

4. Alternatives Description and Analysis

4.1 Introduction

This chapter presents the alternatives analysis for the Project. Section 15126.6(a) of the CEQA Guidelines requires an Environmental Impact Report (EIR) to “describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives.” An EIR need not consider every conceivable alternative to a project. Rather it must consider a reasonable range of potentially feasible alternatives that will foster informed decision making and public participation. An EIR is not required to consider alternatives that are infeasible. The lead agency is responsible for selecting a range of project alternatives for examination and must publicly disclose its reasoning for selecting those alternatives. This section of the CEQA Guidelines (Section 15126.6[b]) also describes the purpose of considering alternatives as a way to identify any measures that would mitigate or avoid the significant effects that a project may have on the environment (Public Resources Code (PRC) Section 21002.1).

The CEQA Guidelines further require that the alternatives discussion allow for meaningful evaluation, analysis, and comparison with the proposed Project’s environmental impacts and that a “no project” alternative be considered (Section 15126.6[d] and [e]). CEQA Guidelines Section 15126.6(e)(1) states that the purpose of describing and analyzing the no project alternative is “to allow decision makers to compare the impacts of approving the proposed project with the impacts of not approving the proposed project.” The no project analysis is required to “discuss the existing conditions at the time the notice of preparation is published...as well as what would be reasonably expected to occur in the foreseeable future if the project were not approved, based on current plans and consistent with available infrastructure and community services” (Section 15126.6[e][2]). If the project is a “development project on identifiable property,” the “no project” alternative is the circumstance under which the project does not proceed. Here the discussion would compare the environmental effects of the property remaining in its existing state against environmental effects that would occur if the Project is approved. In certain instances, the no project alternative means “no build” wherein the existing environmental setting is maintained.

4.1.1 Identifying Project Alternatives

A Notice of Preparation (NOP) was circulated for the Project in June of 2018, describing the proposed restoration and enhancement activities to be conducted within the Project Area. During the scoping period, the California Department of Fish and Wildlife (CDFW) received comments expressing concerns related to potential flooding and erosion, potential impacts to waterfowl habitat and hunting opportunities, as well as use of chemicals (herbicide) for invasive plant management. Several Project alternatives have been explored to address these concerns.

The alternatives to the Project analyzed in this chapter include the No Project Alternative, the Estuarine Restoration with Limited Breaches to McNulty Slough Alternative, and the No Herbicide Use Alternative. The environmentally superior alternative is described in Section 4.4, and alternatives that were initially considered but eliminated from detailed consideration in this Draft EIR are described in Section 4.2 below. Resource categories identified as having no impacts under the proposed Project are not discussed below.

4.2 Alternatives Considered but not Carried Forward in this Draft EIR

During the preliminary planning of the Project and the scoping process for the EIR, several alternatives to the Project were evaluated. These alternatives are summarized below, and are evaluated to determine if they meet the qualifications for alternatives receiving full EIR analysis, as required under CEQA.

According to CEQA Guidelines Section 15126.6(a), an EIR should identify alternatives that were considered but rejected and briefly explain the reasons underlying the lead agency's determination. Among the factors that may be used to eliminate alternatives from further detailed consideration in an EIR are: (a) failure to meet most of the basic project objectives; (b) infeasibility; or (c) inability to avoid significant environmental impacts of a proposed project; and 3) the alternative must be potentially feasible. An EIR need not analyze an alternative whose impact cannot be reasonably ascertained and whose implementation is remote and speculative. Furthermore, an EIR need not consider every conceivable alternative, but must consider a reasonable range of alternatives that will foster well-informed decision-making and public participation.

Alternative locations for the Project were not analyzed in this Draft EIR because habitat restoration is by necessity site-specific. Other units of the Eel River Wildlife Area currently have restoration projects underway (e.g., the Salt River Unit) or planned (e.g., the Cannibal Island Unit). Coastal dune restoration through removal of European beachgrass (*Ammophila arenaria*) is also being conducted at several dunes systems in the region, including on the South Spit of Humboldt Bay by the Bureau of Land Management, at the Humboldt Bay National Wildlife Refuge by the U.S. Fish and Wildlife Service, and at Clam Beach State Park by the California Department of Parks and Recreation. However, no dune habitat restoration or European beachgrass eradication projects are planned at the Ocean Ranch Unit of the Eel River Wildlife Area other than the proposed Project.

4.2.1 Partial Estuarine Restoration

The Partial Estuarine Restoration Alternative would restore tidal function to Project Areas A and E through a breach to North Bay and a breach in the levee between Areas A and E, but would maintain Areas B, C, and D as brackish estuarine marsh. Management of Areas B-D as freshwater wetlands would require repair and long-term maintenance of water control infrastructure, including levees and tide gates. Invasive plant management would be the same as what is proposed in the Project. Public access would be modified to provide a different trail configuration (likely

around managed wetland units) and a different location for the non-motorized boat put-in (likely into Area E).

This alternative was dismissed from further consideration because it did not meet several of the basic Project objectives and because current staff and funding levels limit the ability for CDFW to provide long-term maintenance and management support for on-site water control infrastructure. While the Partial Estuarine Restoration Alternative would reduce the level of significance of the Project's hydraulic impacts, it would do so at the expense of achieving the Project's basic goals. One of the Project's primary goals is to restore the natural tidal prism and improve connectivity of tidal and freshwater habitats within the full Project Area. The Partial Estuarine Restoration Alternative would not accomplish this goal. This alternative would not restore tidal function or channel complexity, or improve estuarine habitat, within a large portion (33 percent; 156 acres) of the Project Area. More specifically, it would:

- Provide less critical estuarine habitat for federally listed fish species, including Tidewater Goby, which would be excluded from Areas B-D.
- Provide limited improvements in tidal exchange, connectivity and hydrology even within tidally restored areas because Area A is already tidal and connected to the Eel River estuary.
- Provide minimal ecotone habitat, as most earthen material removed to construct the tidal channel and lower the perimeter levee would be used as fill for a borrow ditch in Area A, and otherwise not available to create high marsh habitat.
- Management of Areas B-D as freshwater wetlands would require repair and long-term maintenance of water control infrastructure, including levees and tide gates, which is at odds with the goal of restoring natural estuarine hydrologic function to the Project Area.

In light of these considerations, the Partial Estuarine Restoration Alternative was rejected from further consideration.

4.2.2 Full Estuarine Restoration

The Full Estuarine Restoration Alternative would restore full tidal inundation to the Project Area by removing all external and internal levees and constructing an internal tidal channel network. Invasive plant management would be the same as what is proposed under the Project, but estuarine public access would be reduced and/or limited to public use by boat.

The Project Area has over four linear miles of internal and external levees. By completely removing all levees from the Project Area, the Full Estuarine Restoration Alternative would require an extensive amount of excavation and earthwork in sensitive estuarine habitat surrounded by tidal sloughs and saltmarsh. Thus, complete levee removal would result in numerous significant environmental impacts, including to: water quality, sensitive species, and the substantial take of State and Federally listed species. Additionally, full levee removal would necessitate hauling by truck and off-site disposal of a substantial amount of fill

material because there is no stable site to deposit that much material within the Project Area that would not impact or replace wetland or other sensitive habitats. Consequently, the amount of levee removal by heavy equipment and off-site hauling would likely result in significant impacts to GHG emissions, air quality, traffic, and potentially solid waste.

The Full Estuarine Restoration Alternative would also not provide a comparable level of flood protection to adjacent landowners and could result in adverse hydraulic impacts and erosion to the eastern levee of McNulty Slough. This alternative would also negatively impact some Project goals, such as reducing public access within the restoration area. For these reasons, the Full Estuarine Restoration Alternative was eliminated from further consideration.

4.2.3 No Invasive Plant Management/Eradication

The No Invasive Plant Management/Eradication Alternative would not actively manage or eradicate invasive plant species within the Project Area. The estuarine restoration portion and the public access components of the Project would be the same as those described for the Project.

Under this alternative, European beachgrass and dense-flowered cordgrass (*Spartina densiflora*) would continue to outcompete native plant communities and likely expand their abundance and distribution in the dunes and estuary, respectively. The Project's two primary goals are to restore and expand natural estuarine function in the restoration area, and to assist in recovery and enhancement of habitat for native fish, invertebrates, wildlife, and plant species. These Project goals cannot be fully achieved without the management and eradication of invasive plant species.

In the saltmarsh, dense-flowered cordgrass affects all aspects of estuarine function including the timing and rate of tidal exchange and hydroperiod; plant and bird diversity, abundance, and distribution; soil macroinvertebrate ecology, nutrient cycling, and structural complexity. Dense-flowered cordgrass can also form dense monotypic stands that out-compete native plant species and diminish habitat for rare native plants such as Humboldt Bay owl's clover and Point Reyes bird's beak.

European beachgrass forms dense monotypic swales throughout most of the dunes in the Project Area. European beachgrass successfully out-competes native dune plant species and thus replaces dune mat vegetation, including several Sensitive Natural Communities. By stabilizing the dunes and preventing active transport of wind-blown sand, European beachgrass prevents formation of vegetated semi-stable and open-sand habitat critical for colonization and persistence of several rare plant species, including beach layia and Menzies' wallflower. Menzies wallflower, which is not known to occur in the Project Area, occurs in dunes just to the north where European beachgrass does not dominate the dunes, and is considered highly likely to become established within the Project Area in restored dunes.

As a result, the No Invasive Plant Management/Eradication alternative was eliminated from consideration because it would not meet the Project's basic goal of restoring natural estuarine and dune functions and natural communities.

4.3 Analysis of Alternatives

This section describes the Project alternatives that were selected and analyzed in accordance with CEQA Guidelines Section 15126.6(a).

4.3.1 Alternative 1: No Project Alternative

Description

Under the No Project Alternative, there would be no changes to the current management of the Project Area and no modifications to the Project Area would be expected. Currently CDFW does not actively manage (i.e., repair, maintain) the internal and external levee system and water control structures in the Project Area. Current CDFW management of the Project Area does not include active habitat restoration or enhancement activities, such as invasive plant eradication efforts and/or State and Federally listed species recovery efforts. Current management of the Project Area also does not include efforts to expand or enhance recreational opportunities at the Project Area.

Under the No Project Alternative, the estuarine wetlands and sloughs in the Project Area would continue to exist as shallow saltmarsh and brackish wetland habitat. The limited freshwater wetlands would remain unchanged but given sea level rise projections for the Project Area, would likely become increasingly saline or brackish in the coming decades. The dune habitat would remain the same and continued to be primarily dominated by European beachgrass.

Analysis

The No Project Alternative would have similar impacts to the proposed Project in terms of Public Services, Land Use, and Agriculture because no additional public services would be required and the existing land use would remain as wetlands and wildlife habitat, which would continue to not support agriculture operations. The No Project Alternative would have lesser impacts than the proposed Project for all other resource categories except for biological resources and hydrology because over time, these resources would continue to degrade.

Current CDFW management of the Project Area does not include repair or maintenance of the levees and water control structures at the Project Area. Consequently, this infrastructure would continue to degrade and erode. The levees would continue to prevent full tidal exchange throughout most of the estuarine habitat in the Project Area and thus estuarine and saltmarsh habitats would remain in a degraded state providing lower functioning habitat values for fish and wildlife. The No Project Alternative would not control or eradicate invasive plant species in tidal areas or in the dunes and would not improve public access or recreational opportunities.

If the Project Area is left as it currently exists, recovery and enhancement of native species and habitat would be delayed, would not occur at all, or may continue to degrade, and erosion of the levees would continue to negatively impact hydrology and water quality.

Under the No Project Alternative, there would be no substantial improvement to fish and wildlife habitat values, natural dune function, and recovery of Sensitive Natural

Communities. Project goals and several supplementary objectives would not be attained. The No Project Alternative would not improve tidal channel complexity within the Project Area, and the existing level of flood protection to adjacent properties to the east would continue to diminish over time if portions of the levee along McNulty Slough fail and adversely affect hydrology through increased scour and velocity.

4.3.2 Alternative 2: Estuarine Restoration with Limited Breaches to McNulty Slough

Description

As depicted on Figure 4-1, Alternative 2 includes estuarine restoration of Areas A-E with external breaches limited to North Bay (Area A) (BR-1) and McNulty Slough (Area D) (BR-4) to minimize adverse hydraulic impacts on adjacent property owners. Internal restoration actions and public access improvements would be similar to the proposed Project. The changes are detailed below:

- Two exterior breaches (BR-2 and BR-3) would not be constructed and the existing damaged tide-gate that currently connects Area B to McNulty Slough would be removed or buried in place to eliminate the hydraulic connection between the Project Area and McNulty Slough at that location
- Levees along McNulty Slough would not be lowered
- The new channel extending into Area A from the exterior breach to North Bay (BR-1) would not be constructed
- The interior channel network would be reconfigured to connect Areas A, B, and C
- Interior Breach 3 (BI-3) and the tidal channel connecting Areas B and E would not be constructed
- The existing culvert (or a culvert of similar size / configuration) would remain at the interior breach between Areas A and E (BI-4) (i.e., it would not be increased in size)
- Habitat fill would be concentrated in the southern portion of Area B (no habitat fill would be placed in Areas A, C, or D)
- Ditch blocks would be added along the interior channel in the northern portion of Area A, near the interior breach between Areas A and B (BI-1)

The remaining alterations to existing levees, proposed recreational enhancements, and invasive plant management aspects of the Project would remain the same as the proposed Project. This alternative would meet the goals and supplementary objectives of the Project and would reduce significant and unavoidable hydraulic impacts within McNulty Slough that are expected to occur under the Project to a less-than-significant level.

Analysis

Aesthetics

Alternative 2 would result in similar aesthetic impacts to the Project Area as compared to the proposed Project (less than significant). The invasive plant management activities proposed for removal of invasive plants would still occur, which would have the greatest permanent visual impacts within the Project Area. Temporary visual impacts from the presence of construction equipment would generally be the same as the proposed Project since they include similar construction and invasive plant management methods, equipment and schedules. Therefore, Alternative 2 would have equivalent aesthetic impacts as compared to the proposed Project.

Agricultural Resources

Alternative 2 would have similar agricultural resource impacts as the Project with respect to converting agricultural land to a non-agricultural use (i.e., less than significant). Although Alternative 2 would alter the estuarine restoration area differently, it would still inundate a near equivalent portion of potential prime farmland soils within the Project Area. However, as stated in Section 3.2, the Project Area has not been in active agricultural production for over 30 years, and the Project would not convert active prime farmland to non-agricultural use or otherwise conflict with policies related to agricultural lands under the Farmland Mapping and Monitoring Program (FMMP) and the California Coastal Act (Coastal Act). Therefore, the impact to agricultural land would be less than significant for Alternative 2 and the same as the Project. Neither the proposed Project nor this alternative would have any impacts to forest resources because there are no forest resources within the Project Area.

Air Quality

Like the proposed Project, Alternative 2 would result in the generation of criteria pollutants and dust during construction of the estuarine restoration portion of the Project and implementation of invasive plant management activities. The air quality impacts under the proposed Project were determined to be less than significant with implementation of Mitigation Measure AQ-1, which complies with the best management practices (BMP) recommended by air districts to reduce construction-related dust. The impacts of Alternative 2 would similarly be less than significant with implementation of Mitigation Measure AQ-1. Comparatively, construction-related air quality emissions included in Alternative 2 would be less than the estimated emissions for the proposed Project, given that there would be a reduction in the amount of overall earthwork.

Biological Resources

Impacts to biological resources that could potentially occur under the proposed Project were determined to be less than significant with implementation of mitigation measures. During construction, impacts to biological resources under Alternative 2 would be marginally reduced due to the smaller area disturbed by the estuarine restoration component. However, the potential to impact the species identified in Section 3.4.5 during the construction phase would remain the same under Alternative 2, and all identified mitigation measures would remain applicable and

would be implemented (Mitigation Measures BIO-1a, HHM-2, HHM-4, WQ-1, WQ-2, BIO-1b, BIO-1c, BIO-1d, BIO-1e, BIO-1f, and BIO-3). It is anticipated that the elimination of the interior breach between Area B and Area E (BI-3) under Alternative 2 would improve habitat for Tidewater Goby by preserving the hydrologic conditions preferred by the species (i.e., slower moving brackish water). Implementation of the invasive plant management component would still occur as under the proposed Project and therefore Alternative 2 would have equivalent impacts to biological resources from removal of European beachgrass and dense-flowered cordgrass.

Cultural Resources

Alternative 2 is anticipated to result in less direct disturbance of the Project Area as compared to the proposed Project. However, as with the proposed Project, construction and maintenance activities could still unearth unknown cultural resources, which, if realized, would be a significant impact. The same mitigation measures for the proposed Project (Mitigation Measures CR-1, CR-2, CR-3, CR-4, and CR-5) would be applicable and implemented under Alternative 2 to reduce impacts to a less-than-significant level.

Geology and Soils

Alternative 2 would result in slightly less earthwork including a reduction in excavation of levees and sediment from the estuarine restoration portion of the Project. However, the same mitigation measures for the proposed Project (Mitigation Measures HWQ-1, HWQ-2, WQ-6, and GEO-1) would be applicable and implemented under Alternative 2 to reduce potential impacts to a less-than-significant level.

Greenhouse Gas Emissions

Like the proposed Project, Alternative 2 would result in a temporary increase in greenhouse gas (GHG) emissions during Project construction, including exhaust emissions from on-road haul trucks, worker commute vehicles, and off-road heavy equipment. Comparatively, construction related GHG emissions expected to occur under Alternative 2 would be less than the estimated emissions for the proposed Project because there would be a reduction in the amount of earthwork. As with the proposed Project, Alternative 2 would result in a less than significant impact to GHG emissions, because it would not exceed emission thresholds or conflict with an applicable GHG plan, policy, or regulation.

Hazards and Hazardous Materials

Although Alternative 2 would result in less excavation, the boundaries of the Project Area would remain the same, therefore the risk for accidental spills of construction related fuels would also remain the same as the proposed Project. Invasive plant management activities would still occur under Alternative 2, therefore potential risks such as accidental release of herbicide and potential fire risk would be equivalent to the proposed Project. The same mitigation measures for the proposed Project (Mitigation Measures HHM-1, HHM-2, HHM-3, HHM-4, HHM-5, and WQ-2) would apply and be implemented under Alternative 2 to reduce impacts to a less-than-significant level. Therefore, the impacts related to hazards and hazardous materials for Alternative 2 would be equivalent to the proposed Project.

Hydrology and Water Quality

Under the proposed Project, hydrology and water quality impacts were generally determined to be less than significant with implementation of mitigation measures, with the exception of the potential for the Project to increase velocity and shear stress in McNulty Slough, which could erode the eastern levee and potentially flood adjacent private agricultural lands, both potentially significant and unavoidable impacts (reference Section 3.9.5).

The proposed Project includes four breaches (BR-1, BR-2, BR-3, BR-4) to the exterior levee on McNulty Slough. Alternative 2 proposes only two breaches to the McNulty Slough levee by eliminating breaches BR-2 and BR-3. Alternative 2 would result in more tidal flow entering and leaving the Project Site through BR-1, within the Project Area, as opposed to within McNulty Slough as would occur with the proposed Project. Consequently, the elimination of the two exterior breaches to McNulty Slough under Alternative 2 would reduce post-construction flow velocities and shear stress relative to the proposed Project, such that they would be similar to baseline conditions (AECOM 2019).

As a result, the potential for increased erosion of the eastern levee of McNulty Slough (and potential for flooding of private lands) would be avoided. The same mitigation measures for the proposed Project (Mitigation Measures HWQ-1, HWQ-2, HWQ-3, WQ-2, WQ-6, HHM-2, and HHM-4) would be applicable and implemented under Alternative 2, which in conjunction with the elimination of two exterior breaches, would reduce impacts to a less-than-significant level.

Noise

Similar to the proposed Project, Alternative 2 would generate noise when heavy equipment is used in the Project Area (i.e., during construction, invasive plant management, and maintenance activities). Noise-generating equipment and activities would generally occur at a slightly less amount of time and utilize the same equipment under Alternative 2 as the proposed Project. Therefore, noise impacts expected to occur under Alternative 2 would be less than significant and equivalent to what would occur under the proposed Project.

Public Services and Utilities

It is anticipated that Alternative 2 would have minimal impacts to public services and utilities similar to the proposed Project. Alternative 2 would not induce population growth and would not increase demand for public services or utilities. Therefore, impacts to public services and utilities expected to occur under Alternative 2 would be less than significant and equivalent to what would occur under the proposed Project.

Recreation

Alternative 2 would implement similar public access improvements as the proposed Project (with minor deviations in trail locations based on the location of internal levees). Therefore, Alternative 2 would generally result in the same temporary and permanent less-than-significant impacts caused by the closure of the Project Area during construction and increased use after the Project is complete.

Transportation

Transportation impacts expected to occur under Alternative 2 would be equivalent to the proposed Project. Compared to the proposed Project, construction would require similar construction worker and equipment trips, and a comparable number of invasive plant management, maintenance, and public access trips would occur over the long-term. Therefore, impacts to transportation under Alternative 2 would be less than significant and equivalent to what would occur under the proposed Project.

Tribal Cultural Resources

Alternative 2 is anticipated to result in less direct disturbance of the Project Area compared to the proposed Project. However, as with the proposed Project, construction and maintenance activities could still unearth unknown tribal cultural resources, which, if realized, could result in a significant impact. The same mitigation measures for the proposed Project (Mitigation Measures TCR-1, CR-1, and CR-2) would be applicable and implemented under Alternative 2 to reduce impacts to a less-than-significant level.

Energy Resources

Comparatively, construction-related energy use under Alternative 2 would be less than the proposed Project because there would be a slight reduction in the amount of earthwork and overall construction activity. Energy use after the estuarine restoration component of the Project is complete would be comparable to the Project because invasive plant management, maintenance and public access activities would be the same. As with the proposed Project, Alternative 2 would result in a less than significant impact to energy resources because it would not result in a substantial increase in energy use, inefficient, wasteful, or unnecessary consumption of fuels or other energy resources, or conflict with an applicable plan for energy efficiency.

Wildfire

Similar to the proposed Project, invasive plant management under Alternative 2 could include the use of prescribed burns to manage European beachgrass and dense-flowered cordgrass. As with the proposed Project, all prescribed burns would be implemented according to an approved burn plan and supervised by the California Department of Forestry and Fire Protection (CAL FIRE). Therefore, impacts to wildfire risk expected to occur under Alternative 2 would be less than significant and equivalent to what would occur under the proposed Project. With both the proposed Project and Alternative 2, after project implementation the wildfire risk is anticipated to be much lower than current conditions because of the removal of the highly flammable invasive European beachgrass.

4.3.3 Alternative 3: No Herbicide Use

Description

Alternative 3 would not use herbicide to treat invasive plants. All other components, including estuarine restoration, remaining invasive plant management activities

(e.g., mechanical removal and prescribed burning), and the public access improvements would be the same as the proposed Project.

Alternative 3 would attain the Project's basic estuarine and dune restoration goals and supplementary objectives and would avoid any potential impacts associated with herbicide use for invasive plant management.

Analysis

Aesthetics

Similar to the proposed Project, Alternative 3 would have less-than-significant impacts to aesthetic resources. Temporary visual impacts caused by the presence of construction equipment in the Project Area would generally be the same as the proposed Project (i.e., same equipment and methods), although not using herbicide would likely increase the need to use heavy equipment and gas-powered handheld mowing equipment to manage invasive plant species, which would prolong their presence in the Project Area. In the long-term, the removal of invasive plants within the Project Area would occur over the same area as proposed under the Project, resulting in the same permanent aesthetic benefit to the Project Area. Therefore, Alternative 3 would likely have a somewhat greater aesthetic impact during invasive plant management activities, but a similar long-term aesthetic benefit after work is complete compared to the proposed Project.

Agricultural Resources

As with the proposed Project, Alternative 3 would have similar agricultural resources impacts with respect to converting agricultural land to a non-agricultural use (i.e., less than significant). Alternative 3 would alter the estuarine restoration area as described under the proposed Project, and would inundate the same portion of potential prime farmland soil in the Project Area. However, as stated in Section 3.2, the Project Area has not been in active agricultural production for over 30 years, and the Project would not convert active prime farmland to non-agricultural use or otherwise conflict with policies related to agricultural lands under the FMMP and the Coastal Act. Therefore, the impact on agricultural land for Alternative 3 would be less than significant and the same as the proposed Project. Neither the proposed Project nor this alternative would have any impacts to forest resources because there are no forest resources within the Project Area.

Air Quality

Similar to the proposed Project, Alternative 3 would result in the generation of criteria pollutants and dust during construction of the estuarine restoration portion and implementation of invasive plant management activities. The air quality impacts expected to occur under the proposed Project were determined to be less than significant with implementation of Mitigation Measure AQ-1, which complies with the BMPs recommended by air districts to reduce construction-related dust. The same mitigation measure would apply and be implemented under Alternative 3.

However, instead of herbicide use, Alternative 3 would primarily rely on heavy equipment and gas-powered handheld mowing equipment, in addition to prescribed burning, to manage invasive plants. The use of heavy equipment and gas-powered handheld mowing equipment would take considerably more time and effort to

achieve invasive plant management objectives compared to including herbicide use and would have higher air quality emissions. Therefore, although air quality emissions under Alternative 3 would be less than significant, they would be greater than the proposed Project.

Biological Resources

Impacts to biological resources expected to occur under the proposed Project were determined to be less than significant with implementation of mitigation measures. Impacts expected to occur under Alternative 3 would similarly result in less than significant biological resource impacts with implementation of appropriate mitigation measures. With the elimination of herbicide treatment of invasive plants, Mitigation Measures WQ-1, and WQ-2 would no longer be needed or implemented. The remaining mitigation measures (Mitigation Measures BIO-1a, HHM-2, HHM-4, BIO-1b, Bio-1c, BIO-1d, BIO-1e, BIO-1f, and BIO-3) would be applicable and implemented under Alternative 3.

Given that other invasive plant treatment methods would need to be used with greater intensity and duration in the absence of herbicide use, it is expected to take years longer for the Project to achieve its invasive plant management goals. During this delay in achieving restoration goals, the ecological values of the estuarine and dune habitat in the Project Area would remain in their degraded condition and State and Federally listed species would not benefit from an increase in abundance, distribution, or fitness expected from the habitat enhancement actions proposed by the Project. For these reasons, Alternative 3 is considered environmentally inferior to the proposed Project with regard to biological resources, although impacts to biological resource would remain less than significant.

Cultural Resources

Alternative 3 would result in the same amount of direct disturbance of the Project Area as the proposed Project. Similar to the proposed Project, construction and maintenance activities could potentially unearth unknown cultural resources. The risk of discovering currently unknown cultural materials would be identical to the proposed Project as the same area would be disturbed and would be reduced to a less-than-significant level with implementation of the same mitigation measures (Mitigation Measures CR-1, CR-2, CR-3, CR-4 and CR-5). Therefore, the impacts related to cultural resources would be equivalent to the proposed Project.

Geology and Soils

Similar to the proposed Project, Alternative 3 would have less than significant impacts to geology and soils. The same mitigation measures for the proposed Project would be applicable to this alternative (Mitigation Measures HWQ-1, HWQ-1, WQ-6, and GEO-1) and implemented within the estuarine restoration portion of the Project Area. Because the same area would be disturbed as under the proposed Project, impacts to geology and soils associated with Alternative 3 would be less than significant and equivalent to what would occur under the proposed Project.

Greenhouse Gas Emissions

As with the proposed Project, Alternative 3 would have less than significant impacts regarding GHG emissions. Energy use, and thus GHG emissions, for invasive plant

management would likely be higher in Alternative 3 than the proposed Project because instead of herbicide treatment, heavy equipment or gas-powered handheld mowing equipment, along with prescribed burning, would be used. Therefore, it is assumed that Alternative 3 would generate greater GHG emissions than the proposed Project. Although there would be increased GHG emissions under Alternative 3, a less than significant impact would occur because the alternative would not exceed emission thresholds or conflict with an applicable GHG plan, policy, or regulation. However, implementation of Alternative 3 is considered environmentally inferior to the proposed Project regarding GHG emissions.

Hazards and Hazardous Materials

Alternative 3 would have roughly the same potential hazards and hazardous materials impacts as the proposed Project because while no herbicide treatment would take place, heavy equipment and gas-powered handheld mowing equipment use would increase in order to manage invasive plant species. Mitigation Measures HHM-1, HHM-2, and HHM-5 would apply and be implemented under this alternative, however, Mitigation Measures HHM-3, HHM-4, WQ-2, would no longer be required because herbicide treatment would not be used. The impacts related to hazards and hazardous materials under Alternative 3 are expected to be similar to the proposed Project because the increased potential for spills of fuel and lubricant from the increased use of heavy equipment and gas-powered handheld mowing equipment would offset the lower hazardous materials spill risk from herbicide use.

Hydrology and Water Quality

The level of impact from Alternative 3 on hydrology and water quality would be roughly the same as the proposed Project. As with the proposed Project, hydrology and water quality impacts would be less than significant with implementation of Mitigation Measures HWQ-1, HWQ-2, HWQ-3, WQ-2, WQ-6, HHM-2, and HHM-4, with the exception that Alternative 3, like the proposed Project, would increase velocity and shear stress in McNulty Slough, which could erode the eastern levee and potentially flood adjacent private lands, both potentially significant and unavoidable impacts.

Noise

Similar to the proposed Project, implementation of Alternative 3 would generate noise during use of heavy equipment. Elimination of the use of herbicide to treat invasive plants would not lessen the noise impacts as the herbicide application tools do not generate a significant amount of noise. The impact from noise from Alternative 3 would likely be higher than the proposed Project due to an increased reliance on heavy equipment or gas-powered handheld mowing equipment and their longer duration of use. However, similar to the proposed Project, the impact from noise under Alternative 3 would be less than significant.

Public Services and Utilities

Alternative 3 would have minimal impacts to public services and utilities, similar to the proposed Project. Alternative 3 would not induce population growth and would not increase demand for public services or utilities. Therefore, impacts to public services and utilities under Alternative 3 would be less than significant and equivalent to what would occur under the proposed Project.

Recreation

Alternative 3 would implement the same recreational facility improvements as the proposed Project. Therefore, Alternative 3 would result in very similar less-than-significant recreational impacts associated with the closure of the Project Area during construction and invasive plant management, and the increased use of recreational amenities by the public after the Project is complete.

Transportation

Transportation impacts expected to occur under Alternative 3 would be equivalent to the proposed Project because construction would require the same construction worker and equipment trips, and a comparable number of invasive plant management, maintenance and public access trips would occur over the long-term. All recreational components would still be implemented, and anticipated recreational trips would not change under Alternative 3. Therefore, impacts to transportation under Alternative 3 would be less than significant, which is equivalent to what would occur under the Project.

Tribal Cultural Resources

Alternative 3 would disturb an equivalent portion of the Project Area compared to the proposed Project. Therefore, as with the proposed Project, construction and maintenance activities could unearth unknown tribal cultural resources, which, if realized, could result in a significant impact. Mitigation Measures TCR-1, CR-1, and CR-2 would be applicable and implemented under Alternative 3 to reduce impacts to a less-than-significant level.

Energy Resources

Construction-related energy use under Alternative 3 would be equivalent to that needed for the proposed Project because all estuarine restoration components would be implemented as described in Chapter 2 (Project Description). Energy use for invasive plant management would likely be higher under Alternative 3 than the proposed Project because instead of herbicide treatment, heavy equipment or gas-powered handheld mowing equipment would be relied on more heavily. The increased use of heavy equipment and gas-powered handheld mowing equipment would likely be a much more extensive, routine, and longer-term invasive plant management method requiring more energy use than if herbicide use were incorporated into the suite of management options. However, as with the proposed Project, Alternative 3 would result in a less than significant impact to energy resources, because it would not result in a substantial increase in energy use, inefficient, wasteful, or unnecessary consumption of fuels or other energy resources, or conflict with an applicable plan for energy efficiency.

Wildfire

Similar to the proposed Project, Alternative 3 includes the use of prescribed burns to manage invasive plants. As with the proposed Project, all prescribed burns would be implemented according to an approved burn plan and supervised by CAL FIRE. Therefore, the impacts related to wildfires would be equivalent to the proposed Project and less than significant.

4.4 Environmentally Superior Alternative

Table 4-1 (Comparison of Alternatives to the Proposed Project) compares the significance of the potential impacts for the proposed Project with the alternatives considered in the preceding sections. CEQA Guidelines Section 15126.6(e)(2) requires that if the No Project Alternative is the environmentally superior alternative, then the EIR must also identify which of the other alternatives is environmentally superior.

As described above, the proposed Project is a habitat restoration and enhancement project.

As enumerated in greater detail in Section 2.2, the Project's two primary goals are:

1. To restore and expand natural estuarine function in the restoration area, and to assist in recovery and enhancement of habitat for native fish, invertebrates, wildlife, and plant species.
2. To restore natural dune function, and to assist in recovery and enhancement of habitat for native species, State and Federally-listed or otherwise sensitive plants, and associated natural communities.

Implementation of the Project would:

1. Facilitate the recovery of a number of State and Federally-listed fish and rare plant species.
2. Restore natural ecosystem functions at a landscape scale to a diverse mosaic of estuarine tidal slough and saltmarsh and coastal dune habitats using an ecosystem-based management approach.
3. Minimize CDFW long-term maintenance and management efforts and expenditures by allowing for natural ecological processes to maintain the Project Area, rather than relying on on-going maintenance and repair of constructed levees and tide gates.
4. Restore Sensitive Natural Communities.
5. Improve public access and recreational opportunities in the Project Area.

Most of the proposed Project's adverse impacts would be short-term and related to ground disturbance during construction and management of invasive plants. The No Project Alternative would eliminate these potential short-term construction-related impacts, and, because it would have the fewest impacts overall, would nominally be the Environmentally Superior Alternative. However, this alternative would forego the near and longer-term environmental benefits of the Project, listed above and enumerated in Section 2.2.

The proposed Project, as described Section 3.9, Hydrology and Water Quality, would result in two significant and unavoidable impacts. These significant and unavoidable impacts include erosion of the eastern levee along McNulty Slough (Impact HWQ-3) and potential flooding of adjacent private agricultural lands (Impact HWQ-4). For this reason, the proposed Project is not deemed the Environmentally Superior Alternative.

Alternative 2 (Estuarine Restoration with Limited Breaches to McNulty Slough) would reduce these potentially significant and unavoidable hydraulic impacts within McNulty Slough to a less than significant level. The fewer breaches proposed under Alternative 2 would direct more tidal flow into and out of the Project Area itself, rather than increasing flow volume and velocities in McNulty Slough (which is attributed with potential increased erosion to McNulty Slough's eastern levee under the proposed Project). Therefore, the flow velocities within McNulty Slough from Alternative 2 would be similar to baseline conditions, and the potential impact from scour or erosion less than significant. Alternative 2 would meet all of the Project's primary goals and also provide improved habitat quality to Tidewater Goby by preserving desirable hydrologic conditions in Area E and the northern portion of Area A.

While Alternative 3 (No Herbicide Use) would have a reduced risk of hazardous materials exposure or spills from herbicides than the proposed Project, other environmental impacts of Alternative 3 are expected to be greater than the proposed Project. Heavy equipment and gas-powered handheld mowing equipment would be used in place of herbicide under Alternative 3, which would result in greater energy use, air quality impacts, and GHG emissions than the proposed Project. Also, by not using herbicide to manage invasive plants, it is likely that additional treatments would be necessary to eradicate dense-flowered cordgrass and European beachgrass from the Project Area. These additional invasive plant management treatments, implemented over a longer time period, would likely considerably delay achieving the Project's objective to eradicate invasive species and restore natural estuarine and dune function. For these reasons, Alternative 3 is not considered the Environmentally Superior Alternative. Consequently, Alternative 2 (Estuarine Restoration with Limited Breaches to McNulty Slough) is considered the Environmentally Superior Alternative.

Table 4-1 Comparison of Alternatives to the Proposed Project

Potential Impact	Alternative 1 No Project	Alternative 2 Limited Estuarine Restoration	Alternative 3 No Herbicide Use
Aesthetics	superior	equivalent	equivalent
Agricultural Resources	equivalent	equivalent	equivalent
Air Quality	superior	equivalent	inferior
Biological Resources	inferior	superior	inferior
Cultural Resources	superior	equivalent	equivalent
Geology and Soils	superior	equivalent	equivalent
Greenhouse Gas Emissions	superior	equivalent	inferior
Hazards and Hazardous Materials	superior	equivalent	superior
Hydrology and Water Quality	superior	superior	equivalent
Land Use	equivalent	equivalent	equivalent
Noise	superior	equivalent	inferior
Public Services and Utilities	equivalent	equivalent	equivalent
Recreation	inferior	equivalent	equivalent
Transportation	superior	equivalent	equivalent
Tribal Cultural Resources	superior	equivalent	equivalent
Energy	superior	equivalent	inferior
Wildfire	inferior	equivalent	equivalent

