

3.5.3 ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

THRESHOLDS OF SIGNIFICANCE

The following thresholds of significance are based on the environmental checklist in Appendix G of the State CEQA Guidelines, as amended. Implementing the proposed project would result in a significant impact related to biological resources if it would:

- ▶ 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 CDFW or USFWS;
- ▶ have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by CDFW or USFWS;
- ▶ have a substantial adverse effect on state or federally protected wetlands (including but not limited to marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological 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; or
- ▶ conflict with the provisions of an adopted HCP, natural community conservation plan, or other approved local, regional, or state HCP.

ANALYSIS METHODOLOGY

The proposed project has the potential to adversely affect a number of common and sensitive biological resources. The impacts generally fall into one of two categories. Construction of the proposed project would result in ground-disturbing activities that could degrade and remove natural plant communities and wildlife habitat, result in impacts on aquatic resources from sediment runoff or potential frac-out during directional drilling, and result in auditory disturbance to wildlife. Project operation could result in injury and mortality of common and special-status birds and bats over the life of the project.

Potential impacts of the proposed project on biological resources were determined by:

- ▶ overlaying the proposed project footprint, including permanent and temporary disturbance areas, with maps of biological resources in the study area in GIS;
- ▶ determining impact acreages on the ground by habitat type through GIS calculations;
- ▶ distinguishing between direct impacts (e.g., construction of WTGs, roads, and facilities) and indirect impacts (impacts resulting from habitat disturbance, operation of the project, and introduction of human activities during project construction and operation);

- ▶ distinguishing between permanent impacts (built environment) and temporary impacts (during construction);
- ▶ where applicable, applying species-specific protocols to assess impacts; and
- ▶ assessing collision risk with WTGs and power lines based on project-specific studies and studies from other wind energy facilities and consultation with experts.

Details on the nature of the analysis and impact determination for each species are provided below for each specific impact topic. Table 3.5-9 provides an overview of permanent and temporary impacts by land cover type.

Table 3.5-9. Land Cover Types Mapped within the Project Site and Fields Landing, by Disturbance Type

Type	Disturbance Type	Acres	Total Acreage
Barren/Urban	Temporary	8.13	8.77
	Permanent	0.64	
Forests and Woodland	Temporary	464.32	554.56
	Permanent	90.24	
Grassland	Temporary	246.15	283.68
	Permanent	37.53	
Not Surveyed: No Access*	Temporary	21.25	23.91
	Permanent	2. 66	
Riparian	Temporary	1.07	1.78
	Permanent	0.70	
Shrub/Scrub Habitat	Temporary	15.84	19.81
	Permanent	3.97	
Wetland Areas	Temporary	2.11	2.28
	Permanent	0.17	
TOTAL	Temporary	758.87	894.79
	Permanent	135.92	

* Based on a desktop review and scanning with binoculars from adjacent properties, the land cover type in the unsurveyed area was determined to be grassland.

Source: Data provided by Stantec in 2018 and compiled by AECOM in 2019

Construction-Related Impacts

Habitat loss and habitat degradation are the primary impacts on biological resources that would result from project construction. Loss of habitat would result from construction of all project components. Permanent habitat loss would occur in the permanent footprint of project components, while temporary habitat loss would occur during construction and while habitats are restored and returned to their preconstruction condition. Habitat degradation would result from conversion of habitats that would not be restored or allowed to return to their preconstruction state after construction, such as creation of a new gen-tie corridor through forested lands where trees would not be allowed to grow in the transmission corridor over the lifetime of the project.

Operational Impacts

The project's primary operational impacts of concern would be collisions of birds and bats with WTGs while flying through the rotor swept area, and barotrauma for bats. Operational impacts on birds may also result from

collisions with the gen-tie, though this would be limited because all energized project components, including the entire gen-tie and all power lines, would be constructed in accordance with the current suggested practices of the Avian Power Line Interaction Committee (APLIC) (2006, 2012) to protect birds from electrocution and collisions. APLIC publications offer guidance to reduce the risk of avian electrocutions with use of appropriate pole design and/or use of insulation materials to increase the distance between energized parts and grounded parts or to insulate parts to create separation. To date, proven solutions are available to avoid bird electrocutions on distribution poles, whereas the science of power line collisions continues to have great uncertainty. Because of this uncertainty, the effectiveness of prevention mechanisms is not yet as well established and confirmed for reducing bird collisions with line infrastructure as for reducing electrocutions (USFWS 2018b).

IMPACTS AND MITIGATION MEASURES

Impacts on Special-Status Species

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 CDFW or USFWS.

Marbled Murrelets

The project was modified from its original conceptual design specifically to avoid and minimize the impacts of construction and operations on marbled murrelets. These modifications started in the early planning phase of the project, and involved shifting away from the original proposal of placing WTGs on Shively Ridge, in addition to Bear River Ridge and Monument Ridge. The watersheds on both sides of Shively Ridge contain nesting habitat for marbled murrelets (the Eel River to the west and the Van Duzen River to the east). Nesting habitat on both sides of Shively Ridge increases the likelihood of marbled murrelets crossing this ridgetop, and increases the risk of WTG collisions. To reduce that risk, the project applicant abandoned Shively Ridge as a proposed location for project WTGs.

The project layout of WTGs was further refined on Bear River Ridge to minimize collision impacts on marbled murrelets. Radar surveys described in studies prepared by Shell Wind Energy (Cooper and Sanzenbacher 2006; Sanzenbacher and Cooper 2010) identified a low spot along Bear River Ridge that showed greater murrelet transit activity during the breeding season than in other areas along the ridge. Based on this information, the project applicant shifted the proposed placement of WTGs away from this area of higher murrelet activity.

The project footprint was also modified to minimize construction impacts on marbled murrelets. The original proposal for the project involved placement of the operations/staging area in the Eel River Valley near the Jordan Creek access road. The original plan placed the operations/staging areas on lands that supported a 35-acre stand (Stand 66) of large trees that could provide habitat for marbled murrelets. With information from the project applicant's marbled murrelet habitat assessment (Stantec 2018h), the project operations/staging area was shifted to the south near U.S. 101, thereby avoiding any tree removal in this stand.

Finally, the alignment of the transmission lines associated with the gen-tie along Shively Ridge was shifted to avoid entering a stand of old-growth forest on the east side of the ridge, an area that could support nesting marbled murrelets (Stantec 2018h). This transmission line has been routed downslope on the opposite side of the ridge top, away from the old-growth habitat, to minimize collision risk with the line as murrelets move in or out

of this stand. In addition, this transmission line would be placed underground beneath the Eel River rather than above ground, to avoid collision risks for murrelets and other birds that use the river as a flyway.

With these modifications, the project would not remove or degrade habitat that could support marbled murrelet nesting activities (i.e., mature conifer forest in stands of adequate size and with large trees, a multistoried stand, and moderate to high canopy closure [USFWS 1997]). However, construction could result in auditory or visual disturbance of nesting marbled murrelets, and the project WTGs and transmission lines would pose a collision risk to marbled murrelets. These potential impacts are described in detail below.

Construction-Related Impacts

IMPACT 3.5-1	Construction Impacts on Marbled Murrelet Nesting. <i>Construction of the proposed project could affect the success of marbled murrelet nesting activity if construction activity were to cause disturbance at the nest, thereby reducing productivity. This impact would be potentially significant.</i>
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A habitat assessment conducted by Stantec (2018h) identified 74.88 acres of old-growth or mature conifer forest of adequate stand size and suitable characteristics for marbled murrelets within 0.25 mile of the project area. According to the assessment, five forest stands that fit these criteria were documented within the survey area: Stands 63, 64, 66, 68, and 76. Habitat in two of these (Stands 64 and 63) is federally designated as critical habitat for marbled murrelets. Stands 66 and 68 are of small stand size for marbled murrelet occupancy, but were considered to be of marginal quality for marbled murrelets because they are fragments of a once larger stand that was split in the recent past.

Indirect impacts on nesting marbled murrelets from project construction could occur in the 74.88 acres of suitable nesting habitat located in or within 0.25 mile of the project area. Indirect impacts could occur if construction activities were to create visual or audible disturbance that would affect adult behavior in a way that would reduce their ability to successfully reproduce. For example, marbled murrelets may avoid visiting their nests and tending to eggs or young if there is human activity or excessive noise in the area, leading to a reduction in productivity. The degree to which construction activities would affect murrelet nesting success depends on whether the habitat is occupied during the nesting season (March 24–September 15; Evans Mack et al. 2003), but also on the nature of the construction-related work, the distance of the work from occupied habitat, presence of topography or vegetation that blocks or screens the nest site, and the ambient conditions present in those locations.

The Stantec (2018h) habitat assessment included an evaluation of distances over which project-related construction activities could be disruptive to marbled murrelet nesting, according to guidelines set by USFWS (2006). The assessment assumed a “high” action sound level (81–90 decibels [dB]) for general construction activities, a “very high” action sound level (91–100 dB) for blasting, and an “extreme” sound level (101–110 dB) for helicopter overflights. Each of these was evaluated conservatively against a “very low” ambient sound level (51–60 dB), which resulted in estimated auditory harassment distances of nesting marbled murrelet of 100 meters, 250 meters, and 400 meters for general construction, blasting, and helicopter overflights, respectively.

For visual disturbance, USFWS (2006) guidelines suggest that human foot traffic within 40 meters of a nest has the potential to affect nest success and should be avoided; however, they also note that nests are high in trees and some activities may have no effect. Specific tests of human trail use (Hebert and Golightly 2006) indicate that

marbled murrelets do not appear to be affected by humans using trails below their nests, and the birds have neither flushed nor experienced detrimental effects on their nesting.

Table 3.5-10 summarizes the number of acres of old-growth or mature conifer forest of adequate stand size and characteristics for marbled murrelets located in the project area or within the indicated buffer distances (100, 250, or 400 meters) from the project area. These areas have the potential to be affected indirectly during the marbled murrelet nesting season by the type of construction activity indicated when ambient noise conditions are “low.” Conservatively, an assumption ambient noise levels of “very low” was made for potential areas of suitable marbled murrelets nesting habitat within 0.25 mile of the project area, despite the fact that four of the five stands of suitable habitat were near U.S. 101 and are near ongoing timber activities.

Table 3.5-10. Acreage Amounts of Suitable Marbled Murrelet Nesting Habitat Potentially Affected by Construction Noise of Different Magnitudes

Construction Activity	Buffer Distance (m)	Acreage Potentially Affected under “Low” Ambient Noise Conditions
Noise “high” (81–90 dB)	100	4.08
Noise “very high” (91–100 dB)	250	43.90
Noise “Extreme” (101–110 dB)	400	88.44
Notes: dB = decibels; m = meters Source: Data compiled by AECOM in 2018		

Visual or audible disturbance from project construction could affect adult behavior in a way that would reduce their ability to successfully reproduce. This impact would be **potentially significant**.

Mitigation Measure 3.5-1a: Minimize the Construction Footprint to Avoid Impacts on All Suitable Marbled Murrelet Nesting Habitat.

The project applicant shall not remove any old-growth redwood or mature coniferous forest that could support nesting marbled murrelets, and to the extent feasible shall maximize the buffer between construction activities and suitable marbled murrelet habitat. The project applicant shall prepare documentation depicting the location of marbled murrelet nesting habitat overlain with the construction footprint to confirm that construction activities would have no direct impacts on suitable marbled murrelet habitat. The documentation shall be submitted to the Humboldt County Planning & Building Department, CDFW, and USFWS before approval of grading or improvement plans or any ground-disturbing activities.

Implementation: Project applicant.

Timing: *Submittal of documentation showing buffers and approval by CDFW and USFWS:* Before approval of grading or improvement plans or any ground-disturbing activities.

Enforcement: Humboldt County Planning & Building Department, CDFW, and USFWS.

Mitigation Measure 3.5-1b: Avoid Indirect Impacts on Nesting Marbled Murrelet.

During the marbled murrelet nesting season (March 24–September 15), the project applicant shall maintain a no-disturbance buffer between the construction activity and marbled murrelet nesting habitat as described below. An exhibit showing the project improvements and marbled murrelet nesting habitat buffers shall be prepared demonstrating compliance with this mitigation measure. In the event the buffers cannot be maintained, an additional marbled murrelet shall be added to the compensatory mitigation required in Mitigation Measure 3.5-2c. The following auditory disturbance buffers shall be maintained between the construction activity and marbled murrelet nesting habitat:

Construction Activity	Buffer Distance (meters)
Noise “high” (81–90 dB)	100
Noise “very high” (91–100 dB)	250
Noise “Extreme” (101–110 dB)	400

If implementation of the buffers described above is infeasible, the project applicant shall consult with CDFW and USFWS regarding an alternative buffer size. The project applicant shall provide documentation of concurrence from CDFW and USFWS to the Humboldt County Planning & Building Department for the alternative buffer size before issuance of construction permits.

Implementation: Project applicant.

Timing: *Submittal of documentation showing buffers and approval by CDFW and USFWS:* Before approval of grading or improvement plans or any ground-disturbing activities.

Enforcement: Humboldt County Planning & Building Department, CDFW, and USFWS.

Mitigation Measure 3.5-1c: Develop and Implement a Worker Environmental Awareness Program.

Before the start of any construction activity, the project applicant shall develop a worker environmental awareness program subject to review and approval by the Humboldt County Planning & Building Department, in consultation with CDFW and USFWS. Before the start of construction, the environmental training shall be provided to all personnel working on the project site during construction and operation. Training materials and briefings shall include but not be limited to:

- discussion of the federal ESA and CESA, the BGEPA, the MBTA, and CWA; California Fish and Game Code Sections 3503, 3503.5, 3511, 3513, 3800(a), 4150, 4700, 5050, 5515, and 1602; 14 CCR Sections 30.10 and 251.1; the Porter-Cologne Act; CDFA Code Sections 5004 and 7201; and the California Coastal Act, as applicable;
- the consequences of noncompliance with these regulatory requirements;
- specific conditions of any permits from regulatory and other agencies obtained for the project (USACE, North Coast RWQCB, the CCC, USFWS, NMFS, CDFW, and the County);

- identification and values of the special-status plant and wildlife species to be protected;
- identification of any important wildlife habitat and sensitive natural communities to be protected;
- identification of special-status species, life history descriptions, habitat requirements during various life stages, and the species' protected status;
- fire protection measures;
- measures to avoid introduction and minimize the spread of invasive weeds during construction and operation;
- trash and food waste management procedures to prevent attracting corvids or nuisance wildlife to the site;
- hazardous substance spill prevention and containment measures;
- clear instructions that if any workers encounter a special-status species within or near the project site during construction, work shall halt and the project biologist and project applicant shall be informed;
- clear instructions regarding the scenarios in which permit conditions require the notification of specific agencies, the method for contacting the agencies, and the legally required time frames for such contact;
- a contact person at the on-call biological services provider in the event of the discovery of dead or injured wildlife; and
- review of any mitigation requirements related to biological resources.

The training program shall be recorded and subsequently shown to all construction personnel who cannot attend the initial training program before their participation in any construction activity. The project applicant shall submit to the County documentation that all personnel working on the project site during construction and operation have signed a statement that they accept responsibility for acting in accordance with the worker environmental awareness program.

Worker environmental awareness program training materials shall be submitted to the County and the regulatory agencies whose permits are addressed in the training, for their review and approval before ground-disturbing activities begin. Once approved, all project applicant, consultant, and construction personnel entering the project site shall be trained before being allowed on-site.

Implementation: Project applicant.

Timing: *Submittal of worker environmental awareness program training materials:*
Before approval of grading or improvement plans or any ground-disturbing activities.

Avoidance and minimization measures: Before and during construction activities proposed to take place during the marbled murrelet nesting season (March 24–September 15, annually).

Enforcement: Humboldt County Planning & Building Department, in consultation with CDFW, USFWS, and other agencies with permit conditions related to biological resources.

The project applicant shall prepare documentation depicting the location of suitable marbled murrelet nesting habitat (as defined by USFWS 1997), the location of high noise, very high noise, and extreme noise construction activity, and the location of construction buffers. The documentation shall be submitted to the Humboldt County Planning & Building Department before approval of grading or improvement plans or any ground-disturbing activities.

Significance after Mitigation

With implementation of the buffers from construction (Mitigation Measure 3.5-1b), and with the other mitigation measures described above (Mitigation Measure 3.5-1a, “Minimize the Construction Footprint to Avoid Impacts on All Suitable Marbled Murrelet Nesting Habitat,” and Mitigation Measure 3.5-1c, “Develop and Implement a Worker Environmental Awareness Program”), the potential indirect impacts of project construction on marbled murrelet nesting habitat and activities would be avoided or minimized. Therefore, implementing these mitigation measures would reduce this impact to **less than significant**.

The expansion of the Bridgeville Substation would have **no indirect impact** on marbled murrelet nesting habitat during construction.

Operational Impacts

IMPACT 3.5-2	<i>Operational Impacts on Marbled Murrelet. Operation of the proposed project could result in injury to and mortality of marbled murrelet, as a result of collisions with project components such as wind turbine generators and the gen-tie. This impact would be potentially significant.</i>
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Operation of the project could result in injury to and mortality of marbled murrelet as a result of collisions with WTGs or other project components. No operational wind energy facilities exist within the range of marbled murrelet, so no information is available regarding the birds’ ability to avoid colliding with moving WTGs. A collision risk assessment was conducted by H. T. Harvey & Associates (2018a) to estimate the number of marbled murrelets expected to collide with WTGs during the life of the project. The results of the assessment indicated that the project would take approximately one marbled murrelet every 3 years, or 10.43 marbled murrelets over the 30-year life of the project. The assessment generally involved conservatively set parameter estimates, such as the assumptions that all WTGs would be the largest size and largest number from among those being considered, and that the blades would turn at all times at relatively high speeds. When these parameters were set under more realistic operating conditions, the predicted number of marbled murrelet mortalities was estimated to be 7.58 marbled murrelets over 30 years.

The two factors found to most strongly affect the predicted number of mortalities according to a sensitivity analysis were the collision avoidance rate and the marbled murrelet passage rate. Passage rates used in the model were based on a radar study conducted during one nesting season (H. T. Harvey & Associates 2018a). Based on three studies in which murrelet passage rates were determined for multiple years (summarized in H. T. Harvey & Associates 2018a), the project applicant showed that estimated passage rates differed among years by factors of 1.56, 1.37, and 2.01. Thus, if 2018 was a season with lower than average passage rates, the passage rate applied in the model could underestimate or overestimate the true collision rate. The potential exists for the actual mortality rate to be two times the estimate of 10.43, or 20.86 marbled murrelets, over 30 years under realistic operational parameters.

Small changes in the collision avoidance rate were found to affect the collision estimate more strongly than any other modeling parameter (H. T. Harvey & Associates 2018a). The sensitivity analysis conducted for the model demonstrated that reducing the collision avoidance rate by 0.01 increased the predicted collision rate by 46.56 percent. A collision avoidance rate of 0.98 was applied in the collision model, consistent with current information about empirically derived collision avoidance rates for most other birds, particularly among seabirds. Collision avoidance rates as low as 0.95 have been documented for bird species that glide or are resident hunters on the landscape with the WTGs. Should marbled murrelets flying near WTGs over land respond similarly to other bird species with similar behavioral and ecological profiles, the value of 0.98 is accurate or even conservative. However, given the lack of prior information about marbled murrelets, avoidance rates may be lower than anticipated.

Marbled murrelets could be injured or killed if they collide with conductors associated with the proposed project gen-tie. The project would involve constructing a gen-tie that would pass through or near areas where marbled murrelet activity may be concentrated, such as the Eel River corridor, in the saddles of ridgelines. There are five reports of suspected marbled murrelet collisions with transmission lines. These include the remains of two birds found 3 weeks apart in the same location in Humboldt County, on the ground near transmission lines at the edge of an old-growth redwood stand occupied by murrelets during the nesting season (USGS 2015). Nelson (1997) also referenced two marbled murrelets believed to have been killed by collisions with transmission lines in Juneau, Alaska, and one found by a USFWS employee under transmission lines in Mapleton, Oregon, in the 1990s (Nelson, pers. comm., 2015). However, Cooper (2010; as referenced and described in Sanzenbacher et al. 2015) examined collisions at transmission lines and reported an avoidance rate of 1.0. The project would design the gen-tie crossing at the Eel River to avoid the potential for collisions, by placing it underground.

The marbled murrelet is federally listed as threatened and state listed as endangered because of population declines caused by loss of old-growth habitat from timber harvest, fires, and windthrow throughout the Pacific Northwest (USFWS 1997). The marbled murrelet's highly specific habitat nesting requirements and life history strategy, the vulnerability of nests to predators in highly fragmented landscapes, and low fecundity result in slow population growth. The marbled murrelet population's growth rate is sensitive to changes in adult survivorship (USFWS 1997), so the potential for the loss of up to 20.86 or more marbled murrelets over the 30-year life of the project could have population-level effects. This impact would be **potentially significant**.

The section below describes proposed compensatory mitigation measures for impacts on marbled murrelets, and also discusses proposed postconstruction mortality monitoring (PCMM) to evaluate operational impacts on bird and bat species, including marbled murrelets.

Marbled Murrelet Compensatory Mitigation

Most of the remaining marbled murrelet nesting habitat in California has been protected in parks and preserves (Golightly and Gabriel 2009). Corvid management at recreational sites in California that include nesting habitat for murrelets has been a major management initiative over the last 20 years with the goal of improving murrelet nesting success. Corvids, particularly Steller's jays, have been implicated as the primary predator of murrelet nests (Luginbuhl et al. 2001; Marzluff and Neatherlin 2006; Hebert and Golightly 2007; Golightly and Schneider 2009, 2011; Malt and Lank 2009; Peery and Henry 2010). Thus, elevated corvid numbers constitute a loss of murrelet reproductive output. It has been estimated that a 40 percent reduction in jay predation could potentially change nesting success of murrelets in central California parks enough to create a positive population trajectory (Peery and Henry 2010).

Corvids use anthropogenic foods in campgrounds and picnic areas (West et al. 2016). When anthropogenic foods are easily accessed by corvids, the abundance of corvid species increases substantially, even within protected old-growth forests; at Redwood National and State Parks, Steller's jays were three to six times more abundant in and around areas where anthropogenic foods were easily accessed (Wallen et al. 1999; George et al. 2001; Bensen 2008; National Park Service 2010; see also Goldenberg et al. 2016). Thus, nest predation by corvids (especially Steller's jays and to a lesser extent ravens) has been exacerbated by the availability of anthropogenic foods at these recreational sites. Almost all parks and preserves that include trees suitable for murrelet nesting in California have already implemented measures to control corvid behavior, reduce availability of anthropogenic foods to corvids, and manage people responsible for providing food. The retrofitting of parks with effective hardware, infrastructure, and visitor outreach is effective at reducing the abundance and density of corvids. Evidence corroborating this assertion comes from four parks containing murrelet nesting habitat in central California (Big Basin Redwoods State Park, Portola Redwoods State Park, Butano State Park, and San Mateo County Memorial Park); in these parks, jay abundance has been successfully reduced by minimizing food accessibility since 2005 (USFWS 2004; Suddjian 2009).

Funding to support the corvid management projects, including retrofitting of parks with effective hardware, infrastructure, and visitor outreach, is unavailable for most parks. In response to this limitation, natural resource trustee agencies (CDFW, USFWS, and the National Park Service) have made substantial efforts to facilitate corvid management initiatives and have prioritized major funding from several sources (including oil spill restoration funds) to ensure adequate resources to implement corvid management. These resources were specifically directed to restore murrelets lost in oil spills (<https://www.wildlife.ca.gov/OSPR/NRDA>). This particular kind of restoration effort (corvid control in parks) was the most consistent and coordinated action taken by the Trustee Councils overseeing the restoration funds to replace murrelets lost in the oil spills.

All major parks in California in the range of the murrelet now have corvid management programs and infrastructure (Redwood National and State Parks, Humboldt Redwoods State Park, Headwaters Forest Reserve, Grizzly Creek State Park, Big Basin State Park, Portola State Park, Butano State Park, San Mateo Memorial County Park, and others). Van Duzen County Park in Humboldt County is one of the few parks that has not received support to develop a corvid management plan, despite having nesting habitat suitable for murrelets. In addition, other nearby parks and preserves that have good corvid practices can be compromised by the lack of corvid management in Van Duzen County Park; corvids attracted by anthropogenic food sources to Van Duzen County Park could have territories that extend beyond this park's boundaries (Scarpignato and George 2013;

West et al. 2016; West and Peery 2017), allowing them to access nearby old-growth forests in Humboldt Redwoods State Park, Headwaters Forest Reserve, and Grizzly Creek State Park.

The project applicant proposes to mitigate impacts of the project on marbled murrelets by establishing a corvid management program in Van Duzen County Park, which currently lacks an overall corvid management plan or outreach to educate visitors, as is common in other parks and preserves in old-growth coastal forests. Specifically, the project applicant proposes to develop a corvid management plan for Van Duzen County Park and supply funding to implement that plan for the life of the project. Implementing the plan would involve retrofitting campgrounds and picnic areas in Van Duzen County Park with appropriate hardware and infrastructure, and would include a program of visitor outreach and education, similar to other parks with successful corvid management programs. The result of plan implementation would be a reduction in the unintentional provisioning of supplemental foods to corvids, and an increase in the productivity of marbled murrelets. The benefits of the corvid management program would cover the park and associated stands of coastal old-growth/mature forest (separated into at least four stands that approximate 96.7 hectares, separated in part by elbows of the Van Duzen River). These areas support trees that are suitable for nesting by murrelets. Occupied behavior (Evans Mack et al. 2003) by murrelets has been observed in this area, which indicates that murrelets are using the site for reproductive activities.

To assess the benefits to murrelets of implementing a corvid management program in Van Duzen County Park, H. T. Harvey & Associates (2019) developed a deterministic model to specifically calculate the number of new breeding-capable adult murrelets that could be added to the population if corvid management characteristic of other parks is implemented at Van Duzen County Park. Inputs to the model used conservative estimates and assumptions from the scientific literature to estimate the potential nesting capacity of the stands (active nest density and a consideration that current use of the tree stands in Van Duzen County Park by murrelets is probably less than their potential use). The corvid management program would reduce the presently elevated levels of predation on murrelet eggs (and probably chicks) by corvid predators (primarily Steller's jays) that receive supplemental anthropogenic food by reducing that food availability in the area of Van Duzen County Park. The goal of the corvid management program to obtain a 50 percent reduction in the rate of predation.

The area of the old-growth/mature tree stands associated with the compensatory mitigation was measured using Google Earth. Predation rates by corvids on murrelet eggs were based on studies within the redwood forest regions of California, and the effectiveness of changes in predator presence was assessed using predator impact data from the scientific literature. Estimates of the number of fledgling murrelets produced in an environment with fewer predators were calculated; however, this productivity was then discounted to account for survivorship to breeding age (year 3) using annual survivorship measures for murrelets as reported from studies at sea (Beissenger and Peery 2007; Peery and Henry 2010). Consequently, the currency for replacement estimates was new breeding adults. Time to first effects of the mitigation effort was offset by 3 years because of the time it would take for improved reproductive output to first affect the number of breeding murrelets. Calculations were reiterated annually in the model through each of the 30 years to project the cumulative benefits over the life of the project and identify the point in time that the replacement of breeding adults approximated the 30-year take estimated by the collision risk model (H. T. Harvey & Associates 2018a).

Without predator management, the total number of breeding adults produced from the nesting in the stands of murrelet habitat associated with Van Duzen County Park was calculated to average 1.2 breeding adults per year; after 30 years of predator management, the annual production of breeding adults should reach 10.4 breeding

adults recruited to the population per year. The proposed compensatory mitigation is likely to produce 10 times more breeding adults (103 individuals) than the anticipated take after 30 years of the project; the proposed mitigation is likely to fully compensate the 30-year take of individual murrelets as soon as 9 years after initiation of the compensatory mitigation actions. Conservative modeling assumptions, and the very large difference between the potential take and the likely number of new breeding adults produced by the compensatory mitigation, make it highly probable that full replacement will occur. Implementing the corvid management plan will also enhance efforts to manage predators in old-growth habitats at other nearby parks and preserves. The net benefit, in terms of production of new adult murrelets, is to aid in the recovery of murrelets in Northern California.

Postconstruction Mortality Monitoring

The PCMM approach described below is consistent with general guidelines set by the California Energy Commission and CDFW (CEC and CDFW 2007). The approach incorporates contemporary statistical approaches to adequately evaluate the mortality rates of both common and special-status species based on the number of carcasses observed during PCMM searches and the probability of carcass detection.

The following parameters affect the probability of carcass detection using accepted carcass search methods:

- ▶ the proportion of facility WTGs searched;
- ▶ the wind energy facility search area (the amount of area searched for carcasses relative to the area where carcasses are expected to land around a WTG);
- ▶ searcher efficiency (the effectiveness of the searcher's ability to find a carcass that is present in the search area);
- ▶ carcass persistence (the length of time carcasses remain in the search area to be found); and
- ▶ search interval (the length of time between searches).

Surveys will include searcher efficiency and carcass persistence trials for small, medium-sized, and large carcasses during different seasons and in different habitats to determine the probability of carcass detection given its presence in the search area. One of several commonly used mortality estimators shall be used to estimate overall mortality rates based on the number of carcasses detected during searches and the probability of detecting (or not detecting) carcasses based on search parameters. Estimators such as the General Estimator (Dalthrop et al. 2018) will be used to generate per-megawatt (MW) and per-WTG mortality rates for birds and bats, including estimates for groups (e.g., small, medium, and large birds, bats, and raptors, and species-specific estimates).

The evaluation of mortality rates for rare species such as marbled murrelet requires specialized search and analysis methods because the absence of detected mortality does not necessarily mean that no mortality has occurred. PCMM methods for rare species shall be developed using the Evidence of Absence (EoA) model (Dalthrop et al. 2017), as described in species-specific monitoring sections below. The EoA model is a statistical tool that can be used to provide a statistically meaningful level of confidence (e.g., 50 percent, 90 percent certainty) that a specific number of mortalities (for example, a number authorized by a take permit) has or has not been exceeded, given a set of search parameters and results from a PCMM effort. The model can be applied to a

single year or a range of years and will provide confidence levels for mortality estimates even when few or no carcasses are observed during searches. The PCMM design and analysis requirements described below are for marbled murrelet, which will be addressed using the EoA model.

Mitigation Measure 3.5-2a: Avoid and Minimize Operational Impacts on Marbled Murrelets.

The project applicant shall implement the measures listed below to minimize and avoid collisions of marbled murrelets with project components, including WTGs and the gen-tie. As discussed in Chapter 2, “Project Description,” the gen-tie would cross under the bed of the Eel River, and staging areas for the drilling would be established in upland areas on both sides of the river.

- WTGs shall not be placed in areas characterized by high passage rates for marbled murrelets. Before issuance of any construction permits, the project applicant shall provide a map to the Humboldt County Planning & Building Department showing proposed WTG locations relative to marbled murrelet high-passage areas.
- The gen-tie shall be sited in accordance with the following criteria:
 - If the gen-tie is to be placed on a ridgeline (particularly saddles), documentation shall be submitted showing that the location is not a high-use or high-activity area for marbled murrelet.
 - The gen-tie shall not be placed within 200 meters of old-growth or mature conifer forest stands of adequate size to support nesting murrelets
 - If the two criteria above are demonstrated to be infeasible to the satisfaction of the Director of the Humboldt County Planning & Building Department subject to consultation with CDFW and USFWS, the gen-tie transmission lines shall be designed to increase their visibility to marbled murrelet. The project applicant shall use approaches developed in consultation with USFWS and CDFW to increase the visibility of project gen-tie transmission line spans located near areas of potentially concentrated marbled murrelet use such as those described above. These approaches could include placement of bird diverters, aviation balls, or reflective diverters, the choice in application of which will be based on site-specific characteristics of the gen-tie conductors and static wires relative to the forest canopy.

Mitigation Measure 3.5-2b: Conduct Postconstruction Mortality Monitoring for Marbled Murrelets and Other Species.

The project applicant shall prepare and implement a PCMM plan as described to evaluate operational impacts on common bird and bat species and special-status species, including bald and golden eagles and marbled murrelet. PCMM shall be conducted annually for the life of the project, beginning with a 3-year period of “intensive” surveys (full plots around WTGs plus roads and pads) and followed by less intensive annual monitoring of mortality using a “roads and pads” design.

PCMM studies shall be designed to ensure a minimum overall detection probability (g) (Dalthorp et al. 2017) for marbled murrelet of 30 percent during “intensive” searches (first 3 years) and 8 percent for subsequent annual “road and pad” searches. The overall detection probability for the EoA model

represents the probability of detecting a carcass present on the site during the period of evaluation and is based on the results of searcher efficiency and carcass persistence trials, and the spatial and temporal extent of coverage (i.e., proportion of WTGs or time for which searches occurred). Searcher efficiency trials for medium-sized birds shall specifically utilize carcasses that serve as an acceptable proxy for marbled murrelet. Spatial coverage estimates shall also account for the proportion of carcasses expected to fall outside of the search area, based on the search radius from the WTG location and turbine height. This can be estimated initially using information provided by Hull and Muir (2010) or another scientifically defensible source. After a sufficient number of full plot and road and pad searches has been conducted, it may be possible to estimate the proportion of carcasses falling within the search area from site-specific carcass data.

An example calculation of the overall detection probability (g) would be if the probability of detecting a carcass is 50 percent based on combined results of searcher efficiency and carcass persistence trials, and full plot searches (100 percent of carcasses fall within search plot) are conducted at 50 percent of project WTGs, g would be equal to 25 percent (0.5×0.5). To achieve the required 30 percent detection probability level, various search parameters can be adjusted, including the number of WTGs searched, search radius, search interval, and others. The level of search effort may be increased during the marbled murrelet nesting season, but adequate survey effort must still be implemented during the nonbreeding season for the species to meet PCMM objectives for other species (see eagles below). If search effort varies among seasons, the difference in marbled murrelet occurrence (and expected fatality rate) between the seasons must be accounted for in a scientifically defensible fashion when incorporating into overall calculations of g .

At the completion of each year of PCMM studies, the maximum credible number of marbled murrelet mortalities shall be estimated using the EoA model and PCMM data. Separate estimates based on the 50 percent and 90 percent credibility levels ($1 - \alpha$, where $\alpha = 0.5$ and 0.1 , respectively) shall be calculated. There is a 50 percent probability that the actual number of marbled murrelet mortalities is greater than the 50 percent credible number, and a 10 percent probability that the actual number is greater than the 90 percent credible number of mortalities. These estimates can be used as triggers for potential adaptive management or to evaluate effectiveness of mitigation.

If CDFW and USFWS incidental take permits for marbled murrelets specify PCMM methods that differ from those described above, the stricter or most conservative measures shall apply.

Mitigation Measure 3.5-2c: Implement Compensatory Mitigation to Offset Operational Impacts on Marbled Murrelets.

The project applicant shall prepare and implement a marbled murrelet mitigation plan to offset the anticipated level of marbled murrelet take over the operational life of the project. The anticipated level of take is set conservatively at 20.86 marbled murrelets over 30 years of project operation. Implementing the marbled murrelet mitigation plan must create at least one individual marbled murrelet for each marbled murrelet taken as a result of the project. The marbled murrelet mitigation plan will describe in detail the proposed measures to minimize and fully mitigate all impacts of the project on marbled murrelets; describe the monitoring and reporting process to document compliance with and effectiveness of the minimization and mitigation measures; and describe the funding and process required for implementation of the

minimization, mitigation, and monitoring measures. The project applicant shall establish an endowment to fund implementation and monitoring of the marbled murrelet mitigation plan and shall demonstrate that funding is available to support implementation of the plan for the life of the project. The marbled murrelet mitigation plan will include the following elements:

- A description of how predator management will be implemented at Van Duzen County Park to reduce the abundance and concentration of corvids (Steller's jays and ravens), which will include but not be limited to:
 - installation of specialized trash receptacles, recycling stations, and food lockers to reduce the availability of supplemental food resources to corvids and other wildlife;
 - installation of grates and rock bins under campsite faucets to reduce corvid attraction and feeding; and
 - implementation of a "crumb clean" outreach campaign, including installation of signs and providing funding for personnel to enforce the campaign and conduct outreach to visitors to ensure compliance.
- A monitoring plan to assess the effectiveness of the predator management and outreach campaign, and a reporting plan to describe the results of the monitoring. Marbled murrelet occupied behavior detection rates and corvid abundance will be monitored each year for at least the first 10 years of project operation to index use of the sites and to compare to baseline levels of marbled murrelet occupied behavior and corvid abundance.
- A workplan for collaborating with land managers of adjoining parcels and nearby reserves to facilitate comprehensive predator and visitor management in areas adjacent to Van Duzen County Park.
- A funding plan detailing the costs associated with implementation of the plan for the life of the project, and a description of a nonwasting endowment that will be established to fund ongoing predator management, visitor outreach, and monitoring.
- A schedule for mitigation implementation and reporting.

The project applicant shall implement an adaptive management plan if monitoring indicates that the effectiveness of the marbled murrelet mitigation plan is falling short of mitigation goals, or if take levels are on a trajectory to exceed the anticipated take limit. Adaptive management actions to rectify a shortfall in production of sufficient marbled murrelets to offset take shall involve consultation with CDFW and USFWS to develop and implement additional compensatory mitigation. This mitigation may include, but is not limited to, funding to support the following efforts:

- Relocation of recreational facilities out of murrelet habitat. The California Department of Parks and Recreation is seeking funding to relocate a popular day-use picnic area and public restroom facility that currently exists within marbled murrelet old-growth redwood habitat at Founders Grove in Humboldt Redwoods State Park (McAllister, pers. comm., 2019). This day-use area regularly

accommodates busloads of tourists who use it as a rest area and leave food behind as they walk on trails. Removing anthropogenic food subsidies in marbled murrelet habitat would help reduce predator pressures on murrelets in the same manner as is proposed for Van Duzen County Park.

- Habitat enhancements in buffer forest. The California Department of Parks and Recreation has proposed and is seeking funding to thin and release approximately 125 acres of second-growth forest immediately adjacent to Founders Grove to accelerate the progress of these buffers toward old-growth conditions (McAllister, pers. comm., 2019). To further increase benefits to murrelets, canopy manipulation is proposed for these old-growth buffers to further expedite the process of generating murrelet nesting habitat. Such canopy manipulation work has already been successfully completed elsewhere in the park. Approximately 20,000 acres of formerly harvested stands in Humboldt Redwoods State Park adjacent to occupied murrelet habitat are in need of intervention to help promote the buffering of occupied stands and ultimately provide additional murrelet habitat.
- Removal of derelict fishing gear. Removal of derelict fishing gear that poses an entanglement hazard for foraging marbled murrelets could provide benefits to marbled murrelets by reducing fatalities. This measure is currently under consideration as mitigation for murrelets for the Skookumchuk wind project in Washington, and a pilot study has been conducted by SeaDoc out of Humboldt Bay (<https://www.seadocsociety.org/california-lost-fishing-gear-removal-project/>).

If CDFW and USFWS incidental take permits for marbled murrelets require avoidance, minimization, mitigation measures, or postconstruction monitoring approaches that differ from those described above, the stricter or most conservative measures shall apply. The avoidance, minimization, and mitigation measures implemented in fulfillment of the CDFW and USFWS incidental take permit requirements will be counted toward fulfillment of the mitigation requirements described above.

Implementation: Project applicant.

Timing: *Submittal of marbled murrelet mitigation plan and postconstruction monitoring plan:* Before issuance of any construction permits.

Annual reports on postconstruction monitoring: For the life of the project.

Enforcement: Humboldt County Planning & Building Department, in consultation with CDFW and USFWS.

Significance after Mitigation

The project applicant would implement the mitigation measures described, which include avoidance and minimization measures and compensatory mitigation in the form of corvid control, as described in the marbled murrelet mitigation plan. Implementing this plan would create as many as 103 marbled murrelets over the life of the project, more than offsetting the 20.86 individuals taken over the life of the project. The boost in production of marbled murrelets would achieve the performance standard of creating at least one marbled murrelet for every individual taken as a result of the project.

The project applicant would implement an adaptive management plan if monitoring indicates that the effectiveness of the marbled murrelet mitigation plan is falling short of mitigation goals, or if take levels are on a trajectory to exceed the anticipated take limit. Adaptive management actions to rectify a shortfall in production of sufficient marbled murrelets to offset take would involve consultation with CDFW and USFWS to develop and implement additional compensatory mitigation. This mitigation may include acquiring mature stands or establishing conservation easements on suitable marbled murrelet habitat.

Operational impacts of the project on marbled murrelets would be minimized with implementation of the avoidance, minimization, and compensatory mitigation described above. Monitoring would confirm that take of marbled murrelets does not exceed the number of marbled murrelets created by the mitigation, and adaptive management measures would be implemented to rectify a shortfall in production of sufficient marbled murrelets to offset take. However, given the uncertainty as to the feasibility and effectiveness of these compensatory mitigation and yet-to-be developed adaptive management measures, operational impacts on marbled murrelet would be **significant and unavoidable**.

The expansion of the Bridgeville Substation would have **no impact** on marbled murrelet during operation of the substation.

Bald and Golden Eagles

The project site is located within the range of the bald eagle (*Haliaeetus leucocephalus*) and golden eagle (*Aquila chrysaetos*). Both species were detected during site-specific surveys. Therefore, both species have the potential to be affected by construction and operation of the proposed project. Construction-related and operational impacts on eagles are discussed below. Whether one or both species would experience significant impacts from project construction or operation depends on how often the species is expected to be present in or near affected portions of the project area and how they use those locations.

Construction-Related Impacts

<p>IMPACT 3.5-3</p>	<p>Construction Impacts on Bald and Golden Eagle Nesting Activity. <i>Construction of the proposed project could affect bald and golden eagle nest success if active nests were directly affected, or if construction activity were to disturb nest sites, thereby reducing adults' nest attentiveness and nest productivity. This impact would be potentially significant.</i></p>
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Golden Eagle

During 129.75 hours of eagle use count surveys conducted on the project site during 2017–2018 (Stantec 2018e), seven observations of golden eagles were made. The surveys lasted 1 hour each; thus, the detection rate of golden eagles during the surveys averaged 0.054 eagle per 1-hour survey period.

Eagle activity can vary between years in a given location for a several reasons, including variability in territory occupancy, nesting status and location, and prey abundance and distribution. No active golden eagle nests were identified during 2018 aerial surveys conducted by Stantec (2018b). In 2018, continuing long-term monitoring on HRC lands by HRC biologists indicated that four territories assessed within 10 miles of the project were occupied by eagles (HRC 2018b). Nesting behavior was observed in three of the five territories on HRC lands in the region

(one of these was more than 10 miles from the project), although no active nest was discovered for any of them. The occupancy status of four other golden eagle territories within 10 miles of the project site was not assessed by HRC during the 2018 breeding season (HRC 2018b). Eagle nest surveys consisting of 4-hour-long, ground-based surveys were conducted on February 28, March 30, and March 31, 2019. Aerial nest surveys were conducted March 11–March 14, 2019, and follow-up aerial surveys are planned for May 6–May 10, 2019 (Akky, pers. comm., 2019). No active eagle nests have been detected thus far during the surveys.

Changes in nesting activity or occupancy of territories near the project site could lead to increased use of the area by golden eagles over the lifetime of the proposed project, particularly if nesting occurs at any of the six historic nest sites located within 2 miles of proposed WTG locations. If specific territories were not occupied or nesting did not occur during a single breeding season, there is still the potential for eagle breeding activity in future years. Once established, golden eagle territories and the nest sites within them may go unused periodically for natural reasons such as fluctuations in food supply or disturbance from wildfire (Kochert and Steenhof 2012); but an established golden eagle nesting territory usually is not permanently extirpated in the absence of a dramatic change in the environment like that associated with human development (Scott 1985). Golden eagles have reoccupied territories that were vacant for as long as 16 years, and have used alternate nest sites that sat dormant for as long as 22 years (Kochert and Steenhof 2012; Millsap et al. 2015). Therefore, the presence of historically documented golden eagle nest territories and alternate nest sites in the project vicinity indicates the strong probability that nesting golden eagles would be present in the vicinity of the project and may encounter the project's WTGs over the proposed 30-year life of the project.

Bald Eagle

During 129.75 hours of eagle use count surveys conducted on the project site during 2017–2018 (Stantec 2018e), four observations of bald eagles were made, for an average detection rate of 0.031 eagle per 1-hour survey period. Thus, the observed rate of use on the project site during the surveys was lower for bald eagles than for golden eagles. It is possible that impacts on bald eagles would be lower than impacts on golden eagles because there are no documented bald eagle nest sites near the project site and because the species tends to associate more strongly with riparian habitats.

Two historic bald eagle nests have been documented within 10 miles of the project site on the Eel River, one approximately 4.5 miles north of the nearest proposed project WTG (last documented as active in 2013) and the other 5.3 miles to the east-southeast (last documented as active in 2015). Neither nest was active in 2018, but the territory associated with the nest east-southeast of the project site appeared to be occupied by adult bald eagles (Stantec 2018b). During the nesting season and overwintering periods, bald eagle activity is expected to be concentrated along the main river corridors, where nests are located and preferred prey such as fish and waterfowl are available. However, bald eagles may travel over the ridgelines on the project site, where the birds may take advantage of orographic lift on ridgelines, or find more direct travel routes than when following the river corridor.

Bald eagle numbers have been increasing both nationally and in California over the past 30 years (USFWS 2016b; CDFW 2018a), and recent surveys in the area indicate that the overwintering population on the Eel River may be increasing (HRC 2016). Over the course of the 30-year project, bald eagle numbers may increase in the project area, thereby increasing the potential for bald eagles to occur on the project site.

Construction of the proposed project could result in direct or indirect impacts on nesting or foraging bald and golden eagles. Disturbance caused by construction activities may indirectly and directly affect foraging and

nesting behavior, particularly for golden eagles, which are less tolerant of human disturbance than bald eagles (USFWS 2002, 2007). For example, construction activities and associated noise and human presence in the project area could prevent eagles from using preferred foraging habitat, deter them from nesting at historic nest sites near construction, or prevent them from tending to their eggs or young if construction activities occur near an active nest. This impact would be **potentially significant**.

Mitigation Measure 3.5-3: Avoid and Minimize Impacts on Nesting Eagles.

The project applicant shall implement the following measures to avoid and minimize impacts on nesting eagles:

- If construction activities are proposed during the eagle breeding season (January 1–August 31), the project applicant shall conduct preconstruction eagle nesting surveys to determine whether active eagle nests or territories are present within 2 miles of construction boundaries. Surveys shall be conducted by a qualified biologist experienced with the natural history and nesting/territorial behavior of eagles. The ground-based surveys shall be designed to cover all previously documented eagle nest locations (from the CNDDDB, HRC monitoring results, or other reliable sources) and suitable eagles nesting habitat within the 2-mile buffer from the project construction boundaries
- Two 4-hour observations shall be conducted at each nest (multiple nests may be observed simultaneously), including one monitoring period in February, during courtship and before egg-laying, and one in early March to determine whether territories are occupied by adult eagles and to identify nesting activity where possible.
- The results of the surveys shall be documented in a report and submitted to the Humboldt County Planning & Building Department, USFWS, and CDFW no later than August 31 of the breeding season in which the survey was conducted.
- If preconstruction surveys determine that active nests are present within 2 miles of construction activities, the project applicant shall avoid disturbance at active eagle nests. Consistent with the USFWS National Bald Eagle Management Guidelines (2007) and the guidance and recommendations of Millsap et al. (2015) for golden eagles, any nest previously constructed or used by bald or golden eagles should be treated as active unless (1) the nest has been confirmed based on monitoring data to be inactive for at least the previous five breeding seasons or (2) as described in USFWS (2007) guidance, compelling evidence is available to support the conclusion that the nest is unlikely to be used again in the future.
- Active eagle nests shall be subject to the following avoidance buffer distances based on USFWS (2007) guidance for bald eagle and USFWS (2002) guidance for golden eagle, unless specific circumstances warrant a lesser distance in accordance with exceptions set forth in the respective sets of guidelines. During construction, a qualified biological monitor shall be present to observe and record behavior of eagles at the nest and to detect eagle response to construction activities and related disturbance. Biological monitors may modify buffers as appropriate based on these observations, in consultation with CDFW and USFWS. The distances presented parenthetically below are for bald

eagle and golden eagle (respectively) and assume a direct line of sight between the indicated work activity and the active nest:

- Human foot traffic (100 meters/800 meters)
 - Pass-through vehicular traffic (200 meters/400 meters)
 - Any other construction work except the types described below (200 meters/800 meters)
 - Blasting (800 meters for both species)
 - Helicopter flight (300 meters/800 meters [horizontal and vertical])
- Active eagle nests and associated buffers shall be discussed in the worker environmental awareness program training for construction workers (Mitigation Measure 3.5-1c). Compliance with eagle buffers shall be demonstrated in the monitoring reports submitted by the biological monitor (Mitigation Measure 3.5-19a, “Minimize Impacts on Wildlife and Monitor during Construction”).

Implementation: Project applicant.

Timing: *Preconstruction survey results:* Submitted by August 31 of the year in which surveys were conducted.

Surveys and monitoring: Before and during construction.

Enforcement: Humboldt County Planning & Building Department, in consultation with CDFW and USFWS.

Significance after Mitigation

With implementation of the mitigation measures described above, the potential impacts of project construction on bald and golden eagle nesting success would be reduced because impacts would be avoided by determining the location of occupied nests and protecting them during construction. Therefore, implementing this mitigation measure would reduce this impact to **less than significant**.

The expansion of the Bridgeville Substation would have **no impact** on golden or bald eagle nesting activity during construction.

IMPACT 3.5-4	Construction Impacts on Bald and Golden Eagle Foraging and Nesting Habitat. <i>Construction of the proposed project could remove or degrade the quality of suitable bald and golden eagle foraging habitat. This impact would be less than significant.</i>
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Construction could directly affect bald and golden eagles by causing the permanent loss of habitat types on which the species relies. For golden eagles, loss of habitat would result from the planned temporary or permanent removal of up to 37.53 acres of grassland and 3.97 acres of shrub/scrubland habitat in the project area. However, the project would also convert some forested habitats that are currently unsuitable as golden eagle foraging habitat to suitable habitat. The 52.39 acres of permanent impacts on forested areas under the gen-tie would be maintained during project operation as shrub/scrubland habitat, which could provide potential foraging habitat for eagles.

However, the scrub/shrub habitat beneath the gen-tie would provide fragmented and marginal eagle foraging habitat, and the line would also pose a collision risk to eagles.

Grasslands that would be affected by the project are important foraging habitat for eagles with territories near the project area because grasslands are a relatively scarce cover type in this forest-dominated landscape. Reductions in the availability of grassland and scrub/scrubland foraging habitat could reduce the availability of food to nesting eagles, potentially reducing nesting success.

Based on the distribution of 13 previously documented golden eagle nests in eight territories within 10 miles of the project, nests in different territories are typically separated by about 2.5 to 3.0 miles, suggesting that individual territories have a radius of approximately 1.25 to 1.50 miles, and thus comprise about 4.91 to 7.07 square miles, or 3,142–4,525 acres in area. Based on a visual assessment of satellite imagery, the habitat within 1.25 to 1.5 miles of nests in the vicinity of the project appears to consist of a minimum 25–50 percent grassland. Assuming the smaller territory size (3,142 acres) and the lower end of the percentage of grassland (25 percent), an eagle nesting territory could contain as little as 785.5 acres of grassland, of which the project could remove as much as 4.8 percent (37.54 acres). However, this is a conservative estimate (lower end) of the amount of grassland present within golden eagle territories in the region, and the impact on any one territory would probably be less than this. Based on the distribution of known nest sites, the removed habitat is likely distributed across at least two eagle nesting territories. However, even in the most extreme scenario, the removal of 37.54 acres of grassland from a single golden eagle nesting territory containing 785.5 acres of grassland is unlikely to have a significant effect on the productivity of the pair occupying the territory. This is particularly true when the distribution of the removed habitat is taken into consideration, in that it would not be one large contiguous tract of land, but smaller areas between which suitable foraging habitat would remain.

This impact would be **less than significant**.

The expansion of the Bridgeville Substation would have **no impact** on golden or bald eagle nesting habitat during construction.

Operational Impacts

IMPACT 3.5-5	Operational Impacts on Bald and Golden Eagles. <i>Operation of the WTGs would pose a risk of collision to bald and golden eagles. This impact would be potentially significant.</i>
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Operation of the proposed project could result in direct impacts on bald and golden eagles through injury or mortality if they were to collide with operating WTGs. The proposed approximately 25-mile, 115-kilovolt (kV) gen-tie that would provide interconnection with the existing Pacific Gas and Electric Company (PG&E) transmission system would be constructed in accordance with APLIC standards, which would reduce impacts on eagles to less than significant. Both species are permanent residents in the region, although some migrants from other areas may pass through the region during migration or may overwinter in the area. The project site and surrounding areas contain suitable foraging and nesting habitat for golden eagles and both species are known to occur on the project site. The anticipated impacts for each species are summarized below.

Both golden eagles and bald eagles are long-lived, large raptors with a relatively low reproductive rate, and are therefore more vulnerable to population-level impacts from novel sources of mortality. USFWS is responsible for

managing bald and golden eagle populations under the Bald and Golden Eagle Protection Act. Under this law, any activity that may disturb or incidentally take an eagle or its nest as a result of an otherwise legal activity could be considered to be a “take” under BGEPA. In 2016, USFWS released new rules pertaining to compliance with the BGEPA (USFWS 2016a), which set take limits for golden eagles (for take not required to be offset) at 0 percent of the population; in essence, the rules require that any take of a golden eagle be offset through compensatory mitigation.

USFWS (2016a) determined that bald eagle populations are increasing on a national level and set the take limit for the species at 6 percent of the population for the Eagle Management Unit, in which the project site is located (the Mid-Latitude Pacific Flyway Eagle Management Unit). Thus, the BGEPA allows for some take of bald eagles before offsetting mitigation is required. However, the bald eagle remains state listed as endangered in California, and despite increases in the species’ population size and its recolonization of formerly occupied areas over the last 30 years, the state still lacks an estimate of bald eagle populations, and continuing monitoring is required to establish trends (CDFW 2018).

Because project facilities would pose a risk of collision to both bald and golden eagles, which are protected under the BGEPA, this impact would be **potentially significant**.

The project applicant would mitigate the loss of bald or golden eagles resulting from project operations by funding retrofitting of electric utility poles that present a high risk of electrocution to eagles, as prescribed in the *Eagle Conservation Plan Guidance*, Appendix G (USFWS 2013). Retrofitting of distribution poles that pose a high risk of eagle electrocution is a proven method for reducing eagle fatalities (USFWS 2018b). The project applicant would monitor eagle fatalities resulting from project operation for the life of the project, and would mitigate with pole retrofits as described below.

Mitigation Measure 3.5-5a: Avoid, Minimize, and Compensate for Operational Impacts on Eagles.

The project applicant shall design and operate the project to minimize potential operational impacts on eagles by adhering to the following impact avoidance and minimization measures:

- Maintain a landscape around WTGs that does not encourage raptor occurrence by maintaining rodent prey populations to relatively low levels. In addition, implement a prey management program to reduce the availability of rabbits, ground squirrels, and other prey that could attract eagles and other raptors.
- Adhere to the general guidelines for turbine and WTG tower design and operation to minimize bird and bat mortality, use turbines and WTG tower designs lacking potential raptor perches that may encourage bird activity near the moving rotors, and avoid guy wires on meteorological towers.
- Design and construct all energized project components, including the entire gen-tie, according to APLIC (2006) standards to minimize the potential for electrocution or collision with transmission lines by raptors and other large birds.

The project applicant shall demonstrate compliance with BGEPA:

- Before beginning project construction, the project applicant shall demonstrate to the Humboldt County Planning & Building Department that it has consulted with USFWS regarding potential impacts of the proposed project on eagles, that the proposed project has been assessed in accordance with the USFWS (2013) *Eagle Conservation Plan Guidance*, and that the project is in compliance with the BGEPA.
- If the project applicant voluntarily elects to pursue an incidental take permit for eagles with USFWS, any mitigation measures implemented in association with the permit (e.g., mortality monitoring, utility pole retrofits for compensatory mitigation) shall also be counted toward the mitigation recommendations provided below.

Mitigation Measure 3.5-5b: Conduct Postconstruction Mortality Monitoring for Eagles.

- As described for marbled murrelet in Mitigation Measure 3.5-2b, the project applicant shall conduct PCMM studies for the life of the project to assess impacts of project operation on eagles. The PCMM shall be designed to ensure a minimum overall detection probability (g) for bald or golden eagles of 30 percent during “intensive” searches (first 3 years) and 8 percent for subsequent annual “road and pad” searches. The overall detection probability shall be calculated as described for marbled murrelet (Mitigation Measure 3.5-2b; Dalthorp et al. 2017).
- Because eagles are larger than marbled murrelets, the methods outlined for marbled murrelet in Mitigation Measure 3.5-2b are expected to provide adequate detection rates for eagle carcasses. However, because the risk of eagle mortality is spread more evenly throughout the year than the risk of marbled murrelet mortality, the project applicant shall ensure that the search effort for eagle carcasses is distributed evenly throughout all seasons.
- The overall detection of eagle carcasses (g) shall be calculated based on results of searcher efficiency trials with large raptor carcasses. The overall detection probability for the EoA model represents the probability of detecting a carcass present on the site during the period of evaluation and is based on the results of searcher efficiency and carcass persistence trials, and the spatial and temporal extent of coverage (i.e., proportion of WTGs or time for which searches occurred).
- At the completion of each year of PCMM studies, the maximum credible number of bald and golden eagle mortalities shall be estimated using the EoA model and PCMM data. As with the marbled murrelet, separate estimates based on the 50 percent and 90 percent credibility levels ($-\alpha$, where $\alpha=0.5$ and 0.1, respectively) shall be calculated. These estimates can be used as triggers for potential adaptive management or to evaluate effectiveness of mitigation.
- The project applicant shall provide annual reports describing postconstruction monitoring results to the Humboldt County Planning & Building Department and to USFWS.

Mitigation Measure 3.5-5c: Implement Compensatory Mitigation to Offset Operational Impacts on Eagles.

- The project applicant shall compensate for the loss of any golden or bald eagles injured or killed as a result of project operation by paying for the retrofitting of electrical utility poles that present a high risk of electrocution to eagles, as prescribed in the *Eagle Conservation Plan Guidance*, Appendix G (USFWS 2013). This includes eagle mortality detected during structured postconstruction mortality monitoring surveys, and eagle mortality detected incidentally that have resulted from project operations.
- For each instance of project-related injury or mortality that removes a bird from the population, 32 utility poles shall be retrofitted. This is based on a resource equivalency analysis (REA) performed by USFWS (2013; Appendix G) and assumes that each retrofitted pole would result in 10 years of avoided loss from electrocution. The REA analysis also assumes that the take of one eagle and the associated compensatory mitigation occur during the same year. Certain utility poles may be eligible for “reframing” (as opposed to retrofitting) to avoid electrocution, which is assumed by USFWS to result in 30 years of avoided loss rather than 10 years. The reframing of 14 poles would be sufficient to offset take of a single eagle, according to the REA analysis.
- Compensatory mitigation for the loss of each eagle shall be completed within 1 year of each instance of documented take. Retrofitted poles must be considered “high-risk” for electrocution (per USFWS 2013, Appendix G), and for instances of bald eagle take must be located in areas where both species occur and within the Pacific Flyway north of 40 degrees North latitude. For instances of golden eagle take, retrofitted poles must be located within the Pacific Flyway. These areas represent the USFWS-designated “Eagle Management Units” for bald and golden eagles at the project site, respectively (USFWS 2016a).
- The project applicant shall provide a report describing successful implementation of the electric utility pole retrofits for every bald or golden eagle taken as a result of project operations to the Humboldt County Planning & Building Department and to USFWS. The report shall be provided no more than 1 year after detection of the eagle take.

If the project applicant pursues a federal eagle incidental take permit and develops separate mitigation measures for eagles in association with an eagle conservation plan, any mitigation completed toward the eagle take permit requirements shall be counted toward the mitigation requirements outlined above.

Implementation: Project applicant.

Timing: *Avoidance and minimization of impacts, BGEPA compliance, and postconstruction mortality monitoring:* For the life of the project.

Compensatory mitigation: Within 1 year of each documented instance of take thereafter.

Enforcement: *Avoidance and minimization of impacts, and postconstruction mortality monitoring:* Humboldt County Planning & Building Department, in consultation with USFWS.

Significance after Mitigation

Mortality monitoring as described above would identify the amount of compensatory mitigation required to offset impacts on bald and golden eagles. Implementing the compensatory mitigation measure would reduce this impact because the decrease in eagle mortality associated with electrocution from high-risk utility poles would offset the loss of eagles from project operations. With implementation of the mitigation measures above, which include compensatory mitigation, anticipated impacts on golden and bald eagles would be reduced to **less than significant**.

The expansion and operation of the Bridgeville Substation would have **no impact** on golden or bald eagles.

Northern Spotted Owl

Status of Species in the Project Area

Northern spotted owl habitat in the project area occurs primarily on land owned by HRC, but also includes other privately held timber management lands. HRC monitors northern spotted owl activity on its lands as a part of its HCP effectiveness monitoring program. Under this program, designated sampling quadrats are surveyed once every 5 years (one-fifth of all quadrats are surveyed each year). In addition, protocol-level surveys are conducted for all timber harvest plans. Northern spotted owl activity sites detected are entered into the Spotted Owl Database managed by CDFW. Additional information is presented in HRC annual reports through 2015 that are publicly available.

The project applicant used existing data from HRC and other available data to the greatest extent possible during preparation of the *Northern Spotted Owl Habitat Assessment and Auditory and Visual Disturbance Analysis Report* (Stantec 2018e) and the habitat assessment conducted for the project alternatives (Stantec 2019). According to the *Northern Spotted Owl Habitat Assessment and Auditory and Visual Disturbance Analysis Report* (Stantec 2018e), 33,213 acres of functional spotted owl habitat occur within a radius of 0.7 mile (the standard provincial spotted owl home range) from the project area and 1,447 acres of spotted owl habitat are present in the project area.

Designated northern spotted owl critical habitat is not present in the project area; two areas of critical habitat occur within 0.7 mile (Figure 3.5-8). Project implementation would not modify critical habitat. Therefore, critical habitat for northern spotted owl is not addressed further in this analysis.

Northern spotted owl is covered under the Humboldt Redwood Company HCP and the majority of forested northern spotted owl habitat in the project area is on HRC land. Consistency with the Humboldt Redwood Company HCP is analyzed in Impact 3.5-28 below.

The project applicant is preparing a biological assessment for the proposed project and anticipates obtaining an incidental take permit for northern spotted owl. Any avoidance and minimization measures for northern spotted owl included in the incidental take permit will need to be implemented by the project applicant.

Potential impacts on northern spotted owl from project construction were determined by overlaying the project footprint in GIS with the various types of northern spotted owl habitat mapped in the project area (nesting, roosting, and foraging habitat). Based on this overlay with mapped northern spotted owl habitat, Table 3.5-11 shows temporary and permanent impacts of the proposed project on northern spotted owl habitat.

Table 3.5-11. Temporary and Permanent Impacts of the Proposed Project on Northern Spotted Owl Habitat

Type	Disturbance Type	Acres	Total Acreage
Foraging	Temporary	284.60	339.23
	Permanent	54.63	
Nesting	Temporary	34.57	39.65
	Permanent	5.08	
Roosting	Temporary	137.95	167.90
	Permanent	29.94	
Total	Temporary	457.12	546.78
	Permanent	89.66	

Source: Stantec Consulting Services 2018e; data compiled by AECOM in 2019

Construction-Related Impacts

IMPACT 3.5-6	Disturbance of Roosting and Nesting Northern Spotted Owls by Construction Activities. <i>Project construction noise and activities could increase stress levels in owls during daytime roosting/nesting periods, potentially leading to nest abandonment. This impact would be potentially significant.</i>
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Activities in the project area such as vegetation clearing, logging, grading, transport of WTG parts, blasting for excavation of WTG foundations, and use of helicopters for moving WTG components could cause visual and noise impacts at northern spotted owl activity centers. The project applicant conducted an evaluation of the potential for construction activities to exceed ambient noise levels (Stantec 2018e, 2019). Based on the definitions in the USFWS guidelines *Estimating the Effects of Auditory and Visual Disturbance to Northern Spotted Owls and Marbled Murrelets in Northwestern California* (USFWS 2006), overall ambient noise levels in the project area are considered very low, while construction-related noises are expected to range from low to high (i.e., concrete batch plants, muffled explosives) to extreme (i.e., unmuffled blasting, helicopters) in some areas.

When ambient noise levels are very low, USFWS recommends buffers of 100 meters to 400 meters, respectively, from construction noise levels that would be high to extreme. These buffers were applied to the outer edge of the project footprint, and the number of northern spotted owl activity centers present within these buffers was tallied (Figure 3.5-9). Based on available survey data from 2014–2018, one northern spotted owl activity center documented in 2018 occurs inside the 250-meter buffer area within the project area in the vicinity of the Jordan Creek access road. No additional activity centers are located within the 400-meter buffer of the project area. Project construction noise may increase stress levels in owls during daytime roosting/resting periods near activity centers, and therefore, could lead to nest abandonment. This impact would be **potentially significant**.

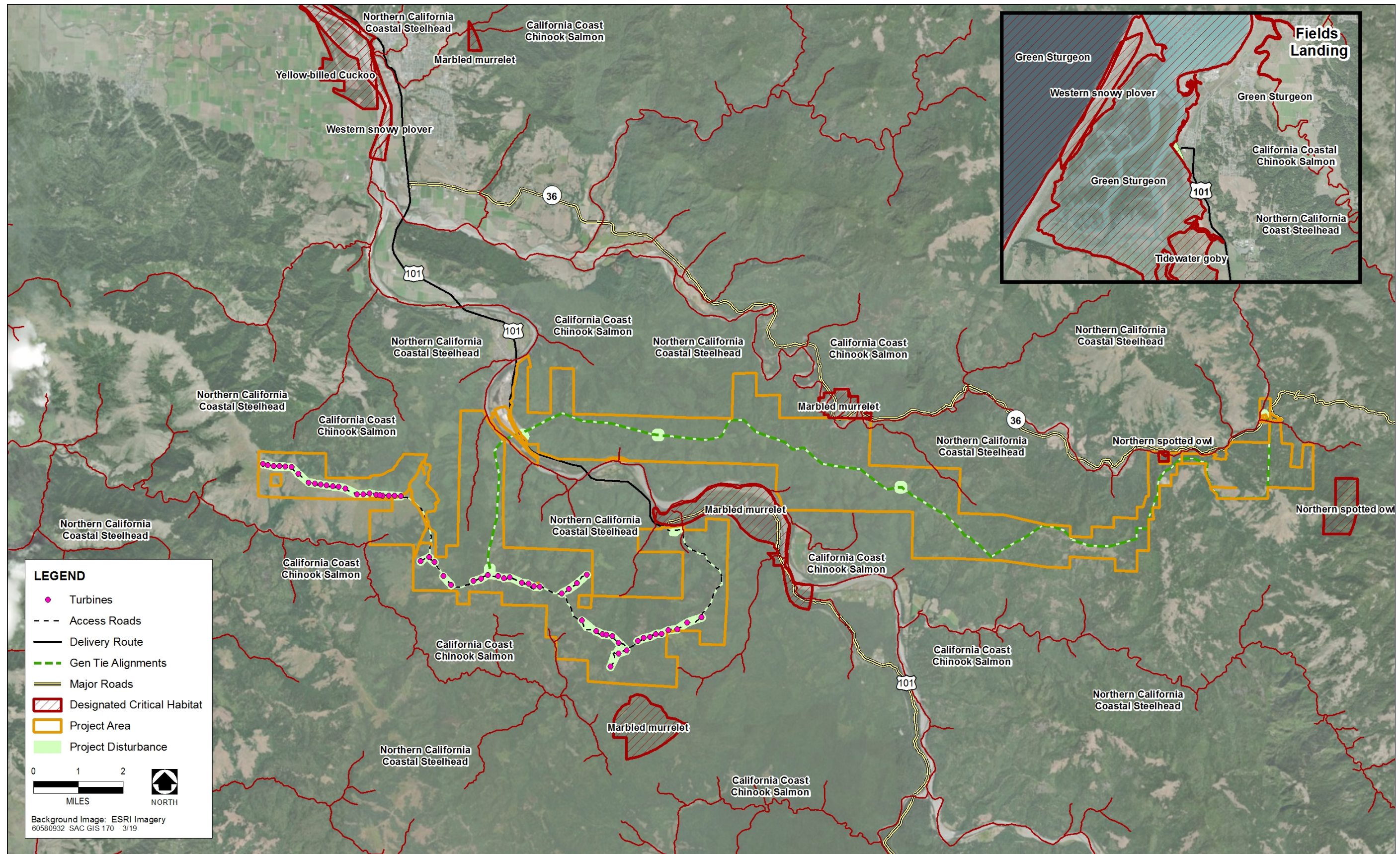


Figure 3.5-8. Locations of Critical Habitat near the Project Area

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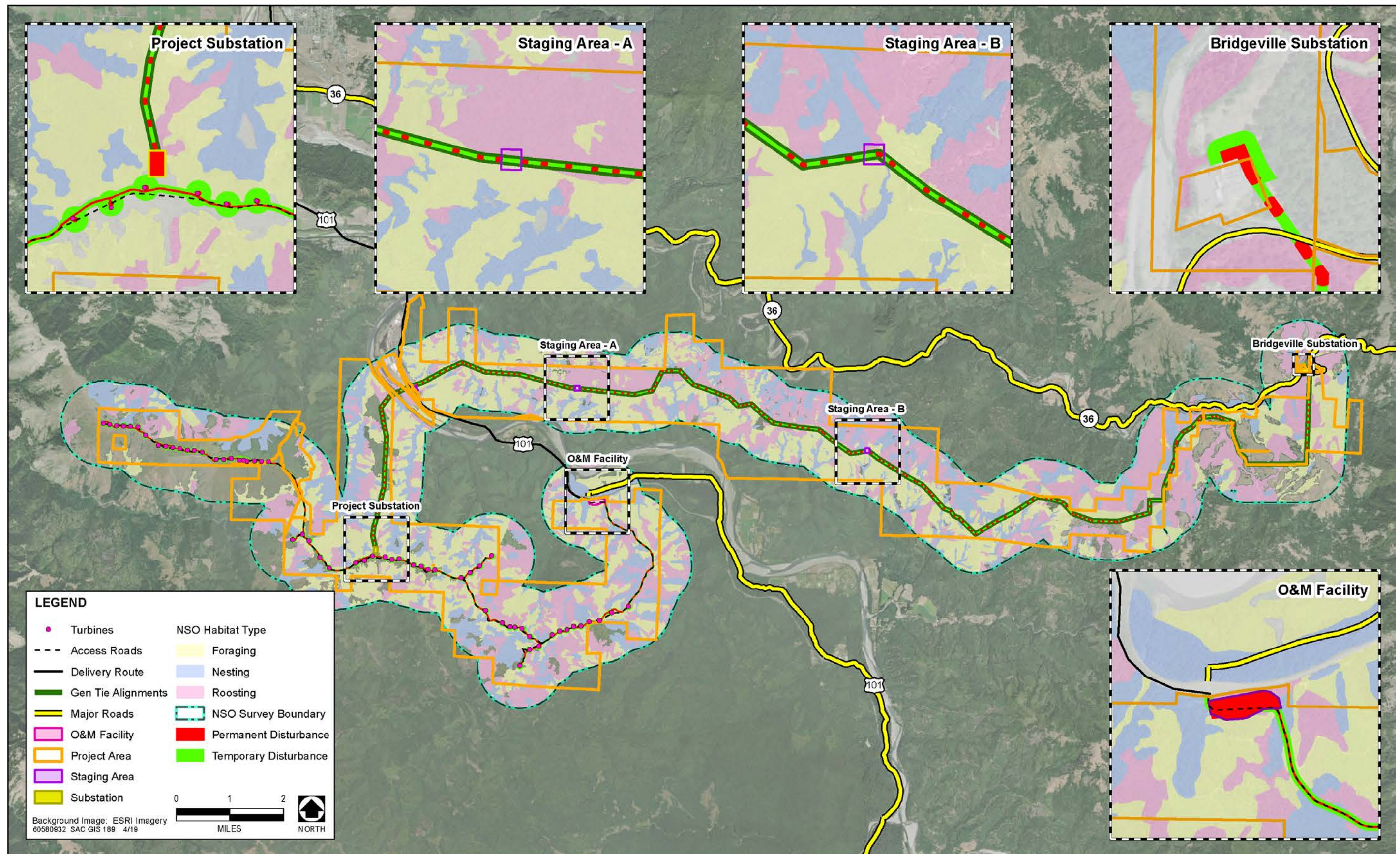


Figure 3.5-9. Northern Spotted Owl Habitat Types and Proposed Project Components

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Mitigation Measure 3.5-6: Minimize Construction Disturbance to Northern Spotted Owl.

To prevent nest abandonment caused by auditory and visual disturbance, the project applicant shall implement the following noise and visual disturbance buffers during the nesting season in accordance with the USFWS guidelines *Estimating the Effects of Auditory and Visual Disturbance to Northern Spotted Owls and Marbled Murrelets in Northwestern California* (USFWS 2006):

- 100 meters for high construction noise (81–90 decibels [dB])
- 250 meters for very high construction noise (91–100 dB)
- 400 meters for extreme construction noise (101–110 dB)

The buffer sizes listed above are default thresholds. Site-specific sound attenuation shall be considered and buffers resized accordingly, and approved by CDFW and USFWS. Buffers shall be placed around northern spotted owl activity centers near the project site as determined during preconstruction surveys and shall account for the locations in the project area where extreme versus high category noise would occur. Buffers shall be clearly indicated on construction drawings and adherence to buffers shall be monitored during construction activities by a qualified monitor. The project applicant shall provide documentation to the Humboldt County Planning & Building Department that CDFW and USFWS have been consulted in developing the size of the auditory buffer and the level of monitoring and reporting required during construction, and that buffers have been established and adhered to during construction.

Implementation: Project applicant.

Timing: *Surveys and buffer establishment:* Before construction.

Monitoring and reporting: During construction near northern spotted owl activity centers and buffers.

Documentation of compliance: During and after construction.

Enforcement: Humboldt County Planning & Building Department, in consultation with CDFW and USFWS.

Significance after Mitigation

Implementing Mitigation Measure 3.5-6 would reduce the impacts of construction noise and disturbance on spotted owls during roosting or nesting periods, and would minimize the risk of nest disturbance and increased stress levels that could adversely affect spotted owl behavior and activities. These avoidance and minimization measures would reduce this impact to **less than significant**.

Implementing Mitigation Measure 3.5-6 would reduce the impact of the Bridgeville Substation expansion related to disturbance of roosting and nesting northern spotted owls by construction noise to **less than significant**.

<p>IMPACT 3.5-7</p>	<p>Removal, Fragmentation, and Modification of Northern Spotted Owl Habitat during Construction. <i>Construction of access roads, the gen-tie, and other project facilities would result in disturbance to approximately 546.8 acres of forested northern spotted owl habitat (approximately 457.1 acres of temporary impact and 89.7 acres of permanent impact). This impact would be potentially significant.</i></p>
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Northern spotted owl habitat would be removed during construction of access roads, WTGs and pads, staging areas, temporary cement batch plants, maintenance facilities, and the gen-tie. Of the estimated 546.78 total acres of forested northern spotted owl habitat that could be affected during construction, 339.23 acres are classified as foraging habitat, 39.65 acres as nesting habitat, and 167.9 acres as roosting habitat. Of these, 54.63 acres of foraging habitat, 5.08 acres of nesting habitat, and 29.94 acres of roosting habitat could be permanently lost as a result of the construction of permanent project-related structures. Another 284.60 acres of foraging habitat, 34.57 acres of nesting habitat, and 137.95 acres of roosting habitat would be temporarily affected during project construction, but would ultimately be restored or allowed to return to forested habitat. Clearing of northern spotted owl habitat for the 80-foot-wide gen-tie corridor would also fragment northern spotted owl habitat. The effect of this fragmentation would be potential increases in predator presence, and increased exposure to wind and sunlight that could alter the microclimate of what was formerly part of the stand interior. These impacts would be **potentially significant**.

Impacts on northern spotted owl habitats on HRC lands from timber harvesting activities were evaluated and mitigated in the joint environmental impact statement (EIS)/EIR that was prepared for HRC's (then Pacific Lumber Company's) HCP in the late 1990s (PALCO 1998). That EIS/EIR evaluated potential owl habitat impacts on HRC lands from timber harvesting and road building activities. In total, the EIS/EIR contemplated that timber harvesting would occur on about 200,000 acres of land, involve the harvest of about 1,900 million board feet of timber per decade, and result in the construction (requiring permanent conversion) of 400 miles of roads over a 50-year period (PALCO 1998:S-20, S-25). The EIS/EIR estimated that these activities would result in a loss of suitable owl habitat, including approximately 32,500 acres of suitable nesting habitat, although more than 175,000 acres of nesting, roosting, and foraging and dispersal habitat would remain (PALCO 1998:Table 2.6-1).

The EIS/EIR found that impacts on owl habitat from timber harvesting would be significant but that such impacts would be mitigated to less than significant through compliance with certain management objectives, implementation of various conservation measures, and application of adaptive management measures (PALCO 1998:3.10-125 to 3.10-132). These measures were then incorporated into the final HCP, which still governs HRC's activities (HRC 1999:P-31).

For the proposed project, temporary loss of owl habitat through timber harvesting on HRC lands is expected to be approximately 276.9 acres and permanent loss is expected to be approximately 196.7 acres. Of the acreage permanently lost, 3.45 acres are related to the WTG pads, 162.97 acres are related to the gen-tie, and 30.28 acres to roads. These acreages are within the total harvesting limits evaluated in the EIS/EIR and are consistent with the overall habitat impacts that were expected to result. Specifically, the EIS/EIR contemplated that up to 400 miles of roads would be constructed over the life of the HCP (PALCO 1998:S-20, S-25). This translates into approximately 1,164 acres of habitat, assuming that the roads are 24 feet wide. Impacts on owl habitat from timber harvesting related to roads, the gen-tie, and WTG pads—which are similarly permanent in nature to roads—are thus well within the scope of impacts associated with the total road construction.

Mitigation Measure 3.5-7: Avoid, Minimize, and Compensate for Construction Impacts on Northern Spotted Owl.

The project applicant shall implement the following measures to avoid, minimize, and compensate for impacts of project construction on northern spotted owl:

- Develop a map based on the best available information depicting the locations of foraging, nesting, and roosting habitat for northern spotted owls on the project site. This information will guide efforts to minimize habitat impacts during the project's final design. The project applicant shall minimize, to the extent feasible, the removal or degradation of mature coniferous forest habitat or other habitats that could support foraging, roosting, or nesting northern spotted owls. Upon completion of construction, the project applicant shall submit to the Humboldt County Planning & Building Department, CDFW, and USFWS documentation of these minimization efforts, and shall provide an accounting of northern spotted owl foraging, nesting, and roosting habitat temporarily and permanently affected by construction.
- Provide documentation to the Humboldt County Planning & Building Department, CDFW, and USFWS confirming that functional habitat thresholds have been met for all spotted owl activity sites occurring within 0.7 mile of the project area upon completion of construction. The thresholds that must be met include:
 - Maintain functional nesting habitat (no habitat modifications, no entry) within 500 feet of northern spotted owl activity centers.
 - Maintain functional foraging and roosting habitat and avoid disturbance within 500–1,000 feet of northern spotted owl activity centers during nesting season.
 - Provide 500 acres of functional habitat within 0.7 mile of activity centers.
 - Provide 1,336 acres of functional habitat within 1.3 miles of activity centers.
- Provide compensatory mitigation for northern spotted owl foraging, nesting, and roosting habitat that is permanently removed (clearing for the gen-tie and roads is considered a permanent impact). This mitigation may be composed of one or more of the following options, and shall be developed in consultation with CDFW and USFWS:
 - The project applicant shall mitigate permanent impacts on northern spotted owl foraging, nesting, and roosting habitat by permanently preserving lands at a minimum 3:1 ratio through the purchase of conservation easements or acquisition of suitable northern spotted owl habitat. The determination of what constitutes suitable habitat shall be made in consultation with CDFW and USFWS. Any preserved land shall be protected from development with an encumbering instrument (e.g., a deed restriction, covenant, or conservation easement) and shall be managed through the use of a nonwasting endowment. With concurrence of CDFW and USFWS, the same mitigation lands that are used for marbled murrelet mitigation may be used to satisfy northern spotted owl mitigation obligations. The replacement habitat shall be in the general vicinity of the

project site (i.e., in Humboldt County) and should be capable of providing functions similar to those provided by the habitat that will be removed, as determined by USFWS and CDFW.

- Within 2 years following the first delivery of power, the project applicant shall purchase and record up the mitigation lands as off-site conservation land in fee-title and/or easement for open space suitable as nesting, foraging, and roosting habitat for northern spotted owls. The County, in consultation with USFWS and CDFW, shall approve the location of the conservation land or easement.
- The project applicant may implement a barred owl management program in the project vicinity on privately held land occupied by northern spotted owl (owned by either HRC or another entity), and/or implement this program on the off-site conservation lands described above.
- The project applicant shall comply with northern spotted owl management objectives, conservation measures, and adaptive management measures required in the HCP EIS/EIR (and incorporated into the HCP) (PALCO 1998).

If CDFW and USFWS incidental take permits for northern spotted owl include avoidance, minimization, and mitigation measures that differ from those described above, the stricter or most conservative measures shall apply.

Implementation: Project applicant.

Timing: *Documentation of northern spotted owl minimization efforts and accounting of temporary and permanent impacts:* Within 1 month of completion of construction.

Purchase and recordation of mitigation land in fee-title and/or easement: 2 years after first delivery of power.

Enforcement: Humboldt County Planning & Building Department, in consultation with CDFW and USFWS.

Significance after Mitigation

Implementing Mitigation Measure 3.5-7 would offset the permanent impacts of construction on northern spotted owl foraging, roosting, and nesting habitat by providing permanent protection of suitable habitat at a 3:1 ratio. Barred owl management has been shown to enhance northern spotted owl survivorship and reproductive success (Diller 2016), which would offset the adverse effects of permanent habitat loss due to project construction. Implementing Mitigation Measure 3.5-7 would therefore reduce construction-related impacts related to loss of northern spotted owl habitat to **less than significant**.

Implementing Mitigation Measure 3.5-7 would reduce construction-related impacts of the Bridgeville Substation expansion related to loss of northern spotted owl habitat to **less than significant**.

Operational Impacts

IMPACT 3.5-8	Operational Impacts on Northern Spotted Owls. <i>Northern spotted owls that cross the road/ridge in the wind turbine generator zone as a matter of foraging habit, or during dispersal by young birds, have the potential to collide with WTG blades. This impact would be potentially significant.</i>
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During operation of the proposed project, northern spotted owls could collide with WTG blades while flying through the rotor swept area. Based on preliminary maps of the project layout provided by the project applicant, the WTGs would be sited mainly within or adjacent to existing spotted owl habitat (Figure 3.5-9). Furthermore, when the WTG layout was projected onto the northern spotted owl occurrence layer in the CNDDDB, it was determined that northern spotted owl activity centers occur near the WTG area, and that several individual detections of spotted owls imply that ridge crossings were made. In the portions of the proposed WTG string, particularly along Bear River Ridge where substantial natural gaps of one-half to 1 mile already occur between habitat areas, the risk of collision with WTGs is expected to be low, assuming that northern spotted owls would only rarely cross such large expanses of nonhabitat. There is a low potential for collisions if and when northern spotted owls cross over these open ridges en route to nearby foraging areas, during dispersal by young birds seeking new territories, or as northern spotted owls are “evicted” by barred owls.

Existing northern spotted owl habitat along much of the proposed WTG string attains or nearly attains the ridgetop, including both sides of the ridge in some areas, particularly along the southeastern part of the string on Monument Ridge. Existing roadways are relatively narrow (approximately 20–30 feet wide) and generally do not disrupt the continuity of the habitat; therefore, any northern spotted owls currently using the habitat would likely move freely across the existing roads. After project construction widens the existing roadways to approximately 200 feet in the WTG area (to be narrowed to 26 feet after construction), any northern spotted owl occupying these habitats could conceivably continue to cross the road/ridge as a matter of foraging habit, out of the need to find adequate prey or during dispersal by young birds. This would put them at risk of collision with WTGs.

An analysis of 3 decades of dispersal data involving 381 northern spotted owls that were banded as juveniles and later recaptured, either on new territories or as “floaters,” revealed that 104 (27.3 percent) of the owls were known to have crossed nonhabitat obstacles (i.e., rivers, highways) that were approximately 100–200 meters wide. The most common “crossings” were of the Mad River and State Route 299, at 85.6 percent (n= 89) of the observed dispersal events. Crossings of larger nonhabitat areas such as the Smith and Klamath rivers were observed in 16.3 percent of the dispersal events (n=17). Based on this dispersal data set, it appears that northern spotted owls will readily cross areas of nonhabitat in the range of 100–200 meters. Direct field observations of northern spotted owls that come from the same studies on managed timberlands in northwest California indicate that northern spotted owls infrequently traversed openings or nonhabitat at distances of 50–100 meters (Hamm, pers. comm., 2019). The blades for the WTGs would reach a minimum height (above ground level) of 23 meters (76 feet). Although this height may exceed the height of many of the younger trees in the area, northern spotted owl habitat generally involves mature redwood and/or Douglas-fir trees, which may reach up to or beyond 200 feet in height. Thus, owls departing from the canopy, which may be as close as 100 feet to WTGs, as the owls move between patches of habitat could be at risk of colliding with WTG blades in areas where WTG blade height overlaps with the height of the adjacent forest canopy.

The potential susceptibility of northern spotted owls to collisions with WTGs was evaluated for a sympatric species, the barred owl. In a review of available postconstruction fatality survey datasets from within the range of the barred owl in the eastern United States, Stantec (2019 unpublished summary) reported a total of two barred owls from 89 annual surveys conducted at 41 wind energy facilities from Maine to West Virginia, west to Pennsylvania and Tennessee. Those studies included a total of 96,948 WTG searches, from 2000 to 2018, during which a total of 2,682 bird carcasses were found. The two barred owl discoveries represented 0.07 percent of the total number of carcasses found. At Hatchet Ridge, California, the 2 years of surveys completed by Tetra Tech (2013) documented a total of 73 bird carcasses. No barred owl fatalities were reported. In addition, Bird Studies Canada (2018) reports that at 91 wind energy facilities studied between 2006 and 2017, a total of 3,931 bird carcasses of 190 identifiable species were found at 2,674 WTGs searched. No barred owls were reported as fatalities.

Northern spotted owls have the potential to collide with WTG blades associated with the proposed project, although this potential is low. This impact would be **potentially significant**.

Mitigation Measure 3.5-8: Avoid, Minimize, and Compensate for Operational Impacts on Northern Spotted Owls.

- The project applicant shall implement:
 - Mitigation Measure 3.5-5a, “Avoid, Minimize, and Compensate for Operational Impacts on Eagles,” which provides similar benefits and protections for northern spotted owls; and
 - Mitigation Measure 3.5-5b, “Conduct Postconstruction Mortality Monitoring for Eagles,” as adhering to postconstruction monitoring protocols for eagles will achieve adequate detection rates to determine whether the project has resulted in take of northern spotted owls.
- For each northern spotted owl mortality, the project applicant shall develop and implement compensatory mitigation in consultation with CDFW and USFWS that will create one northern spotted owl for every individual taken to offset any fatalities documented over the operational life of the project. This offset can be accomplished with funding and implementation of barred owl management programs, or by acquisition of or conservation easements on habitat that would provide nesting, foraging, or roosting northern spotted owl habitat, as described in Mitigation Measure 3.5-7. The benefit to the affected population shall be demonstrated to offset take by creating one northern spotted owl for every spotted owl taken as a result of project operation.

If CDFW and USFWS incidental take permits for northern spotted owl include avoidance, minimization, and mitigation measures that differ from those described above, the stricter or most conservative measures shall apply.

Implementation: Project applicant.

Timing: *Postconstruction monitoring:* For the duration of the project, with reports submitted annually to CDFW, USFWS, and the Humboldt County Planning & Building Department.

Purchase and recordation of mitigation land in fee-title and/or easement: 2 years after first delivery of power.

Enforcement: Humboldt County Planning & Building Department, CDFW, and USFWS.

Significance after Mitigation

With implementation of Mitigation Measure 3.5-8, potential impacts of project operation related to collisions of northern spotted owls with WTG blades would be avoided and minimized to the maximum extent feasible. Any unavoidable impacts resulting in mortality of or injury to northern spotted owl would be offset through compensatory mitigation in the form of the acquisition, creation, and/or preservation of land of equal or greater value to the species, or through barred owl management programs. Therefore, implementing the above mitigation measure would reduce this impact to **less than significant**.

Implementing Mitigation Measure 3.5-8 would reduce construction-related and operational impacts of the Bridgeville Substation expansion related to loss of northern spotted owl habitat to **less than significant**.

Raptors

Status of Species in the Project Area

The combination of habitats in the project area, particularly the grasslands, forests, and riparian habitats, attracts a diversity of raptors. Although the grasslands on and surrounding the project site are grazed by livestock and relatively disturbed, they provide an underrepresented habitat type in northwestern California, where the landscape is dominated by forested habitats, including old-growth forests. In total, 21 species of raptors (including vultures) were detected on the project site during bird use count surveys conducted by Stantec or seen incidentally during the course of other surveys (Stantec 2018f, Appendix J; and Stantec 2018i, Appendix M). This includes bald and golden eagles and northern spotted owl, which are addressed in separate sections of this biological resources impact analysis.

Common Raptors: The most commonly observed non-special-status raptor species on the project site during the bird use count surveys (Stantec 2018g) were red-tailed hawk and turkey vulture, followed by American kestrel. All three species breed locally and are year-round residents and likely breeders in or near the project area. Red-tailed hawks and American kestrels tend to avoid heavily forested areas and to associate most strongly with more open habitats, including grassland and shrub/scrub-dominated, where nest trees and perches are available. Turkey vultures nest in rock outcrops, in caves on cliffs, and occasionally on the ground, and associate with a variety of habitats where carrion can be found. Rough-legged hawks are regularly observed in winter on Bear River Ridge, and red-shouldered hawks are typically found associated with riparian areas, although they are occasionally observed on ridges in the project area as well (McAllister, pers. comm., 2019).

Three owl species—the northern saw whet owl, western burrowing owl, and northern pygmy owl—were detected during site-specific surveys conducted by Stantec (2018g). Three additional species (great horned owl, western screech owl, and northern spotted owl) were observed incidentally to the standardized avian surveys (Stantec 2018i). Because most owl species in the area are nocturnal and the surveys were conducted during the daytime when they would have been relatively inactive and roosting, owl abundance and diversity may be underrepresented in survey data. Owl species that likely occur and nest in the project area but went undetected include barn owl. Although one northern saw-whet owl was detected during surveys, this species may also be

underrepresented. Barn owls nest and forage in a variety of more open habitats, and great horned owls occupy a wide variety of habitats while the other species tend to nest and forage in more wooded areas.

Special-Status Raptors: Aside from the two eagle species and northern spotted owl, a total of 12 special-status raptors were considered as having the potential to occur on the project site. Nine of these were observed during site-specific surveys conducted by Stantec or incidentally during other fieldwork [Stantec 2018f, 2018i]): Cooper’s hawk, sharp-shinned hawk, ferruginous hawk, northern harrier, peregrine falcon, prairie falcon, white-tailed kite, western burrowing owl, and osprey (Table 3.5-5).

Of the special-status species that may nest in the project area and could be affected by the project, the Cooper’s hawk was the most frequently observed during site-specific surveys, and was the fourth most frequently observed raptor species overall (Stantec 2018g). This species is most often found within the cover of forests, where hawks nest and hunt mainly for avian prey, but will readily fly through and forage within more open or shrub/scrub-dominated areas between patches of woodland. The same is true of the closely related sharp-shinned hawk, which was observed less frequently during site-specific surveys but occurs with regularity in the project area. Other special-status species that may nest in the project area, but were rarely detected during site-specific surveys, include peregrine falcon, white-tailed kite, and osprey. The peregrine falcon nests on cliffs, or occasionally in the lattice of tall transmission towers, and forages in a variety of habitats including grasslands and wetlands. Ospreys nest in tall trees, often in snags located near water sources where they hunt for their preferred prey, fish. Although the white-tailed kite is common in agricultural lands along the lower Eel River Valley about 5 miles north of the project site, it was not detected in site-specific surveys despite being a very detectable species when present. Hunter et al. (2005) noted that the species was a “possible” breeder in two survey blocks on Bear River Ridge.

Special-status raptor species that are unlikely to nest in the project area but could be affected by the project because they use habitats within it during the nonbreeding season include the ferruginous hawk, northern harrier, and western burrowing owl. Each of these species migrates through and overwinters in the region, and exhibits association with grassland habitats, such as those present on Bear River Ridge.

Three special-status species were not detected during surveys: long-eared owl, short-eared owl, and northern goshawk. These species, along with the prairie falcon (observed once during surveys), are not expected to be affected by the project because they are generally uncommon or rare in the project area. The northern goshawk breeds in old-growth forests of the region but is an exceedingly rare breeder along the coast (Hunter et al. 2005).

Construction-Related Impacts

IMPACT 3.5-9	Construction Impacts on Nesting Raptors. <i>Project construction could directly or indirectly affect the nesting success of raptors. This impact would be potentially significant.</i>
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Activities associated with project construction could affect nesting raptors directly or indirectly. Potential direct impacts include the physical removal of or damage to an active nest in the process of performing construction activities such as grading or the removal of trees or other vegetation that might provide a nesting substrate. Potential indirect impacts on nesting raptors could occur if activity at nests is affected by visual, audible, or vibrational disturbance associated with construction activity.

Common raptor species such as the red-tailed hawk and American kestrel, and special-status raptor species that nest within or immediately adjacent to the project area, may be subjected to this impact because suitable nesting habitat for these species is present in the project area. This impact would be **potentially significant**.

Mitigation Measure 3.5-9: Avoid Impacts on Nesting Raptors.

The project applicant shall implement the following measures to avoid directly or indirectly affecting nesting raptors during project construction:

- Where feasible, tree and vegetation removal activities shall be avoided in potential raptor nesting habitat during the avian nesting season (February 1–August 31, annually).
- Preconstruction raptor nesting surveys shall be conducted. Before any construction activities occur during the avian nesting season (February 1–August 31), including vegetation removal (if necessary), preconstruction raptor nesting surveys shall be conducted by a qualified biologist to identify raptor nests within 500 feet of proposed work areas. The qualified biologist shall be knowledgeable in the distribution, habitat, life history, and identification of Northern California birds; experienced in nest searching for birds that may occur within study area; and knowledgeable in survey protocols and/or permits needed to survey for federally listed or state-listed birds.
- If active raptor nests are detected during preconstruction surveys, a 500-foot exclusion zone shall be established around the nest in which no work would be allowed until the young have successfully fledged or nesting activity has ceased. The determination of fledging or cessation of nesting shall be made by a qualified biologist with experience in nest searching and monitoring for raptors, in consultation with CDFW and USFWS. In consultation with CDFW and USFWS, the size of the exclusion zone may be modified depending on the species and the type of construction activity and associated disturbance anticipated near the nest. Active nest sites shall be monitored periodically by a qualified biologist throughout the nesting season to identify any sign of disturbance and to document nest status.

Implementation: Project applicant.

Timing: Before and during construction activities proposed to take place during the general avian nesting season (February 1–August 31, annually).

Enforcement: Humboldt County Planning & Building Department.

Significance after Mitigation

With implementation of the mitigation measure described above, the potential impacts of project construction on raptor nesting success would be reduced because impacts would be avoided by determining the locations of active nests and protecting them during construction. Implementing these mitigation measures would reduce this impact to **less than significant**.

Implementing Mitigation Measure 3.5-9 would reduce construction-related impacts on nesting raptors from the Bridgeville Substation expansion to **less than significant**.

<p>IMPACT 3.5-10</p>	<p>Removal and Modification of Special-Status Raptor Nesting and Foraging Habitat during Construction. <i>Construction of access roads, the gen-tie, and other project facilities would result in up to approximately 862.1 acres of impacts (approximately 729.5 acres of temporary impacts and 132.6 acres of permanent impacts) on potential nesting and foraging habitat for special-status raptor species. This impact would be less than significant.</i></p>
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Project construction could affect raptors that nest and forage in the project area as a result of the permanent or temporary loss or degradation of suitable nesting and foraging habitat. The main habitat types used collectively by raptors on the project site are listed below (Table 3.5-12), with the expected maximum amount of acreage to be affected temporarily or permanently by construction of the project. Development of the project would affect up to 862.1 acres of potential raptor nesting and foraging habitat. Most of this habitat (more than 85 percent) would be subjected to only temporary impacts and portions affected could be restored to preconstruction conditions where possible. Construction would result in the permanent loss of approximately 90.2 acres of forest and woodland habitat and 37.5 acres of grassland. The amounts of riparian, wetland, and scrub/shrub habitat that would be permanently affected by construction are small relative to the availability of these habitat types in the region, and those effects are not expected to result in a limitation of foraging or nesting habitat for any raptor species.

Table 3.5-12. Acreages of Potential Raptor Nesting and Foraging Habitat that Would Be Affected by Project Construction

Land Cover Impacts by Disturbance Type			
Type	Disturbance Type	Acres	Total Acreage
Forests and Woodland	Temporary	464.32	554.56
	Permanent	90.24	
Grassland	Temporary	246.15	283.68
	Permanent	37.53	
Riparian	Temporary	1.07	1.78
	Permanent	0.70	
Shrub/Scrub Habitat	Temporary	15.84	19.81
	Permanent	3.97	
Wetland Areas	Temporary	2.11	2.28
	Permanent	0.17	
Total	Temporary	729.49	862.11
	Permanent	132.62	

Source: Data compiled by AECOM in 2019

Common raptor species are not expected to be affected at the population level by this level of habitat loss. Special-status raptor species have smaller and more vulnerable populations, so the potential for significant impacts on these species is greater, particularly if they nest in or depend heavily on woodland/forest or grassland habitats for foraging. However, the habitat type that would experience the most significant impact (forests and woodland) is not a habitat type that is limited in the region, and permanent impacts on other habitat types are relatively low compared to their availability. Although special-status raptors nesting in the project area may experience some negative impacts, these impacts are not expected to be significant at the population level.

Cooper's hawks and sharp-shinned hawks would be adversely affected by temporary and permanent loss of forests and woodlands and riparian habitat because they forage and nest in these habitats. The permanent loss of

90.24 acres of forests and woodland and 0.7 acre of riparian habitat would not likely have a substantial effect on the regional population of Cooper's hawks and sharp-shinned hawks. The temporary and permanent loss of grassland habitat would adversely affect foraging habitat for ferruginous hawk, northern harrier, and western burrowing owl, which occur in the project area but do not breed there. However, the permanent loss of 37.53 acres of grassland would not have a significant adverse effect on these species. White-tailed kites are not known to breed in the project area, and the nesting and foraging activities of peregrine falcons and osprey would not be significantly affected by permanent loss of forest, woodlands, grassland, or riparian habitat.

The habitat that would be permanently affected by the project habitat would occur in small, discrete locations spread across a large landscape that has an abundance of both forested and open habitats for raptors. The permanently removed habitat would not reduce foraging, roosting, or nesting habitat at a sufficient level to create a significant impact on raptors, and the temporarily removed habitat would be restored in accordance with Mitigation Measure 3.5-23e, "Develop and Submit a Reclamation, Revegetation, and Weed Control Plan." Therefore, impacts on special-status raptors would be **less than significant**.

Operational Impacts

IMPACT 3.5-11	Operational Impacts on Raptors. <i>Operation of the proposed project could result in mortality of and injury to raptors, as a result of collisions with wind turbine generators and electrical transmission lines. This impact would be potentially significant.</i>
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Operation of the proposed project could result in direct impacts on raptors through injury or mortality if they were to collide with operating WTGs. Raptors that nest, forage, or move through the project area during migration or dispersal would be at risk of these potential direct impacts.

In a review of fatality data from 21 wind energy projects in California, Oregon, and Washington from 1999 to 2013, Stantec (2018g) reported that overall avian fatality rates in the region ranged from 0.06 bird to 10.44 birds per WTG per study period, where the study period was generally 1 year. Only two facilities reported more than six avian fatalities per WTG per period, and both were in the Mediterranean California Ecoregion. Mortality estimates from facilities in Northern California and Oregon, within the Western Cordillera region (where the proposed project is located), were lower than those from the Mediterranean California and Cold Desert ecoregions, and did not exceed 5.69 avian mortalities per WTG. The average rate of mortality across all facilities was 3.34 birds per WTG per period. Thus, a reasonable estimate of the avian mortality rate for the proposed project is about three to six avian mortalities per WTG per year.

At the 16 facilities in the region for which Stantec (2018g) summarized mortalities, diurnal raptors, owls, and vultures composed 227 mortalities, while common species accounted for at least 84 percent of mortalities, including American kestrel (103 individuals), red-tailed hawk (61 individuals), barn owl (15 individuals), and turkey vulture (12 individuals). Among the regional fatality surveys, the following numbers of carcasses were found for the eight special-status raptor species observed during on-site surveys conducted by Stantec: Cooper's hawk (1), sharp-shinned hawk (0), ferruginous hawk (4), northern harrier (4), peregrine falcon (1), prairie falcon (1), western burrowing owl (1), and osprey (0). Special-status raptor species observed on-site represent 12 of the 227 (5 percent) raptor/owl/vulture fatalities reported among regional studies.

The American Wind Wildlife Institute (AWWI 2019) compiled avian fatality estimates from 167 studies at 115 projects nationwide and reported a median raptor mortality rate of 0.74 raptor per MW per year (raptors/MW/year) for 10 projects in the Pacific avifaunal biome, within which the project lies. This fatality rate was notably higher than the other five avifauna biomes investigated and higher than the national median rate of 0.06 raptor/MW/year. If raptor mortality rates at the project site are similar to those for the Pacific avifaunal biome as a whole, up to 114 raptor fatalities may be expected per year (based on the nameplate generating capacity of up to 155 MW). However, most of the wind facilities used to develop this estimate are in areas dominated by grasslands and agricultural lands with interspersed woodlands and may not be indicative of raptor mortality rates at the project site.

The Hatchet Ridge Wind Project is the nearest ridgeline wind facility to the project site with available postconstruction monitoring results, and, like the proposed project, is located in an area dominated by conifer forest with commercial timber harvest. During 2 monitoring years at Hatchet Ridge, three raptors, one red-tailed hawk, one sharp-shinned hawk, and one turkey vulture were found (Tetra Tech 2013). During Year 1 of fatality monitoring at Hatchet Ridge, the authors estimated an annual fatality rate for raptors of 0.06 per WTG per year (the raptor fatality rate could not be calculated for Year 2 because of a lack of raptor carcasses found at WTGs searched biweekly) (Tetra Tech 2013). Although the habitat at Hatchet Ridge is similar to that at the project site, winters in the region are more severe, with measurable snowfall occurring regularly. Thus, raptor abundance could be higher at the project site, where winters are milder. Tetra Tech (2013) compared the low raptor fatality rates to those at two other wind facilities on the Columbia Plateau in eastern Oregon and Washington. These fatality rates ranged from 0.06 to 0.49 raptor/WTG/year (Erickson et al. 2004; Gritski et al. 2010, as cited by Tetra Tech 2013). Based on data from the three sites combined, the raptor fatality rate at the project site (based on the 60 WTGs proposed) may range from four to 29 raptor fatalities per year. However, like the Hatchet Ridge site, the two Columbia Plateau sites experience more severe winters with regular snowfall. Given differences in habitat, climate, raptor communities, and fatality monitoring methodologies among projects, it is not possible to determine whether raptor mortality rates at the project site will be more similar to the lower range (4–29 raptors/year), based on other wind facilities in the northwestern United States, or closer to the higher estimate (114 raptors/year) based on median fatality rates observed for wind projects the Pacific avifaunal biome.

Because raptors generally occur at low densities given their large territory sizes and are long-lived, often with a relatively low reproductive rate, this impact on raptors could be potentially significant, particularly for special-status species expected to occur regularly on the project site such as the Cooper’s hawk, sharp-shinned hawk, burrowing owl, ferruginous hawk, and northern harrier. This impact would be **potentially significant**.

Mitigation Measure 3.5-11: Avoid, Minimize, and Compensate for Operational Impacts on Raptors.

The project applicant shall implement:

- Mitigation Measure 3.5-5a, “Avoid, Minimize, and Compensate for Operational Impacts on Eagles,” which provides similar protections to raptors;
- Mitigation Measure 3.5-5b, “Conduct Postconstruction Mortality Monitoring for Eagles,” as adhering to postconstruction monitoring for eagles will also provide sufficient fatality monitoring for other raptors; and

- Mitigation Measure 3.5-5c, “Implement Compensatory Mitigation to Offset Operational Impacts on Eagles.” These avoidance and minimization measures include requirements to implement avoidance and minimization measures and implement a PCMM to monitor and report on project-related fatalities. This measure also describes compensatory mitigation in the form of retrofitting power poles to reduce electrocution risk to eagles, but this mitigation also provides benefits to raptors other than eagles (Kagan 2016).

After collection of 3 years of postconstruction monitoring data, the Humboldt County Planning & Building Department will review the data and, in consultation with USFWS and CDFW, will determine which, if any, specific WTGs generate disproportionately high levels of avian mortalities (based on evidence of statistically significant higher levels of mortality relative to other WTGs). If specific WTGs are found to result in disproportionately high avian mortalities, the project applicant shall consult with the County to evaluate any feasible measures that can be implemented at the discretion of the County to reduce or avoid mortalities at those specific WTGs.

If unauthorized take of a federal or state threatened or endangered raptor occurs during project operation, the project applicant shall immediately notify the appropriate agency (CDFW and/or USFWS) by phone. The applicant shall then submit a written finding to the appropriate agency and the County within 2 calendar days that describes the date, time, location, species and, if possible, cause of unauthorized take. The applicant shall notify the County within 3 calendar days of the receipt of any USFWS and/or CDFW required or recommended actions resulting from the unauthorized take, including whether an incidental take permit and/or additional requirements is deemed necessary by either agency.

Implementation: Project applicant.

Timing: Avoidance and minimization of impacts during construction; postconstruction mortality monitoring for the life of the project.

Enforcement: Humboldt County Planning & Building Department.

Significance after Mitigation

Implementing Mitigation Measure 3.5-11 would avoid and minimize potential impacts on special-status raptors to the maximum extent feasible, and would offset some of the impacts on raptors by reducing raptor electrocution rates by power pole retrofits. However, the fatalities of as many as 114 raptors/year on regional populations of raptors would substantially reduce the region’s raptor populations. This impact would be **significant and unavoidable**.

The expansion and operation of the Bridgeville Substation does not include operational hazards similar to the WTGs, and **no impact** on raptors would occur.

Migratory/Resident Birds

This section addresses project impacts on nonraptor birds that are not already addressed in separate sections of this impact analysis, such as the marbled murrelet. A total of 110 bird (nonraptor) species were detected on the project site during surveys (Appendix J). Passerine (songbird) species were most often encountered during surveys, followed by doves/pigeons and upland game birds. The bulk of bird observations were of common

thrush, sparrow, and blackbird species using coniferous forest (75 percent of all observations) and grassland habitats (30 percent of observations).¹

Aside from the marbled murrelet, 14 species of special-status nonraptor birds have some potential to occur on the project site, nine of which are known to occur and were documented during project surveys: Vaux's swift (*Chaetura vauxi*), olive-sided flycatcher (*Contopus cooperi*), purple martin (*Progne subis*), grasshopper sparrow (*Ammodramus savannarum*), horned lark (*Eremophila alpestris actia*), Bryant's savannah sparrow (*Passerculus sandwichensis alaudinus*), yellow warbler (*Setophaga petechia*), black swift (*Cypseloides niger*), and common loon (*Gavia immer*) (Table 3.5-5). Other special-status birds that could occur on the project site are western yellow-billed cuckoo (*Coccyzus americanus occidentalis*), little willow flycatcher (*Empidonax traillii brewsteri*), yellow-breasted chat (*Icteria virens*), bank swallow (*Riparia riparia*), western snowy plover (*Charadrius alexandrinus nivosus*), and black brant (*Branta bernicla*) (Appendix M).

Status of Species in the Project Area

Common Birds: The Bear River Ridge portion of the project site overlaps the northeastern corner of the Cape Mendocino Grasslands Important Bird Area, one of the largest expanses of grassland habitat in the North Coast region that extends south and west of the project site to also include coastline habitats and offshore rocks (National Audubon Society 2013) (Figure 3.5-10). The Cape Mendocino Grasslands Important Bird Area supports a diversity of resident and migratory birds that may also occur on the project site (National Audubon Society 2013). During project surveys, American robin (*Turdus migratorius*), dark-eyed junco (*Junco hyemalis*), Brewer's blackbird (*Euphagus cyanocephalus*), and western meadowlark (*Sturnella neglecta*) were encountered more often than any other species (Stantec 2018g). American robins, dark-eyed juncos, and Brewer's blackbirds are habitat generalists that likely benefit from open grasslands and edge habitats in the project site, particularly on ridgelines and recently logged areas, for foraging. Robins and juncos use forests and woodlands for nesting, while Brewer's blackbirds will nest in a variety of habitats, and western meadowlarks are dependent upon grasslands for both foraging and nesting.

The Fields Landing component off-loading location and the northern portion of the haul route are situated along the eastern edge of the Humboldt Bay Important Bird Area (Figure 3.5-6). Humboldt Bay is known to be an important wintering and stopover habitat for thousands of migratory birds, and provides a diversity of nesting, roosting, and foraging habitats for large numbers of waterfowl, shorebirds, raptors, and songbirds. Several rookery (colonial nesting) sites for herons, egrets, and cormorants are documented approximately 2 miles south and 7 miles north of the offloading site (CDFW 2018a).

Special-Status Birds: Most of the special-status birds that are known to or could occur in the project area are associated with either forest or grassland habitats. The abundant forests and woodlands on the project site, particularly in the eastern portion of Monument Ridge and the gen-tie corridor, provide suitable breeding and foraging habitat for Vaux's swift, purple martin, and olive-sided flycatcher. The large expanses of grassland occurring on Bear River Ridge and western Monument Ridge provide suitable breeding and foraging habitat for Bryant's savannah sparrow, horned lark, and grasshopper sparrow. Grasshopper sparrow and Bryant's savannah sparrow may also occasionally use shrub/scrub habitats, while horned larks are entirely dependent upon open areas in grassland habitat.

¹ Many birds were observed occupying more than one habitat; thus, the total percentage of observations adds up to be greater than 100.

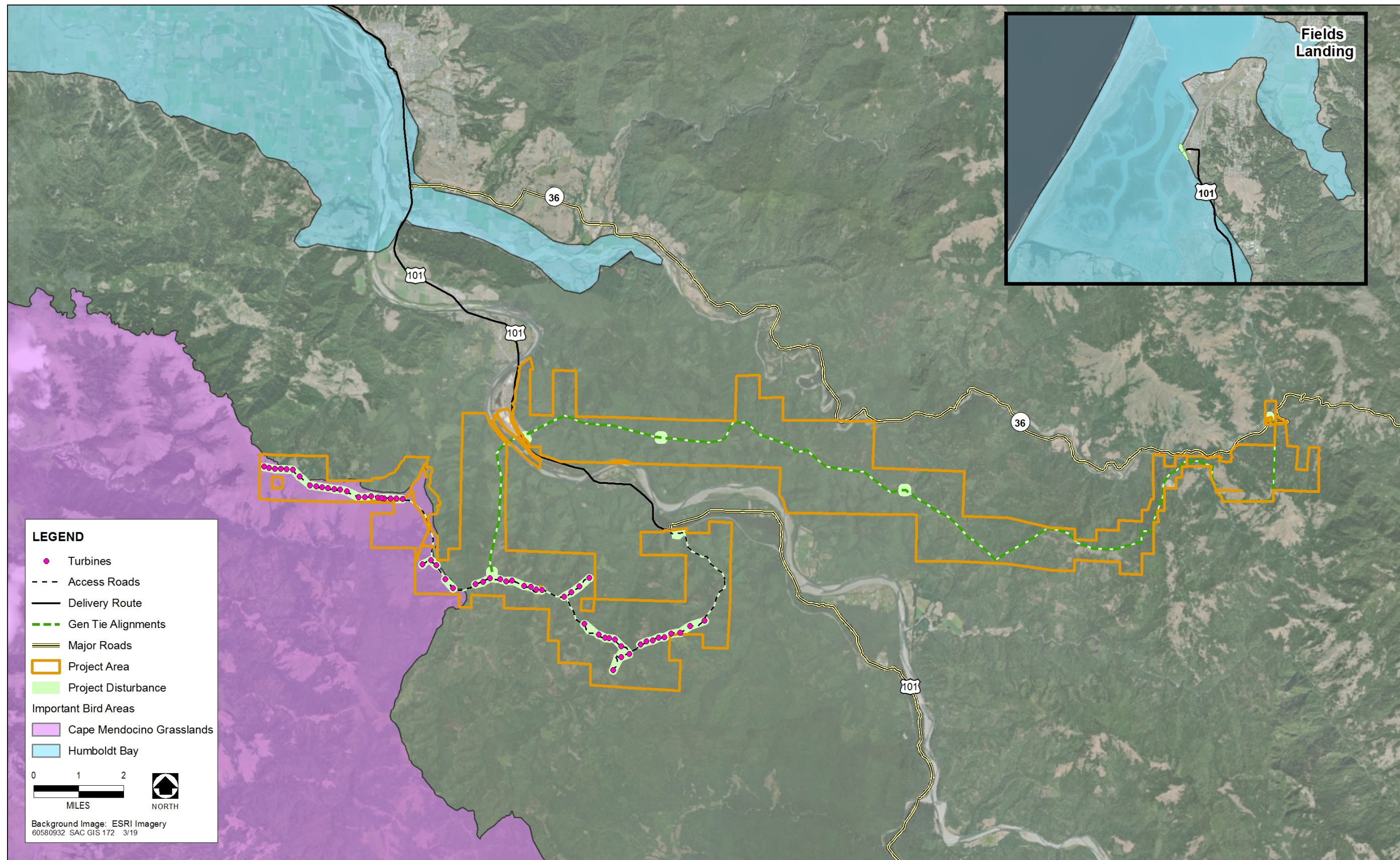


Figure 3.5-10. Important Bird Areas

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Horned larks are particularly concentrated near the eastern portion of Bear River Ridge within the project site footprint (Stantec 2018g; McAllister, pers. comm., 2019). In 1929, the small isolated population of horned larks on Bear River Ridge was described by George Atwell as occupying a 1-mile by one-half mile area on Bear River Ridge, and containing approximately 50 pairs (Grinnell 1931). Four of the horned larks were collected by Atwell and were later identified as streaked horned larks (*Eremophila alpestris strigata*) by Grinnell. Around 1942, these specimens were relabeled as California horned larks (*E.a. actia*), likely based on plumage (McAllister, pers. comm., 2019). However, this classification was likely based on plumage alone, and efforts are underway to obtain samples from the specimens for genetic testing, as there is interest in determining whether this population might be genetically distinct. Since 2008, no more than seven pairs of horned larks have been reported, and the breeding area—the only known breeding area within approximately 100 miles—is within a similar sized area on Bear River Ridge as was reported by Atwell (McAllister, pers. comm., 2019). Figure 3.5-11a shows survey observations for horned larks on Bear River Ridge between 2004 and 2007 by McAllister et al. (McAllister, pers. comm., 2019), and in 2018 by Stantec (2018g; Appendix J). The 2018 surveys by Stantec included additional points on Monument Ridge where larks were not detected (not shown on the map) and the 2004–2007 surveys by McAllister et al. included additional points on Bear River Ridge where larks were not detected (not shown on the map). Symbols on the map reflect survey locations from which larks were detected, not the actual locations of the larks. The actual locations of the larks were likely within a 100-meter radius, based on the ability to detect this species by sight and/or sound. Figure 3.5-11b shows observations during part of the breeding season (April through July) from the same studies. These records were isolated to exclude temporal overlap with the presence of nonbreeding individuals to provide a more accurate presentation of the specific breeding area on Bear River Ridge.

On Bear River Ridge, these birds are found in ridgetop short-grass habitat, especially where sporadic small rock outcrops occur. These outcrops, which consist of large boulder-size to basketball-sized rocks, serve as singing perches for males; male-female pairs are frequently observed at these rocks together in Spring (McAllister, pers. comm., 2019), and nests are often placed on the leeward side of rocks or other objects (Beason 1995). Special-status birds that could occur in riparian forest and scrub habitats on the project site are yellow-billed cuckoo, little willow flycatcher, yellow-breasted chat, and yellow warbler. Yellow-billed cuckoo is a federally listed as threatened and state listed as endangered, and is a rare breeder on the lower Eel River (McAllister 2016).

Little willow flycatcher is also a rare breeder in riparian habitats with known local nesting records on the Mad, Van Duzen, and Eel rivers (McAllister, pers. comm., 2019). Riparian scrub habitats (i.e., willow, alder, and blackberry thickets) are scattered amongst the numerous drainages that traverse the proposed wind generation corridor, access roads, and gen-tie. However, these riparian areas are relatively narrow bands along the rivers, not contiguous, and interspersed with urban areas. Therefore, it is unlikely that they provide suitable nesting habitat for these species. It is likely that these species could fly over the ridge through the project area during migration.

The Eel River and Van Duzen River riparian corridors also provide nesting habitat for bank swallow, which has been documented to nest in banks along both rivers approximately 6 miles from the project site in 2017 (Slauson 2017).

Special-status birds that occur in Humboldt Bay or adjacent habitat are black brant, common loon, and western snowy plover. Black brants depend on the extensive beds of eelgrass present in Humboldt Bay as an important food source during migration. Eelgrass occurs near the project's proposed unloading location at Fields Landing (Figure 3.5-4). Common loons are common winter residents on nearshore coastal waters in the region, including

Humboldt Bay, and would not be expected to occur in the project area, except possibly as rare flyovers during migration. Western snowy plovers are known to breed in beach and dune habitats along Humboldt Bay and on gravel bars near the mouth of the Eel River (Feucht et al. 2018; CDFW 2018a). Suitable habitat for western snowy plover and black brant has not been mapped in the project disturbance area.

Construction-Related Impacts

Construction activities, including grading and clearing of vegetation for installation of project infrastructure and access roads, may affect common and special-status birds through habitat reduction, nest disturbance or destruction, and interference with normal nesting/foraging behavior.

Construction activities would not result in impacts on avian habitat in Humboldt Bay, because barges would use existing shipping channels and infrastructure to deliver WTG components, with no dredging or anchoring required for access (Central Oceans 2018, 2019). No impacts on eelgrass habitat would occur because a spud barge with cleats, portable spud wells, and spud/morning legs would be used to provide a mooring to prevent the delivery barge from drifting toward the shore. Similarly, suitable habitat for western snowy plover near the project site would not be affected. No impacts on beach habitats are expected as a result of project component delivery and storage at Fields Landing, because the site is composed entirely of developed areas and ruderal grassland. Any gravel bars that may exist near the project site, such along the Eel River where the gen-tie alignment would cross, would be entirely avoided by construction activities because the gen-tie would be bored under the river, with drilling entry and exit locations set back from riparian areas. Furthermore, because no construction activities are proposed within or near river banks, no impacts on bank swallow nesting habitat is expected. Therefore, these topics are not discussed further in this EIR.

IMPACT 3.5-12	Construction Impacts on Avian Foraging and Nesting Habitat. <i>Construction activities associated with installation of proposed project infrastructure, including wind turbine generators and pads, the substation, the O&M facility, and the gen-tie, resulting in removal of forest, woodland, grassland, and riparian habitat would result in loss of avian nesting, foraging, and migratory stopover habitat for special-status birds. This impact would be potentially significant.</i>
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Project construction activities requiring clearing and grading for staging areas and access roads, and installation of project infrastructure, would disturb up to 862.1 acres of forest, woodland, grassland, shrub/scrub, and riparian/wetland areas that serve as potential avian nesting, foraging, and migratory stopover habitat. Of this, up to 729.5 acres are associated with temporary impacts (i.e., staging and storage areas), of which up to 132.6 acres may be permanently affected by removal and/or replacement by project infrastructure.

The project disturbance area consists mainly of woodland/forest and grassland, with lesser amounts of riparian and wetland habitats. As a result, project construction (i.e., permanent infrastructure) has the greatest potential to affect the following special-status bird species:

- ▶ removal of up to 90.2 acres of forest and woodlands that could provide suitable habitat for nesting and foraging Vaux’s swift, purple martin, and olive-sided flycatcher;
- ▶ removal of up to 3.97 acres of shrub/scrub that could provide suitable foraging habitat and singing perches for Bryant’s savannah sparrow, grasshopper sparrow, yellow warbler;

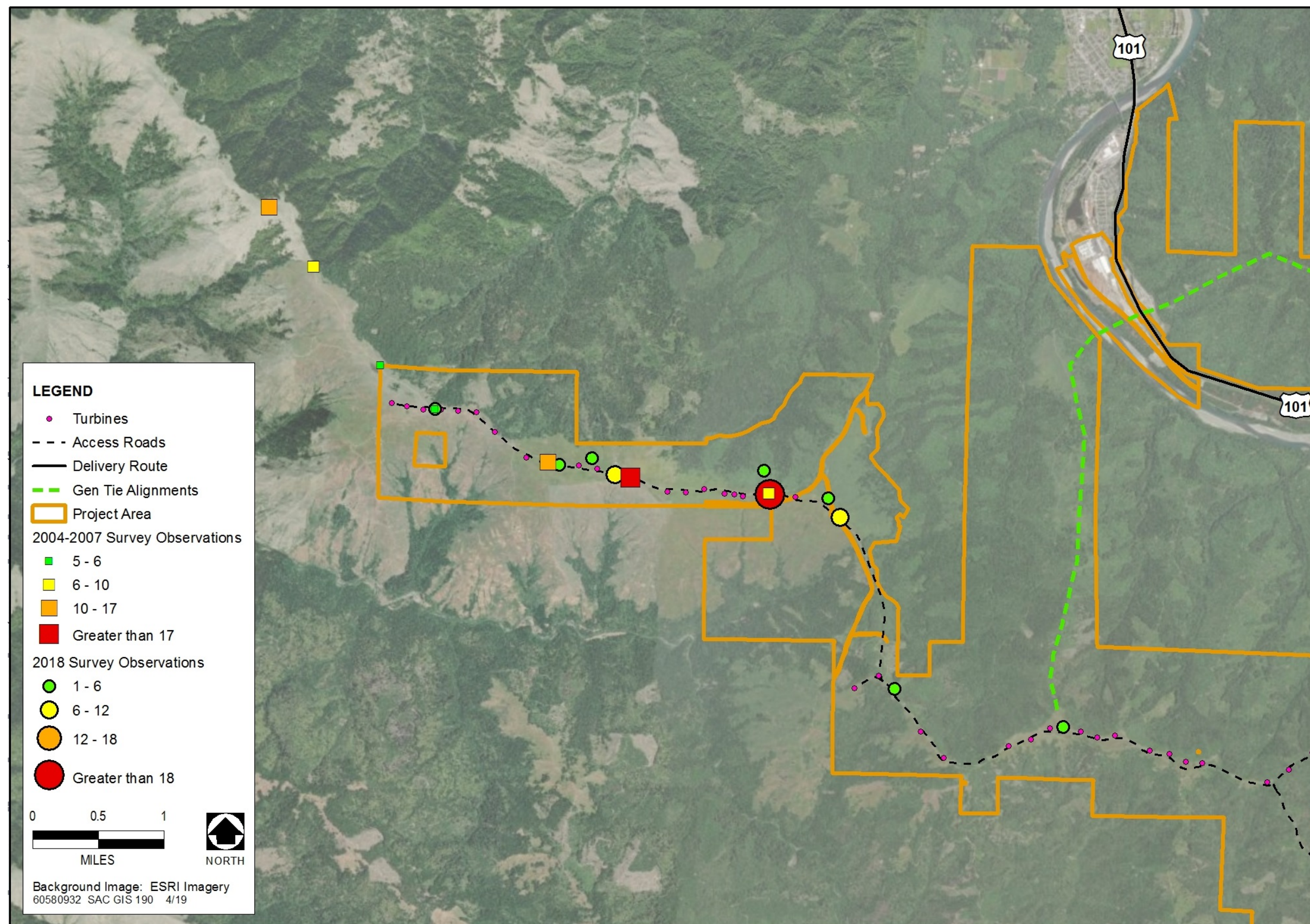


Figure 3.5-11a. California Horned Lark Population on Bear River Ridge, Humboldt County—2004–2007 and 2018 Survey Observations

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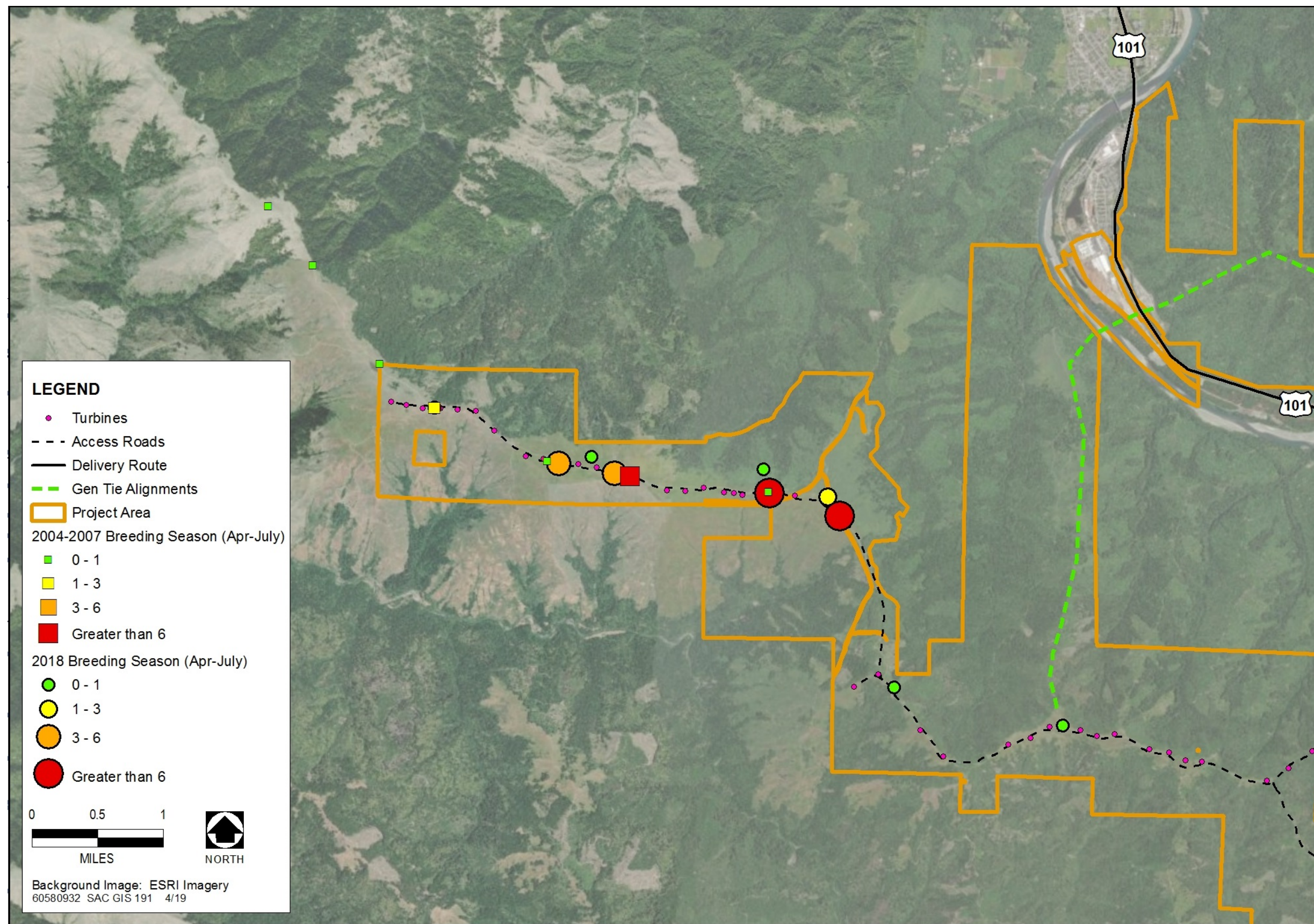


Figure 3.5-11b. California Horned Lark Population on Bear River Ridge, Humboldt County—2018 Survey Observations during Part of the Breeding Season

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- ▶ removal of up to 37.5 acres of suitable grassland habitat for horned lark, Bryant's savannah sparrow, and grasshopper sparrow; and
- ▶ removal of up to 0.7 acre of riparian habitat and up to 0.2 acre of other wetland areas that would affect suitable nesting and foraging habitat for yellow warbler.

Actual disturbance acreage would be refined and expected to be reduced during engineering and siting, because project components would be designed to minimize impacts where possible. Construction activities resulting in the removal of trees and shrubs, although part of a temporary impact area that would be reclaimed and revegetated after completion of project activities, could result in substantial temporal loss of habitat; replacement planted trees and shrubs may take decades to reach the size of trees that were removed. Shrub/scrub habitat may recover more quickly than large hardwood and conifer trees, but thickets may still require 5–10 years to reach mature height and density. Temporal impacts on forest and shrub habitat may also occur where trees and shrubs are trimmed to accommodate project component delivery and access. Depending on the extent and severity of trimming, particularly in trees, this could be considered a permanent impact if the shape and/or size of a tree, and thus its usability as roosting or nesting habitat, were to be permanently altered by trimming activity. Furthermore, permanent removal of forest/woodland habitat for access roads, the O&M facility, and the gen-tie would represent a permanent change in habitat, even if the staging areas and the gen-tie were reclaimed with native grasses.

As a result of project activities, some special-status birds would experience **potentially significant** losses of habitat, including up to 90.2 acres of forest/woodland, 37.5 acres of grassland, and 0.88 acre of riparian/wetland areas. Common bird species are not expected to be substantially affected at the population level by this level of habitat loss. The potential for significant impacts on special-status bird species is greater, particularly if they nest in or depend heavily on woodland/forest or grassland habitats.

For Vaux's swift, purple martin, and olive-sided flycatcher, there is no evidence that woodlands and forest habitat are limiting factors for nesting or foraging, and these habitat types are abundant in the project area. Loss of 90.2 acres of forest and woodlands would not have substantial adverse effects on these species. Similarly, Bryant's savannah sparrow, grasshopper sparrow, and yellow warbler are not likely to experience significant adverse impacts from permanent loss of to 3.97 acres of shrub/scrub. For special-status species such as yellow warbler, and other common bird species dependent on riparian habitat, loss of even 0.7 acre of riparian habitat could adversely affect habitat that provides sites for nesting, foraging, and cover. Grassland impacts could also have substantial impacts on a species like horned lark. Regionally, horned larks are only known to breed in grassland areas of eastern Bear River Ridge, so any loss of grassland habitat on Bear River and Monument Ridge would be potentially significant for this small and disjunct population.

In contrast, the land cover type that would experience the most extensive impact (forests and woodland) is not a habitat type that is limited in the region, and permanent impacts on other habitat types (such as riparian and shrub/scrub) are relatively low compared to their availability. After project construction, most of the project area would remain undeveloped, and habitats required by special-status birds would not be limited to the extent that permanent impacts would result in significant (i.e., population-level) impacts on the majority of special-status species. However, for horned larks, which are a regionally small and disjunct population, loss of grassland habitat that supported breeding horned larks would could have a potentially significant impact. This impact would not be a consequence of losing foraging habitat because the grassland habitat that would be permanently affected by the project habitat would occur in small, discrete locations spread across a large landscape. However, if construction

and habitat loss were to substantially disrupt horned lark breeding activities, the impact on this small, isolated population would be **potentially significant**.

Mitigation Measure 3.5-12: Avoid and Minimize Impacts on Avian Nesting and Foraging Habitat.

The project applicant shall implement the following measures to avoid or offset impacts on avian nesting and foraging habitat:

- Minimize the construction footprint in riparian and wetland habitats, and in grassland habitats that could support nesting horned larks. Based on information from project bird use survey data (Stantec 2018g) and from McAllister (pers. comm., 2019), the project applicant shall develop a map depicting the location of the Bear River population of horned larks. Within this area, small and large rock outcroppings shall not be disturbed for the purposes of WTG placement. A 150-foot buffer shall be applied to large and small rock outcroppings that are suitable habitat for horned larks. If it is not feasible to maintain the rock outcroppings for the purpose of constructing the main access road, substitute rocks shall be placed within the mapped population area.
- Implement Mitigation Measure 3.5-1c, “Develop and Implement a Worker Environmental Awareness Program.”
- Provide compensatory mitigation for permanent impacts on grassland habitat at a no-net-loss ratio for grassland and scrub/shrub habitat, and at a 3:1 ratio for permanent impacts on riparian habitat, as described in Mitigation Measure 3.5-23e, “Develop and Submit a Reclamation, Revegetation, and Weed Control Plan.” Temporary impacts on grassland, scrub/shrub, and riparian habitat shall be restored on-site.

Implementation: Project applicant.

Timing: Before and during construction activities proposed to take place during the avian nesting season (February 15–September 15, annually).

Enforcement: Humboldt County Planning & Building Department.

Significance after Mitigation

With implementation of Mitigation Measure 3.5-12 described above, potential impacts of project construction on avian foraging and nesting habitat would be reduced because project components would be sited in areas where they would not affect avian nesting and foraging habitat where feasible, and unavoidable temporary and permanent impacts on suitable avian habitat would be restored. Impacts on horned lark nesting habitat would be avoided or mitigated with implementation of the horned lark mitigation plan described below (Mitigation Measure 3.5-14). These mitigation measures would reduce this impact to **less than significant**.

Implementing Mitigation Measure 3.5-12 would reduce construction-related impacts of the Bridgeville Substation expansion related to loss of avian foraging and nesting habitat to **less than significant**.

<p>IMPACT 3.5-13</p>	<p>Construction Impacts on Nesting Birds. <i>Construction of the proposed project could affect avian nest success if active nests were to be directly affected or if construction activity were to cause disturbance at nest sites, thereby reducing adults' nest attentiveness and nest productivity. This impact would be potentially significant.</i></p>
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Project construction activities and related disturbance could result in direct and indirect impacts on nesting common and special-status birds. As discussed above, the black brant and common loon do not nest in or near the project site. In addition, suitable nesting habitats for western snowy plover (beaches, dunes, gravel bars) and bank swallow (banks over water) are not part of the proposed project's disturbance area. Therefore, impacts on these species and/or their nest sites are not expected to occur.

Willow flycatchers are extremely scarce as breeders in Humboldt County, and the project site contains little nesting or favorable foraging habitat for this species. Based on 5 years (1995–1999) of intensive breeding bird surveys conducted throughout Humboldt County, only one confirmed, two “probable” and four “possible” breeding occurrences were reported (Hunter et al. 2005). Nevertheless, the possibility of willow flycatchers nesting in riparian habitat in the project site cannot be ruled out.

Yellow-billed cuckoos could potentially nest in the project area. A small area of suitable nesting habitat (cottonwood riparian forest) exists along the Eel River, next to the proposed gen-tie crossing. The nearest occurrence records for yellow-billed cuckoos are approximately 4 miles downstream near Rio Dell at the base of Monument Road and upstream at the mouth of Larabee Creek. Evidence of breeding has been documented on the lower Eel River at Cock Robin Island, approximately 8 miles from the project site (Falxa and McAllister 2016).

Direct construction-related impacts on nesting birds include destruction of nests or eggs as a result of vegetation trimming, tree removal, and grading. These actions could directly affect birds nesting in grassland, forest/woodland, shrub/scrub, and riparian habitats as described above, including special-status species.

Indirect impacts on nesting birds, including special-status species, include visual or auditory disturbance from construction noise and human presence. These types of disturbance could result in nest abandonment or failure by deterring birds from preferred nest and foraging sites, and/or distracting adults from tending to their eggs or young.

Direct and indirect impacts on nesting birds, including special-status species such as yellow-billed cuckoo, on and near the project site during construction could result in nest destruction, abandonment, and failure. This impact would be **potentially significant**.

Mitigation Measure 3.5-13: Avoid Impacts on Nesting Birds.

The project applicant shall minimize impacts on habitat supporting nesting birds, as described in Mitigation Measure 3.5-12, and shall implement Mitigation Measure 3.5-1c, “Develop and Implement a Worker Environmental Awareness Program,” and measures for biological monitors. In addition, the project applicant shall implement the following measures to avoid directly or indirectly affecting nesting birds during project construction:

- The project applicant shall conduct preconstruction nesting bird surveys to locate all active nests of special-status birds and birds protected under the MBTA, and California Fish and Game Code Sections 3503 and 3503.5. Before any construction activities occur during the general avian nesting season (March 1–August 31), including vegetation removal (if necessary), preconstruction nesting bird surveys shall be conducted by a qualified biologist to identify any nests within 250 feet of proposed work areas. The qualified biologist shall be knowledgeable in the distribution, habitat, life history, and identification of Northern California birds; experienced in nest searching for birds that may occur within the study area; and knowledgeable in survey protocols and/or permits needed to survey for federally listed or state-listed birds.
- If nests are detected during preconstruction surveys, a 250-foot exclusion zone shall be established around the nest in which no work will be allowed until the young have successfully fledged or nesting activity has ceased. The determination of fledging or cessation of nesting shall be made by a qualified biologist with experience in nest searching and monitoring for raptors, in consultation with CDFW and USFWS. In consultation with CDFW and USFWS, the size of the exclusion zone may be modified depending on the species and the type of construction activity and associated disturbance anticipated near the nest. Active nest sites shall be monitored periodically throughout the nesting season to identify any sign of disturbance and to document nest status.

Implementation: Project applicant.

Timing: Before and during construction activities proposed to take place during the general avian nesting season (March 1–August 31, annually).

Enforcement: Humboldt County Planning & Building Department, in consultation with CDFW and USFWS.

Significance after Mitigation

With implementation of Mitigation Measure 3.5-13, potential construction-related impacts on avian nesting success would be reduced because the locations of active nests would be determined and the nests would be protected during construction. This mitigation measure would reduce impacts to **less than significant**.

Operational Impacts

IMPACT 3.5-14	Operational Impacts on Nonraptor Birds. <i>Operation of the proposed project could result in mortality of and injury to nonraptor birds, as birds could collide with or be electrocuted by project components such as wind turbine generators and electrical transmission lines. This impact would be potentially significant.</i>
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Operation of the proposed project could result in direct impacts on nonraptors through injury or mortality if they were to collide with operating WTGs. The proposed approximately 19-mile, 115 kV gen-tie that would provide interconnection with the existing PG&E transmission system would pose a risk of collision or electrocution. Nonraptor birds that nest, forage, or move through the project area during migration or dispersal would be at risk of these potential direct impacts.

The risk of collision with WTGs is the most important potential operational impact on nonraptor birds. (See Impact 3.5-11, “Operational Impacts on Raptors,” which evaluated this effect on raptors.) The results of an avian risk assessment conducted by Stantec (2018g) were analyzed to estimate the number of avian fatalities expected to result from project operation. The analysis found that the project would cause approximately three to six avian mortalities per WTG per year (see Impact 3.5-13). Nonraptor birds (all groups other than diurnal raptors, vultures, and owls) composed 96.9 percent of all avian observations during bird use count surveys and 99.1 percent of observations in small-bird count surveys conducted at the project site by Stantec (2018g). However, nonraptor birds composed about 83 percent of all mortalities detected during avian mortality monitoring surveys at 16 wind energy facilities located in California, Oregon, and Washington (Stantec 2018g).

Applying the above-derived estimate of three to six avian mortalities per WTG per year to the regional estimate of about 83 percent of mortalities being nonraptor birds, and multiplying by the 60 WTGs proposed for the project, a reasonable estimate of the number of nonraptor birds that could be killed through collision with WTGs per year is about 150–300 individuals. The most common nonraptor species tend to be the ones that most frequently collide with WTGs. Stantec (2018g) summarized mortalities at 16 facilities in the region and presented data on 1,114 nonraptor mortalities. The findings indicate that on average, 72.4 percent of all nonraptor mortalities were passerine (perching) birds, followed by upland game birds, doves and pigeons, and waterfowl (7.7 percent, 6.1 percent, and 5.9 percent of nonraptor mortalities, respectively). No other group accounted for more than 2.3 percent of nonraptor mortalities.

Given the above-estimated range of 150–300 nonraptor mortalities per year at the project site, one might expect approximately 110–220 (72.4 percent) mortalities of passerine birds, and no more than about 10–25 (8 percent) mortalities of any other single taxonomic group. These numbers are intended only to provide a general index of the anticipated level of mortality, based on what has been observed at other wind energy facilities in the region.

The composition of nonraptor bird species at the project site may not correlate strongly with the number of fatalities observed across species or taxonomic groups. Variability in collision risks among species is affected by factors other than density, such as the percentage of time the species spends flying in the rotor-swept area, and other aspects of bird behavior. Nonetheless, fatalities at the project site are expected to be highest for the species that compose a large proportion of fatalities at other wind energy facilities in the region and were commonly detected in the project area during surveys conducted by Stantec (2018g). Among these species are western meadowlark and other blackbirds, and sparrows, including dark-eyed juncos.

Horned larks often compose a large proportion of mortalities at wind farms in the region, but the species’ abundance at the project site is relatively low. Nonetheless, impacts on this species here may have a disproportionately large impact because the population is small and disjunct from other populations in the species’ range. These conditions suggest the possibility that the population could be genetically distinct and not supported by immigration from other populations. Locally breeding willow flycatchers are unlikely to be at risk of WTG collision because the project area contains little nesting or favorable foraging habitat and willow flycatchers are extremely scarce as breeders in Humboldt County. Willow flycatchers have been documented to travel through northwestern California during fall migration (Ralph and Hollinger 2010), but this species is uncommon during migration, which typically occurs from mid-May through mid-June and late July–September (Harris et al. 1987; Hunter et al. 2005; Ralph and Hollinger 2003), a temporal pattern similar throughout the state (Small 1994). In addition, the project site does not compose ideal migratory stopover habitat for nonbreeding migrants, although migrants might occasionally occur in the project area. Migrant willow flycatchers prefer willow riparian and

coastal willow patches in the region (Harris 2006), and willow groves and other riparian habitats are relatively widespread in Humboldt County and do not appear limited with respect to willow flycatcher stopover habitat. With respect to potential WTG collisions, the probability of a breeding, or potentially (California) breeding, willow flycatcher interacting with a WTG at the project site is low.

Non-California breeding migrant willow flycatchers are also scarce in the project region, but some migrant willow flycatchers may migrate over the project site. Willow flycatchers, like many passerines, migrate nocturnally. For most passerines, the average migration altitude is between 500 and 1,000 feet (Bellerose 1971), with many cases of nocturnal migrants flying higher than 1,000 feet (Newton 2008) (an observation strongly supported by radar studies at wind resource projects—e.g., see Johnston et al. 2013 and Aschwanden et al. 2018). However, altitudes of migration are variable and subject to influence by weather. Migrants must land and take off for ascent and descent in migration, and altitudes of migration can be lower than normal when crossing a ridge. Nevertheless, given the relative scarcity of migrant willow flycatchers in the project region and the typical altitude of nocturnally migrating passerines, WTG collision risk should be very low.

In addition to these factors, high avoidance rates have been attributed to passerines and avoidance rates of as low as 0.97 and as high as 0.99 have been measured for them (Winkelman 1992, as cited in Chamberlin et al. 2006; Aschwanden et al. 2018). Studies of nocturnal bird migration using an X-band tracking-radar demonstrated that direct avoidance of WTGs by migrants was quite clear in many cases, indicating that nocturnally migrating birds can detect and avoid WTGs (Larkin 2010). Aschwanden et al. (2018) studied nocturnal migrants at a wind farm in a mountainous area in Switzerland using dedicated radar coupled with fatality searches (with appropriate correction factors) at WTGs from February to mid-November (2015). Based on 1.65 million birds per kilometer that passed through the wind facility with 390,500 flying at WTG risk height, they estimated 21 bird collisions per WTG and concluded that these birds exhibited a median avoidance of 97.9 percent (95 percent CI: 97.0 - 98.5 percent).

A rigorous study of the interaction of nocturnal migrants and WTGs was conducted at the Montezuma Hills Wind Resource Area in Northern California using nightly radar, night vision, and acoustic monitoring (Johnston et al. 2013) to determine nocturnal flight directions, passage rates, and flight altitudes of birds and bats coupled with daily carcass searches to assess fatality rates as a function of movement patterns in the wind resource area during fall migration periods from August 15 to October 15, 2009, and August 30 to October 28, 2010. Although the average nocturnal passage rates ranged from 326 to 454 targets per kilometer per hour (a high rate for the western United States), only 2–6 percent of the total passed through at altitudes less than 125 meters above ground level, the height where birds and bats are at risk of collision with WTGs. Six nocturnal-migrant bird fatalities were observed during the surveys. Nocturnal migrants do collide with WTGs and, while the exact proportion of migrants colliding with WTGs varies based on site-specific characteristics, this proportion appears quite low relative to the total numbers of birds migrating over wind resource projects.

Although nonraptor birds are generally at relatively low risk of collision with WTGs during migration, resident breeding birds and birds that winter in the project area are at risk of collisions with project-related components such as WTGs and electrical transmission lines. In particular, operational impacts on the project area's horned lark population could cause this population to decrease below self-sustaining levels. This operational impact would be **potentially significant**.

Mitigation Measure 3.5-14: Avoid and Minimize Operational Impacts on Nonraptor Birds.

The project applicant shall implement the following measures to avoid and minimize operational impacts of the project on nonraptor birds:

- **Minimize Construction Footprint.** The project applicant shall minimize the construction footprint to ensure that locations chosen for WTGs avoid known occurrences of all special-status nonraptor species to the greatest extent feasible.
- **Conduct Postconstruction Mortality Monitoring.** PCMM studies shall be designed to ensure a minimum overall detection probability (g) for bats of 10 percent during “intensive” searches (first 3 years) and 3 percent for subsequent annual “road and pad” searches. The overall detection probability shall be calculated as described for marbled murrelet (Mitigation Measure 3.5-2b; Dalthorp et al. 2017). Achieving this level of detection for bats will ensure that the detection rates for small birds are sufficient as well, because small birds generally persist longer and are detected at higher rates than bats.
- **Calculate Detection Probability.** The overall detection probability shall be calculated as described above for marbled murrelet and eagles, to represent the probability of detecting a carcass present on the site during the period of evaluation based on the results of searcher efficiency and carcass persistence trials, the proportion of WTGs covered, the proportion of carcasses falling within the search area, and the temporal extent of coverage. As described in Mitigation Measure 3.5-18b, this required level of detection is based on the need to accurately determine when the mortality rate of bats meets or exceeds 1.7 mortalities per WTG per year, which would trigger adaptive management action. Meeting this requirement will also ensure that detection rates of small birds are adequate to identify when one or more species is experiencing significant mortality, because they are more readily detected and tend to persist for longer than bat carcasses. After collection of 3 years of postconstruction monitoring data, the Humboldt County Planning & Building Department will review the data and, in consultation with USFWS and CDFW, will determine which, if any, specific WTGs generate disproportionately high levels of avian mortalities (based on evidence of statistically significant higher levels of mortality relative to other WTGs). If specific WTGs are found to result in disproportionately high avian mortalities, the project applicant shall consult with the County to evaluate any feasible measures that can be implemented at the discretion of the County to reduce or avoid mortalities at those specific WTGs.
- **Report Take.** If unauthorized take of a federally listed or state-listed threatened or endangered avian species occurs during project operation, the project applicant shall immediately notify the appropriate agency (CDFW and/or USFWS) by phone. The project applicant shall then submit a written finding to the appropriate agency and the County within 2 calendar days that describes the date, time, location, species, and if possible, cause of unauthorized take. The project applicant shall notify the County within 3 calendar days of the receipt of any USFWS- and/or CDFW-required or recommended actions resulting from the unauthorized take, including whether an incidental take permit and/or additional requirements is deemed necessary by either agency.

Implementation:	Project applicant.
Timing:	<p><i>Avoidance and minimization of impacts:</i> Before the start of project operation.</p> <p><i>Submittal of horned lark mitigation plan:</i> Before issuance of grading permits.</p> <p><i>Postconstruction mortality monitoring:</i> First 3 years of project operation.</p> <p><i>Compensatory mitigation:</i> Within 1 year of each documented instance of take thereafter.</p>
Enforcement:	Humboldt County Planning & Building Department, in consultation with CDFW.

Significance after Mitigation

Implementing Mitigation Measure 3.5-14 would avoid and minimize potential impacts on nonraptor birds to the maximum extent feasible. Mortality monitoring would potentially allow for the identification of particular WTGs or times of day or the year as having significant impacts on nonraptor birds. This would make it possible to make adaptive management decisions that could be used to reduce project impacts to less than significant. Therefore, implementing Mitigation Measure 3.5-14 would reduce this operational impact on nonraptor birds to **less than significant**.

The operation of the expanded Bridgeville Substation would have **no impact** that would pose a danger to nonraptor birds.

Bats

Construction-Related Impacts

IMPACT 3.5-15	<p>Construction Impacts on Bat Maternity Roosts or Hibernacula and Loss of Essential Roost Habitat.</p> <p><i>Construction of the proposed project could result in mortality of and injury to bats, including special-status species, and removal of essential bat roost habitat. This impact would be potentially significant.</i></p>
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Trees and rock outcroppings that offer appropriate habitat features to support bat roosts may be present in the project area. These habitat features include snags or trees that may decay in a way that creates cavities or large crevices (e.g., redwoods, tanoak, or big-leaf maple), and rock outcroppings that provide cavities or fissures. Roost sites are important habitat features for bats and can be a limiting resource for bat populations. Most California bat species, including 10 species that occur at the project site, form nursery colonies in the summer that number from several to hundreds of thousands of female bats and their young (Zeiner et al. 1988). Several of these colonial species have also been documented coming together in hibernacula during the winter, though typically in smaller numbers than their counterparts in the eastern United States (Weller 2018). This colonial trait can make local populations of these species especially vulnerable during these sensitive seasons.

Removal of an occupied maternity roost (e.g., via tree felling) could result in the fatality of an entire colony because when disturbed bats retreat rather than flush from the roost. Likewise, sufficient disturbance of an occupied maternity roost (e.g., via construction activities) could result in the abandonment of an entire generation of nonvolant pups (pups that cannot fly). Removal of an occupied hibernaculum could result in the fatality of an entire colony of hibernating nonvolant bats. Likewise, sufficient disturbance of an occupied hibernaculum could awaken hibernating bats during the winter, depleting their energy reserves and potentially resulting in death.

Construction activities that could cause temporary disturbance or permanent removal of trees or rock outcroppings that support occupied bat roosts, particularly maternity roosts or hibernacula, could result in mortality of or injury to a large number of bats, including special-status species such as Townsend's big-eared bat, pallid bat, little brown bat, long-eared Myotis, long-legged Myotis, and fringed Myotis. Such mortality would be a substantial adverse effect and could cause a local bat population to drop below self-sustaining levels. This impact would be **potentially significant**.

In addition, roost sites can be an essential and limiting resource for colonial bat species. Most species exhibit high roost fidelity, using the same roosts for generations, and suitable roosting conditions (e.g., thermal stability) can be narrow. Because the old-growth forest in the project area has been heavily logged, and few caves or mines exist in the vicinity, suitable roost sites may be scarce and important, especially for the Townsend's big-eared bat, which prefers these roost habitats. Researchers have shown that the use of individual hollow redwood trees by bats is denser in forests where only remnant small patches of old-growth remain compared to intact old-growth forest; that is, bats are more concentrated into large hollow trees where these trees are a more limited resource (Zielinski & Gellman 1999).

CDFW considers any structure, or set of structures, used by Townsend's big-eared bat as a maternity or hibernation roost to be habitat essential for the continued existence of the species (CDFW 2016). The nearby foraging, commuting, and night roosting habitats in areas around the roost sites are also considered essential habitat (CDFW 2016). The project would not remove any old-growth stands, thus reducing the probability that a Townsend's big-eared bat would be affected by the project. Despite this, construction activities that would cause the removal of trees or rock outcroppings could also permanently eliminate roost habitat considered essential for the local population of Townsend's big eared bat. This could indirectly cause mortality of local bat species and/or limit population growth rates of Townsend's big-eared bat. This impact would be **potentially significant**.

Mitigation Measure 3.5-15: Avoid and Compensate for Impacts on Bat Roosts.

To avoid direct and indirect impacts on bats, the project applicant shall conduct a habitat assessment to determine whether potential bat roosts occur in or near the project area, and shall implement avoidance and minimization measures to protect bats and bat roosts as described below.

1. Conduct a habitat assessment to identify potential bat roost sites:
 - a. Trees, rock outcroppings, and structures to be removed shall be assessed for potentially suitable colonial roost habitat in advance of removal (Tatarian 2018). The assessment shall be conducted under the guidance of a qualified biologist with experience identifying bat roosts and approved by CDFW. The assessment shall emphasize trees and rock outcroppings that exhibit characteristics that provide high-quality roost habitat, such as snags with apparent cavities or sloughing bark, large-diameter trees with basal hollows, large-diameter trees with indications of senescence, live

trees with dead tops, species that age or decay in a manner that creates cavities or large crevices (e.g., redwood, big-leaf maple, tanoak), and large rock outcroppings containing cave-like structures, or numerous fissures or flakes.

2. All potentially suitable roost habitat shall be rated on a scale of 1 to 3, as follows: 1 = unsuitable/low suitability, 2 = high suitability, 3 = identifiable roost. Avoid removal of confirmed roosts and highly suitable potential roost habitat:
 - a. Removal of roost habitat rated 2 or 3 shall be avoided to the extent feasible via project modifications (e.g., roadway realignment). When determining whether suitable roost habitat shall be preserved, the qualified biologist, in consultation with CDFW, shall consider whether preserving the habitat might lead to greater impacts (ongoing mortality) from wind farm operations than the impacts that would be caused by removal (exclusion and loss of habitat), depending on the location and significance of the suitable roost habitat.
 - b. If avoiding all potential and identifiable roost habitat rated 2 or 3 is not feasible, the qualified biologist shall visually inspect all accessible habitat during the daytime. During the inspection, the biologist shall identify characteristics that would make the habitat unsuitable for roosting bats (e.g., water intrusion, excessive airflow, indications of use by other wildlife) and for indications of use by bats (e.g., guano, urine or oil staining, bat smells, audible bat noises, visible bats). Visual inspections shall be aided as appropriate by the use of spotlights, binoculars, and borescopes, and shall avoid undue disturbance to roosting bats in a sensitive state (e.g., rearing or hibernation). Any roost habitat determined to be unsuitable shall be changed to a rating of 1. Any indications of bat use shall be recorded and the roost habitat shall be rated 3.
 - c. A qualified biologist who is experienced in surveying potential roost habitat, and who is approved by CDFW, shall survey all potential roost habitat rated 2 that is inaccessible for visual inspection to determine habitat use patterns. The survey design may include emergence surveys using night-vision technology, acoustic surveys, thermal surveys, or any combination of the above, as determined appropriate for specific site conditions by the qualified biologist, and as approved by CDFW. The surveyor shall attempt to determine whether the habitat serves as a day roost, night roost, maternity roost, and/or hibernacula; how many bats may use the habitat; and which species may use the habitat. To determine which seasons the roost is in use, such surveys may need to be conducted during all four seasons. Any habitat with indications of use shall be changed to a rating of 3. Any roost habitat that is surveyed sufficiently, as determined by the qualified biologist in consultation with CDFW, to indicate an absence of bat use shall be changed to a rating of 1.
 - d. As an alternative to doing extensive surveys to determine habitat use patterns and/or to determine whether the roost is used by Townsend's big-eared bat, the project applicant shall assume that all potential roost habitat rated 2 is identified roost habitat rated 3, and shall remove it and compensate for its loss as described below.
3. Adjust tree removal timing and approach to minimize impacts:
 - a. To the extent feasible, all tree removal shall occur in the fall (September 1–October 31, with adjustments possible depending on weather conditions and as approved by CDFW) to minimize impacts on foliage-roosting bat species, and on any colonial tree-roosting species not detected

during the habitat assessment and surveys. All trees rated 3 shall only be removed outside of their season(s) of use, or in the fall.

- b. The project applicant shall implement a staged approach to tree removal under the guidance of the qualified biologist who has experience identifying bat roosts. The purpose of the staged approach is to encourage any bats in residence to leave before habitat is removed. Where roost habitat rated 2 or 3 must be removed, habitat rated 1 shall be removed at least 1 day and no more than 5 days before habitat rated 2 or 3. In addition, if roost habitat rated 3 must be removed, the qualified biologist shall develop a tree removal approach to further encourage any bats in residence to leave before any trees are removed. This approach shall be developed in consultation with CDFW and may include such measures as limbing the tree a day before felling the tree; opening up the potential roost habitat to introduce disturbing airflow; introducing nighttime lighting or other disturbing elements to the roost area; or excluding bats from the habitat, either physically with the use of one-way doors, or with the use of acoustic deterrents, as practical.
4. Compensate for the loss of essential Townsend's big-eared bat roost habitat:
- a. All essential Townsend's big-eared bat roost habitat being removed shall be replaced with artificial roost habitat constructed to mimic the specific type of roost habitat being removed. The design and location of the artificial roost habitat shall be approved by CDFW, and may include the creation of basal hollows in existing trees, or constructed artificial roosts.
 - b. Based on the judgment of the qualified biologist and in consultation with CDFW, replacement habitat shall be located near suitable foraging habitat, and within a suitable distance of the habitat removed, to benefit the local bat populations affected. Bat occupancy performance standards, provisions for long-term protection, and a monitoring approach for the replacement habitat shall be approved by CDFW before the roost is removed.
5. Avoid and minimize temporary impacts on roost sites during construction:
- a. *Conduct a habitat assessment.* Trees, rock outcroppings, and structures located within a minimum 100-foot buffer area from anticipated construction disturbance areas shall be assessed as part of the habitat assessment described above in Measure 1. The buffer area will generally include all habitat within the line of sight from the edge of the disturbance area. However, the buffer area may be field-fit and expanded as necessary by the qualified biologist, depending on the severity of planned disturbance and any visual or acoustic screening that may exist (e.g., dense vegetation can reduce noise levels by 10 dBA more than 200 feet [U.S. Department of Transportation 2011 in Caltrans 2016]).
 - b. *Avoid and minimize disturbance of potential roost habitat.* Disturbance of all habitat rated 2 or 3 shall be avoided to the extent feasible via project modifications. If avoiding all habitat rated 2 or 3 is not possible, a qualified biologist, in consultation with CDFW, shall assess the degree of anticipated disturbance and probable species sensitivity. If warranted, the qualified biologist shall develop and implement impact minimization measures that are appropriate to site conditions. He or she shall consider that some degree of construction disturbance to species with high roost fidelity may be less disruptive than implementation of certain minimization measures (e.g., temporary exclusion). Impact minimization measures may include the following:

- Delaying work in a buffer area around the suitable roost habitat until spring or fall when all bats would be volant and could fly away from the disturbance area. An appropriate buffer may be approximately 100 feet depending on site specifics, but greater avoidance distances might be needed to allow noise to attenuate to approximately background levels to achieve optimal noise avoidance (Johnston et al. 2004).
- Modifying construction techniques, equipment, and/or timing to use less disruptive approaches. Examples of less disruptive approaches include using equipment that emits noise at a lower decibel level and/or at lower frequencies outside the ranges that bats can hear; scheduling intermittent highly disruptive activities during the spring and fall when bats are the least sensitive; and conducting intermittent highly disruptive activities when atmospheric conditions are favorable. (For example, noise travels farther during periods of higher humidity or lower temperatures [Washington Department of Transportation 2015 in Caltrans 2016]).
- Installing sound or vision barriers between the suitable roost habitat and the construction.
- Starting the disturbance before the sensitive season(s) and continuing into the sensitive season(s), so that bats can avoid establishing a maternity or hibernation roost in the area of disturbance, or can become desensitized to the disturbance before their sensitive season(s).
- Avoiding the use of nighttime lighting and/or disruptive work around important night roosts.
- Temporarily excluding bats before their sensitive seasons and before construction disturbance.
- As an alternative to implementing Measures 5a and 5b listed above, all highly suitable roost habitat may be surveyed as described above in Measure 2. If the qualified biologist determines that survey approaches and results are sufficient to indicate an absence of bats in the potential roost habitat, no further action is required.

Implementation: Project applicant.

Timing: Completion of habitat assessment before approval of grading or improvement plans or any ground-disturbing activities.

Enforcement: Humboldt County Planning & Building Department, in consultation with CDFW.

Significance after Mitigation

With implementation of the mitigation measure described above, potential direct and indirect impacts of roost removal and construction disturbance on bats would be reduced. Direct mortality would be minimized because potential bat roost habitat would be assessed and avoided where feasible. Compensatory mitigation in the form of artificial roost habitat would offset the unavoidable loss of any essential roost habitat for Townsend's big-eared bat. Implementing Mitigation Measure 3.5-15 would reduce this impact to **less than significant**.

Implementing Mitigation Measure 3.5-15 would reduce construction-related impacts of the Bridgeville Substation expansion related to loss of bat habitat to **less than significant**.

IMPACT 3.5-16	Construction Disturbance of Bachelor Groups, Migratory Roosts, or Solitary Bats. <i>Construction of the proposed project could result in mortality, displacement, and disturbance of bachelor groups, migrating bats, or solitary bats, including special-status species. This impact would be less than significant.</i>
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Bachelor roosts are day roosts that contain mostly males. Bachelor groups often form during the maternity season while females and pups congregate in maternity roosts. Migratory roosts are day roosts used by both males and females during the spring and fall. Neither of these types of roosts typically house very large numbers of bats like some maternity roosts. Bats from the two solitary species that occur in the project area, hoary bat and western red bat, typically roost alone in tree foliage year-round. However, during the maternity season, two or more female red bats and their young may be found roosting together.

As with colonial maternity roosts and hibernacula, construction activities that would cause temporary disturbance or permanent removal of an occupied bachelor roost, migratory roost, or solitary bat roost could cause direct and indirect adverse effects on individual bats or groups. Potential adverse effects could include direct mortality during roost removal; dysfunctional allocation of time and energy to vigilance behaviors; increased energy costs for maintenance, growth, and reproduction; degradation of physiological condition and social order; shifts in habitat use patterns, species distribution, and community structure; and roost abandonment (Caltrans 2016). Roost abandonment may cause pup mortality, expose bats to predation, require them to redirect their limited energy reserves to finding new roosts, and require bats to expend more energy for thermoregulation in suboptimal replacement roosts (Caltrans 2016).

However, because bats inhabiting bachelor and migratory roosts would be volant, they would be able to fly away from construction disturbances. Hoary bats and red bats change roosts frequently and mothers can move their young; therefore, they too would have the capacity to fly away from disturbance. None of the indirect adverse effects would be expected to cause mortality in large numbers of bats and would not be expected to cause a local bat population to drop below self-sustaining levels. This impact would be **less than significant**. No mitigation measures are required. However, Mitigation Measure 3.5-15 would be implemented to reduce these potential impacts further.

Implementing Mitigation Measure 3.5-15 would reduce the impact of the Bridgeville Substation expansion related to construction disturbance of bachelor groups, migratory roosts, or solitary bats to **less than significant**.

IMPACT 3.5-17	Loss of Bat Foraging Habitat and Nonessential Roosts. <i>Construction of the proposed project would require the permanent removal of foraging habitat, and could result in the permanent loss of nonessential roosts. This impact would be less than significant.</i>
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Most habitat types in the project area are suitable for foraging and/or roosting by the bat species that occur in the vicinity. In general, riparian corridors may attract the most bat use for both foraging and roosting, followed by forested habitat, the interface of grasslands and forested habitats, and grasslands (Thompson et al. 2017). Approximately 1,500 acres of the 2,218-acre project site are forest/woodland, 568 acres are grassland, and 16

acres are riparian (Table 3.5-2). Table 3.5-9 summarizes the habitat types that would be temporarily or permanently disturbed by project construction. Permanent loss of approximately 90.2 acres of forests/woodland, 37.5 acres of grassland, and 0.70 acre of riparian habitat would result in the loss of bat foraging habitat and could result in the permanent loss or degradation of nonessential roosts. Nonessential roosts may include bachelor roosts, migratory roosts, roost types that may be available in abundance (e.g., flaking bark), and roosts used by few bats or bats of low conservation concern (e.g., a small roost used by few Yuma Myotis).

Temporary loss of foraging habitat would constitute up to 464.3 acres of impacts on forest/woodlands, 246.2 acres of grassland, and 1.07 acres of riparian habitat. These temporary habitat losses would be minimized or offset with implementation of the measure “Minimize Construction Footprint” in Mitigation Measure 3.5-14, “Avoid and Minimize Operational Impacts on Nonraptor Birds”; and implementation of Mitigation Measure 3.5-23e, “Develop and Submit a Reclamation, Revegetation, and Weed Control Plan.”

Because abundant foraging habitat is available in the project vicinity, the temporary and permanent loss or degradation of foraging habitat would not be expected to cause indirect mortality to large numbers of bats, or to substantially reduce their habitat. Likewise, nonessential roosts are not critical for sustaining bat populations. The permanent loss of some nonessential roosts would not be expected to cause indirect mortality to large numbers of bats, reduce their number, or restrict their range. This impact would be **less than significant**.

The expansion of the Bridgeville Substation would occur in a minor area and sufficient foraging habitat and nonessential roosts are present in the area. This impact would be **less than significant**.

Operational Impacts

IMPACT 3.5-18	Operational Impacts on Bats. <i>Operation of the proposed project could result in mortality of and injury to a large number of bats, including special-status bat species, as a result of interaction with wind turbine generators. This impact would be potentially significant.</i>
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Most bat species are vulnerable to mortality and injury at wind farms as a result of collisions and other interactions with WTGs. Survey data suggest bat mortality from wind farms of up to 70 bats per WTG per year in North America (Arnett et al. 2008), with the highest rates documented along forested ridgelines. Collectively, researchers estimate that more than 500,000 bats are killed every year across Canada and the United States (Arnett and Baerwald 2013; Hayes 2013; Smallwood 2013 in Frick et al. 2017). Mortality monitoring has documented that hoary bats make up the highest proportion of bat fatalities (38 percent) at wind energy facilities (Arnett and Baerwald 2013). In one recent collaborative study, researchers concluded that even with no increase in wind energy generation beyond that available in 2014, the hoary bat population is expected to decline by as much as 90 percent in the next 50 years as a result of wind energy–related fatalities, with the possibility of near or total extinction (Frick et al. 2017).

Data from California wind farms reflect bat fatality patterns similar to those seen nationwide. Typically, migratory bats also make up the greatest proportion of documented fatalities in California (hoary bat, Mexican free-tailed bat, western red bat, and silver-haired bat), with the largest number occurring during fall migration and a smaller peak during spring migration.

Studies at the Montezuma Hills Wind Resource Area in Solano County indicate that migratory hoary and Mexican free-tailed bats are the most common bat fatalities. Bat fatalities in this wind resource area show a seasonal migratory patterns (August and September, April and May), and annual bat mortality rates at the 100-WTG Shiloh 1 wind facility have been estimated at 588 bat fatalities/year (Solano County 2011). (Solano County 2011). At Hatchet Ridge in Shasta County, the three most common species of bat fatalities were hoary bat, Mexican free-tailed bat, and silver-haired bat, in decreasing abundance in 2011 and 2012, with a seasonal peak in September and August. Reported fatality rates at that 44-WTG facility were 226 and 529 bats/year in each of those 2 years, respectively (Tetra Tech 2013). The first year of mortality studies conducted at one of the newest wind farms in California, the Golden Hills Wind Energy Center in Alameda County, documented that Mexican free-tailed bats (58 percent) and hoary bats (37 percent) accounted for 95 percent of the bat fatalities. Most bat fatalities occurred during the fall migration from August through October, with a secondary peak during spring in May and June (H. T. Harvey & Associates 2018b). Total mortality at this 48-WTG facility was estimated at 468 bats per year (318–900 bats per year).

As described in Section 3.5.1, “Environmental Setting,” acoustic monitoring for the proposed project documented the presence of 12 of the 13 bat species potentially occurring in Humboldt County, and confirmed expected habitat use patterns. Most of the species recorded at the project site are species of conservation concern, including the Townsend’s big-eared bat, western red bat, hoary bat, silver-haired bat, and four *Myotis* species. Overall bat activity in the project area may be relatively high, and a gradual increase in monthly activity was seen between March and September (Stantec 2018i). Likewise, Kennedy et al. (2014) documented a spike in bat activity in the fall during acoustic monitoring efforts in nearby Humboldt Redwoods State Park. The surveys also documented patterns similar to other studies that have shown bat activity to be positively correlated with nightly mean temperatures and negatively correlated with average nightly wind speed. Only one detector was placed at elevation, but analysis of acoustic sampling at rotor elevations typically reveals reduced bat activity with increased wind speed. These patterns can be useful in predicting periods of high bat mortality and adjusting wind farm operations to minimize impacts.

Recent research suggests that bat activity and species ratios detected before construction of a wind farm do not always predict bat fatality (Solick and Howlin 2018). At the Foote Creek Rim Wind Farm, hoary bats were 88 percent of the fatalities but only 8 percent of the acoustic detections (Gruver 2002 in Solick and Howlin 2018). Hoary bats may not echolocate 50 percent of the time, and may only be detectable 10 percent of the time (Corcoran & Weller 2018). Some species, including hoary bats, may also be attracted to WTGs (Cryan 2008), so activity patterns may change once WTGs are built (Solick and Howlin 2018). Therefore, species fatality rates from other wind farms may be a better predictor of species risk associated with the proposed project than acoustic activity recorded at the project site in 2018.

As also described in Section 3.5.1, hoary bats have been captured in exceptionally high numbers, especially during the fall, at the Humboldt Redwoods State Park study site approximately 4 miles from the project site (Weller, pers. comm., 2018; Szewczak, pers. comm., 2018). This discovery of what may be fall swarming behavior of hoary bats has not yet been documented anywhere else, it could represent a vital life history component for this species (Szewczak, pers. comm., 2018), and it may demonstrate a seasonal concentration of mating hoary bats from all over western North America (Johnston, pers. comm., 2018). Locating a wind farm so close to this unique concentration of hoary bats may increase the mortality of this species if they use or are attracted to the project site following construction.

Although threats associated with the proposed project are similar for the other bat species found in the area, the high hoary bat mortality rates associated with wind farms and the exceptionally high numbers of hoary bats documented near the project site provide substantial evidence that the project could cause a large number of hoary bat fatalities on an annual basis over the 30-year life of the project. Because little empirical demographic and population data exist for the species, it is difficult to evaluate the significance of such high fatality (Frick et al. 2017). Recent contradictory genetic studies have indicated that hoary bats may reproduce within local populations with a small effective size (Pylant et al. 2016), or that all North American hoary bats may represent a large and well-mixed population (Baird et al. 2017). If the former, the proposed project would have the potential to eliminate a high proportion of a local population of hoary bats over a long period of time. If the latter, the proposed project would have the potential to create a population sink for a large and widespread population over a long period of time. Either would be an adverse effect that could cause a wildlife population to drop below self-sustaining levels or threaten to eliminate an animal community. This impact would be **potentially significant**.

The primary method that has been shown to reduce bat fatalities at WTGs is the use of operational minimization protocols during high-risk periods. Studies have shown that high-risk periods may include nighttime when wind speeds are low, spring and autumn migration periods, and times of certain weather conditions such as before and after storms (Arnett et al. 2011; Baerwald et al. 2009 in Frick et al. 2017).

Operational minimization protocols limit blade rotation by raising the cut-in speed (the wind speed at which the blades begin spinning and generating electricity) and by feathering WTG blades (pitching them parallel to the wind to minimize movement) below the cut-in speed. Informed operational minimization approaches such as the predictive algorithm-based approach developed by Korner-Nievergelt et al. (2013 in Sutter 2018) and Behr et al. (2017 in Sutter 2018), the “SMART” strategy based on bat detection (Sutter 2018), and an activity-based operational minimization protocol (Peterson 2018) have all been shown to reduce bat mortality. Such strategies can provide wind farm operators with additional tools to minimize bat fatalities while minimizing loss of energy generation.

Although operational minimization measures may provide the best impact minimization currently, other approaches are in development and/or under study. For example, ultraviolet visual and ultrasonic acoustic bat deterrent systems offer promising potential to reduce bat collisions with WTGs (Szewczak and Arnett 2008; Arnett et al. 2013; Hein 2018; NRG 2018). Over the life of the project, such approaches in development may be found appropriate for use with the proposed project.

Mitigation Measure 3.5-18a: Preclude Operational Impacts on Bat Population Level Decline through Consultation with a Technical Advisory Committee.

To minimize the risk of bat mortality and preclude the project’s contribution to significant impacts on local and regional bat populations, a technical advisory committee (TAC) shall be formed and funded by the project applicant. The TAC shall evaluate postconstruction monitoring data to determine whether bat mortality attributable to the project poses a potential for a significant impact on the local and regional bat population if left unabated.

The TAC’s duties shall include but not be limited to the following:

- reviewing and interpreting postconstruction fatality data and bat survey data;

- assessing whether bat mortality attributable to the project poses a potential for a bat population to drop below self-sustaining levels if left unabated; and
- strategically identifying operational minimization measures that will most efficiently minimize impacts on bat populations while recognizing the operational needs of the facility.

In the event the TAC finds that action is needed, the TAC shall strategically identify the measures that will most efficiently minimize impacts on the bat population. The TAC's recommendations shall focus on operational modifications that address documented mortality contributing to population-level declines of bats while recognizing the operational needs of the facility.

The TAC shall provide a report of its findings to the Humboldt County Planning & Building Department on an annual basis, or at less frequent intervals if determined by the TAC that annual reporting is not necessary. The recommendations of the TAC shall be implemented as a component of this mitigation measure.

The TAC shall be composed of representatives from the following organizations:

- Humboldt County Planning & Building Department
- CDFW
- Pacific Southwest Research Station (or another organization dedicated to bat research)
- Humboldt Wind, LLC (operator of facility)

Implementation: Project applicant and Humboldt County Planning & Building Department.

Timing: Before project operation.

Enforcement: Humboldt County Planning & Building Department.

Mitigation Measure 3.5-18b: Conduct Bat Surveys and Mortality Monitoring.

To inform operations and resource management practices, the project applicant shall conduct surveys to assess and monitor bat use across the project site. Surveys shall be designed for determining whether bat presence in the project area can be used to refine operations to minimize bat fatalities and loss of energy generation. Study designs shall be developed in consultation with the TAC. Surveys shall be designed for determining whether, when, and where bats—particularly hoary bats—move through the project site and in what numbers. The study design may include a combination of study methods, such as radiotelemetry monitoring using Motus stations, thermal imaging, radar studies designed to detect the elevations at which bats fly through the project area, and acoustic studies conducted at WTG elevations (Weller, pers. comm., 2018; Johnston, pers. comm., 2018).

The project applicant shall conduct mortality monitoring across the project site to inform resource management practices, to aid in refining operational minimization measures for minimizing bat fatalities and loss of energy generation, and for assessing the effectiveness of other impact minimization measures currently in development that may be implemented as they become available.

The monitoring protocol (i.e., field protocol) and data evaluation methods (e.g., statistical and modeling approaches) shall be developed in consultation with the TAC. The monitoring protocol and evaluation methods used shall incorporate “lessons learned” from other recent monitoring efforts (e.g., Golden Hills North Wind Energy Center), and may include the use of scent detection dogs and data analysis approaches developed by USGS (GenEst, Evidence of Absence model), as appropriate.

PCMM studies shall be designed to ensure a minimum overall detection probability (g) for bats of 10 percent during “intensive” searches (first 3 years) and 3 percent for subsequent annual “road and pad” searches. The overall detection probability shall be calculated as described for marbled murrelet (Mitigation Measure 3.5-2b; Dalthorp et al. 2017). The overall detection probability shall be calculated as described above for marbled murrelet and eagles, to represent the probability of detecting a carcass present on the site during the period of evaluation based on the results of searcher efficiency and carcass persistence trials, the proportion of WTGs covered, the proportion of carcasses falling within the search area, and the temporal extent of coverage. This required level of detection is based on the need to accurately determine when the mortality rate of hoary bats meets or exceeds mortality rates that may trigger adaptive management action. The TAC may determine that intensive searches are needed beyond the first 3 years of operation to provide enough iterations to determine the best operational protocols to minimize mortality and loss of energy generation.

The project applicant shall report bat survey and mortality data to BatAMP, the Wildlife Response and Reporting System, the Biogeographic Information and Observation System Program, and other organizations that collaboratively collect and analyze these data, in accordance with California Energy Commission guidelines, and as directed by the TAC.

The project applicant shall implement an employee wildlife incident reporting program to document and report any unanticipated or unusual events (e.g., a large-scale bat fatality event or atypical fatality pattern) discovered outside the course of standardized postconstruction monitoring. Such discoveries shall be reported to the TAC for a root cause analysis, and operational minimization measures shall be developed and implemented to reduce the likelihood of such events occurring again.

Mitigation Measure 3.5-18c: Design and Operate Facility Lighting to Avoid Attracting Bats into Rotor Paths.

Light sources required for operations shall be located, shielded, and oriented to avoid attracting bats into the rotor path of any WTGs. Lighting near WTGs shall be motion-activated, shall emit no light during the “off” phase, and shall be set for short durations when activated.

Implementation: Project applicant.

Timing: Before and during project operation.

Enforcement: Humboldt County Community Development Services Department.

Significance after Mitigation

Implementing Mitigation Measures 3.5-18a through 3.5-18c described above would reduce anticipated impacts on bat populations. Operational minimization measures have been shown to reduce bat mortality by up to 93 percent

(BCI 2018) and deterrents in development have been shown to reduce bat mortality by up to approximately 50 percent (NRG 2018). Direct mortality would be minimized by monitoring mortality rates and modifying operations to a level that would avoid causing population declines below self-sustaining levels. Implementing Mitigation Measures 3.5-18a through 3.5-18c would reduce this impact to **less than significant**.

The expansion of the Bridgeville Substation would have **no operational impact** on bats.

Other Mammals

In addition to the special-status bat species described above, a total of five special-status terrestrial mammals were considered to have the potential to occur on the project site (Table 3.5-4):

- ▶ Sonoma tree vole (*Arborimus pomo*)
- ▶ Ringtail (*Bassariscus astutus*)
- ▶ Pacific fisher (*Pekania pennanti*) Northern California ESU²
- ▶ American badger (*Taxidea taxus*)

Ringtail are a CDFW fully protected species; and Sonoma tree vole, Pacific fisher–Northern California ESU, and American badger are CDFW SSCs.

Pacific fisher was incidentally detected on the project site during wildlife habitat assessment surveys (Appendix M), and occurrences of American badger have been recorded on Bear River Ridge (McAllister, pers. comm., 2019). All special-status mammal species potentially occurring on the project site are associated with terrestrial habitats present on the project site, such as forests and grasslands; these species may also use riparian corridors and other aquatic habitats for movement, dispersal, resting, and foraging.

Wildlife habitats were mapped in the entire project area, except for approximately 50 acres that are expected to remain unsurveyed because of intractable safety and access limitations (steep slopes, pens with bull cattle, and illegal cannabis cultivation sites) (Akky, pers. comm., 2019). Habitats in these areas are similar to those mapped elsewhere in the project disturbance area; therefore, special-status mammals determined to potentially occur within the project site may be present in these areas. However, because of the inaccessibility of these areas, they would likely be avoided during project design.

Status of Species in the Project Area

Sonoma Tree Vole: Sonoma tree voles are associated with Douglas-fir, redwood, and montane hardwood-conifer forest habitats, where they feed almost exclusively on Douglas-fir needles (H. T. Harvey & Associates 2018b). There are six records of this species in forested areas within 2 miles of the project site near the Eel River and along Bear River Ridge, adjacent to the proposed wind generation corridor (CDFW 2018a). In addition, as part of HCP monitoring surveys for Sonoma tree vole nests, HRC biologists documented this species at 57 nest locations in forest stands that varied widely in terms of total stand area and vegetative characteristics, from dense old-

² The Northern California ESU of Pacific fisher consists of fishers that occur in California in the Klamath Mountains, Coast Ranges, southern Cascades, and northern Sierra Nevada. The West Coast population of the fisher is now considered to be a distinct population segment (DPS) by USFWS. The West Coast DPS of fisher was proposed threatened by USFWS in 2014, and then withdrawn in 2016. The California Fish and Game Commission Notice of Findings from April 20, 2016, notes that the Southern Sierra Nevada ESU (defined as south of the Merced River) is recognized as threatened, while the Northern California ESU was not warranted.

growth canopies to thin pole sites with thick understory brush (HRC 2017). HRC found that the greatest numbers of nests were in Douglas-fir trees, with tree size ranging from 10.5 to 226 centimeters in diameter at breast height (DBH) (HRC 2017). The Sonoma tree vole is likely to occur in suitable, Douglas-fir–dominated habitats where WTGs and the O&M facility are proposed, and along the gen-tie.

Ringtail: Ringtails usually occur near water in riparian, forest, and shrub habitats, where they forage on the ground, among rocks, and in trees (Stantec 2018j). Ringtails prefer areas containing hollow trees, logs, cavities, and rocky areas for cover and are usually not found more than 1 kilometer away from a permanent water source. Their den sites are rocky crevices, hollow trees or snags, abandoned burrows, or woodrat nests (Stantec 2018j). During HCP monitoring surveys, HRC documented ringtails at six camera trap locations approximately 10 miles north of the project site (HRC 2014). Ringtails may occur where WTGs and the O&M facility are proposed, although their presence would likely be associated only with short-term movements between riparian areas of suitable habitat. Ringtails are likely to occur along the gen-tie, particularly portions closer to the Eel River and any larger tributaries that support their preferred riparian forest and shrub habitats.

Pacific Fisher–Northern California ESU: The Northern California ESU consists of those fishers that occur in California in the Klamath Mountains, Coast Ranges, southern Cascades, and northern Sierra Nevada (CDFW 2015). Pacific fishers are typically found in mixed coniferous forest habitats with structural characteristics that include high canopy closure, large tree snags, large downed wood, and multiple canopy layers; and riparian habitat is used as travel corridors and resting sites (Stantec 2018j). HRC has documented Pacific fishers at 53 camera trap locations on HRC lands, some of which overlap the project site, and one Pacific fisher was observed crossing a road along Monument Ridge during project surveys (HRC 2018a; Stantec 2018j). The Pacific fisher is likely to occur throughout the project site.

American Badger: Badgers are found in grassland, agricultural, and woodland edge habitats where there are friable soils for the construction of underground burrows for denning and reproduction, and sufficient preferred prey items (e.g., ground squirrels and other fossorial mammals) (Zeiner et al. 1988–1990). Active burrows were documented on Bear River Ridge in 2005 (McAllister, pers. comm., 2019). American badger may occur where WTGs are proposed on suitable open grassland habitat on Bear River Ridge and the western portion of Monument Ridge.

Construction-Related and Operational Impacts

IMPACT 3.5-19	Construction Impacts on Special-Status Mammals. <i>Grading and clearing activities, foot and vehicular traffic, and equipment operations associated with preparation of staging areas, construction of access roads, installation of components, and other activities associated with construction of the proposed project would result in loss of habitat for and disturbance of special-status wildlife, including the potential for direct mortality and injury. This impact would be potentially significant.</i>
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The proposed project’s potential direct impacts on special-status mammals include habitat loss, habitat fragmentation, disturbance, and injury or mortality. Introducing roads into native landscapes contributes to habitat fragmentation and increases edge effects. Project construction could result in direct disturbance (i.e., forced dispersal) and injury to special-status mammals from land clearing and grading, vehicular emissions, dust, noise,

and vehicular activity. In addition, possible mortality impacts could be caused by vehicular collisions, crushing, and destruction of occupied den or nest sites (e.g., tree branches, tree hollows, and underground burrows).

Project construction would result in temporary disturbance and permanent loss of several types of wildlife habitat (forest, woodland, shrub/scrub, riparian, wetland, and grassland) in the project area that are used by special-status mammals for cover, foraging, dispersal, and movement. Project construction would temporarily disturb approximately 729.5 acres of wildlife habitat, the majority of which would be forests and woodland (approximately 464.3 acres), followed by grasslands (approximately 246.2 acres). Furthermore, project construction would result in the permanent loss of approximately 132.6 acres of wildlife habitat consisting mostly of forests/woodland (approximately 90.2 acres) and grassland (approximately 37.5 acres).

Actual disturbance acreage would be refined and likely reduced during the process of engineering and siting, as components would be designed to minimize impacts where possible. Temporary impacts on special-status wildlife habitat are associated with ground disturbance activities that would be restricted solely to the construction phase, such as grading roads and clearing vegetation in staging areas. These activities are considered temporary, provided that habitats are not replaced with infrastructure or the area is not maintained free of vegetation, and that restoration is deemed feasible before project implementation. Any temporary impact, such as component storage and soil stockpiling, that would extend beyond 1 year would be considered a permanent impact on wildlife habitat.

Construction activities resulting in tree removal, even those that might occur within a temporary impact area that would be reclaimed and revegetated after the completion of project activities, would result in a potentially significant impact. Such activities could result in direct mortality should a tree be occupied by a special-status mammal (e.g., Sonoma tree vole) at the time of removal, and in a substantial temporal loss of forest and woodland habitat because any trees planted as replacement mitigation may take decades to reach the size of the trees that were removed. Thus, the permanent removal of forest and woodland habitats for the proposed staging areas, construction buffers, and gen-tie alignment represents a significant and permanent change in habitat, even though these areas would be reclaimed and revegetated with native grasses. Furthermore, depending on the extent and severity, trimming of trees and shrubs could also be considered a permanent impact because a temporal loss of spatial cover and foraging habitat would occur where trees and shrubs are severely trimmed to accommodate project component delivery and access. Severe trimming could permanently change the size, shape, and/or ability of vegetation to recover, thus permanently altering its suitability as habitat for special-status wildlife.

Special-status mammals may experience potentially significant impacts—specifically, direct injury or mortality, and disturbance and degradation of cover, foraging, and dispersal habitat—in association with the project activities described above, particularly in forest, woodland, and grassland habitats. With the conservative assumption that disturbance and loss of special-status mammal habitat would occur at the highest estimates provided in Table 3.5-10 as a result of construction of the proposed project, this impact would be **potentially significant**.

Mitigation Measure 3.5-19a: Minimize Impacts on Wildlife and Monitor during Construction.

The project applicant shall retain qualified biological monitors to continuously implement the following measures during construction to minimize impacts on wildlife and sensitive habitats:

- Monitor construction activity for compliance with all project permits and the approved mitigation and monitoring program for the project; report on monitoring activities as required by project permits.
- All fences installed on the project site shall be a maximum of 4 feet in height, wire strand, with a smooth bottom wire at least 18 inches from the ground to facilitate wildlife movement during operation of the project.
- During construction activities, if an injured or dead special-status species is encountered, the work shall stop within the immediate vicinity. The project applicant shall notify the biological monitor, and the appropriate resource agency (e.g., USFWS or CDFW). Any measures required by these agencies be implemented and proof of implementation shall be submitted to the agencies before construction is allowed to proceed.
- At the end of each work day, the biological monitor shall ensure that all potential wildlife pitfalls (trenches, bores, and other excavations) have been backfilled. If backfilling is not feasible, all trenches, bores, and other excavations shall be sloped at a 3:1 ratio at the ends to provide wildlife escape ramps, or covered completely to prevent wildlife access, or fully enclosed with exclusion fencing. If any wildlife species become entrapped, construction shall not occur until the animal has left the trench or been removed by a qualified biological monitor as feasible.
- Employees and contractors shall look under vehicles and equipment for the presence of wildlife before moving vehicles and equipment. If wildlife is observed, no vehicles or equipment would be moved until the animal has left voluntarily or is removed by the biological monitor. No federally listed or state-listed species shall be handled.
- Vehicle speed limits shall not exceed 15 miles per hour during construction and operation of the project. A speed limit sign shall be posted at all project site entry locations.
- The use of high-intensity lighting, steady burning, or bright lights such as sodium vapor, quartz, halogen, or other bright spotlights shall be continuously minimized.
- Nighttime vehicle traffic associated with project activities shall be kept to a minimum volume and speed to prevent mortality of nocturnal wildlife species.

Implementation: Project applicant.

Timing: Continuously during all project-related construction activities.

Enforcement: Humboldt County Planning & Building Department.

Mitigation Measure 3.5-19b: Avoid and Minimize Impacts on Special-Status Mammals and Associated Habitats.

To avoid and minimize impacts on special-status wildlife and associated habitats, the project applicant shall implement the following measures:

- Mitigation Measure 3.5-1c, “Develop and Implement a Worker Environmental Awareness Program”
- “Minimize Construction Footprint” in Mitigation Measure 3.5-14, “Avoid and Minimize Operational Impacts on Nonraptor Birds”
- Mitigation Measure 3.5-23e, “Develop and Submit a Reclamation, Revegetation, and Weed Control Plan”
- Mitigation Measure 3.5-22b, “Implement Siting Constraint Measures to Delineate and Protect Aquatic Resources”
- Mitigation Measure 3.10-1, “Implement Wet-Weather BMPs Consistent with the Humboldt Redwood Company Habitat Conservation Plan,” in Section 3.10, “Hydrology and Water Quality”

Implementation: Project applicant.

Timing: Before approval of grading or improvement plans or any ground-disturbing activities.

Enforcement: Humboldt County Planning & Building Department.

Mitigation Measure 3.5-19c: Develop and Implement a Preconstruction Survey Plan for Special-Status Mammals.

Before approval of grading or improvement plans, a qualified biologist shall prepare a preconstruction survey plan for special-status mammals. The survey plan shall address the following special-status species: Sonoma tree vole, ringtail, Pacific fisher, and American badger. Survey techniques and methodologies described in the plan may incorporate those described in *Sonoma Tree Vole Habitat on Managed Redwood and Douglas-fir Forestlands in North Coastal California* (Chinnici et al. 2011) and the *Fisher and Marten Survey Techniques on the Tahoe National Forest* (Fowler and Golightly 1994). The survey plan shall include the following elements:

- The survey area shall be conducted in a buffer 150 feet from the boundary of construction disturbance in areas with suitable habitat for these species.
- If occupied burrows, dens, or nests are detected, impacts shall be avoided by establishing 50-foot exclusion buffers within which construction activities shall be prohibited until denning/nesting activities are complete or the den/nest is abandoned.
- Occupied dens/nests shall be monitored once per week to assess disturbance and use status.
- If avoidance of a den/nest is infeasible, the project applicant shall coordinate with CDFW to passively relocate the mammal.

The project applicant shall submit the special-status mammal survey plan for approval to the Humboldt County Planning & Building Department before approval of grading or improvement plans, and surveys shall be conducted before ground-disturbing activities.

Implementation: Project applicant.

Timing: Before approval of grading or improvement plans or any ground-disturbing activities.

Enforcement: Humboldt County Planning & Building Department, in consultation with CDFW.

Mitigation Measure 3.5-19d: Minimize Impacts on Special-Status Mammals during Construction.

The project applicant shall continuously implement the following measures to minimize impacts on wildlife during ongoing construction activities:

- All fences installed on the project site shall be a maximum of 4 feet in height, wire strand, with a smooth bottom wire at least 18 inches from the ground to facilitate wildlife movement during project operation.
- During construction activities, if an injured or dead special-status species is encountered, the construction contractor shall stop work within the immediate vicinity. The project applicant shall notify the Humboldt County Planning & Building Department, the on-call biologist, and the appropriate resources agency (e.g., USFWS or CDFW) before construction is allowed to proceed.
- At the end of each work day, the biological monitor shall ensure that all potential wildlife pitfalls (trenches, bores, and other excavations) have been backfilled. If backfilling is not feasible, all trenches, bores, and other excavations shall be sloped at a 3:1 ratio at the ends to provide wildlife escape ramps, or covered completely to prevent wildlife access, or fully enclosed with exclusion fencing. If any wildlife becomes entrapped, construction shall not occur until the animal has left the trench or been removed by a qualified biological monitor as feasible.
- Employees and contractors shall look under vehicles and equipment for the presence of wildlife before moving vehicles and equipment. If wildlife is observed, no vehicles or equipment shall be moved until the animal has left voluntarily or is removed by the biological monitor. No listed species shall be handled.
- Vehicle speed limits shall not exceed 15 miles per hour during construction and operation of the project. A speed limit sign shall be posted at all project site entry locations.
- The project shall continuously minimize use of high-intensity lighting, steady burning, or bright lights such as sodium vapor, quartz, halogen, or other bright spotlights.
- Nighttime vehicle traffic associated with project activities shall be kept to a minimum volume and speed to prevent mortality of nocturnal wildlife species.

Implementation: Project applicant.

Timing: Continuously during all project-related construction activities.

Enforcement: Humboldt County Planning & Building Department.

Mitigation Measure 3.5-19e: Restore Special-Status Mammal Habitat.

If restoration and/or enhancement of special-status mammal habitat is selected as a mitigation strategy, the project applicant shall implement Mitigation Measure 3.5-23e, “Develop and Submit a Reclamation, Revegetation, and Weed Control Plan,” and include performance standards, and a monitoring and reporting program to track revegetation and/or enhancement success.

Implementation: Project applicant.

Timing: Preparation and development of reclamation, revegetation, and weed control plan before approval of grading or improvement plans or any ground-disturbing activities; implementation of the plan within 1 year of the commencement of construction activities.

Enforcement: Humboldt County Planning & Building Department.

Significance after Mitigation

Implementing Mitigation Measures 3.5-19a through 3.5-19e would reduce potential impacts of the project on special-status mammals and associated habitats to **less than significant**.

Implementing Mitigation Measures 3.5-19a through 3.5-19e would reduce construction-related impacts of the Bridgeville Substation expansion related to loss of special-status mammal habitat to **less than significant**.

IMPACT 3.5-20	Operational Impacts on Special-Status Mammals. <i>The potential exists for special-status mammals present in the project area during project operation to be struck by vehicles. However, this impact would be less than significant.</i>
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During the O&M period of the project, regularly scheduled inspection and preventive maintenance activities would be performed daily, weekly, and monthly. This ongoing vehicular traffic could result in impacts on special-status mammals that may be struck by vehicles; however, vehicular activity is expected to be limited to daytime hours during project operation, reducing the risk of collisions. Therefore, this impact would be **less than significant**.

Amphibians/Reptiles

The following special-status amphibians and reptiles could occur on the project site (Table 3.5-5):

- ▶ Foothill yellow-legged frog (*Rana boylei*)
- ▶ Northern red-legged frog (*R. aurora*)
- ▶ Pacific tailed frog (*Ascaphus truei*)
- ▶ Southern torrent salamander (*Rhyacotriton variegatus*)
- ▶ Western pond turtle (*Emys marmorata*)

The northern red-legged frog was detected incidentally on the project site during wildlife assessment surveys (Table 3.5-5; Appendix M). All of these species are listed as CDFW SSCs, and foothill yellow-legged frog is also a candidate threatened species under the CESA.

Status of Species in the Project Area

All of the special-status amphibian and reptile species that could occur on the project site have been documented in the vicinity, including on neighboring HRC lands, in association with streams and nearby riparian and upland habitats (CDFW 2018a; HRC 2014, 2015). The western pond turtle, northern red-legged frog, and foothill yellow-legged frog may also be found in ponds, although the presence of bullfrogs and/or predatory fish typically excludes the presence of special-status frogs in pond habitats (CDFW 2018a, 2018b).

Foothill Yellow-legged Frog: Foothill yellow-legged frogs are known to move among aquatic breeding, postbreeding summer, and overwintering habitats. During the nonbreeding season, foothill yellow-legged frogs are typically associated with small tributary streams, and then during the breeding season will move across uplands to streams with wider pools, and sometimes isolated ponds, for breeding and egg-laying (CDFW 2018b). In Mendocino County, foothill yellow-legged frogs have been observed moving across uplands for up to 331 meters away from natal streams (average of 71.3 meters), often across urban settings (Cook 2012). There are 14 occurrences of foothill yellow-legged frog within 2 miles of the project site along tributaries to Larabee Creek, the Eel River, the Van Duzen River, and Greenlow Creek (CDFW 2018a). Foothill yellow-legged frogs have also been documented near the Van Duzen River as part of HRC's HCP monitoring surveys (HRC 2014). This species is fairly common in the Eel and Van Duzen rivers, where hundreds of individuals have been observed by local biologists (McAllister, pers. comm., 2019).

Northern Red-legged Frog: The northern red-legged frog is highly aquatic, exhibiting little movement from streamside habitats except occasionally during winter and spring rains (Morey and Basey 2008). Northern red-legged frog has been recorded in the project vicinity near the Van Duzen River, Humboldt Bay National Wildlife Refuge, and Humboldt Redwoods State Park, and in ponds near the College of the Redwoods (CDFW 2018a). This species is known to occur on the project site, and there are 39 known breeding pond sites for northern red-legged frog throughout neighboring HRC lands (Stantec 2018j; HRC 2015).

Pacific Tailed Frog: In California, Pacific tailed frogs occur in low-temperature, perennial streams in conifer-dominated and mixed coniferous habitats (Morey 2000a). Home ranges are rarely more than 80 feet in dimension, with movement typically limited to within the stream habitat, although adults may move away from streams into moist uplands during or immediately after rains at night (Morey 2000a). There are no records of Pacific tailed frog within 2 miles of the project site (CDFW 2018a). However, during HCP monitoring surveys, HRC documented Pacific tailed frogs at six high-gradient stream locations in the Freshwater Creek and Van Duzen watershed units (HRC 2015).

Southern Torrent Salamander: Southern torrent salamanders are typically found in cold, well-shaded perennial streams and seeps in conifer-dominated and mixed coniferous habitats (Marangio 2005). This species is highly aquatic and does not exhibit any seasonal movement. Eight occurrences of southern torrent salamander have been documented within 2 miles of the project site in tributaries to the Eel River, Bear River, and Larabee Creek, although there have been no new records of this species in the area since 1995 (CDFW 2018a). During HCP monitoring surveys, HRC documented occupancy by southern torrent salamanders at nine of 11 known historic

torrent salamander sites in headwater habitats and high-gradient streams within the Freshwater and Van Duzen watersheds (HRC 2015).

Western Pond Turtle: Western pond turtles may be found in stream and pond habitats and along adjacent riparian banks and nearby upland habitats, the latter used for basking and egg-laying (Morey 2000b). Movement is primarily along aquatic habitat corridors, although turtles disperse overland in response to the drying of local water bodies and females may move up to 325 feet into uplands to find suitable sites for egg-laying (Morey 2000). Females usually select nest sites within 300 feet of a water body, although nests as far away as 1,500 feet have occasionally been reported (Thomson et al. 2016). There are eight occurrences of western pond turtles within 2 miles of the project site along Larabee Creek, Little Salmon Creek, the Eel River, and the Van Duzen River (CDFW 2018a). In addition, HRC has documented two records for this species in streams within the Van Duzen watershed during HCP monitoring surveys (HRC 2015).

Construction-Related Impacts

IMPACT 3.5-21	Construction Impacts on Special-Status Amphibians and Reptiles. <i>Grading, clearing, horizontal directional drilling, and other activities associated with project construction could result in direct and indirect impacts on special-status amphibian and reptile species and their habitat. This impact would be potentially significant.</i>
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As described below, special-status amphibians and reptiles in aquatic habitats within the project site may experience adverse effects from disturbance and degradation of aquatic habitat, reduced water quality, accidental spills of fuels and lubricants, and inadvertent releases of bentonite slurry during project construction activities.

Direct adverse effects of project construction on these species may include trampling or crushing of adults, juveniles, and eggs in aquatic and terrestrial habitats by foot traffic, vehicles, and/or equipment. Such effects could occur during clearing and grading for staging areas and access roads, installation of project infrastructure, culvert installation, and installation of an underground gen-tie beneath the Eel River. Potential terrestrial habitat for special-status amphibians and reptiles is defined as being within 300 feet of suitable aquatic habitat (Figure 3.5-12). This buffer is based on the average distance traveled by foothill yellow-legged frogs and western pond turtles when they move overland, and is meant to reflect a conservative and reasonable approach to quantifying where special-status amphibians and reptiles may occur in uplands.

Special-status amphibians and reptiles may be adversely affected by increased turbidity and reduced water quality when dust, sediment, and contaminants (i.e., fuels and lubricant fluids) are released into aquatic habitats during soil disturbance, excavation, cutting/filling, stockpiling, and grading activities. In addition, moving water could transport sediment turbidity plumes or fuel/lubricant spills, creating the potential for effects on special-status aquatic species downstream of the construction area.

Furthermore, a direct temporary impact on special-status amphibians and reptiles could result from horizontal directional drilling activities for installation of underground portions of the gen-tie beneath the Eel River. This impact could occur if there were an inadvertent release of bentonite slurry (known as a frac-out) that, when released into water, could smother aquatic wildlife and their eggs.

Indirect effects of project construction activities on special-status amphibians and reptiles include disturbance to aquatic and terrestrial habitats. Such activities would temporarily disturb up to 2 acres of potentially suitable aquatic habitats (1.73 acre of perennial drainages, 0.13 acre of intermittent drainages, and 0.13 acre of open water pond habitat) and permanently remove up to 0.13 acre of aquatic habitat (0.03 acre of perennial drainage and 0.10 acre of intermittent drainage). In addition, construction activities would temporarily disturb up to 34.1 acres of adjacent terrestrial habitats (i.e., those within a 300-foot buffer of suitable aquatic habitat) that special-status amphibians may use for basking, foraging, dispersal, and in the case of the western pond turtle, egg-laying (Figure 3.5-8). Up to 7.9 acres of these adjacent terrestrial habitats may be permanently affected by project construction.

The actual acreage expected to be disturbed would be refined and is expected to be reduced during project engineering and siting, because project components would be designed to minimize impacts where possible. Temporary impacts on suitable aquatic and terrestrial habitats are associated with ground disturbance activities that would be restricted to the construction phase, such as grading, culvert installation, and clearing vegetation. These activities are considered temporary provided that infrastructure does not replace habitats or the area is not maintained free of vegetation for more than one growing season, and that restoration is deemed feasible before project implementation. Any temporary activity, such as component storage and soil stockpiling, that would extend beyond 1 year would result in a permanent impact.

Special-status amphibians and reptiles in adjacent riparian and terrestrial habitats may be subjected to trampling or crushing. Their terrestrial habitat could be degraded through removal and trimming of vegetation, increased erosion, and the spread and colonization of noxious weeds. Because of the potential for these direct and indirect effects, this impact would be **potentially significant**.

Mitigation Measure 3.5-21a: Avoid and Minimize Impacts on Aquatic, Riparian, and Upland Habitats.

The project applicant shall avoid and minimize removal and disturbance of aquatic, riparian, and upland habitats that could support special-status amphibians and reptiles by implementing the following measures:

- Mitigation Measure 3.5-1c, “Develop and Implement a Worker Environmental Awareness Program”
- “Minimize Construction Footprint” in Mitigation Measure 3.5-14, “Avoid and Minimize Operational Impacts on Nonraptor Birds”
- Mitigation Measure 3.5-22b, “Implement Siting Constraint Measures to Delineate and Protect Aquatic Resources”
- Mitigation Measure 3.5-22d, “Avoid Potential Effects on Aquatic Resources Associated with Horizontal Directional Drilling”
- Mitigation Measure 3.5-23e, “Develop and Submit a Reclamation, Revegetation, and Weed Control Plan”
- Mitigation Measure 3.10-1, “Implement Wet-Weather BMPs Consistent with the Humboldt Redwood Company Habitat Conservation Plan,” in Section 3.10, “Hydrology and Water Quality”

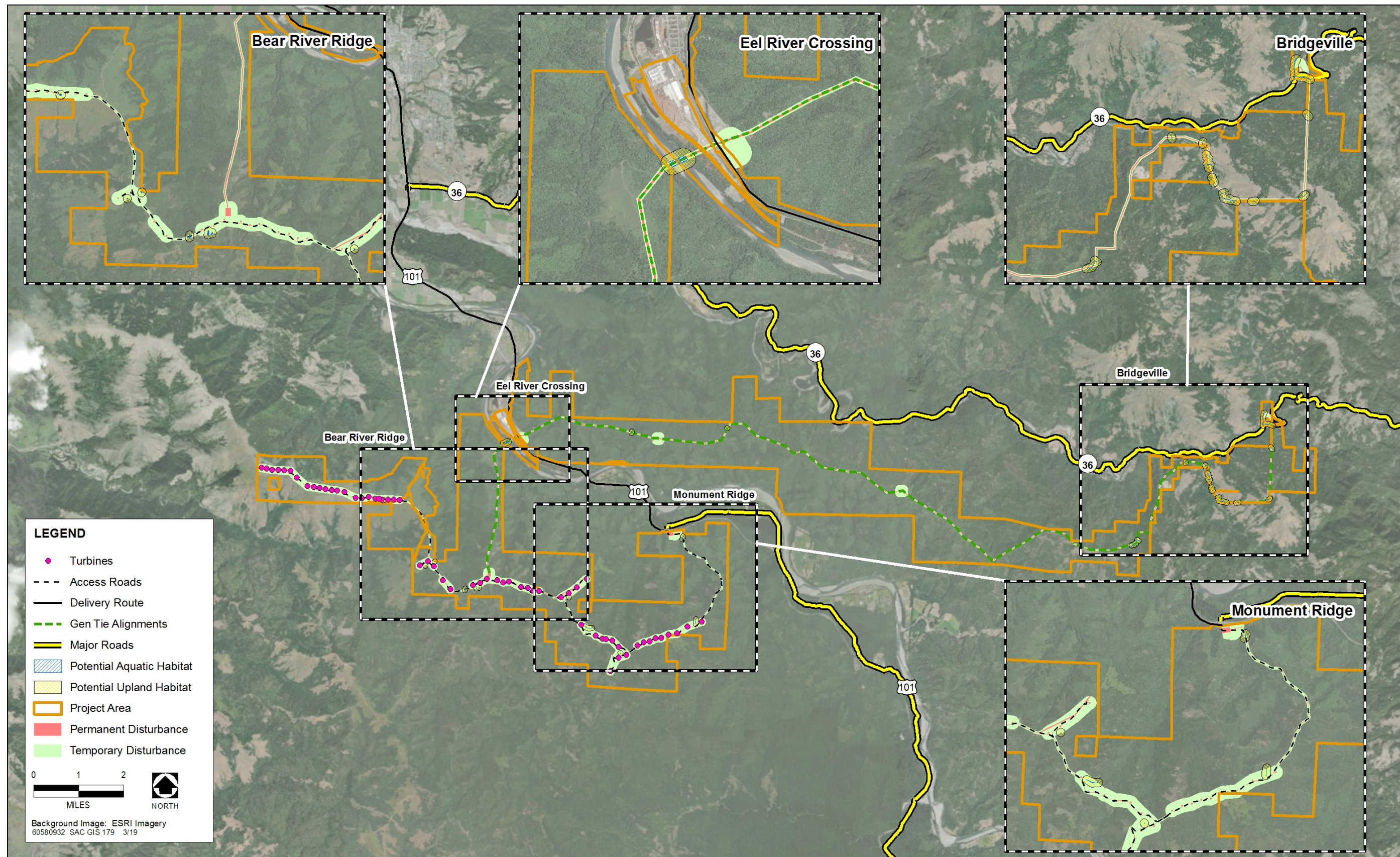


Figure 3.5-12. Potential Impacts on Aquatic and Terrestrial Habitats for Special-Status Amphibians and Reptiles

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Mitigation Measure 3.5-21b: Avoid and Minimize Impacts on Special-Status Amphibians and Reptiles.

The project applicant shall avoid and minimize impacts on foothill yellow-legged frog, northern red-legged frog, Pacific tailed frog, southern torrent salamander, and western pond turtle by implementing the mitigation measures listed above and Mitigation Measure 3.5-19a, “Minimize Impacts on Wildlife and Monitor during Construction.”

Mitigation Measure 3.5-21c: Develop and Implement a Preconstruction Survey Plan for Special-Status Amphibians and Reptiles.

The project applicant shall implement preconstruction surveys as described below. The preconstruction survey plan shall identify, at minimum, the following information for each special-status amphibian species and western pond turtle:

- The life stage(s) to be surveyed for
- Survey method(s)
- Timing of survey(s)
- Justification for timing and methodology of survey design (e.g., watershed characteristics, regional snowpack, timing and rate of spring runoff, day length, average ambient air and water temperatures, local and seasonal conditions)

The project applicant shall conduct preconstruction surveys for special-status amphibians and western pond turtles. Preconstruction surveys shall include, at minimum, the following provisions:

- Surveys shall be conducted by a qualified biologist within 3–5 days before entering or working within suitable aquatic and/or upland habitat.
- Surveys shall be conducted within the boundaries of the proposed worksite plus a 500-foot buffer zone upstream and downstream of the construction area.
- Surveys shall include a description of any standing or flowing water.
- Surveys shall consist of “walk and turn” surveys during which the biologist shall examine areas beneath surface objects (e.g., rocks, leaf litter, moss mats, coarse woody debris) for salamanders, and conduct visual surveys for frogs and western pond turtle.
- If special-status amphibians or reptiles are detected during the preconstruction survey, impacts shall be avoided by establishing an exclusion buffer of no less than 50 feet within which construction activities shall be prohibited. A qualified biologist shall be on-site during all nearby construction activities. If the biologist determines that the habitat is no longer occupied, construction may proceed within the exclusion buffer.

If avoidance is infeasible, the project applicant shall coordinate with CDFW to passively relocate the special-status amphibian or reptile.

Mitigation Measure 3.5-21d: Avoid and Minimize Impacts on Foothill Yellow-Legged Frog.

A qualified biologist shall conduct a visual preconstruction survey for foothill yellow-legged frog in or within 200 feet of suitable habitat 48 hours before the start of construction. The biologist shall be familiar with the life cycle of this species and shall conduct surveys appropriate to the life stage anticipated to be present in the project area at the time of year during which surveys are being undertaken.

If foothill yellow-legged frog is detected during surveys, the project applicant shall implement avoidance measures included in the incidental take permits obtained by CDFW. Avoidance and minimization measures for foothill yellow-legged frog shall include, as appropriate, the following components:

- Seasonal work restriction
- Exclusion fencing
- Decontamination
- No night work or lighting
- Water diversion
- Water storage facilities
- Season of diversion
- Bypass flow
- Diversion materials
- Diversion monitoring

If foothill yellow-legged frogs are found during the preconstruction survey, the project applicant shall consult CDFW immediately by either telephone or e-mail and shall provide a short description of observations, including a count of individuals and the life stage(s), conditions at the site, and other aquatic species observed. If no foothill yellow-legged frogs are found during the preconstruction survey and no surface water is present in the project area, work may commence without further surveys or construction restrictions.

If no foothill yellow-legged frogs are found but surface water is present during the preconstruction survey, or if surface water becomes present at any time during the work period, the biologist shall survey the worksite each day before the start of work activities where equipment and/or materials may come in contact with such water.

Mitigation Measure 3.5-21e: Compensate for Impacts on Aquatic and Upland Habitats for Foothill Yellow-Legged Frog.

The project applicant shall provide compensatory mitigation for permanent impacts on aquatic, riparian, and associated upland habitats for foothill yellow-legged frog at a minimum 1:1 ratio. Within 2 years following the first delivery of power, the project applicant shall purchase and record the mitigation lands as off-site conservation land in fee-title and/or easement for suitable habitat that would support foothill yellow-legged frogs. The County, in consultation with CDFW, shall approve the location of the conservation land or easement.

Implementation: Project applicant.

Timing: *Avoidance and minimization of impacts:* Before approval of grading or improvement plans or any ground-disturbing activities.

Preconstruction survey plan: Submittal of plan at least 3 months before submittal of grading or improvement plans. Approval of survey plan must be granted before approval of grading or improvement plans or any ground-disturbing activities.

Compensatory mitigation: Continuously during all project-related construction activities, with completion within 1 year of completion of construction.

Purchase and recordation of mitigation land in fee-title and/or easement: 2 years after first delivery of power.

Enforcement: Humboldt County Planning & Building Department, in consultation with CDFW.

Significance after Mitigation

The mitigation measures described above would avoid and minimize impacts on special-status amphibians and reptiles by identifying the locations of and habitat for these species with protective measures such as establishing construction exclusion zones and best management practices (BMPs) to avoid adverse effects on water quality. Compensatory mitigation would offset permanent impacts on habitat for foothill yellow-legged frogs so that no net loss in habitat for this species would occur. Implementing Mitigation Measures 3.5-21a through 3.5-21e would reduce this impact on special-status amphibian and reptile species to **less than significant**.

Implementing Mitigation Measures 3.5-21a through 3.5-21e would reduce construction-related impacts of the Bridgeville Substation expansion related to loss of special-status amphibian habitat to **less than significant**.

Fish

Nine special-status fish species have the potential to occur within the project site (Table 3.5-5). Potential habitat for special-status fishes includes the Eel River and its tributaries (Larabee Creek, Fish Creek, Hoagland Creek, Stitz Creek, and Greenlow Creek) and Humboldt Bay. Special-status fish species that could occur within the project site are the Southern Oregon/Northern California Coast Coho Salmon (*Oncorhynchus kisutch*) ESU, Northern California Steelhead DPS (*O. mykiss irideus*) Winter and Summer runs, California Coastal Chinook Salmon (*O. tshawytscha*) ESU, Coastal Cutthroat Trout (*O. clarkii clarkii*), Green Sturgeon Northern DPS (*Acipenser medirostris*), Pacific Lamprey (*Entosphenus tridentatus*), Longfin Smelt (*Spirinchus thaleichthys*), and Tidewater Goby (*Eucyclogobius newberryi*).

Status of Species in the Project Area

Southern Oregon/Northern California Coast Coho Salmon ESU: The nearest CNDDDB occurrence (dated 2005) is located in Salmon Creek running into Humboldt Bay, approximately 11 miles northwest of the project site (Stantec 2018j). The NMFS recovery plan for this species (NMFS 2014) states that its current distribution near the project site includes the Eel and lower Van Duzen rivers and Howe Creek. Spawning surveys in 2011

documented eight spawning individuals in Fish Creek, a tributary to Lawrence Creek and the Van Duzen River, downstream of the Bridgeville Substation (NMFS 2014). The recovery plan also states that the lower reaches of Little Larabee Creek, the Eel River including where the gen-tie would cross, and the lower reaches of Monument Creek, Jordan Creek, and Greenlow Creek all have some potential to support this species. Critical habitat has been designated to include all waters accessible to the Southern Oregon/Northern California Coast Coho Salmon ESU between Cape Blanco, Oregon, and Punta Gorda, California (NMFS 1999). In the project vicinity, this includes Humboldt Bay tributaries and the Lower Eel and Van Duzen rivers.

Northern California Steelhead DPS: Steelhead are widely distributed throughout the Eel River watershed (Stantec 2018j). Steelhead are known from one CNDDDB occurrence from 1992 within 5 miles of the project area that documents Summer-run Steelhead (CDFW 2018a). Critical habitat for Northern California Steelhead DPS has been designated near the project area (Figure 3.5-3).

California Coastal Chinook Salmon ESU: This ESU includes all Chinook Salmon that spawn in coastal watersheds from Redwood Creek in Humboldt County south to the Russian River in Sonoma and Mendocino counties, inclusive (Stantec 2018j). California Coastal Chinook Salmon in the Eel River consist of two independent populations in the Lower and Upper Eel River (NMFS 2016). One CNDDDB occurrence of this species was documented in 2000 at a Hely Creek monitoring station north of its connection to the Van Duzen River (CDFW 2018a). Critical habitat for this species has been designated along the Eel River (Figure 3.5-3).

Coastal Cutthroat Trout: The Native Fishery Society (2018) notes this species as being present in the Eel River. There are CNDDDB occurrences of this species from Salmon Creek and in the Eel River as far upstream as the confluence with the Van Duzen River (CDFW 2018a).

Green Sturgeon Northern DPS: This species was documented in 2007 in Humboldt Bay within 2 miles of the project component delivery location at Fields Landing; detections have been documented throughout Humboldt Bay, with the majority occurring in north Humboldt Bay (CDFW 2018a). Studies completed from 2014 through 2016 indicate that a spawning run of Green Sturgeon (Northern DPS) still occurs annually in the Eel River basin (Stantec 2018j). Critical habitat has been designated in Humboldt Bay (Figure 3.5-3).

Pacific Lamprey: Pacific Lamprey is found in the project area. Its current range includes the Van Duzen River and the Eel River, including upstream and downstream of where the gen-tie would cross the Eel River; and upstream and downstream of the Bridgeville Substation, which is adjacent to the Van Duzen River (Stantec 2018j). CNDDDB records include an occurrence of the species in Salmon Creek (CDFW 2018a).

Longfin Smelt: The San Francisco estuary and the Sacramento–San Joaquin Delta support the largest population of Longfin Smelt in California, while Humboldt Bay supports the second largest population. Habitat in Humboldt Bay includes the Eel River estuary and Humboldt Bay. There is one CNDDDB occurrence for the species at the mouth of the Van Duzen River, where seven individuals were collected in 1956 (CDFW 2018a). The current suspected extant range of the species, locally, includes the Eel River as far upstream as the confluence with the Van Duzen River (Stantec 2018j).

Tidewater Goby: This species was documented in 2006 in Humboldt Bay within 2 miles south of the project component delivery location at Fields Landing, along the southeast shore in Humboldt Bay National Wildlife Refuge (CDFW 2018a). The North Coast-3 Sub-unit of the *Tidewater Goby Recovery Plan* covers approximately

25 miles from north to south, starting at the mouth of the Mad River and extending across Arcata/Humboldt Bay to the Eel River (USFWS 2005). Critical habitat has been designated in southern Humboldt Bay (Figure 3.5-3).

Construction-Related and Operational Impacts

Construction-related impacts of the proposed project on special-status fish or other aquatic resources are discussed below. No operational impacts on special-status fish or other aquatic resources are anticipated to result from the project. Therefore, this topic is not discussed further.

<p>IMPACT 3.5-22</p>	<p>Impacts of Project Construction on Special-Status Fish. <i>Grading, clearing, horizontal directional drilling, and other activities associated with project construction could result in indirect impacts on special-status fish species and their habitat from project runoff and sedimentation. This impact would be potentially significant.</i></p>
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Project construction activities requiring clearing and grading for staging areas and access roads, and installation of an underground gen-tie beneath the Eel River, would temporarily disturb up to 1.62 acres along the Eel River and up to 0.12 acre of other perennial drainages that cross the project area (Larabee Creek, Fish Creek, Hoagland Creek, Stitz Creek, and Greenlow Creek). The actual acreage of disturbance would be refined and is expected to be reduced during project engineering and siting, because project components would be designed to minimize impacts where possible.

WTG components would be delivered via barges in Humboldt Bay. No impacts on Humboldt Bay are anticipated from this project activity. Barges would use existing shipping channels and infrastructure, with no dredging or anchoring required for access (Central Oceans USA 2018, 2019). Furthermore, the sediments in Humboldt Bay and adjacent estuarine habitats would not be affected, because the delivery barges would be positioned at unloading docks, pinned against wooden piles (dolphins), and anchored to the shore by mooring lines.

Construction activities involving soil disturbance, excavation, cutting/filling, stockpiling, and grading could increase erosion and sedimentation to surface waters, which could increase turbidity (i.e., reduce water quality) in watercourses on the project site. Increased turbidity could adversely affect fish, fish habitat, and other aquatic resources. Construction activities could also introduce contaminants (e.g., fuels and lubricants) directly into aquatic resource areas and indirectly in stormwater runoff through accidental spills. In addition, moving water could transport turbidity plumes or fuel/lubricant spills, with the potential to affect special-status fish downstream of the project site. The entire project area is within the Eel River watershed, which is tributary to Humboldt Bay, an important state and regional estuary. Humboldt Bay is located approximately 20 miles downstream of the project site, and could be affected by upstream activities.

As described in Section 2.3.7, “Gen-tie Interconnection,” in Chapter 2, “Project Description,” the project applicant proposes to use horizontal directional drilling techniques when crossing beneath the Eel River to avoid potential impacts on aquatic resources during installation of underground portions of the gen-tie. When implemented properly, horizontal directional drilling is less intrusive than—and minimizes erosion and vegetation loss relative to—traditional surface crossings that use open-cut trenching. However, a direct temporary impact could result from an inadvertent release of bentonite slurry (known as a frac-out), which is used as a lubricant during horizontal directional drilling activities. Bentonite is a nontoxic clay that is mixed with water to form a

slurry that, when released, can smother aquatic wildlife and their eggs. A frac-out can occur when drilling fractures the surrounding bedrock, allowing bentonite slurry to travel upward through the fracture, emerge through the surface, and contaminate adjacent aquatic resources.

Special-status fish in the Eel River watershed and in Humboldt Bay may experience adverse effects from disturbance and degradation of aquatic habitat, reduced water quality, accidental spills of fuels and lubricants, and inadvertent releases of bentonite slurry during project activities as described above. Therefore, this impact would be **potentially significant**.

Mitigation Measure 3.5-22a: Avoid and Minimize Impacts on Aquatic Resources.

The project applicant shall implement the following mitigation measures:

- Mitigation Measure 3.5-1c, “Develop and Implement a Worker Environmental Awareness Program”
- “Minimize Construction Footprint” in Mitigation Measure 3.5-14, “Avoid and Minimize Operational Impacts on Nonraptor Birds”
- Mitigation Measure 3.5-23e, “Develop and Submit a Reclamation, Revegetation, and Weed Control Plan”
- Mitigation Measure 3.10-1, “Implement Wet-Weather BMPs Consistent with the Humboldt Redwood Company Habitat Conservation Plan,” in Section 3.10, “Hydrology and Water Quality”

In addition, the project applicant shall coordinate with Humboldt County to implement the Five Counties Salmonid Conservation Program to protect water quality for listed salmonids during activities associated with construction of access roads, including culvert installation, in accordance with the *Five Counties Salmonid Conservation Roads Maintenance Manual*. This manual (Five Counties Salmon Conservation Program 2002) provides a framework for implementing improved road maintenance practices and was developed with input from CDFW Region I, the North Coast RWQCB, and NMFS. The manual, which was adopted by the County in 2010, includes guidelines and procedures for protecting listed salmonids in the context of road construction and maintenance, including measures for culvert maintenance, soil disposal, bridge maintenance, monitoring practices, staff training, BMP designs, culvert criteria for fish passage, and water drafting guidelines.

Implementation: Project applicant.

Timing: Before approval of grading or improvement plans or any ground-disturbing activities.

Enforcement: Humboldt County Planning & Building Department.

Mitigation Measure 3.5-22b: Implement Siting Constraint Measures to Delineate and Protect Aquatic Resources.

The project applicant shall assign a qualified biologist to flag or fence aquatic habitats to clearly delineate the extent of construction. All crews shall be provided a set of drawings showing the locations of aquatic habitats in and near the work area.

Implementation: Project applicant.

Timing: Before approval of grading or improvement plans or any ground-disturbing activities.

Enforcement: Humboldt County Planning & Building Department.

Mitigation Measure 3.5-22c: Avoid Impacts on Sediment and Habitats in Humboldt Bay and Implement Eelgrass Monitoring and Protection Plan.

The project applicant shall avoid all impacts on sediment and adjacent habitats (such as eelgrass beds) in Humboldt Bay by using existing shipping channels and pinning the barge against wooden piles connected to the shore by a mooring line. The barge shall not come in contact with Humboldt Bay sediment or habitats at any time. The project applicant shall develop an eelgrass monitoring and protection plan to ensure that eelgrass beds will not be adversely affected during offloading of components in Humboldt Bay.

Implementation: Project applicant.

Timing: At the time of project component delivery.

Enforcement: Humboldt County Planning & Building Department.

Mitigation Measure 3.5-22d: Avoid Potential Effects on Aquatic Resources Associated with Horizontal Directional Drilling.

The project applicant shall implement the following mitigation measures to avoid potential effects on aquatic resources associated with horizontal directional drilling:

- Provide notification of the horizontal directional drilling to CDFW as part of the lake and streambed alteration agreement application, and to Humboldt County as part of the final conditional use permit application. The project applicant shall assign a qualified biological monitor with previous horizontal directional drilling monitoring experience and knowledge of the environmental sensitivities of the project area to monitor all horizontal directional drilling activities. The monitor shall be on-site for the duration of horizontal directional drilling activities and shall provide brief reports of daily activities to CDFW and the County.
- The project applicant's biologist shall conduct on-site briefings for all horizontal directional drilling workers to ensure that all field personnel understand the locations of aquatic resources and their responsibility for timely reporting of frac-outs.

- Barriers (e.g., straw bales, sedimentation fences) shall be erected between the bore site and all nearby aquatic resources before drilling to prevent any material from reaching aquatic resource areas. The distance between the bore site and aquatic resource areas shall be compliant with protective setback boundary requirements specified in CDFW and County permits.

Implementation: Project applicant.

Timing: Before the start of horizontal directional drilling activities.

Enforcement: Humboldt County Planning & Building Department.

Mitigation Measure 3.5-22e: Minimize Potential Effects on Aquatic Resources Associated with Horizontal Directional Drilling.

The project applicant shall implement the following mitigation measures to minimize potential effects on aquatic resources associated with horizontal directional drilling:

- The biological monitor shall continually visually inspect aquatic resources, and surrounding areas, for evidence of frac-outs. The biological monitor shall monitor the drilling fluid circulation at the horizontal directional drilling site and stay aware of the status of the operation.
- If the biological monitor suspects a potential frac-out that is not yet visible at the surface (e.g., loss of bentonite slurry in the drill pit but no frac-out at the surface), the project applicant shall cease horizontal directional drilling activities immediately and the horizontal directional drilling contractor shall implement measures to reduce the potential for a frac-out (e.g., increase the density of the drilling mud or reduce the pressure of the drill). The project applicant shall then be allowed to continue horizontal directional drilling activities. If a frac-out occurs, the project applicant shall implement the measure identified below to reduce or minimize effects on the affected aquatic resource.
- The horizontal directional drilling contractor shall keep necessary response equipment and supplies (e.g., vacuum truck, straw bales, sediment fencing, sandbags) on-site during horizontal directional drilling operations so that they are readily available in the event of a frac-out.
- If a frac-out is detected, the project applicant shall implement the following measures to reduce or minimize effects on the affected aquatic resource:
 - All work shall stop until the frac-out has been contained and cleaned up.
 - The frac-out area shall be isolated with straw bales, sandbags, or silt fencing to surround and contain the drilling mud; cleanup shall be performed using a vacuum truck supported by construction workers on foot using hand tools, as necessary. (To prevent effects on the streambanks, mechanized equipment shall not be used to scoop or scrape up frac-out materials.)
 - If a frac-out occurs, the project applicant shall notify the appropriate jurisdictional agency (USACE, the North Coast RWQCB, and/or CDFW) and the County Public Works–Engineering

Department by telephone and in writing (e-mail acceptable) within 24 hours. The required notification shall include a description of the frac-out and cleanup measures implemented. For the purpose of this mitigation, USACE, the North Coast RWQCB, and CDFW are considered potentially jurisdictional agencies that require notification of a frac-out affecting a stream feature, and USACE and the North Coast RWQCB are considered potentially jurisdictional agencies that require notification of a frac-out.

- If a frac-out occurs and is considered to have negatively affected the Eel River, based on consultation with the appropriate jurisdictional agencies, the project applicant shall implement appropriate measures to restore pre-horizontal directional drilling conditions in consultation with the agencies.

Implementation: Project applicant.

Timing: During horizontal directional drilling activities.

Enforcement: Humboldt County Planning & Building Department.

Significance after Mitigation

Implementing Mitigation Measures 3.5-22a through 3.5-22e would reduce potential temporary impacts of the project on fish and fish habitat immediately adjacent to and downstream of project construction activities to **less than significant**.

Implementing Mitigation Measures 3.5-22a through 3.5-22e would reduce construction-related impacts of the Bridgeville Substation expansion related to loss of special-status fish habitat to **less than significant**.

Special-Status Plants

In total, 29 special-status plant species were considered as potentially occurring on the project site. Of these, four special-status plants were detected and mapped on the site during surveys (Appendix G): Pacific gilia (*Gilia capitata* ssp. *pacifica*), short-leaved evax (*Hesperavax sparsiflora* var. *brevifolia*), Siskiyou checkerbloom (*Sidalcea malviflora* ssp. *patula*), and Howell's montia (*Montia howellii*). No federally listed or state-listed plant species were detected within the project site.

CNPS has identified Pacific gilia, short-leaved evax, and Siskiyou checkerbloom as CRPR List 1B.2 species and Howell's montia as a CRPR List 2B.2 species. In addition to these four species, numerous CRPR List 3 and 4 species were detected and mapped in the project area. (See definitions of CRPR categories under "Special-Status Species" in Section 3.5.1, "Environmental Setting.") Impacts on these species are not specifically quantified as part of this analysis, because their listing status does not require detailed analysis. However, their occurrence and distribution in the project area should be considered during project design and preparation of the project's reclamation, revegetation, and weed control plan. Table 3.5-13 shows the total acreage of each rare plant population mapped within the project boundaries. Because of access constraints during the blooming period of the target species, approximately 560 acres of the project site were surveyed at only a reconnaissance level in 2018. These areas will be surveyed for special-status plants in spring and summer 2019. Approximately 50.4 acres of the project site are expected to remain unsurveyed because of intractable safety and access limitations (steep slopes, pens with bull cattle, and illegal cannabis cultivation sites) (Akky, pers. comm., 2019). Habitats in these areas are similar to those mapped elsewhere in the project disturbance area. Therefore, special-status plant species

determined to potentially occur within the project site may be present in these areas, including special-status plants that were detected during protocol-level surveys conducted in 2018. However, given the inaccessibility of these areas, they would likely be avoided during project design.

Table 3.5-13. Special-Status Plants Detected on the Project Site and in Transportation Improvement Areas—Permanent vs. Temporary Impact Acreages and Total Acres Disturbed

Scientific Name	Common Name	Status (Fed/State/CRPR*)	Disturbance Type	Acres	Total Acreage
<i>Gilia capitata</i> ssp. <i>pacifica</i>	Pacific gilia	None/None/1B.2	Temporary	0.16	
			Permanent	0.00	0.16
<i>Hesperervax sparsiflora</i> var. <i>brevifolia</i>	Short-leaved evax	None/None/1B.2	Temporary	0.13	
			Permanent	0.02	0.15
<i>Sidalcea malviflora</i> ssp. <i>patula</i>	Siskiyou checkerbloom	None/None/1B.2	Temporary	7.67	
			Permanent	0.75	8.42
<i>Montia howellii</i>	Howell's montia	None/None/2B.2	Temporary	0.04	
			Permanent	0.10	0.14
TOTAL IMPACTS ON SPECIAL-STATUS PLANT POPULATIONS:			Temporary	7.99	
			Permanent	0.87	8.86
Notes: CRPR = California Rare Plant Rank; Fed = federal					
* The CRPR status indicates categories and extensions indicating level of endangerment in California. List 1B = plant species considered rare, threatened, or endangered in California and elsewhere, List 2B = plant species considered rare, threatened, or endangered in California but more common elsewhere, and the extension .2 = Fairly endangered in California (20–80 percent of occurrences are threatened).					
Source: Data compiled by Stantec in 2018					

Status of Species in the Project Area

Pacific gilia: Pacific gilia is an herbaceous annual plant that can be found in a variety of habitats up to 761 meters in elevation, including steep slopes and ravines, coastal bluffs, grassland, and dunes in California's North Coast and Klamath regions, and in the state of Oregon (Porter 2012). Pacific gilia is fairly common in the region, with 26 records of the species in various prairie, road-cut, bluff, and ridgeline locations throughout the 23-quadrangle area surrounding the project site (CDFW 2018). In 2014, HRC botanists reported 20 populations totaling about 14,000 individuals in grassland prairie habitat in neighboring properties (HRC 2014). There are five records of Pacific gilia within 2 miles of the project site, three of which are based on historic collections in Fortuna, Rio Dell, and Bridgeville; recent records from 2010 and 2004 are both located on Monument Ridge (CDFW 2018). A total of three occurrences of Pacific gilia were detected during botanical surveys in the project disturbance area, where it was found growing on steep slopes and open flats in coastal prairie habitat on Monument Ridge and in the Monument Ridge–U.S. 101 gen-tie segment. These occurrences encompass approximately 1,495 plants occupying 0.95 acre within the proposed project disturbance area.

Short-leaved evax: Short-leaved evax is an herbaceous annual plant distributed along the Northern and Central California coastline where it is found in a variety of coastal habitats, including bluffs, terraces, dunes, and coastal strands (Morefield 2012). In the region, records of this species occur more frequently along the coast, with occasional populations inland (CDFW 2018). Of the nine records of this species within a 23-quadrangle buffer of the project site, three occur along Bear River Ridge, while the other six are associated with coastal strand and dune habitats near Mattole Beach and Humboldt Bay (CDFW 2018). Two occurrences of short-leaved evax were

detected during project surveys on coastal prairie grassland habitats on Bear River Ridge, where approximately 1,150 plants occupy 0.17 acre.

Siskiyou checkerbloom: Siskiyou checkerbloom is an herbaceous perennial plant with low-growing, often rooting stems (Hill 2012). This plant is found in the North Coast region of the state and southern Oregon, and is most common in Humboldt and Del Norte counties, where it is fairly widespread. The species is recorded as occurring on roadsides and in open grassland and prairie edges at 29 locations within a 23-quadrangle buffer of the project site (CDFW 2018). In 2014, HRC botanists reported nine populations, totaling about 2,700 plants, on neighboring HRC-owned lands along grassy roadsides, in prairies, and forest edges (HRC 2014). During project surveys, this plant was found on coastal prairie habitat on Bear River Ridge, where approximately 2,001 plants occupy 17.31 acres. There are six records of this species within 2 miles of the project site boundaries in open grassland and prairie habitats (CDFW 2018).

Siskiyou checkerbloom is mapped on the project site in areas that overlap with grassland and prairie vegetation communities. Table 3.5-14 lists the noxious weeds that may co-occur with Siskiyou checkerbloom.

Howell’s montia: Howell’s montia is an herbaceous annual plant that is known to occur in California only in Humboldt and Trinity counties, where it is associated with vernal wet sites; outside of California, its range extends to British Columbia (Miller & Chambers 2012). This species appears to be locally common and fairly tolerant of moderate levels of disturbance. There are 22 records for this species within 2 miles of the project site along various roads and semi-open forest areas (CDFW 2018). In 2014, HRC botanists reported about 32,000 Howell’s montia plants across 38 populations on neighboring HRC lands, where it is found on roads, roadsides, skid trails, turnouts, landings, grazed meadows, and along cow and deer trails (HRC 2014). HRC botanists speculate that this species is adapted for disturbance, with plants appearing from a dormant seed bank when conditions warrant. Two occurrences of Howell’s montia were detected during botanical surveys on vernal wet, compacted soils on moderately used roadbeds on the Monument Ridge–U.S. 101 gen-tie segment, where approximately 70 plants occupy 0.15 acre.

Construction-Related and Operational Impacts

IMPACT 3.5-23	Impacts on Special-Status Plants during Project Construction and Operation. <i>Grading, clearing, and other activities associated with construction and operation of the proposed project would result in loss and disturbance of special-status plant species present in the project footprint. This impact would be potentially significant.</i>
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Construction Impacts

Clearing and grading in the project area to facilitate installation of up to 60 WTGs and associated infrastructure would result in impacts on special-status plant populations. In addition, special-status plant populations would be disturbed by clearing activities for staging areas, laydown of project components, access roads and buffers, and other project activities. Based on the current project footprint, the total disturbance area for special-status plants is approximately 8.86 acres (7.99 acres of temporary disturbance and 0.87 acre of permanent disturbance). For species such as Siskiyou checkerbloom, temporary impacts have the potential to become permanent as a result of adverse effects of ground disturbance. Actual disturbance acreage would be refined and likely reduced during project engineering and siting, because project components would be designed to minimize impacts on special-

Table 3.5-14. Noxious Weeds with Potential to Occur in the Siskiyou Checkerbloom Populations

Scientific Name	Common Name	CDFA Rating ¹	Cal-IPC Rating ²	HCWMA Rating ³
<i>Anthoxanthum odoratum</i> *	Sweet vernal grass	—	Moderate	—
<i>Bromus hordeaceus</i>	Softchess brome	—	Limited	—
<i>Cynosurus echinatus</i>	Bristly dogtail grass	—	Moderate	—
<i>Festuca arundinacea</i>	Reed fescue	—	Moderate	—
<i>Holcus lanatus</i>	Common velvet grass	—	Moderate	—
<i>Rytidosperma penicillatum</i>	Purple awned wallaby grass	—	Limited	—

Notes: Cal-IPC = California Invasive Plant Council; CDFA = California Department of Food and Agriculture; HCWMA = Humboldt County Weed Management Area

¹ CDFA Pest Ratings:

A: Weeds of known economic significance, subject to action by CDFA including eradication, quarantine, containment, rejection of shipments, or other holding action at the state-county level. Quarantine interceptions are to be rejected or treated at any point in the state.

B: Weeds subject to action by CDFA only when found in a nursery, and otherwise subject to eradication, containment, control, or other holding action at the discretion of the local county agricultural commissioner.

C: Not subject to state action except to provide for general pest cleanliness in nurseries; rejected by CDFA only when found in a crop seed for planting or at the discretion of the commissioner, action to retard spread outside of nurseries at the discretion of the county agricultural commissioner.

² Cal-IPC Pest Ratings:

High: These species have severe ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal and establishment. Most are widely distributed ecologically.

Moderate: These species have substantial and apparent—but generally not severe—ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal, though establishment is generally dependent upon ecological disturbance. Ecological amplitude and distribution may range from limited to widespread.

Limited: These species are invasive but their ecological impacts are minor on a statewide level or there was not enough information to justify a higher score. Their reproductive biology and other attributes result in low to moderate rates of invasiveness. Ecological amplitude and distribution are generally limited, but these species may be locally persistent and problematic.

³ Humboldt County Weed Management Area Ratings:

Red Alert: The species is present in the HCWMA and has very few populations and/or very limited distribution, such that complete eradication is possible, even if it takes repeated eradication efforts. Its potential for spread and agronomic, economic, or wildland impact is severe. This is an early-detection, rapid-response action category. These localized and satellite species, once located, will be actively managed.

High Priority: These species are present in the HCWMA and are under ongoing, active management. They are affecting agronomic, economic, or wildland resources. Combined efforts between members of the HCWMA can significantly work toward complete eradication or containment of these species. Efforts include direct weed control, public education and outreach, prevention, mapping, etc.

Moderate Priority: These species are known to be invasive in various environments and have known ecological impacts. Treatment of these species occurs, often packaged as part of an overall weed abatement program for a given project area.

Sources: Stantec 2018d; CDFA 2016; Cal-IPC 2018; HCWMA 2010

status plants where possible. Temporary impacts on special-status plants are associated with ground disturbance activities that would be restricted to the construction phase, such as grading roads and clearing vegetation in staging areas. These activities are considered temporary, provided that infrastructure does not replace special-status plant populations; that the area is not maintained free of vegetation for more than one growing season; and that restoration is deemed feasible before project implementation. Any temporary impact, such as component storage and soil stockpiling, that would extend beyond 1 year would be considered a permanent impact on special-status plants.

Direct impacts on special-status plant species present in the project disturbance areas could occur in a variety of ways, including removal of plants during construction. Alteration of soil conditions by clearing and grading may result in the loss of native seed banks, or changes to topography and drainage patterns that could impair the ability of the habitat to support special-status plants in the long term.

Potential indirect impacts include dust from construction activities that may reduce photosynthetic capacity or inhibit reproduction by coating leaves and reproductive structures. Indirect impacts could also result from the creation of conditions favorable for the invasion of weedy exotic species that outcompete native species and prevent the reestablishment of desirable vegetation, including special-status plants. Ground-disturbing activities have the potential to result in the introduction and spread of noxious weed species of concern to local agricultural interests and to the California Invasive Plant Council and the Humboldt County Weed Management Area.

Noxious invasive weeds are plants that are rated as List A, B, or C by the California Department of Food and Agriculture (CDFA 2016); as High, Moderate, or Limited by the California Invasive Plant Council (Cal-IPC 2018); or as Moderate Priority, High Priority, or Red Alert by the Humboldt County Weed Management Area (HCWMA 2010).

Invasive plant seeds can be dispersed through water or wind, wildlife or livestock, and motorized vehicles or other equipment. Invasive seeds can be introduced via construction vehicles and personnel, soils used for backfill, and grading and clearing of vegetated areas. Invasive seeds may also be introduced after construction by off-highway vehicles, or livestock from newly created access to areas that previously had limited access.

Operational Impacts

Potential operational impacts of the proposed project include ongoing removal and trimming of vegetation during maintenance activities, trampling or crushing during the use of new or improved access roads, increased erosion, and the spread and colonization of noxious weeds.

Potential impacts on Pacific gilia, Howell's montia, and short-leaved evax are likely to be minimal. These species are widely distributed in the region, and a loss of less than 1 acre of these plant populations (i.e., the maximum potential impact) would not result in regional population impacts on these species or cause them to drop below self-sustaining levels. Because the proposed project would affect a small amount of the available habitat in the project area and would not substantially affect local populations of these species during construction, the potential impacts of project construction and operation on Pacific gilia, Howell's montia, and short-leaved evax would be **less than significant**. No mitigation measures are required for these species.

With the conservative assumption that disturbance and loss would occur at the highest estimates provided in Table 3.5-15, Siskiyou checkerbloom would experience potentially significant losses as a result of proposed project construction and operation, given the large area of potential impact (Figure 3.5-13). This impact would be **potentially significant**.

In addition to the impacts described above, additional populations of special-status plants could occur in areas of the project site previously unsurveyed, and if present, could be affected by construction and operation of the proposed project. This impact would be **potentially significant**.

Mitigation Measure 3.5-23a: Conduct Preconstruction Botanical Surveys for Special-Status Plants.

The project applicant shall conduct appropriately timed botanical surveys before construction for all areas of ground disturbance that could support special-status plant populations. Floristic surveys shall be conducted by a qualified botanist during the species' blooming period in accordance with methods described in CDFW's 2018 *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities* (CDFW 2018b). The results of the survey shall be presented in a report submitted to Humboldt County and CDFW no later than August 2019. If additional special-status plants are detected in the project area, they shall be incorporated into project siting, design, avoidance, and management in accordance with Mitigation Measures 3.5-23b through 3.5-23d below.

Mitigation Measure 3.5-23b: Avoid and Minimize Impacts of Project Construction on Special-Status Plants.

Known occurrences of special-status plants shall be flagged during preconstruction surveys and avoided to the greatest extent feasible. Avoidance measures may consist of placing an equipment limitation or equipment exclusion zone around special-status plant populations to minimize direct impacts while allowing the use of any existing roads or other access areas that may pass through the equipment limitation zone or near the equipment exclusion zone. If impacts on Siskiyou checkerbloom cannot be avoided, then a qualified biologist shall map the location and extent of potentially affected populations in the project impact area during preconstruction surveys, and shall quantify the anticipated loss for mitigation.

To control invasive/noxious weeds, the project applicant shall implement Mitigation Measure 3.5-23e, "Develop and Submit a Reclamation, Revegetation, and Weed Control Plan," before construction begins. The project applicant shall return all temporarily disturbed areas to their natural condition by implementing the project reclamation, revegetation, and weed control plan.

Mitigation Measure 3.5-23c: Compensate for Permanent Effects of Project Construction on Special-Status Plants and Associated Habitats.

Where occurrences of special-status plants cannot be avoided, the reclamation, revegetation, and weed control plan shall include seed, plant, and/or topsoil salvage. Topsoil, seeds, and/or plants shall be replaced in the approximate location of their removal after project construction has been completed, or in another location within the project area with suitable habitat. In addition, mitigation for permanent loss for sensitive natural communities (Mitigation Measures 3.5-24a through 3.5-24c, below) will benefit the special-status plant species supported in those communities.

Mitigation Measure 3.5-23d: Compensate for Impacts on Siskiyou Checkerbloom.

For any unavoidable impacts on Siskiyou checkerbloom, the project applicant shall develop a mitigation strategy as part of the reclamation, revegetation, and weed control plan. The mitigation strategy shall include performance standards for successful (re)establishment of Siskiyou checkerbloom and/or enhancement of existing habitat, and a monitoring and reporting program to track revegetation and/or enhancement success. This plan shall be developed in consultation with CDFW and shall be approved by Humboldt County before construction begins. Mitigation shall be at least 1.5:1 for the actual impact.

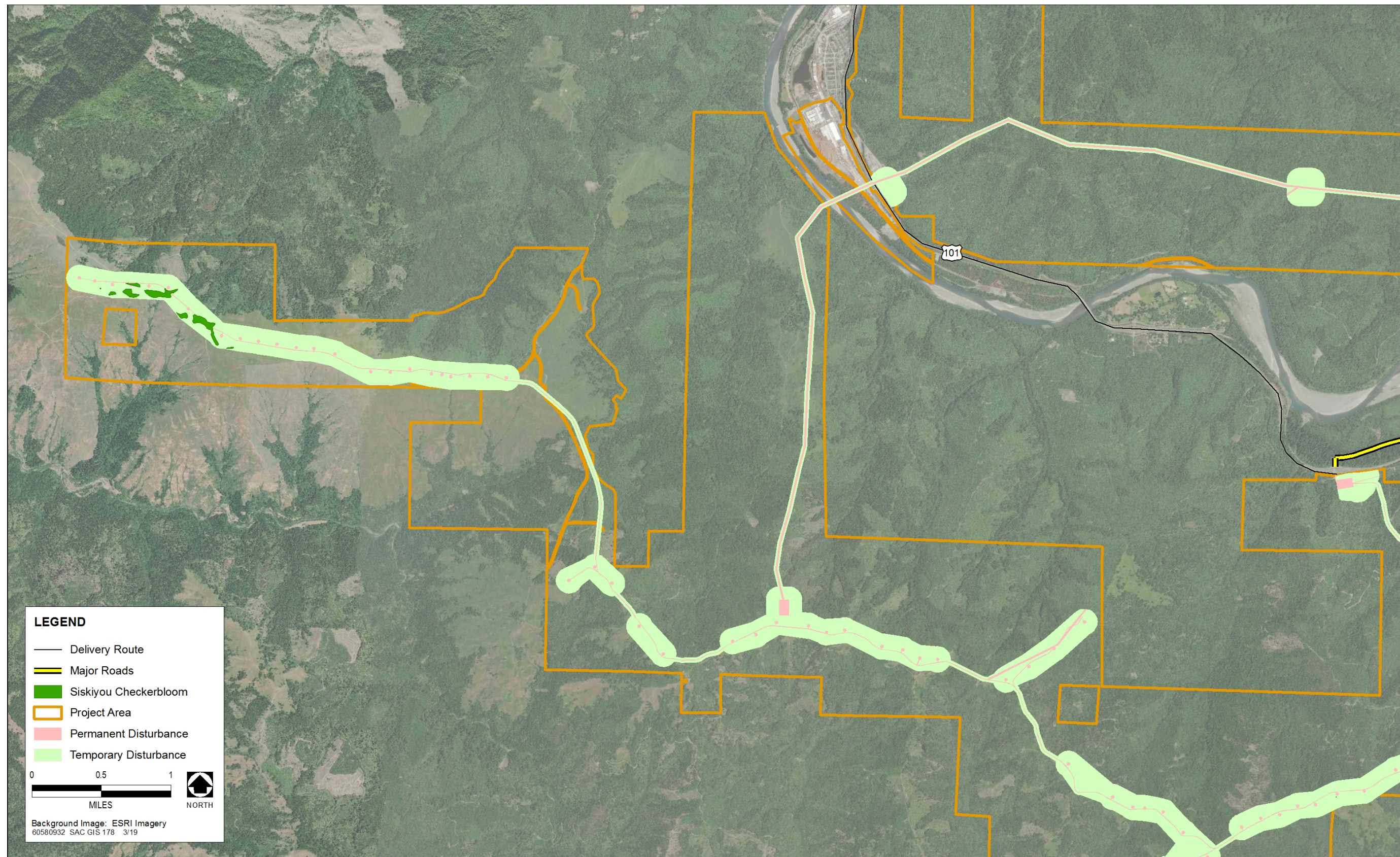


Figure 3.5-13. Potential Impacts of the Proposed Project on Siskiyou Checkerbloom

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acreage to Siskiyou checkerbloom populations, calculated per as-built construction drawings and the results of the preconstruction plan surveys.

- The revegetation plan shall include the following provisions for the restoration and/or enhancement of affected Siskiyou checkerbloom plants:
- Before project disturbance, identification of restoration areas within the project site for seeding and/or transplanting of Siskiyou checkerbloom, with data collection to determine appropriate microsites
- Before project disturbance, measurement of existing Siskiyou checkerbloom populations within the project site for percent cover and density and establishment of these characteristics as the minimum success criteria for the species' cover and density as a result of restoration/enhancement.
- A plan and protocols for appropriate and ecologically sensitive collection and storage of Siskiyou checkerbloom seeds, rhizomes, and plants from the project site.
- Transplanting and seeding protocols for Siskiyou checkerbloom.
- Adaptive management measures and a remedial planting plan.
- Revegetation and/or enhancement monitoring and reporting for at least 3 years.
- Techniques for the protection and enhancement of existing populations of Siskiyou checkerbloom within the project site that are not affected, such as control of invasive weeds and, through coordination with local tribes, cultural methods associated with traditional ecological knowledge of tending the species.

Mitigation Measure 3.5-23e: Develop and Submit a Reclamation, Revegetation, and Weed Control Plan.

Before project construction, the project applicant shall develop and submit a reclamation, revegetation, and weed control plan to CDFW, Humboldt County, and any agency whose permit requirements are addressed in the plan, for their review and approval. The plan shall describe in detail any reclamation, revegetation, and weed control efforts to be conducted during and after project construction, both to stabilize the site and to comply with the mitigation requirements of regulatory agency permits. The plan shall establish performance criteria, time frames for reclamation and restoration of the project site, and provisions for a monitoring program to assess the success of any proposed reclamation, revegetation, and/or restoration efforts.

The reclamation, revegetation, and weed control plan shall be developed and implemented to preserve native vegetation communities in the project area and reestablish native plant cover, natural communities, and wildlife habitat to the greatest extent feasible. The plan shall provide for the reestablishment/restoration of sensitive natural communities on a no-net-loss basis. The plan shall be developed in accordance with the Humboldt County Grading, Excavation, Erosion, and Sedimentation Control Ordinance. The reclamation, revegetation, and weed control plan shall include, at a minimum, the following provisions:

- Reclamation of all areas disturbed by project construction, including temporary disturbance areas around construction sites, laydown/staging areas, temporary access roads, and the gen-tie, using a locally sourced native seed mix. For portions of the gen-tie that cross HRC lands, the seed mix shall be developed in coordination with HRC to ensure compliance with any provisions of the Humboldt Redwood Company HCP. A qualified biologist with demonstrated experience with the habitat to be restored shall have oversight for the selection of reclamation species.
- Procedures and practices included in the project's weed control plan for the control of nonnative invasive/noxious weeds in reclaimed and revegetated areas. Invasive pest species, as listed by the California Invasive Plant Council and the Humboldt Weed Management Area, shall not be used. The weed control plan may be appended to the reclamation and revegetation plan.
- A description of proven available reclamation techniques and procedures (such as hydroseeding, drill seeding, and broadcast seeding, adapted to local conditions) in all disturbed areas.
- Salvage of topsoil in all areas subject to grading or excavation. Topsoil shall be removed, stockpiled on-site, and returned to the original site (reclaimed) or used in habitat restoration activities elsewhere on the site. To avoid spreading pathogens such as Sudden Oak Death with movement of topsoil, the following BMPs from the California Oak Mortality Task Force shall be implemented:
 - Before issuance of any permits or grading activities, conduct a survey of the site to determine whether portions of the forest are infected with the pathogen that causes Sudden Oak Death. If identified, the areas of infestation shall be shown on a map. This map shall be included in the worker environmental awareness plan and the criteria listed below shall be followed.
 - To the extent practical and feasible, route equipment away from host plants and trees, especially in areas with disease symptoms. Locate landings, access roads, staging areas, and other sites of equipment activity away from host plants, especially areas with disease symptoms.
 - Each time equipment or vehicles leave the site, inspect the equipment or vehicles for host plant debris (leaves, twigs, and branches). Host plant debris should be removed from equipment and vehicles before their departure. This applies to all equipment and vehicles associated with the operation. An exception will be granted for equipment or vehicles that leave the site temporarily and will not be traveling to uninfested areas before their return.
 - After working in an infested area, remove or wash off accumulations of soil, mud, and organic debris from shoes, boots, vehicles and heavy equipment, etc., before traveling to an area that is not infested with Sudden Oak Death. Lysol® or a bleach solution can be used to disinfect shoes and boots after cleaning.
 - Clean mud from vehicles to remove host plant material embedded in mud. Establish an equipment power wash station near the infested area. The power wash station shall be constructed to include paved or rocked base; well-drained so that vehicles exiting the station do not become contaminated by wash water; and located where wash water and displaced soil does not have the potential to carry fines to a watercourse, paying particular attention to sites where soil and organic debris may accumulate.

- BMPs for erosion control and water quality protection identified in Section 3.10, “Hydrology and Water Quality”; the CDFW Streambed Alteration Agreement; the USACE permit; and the project’s storm water pollution prevention plan (SWPPP). Before issuance of a grading permit, the project applicant shall consult with the County, the State Water Resources Control Board, and the North Coast RWQCB to acquire the appropriate regulatory approvals that may be necessary to obtain Section 401 water quality certification, a State Water Resources Control Board statewide National Pollutant Discharge Elimination System stormwater permit for general construction activity (Water Quality Order 2009-0009-DWQ), and any other necessary site-specific waste discharge requirements or waivers under the Porter-Cologne Act. The project applicant shall prepare and submit the appropriate notices of intent and prepare the SWPPP and any other necessary engineering plans and specifications for erosion and pollution prevention and control.
- Monitoring of and reporting on created or restored habitat as mitigation for temporary and permanent impacts for a minimum of 5 years or until established success criteria have been met, to assess progress and identify potential problems with the restoration sites. Success criteria are defined as minimum thresholds for vegetation growth and establishment. Such criteria will be developed based on preproject (baseline) conditions and the conditions of appropriate nearby reference sites for the particular habitat types being reclaimed or restored. In communities not considered sensitive natural communities by CDFW, minimum success criteria would include but are not be limited to overall percent cover, relative percent cover of native species, and percent cover of noxious weeds. For created or restored sensitive natural communities, additional success criteria would include percent cover for herbaceous plants, percent canopy cover for native woody (i.e., tree and shrub) species (if applicable to the habitat type being reclaimed/restored), density of native woody species (if applicable to the habitat type being reclaimed/restored), and percent survival of planted woody species (if applicable).
- Adaptive management measures and a remedial planting plan. Remedial measures (e.g., additional planting, weeding, or erosion control) shall be taken during the monitoring period if necessary to ensure the success of the restoration effort.
- Maintenance, monitoring, and reporting procedures.

If the mitigation fails to meet the established performance criteria for vegetation growth and establishment within the maintenance and monitoring period, monitoring of remedial plantings shall extend beyond the initial period until the criteria are met or unless otherwise approved by Humboldt County in consultation with the North Coast RWQCB, USACE, and CDFW.

If elements of the restoration area(s) meet their success criteria before the end of 5 years of monitoring, they may be eliminated from future monitoring with approval from the enforcement agency.

Implementation: Project applicant.

Timing: *Submittal of reclamation, revegetation, and weed control plan:* Before project construction.

Monitoring of and reporting on restored habitat: Minimum of 5 years or until established success criteria have been met.

Enforcement: Humboldt County Planning & Building Department.

Significance after Mitigation

Implementing Mitigation Measures 3.5-23a through 3.5-23e would reduce the project's potential impacts on special-status plants to **less than significant**.

Implementing Mitigation Measures 3.5-23a through 3.5-23e would reduce construction-related impacts of the Bridgeville Substation expansion on special-status plant habitat to **less than significant**.

Impacts on Riparian Habitat and Sensitive Natural Communities

Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by CDFW or USFWS.

Construction-Related and Operational Impacts

IMPACT 3.5-24	Loss or Disturbance of Sensitive Natural Communities and Riparian Habitat. <i>Grading, clearing, and other activities associated with construction and operation of the proposed project would result in substantial loss and disturbance of sensitive natural communities and riparian habitat. This impact would be potentially significant.</i>
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Project construction activities occurring within sensitive natural communities or riparian habitat would result in a direct impact through the removal of vegetation. Construction activities would include clearing and grading at the locations of the pads for the proposed WTGs and meteorological towers, the substation, the O&M building, and staging areas; installation of the gen-tie; and construction, grading, and widening of access roads. Construction-related transport of WTG components into Fields Landing by large barge could result in direct impacts on eelgrass (*Zostera marina*) in the immediate vicinity of the dock, should a barge run aground during low tide in areas that support eelgrass.

Potential indirect impacts of project construction on sensitive natural communities and riparian habitat include alterations to existing topography and hydrology regimes; accumulation of fugitive dust on vegetation; disruptions to native seed banks from ground disturbance; and potential colonization of disturbed areas of the project site by nonnative, invasive plant species. High turbidity levels created by barge traffic or other in-water activity for unloading of the barges could result in indirect construction-related impacts on eelgrass at Fields Landing.

Temporary effects on sensitive natural communities and riparian habitat would result from other ground disturbance activities that would be restricted to the construction phase, such as grading roadways and clearing/trimming vegetation in staging areas. These impacts are considered temporary provided that infrastructure does not replace native vegetation; the area is not maintained free of vegetation in the long term; and habitat restoration and/or recovery is deemed feasible before project implementation. Any temporary impact, such as component storage and soil stockpiling, that would occur in a sensitive natural community or riparian habitat beyond 1 year would be considered a permanent impact.

Ongoing operational impacts on sensitive natural communities and riparian habitat could occur during routine inspection and maintenance of project facilities. These impacts could include trampling or crushing of native vegetation by vehicles or foot traffic if maintenance personnel leave access roads; increased erosion and sedimentation; and introduction of nonnative, invasive plants as a result of increased human presence. Operational impacts would generally be addressed by vegetation management related to restoration and invasive species management; therefore, such impacts are not discussed separately in further detail.

Sensitive natural communities and riparian habitats within the project site, including potential impacts of the proposed project, are discussed below.

Sensitive Natural Communities

Of the 83 vegetation communities mapped on the project site, 43 are listed by CDFW as sensitive natural communities (Stantec 2018d). Characteristic sensitive natural communities within the project site include redwood forest, tanoak forest, California oat grass prairie, and coastal brambles (Stantec 2018d). Based on the proposed site plan, an estimated 419 acres of sensitive natural communities occur in the project area. Of this total, approximately 342 acres would be permanently affected by the project, for placement of project infrastructure, and another 77 acres would be temporarily affected.

Eelgrass is present in dense beds in Humboldt Bay. CDFW considers eelgrass to be a sensitive estuarine vegetation community (CDFW 2016). A submergent flowering plant, eelgrass is an important ecological component of the regional coastal ecosystem, serving as foraging habitat for large populations of migrating black brant (*Branta bernicla*), a CDFW species of special concern (CDFW 2016). Surveys for eelgrass were not conducted as part of the project's technical studies, but some data are available from other sources, including mapping by CDFW. Eelgrass beds mapped by CDFW in Humboldt Bay do not overlap with the project boundaries (Figure 3.5-4) (CDFW 2016). However, mapping available from CDFW is not entirely current. Eelgrass occurs in the immediate vicinity of the proposed unloading location, and eelgrass is visible beyond the mapped boundaries in recent aerial photographs underlying Figure 3.5-4.

Project components would be delivered via barges to Fields Landing in Humboldt Bay. Barges would use existing shipping channels and infrastructure, and no dredging or anchoring would be required for access (Central Oceans USA 2018). Barges used to transport WTG components would be restricted by the maximum barge crossing limit on the jetty at the entrance to Humboldt Bay (Central Oceans USA 2019).

To avoid impacts on the seafloor (and therefore on eelgrass), barges must have enough draft or must be positioned in deep enough water. Draft is the depth between the bottom of the barge and the water surface. The type of barge that would be used at Fields Landing (because of the jetty size constraint) has a maximum draft of 15 feet (Central Oceans USA 2019). However, because of space limits on the barge, Central Oceans USA estimates that the maximum draft of a fully loaded barge would be about 7 feet, 1 inch below the surface of the water. The closest proposed unloading location for the barges is 50 feet off the terminal wall. The water depth of the terminal wall at 50 feet ranges from 2.5 feet at low tide to 8–10 feet at high tide. The draft of a fully loaded barge would exceed this limit; thus, the potential would exist for the barge to sit on the seafloor, damaging eelgrass, if present.

The project applicant proposes to unload the WTG components from barges at 60 feet from the terminal wall, where water depth deepens to more than 10 feet at low tide (thus enabling a fully loaded barge drafting at 7 feet, 1 inch to maintain almost 3 feet of distance from the seafloor) (Central Oceans USA 2019). Barges would be

unloaded using a shore crane and spud leg moorings. Four spud legs would be used to hold the barge in place. Spud legs would be placed in the deep water channel to avoid impacts on eelgrass (Central Oceans USA 2019).

With these proposed barge unloading and mooring procedures, any contact between the bottom of the barges and the seafloor would be avoided and no direct impact would occur. Furthermore, indirect impacts on the seafloor would be avoided by maintaining a distance of almost 3 feet at low tide between the seafloor and the bottom of the barge. With adherence to the proposed protocols, potential impacts on eelgrass would be **less than significant**. No mitigation measures are required.

Table 3.5-15 summarizes the total acreage of sensitive natural communities that has been mapped within the project boundaries and would be expected to experience permanent or temporary impacts. To avoid double-counting acreages of vegetation within the project site, portions of sensitive natural communities that were mapped as riparian habitat are calculated separately. Those areas are included in the “Riparian Habitat” discussion below (Table 3.5-16) and are not included in the total acreage quantified in Table 3.5-15.

Riparian Habitat

Riparian habitat is under the jurisdiction of CDFW under Section 1600 of the California Fish and Game Code, and includes vegetation growing in association with waterways (e.g., rivers and perennial, ephemeral, and intermittent drainages). The total area of riparian habitat mapped within the project site is 16.2 acres, of which approximately 0.70 acres would be permanently affected and 1.07 acres would be temporarily affected by implementation of the project. Because riparian habitat includes hydrophytic vegetation growing along waterways, this acreage includes natural communities that CDFW considers to be both sensitive and nonsensitive. Examples of sensitive natural communities mapped by Stantec (2018d) in areas also mapped as riparian habitat (Stantec 2018j) include red alder forest and California bay forest. Examples of nonsensitive vegetation communities (Stantec 2018d) mapped in riparian habitat (Stantec 2018j) are coyote brush scrub, arroyo willow thickets, and Himalayan blackberry–rattlebox–edible fig scrub. Before construction, the project applicant intends to apply for a Section 1600 streambed alteration agreement from CDFW for any activities that fall under CDFW jurisdiction, and would implement all conditions in the permit to avoid impacts on fish and wildlife resources associated with riparian habitat. The project applicant would also conduct construction activities in compliance with Humboldt County Streamside Management Area requirements and siting constraints.

Table 3.5-16 summarizes the total acreage of riparian habitat mapped within the project boundaries.

With the conservative assumption that disturbance and loss would occur at the highest estimates provided in Table 3.5-15 and Table 3.5-16, the proposed project would result in losses of sensitive natural communities and riparian habitat. This impact would be **potentially significant**.

Table 3.5-15. Sensitive Natural Communities Other than Riparian Habitats within the Project Site—Permanent vs. Temporary Impact Acreages and Total Acres Disturbed

Sensitive Natural Community	Disturbance Type	Acres	Total Acreage
Redwood forest*	Temporary	232.37	283.65
	Permanent	51.29	
Spike bentgrass prairie/coastal terrace prairie	Temporary	34.42	42.54
	Permanent	8.12	
Tanoak forest	Temporary	9.68	12.63
	Permanent	2.95	
California brome–blue wildrye prairie	Temporary	19.78	23.97
	Permanent	4.19	
California oat grass prairie	Temporary	11.61	12.86
	Permanent	1.25	
Ocean spray brush	Temporary	3.27	31.28
	Permanent	1.08	
Tufted hair grass meadows	Temporary	3.96	4.12
	Permanent	0.16	
Coastal brambles	Temporary	2.69	2.89
	Permanent	0.20	
Oregon white oak woodland	Temporary	2.13	2.87
	Permanent	0.74	
Bigleaf maple forest	Temporary	2.06	2.93
	Permanent	0.87	
Red alder forest**	Temporary	0.47	0.92
	Permanent	0.45	
California bay forest**	Temporary	0.74	1.24
	Permanent	0.50	
Madrone forest	Temporary	1.44	2.86
	Permanent	0.48	
Shining willow groves	Temporary	0.74	0.85
	Permanent	0.11	
Grand fir forest*	Temporary	0.52	0.63
	Permanent	0.11	
Sand dune sedge swaths	Temporary	0.47	0.47
	Permanent	0.00	
Douglas-fir forest ¹	Temporary	13.76	18.21
	Permanent	4.45	
TOTAL IMPACTS ON SENSITIVE NATURAL COMMUNITY ACREAGE	Temporary	340.11	417.63
	Permanent	77.52	

Notes:

* No off-site tree planting or other mitigation is required for tree removal conducted under a timber harvest plan, per Section 1106 of the California Forest Practice Rules (Estlow, pers. comm., 2019).

** Sensitive natural communities denoted with two asterisks have portions that overlap waterways, and were therefore considered to be California Department of Fish and Wildlife–jurisdictional riparian habitat at some locations. Where a sensitive natural community overlaps a waterway, that acreage was calculated and captured as riparian habitat. The acreages of these communities mapped as riparian habitat are not included in the total acreage of sensitive natural communities, because these acreages are already accounted for as riparian habitat.

¹ The Douglas-fir forest sensitive natural community includes the following sensitive vegetation associations: *Pseudotsuga menziesii*–*Arbutus menziesii*; *Pseudotsuga menziesii*–*Gaultheria shallon*; *Pseudotsuga menziesii*–*Mahonia nervosa*; and *Pseudotsuga menziesii*–*Quercus garryana* var. *garryana*/grass.

Source: Stantec 2018f; data compiled by AECOM in 2019

Table 3.5-16. Riparian Habitats within the Project Site—Permanent vs. Temporary Impact Acreages and Total Acres Disturbed

Riparian Habitat Type—Vegetation Alliance Name	Disturbance Type	Acres	Total Acreage
Barren/urban	Temporary	0.01	0.01
	Permanent	0.00	
Black cottonwood forest*	Temporary	0.07	0.29
	Permanent	0.22	
California bay forest*	Temporary	0.07	0.08
	Permanent	0.01	
Douglas-fir forest	Temporary	0.00	0.02
	Permanent	0.02	
Douglas-fir–tanoak forest	Temporary	0.03	0.19
	Permanent	0.16	
Red alder forest*	Temporary	0.82	1.12
	Permanent	0.29	
Redwood forest*	Temporary	0.07	0.07
	Permanent	0.00	
TOTAL IMPACTS ON RIPARIAN HABITAT ACREAGE	Temporary	1.07	1.77
	Permanent	0.70	

* Riparian habitats denoted with an asterisk are also considered sensitive natural communities; where a sensitive natural community overlaps a waterway, that acreage is calculated and captured here as riparian habitat. The acreages of communities mapped as riparian habitat are not included in the total acreage of sensitive natural communities, because these acreages are already accounted for and potential impacts are captured under riparian habitat considerations.

Source: Stantec 2018f; data compiled by AECOM in 2019

Mitigation Measure 3.5-24a: Avoid and Minimize Impacts on Sensitive Natural Communities and Riparian Habitat.

During project engineering and design and during construction, the project applicant shall avoid and minimize disturbances to sensitive natural communities and riparian habitat whenever possible by implementing the following mitigation measures:

- Mitigation Measure 3.5-1c, “Develop and Implement a Worker Environmental Awareness Program”
- “Minimize Construction Footprint” in Mitigation Measure 3.5-14, “Avoid and Minimize Operational Impacts on Nonraptor Birds”
- Mitigation Measure 3.5-19a, “Minimize Impacts on Wildlife and Monitor during Construction”
- Mitigation Measure 3.5-23e, “Develop and Submit a Reclamation, Revegetation, and Weed Control Plan”

A qualified biologist shall monitor impacts on sensitive natural communities and riparian habitat during construction to ensure that they are identified for avoidance and preserved on-site to the greatest extent

feasible. For all sensitive natural communities and riparian habitat that cannot be avoided, the project applicant shall quantify refined impact acreages based on the final design before construction, to identify the degree of actual impacts adequately to determine required mitigation acreages. These impact acreages shall be verified upon completion of construction based on monitoring reports and as-built drawings.

Implementation: Project applicant.

Timing: Quantification before approval of grading or improvement plans or any ground-disturbing activities; avoidance and monitoring during construction; final quantification after construction.

Enforcement: Humboldt County Planning & Building Department.

Implementation: Project applicant.

Timing: Before approval of grading or improvement plans or any ground-disturbing activities.

Enforcement: Humboldt County Planning & Building Department.

Mitigation Measure 3.5-24b: Compensate for Loss of Sensitive Natural Communities and Riparian Habitat.

Any sensitive natural communities and/or riparian habitat permanently affected shall be included in per-acre compensatory mitigation as described in Mitigation Measure 3.5-23e, “Develop and Submit a Reclamation, Revegetation, and Weed Control Plan.” For sensitive natural communities that cannot be reestablished/created on-site or off-site because of the limited nature of suitable substrates, such as coastal prairie communities, habitat enhancement/on-site restoration of degraded sensitive natural communities may be used for compensation. Habitat lift/enhancement may be used to count toward compensatory mitigation ratios, but shall not exceed 1.5 to 1 (i.e., 1.5 acre of enhanced high-quality sensitive natural community to compensate for the loss of 1 acre of degraded sensitive natural community). An exception to replacement applies to forest communities that are removed under a timber harvest plan in accordance with Section 1106 of the California Forest Practice Rules. No off-site tree planting or other mitigation is required for these forest communities. These communities are identified with a single asterisk (*) in DEIR Table 3.5-15 and include redwood forest, grand fir forest, and Douglas-fir forest.

Implementation: Project applicant.

Timing: Within 1 year of initiation of project construction.

Enforcement: Humboldt County Planning & Building Department.

Mitigation Measure 3.5-24c: Restore Sensitive Natural Communities and Riparian Habitat.

If on-site restoration is selected as compensatory mitigation for impacts on sensitive natural communities and/or riparian habitat, the project applicant shall prepare and implement Mitigation Measure 3.5-23e, “Develop and Submit a Reclamation, Revegetation, and Weed Control Plan.” The plan shall include reestablishment of sensitive natural communities and/or riparian habitat, including riparian vegetation

subject to CDFW jurisdiction, and/or enhancement of existing habitat, on a per-acre basis. To offset the temporary loss of sensitive natural communities during construction, the minimum mitigation ratio shall be at least 1 acre of sensitive natural communities for each acre of permanent or temporary impact. Greater mitigation ratios are required for impacts on mature, high-quality riparian habitat that require a longer period to create high-value replacement habitat. Riparian vegetation under CDFW jurisdiction shall be mitigated according to the project's lake and streambed alteration agreement obtained pursuant to Section 1600 of the California Fish and Game Code. The reclamation, revegetation, and weed control plan shall include the following provisions for restoring affected sensitive natural communities and/or riparian habitat:

- Baseline data shall be collected at reference locations within the project site to establish expected ranges and minimum thresholds for species composition, relative species richness, and vegetative cover (i.e., herbaceous, shrub, and/or woody canopy) for each sensitive habitat that would be affected.
- An appropriate species planting palette shall be developed for each sensitive habitat that would be affected.
- Minimum planting densities shall be designed to achieve minimum performance standards for survival cover and density, while maintaining the natural character of the vegetation community being restored/created.
- Minimum performance standards shall be established for percent survival, species composition, relative species richness, and vegetative cover (i.e., herbaceous, shrub, and/or woody canopy). These standards shall be based on the preconstruction documentation of reference locations within the project site and the life history traits of the plants being restored (i.e., herbaceous vs. woody, fast-growing primary colonizers vs. slow-growing successional species).
- Any trees removed from riparian habitat shall be replaced with the same or similar species at a ratio of 3:1 (three trees planted for every one tree removed). Tree replacement may be carried out concurrently on sensitive natural communities and/or riparian habitats that are also being restored/created/enhanced on a per-acre compensatory basis.
- In sensitive natural communities, mature, woody trees and shrubs shall be avoided to the greatest extent feasible. In cases where mature trees within sensitive natural communities will be removed, a mitigation ratio of 3:1 shall be used to compensate for the time it takes for trees to grow to functional capacity. Mature trees consist of trees with the following DBH:
 - Oregon white oak: More than 6 inches DBH
 - California bay: More than 10 inches DBH
 - Madrone: More than 6 inches DBH
 - Big-leaf maple: More than 10 inches DBH
 - Tanoak: More than 10 inches DBH
 - Red alder: More than 10 inches DBH
 - Shining willow: More than 6 inches DBH

Implementation: Project applicant.

Timing: Planning before project construction; implementation of planting within one growing season and no later than 1 year from ground disturbance.

Enforcement: Humboldt County Planning & Building Department.

Significance after Mitigation

With implementation of the mitigation measures listed above, impacts on sensitive natural communities and riparian habitat either would be avoided or would be compensated on a per-acre basis at a 1:1 ratio, except for riparian habitat, which would be replaced at a 3:1 ratio in accordance with the project's Fish and Game Code Section 1600 lake and streambed alteration agreement. Therefore, implementing Mitigation Measures 3.5-24a through 3.5-24c would reduce this impact to **less than significant**.

The expansion of the Bridgeville Substation would have **no impact** on sensitive natural communities and riparian habitat during construction.

Impacts on Wetlands

Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.

Construction-Related Impacts

IMPACT 3.5-25	Disturbance and Loss of Wetlands and Other Waters during Project Construction. <i>Grading, clearing, and other activities associated with construction and operation of the proposed project would result in disturbance and loss of wetlands and other waters. This impact would be potentially significant.</i>
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Clearing and grading in the project area to facilitate installation of up to 60 WTGs and all associated infrastructure would result in impacts on wetlands and other waters of the United States subject to USACE jurisdiction under Section 404 of the federal CWA. Wetlands and other waters of the United States would also be disturbed by activities associated with staging areas and laydown of project components and improvements along the transportation route.

Implementing the proposed project would require a CWA Section 404 permit from USACE and a CWA Section 401 certification from the North Coast RWQCB. Wetlands in the coastal zone are also subject to regulation by the CCC under the California Coastal Act. Wetlands and other waters of the United States that do not meet all three USACE wetland criteria could be subject to regulation by the North Coast RWQCB under the state's Porter-Cologne Act. All wetlands and other waters mapped in the project area meet all three USACE criteria and therefore are subject to USACE jurisdiction.

The proposed project's total wetland impact area would be up to 5.25 acres (approximately 4.35 acres of temporary impacts and 0.89 acre of permanent impacts). The actual disturbance acreage would be refined during site design and project engineering and permitting and would likely be reduced, because project components would be sited to avoid and minimize impacts on wetlands and other waters of the United States where possible. Temporary direct impacts on wetlands and other waters would be associated with ground disturbance primarily during the construction phase; these activities are considered temporary, provided that wetlands and other waters

of the United States are not filled or replaced; that the site's hydrology is not permanently altered; and that restoration is deemed feasible before project implementation.

Construction activities that encroach upon wetlands have the potential to result in the loss of wetland area or wetland habitat functions, through direct or indirect impacts on wetland vegetation, degradation of water quality, and/or loss of wetland functions and services, and changes in hydrology. Construction-related and operational spills, worker errors, and soil erosion within or near wetlands are other potential sources of impacts on wetlands and other waters of the United States. Potential indirect impacts on aquatic resources include the introduction of nonnative invasive species, dust, contaminants, and settling of contaminants associated with vehicle emissions.

Aquatic resources mapped in the project area (Terra-Gen Development Company 2018) include wetlands, open water, and drainages (perennial, intermittent, and ephemeral) that may qualify as waters of the United States and/or state (Appendix F). The aquatic resources survey (2018) identifies the delineated locations and boundaries of the wetlands and other waters on the project site (Table 3.5-17).

Table 3.5-17. Wetlands and Other Waters on the Project Site and in Transportation Improvement Areas—Permanent vs. Temporary Impact Acreages and Total Acres Disturbed

Feature Type	Disturbance Type	Acres	Total Acreage
Wetlands ¹	Temporary	3.47	4.22
	Permanent	0.75	
Other Waters ²	Temporary	0.88	1.02
	Permanent	0.14	
TOTAL:	Temporary	4.35	5.25
	Permanent	0.89	
Notes:			
¹ Wetlands were categorized into three types: palustrine emergent, palustrine scrub/shrub, and palustrine forested.			
² Includes 0.1384-acre open water (stock pond) and 0.89-acre drainages.			
Source: Terra-Gen Development Company 2018; data compiled by AECOM in 2019			

Construction activities associated with the proposed project could result in the temporary and/or permanent placement of dredged or fill material into wetlands and other waters of the United States. Activities to construct or improve access roads, install or replace culverts, and establish staging areas could result in fill and/or disturbance of aquatic resources, transport of sediment, and runoff of contaminants (e.g., fuel, lubricants) into waters. The precise extent of waters of the United States affected would be determined upon submittal of the final site plan during the CWA Section 404 permitting process.

With the conservative assumption that disturbance and loss would occur at the highest estimates provided in Table 3.5-17, the proposed project could result in significant losses of wetlands and other waters of the United States. This impact would be **potentially significant**.

Mitigation Measure 3.5-25a: Avoid and Minimize Impacts on Wetlands and Other Waters of the United States.

The project applicant shall avoid and minimize impacts on wetlands and other waters of the United States by implementing the following mitigation measures:

- Mitigation Measure 3.5-22b, "Implement Siting Constraint Measures to Delineate and Protect Aquatic Resources"

- Mitigation Measure 3.5-22e, “Minimize Potential Effects on Aquatic Resources Associated With Horizontal Directional Drilling”
- Mitigation Measure 3.5-23e, “Develop and Submit a Reclamation, Revegetation, and Weed Control Plan”
- Mitigation Measure 3.10-1, “Implement Wet-Weather BMPs Consistent with the Humboldt Redwood Company Habitat Conservation Plan,” in Section 3.10, “Hydrology and Water Quality”

In addition, the project applicant shall implement the following measures:

- Before any construction activity, the project applicant shall submit a wetland delineation to USACE for verification. The verified delineation shall serve as the baseline to determine actual project impacts for the purpose of permitting and determining compensatory mitigation needs. The project applicant shall obtain a CWA Section 404 permit from USACE for discharges under USACE jurisdiction before project construction, and shall abide by all permit conditions, including those for compensatory mitigation. The mitigation ratio will be determined by USACE but shall be no less than 1:1 for permanent impacts to ensure no net loss of wetlands functions and values in the project area in the long term. To ensure consistency and a comprehensive approach to mitigation planning, compensatory mitigation may be planned and implemented concurrently with other mitigation requirements, such as those for riparian habitat mitigation and sensitive natural communities.
- The project applicant shall also submit wetland mapping to Humboldt County and identify corresponding setback requirements as appropriate (i.e., 100-foot setback) on project maps to comply with County setback requirements. Any required setback shall be shown on project construction drawings and plans (e.g., grading and improvement plans).
- Construction activities and project components shall be located at least 100 feet from aquatic resources wherever feasible.
- Before any construction activity, the project applicant shall assign a qualified biologist to identify the locations of wetlands and other waters and their corresponding setbacks (if applicable) as required by project permits, for avoidance. Identification of wetlands and other waters for avoidance shall be in addition to and distinguished from any required construction boundary fencing or flagging.
- If it is not feasible to maintain the aquatic resource setbacks, the County may allow encroachment within the setbacks depending on site-specific factors, subject to advance consultation with CDFW, as required by the County’s Streamside Management Ordinance. The project applicant shall submit a supplemental evaluation to the County that details how the proposed construction activities would avoid potential impacts on aquatic resources, including through BMPs, and shall obtain permission from the County for encroachment.

The project applicant shall implement Mitigation Measure 3.5-1c, “Develop and Implement a Worker Environmental Awareness Program,” to include specific information regarding wetlands and other waters that occur on the project site and that either would be affected or have been identified for avoidance. Training shall be conducted before the start of construction and shall include information about the

locations and extent of wetlands and other waters, methods of resource avoidance, permit conditions, and possible fines for violations of permit conditions and federal and/or state environmental laws.

Mitigation Measure 3.5-25b: Compensate for Impacts on Wetlands and Other Waters.

The project applicant shall implement Mitigation Measure 3.5-23e, “Develop and Submit a Reclamation, Revegetation, and Weed Control Plan,” and shall include detailed measures for the compensation, restoration, and/or enhancement of wetlands and other waters on a wetland type per-acre basis. The standard for mitigation shall be no net loss. If restoration is selected as a method of compensatory mitigation, the project applicant shall prepare a wetland mitigation and monitoring plan as part of the project’s reclamation, revegetation, and weed control plan (Mitigation Measure 3.5-23e), and shall submit it to the County for review, determination of adequacy, and approval. Mitigation ratios shall be calculated following USACE wetland mitigation procedures and shall be based on the actual impact acreage of final design per as-built construction drawings and the results of the preconstruction surveys. After review and approval by the pertinent agencies, mitigation shall be carried out at a ratio no less than 1:1, or another ratio approved by the appropriate jurisdictional agency, whichever is higher.

The wetland mitigation and monitoring plan shall be written by a qualified biologist and shall include the following elements, at minimum:

- goals of the plan and permitting requirements satisfied;
- wetland restoration activities and locations, including the restoration of temporarily affected wetlands and other waters to preconstruction conditions;
- monitoring and reporting requirements (including monitoring period), and criteria to measure mitigation success; and
- remedial measures, should mitigation efforts fall short of established targets.

The project applicant shall consult with USACE about the adequacy of the plan and may consult with other agencies, if the plan aims to fulfill multiple permitting and mitigation requirements.

Significance after Mitigation

Implementing Mitigation Measures 3.5-25a and 3.5-25b would reduce the potential impacts of the project on wetlands and other waters of the United States to **less than significant** because impacts on these resources either would be avoided or would be compensated for at no less than a 1:1 ratio, or another ratio approved by the appropriate jurisdictional agency(ies), whichever is higher. No less than a 1:1 ratio is needed to achieve a no-net-loss standard.

Implementing Mitigation Measures 3.5-25a and 3.5-25b would reduce construction-related impacts of the Bridgeville Substation expansion on wetlands and other waters to **less than significant**.

Impacts on Migratory Corridors and Nursery Sites

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.

IMPACT 3.5-26	Impacts on Migratory Corridors during Project Construction and Operation. <i>Construction of the proposed project would result in the loss of relatively small amounts of land area, such that the project site would remain largely undeveloped. Project infrastructure would not impede movement by birds, bats, and terrestrial wildlife, and project operation would consist of activities that are similar to other land uses in the area. This impact would be less than significant.</i>
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Construction-Related Impacts

The project site is overlapped by landscape linkages and an expansive Essential Connectivity Area that connect several core protected habitat areas in the region, including Humboldt Redwoods State Park to the south, the Headwaters Forest Reserve and Grizzly Creek Redwoods State Park to the north, and Six Rivers National Forest to the east (Figure 3.5-5; Spencer et al. 2010). Landscape linkages that cross the project site consist of forest cover; land management protections (e.g., Humboldt Redwood Company HCP lands); and stepping-stone patches of late seral forest, that together facilitate continued movement by animals through the region in the context of ongoing timber harvest, grazing, and other land uses (Penrod et al. 2001). In addition to these terrestrial landscape linkages, aquatic habitats in the Eel and Van Duzen rivers and numerous tributary creeks and streams represent important migration and dispersal corridors for anadromous fish and other aquatic species. Birds and mammals also use riparian corridors as avenues for movement, migration, and dispersal.

The primary barriers to wildlife movement across connectivity areas are roads and urban development (Spencer et al. 2010). The proposed project is designed to use existing roadways and urban areas as much as possible, thereby reducing the potential impacts of project construction and operation on wildlife movement. For example, project components would be hauled and delivered on or adjacent to existing highway infrastructure, and project-related access roads would be developed along existing logging tracks. In addition, the project does not propose any barriers to riparian corridors. Where the gen-tie would cross the Eel River, the project applicant would use horizontal directional drilling to install the gen-tie beneath the river (underground), with setbacks to nearby riparian habitat at drilling locations.

Most potential construction-related disturbance of existing habitats at the project site, such as clearing and grading for staging and laydown areas, would be temporary, and most of the project area would be reclaimed to natural habitat after construction concludes. Installing project infrastructure would result in the loss of relatively small amounts of land area (approximately 320 acres, roughly 14 percent of the project site), leaving much of the land undeveloped. Proposed project infrastructure would consist primarily of scattered components with small footprints, such as WTGs, meteorological towers, substation, an O&M facility, and power line poles. These components would not impede movement by wide-ranging wildlife through the area. Because of the limited nature and extent of new infrastructure, a lack of new barriers to wildlife movement corridors, and the availability of large expanses of suitable habitat elsewhere, construction impacts on land-based migration corridors would be **less than significant**. No mitigation measures are required.

Operational Impacts

During project operation, personnel would work at the O&M facility, and access roads would be used for routine inspection and maintenance of project components at intervals and traffic levels similar to those for other land uses in the area (cattle grazing, agriculture, and timber management operations). The existing and proposed access roads would not represent barriers to wildlife movement because they are or would be rural, small, and lightly traveled. The potentially significant impact related to wildlife collisions with vehicles would be reduced to less than significant with mitigation measures such as limiting traffic to daytime hours and speeds of less than 15 miles per hour (Mitigation Measure 3.5-19b, “Avoid and Minimize Impacts on Special-Status Mammals and Associated Habitats”).

The Bear River Ridge portion of the project site overlaps the northeastern corner of the Cape Mendocino Grasslands Important Bird Area. The Fields Landing site, where project components would be off-loaded, and the northern portion of the haul route are situated along the eastern edge of the Humboldt Bay Important Bird Area. Both of these areas support large numbers of resident and migratory birds (Figure 3.5-6). Birds migrating between these areas may use riparian corridors, ridges, or coastlines as main travel pathways, with habitats on the project site potentially serving as migration stopover points. Impacts of WTG operation on migrating birds would be reduced to less than significant with mitigation measures such as minimizing and avoiding habitats known to support proportionally higher numbers of birds (i.e., riparian areas). Therefore, the potential impact of project construction and operation on bird migration corridors would be **less than significant**.

The expansion of the Bridgeville Substation, because of its proximity to the existing substation site, would have **no impact** on migratory corridors.

IMPACT 3.5-27	<i>Impacts on Nursery Sites. Construction of the proposed project would avoid colonial bird-nesting sites (rookeries), and would avoid and minimize impacts on bat nursery roost sites. The project site would remain largely undeveloped, and project operation would not result in additional impacts on suitable nursery sites. This impact would be less than significant.</i>
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The results of a database search indicate that 32 known colonial bird-nesting sites (rookeries) are present in the project vicinity, all in Humboldt Bay and the Eel River/Van Duzen River delta. The nearest rookery to the project site is a black-crowned night heron (*Nycticorax nycticorax*) nesting colony in Humboldt Bay National Wildlife Refuge, approximately 2.5 miles southwest of the Fields Landing delivery site (CDFW 2018a). The Fields Landing delivery site consists of an active boat dock, a paved storage facility, and a graveled staging area with ruderal grasses and scrub. No suitable rookery habitat, such as large trees or clumps of trees, exists on or near the delivery site. Furthermore, no suitable rookery habitat or colonial bird nesting sites were detected during project site surveys (Stantec 2018j). Construction-related and operational activities for the proposed project would occur at least 4 miles inland from known rookery locations. Therefore, potential impacts on colonial bird-nesting sites would be **less than significant**.

Ten species of bats that occur within and near the project site form nursery colonies in the summer (Stantec 2018j). No surveys for bat roosts have been conducted in the project area, but trees or rock outcroppings on or near the project site that offer appropriate habitat features (e.g., hollows, cracks, and fissures) could support colonial maternity roosts. The loss of bat maternity colonies as a result of clearing and grading activities during

construction would be a potentially significant impact that would be reduced to less than significant with mitigation measures such as a preconstruction habitat assessment, avoidance of suitable roost habitat, and adjustment of the timing of tree removal (Mitigation Measure 3.5-15, “Avoid and Compensate for Impacts on Bat Roosts”). Operational activities such as routine maintenance and rotational movement of WTG blades would not require any additional removal of habitat. Therefore, potential impacts of project operation on bat nursery colonies would be **less than significant**.

The Bridgeville Substation expansion site does not contain colonial bird-nesting sites; thus, this impact would be **less than significant**.

Consistency with Local Policies and Ordinances

The proposed project would have essentially no effect on the Humboldt Bay Harbor, Recreation and Conservation District; therefore, a determination of the project’s consistency with the district’s Humboldt Bay Management Plan is not needed, and this issue is not considered further in this EIR.

For the purposes of this EIR, it is assumed that the project applicant would acquire a coastal development permit from the County through the Local Coastal Program, and from the CCC if required. The project applicant would apply to both entities and comply with any conditions of issued permits. As a result, no impact would occur. This issue is not considered further in this EIR.

In addition, it is expected that the project applicant would comply with the Five Counties Salmonid Conservation Program to implement the guidelines of the *Five Counties Salmonid Conservation Roads Maintenance Manual*, which includes measures to protect water quality using BMPs during the design and operation of new road segments. These standards should apply to private roads associated with the proposed project because the County would condition the project to meet these standards as part of its discretionary permitting authority for issuance of the conditional use permit, and the project applicant would comply with any conditions of the issued conditional use permit. As a result, no impact would occur. This issue is not considered further in this EIR.

Several named watercourses and numerous other drainage features and wet areas are scattered throughout the project area. Streamside management areas were not mapped as part of the aquatic resources mapping conducted for the project (TerraGen Development Company 2018), but are generally expected to occur adjacent to the majority of these features. Various project components have the potential to affect streamside management areas, primarily access roads and the gen-tie. The County’s Streamside Management Ordinance allows road crossings in stream channels and streamside management areas, so no further coordination with the County for such crossings is necessary. Roads have prescribed erosion control measures and the ordinance includes standards that apply to winter operations. These standards would be included in the project applicant’s water quality control plans and measures.

Unlike roads, utilities such as the gen-tie are not exempt from the Streamside Management Ordinance. The possibility exists that poles supporting the gen-tie could affect streamside management areas directly or indirectly. For this consistency analysis, the outer boundary of streamside management areas associated with streams is estimated to be 200 feet from the stream transition line on either side of waters, and for wetlands, 50 feet or 150 feet from the edge of seasonal and perennial wetlands, respectively. Several poles would fall within these buffers.

The project applicant proposes to reduce the impact of construction in streamside management areas to the extent feasible, and would determine the exact impact acreage of placing nonexempt structures such as power poles in the streamside management areas in the project area. The project applicant also proposes to obtain a special permit pursuant to County zoning regulations. Installing poles in streamside management areas would require compensatory mitigation to offset permanent losses, including replacement of affected riparian or wetland habitat at a ratio of 1:1 or greater. Monitoring of mitigation measures and reporting for this replacement habitat would be included as conditions of the special permit. These requirements can also be achieved through compliance with other permits that require compensatory mitigation for impacts on wetland and riparian habitat (see “Impacts on Sensitive Natural Communities”). If the project applicant demonstrates to the satisfaction of the County that other compensatory mitigation efforts will suffice to comply with the Streamside Management Ordinance, and with County General Plan Policies BR-P4, BR-P5, and BR-P6, no additional mitigation may be necessary. The potential for the proposed project to conflict with other local policies or ordinances in Humboldt County and with the *Humboldt County General Plan* is considered below.

Conflict with an Adopted Habitat Conservation Plan

Conflict with the provisions of an adopted HCP, natural community conservation plan, or other approved local, regional, or state HCP.

IMPACT 3.5-28	Potential Inconsistency with the Humboldt Redwood Company Habitat Conservation Plan. <i>The period for the first project construction phase is inconsistent with the provisions of the Humboldt Redwood Company HCP. This impact would be potentially significant.</i>
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The Green Diamond Resource Company signed an aquatic habitat conservation plan with NMFS and USFWS in 2007 to enhance habitat for six coldwater-adapted fish and amphibians. The project boundaries do not overlap with Green Diamond’s property (Hamm, pers. comm., 2019). Construction and operation of the project therefore would not conflict with the provisions of Green Diamond Resource Company’s aquatic conservation plan.

Much of the project site is on lands owned by HRC (Figure 3.5-14), which are covered by the *Habitat Conservation Plan for the Properties of the Pacific Lumber Company, Scotia Pacific Holding Company, and Salmon Creek Corporation*. HRC assumed responsibilities as a permittee of the HCP when it purchased Pacific Lumber Company’s land. The plan focuses on timber management and its related impacts on listed fish and wildlife species, many of which are also expected to be affected by the proposed project. The Humboldt Wind Energy Project is not a covered activity in the HCP, and the project applicant is not participatory to the HCP. However, the project would involve logging operations and road construction, activities that are addressed in the Humboldt Redwood Company HCP. The project applicant seeks to be consistent with the management objectives of the HCP and not to impair implementation of the HCP in any way.

Proposed activities would avoid old-growth portions of the project area, and habitat for marbled murrelets would remain undisturbed. The primary mitigation and conservation measure included in the HCP to meet the management objectives for marbled murrelet is the establishment of marbled murrelet conservation areas (MMCAs). The MMCAs are protected for the life of the HCP (50 years, 2049), and timber harvesting, including salvage logging and other management activities that are detrimental to the marbled murrelet or marbled murrelet

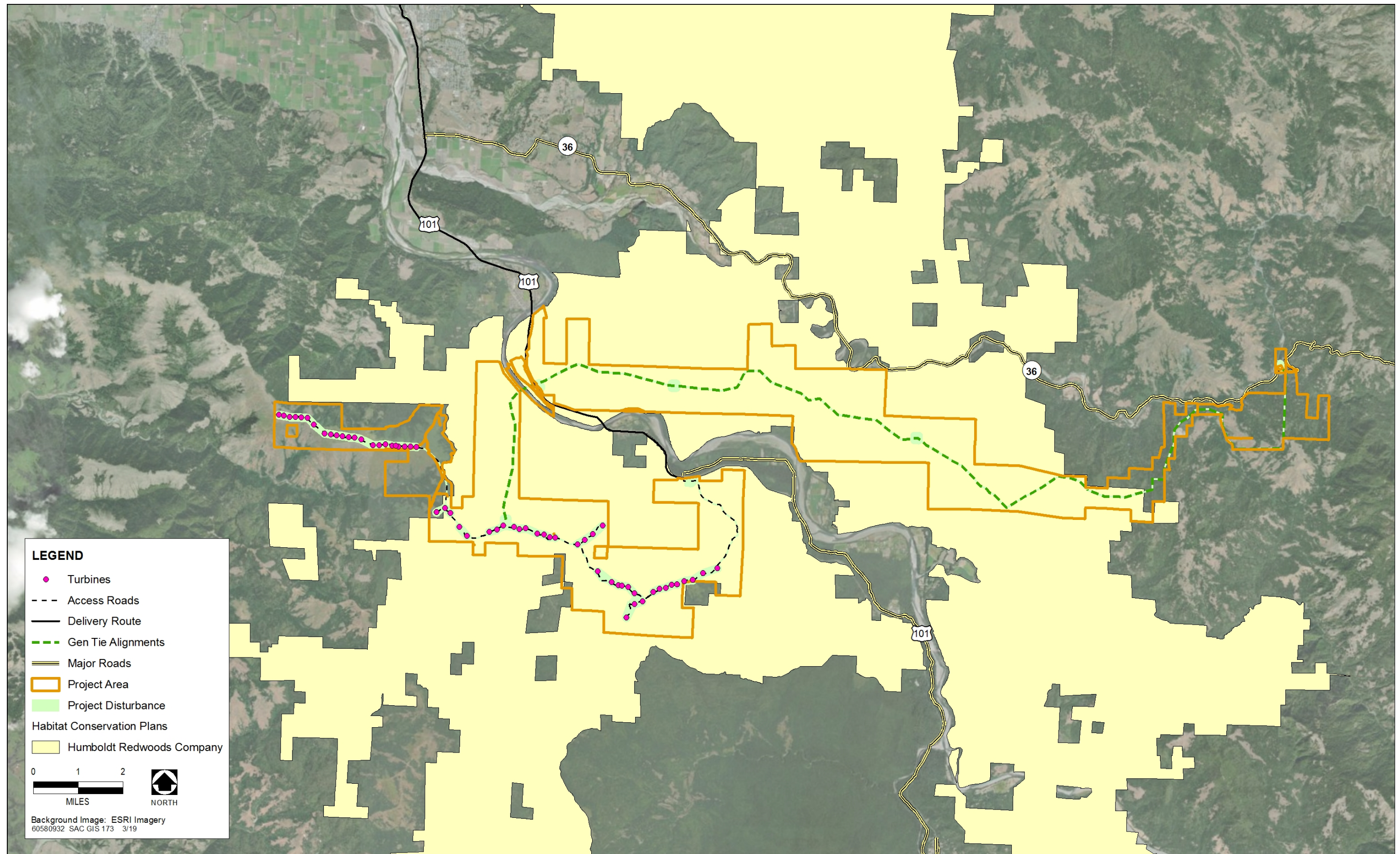


Figure 3.5-14. Location of Humboldt Redwood Company Property Relative to the Project Area

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habitat, are prohibited in the MMCAs. The closest MMCA is located just under 6 miles north of the project site, and project activities would not take place in or near any MMCAs or associated buffers.

Section 6.1.2.3 of the HCP, “Minimization of Take of Marbled Murrelet,” specifies implementation of seasonal buffers and restrictions on logging operations, disturbance minimization, and consultation with CDFW and USFWS for all activities within 0.25 mile of old-growth habitat to ensure that impacts on marbled murrelets are minimized. These HCP measures are consistent with those described in Mitigation Measure 3.5-1b, “Avoid Indirect Impacts on Nesting Marbled Murrelet.”

The Humboldt Redwood Company HCP’s management objectives for the Northern Spotted Owl Conservation Plan include:

- ▶ Maintain a minimum of 108 activity sites each year over the life of the HCP.
- ▶ Maintain northern spotted owl pairs on an average of 80 percent (over a 5-year period) of the minimum 108 activity sites on the ownership with at least 80 of these sites Level One sites, and the balance shall be Level Two sites.

Maintain an average reproductive rate of at least 0.61 fledged young per pair (over a 5-year period) for the minimum of 108 activity sites. By implementing Mitigation Measure 3.5-6, “Minimize Construction Disturbance to Northern Spotted Owl,” the project would avoid interfering with maintenance of the requisite number of activity sites, northern spotted owl pairs, and average reproductive rates on HRC lands.

Potential project effects on marbled murrelets and northern spotted owl would also be addressed in the USFWS Section 7 biological opinion obtained by the project, and in the CDFW Section 2081 incidental take permit. With implementation of Mitigation Measures 3.5-1a through 3.5-1c, 3.5-2a through 3.5-2c, 3.5-6 through 3.5-8, and by implementing the conditions described in the incidental take permit, the project would not restrict HRC from achieving the HCP management objectives for marbled murrelets or northern spotted owls.

Southern Oregon/Northern California Coho Salmon, Northern California Steelhead, and California Coastal Chinook Salmon are covered species in the HCP. These species could occur in watercourses on the project site, and several watercourses in the area are within critical habitat for these species. As discussed in Impact 3.5-22, the primary potential impact on special-status fish species is associated with project-related erosion and sediment delivery to streams (primarily during construction). Mitigation Measures 3.5-22a through 3.5-24e require implementation of erosion control measures for disturbed areas and other BMPs intended to avoid sediment input to watercourses and effects on water quality and fish habitat. These measures include erosion control measures outlined in the SWPPP, stormproofing of roads, driving restrictions during the wet months, and revegetation of disturbed areas after construction. Monitoring would be conducted to determine the effectiveness of BMPs.

The project applicant is planning for a construction period of approximately 18 months starting in fall 2019. The first phase would involve construction of the staging area at Jordan Creek and the access road onto Monument Ridge across HRC lands; construction would occur during the wet season. This construction period is inconsistent with the provisions of Section 6.3.3.3 of the Humboldt Redwood Company HCP’s Aquatics Conservation Plan Management Objectives, which state that road or landing construction, reconstruction, and upgrades shall not occur during the wet-weather period (October 15–June 1) unless certain conditions are met. Therefore, this impact would be **potentially significant**. Compliance with the following mitigation measure would ensure consistency

with the Humboldt Redwood Company HCP's Aquatics Conservation Plan Management Objectives, and protect water quality for special-status fish species.

Mitigation Measure 3.5-28: Implement Wet-Weather BMPs Consistent with the Humboldt Redwood Company Habitat Conservation Plan or Equivalent BMPs.

To reduce the potential for erosion and sedimentation that may cause downstream impacts on anadromous fish species, the project applicant shall implement the following measures from the Humboldt Redwood Company HCP. During the wet season (October 15–June 1), the project applicant shall implement the following measures while conducting road or landing construction, reconstruction, and road upgrades:

- No road or landing construction, reconstruction, and upgrading shall occur within 170 feet of Class I or II waters, or within the Equipment Exclusion Zone (50 or 100 feet, respectively) of Class III waters. [The Equipment Exclusion Zone is the area where heavy equipment associated with timber operations is totally excluded for the protection of aquatic habitat, aquatic species, water quality, and beneficial uses of water and other forest resources. Class I waters are those where fish are always or seasonally present on-site, and include habitat to sustain fish migration, spawning, and rearing, and domestic water supplies, such as springs, on-site or within 100 feet downstream of the project operations area. Class II waters are non-fish-bearing waters where aquatic habitat is present for non-fish aquatic species, including in watercourses, streams, seeps, springs, lakes, ponds, and wetlands. Class III waters are those with no aquatic life or habitat present.]
- The construction, reconstruction, and upgrading shall not cross Class I, II, or III waters.
- No portion of the constructed, reconstructed, and upgraded road/landing shall cross an inner gorge, headwall swale, unstable area, extreme, very high, or high mass-wasting hazard area. The soil moisture condition in the soils moved for purposes of construction, reconstruction, and upgrading shall be no wetter than is found during normal watering (dust abatement treatments or light rainfall, and the soil is not rutting or pumping fines).
- During and after construction, reconstruction, and upgrading, there shall be no visible increase in turbidity in any drainage facility, construction/reconstruction site, or road surface, any of which drains directly to Class I, II, or III waters (standing water on the road that does not drain to Class I, II, or III waters is not applicable).
- During construction, reconstruction, and upgrading, erosion control material of sufficient quantity shall be stockpiled on-site and utilized to prevent an increase in turbidity in any drainage facility, construction site, or road surface, any of which drains directly to Class I, II, or III waters.

Alternatively, the project applicant shall implement Mitigation Measure 3.10-1, "Implement Wet-Weather BMPs Consistent with the Humboldt Redwood Company Habitat Conservation Plan," described in Section 3.10, "Hydrology and Water Quality." These measures describe BMPs for wet-season erosion control, and a water quality monitoring program that provides Humboldt County with stop-work authority over project construction activities.

Implementation: Project applicant.

Timing: Before issuance of a grading permit and throughout construction.

Enforcement: Humboldt County Planning & Building Department.

Significance after Mitigation

Implementing Mitigation Measure 3.5-28 to protect water quality during wet-weather road construction would achieve consistency with requirements in the Humboldt Redwood Company HCP, avoiding any potential conflict with this HCP and reducing this impact to **less than significant**.

Implementing Mitigation Measure 3.5-28 would reduce impacts associated with wet-weather work on the Bridgeville Substation expansion to **less than significant**.

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