Humboldt Wind Energy Project

Reclamation, Revegetation, and Weed Control Plan

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Acronyms and Abbreviations

CDFW	California Department of Fish and Wildlife
DBH	diameter at breast height
EIR	Environmental Impact Report
EM	Environmental Monitor
ft	feet/foot
gen-tie	generation transmission line
mi	mile
RE	Restoration Ecologist
RRWP	Restoration, Revegetation, and Weed Control Plan
RWQCB	Regional Water Quality Control Board
USACE	U.S. Army Corps of Engineers

1.0 INTRODUCTION

Humboldt Wind, LLC (Humboldt Wind) is planning to construct and operate the Humboldt Wind Energy Project (project) in southcentral Humboldt County, California. The project consists of up to 47 wind turbines and associated facilities including meteorological towers, electrical collection system, access roads, construction staging areas, a substation, an operations and maintenance facility, an up to 22-mile (mi) generation transmission line (gen-tie) and its associated point of interconnection at Pacific Gas & Electric's Bridgeville Substation. The project would have a nameplate generating capacity of up to 155 megawatts.

Turbines would be situated on two ridgelines, Bear River Ridge and Monument Ridge, about 4 mi south and southwest of Scotia, in Humboldt County, California.

The project includes turbines, project roads, the electrical collection line, and the gen-tie, as well as staging areas. Project components would be offloaded at Fields Landing and transported overland on Highway 101 before reaching the temporary staging area located near the Jordan Creek offramp. Several locations along the component transport route would require temporary improvements. In addition to Fields Landing, transportation improvements will occur in four locations along Highway 101. One location, at Loleta Drive, would require vegetation trimming only.

Temporary improvements associated with project component offloading at Fields Landing would last up to 30 days; temporary improvements along the transportation route would last up to 6 months. Construction of the turbines and associated facilities would last from 12 to 18 months.

2.0 PROJECT OVERVIEW

2.1 PROJECT LOCATION

The project is on privately owned and managed lands in rural, unincorporated southcentral Humboldt County, 10 mi southeast of Ferndale, 20 mi south of Eureka, and 22 mi north of Garberville, California. Most of the project would be located on two ridgelines that are located south and east of the town of Scotia. Monument Ridge is located south and west of Highway 101 and the Eel River, and Shively ridge is located north and east of Highway 101 and the Eel River.

The project consists primarily of managed timberlands that are dominated by redwood (*Sequoia sempervirens*) forests and Douglas-fir (*Pseudotsuga menziesii*) forests, with annual grassland, hardwood, and chaparral inclusions. In addition to timber production, some areas of the project are managed for cattle grazing. The topography is diverse and steep in places, and elevation ranges from nearly sea level in river bottoms to just under 3,000 feet (ft).

2.2 GOALS AND OBJECTIVES OF THE RECLAMATION, REVEGETATION, AND WEED CONTROL PLAN

This Reclamation, Revegetation, and Weed Control Plan (RRWP) provides guidance for the management of vegetation within the project, which includes the implementation of protection measures for special-status plants (i.e., those listed as threatened or endangered by regulatory agencies; candidates for listing; those recognized by the California Native Plant Society as having a California Rare Plant Rank of 3 or higher) and sensitive natural communities, as well as guidance for vegetation management related to temporary and permanent impacts within the project. Sensitive communities, as defined for the purpose of this plan, include areas of known special-status plants and wildlife, areas of known special-status natural communities (including riparian zones and wetlands), and other predetermined areas with significant resources (i.e., culturally sensitive plant species).

More specifically, the purpose of this RRWP is to facilitate the integrated management of vegetation with several factors related to operation of the project:

- Facility reliability, including powerline safety and reliability regulations
- Operations and maintenance demands
- Staff and public safety
- Federal regulations governing special-status species protection
- Non-native invasive plant management
- Herbicide best management practices

The goal of the RRWP is to provide guidance to comply with the permits that require a RRWP (U.S. Army Corps of Engineers [USACE] 404, USACE 401, California Department of Fish and Wildlife [CDFW] 1600, Coastal Development Permit, etc.), and to fulfill the mitigation requirements as outlined in the Environmental Impact Report (EIR) (AECOM 2019) . In addition, direction from CDFW (CDFW 2019) and Humboldt County (Humboldt County 2019) requires specific mitigation measures and performance criteria outlined for special-status plants and sensitive natural communities. The RRWP provides such specific information for implementing restoration, revegetation, and weed control activities as well as the means for monitoring the effectiveness of these activities through success criteria. This RRWP is designed to accomplish the following:

- Preserve native vegetation in the project and reestablish native plant cover, natural communities, and wildlife habitat. In particular, provide for the re-establishment/restoration of sensitive natural communities on a no-net-loss basis.
- Salvage plants listed in the “Wiyot List of Plant Species of Environmental and Cultural Concern” (Appendix A) and use them for restoration or to donate to the tribe where appropriate.
- Address final cleanup, stabilization, and revegetation procedures for areas impacted by the project.
- Establish measurable success criteria and monitoring specifications for revegetation of temporarily impacted areas, long-term erosion and sediment control measures, and slope stabilization measures in accordance with the Humboldt County Grading, Excavation, Erosion, and Sedimentation Control Ordinance (Humboldt County 2002).
- Address provisions outlined in the EIR mitigation measures, as outlined below.

2.3 ASSOCIATED MITIGATION MEASURES

Ten mitigation measures outlined in the Draft EIR rely on vegetation management guidance, restoration methods, and success criteria described in this RRWP. For a track change version of this these mitigation measures please see Section 9.2. of the Final EIR. Success criteria are set forth in Section 5.0 below.

- Mitigation Measure 3.5-25b: Avoid and Minimize Impacts of Project Construction on Special-Status Plants
- Mitigation Measure 3.5-25c: Compensate for Permanent Effects of Project Construction on Special-Status Plants and Associated Habitats
- Mitigation Measure 3.5-25d: Compensate for Impacts on Siskiyou Checkerbloom
- Mitigation Measure 3.5-23e: Develop and Submit a Reclamation, Revegetation, and Weed Control Plan
- Mitigation Measure 3.5-24a: Avoid and Minimize Impacts on Sensitive Natural Communities and Riparian Habitat
- Mitigation Measure 3.5-24b: Compensate for Loss of Sensitive Natural Communities and Riparian Habitat
- Mitigation Measure 3.5-24c: Restore Sensitive Natural Communities and Riparian Habitat
- Mitigation Measure 3.5-25a: Avoid and Minimize Impacts on Wetlands and Other Waters of the United States
- Mitigation Measure 3.5-25b: Compensate for Impacts on Wetlands and Other Waters
- Mitigation Measure 3.6-3c: Incorporate Plants Appropriate for the Wiyot Tribe Ethnobotanical Area into the Reclamation, Revegetation, and Weed Control Plan Required as part of Mitigation Measure 3.5-23e

2.4 RESPONSIBILITIES FOR MONITORING AND ENFORCEMENT

Humboldt Wind will be responsible for ensuring that the contractor working on the project meets the standards defined in this plan to restore impacted areas to pre-construction conditions, to monitor restoration success, to implement remedial actions if necessary to achieve the specified success criteria, and to prepare and submit monitoring reports.

Humboldt Wind will employ an Environmental Monitor (EM) to be responsible for ensuring that the contractor performs field activities in accordance with this plan and remains in compliance with other permits and authorizations. Humboldt Wind will also employ a Restoration Ecologist (RE) who will be responsible for making site-specific field changes in certain restoration procedures within the guidelines of this plan. The RE will take remedial actions, as necessary, to reestablish and maintain stable vegetation cover on reclaimed sites and will provide the contractor with the appropriate seed mixes. The RE will also be responsible for assessing the success of control methods implemented to prevent the spread of weed species and to ensure that the restoration of temporarily impacted areas is successful. The RE will collect pertinent information regarding restoration success and weed-control methods through direct observation during annual site visits, including data on germination success, plant density, survivorship, and diversity.

The contractor will be responsible for post-construction grading, seedbed preparation, and seeding of temporarily impacted areas associated with the project immediately after construction is completed. All restoration activities will be conducted according to this RRWP.

3.0 RESTORATION AND VEGETATION MANAGEMENT

3.1 PRE-CONSTRUCTION DOCUMENTATION

3.1.1 Permanent Impacts

Prior to ground-disturbing activities, Humboldt Wind will photograph and document locations to be permanently impacted. Humboldt Wind will further document the vegetation communities that will be impacted, including the presence/absence of noxious weeds, composition of native vs. non-native species, and sensitive plant species present. For permanent impacts requiring compensatory mitigation (e.g., to sensitive natural communities) information from these baseline surveys will be used to assess suitability of existing sensitive natural communities on off-site mitigation sites or generate a species planting palette for areas to be enhanced as compensatory mitigation within these off-site locations.

Should on-site (i.e., within the project) restoration as compensatory mitigation occur, Humboldt Wind will identify unimpacted reference sites (if feasible) that will be used during the post-construction monitoring and reporting effort. Alternatively, pre-construction baseline data can be used as a reference for restoration. The documentation of pre-construction conditions will be submitted to the Humboldt County Planning & Building Department, USACE, the Regional Water Quality Control Board (RWQCB), and CDFW after completing disturbance activities associated with permitted activities.

3.1.2 Temporary Impacts

Areas of temporary impact will be restored to near pre-construction conditions. Prior to ground-disturbing activities, Humboldt Wind will photograph and document temporary impact locations to determine total temporary impact acres. Humboldt Wind will also document the vegetation communities that will be impacted, the presence/absence of noxious weeds, and the composition of native vs. non-native species. Information from these baseline surveys will be used to generate a species planting palette for general vegetation communities (e.g., grassland) and for specific sensitive natural communities.

In addition, Humboldt Wind will identify reference sites that will be used during post-construction monitoring and reporting effort. The reference sites will be adjacent to the temporarily impacted areas that will be restored, will contain the same general plant species and densities as the work area, and will be approximately the same size as the area to be restored. Alternatively, if a suitable adjacent site is not present, pre-construction baseline data can be used as a reference for restoration. The documentation of pre-construction baseline conditions will be submitted to the Humboldt County Planning & Building Department, USACE, RWQCB, and CDFW after completing temporary disturbance activities associated with permitted activities.

3.2 SITE PREPARATION

Site preparation activities (i.e., clearing and grading) will be limited to the area within the fenced, staked, or flagged work limits. Humboldt Wind will limit vegetation and tree removal to only the areas necessary for construction and to ensure full clearance compliance for the proposed gen-tie line, with particular attention given to minimizing effects on special-status plant species, riparian areas, and mature trees. Wherever possible, vegetation will be left in place to

avoid excessive root damage and to allow for natural recruitment following construction. Qualified EMs will be present during vegetation removal activities to help ensure that impacts to biological resources are minimized to the extent possible.

3.3 CONSTRUCTION CLEANUP

Cleanup of construction materials and equipment will occur on a daily basis and as each phase of the project concludes. Trash and excess dirt caused by project activities will be removed according to state and local regulations. Humboldt Wind will arrange for disposing of these materials outside of the project site and will pay costs involved. Adjacent trails and paved areas will be swept on a weekly basis throughout the duration of the project.

Scars, ruts, or other marks in the ground caused by the work will be repaired. Upon completion of construction activities at each work area, ground surfaces will be smoothed, and excess dirt, materials, rubbish, and debris will be removed—in accordance with state and local regulations— and transported to an off-site location or as directed by the property owner's authorized representative. Adjacent streets, curbs, gutters, and sidewalks will be swept, and construction equipment will be removed from the premises. Humboldt Wind will verify in writing that such construction clean-up activities have been completed and will submit documentation to the Humboldt County Planning & Building Department to confirm compliance.

3.4 RESTORATION METHODOLOGY OF AQUATIC RESOURCES, RIPARIAN AREAS, AND SENSITIVE NATURAL COMMUNITIES

Humboldt Wind will obtain permits from the appropriate regulatory agencies—USACE, RWQCB, and/or CDFW—prior to commencing work in an aquatic resource. As specified by USACE, RWQCB, and the above mitigation measures, permanently impacted waters of U.S. will be mitigated for at no less than a 1:1 basis through either off-site mitigation or on-site wetland establishment. Temporarily impacted waters of the U.S. and State will be returned to pre-construction conditions and both newly established wetlands and temporarily impacted wetlands will be seeded with native species to stabilize the soils and minimize the introduction of invasive plants.

In addition to aquatic resources, compensatory mitigation is also required for permanent impacts to sensitive natural communities (CDFW 2018; 1:1) and riparian areas (3:1). Aquatic resources, riparian habitat, and vegetation communities within in the project area are outlined in Table 1 below.

Table 1. Sensitive Natural Communities Other than Riparian Habitats within the Project— Permanent vs. Temporary Impact Acreages and Total Acres Impacted.

	Disturbance Type	Acres	Total Acreage
Sensitive Natural Community			
Redwood forest*	Temporary	228.21	248.01
	Permanent	19.8	
Spike bentgrass prairie/coastal terrace prairie	Temporary	38.36	43.75
	Permanent	5.39	
Tanoak forest	Temporary	5.59	5.81
	Permanent	0.22	
California brome–blue wildrye prairie	Temporary	21.45	25.33
	Permanent	3.88	
California oat grass prairie	Temporary	2.21	2.73

	Disturbance Type	Acres	Total Acreage
	Permanent	0.52	
Tufted hair grass meadows	Temporary	3.38	3.88
	Permanent	0.5	
Coastal brambles	Temporary	0,78	0.78
	Permanent	0	
Oregon white oak woodland	Temporary	0.88	0.91
	Permanent	0.03	
Bigleaf maple forest	Temporary	0.76	0.76
	Permanent	0	
Red alder forest**	Temporary	1.03	1.08
	Permanent	0.05	
California bay forest**	Temporary	0.5	0.5
	Permanent	0	
Madrone forest	Temporary	1.23	1.53
	Permanent	0.30	
Shining willow groves	Temporary	1.04	1.17
	Permanent	0.13	
Arroyo willow groves	Temporary	2.23	2.23
	Permanent	0	
Douglas-fir forest*	Temporary	12.98	13.66
	Permanent	0.68	
TOTAL IMPACTS ON SENSITIVE NATURAL COMMUNITY ACREAGE	**Temporary**	**320.63**	352.13
	Permanent	**31.50**	
Aquatic Resources			
Herbaceous Wetlands	Temporary	5.01	5.18
	Permanent	0.17	
Willow Wetlands	Temporary	0.16	0.16
	Permanent	0	
Riparian Canopy (Forested Wetlands)	Temporary	0.40	0.40
	Permanent	0	
Drainages and Stock Pond	Temporary	0.49	0.51
	Permanent	0.02	
TOTAL IMPACTS ON AQUATIC RESOURCES ACREAGE	**Temporary**	**6.06**	**6.25**
	Permanent	**0.19**	
Special-Status Plants			
Siskiyou Checkerbloom (1.5:1 mitigation ratio)	**Temporary**	**3.68**	**4.45**
	Permanent	**0.77`**	

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
** Sensitive natural communities denoted with two asterisks have portions that overlap waterways and were, therefore, considered to be CDFW–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.

3.4.1 Permanent Impacts

In accordance with project mitigation measures, permanent impacts to aquatic resources, riparian areas, and sensitive natural communities require compensatory mitigation at various mitigation ratios depending on the resource. If compensatory mitigation is carried out on-site in the form of new establishment of impacted communities/resources,

revegetation of these areas will include a combination of seeding, container planting, and/or cuttings. Seed mixes and planting palettes will be created upon completion of the pre-construction documentation, as detailed in Section 3.1. Final grading, topsoil salvage, seedbed preparation, and seed application will follow the same procedures for all vegetation types. Success criteria for these revegetation and enhancement efforts are discussed in Section 5.0 below.

For permanently impacted areas that cannot be restored onsite, Humboldt Wind will identify and acquire offsite mitigation locations.

For both on or offsite mitigation, mature, native trees removed from riparian habitat and sensitive natural communities shall be replaced with the same or similar species at a ratio of 3:1 for trees above a certain size per the list outlined below. Tree replacement may be carried out concurrently on sensitive natural communities and/or riparian habitats that are also being restored/established/enhanced as a result of the project. Mature trees consist of trees with the following diameter at breast height (DBH):

- Oregon white oak (*Quercus garryana*): More than 6 inches DBH
- California bay (*Umbellularia californica*): More than 10 inches DBH
- Madrone (*Arbutus menziesii*): More than 6 inches DBH
- Big-leaf maple (*Acer macrophyllum)*: More than 10 inches DBH
- Tanoak (*Notholithocarpus densiflorus*): More than 10 inches DBH
- Red alder (*Alnus rubra*): More than 10 inches DBH
- Shining willow (*Salix lasiandra*): More than 6 inches DBH

The success criteria for replacement of trees are discussed in Section 5.0 below.

3.4.2 Temporary Impacts

In accordance with project mitigation measures, temporary impacts to aquatic resources, riparian areas, and sensitive natural communities will be restored at a ratio of 1:1. Restoration of these areas will include a combination of seeding, container plantings, and/or cuttings. Seed mixes and planting palettes will be created upon completion of the pre-construction documentation, as detailed in Section 3.1. Final grading to preconstruction contours, topsoil salvage, seedbed preparation, and mulch application will follow the same procedures for all vegetation types. Temporarily impacted areas will be disturbed for no more than 1 year.

Mature trees removed from riparian habitat and sensitive natural communities shall be replaced with the same or similar species at a ratio of 3:1, as outlined above with the size requirements specified in Section 3.4.1 above. Tree replacement may be carried out concurrently on sensitive natural communities and/or riparian habitats that are also being restored/created/enhanced as a result of the project.

3.4.3 Final Grade

As required by project mitigation measures, areas that are temporarily impacted by construction activities will be re-graded to pre-construction contours to eliminate uneven areas resulting from rough-grading operations. Areas designated for mitigation vegetation establishment may require further grading to achieve appropriate hydrology and aspect. Fine scale grading will be conducted manually around sensitive areas, vegetation to be preserved, and existing hardscape elements and structures. Planting and seeding areas will be fine graded to finish grade to produce

a surface suitable for planting and seeding. Prepared areas will be protected from compaction. A Storm Water Pollution Prevention Plan will be implemented that will be consistent with this RRWP.

3.4.4 Topsoil Salvage and Seedbed Preparation

Topsoil will be salvaged in areas that will be graded or excavated. Topsoil will be segregated during the grading phase, stockpiled, and covered along the edge of the work area for use during restoration and creation. The topsoil will be replaced to the approximate location of its removal after project construction has been completed. In general, the top 2 to 4 inches or the entire A horizon—whichever is deeper—will be removed and salvaged. However, the actual depth to be salvaged will be determined by Humboldt Wind in the field. Topsoil will not be salvaged from areas infested with noxious or invasive species. As part of normal equipment inspections during project operation, an evaluation of access routes will be conducted to confirm that use has not resulted in compaction. After construction has been completed at the access route location, compacted soil will be loosened or ripped to a depth of 6 to 12 inches. Where feasible in hydrologically sensitive sites, organic matter will be incorporated to a depth of at least 6 inches if topsoil is lacking. Topsoil will be replaced in areas where it was removed before construction by distributing it at an even depth of 6 inches. Topsoil will be dry and replaced during dry weather. Debris, roots, weeds, and other materials in excess of 1 inch in diameter will be removed. Salvaged duff/mulch, pine needles, and/or aged wood chips will be applied to a depth of 1 inch on the surface of areas where soil has been loosened. The use of fertilizers and nutrient-containing amendments will be restricted to slow-release, organic fertilizers or compost applied to enhance the establishment of plantings on sites determined to have very little total soil nitrogen. Fertilizer will not be used in seeded areas, on plant cuttings, or within 25 ft of aquatic resources or riparian areas.

To avoid spreading pathogens such as Sudden Oak Death with movement of topsoil, the following best management practices from the California Oak Mortality Task Force shall be implemented:

- Before issuance of 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 be 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.

3.4.5 Revegetation

3.4.5.1 Seeding

Seeds will be planted after the site and soil have been prepared and graded and after other site improvements have been completed, and seeding should occur in late summer or early fall. Seeding will be uniformly broadcast using a combination of hydro seeding and broadcast seeding depending on appropriate conditions. To promote quick and efficient restoration, seed will be applied at the rate of 100 to 200 pure live seed per square ft, which is double the standard seeding rate. Seed will not be left uncovered for more than 24 hours, unless otherwise approved by the RE. Seeding will not occur when wind speeds exceed 5 mi per hour. Humboldt Wind will utilize locally collected native seed sources for revegetation when possible; either purchased through a supplier or collected on-site. Plant and seed material will be collected from or near the project area, from within the same watershed, and at a similar elevation when possible and with approval of the RE. Seed mixes will conform to a pure live seed rate of 90% purity and 80% germination and will be 100% weed-free. The seed material will be state-certified seed from the most recent growing season and will be provided in original sealed bags bearing the supplier's guaranteed analysis. Persistent non-natives—such as crimson clover (*Trifolium incarnatum*), soft velvet grass (*Holcus lanatus*), or ryegrass (*Festuca* spp.)—will not be used. Further details on seeding requirements are provided in the sections that follow.

3.4.5.2 Planting

The following guidelines for plantings in restoration areas will be implemented. Container plants will be installed in impacted riparian vegetation following site preparation procedures and seeding operations. Plant palettes will be derived from the detailed baseline data collected in the pre-construction documentation. Plants installed from container stock will be propagated from either onsite materials or from sources in the region. Propagation material (e.g., seeds and rhizomes) will also be contained in the stockpiled topsoil and is expected to naturally colonize the restored areas. During propagation, plant containers will be small and deep to facilitate the development of large root systems in relation to the size of the aboveground portion of plants. If possible, contracts to procure plant materials should be established more than one growing season in advance to ensure availability of desired materials. Planting will occur in fall or spring to minimize plant stress. The planting layout will be irregular to avoid existing vegetation and to mimic a natural layout. Plants will not be removed from containers for more than 1 hour before planting. Planting holes will be excavated by hand, pry bar, hydraulic bar with spade or chisel point, or auger. The inside surfaces of planting holes will be scarified before backfilling with soil. Large rocks, sticks, or material measuring more than 2 inches will be removed from the backfill materials and discarded before backfilling holes. Plants will not be held by the stem or branch, or in other ways that damages the plant. Plants should be adequately "hardened off" and acclimatized to site conditions for 2 weeks before installation. During the holding period, plants must be carefully watered and re-fertilized if necessary. Plants must be thoroughly watered immediately before planting.

Plants will be removed from containers with the root ball intact and scarified to prevent the plant from becoming rootbound. Compost and organic slow-release fertilizer will be placed between the root ball and the bottom of the container, but not higher than one-third of the way up the root ball. Plants will be thoroughly hand-watered immediately after installation. Plants will be checked within 24 hours of installation for settling, and corrections will be made as needed. If roots become exposed, additional soil will be placed around the root crown. Within 5 days of completing the plant installation work at a specific location, the planting contractor will submit a written guaranty against defects resulting from poor installation correlated materials to Humboldt Wind for a period of one full growing

season after Humboldt Wind's acceptance of plant installation. For the purposes of this contract, a full growing season will commence on October 16 of the plant installation year and end on October 15 of the next calendar year.

3.4.5.3 Willow Cuttings

Where willow (*Salix* spp.) trees and shrubs are a primary component, willow cuttings may be used in the restoration and establishment of aquatic resources, riparian areas, and some of the sensitive natural communities. At the Fields Landing site, willow trees with a DBH over 6 inches will be replaced at a 4:1 ratio for trees removed. In other locations, willow can be used as a component of the shrub layer. Willows are easily propagated through the technique of cuttings and can be harvested from locations where they will be removed prior to construction. Live cuttings can be taken when the willows are dormant, typically late November through March, from local sourcing, and should be 2 to 3 ft in length with a diameter of 1 to 2 inches. Cuttings should be taken from wood 2 years or older and require soaking for 5 to 7 days prior to planting. After planting, cuttings can be maintained similar to plants derived from pots.

3.4.6 Maintenance

Irrigation of planted seeds would optimally be limited to one season to support the reliable, timely establishment of healthy plants that are not dependent on irrigation for their persistence. However, based on the monitoring efforts and data collected watering may be required for multiple seasons until plants and/or seeds are well established. Planted and seeded areas will either be watered by hand or truck. Seeded areas will be irrigated to facilitate plant establishment where erosion control depends primarily on rapid revegetation and where irrigation is practicable. Where erosion control does not depend primarily on rapid revegetation, the need for irrigation will be determined by the RE on a site-by-site basis.

In general, irrigation of seeded areas will only be conducted between June 1 and September 30 following plant installation. A recommended irrigation rate is once per week. The recommended irrigation strategy for seeded areas will be to apply an amount of water that is sufficient to wet the soil profile to a depth below the rooting zone, then wet the soil to progressively greater depths (from initially 3 to later 10 inches in depth) and allow a progressively greater depletion of soil water (i.e., longer intervals between applications) as plants increase in size. At planted and seeded sites, irrigation water will be applied at a rate that does not exceed the rate that water infiltrates the soil.

Container plants and cuttings will be watered immediately after installation and will be periodically irrigated (wetting to a depth below the rooting zone) more than once for two growing seasons to facilitate establishment. Where applicable, planting basins will be completely filled with water at each application. After each watering, the root zone around each plant will be saturated to a minimum depth of 1 ft across the entire width of the planting basin. The watering will not occur in excess of 1 hour at an individual planting site.

As part of the maintenance period, Humboldt Wind will be responsible for replacement plantings or cuttings that are needed. Replacement planting and seeding will utilize the same species and plant/seed size that was originally planted, unless it is determined by the RE that another species or size will be more successful. Tree and shrub material that has no easily observable, viable, aboveground living material will be considered dead and will be replaced. Herbaceous plants that fail to show new growth from their root systems after one dormant period and within the first 9 months after planting will be considered dead and will be replaced.

3.5 RESTORATION OF SPECIAL-STATUS PLANT SPECIES

Siskiyou checkerbloom occurs within the project site, and the EIR requires a 1.5:1 per acre mitigation ratio. This species can be propagated through both seeding and rhizome transplantation; additional details for both techniques are outlined below and have been developed from commercial techniques (Young-Mathews 2012).

3.5.1 Seed Collection

Siskiyou checkerbloom can be successfully established using seeds collected from plants growing on-site. Seeds are variable in their maturation; often plants will contain all phases of fruit and flowering during the blooming season, from flowers in bud to shattered seed pods. Therefore, seeds can be collected throughout the majority of the blooming season between May 1 and September 1. Collected seeds should be kept in a dry refrigerator prior to planting.

3.5.2 Rhizome Collection

Siskiyou checkerbloom may also be established using rhizome division and cultivation. Topsoil will be salvaged in areas of Siskiyou checkerbloom, after which the RE will identify and remove rhizomes of Siskiyou Checkerbloom for replanting. Ideally, rhizomes would be harvested from the site in the winter or spring, when conditions are best for rhizome collection and transplantation. Assuming that conditions are ideal, rhizomes will mature in the ground within 3 to 6 months and will be established within 1 to 2 years.

3.5.3 Establishment and Maintenance

Seeds should be direct-seeded in the spring or fall when temperatures reach approximately 50°F at night. Seeds should be sown at a depth of 0.25 to 0.50 inches and a rate of 4 to 6 pounds per acre for optimum establishment. Rhizome cuttings can be transplanted in the spring or fall also and should be planted at depth just under the soil surface (2 to 4 inches) in rows 24 to 36 inches apart. Watering and other maintenance is similar to what is described for the aquatic resources, riparian, and sensitive natural communities in Section 3.4.6.

3.6 CULTURALLY SENSITIVE PLANT SPECIES

Plant species of environmental and cultural concern (listed in Appendix A), will be considered for salvage during construction. The Wiyot Tribe will be able to select up to 100 plants to be salvaged and place into 1-gallon containers and/or up to 200 cuttings or plants less than 3 feet in height to be salvage and remain bare rooted during transfer to a location designated by the Wiyot Tribe. After the plants have been salvaged and transported, responsibility for management and planting of the material will be with the Wiyot Tribe, as neither follow-up surveys nor monitoring is required under Mitigation Measure 3.6-3c.

Where appropriate, plant species listed in Appendix A will also be incorporated into the plant palette for on-site and off-site revegetation and restoration efforts.

3.7 RESTORATION OF UPLAND VEGETATION OMMUNITIES

Upland vegetation communities that are not special-status communities that are temporarily impacted by project construction will be restored to pre-construction conditions and will be seeded with native species to stabilize the soils and minimize the introduction of invasive plants. Trees and shrubs are expected to naturally colonize the restored

vegetation communities from adjacent, undisturbed sites. Final grading, topsoil salvage, seedbed preparation, and mulch application will follow the same procedures for upland vegetation types, similar to the methods outlined for the aquatic resources, riparian areas, and sensitive natural communities Sections 3.43 through 3.4.6. Success criteria for such restoration are discussed in Section 5.0 below.

3.8 NOXIOUS WEED MANAGEMENT

The following measures will be implemented to minimize the risk of new weed introductions, and to minimize the spread of weeds within and between work areas:

- Humboldt Wind will utilize locally collected native seed sources for revegetation when possible. Plant and seed material will be collected from or near the project area, from within the same watershed, and at a similar elevation when possible. Persistent non-natives will not be used in revegetation.
- Before construction activities begin, Humboldt Wind will treat invasive plant infestations where feasible. Treatments will be selected based on each species' ecology and phenology. If areas infested with invasive plants are unavoidable, the plants will be cut (if feasible) and disposed of in a landfill in sealed bags, or they will be disposed of or destroyed in another manner that is acceptable to USACE, CDFW, or other agency as appropriate. If cutting is not feasible, layers of mulch, degradable geotextiles, or similar materials will be placed over the infestation area to minimize the spread of propagules by equipment and vehicles during construction. These materials will be secured so they are not blown or washed away.
- All treatment methods—including the use of herbicides—will be conducted in accordance with the law, regulations, and policies governing the landowner. Landowners will be notified prior to the use of herbicides.
- In areas where treatment is not feasible, Humboldt Wind will clearly flag or fence infested areas in order to clearly delineate work exclusion. Appropriate treatments will also be incorporated into tree removal and construction activities, such as a requirement that all cut, live conifer stumps that are larger than 6 inches in diameter will be treated with Sporax or a U.S. Environmental Protection Agency-registered borate compound to prevent the spread of Annosus root disease.
- Vehicles and equipment will arrive at the project area clean and weed-free and will be inspected by the on-site EM for mud or other signs that weed seeds or propagules could be present prior to use in the project area. If the vehicles and equipment are not clean, the EM will deny entry to the right-of-way and other work areas. Vehicles and equipment will be cleaned using high-pressure water or air at designated weed-cleaning stations after exiting an infested area. Cleaning stations will be designated by the EM and located away from aquatic resources. Only certified weed-free construction materials (e.g., sand, fiber, gravel, seed, and fill) will be used throughout the project. If invasive plant infestations are later identified throughout the course of construction in staging areas, parking areas, or access routes, they will be treated as described in the previous bullets.
- Success criteria for managing noxious weeds are discussed in Section 5.0 below.

4.0 SCHEDULE

4.1 CONSTRUCTION AND RESTORATION

Construction is anticipated to begin in Fall 2019 and will take approximately 12 to 18 months to complete. Restoration of impacted areas will commence within 30 days of construction completion.

4.2 SEEDING AND PLANTING

Seeding and planting of woody vegetation will take place following final grading and seedbed preparation, once soils are sufficiently moist and per specific methodology detailed above in Section 3.4 above. Maintenance—including irrigation, plant protection, and remedial or supplemental work—will be conducted until the areas of disturbance meet the established success criteria, or for up to 5 years following the completion of construction, whichever is less.

5.0 MONITORING, ANNUAL PERFORMANCE STANDARDS, AND SUCCESS CRITERIA

5.1 WETLANDS AND OTHER WATERS

Restoration monitoring of wetlands and other waters will focus on the percent vegetation cover of native wetland species and exposed soil, and the duration and percent soil saturation/ponding. Restoration monitoring of drainages will focus on percent cover of native vegetation and percent exposed soil. Both wetland and drainage monitoring will include a comparison of restoration sites to surrounding, undisturbed reference sites. Monitoring will occur during the growing season, at a time when most of the species to be monitored are in bloom or readily identifiable. All plant species observed within the restoration areas will be documented during the monitoring years. Photographic documentation of the restoration areas and the surrounding, undisturbed sites will also be collected. A summary of success criteria is presented in Table 2 and Table 3.

Table 2. Monitoring Standards for Drainages and Forested/Woody Wetlands

Monitored Character	Monitoring Year (s)	Monitoring Frequency	Success Criteria
Woody Riparian Plant Survival	1–5	Once per year during the growing season	70% survival of individuals
Total Vegetation Cover	1–5	Once per year during the growing season	70% of an adjacent reference site
Native Vegetation – Total Relative Cover	1–5	Once per year during the growing season	70% of an adjacent reference site

Table 3. Monitoring Standards for Herbaceous Wetlands

Monitored Character	Monitoring Year (s)	Monitoring Frequency	Success Criteria
Hydrology – Percent Soil Saturation/Ponding	1–5	Once per year during the growing season	Based on visual observations, the percentage of soil saturation or ponding is similar to undisturbed wetland areas
Vegetation – Total Relative Cover of Wetland Species	1–5	Once per year during the growing season	70% of an adjacent reference site

If success criteria are not met, then the applicant shall comply with the measures set forth in Section 5.7 below.

5.2 SPECIAL-STATUS PLANT SPECIES

Restoration monitoring of the Siskiyou checkerbloom will focus on percent cover of native vegetation and survivorship of individuals. Native vegetation monitoring will include a comparison of restoration sites to surrounding, undisturbed reference sites. Monitoring will occur during the growing season, at a time when the checkerbloom to be monitored are in bloom or readily identifiable. All plant species observed within the restoration areas will be documented during the monitoring years. Photographic documentation of the restoration areas and the surrounding, undisturbed sites will also be collected. A summary of success criteria is presented in Table 4.

Table 4. Monitoring Standards for Special-Status Plant Species

Monitored Character	Monitoring Year (s)	Monitoring Frequency	Success Criteria
Individual Checkerbloom Plant Survival	1–3	Once per year during the growing season	70% individual success
Native Vegetation – Total Relative Cover	1–3	Once per year during the growing season	70% of an adjacent reference site

If success criteria are not met, then the applicant shall comply with the measures set forth in Section 5.7 below.

5.3 CULTURALLY SENSITIVE PLANT SPECIES

No monitoring standards or success criteria are required for culturally sensitive plant species as these will not be maintained or under the responsibility of Humboldt Wind after transportation of the plant material. Culturally sensitive plants that are planted as part of on-site restoration in the ethnobotanical area will be subject to the same monitoring requirements as appropriate for the respective vegetation type.

5.4 SENSITIVE NATURAL COMMUNITIES

Restoration monitoring of special-status natural communities will focus on the percent cover of native species and exposed soil. Monitoring will include a comparison of restoration sites to the surrounding, undisturbed reference sites, or conditions documented during preconstruction documentation. Monitoring will occur during the growing season, at a time when most of the species to be monitored are in bloom or are readily identifiable. All plant species observed within the restoration areas will be documented during monitoring years. Photographic documentation of the

restoration areas and the surrounding, undisturbed sites will also be collected. A summary of performance standards and success criteria for upland vegetation is presented in Table 5.

Table 5. Monitoring Standards for Sensitive Natural Communities

Monitored Character	Monitoring Year (s)	Monitoring Frequency	Success Criteria
Total Vegetation Cover	1–5	Once per year during the growing season	70% of an adjacent reference site
Total Native Vegetation Cover	1–5	Once per year during the growing season	70% of an adjacent reference site
Percent Relative Cover – Shrubs	1–5	Once per year during the growing season	3% or more of an adjacent reference site
Mitigation Tree Plantings – Survival	1–5	Once per year during the growing season	70% survival of individuals

If success criteria are not met, then the applicant shall comply with the measures set forth in Section 5.7 below.

5.5 UPLAND VEGETATION

Restoration monitoring of upland vegetation communities will focus on the percent cover of native species and exposed soil, and signs of erosion. Monitoring will include a comparison of restoration sites to the surrounding, undisturbed reference sites, or to conditions documented during preconstruction documentation. Monitoring will occur during the growing season, at a time when most of the species to be monitored are in bloom or are readily identifiable. All plant species observed within the restoration areas will be documented during monitoring years. Photographic documentation of the restoration areas and the surrounding, undisturbed sites will also be collected. A summary of performance standards and success criteria for upland vegetation is presented in Table 6.

Table 6. Monitoring Standards for Upland Vegetation

Monitored Character	Monitoring Year (s)	Monitoring Frequency	Success Criteria
Total Vegetation Cover	1–5	Once per year during the growing season	70% of an adjacent reference site
Total Native Vegetation Cover	1–5	Once per year during the growing season	70% of an adjacent reference site
Erosion	1–3	Once per year during the growing season	No visible evidence of excessive erosion

If success criteria are not met, then the applicant shall comply with the measures set forth in Section 5.7 below.

5.6 NOXIOUS WEEDS

After the project is completed, the project will be monitored for 3 years for new l noxious weed species establishment or spread of existing noxious weed populations in the areas impacted by the project. Noxious weeds are defined as those on the Cal-IPC Northwest Region Priority Species List as well as any other species listed with a high rating by Cal-IPC. Monitoring will occur during the growing season, at a time when most of the species to be monitored are in

bloom or are readily identifiable. Noxious weed management will be considered successful when the percent of weed species remains at or below the populations within the adjacent reference sites. A summary of performance standards and success criteria for noxious weed restoration is provided below in Table 7.

Table 7. Monitoring Standards for Noxious Weeds

Monitored Character	Monitoring Year (s)	Monitoring Frequency	Success Criteria
Total Percent Cover – Noxious Weeds	1–3	Once per year during the growing season	Percent cover at or below that of adjacent reference site

5.7 ADAPTIVE MANAGEMENT AND REMEDIAL ACTIONS

Remedial actions may be necessary and will be identified within the first 3 years following planting/seeding or replanting/reseeding. If the success criteria for the restored areas have not been met after 3 years, Humboldt Wind will consult with USACE, CDFW, RWQCB, or other applicable agencies to develop additional restoration measures. In general, an adaptive management approach should be taken to identify additional restoration and noxious weed control measures. This approach will focus on gathering information during the monitoring period and adjusting management practices and remedial measures according to assessments made while monitoring. If a site fails to meet the established success criteria, Humboldt Wind will modify and/or add restoration and/or weed- control measures in coordination with the agencies involved. It is noted that in areas where noxious weeds are prevalent well beyond the construction limits, noxious weed re- establishment is likely and Humboldt Wind will not be held to full eradication. Examples of modified or additional restoration or weed-control measures include the following: re-seeding a site that experienced significant seed loss during a major rain event, implementing a watering program during a prolonged drought, recontouring and reapplying hydro mulch to a site damaged by unauthorized off-road vehicle use, utilizing mechanical weed abatement methods, or the selective use of herbicides.

If chemical or mechanical weed abatement methods are determined to be required, the application of these methods will be conducted in a manner that minimizes potential impacts to sensitive plant and wildlife species (e.g., the timing of implementation, the application rate for chemical controls, and the utilization of site-specific measures).

All remedial activities will follow requirements in appropriate mitigation measures, as well as procedures used for the initial restoration.

6.0 REPORTING

Humboldt Wind will submit a Restoration Monitoring Report to USACE, RWQCB, CDFW, and other appropriate agencies by December each year, following the completion of project construction. This report will include but is not limited to:

- Introduction
- Monitoring methods summary
- Monitoring results

- Discussion
- Conclusion and recommendations

Monitoring and reporting of restoration progress will be conducted for up to 5 years. If the restoration success criteria for specific sites have been met before year 5, monitoring and reporting will cease at that time.

7.0 COMPLETION OF RESTORATION PROGRAM

The restoration of the project will be considered complete when the monitoring period is over and the final success criteria are met. Humboldt Wind will notify the Humboldt County Planning & Building Department, USACE, RWQCB, and CDFW that the success standards have been met upon submitting the annual report for the final year and will request acceptance that the success criteria have been met and acknowledgement that applicable mitigation measures have been fulfilled.

8.0 REFERENCES

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APPENDICES

Appendix A WIYOT TRIBE LIST OF PLANT SPECIES OF ENVIRONMENTAL AND CULTURAL CONCERN UPDATE ADOPTED: JANUARY 11, 2016

Wiyot Tribe-Table Bluff Reservation

NATURAL RESOURCE DEPARTMENT

Wiyot Tribe
List of Plant Species of Environmental and Cultural Concern
Update Adopted: January 11, 2016

Summary:
The Wiyot Tribe List of Plant Species of Environmental and Cultural Concern is a compilation of significant plants that are of importance to the Wiyot Tribe. Sources are from interviews conducted by ethnographers Llewellyn L. Loud, Ruth Rouvier, and Karl Teeter, combined with plants lists from the Table Bluff Ecological Reserve, coastal species noted in the document "Native Traditional Use Plants Within Yurok Ancestral Territory", input from various Wiyot citizens, and the BIA funded Wiyot Geospatial Ethnobotany Project (Adam Canter).

Geographic Scope:
This list focuses on species present in Wiyot Ancestral Territory (Oil Creek to Little River), where the last list (2005) only focused on plants noted on Indian Island.

Significance:
The Wiyot Tribe will work to protect and enhance populations of and habitat for plants present on the List of Plant Species of Environmental and Cultural Concern as "Tribal Trust Resources", through thoughtful land use decisions, cultural and environmental education and outreach, wetland and habitat restoration projects and environmental protection. This includes a conservation focus on unique, rare, and threatened plant community types found in Wiyot Ancestral Territory, in particular globally rare coastal prairie, northern coastal scrub, coastal salt marsh, riparian, wetlands, beach, and dunes ecosystems. Statewide rare and significant vegetation types in Wiyot Ancestral territory include native dunegrass (*Elymus mollis*), Pacific reedgrass meadows (*Calamagrostis nutakaensis*), beach pine (*Pinus contorta* ssp *contorta*), north coast riparian black cottonwood (*Populus trichocarpa*), Sitka spruce (*Picea sitchensis*), grand fir (*Abies grandis*), tufted hairgrass prairie (*Deschampsia caespitosa*), Bulrush-cattail (brackish), pepperwood (*Umbellularia californica*), mixed willow, Pacific willow, Sitka willow (*Salix sitchensis*), red alder-non-successional (*Alnus rubra*), red fescue (*Festuca rubra*), rush (*Juncus*), saltgrass (coastal), western Labrador tea thickets (*Rhododendron columbianum*) coastal bramble (salmonberry, thimbleberry, blackberry), and coastal hazelnut scrub (*Corylus cornuta* ssp. *californica*). Rarity ranking sources taken from the Manual of California Vegetation 2nd Edition (Sawyer et al. 2008) California Natural Diversity Database 1997 (CNDDB), Terrestrial Vegetation of California (Barbour, Keeler-Wolf, Schoenherr 2007), The Nature Conservancy Heritage Program, and "Rare and Threatened Vegetation of the California North Coast Basin" (Green 1999).

Amendment and Revision
The Tribal Council of the Wiyot Tribe will have the authority to add additional species to this list at their discretion by a majority vote at any point in time. Amending this species list is important regarding the expansion of Wiyot Tribal properties and interests beyond Table Bluff Reservation and Indian Island (i.e. Cock Robin Island, Ma-le'l Dunes) to encompass the whole of Wiyot Ancestral Territory. Prioritization of vegetation types for protection include all types with a state ranking of S3 or lower and should be consulted in the most recent edition of the Manual of California Vegetation.

Wiyot Tribe List of Plant Species of Environmental and Cultural Concern (2016)

Common Name	***Scientific Name***	**Plant Community/Habitat**	**Lifeform**	**Traditional Use**	**Wiyot Name/Notes L=Loud, R=Ruth Rouvier T=Karl V. Teeter**
Alder, Red	*Alnus rubra*	Riparian forest, Redwood forest	tree	Smoke salmon, basketry dye	wit (L)
Angelica	*Angelica lucida,*	Coastal salt marsh strand, coastal prairie and scrub	perennial herb	Ceremonial, food	tsou'm (T192)
Angelica	*Angelica hendersonii*	Coastal salt marsh strand, coastal prairie and scrub	perennial herb	Ceremonial, food	tsou'm (T192)
Bear grass	*Xerophyllum tenax*	mixed-evergreen forest	perennial herb	Important basketry material, jewelry, clothing	himene-wél (L)
Big leaf maple	*Acer macrophyllum*	mixed-evergreen forest	tree		
Black cottonwood	*Populus balsamifera ssp. trichocarpa*	Riparian hardwood forest	tree	Medicinal, (ie. sore throat) pitch used in tattooing	
blackberry	*Rubus ursinus*	Coastal scrub, prairie	shrub	Food	mīp(L)
Blue blossom	*Ceanothus thyrsiflorus*	coast scrub	Shrub	basketry, medicine, soap	

Wiyot Tribe List of Plant Species of Environmental and Cultural Concern (2016)

cascara buckthorn	*Frangula purshiana*	coastal scrub, redwood forest, mixed evergreen forest	shrub	medicinal-laxitive	dételh?? (R135) (see Ledum gladulosum)
cattail	*Typha latifolia*	wetlands	perennial herb	food, misc	
celery (wild)	*Lomatium californicum*	mixed evergreen forest, coastal prairie/scrub	perennial herb	food, possibly extirpated from coast our confused with Angelic of cow parsley	
clover (sand, seaside, or springbank clover)	*Trifolium wormskioldii*	dunes, riparian	pernennial herb	food	rakayi (L232)
clover (thimble clover)	*Trifolium microdon*	coastal prairie, dune forest, mixed evergreen forest	annual herb	food, medicine-yurok	dáboulh? (R135)- "small red clover"??
clover (whitetip clover)	*Trifolium variegatum*	coastal prairie/scrub	annual herb	food, medicine-yurok	
Coast checkerbloom	*Sidalcea oregana ssp. eximia*	coastal prairie, wetland riparian	perennial herb	food	CNPS list 1B.2 (rare, threatened and endangered in Calif.
coltsfoot	*Petasites palmatus*	redwood forest, mixed-evergreen forest	perennial herb	medicine (rheumatism-yurok)	
columbine	*Aquilegia formosa*	wetlands, riparian, coastal prairie	perennial herb	food-yurok	
cow parsnip	*Heracleum lanatum*	coastal prairie/scrub	perennial herb	food	wough, siswleatkak- possibly confused by Loud as anise
cucumber (wild, coastal manroot	*Marah oreganus*	coastal forest	perennial vine	drink, game-yurok	
Currant (red flowering)	*Ribes sanguinea*	Coastal, mixed evergreen forest, Redwood forest, many habitats	Shrub	Arrow shafts	hawutsi’
Douglas fir	*Pseudotsuga menziesii*	Coastal conifer forest, redwood forest, mixed-evergreen forest	tree	Basketry, medicinal, candy, misc.	dak

Wiyot Tribe List of Plant Species of Environmental and Cultural Concern (2016)

Douglas iris	*Iris douglasiana*	coastal prairie, scrub, mixed-evergreen forest	Perennial herb		hútal (R135-iris fiber before twisting
Eelgrass	*Zostera marina*	intertidal mudflats	perennial sea grass	food	
Evergreen huckleberry	*Vaccinium ovatum*	Dune forest, coastal scrub, coastal prairie, many forest types	shrub	drink, medicine for high blood pressure (Yurok)	mó ‘kel (L)
fern (whalebone/sword fern)	*Polysticum munitum*	many habitats	fern	??	
fern-lady fern	*Athyrium felix-femina*	wetlands, coastal scrub/prairie	fern	food	diqa (T180)
fern-maidenhair	*Andiatum aleuticum*	riparian	fern	basketry, medicinal, misc	siswáqi (T180)
fern-woodwardia (giant chain fern)	*Woodwardia fimbrata*	Wetlands	fern	basketry, misc, place inside salmon to keep fresh when packing home (yurok)	tigwametsha-wél (L)
Grand fir	*Abies grandis*	Coastal conifer forest	tree		
ginger (wild)	*Asarum caudatum*	redwood forest, mixed-evergreen forest, riparian/wetland	perennial herb	medicinal-(prevent infection in newborn's navel-yurok)	
gumplant	*Grindelia stricta var. stricta*	dune, saltmarsh	perennial herb	chewing gum	habóusha'n (chewing gum of dandelion)
hazelnut	*Corylus conrunuta ssp. californica*	Coastal scrub, coastal conifer forest, coastal prairie	shrub	Foot, medicine, basketry, fishing weirs, other tools.	legoLes-weL
Hookers willow	*Salix hookeriana*	Coastal wetlands	shrub	Basketry, medicinal	tigelh (L)
Humboldt Bay owl's clover	*Castilleja ambigua ssp. humboldtiensis*	coastal saltmarsh, wetland	perennial herb	CNPS list 1B.2 (rare threatened and endangered in Calif and elsewhere	

Wiyot Tribe List of Plant Species of Environmental and Cultural Concern (2016)

Indian plum/Oso berry	*Oemelaria cerasiformis*	Coastal conifer forest, Redwood forest, Mixed evergreen forest	Shrub	Medicinal (cancer/HIV/AIDS) (Yurok)	
Indian potato	*Allium unifolium*	mixed-evergreen forest, dune forest	perennial herb	food	
Indian potato	*Brodiaea coronaria*	coastal prairie, dune forest	perennial herb	food	bóudurroush
Indian potato	*Brodiaea terrestris ssp. terrestris*	coastal prairie, dune forest	perennial herb	food	other indian potato and geophyte words include: topóderos, blókat, bokītchere, rapcaue, bulákutk(hill onion)
Indian potato	*Triteleia hyacinthina*	coastal prairie, dune forest	perennial herb	food	
Indian potato	*Fritillaria affinis*	coastal prairie, dune forest	perennial herb	food	
Indian potato	*Dichelostemma capitatum*	coastal prairie, dune forest	perennial herb	food	
Indian potato	*Dichelostemma congestum*	coastal prairie, dune forest	perennial herb	food	
Iris (Douglas)	*Iris douglasiana*	coastal prairie	perennial herb	cordage	
Little Pippsissewa	*Chimaphila menziesii*	dune forest, mixed evergreen forest	perennial herb	medicinal-yurok (found in limited locations in dune forest near Ma-le'l	
Madrone	*Arbutus menziesii*	Mixed evergreen forest, dune forest	tree	Medicine, food, drink, decoration, ceremony	shágichouk (R135)
manzanita	*Arctostaphylus columbiana*	Coastal scrub, dune forest	shrub		ghus (R 135)
monkeyflower (sticky)	*Mimulus aurantiacus*	coastal prairie, coastal scrub	shrub		
monkeyflower	*Mimulus guttatus*	wetlands, coastal scrub/prairie	annual/perennial herb	young leaves edible, medicinal (for fevers-yurok)	
mugwort (wormwood)	*Artemisia douglasiana*	Wetlands, disturbed wetlands	herb	medicinal	
nettle	*Urtica dioica*	Riparian forest, prairie	herb	Medicinal	vilh?
ninebark	*Physocarpus capitatus*	riparian, coastal scrub	shrub	medicinal (stomach ulcers, cancer-yurok)	
oceanspray	*Holodiscus discolor*	coastal scrub	shrub	Arrow shafts	
Oregon grape	*Berberis nervosa*	Redwood forest, coastal coniferous forest, mixed-evergreen forest	shrub	basketry, dye (medicinal-bood purifier, liver, kidneys-yurok)	

Wiyot Tribe List of Plant Species of Environmental and Cultural Concern (2016)

Pepperwood (Calif. Bay laurel)	*Umbellularia californica*	Mixed-evergreen forest, Redwood forest	Understory tree	Nuts Food, ceremonial, poulstice, cold medicine, spider bites, ABx, gen cooking	wagúlhat
Point Reyes bird's beak	*Cordylanthus maritimum ssp. palustre*	coastal saltmarsh	perennial herb	CNPS list 1B.2 (rare threatened and endangered in Calif and elsewhere	
rattlesnake plantain	*Goodyera oblongifolia*	dune forest, mixed evergreen forest, redwood forest	perennial herb	medicinal (fertility)-yurok	
red elderberry	*Sambucus racemosa*	coastal scrub, riparian, coastal forest	perennial herb	Food, medicine	ti'má-berry, ti'málhat-bush (R41,R135)
Red huckleberry	*Vacinnium parvifolium*	Coastal conifer forest, redwood forest	shrub	Food, brooms (yurok)	
Redwood	*Sequoia sempervirens*	Redwood forest	tree	Boats, houses, basketry, salmon cooking sticks, tools, etc.	mou'pel
redwood sorrel	*Oxalis oregana*	Redwood forest	perennial herb	food, medicine	
reedgrass	*Calamagrostis nutkaensis*	coastal prairie, coastal scrub	perennial bunch grass		
Salal	*Gaultheria shallon*	Coastal scrub, prairie, forest	shrub	food	
salmon lily (fetid adders toungue)	*Scoliopus bigelovii*	redwood forest	perennial herb	medicine (lungs, tuberculosis-yurok)	
salmonberry	*Rubus spectabalis*	Coastal scrub, coastal forest	shrub	food	we'taw (L)
Sandberry (kinnikinnick)	*Arctostaphylus uva-ursi*	Coastal dunes, prairie, and scurb	ground shrub	Food, medicine,	
shore pine	*Pinus contorta ssp. contorta*	Coastal dune forest, coastal conifer forest, coastal headlands	Tree	Medicinal, caulking, tool handles, ceremonial	mukweti, wulágululhik (T220)
silktassel	*Garrya elliptica*	coastal scrub	shrub	wood hardened by fire and used to pry open mussels (yurok)	

Wiyot Tribe List of Plant Species of Environmental and Cultural Concern (2016)

Siskiyou checkerbloom	*Sidalcea malviflora ssp. patula*	coastal praire	perennial herb	edible green (Anderson 2005)	
Sitka spruce	*Picea sitchensis*	Dune forest, coastal conifer, forest, Redwood forest	tree	Basketry, caulking, knots used to make coals for roasting eels (Yurok), medicinal	dap
Sitka willow	*Salix sitchensis*	Coastal wetlands	Small tree/shrub	Basketry, medicinal	tigelh(L)
Skunk cabbage					
soaproot	*Chlorogalum pomeridianum*	Coastal scrub and prairie, mixed evergreen forest	herb	medicinal, soap, misc.	kātserā(L)
strawberry	*Fragaria chiloensis*	dunes	perennial herb	food	lash(T190)
Swamp tea	*Ledum gladulosum*	Coastal wetlands (rare) mixed evergreen forest	shrub	Drink, medicine for high blood pressure (Yurok)	
tanoak	*Lithocarpus densiflorus*	mixed-evergreen forest	tree	food, medicine, misc.	doulhulhat (R41)
tansy (dune)	*Tanacetum camphoratum*	dunes	perennial herb	medicine (fever-yurok)	
Tea plant (Labrador tea, trapper's trea	*Ledum gladulosum (Rhododendron columbianum)*	wetland, riparian, mixed evergreen forest	shrub	drink, medicinal (high blood pressure-yurok)	dételh?? (R135)-also possibly cascara-"large bush with flowers like snowball"
thimbleberry	*Rubus parviflora*	Coastal scrub, coastal forest	shrub	Food	kiwátchokwere (L)
trillium (western)	*Trillium ovatum*	redwood forest, mixed-evergreen forest	perennial herb	medicinal (labor pains-yurok)	
twinberry	*Lonicera involucrate*	Coastal scrub, dune forest	shrub	poison, perfume (yurok)	
VineTea (yerba buena)	*Satureja douglasii*	Dune forest, coastal scurb and prairie	Perennial ground vine	medicinal,-(colds, lungs, fever cough, asthma, liver, kidneys, blood-yurok) drink	
wax myrtle	*Morrela californica*	Dune forest, coastal scrub, coastal prairie, rewood forest, coastal conifer forest	shrub	medicinal (stomach problems) wax for candles/soap (wikipedia)	dougúl (T206)
western lily	*Lilium occidentale*	coastal prairie, scrub, coastal conifer forest	Perennial herb	geophyte (listed as federally Endangered under ESA)	na
white-veined wintergreen	*Pyrola picta*	dune forest, mixed evergreen forest, redwood forest	perennial herb	medicinal (kidneys)-yurok-found at Ma-le'l dunes	

Wiyot Tribe List of Plant Species of Environmental and Cultural Concern (2016)

yarrow	*Achillea millefolium*	coastal prairie, scrub, grasslands and open areas	perennial herb	medicinal, analgesic/stimulant	

Table Bluff Reservation – Wiyot Tribe
Environmental Department

Wiyot Tribe
List of Species of Environmental and/or Cultural Concern
Adopted by Tribal Council: December 12, 2005

Summary
The Wiyot Tribe List of Species of Species of Environmental and/or Cultural Concern is a compilation of significant plants and wildlife that are of importance to the Wiyot Tribe. These species are of environmental and/or cultural value to the Wiyot Tribe.

Geographic Scope
This list focuses on species present on Indian Island or species with potential habitat on Indian Island, located in Humboldt Bay.

Significance
The Wiyot Tribe will work to protect and enhance populations of and habitat for plants and animals present on the List of Species of Environmental and/or Cultural Concern through thoughtful land use decisions, cultural education and outreach, wetland and habitat restoration projects, and environmental protection.

Amendment and Revision
The Tribal Council of the Wiyot Tribe will have authority to add additional species to this list at their discretion by a majority vote at any point in time. Amending the List of Species of Environmental and/or Cultural Concern at some point in the future will be particularly valuable regarding the expansion of the list's geographic scope beyond Indian Island.

Elk
Eel
Salmon
rabbits
blue jay
woodpecker
sea otter
seal
whale

Eel grass
bear grass
maidenhair fern
whalebone fern
~~willow~~
Salal berry
Strawberries

angelica root
pepperwood
worm wood
pine (?)

Iris
Tule
Oregon grape root
vine tea
Oak

Common Name	Scientific Name	Status
Bald Eagle	*Haliaeetus leucocephalus*	ESA Threatened
Western Snowy Plover	*Charadrius alexandrinus nivosus*	ESA Threatened
Marbled Murrelet	*Brachyramphus marmoratus*	ESA Threatened
California Brown Pelican	*Pelecanun occidentalis californicus*	ESA Endangered
California Clapper Rail	*Rallus longirostris obsoletus*	ESA Endangered
Great egret	*Ardea alba*	
Common egret	*Casmerodius albus*	
Snowy egret	*Leucophoyx thula*	
Cattle egret	*Bubulcus ibis*	
Great blue heron	*Ardea herodias*	
Black-crowned night heron	*Nycticorax nycticorax*	
Black brant	*Branta bernicla*	
Canada goose	*Branta canadensis*	
Aleutian goose	*Branta canadensis leucopareia*	
Mallard	*Anas platyrhynchos*	
Northern pintail	*Anas acuta*	
American widgeon	*Anas americana*	
Northern shoveler	*Anas clypeata*	
Green-winged teal	*Anas crecca*	
White-winged scoter	*Melanitta fusca*	
Surf scoter	*Melanitta perspicillata*	
Canvasback	*Aythya valisineria*	
Ring-necked duck	*Aythya collaris*	
Greater scaup	*Aythya marila*	
Lesser Scaup	*Aythya affinis*	
Common goldeneye	*Bucephala clangula*	
Bufflehead	*Bucephala albeola*	
Ruddy duck	*Oxyura jamaicensis*	
American coot	*Fulica americana*	
Northern harrier	*Circus cyaneus*	
California condor	*Gymnogyps californianus*	