitat for birds including raptors. Most bird species are protected under the MBTA and all bird species are protected under California Fish and Game Code.

6.9 Bats

The trees found at and nearby the project area could provide roosting habitat for common bat species. Bats tend to forage near water sources; therefore, trees over or near water bodies are even more likely to serve as roosting sites. As a result, bat species have potential to occur in the project area and use the trees for roosting. Bats are protected under California Fish and Game Code as non-game mammals.

6.10 Potential Jurisdictional Aquatic Features

The existing water diversion sites on Hoffman and Piney creeks are located within potential jurisdictional waters of the U.S. and State as defined by Sections 401 and 404 of the CWA and the Porter Cologne Act. Construction or modifications below the OHWM of these creeks may require authorization from the USACE and/or RWQCB. In addition, Redwood Forest Alliance riparian vegetation and drainage and pond features with bed and bank topography are regulated by Sections 1600-1616 of the California Fish and Game Code. The existing water diversion

sites are regulated by sections 1600-1603 of California Fish and Game Code and may be subject to an LSAA from CDFW.

7 Biological Impact Assessment

7.1 Significance Criteria

Potential impacts to biological resources were determined in accordance with Appendix G of the CEQA Guidelines. Impacts would be considered potentially significant if the proposed project will:

- Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS.
- Have a substantial adverse effect on any sensitive natural community identified in local or regional plans, policies, or regulations, or by the CDFW or USFWS.
- Have a substantial adverse effect on federally protected wetlands, as defined by Section 404 of the CWA (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrologic interruption, or other means.
- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.
- Conflict with the provisions of an adopted Habitat Conservation Plan (HCP), Natural Community Conservation Plant (NCCP), or other approved local, regional, or state HCP.

7.2 Overall Impacts from Water Diversion Activities

Redwood Glen is primarily surrounded by open space with natural habitats, but also by rural residential development. The Redwood Glen property is mostly undeveloped with natural habitats. The development and construction of the current water diversion system is complete, including the water infrastructure site, water diversion sites in Hoffman and Piney creeks, and the gravity-fed diversion pipes. Water for Redwood Glen has been provided from the Pescadero Creek watershed since it opened in 1958, and the Hoffman and Piney Creek diversions have been in operation since that time, although the amount of water diverted has varied. From 1958 to 1995, Redwood Glen had multiple sources of water that supplied both the potable water system, as well as irrigation and/or other, non-potable uses. During this time, Redwood Glen diverted up to 8-acre-feet of water/year or 2,606,808 gallons/year in accordance with their pre-1914 appropriate riparian water right at Hoffman Creek. From 1998 through March 2016, potable water was provided to Redwood Glen by San Mateo County Memorial Park; therefore, the Hoffman and Piney creek sources were only used for irrigation purposes during this time. Based on the San Mateo County Statements of Diversion and Use, water diverted at Redwood

Glen for irrigation purposes has ranged from 180,000 to 250,000 gallons/year. The proposed project would need to increase the amount of water diverted and/or stored to meet the projected annual average potable water demand for the camp, which is estimated to be 1,305,953 gallons per year (i.e., 4-acre-feet/year).

Although the project would need to meet the project annual average demand, the project will not have significant impacts on special-status species, habitat, or baseflows in Hoffman and Piney creeks. Additionally, there are no current conflicts with local policies or conservation plans. The proposed project is also not expected to have cumulative biological impacts. The impact assessment is based on a site assessment by MIG and the findings of Balance Hydrologics (Balance; Appendix D), including the following conclusions:

- The current diversion system on Hoffman and Piney creeks are inefficient and baseflow will continue to passively bypass the diversions. Storm-related streamflows and early dry-season baseflows also flow over the diversion structures. Therefore, the existing/historic effect of the diversions on baseflows in Hoffman, Piney, and Pescadero creeks is not significant.
    - Balance provided an example of existing late dry-season baseflow bypass at the Hoffman Creek diversion where they measured flow at the diversion on September 9, 2017. At that time, they measured 4.6 gallons per minute flowing below the diversion while 0.73 gallons per minute were being diverted.
    - Although higher rates of diversion are possible at the diversions when the diversions are fully submerged, such as during storm events, even some of this water still bypasses the diversion structures.
- The drainage areas of Hoffman and Piney creeks are significantly small compared to Pescadero Creek, and as a result, wet-season runoff at water diversion sites on Hoffman and Piney creeks are much less than one percent of flow in Pescadero Creek.
- The water diversion sites on Hoffman and Piney creeks are situated at headwater springs that, therefore, can only divert a portion of total baseflow at the mouth of the creeks. Springflow to the creeks downstream of the water diversion sites are not diverted by the Redwood Glen diversions.
- In extreme dry years, most of the water in the creeks would likely passively bypass the diversion structures and an existing 70,000 gallon raw water storage and other water use conservation measures would be used to ensure the potable water demand was met.

Future development of infrastructure associated with water diversion, including rebuilding equipment at the existing water diversion sites could result in direct and indirect effects on biological resources. Potential impacts could include the loss of natural redwood forest, aquatic, and riparian habitat through grading and removal of vegetation, all of which provide valuable

habitat and migratory paths for native plants and wildlife. Other impacts include the degradation of water quality from discharge of sediment into Hoffman and Piney creeks.

Future development of infrastructure associated with water diversion, including maintenance of the existing water diversion sites, should include avoidance and mitigation measures (AMMs) and best management practices (BMPs) to avoid or mitigate for significant impacts to biological resources, including special-status animals and plants. Possible measures include conducting pre-construction surveys to comply with state and federal laws protecting bird, special-status plant and animal species; conducting pre-construction surveys to protect bat species that may roost in trees; and implementing a Stormwater Pollution Prevention Plan (SWPP) to minimize disturbance and protect water quality. Resource agency permits may be required, depending on what activities are planned.

Future development of infrastructure associated with the water diversion could also allow for a more efficient diversion system that would capture more water and allow less passive bypass flow. This would allow for a future increase in the volume of water diverted that could possibly result in indirect or direct impacts to biological resources in Hoffman and Piney creeks, as well as Pescadero Creek, and would require a new assessment as it could adversely impact biological resources. At this time, there is no plan to construct a new diversion on Hoffman or Piney creeks.

7.3 Sensitive Species – *Less-Than-Significant Impact*

7.3.1 Special-Status Animals

Amphibians. Operation of the existing water diversion is not expected to affect special-status amphibian species. No wetlands were observed in the project area during the site visit conducted in September 2017. In addition, as stated above, baseflow will continue to bypass the diversion system, including in dry years, and; therefore, the diversion will not have a significant effect on the baseflows or habitat in Hoffman, Piney, or Pescadero Creek. The proposed project will also not result in changes to the existing Redwood Forest Alliance habitat surrounding the creeks because baseflows will continue to bypass the diversions for stream dependent vegetation and no new construction will occur at the diversions.

Future construction activities at the water diversion sites could result in direct impacts to special-status amphibian species, including CRLF, foothill yellow-legged frog, Santa Cruz black salamander, and California giant salamander, and would need to be evaluated for potential impacts to special-status amphibians. In addition, if the diversion structures were modified to capture more water and minimize bypass flows, impacts to special-status species would need to be re-evaluated.

Steelhead. Hoffman and Piney creeks do not provide suitable habitat for steelhead. Therefore, direct impacts to steelhead at the water diversion sites are not expected to occur.

Steelhead are known to occur downstream in Pescadero Creek. The concern is that impacts to steelhead habitat in Pescadero Creek could occur from operation of the water diversion if the water diversion significantly affects Pescadero Creek during certain periods of the year. Very low flows can pose a risk to developing eggs and can strand fish. Decreased flows could also result in temperature changes that could make the habitat unsuitable for steelhead.

Balance prepared a hydrologic analysis to determine how the operation of the water diversion associated with the project affects the stream flow regime in Pescadero Creek (Appendix D). The hydrologic analysis concluded that the drainage areas of Hoffman and Piney creeks were significantly small compared to Pescadero Creek, and that wet season runoff at the water diversion sites on Hoffman and Piney Creek is much less than one percent of the flow in Pescadero Creek. In addition, baseflow estimates for Hoffman and Piney creeks during consecutive dry years were much less than one percent of the flow in Pescadero Creek. Only the base flow estimate for 2014, which was an extreme dry year, exceeded one percent of the flow in Pescadero Creek. However, Piney Creek can provide raw water that can be stored through the summer months and used during an extreme dry year scenario to ensure that flows in Pescadero Creek are not altered. Based on this assessment, operation of the water diversions on Hoffman and Piney creeks is not expected to impact steelhead in Pescadero Creek.

If future construction activities are necessary at the water diversion sites, these will need to be evaluated for potential impacts to steelhead from stormwater pollution, and AMMs would need to be proposed to avoid or significantly reduce these impacts. In addition, if there is a future proposal to modify the diversion structures so that the volume of water diverted in Hoffman and Piney creeks could be increased and bypass flows minimized, impacts to steelhead would need to be re-evaluated.

Roosting Bats. The project area provides suitable roosting (i.e., trees with large cavities) and foraging (i.e., perennial creek) habitat for western red bat and Townsend's big-eared bat as well as other common bat species protected under California Fish and Game Code. As stated above, baseflow will continue to bypass the diversion system, including in dry years, and; therefore, the diversion will not have a significant effect on the baseflows or foraging/creek habitat in Hoffman, Piney, or Pescadero Creek. In addition, the project will not impact any of the trees in the project area. Therefore, the operation of the water diversions is not expected to impact roosting bats.

Future construction activities in the project area could result in direct and indirect impacts to roosting bats, and would need to be re-evaluated. In addition, if there is a future proposal to modify the diversion structures so that the volume of water diverted in Hoffman and Piney creeks could be increased and bypass flows minimized, impacts to bat foraging habitat would need to be re-evaluated.

Nesting Birds. Operation of the water diversions will have no impacts on nesting birds, including marbled murrelet, because no trees in the project area will be impacted and the Redwood Forest Alliance habitat will remain unchanged. Future construction activities in the project area, if proposed, could result in direct and indirect impacts to nesting birds, and will need to be assessed. Nesting birds, including raptors, protected under the MBTA and California Fish and Game Code are potentially present in the trees within the project area. Marbled murrelet has additional protection under FESA and CESA.

Special-Status Plants. The current water diversion infrastructure, including the water diversion sites and associated activities are not expected to impact special-status plants. As stated above, baseflow will continue to bypass the diversion system, including in dry years, and; therefore, the diversion will not have a significant effect on the baseflows or habitat in Hoffman, Piney, or Pescadero Creek. In addition, the operation of the water diversions will not impact the Redwood Forest Alliance habitat.

There is suitable habitat for Dudley's lousewort, minute pocket moss, and white-flowered rein orchid throughout the project area. There is also suitable habitat for western leatherwood in the Hoffman and Piney Creek riparian areas. If construction projects are proposed in the project area the impacts to rare plant species will need to be re-evaluated. In addition, if there is a future proposal to modify the diversion structures so that the volume of water diverted in Hoffman and Piney creeks could be increased and bypass flows minimized, impacts to rare plant species would need to be re-evaluated.

7.4 Sensitive Natural Vegetation Communities, Including Wetlands – *Less-Than-Significant Impact*

Sensitive vegetation communities include riparian habitat or other sensitive natural communities identified in local or regional plans, policies, or regulations, or designated by the USFWS and CDFW. The operation of the diversions will not have significant impacts on sensitive vegetation communities, including riparian and the Redwood Forest Alliance because of the reasons stated above, including that water will continue to passively bypass the diversions and baseflow will not be significantly altered.

Future construction activities at the water diversion sites could result in impacts that will need to be addressed at that time. In addition, if there is a future proposal to modify the diversion structures so that the volume of water diverted in Hoffman and Piney creeks could be increased and bypass flows minimized, impacts to sensitive vegetation communities would need to be re-evaluated. Any future construction or maintenance activities at the water diversion sites could require a USACE Nationwide Permit pursuant to Section 404 of the CWA, a Water Quality Certification by the RWQCB pursuant to Section 401 of the CWA, and an LSAA from CDFW.

7.5 Interfere with Native Wildlife Movement – *No Impact*

Operation of the water diversions will not impede or alter, native wildlife movement. Any future construction activities and/or maintenance activities at Hoffman and Piney creeks would need to be evaluated to determine potential impacts to movement of wildlife. In addition, if there is a future proposal to modify the diversion structures so that the volume of water diverted in Hoffman and Piney creeks could be increased and bypass flows minimized, impacts to wildlife movement would need to be re-evaluated.

7.6 Conflict with Local Policies – *No Impact*

No trees will be removed as part of the proposed project. Therefore, operation of the project will not conflict with any local policies.

If construction or maintenance activities involve the removal of trees classified as heritage or significant by the County of San Mateo, a permit from the County will need to be obtained. The permit will likely require requirements to replace any significant trees removed with other native plantings.

7.7 Conflict with Conservation Plan – *No Impact*

The project area is not within an area covered by an HCP or NCCP. As a result, the continued diversion of water from Hoffman and Piney creeks will have no impact related to a conservation plan.

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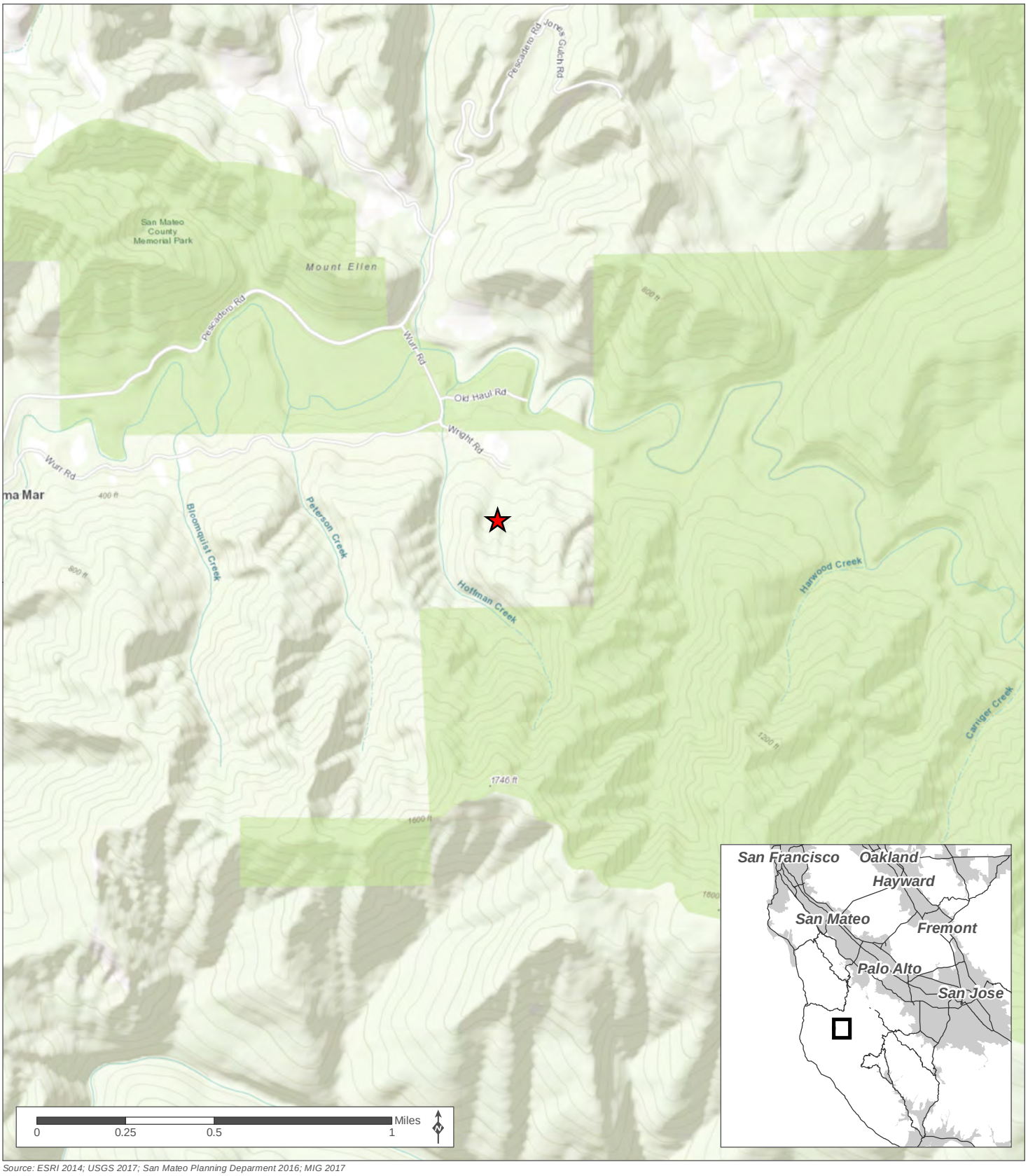

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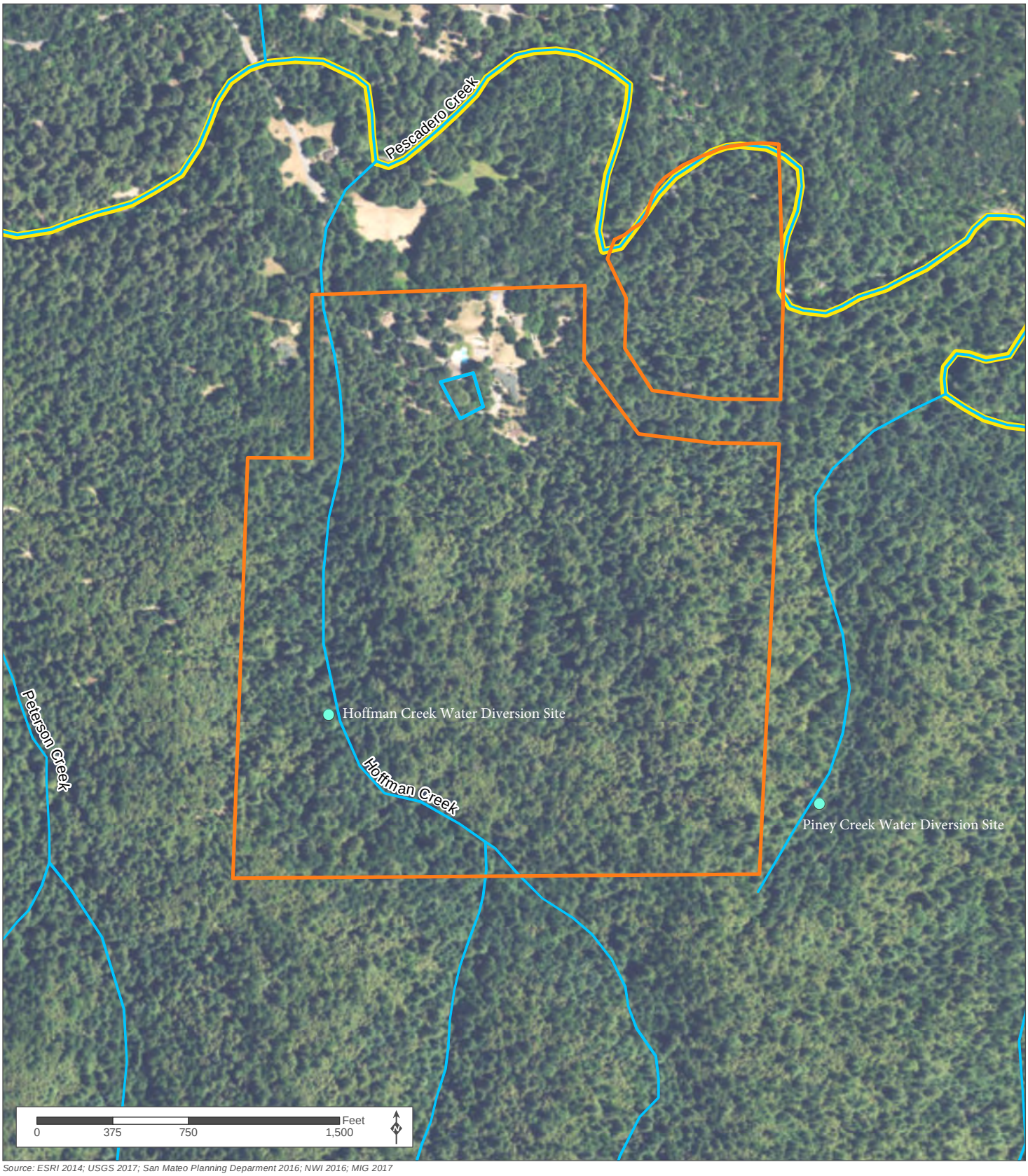
Source: ESRI 2014; USGS 2017; San Mateo Planning Deparment 2016; MIG 2017

Project Location

Figure 1 Site Location

Redwood Glen Water Diversion Project Biology Resources Evaluation



Source: ESRI 2014; USGS 2017; San Mateo Planning Deparment 2016; NWI 2016; MIG 2017

Redwood Glen Camp and Conference Center Property Boundary

Water Infrastructure Site

Water Diversion Site

Critical Habitat

Steelhead

California Red-Legged Frog (all areas of map)

Aquatic Features

NWI Waters of the US

Figure 2 Critical Habitat and Waters of the U.S. in the Project Area

Redwood Glen Water Diversion Project Biology Resources Evaluation

Appendix B Photographs

Photo 1. Converted Conex shipping container where the surface water treatment plant is located.

Photo 2. Existing raw water storage tanks at the water infrastructure site.

Photo 3. The 70,000-gallon raw water storage tank.

Photo 4. Water Diversion site on Hoffman Creek.

Photo 5. Water Diversion site on Piney Creek.

Photo 6. Pescadero Creek near confluence with Hoffman Creek. The water diversion sites on Hoffman Creek and Piney creeks are approximately 0.5 miles and 0.4 miles upstream of Pescadero Creek, respectively.

Table 1. Special-Status Plant Species Evaluated for Potential to Occur in the Project Area

Species Name	Federal, State, and CNPS Listing Status[1]	Geographic Distribution	Habitat Preferences and Elevation Range	Blooming Period	Potential to Occur[2]
Anderson's manzanita (*Arctostaphylos andersonii*)	1B.2	Endemic to California. Found in Santa Clara, Santa Cruz, and San Mateo counties.	Anderson's manzanita is found in the openings and edges of broad-leafed upland forest, chaparral, and north coast coniferous forest. It occurs at elevations from approximately 200 to 2,500 feet.	November – May	**None.** Eight CNDDB occurrences for Anderson's manzanita have been documented within 5 miles of Redwood Glen. However, there is no suitable habitat for this species at the water diversion sites, water infrastructure site, and at the existing gravity-fed diversion pipes.
Arcuate bush-mallow (*Malacothamnus arcuatus*)	1B.2	Endemic to California. Found in Santa Clara, Santa Cruz, and San Mateo counties.	Arcuate bush-mallow is found growing in gravelly alluvium substrates in chaparral and cismontane woodland habitats. It occurs at elevations between 50 and 1,160 feet.	April – September	**None.** One CNDDB occurrence for arcuate bush mallow has been documented within 5 miles of Redwood Glen However, there is no suitable habitat for this species at the water diversion sites, water infrastructure site, and at the existing gravity-fed diversion pipes.
Butano Ridge cypress (*Hesperocyparis abramsiana var. butanoensis*)	FT CE 1B.2	Endemic to California. Found only in San Mateo County.	Butano Ridge cypress is found in closed-cone coniferous forest, chaparral, and lower montane coniferous forest on sandstone. It occurs at elevations between 1,312 and 1,607 feet.	October	**None.** Known only from Butano Ridge in the Santa Cruz Mountains. However, there is no suitable habitat for this species at the water diversion sites, water infrastructure site, and at the existing gravity-fed diversion pipes.

Species Name	Federal, State, and CNPS Listing Status[1]	Geographic Distribution	Habitat Preferences and Elevation Range	Blooming Period	Potential to Occur[2]
Choris' popcorn-flower (*Plagiobothrys chorisianus var. chorisianus*)	1B.2	Endemic to California. Found in Alameda, Monterey, Santa Clara, Santa Cruz, San Francisco, and San Mateo counties.	Choris' popcorn-flower grows in mesic chaparral, coastal prairie, and coastal scrub habitats. It occurs at elevations between 50 and 520 feet.	March – June	**None.** Three CNDDB occurrences for Choris' popcorn-flower have been documented within 5 miles of Redwood Glen. There is no suitable habitat for this species on the project site.
Dudley's lousewort (*Pedicularis dudleyi*)	CR 1B.2	Endemic to central coastal California from San Mateo county south to San Luis Obispo county.	Chaparral, valley and foothill grassland and North coast coniferous forest, particularly deep shady woods and steep cut banks in older coast redwood forests and maritime chaparral.	April – June	**High.** One CNDDB occurrence for Dudley's lousewort has been documented within 5 miles of Redwood Glen. There is suitable habitat at the water diversion sites, water infrastructure site, and at the existing gravity-fed diversion pipes.
Kellman's bristle moss (*Orthotrichum kellmanii*)	1B.2	Endemic to California. Found in Monterey, Santa Cruz, and San Mateo counties.	Kellman's bristle moss grows in chaparral, and cismontane woodland on sandstone, carbonate soils. It occurs at elevations from approximately 1,125-2,247 feet.	January-February	**None.** One CNDDB occurrence for Kellman's bristle moss has been documented within 5 miles of Redwood Glen. However, there is no suitable habitat for this species at the water diversion sites, water infrastructure site, and at the existing gravity-fed diversion pipes.
Minute pocket moss (*Fissidens pauperculus*)	1B.2	In California, found in Alameda, Butte, Del Norte, Humboldt, Mendocino, Marin, Santa Cruz, San Mateo, Sonoma, and Yuba counties.	Minute pocket moss grows in damp, coastal soil in North Coast coniferous forest. It occurs at elevations from approximately 33-3,360 feet.	N/A	**High.** Three CNDDB occurrences for minute pocket moss have been documented within 5 miles of Redwood Glen, including one from 2011 along Pescadero Creek near Redwood Glen. There is suitable habitat for this species at the water diversion sites, water infrastructure site, and at the existing gravity-fed diversion pipes.

Species Name	Federal, State, and CNPS Listing Status[1]	Geographic Distribution	Habitat Preferences and Elevation Range	Blooming Period	Potential to Occur[2]
Point Reyes meadowfoam (*Limnanthes douglasii ssp. sulphurea*)	CE 1B.2	Endemic to California. Found in Marin, and San Mateo counties.	Point Reyes meadowfoam grows in coastal prairie, meadows and seeps (mesic), marshes and swamps (fresh water), and vernal pools. It occurs at elevations from 0-459 feet.	March - May	**None.** One CNDDB occurrence for Point Reyes meadowfoam has been documented within 5 miles of Redwood Glen. However, there is no suitable habitat for this species at the water diversion sites, water infrastructure site, and at the existing gravity-fed diversion pipes.
Round-leaved filaree (*California macrophylla*)	1B.2	Occurs in central and coastal California from near Chico to near San Diego.	Round-leaved filaree grows in cismontane woodland, and valley and foothill grassland in clay soils. It occurs at elevations from approximately 49 to 3,937 feet.	March - May	**None.** One CNDDB occurrence for round-leaved filaree has been documented within 5 miles of Redwood Glen. However, there is no suitable habitat for this species at the water diversion sites, water infrastructure site, and at the existing gravity-fed diversion pipes.
San Mateo woolly sunflower (*Eriophyllum latilobum*)	FE CE 1B.1	Endemic to San Mateo County.	San Mateo woolly sunflower is found growing in cismontane woodland habitats often on serpentinite soils and on roadcuts. It is known from two extant occurrences. It occurs at elevations between 150 and 500 feet.	May – June	**None.** One CNDDB occurrence for San Mateo thorn-mint has been documented within 5 miles of Redwood Glen. However, there is no suitable habitat for this species at the water diversion sites, water infrastructure site, and at the existing gravity-fed diversion pipes.
Toren's grimmia (*Grimmia torenii*)	1B.3	Endemic to California. Found in Contra Costa, Colusa, Lake, Mendocino, Monterey, Santa Cruz, and San Mateo counties.	Toren's grimmia grows in chaparral, cismontane woodland, and lower montane coniferous forest in openings, rocky, boulder and rock walls in carbonate, volcanic soils. It occurs at elevations from approximately 1,066 to 3,806 feet.	N/A	**None.** One CNDDB occurrence for Toren's grimmia has been documented within 5 miles of Redwood Glen. However, there is no suitable habitat for this species at the water diversion sites, water infrastructure site, and at the existing gravity-fed diversion pipes.

Species Name	Federal, State, and CNPS Listing Status[1]	Geographic Distribution	Habitat Preferences and Elevation Range	Blooming Period	Potential to Occur[2]
Western leatherwood (*Dirca occidentalis*)	1B.2	Endemic to California. Found in Alameda, Contra Costa, Marin, Santa Clara, San Mateo, and Sonoma counties.	Western leatherwood is found in mesic habitats including broad-leafed upland forest, closed-cone coniferous forest, chaparral, cismontane woodland, north coast coniferous forest, and riparian forest and woodland. It occurs at elevations from approximately 80 to 1,400 feet.	January – April	**Moderate.** Five CNDDB occurrences for western leatherwood have been documented within 5 miles of Redwood Glen. There is suitable habitat for this species at the water diversion sites, but it was not observed during the September 2017 site visit.
White-flowered rein orchid (*Piperia candida*)	1B.2	Found along the coast and coast ranges in California from the northern border of the state to the Santa Cruz mountains.	White-flowered rein orchid grows in broad-leafed upland forest, lower montane coniferous forest, and North Coast coniferous forest, sometimes in serpentine soils. It occurs at elevations from approximately 98 to 4,298 feet.	May - September	**Moderate.** One CNDDB occurrence for white-flowered rein orchid has been documented within 5 miles of Redwood Glen. There is suitable habitat for this species at the water diversion sites, water infrastructure site, and at the existing gravity-fed diversion pipes.
Woodland monolopia (*Monolopia gracilens*)	1B.2	Endemic to California. Found in Alameda, Contra Costa, Monterey, San Benito, Santa Clara, Santa Cruz, San Luis Obispo, and San Mateo counties.	Woodland monolopia grows in serpentine soils in openings in broad-leafed upland forests, openings in chaparral, cismontane woodlands, North Coast coniferous forests, and valley foothill grassland habitats. It occurs at elevations between 330 and 4,000 feet.	February – July	**None.** One CNDDB occurrence for woodland monolopia has been documented within 5 miles of Redwood Glen. However, there is no suitable habitat for this species at the water diversion sites, water infrastructure site, and at the existing gravity-fed diversion pipes.

Species Name	Federal, State, and CNPS Listing Status[1]	Geographic Distribution	Habitat Preferences and Elevation Range	Blooming Period	Potential to Occur[2]

[1] Status explanations:

Federal:

FE = Listed as endangered under the Federal Endangered Species Act.

FT = Listed as threatened under the Federal Endangered Species Act.

State:

CE = Listed as endangered under the California Endangered Species Act.

CT = Listed as threatened under the California Endangered Species Act.

CR = Listed as rare in California.

California Rare Plant Rank:

Rank 1B = Rare, threatened, or endangered in California and elsewhere;

.1 = Seriously endangered in California

.2 = Fairly endangered in California

.3 = Not very endangered in California

[2] Potential Occurrence explanations:

Present: Species was observed at the site or has a recent (within five years) recorded observation in the CNDDB or literature at the site.

High: Highly suitable habitat is present (i.e., all habitat components meeting the species requirements are present and/or the habitat is highly suitable or of high quality). Additionally, there are few to many records of occurrences within the last ten years in the vicinity of the site. This species has a high probability of being found.

Moderate: Suitable habitat is present (i.e., some of the habitat components meeting the species requirements are present and/or the majority of the habitat is suitable or of marginal quality). Additionally, there are few to many modern records of occurrences in the vicinity of the site. The species has a moderate probability of being found.

Low: Limited suitable habitat is present (i.e., few of the habitat components meeting the species requirements are present and/or the majority of habitat is unsuitable or of very low quality). Additionally, there are no or few historical records of occurrence in the vicinity of the site. The species has a low probability of being found.

None: There is no suitable habitat present (i.e., habitats are clearly unsuitable for the species requirements [e.g., foraging, breeding, cover, substrate, elevation, hydrology, plant community, disturbance regime]). Additionally, there are no or few historical records of occurrence in the vicinity of the site. The species has no potential of being found.

Plant species that do not meet the definition for special-status species:

California bottle-brush grass (*Elymus californicus*; CRPR 4.2)

Mountain lady's-slipper (*Cypripedium montanum*; CRPR 4.2)

Table 2. Special-Status Animal Species Evaluated for Potential to Occur in the Project Area

Species Name	Federal and State Listing Status[1]	Geographic Distribution	Habitat Requirements	Potential to Occur[2]
Fish				
Longfin smelt (*Spirinchus thaleichthys*)	FC CT CSSC	Found in nearshore coastal environments from San Francisco Bay north to Lake Earl, near the Oregon Border. Specifically, found in the Sacramento-San Joaquin Delta, San Pablo Bay, San Francisco Bay, the Gulf of Farallones, the Humboldt Bay, and the Eel River estuary.	Longfin smelt is found in open waters of estuaries, mostly in the middle or bottom of the water column. It prefers salinities of 15 to 30 parts per thousand, but it can be found in completely freshwater to almost pure saltwater.	**None.** One CNDDB occurrence for longfin smelt has been documented within 5 miles of the project site. There is no suitable habitat for this species on the project site.
Coho salmon (*Oncorhynchus kisutch*)	FE CE	The species was historically distributed throughout the North Pacific Ocean from central California to Point Hope, Alaska, through the Aleutian Islands. Coho probably inhabited most coastal streams in Washington, Oregon, and central and northern California. Some populations, now considered extinct, are believed to have migrated hundreds of miles inland to spawn in tributaries of the upper Columbia River in Washington, and the Snake River in Idaho.	Coho salmon is an anadromous fish, meaning it spends approximately the first half of its life cycle rearing and feeding in streams and small freshwater tributaries, and the second half of its life foraging in estuarine and marine waters of the Pacific Ocean. Streams with stable gravel substrates provide spawning habitat for this species. Adults return to their stream of origin to spawn and die, usually at around three years old. Young coho spend one to two years in their freshwater natal streams. Smolts migrate to the ocean in late March through July. Coho salmon live in the salt water for one to three years before returning to spawn.	**None.** Coho were reported in the lower reaches of Pescadero Creek in 2015, but are thought to be nearly extirpated from the Pescadero-Butano Watershed. Coho salmon are known to occur in the San Gregorio Watershed north of the project area.

Species Name	Federal and State Listing Status[1]	Geographic Distribution	Habitat Requirements	Potential to Occur[2]
Steelhead- central California coast DPS (*Oncorhynchus mykiss irideus*)	FT	This DPS includes all populations of steelhead from the Russian River south to Aptos Creek. Steelhead in drainages of San Francisco, San Pablo, and Suisun Bays are also part of this DPS.	Adult steelhead migrate from the ocean into streams in the late fall, winter, or early spring seeking out deep pools within fast moving water to rest prior to spawning. Steelhead spawn in shallow-water gravel beds.	**Low.** There are four CNDDB occurrences for steelhead within 5 miles of the project site; it is known from Pescadero Creek and tributaries. Pescadero Creek is within NOAA Fisheries designated critical habitat for this species. It has not been documented in Hoffman or Piney creeks and Hoffman Creek was determined not to be suitable habitat for steelhead during a fish passage study conducted in 2004.
Amphibians				
California giant salamander (*Dicamptodon ensatus*)	CSSC	Known from wet coastal forests near streams and seeps from Mendocino County south to Monterey County and east to Napa County.	Aquatic larvae found in cold, clear streams, occasionally in lakes and ponds. Adults known from wet forests under rocks and logs near streams and lakes.	**High.** There are nine CNDDB occurrences for California giant salamander within 5 miles of the project site. There is suitable habitat for this species on site in Hoffman and Piney creeks.
California red-legged frog (*Rana draytonii*)	FT CSSC	Found from Riverside County to Mendocino County along the Coast Range, from Calaveras County to Butte County in the Sierra Nevada, and in Baja California.	California red-legged frog is found in lowlands and foothills in or near permanent sources of deep water. It prefers shorelines with extensive vegetation since it disperses far during and after rain. Larvae require 11-12 weeks of permanent water for development.	**High.** There are 11 CNDDB occurrences for California red-legged frog within 5 miles of the project site. The site is within USFWS-designated habitat for this species. There is some suitable habitat for this species on the project site.

Species Name	Federal and State Listing Status[1]	Geographic Distribution	Habitat Requirements	Potential to Occur[2]
Foothill yellow-legged frog (*Rana boylii*)	CPT CSSC	Largest remaining populations in California are in the north coast range, particularly in the Smith River, tributaries of the Klamath River, the South Fork Trinity River, the South Fork Eel River, Redwood Creek, coastal tributaries in Mendocino County and Russian River tributaries.	Foothill yellow-legged frog is found in partly-shaded, shallow streams and riffles with a rocky substrate in a variety of habitats. It needs at least some cobble-sized substrate for egg-laying, and at least 15 weeks to attain metamorphosis.	**Moderate.** One CNDDB occurrence for foothill yellow-legged frog has been documented within 5 miles of the project site in Pescadero Creek in 1999. There is some suitable habitat for this species on the site.
Santa Cruz black salamander (*Aneides niger*)	CSSC	Found in mixed deciduous and coniferous woodlands and coastal grasslands in San Mateo, Santa Cruz, and Santa Clara counties.	Adults found under rocks, talus, and damp woody debris.	**High.** Three CNDDB occurrences for Santa Cruz black salamander have been documented within 5 miles of the project site. There is some suitable habitat for this species on the project site.

Species Name	Federal and State Listing Status[1]	Geographic Distribution	Habitat Requirements	Potential to Occur[2]
Reptiles				
San Francisco garter snake (*Thamnophlis sirtalis tetrataenia*)	FE CE	Historically, occurred in scattered wetland areas on the San Francisco Peninsula from approximately the San Francisco County line south along the eastern and western bases of the Santa Cruz Mountains. Found at least from the Upper Crystal Springs Reservoir in San Mateo County south to Año Nuevo State Reserve in Santa Cruz County. Currently, although the geographical distribution may remain the same, reliable information regarding specific locations and population status is not available. Much of the remaining suitable habitat is located on private property that has not been surveyed for the presence of the snake.	San Francisco garter snake is a highly aquatic species that is found in or near densely vegetated freshwater ponds with adjacent open hillsides where they can bask, feed, and find cover in rodent burrows.	**Low.** There are 24 CNDDB occurrences for San Francisco garter snake within 5 miles of the project site. There is no suitable habitat for this species on the project site.
Western pond turtle (*Emys marmorata*)	CSSC	From Oregon border of Del Norte and Siskiyou Counties south along the coast to San Francisco Bay, inland through the Sacramento Valley and on western slope of Sierra Nevada.	Ponds, marshes, rivers, streams, and irrigation canals with muddy or rocky bottoms and with watercress, cattails, water lilies, or other aquatic vegetation in woodlands, grasslands, and open forests.	**Low.** Although there are no CNDDB records for western pond turtle within 5 miles of the project area, Hoffman and Piney Creek could provide suitable habitat for this species.

Species Name	Federal and State Listing Status[1]	Geographic Distribution	Habitat Requirements	Potential to Occur[2]
Birds				
American peregrine falcon (*Falco peregrinus anatum*)	CFP	Occurs throughout the Central Valley, coastal areas, and northern mountains of California.	American peregrine falcon uses steep cliffs and buildings for nesting. It forages over a variety of habitats, especially wetlands.	**None.** Two CNDDB occurrences for American peregrine falcon have been documented within 5 miles of the project area. There is no suitable nesting habitat for this species in the project area.
Marbled murrelet (*Brachyramphus marmoratus*)	FT CE	Feeds near-shore; nests inland along coast from Eureka to Oregon border and from Half Moon Bay to Santa Cruz.	Marbled murrelet nests in old-growth redwood-dominated forests, up to six miles inland, often in Douglas-fir.	**High.** There are 24 CNDDB occurrences for marbled murrelet within 5 miles of the project area, including within San Mateo County Memorial Park and Pescadero Creek Park. Suitable habitat for this species is present in the project area.
Mammals				
Pallid bat (*Antrozous pallidus*)	CSSC	Common throughout low elevations of California. Not found in the high Sierra from Shasta to Kern counties and the northwestern corner of the State from Del Norte and western Siskiyou counties to northern Mendocino County.	Pallid bat is uncommon, especially in urban areas. This species roosts in caves and large cavities within trees. It forages in grasslands and oak savannah. It is most common in open, dry habitats with rocky areas for roosting.	**Low.** One CNDDB occurrence from 1945 for pallid bat has been documented within 5 miles of the project area. Trees are present in the project area that could provide roosting habitat for pallid bat; however, the site is not in its preferred habitat.

Species Name	Federal and State Listing Status[1]	Geographic Distribution	Habitat Requirements	Potential to Occur[2]
Townsend's big-eared bat (*Corynorhinus townsendii*)	CPT CSSC	Found throughout California, but details of its distribution are not well known. Found in all but subalpine and alpine habitats.	Townsend's big-eared bat roosts in caves, mines, and large cavities within trees. It forages within woodlands and along stream edges. This species is extremely sensitive to human disturbance.	**High.** Four CNDDB occurrences for Townsend's big-eared bat have been documented within 5 miles of the project site. The large trees and streams at the site could provide suitable habitat for this species.
Western red bat (*Lasiurus blossevillii*)	CSSC	Found throughout California. Additionally, these bats can be found in western Canada, the western United States, western Mexico and Central America.	The western red bat roosts primarily in tree foliage, especially in cottonwood, sycamore, and other riparian trees or orchards. The bat prefers habitat edges and mosaics with trees that are protected from above and open below with open areas for foraging, including grasslands, shrublands, and open woodlands. They are solitary by nature, but will gather in larger nursery roosts during the summer.	**High.** Western red bat is known to occur in the Pescadero-Butano watershed and has been documented on the nearby La Honda Creek Open Space Preserve. This species may roost in the riparian vegetation within Hoffman and Piney creeks.

Species Name	Federal and State Listing Status[1]	Geographic Distribution	Habitat Requirements	Potential to Occur[2]
San Francisco dusky-footed woodrat (*Neotoma fuscipes annectens*)	CSSC	The San Francisco dusky-footed woodrat is one of eleven historically described subspecies of the dusky-footed woodrat (packrats) found in forest and shrubland communities throughout much of California and Oregon. The San Francisco dusky-footed woodrat can be found throughout the SF Bay area.	San Francisco Dusky-footed woodrat is a nocturnal species that is known for constructing large terrestrial stick houses, some of which can last for twenty or more years. Houses typically are placed on the ground against or straddling a log or exposed roots of a standing tree, and, are often located in dense brush. Nests are also placed in the crotches and cavities of trees and in hollow logs. Sometimes arboreal nests are constructed in habitat with evergreen trees such as live oak.	**Low.** San Francisco dusky-footed woodrat is widely distributed in San Mateo County. There is suitable high-quality habitat at Redwood Glen. However, the open understory of the Redwood forest provides marginal habitat.

Species Name	Federal and State Listing Status[1]	Geographic Distribution	Habitat Requirements	Potential to Occur[2]

[1] Status explanations:

Federal:

FE = Listed as endangered under the Federal Endangered Species Act.

FT = Listed as threatened under the Federal Endangered Species Act.

FC = Candidate species to be listed under the Federal Endangered Species Act.

State:

CE = Listed as endangered under the California Endangered Species Act.

CT = Listed as threatened under the California Endangered Species Act.

CPT = Proposed as threatened under the California Endangered Species Act.

CSSC = Species of Special Concern designated by California Department of Fish and Wildlife.

CFP = Fully Protected Species under California Fish and Game Code.

[2] Potential Occurrence explanations:

Present: Species was observed at the site or has a recent (within five years) recorded observation in the CNDDB or literature at the site.

High: Highly suitable habitat is present (i.e., all habitat components meeting the species requirements are present and/or the habitat is highly suitable or of high quality). Additionally, there are few to many records of occurrences within the last ten years in the vicinity of the site. This species has a high probability of being found.

Moderate: Suitable habitat is present (i.e., some of the habitat components meeting the species requirements are present and/or the majority of the habitat is suitable or of marginal quality). Additionally, there are few to many modern records of occurrences in the vicinity of the site. The species has a moderate probability of being found.

Low: Limited suitable habitat is present (i.e., few of the habitat components meeting the species requirements are present and/or the majority of habitat is unsuitable or of very low quality). Additionally, there are no or few historical records of occurrence in the vicinity of the site. The species has a low probability of being found.

None: There is no suitable habitat present (i.e., habitats are clearly unsuitable for the species requirements [e.g., foraging, breeding, cover, substrate, elevation, hydrology, plant community, disturbance regime]). Additionally, there are no or few historical records of occurrence in the vicinity of the site. The species has no potential of being found.

Memorandum

To: Lauren Huff, Senior Biologist, MIG, Inc.

From: Mark Woyshner and Jonathan Owens

Date: October 27, 2017

Subject: CEQA-level hydrologic analysis for an evaluation of the biological effects of surface-water diversions at Redwood Glen, San Mateo County, CA.

Introduction

Redwood Glen, located at 100 Wright Way, Loma Mar, CA 94021, is a non-profit camp and conference center situated on 165 acres with lodging, a kitchen, and bathroom facilities, and can serve a maximum capacity of approximately 300 people. Redwood Glen holds riparian water rights to Hoffman Creek and appropriative rights to Piney Creek (also known as Pioneer Creek in some documents).[1] Hoffman and Piney Creeks are first-order tributaries to Pescadero Creek.

Prior to 1995, water was supplied to the camp solely by diversion from Hoffman and Piney Creeks. From 1995 through March 2016, potable water was provided to Redwood Glen by San Mateo County Memorial Park, by diversion from Pescadero Creek. In addition, Redwood Glen utilized 8 acre-feet per year of flow from Hoffman Creek (~5 gallons per minute, or gpm, continuous), as per their Statement of Diversion and Use filings with the State. Potable water service from Memorial Park was discontinued in March 2016, and as a result, Redwood Glen has since been in the process of permitting a new public water system. The State Water Resources Control

[1] Redwood Glen holds riparian rights to Hoffman Creek, allowing the camp to utilize water available in Hoffman Creek instantaneously, as well as store up to 10,000 gallons of water. Redwood Glen holds appropriative rights License No. 11116 to divert water from Piney Creek at a rate not to exceed 0.042 cubic feet per second (19 gpm or 27,000 gpd) from January 1 to December 31, and not to exceed 24 acre-feet per year (Permit No. 16745, Application No. 24192). Appropriative rights also allow Redwood Glen to store an unlimited amount of raw water from Piney Creek. Two point of diversions (PODs) are identified: (a) POD #1 (aka upper POD) is south 2,500 feet and east 200 feet from NW corner of Section 2, T8S, R4W, being within SW1/4 of NW1/4 of said section 2; and (b) POD #2 (aka lower POD) is south 2,000 feet and east 350 feet from NW corner of Section 2, T8S, R4W, being within SW1/4 of NW1/4 of said section 2. During August 2017, Redwood Glen improved the diversion structure at the lower POD.

Board (SWRCB) has approved the use of the two creeks as source water for their new public water system at Redwood Glen.

Triggered by the Resource Management Permit and update to the Use Permit, San Mateo County Planning Department requested an evaluation of the biological effects of the diversions, including the potential cumulative effect to anadromous salmon, including steelhead (*Oncorhynchus mykiss*), downstream in Pescadero Creek.[2] To support the biological evaluation, this memo presents a hydrologic analysis at the point of diversions (PODs) on Hoffman Creek and Piney Creek relative to flow in Pescadero Creek.

Background

Physical setting

The Pescadero Creek watershed is the largest coastal watershed between the Golden Gate in San Francisco County and the San Lorenzo River in Santa Cruz County, measuring 59.7 square miles (sq. mi.) above Pescadero Marsh (**Figure 1**). Ranging in elevation from sea level to roughly 2,700 feet above sea level, the watershed is dominated by the rugged topography of the Santa Cruz Mountains, sloping westward into uplifted marine terraces at the coast. Pescadero Creek joins Butano Creek at Pescadero Marsh, which opens to the Pacific Ocean. The watersheds of these two principal streams feeding Pescadero Marsh are generally divided by Butano Ridge -- a prominent regional bedrock feature -- with Pescadero Creek flowing north of Butano Ridge, and Butano Creek south of the ridge. The two watersheds have a combined drainage area of 81 sq. mi. at Pescadero Marsh. Hoffman and Piney Creeks are each one of many small sub-watersheds draining the northerly slopes of Butano Ridge into Pescadero Creek. Relative drainage areas are shown in **Table 1**.

The U. S. Geological Survey (USGS) operates a stream gage (No. 11162500) about 3.5 miles upstream of the Town of Pescadero and west of Butano Ridge.[3] Data from this

[2] The County requested more information about the biological impacts to the creeks, which they felt was not covered by the Notice of Exemption that Redwood Gelen initially received for the project.

[3] U.S. Geological Survey gaging station no. 11162500, Pescadero Creek near Pescadero, CA. LOCATION - Lat 37°15'39", long 122°19'40" referenced to North American Datum of 1927, in SW 1/4 sec.05, T.8 S., R.4 W., San Mateo County, CA, Hydrologic Unit 18050006, on left bank, at

gage is used in our hydrologic analysis. Hoffman Creek is located about four miles upstream from the USGS gage, and Piney Creek another mile upstream from Hoffman Creek. Hoffman Creek has a drainage area 0.4 sq. mi., which is one percent of the 39.1 sq. mi. Pescadero Creek drainage area (at their confluence), while the drainage area above Redwood Glen's POD on Hoffman Creek is 0.5 percent of Pescadero Creek.[4] Piney Creek has a drainage area one-quarter size of Hoffman Creek. The drainage area above Redwood Glen's POD on Piney Creek is 0.03 sq. mi. (or 19 acres), which is 0.08 percent of the 38.4 sq. mi. Pescadero Creek drainage area (at their confluence). The drainage areas of Hoffman and Piney Creeks are significantly small compared to Pescadero Creek.

Geology and soils

Pescadero Creek watershed has been mapped generally as an assemblage of large, fault-bounded blocks that contain unique stratigraphic sequences (Brabb and others, 2000). The region is transected by two major faults, the north-south trending San Gregorio fault to the west, and the WNW trending reverse Butano fault to the east, separating the watershed into lithologically and structurally distinct regions. The San Andreas fault is a few miles to the northeast. Lithologically, the watershed is complex, consisting mainly of a thick sequence of folded Tertiary marine sedimentary rocks overlying a crystalline basement, with minor carbonates and volcanics interspersed amongst predominant marine sandstones, mudstones, shales, and various Quaternary deposits. Three prominent folds cross the watershed with northwest trending axes: the Big Basin Syncline on the south, the Butano Anticline along Butano Ridge, and the Pescadero syncline north of Pescadero Creek.

Butano Ridge is a large northwest trending block of consolidated Butano Sandstone (Tb) – Tertiary marine deposits potentially thousands of feet thick – drained by steeply sloped single-order and second-order streams (**Figure 1**). Large northerly-trending vertical fracture zones are found in the Butano ridge block, which lead to springs at the sources of Hoffman Creek, Piney Creek, and other creeks which head in the bedrock.

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downstream side of highway bridge, 3.0 mi east of Pescadero, and 5.3 mi upstream from mouth. DRAINAGE AREA - 45.9 mi^2. PERIOD OF RECORD - April 1951 to current year.

[4] Drainage areas of Hoffman and Piney Creeks are expressed relative to the Pescadero Creek drainage area below their respective confluences, so as to exclude the drainage area downstream of the confluences.

Overlying the Butano Sandstone, Santa Cruz Mudstone (Tsc) is mapped at the foot of Butano Ridge, along Pescadero Creek and the Butano fault at the northern most portion of Redwood Glen. Quaternary terrace deposits (Qt), found along Pescadero Creek, overlay the Santa Cruz Mudstone (**Figure 2**).

The Hoffman Creek and Piney Creek watersheds drain north-facing slopes of Butano Ridge with Hugo and Josephine sandy loam soils (HyF). In general, both soils are 36 to 60 inches deep over bedrock, with generally slopes 40 percent or steeper. Runoff is very rapid, and the erosion hazard is very high. The effective depth of root penetration is deep. The water-holding capacity of the Hugo soil is low, and that of the Josephine soil is moderate ('good'). Permeability is moderately rapid in the Hugo soil and in the surface soil of the Josephine; the Josephine subsoil has moderately slow permeability. The underlying fractured sandstone and mudstone provide a limited potential for well yields. Based on well pumping tests at Redwood Glen (Woyshner and others, 2017), the hydraulic conductivity of the underlying bedrock is on the order of 0.02 to 0.04 gallons per day per square foot (or 1 to 2 x 10^{-6} centimeters per second). These soils are good for growing timber, particularly redwood and Douglas fir.

Land use

Intensive logging in the Pescadero Creek watershed began during the second half of the 1800s and then resumed in the 1950s and 1960s (Barbic and others, 2004). Forests of the area have since regenerated. There is evidence of old landslides within the watersheds and broader area, potentially related to the logging activities. The watersheds of Hoffman Creek and Piney Creek are currently not managed for timber harvesting. 90 percent of the 117-acre Hoffman Creek watershed (**Figure 3**) and 98 percent of the 19-acre Piney Creek watershed (**Figure 4**) are owned by San Mateo County as an open-space park land and are managed mainly for stream water quality for downstream anadromous fishery habitat (see Decision-Making Guidelines for Vegetation Management, San Mateo County Parks, June 30, 2006).

Diversion structures

The diversion structure on Hoffman Creek consists of a stainless-steel sink attached to a redwood log across this creek (**Figure 5**). Sediment and wood debris impounded behind the log has raised the channel bed to allow flow over the log and into the sink. Underflow beneath the log bypasses the 'sink' diversion, as does overflow when the sink is spilling. As an example of existing late dry-season baseflow bypass, on September 9,

2017, we measured 4.6 gpm below the sink diversion while 0.73 gpm was being diverted. At that time, the diversion port was only partially submerged. Higher rates of diversion are possible when the diversion port is fully submerged with higher rates of inflow to the sink.

The diversion structure on Piney Creek was rehabilitated during 2017 to remove sediment and debris, and to restore its full functionality. It now includes a functioning bypass port and diversion port with the same diameter and set at the same elevation (**Figure 6**). If both ports are completely open, then the flow is passively split in half.

Both diversion structures bypass a significant proportion of baseflow.

Proposed water demand

Redwood Glen has not proposed to increase water demand for their new water system permit (the project conditions) beyond their historic use (the existing conditions), therefore, there is ***no additional impact by the proposed project***. Redwood Glen reported following water demand calculations for their new public water system permit (SRT, 2017):

- Average demand
  - Average Annual Demand = 1,305,953 gallons per year (gal/year)
  - Average Daily Demand (ADD) = 3,578 gallons per day (gpd)
  - Average Daily Rate of Production (24-HR) = 2.5 gallons per minute (gpm)
- Maximum demand
  - Maximum Month Demand (MMD) = 230,010 gal/month
  - Average Daily Usage During Maximum Month = 7,420 gal/day or 5.2 gpm
  - Maximum Daily Demand (MDD) = MMD * 1.5 = 11,130 gal/day
  - Maximum Daily Rate of Production (24-HR) = 7.7 gpm
  - Peaking Factor (MDD/ADD) = 3.1
- Maximum demand with Factor of Safety (using omitted data for elevated-years)
  - MMD with Factor of Safety = 259,107 gal/month
  - Average Daily Usage During Maximum Month = 8,358 gal/day or 5.8 gpm
  - Maximum Daily Demand (MDD) = MMD * 1.5 = 12,537 gal/day
  - Maximum Daily Rate of Production (24-HR) = 8.7 gpm
  - Peaking Factor (MDD/ADD) = 3.5

The SWRCB issued a letter on January 6, 2017, which recognizes that Redwood Glen's two surface water sources "would provide sufficient supply to meet demand for the Center." The State nonetheless expressed concerns that Hoffman Creek and Piney Creek may only provide marginal supply during the dry season. The estimated supply deficit during an extreme dry-year scenario (such as during 2014), though, can be bridged with the use of the existing 70,000-gallon raw water tank supply (SRT 2017). With additional conservation, for example, 70,000 gallons storage can provide 40 days of supply at half the ADD.

Hydrologic Analysis

Pescadero Creek annual hydrology (by water year)[5]

The USGS Pescadero Creek gaging station has a 65-year period of record (1951-2016). To evaluate baseflow conditions during dry-year conditions, we looked at the recent five consecutive dry years from 2012 through 2016, which ranked 4th driest of the 5-year-average periods, exceeded only by dry years during late 1980s through 1992 (**Table 2**). The dry period 2012 through 2016 is appropriate for this analysis given the following conditions: a) water year 2014 ranked second driest water year (preceded by 1977); b) the effects of logging during the '50s and '60s have further recovered, providing slightly higher evapotranspiration rates and lower baseflows than during initial years/decades following logging; and c) the somewhat improved gaging methods at the Pescadero Creek gage. The annual runoff at the Pescadero Creek station during water years 2012, 2013, and 2014 was 47 percent, 57 percent, and 6 percent of normal, for those respective years. The extreme dry year of 2014 was then followed by an annual runoff of 41 percent of normal during 2015 and 92 percent of normal during 2016. Baseflow hydrographs (**Figure 7**) illustrate the deepening multi-year drought into the 2014 extreme dry year, when flows were below the 5th percentile of the 65-year record during nearly all of the dry season (rivaling baseflow during 1977, the driest year of record). Bracketing the multiyear drought, baseflows tracked the 50th percentile during 2012 and 2016, receding to the 25th percentile by season end. Baseflows during

[5] Most hydrologic and geomorphic monitoring occurs for a period defined as a water year, which begins on October 1 and ends on September 30 of the named year. For example, water year 2016 (WY 2016) began on October 1, 2015, and concluded on September 30, 2016.

intervening water years 2013 and 2015 receded to a level within the 10th and 25th percentiles.

Hoffman Creek and Piney Creek monthly and baseflow hydrology

We estimated monthly mean flow at the PODs on Hoffman Creek and Piney Creek for the recent consecutive dry years 2012 through 2016 by correlating flow measurements taken during dry seasons 2015, 2016 and 2017 to the corresponding daily mean flow at the USGS Pescadero Creek gaging station.[6] Redwood Glen staff frequently measured flow in Hoffman Creek at Wright Way and in Piney Creek at Old Haul Road using a bucket-and-stopwatch method (**Table 3**). Periodic measurements of flow at were measured by Balance Hydrologics' hydrologists at the upstream PODs, using USGS bucket-wheel current-meter methods (c.f., Rantz and others, 1982), a portable cutthroat flume, and/or the bucket-and-stopwatch method; Balance also measured flows at the road culverts. The measurement locations are identified in **Figure 8**, and the flow measurements are shown in **Table 3**. We also measured the specific conductance and temperature of the water in the creeks at these sites (**Table 4**).[7] The higher specific conductance measurements downstream of the PODs generally support observations of flow accretion, potentially by groundwater with deeper or longer flow paths and/or groundwater emanating from fractures in the Santa Cruz Mudstone, located lower in the watersheds.

The baseflow correlations were based on the more frequent measurements at the road crossings and then shifted slightly to match fewer measurements at the PODs. Higher flows were proportioned to drainage area, and low-flow extrapolation beyond the lowest measurement was based on the proportion of Pescadero Creek flow of that lowest measurement. Correlations are shown in **Table 5** and **Figures 9**. Based on these correlations, we developed monthly estimates of mean daily flow for water years 2012 through 2016 (**Table 6 and Figure 10**). We also calculated the monthly mean daily flows

[6] Correlations to daily mean flows were appropriate primarily because no rain occurred during the dry-season baseflow measurement period.

[7] Specific conductance (SC) measures the ability of the water to conduct electricity and is a widely used index for salinity or total dissolved solids (TDS). Rainwater has very low specific conductance (nearly zero), and as water passes over and through the ground, salts are dissolved, thereby increasing the specific conductance. Higher specific conductance indicates transmittal through salt-bearing geologic formations or longer residence times in the ground.

for Hoffman Creek and Piney Creek from the monthly mean daily flows for the period of record at the USGS Pescadero Creek station.

Winter storm flow

Given that annual rainfall and runoff totals during water years 2012 through 2016 were below normal, the estimated dry-season baseflows are shown to be lower than the monthly means for the period of record. Runoff related to the December 11, 2014 storm and the March 6th and 13th, 2016 storms, however, were significantly large, and the related mean daily flow for December 2014 and March 2016 were above normal. Similarly, rainfall during November and December of 2012 generated above normal runoff. The runoff estimates for March and April of 2012 and January 2016 were near normal, while other months were below normal.

Monthly flow as percent of Pescadero Creek

The Pescadero Creek USGS gaging record includes the effect of Redwood Glen's historic water use from Hoffman Creek and Piney Creek diversions, as well as raw-water supplies from San Mateo County's Memorial Park diversion, located on the right bank just downstream from Wurr Road bridge, which is also downstream of both Hoffman and Piney Creeks (**Figure 1**). However, to give an idea of the relative magnitude of potential diversions at the Hoffman Creek and Piney Creek PODs, we calculated mean monthly flow at the PODs as a percent of flow at USGS Pescadero Creek gaging station for mean daily flow conditions and for the consecutive dry year period 2012 through 2016 (**Table 6**). Mean daily flow conditions are significantly less than one percent of the flow in Pescadero Creek. During the consecutive dry years, flows were also estimated at less than one percent of flow in Pescadero Creek, with the exception of dry-season 2014, the extreme dry year. Baseflows in Hoffman and Piney Creeks during July, August, and September of 2014 exceeded one percent of the flow in Pescadero Creek, with the baseflow in Piney Creek during August the highest at 1.7 percent of the flow in Pescadero Creek.[8]

[8] Flow extrapolations for an extreme dry year has a higher uncertainty than dry-year correlations within the range of flow measurements taken at Hoffman and Piney Creeks.

Conclusions

- Given that Redwood Glen is not proposing to increase water demand for project conditions described for their new water system permit beyond their historic use and water rights, there is no additional impact by the proposed project.

- The drainage areas of Hoffman and Piney Creeks are significantly small compared to Pescadero Creek, and as a result, wet-season runoff at Redwood Glen's PODs on Hoffman and Piney Creeks are much less than one percent of flow in Pescadero Creek.

- Hoffman and Piney Creeks are small sub-watersheds on Butano Ridge, formed at large fracture zones that lead to spring sources supporting perennial baseflows that accrete (gain flow) downstream. The point of diversions on Hoffman and Piney Creeks are situated at headwater springs that, therefore, can only divert a portion of total baseflow found at the mouth of the creeks. Springflow to the creeks downstream of the PODs are obviously not diverted by the diversions. In addition, the diversion structures allow for a significant portion of baseflow to passively bypass the diversions. Storm-related streamflows and early dry-season baseflows also flow over the diversion structures. Therefore, the existing/historic effect of the diversions on baseflows in Pescadero Creek is not significant.

- Baseflow estimates for Hoffman and Piney Creeks during consecutive dry years were much less than one percent of flow in Pescadero Creek. As a worst case scenario, baseflow estimates in each creek during the 2014 extreme dry year exceeded one percent of the flow in Pescadero Creek during July, August and September. Considering passive bypass flows at the diversions, the estimated combined diverted quantity from both creeks could be as much as 1.5 percent of the baseflow in Pescadero Creek during this period. The existing 70,000 gallon raw water tank storage can provide supply to help bridge the baseflow supply deficit during an extreme dry-year scenario by providing roughly 0.5 gpm during this period three-month period, which would have been diverted at higher flows during the Spring months. 0.5 gpm is roughly 0.5 percent of the average flow in Pescadero Creek during July, August and September of 2014. Additional water use conservation would also benefit.

- The Hoffman Creek and Piney Creek watersheds are currently not managed for timber harvesting, as they were many decades ago; but rather, they are managed by the County for stream water-quality for downstream anadromous fishery habitat and for water supply. However given the high runoff potential of the soils, if a fire were to significantly burn the watersheds, then the streams would be vulnerable to sedimentation and higher levels of turbidity. Similarly, if the County were to change their land-use plan sediment production may increase. Redwood Glen manages only the lower 10 percent of Hoffman Creek and 2 percent of Piney Creek for water quality.

Limitations

Balance Hydrologics prepared this memo for the client's exclusive use on this particular project. It was prepared in general accordance with the accepted standard of practice existing in Northern California at the time the investigation was performed. No other warranties, expressed or implied, are made. It is based in part on information obtained from property plans and well drillers reports, including a level survey of portions of the property and personal communication with the client regarding subsurface conditions below the property. The methods used relied upon flow measurements performed by the client and reference values commonly used in the area or developed by sources generally held to be reliable. Hydrologic results are considered provisional and subject to revision. Findings and recommendations in this memo are based on the assumption that an appropriate and adequate follow-up program will be conducted, and that Balance will be retained at key stages in the project to revise the findings described in this memo as warranted.

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Attachments

Table 1. Drainage areas, Redwood Glen, San Mateo County, CA

Location	Latitude *(WGS84)*	Longitude *(WGS84)*	Drainage area *(sq.mi.)*	*(acres)*	*(% of Pescadero Cr)*
Pescadero Cr at Highway 1 [1]	37.26621	-122.41156	81	--	--
Pescadero Cr at Butano Cr (at Pescadero Marsh)	37.26623	-122.41149	59.7	--	--
Butano Cr at Pescadero Cr (at Pescadero Marsh)	37.25988	-122.40602	21.1	--	--
USGS Pescadero Cr gage near Pescadero, CA (No. 11162500)	37.26078	-122.32886	45.9	--	--
Pescadero Cr below Hoffman Cr	37.27518	-122.28440	39.1	--	--
Hoffman Cr at Pescadero Cr	37.27421	-122.28455	0.40	256	1.0%
Hoffman Cr at Wright Way (flow measurement site)	37.27063	-121.72418	0.29	182	0.73%
Hoffman Cr "sink" POD (flow measurement site)	37.26585	-122.28427	0.18	117	0.47%
Pescadero Cr below Piney Cr	37.27176	-122.27397	38.4	--	--
Piney Cr at Pescadero Cr (flow measurement site)	37.27101	-122.27483	0.10	64	0.26%
Piney Cr at lower POD (flow measurement site)	37.26750	-122.27643	0.03	19	0.08%

Notes:

[1] Pescadero Creek and its major tributary Butano Creek both terminate at Pescadero Marsh above Hwy 1.

Table 2. Monthly mean flow in Pescadero Creek near Pescadero, San Mateo County, CA.

We analyzed flows for the recent dry-year period 2012 through 2016 (highlighted) and ranked the annual mean flow and five-year mean annual flow from driest to wettest. The years analyzed are appropriate for baseflow analysis given the following conditions: a) the five-year period included water year 2014, which ranked second driest year for the 65-year period of record; b) the effects of logging during the '50s and '60s have recovered; c) the likely fewer diversions in general than during earlier years; and d) somewhat improved gaging methods.

Water	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Annual Mean			5-yr Mean Annual	
Year	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(% of normal)	(rank, dry to wet)	(cfs)	(rank, dry to wet)
1952	3.84	7.8	158	418.3	134.2	268.3	54.5	23.8	13.8	8.82	5.32	3.14	92.2	227%	59	--	--
1953	2.55	7.01	158.6	184.2	34.7	53	34	23.6	10.7	6.58	5.53	3.2	44.1	109%	40	--	--
1954	4.08	9.25	5.31	35.7	58.9	82.6	46.9	14.9	8.35	3.63	3.56	3.24	22.8	56%	25	--	--
1955	3.99	11.6	64.3	72.5	34.9	23.9	19.3	14.8	6.15	3.56	2.91	1.46	21.6	53%	23	--	--
1956	1.97	3.7	469.4	338	134.9	72	32.2	19.6	11.3	7.33	5.17	4.04	92.3	227%	60	54.6	52
1957	5.28	4.59	5.86	13.6	45.2	54.6	18.6	47.8	12.2	4.73	3.71	2.23	18.1	45%	19	39.8	33
1958	8.37	7.26	27	75.3	429.2	255.8	398.4	33.4	16.1	10	6.64	3.97	103.3	254%	63	51.6	49
1959	2.8	3.89	6.83	48.6	98.3	19.5	7.96	5.46	3.3	1.65	1.16	5.53	16.5	41%	16	50.4	47
1960	2.38	2.95	3.67	19.6	67.2	11.1	8.86	4.3	2.33	1.29	0.71	0.807	10.2	25%	9	48.1	44
1961	0.971	5.6	8.3	5.44	12.2	17.3	7.99	5.03	2.25	0.494	0.219	0.223	5.47	13%	4	30.7	18
1962	0.377	2.62	8.6	8.13	153.3	82.9	14.5	7.54	3.74	1.75	1.63	0.33	22.9	56%	26	31.7	21
1963	92.8	9.98	19.8	127.1	259.3	68.7	151.5	41.6	17.8	9.8	5.56	3.99	66.0	162%	54	24.2	10
1964	5.47	21.8	7.64	45.6	13	10.7	6.68	5.09	3.66	2	1.14	0.983	10.3	25%	10	23.0	8
1965	1.34	11.1	158.5	229.5	39.2	21.1	109.1	24.7	13.1	6.9	3.79	2.95	52.1	128%	45	31.4	19
1966	2.55	18.6	35.4	57.6	60.1	20.5	9.69	5.76	3.69	2.37	1.12	1.06	18.0	44%	18	33.9	23
1967	1.12	10.4	54.6	253.7	80.5	147.3	199.2	47.5	21	10.1	5.86	3.34	69.6	171%	55	43.2	38
1968	3.95	4.69	11.5	71.6	60.8	67.5	21.3	8.91	5.09	2.85	3.06	1.7	21.9	54%	24	34.4	26
1969	1.89	4.21	24.4	372	389.9	145.4	55.8	20.5	9.59	9.8	10.5	5.16	85.7	211%	58	49.5	46
1970	5.19	4.8	33.7	256	77.5	80.6	20.9	10.3	6.3	4.03	2.18	1.68	42.0	103%	39	47.4	42
1971	1.76	28.1	124.8	52.8	17.8	36.7	19.9	9.76	5.63	3.55	2.29	1.9	25.6	63%	31	49.0	45
1972	1.76	3.34	23.1	10.8	18	6.52	6.69	3.01	1.79	1.03	0.649	0.799	6.43	16%	6	36.3	28
1973	9.32	71.4	23.2	244.8	301.7	148.2	40.9	16.3	8.53	5.44	3.48	2.79	71.6	176%	56	46.3	41
1974	4.73	49.4	137	130.7	37.4	179.5	172.1	32.9	19	8.58	5.11	4.24	65.3	161%	53	42.2	36
1975	4.65	8.34	28.3	41.3	117.6	138.7	50.3	18.1	10.1	7.13	4.93	3.53	35.6	88%	36	40.9	34
1976	5.64	4.75	4.38	4.29	4.73	9.71	8.48	2.76	1.91	0.921	1.12	0.674	4.11	10%	3	36.6	29
1977	0.921	1.78	2.3	3.22	2.92	4.58	1.93	2	0.78	0.205	0.012	0.083	1.72	4%	1	35.7	27
1978	0.488	3.9	25.8	299.2	166.8	124	86.1	30.4	12.3	6.4	3.25	2.8	63.0	155%	51	33.9	24
1979	2.25	3.43	3.75	34.2	104.9	68.9	36.4	13.8	5.47	3.85	2.75	2.08	22.9	56%	27	25.5	11
1980	4.62	6.14	34.6	150.4	281.9	115.9	51.1	24.9	12.1	6.14	4.17	4.03	57.2	141%	49	29.8	15
1981	2.13	2.4	5.2	31.9	18.9	65.3	19.6	6.49	3.46	1.75	1.78	0.64	13.3	33%	14	31.6	20
1982	3.01	27.6	56.5	292.6	178.6	205.6	351.9	43.5	16.3	9.34	6.95	5.74	99.2	244%	62	51.1	48
1983	7.39	51.2	317.6	311.5	475.7	540.1	129.9	93.8	28.1	14.8	8.71	7.79	164.2	404%	65	71.4	58
1984	10.4	85.9	308.9	72	38	28.2	17.6	12.3	10.7	4.09	3.2	2.34	49.8	123%	43	76.7	60
1985	5.83	35.1	30.5	11.1	55.7	56.5	21.3	9.38	5.2	2.55	2.24	3.32	19.6	48%	21	69.2	57
1986	3.16	8.05	15.1	28	434.3	231.6	35.9	15.5	8	5	3.67	4.57	63.6	157%	52	79.3	61
1987	3.27	3.48	5.41	8.24	27.5	27.6	7.45	3.76	2.14	1.29	0.786	0.787	7.53	19%	7	60.9	53
1988	1.16	2.49	18	27.5	6.93	4.25	5.98	3.61	2.23	0.949	0.391	0.229	6.18	15%	5	29.3	14
1989	0.514	6.21	12.3	13.2	6.87	57.4	11.3	3.47	1.87	1.1	1.27	1.42	9.81	24%	8	21.3	5
1990	11.7	21.2	12.7	17.3	23.4	10.4	7.03	8.72	5.47	3.17	2.48	2.04	10.4	26%	11	19.5	3
1991	1.73	2.12	3.61	2.75	3.64	121.5	13.1	4.56	2.61	1.76	1.35	0.753	13.5	33%	15	9.5	1
1992	1.93	1.61	7.57	10.8	212.9	63.8	14.8	6.46	3.39	2.26	1.09	0.829	26.5	65%	32	13.3	2
1993	1.45	1.9	24.6	288.9	168.8	78.5	36.9	13	9.08	5.02	3.11	2.84	52.3	129%	46	22.5	7
1994	2.93	4.79	16.1	12.1	85	14.1	8.45	7.63	3.02	1.29	0.952	0.645	12.6	31%	13	23.1	9
1995	0.831	8.72	9.62	362.7	54.5	367.5	66.4	62.2	21.9	13.4	7.9	5.28	82.6	203%	57	37.5	31
1996	4.21	4.14	31.9	87.9	310.7	120.7	41.5	25.4	13.8	8.05	5.25	4.08	53.8	132%	47	45.6	40
1997	4.12	14	133.1	435.3	77.9	28.5	16	10.1	6.28	4.27	3.31	2.88	61.7	152%	50	52.6	50
1998	2.91	16.2	28.5	233.5	865.3	132	98.2	51.4	32.5	17.5	11.6	8.64	119.7	295%	64	66.1	55
1999	8.26	9.58	16	79.5	247.1	92.4	81.7	24.5	14.1	9	6.01	5.88	48.1	118%	42	73.2	59
2000	4.98	6.62	5.95	96.7	361.5	133.1	38.3	20.2	11.5	7.91	4.8	4.64	56.8	140%	48	68.0	56
2001	8.19	5.9	6.85	26.5	94.8	66.2	18.3	8.45	4.88	3.56	2.47	1.88	20.2	50%	22	61.3	54
2002	1.69	11.4	118.7	67.1	35.6	39.8	19	10.2	6.57	3.83	2.22	1.77	26.6	65%	33	54.3	51
2003	1.81	5.25	175.1	46	22.6	20.9	72.6	39.7	12	6.89	3.98	2.69	34.4	85%	35	37.2	30
2004	2.33	4.39	66.1	84.3	159.2	49.2	14.9	7.93	4.84	2.86	2.08	1.55	32.9	81%	34	34.2	25
2005	4.74	4.75	69.5	144	96.6	153.2	76.1	32.5	16.8	9.35	5.19	3.88	51.3	126%	44	33.1	22
2006	3.57	5	133.7	154.8	62	329	333.7	43.8	18.4	10.5	7.04	5.09	92.5	228%	61	47.5	43
2007	5.13	7.41	13.8	8.69	64.4	24.1	8.35	5.42	3.66	2.34	1.87	1.48	11.9	29%	12	44.6	39
2008	2.71	2.29	4.27	149	87	22.5	9.59	6.23	3.41	1.98	1.42	0.954	24.2	60%	29	42.6	37
2009	1.3	3.76	6.66	4.55	172.4	100.5	11.5	7.13	4.35	2.47	1.45	1.26	25.5	63%	30	41.1	35
2010	10.9	2.71	6.83	101.2	91	90.4	95	22	9.66	5.26	3.94	2.69	36.5	90%	37	38.1	32
2011	2.97	5.69	62.7	28.7	92.4	255.9	54.4	17.9	15.4	8.38	5.71	3.65	46.1	113%	41	28.8	13
2012	5.54	6.02	4.73	11.3	6.25	105.1	61.3	12.2	6.18	3.65	2.16	1.75	18.9	47%	20	30.2	17
2013	2.21	15.2	186.2	32.8	12.1	9.89	8.15	4	2.72	1.56	0.984	0.935	23.3	57%	28	30.1	16
2014	0.891	2	2.03	1.06	6.02	9.49	6.21	1.51	0.823	0.365	0.102	0.266	2.54	6%	2	25.5	12
2015	0.395	1.64	110	9.52	53.8	8.67	6.39	4.08	2.73	1.74	0.966	0.799	16.6	41%	17	21.5	6
2016	0.658	2.84	21.8	112.6	22.8	233.5	25.6	12	6.06	3.44	2.26	1.56	37.5	92%	38	19.8	4
Mean	4.98	11.3	57.2	108	123	95.9	54.4	18.1	8.74	4.98	3.36	2.61	40.6	--	--	--	--

Data source: USGS gaging station 11162500; latitude 37°15'39", longitude 122°19'40" NAD27; drainage area 45.9 square miles; gage datum 62.30 feet above NGVD29.

Table 3. Streamflow measurements in Hoffman and Piney Creeks, Redwood Glen, San Mateo County, CA.

Date	Hoffman Cr at ("sink") POD		Hoffman Cr at Wright Way		Piney Cr at POD (improved 2017)		Piney Cr at Haul Rd	
	gpm	cfs	gpm	cfs	gpm	cfs	gpm	cfs
10/12/2015	--	--	3.0	0.0067	--	--	4.0	0.0089
4/14/2016	29	0.065	36	0.080	--	--	22	0.049
5/2/2016	--	--	41	0.091	--	--	12	0.027
5/15/2016	--	--	26	0.058	--	--	14	0.031
5/31/2016	--	--	25	0.056	--	--	10	0.022
6/2/2016	--	--	--	--	5.8	0.013	9.6	0.021
6/11/2016	--	--	14	0.031	--	--	8.0	0.018
7/1/2016	6.8	0.015	6.8	0.015	--	--	7.4	0.016
7/7/2016	--	--	7.4	0.016	--	--	7.2	0.016
7/14/2016	--	--	6.4	0.014	--	--	6.9	0.015
7/21/2016	--	--	6.7	0.015	--	--	7.4	0.016
8/5/2016	--	--	5.5	0.012	--	--	6.9	0.015
8/11/2016	--	--	3.9	0.0087	--	--	6.1	0.013
8/22/2016	--	--	4.2	0.0093	--	--	6.2	0.014
8/29/2016	--	--	4.4	0.0098	--	--	6.2	0.014
9/8/2016	--	--	2.9	0.0065	--	--	5.1	0.011
9/29/2016	--	--	2.9	0.0065	--	--	5.0	0.011
10/11/2016	--	--	--	--	4.1	0.0091	5.1	0.011
10/13/2016	3.5	0.0078	2.9	0.0065	--	--	--	--
10/17/2016	--	--	22	0.050	--	--	13	0.028
11/8/2016	--	--	8.6	0.019	--	--	8.0	0.018
11/19/2016	--	--	--	--	4.0	0.0088	--	--
12/5/2016	--	--	15.9	0.035	--	--	9.4	0.021
7/20/2017			14.7	0.033			12.2	0.027
7/27/2017			13.4	0.030			10.6	0.024
8/4/2017			13.3	0.030			11.2	0.025
8/21/2017			14.4	0.032			9.4	0.021
9/4/2017			12.2	0.027			6.0	0.013
9/9/2017	5.3	0.012	8.5	0.019	4.6	0.0102	10.9	0.024

Notes:

1. Flow measurements were more frequently made at the easily accessible culvert outflow sites of Hoffman Cr at Wright Way and of Piney Cr at Haul Rd using a calibrated bucket and stopwatch, mainly by Redwood Glen water-system staff. At the PODs, flows were measured by a Balance Hydrologics hydrologist using either a current meter and open-channel flow method, portable cutthroat flume, or a bucket and stopwatch where applicable. On these site visits by Balance, flows were also measured at the culvert sites.

Table 4. Specific conductance and temperature measurements in Hoffman, Piney, and Pescadero Creeks, Redwood Glen, San Mateo County, CA.

Data generally support the observation of flow accretion downstream of the point of diversions.

Date	Hoffman Cr at ("sink") POD		Hoffman Cr at Wright Way		Piney Cr upper bowl of lower POD		Piney Cr lower bowl of lower POD		Piney Cr lower POD (composite) [2]		Piney Cr at Haul Rd		Pescadero Creek at park diversion	
	uS/cm @ 25°C	°C	uS/cm @ 25°C	°C	uS/cm @ 25°C	°C	uS/cm @ 25°C	°C	uS/cm @ 25°C	°C	uS/cm @ 25°C	°C	uS/cm @ 25°C	°C
4/14/2016	245	11.6	508	11.5	--	--	--	--	--	--	624	12	599	11.5
6/2/2016	500	14	785	14.5	--	--	--	--	--	--	809	14.5	778	18
7/1/2016	493	13.6	762	14.2	--	--	--	--	--	--	616	13.5	--	--
10/11/2016	--	--	--	--	710	12.8	676	13.2	--	--	695	13.2	--	--
10/13/2016	693	12.1	907	12.1	--	--	--	--	--	--	--	--	--	--
11/14/2016	--	--	--	--	681	12.2	789	12.3	743	12.6	--	--	--	--
11/18/2016	--	--	--	--	--	--	--	--	--	--	--	--	709	8
11/19/2016	--	--	--	--	684	10.2	778	12	--	--	--	--	--	--
9/9/2017	546	14.6	711	15.2	--	--	--	--	707	14.2	--	--	706	18.9

Notes:

1. Measurements made with a YSI Pro30 specific conductance and temperature field meter.

2. During August 2017, the diversion structure on Piney Creek was improved at the composite site located just downstream of the upper and lower bowls to include a diversion port, bypass port and sediment sluicing port.

Data provisional and subject to revision.

Table 5. Flow correlation equations for Hoffman and Piney Creeks, Redwood Glen, San Mateo County, CA.

Dependent variable (y)	Independent variable (x)	Polynomial coefficients			
		ax^3	bx^2	cx	d
Piney Cr @ lower POD (gpm)	Pescadero Cr near Pescadero, CA (cfs)	-5.40139161583832E-09	2.24592175335179E-05	2.8068149420691E-01	3.33867879637544
	Pescadero Cr near Pescadero, CA (below 0.45035 cfs)	0	0	7.69402166460992	0
Hoffman Cr @ "sink" POD (gpm)	Pescadero Cr near Pescadero, CA (above 2.393 cfs)	0	0	1.85026750816993	0
	Pescadero Cr near Pescadero, CA (2.393 to 0.53125 cfs)	0	0.014519934	0.68912955	2.695403074
	Pescadero Cr near Pescadero, CA (below 0.53125 cfs)	0	0	5.77051624845744	0

Notes:

1. Correlations of baseflow measurements and of drainage areas were developed using daily mean flows at Pescadero Creek near Pescadero, CA (USGS station no. 11162500). The baseflow correlations were based on more frequent measurements at the easily accessible road-crossing culvert sites and then shifted slight to match fewer measurements at the PODs. Higher flows were proportioned to drainage area. Correlations to daily mean flows were appropriate primarily because no rain occurred during the dry-season baseflow measurement period.
2. Values shown are coefficients "a", "b", "c", and "d" of a polynomial equation $y = ax^3 + bx^2 + cx + d$ where "x" is the flow in Pescadero Creek and "y" if the flow in Hoffman or Piney Creeks.
3. Correlations shown in Figure 10.

Data provisional and subject to revision.

Table 6. Monthly mean flow estimates for Hoffman and Piney Creeks during recent consecutive dry years 2012 through 2016 and statistically mean conditions, Redwood Glen, San Mateo County, CA.

	Pescadero Cr USGS station near Pescadero	Hoffman Cr at POD "sink" diversion		Piney Cr at POD (improved 2017) 2,000 ft south and 350 ft east from NW corner of Section 2, T8S, R4W	
Drarinage area					
Square miles	45.9		0.183		0.030
% of Pescadero Cr			0.4%		0.06%
	(cfs)	*(gpm)*	*(% of Pescadero Cr)*	*(gpm)*	*(% of Pescadero Cr)*
Water Year 2012 *(dry year)*					
October	5.55	10	0.4%	5	0.2%
November	6.00	11	0.4%	5	0.2%
December	4.72	9	0.4%	5	0.2%
January	11.4	21	0.4%	7	0.1%
February	6.27	12	0.4%	5	0.2%
March	105	194	0.4%	33	0.1%
April	61.1	113	0.4%	21	0.1%
May	12.2	23	0.4%	7	0.1%
June	6.17	11	0.4%	5	0.2%
July	3.66	7	0.4%	4	0.3%
August	2.17	4	0.4%	4	0.4%
September	1.76	4	0.5%	4	0.5%
Annual	18.9	35	0.4%	9	0.1%
	(cfs)	*(gpm)*	*(% of Pescadero Cr)*	*(gpm)*	*(% of Pescadero Cr)*
Water Year 2013 *(dry year)*					
October	2.21	5	0.5%	4	0.4%
November	15.2	28	0.4%	8	0.1%
December	186	345	0.4%	58	0.1%
January	32.9	61	0.4%	13	0.1%
February	12.1	22	0.4%	7	0.1%
March	9.91	18	0.4%	6	0.1%
April	8.16	15	0.4%	6	0.2%
May	4.00	7	0.4%	4	0.2%
June	2.72	5	0.4%	4	0.3%
July	1.57	4	0.5%	4	0.5%
August	0.985	3	0.8%	4	0.8%
September	0.936	3	0.8%	4	0.9%
Annual	23.3	44	0.4%	10	0.1%
	(cfs)	*(gpm)*	*(% of Pescadero Cr)*	*(gpm)*	*(% of Pescadero Cr)*
Water Year 2014 *(extreme dry year)*					
October	0.889	3	0.8%	4	0.9%
November	2.00	4	0.5%	4	0.4%
December	2.03	4	0.5%	4	0.4%
January	1.07	3	0.7%	4	0.8%
February	6.03	12	0.4%	5	0.2%
March	9.50	18	0.4%	6	0.1%
April	6.21	12	0.4%	5	0.2%
May	1.51	4	0.6%	4	0.6%
June	0.826	3	0.9%	4	1.0%
July	0.365	2	1.2%	3	1.5%
August	0.102	1	1.3%	1	1.7%
September	0.266	1	1.1%	2	1.4%
Annual	2.54	6	0.5%	4	0.3%

	Pescadero Cr USGS station near Pescadero	**Hoffman Cr at POD** "sink" diversion		**Piney Cr at POD (improved 2017)** 2,000 ft south and 350 ft east from NW corner of Section 2, T8S, R4W	
	(cfs)	*(gpm)*	*(% of Pescadero Cr)*	*(gpm)*	*(% of Pescadero Cr)*
Water Year 2015 *(dry year)*					
October	0.395	2	1.1%	2	1.4%
November	1.64	4	0.6%	4	0.5%
December	110	204	0.4%	35	0.1%
January	9.56	18	0.4%	6	0.1%
February	53.9	100	0.4%	19	0.1%
March	8.66	16	0.4%	6	0.1%
April	6.38	12	0.4%	5	0.2%
May	4.07	8	0.4%	4	0.2%
June	2.73	5	0.4%	4	0.3%
July	1.74	4	0.5%	4	0.5%
August	0.975	3	0.8%	4	0.8%
September	0.8	3	0.9%	4	1.0%
Annual	16.6	31	0.4%	8	0.1%
	(cfs)	*(gpm)*	*(% of Pescadero Cr)*	*(gpm)*	*(% of Pescadero Cr)*
Water Year 2016 *(below normal)*					
October	0.659	3	1.0%	4	1.2%
November	2.83	5	0.4%	4	0.3%
December	21.8	40	0.4%	10	0.1%
January	113	208	0.4%	36	0.1%
February	22.8	42	0.4%	10	0.1%
March	234	432	0.4%	71	0.1%
April	25.6	47	0.4%	11	0.1%
May	12.0	22	0.4%	7	0.1%
June	6.07	11	0.4%	5	0.2%
July	3.44	6	0.4%	4	0.3%
August	2.27	4	0.4%	4	0.4%
September	1.56	4	0.5%	4	0.5%
Annual	37.5	70	0.4%	14	0.1%
	(cfs)	*(gpm)*	*(% of Pescadero Cr)*	*(gpm)*	*(% of Pescadero Cr)*
Mean Daily Flow *(65-yr period of record)*					
October	4.98	9	0.4%	5	0.2%
November	11.3	21	0.4%	6	0.1%
December	57.2	106	0.4%	19	0.1%
January	108	200	0.4%	34	0.1%
February	123	225	0.4%	38	0.1%
March	95.9	178	0.4%	30	0.1%
April	54.4	100	0.4%	19	0.1%
May	18.1	34	0.4%	8	0.1%
June	8.76	16	0.4%	6	0.1%
July	5.00	9	0.4%	5	0.2%
August	3.38	6	0.4%	4	0.3%
September	2.62	5	0.4%	4	0.3%
Annual	40.6	75	0.4%	15	0.1%

Notes:

1. Estimates were based on correlations of baseflow measurements (for low flow) and of drainage areas (for high flow) to Pescadero Creek near Pescadero, CA (USGS station no. 11162500), period of record for water years

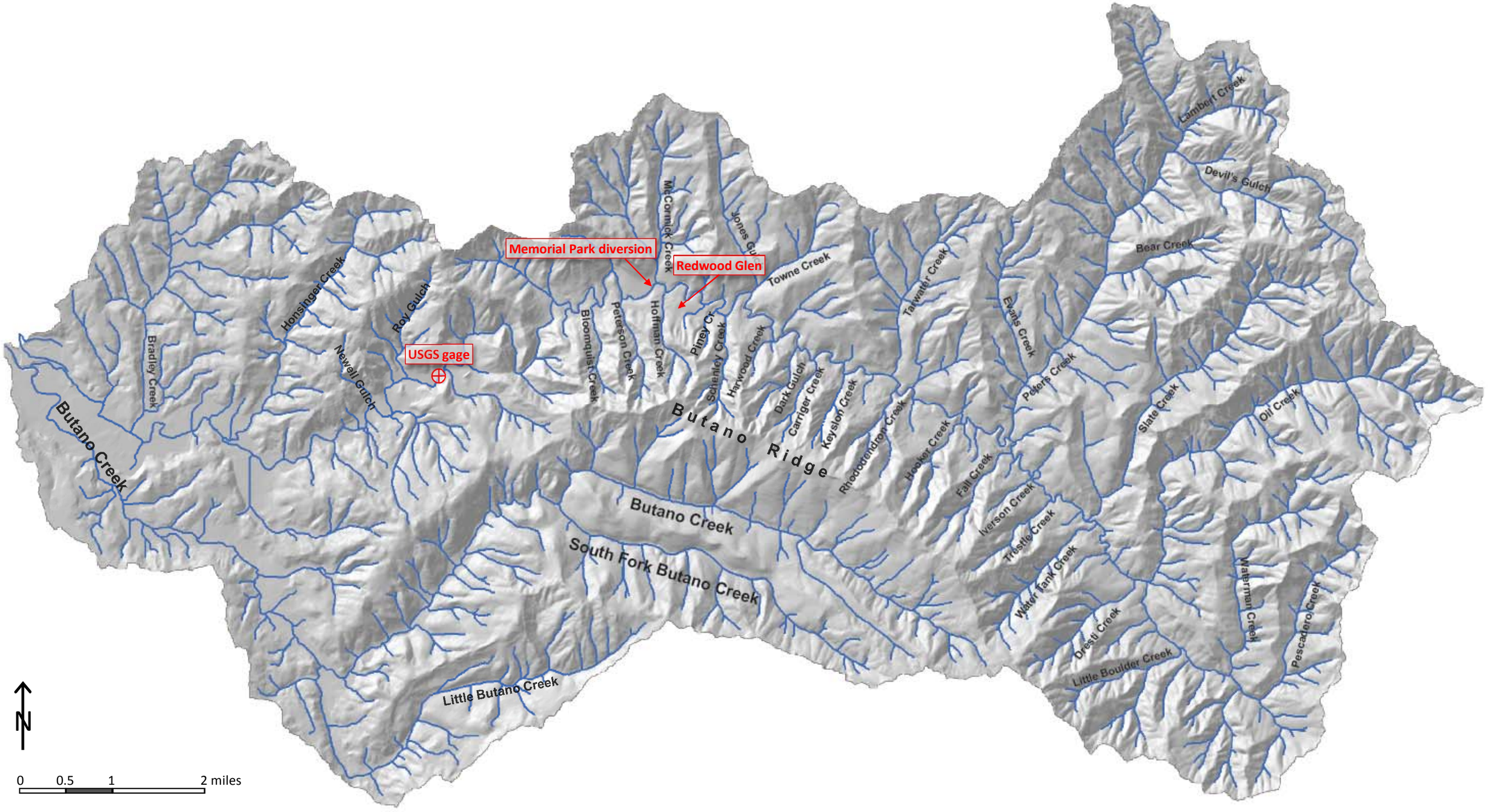

Figure 1. Location of Redwood Glen and USGS gaging station in Pescadero Creek watershed, San Mateo County, CA.
Base map source: Donaldson, E., 2011, Geomorphic controls on spatial distributaions of cobbles and boulders in stream-channel network: Master of Science in Geoscience, San Francisco State University, August 2011, 57 p. + tables, figures and appendix.

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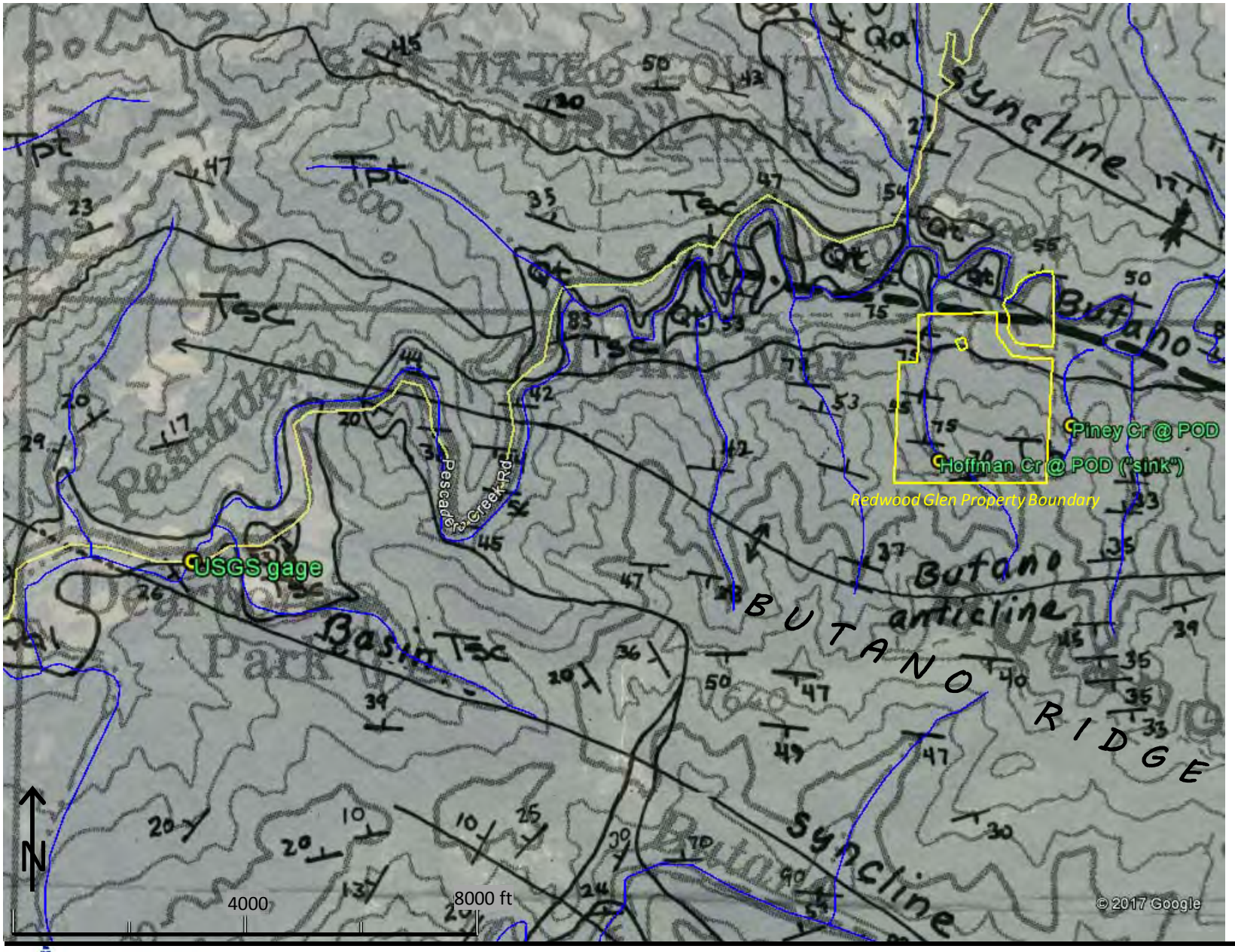

Description of Map Units

(Brabb and others, 2000)

Santa Cruz Mudstone, Tsc (upper Miocene) -- Brown and gray to light-gray, buff, and light-yellow siliceous mudstone with nonsiliceous mudstone and siltstone and minor amounts of sandstone. Santa Cruz Mudstone is more than 1,000 m thick

Butano Sandstone, Tb (middle and lower Eocene) -- Light-gray to buff, very fine to very coarse grained arkosic sandstone in thin to very thick beds interbedded with dark-gray to brown mudstone and shale. Conglomerate, containing boulders of granitic and metamorphic rocks and well-rounded cobbles and pebbles of quartzite and porphyry, is present locally in lower part of section. Amount of mudstone and shale varies from 10 to 40 percent of volume of formation. About 3,000 m thick

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Figure 2. Surface geology mapped in the vicinity of Redwood Glen, San Mateo County, CA. Large vertical-trending fracture zones are found in the Butano Ridge block, which lead to springs at the sources of Hoffman Creek, Piney Creek, and other creeks that head in the Butano Sandstone (Tb). Overlying Santa Cruz Mudstone (Tsc) is mapped along Pescadero Creek and the Butano fault at the northern most portion of Redwood Glen, overlain by Quaternary terrace deposits (Qt).

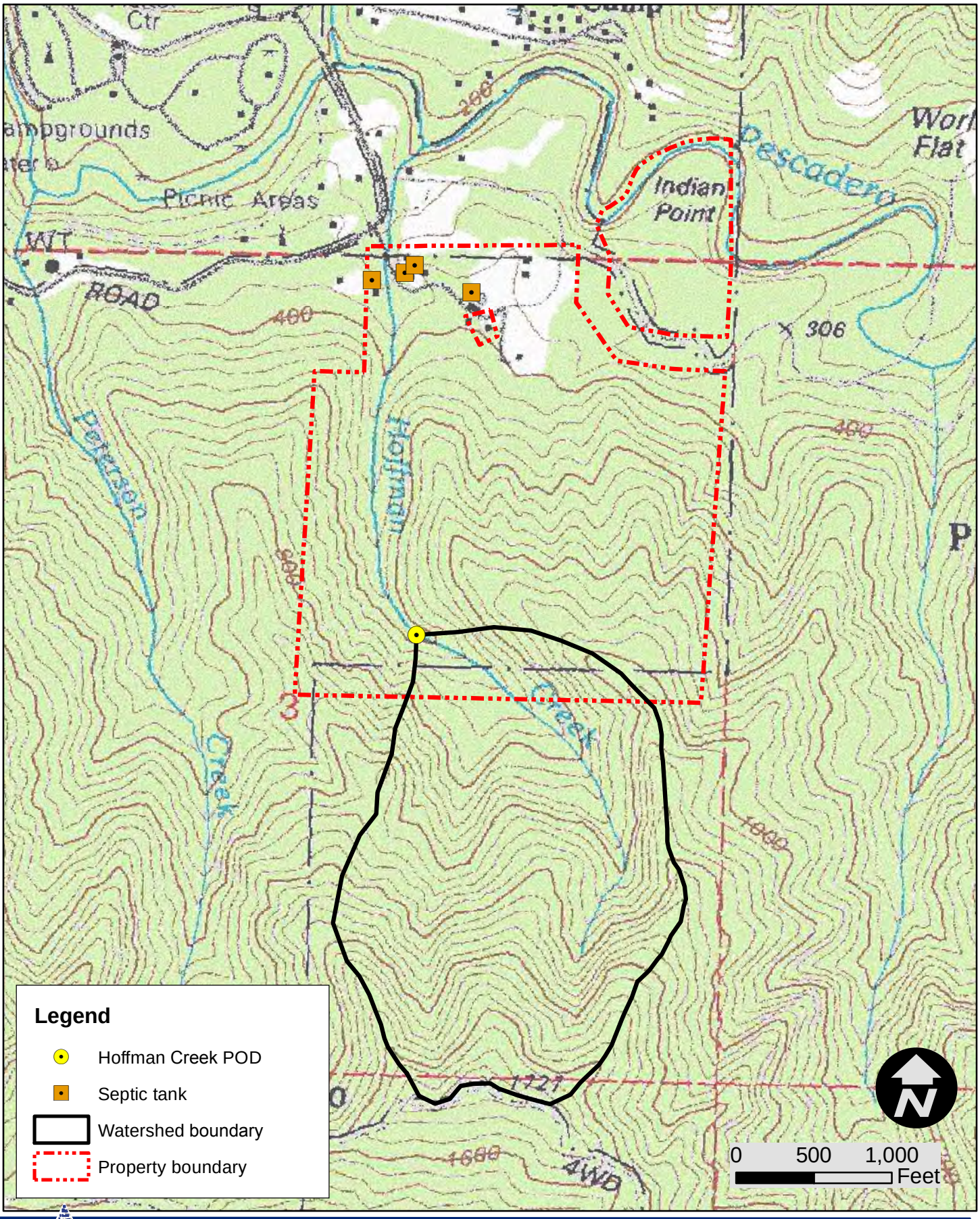

Figure 3. Source-water assessment map for existing point of diversion on Hoffman Creek (the 'sink' diversion), Redwood Glen, San Mateo County, CA.

Area of the watershed is 117 acres.

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Base map: USGS La Honda 7.5' Quadrangle

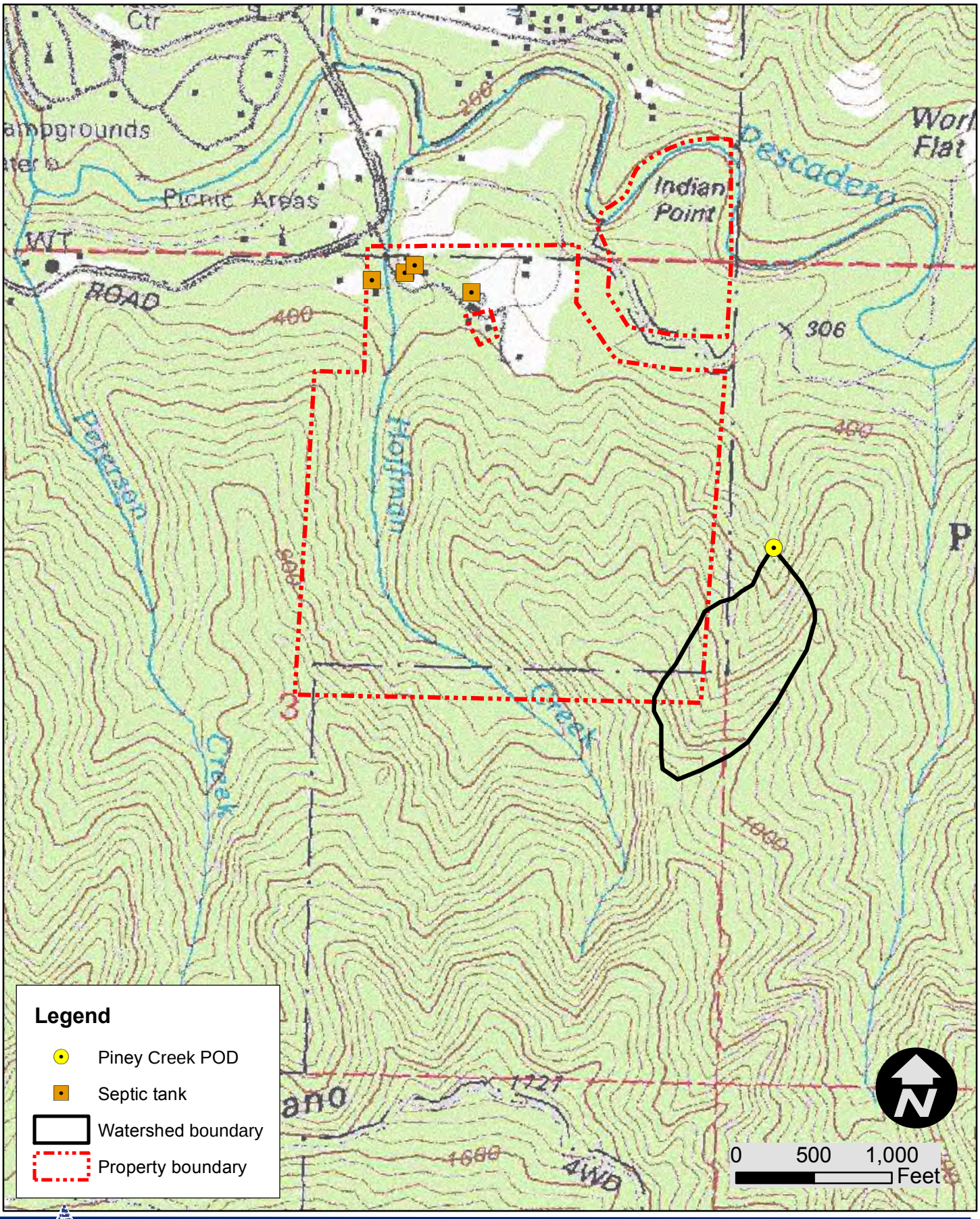

Figure 4. Source-water assessment map for point of diversion on Piney Creek, Redwood Glen, San Mateo County, CA

Area of the watershed is 19 acres.

Balance Hydrologics, Inc.

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Base map: USGS La Honda 7.5' Quadrangle

On 9/9/17 0.73 gpm diverted and 4.6 gpm basefow downstream of the diversion

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Figure 5. Existing diversion structure on Hoffman Creek, Redwood Glen, San Mateo County, CA. The diversion structure consists of a stainless-steel sink attached to a redwood log across this creek. Sediment and wood debris impounded behind the log has raised the channel bed to allow flow over the log and into the sink. Underflow beneath the log bypasses the diversion, as does overflow when the sink spills.

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Figure 6. Improved diversion structure on Piney Creek, Redwood Glen, San Mateo County, CA.
The diversion structure was rehabilitated during 2017 to remove sediment and debris, and to restore its full functionality. It now includes a functioning bypass port and diversion port with the same diameter and set at the same elevation. If both ports are completely open, then the flow is passively split in half.

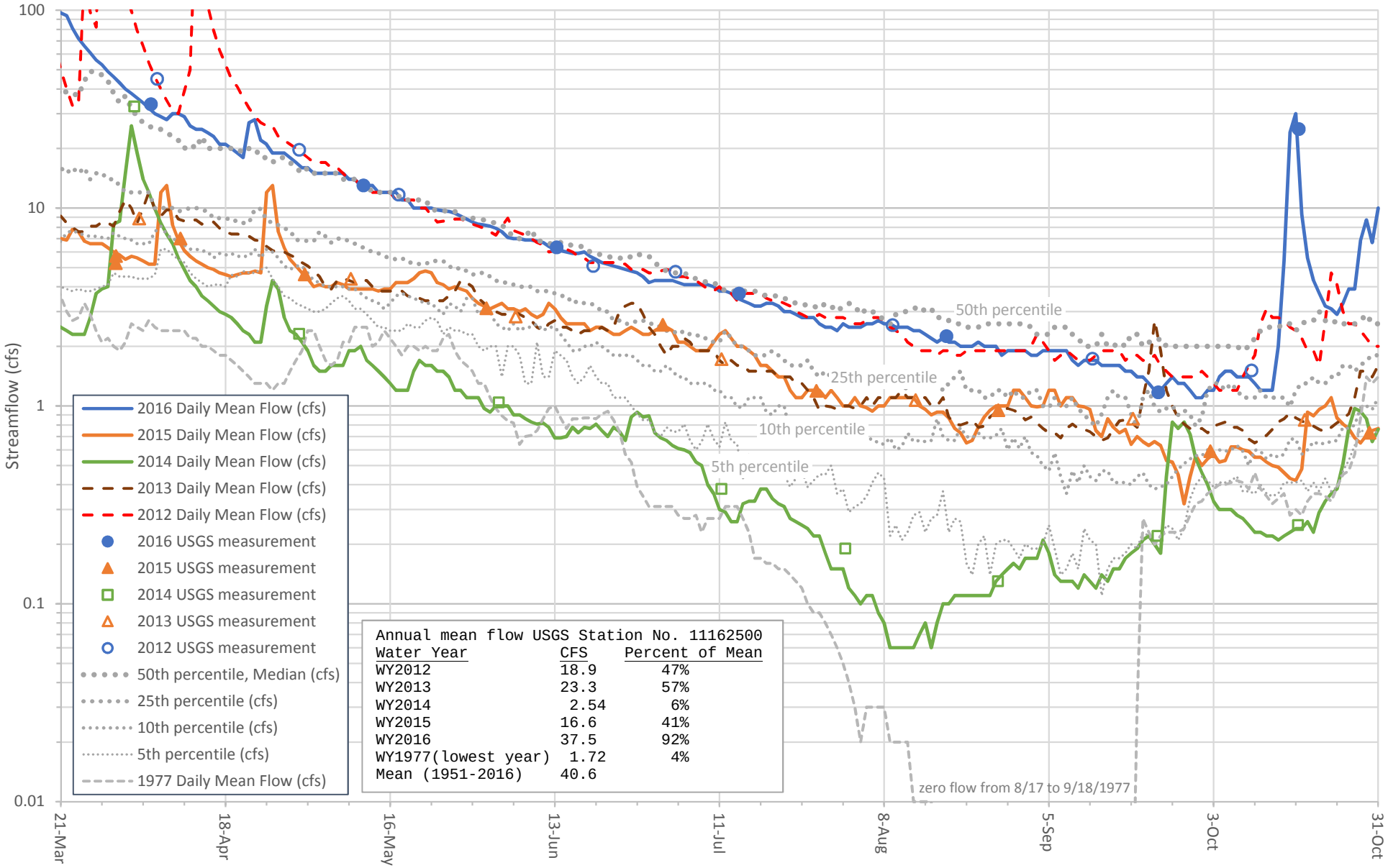


Figure 7. Streamflow recession at the USGS gage on Pescadero Creek near Pescadero during consecutive dry years 2012 through 2016, San Mateo County, CA. Baseflow hydrographs illustrate a deepening multi-year drought into the 2014 extreme dry year, when flows were below the 5th percentile of the 65-year record during nearly all of the dry season; flows during 2013 and 2015 receded to a level within the 10th and 25th percentiles; and bracketing the multi-year drought, baseflows tracked the 50th percentile during 2012 and 2016, receding to the 25th percentile by season end.

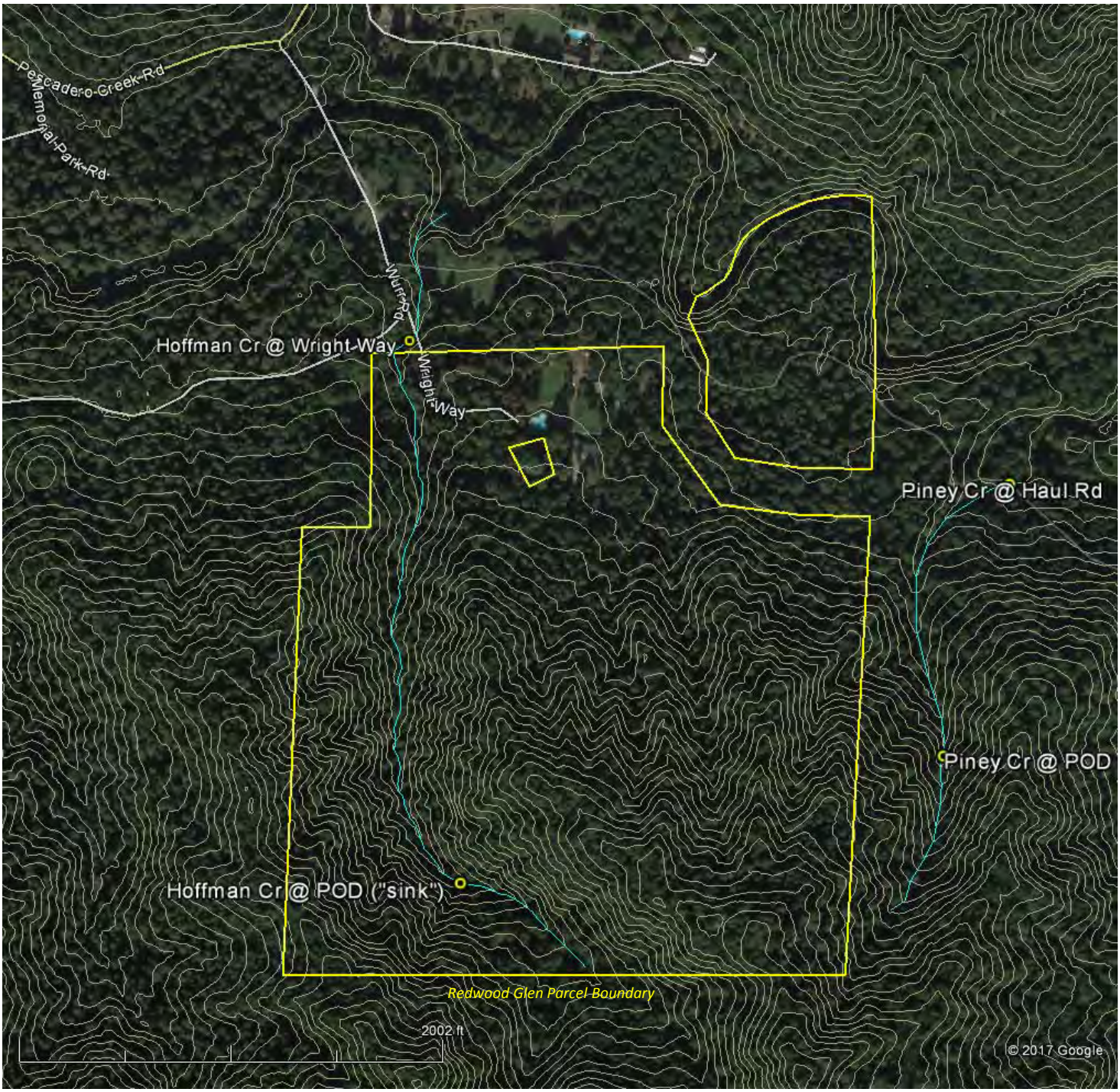
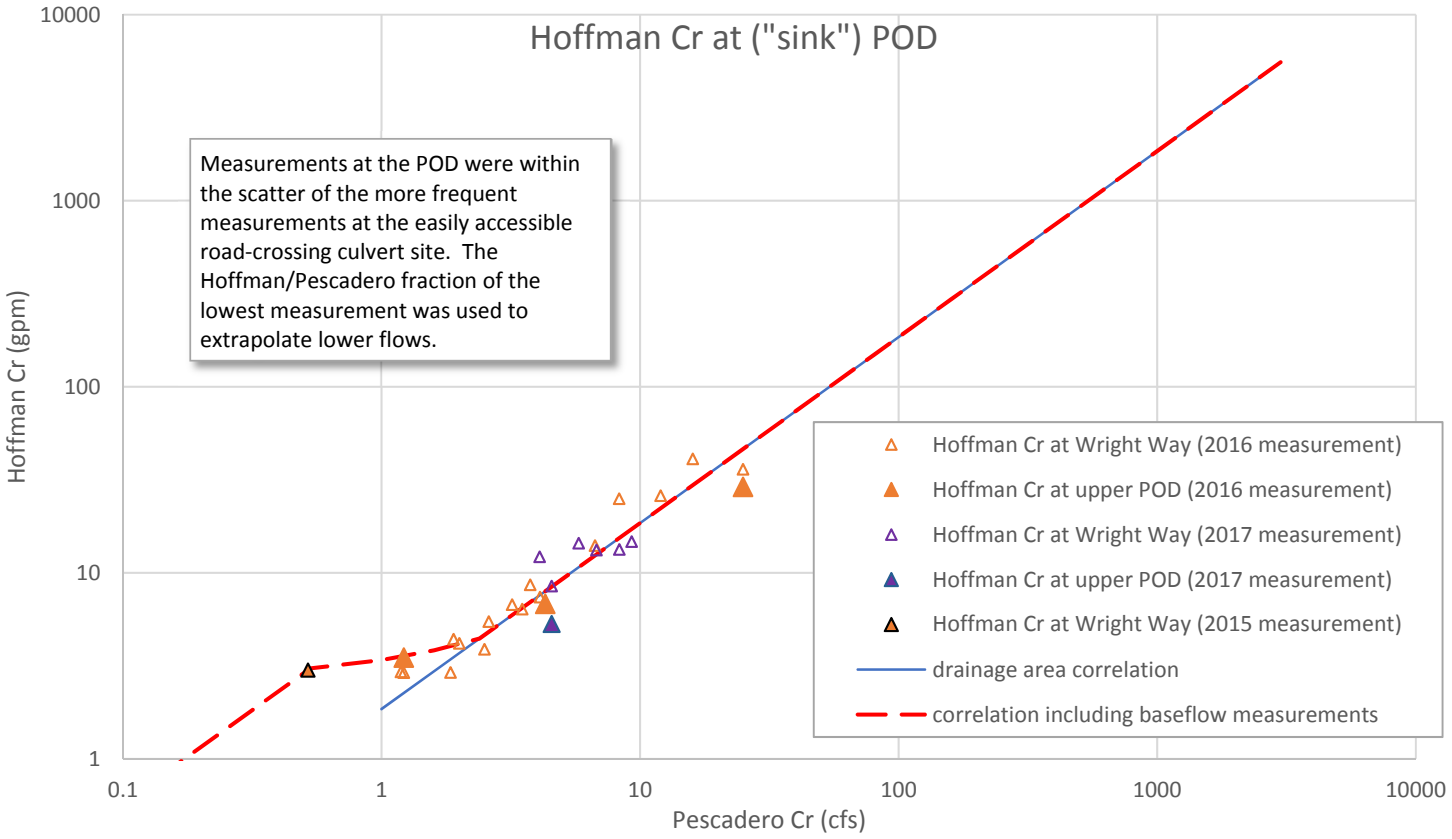


Figure 8. Streamflow measurement locations at Redwood Glen, San Mateo County, CA.
Photo source: Google Earth.
Contour interval: 5 ft



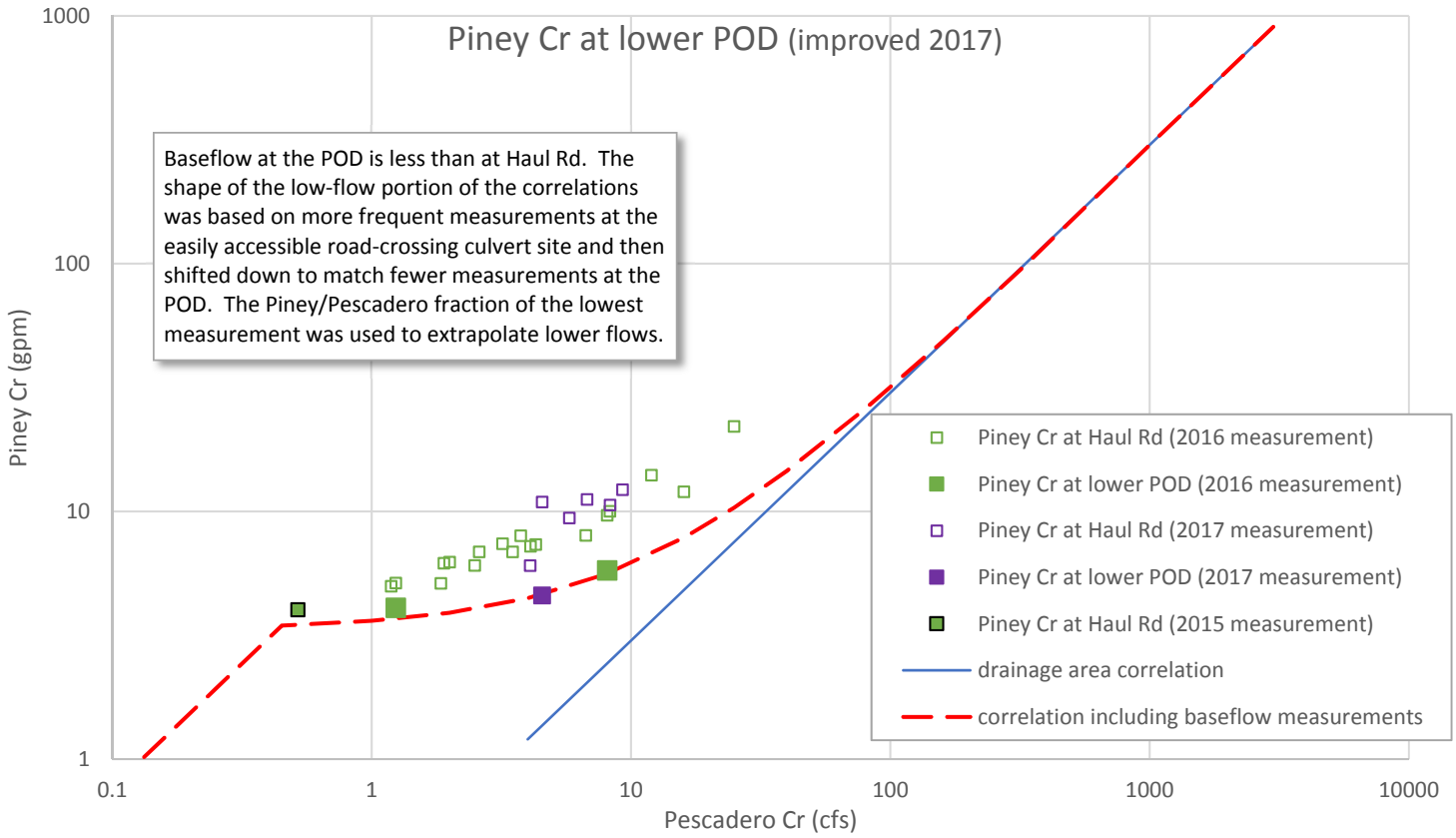
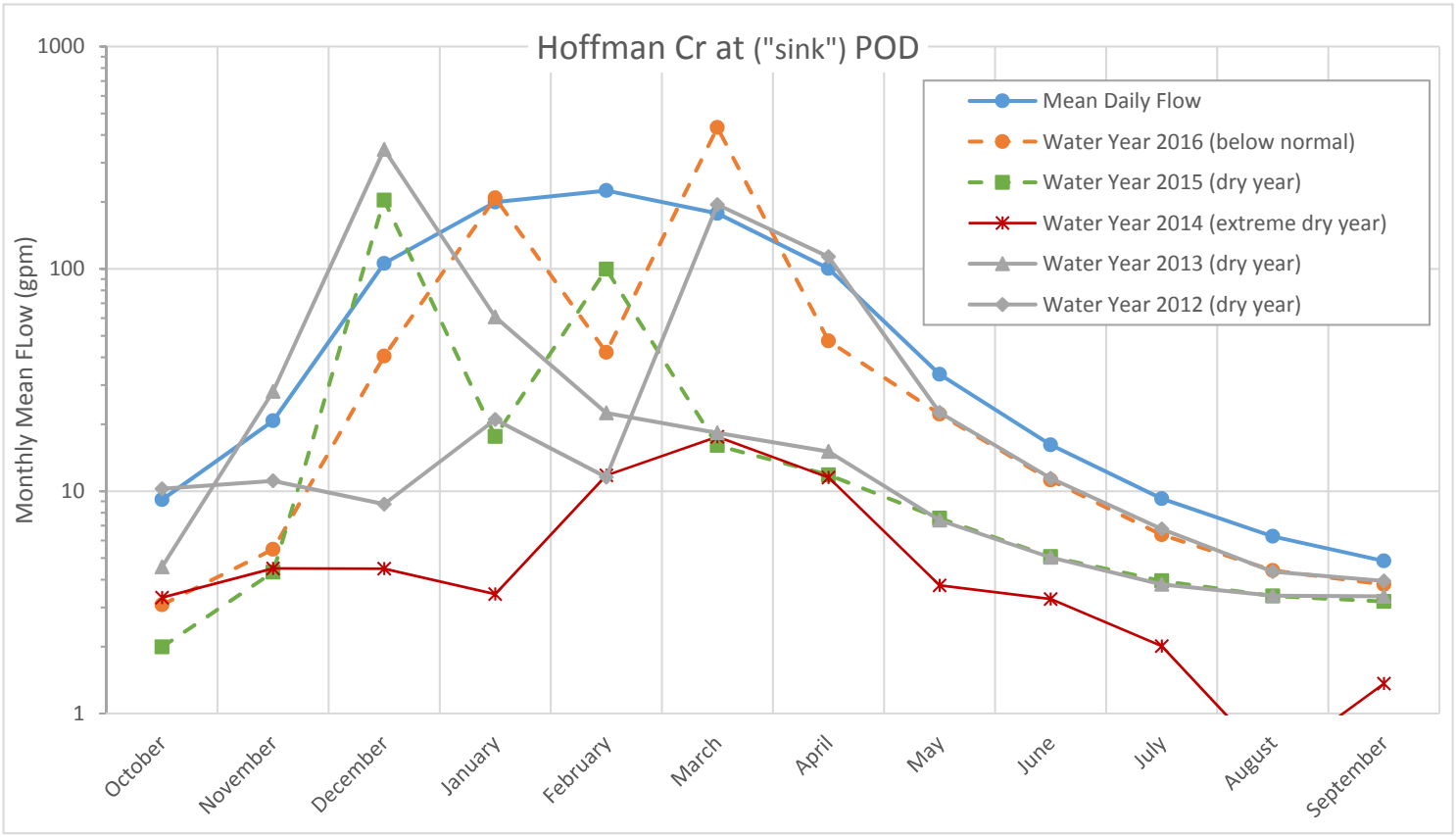


Figure 9. Flow correlations for Piney and Hoffman Creeks, Redwood Glen, San Mateo County, CA. Baseflow measurements were correlated to corresponding flows in Pescadero Cr near Pescadero, CA (USGS station no. 11162500). Higher flows were proportioned to drainage area. Correlation equations are listed in Table 5.



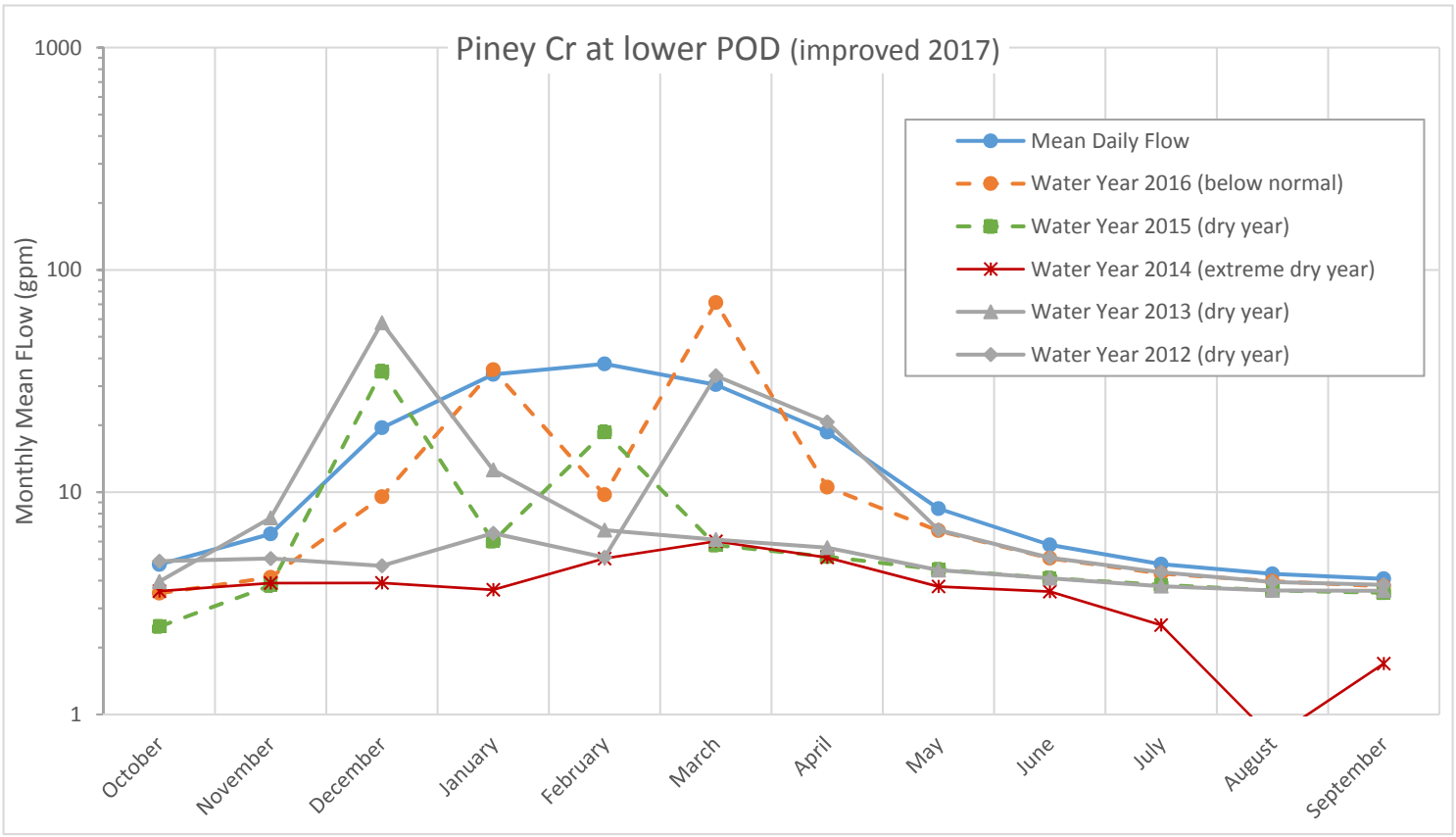


Figure 10. Monthly mean flow estimates for Hoffman and Piney Creeks, Redwood Glen, San Mateo County, CA. Estimates were based on correlations of baseflow measurements (for low flow) and of drainage area (for high flow) to Pescadero Creek near Pescadero, CA (USGS station no. 11162500).

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County of San Mateo - Planning and Building Department

ATTACHMENT G

SECTION 3 Water System Demand

In accordance with California Code of Regulations (CCR), Title 22, Division 4, Chapter 16 Waterworks Standards §64554, the average daily demand (ADD) and maximum daily demand (MDD) were determined for the Redwood Glen system in order to understand the system demands and establish the source capacity requirements for Redwood Glen.

Redwood Glen provided historical monthly water usage records for the past 10 years (from 2006 to present). Data from 2006 through 2008 was uncharacteristically elevated due to a special school program that ran throughout the year, and which no longer occurs,[4] while data from 2014 was unusually low and incomplete[5]. After discussion with the State, it was determined that these values were not representative of system demands and would not be included in ADD and MDD calculations. The ADD and MDD calculations are included in the section below.

3.1 Average Daily Demand

The ADD was calculated from six (6) years of demand data: 2009 through 2013, and 2015, which are the same values utilized in the initial submission of the SWAA (June 2016) and the submission of the SWAA Addendum (December 2016). Based on these values, the ADD was calculated to be 3,578 gpd, or 2.5 gpm. The distribution of average monthly demand for these six (6) years is included below in Table 5. See Attachment 3 for the raw demand data and demand analysis.

[4] Average annual demands are approximately 1MG (~83%) higher from 2006-2008 in comparison to 2009-2015 (2.2M versus 1.2M), and are not representative of typical demands on the water system.
[5] Incomplete due to water being imported that year and not having complete records.

Table 5 Monthly Distribution of Average Daily Demand (ADD)

Month	Monthly Average Daily Demand (2009-2013 & 2015)	Monthly Average Daily Demand (2009-2013 & 2015)
	gallons	*gpm*
January	96,285	2.2
February	77,296	1.9
March	95,705	2.1
April	122,432	2.8
May	108,817	2.4
June	138,577	3.2
July	168,102	3.8
August	161,224	3.6
September	99,540	2.3
October	106,054	2.4
November	67,202	1.6
December	64,719	1.4
Average	***108,829***	***2.5***

3.2 Maximum Daily Demand

The MDD was calculated based on the CCR Section § 64554(b)(2), utilizing the maximum month calculation. Table 6 presents the maximum month demand for each month of the year based on historical data from 2009-2013 and 2015. Using this calculation, the highest monthly usage that occurred during the period of analysis was reported in July 2011, and equates to 230,010 gallons, or a maximum month average daily demand (MMD) of 7,420 gpd (5.2 gpm).

Table 6 Distribution of Maximum Month Demand (MMD)

Month	Maximum Monthly Demand (2009-2013 & 2015)	Maximum Monthly Demand (2009-2013 & 2015)
	Gallons	*gpm*
January	108,310	2.4
February	147,431	3.6
March	130,077	2.9
April	161,568	3.7
May	129,718	2.9
June	189,244	4.4
July	230,010	5.2
August	191,787	4.3
September	132,300	3.1
October	145,561	3.3
November	98,550	2.3
December	81,300	1.8

A factor of safety was added to the calculated MMD to account for possible growth and/or source failure. The factor of safety was determined through the following methodology:

- **Establish the Adjusted MMD**: An adjusted MMD was calculated by determining the *next highest monthly usage* from the data that was omitted for the "elevated years" of usage at Redwood Glen (2006 through 2008). The *next highest monthly usage* reported was in August 2006: 259,107 gallons for an MMD of 8,358 gpd (5.8 gpm).
- **Calculate the Adjusted MDD**: An adjusted MDD was calculated by multiplying the adjusted MMD (8,358 gpd, or 5.8 gpm) by 1.5, equating to a revised MDD estimate of 12,537 gpd, or 8.7 gpm. This equates to a 1.0 gpm increase over the initial MDD rate of 7.7 gpm.

See Attachment 3 for the raw demand data and the demand analysis.

3.3 Future Demand

There is no anticipated growth over the next 10 years at the Redwood Glen Camp and Conference Center. Furthermore, there is no anticipated increase in water demand on the Redwood Glen water system.

However, the SWRCB indicated a factor of safety should be applied to "account for possible future growth," and per the previous section, this is accounted for in the revised MMD calculation of 5.8 gpm and the revised MDD calculation of 8.7 gpm. These values will be utilized in the supply availability and storage analysis that follows.

3.4 Demand Used for Analysis

As noted above, establishing the demand of Redwood Glen's system is critical in determining the adequacy of supply. The demands used for the supply adequacy analysis (included in Section 4.4) were based on real monthly data for the Redwood Glen system with added factors of safety, as follows:

- The maximum monthly demands over the historical demand data set (2009 - 2013 & 2015, Section 3.2) were used for each month, with 5% losses added to the demands to account for losses in the distribution system and in the operations of the treatment plant[6].
- The adjusted MDD (explained in Section 3.2) was was used for three (3) months of the year (June, July, and August), instead of just the month of August. Losses of 5% were added to these demands as well to account for losses in the distribution system and in the operations of the treatment plant.

Table 7 includes the water demands used for the adequacy of supply calculation included in the following section.

[6] As requested by the State in their response to the SWAA Addendum, December 2016.

Table 7 Redwood Glen Design Water Demands

Month	Water Demands	Water Demand with 5% Losses
	gpm	*gpm*
January	2.4	2.5
February	3.6	3.8
March	2.9	3.1
April	3.7	3.9
May	2.9	3.1
June	5.8	6.1
July	5.8	6.1
August	5.8	6.1
September	2.3	3.2
October	2.4	3.4
November	1.6	2.4
December	1.4	1.9

SECTION 4 Availability of Source Water

Surface water supply is available to Redwood Glen from two (2) creeks to which the camp holds the rights: Hoffman Creek and Piney (or Pioneer) Creek. Updated information regarding the water rights and source water availability is included in the sections below.

4.1 Hoffman Creek

From 1958 to 1995, Redwood Glen (at that time ABCW) utilized Hoffman Creek for domestic purposes to serve a non-transient non-community (NTNC) public water system, providing water for up to 250 persons. Historical documentation notes that the Hoffman Creek water system served the lodges, residences, and campgrounds on site. During this time, records indicate they utilized their full allotment of 8 acre-feet per year (average of 5 gpm or 7,200 gpd, for a total of approximately 2.6 million gallons per year). In 1995, Redwood Glen ceased utilizing Hoffman Creek for their domestic purposes, and began purchasing water from Memorial Park. Since this time, Redwood Glen has utilized the Hoffman Creek water right for irrigation purposes only.

There are two (2) existing diversion structures, and 1,800 feet of raw water transmission line that currently delivers water from the upper diversion structure ("diversion sink") to Redwood Glen facilities for irrigation purposes. Given the existing infrastructure, water rights, recorded flows, and water quality, Hoffman Creek was deemed a viable surface water source for Redwood Glen. The sections below detail the water rights, surface water yield, and water quality results for Hoffman Creek.

4.1.1 Water Rights

Further investigation was conducted as to the Hoffman Creek water rights held by Redwood Glen. It was determined that Redwood Glen holds riparian rights to Hoffman Creek, allowing the camp to utilize water available in Hoffman Creek instantaneously, as well as store up to 10,000 gallons of its water with their existing riparian water right. As noted above, Redwood Glen has historically utilized 8-acre-feet per year (or 2.6 MG) of flow from Hoffman Creek, as per their Statement of Diversion and Use filings with the State (Attachment 4). Given the water rights findings for Hoffman Creek, this source will remain a primary source for the Redwood Glen system, however, the inability to store large amounts of water from the creek will influence the design and operation of the system. The water rights documentation for Hoffman Creek is included as Attachment 4.

4.1.2 Source Capacity

Balance Hydrologics has been evaluating the source capacity of Hoffman Creek since April 2016. Since April, Balance recorded regular measurements of flow at the Wright Way road culvert, and the two existing points of diversion - the "diversion

sink" (upper diversion) and an in-stream diversion structure (lower diversion). The USGS bucket-wheel current-meter methods and/or bucket-and-stopwatch method were utilized to take these measurements.

Balance established monthly reliable yields for the two (2) diversion points in both a dry year (41% of mean flow) and regular year (92% of mean flow). The dry year values, which will be used for the purposes of the supply reliability and storage analysis, are included in Table 8, below. Attachment 5 includes the *Streamflow Measurements and Source Capacity Estimates at Redwood Glen* memorandum prepared by Balance for both Hoffman Creek and Piney Creek. As per the additional requirements of SB 1263, Table 8 presents the Hoffman Creek's monthly reliable yields for the single extreme dry-year and the multi-dry year scenarios. Attachment 6 is the Amendment to the *source capacity estimates at Redwood Glen* prepared by Balance and includes the data related to the single extreme dry-year and multi-dry year scenarios.

Table 8 Hoffman Creek Monthly Reliable Yields at Upper POD
Normal Dry-Year (Water Year 2015), Single Extreme Dry-Year (Water Year 2014) & Multi Dry-Year Scenarios (Water Years 2012-2014)

Month	Water Year 2012 (gpm)	Water Year 2013 (gpm)	Water year 2014 (gpm)	Water Year 2015 (gpm)
January	21	61	3	30.7
February	12	22	12	92.1
March	194	18	18	22.0
April	113	15	12	16.1
May	23	7	4	11.2
June	11	5	3	6.8
July	7	4	3	3.9
August	5	3	2	2.6
September	4	3	2	2.3
October	10	5	3	2.3
November	11	28	5	5.7
December	9	345	5	263

4.1.3 Water Quality

The raw water quality analysis performed in August 2015 for Hoffman Creek (Attachment 7) confirmed that all water quality constituents tested in the source water are below levels of concern or required treatment. The measured concentration of total dissolved solids (TDS) is slightly lower than the recommended maximum concentration level for drinking water of 500 mg/L. Although turbidity was only measured at 0.1 NTU, it is anticipated that turbidity will be a more substantial concern in the winter months.

Although the reported concentrations of total organic carbon (TOC) and dissolved organic carbon (DOC) levels were low, there is a possibility for disinfection by-products (DBPs) formation due to the potential for long contact time between chlorine and water during the low demand season. It is difficult to establish the potential for DBP formation prior to operating the water system with a new source of water, however all water quality concerns are being evaluated for the recommended design.

4.1.4 Source Water Assessment

The watershed for the upper point of diversion includes approximately 117 acres. The point of diversion is located in a non-urban, remote, wooded and mountainous headwaters area and is only accessible through a dedicated hiking trail with semi-controlled access by Redwood Glen staff. No possible contaminating activities (PCAs) that might affect water quality have been identified within the watershed. The source water assessment conducted by Balance Hydrologics is included in Attachment 8 and is based on previous studies, field visits, meetings with system operator and manager, site reconnaissance and flow measurements.

4.2 Piney Creek

Piney Creek was evaluated as a potential surface water source for the new water system in the initial SWAA (June 2016). However, at the time of the initial SWAA, Piney Creek was not considered as a viable source for the camp as it was indicated that there were no existing diversion structures in the creek. Based on this information, it was determined that the permitting process timeline for new diversion structures would not have met the State deadline for Redwood Glen to have a permitted water system[7].

In October 2016, it was brought to the attention of SRT by Redwood Glen staff that two (2) known diversion structures exist and are associated with the approved point(s) of diversion for Piney Creek. The diversion structures, which consist of two concrete basins and pipe outlets, were inspected by SRT and deemed appropriate for use. It was established that both diversion structures are a part of the State-approved “lower POD”, or “Diversion #2”, as shown on the map submitted with the

[7] If new diversion structures needed to be added to the Piney Creek, it was anticipated that the environmental permitting process would have taken at least 12 months.

1980 application to add a point of diversion (see Attachment 9). For the purposes of this report, the diversion structures will be considered the “Lower Piney POD”.

An existing 2-inch raw water pipeline was also identified by Redwood Glen staff and SRT, which at one time connected Piney Creek’s diversion structures to Redwood Glen’s water system. The Piney Creek transmission line is in disrepair, however, it can be rehabilitated and/or replaced for immediate use. Due to the confirmation of the existing diversion structures and the raw water transmission pipe, Piney Creek is now considered a viable surface water source for Redwood Glen.

4.2.1 Water Rights

Redwood Glen holds appropriative rights License No. 11116 to divert water from Piney Creek at a rate not to exceed 0.042 cubic feet per second (19 gpm or 27,000 gpd) from January 1 to December 31, and not to exceed 24 acre-feet per year (Permit No. 16745, Application No. 24192). Appropriative rights also allow Redwood Glen to store an unlimited amount of raw water from Piney Creek, which will likely be important during the summer months given that significant raw water storage from Hoffman Creek is not permitted. The water rights documentation for Piney Creek is included in Attachment 4.

4.2.2 Source Capacity

Balance Hydrologics has been evaluating the source capacity of Piney Creek since April 2016. Since April, regular measurements of flow were recorded by Balance at the Haul Road culvert, and the two (2) existing diversion structures, which are both considered part of the State-approved Lower Piney POD. The USGS bucket-wheel current-meter methods and/or bucket-and-stopwatch method were utilized to take these measurements.

Balance established monthly reliable yields for the two (2) diversion structures located at the approved POD in both a dry year (41% of mean flow) and regular year (92% of mean flow). The dry year values, which will be used for the purposes of the supply reliability and storage analysis, are included in Table 9, below. Attachment 5 includes the *Streamflow Measurements and Source Capacity Estimates at Redwood Glen* memorandum prepared by Balance for both Hoffman Creek and Piney Creek. Attachment 6 is an Amendment to the source capacity estimates and includes the reliable yields of the single extreme dry-year and multi-dry year scenarios for Hoffman and Piney Creek. Table 9 shows Piney Creek’s flow data for the single extreme dry-year (Water Year 2014) and the multi-dry year scenario (Water Years 2012 to 2014).

Table 9 Piney Creek Monthly Reliable Yields at Lower POD
Normal Dry-Year Scenario (Water Year 2015), Single Extreme Dry-Year (Water Year 2014) & Multi Dry-Year Scenarios (Water Years 2012-2014)

Month	Water Year 2012 (gpm)	Water Year 2013 (gpm)	Water Year 2014 (gpm)	Water Year 2015 (gpm)
January	7	13	4	8.0
February	5	7	5	17.5
March	33	6	6	6.6
April	21	6	5	5.7
May	7	5	4	4.9
June	5	4	4	4.4
July	5	4	4	3.9
August	4	4	4	3.7
September	4	4	4	3.5
October	5	4	4	3.6
November	5	8	4	4.2
December	5	58	4	44.6

4.2.3 Water Quality

A water quality sample was taken from the composite flows from both diversion structures in Piney Creek, as this was considered the best representative sample of the Lower Piney POD raw water quality source. Both iron (Fe) and manganese (Mn) concentrations exceed the maximum contaminant level (MCL) for the constituents: Fe is reported at 1058 ppb (MCL of 300 ppb) and Mn is reported at 177 ppb (MCL of 50 ppb). The measured concentration of total dissolved solids (TDS) is slightly lower than the recommended maximum concentration level for drinking water of 500 mg/L and a turbidity level was reported at 6.7 NTU.

Based on the water quality results from Piney Creek, it is expected that specific pre-treatment processes targeting iron and manganese will be required in the system design. Similar to Hoffman Creek, the reported concentrations of total organic carbon (TOC) and dissolved organic carbon (DOC) levels were low, there is a possibility for DBP formation due to the potential for long contact time between chlorine and water during the low demand season. It is difficult to establish the potential for DBP formation prior to operating the water system with a new source of

water, however all water quality concerns are being evaluated for the recommended design. The water quality report for the Piney Creek composite sample is included in Attachment 7.

4.2.4 Source Water Assessment

The watershed for the Piney Creek includes approximately 19 acres. The point of diversion is in a non-urban, remote, wooded and mountainous headwaters area on private property and is only accessible through a dedicated hiking trail with controlled access by Redwood Glen staff. No possible contaminating activities (PCAs) that might affect water quality have been identified within the watershed. The source water assessment (SWA) conducted by Balance Hydrologics is included as Attachment 8 and is based on based on previous studies, field visits, meetings with the system operator and manager, site reconnaissance and flow measurements.

4.3 Summary of Source Water Available

Significant surface water is available to Redwood Glen through Hoffman and Piney Creek. Both are important water sources for the Redwood Glen water system:

- Hoffman Creek can provide Redwood Glen with high quality water through infrastructure in need of very minimal repairs, while
- Piney Creek can provide Redwood Glen with raw water that can be stored through the summer months based on the existing appropriative water rights.

The total surface water available to Redwood Glen is presented in Table 10, below. Hoffman Creek water will be utilized before Piney Creek water in order to minimize treatment requirements and to fully utilize Redwood Glen's riparian right to the creek. It is anticipated that Hoffman Creek will be the primary water source of the system through the fall, winter, and spring months. A supply and demand comparison for the water system will be presented in Section 4.4.

Table 10 Monthly Surface Water Flows Available
(Water Year 2015, Normal Dry Year, 41% of mean flow)

Month	Hoffman Creek Flow at Upper POD (gpm)	Piney Creek Flow at Lower POD (gpm)	Total Surface Water Supply Available (gpm)
January	30.74	7.97	38.71
February	92.13	17.47	109.60
March	22.03	6.61	28.64
April	16.07	5.69	21.76
May	11.17	4.93	16.10
June	6.81	4.38	11.19
July	3.88	3.95	7.83
August	2.63	3.69	6.32
September	2.32	3.55	5.87
October	2.27	3.58	5.85
November	5.75	4.19	9.94
December	263.3	44.56	307.86

4.4 Determination of Adequate Supply

A supply and demand comparison was conducted for the Redwood Glen system to determine if raw water storage would be necessary to meet the maximum demands. Monthly surface water yield data (see Sections 4.1 - 4.3) was compared with the historical maximum monthly demand (MMD) values for the low season, and the MMD (5.8 gpm) for the high season (see Section 3 and Table 11 below). This supply versus demand comparison was based only on the combined surface water yields from Hoffman Creek and Piney Creek to determine if the Redwood Glen water system could rely strictly on its surface water sources.

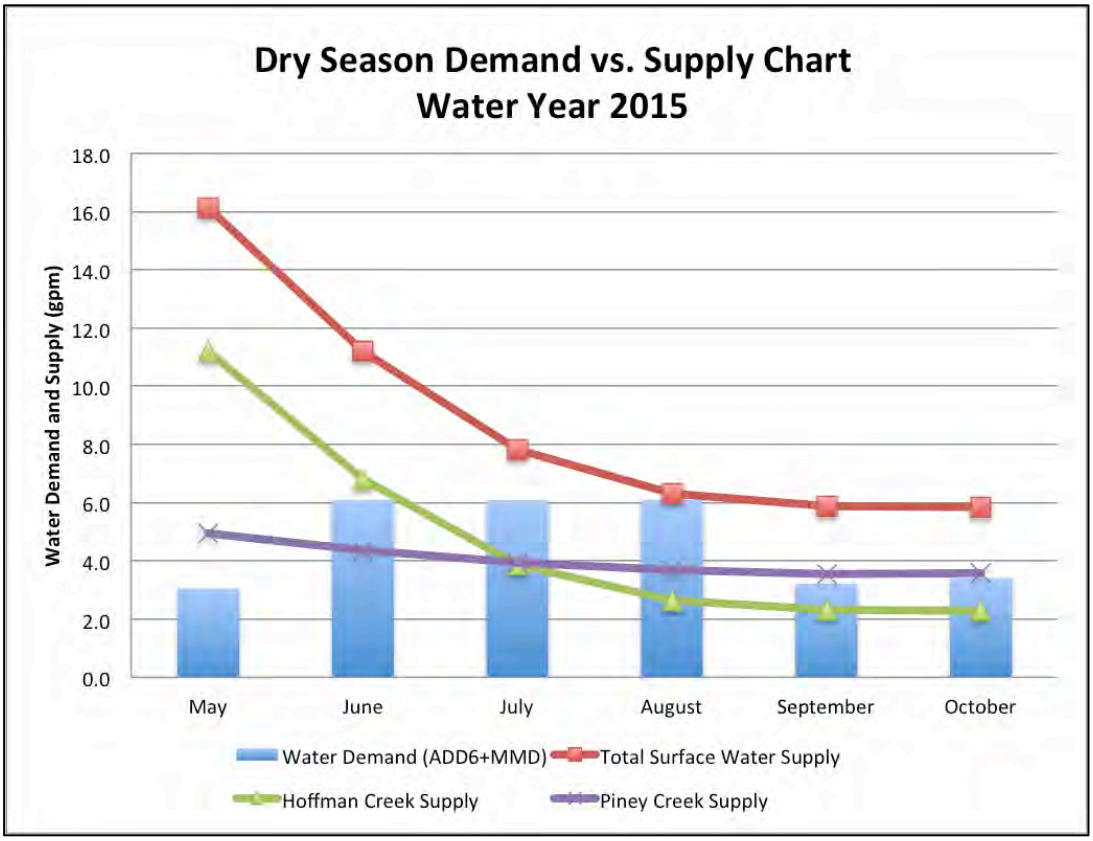
Table 11 Water Demand and Normal Dry-Year Supply Comparison

Month	Water Demand & Losses[1] (gpm)	Hoffman Creek Flow (gpm)	Piney Creek Flow (gpm)	Total Surface Water Supply (gpm)	Rate Deficiency (gpm)
January	2.5	30.7	8.0	38.7	--
February	3.8	92.1	17.5	109.6	--
March	3.1	22.0	6.6	28.6	--
April	3.9	16.1	5.7	21.8	--
May	3.1	11.2	4.9	16.1	--
June	6.1	6.8	4.4	11.2	--
July	6.1	3.9	3.9	7.8	--
August	6.1	2.6	3.7	6.3	--
September	3.2	2.3	3.5	5.9	--
October	3.4	2.3	3.6	5.9	--
November	2.4	5.7	4.2	9.9	--
December	1.9	263	44.6	307.6	--

[1]As mentioned in Section 3, the demands have been calculated based on the historical data over 6 years (2009-2013 & 2015) and the corrected MMD of 5.8 gpm was assumed for 3 months of the year (June, July and August) as a conservative measure, instead of just for the maximum month of August. Additionally, 5% of losses were added to the demand values, as requested by the State and as explained in Section 3.4.

Based on the results presented above (Table 11), it appears that the surface water sources are adequate to cover the demands. Hoffman Creek's flow is sufficient to supply all of Redwood Glen's demand from November to May. As shown in Figure 1, from May to October, Piney Creek can provide the required flow to match the system's demand. Further analysis regarding the available supply and required raw water storage is included in Section 5.4, below.

Figure 1 Demand vs. Supply from May to October



The State issued a letter on January 6, 2017, which recognizes that Redwood Glen's two surface water sources "*would provide sufficient supply to meet demand for the Center*." The State nonetheless expressed concerns that Hoffman Creek and Piney Creek may only provide marginal supply during the dry season. Once the system is up and running, the monitoring and recording of the surface water supply from both sources and of the camp's demands will inform potential future improvements to the system and the development of additional sources of water, if needed.

4.4.1 Single Extreme Dry-Year and Multi-Dry Year Analysis

To comply by SB 1263, the evaluation of Redwood Glen's available supply also included the analysis of single dry-year and multi-dry year scenarios to comply with SB 1263, as described in Attachment 6.

The single extreme dry-year scenario is presented in Table 12, based on data for the water year 2014. A slight shortage of surface water supply occurs over the month of August. In this extreme scenario, approximately 4,500 gallons of water is required from the 70,000-gallon raw water storage tank to bridge the deficit. Based on this conservative analysis, the 70,000-gallon raw water tank provides ample supply in the case of an extreme dry-year scenario.

Table 12 Water Demand and Single Extreme Dry-Year Comparison

Month	Water Demand[1] (gpm)	Hoffman Creek (gpm)	Piney Creek (gpm)	Total Surface Water Supply (gpm)	Deficiency (gallons)
January	2.5	3	4	7	--
February	3.8	12	5	17	--
March	3.1	18	6	24	--
April	3.9	12	5	17	--
May	3.1	4	4	8	--
June	6.1	3	4	7	--
July	6.1	3	4	7	--
August	6.1	2	4	6	4,464
September	3.2	2	4	6	--
October	3.4	3	4	7	--
November	2.4	5	4	9	--
December	1.9	5	4	9	--

[1]As discussed in Section 3, the demands have been calculated based on the historical data over 6 years (2009-2013 & 2015) and the adjusted MMD of 5.8 gpm was assumed for 3 months of the year (June, July and August) as a conservative measure, instead of only for the maximum month of August. Additionally, 5% of losses were added to the demand values, as requested by the State and as explained in Section 3.4.

A similar analysis was performed for the multi-dry year scenario (water years 2012 to 2014) and it revealed that there is no water deficit occurring during the water years 2012 and 2013. Additionally, the supply of water from Hoffman Creek and Piney Creek over the wet months is consistently more than what is needed to refill the 70,000-gallon tank and to supply Redwood Glen's low-season demand from a water year to the next. Therefore, the water deficit for the multi-dry year scenario only occurs during water year 2014, which represents the single extreme dry-year scenario. As such, the deficit of water throughout the dry season never exceeds 4,500 gallons of water, which is easily available in the 70,000-gallon tank.

The analysis confirmed that the surface water sources and the 70,000-gallon tank can provide adequate supply for Redwood Glen's facilities. Attachment 6 includes the multi dry-year analysis from 2012 to 2014, which also shows the single extreme dry-year scenario (Water Year 2014).

S010156

State of California
State Water Resources Control Board
DIVISION OF WATER RIGHTS
P.O. Box 2000, Sacramento, CA 95812-2000
Info: (916) 341-5300, FAX: (916) 341-5400, Web: http://www.waterrights.ca.gov

NOTICE OF ASSIGNMENT

State Water Resources Control Board
Division of Water Rights
P.O. Box 2000
Sacramento, CA 95812-2000

Gentlemen:

I have assigned all my right, title, and interest in

Statement Number **s010156** on file with the State Water Resources

Control Board to:

Redwood Glen

whose address is:

100 Wright Drive
(Street Address)
Loma Mar
(City)
CA **94021**
(State) (Zip code)

Telephone No. ( ) **650-879-0320**

Pamela Breen
(Printed Name)

Pamela Breen
(Signature)

Telephone No. (**925**) **277-3980**

Dated: **August 19, 2010**

CM 10/27/10

STATEMENT-ASGN (4-10)

STATE WATER RESOURCES CONTROL BOARD
DIVISION OF WATER RIGHTS
P.O. Box 2000
Sacramento, CA 95812-2000

STATEMENT OF WATER DIVERSION AND USE INFORMATION SHEET

STATEMENT NO. S010156

DIVERSION SITE:

OWNER'S NAME AMERICAN BAPTIST CHURCHES OF THE WEST
(FIRST) (MIDDLE) (LAST)

PARCEL NO. 084-071-100; 260; 270
084-120-010; 060

PLACE OF USE:

OWNER'S NAME REDWOOD GLEN BAPTIST CAMP, ABCW
(FIRST) (MIDDLE) (LAST)

1. **PARCEL NO.** 084-071-100; 260; 270
2. **PARCEL NO.** 084-120-010; 060
3. **PARCEL NO.** _____

PERSON OR FIRM TO RECEIVE ALL CORRESPONDENCE AND SUPPLEMENTAL STATEMENTS:

OWNER/LESSEE/AGENT/OTHER Agent

NAME Ray (FIRST) _____ (MIDDLE) Miller (LAST)

MAILING ADDRESS 1430 Wurr Road

Loma Mar (CITY) CA (STATE) 94021 (ZIP)

TELEPHONE NO. (415) 879 - 0320

OTHERS USING ABOVE DIVERSION LOCATION:

1. **NAME** _____
(FIRST) (MIDDLE) (LAST)

MAILING ADDRESS _____

_____
(CITY) (STATE) (ZIP)

TELEPHONE NO. (_____) _____ - _____

2. **NAME** _____
(FIRST) (MIDDLE) (LAST)

MAILING ADDRESS _____

_____
(CITY) (STATE) (ZIP)

TELEPHONE NO. (_____) _____ - _____

☐ ADDITIONAL INFORMATION CONTINUED ON BACK OF PAGE OR ATTACHED

PLEASE USE THE OTHER SIDE TO PROVIDE THE ABOVE INFORMATION FOR ADDITIONAL OWNERS OR PLACES OF USE AND CHECK THE ADDITIONAL INFORMATION BOX.

(1/95)

S-10156

** PLEASE COMPLETE, SUBMIT THE ORIGINAL AND MAKE A COPY FOR YOUR RECORDS ***

STATE WATER RESOURCES CONTROL BOARD
DIVISION OF WATER RIGHTS

P.O. BOX 2000 SACRAMENTO, CA 95812-2000

SUPPLEMENTAL STATEMENT OF WATER DIVERSION AND USE

STATEMENT NO: S010156
OWNER OF RECORD: AMERICAN BAPTIST CHURCHES OF THE WEST

To RAY MILLER
1430 WURR ROAD
LOMA MAR, CA 94021

STATE WATER RESOURCES CONTROL BOARD
DIV. OF WATER RIGHTS
SACRAMENTO
1995 APR 12 PM 1:18

SOURCE: HOFFMAN CREEK
TRIBUTARY TO: PESCADERO CREEK
COUNTY: SAN MATEO
DIVERSION WITHIN: NW¼ OF NE¼ SECTION 3, T8S, R4W, MDB&M.

TELEPHONE NUMBER: (415) 879-0320
YEAR OF FIRST USE: 1964
PARCEL NO:

(If any of the above information is inaccurate or missing, please correct. Notify this office if ownership or address changes occur during the coming year.)

COMPLETE AND RETURN THIS FORM BY JULY 1, 1995.

A. Water is used under: Riparian claim X; Pre 1914 right _____; Other (explain) _____

B. Year of first use (Please provide if missing above) 1964.

C. Amount of Use - Enter the amount of water used each month. If monthly and annual use are not known, check the months in which water was used.

Amounts below are: ☐ Gallons ☒ Acre-feet ☐ (other) _____

	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC	TOTAL ANNUAL
1992	X	X	X	X	X	X	X	X	X	X	X	X	
1993	X	X	X	X	X	X	X	X	X	X	X	X	
1994	X	X	X	X	X	X	X	X	X	X	X	X	

D. Purpose of Use - Specify number of acres irrigated, stock watered, persons served, etc.
Irrigation _____ acres; Stockwatering _____; Domestic 250 persons
Other (specify) served in lodges, residences and campgrounds.

*** CONTINUE ON BACK PAGE ***

***** PLEASE COMPLETE, SUBMIT THE ORIGINAL AND MAKE A COPY FOR YOUR RECORDS *****

E. Changes in Method of Diversion - Describe any changes in your project since your previous statement was filed. (New pump, enlarged diversion dam, location of diversion, etc.)

No changes

F. If part of the water listed in Part C consists of reclaimed or polluted water, please indicate the annual amounts of reclaimed or polluted water in the space below.

N/A

I declare under penalty of perjury that the information in this report is true to the best of my knowledge and belief.

DATED: April 10, 1995, at Loma Mar, California

SIGNATURE: Ray Miller

PRINTED NAME: Ray (FIRST NAME) (M. NAME) Miller (LAST NAME)

COMPANY NAME: REDWOOD GLEN BAPTIST CAMP & CONFERENCE

GENERAL INFORMATION PERTAINING TO WATER RIGHTS IN CALIFORNIA

There are two principal types of surface water rights in California. They are riparian and appropriative rights.

A riparian right enables an owner of land bordering a natural lake or stream to take and use water on his riparian land. Riparian land must be in the same watershed as the water source and must never have been severed from the sources of supply by an intervening parcel without reservation of the riparian right to the severed parcel. Generally, a riparian water user must share the water supply with other riparian users. Riparian rights may be used to divert the natural flow of a stream but may not be used to store water for later use or to divert water which originates in a different watershed, or return flows from use of groundwater.

An appropriate right is required for use of water on nonriparian land and for storage of water. Generally, appropriative rights may be exercised only when there is a surplus not needed by riparian water users. Since 1914 new appropriators have been required to obtain a permit and license from the State.

Statements of Water Diversion and Use must be filed by riparian and pre-1914 appropriative water users. The filing of a statement (1) provides a record of water use, (2) enables the State to notify such users if someone proposes a new appropriation upstream from their diversion, and (3) assists the State to determine if additional water is available for future appropriators.

The above discussion is provided for general information. For more specific information concerning water rights, please contact an attorney or write to this office. We have several pamphlets available. They include:

"Statements of Water Diversion and Use"
"Information Pertaining to Water Rights in California"
"Water Rights for Stockponds Constructed Prior to 1969"
"Appropriation of Water in California"

STATE OF CALIFORNIA
STATE WATER RESOURCES CONTROL BOARD
Division of Water Rights

P.O. BOX 2000 SACRAMENTO, CA 95810
901 P ST. SACRAMENTO, CA
(916) 322-4503

(916) 324-5676

SUPPLEMENTAL STATEMENT OF WATER DIVERSION AND USE

1992 FEB -3 PM 3:26
DIV. OF WATER RIGHTS
SACRAMENTO

DIVERTER OF RECORD:

STATEMENT NO: 010156

AMERICAN BAPTIST CHURCHES OF THE WEST
C/O RAY MILLER
1430 WURR ROAD
LOMA MAR, CA 94021

TELEPHONE NUMBER:
(415) 879-0320

IF NAME/ADDRESS/PHONE NO. IS WRONG OR MISSING, PLEASE CORRECT.

SOURCE: HOFFMAN CREEK

TRIBUTARY TO: PESCADERO CREEK

COUNTY: SAN MATEO

DIVERSION
WITHIN: NW1/4 OF NE1/4 SECTION 03, T08S, R04W, MDB&M.

INSTRUCTIONS: Please complete Items A. B and C. Item D should be completed if you replaced all or part of your regular water supply with reclaimed or polluted water. RETURN THIS FORM BY JULY 1, 1992. (Additional information on reverse side of this form.)

A. Amount of Use - Fill in the amount of water used each month. If monthly and annual use are not known, check the months in which water was used.

Amounts below are: ☐ Gallons ☒ Acre-feet ☐ _____ (other)

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total Annual
1989	X	X	X	X	X	X	X	X	X	X	X	X	8
1990	X	X	X	X	X	X	X	X	X	X	X	X	8
1991	X	X	X	X	X	X	X	X	X	X	X	X	8

B. Purpose of Use - Specify number of acres irrigated, stock watered, persons served, etc.

Irrigation _____

Stockwatering _____

Domestic 250 persons served in lodge, residences and campgrounds

Other (specify) _____

C. Changes in Method of Diversion - Describe any changes in your project since your previous statement was filed. (New pump, enlarged diversion dam, location of diversion, etc.)

No changes

D. If part of the water listed in Part A consists of reclaimed or polluted water, please indicate the annual amounts of reclaimed or polluted water in the space below.

I declare under penalty of perjury that the information in this report is true to the best of my knowledge and belief.

DATED: January 30, 19 92, at Loma Mar, California

Signature: Ray Miller

WR 40-1 (11/85)
0034

1991

STATE OF CALIFORNIA
STATE WATER RESOURCES CONTROL BOARD
Division of Water Rights

P.O. BOX 2000 SACRAMENTO, CA 95810
901 P ST. SACRAMENTO, CA
(916) 322-4503

OCT 21 '87 K.R.B.

(916) 324-5741

SUPPLEMENTAL STATEMENT OF WATER DIVERSION AND USE

DIVERTER OF RECORD:

STATEMENT NO: 010156

AMERICAN BAPTIST CHURCHES OF THE WEST
C/O ~~KELVA KROKKEIT~~ RAY MILLER
1430 WURR ROAD
LOMA MAR, CA ~~94020~~ 94021

TELEPHONE NUMBER:
(415) 879-0320

IF NAME/ADDRESS/PHONE NO. IS WRONG OR MISSING, PLEASE CORRECT.

SOURCE: HOFFMAN CREEK

TRIBUTARY TO: PESCADERO CREEK

COUNTY: SAN MATEO

DIVERSION
WITHIN: NW1/4 OF NE1/4 SECTION 03, T08S, R04W, MDB&M.

RECEIVED
OCT -5 PM 2:37
STATE WATER RESOURCES CONTROL BOARD
SACRAMENTO, CALIFORNIA

INSTRUCTIONS: Please complete Items A. B and C. Item D should be completed if you replaced all or part of your regular water supply with reclaimed or polluted water. RETURN THIS FORM BY JULY 1, 1986. (Additional information on reverse side of this form.)

A. Amount of Use - Fill in the amount of water used each month. If monthly and annual use are not known, check the months in which water was used.

Amounts below are: ☐ Gallons ☒ Acre-feet ☐ _____ (other)

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total Annual
1983	X	X	X	X	X	X	X	X	X	X	X	X	8
1984	X	X	X	X	X	X	X	X	X	X	X	X	8
1985	X	X	X	X	X	X	X	X	X	X	X	X	8

B. Purpose of Use - Specify number of acres irrigated, stock watered, persons served, etc.

Irrigation _____

Stockwatering _____

Domestic 250 persons served in lodge, residences and campgrounds

Other (specify) _____

C. Changes in Method of Diversion - Describe any changes in your project since your previous statement was filed. (New pump, enlarged diversion dam, location of diversion, etc.)

no changes

D. If part of the water listed in Part A consists of reclaimed or polluted water, please indicate the annual amounts of reclaimed or polluted water in the space below.

I declare under penalty of perjury that the information in this report is true to the best of my knowledge and belief.

DATED: October 1, 19 87, at Loma Mar, California

Signature: Ray Miller

OCT 2 6 1987

10-6-87

WR 40-I (11/85)

0034

1985

STATE OF CALIFORNIA

STATE WATER RESOURCES CONTROL BOARD

DIVISION OF WATER RIGHTS

S10156

STATE WATER RESOURCES CONTROL BOARD

DEC 12 4 15 PM '80

DIV. OF WATER RIGHTS SACRAMENTO

STATEMENT OF WATER DIVERSION AND USE

(This is not a Water Right)

This statement should be typewritten or legibly written in ink.

A. Name of person diverting water American Baptist Churches of the West

Address c/o Stanley S. Skeehan, 210-16th Ave. Santa Cruz CA 95060 Telephone: (415) 879-0320

B. Name of body of water at point of diversion Hoffman Creek

Tributary to Pescadero Creek

C. Place of diversion NW ¼ NE ¼ Section 3, Township 8S, Range 4W, MD B&M, San Mateo County, or locate it on sketch of section grid on reverse side with regard to section lines or prominent local landmarks.

D. Name of works none

E. Capacity of diversion works Estimated to be 6 gpm (cubic feet per second / gallons per minute)

Capacity of storage reservoir None (gallons / acre-feet)

State quantity of water used each month in gallons or acre-feet

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total Annual
1980	X	X	X	X	X	X	X	X	X	X	X	X	4 ac-ft

If monthly and annual use are not known, check months in which water was used. State extent of use in units, such as acres of each crop irrigated, average number of persons served, number of stock watered, etc.

250 people served in lodges, residences and campgrounds

Maximum annual water use in recent years Estimated at 4 ac-ft. (gallons / acre-feet)

Minimum annual water use in recent years Estimated at 4 ac-ft. (gallons / acre-feet)

Type of diversion facility: gravity X, pump ____

Method of measurement: weir ____, flume ____, electric power meter ____, water meter ____, estimate X

F. Purpose of use (what water is being used for) Domestic use

G. General description or location of place of use (use sketch of section grid on reverse side if you desire)

Redwood Glen Camp

H. Year of first use as nearly as known 1964

I. Name of person filing statement Stanley S. Skeehan

Position Water Rights Consultant Organization Same

Address 210 16th Ave, S.C. CA 95062 Telephone: 408 425-9318

I declare under penalty of perjury that the above is true and correct to the best of my knowledge and belief.

DATED: Dec 10th, 19 80, at Santa Cruz, California.

Signature: Stanley S. Skeehan, agent

See Instructions on Reverse Side

SWRCB 40 (7/77)

3-703-01-00-0

STATE OF CALIFORNIA
THE RESOURCES AGENCY
STATE WATER RESOURCES CONTROL BOARD
DIVISION OF WATER RIGHTS

License for Diversion and Use of Water

APPLICATION 24192 PERMIT 16745 LICENSE 11116

THIS IS TO CERTIFY, *That* AMERICAN BAPTIST CHURCHES OF THE WEST
268 GRAND AVENUE, OAKLAND, CALIF 94610

HAVE *made proof as of* OCTOBER 29, 1979 *(the date of inspection) to the satisfaction of the State Water Resources Control Board of a right to the use of the water of* AN UNNAMED STREAM (AKA PIONEER CREEK) IN SAN MATEO COUNTY

tributary to PESCADERO CREEK

for the purpose of DOMESTIC USE
under Permit 16745 *of the Board and that the right to the use of this water has been perfected in accordance with the laws of California, the Regulations of the Board and the permit terms; that the priority of this right dates from* SEPTEMBER 27, 1972 *and that the amount of water to which this right is entitled and hereby confirmed is limited to the amount actually beneficially used for the stated purposes and shall not exceed* FORTY-TWO THOUSANDTHS (0.042) CUBIC FOOT PER SECOND, TO BE DIVERTED FROM JANUARY 1 TO DECEMBER 31 OF EACH YEAR. THE MAXIMUM AMOUNT DIVERTED UNDER THIS LICENSE SHALL NOT EXCEED 24 ACRE-FEET PER YEAR.

THE POINTS OF DIVERSION OF SUCH WATER ARE LOCATED:

(1) SOUTH 2,500 FEET AND EAST 200 FEET FROM NW CORNER OF SECTION 2, T8S, R4W, MDB&M, BEING WITHIN SW1/4 OF NW1/4 OF SAID SECTION 2 AND
(2) SOUTH 2,000 FEET AND EAST 350 FEET FROM NW CORNER OF SECTION 2, T8S, R4W, MDB&M, BEING WITHIN SW1/4 OF NW1/4 OF SAID SECTION 2.

A DESCRIPTION OF LANDS OR THE PLACE WHERE SUCH WATER IS PUT TO BENEFICIAL USE IS AS FOLLOWS:

AT REDWOOD GLEN CAMP WITHIN N1/2 OF NE1/4 OF SECTION 3, T8S, R4W, MDB&M AND SE1/4 OF SE1/4 OF SECTION 34, T7S, R4W, MDB&M.

THE QUANTITY OF WATER DIVERTED UNDER THIS LICENSE IS SUBJECT TO MODIFICATION BY THE STATE WATER RESOURCES CONTROL BOARD, IF, AFTER NOTICE TO THE LICENSEE AND AN OPPORTUNITY FOR HEARING, THE BOARD FINDS THAT SUCH MODIFICATION IS NECESSARY TO MEET WATER QUALITY OBJECTIVES IN WATER QUALITY CONTROL PLANS WHICH HAVE BEEN OR HEREAFTER MAY BE ESTABLISHED OR MODIFIED PURSUANT TO DIVISION 7 OF THE WATER CODE. NO ACTION WILL BE TAKEN PURSUANT TO THIS PARAGRAPH UNLESS THE BOARD FINDS THAT (1) ADEQUATE WASTE DISCHARGE REQUIREMENTS HAVE BEEN PRESCRIBED AND ARE IN EFFECT WITH RESPECT TO ALL WASTE DISCHARGES WHICH HAVE ANY SUBSTANTIAL EFFECT UPON WATER QUALITY IN THE AREA INVOLVED, AND (2) THE WATER QUALITY OBJECTIVES CANNOT BE ACHIEVED SOLELY THROUGH THE CONTROL OF WASTE DISCHARGES.

48403-993 1-77 1M ⓘ◊ DBP

Licensee shall allow representatives of the Board and other parties, as may be authorized from time to time by the Board, reasonable access to project works to determine compliance with the terms of this license.

Pursuant to California Water Code Section 100 all rights and privileges under this license, including method of diversion, method of use and quantity of water diverted are subject to the continuing authority of the Board in accordance with law and in the interest of the public welfare to prevent waste, unreasonable use, unreasonable method of use or unreasonable method of diversion of said water.

This continuing authority of the Board may be exercised by imposing specific requirements over and above those contained in this license with a view to minimizing waste of water and to meeting the reasonable water requirements of licensee without unreasonable draft on the source. Licensee may be required to implement such programs as (1) reusing or reclaiming the water allocated; (2) restricting diversions so as to eliminate agricultural tailwater or to reduce return flow; (3) suppressing evaporation losses from water surfaces; (4) controlling phreatophytic growth; and (5) installing, maintaining, and operating efficient water measuring devices to assure compliance with the quantity limitations of this license and to determine accurately water use as against reasonable water requirements for the authorized project. No action will be taken pursuant to this paragraph unless the Board determines, after notice to affected parties and opportunity for hearing, that such specific requirements are physically and financially feasible and are appropriate to the particular situation.

Reports shall be filed promptly by licensee on appropriate forms which will be provided for the purpose from time to time by the Board.

The right hereby confirmed to the diversion and use of water is restricted to the point or points of diversion herein specified and to the lands or place of use herein described.

This license is granted and licensee accepts all rights herein confirmed subject to the following provisions of the Water Code:

Section 1625. Each license shall be in such form and contain such terms as may be prescribed by the Board.

Section 1626. All licenses shall be under the terms and conditions of this division (of the Water Code).

Section 1627. A license shall be effective for such time as the water actually appropriated under it is used for a useful and beneficial purpose in conformity with this division (of the Water Code) but no longer.

Section 1628. Every license shall include the enumeration of conditions herein which in substance shall include all of the provisions of this article and the statement that any appropriator of water to whom a license is issued takes the license subject to the conditions therein expressed.

Section 1629. Every licensee, if he accepts a license does so under the conditions precedent that no value whatsoever in excess of the actual amount paid to the State therefor shall at any time be assigned to or claimed for any license granted or issued under the provisions of this division (of the Water Code), or for any rights granted or acquired under the provisions of this division (of the Water Code), in respect to the regulation by any competent public authority of the services or the price of the services to be rendered by any licensee or by the holder of any rights granted or acquired under the provisions of this division (of the Water Code) or in respect to any valuation for purposes of sale to or purchase, whether through condemnation proceedings or otherwise, by the State or any city, city and county, municipal water district, irrigation district, lighting district, or any political subdivision of the State, of the rights and property of any licensee, or the possessor of any rights granted, issued, or acquired under the provisions of this division (of the Water Code).

Section 1630. At any time after the expiration of twenty years after the granting of a license, the State or any city, city and county, municipal water district, irrigation district, lighting district, or any political subdivision of the State shall have the right to purchase the works and property occupied and used under the license and the works built or constructed for the enjoyment of the rights granted under the license.

Section 1631. In the event that the State, or any city, city and county, municipal water district, irrigation district, lighting district, or political subdivision of the State so desiring to purchase and the owner of the works and property cannot agree upon the purchase price, the price shall be determined in such manner as is now or may hereafter be provided by law for determining the value of property taken in eminent domain proceedings.

Dated: APRIL 29 1981

STATE WATER RESOURCES CONTROL BOARD

Raymond Walsh

Chief, Division of Water Rights

County of San Mateo - Planning and Building Department

ATTACHMENT H

Maintenance Procedures for Hoffman Creek Diversion Point

Hoffman Creek Diversion Point maintenance activities consist mainly of visual inspection and periodic sedimentation removal, as detailed below.

Visual Inspection and Repairs

Visual inspection for functionality and continued soundness of structure occurs approximately monthly. No repairs have been required in recent history, as there has been no visual degradation of the equipment. Should maintenance be required in the future, it is anticipated that repairs may consist of resetting a stainless steel bolt or replacing a pipe flange, which only requires hand tools to accomplish and limited disturbance to the diversion structure or surrounding area. No chemicals/toxic substances are involved in any repair procedures. All work occurs outside the creek channel except for bolt replacement. During bolt resetting/replacement, the only materials coming in contact with the creek are the repairer's hands, bolt, and a box wrench (hand tool). Replaced materials are hauled out for proper disposal.

Sedimentation Removal

Sedimentation at the Hoffman Creek diversion point is accumulated approximately 100 feet downpipe from the diversion point in a series of three (3) existing 55-gallon plastic drums used for settling. Sedimentation removal procedures are as follows:

- Twice annually sedimentation is flushed from the system back into the creek. Discharge is trickled through the rocks on the bank of Hoffman Creek in order to reduce the amount of turbidity associated with the discharge. This procedure is conducted once in mid-spring (March/April) and following first storm event during the fall (October/November). Sedimentation accumulates at a rate of approximately 1.7 cubic feet per year (or .85 cubic feet per 'flush').
- The 55-gallon drums are flushed one at a time, and sediment in the drums is reintroduced to the creek. The resulting discharge back into the creek is approximately 55 gallons, or 7.4 cubic feet of water, containing approximately .28 cubic feet or sediment.

Sedimentation is benign and composed of only those constituents that are naturally occurring in the watershed. Although there is likely an increase in turbidity immediately following the cleanout of sediment, the increase is temporary and short in duration and is not visibly any greater than turbidity that is observed in the creek after a storm event.

Maintenance Procedures for Piney Creek Diversion Point

Piney Creek Diversion Point maintenance activities consist mainly of visual inspection and periodic sedimentation removal.

Visual Inspection and Repairs

Visual inspection for functionality and continued soundness of structure occurs approximately monthly. Occasional leafy debris clearing from clogged ports is required and can be done manually. Repairs are made as needed concurrently with periodic sedimentation removal. Such repairs would, in general, consist of replacement of malfunctioning piping equipment, which only requires hand tools to accomplish. Occasionally, pvc glue is required for repairs. In these instances, parts are glued up away from the structure and away from the creek channel and allowed to fully cure prior to installation. The resulting composite parts can then be installed through mechanical connection (i.e. threads). No other chemicals/toxic substances are involved in any repair procedures. All work occurs outside the active course(s) of water across/through the diversion structure.

Sedimentation Removal

Sedimentation is accumulated behind the diversion point where there is a maximum volume of approximately 13.5 cubic feet (up to the bottom elevation of the bypass port where sedimentation would no longer be able to accumulate). Sedimentation procedures are as follows:

- Twice annually sedimentation is flushed from the system back into the creek. This procedure is conducted once in mid-spring (March/April) and following first storm event during the fall (October/November). Sedimentation accumulates at a rate of approximately 4 cubic feet per year (or 2 cubic feet per 'flush').
- Sediment is removed by opening the cap on the cleanout port, allowing an initial discharge back into the creek that is approximately 102 gallons, or 13.5 cubic feet. Once creek flow through the cleanout port equalizes (approximately 45 seconds), water is captured at the port with a bucket and poured back behind the diversion point to facilitate cleaning of sedimentation through cleanout port. This procedure results in an additional 50 gallons (approximately), with the resulting totals being ~152 gallons of water used to flush the 2 cubic feet of sedimentation.

Sedimentation is benign and composed of only those constituents that are naturally occurring in the watershed. Although there is likely an increase in turbidity immediately following the cleanout of sediment, the increase is temporary and short in duration and is not visibly any greater than turbidity that is observed in the creek after a storm event.

County of San Mateo - Planning and Building Department

ATTACHMENT I

April 12, 2018

Laura Richstone
Project Planner
San Mateo County Planning and Building Division
455 Couny Center
Redwood City, California 94063

Subject: Redwood Glen Diversion Point Maintenance Procedure Plan

Dear Ms. Richstone:

This letter is in response to a request the County made to Redwood Glen regarding the assessment of potential biological impacts associated with the Redwood Glen Diversion Point Maintenance Procedure Plan for Redwood Glen Diverson Plan (plan). This letter includes a description of our understanding of the proposed plan and our conclusions regarding the potential impacts to biological resources caused by plan implementation.

Project Understanding: Maintenance procedures occur at both the Hoffman Creek diversion location and the Piney Creek diversion location, including visual inspections, minor repairs, and sediment removal. A description of repair and sediment removal activities at each diversion location follows.

Hoffman Creek Diversion Maintenance: Repairs have not been required at Hoffman Creek in recent history. If repairs should become necessary, it is anticipated that they will consist of resetting a stainless bolt or replacing a pipe flange. No chemicals/toxic substances will be involved in the repair procedures and all work, with the exception of bolt replacement, will occur outside the creek channel. Bolt replacement will involve minimal work by hand using a box wrench.

Sediment removal at Hoffman Creek occurs twice annually, including in mid-spring (i.e., March or April) and following the first winter storm event (i.e., October or November). The Hofffman Creek diversion structure consists of a stainless-steel sink attached to a redwood (*Sequoia sempervirens*) log across the creek. Sediment entrained in the diversion line extending from the stainless steel sink to the raw water tank accumulates in a series of three 55-gallon plastic drums used for settling the sediment. To remove the sediment, the 55-gallon drums are flushed one at a time. Discharge is trickled through the rocks on the bank of Hoffman Creek to reduce turbidity associated with the cleanout. The resulting discharge into Hoffman Creek from each drum is estimated to be 7.4 cubic feet of water containing approximately 0.28 cubic feet of sediment. As a result, a total of about 0.85 cubic feet of sediment enters the creek. Sediment scooped out of the stainless steel sink is deposited and spread outside the bank of the creek.

Piney Creek Diversion Maintenance: At the Piney Creek diversion, leafy debris is occasionally cleared from the clogged ports. Clearing is conducted by hand. Repairs at the Piney Creek diversion include replacement of piping when necessary. Occasionally, PVC glue is required on pipe joints for these repairs. The glue is added to the pipe outside the creek channel and allowed to fully cure prior to installing the pipe in the creek. No other chemicals/toxic substances are required for repairs. All work occurs outside standing or flowing water.

Sediment removal at Piney Creek occurs twice annually, including in mid-spring (i.e., March or April) and following the first winter storm event (i.e., October or November). The Piney Creek diversion structure consists of a concrete dam across a narrow (approximately 4-foot) bedrock notch. The Piney Creek diversion structure includes a 2-inch diameter diversion port and bypass port and a 4-inch diameter sediment sluice port. Sediment at Piney Creek accumulates behind the concrete dam where a

maximum volume of approximately 13.5 cubic feet can accumulate at the level of the bypass port. This accumulation is removed by opening the cap on the sluice port and letting water and sediment flow through. Depending on conditions this can result in a maximum initial discharge of sediment and water mixture of up to 13.5 cubic feet. Once the creek flow through the sluice port equalizes (after about 45 seconds), the structure is rinsed with an additional approximatley 50 gallons of water. The entire sediment removal procedure at Piney Creek, under normal conditions, is estimated to discharge approximately 152 gallons of water containing approximately 2 cubic feet of sediment.

Conclusions

Repairs at both Piney Creek and Hoffman Creek would not result in significant impacts to biological resources. We carefully discussed the maintenance activities with Redwood Glen, and we cannot think of any instance that repairs would cause significant impacts. We have recommended measures to protect water quality that have been incorporated into the maintenance plan, such as glueing pipe outside of the creek zone and conducting work outside of the creek zone, as feasible.The repairs are minor and short in duration, no heavy equipment is required to conduct the repairs, the majority of the repairs occur outside the creek channel or outside of standing/flowing water, and no chemicals/toxic substances could come in contact with the water during the repairs.

Sediment removal at Piney Creek and Hoffman Creek is also not expected to result in significant impacts to biological resources. The normal discharges associated with the sediment removal are very small. They cause an initial increase in turbidity that is very short in duration and is localized at the initial discharge location. We have also recommended measures to protect water quality that have been incorporated into the maintenance plan, such as returning sediment-laden water to the creek through a natural filter (rocks and creek bank vegetation). Importantly, this maintenance method returns previously trapped sediment to the creek system. Natural sediment flow is an important component to stream health and diversion points can interrupt that flow. The proposed maintenance plan, under normal conditions, does not remove sediment from the system. During most storm events, the sediment and water continue to flow over the Piney Creek diversion and the sediment does not accumulate any more than under normal circumstances. In the event of an extreme storm event where the sediment does accumulate and the diversion dam fills with 13.5 cubic feet of sediment, we have recommended that Redwood Glen remove the sediment using hand tools and spread it outside the bank of the creek. Redwood Glen has agreed to incorporate this measure into the plan.

We also requested that Redwood Glen consult the hydrologist on this issue, because impacts to the hydrology or geomorphology of the creek could also impact biological resources. The hydrologist (Balance Hydrologics) determined that the discharge would not impact the hydrology or geomorphology of the creek (Balance Hydrologics 2018)[1].

Our professional opinion is that the maintenance plan incorporates protection measures and that implementation of the maintenance plan will not result in significant impacts to biological resources.

If you have any questions or need additional information, please contact me at (805) 215-876 or lhuff@migcom.com or Tay Peterson at (650) 400-5767 or tpeterson@migcom.com at your convenience.

Sincerely,

Lauren Huff

Lauren Huff
Senior Biologist

County of San Mateo - Planning and Building Department

ATTACHMENT J

Balance Hydrologics, Inc.®

800 Bancroft Way • Suite 101 • Berkeley, CA 94710-2227 • (510) 704-1000
www.balancehydro.com • email: office@balancehydro.com
Berkeley • Santa Cruz • Truckee

April 11, 2018

Larry Rice
Executive Director
Redwood Glen
100 Wright Way
Loma Mar, CA 94021
exec@redwoodglen.com

RE: Sediment Management at Point of Diversions on Piney and Hoffman Creeks

Dear Larry:

You have asked Balance to respond to the County's request for additional information as to the effect of sediment released from Redwood Glen's point of diversion (POD) structures on Hoffman and Piney Creeks during maintenance. Sediment removal described in Redwood Glen's maintenance procedures is summarized as follows:

- At the Hoffman Creek POD, the diversion structure consists of a stainless-steel sink attached to a redwood log across this creek (**Figure 1**). Silt and find sands entrained in the diversion line (hose) extending from the sink to the raw-water tank accumulate in a series of three 55-gallon plastic drums used for settling. Twice annually the drums are drained to the upper bank of Hoffman Creek -- once in mid-spring (March/April) and again following first storm event during the fall (October/November). Each drum is flushed one at a time, with the water and sediment in the drums flowing onto the bank and reintroduced to the creek. The resulting discharge back into the creek from each drum is approximately 55 gallons (7.4 cubic feet) of water containing approximately 0.28 cubic feet or sediment. A total of about 0.85 cubic feet of sediment enters the creek per 'flush', or approximately 1.7 cubic feet per year. Sediment accumulation scooped out of the sink is deposited up slope and does not reenter the stream.

- At Piney Creek POD, the diversion structure consists of a concrete dam across a narrow (4-ft.) bedrock notch, which includes a 2-inch diameter diversion port and bypass port, and a 4-inch diameter sediment sluice port (**Figure 2**). Primarily sand accumulates behind the dam, where there is a maximum volume of approximately 13.5 cubic feet at the level of the bypass port, and about 20 cubic feet at the level of the spillway. Twice annually the sluice port is opened and sediment is flushed downstream -- once in mid-spring (March/April) and again following first storm event during the fall (October/November). When the sluice port is opened, a flush of 13.5 cubic feet (about 100 gallons) of water flows downstream from the port at a rate of about 0.3 cubic feet per second (cfs). The structure is then rinsed with about an additional 50 gallons of water. Approximately 2 cubic feet of sediment is flushed downstream, totaling about 4 cubic feet per year.

To put this amount of sediment in context, sediment yields of about 2,500 to 3,000 tons per square mile are reported for most watersheds on the San Mateo County coast. Thus, maintenance sluicing 2 cubic feet of sand twice a year at the Piney Creek diversion (or 0.1 tons, given 100 lbs per cu. ft. of sediment) and flushing 0.85 cubic feet of sediment twice a year at the Hoffman Creek diversion (or 0.0425 tons) is well within the norms of sediment yield for tributary watersheds of the region. Furthermore, this level of maintenance sluicing is negligible relative to the drainage areas for coastal gages nearby -- Pescadero Creek at the USGS gage near Pescadero, 45.9 square miles; San Gregorio Creek at the USGS gage at San Gregorio, 50.9 square miles; and Gazos Creek above Cabrillo Highway, 11.3 square miles.

As an example, Balance gages streamflow and sediment yield in Gazos Creek, with watershed geology similar to Piney and Hoffman Creeks. In 2002, a below normal rainfall year, bedload yield was 4,800 tons and suspended sediment yield was 5,500 tons (Owens and others, 2003). Though a much larger watershed than Hoffman and Piney Creeks with known landslides and other sediment sources, this yield equates to 93 tons from the 0.10 square mile Piney Creek watershed and 330 tons from the 0.36 square mile Hoffman Creek watershed (**Table 1**). Lower sediment yields per drainage area were found in other streams of the Santa Cruz Mountains, which equate to as little as 11 tons in Piney Creek and 39 tons in Hoffman Creek during 2002. These watersheds also yield significantly more sediment during normal and wet years, and extremely high sediment transport rates following fire.

We conclude that there would not be a hydrologic or geomorphic impact by sluicing and keeping the sediment in the creek as described in your POD maintenance procedures. In addition, if during an extreme event and the Piney Creek diversion dam were to fill with 20 cubic feet of sediment, then the 1 ton of sediment would still be within the regional norms of tributary sediment yields. Though you would likely need to shovel out much of the sediment and deposit it up slope to reactivate the functionality of the diversion structure. In that regard, Redwood Glen may want to also retain the option to capture some of the sediment during maintenance and use on site it as needed.

Closing

Please let us know if you have questions or if you need further detail.

Sincerely,

BALANCE HYDROLOGICS, INC.

Mark Woyshner, M.Sc.Eng.
Hydrologist/Hydrogeologist
Senior Consultant and Director

Attachments: 2 figures, 1 table

Cited Reference: Owens, J., Chartrand, C, and Hecht, B., 2003, Geomorphic and Sediment Assessment of the Gazos Creek Watershed, San Mateo and Santa Cruz Counties, California: A Balance Hydrologic report prepared for Coastal Watershed Council, Funded by California Department of Fish and Wildlife, and State Coastal Conservancy, Balance Project Assignment 200022, 41 p

Table 1. Sediment yield estimates scaled for Pescadero Creek, Hoffman Creek, and Piney Creek based on measured sediment yields in Santa Cruz Mountain streams, San Mateo County, CA

Water Year	Bedload Sediment [1]	Suspended Sediment [1]	Bedload + Suspended Sediment [1]	Watershed Area	Percent of Average Annual Streamflow [2]	Bedload Yield	Suspended Sediment Yield	Bedload + Suspended Sediment Yield	Pescadero Cr above Pescadero Marsh (59.7 sq. mile watershed)			Hoffman Cr at Pescadero Cr (0.36 sq. mile watershed)			Piney Cr at Pescadero Cr (0.10 sq. mile watershed)		
	Qb (tons)	*Qss (tons)*	*Qb+Qss (tons)*	*(sq mi)*		*(tons/sq mi)*	*(tons/sq mi)*	*(tons/sq mi)*	*Qb (tons)*	*Qss (tons)*	*Qb+Qss (tons)*	*Qb (tons)*	*Qss (tons)*	*Qb+Qss (tons)*	*Qb (tons)*	*Qss (tons)*	*Qb+Qss (tons)*
Gazos Creek near Highway 1																	
2002	4,784	5,481	10,265	11.3	65%	423	485	908	25,276	28,958	54,234	154	176	330	43	49	93
Corte Madera Creek at Westridge Drive																	
1998	43,251	148,912	192,163	6.0	295%	7,209	24,819	32,027	430,347	1,481,674	1,912,022	2,616	9,008	11,624	735	2,532	3,268
1999	7,106	8,113	15,219	6.0	118%	1,184	1,352	2,537	70,705	80,724	151,429	430	491	921	121	138	259
2000	17,007	40,174	57,181	6.0	140%	2,835	6,696	9,530	169,220	399,731	568,951	1,029	2,430	3,459	289	683	972
2001	391	1,011	1,402	6.0	50%	65	169	234	3,889	10,061	13,951	24	61	85	6.6	17	24
2002	1,482	3,661	5,143	6.0	65%	247	610	857	14,746	36,427	51,173	90	221	311	25	62	87
Los Trancos Creek at Arastradero Road																	
1998	5,418	3,398	8,816	5.27	295%	1,028	645	1,673	61,378	38,495	99,874	373	234	607	105	66	171
1999	1,135	2,639	3,774	5.27	118%	215	501	716	12,856	29,896	42,752	78	182	260	22	51	73
2000	1,202	754	1,956	5.27	140%	228	143	371	13,617	8,545	22,161	83	52	135	23	15	38
2001	200	119	318	5.27	50%	38	23	60	2,263	1,344	3,607	14	8.2	22	3.9	2.3	6.2
2002	158	410	568	5.27	65%	30	78	108	1,790	4,640	6,431	11	28	39	3.1	7.9	11

Notes:

1. Bedload and suspended measurements by Balance Hydrologics and reported in Owens, J., Chartrand, C, and Hecht, B., 2003, Geomorphic and Sediment Assessment of the Gazos Creek Watershed, San Mateo and Santa Cruz Counties, California: A Balance Hydrologic report prepared for Coastal Watershed Council, Funded by California Department of Fish and Wildlife, and State Coastal Conservancy, Balance Project Assignment 200022, 41 p

2. U.S. Geological Survey gaging station no. 11162500, Pescadero Creek near Pescadero, CA. LOCATION - Lat 37°15'39", long 122°19'40" referenced to North American Datum of 1927, in SW 1/4 sec.05, T.8 S., R.4 W., San Mateo County, CA, Hydrologic Unit 18050006, on left bank, at downstream side of highway bridge, 3.0 mi east of Pescadero, and 5.3 mi upstream from mouth. DRAINAGE AREA - 45.9 mi^2. PERIOD OF RECORD - April 1951 to current year

Balance Hydrologics, Inc.®

Figure 1. Existing diversion structure on Hoffman Creek, Redwood Glen, San Mateo County, CA. The diversion structure consists of a stainless-steel sink attached to a redwood log across this creek. Sediment entrained in the line extending from the sink to the raw-water tank accumulates in a series of three 55-gallon drums used for settling. Water and sediment is flushed onto the bank duirng maintenance twice a year.

County of San Mateo - Planning and Building Department

ATTACHMENT K

Surface Water Treatment Plant Waste Management Plan
Redwood Glen Camp & Conference Center

Redwood Glen's treatment units both generate waste streams during their respective backwash and cleaning cycles, as follows:

- Waste stream from the continuous membrane filtration (CMF) unit:
  - Regular backwash, once per hour of operation (frequency will depend on water quality and usage),
  - Maintenance & conditioning wash, once per 1-2 weeks (frequency will depend on water quality), and
  - Cleaning-in-Place chemical wash, once per quarter.

- Waste stream from the iron and manganese (Fe/Mn) Pelican Water unit:
  - Regular backwash, once per day maximum (frequency will depend on water quality and usage).

CMF Waste Streams

1. Regular backwash

The regular backwash cycle is meant to prevent the fouling of the membranes. It does so by injecting compressed air through the membranes in the opposite water flow direction to dislodge the particles that were filtered out by the membranes. Raw water then washes away the loose particles out of the unit. The cycle is set to occur every 60 minutes, lasts approximately 90 seconds and uses approximately 40 gallons of water. The plant operator may also adjust the frequency of backwash from the CMF unit's control panel. Additionally, the CMF unit will automatically trigger a backwash cycle if the trans-membrane pressure rises above 1 psi.

During ADD conditions, the daily backwash volume produced is estimated to be approximately 230 gallons, and during MDD conditions, it is estimated to be approximately 530 gallons.

The recycling of the regular cycle backwash water will ensure that Redwood Glen will be able to reuse as much water as possible of its available supply. Through settling and dilution, Redwood Glen plans to recycle the CMF's regular backwash cycle water stream.

Based on the estimates presented above, Redwood Glen proposes the installation of a 2,500-gallon conical tank, which would allow the settling of the particles and the easy disposal of the solids accumulated at the bottom of the tank. A 2,500-gallon tank will have the capacity to store the equivalent of:

- Backwash water for up to 11 days of ADD; and
- Backwash water for up to 4.5 days of MDD.

The suspended solids in the backwash water will settle on a daily basis when the plant is not operating and the clear supernatant will be returned to the two (2) 5,000-gallon raw

water tanks once a day. The amount of accumulated solids varies based on the concentration of total suspended solids in the raw water and the number of hours the CMF unit is operating (i.e the water demand).

Based on the calculated volume of solids that will settle during ADD and MDD conditions, it is estimated that the conical section of the tank will be 75% full after approximately 20 years of operation. The solids accumulate at the bottom of the tank, within the conical section of the tank and can be removed through the outlet located at the center of the conical bottom of the tank.

Disposal of Solids

The backwash water in the conical tank does not contain any added chemical from the treatment process and the settled solids only include the surface water source's suspended solids. The settled solids can be removed at a frequency established by operations and maintenance (O&M) staff and land-applied on Redwood Glen's property.

2. Maintenance & Conditioning Wash – "Short" CIP

The maintenance wash consists of a sodium hypochlorite wash to condition the membranes and ensure their long-term performance. The sodium hypochlorite concentration is between 400 to 500 ppm. The frequency of the maintenance wash will be based on the water quality and will be set automatically according to the vendor's recommendation. Following the vendor's recommendation, the total volume of the maintenance wash should be approximately 350 gallons and the cycle should run every 1 to 2 weeks, depending on the seasonal water demand and the exact raw water composition. The monthly maintenance wash volume would be vary between 700 and 1,400 gallons. The waste stream from the maintenance wash will be directed to the 2,500-gallon CIP water holding tank and be hauled off-site periodically, as described below.

3. CIP Chemical Wash – "Regular" CIP

The Cleaning-in-Place (CIP) cycle occurs once per quarter and includes a citric acid/sodium hypochlorite chemical cleaning and a series of backwash cycles. The complete process uses approximately 350 gallons of water. Similar to the maintenance wash water, the chemical cleaning waste will be directed to the 2,500-gallon CIP water holding tank and be hauled off-site periodically, as described below.

Disposal of CIP Waste Stream

A 2,500-gallon CIP holding tank will ensure a practical frequency of the off-site hauling trips (once a month or less). The maintenance wash will use up to 1,400 gallons of the tank's capacity, which will leave sufficient available space if a CIP cycle needs to be performed. A qualified vendor will haul the CIP water off-site. Trinity Liquid Waste Services (https://www.trinityliquidwaste.com/) has confirmed that they can provide transport and disposal services for this waste stream on a monthly basis.

Waste stream from the Fe/Mn Treatment Unit

The Fe/Mn treatment unit has one (1) backwash cycle, and the vendor estimates a backwash volume of 75 gallons per cycle. The frequency of the backwash cycle can be adjusted by the operator depending on the usage and the raw water Fe/Mn concentrations. Based on Redwood Glen's demand and concentrations of Fe/Mn, the vendor predicts the following backwash cycle frequency:

- During low water consumption periods, the backwash can be set to run every 4 to 5 days; and
- During high water consumption periods, the backwash can be set to run daily.

The vendor of the iron and manganese unit has confirmed that the backwash water of the unit can be used for irrigation or sent to a septic system, floor drain or drain field. A backwash drain line is supplied with the unit.

The backwash water from the Fe/Mn unit will be directed to an existing onsite 2,500-gallon tank, currently located near the SWTP. During the high season, the 2,500-gallon tank will hold approximately 30 days of the waste stream. During the low season, the 2,500-gallon tank will hold up to 5 to 6 months of the Mn/Fe unit backwash water. The stored Fe/Mn backwash water will then be used as on site as irrigation water and represent useful water savings for the system.

County of San Mateo - Planning and Building Department

ATTACHMENT L

County of San Mateo
Planning and Building Department

INITIAL STUDY
ENVIRONMENTAL EVALUATION CHECKLIST
(To Be Completed by Planning Department)

1. **Project Title:** Redwood Glen Change of Water Source - Creek Water Treatment and Filtration Facility

2. **County File Number:** PLN 2001-00695

3. **Lead Agency Name and Address:** County of San Mateo Planning and Building Department 455 County Center, 2nd Floor, Redwood City, CA 94063

4. **Contact Person and Phone Number:** Laura Richstone, Project Planner; 650/363-1829

5. **Project Location:** 100 Wright Drive, Loma Mar

6. **Assessor's Parcel Number and Size of Parcel:** 084-071-100; 084-071-260; 084-071-270; 084-120-010; and 084-120-060. 165 acres.

7. **Project Sponsor's Name and Address:** Redwood Glen, 100 Wright Drive, Loma Mar, CA 94021

8. **General Plan Designation:** Private Recreation Rural

9. **Zoning:** Resource Management District (RM)

10. **Description of the Project:**

    Developed with a conference center, cabins, lodges, camp grounds, RV sites, a swimming pool, and various other outdoor recreation facilities, Redwood Glen Camp and Conference Center (Redwood Glen) provides camping and lodging facilities for 165 guests. The applicant, Redwood Glen, is seeking a Use Permit Renewal, Use Permit Amendment, and a Resource Management District Permit to allow the continued operation of a Baptist Church Camp, a change of potable water source from County Memorial Park to surface streams (Hoffman and Piney Creek), and the installation of approximately 3,400 linear feet of above ground piping, two (2) 2,500 gallon water storage tanks, and a 320 sq. ft. water filtration facility (built within a shipping container). The pre-fabricated water filtration facility has been previously installed in a developed relatively flat area of the parcel. Minimal grading in the form of trenching to connect to an existing water main and slight ground leveling for the above ground water filtration supports and water storage tanks are expected to occur. The applicant is seeking permission to install the proposed above ground piping, connect the filtration facility, and use surface streams to meet their potable water demands. No trees are proposed for removal and this project will involve minimal ground disturbance due to the fact that the water filtration facility, water tanks, and proposed piping will be placed above ground.

Project Background

From its opening in 1958 until 1995, Redwood Glen received its potable water from surface streams (Hoffman and Piney Creeks) and multiple wells located on the parcels that comprise of the Redwood Glen property (084-120-060; 084-071-260; 084-071-100; and 084-120-010). During this time, Redwood Glen diverted up to 8-acre-feet of water per year (2,606,808 gallons/year) from surface streams. From 1995 to March 2016, Redwood Glen received its potable water from San Mateo County Memorial Park and continued to divert between 180,000 - 250,000 gallons of water per year from surface streams for irrigation purposes. In 2014, the State Water Resource Control Board (SWRCB) issued a notice to the San Mateo County Parks Department that Memorial Park would lose its classification as a transient non-community water system and be re-classified as a community water system if the park continued to serve Redwood Glen. To avoid re-classification, Memorial Park discontinued water service to Redwood Glen on March 1, 2016. Redwood Glen has elected to exercise their water rights and use Hoffman and Piney Creeks to meet their projected water demand of 4-acre-feet of water per year (1,305,953 gallons/year). Redwood Glen's existing water infrastructure consists of a point of water diversion on Hoffman Creek, a point of water diversion on Piney Creek, several on-site wells, above and below ground water piping, and three (3) 5,000 gallon, one (1) 20,000 gallon, and one (1) 70,000 gallon water storage tanks.

Water Rights

Redwood Glen holds riparian water rights to Hoffman Creek that allow the camp to divert up to 8-acre-feet of water per year, immediately utilize the available water from the creek, and store up to 10,000 gallons of water. Hoffman Creek will remain the primary source of water for the camp. Redwood Glen also holds appropriative rights to Piney Creek (License No. 11116) to divert up to 24-acre-feet of water per year and store an unlimited amount of raw water. Water from Piney Creek will supplement water from Hoffman Creek during the drier summer months. No construction of water diversion structures are proposed. Existing water diversion structures are already located within Hoffman and Piney Creeks.

11. **Surrounding Land Uses and Setting:**

Surrounding land uses include open space and rural residences. Redwood Glen is located on 165 acres in the Santa Cruz Mountains, south of Pescadero Creek Road between County Memorial Park and Pescadero Creek County Park. Redwood Glen is developed with a conference center, lodges, campground facilities, and recreational areas. A majority of the parcels that constitute the Redwood Glen grounds are undeveloped and covered with redwood forest alliance habitat and riparian habitat. The parcels that host the majority of Redwood Glen's development (084-120-090; 084-071-260; and 084-120-010) are hilly, slope down toward Pescadero Creek and have elevations that range from 200 – 1,000 feet above sea level. Two surface perennial streams, Piney and Hoffman Creeks, bisect the Redwood Glen property and flow into Pescadero Creek (located just north of the subject parcel). Existing water diversion sites on Hoffman and Piney Creeks are located approximately 0.5 miles and 0.4 miles upstream of Pescadero Creek, respectively.

Special-status species that have a high potential to occur throughout the project parcel and near the existing points of water diversion include the California red-legged frog, Foothill yellow-legged frog, Santa Cruz black salamander, California giant salamander, Townsend's big-eared bat, Western red bat, and the Dudley's lousewort plant. Special-status species, including the Western pond turtle, Steelhead salmon, and the San Francisco garter snake, have a low potential to occur.

12. **Other Public Agencies Whose Approval is Required:**

Regional Water Quality Control Board
California Department of Fish and Wildlife (Streambed Alteration Agreement)

13. **Have California Native American tribes traditionally and culturally affiliated with the project area requested consultation pursuant to Public Resources Code Section 21080.3.1? If so, has consultation begun?:**

This project is not subject to Assembly Bill 52, as the County of San Mateo has no records of requests for formal notification of proposed projects within the County from any traditionally or culturally affiliated California Native American Tribes. However, the County seeks to satisfy the Native American Heritage Commission's best practices and has referred this project to all tribes within San Mateo County. As of the date of this report, no tribes have contacted the County requesting formal consultation on this project.

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" or "Significant Unless Mitigated" as indicated by the checklist on the following pages.

	Aesthetics	X	Hazards and Hazardous Materials		Recreation
	Agricultural and Forest Resources	X	Hydrology/Water Quality		Transportation/Traffic
	Air Quality		Land Use/Planning		Tribal Cultural Resources
X	Biological Resources		Mineral Resources	X	Utilities/Service Systems
X	Cultural Resources		Noise		Mandatory Findings of Significance
	Geology/Soils		Population/Housing		
	Climate Change		Public Services		

EVALUATION OF ENVIRONMENTAL IMPACTS

1. A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources a lead agency cites. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors as well as general standards (e.g., the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).

2. All answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.

3. Once the lead agency has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant Impact" is appropriate if there is substantial evidence that an effect may be significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an EIR is required.

4. "Negative Declaration: Less Than Significant with Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less Than Significant Impact." The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level (mitigation measures from "Earlier Analyses," as described in 5. below, may be cross-referenced).

5. Earlier analyses may be used where, pursuant to the tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration (Section 15063(c)(3)(D)). In this case, a brief discussion should identify the following:

   a. Earlier Analysis Used. Identify and state where they are available for review.

   b. Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.

   c. Mitigation Measures. For effects that are "Less Than Significant with Mitigation Measures Incorporated," describe the mitigation measures which were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.

6. Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g., general plans, zoning ordinances). Reference to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated.

7. Supporting Information Sources. Sources used or individuals contacted should be cited in the discussion.

1.	**AESTHETICS**. Would the project:				
		Potentially Significant Impacts	***Significant Unless Mitigated***	***Less Than Significant Impact***	***No Impact***
1.a.	Have a significant adverse effect on a scenic vista, views from existing residential areas, public lands, water bodies, or roads?				X

Discussion: The subject parcel is not located within or adjacent to any County or State Scenic Corridors. Though mostly undeveloped, existing development in the form of staff cabins, lodges, a conference center, recreational areas, and camp ground facilities are located throughout the parcel. The proposed water filtration facility (which was previously installed but is not operational at this time) is located in a previously developed flat area of the parcel adjacent to an existing road. The water filtration facility is housed in a 320 sq. ft. shipping container and is consistent with the scale of surrounding development, which includes several existing water storage tanks and storage containers. Though the location of the proposed water filtration facility and above ground piping do have natural scenic qualities, given the distance, surrounding vegetation, and topography, the project will not impact views from any public lands, water bodies, or roads.

Source: Project Plans; Project Location.

1.b.	Significantly damage or destroy scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?				X

Discussion: The project site is not located within a State Scenic Highway. Furthermore, no trees are proposed for removal nor are any rock outcroppings located near the project site.

Source: Project Location; San Mateo County General Plan; Scenic Resources Map.

1.c.	Significantly degrade the existing visual character or quality of the site and its surroundings, including significant change in topography or ground surface relief features, and/or development on a ridgeline?				X

Discussion: See the discussion provided to question 1.a. above.

Source: Project Plans.

1.d.	Create a new source of significant light or glare that would adversely affect day or nighttime views in the area?			X	

Discussion: Exterior lights are proposed for the project. The lights will be attached to the water filtration facility and positioned at the entrance and rear of the structure. These lights will not create a significant source of light or glare as they are downward directed. Any light or glare created by the proposed lights will be screened by the surrounding vegetation and mature redwood forest.

Source: Project Plans.

1.e.	Be adjacent to a designated Scenic Highway or within a State or County Scenic Corridor?				X

Discussion: The subject property is not located within a State or County Scenic Corridor. At its nearest point, the Pescadero Creek County Scenic Corridor's boundary ends approximately 600 linear feet to the northwest of the main project parcels (084-120-090 and 084-071-260). The location of the water filtration facility is located approximately 1,300 linear feet from the Pescadero Creek County Scenic Corridor. The location of the water filtration facility is not visible from the

corridor due to the long distances, topography of the area, mature vegetation, and existing development located between the parcel and the corridor.

Source: San Mateo County General Plan; Scenic Corridors Map; Project Plans; Project Location.

1.f.	If within a Design Review District, conflict with applicable General Plan or Zoning Ordinance provisions?				X

Discussion: The project is not located within a Design Review District.

Source: Project Location; San Mateo County Zoning Map.

1.g.	Visually intrude into an area having natural scenic qualities?			X	

Discussion: Situated between Memorial and Pescadero Creek County Parks, the project parcel has natural scenic qualities consisting of rural lands, County parks, and mature redwood forests and riparian habitats. As previously discussed, the water filtration facility is not visible from surrounding parcels due to the surrounding topography of the parcel and the surrounding mature vegetation. The proposed water filtration facility will be located in a disturbed and developed area of the parcel adjacent to existing water tanks and roads. The proposed linear piping necessary to draw water from Hoffman and Piney Creeks will be located at grade and screened by existing vegetation. As such, the piping and water filtration facility will have minimal visual impacts to the area.

Source: Project Plans.

2. AGRICULTURAL AND FOREST RESOURCES. In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the State's inventory of forestland, including the Forest and Range Assessment Project and the Forest Legacy Assessment Project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:

		Potentially Significant Impacts	***Significant Unless Mitigated***	***Less Than Significant Impact***	***No Impact***
2.a.	For lands outside the Coastal Zone, convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland) as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?				X

Discussion: Redwood Glen is zoned Resource Management (RM) and consists of several heavily

forested parcels. Most of Redwood Glen's development is located on small portions of lots 084-271-260; 804-120-010; and 084-120-060. Though agricultural uses are allowed in the RM Zoning District, there are no agricultural lands on or adjacent to the project parcels as identified by the San Mateo County Important Farmland Map of 2014. In addition, the water filtration facility will be located in a disturbed area of parcel 084-071-260 and will not involve the conversion of undeveloped land to developed land.

Source: Project Plans; San Mateo County Important Farmland Map, 2014.

2.b.	Conflict with existing zoning for agricultural use, an existing Open Space Easement, or a Williamson Act contract?				X

Discussion: The project parcel is not located within an Open Space Easement or under a Williamson Act Contract. The project is zoned Resource Management (RM). While agriculture is an allowed use in the RM District, the current use of the site as camp grounds for private recreation is allowed with the issuance of a Use Permit. The existing Redwood Glen Camp has operated under a Use Permit with the County of San Mateo since 1958. The proposed project will allow Redwood Glen to continue operating by providing an adequate source of potable water.

Source: San Mateo County Zoning Regulations; San Mateo County Agricultural Preserves Map; Project Plans.

2.c.	Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forestland to non-forest use?				X

Discussion: This parcel is not designated as Prime Farmland and, as such, will not result in the conversion of Farmland to a non-agricultural use.

The definition of forestland (PRC Section 1220(g)) is "land that can support 10% native tree cover of any species, including hardwoods, under natural conditions, and that allows for management of one or more forest resources, including timber, aesthetics, fish and wildlife, biodiversity, water quality, recreation, and other public benefits." The subject parcel is located in a heavily forested pine and redwood forest south of San Mateo County Memorial Park and meets the definition of forestland. The project site proposed for the placement of the water treatment facility is located in a previously developed and cleared area of the parcel, does not involve tree removal, requires minimal grading, and will not convert forestland into a non-forest use (the existing site is already converted to non-forest use). Similarly, the proposed water piping infrastructure, which will be placed above ground, does not require tree removal or grading activities. The placement of the water filtration facility and above ground piping are within developed areas of the main project parcels (084-120-060 and 084-071-260) that have already been converted to non-forest use. The continued use of the project parcels as a camp ground and the proposed project will not result in the further conversion of forestland into a non-forest use.

Source: Department of Conservation San Mateo County Important Farmland Map 2014; Project Plans.

2.d.	For lands within the Coastal Zone, convert or divide lands identified as Class I or Class II Agriculture Soils and Class III Soils rated good or very good for artichokes or Brussels sprouts?				X

Discussion: This project is not located within the Coastal Zone.

Source: San Mateo County GIS.

2.e.	Result in damage to soil capability or loss of agricultural land?			X	

Discussion: The proposed project site is located in a disturbed and developed area of the parcel adjacent to an existing road and is not considered to be protected agricultural land under the San Mateo County Zoning Regulations as soils in the project area have a Storie Index rating of Grade 4, where Grades 1-3 are protected. Though portions of the main project parcels (084-120-060 and 084-071-260) do contain soils with a Storie Index rating of Grade 3 (where Grade 3 is protected), no agricultural activities occur on these parcels. Additionally, the non-irrigated land capability of the project site is not rated, per the National Resources Conservation Service (NRCS), as the soils at the project site are sandy, sloping, and steep.

Though Grade 3 soils do exist on portions of the project parcels, various existing residential and camp buildings are located atop these soils. No new development (with the exception of the above ground piping) will occur on these soils. There is no expectation that the location of the water treatment facility, placement of the above ground piping, and the utilization of the surface creeks as a potable water source would result in any damage to the soil or soil capability.

Source: Zoning Maps; Natural Resources Conservation Service; San Mateo County General Plan Productive Soil Resources Soils with Agricultural Capability Map.

2.f.	Conflict with existing zoning for, or cause rezoning of, forestland (as defined in Public Resources Code Section 12220(g)), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))? *Note to reader: This question seeks to address the economic impact of converting forestland to a non-timber harvesting use.*				X

Discussion: The project parcel is zoned Resource Management (RM) and, as such, is not located in a Timberland Preserve Zoning District. The operation of a private recreation and camp ground facility is an allowed use subject to the issuance of a Use Permit in the RM Zoning District. Redwood Glen has operated under a Use Permit with San Mateo County since 1958. The proposed project, to renew and amend Redwood Glen's Use Permit to allow a change in potable water source, and the installation of a water treatment facility, are allowed under the current RM Zoning Regulations and no rezoning is proposed as a part of this project.

Source: San Mateo County Zoning Maps; San Mateo County Zoning Regulations.

3. AIR QUALITY. Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:

		Potentially Significant Impacts	***Significant Unless Mitigated***	***Less Than Significant Impact***	***No Impact***
3.a.	Conflict with or obstruct implementation of the applicable air quality plan?		X		

Discussion: The Bay Area 2010 Clean Air Plan (CAP), developed by the Bay Area Air Quality Management District (BAAQMD), is the applicable air quality plan for San Mateo County. The CAP was created to improve Bay Area air quality and to protect public health and climate.

The proposed project would not conflict with or obstruct the implementation of the BAAQMD's 2010 CAP. The project and its operation involve minimal hydrocarbon (carbon monoxide: CO2) air emissions, whose source would be exhaust from vehicle trips (e.g., construction vehicles and personal cars of construction workers), whose primary fuel source is gasoline, during its construction. Due to the site's rural location and assuming construction vehicles and workers are based in urban areas, potential project air emission levels from construction would be increased from general levels. However, any such construction-related emissions would be temporary and localized and would not conflict with or obstruct the Bay Area Air Quality Plan.

The BAAQMD has established thresholds of significance for construction emissions and operational emissions. As defined in the BAAQMD's 2010 CEQA Guidelines, the BAAQMD does not require quantification of construction emissions due to the number of variables that can impact the calculation of construction emissions. Instead, the BAAQMD emphasizes implementation of all feasible construction measures to minimize emissions from construction activities. The BAAQMD provides a list of construction-related control measures that they have determined, when fully implemented, would significantly reduce construction-related air emissions to a less than significant level. These control measures have been included in Mitigation Measure 1 below:

Mitigation Measure 1: The applicant shall require construction contractors to implement all the Bay Area Air Quality Management District's Basic Construction Mitigation Measures, listed below:

a. Water all active construction areas at least twice daily.

b. Apply water two times daily, or apply (non-toxic) soil stabilizers on all unpaved access roads, parking, and staging areas at construction sites. Also, hydroseed or apply non-toxic soil stablizers to inactive construction areas.

c. Sweep adjacent public streets daily (preferably with water sweepers) if visible soil material is carried onto them.

d. Limit traffic speeds on unpaved roads within the project parcel to 15 miles per hour.

e. All construction equipment shall be maintained and properly tuned in accordance with manufacturers' specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.

f. Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California Airborne Toxics Control Measure Title 13, Section 2485, of the California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points.

Also, see the discussion to question 7.1. (Climate Change: Greenhouse Gas Emissions), relative to

the project's compliance with the County Energy Efficiency Climate Action Plan. **Source:** BAAQMD CEQA Guidelines, May 2017; Project Plans.					
3.b.	Violate any air quality standard or contribute significantly to an existing or projected air quality violation?		X		
Discussion: The project would not violate any construction-related or operation air quality standards or contribute significantly to an existing or project air quality violation. See the discussion provided to question 3.a. and Mitigation Measure 1 above. **Source:** BAAQMD CEQA Guidelines, May 2017; Project Plans.					
3.c.	Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable Federal or State ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?		X		
Discussion: The San Francisco Bay Area Air Basin is a State designated non-attainment area for Ozone, Particulate Matter (PM10), and Fine Particulate Matter (PM2.5). Therefore, any increase in these criteria pollutants would be significant. Past construction of the water filtration facility and future construction of the above ground piping and water tanks would generate temporary increases in these criteria pollutants due to construction vehicle emissions. However, the placement and assembly of the prefabricated water filtration facility and the laying of approximately 3,400 linear feet of above piping by hand would not result in a significant impact to air quality in the immediate area or the air basin. Implementation of Mitigation Measure 1 will minimize increases in non-attainment criteria pollutants generated from project construction to a less than significant level. **Source:** Project Plans.					
3.d.	Expose sensitive receptors to significant pollutant concentrations, as defined by BAAQMD?			X	
Discussion: Sensitive receptors are facilities or land uses such as schools, hospitals, or residential areas where people live, play, convalesce, or a place where insensitive individuals spend significant amounts of time. Sensitive individuals, such as children and the elderly, are those most susceptible to poor air quality. While the above ground piping will be placed in locations in close proximity to sensitive receptors, all the piping will be installed and laid by hand. The installation of the piping will not produce any emissions nor expose any sensitive receptors to pollutants. The location of the water filtration facility and the proposed 2,500 gallon water tanks are located near the easterly border of the project parcel. This area sees little foot traffic and is located approximately 300 feet way from the nearest sensitive receptors (a single-family staff residence). Though already installed, any pollutant emissions generated from the construction of the water treatment facility would be temporary in nature. Similarly, pollutant emissions generated from the construction of the proposed water tanks and the installation of the linear piping will also be temporary. Once					

operational, the water treatment facility will be powered by electricity and any long-term emissions for the facility will be associated with its maintenance and transitory in nature. Maintenance for this facility will include hauling and disposing wastewater off-site to Trinity Liquid Waste Services (an appropriate disposal facility) monthly. Emissions from maintenance vehicles will be temporary in nature and will not impact any sensitive receptors.

Source: Project Plans; Redwood Glen's Proposed Operation and Maintenance Plan.

3.e.	Create objectionable odors affecting a significant number of people?			X	

Discussion: The project, once operational, will not create or generate any odors. The project has the potential to generate odors associated with construction and maintenance activities (i.e., vehicle exhaust). The project site is located in a rural area where any objectionable odors introduced during these times would be minimal, temporary in nature, and will not impact significant numbers of people over an extended duration of time. Thus, the impact would be less than significant.

Source: Project Plans.

3.f.	Generate pollutants (hydrocarbon, thermal odor, dust or smoke particulates, radiation, etc.) that will violate existing standards of air quality on-site or in the surrounding area?		X		

Discussion: Though the water filtration facility has already been installed, the delivery of the above ground piping, water tanks, and off-hauling of wastewater during the lifetime of the project could generate dust for a short duration of time. To ensure that project impacts will be less than significant, see Mitigation Measure 1 described in 3.a. above.

Source: See sources in Section 3.a.

4. BIOLOGICAL RESOURCES. Would the project:

		Potentially Significant Impacts	***Significant Unless Mitigated***	***Less Than Significant Impact***	***No Impact***
4.a.	Have a significant adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?		X		

Discussion: According to the Biological Impact Assessment (Attachment A) prepared by MIG, Inc., dated December 2017, the majority of the project parcels contains redwood forest alliance habitat (i.e., forest stands where redwood trees are the dominant tree but other tree species often share the canopy) and riparian habitats along Piney and Hoffman Creeks. MIG biologists assessed the existing water diversion sites at the creeks on September 14, 2017 and identified the potential for

eight special-status animals and one special-status plant species to occur within or near the existing points of diversion.

Project activities including the maintenance and cleaning of the existing points of diversion and the increased diversion of water from Hoffman and Piney Creeks could result in permanent and temporary impacts to special-status reptiles and amphibians and their habitat. Species with the potential to occur at the existing points of water diversion are discussed below:

Reptiles, Amphibians, and Fish

California Red-Legged Frog (CRLF)

The California red-legged frog (*Rana draytonii*) is federally listed as threatened under the Federal Endangered Species Act (FESA) and is a designated state species of special concern. Redwood Glen campground and parcels are within the designated critical habitat for CRLFs and suitable breeding habitat for this species are also found in Pescadero Creek near Redwood Glen. CRLFs are also known to occur within the upper reaches of Pescadero Creek in neighboring Memorial, Sam McDonald, and Pescadero Creek County Parks. A field assessment of the existing points of water diversion (POD) concluded that while there is a lack of suitable breeding habitat, there is a high potential for CRLFs to move through, occupy, and forage within both Piney and Hoffman Creeks.

Potential indirect impacts on CRLFs include degradation of water quality resulting from the discharge of sediment from water diversion sites and the alteration of the hydrology of Piney and Hoffman Creeks. The proposed project could significantly impact CRLFs and their habitat. Due to the regional rarity of this species, increased mortality of the CRLF would be significant under CEQA. Implementation of the mitigation measures below will reduce potential impacts to CRLF to less than significant levels.

San Francisco Garter Snake (SFGS)

The San Francisco Garter Snake (*Thamnophlis sirtalis tetrataenia*) is listed under the FESA and CESA as Endangered. They are highly aquatic and endemic to the San Francisco Bay Area, and occur sympatrically with their primary prey species, the CRLF. The SFGSs are known to occur within the Pescadero Marsh and based on a field assessment by MIG, Pescadero Creek could provide suitable habitat for SFGSs. However, SFGSs have not been documented within the upper reaches of Pescadero Creek near Redwood Glen. Based on a lack of suitable wetland and upland habitat at or near the existing points of diversion, Redwood Glen does not support suitable breeding habitat for the SFGS. In addition, SFGSs are not expected to use Hoffman or Piney Creeks as movement corridors due to their lack of connectivity to suitable wetland habitat. The SFGSs have a low potential to be present at the existing points of diversion (or within Redwood Glen as a whole) based on the lack of nearby occurrences of SFGSs and lack of suitable habitat requirements. No impacts are expected to occur to the SFGS and, as such, no mitigation measures specific to the SFGS are necessary.

Steelhead Salmon

Central California Coast Steelhead Salmon (*Oncorhynchus mykiss irideus*) is threatened under the FESA. Pescadero Creek is within NOAA Fisheries designated critical habitat for this species. Steelhead are known to occur within Pescadero Creek and its tributaries and could occur in the lower reaches of Hoffman and Piney Creeks where they flow into Pescadero Creek.

During MIG's September 14, 2017 site visit, biologists noted that the PODs on Hoffman and Piney Creeks are located close to their respective headwaters where the creeks are shallow and lack the deep water pools necessary for spawning. No steelhead salmon have been documented in Hoffman or Piney Creeks. In 2004, Hoffman Creek was evaluated as a part of a fish passage study and was described as "Steep…[and] Deemed not fish bearing". As such, there is a low potential for

steelhead to be located near the existing points of diversion.

Though the existing PODs may not impact this species, increased water diversion from Hoffman and Piney Creeks (tributaries of Pescadero Creek) and possible subsequent changes in the hydrology of both creeks may impact this species.

A hydrology analysis, by Balance Hydrologics, Inc. (Balance), assessed the existing PODs and the projected effects of increased quantities of water diversion proposed by Redwood Glen. Balance stated that the existing PODs are inefficient and allow the majority of base flows to passively bypass the diversion systems (see Section 9. for further discussion). Balance also observed that the PODs are located at the headwater springs of both creeks, can only divert a portion of the total base flow at the mouth of both creeks, and that spring flows downstream of the diversion sites are not diverted. They also noted that the drainage areas of Hoffman and Piney Creeks are small compared to Pescadero Creek and constitute less than one percent of flow into Pescadero Creek. They concluded that Hoffman and Piney Creeks provide an adequate water supply for Redwood Glen and that the increased diversion from both creeks would not have a significant effect on the flowrates of Pescadero Creek. Because steelhead salmon have the potential to exist in the lower reaches of Hoffman and Piney Creeks where they flow into Pescadero Creek, the proposed water diversion activities have the potential to impact their habitat during drought scenarios and the dry summer months. Implementation of Mitigation Measure 5 below relating to water conservation will reduce potential impacts to a less-than-significant level.

Western Pond Turtle (WPT)

The western pond turtle (*Emys marmorat*) is a designated state species of special concern. WPTs are normally found in and along riparian areas and are known to occur in Pescadero Marsh, and in the San Gregorio and Waddell Creek watersheds to the north and south of Pescadero Creek, respectively. Though this species has not been documented within the upper reaches of Pescadero Creek, field assessments by MIG of Pescadero Creek, Hoffman Creek, and Piney Creek concluded that these creeks could provide suitable high-quality habitat. Based on lack of nearby occurrences and lack of suitable upland grassland habitat, there is a low potential for WPT to occur within the Redwood Glen property. Impacts on the WPT would be similar to those described for the CRLF and the steelhead salmon relating to a potential change in the hydrology of Hoffman and Piney Creeks, and the potential of accumulated sediment discharge (see Section 9.a. for further discussion) from the existing PODs. Implementation of the mitigation measures listed for the California red-legged frog and the steelhead salmon will minimize impacts to this species to a less-than-significant level.

California Giant Salamander (CGS)

The California giant salamander (*Dicamptodon ensatus*) is a state designated species of special concern. One of the largest terrestrial salamander in North America, the CGS is endemic to California and occurs in wet coastal forests in or near clear, cold permanent or semi-permanent streams. Hoffman and Piney Creeks provide suitable habitat for the CGS and this species is known to occur within nearby areas of Redwood Glen. There is a high potential for CGSs to occur at or near the water diversion sites and elsewhere along Hoffman and Piney Creeks based on the presence of suitable habitat and past nearby occurrences of this species. Impacts to the CGS could arise from a change in hydrology of Hoffman and Piney Creeks due to an increase in water diversion and thus a reduction in suitable habitat. Implementation of the mitigation measures below relating to the adherence to a water conservation plan and water diversion maintenance pre-construction surveys will reduce potential impacts to the CGS to a less-than-significant level.

Foothill Yellow-Legged Frog (FYLF)

The foothill yellow-legged frog (*Rana boylii*) is a designated state species of special concern and is proposed to be listed as threatened under the CESA. FYLFs are found in partly-shaded, shallow streams with rocky substrates in forests/woodlands and are known to occur in adjacent Pescadero

Creek County Park. Hoffman and Piney Creeks provide suitable breeding and foraging habitat for the FYLF and there is a moderate potential for this frog species to occupy both creeks. Implementation of, and compliance with, the mitigation measure below will reduce potential impacts to the FYLF to a less-than-significant level.

Santa Cruz Black Salamander (SCBS)

The Santa Cruz black salamander (*Aneides niger*) is a designated state species of special concern. Endemic to California, SCBSs are terrestrial salamanders and are found in damp environments near streams and creeks in deciduous woodlands, coniferous forests, and coastal grasslands. SCBSs have been known to occur within nearby areas of Redwood Glen, and the redwood forest habitat near both Hoffman and Piney Creeks provides suitable habitat for this species. Based on the presence of suitable habitat and nearby occurrences of this species, there is a high potential for the SCBS to occur near the existing points of water diversion and throughout Hoffman and Piney Creeks. Potential impacts to the SCBS could occur from a reduction in suitable habitat due to increased rates of water diversion from both Hoffman and Piney Creeks. Implementation of the below mitigation measures will reduce potential impacts to the SCBS to less-than-significant levels. See Section 9. (*Hydrology and Water Quality*) below for a discussion of Redwood Glen's water rights and the potential impacts that increased rates of water diversion may have on the hydrology of Hoffman, Piney, and Pescadero Creeks.

Birds

Marbled Murrelet (MM)

The Marbled Murrelet *(Brachyramphus marmoratus)* is federally listed as threatened under the FESA and state listed as endangered under the CESA. The MM is an aquatic bird the feeds near-shore and nests inland along the coast in old-growth redwood dominated forests. The MM is known to nest in nearby Memorial and Pescadero County Parks and both parks are within the federally designated critical habitat for the MM. There is a high likelihood for the MM to nest within Redwood Glen due to the presence of suitable habitat and nearby past occurrences of this species. Impacts to the MM relating to nest disturbance could occur during routine maintenance of the existing points of water diversion. Implementation of the below mitigation measures relating to pre-activity surveys will reduce potential impacts to the Marbled Murrelet to less-than-significant levels.

Mammals

Townsend's Big Eared Bat (TBEB)

Townsend's big eared bat (*Corynorhinus townsendii*) is a designated state species of special concern and is proposed to be listed as threatened under the CESA. TBEBs forage within woodlands and long streams and will roost in caves, mines, and large tree cavities. This species is known to occur in the Pescadero - Butano watershed. TBEBs are extremely sensitive to human disturbance and will abandon roost sites after human interference. Based on habitat requirements and nearby occurrences, there is a high potential for this species to occur within Redwood Glen and near the existing points of water diversion. Future construction or maintenance activities in the project area could result in direct and indirect impacts to roosting bats. Implementation of the mitigation measures below relating to pre-activity surveys will reduce potential impacts to this species to a less-than-significant level.

Western Red Bat (WRB)

Western red bats (*Lasiurus blossevillii*) are a state species of special concern. The western red bat primarily roosts in riparian trees and orchards and prefer habitat with trees that are protected from above and open below with open areas for foraging, including grasslands, shrublands, and open woodlands. Western red bats are known to occur in the Pescadero - Butano watershed and have been documented on the nearby La Honda Creek Open Space Preserve. Based on nearby

occurrences of this species and the presence of necessary habitat, there is a high potential for the WRB to occur. As stated before, increased rates of water diversion are not expected to have a significant effect on the base flow of the creeks / creek habitat in Hoffman, Piney, or Pescadero Creeks. However, maintenance activities may impact roosting bats. Implementation of the mitigation measures below will reduce potential impacts to the WRB to a less-than-significant level.

Plants

Dudley's Lousewort (DL)

Dudley's lousewort (*Pedicularis dudleyi*) is state listed as rare. DL is a perennial herb, endemic to the central Californian coast and grows coniferous forest, particularly in deep shady woods and steep cut banks in older coast redwood forests. Blooming from April - June, DL is threatened by foot traffic, erosion, and development. Based on the presence of suitable habitat in conjunction with nearby occurrences of this species, Dudley's lousewort has a high potential to occur near the points of water diversion and elsewhere throughout Redwood Glen.

Avoid or Minimize Disturbance

Mitigation Measure 2: Prior to the installation of the proposed above ground piping and prior to any scheduled maintenance, a pre-activity survey for special-status plant and animal species and communities will be conducted by a USFWS-approved biologist at the existing points of water diversion at Hoffman and Piney Creeks. The survey will consist of walking the site to ascertain the possible presence of these species. The USFWS-approved biologist will investigate all potential areas near the existing PODs that could be used by these species for feeding, breeding, sheltering, movement, or other essential behaviors. If any adults, seedlings, juveniles, eggs, or tadpoles are found, the USFWS-approved biologist will contact the USFWS and/or California Fish Wildlife Service to determine if the proposed maintenance or construction activities will negatively affect any identified species and if moving any of the individuals is appropriate. If the USFWS approves moving animals, the biologist and USFWS will identify a suitable relocation site, and the applicant will ensure that the USFWS-approved biologist is given sufficient time to move the animals from the work site before work is initiated. Only USFWS-approved biologists can capture, handle, and monitor the California red-legged frog, San Francisco garter snake, marbled murrelet, or steelhead salmon.

Mitigation Measure 3: Marbled Murrelets nest from March to September. Scheduled maintenance (with the exception of emergencies) at the existing points of water diversion shall occur outside of the nesting season. If work cannot be scheduled outside the breeding season, then the applicant shall hire a qualified biologist to conduct pre-construction surveys for nesting birds no more than 14 days prior to onset of construction or maintenance activities. If any active bird nests are observed within 50 ft. (or 250 ft. for raptors) of the new piping infrastructure or water filtration facility, the work shall be postponed until the biologist determines that all young have fledged the nest.

Mitigation Measure 4: The applicant shall not apply insecticides or herbicides at the project site during project implementation or long-term operational maintenance where there is the potential for these chemical agents to enter creeks, streams, waterbodies, or uplands that contain potential habitat for the identified special-status species.

Mitigation Measure 5: Redwood Glen shall implement the following water conservation measures to reduce potential significant impacts to sensitive habitats:

a. Landscape and recreation fields shall be irrigated early in the day or late in the evening between the hours of 10:00 p.m. and 6:00 a.m.

b. Water shall not be allowed to run off to the roadside ditch or gutter. Care shall be taken not to water past the point of saturation.

c. Leaking pipes or faulty sprinklers shall be repaired within five (5) days or less if warranted by

the severity of the problem.

d. No hosing down of automobiles, boats, roadways, and/or driveways shall be permitted. All automobiles and/or equipment shall be washed on the lawn.

e. Washing of streets, parking lots, and buildings shall be prohibited except as necessary for health, sanitary, or fire protection purposes.

f. Attach automatic shut-off devices on any hose or filling apparatus in use. No water from the potable water system shall be used to fill or refill the swimming pool except as necessary for public health or fire protection.

g. No outdoor water use of any kind is permitted during power outages.

Mitigation Measure 6: Prior to building permit approval for the construction and utilization of Piney and Hoffman Creeks as a potable water source, coordinate with all state agencies to obtain applicable jurisdictional permits for the project, including the California Department of Fish and Wildlife (CDFW) to obtain a Streambed Alteration Agreement (if CDFW deems it necessary) and the State Water Resources Control Board (SWRCB) to obtain all required permits for the proposed potable water system. Prior to the issuance of a building permit for this project, the applicant shall submit evidence of these required permits.

Source: MIG Biological Impact Report, December 2017; TMF Report Attachment 4B Hydrology, May 2017.

4.b.	Have a significant adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?		X		

Discussion: Riparian habitat and Redwood forest alliance habitat cover a majority of Redwood Glen. Redwood forest alliance is classified as a highly imperiled and sensitive natural community by CDFW. Though no trees or vegetation are proposed for removal, increased water diversion activities have the potential to impact these habitats. Due to the inefficient water diversion sites that allow water to bypass the diversion structures, the fact that Piney and Hoffman Creeks constitute less than one percent of the flow into Pescadero Creek, the location of the points of diversion (at the spring headwaters), the existence of a 70,000 gallon water storage tank (that provides supplemental water during the dry months), and the implementation of water conservation activities (Mitigation Measure 5), the water diverted from both streams will not negatively affect surrounding vegetation.

Source: MIG Biological Impact Report, December 2017; TMF Report Attachment 4B-Hydrology, May 2017.

4.c.	Have a significant adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?				X

Discussion: There are no identified wetlands on the project parcel, nor is there any physical

evidence (such as wetland vegetation) to suggest that wetlands are present on-site. **Source:** Project Plans; Site Visit; Biological Impact Report, December 2017.					
4.d.	Interfere significantly with the movement of any native resident or migratory fish or wildlife species or with established native resident migratory wildlife corridors, or impede the use of native wildlife nursery sites?			X	
Discussion: Redwood Glen (which consists of APNs 084-271-100; 084-271-260; 084-071-270; 084-120-060; and 084-120-010) is mostly undeveloped and is surrounded by open space and rural development including Pescadero Creek County Park to the south and Memorial County Park to the north. The undeveloped open spaces (including riparian, aquatic, and woodland habitat) within Redwood Glen likely act as wildlife corridors to both County parks and to Pescadero Creek. Operation of the existing water diversion sites and renewal of the camp's conditional use permit will not alter or impede wildlife movement. **Source:** Project Plans; MIG Biological Impact Report, December 2017.					
4.e.	Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance (including the County Heritage and Significant Tree Ordinances)?				X
Discussion: No tree removal activities are proposed. Additionally, increased water diversion from Hoffman and Piney Creeks is not expected to have a significant impact on the surrounding redwood forest alliance/riparian habitat (see 4.b. above and Section 9. below). **Source:** MIG Biological Impact Report, December 2017; TMF Report Attachment 4B-Hydrology, May 2017.					
4.f.	Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Conservation Community Plan, other approved local, regional, or State habitat conservation plan?				X
Discussion: The project parcel is not located within the boundaries of any said conservation plan. **Source:** California Department of Fish and Wildlife.					
4.g.	Be located inside or within 200 feet of a marine or wildlife reserve?				X
Discussion: The project parcel nor the project site is inside or within 200 feet of a marine or wildlife reserve. **Source:** Project Location; California Department of Fish and Wildlife Services; National Wildlife Refuge System Locator.					

4.h.	Result in loss of oak woodlands or other non-timber woodlands?				X

Discussion: The project parcel does not contain oak woodlands; however, the parcel is heavily forested and is composed of a mixture of redwood forest alliance and riparian habitat. No impacts are expected to occur as no trees or vegetation removal activities are proposed with this project.

Source: MIG Biological Impact Report, December 2017; TMF Report Attachment 4B-Hydrology, May 2017.

5. CULTURAL RESOURCES. Would the project:

		Potentially Significant Impacts	***Significant Unless Mitigated***	***Less Than Significant Impact***	***No Impact***
5.a.	Cause a significant adverse change in the significance of a historical resource as defined in CEQA Section 15064.5?			X	

Discussion: A referral was sent to the California Historical Information System (CHRIS) in April 2018. Their response noted that previous studies conducted in 1992 and 2007 identified the presence of resources and recommended that a new archaeological survey be conducted for the proposed project.

An archaeological survey conducted by MIG was submitted to the County in June 2018. One potential historical resource was noted on the parcel. Implementation of the proposed project will not have an impact on any identified historical resources nor affect the resources' potential eligibility for the California Register of Historical Resources (CRHR). As such, the proposed project would not result in an adverse change in the significance of the potential historical resource and a less than significant impact would occur.

Source: Project Plans; Archaeological Report, June 2018.

5.b.	Cause a significant adverse change in the significance of an archaeological resource pursuant to CEQA Section 15064.5?		X		

Discussion: In 1992, an archaeological survey was conducted on select portions of Redwood Glen's properties for the purposes of submitting a Timber Harvest Plan (THP 1-93-426 SMO). The survey resulted in the identification of archaeological resources. In 2007, Redwood Glen prepared a new Timber Harvest Plan (THP 1-06-147 SMO) and conducted another investigation into the archaeological resources as required and as part of the proposed timber harvesting operations. The resources found in 1992 were not found in 2007.

The 2018 archeological report prepared by MIG assessed the areas surveyed in 1992 and 2007 and included a 25-ft., buffer area on either side of the proposed above ground water pipeline. No cultural/archaeological resources were noted in the 2018 archaeological report. Though the project's minimal grading activities are not considered to have an adverse change to any previously identified archaeological resources, grading activities may have the potential to unearth previously

undiscovered subsurface archaeological resources.

In order to preserve potential undiscovered archaeological resources and reduce the proposed project's impacts to a less than significant level, the following mitigation measures from the 2018 archaeological report are proposed:

Mitigation Measure 7: Archaeological monitoring shall be instigated for all ground disturbing activities. An archaeologist who meets the Secretary of the Interior's Standards for Archaeology shall be present at the project site during ground disturbing activities, including machine or hand excavation, or grubbing. No ground disturbing activities of any kind shall be allowed to take place if the archaeologist is not present. An archaeological report meeting the Secretary of the Interior's Standards detailing the findings of the monitoring will be submitted to the Northwest Information Center after monitoring has ceased.

Mitigation Measure 8: In the event that archaeological remains from either a historic or prehistoric period are discovered (or have been suspected to have been discovered) during project construction, all ground disturbing work on the site shall cease and the Planning Department shall be notified of any such findings. The archaeologist shall assess the discovery before any additional ground disturbing work within the site shall be allowed to continue. No further ground disturbing work shall be allowed to continue until the archaeologist has fully evaluated the find, recommended appropriate protection measures, and those measures have been approved by the Planning Department, and implemented by the project applicant. Dependent on the evaluation by the archaeologist, archaeological excavation and recordation may be required before construction can continue.

Mitigation Measure 9: All excavator machinery shall use toothless buckets during ground disturbing activity to allow the monitoring archaeologist to more clearly identify archaeological features, if present.

Mitigation Measure 10: If a newly discovered resource is, or is suspected to be, Native American in origin, the resource shall be treated as a significant Tribal Cultural Resource, pursuant to Public Resources Code 21074, until the County has determined otherwise with the consultation of a qualified archaeologist and local tribal representative.

Source: Project Plans; Timber Harvest Plan THP-1-06-147-SMO; Archaeologist Report, June 2018.

5.c.	Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?				X

Discussion: The project site consists of sedimentary rocks (Tes), overlying rocks, and alluvium (Qoa) surficial sediments which are common geologic materials in the area. No mapped unique paleontological resources or geological features are found on the project parcel. No impacts are expected to occur.

Source: United States Geological Survey Geologic Map of the San Francisco Bay Region.

5.d.	Disturb any human remains, including those interred outside of formal cemeteries?		X		

Discussion: Minimal grading activities in the form of trenching to connect the proposed project to an existing water main and slight leveling of the site to accommodate the above ground supports for the water filtration facility and water tanks are proposed with this project. The maximum depth of excavation will be approximately 3 feet below ground level. There are no known human remains located on the site and none were identified in previous evaluations of the project area. However,

the following mitigation measure has been included in the event human remains are encountered.

Mitigation Measure 11: In the event of discovery or recognition of any human remains during project construction, there shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains. The applicant shall then immediately notify the County Coroner's Office and possibly the State Native American Heritage Commission to seek recommendations from a Most Likely Descendant (Tribal Contact) before any further action at the location of the find can proceed. All contractors and sub-contractors shall be made aware of these requirements and shall adhere to all applicable laws including State Cultural Preservation laws.

Source: California Public Resources Code; Project Location.

6. GEOLOGY AND SOILS. Would the project:

		Potentially Significant Impacts	***Significant Unless Mitigated***	***Less Than Significant Impact***	***No Impact***
6.a.	Expose people or structures to potential significant adverse effects, including the risk of loss, injury, or death involving the following, or create a situation that results in:				
	i. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other significant evidence of a known fault? *Note: Refer to Division of Mines and Geology Special Publication 42 and the County Geotechnical Hazards Synthesis Map.*				X

Discussion: The project site is not located in a mapped Alquist-Priolo Earthquake Fault Zone or special study area where fault rupture is likely to occur.

Source: State of California Department of Conservation, California Geological Survey, Alquist-Priolo Regulatory Map.

	ii. Strong seismic ground shaking?			X	

Discussion: The project parcel is located approximately 4 miles away from the San Gregorio fault and 6 miles away from the San Andreas fault. The project site is expected to experience very strong ground shaking for a high intensity of 7.5 (Modified Mercalli Intensity (MMI)) earthquake scenario on the San Gregorio Fault and a strong shaking for a 7.2 MMI earthquake scenario on the San Andreas Fault. The principal concern related to human exposure to ground shaking is that strong ground shaking can result in structural damage to buildings, potentially jeopardizing the safety of its occupants. The water filtration facility is automated and access to the facility is restricted which limits the time and number of people that would be in the water filtration facility structure at any one time. The proposed project will be required to comply with applicable California Building Code

standards and is not considered a habitable structure. Similarly, all permitted structures on-site have been built to comply with the applicable California Building Code earthquake safety standards. Redwood Glen also has a camp wide emergency evacuation plan in place in case of future natural disasters. Therefore, the project and renewal of Redwood Glen's use permit pose little risk to health or safety. No further mitigation is necessary. **Source:** Association of Bay Area Governments, Shaking Hazard Map; Project Plans.				
iii. Seismic-related ground failure, including liquefaction and differential settling?			X	
Discussion: Based on the San Mateo County Geotechnical Hazards Synthesis Map, there is a low potential for liquefaction in the project area. The water filtration equipment (housed in a shipping container) is limited to private use, unmanned, and is not considered a habitable structure. Therefore, the proposed project proposes little risk to health or safety. No mitigation is necessary. **Source:** San Mateo County Geotechnical Hazards Synthesis Map, 1973.				
iv. Landslides?			X	
Discussion: Based on the U.S. Geological Survey's Landslide Susceptibility Map of 1972, the project site is located in Landslide Susceptibility IV (areas of very high susceptibility to landslide). The parcel has moderate to steep slopes. However, the water filtration facility is located in a flat portion of the parcel and does not exhibit visible scars of past slope failures. No grading activities that would impact ground stability are proposed. Therefore, the likelihood of a landslide at the project site is low. In addition, the project will be subject to the issuance of a building permit and all work shall be completed in accordance with the California Building Code. **Source:** U.S. Geological Survey's Landslide Susceptibility Map, 1972; Project Location; Site Visit.				
v. Coastal cliff/bluff instability or erosion? *Note to reader: This question is looking at instability under current conditions. Future, potential instability is looked at in Section 7 (Climate Change).*				X
Discussion: The project parcel is not located near any coastal cliffs or bluffs. **Source:** Project Location.				
6.b. Result in significant soil erosion or the loss of topsoil?				X
Discussion: Minimal grading activities in the form of trenching to connect the proposed project to an existing water main and slight leveling of the project area for the construction of the above ground water storage tanks and filtration facility supports are proposed. These grading activities are minor in nature and are confined to a small previously cleared and developed area of the property (084-271-260). No vegetation or tree removal activities are proposed for this project. The water filtration facility and associated water storage tanks are located adjacent to an existing dirt road in an area of the parcel that was previously developed with water storage tanks. While the water filtration facility was previously installed on the subject parcel, construction of the facility would not have resulted in significant soil erosion or loss of topsoil due to the fact that the facility sits above ground and only minimal grading in the form of leveling out the ground for the above ground supports was required				

for the construction of the facility's foundation. Similarly, the placement of the proposed above ground linear piping is not expected to result in soil erosion or loss of topsoil.

Operation of the proposed facility is not expected to result in significant erosion or loss of topsoil. Water from the creeks will be delivered to the water tanks and water filtration facility through waterproof piping while wastewater will be disposed of off-site. Because water from the proposed project will not flow freely across the parcel, no soil erosion or loss of topsoil is expected.

Source: Project Plans.

6.c.	Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, severe erosion, liquefaction or collapse?			X	

Discussion: See 6.a. and 6.b. above.

Source: U.S. Geological Survey's Landslide Susceptibility Map, 1972; Project Plans.

6.d.	Be located on expansive soil, as noted in the 2010 California Building Code, creating significant risks to life or property?				X

Discussion: The principal concern related to expansive soil is that it can result in structural damage, potentially jeopardizing the safety of persons in or around the structures. The water treatment facility will be required to comply with applicable California Building Code standards and is not considered a habitable structure. Furthermore, its use will be limited to providing potable drinking water to the camp facility and will be unmanned for a majority of its operation (with the exception of maintenance checks, etc.). Therefore, the project will not pose a significant risk to life of property. No mitigation is necessary.

Source: Project Plans.

6.e.	Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?		X		

Discussion: Though the proposed water filtration facility and infrastructure do not involve the use of septic systems, Redwood Glen's soils are capable of adequately supporting the use of septic tanks as several septic systems exist throughout the Redwood Glen property. These septic systems have been reviewed and approved by the San Mateo County Environmental Health Division for Redwood Glen's Use Permit Renewal.

The water treatment facility will generate wastewater and insoluble solids which will be collected in a 2,500 gallon backflush settling tank and a separate 2,500 gallon Clean In Place (CIP) settling tank. As conditioned below, the wastewater from these tanks will be hauled off-site and disposed at an appropriate facility (Trinity Liquid Waste Services). As such, the disposal of the wastewater will not require the construction of additional wastewater disposal infrastructure nor will it impact the existing septic system infrastructure. To ensure no impacts result from the wastewater generated from the

water filtration facility, the following mitigation measures shall be implemented:

Mitigation Measure 12: The water treatment and storage facilities shall be properly maintained at all times. The water filtration facility shall be supervised by a Wastewater Treatment Operator licensed by the State Water Resources Control Board.

Mitigation Measure 13: No wastewater or settled solids shall be discharged on-site. All wastewater and solids generated from the water filtration facility's CMF waste streams shall be hauled off-site and disposed at a licensed waste facility.

Source: Technical, Managerial, and Financial (TMF) Report, Operations Plan; Surface Water Treatment Plant Waste Management Plan.

7. CLIMATE CHANGE. Would the project:

		Potentially Significant Impacts	*Significant Unless Mitigated*	*Less Than Significant Impact*	*No Impact*
7.a.	Generate greenhouse gas (GHG) emissions (including methane), either directly or indirectly, that may have a significant impact on the environment?			X	

Discussion: Project-related materials delivery or construction activities may result in the temporary generation of GHG emissions along travel routes and at the project site. In general, construction-related GHG emissions result mainly from exhaust from vehicles (i.e., construction vehicles and personal cars of construction workers). Due to the site's rural location, temporary nature of construction, and no emissions generated from the water filtration facility itself, the project's construction GHG emission levels are considered to be less than significant. Furthermore, Mitigation Measure 1 includes BAAQMD Best Management Practices for reducing construction vehicle and equipment emissions. No further mitigation is necessary.

Source: Project Plans.

7.b.	Conflict with an applicable plan (including a local climate action plan), policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?		X		

Discussion: The San Mateo County Energy Efficiency Climate Action Plan (EECAP) identifies implementation measures for the reduction of GHG emissions resulting from development consistent with state legislation, including construction idling. GHG emissions from the project are expected to occur during the construction phase, primarily from vehicle exhaust. Although the emissions are temporary in nature, Mitigation Measure 1 in Section 3.a. will help ensure that any such temporary emissions are minimized.

Source: San Mateo County EECAP; BAAQMD 2017 CEQA Guidelines.

7.c.	Result in the loss of forestland or conversion of forestland to non-forest use, such that it would release significant amounts of GHG emissions, or significantly reduce GHG sequestering?			X	

Discussion: The project parcel meets the definition of forestland and is heavily forested with a mixture of redwood trees, pine trees, and riparian habitat. The Biological Impact Report prepared by MIG (December 2017) in conjunction with the findings made by Balance, Inc. concluded that the existing water diversion sites are inefficient and that the projected water diversion activities will not have a significant effect on existing water base flow rates for Piney or Hoffman Creek. As such, MIG concluded that the project would have a less than significant impact on the health of the surrounding forestland. In addition, the water filtration facility and water tanks will be located adjacent to an existing dirt road and will not require the removal of any trees. Similarly, the proposed piping will be placed above ground, will be laid between existing trees, and will not cause removal of trees or conversion of forestland.

The project will not alter the tree coverage on the parcel, will not convert forestland to a non-forestland use, and will not result in the release of significant amounts of GHG emissions.

Source: Biological Impact Report, December 2017; TMF Report.

7.d.	Expose new or existing structures and/or infrastructure (e.g., leach fields) to accelerated coastal cliff/bluff erosion due to rising sea levels?				X

Discussion: The project parcel is over six miles from the Pacific Ocean and does not contain coastal cliffs and/or bluffs.

Source: Project Location; San Mateo County GIS.

7.e.	Expose people or structures to a significant risk of loss, injury or death involving sea level rise?				X

Discussion: The project parcel is located over six miles from the Pacific Ocean and sits well above sea level. As such, the project will not expose people or structures to significant risk involving sea level rise.

Source: Project Location; San Mateo County GIS.

7.f.	Place structures within an anticipated 100-year flood hazard area as mapped on a Federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?				X

Discussion: The project parcel is not located in such an area. The project site is located within Flood Zone X (areas with minimal flood risk outside the 1-percent and 0.2-percent-annual-chance floodplains); Community Panel No. 06081C0395E, effective October 16, 2012.

Source: Project Location; Federal Emergency Management Agency, Flood Map Service Center.

7.g.	Place within an anticipated 100-year flood hazard area structures that would impede or redirect flood flows?				X

Discussion: The project is not located in such an area.

Source: Project Location; Federal Emergency Management Agency Flood Hazard Maps.

8. HAZARDS AND HAZARDOUS MATERIALS. Would the project:

		Potentially Significant Impacts	***Significant Unless Mitigated***	***Less Than Significant Impact***	***No Impact***
8.a.	Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials (e.g., pesticides, herbicides, other toxic substances, or radioactive material)?		X		

Discussion: The water filtration system will require the regular use of a NSF-60 certified 12.5% sodium hypochlorite solution and a NSF-60 certified citric acid anhydrous solution to make the water from the surface streams potable. Undiluted, these chemicals can be hazardous. The delivery of the sodium hypochlorite and citric acid anhydrous solutions will be regulated by industry standards. Implementation of Mitigation Measure 14 will reduce public or environmental exposure to these chemicals to less than significant levels.

Source: Project Plans; TMF Report.

8.b.	Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?		X		

Discussion: Project operation will require the storage and use of certain hazardous chemicals such as NSF-60 sodium hypochlorite and citric acid anhydrous. Inadvertent release of these materials into the environment could adversely impact soil, surface, or groundwater quality. To minimize this potential impact, the following mitigation measure is proposed:

Mitigation Measure 14: The applicant shall use the following Best Management Practices to minimize potential adverse effects of the project to groundwater and soils from chemicals used during the operation of the water filtration facility:

a. Follow the manufacturer's recommendations on use, storage, and disposal of chemicals used in the water filtration and cleaning process.

b. Avoid overtopping storage containers.

c. Provide secondary containment for any hazardous materials stored on-site.

d. Personal Protective Equipment (PPE) warning signs shall be placed on all chemical storage

containers.

e. Appropriate chemical warning signs shall be placed on the exterior of the water filtration facility.

f. Perform regular inspections of the water filtration system equipment and materials storage areas for leaks and maintain records documenting compliance with the storage, handling, and disposal of hazardous materials.

Source: Project Plans; TMF Report.

8.c.	Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?				X

Discussion: The project site is not located within one-quarter mile of an existing or proposed school.

Source: Project Plans; Project Location.

8.d.	Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?				X

Discussion: The project site is not located in an area identified as a hazardous materials site.

Source: California Department of Toxic Substances Control, Hazardous Waste and Substances Site List.

8.e.	For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, result in a safety hazard for people residing or working in the project area?				X

Discussion: The project site is not located within a known area regulated by an airport land use plan nor is it located within two miles of a public airport or public use airport.

Source: Project Location.

8.f.	For a project within the vicinity of a private airstrip, result in a safety hazard for people residing or working in the project area?				X

Discussion: The project parcel is not located within the vicinity of any known private airstrips.

Source: Project Location.

8.g.	Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?				X
Discussion: There is no evidence to suggest that the project will interfere with any emergency response plan. The water filtration system and associated water tanks will be located adjacent to a private dirt road in a sparsely developed area of the project parcel. The proposed above ground piping will be low lying, located adjacent to existing private roads/trails, and will not impede access to the site. All improvements are located within the boundaries of the project parcel, no work will occur that will impeded or close a public road, and there is no expectation that the proposed project will impact any such emergency response or evacuation plans. **Source:** Project Plans.					
8.h.	Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?			X	
Discussion: The project site is located within a High Fire Hazard Severity Zone. The water filtration facility and Use Permit Renewal was reviewed and approved by the San Mateo County Fire Authority (Cal-Fire). Given that the water filtration facility does not involve the construction of any habitable structures nor place more people within a fire hazard area than already occupy the Redwood Glen property, there is a less than significant impact. **Source:** Project Plans; Cal-Fire, Fire Hazard Severity Zones Maps.					
8.i.	Place housing within an existing 100-year flood hazard area as mapped on a Federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?				X
Discussion: The project does not involve the construction of any housing or habitable structures. The project site is not located in 100-year flood hazard area. The project site is located within a Flood Zone X (areas with minimal food risk). No base flood elevations or base flood depths are shown within these zones. Community Panel No. 06081C0395E, effective October 16, 2012. **Source:** Project Plans; Federal Emergency Management Agency, Flood Map 06081C0395E.					
8.j.	Place within an existing 100-year flood hazard area structures that would impede or redirect flood flows?				X
Discussion: See Section 8.i. above. **Source:** Project Location; Federal Emergency Management Agency, Flood Map 06081C0395E.					

8.k.	Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?				X

Discussion: The project site is not located within a mapped flood area or within the vicinity of a levee or dam inundation area.

Source: Project Location; San Mateo County Dam Failure Inundation Areas Map.

8.l.	Inundation by seiche, tsunami, or mudflow?				X

Discussion: The project site is not in a seiche, tsunami, or mudflow hazard zone.

Source: San Mateo County General Plan, Hazards Map.

9. HYDROLOGY AND WATER QUALITY. Would the project:

		Potentially Significant Impacts	***Significant Unless Mitigated***	***Less Than Significant Impact***	***No Impact***
9.a.	Violate any water quality standards or waste discharge requirements (consider water quality parameters such as temperature, dissolved oxygen, turbidity and other typical stormwater pollutants (e.g., heavy metals, pathogens, petroleum derivatives, synthetic organics, sediment, nutrients, oxygen-demanding substances, and trash))?		X		

Discussion:

Hoffman Creek

The existing Hoffman Creek diversion structure consists of a stainless-steel sink attached to a redwood log that crosses the creek. Sediment entrained from the diversion structure accumulates in a series of three 55-gallon plastic drums located along the bank of Hoffman Creek. The drums are drained twice annually to the upper bank of Hoffman Creek, once in mid-spring (March or April) and once following the first winter storm (October or November). Each drum is flushed one at a time and the discharged water and sediment are trickled through the rocks on the bank (to reduce turbidity) and reintroduced to the creek. Approximately 1.7 cubic yards of sediment reenters the creek annually (0.85 cubic yards per flush cycle). When necessary, sediment accumulation behind and within the diversion structure is scooped out of the sink, spread outside the banks of the creek, and does not renter the stream. Per Redwood Glen's Diversion Point Maintenance Procedure Plan (Attachment C), possible future repairs to the Hoffman Creek diversion structure may consist of resetting a stainless steel bolt or replacing a pipe flange. In addition, no chemicals/toxic substances would be involved in these repairs and all repair procedures, with the exception of bolt replacement, will occur outside of the creek channel.

Piney Creek

The existing Piney Creek diversion structure consists of a small concrete dam (4-ft. wide) and includes a 2-inch diameter diversion port, a 2-inch bypass port, and a 4-inch sediment sluice port. Sediment accumulates behind the dam structure. To clean the accumulated sediment, the sluice port is opened and sediment is flushed downstream twice annually, once in mid-spring (March/April) and again following the first fall storm event (October/November). When the sluice port is opened, a flush of 13.5 cubic feet of water and 2 cubic yards of sediment (4 cubic yards annually) are flushed downstream. Anticipated maintenance of the diversion structure is expected to include clearing leafy debris from the clogged ports by hand and the replacement of piping when necessary.

Natural sediment flow, which is an important component to stream health, can be interrupted by diversion structures. Redwood Glen's maintenance activities listed above propose to reintroduce the small quantities of sediment trapped behind the diversion structures to the creeks systems in order to maintain a healthy stream environment and morphology. Any increase in turbidity resulting from maintenance activities is very short in duration and localized at the discharge location. Balance, Inc. reviewed Redwood Glen's Diversion Point Maintenance Procedure Plan and concluded that anticipated maintenance activities would not impact the hydrologic or geomorphic features of Piney or Hoffman Creek.

With implementation of mitigation measures below which reduce water turbidity and limit maintenance activities that occur in the creeks, MIG concluded that the proposed Maintenance Plan would not result in significant impacts to biological resources.

Mitigation Measure 15: All repair work for the Hoffman Creek diversion structure, with the exception of the bolt replacement, shall occur outside the creek channel.

Mitigation Measure 16: Sediment-laden water associated with Hoffman Creek maintenance activities shall be reintroduced to the creek system through a natural filter (such as rocks and creek bank vegetation) to reduce water turbidity.

Mitigation Measure 17: Any required PVC glue necessary for the Piney Creek diversion structure shall be added to the pipe outside the creek channel and shall fully cure prior to installing the pipe in the creek.

Mitigation Measure 18: In the event of an extreme storm event where significant amounts of sediment accumulates behind the Piney Creek diversion dam, Redwood Glen shall remove the accumulated sediment using hand tools and spread the sediment outside the banks of the creek to prevent the reintroduction of the sediment into the creek system.

Source: Redwood Glen's Diversion Point Maintenance Procedure Plan; Project Plans.

9.b.	Significantly deplete groundwater supplies or interfere significantly with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?			X	

Discussion: Redwood Glen is proposing to use a combination of existing wells and surface streams to meet their projected water demand. Of four existing groundwater wells on-site, only one well (drilled in 1992) provides acceptable potable water. Another well, also drilled in 1992, does not

meet potable water standards but can be used for irrigation. The two other existing wells were not pursued as potable water sources due to low pumping yields and poor water quality. Though Redwood Glen has two viable wells, a majority of their potable water demand will be met with water from surface streams. Utilization of the wells and surface streams would not significantly deplete groundwater supplies or interfere with groundwater recharge. Located at headwater springs, the diversion structures can only divert a small portion of the creek's total base flow at the mouth of the creek. The hydrology report determined that the proposed quantity of water diversion was not a significant quantity compared to overall creek flow and noted that spring flows downstream of the PODs are not diverted and are allowed to flow naturally, recharging the groundwater supply. In addition, the existing inefficient water diversion structures allow a majority of the water in Piney and Hoffman Creeks to bypass diversion and flow freely.

The Hoffman Creek diversion structure consists of a stainless steel sink attached to a redwood log across the creek. Sediment and wood debris that are impounded behind the log have raised the creek bed to allow water to flow over the log and into the sink. Underflow beneath the log bypasses the diversion structure, as does overflow when the sink is spilling. For example, Balance, Inc. measured late dry-season bypass base flows at the Hoffman Creek diversion structure in September 2017 and found that 0.73 gallons of water per minute (gpm) was being diverted while 4.6 gpm was passively flowing below the diversion structure.

Similarly, the Piney Creek diversion structure is also inefficient and allows water to bypass diversion. The Piney Creek diversion structure consists of a small 4-ft. wide dam and includes a bypass port and diversion port. The bypass port is the same size and located at the same elevation of the diversion port and passively splits the flow of Piney Creek in half. This allows a significant amount of water to bypass the diversion port and continue flowing downstream.

An analysis by Balance, Inc. determined that Hoffman and Piney Creeks supply enough water to meet Redwood Glen's projected water demand (see Section 18.d. for further discussion). Utilizing surface streams and two existing wells to meet Redwood Glen's water demand will have a less than significant impact on ground water supplies due to the fact that the diversion structures allow a majority of the water in the creeks to bypass diversion and recharge ground water supplies.

Source: MIG Biological Impact Report, Dated December 2017; TMF Report.

9.c.	Significantly alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in significant erosion or siltation on- or off-site?		X		

Discussion: The 320 sq. ft. water filtration facility (which is already constructed) is located in a flat area of the parcel. The shipping container that houses the filtration facility is elevated on pedestals and will not alter the natural drainage of the site as water will still be able to percolate into the soil. Additionally, utilization of the existing PODs is not expected to result in significant erosion and/or siltation. The Hoffman and Piney Creek PODs have been in situ for many years. Because water is allowed to flow under and below the PODs, use of these structures would not create a significant enough blockage that would cause the waterways to shift. Per Redwood Glen's POD Maintenance Procedure Plan (see 9.a. above), the small amount of sediment that accumulates behind the diversion structures would be reintroduced to the creek systems twice annually. Reintroduction of natural sediment into the creek systems will level out the creek beds, shore up the banks downstream, and prevent the creeks from altering their natural drainage patterns. Implementation of the following mitigation measure which requires Redwood Glen to quickly repair pipe leaks will ensure that transport of water from the creeks to the water filtration facility will not result in significant

erosion or on-site flooding. **<u>Mitigation Measure 19</u>:** The proposed above ground piping shall be inspected regularly for leaks. Upon discovery, all leaks shall be repaired within five (5) days or less. **Source:** MIG Biological Impact Report, December 2017; Diversion Point Maintenance Procedures.					
9.d.	Significantly alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or significantly increase the rate or amount of surface runoff in a manner that would result in flooding on- or off-site?		X		
Discussion: See Section 9.c. above. **Source:** MIG Biological Impact Report, December 2017; Diversion Point Maintenance Procedures.					
9.e.	Create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide significant additional sources of polluted runoff?		X		
Discussion: See Section 9.c. above. **Source:** MIG Biological Report, Dated December 2017; Diversion Point Maintenance Procedures.					
9.f.	Significantly degrade surface or ground-water water quality?		X		
Discussion: Operation of the water filtration facility and utilization of the water diversion structures will not significantly degrade surface or groundwater quality. Implementation of Mitigation Measures 15-18 will ensure that all POD maintenance activities will not degrade the water quality of Hoffman or Piney Creek. See Section 9.a. for further discussion. **Source:** Redwood Glen's Diversion Point Maintenance Procedure Plan; Project Plans.					
9.g.	Result in increased impervious surfaces and associated increased runoff?			X	
Discussion: Elevated on pedestals, the water filtration facility structure will result in approximately 320 sq. ft. of impervious surface area. This increase in impervious surface area is minimal compared to the size of the parcel (084-271-260) and is not expected to result in increased water runoff as water will still be able to percolate into the ground under and around the water filtration facility structure. See Section 9.c. above for further discussion. **Source:** Redwood Glen's Diversion Point Maintenance Procedure Plan; Project Plans.					

10. LAND USE AND PLANNING. Would the project:				
	Potentially Significant Impacts	***Significant Unless Mitigated***	***Less Than Significant Impact***	***No Impact***
10.a. Physically divide an established community?				X
Discussion: There is no land division or development proposed that would result in the diversion of an established community. The project will provide the potable water necessary to continue the operation of a private camp ground and the associated occupation of six staff residences. **Source:** Project Plans.				
10.b. Conflict with any applicable land use plan, policy or regulation of an agency with jurisdiction over the project (including, but not limited to, the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?				X
Discussion: The project as proposed and conditioned (including the mitigation measures cited in this report) will not conflict with any applicable land use plan, policy, or regulation adopted for the purposes of avoiding or mitigating an environmental impact. **Source:** Project Plans; Zoning Regulations.				
10.c. Conflict with any applicable habitat conservation plan or natural community conservation plan?				X
Discussion: The project would not conflict with any Habitat Conservation Plans or Natural Conservation Community Plans as none exist on the project parcel. **Source:** California Department of Fish and Wildlife, Habitat Conservation Planning, California Regional Conservation Plans Map.				
10.d. Result in the congregating of more than 50 people on a regular basis?			X	
Discussion: After construction, the water filtration facility will be largely self-sufficient and unmanned. Periodic maintenance activities will be short in duration and will not require a large number of workers. The water treatment facility will allow for the continued operation of Redwood Glen's private camp ground and conference center which may involve gatherings of 50 or more persons at a time. In operation since 1958, the water filtration facility will not result in increased congregations or visitorship to Redwood Glen beyond that which is already existing. **Source:** Project Plans.				

10.e.	Result in the introduction of activities not currently found within the community?				X

Discussion: The project consists of installing a water treatment facility, two 2,500 gallon water storage tanks, associated above ground piping, and changing Redwood Glen's water source from County Memorial Park to surface creeks. Because County Memorial Park no longer provides Redwood Glen with potable water, the proposed project is necessary to meet County requirements that all residential development have a sustainable source of potable water. The proposed project will allow Redwood Glen to continue its operation and will not introduce any activities not currently found in the community.

Source: Project Plans.

10.f.	Serve to encourage off-site development of presently undeveloped areas or increase development intensity of already developed areas (examples include the introduction of new or expanded public utilities, new industry, commercial facilities or recreation activities)?				X

Discussion: The project proposes improvements to only serve Redwood Glen. These improvements are completely within the boundaries of the Redwood Glen's property and do not encourage off-site development of underdeveloped areas. The project will not increase the development intensity of Redwood Glen itself as the currently proposed water system is designed to meet Redwood Glen's current projected needs. Any expansion of Redwood Glen's facilities (i.e., increased vistorship) would require an amendment to their Use Permit and would most likely require establishing another point of water diversion. Establishment of a new POD would require additional review and permits from various governmental agencies (i.e., CDFW and SWRCB).

Source: Project Plans; TMF Report.

10.g.	Create a significant new demand for housing?			X	

Discussion: As stated above, the project proposes improvements that will only serve Redwood Glen. The implementation of the proposed project will not create a significant demand for housing but allow the existing staff housing on the site to remain by providing a permanent source of potable water.

Source: Project Plans.

11. MINERAL RESOURCES. Would the project:				
	Potentially Significant Impacts	***Significant Unless Mitigated***	***Less Than Significant Impact***	***No Impact***
11.a. Result in the loss of availability of a known mineral resource that would be of value to the region or the residents of the State?				X
Discussion: There are no known mineral resources identified on the project parcel. **Source:** Project Location; San Mateo County General Plan Mineral Resources Map.				
11.b. Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?				X
Discussion: There are no locally important mineral resource recovery site(s) delineated on the County's General Plan, any specific plan, or any other land use plan. **Source:** Project Location; San Mateo County General Plan.				

12. NOISE. Would the project result in:				
	Potentially Significant Impacts	***Significant Unless Mitigated***	***Less Than Significant Impact***	***No Impact***
12.a. Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?			X	
Discussion: The construction of the proposed project will not generate excess noise levels as the water treatment facility will be housed in a shipping container and is partially pre-fabricated upon delivery. The proposed piping will not generate excessive noise levels as the piping will be placed above ground, will not require grading, and will by laid by hand. Similarly, the operation of the water treatment facility will not expose persons to excessive noise levels as the facility will be located away from existing residences and cabins. Though the operation of the water treatment facility will generate some noise, the shipping container will attenuate any noise generated to ensure that noise levels do not exceed standards established in the San Mateo County Noise Ordinance. **Source:** Project Plans; San Mateo County Noise Ordinance.				

12.b.	Exposure of persons to or generation of excessive ground-borne vibration or ground-borne noise levels?				X
Discussion: It is not anticipated that this project will utilize heavy equipment that creates large amounts of vibration. There are no aspects of the project that would include generation of excessive ground-borne vibration or ground-borne noise levels. **Source:** Project Plans.					
12.c.	A significant permanent increase in ambient noise levels in the project vicinity above levels existing without the project?			X	
Discussion: A temporary increase in ambient noise levels during the construction phase of the project is expected. Once construction is complete, the project is not expected to generate significant amounts of noise and noise levels will return to levels similar to the existing noise environment. The project will not result in excessive maintenance activities that will generate significant new levels and amounts of noise. Operational noise impacts will be less than significant. **Source:** Project Plans.					
12.d.	A significant temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?			X	
Discussion: See Discussion 12.c. above. **Source:** Project Plans.					
12.e.	For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, exposure to people residing or working in the project area to excessive noise levels?				X
Discussion: The project site is not within or near an airport land use plan. **Source:** County GIS; Project Location.					
12.f.	For a project within the vicinity of a private airstrip, exposure to people residing or working in the project area to excessive noise levels?				X
Discussion: There are no private airstrips within the vicinity of the project site. **Source:** County GIS; Project Location.					

13.	**POPULATION AND HOUSING**. Would the project:				
		Potentially Significant Impacts	***Significant Unless Mitigated***	***Less Than Significant Impact***	***No Impact***
13.a.	Induce significant population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?				X
Discussion: The project will not induce population growth as the water filtration system is located within the boundaries of the privately-owned project parcel. The water treatment facility, which is pending permits with the SWRCB, has been designed to only serve Redwood Glen. The water facility is not designed to, and will not, serve any adjacent parcels not owned by Redwood Glen. As their main source of potable water, the water treatment system is necessary for Redwood Glen's continued operation and will not trigger population growth in the area. Any proposed intensification of use or development will be subject to discretionary review under Redwood Glen's Use Permit. **Source:** Project Plans.					
13.b.	Displace existing housing **(including low- or moderate-income housing)**, in an area that is substantially deficient in housing, necessitating the construction of replacement housing elsewhere?				X
Discussion: Six staff residences are located throughout the Redwood Glen camp facility. The proposed project would not displace existing housing or persons, as no residences are located near the location of the water treatment facility. The proposed project will provide potable water for the site and allow for the continued habitation of the staff residences. **Source:** Project Plans.					

14.	**PUBLIC SERVICES**. Would the project result in significant adverse physical impacts associated with the provision of new or physically altered government facilities, the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
		Potentially Significant Impacts	***Significant Unless Mitigated***	***Less Than Significant Impact***	***No Impact***
14.a.	Fire protection?				X
14.b.	Police protection?				X
14.c.	Schools?				X

14.d.	Parks?				X
14.e.	Other public facilities or utilities (e.g., hospitals, or electrical/natural gas supply systems)?				X

Discussion: The project will not introduce uses that would adversely impact public services. No impacts to pubic services will occur as the project parcel is already developed. The project will allow for the continued operation of an existing private recreation facility.

Source: Project Plans.

15.	**RECREATION**. Would the project:				
		Potentially Significant Impacts	***Significant Unless Mitigated***	***Less Than Significant Impact***	***No Impact***
15.a.	Increase the use of existing neighborhood or regional parks or other recreational facilities such that significant physical deterioration of the facility would occur or be accelerated?			X	

Discussion: The installation of the water treatment facility and associated infrastructure will allow for the continued operation of this private recreation facility. The proposed project will not increase visitorship but will enable Redwood Glen to continue its operation. Per the direction of the State Water Resources Control Board, Redwood Glen has ceased operations as of May 15, 2018. Until the permitting process necessary to construct the water filtration facility and provide a reliable source of potable water is completed, Redwood Glen will not be open for business or continue to accept visitors.

Source: Project Plans.

15.b.	Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?		X		

Discussion: The proposed project does not involve the expansion of private recreational facilities but will allow for the continued operation of Redwood Glen's private recreational facilities. The change of potable water source from County Memorial Park to surface streams has the potential to adversely affect the environment by drawing too much water from the streams. However, these potential impacts were assessed in a Biological Impact Report prepared by MIG, dated December 2017 and are discussed in Section 4. (*Biology*) above. Implementation of Mitigation Measures 12-13 and 15-19 will reduce impacts to less than significant levels.

Source: Project Plans; TMF Report; Biological Impact Report, Dated December 2017.

16. TRANSPORTATION/TRAFFIC. Would the project:				
	Potentially Significant Impacts	***Significant Unless Mitigated***	***Less Than Significant Impact***	***No Impact***
16.a. Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including, but not limited to, intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?				X
Discussion: The proposed project involves the construction of a water treatment facility and above ground linear piping and will result in a temporary increase of traffic levels during construction. As the water treatment facility will require off-hauling of wastewater once a month, the project will not generate significant operational traffic upon completion. The water treatment facility itself will require weekly inspections involving 1-2 Redwood Glen staff members and would not generate a net increase in traffic. **Source:** Project Plans; TMF Report.				
16.b. Conflict with an applicable congestion management program, including, but not limited to, level of service standards and travel demand measures, or other standards established by the County congestion management agency for designated roads or highways?				X
Discussion: No impacts are expected to occur as the project is not located within a congestion management designated area. In addition, the proposed site improvements will occur on a privately-owned parcel and the project does not involve a level of development that would conflict with any congestion management plan for designated roads or highways. **Source:** City/County Association of Governments of San Mateo County Final San Mateo County Congestion Management Program 2013; Project Plans.				
16.c. Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in significant safety risks?				X
Discussion: The project will not require or result in a change in air traffic patterns as the project site is not located near any public or private airports; therefore, no impacts will occur. **Source:** Project Location; County GIS.				

16.d.	Significantly increase hazards to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?				X
Discussion: The proposed project will not alter any existing roadways, create an impediment or hazard, or permanently utilize equipment that would be incompatible with existing vehicular traffic. **Source:** Project Plans.					
16.e.	Result in inadequate emergency access?				X
Discussion: The proposed project will not change existing access to the project site. The water filtration facility will be located at the easterly edge of the parcel off of a private road away from the main entry. The proposed linear piping will be located away from the main residences and cabins and will be parallel to existing private roads and trails. Both the proposed water filtration facility and piping will not interfere will emergency access to the site. Additionally, in the event of an emergency, the existing water storage tanks (and water filtration facility/infrastructure) can be used as supplemental water sources for fire suppression. **Source:** Project Plans.					
16.f.	Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?				X
Discussion: The project will not impact any bicycle, pedestrian, or public transit facilities, prevent the implementation of any transportation plan, or reduce the performance of any such facilities. Located in rural Loma Mar, there are no public transit stops on or immediately near the project parcel. **Source:** Project Plans.					
16.g.	Cause noticeable increase in pedestrian traffic or a change in pedestrian patterns?				X
Discussion: The water treatment facility is located adjacent to a private dirt road and will not result in the blockage or rerouting of any trail, sidewalk, or other walking paths. Similarly, the proposed above ground piping is located parallel to existing private roads and trails and will not cause an increase or change in pedestrian patterns in the area. **Source:** Project Plans.					
16.h.	Result in inadequate parking capacity?				X
Discussion: The project, an unmanned water filtration facility and above ground linear piping, will not require parking after the construction of the project is complete. There are several parking lots and sufficient areas on the project parcel to accommodate parking for construction workers during the construction phase. Similarly, the existing parking lots provide enough on-site parking to					

accommodate the existing camp ground and conference center.

Source: Project Plans.

17. TRIBAL CULTURAL RESOURCES. Would the project:				
	Potentially Significant Impacts	***Significant Unless Mitigated***	***Less Than Significant Impact***	***No Impact***
17.a. Cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place or cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:				
i. Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k)		X		

Discussion: The project site is not listed in the California Register of Historical Resources. Furthermore, the project is not listed in a local register of historical resources, pursuant to any local ordinance or resolution as defined in Public Resources Code Section 5020.1(k).

This project is not subject to Assembly Bill 52 for California Native American Tribal Consultation requirements, as no traditionally or culturally affiliated tribe has requested, in writing, to the County to be informed of proposed projects in the geographic project area. However, a *Sacred Lands File and Native American Contacts List Request* was sent to the Native American Heritage Council (NAHC) in February 2018. A Sacred Lands File search was completed by the NAHC and no sacred lands were found in the subject area. In following the NAHC's recommended Best Practices, the County has also contacted local Native American tribes who may have knowledge of cultural resources in the project area. As of the date of this report, no tribe has requested consultation.

While the project is not expected to cause a substantial adverse change to any potential tribal cultural resources, the following mitigation measures are recommended to minimize any potential significant impacts to unknown tribal resources:

Mitigation Measure 20: Should any traditionally or culturally affiliated Native American Tribe respond to the County's issued notification for consultation, such process shall be completed and any resulting agreed upon measures for avoidance and preservation of identified resources be taken prior to implementation.

Mitigation Measure 21: In the event that tribal cultural resources are inadvertently discovered during project implementation, all work shall cease until a qualified professional can evaluate the find and recommend appropriate measures to avoid and preserve the resources in place, or minimize

adverse impacts to the resource. Those measures shall be approved by the County Planning Department prior to implementation and prior to continuing any work associated with the project.

Mitigation Measure 22: Any inadvertently discovered tribal cultural resources shall be treated with culturally appropriate dignity taking into account the tribal cultural values and meaning of the resource, including, but not limited to, protecting the cultural character and integrity of the resource, protecting the traditional use of the resource, and protecting the confidentiality of the resource.

Source: California Office of Historic Preservation, San Mateo County Listed Historical Resources.

ii. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in Subdivision (c) of Public Resources Code Section 5024.1. (In applying the criteria set forth in Subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.)		X		

Discussion: No resources has been determined to be located on the project parcel. If during construction activities, a resource is uncovered, then the implementation of Mitigation Measures 7-10, and 20-22, will reduce impacts to a less-than-significant level.

Source: Project Plans, Native American Heritage Commission, State Assembly Bill 52.

18. UTILITIES AND SERVICE SYSTEMS. Would the project:

		Potentially Significant Impacts	***Significant Unless Mitigated***	***Less Than Significant Impact***	***No Impact***
18.a.	Exceed wastewater treatment require-ments of the applicable Regional Water Quality Control Board?		X		

Discussion: Though utilization of the proposed water filtration facility will generate wastewater, Redwood Glen has been working with the SWRCB on the design of their proposed water filtration facility. Implementation of Mitigation Measures 12-13 will ensure that the operation of the water filtration facility meets wastewater standards. See Section 6.e. for further discussion.

Source: TMF, Operations Plan.

18.b.	Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?		X		

Discussion: The proposed project involves utilizing surface streams and the construction of a new water filtration facility (which has been installed but is not operational) to provide potable water to Redwood Glen. The proposed project has the potential to significantly impact biological, hydrological, and cultural resources. A biological report prepared by MIG surveyed the parcel for protected species and evaluated the potential impact that the proposed project would have on biological resources. Specifically, implementation of the mitigation measures found in Section 4. (*Biological Resources*) and Section 9. (*Hydrology and Water Quality*) will reduce potential impacts of the proposed project to less than significant levels. Similarly, hydrology reports prepared by Balance, Inc. assessed if Hoffman and Piney Creeks would be able to meet Redwood Glen's projected water demand and what the projected impact on the creek systems (see Section 9. for further discussion) would be. The hydrology reports concluded that the surface streams would meet the water demands of Redwood Glen (see Section 18.d.) and implementation of the project would not significantly affect the hydrology of the parcel. Implementation of mitigation measures found in Section 9. (*Hydrology and Water Quality*) and Section 18. (*Utilities and Service Systems*) will reduce potential impacts to the creek systems to less than significant levels. Though Redwood Glen does contain identified cultural resources, an archaeology report prepared by MIG assessed the potential impacts of the proposed project and concluded that the project would not significantly impact cultural resources with implementation of the mitigation measures found in Section 5. (*Cultural Resources*).

Source: MIG Biological Report, Dated December 2017; TMF Report; Redwood Glen's Diversion Point Maintenance Procedure Plan; Archaeological Report, Dated June 2018; Project Plans.

18.c.	Require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?				X

Discussion: The proposed project does not involve the construction of new stormwater facilities or the expansion of existing facilities.

Source: Project Plans.

18.d.	Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?		X		

Discussion:

Water Rights

Redwood Glen possesses riparian water rights to Hoffman Creek that allows 8 acre-feet/year of water to be diverted as well as up to 10,000 gallons of water to be stored on-site. Redwood Glen also holds appropriative water rights to Piney Creek which allows for 24 acre-feet of water per year to be diverted with unlimited on-site water storage. From 1995 through March 2016, Redwood Glen received its potable water from San Mateo County Memorial Park. During this time, Redwood Glen continued to utilize their appropriative and riparian water rights to Hoffman and Piney Creeks to divert between 180,000 - 250,000 gallons of water per year for irrigation purposes. Redwood Glen is now proposing to exercise their water rights to Hoffman and Piney Creeks to meet their projected potable water demands of approximately 1,305,953 gallons per year (or 4-acre-feet/year).

Water Supply Analysis

Balance Hydrologics, Inc. performed a supply vs. demand comparison to determine if Redwood

Glen's water demand could be entirely met by surface water sources. Balance, Inc. concluded that Hoffman Creek is sufficient to meet all of Redwood Glen's water needs from November to May and that from May to October, Piney Creek can provide enough supplemental water to match Redwood Glen's demands. Balance, Inc. also performed a single extreme dry-year and multi-dry year analysis to evaluate if the surface streams would still be sufficient to meet Redwood Glen's water demand. This analysis concluded that there was no water deficiency during the multiple dry-year scenario but that a slight shortage of surface water (approximately 4,500 gallons) occurs in August during a single extreme dry-year scenario. Balance concluded that an existing 70,000 gallon raw water storage tank would be able to provide an ample amount of water during the summer months and during an extreme dry-year scenario. Even during extreme dry years, most of the water in Hoffman and Piney Creeks would still passively bypass the water diversion structures, recharge groundwater supplies, and be available for flora and fauna downstream (see Section 9. for further discussion). This water supply analysis is based on Redwood Glen's existing visitorship and consumption. Redwood Glen's request for a Use Permit Renewal does not include an increase in visitorship. Any request for an increase in visitorship would require additional review to include a Use Permit Amendment and supplemental hydrology and biology reports to ensure that the camp does not expand beyond the capacity of Redwood Glen's surface creeks and wells and to ensure that any increase in water consumption will not unduly impact the surrounding environment.

Though surface streams provide enough water to meet Redwood Glen's water demand and no additional water entitlements are required, implementation of Mitigation Measure 5 relating to water conservation will ensure that Redwood Glen will have enough water to serve their needs.

Source: TMF Report, System Water Demand & Availability of Source Water; Biological Report, Dated December 2017; Project Plans.

18.e.	Result in a determination by the waste-water treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?				X

Discussion: A series of existing septic systems is used to process Redwood Glen's wastewater. While the water filtration facility will generate additional wastewater (see Section 6.e.), this wastewater will be disposed off-site at a licensed waste facility and will not impact Redwood Glen's septic systems.

Source: Project Plans; TMF Report.

18.f.	Be served by a landfill with insufficient permitted capacity to accommodate the project's solid waste disposal needs?		X		

Discussion: Solid waste in the form of solids that accumulate at the bottom of the water filtration facility's settling tank will be generated. Per Mitigation Measure 13, the solids from the water filtration facility will be transported to an appropriate off-site disposal facility for disposal.

Source: TMF, Operations Plan.

18.g.	Comply with Federal, State, and local statutes and regulations related to solid waste?				X

Discussion: It is not expected that the solid waste materials resulting from the operation of the water filtration facility would result in compliance issues with any Federal, State, or local statutes or regulations. **Source:** Project Plans.					
18.h.	Be sited, oriented, and/or designed to minimize energy consumption, including transportation energy; incorporate water conservation and solid waste reduction measures; and incorporate solar or other alternative energy sources?			X	
Discussion: While the prefabricated water filtration facility has already been installed and constructed, the construction of the above ground piping and water storage tanks has yet to occur. Full implementation of the project will involve construction vehicles and equipment for which Mitigation Measure 1 provides limits on vehicle speeds and idling times, including for any diesel powered equipment, as well as ensuring that equipment is properly maintained and tuned in accordance with manufacturer's specifications. While these measures are set forth in Section 3.b. to help minimize construction-related air emissions, the measures will also encourage energy efficiency of construction equipment. Furthermore, as conditioned in Section 18.d., this project will be required to incorporate water conservation measures for the life of the project. **Source:** Project Plans.					
18.i.	Generate any demands that will cause a public facility or utility to reach or exceed its capacity?				X
Discussion: This project is proposing to construct a community water system (i.e., the water filtration facility) to meet Redwood Glen's water demands. **Source:** Project Plans.					

19. MANDATORY FINDINGS OF SIGNIFICANCE.				
	Potentially Significant Impacts	***Significant Unless Mitigated***	***Less Than Significant Impact***	***No Impact***
19.a. Does the project have the potential to degrade the quality of the environment, significantly reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?		X		
Discussion: Without mitigation, the project could potentially generate significant impacts to air quality, biological resources, cultural resources, soils, and the hydrology and water quality of the parcel. Mitigation measures have been included to reduce these potential impacts to a less than significant level. Any increase in water usage, expansion of facilities, and/or the construction of a new point of water diversion will require updated hydrology and biological reports and may trigger the need for further discussion in a subsequent environmental document. No request to expand the facilities or construct a new POD have been presented to the County for review and consideration. Because of the "stand-alone" nature of this project and recommended mitigation measures contained throughout this document, the project will have a less than significant cumulative impact on the environment. Furthermore, the project does not introduce any significant impacts that cannot be avoided through mitigation. **Source:** Project Plans; BAAQMD CEQA Guidelines, 2017; Biological Impact Report, Prepared by MIG, December 2017.				
19.b. Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively consider-able" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)			X	
Discussion: As defined by the CEQA Guidelines, cumulative impacts reflect "the change in the environment which results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time." (CEQA Guidelines, Section 15355[b]). To Staff's best of knowledge, there are no known approved pending or future projects associated with or near the project site. The project will not impact agricultural or mineral resources. The project's potential impacts with				

respect to air quality and greenhouse gas emissions will be limited to the construction phase of the project, monthly hauling of waste water, and minimal annual maintenance. All impacts will be mitigated and there is no evidence to suggest that they would substantially combine with other off-site impacts.

The project's potential impacts with respect to biological and water resources could extend beyond the site and combine with impacts from other projects. As described in Sections 4. and 9. (*Biology* and *Hydrology,* respectively), the current estimated water usage will not exceed Redwood Glen's water rights nor impact the biology of the site, as assessed by the Biological Report dated December 2017. However, cumulative biological impacts could occur if Redwood Glen proposes to increase its visitorship and subsequent water usage. Any request to increase visitorship will constitute a change in Redwood Glen's Use Permit and shall be subject to a biological evaluation to assess the potential cumulative impacts.

Without mitigation, the proposed project could potentially generate significant impacts to air quality, biological resources, cultural resources, climate change, and hydrology. Mitigation measures have been included to reduce these potential impacts to a less than significant level. Due to the "stand-alone" nature of this project in conjunction with the recommended mitigation measures contained throughout this document, the project will have a less than significant cumulative impact on the environment.

Source: Project Plans; Biological Impact Report, December 2017; TMF Report; POD Maintenance Plan.

19.c. Does the project have environmental effects which will cause significant adverse effects on human beings, either directly or indirectly?				X

Discussion: Given the rural location of the project site, limited project scope, and purpose of the project to provide adequate potable water to the Redwood Glen Camp facilities and visitors, the project will not cause significant impacts on human beings.

Source: Project Scope.

RESPONSIBLE AGENCIES. Check what agency has permit authority or other approval for the project.

AGENCY	YES	NO	TYPE OF APPROVAL
U.S. Army Corps of Engineers (CE)		X	
State Water Resources Control Board	X		
Regional Water Quality Control Board		X	
State Department of Public Health		X	
San Francisco Bay Conservation and Development Commission (BCDC)		X	
U.S. Environmental Protection Agency (EPA)		X	
County Airport Land Use Commission (ALUC)		X	

AGENCY	YES	NO	TYPE OF APPROVAL
Caltrans		X	
Bay Area Air Quality Management District		X	
U.S. Fish and Wildlife Service	X		
Coastal Commission		X	
City		X	
Sewer/Water District:		X	
Other: California Department of Fish and Wildlife	X		Streambed Alteration Agreement

MITIGATION MEASURES

	Yes	No
Mitigation measures have been proposed in project application.	X	
Other mitigation measures are needed.	X	

The following measures are included in the project plans or proposals pursuant to Section 15070(b)(1) of the State CEQA Guidelines:

Mitigation Measure 1: The applicant shall require construction contractors to implement all the Bay Area Air Quality Management District's Basic Construction Mitigation Measures, listed below:

a. Water all active construction areas at least twice daily.

b. Apply water two times daily, or apply (non-toxic) soil stabilizers on all unpaved access roads, parking, and staging areas at construction sites. Also, hydroseed or apply non-toxic soil stablizers to inactive construction areas.

c. Sweep adjacent public streets daily (preferably with water sweepers) if visible soil material is carried onto them.

d. Limit traffic speeds on unpaved roads within the project parcel to 15 miles per hour.

e. All construction equipment shall be maintained and properly tuned in accordance with manufacturers' specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.

f. Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California Airborne Toxics Control Measure Title 13, Section 2485, of the California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points.

Mitigation Measure 2: Prior to the installation of the proposed above ground piping and prior to any scheduled maintenance, a pre-activity survey for special-status plant and animal species and communities will be conducted by a USFWS-approved biologist at the existing points of water diversion at Hoffman and Piney Creeks. The survey will consist of walking the site to ascertain the possible presence of these species. The USFWS-approved biologist will investigate all potential areas near the existing PODs that could be used by these species for feeding, breeding, sheltering,

movement, or other essential behaviors. If any adults, seedlings, juveniles, eggs, or tadpoles are found, the USFWS-approved biologist will contact the USFWS and/or California Fish Wildlife Service to determine if the proposed maintenance or construction activities will negatively affect any identified species and if moving any of the individuals is appropriate. If the USFWS approves moving animals, the biologist and USFWS will identify a suitable relocation site, and the applicant will ensure that the USFWS-approved biologist is given sufficient time to move the animals from the work site before work is initiated. Only USFWS-approved biologists can capture, handle, and monitor the California red-legged frog, San Francisco garter snake, marbled murrelet, or steelhead salmon.

Mitigation Measure 3: Marbled Murrelets nest from March to September. Scheduled maintenance (with the exception of emergencies) at the existing points of water diversion shall occur outside of the nesting season. If work cannot be scheduled outside the breeding season, then the applicant shall hire a qualified biologist to conduct pre-construction surveys for nesting birds no more than 14 days prior to onset of construction or maintenance activities. If any active bird nests are observed within 50 ft. (or 250 ft. for raptors) of the new piping infrastructure or water filtration facility, the work shall be postponed until the biologist determines that all young have fledged the nest.

Mitigation Measure 4: The applicant shall not apply insecticides or herbicides at the project site during project implementation or long-term operational maintenance where there is the potential for these chemical agents to enter creeks, streams, waterbodies, or uplands that contain potential habitat for the identified special-status species.

Mitigation Measure 5: Redwood Glen shall implement the following water conservation measures to reduce potential significant impacts to sensitive habitats:

a. Landscape and recreation fields shall be irrigated early in the day or late in the evening between the hours of 10:00 p.m. and 6:00 a.m.

b. Water shall not be allowed to run off to the roadside ditch or gutter. Care shall be taken not to water past the point of saturation.

c. Leaking pipes or faulty sprinklers shall be repaired within five (5) days or less if warranted by the severity of the problem.

d. No hosing down of automobiles, boats, roadways, and/or driveways shall be permitted. All automobiles and/or equipment shall be washed on the lawn.

e. Washing of streets, parking lots, and buildings shall be prohibited except as necessary for health, sanitary, or fire protection purposes.

f. Attach automatic shut-off devices on any hose or filling apparatus in use. No water from the potable water system shall be used to fill or refill the swimming pool except as necessary for public health or fire protection.

g. No outdoor water use of any kind is permitted during power outages.

Mitigation Measure 6: Prior to building permit approval for the construction and utilization of Piney and Hoffman Creeks as a potable water source, coordinate with all state agencies to obtain applicable jurisdictional permits for the project, including the California Department of Fish and Wildlife (CDFW) to obtain a Streambed Alteration Agreement (if CDFW deems it necessary) and the State Water Resources Control Board (SWRCB) to obtain all required permits for the proposed potable water system. Prior to the issuance of a building permit for this project, the applicant shall submit evidence of these required permits.

Mitigation Measure 7: Archaeological monitoring shall be instigated for all ground disturbing activities. An archaeologist who meets the Secretary of the Interior's Standards for Archaeology

shall be present at the project site during ground disturbing activities, including machine or hand excavation, or grubbing. No ground disturbing activities of any kind shall be allowed to take place if the archaeologist is not present. An archaeological report meeting the Secretary of the Interior's Standards detailing the findings of the monitoring will be submitted to the Northwest Information Center after monitoring has ceased.

Mitigation Measure 8: In the event that archaeological remains from either a historic or prehistoric period are discovered (or have been suspected to have been discovered) during project construction, all ground disturbing work on the site shall cease and the Planning Department shall be notified of any such findings. The archaeologist shall assess the discovery before any additional ground disturbing work within the site shall be allowed to continue. No further ground disturbing work shall be allowed to continue until the archaeologist has fully evaluated the find, recommended appropriate protection measures, and those measures have been approved by the Planning Department, and implemented by the project applicant. Dependent on the evaluation by the archaeologist, archaeological excavation and recordation may be required before construction can continue.

Mitigation Measure 9: All excavator machinery shall use toothless buckets during ground disturbing activity to allow the monitoring archaeologist to more clearly identify archaeological features, if present.

Mitigation Measure 10: If a newly discovered resource is, or is suspected to be, Native American in origin, the resource shall be treated as a significant Tribal Cultural Resource, pursuant to Public Resources Code 21074, until the County has determined otherwise with the consultation of a qualified archaeologist and local tribal representative.

Mitigation Measure 11: In the event of discovery or recognition of any human remains during project construction, there shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains. The applicant shall then immediately notify the County Coroner's Office and possibly the State Native American Heritage Commission to seek recommendations from a Most Likely Descendant (Tribal Contact) before any further action at the location of the find can proceed. All contractors and sub-contractors shall be made aware of these requirements and shall adhere to all applicable laws including State Cultural Preservation laws.

Mitigation Measure 12: The water treatment and storage facilities shall be properly maintained at all times. The water filtration facility shall be supervised by a Wastewater Treatment Operator licensed by the State Water Resources Control Board.

Mitigation Measure 13: No wastewater or settled solids shall be discharged on-site. All wastewater and solids generated from the water filtration facility's CMF waste streams shall be hauled off-site and disposed at a licensed waste facility.

Mitigation Measure 14: The applicant shall use the following Best Management Practices to minimize potential adverse effects of the project to groundwater and soils from chemicals used during the operation of the water filtration facility:

a. Follow the manufacturer's recommendations on use, storage, and disposal of chemicals used in the water filtration and cleaning process.

b. Avoid overtopping storage containers.

c. Provide secondary containment for any hazardous materials stored on-site.

d. Personal Protective Equipment (PPE) warning signs shall be placed on all chemical storage containers.

e. Appropriate chemical warning signs shall be placed on the exterior of the water filtration facility.

f. Perform regular inspections of the water filtration system equipment and materials storage areas for leaks and maintain records documenting compliance with the storage, handling, and disposal of hazardous materials.

Mitigation Measure 15: All repair work for the Hoffman Creek diversion structure, with the exception of the bolt replacement, shall occur outside the creek channel.

Mitigation Measure 16: Sediment-laden water associated with Hoffman Creek maintenance activities shall be reintroduced to the creek system through a natural filter (such as rocks and creek bank vegetation) to reduce water turbidity.

Mitigation Measure 17: Any required PVC glue necessary for the Piney Creek diversion structure shall be added to the pipe outside the creek channel and shall fully cure prior to installing the pipe in the creek.

Mitigation Measure 18: In the event of an extreme storm event where significant amounts of sediment accumulates behind the Piney Creek diversion dam, Redwood Glen shall remove the accumulated sediment using hand tools and spread the sediment outside the banks of the creek to prevent the reintroduction of the sediment into the creek system.

Mitigation Measure 19: The proposed above ground piping shall be inspected regularly for leaks. Upon discovery, all leaks shall be repaired within five (5) days or less.

Mitigation Measure 20: Should any traditionally or culturally affiliated Native American Tribe respond to the County's issued notification for consultation, such process shall be completed and any resulting agreed upon measures for avoidance and preservation of identified resources be taken prior to implementation.

Mitigation Measure 21: In the event that tribal cultural resources are inadvertently discovered during project implementation, all work shall cease until a qualified professional can evaluate the find and recommend appropriate measures to avoid and preserve the resources in place, or minimize adverse impacts to the resource. Those measures shall be approved by the County Planning Department prior to implementation and prior to continuing any work associated with the project.

Mitigation Measure 22: Any inadvertently discovered tribal cultural resources shall be treated with culturally appropriate dignity taking into account the tribal cultural values and meaning of the resource, including, but not limited to, protecting the cultural character and integrity of the resource, protecting the traditional use of the resource, and protecting the confidentiality of the resource.

DETERMINATION (to be completed by the Lead Agency).

On the basis of this initial evaluation:

	I find the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared by the Planning Department.
X	I find that although the proposed project could have a significant effect on the environment, there WILL NOT be a significant effect in this case because of the mitigation measures in the discussion have been included as part of the proposed project. A MITIGATED NEGATIVE DECLARATION will be prepared.
	I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

(Signature)

7/10/2018	Project Planner
Date	(Title)

ATTACHMENTS:

A. Project Location Map
B. Project Plans
C. Biological Impact Report, prepared by MIG, Inc., dated December 2017
D. Technical, Mechanical, Financial Report, dated May 16, 2017
E. Maintenance Procedures of Hoffman and Piney Creek Diversion Structures
F. Biological Evaluation of Proposed POD Maintenance Activities
G. Hydrological Evaluation of Proposed POD Maintenance Activities
H. Water Treatment Facility Waste Management Plan

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