

HUM-101 SAVAGE CREEK INTAKE PROJECT



ENVIRONMENTALLY SENSITIVE HABITAT AREA (ESHA) ASSESSMENT

01-HUM-101 Post Miles R103.390 and R103.667
EA 01-0J360 / EFIS 0119000012

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STATE OF CALIFORNIA
Department of Transportation

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LIST OF ABBREVIATED TERMS

Abbreviation	Description
BMPs	Best Management Practices
Caltrans	California Department of Transportation
CCA	California Coastal Act
CCC	California Coastal Commission
CDFW	California Department of Fish and Wildlife
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CRPR	California Rare Plant Rank
dB	decibels
Dbh	diameter at breast height
DPS	Distinct Population Segment
ECL	Environmental Construction Liaison
ESAs	Environmentally Sensitive Areas
ESHA(s)	Environmentally Sensitive Habitat Area(s)
ESL	Environmental Study Limits
HUM	Humboldt
MAMU	marbled murrelet
NES	Natural Environment Study
NPDES	National Pollutant Discharge Elimination System
NSO	northern spotted owl
PM(s)	Post Mile(s)
SEMWC	Seawood Estates Municipal Water Company
SNCs	Sensitive Natural Communities
SRRA	Safety Roadside Rest Area
SWPPP	Stormwater Pollution Prevention Plan
THVF	Temporary High Visibility Fencing
U.S.	United States
U.S. 101	United States Highway 101
USACE	U.S. Army Corps of Engineers
USGS	U.S. Geological Survey
WPCP	Water Pollution Control Program



Chapter 1. Introduction

1.1 Project History

The California Department of Transportation (Caltrans) is proposing to upgrade an existing water intake structure at Savage Creek and associated surface water diversion infrastructure. The project is located on U.S. Highway 101 in Humboldt County between post miles (PMs) R103.390 and S103.667 (Figure 1).

The surface water diversion at Savage Creek supplies water to both the Trinidad Southbound Safety Roadside Rest Area (SRRA) and residences serviced by Seawood Estates Municipal Water Company (SEMWC).

1.2 Purpose and Need

The purpose of the project is to upgrade the existing water supply intake system to be reliable and require less maintenance. The existing intake system currently requires frequent maintenance to meet demand, primarily due to fine sediment accumulation in the existing diversion box which restricts flow.

This Environmentally Sensitive Habitat Area (ESHA) analysis was conducted to meet the conditions of the California Coastal Act (CCA) and *Humboldt County General Plan Volume II- Trinidad Area Plan of the Humboldt County Local Coastal Program* (Humboldt County 2014) to upgrade an existing water intake at Savage Creek. The purpose of this analysis is to quantify and describe the existing ESHAs and recommend appropriate measures to reduce impacts on these ESHAs, particularly within the Environmental Study Limits (ESL) and pertinent buffer zone areas.

This report summarizes information gathered from previous biological surveys for the project and investigations conducted solely for the purposes of this ESHA assessment, including wetlands and other waters of the U.S., sensitive natural communities, riparian areas, areas of vegetation that contain species of rare or endangered plants, and habitats of rare and endangered plants and animals.

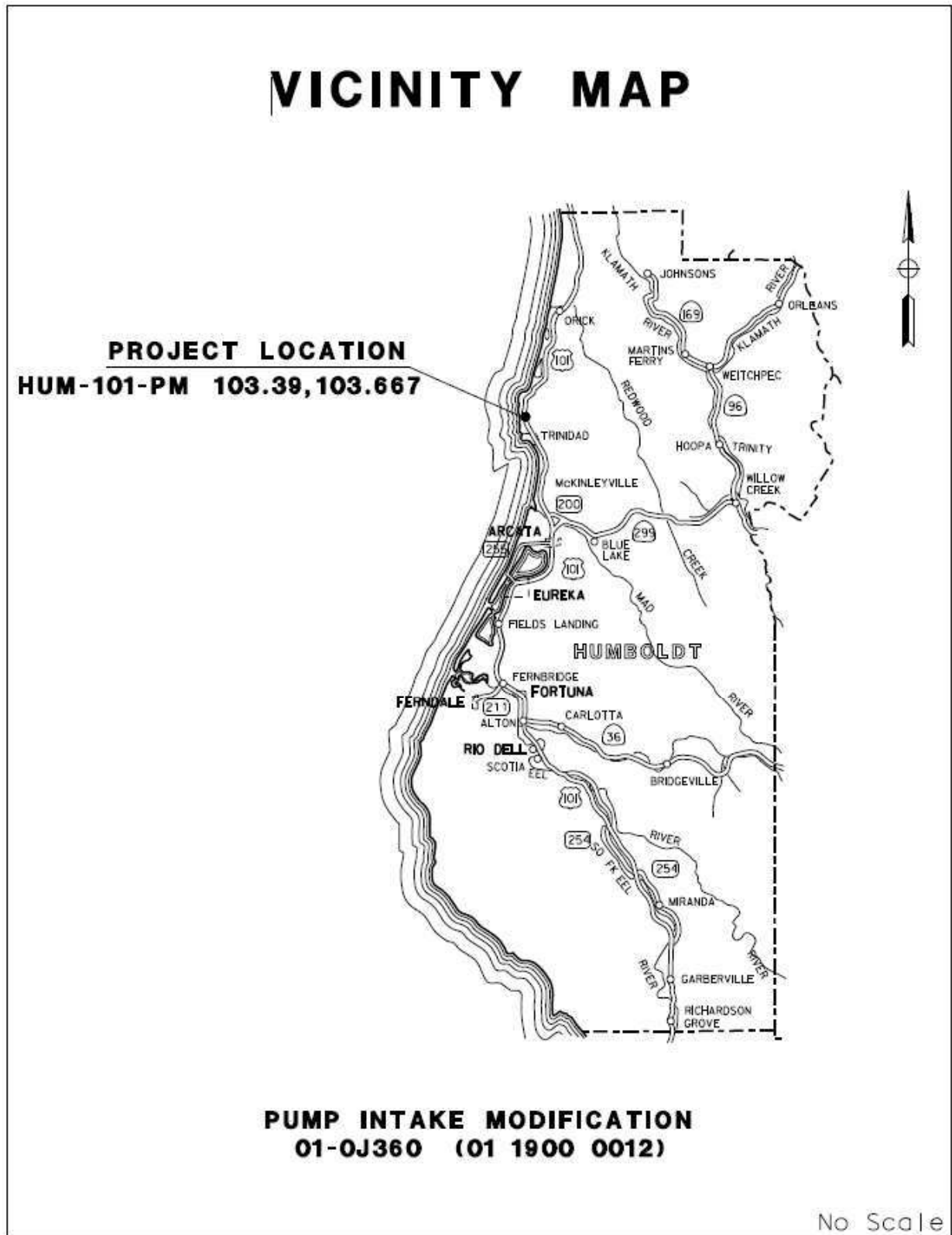


Figure 1. Project Vicinity

1.3 Regulatory Background and ESHA Definitions

The ESL for this ESHA analysis is defined as the areas of potential direct impacts of the project within the Coastal Zone and a 100-foot buffer surrounding the natural resources (SNCs, riparian, wetlands and waters) within the project footprint which incorporates the riparian area, streams and existing wetland at Savage Creek.

When identifying and mapping ESHAs in the ESL and when considering direct and indirect impacts the project could have on an ESHA, the following criteria was used (Humboldt County 2017 and CCC 1976, 1981):

California Coastal Act ESHA Definition (Section 30107.5)

“Environmentally sensitive area” means any areas in which plant or animal life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem and which could be easily disturbed or degraded by human activities and developments.

California Coastal Act ESHA Land Resources (Section 30240)

(a) Environmentally sensitive habitat areas shall be protected against any significant disruption of habitat values, and only uses dependent on those resources shall be allowed within those areas. (b) Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade those areas, and shall be compatible with the continuance of those habitat and recreation areas.

California Coastal Act Section 30121 Wetland Definition

Lands within the Coastal Zone which may be covered periodically or permanently with shallow water and include saltwater marshes, freshwater marshes, open or closed brackish water marshes, swamps, mudflats, and fens.

Humboldt County Area General Plan ESHA Definition

Any area in which plant or animal life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem and which could be easily disturbed or degraded by human activities and developments (Coastal Act Section 30107.5), including: areas of special biological significance as identified by the State Water Resources Control Board; rare and endangered species habitat identified by the State Department of Fish and Wildlife; all coastal wetlands and

lagoons; all marine, wildlife and education and research reserves; nearshore reefs; tidepools; sea caves; islets and offshore rocks; kelp beds; indigenous dune plant habitats; and wilderness and primitive areas.

Humboldt County General Plan Volume II- Trinidad Area Plan of the Humboldt County Local Coastal Program

The *Humboldt County General Plan* includes the Local Coastal Program, which incorporates several regionally based Local Coastal Plans. The proposed project is located in the Trinidad Planning Area and would incorporate the Trinidad Area Local Coastal Plan. The Local Coastal Plan boundaries are shown in Appendix A.

The updated Humboldt County General Plan Volume II (2019) has not incorporated Local Coastal Plans, due to the need for certification by the Coastal Commission. Thus, the ESHA analysis provided in this report will rely on the current Trinidad Area Plan of the Local Coastal Program (2014).

ESHAs within the County Trinidad Planning Area shall include:

- (1) Rivers, creeks and associated riparian habitats.
- (2) Offshore rocks, islands and intertidal areas.
- (3) Other critical habitats for rare or endangered species listed on state or federal lists
- (4) Wetlands. No wetlands are currently identified in plan.
- (5) Wetland areas shall be identified according to the Coastal Act's definition of wetlands.

Wetland Regulations and Protections

Outside the Urban Limit Line, as defined in the Trinidad Local Coastal Program, include the following:

- A. No land use or development shall be permitted in areas adjacent to coastal wetlands, called Wetland Buffer Areas, which degrade the wetland or detract from the natural resource value. Wetland Buffer Areas shall be defined as:

(1) The area between a wetland and the nearest paved road or the 40 foot contour line (as determined from the 7.5' USGS contour maps), whichever is the shortest distance, or

(2) 250 feet from the wetland, where the nearest paved road or 40 foot contour exceed this distance.

(3) Transitional Agricultural lands designated Agriculture Exclusive shall be excluded from the wetland buffer.

B. Outside an Urban Limit Line, the setback shall be between 100 and 200 feet, depending upon the size and sensitivity of the wetland, drainage boundaries, vegetation, adjacent uses, and the potential impacts of the project on the wetland habitat values. The precise width of the setback shall be sufficient to prevent significant effects to the wetland.

C. In both urban and rural areas, setbacks of less than the distance specified above may be permitted only when the prescribed buffer would prohibit development of the site for principal use for which it is designated. Any such reduction in setback shall still retain the maximum setback feasible, and may require mitigation measures, in addition to those specified below, to ensure new development does not adversely affect the wetland habitat values.

Coastal Streams and Riparian Vegetation

A. The biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes appropriate to maintain optimum populations of marine organisms and for the protection of human health shall be maintained and, where feasible, restored through, among other means, minimizing adverse effects of waste water discharges and entrainment, controlling runoff, preventing depletion of ground water supplies and substantial interference with surface waterflow, encouraging waste water reclamation, maintaining natural vegetation buffer areas that protect riparian habitats, and minimizing alteration of natural streams.

Riparian corridors on all perennial and intermittent streams shall be, at a minimum, the larger of the following:

- A. 100 feet, measured as the horizontal distance from the stream transition line on both sides.
- B. 50 feet plus four times the average percent of slope, measured as a slope distance from the stream transition line on both sides of the intermittent and perennial streams.
- C. Where necessary, the width of riparian corridors shall be expanded to include significant areas of riparian vegetation adjacent to the corridor, slides, and areas with visible evidence of slope instability, not to exceed 200 feet measured as a horizontal distance.

Sensitive Natural Communities

The California Department of Fish and Wildlife (CDFW) lists sensitive natural communities (SNCs), which include natural communities that are rare in the state or throughout its entire range. Sensitive natural communities, as defined by CDFW, are vegetation alliances with a state rarity ranking of S1 (critically imperiled), S2 (imperiled), or S3 (vulnerable). CDFW has not yet provided state rarity rankings for all associations; associations not yet ranked but considered sensitive are included in the current CDFW Natural Communities List (CDFW 2019). Since Section 30107.5 of the Coastal Act indicates ESHAs include rare habitats, sensitive natural communities as defined by CDFW qualify as ESHAs.

1.4 Project Description

Caltrans is proposing the following retrofit/additions to the existing water diversion system:

- Retrofit the existing diversion structure by replacing the existing collection manifold, backfilling the diversion intake structure with graded media, and installing a new fish friendly wedge-wire screen.
- Install a new well sump which includes new piping to connect to the intake, a new pump and new conduit.

- Install a backwashing system to tie in with existing water and electrical infrastructure at the intersection of Seawood Drive and U.S. 101 off-ramp. The backwash system includes the installation of additional pipe for water conveyance and conduit, construction of a concrete control pad, bollards for protection, a security enclosure, a utility box, and other mechanical equipment. The use of a backwash system also requires new piping to the intake structure, bypassing the intake sump.

The proposed work would result in less maintenance than the existing intake facility, allow for aquatic species passage within the creek, and improve influent water quality.

Rehabilitation of the existing intake would require a temporary creek diversion originating upstream of the work area. Other existing diversion infrastructure used to convey water to the SRRA and SEMWC would remain in place.

1.5 Construction Scenario

1.5.1 Savage Creek Intake System (PM 103.667)

Existing Infrastructure

Currently, water passively percolates through the 4' wide x 6' long concrete instream intake structure, which is then gravity fed through an 8" diameter pipe to a well sump located off-stream. The well sump is located within a 30' wide x 5' long fiberglass enclosure on a concrete slab approximately 15' from the instream intake structure. A wooden shed is located on-site and houses a control cabinet for the sump. Water pumped from the well sump is conveyed through a 4" wide x 44' long pipe to the pump control cabinet, up the exiting access road adjacent to U.S. Highway 101 (US 101). The diverted water is directed to Seawood Drive to Seawood Estates Municipal Water Treatment Plant.

The current intake structure, constructed in 2005, initially consisted of an instream, concrete diversion box (4' wide x 6' long), permeable membrane, graded media (sand, gravel, rock), and a pipe manifold of eight 4" wide slotted pipe laterals. The permeable membrane fabric within the concrete diversion box failed in 2006 due to biofilm growth and was removed, along with the graded media surrounding the intake pipes. As a result, the intake structure largely has filled with debris and does not operate as intended, thus requiring frequent maintenance. Current maintenance activity involves removing the intake screen and digging out sediment that has clogged the intake system which requires instream work multiple times per year.

Proposed Infrastructure

Savage Creek (PM 103.67): The stream intake structure would largely remain as is. However, the existing 6' wide grate/manifold would be replaced with one consisting of openings of 3/32 inch openings. The contents of the intake structure would include graded media. The 8" wide pipe located inside the instream concrete box would consist of 4" wide openings (sand, gravel, rock). The pipe would be below the newly placed graded media. The existing well sump would be replaced, relocated approximately 15' closer to the west (towards the pump control cabinet), on a new 6' wide x 6' long concrete slab. The old slab and fiberglass cabinet would be removed. The existing water lines would be replaced in-kind along the same alignment. Water would passively percolate through the intake structure through a pipe to a well sump located off stream.

Additional changes would include installation of a flow meter along the newly replaced water line for purposes of documenting the permitted water diversion. A stream gauge would be installed along Savage Creek's left bank. A three-way valve would be installed along the water line to allow the proposed backwash system to function. The new water line would be approximately 4" wide x 16' long.

The new intake structure is designed to be a reliable source of water for domestic users without clogging and requiring routine maintenance, manual or otherwise. However, if the diversion is clogged, thus requiring use of the backwash system, the backwash system would reverse raw water from SEMWC's 5,000 raw water tank at a rate of 215 GPM back into the instream intake structure, dislodging sediment. Sediment that becomes entrapped within the intake structure would be suspended by backwashing, and carried downstream, always remaining in Savage Creek. The backwash system would reverse flow through one third of the total collection manifold at a time, through three manually operated valves adjacent to the intake at Savage Creek. Operation of the backwash system is anticipated to last approximately 5 minutes. Operating the backwash system would require two individuals, one at the Seawood Drive backwash control panel and another at Savage Creek.

Savage Creek would need a temporary stream diversion for adequate construction access. A diversion would be installed approximately 80 feet upstream of the work area and water would be diverted through a pipe downstream through the existing culvert. To minimize disturbance to Savage Creek, stream diversion would occur during one season and take place during the low-flow period, June 15–October 15. Aquatic species relocation and protection measures are outlined in Section 1.5.

At all times, erosion/sediment control Best Management Practices (BMPs) would be employed to maintain high water quality in Savage Creek. Upon completion of construction, all disturbed areas would be returned to natural contours. The shoulder of US 101 and the area of proposed disturbance near the pumphouse is currently covered by ruderal herbaceous vegetation. Erosion control BMPs, such as mulching and hydroseeding, would be applied to disturbed areas upon completion of the project. These areas are expected to revegetate naturally. A list of equipment used for this project and associated sound decibel (dB) levels is provided in Table 1.

Table 1. Construction Equipment dB Values

Sound Source	Decibel Value ¹
Backhoe	80
Front End Loader	80
Dump Truck	85
Concrete Mixer Truck	85
Mini Excavator	85
Trencher	85
Asphalt Roller	85
Asphalt Paver	85
Flat Bed Truck	84
Pickup Truck	55
Jackhammer	85
Pneumatic Tools	85
Compactor	80
Generator	82
Concrete/Asphalt Saw	90

¹ The measured "Actual" emission level at 50 feet for each piece of equipment based on hundreds of emission measurements performed on CA/T work site (FHWA 2017)

1.5.2 Savage Creek Backwash System (PM 103.390)

The corner of Seawood Drive and the southbound (SB) US 101 off-ramp is an existing vehicle turnout, consisting of a transformer and electrical service pedestal. The proposed backwash system would require installation of a 4-inch-wide x 35-foot-long water line to an existing water line conveying water diverted from Savage Creek. The backwash system would include installation of a 5-horsepower pump. A new 5-foot-wide x 11-foot-long concrete pad would be constructed for the new backwash pump and electrical service box. New electrical conduit would be installed to connect the new electrical control panel to the existing service pedestal.

A list of equipment used for this project and associated sound decibel levels is provided in Table 1.

1.5.3 Access and Staging Areas

Prior to any ground disturbance, upland and aquatic resources would be protected as necessary by using Best Management Practices (BMPs), such as erosion control and temporary high visibility fencing (THVF) around environmentally sensitive areas (ESAs). Standard Measures and Best Management Practices can be found in Section 1.7. BMPs would be maintained and modified as needed. For the Savage Creek location (PM 103.67), staging areas would be limited to the existing gravel turnout at Savage Creek's access road and within the mowed and maintained areas within the project limits. However, access for replacing the intake system would require a temporary stream diversion, approximately 80 feet from the intake structure. For the Seawood Drive location (PM 103.39), access and staging would be limited to gravel, paved, and mowed roadside areas.

1.5.4 Season and Hours of Work

Construction is anticipated to start in summer 2023 and is estimated to take approximately 180, 8-hour working days to complete. The following seasonal restrictions are anticipated:

- September 16 to February 1—tree trimming and vegetation removal would occur outside of the bird breeding season. If vegetation removal cannot be done in this window, then nesting bird surveys by a qualified biologist would be required one week prior to the removal of any vegetation.
- June 15 to October 15—All work within Waters of the U.S. and State would be limited to the dry season.
- Seasonal noise restrictions for marbled murrelet and northern spotted owl would apply to work constructed between February 1 and September 15 (Section 1.7).

1.5.5 Clean-Up Operations

Areas where ground disturbance created during construction activities occur would be treated with appropriate BMPs to prevent erosion and stormwater pollution (Section 1.7).

1.6 Alternatives Considered

During the preliminary planning stages, five alternative designs were considered. Alternative 4 was chosen and 1,2,3 and 5, were eliminated from further consideration. All five are discussed below.

All alternatives listed below would require instream cleaning/maintenance once each intake collects enough fine sediment and becomes clogged. The rejected designs may require manual maintenance whereas the accepted alternative (Alternative 4) is intended to be less invasive. All alternatives are required to comply with the North Coast Regional Water Quality Control Board's Basin Plan where turbidity shall not be increased by more than 20 percent above naturally occurring background levels. However, allowable zones of dilution within which higher percentages can be tolerated may be defined for specific discharges upon the issuance of discharge permits or waiver thereof.

Alternative 1: Side Channel Diversion

A side channel diversion which would consist of a concrete channel constructed parallel to the stream with a boulder/rock weir to divert a portion of the streamflow into the constructed side channel would include a screened inlet and flow control structure to collect and convey water to the existing wet well.

Rejection Justification: As described in final Savage Creek Evaluation and Analysis, Savage Creek Intake Box, this alternative was identified as the least preferred option mainly due to its large impact on Waters of the U.S., Waters of the State, and riparian habitat. Additional challenges include a more complex construction and permitting scenario, and overall high capital cost. This alternative would require mitigation for wetland impacts. Additionally, this alternative would drastically impact the free flowing conditions of Savage Creek.

Alternative 2: Sitting Well

A sitting well, which would consist of a vertically oriented corrugated metal or concrete culvert within an intake screen installed on the side of the pipe to maintain acceptable approach velocities, is typically installed on a stream bank and sits parallel to the direction of stream flow. An adjustable standpipe is installed in the center of the well to control the diversion rate and convey water to the existing wet well. The use of a sitting well is more

common with larger streams and is typically not very effective in small streams that have wide fluctuations in seasonal flow.

Rejection Justification: This alternative was rejected due to its average to below average performance in all reviewed performance categories. Constructability complexity, low flow performance, and capital costs were a few of the reasons this option was rejected in favor of the selected alternative.

Alternative 3: Instream Rock Weir and Inclined Screen

This option would include installation of a low profile rock weir across the stream and embedding a small inclined stainless steel fish-friendly, wedge-wire screen box into the rock weir. The screen box collects water flowing over the weir and conveys it directly to the existing wet well. The rock weir can be constructed to focus the flow across the screen and effectively capture water during low and high flows. The inclined screen is sloped downstream and is designed to be self-cleaning.

Rejection Justification: Of the project Alternatives prepared by Fall Creek Engineering Inc., this alternative was ranked as the most preferred alternative mostly because of the minimal fish screening criteria that would be required, the low operation and maintenance needs, and the reliability in performance during low flow conditions. However, during Fall Creek Engineering Inc.'s review of each alternative, Alternative 3 did not include a backwash function. Further design changes have been made to lessen Caltrans' environmental impact while also improving the diversion's functionality which justified proceeding with Alternative 4 over Alternative 3.

Alternative 4 (Selected Design): Retrofit the Existing Intake Infrastructure with Backwash System

This alternative would not be substantially different than the current screen system. Upgrades to infrastructure of the existing surface water diversion system would include:

- Replace the media inside the passive instream intake structure
- Replace the existing collection manifold with a fish friendly, wedge-wire screen (3/32 inch openings)
- Install a new well sump which would include new piping to connect to the intake, a new pump, and new conduit
- Install a backwashing system for the intake, including a 5-horsepower pump

- Install a new flow meter in the new piping to measure quantity and rate of diversion
- Additional work would include electrical and water line enhancements to allow the backwash system to operate; including, but not limited to, constructing concrete slabs, security enclosures, utility boxes, etc.

Alternative 5: No-Build

The No-Build Alternative would maintain the facility in its current condition and would not meet the purpose and need of the project. Under the No-Build Alternative, no alterations to the existing conditions would occur and the proposed improvements would not be implemented. The No-Build Alternative is not discussed further in this report.

1.7 Standard Measures and Best Management Practices

The following section provides a list of standard practices that are included as part of the project description. Standard measures are prescriptive and sufficiently standardized to be generally applicable, and do not require special tailoring to a project situation. These are generally measures that result from laws, permits, guidelines, and resource management plans that are relevant to the project. They contain refinements in planning policies and implementing actions. These practices predate the project's proposal and apply to all similar projects. For this reason, these measures and practices do not qualify as project mitigation and the effects of the project are analyzed with these measures in place. Standard measures relevant to the protection of natural resources deemed applicable to the proposed project include the following:

General Protection Measures

Before start of work, as required by permit or consultation conditions, a Caltrans biologist or Environmental Construction Liaison (ECL) would meet with the contractor to brief them on environmental permit conditions and requirements relative to each stage of the proposed project, including, but not limited to, work windows, and how to identify and report regulated species within the project areas.

Animal Species Protection Measures

- To protect migratory and nongame birds (occupied nests and eggs), if possible, vegetation removal would be limited to the period outside of the bird breeding season (removal would occur between September 16 and January 31). If vegetation removal is required during the breeding season, a nesting bird survey would be conducted by a qualified biologist within one week prior to vegetation removal. If an active nest is located, the biologist would coordinate with CDFW to establish appropriate species-specific buffer(s) and any monitoring requirements. The buffer would be delineated around each active nest and construction activities would be excluded from these areas until birds have fledged, or the nest is determined to be unoccupied.
- Pre-construction surveys for active raptor nests within one-quarter mile of the construction area would be conducted by a qualified biologist within one week prior to initiation of construction activities. Areas to be surveyed would be limited to those areas subject to increased disturbance because of construction activities (i.e., areas where existing traffic or human activity is greater than or equal to construction-related disturbance need not be surveyed). If any active raptor nests are identified, appropriate conservation measures (as determined by a qualified biologist) would be implemented. These measures may include, but are not limited to, establishing a construction-free buffer zone around the active nest site, biological monitoring of the active nest site, and delaying construction activities near the active nest site until the young have fledged.
- To prevent attracting corvids (birds of the Corvidae family which include jays, crows, and ravens), no trash or foodstuffs would be left or stored on-site. All trash would be deposited in a secure container daily and disposed of at an approved waste facility at least once a week. Also, on-site workers would not attempt to attract or feed any wildlife.
- A qualified biologist would monitor in-stream construction activities that could potentially impact sensitive biological receptors. The biological monitor would be present during activities such as installation and removal of dewatering or diversion systems to ensure adherence to permit conditions. In-water work restrictions would be implemented.

- An Aquatic Species Relocation Plan, or equivalent, would be prepared by a qualified biologist and include provisions for pre-construction surveys and the appropriate methods or protocols to relocate any species found. If previously unidentified threatened or endangered species are encountered or anticipated incidental take levels are exceeded, work would either be stopped until the species is out of the impact area, or the appropriate regulatory agency would be contacted to establish steps to avoid or minimize potential adverse effects. This Plan may be included as part of the Temporary Creek Diversion System Plan identified.
- Artificial night lighting may be required. To reduce potential disturbance to sensitive resources, lighting would be temporary, and directed specifically on the portion of the work area actively under construction. Use of artificial lighting would be limited to Cal/OSHA work area lighting requirements.
- To protect nesting or roosting northern spotted owl and marbled murrelet, suitable northern spotted owl or marbled murrelet nesting trees would be removed between September 16 and January 31. No construction activities generating noise levels greater than 90 decibels (dB) (with the exception of backup alarms) or activities generating sound levels 20 or more dB above ambient sound levels would occur between February 1 and August 5. Between August 6 and September 15, work that generates noise levels greater than 10 dB above ambient sound levels or above 90 dB max would observe a daily work window beginning 2 hours post-sunrise and ending 2 hours pre-sunset. Noise-related work windows would be lifted between September 16 and January 31. Further, no construction activities would occur within a visual line-of-sight of 328 feet or less from any known active nest locations for northern spotted owl or marbled murrelet.

Standard Measures for Invasive Species

- Straw, straw bales, seed, mulch, or other material used for erosion control or landscaping which would be free of noxious weed seed and propagules.
- All equipment would be thoroughly cleaned of all dirt and vegetation prior to entering the job site to prevent importing invasive non-native species. Project personnel would adhere to the latest version of the *California Department of Fish and Wildlife Aquatic Invasive Species Cleaning/Decontamination Protocol (Northern Region)* for all field gear and equipment in contact with water.

Plant Species and Sensitive Natural Communities

- Prior to the start of work, Temporary High Visibility Fencing (THVF) and/or flagging would be installed around sensitive natural communities, environmentally sensitive habitat areas, rare plant occurrences, intermittent streams, and wetlands and other waters, where appropriate. No work would occur within fenced/flagged areas.
- Where feasible, the structural root zone would be identified around each large-diameter tree (>2-foot DBH) directly adjacent to project activities, and work within the zone would be limited.
- When possible, excavation of roots of large diameter trees (>2-foot DBH) would not be conducted with mechanical excavator or other ripping tools. Instead, roots would be severed using a combination of root-friendly excavation and severance methods (e.g., sharp-bladed pruning instruments or chainsaw). At a minimum, jagged roots would be pruned away to make sharp, clean cuts.
- After completion, all superfluous construction materials would be completely removed from the site. The site would then be restored by regrading and stabilizing with a hydroseed mixture of native species along with fast growing sterile erosion control seed, as required by the Erosion Control Plan.

Wetlands and Other Waters

- The contractor would be required to prepare and submit a Temporary Creek Diversion System Plan to Caltrans for approval prior to any creek diversion. Depending on site conditions, the plan may also require specifications for the relocation of sensitive aquatic species (see also Aquatic Species Relocation Plan under *Animal Species Protection Measures*). Water generated from the diversion operations would be pumped and discharged according to the approved plan and applicable permits.
- In-stream work would be restricted to the period between June 15 and October 15 to protect water quality and vulnerable life stages of sensitive fish species. Construction activities restricted to this period include any work below the ordinary high water. Construction activities performed above the ordinary high water mark of a watercourse that could potentially directly impact surface waters (i.e., soil disturbance that could lead to turbidity) would be performed during the dry season, typically between June through October, or as weather permits.

- See Temporary High Visibility Fencing (THVF) information under *Plant Species and Sensitive Natural Communities*.

Water Quality and Stormwater Runoff

The project would comply with the Provisions of the Caltrans Statewide National Pollutant Discharge Elimination System (NPDES) Permit (Order 2012-0011-DWQ) as amended by subsequent orders, which became effective July 1, 2013. If the project results in a land disturbance of one acre or more, coverage under the Construction General Permit (Order 2009-0009-DWQ) is also required.

Before any ground-disturbing activities, the contractor would prepare a Stormwater Pollution Prevention Plan (SWPPP) (per the Construction General Permit Order 2009-0009-DWQ) or Water Pollution Control Program (WPCP) (projects that result in a land disturbance of less than one acre), that includes erosion control measures and construction waste containment measures to protect waters of the State during project construction.

The SWPPP or WPCP would identify the sources of pollutants that may affect the quality of stormwater; include construction site Best Management Practices (BMPs) to control sedimentation, erosion, and potential chemical pollutants; provide for construction materials management; include non-stormwater BMPs; and include routine inspections and a monitoring and reporting plan. All construction site BMPs would follow the latest edition of the Caltrans Storm Water Quality Handbooks: Construction Site BMPs Manual to control and reduce the impacts of construction-related activities, materials, and pollutants on the watershed.

The project SWPPP or WPCP would be continuously updated to adapt to changing site conditions during the construction phase. Construction may require one or more of the following temporary construction site BMPs:

- Any spills or leaks from construction equipment (i.e., fuel, oil, hydraulic fluid, and grease) would be cleaned up in accordance with applicable local, state, and/or federal regulations.
- Accumulated stormwater, groundwater, or surface water from excavations or temporary containment facilities would be removed by dewatering.
- Water generated from the dewatering operations would be discharged on-site for dust control and/or to an infiltration basin, or disposed of offsite.

- Temporary sediment control and soil stabilization devices would be installed.
- Existing vegetated areas would be maintained to the maximum extent practicable.
- Clearing, grubbing, and excavation would be limited to specific locations, as delineated on the plans, to maximize the preservation of existing vegetation.
- Vegetation reestablishment or other stabilization measures would be implemented on disturbed soil areas, per the Erosion Control Plan.
- Soil disturbing work would be limited during the rainy season.

In addition to the BMPs listed above, the project would incorporate pollution prevention and design measures consistent with the 2016 Caltrans Storm Water Management Plan. This plan complies with the requirements of the Caltrans Statewide NPDES Permit (Order 2012-0011-DWQ) as amended by subsequent orders. The project design may include one or more of the following:

- Vegetated surfaces would feature native plants, and revegetation would use the seed mixture, mulch, tackifier, and fertilizer recommended in the Erosion Control Plan prepared for the project.
- Where possible, stormwater would be directed in such a way as to sheet flow across vegetated slopes, thus providing filtration of any potential pollutants.

Invasive Species

- To improve habitat for native species in and adjacent to disturbed soil areas within the project limits, Caltrans would implement a program of invasive weed control in all areas of soil disturbance caused by geotechnical investigation activities.
- Any hay, straw, hay bales, straw bales, seed, mulch, or other material used for erosion control or landscaping in the project area would be free of noxious weed seeds and propagules.
- All driven equipment would be thoroughly cleaned of all dirt and vegetation prior to entering the ESL, in order to prevent importing noxious weeds.
- All material and fill brought to the site, including rock, gravel, road base, sand, and topsoil, would be free of noxious weed seeds and propagules.
- Caltrans would not allow disposal of soil and plant materials from any areas that support invasive species to areas that support stands dominated by native vegetation.

- Any seed mixes or other vegetative material used for revegetation of disturbed sites would consist of nonpersistent cereal grain, California native seed mix, or locally adapted native plant materials to the extent practicable.
- Plant species used for erosion control would consist of native, noninvasive species or nonpersistent hybrids that would prevent invasive species from colonizing.
- Workers would be educated on the importance of controlling and preventing the spread of identified invasive nonnative species.



Chapter 2. Study Methods

2.1 Previous Studies

Biological studies for the project have been completed and are presented in the project Natural Environment Study (NES). The NES includes information on:

- 1) Habitat type/s present;
- 2) Potential jurisdictional wetlands and waters;
- 3) Factors indicating the potential for special status species;
- 4) Special status species present;
- 5) Potentially sensitive water quality receptors (e.g., amphibians, fish);
- 6) Inventory baseline conditions of biological resources; and
- 7) Identification of potential issues for the study.

Field and record reviews conducted for the project have been used for the purposes of determining ESHAs. The ESHA study area includes a 100-foot Coastal Zone buffer around all sites within the Coastal Zone under the jurisdiction of the California Coastal Commission. Table 2 includes information on field visits that occurred in 2021.

Table 2. Personnel and Survey Dates for the Biological Resources/Environmentally Sensitive Habitat Area Evaluation

Survey	Date	Location	Personnel
Early-Season Botanical Survey	April 13, 2021	Savage Creek	Jennifer Brown – Caltrans Biologist Hilary Hodson – Caltrans Biologist
Mid-Season Botanical Survey	May 10, 2021	Savage Creek	Jennifer Brown – Caltrans Biologist Hilary Hodson – Caltrans Biologist
Aquatic Resources Assessment	May 11, 2021, and August 9, 2021	Savage Creek	Jennifer Brown – Caltrans Biologist Ben Lardiere – Caltrans Biologist
Late Season Botanical Survey	August 9, 2021	Backwash System (Seawood Drive)	Jennifer Brown – Caltrans Biologist Ben Lardiere – Caltrans Biologist Alexandre Balcerzak – Caltrans Environmental Coordinator
Humboldt Mountain Beaver Surveys, PLOC discussion for NSO, MAMU and Marten	December 29, 2021	Savage Creek	Greg Schmidt – USFWS Liaison Jennifer Brown – Caltrans Biologist Ben Lardiere – Caltrans Biologist



Chapter 3. Results: Biological Resources and Discussion of Impacts

3.1 Potential Environmentally Sensitive Habitat Areas

The Environmentally Sensitive Habitat Areas (ESHAs) delineated in the ESL include wetland and non-wetland Waters of the U.S. and State (Appendix A). Temporary impacts are anticipated for wetland and non-wetland Waters of the U.S.; permanent impacts are not anticipated. The project would have no impact on sensitive natural communities.

Temporary impacts may potentially occur to aquatic wildlife habitat (CDFW Species of Special Concern). Potential ESHAs that occur within the 100-foot Coastal Zone buffer are summarized in Table 3. Standard Measures and Best Management Practices which would reduce or avoid impacts to these areas are outlined in Section 1.7. There would be no permanent impacts on any potential ESHA.

Table 3. Potential Environmentally Sensitive Habitat Areas within the Environmental Study Limits

Potential Environmentally Sensitive Habitat Area	Potential Impacts	Description of Work within Potential ESHA
Wetlands and Waters of the U.S. and other Coastal Jurisdictional Areas (Riparian)	Yes	Temporary impacts to wetlands and Waters of the U.S. and State, and coastal jurisdictional features regulated by the California Coastal Commission are anticipated. No impacts to riparian habitat are anticipated.
Sensitive Natural Communities	No	No impacts to sensitive natural communities.
Special Status Wildlife Habitat	Yes	Work is required within federally and state-listed wildlife habitat. Potential temporary impacts to state-listed Species of Special Concern and aquatic habitat are anticipated. Potential temporary impacts on terrestrial special status wildlife habitat are noise and visual disturbances.

Special status plants considered by CDFW to be “rare, threatened or endangered in California” include plants tracked by the California Natural Diversity Database (CNDDDB) and the California Native Plant Society (CNPS) as California Rare Plant Rank (CRPR) 1 or 2. Plants may also warrant consideration under CEQA on the basis of declining trends, recent taxonomic information, or other factors, including plants tracked by the CNDDDB and CNPS as CRPR 3 or 4.

The results of the analysis of the database searches and the additional rare plant records revealed 69 California Rare Plant Rank (CRPR) 1 through 4 plant taxa that could potentially occur within the vegetation and habitat types present within the ESL. Botanical survey results, which document the results of seasonally-appropriate floristic surveys carried out for the proposed project, are provided in the NES. No special status, state or federally listed plants were observed within the ESL.

Wetlands and Waters of the United States and State

One small, isolated wetland (22 square feet; 0.0006 acre), one perennial stream that flows through a culvert under U.S. 101 and then towards the Pacific Ocean, were mapped within the ESL as Waters of the U.S. under U.S. Army Corps of Engineers (USACE) jurisdiction (Table 4 and Appendix A). In total, 0.172 acre of potential Waters of the U.S. and State are within the Coastal Zone: 0.135 acre of palustrine emergent nonpersistent wetland and 0.037 acre of non-wetland waters. These areas would also be considered coastal jurisdictional features, regulated by the California Coastal Commission (CCC).

To be considered a wetland, CCC regulations require only one parameter—wetland hydrology. However, when indicators of hydrophytic vegetation or hydric soils are present, the area needs to be closely examined to determine if, and why, hydrology indicators are absent, and if the area is functioning as a wetland. The wetland area (22 square feet; 0.0006 acre) delineated within the project footprint included hydrophytic vegetation, hydric soils and wetland hydrology. This delineated area was considered a jurisdictional palustrine emergent nonpersistent wetland. Additionally, a perennial stream (20 square feet; 0.0005 acre) was identified as a non-wetland water within the project footprint. In summary, 0.0006 acre and 0.005 acre of wetland and non-wetland waters, respectively, would be temporarily impacted by project activities. Table 4 summarizes wetland and non-wetland Waters of the U.S. and State within the project study area. Appendix A depicts all wetlands and non-waters of the U.S. and State within the ESL.

Project Impacts

The project would not permanently impact wetlands or jurisdictional waters. There would be approximately 8 linear feet and approximately 20 square feet of temporary impacts to Waters of the State (perennial stream) from work associated with the existing intake facility (in-stream) (Table 4). There would be approximately 10 linear feet and approximately 22 square feet of temporary Waters of the U.S. and State (wetland) impacts from disturbance associated with the replacement of existing water line infrastructure (Table 4).

There would be no permanent¹ impacts due to installation of the new intake system and water line as they would be replaced in-kind (same dimensions as previous features).

No trees would be removed at either the Savage Creek or Seawood Drive locations. However, minimal trimming of non-riparian tree branches and trimming or clearing of shrubs and herbaceous vegetation would occur, which would be replanted as needed and/or revegetated naturally within a year. The values listed in this document are an estimate based on the information available at the time of writing.

Table 4. Wetlands and Waters within the Project Footprint

Location	Feature Type	Temporary Impacts	
		Intake system	Water Line
Savage Creek	Perennial stream	8 (linear feet)	–
Savage Creek	Wetland	–	10 (linear feet)
Total Impacts (square feet)		20	22
Total Impacts (linear feet)		8	10
Total Impacts (acres)		0.0005	0.0006

¹ Permanent impacts refer to impacts that permanently remove a resource (e.g., paving a wetland). Temporary impacts refer to those areas that would be restored onsite and in-kind upon completion of construction (e.g., a temporary road that is created through a riparian area for construction access).

Buffer—The *Humboldt County General Plan Volume II- Trinidad Area Plan of the Humboldt County Local Coastal Program* requires a minimum 100-foot buffer around wetlands, unless it can be determined that there is no adverse impact on the wetland.

A 100-foot buffer is not feasible at these locations due to the required scope of work for the project. A buffer of less than 100 feet would be used to avoid impacts on the sensitive natural communities and other non-wetland waters [*consistent with the Humboldt County General Plan 2017*].

Avoidance—A buffer of less than 100 feet would have no adverse impact on coastal jurisdictional ESHAs because:

- (1) access to surrounding areas is both temporary and minor, meaning the ESHA would be protected against any disruption of habitat values [*consistent with Humboldt County General Plan Volume II- Trinidad Area Plan of the Humboldt County Local Coastal Program*]
- (2) the activity is not a new development [*consistent with Humboldt County General Plan Volume II- Trinidad Area Plan of the Humboldt County Local Coastal Program*] and
- (3) standard measures and BMPs would be implemented as part of the project to prevent temporary or permanent impacts to these ESHAs, including use of temporary high-visibility fencing and/or flagging, where appropriate, to exclude ESHAs; thus, avoiding impacts.

3.2 Other Potential Environmentally Sensitive Habitat Areas

The *Humboldt County General Plan Volume II- Trinidad Area Plan of the Humboldt County Local Coastal Program*, describes protected sensitive habitat types as offshore rocks, intertidal areas, estuaries, sea cliffs, wetlands, riparian areas, and coastal sand dunes. Other than the wetland, non-wetland waters, and riparian described above, none of these habitat types exist within the ESL; however, the California Coastal Act (CCA) uses a broader definition for resources that may be considered ESHAs, which may include occupied special status wildlife habitat and sensitive natural communities as defined by the California Department of Fish and Wildlife (CDFW) (CDFW 2019) (Appendix A). Those areas identified as potential ESHAs would be avoided to the extent feasible. Additionally, standard measures would be implemented to minimize unavoidable temporary impacts.

Sensitive Natural Communities

Sensitive natural communities are habitats considered sensitive because of their high species diversity, high productivity, unusual nature, limited distribution, or declining status (CDFW 2018). The CDFW ranks natural communities (alliances and associations) according to their degree of imperilment (as measured by rarity, trends, and threats) and considers natural communities with a state rarity ranking of S1-S3 as sensitive. Small portions of these areas may also be considered coastal riparian features or wetlands. Such areas are discussed in Section 3.1.1.

The following sensitive natural communities are within the ESL and may be considered ESHAs:

- *Sequoia sempervirens* (Redwood forest) Alliance (G3, S3²) is considered vulnerable worldwide and throughout its statewide range and is considered a natural community of special concern (NCSC) (CDFW 2010).
- *Pseudotsuga menziesii* (Douglas-fir forest) Alliance (G5, S4) is considered demonstrably secure worldwide and throughout its statewide range.
- *Alnus rubra* (Red alder forest) Alliance (G5, S4) is considered demonstrably secure worldwide and secure throughout its statewide range.

The CCA and *Humboldt County General Plan Volume II- Trinidad Area Plan of the Humboldt County Local Coastal Program* do not identify a specific buffer distance for sensitive natural communities within the Coastal Zone, but state all ESHAs “shall be protected against any significant disruption of habitat values.” There would be no temporary or permanent impacts to the sensitive natural communities (SNCs) ESHAs. To protect these SNC ESHAs, Best Management Practices (BMPs), such as stormwater control, temporary high visibility fencing (THVF), or flagging around environmentally sensitive areas (ESAs), would be installed.

² Conservation status for global (G) and state (S) ranks is based on a one to five scale, ranging from critically imperiled (G1) to demonstrably secure (G5).

As described in the project description, the site selection process involved minimizing disturbance by using existing access roads and trails to the extent feasible. Accordingly, no substantial disruption of habitat value is expected. Standard measures and Best Management Practices, as described in the project description (Section 1.7), have been outlined to reduce impacts on ESHAs.

Special Status Wildlife Habitat

For the purposes of this ESHA Assessment, special status wildlife habitat is considered to consist of areas occupied or presumed occupied by species regarded as state or federally threatened, endangered, candidates for listing, proposed as threatened or endangered, or state fully protected. Protocol-level surveys were not conducted for special status species and any potentially suitable habitat within the ESL is presumed occupied. The following special status wildlife species have potential habitat within the ESL:

- Pacific (Humboldt) marten (*Martes caurina humboldtensis*)—Coastal DPS—federally threatened and state endangered
- Marbled murrelet (*Brachyramphus marmoratus*) (MAMU) and associated critical habitat—federally threatened and state endangered.
- Northern spotted owl (*Strix occidentalis caurina*) (NSO)—federally and state threatened
- Ring-tailed cat (*Bassariscus astutus*)—state fully protected
- Foothill yellow-legged frog (*Rana boylei*)—state Species of Special Concern
- Northern red-legged frog (*Rana aurora*)—state Species of Special Concern
- Pacific-tailed frog (*Ascaphus truei*)—state Species of Special Concern
- Southern torrent salamander (*Rhyacotriton variegates*)—state Species of Special Concern
- Coastal cutthroat trout (*Oncorhynchus clarkii clarkii*)—state Species of Special Concern
- Western brook lamprey (*Lampetra richardsoni*)—state Species of Special Concern

The *Humboldt County General Plan Volume II- Trinidad Area Plan of the Humboldt County Local Coastal Program*, does not identify a buffer distance for special status wildlife habitat within the Coastal Zone. All ESHAs “shall be protected against any significant disruption of habitat values.” It would not be feasible to avoid impacts on special status wildlife habitat due to the vast extent of potentially occupied habitat in and surrounding locations required for the project. However, impacts on these special status wildlife habitats would be minor and temporary, resulting from in-stream project activities. While visual and noise disturbance may indirectly and temporarily affect these species’ ability to use these habitats, work locations are surrounded with expansive areas of alternative suitable habitat should noise and visual disturbances cause any species to be temporarily displaced.

Caltrans has determined the proposed action ***may affect, but is not likely to adversely affect*** marbled murrelet, northern spotted owl, and Pacific marten– Coastal DPS (Caltrans 2022). The Programmatic Letter of Concurrence would be used for Section 7 consultation with the U.S. Fish and Wildlife Service to address potential impacts to marbled murrelet and northern spotted owl (USFWS 2022). There would be no adverse impact to ring-tailed cat.

The California Department of Fish and Wildlife (CDFW) also maintains a list of animal Species of Special Concern (SSC), most of which are species whose breeding populations in California may face extirpation. Although these species have no legal status, the CDFW recommends their consideration during analysis of the impacts of proposed projects to protect declining populations and to avoid the need to list them in the future. This project would have “***no impact***” on the following Species of Special Concern that may occur within the project area:

- Foothill yellow-legged frog (*Rana boylei*)
- Northern red-legged frog (*Rana aurora*)
- Pacific-tailed frog (*Ascaphus truei*)
- Southern torrent salamander (*Rhyacotriton variegates*)
- Western pond turtle (*Emys marmorata*)
- Fork-tailed storm-petrel (*Hydrobates furcatus*)
- Golden eagle (*Aquila chrysaetos*)
- Mountain plover (*Charadrius montanus*)
- Northern harrier (*Circus hudsonius*)
- Tufted puffin (*Fratercula cirrhata*)

- Western snowy plover (*Charadrius alexandrinus nivosus*)
- Yellow rail (*Coturnicops noveboracensis*)
- Coastal cutthroat trout (*Oncorhynchus clarkii clarkii*)
- Green sturgeon (*Acipenser medirostris*)
- Longfin smelt (*Spirinchus thaleichthys*)
- Lower Klamath marbled sculpin (*Cottus klamathensis polyporus*)
- Pacific lamprey (*Entosphenus tridentatus*)
- Western brook lamprey (*Lampetra richardsoni*)
- Fisher (*Pekania pennanti*)
- Humboldt mountain beaver (*Aplodontia rufa humboldtiana*)
- Sonoma tree vole (*Arborimus pomo*)
- White-footed vole (*Arborimus albipes*)
- Townsend's big-eared bat (*Corynorhinus townsendii*)
- Western red bat (*Lasiurus blossevillii*)

Due to the short-term nature of the activities and timing of work (outside of the breeding season for all of these species), no substantial disruption of habitat values is expected. Standard Measures and Best Management Practices (Section 1.7) have been outlined for the habitats associated with these species.

Chapter 4. References

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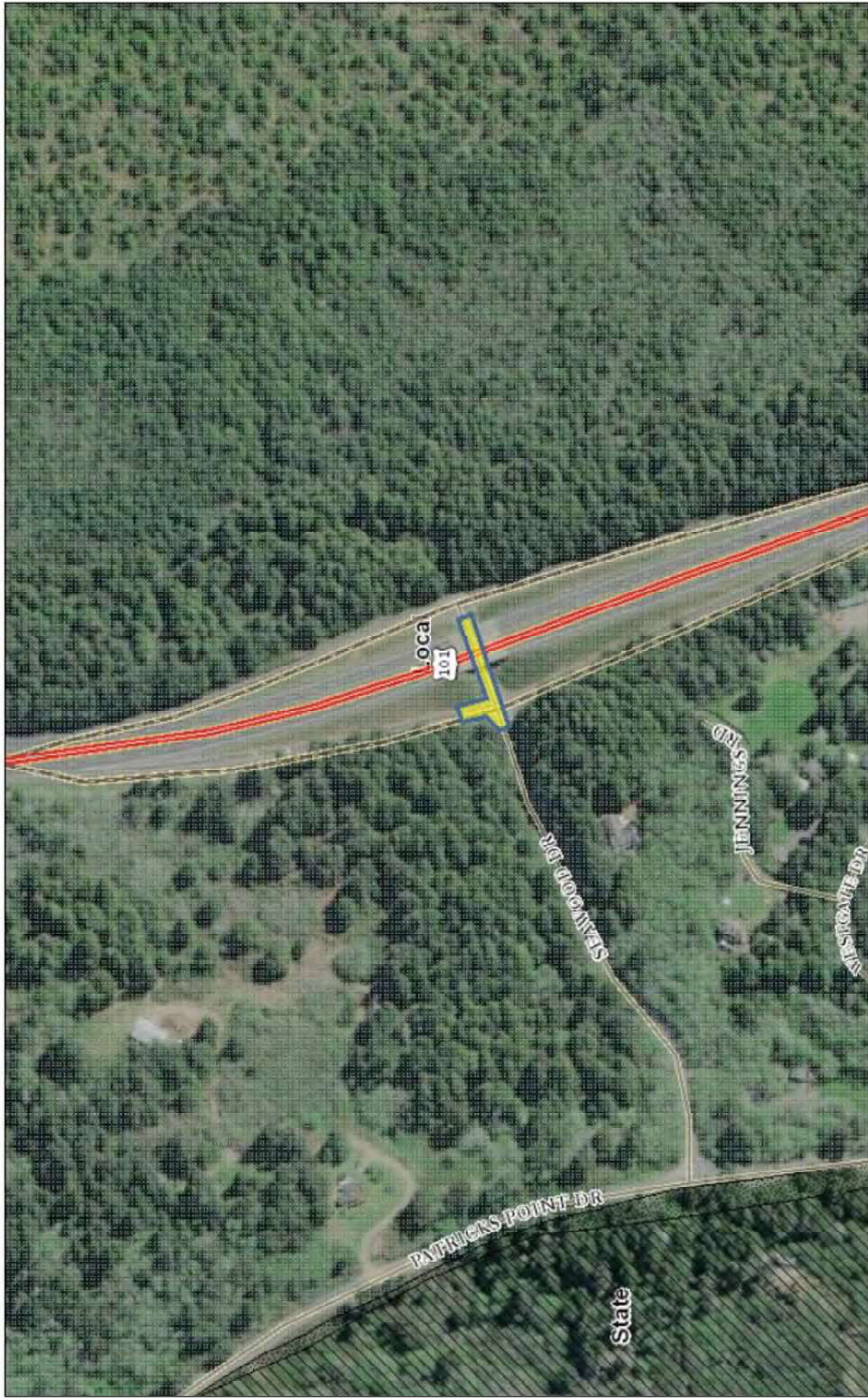
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**Appendix A. Resources within the
Environmental Study Limits
(Local Coastal Boundaries and
ESHAs Delineated)**



Local Coastal Boundaries

Work Area

Highways and Roads

Principal Arterials

Minor Arterials

Major Collectors

Areas

Minor Collectors

Local Roads

Private or Unclassified

Major River or Stream

Blue Line Streams

Perennial 1-3

Perennial >4

Intermittent

Subsurface

Coastal Zone Boundary

Coastal Zone

Juris dict...

State

Appeal

Local

Inland

0 175 350 700 Feet

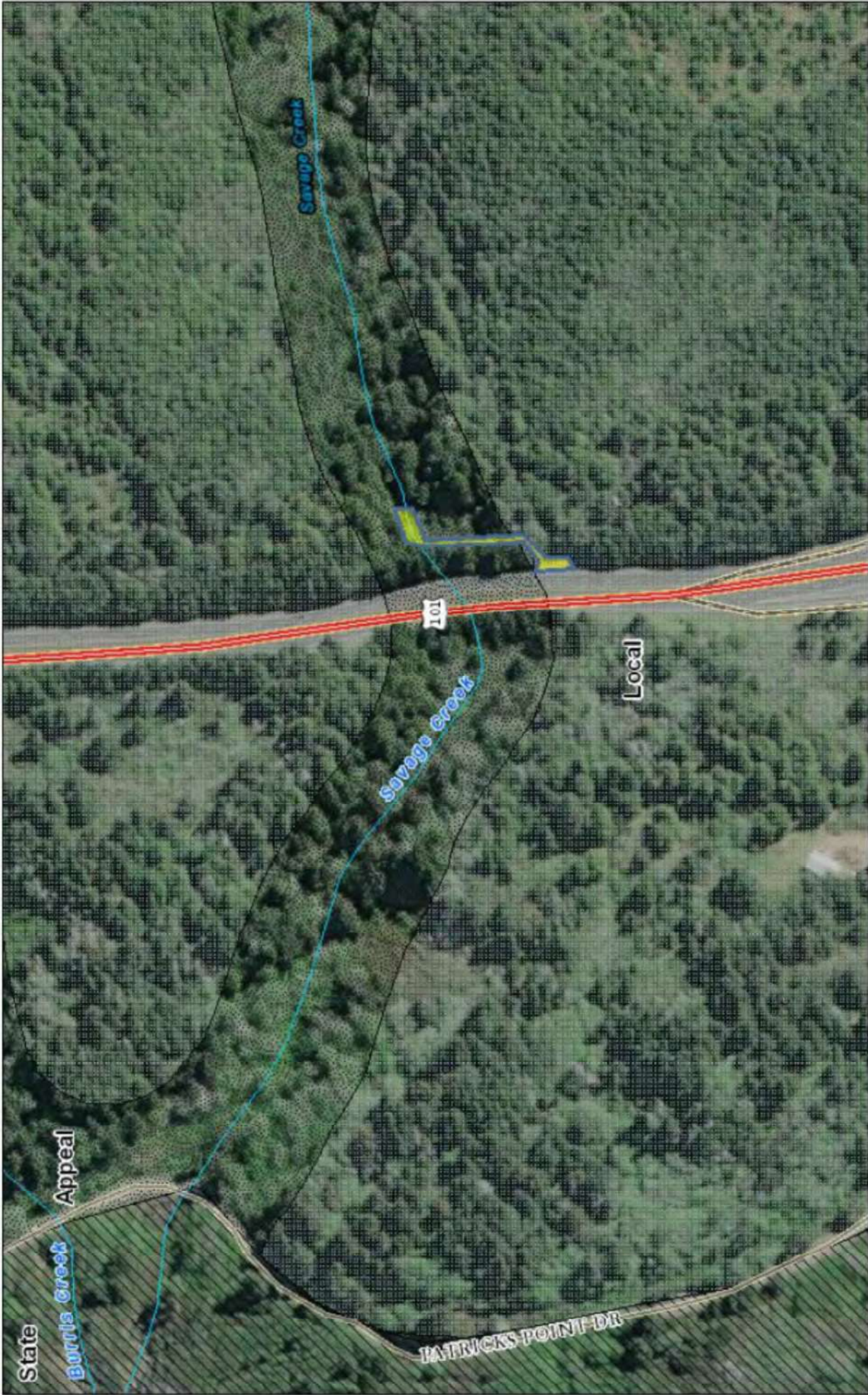
0 0.03 0.06 0.12 Miles

1 in = 365 ft

RF = 1:4,383

Sources: Humboldt County GIS
Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community
Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

Printed: July 25, 2022
Web AppBuilder 2.0 for ArcGIS
Map Disclaimer:
While every effort has been made to assure the accuracy of this information, it should be understood that it does not have the force & effect of law, rule, or regulation. Should any difference or error occur, the law will take precedence.



Local Coastal Boundaries

- Areas**
- Work Area
 - Highways and Roads
 - Principal Arterials
 - Minor Arterials
 - Major Collectors

- Minor Collectors
 - Local Roads
 - Private or Unclassified
 - Major River or Stream
 - Blue Line Streams
 - Perennial >4
 - Intermittent
 - Subsurface
 - Coastal Zone Boundary
 - Perennial 1-3
- Coastal Zone Jurisdiction**
- State
 - Appeal
 - Local
 - Inland

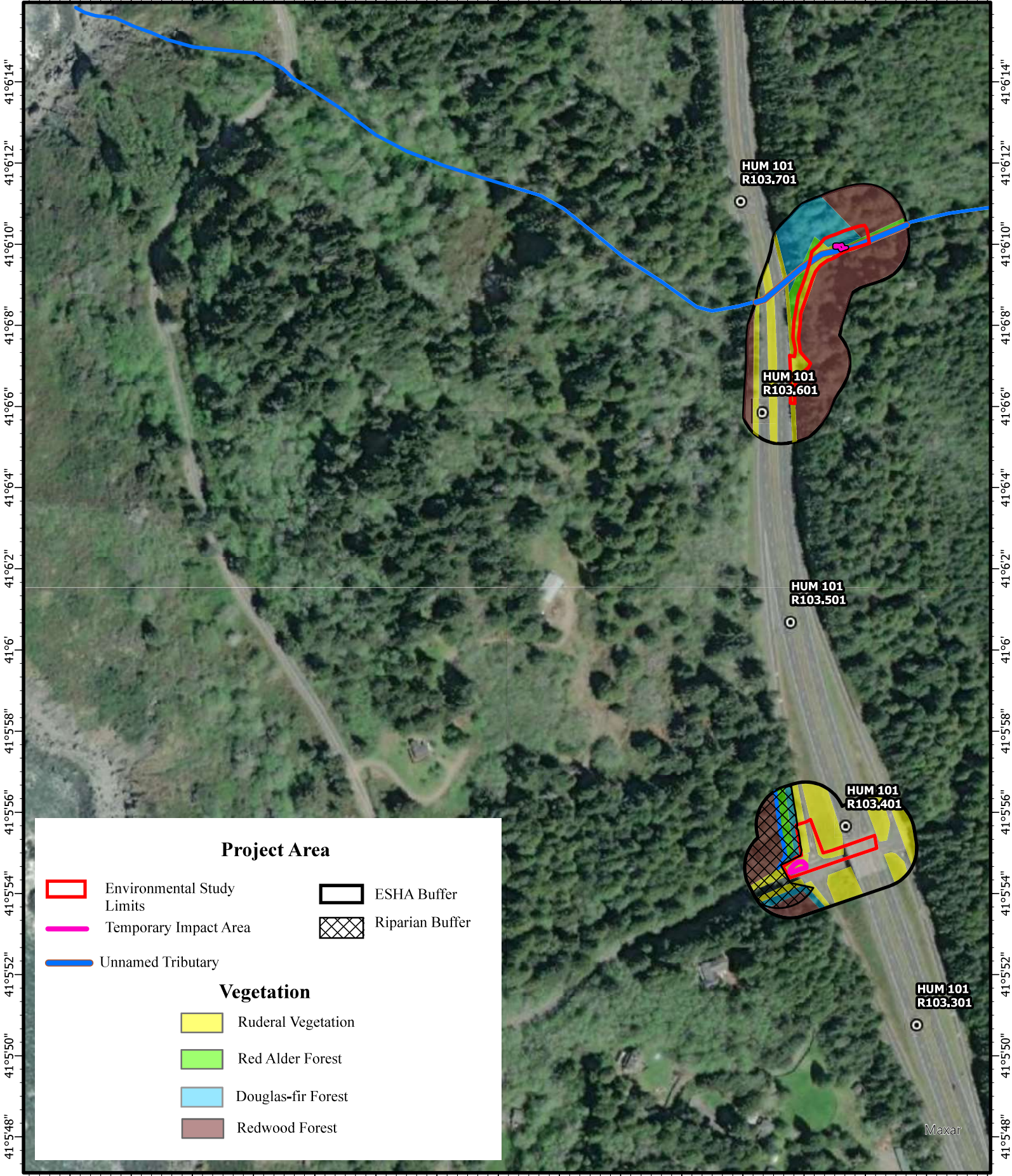


Sources: Humboldt County GIS Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community
 Source: Esri, Maxar, EarthstarGeographics, and the GIS User Community

Humboldt County Planning and Building Department
 Printed: July 25, 2022
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Project Area

- Environmental Study Limits
- ESHA Buffer
- Temporary Impact Area
- Riparian Buffer
- Unnamed Tributary

Vegetation

- Ruderal Vegetation
- Red Alder Forest
- Douglas-fir Forest
- Redwood Forest

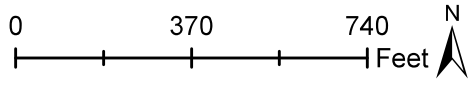
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R103.301



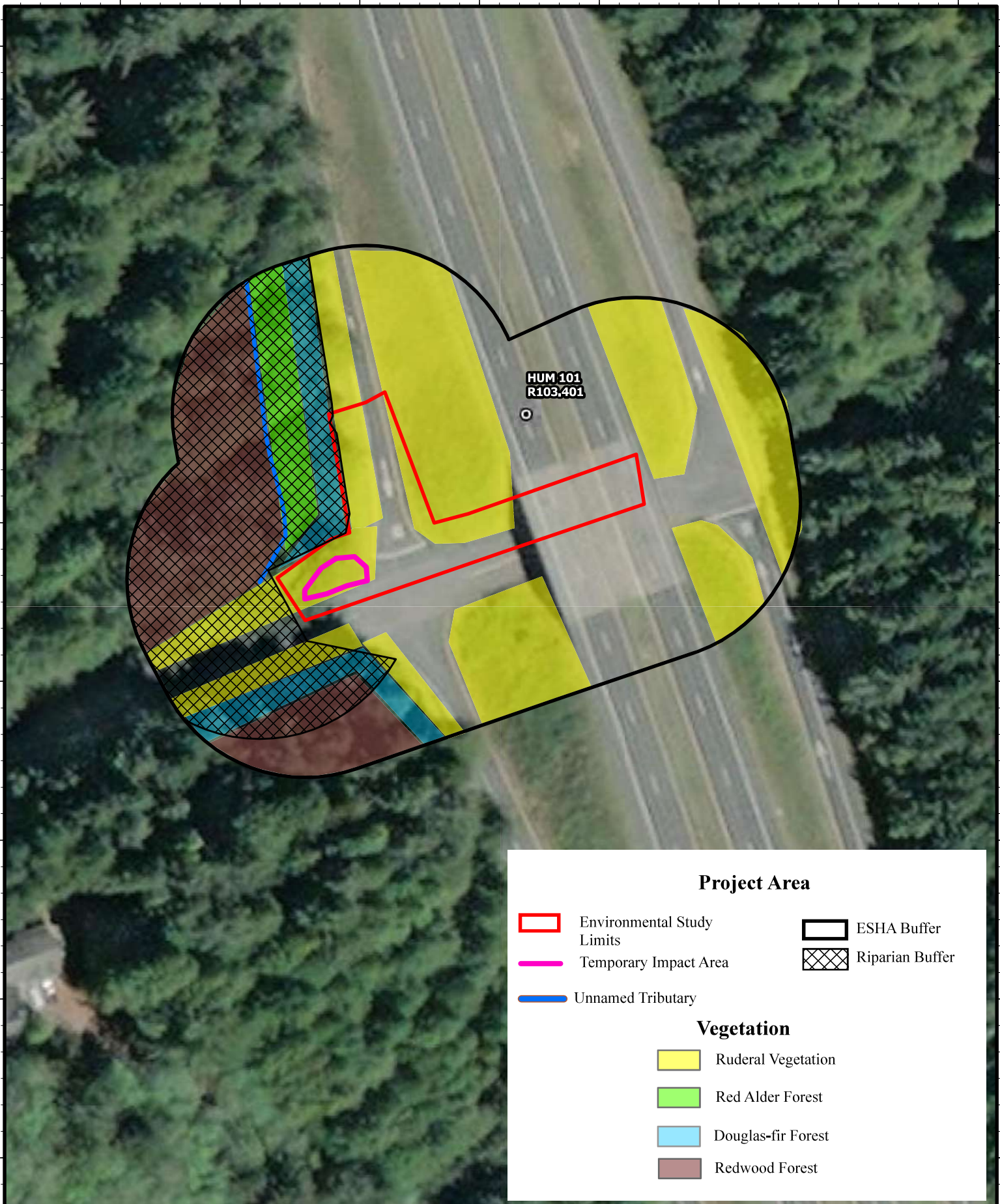
Environmental Sensitive Habitat Area Mapping (ESHA)
 Savage Creek Intake, U.S. 101, Humboldt County
 EA 01-0J360

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



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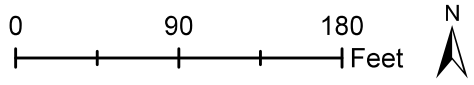


Project Area

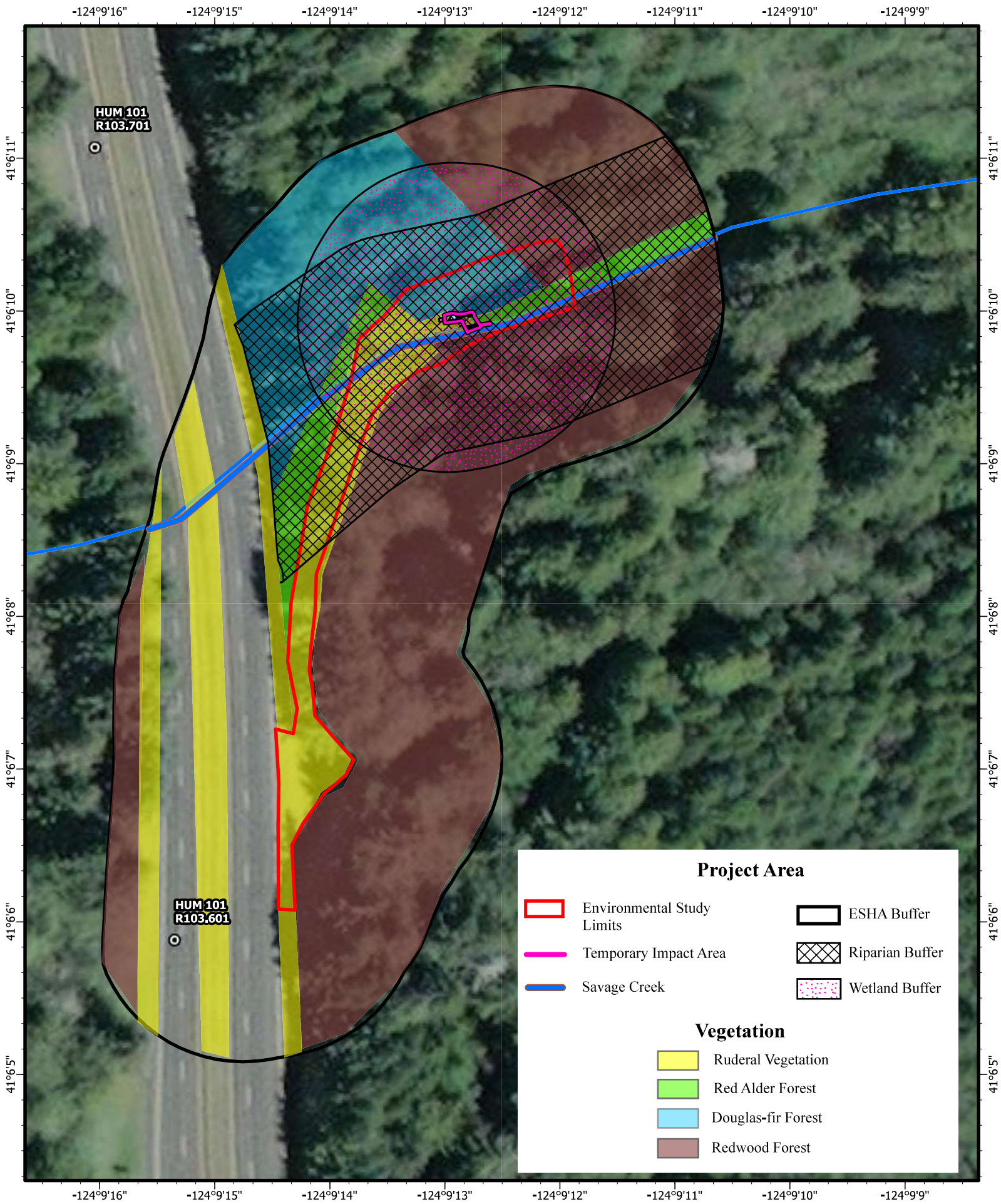
	Environmental Study Limits		ESHA Buffer
	Temporary Impact Area		Riparian Buffer
	Unnamed Tributary		

Vegetation







	Ruderal Vegetation
	Red Alder Forest
	Douglas-fir Forest
	Redwood Forest







Environmental Sensitive Habitat Area Mapping (ESHA)
Savage Creek Intake (Seawood Drive), U.S. 101, Humboldt County
EA 01-0J360

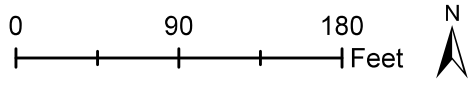


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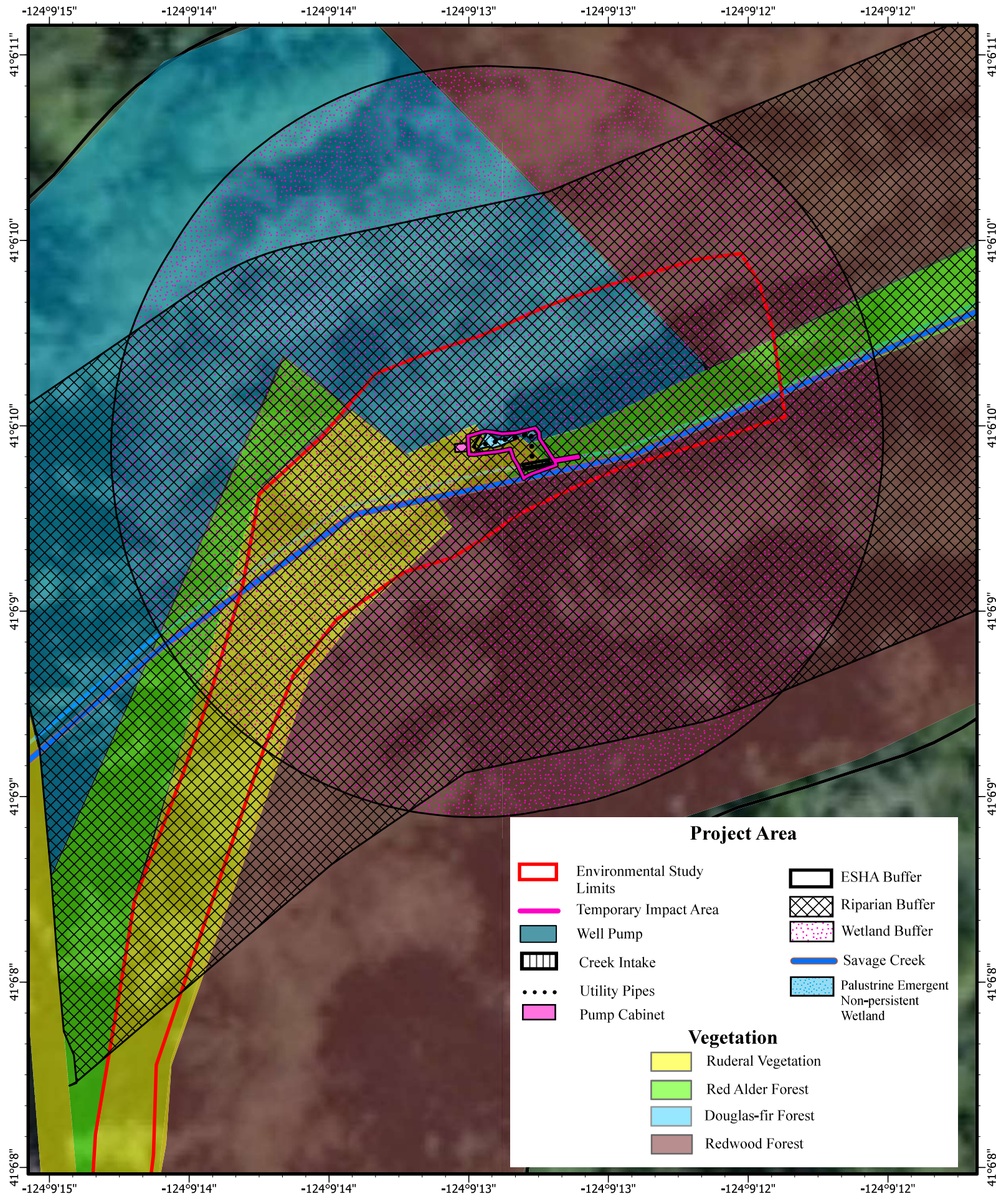
	Environmental Study Limits		ESHA Buffer
	Temporary Impact Area		Riparian Buffer
	Savage Creek		Wetland Buffer

Vegetation












	Ruderal Vegetation
	Red Alder Forest
	Douglas-fir Forest
	Redwood Forest







Environmental Sensitive Habitat Area Mapping (ESHA)
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EA 01-0J360

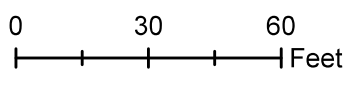


Project Area

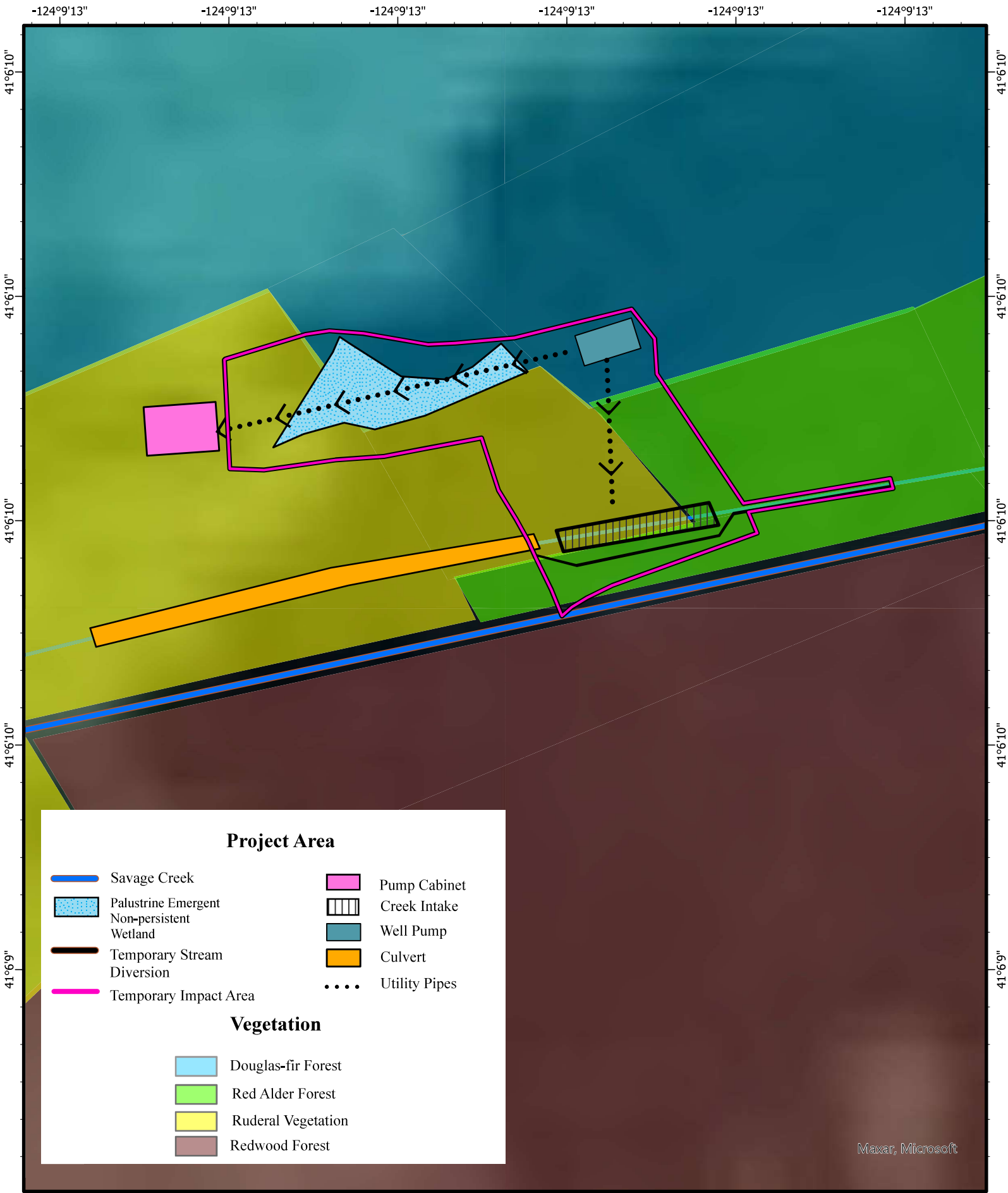
	Environmental Study Limits		ESHA Buffer
	Temporary Impact Area		Riparian Buffer
	Well Pump		Wetland Buffer
	Creek Intake		Savage Creek
	Utility Pipes		Palustrine Emergent Non-persistent Wetland
	Pump Cabinet		

Vegetation

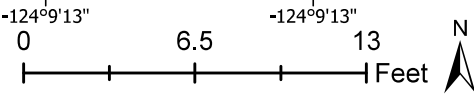
	Ruderal Vegetation
	Red Alder Forest
	Douglas-fir Forest
	Redwood Forest



Environmental Sensitive Habitat Area Mapping (ESHA)
Savage Creek Intake (Savage Creek), U.S. 101, Humboldt County
EA 01-0J360



Maxar, Microsoft



Environmental Sensitive Habitat Area Mapping (ESHA)
 Savage Creek Intake, U.S. 101, Humboldt County
 EA 01-0J360



Appendix B. Environmental Study Limits Photos

Seawood Drive: Backwash System Location



Figure 1. Seawood Drive ESL and potential staging area (looking east)



Figure 2. Seawood Drive ESL and potential staging area (looking north)

Seawood Drive: Backwash System Location



Figure 3. Location for backwash system (looking northeast)



Figures 4 & 5. Unnamed tributary (outside ESL). Left is looking upstream and right downstream.

Savage Creek: Intake System Location



Figure 6. Savage Creek habitat mosaic (with intake facilities in background)



Figure 7. Access road: existing maintenance road leading down to intake facility

Savage Creek: Intake System Location



Figure 8. Temporary impact area (red box): Savage Creek existing intake facility to be replaced



Figure 9. Temporary impact area (red box): Savage Creek existing intake facility (zoomed in) to be replaced

Savage Creek: Intake System Location



Figure 10 & 11. Temporary impact area (red box): Savage Creek existing intake facility (left: upstream; right: downstream) to be replaced



Figure 12. Temporary impact area (red box): palustrine emergent non-persistent wetland (flagged), replacement of utility pipes (yellow dash), and well pump relocation (circle-x)