

CHAPTER 5 COMPARISON OF EVALUATED ALTERNATIVES

The three alternatives for the Otay River Estuary Restoration Project (ORERP or proposed action) are outlined in detail in Chapter 2 of this environmental impact statement (EIS). Alternative A, the no action alternative, would not create any significant impacts through implementation. Both action alternatives, Alternative B and Alternative C, would create similar impacts on the environment, such as temporary recreational trail interruption. Although both action alternatives would create temporary significant impacts during construction, both would create beneficial significant impacts to biological resources upon implementation, and would minimize existing flooding hazards. The two action alternatives differ in their significant beneficial biological impacts; Alternative B is the preferred alternative, as outlined in detail in Section 4.2, Physical Environment.

A summary of the potential beneficial and significant impacts associated with implementation of each alternative for each resource area identified in this document is outlined in Table 5-1. To minimize or avoid significant impacts associated with the implementation of Alternative B or C, mitigation measures have been identified for each proposed project alternative as described in detail in Chapter 4, Environmental Consequences.

Table 5-1
Summary of Potentially Significant Impacts of Alternatives

Resource Area	Alternative A	Alternative B	Alternative C
<i>Physical Environment</i>			
Topography/Visual Quality	No change from the existing condition.	Under this alternative, grading techniques to achieve varying elevations would mimic the natural topography in the area, which is low-lying with gradual slopes. Alternative B would not result in the substantial alteration of locally or regionally important topographic landforms, or block public views to a scenic resource (such as San Diego Bay) from existing public vantage points. Impacts would be less than significant.	Impacts would be similar to those identified for Alternative B.
Geology, Soils, and Agricultural Resources	No change from the existing condition.	With implementation of mitigation measures to offset any potential impacts, this alternative would not trigger or accelerate substantial slope instability, subsidence, ground failure, or erosion that would affect on-site or adjacent facilities. This alternative would not create significant impacts to potential farmlands.	Impacts would be similar to those identified for Alternative B.
Mineral Resources	No change from the existing condition.	This alternative would not result in the loss of the availability of a known mineral resource that would be of value to the region, and does not propose incompatible uses on or within the vicinity (generally up to 1,300 feet) of an area classified as MRZ-2, on land classified as MRZ-3, on land underlain by Quaternary alluvium, or on or within the vicinity of areas known to contain industrial material or gemstone resources.	Impacts would be similar to those identified for Alternative B.
Paleontological Resources	No change from the existing condition.	With implementation of MM-PALEO-1, this alternative would not directly or indirectly damage a unique paleontological resource or site, or propose grading or excavation that would disturb the substratum or parent material below the major soil horizon in a paleontologically sensitive area.	Impacts would be similar to those identified for Alternative B.
Hydrology/Water Quality	No change from the existing condition. Flooding of adjacent and downstream areas, including residential properties, is possible during storm events.	In general, Alternative B would not change flood elevations in tidally influenced areas, including the South Bay Salt Works area (formerly Ponds 10A, 10, and 11). Flooding would increase for Ponds 12, 13, 14, 28, and 29. In addition, implementation of Alternative B would alter the maximum 100-year flood elevation along the bike path, as shown on Figure 4.2-2. With implementation of this alternative, flooding along the bike path would not occur up to the 15-year return period flood event. In general, the 100-year flood elevations would decrease at the center portion of the bike path along Pond 20, but increase at the southern end	Impacts would be similar to those identified for Alternative B.

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		<p>of the bike path along Pond 22. The higher flood elevations would be due to the redistribution of the flood flows.</p> <p>The residential area in Imperial Beach near Bayside Park is currently at risk for flooding in the existing condition. With implementation of project features such as the levee between Ponds 22 and 23 and the berm along the southern perimeter of the Otay River Floodplain Site, Alternative B would not result in any increase in flood elevations at this location.</p> <p>During dry-weather conditions under Alternative B, both the Otay River Floodplain Site and the Pond 15 Site would be in a steady-state equilibrium that is neither depositional nor erosional. Source-water inlets to both portions of the project site are stable and immune to closure or restriction by sedimentation under dry-weather tidal exchange.</p> <p>Excavation and filling associated with the implementation of Alternative B, as well as the long-term presence of these restored wetlands, would not result in any violation of water quality standards or waste discharge requirements (with the possible requirement of a construction dewatering permit), substantially increase downstream sedimentation, or otherwise substantially degrade water quality in either dry-weather or wet-weather conditions. Although contaminants from soils in the eastern portion of the Otay River Floodplain Site may erode and be suspended into floodwaters, implementation of this alternative would not introduce any additional contaminants. Therefore, no significant impacts are anticipated.</p>	
Air Quality	No change from the existing condition.	<p>Construction of this alternative would result in a temporary addition of pollutants to the local airshed caused by soil disturbance, fugitive dust emissions, and combustion pollutants from on-site construction equipment, as well as from off-site trucks hauling construction materials and soil from the Otay River Floodplain Site to the Pond 15 Site. Daily construction emissions would not exceed the thresholds for volatile organic compounds (VOCs), oxides of nitrogen (NO_x), carbon monoxide (CO), sulfur oxides (SO_x), or particulate matter (PM₁₀ and PM_{2.5}). Additionally, criteria pollutant emissions would not exceed the annual General Conformity de minimis thresholds. Impacts would not be significant.</p>	<p>An additional 54,000 cubic yards of soil would be transported from the Otay River Floodplain Site to the Pond 15 Site, resulting in additional truck trips under the truck soil transport option. Even with these additional trips, daily construction emissions would not exceed the thresholds for VOCs, NO_x, CO, SO_x, PM₁₀, or PM_{2.5}. Additionally, criteria pollutant emissions would not exceed the annual General Conformity de minimis thresholds. Impacts would not be significant.</p>

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Noise	No change from the existing condition.	Construction of this alternative would result in a temporary increase in ambient noise levels on the project site on an intermittent basis. Due to the lack of sensitive receptors within 50 feet of the site, discontinuation of work during the nesting season, and the dispersed construction area, construction noise levels are anticipated to comply with the applicable noise criteria of surrounding jurisdictions. Once construction is complete, under this alternative, the proposed action would not result in a permanent increase in ambient noise levels.	Impacts would be similar to those identified for Alternative B.
Climate Change and Sea-Level Rise	No change from the existing condition.	Potential sea-level rise was included in the design of the habitat types at both the Otay River Floodplain Site and the Pond 15 Site under this alternative. Mudflat and low marsh habitat would significantly increase, but mid-marsh and high vegetated marsh habitat would be almost completely lost.	Impacts would be similar to those identified for Alternative B.
Greenhouse Gases	No change from the existing condition.	The threshold of 10,000 metric tons of carbon dioxide equivalent (MT CO ₂ E) per year was used to assess the impact of the proposed action's greenhouse gas (GHG) emissions. The highest total construction emissions under the proposed action in any one year for any of the proposed construction options would equal approximately 1,411 MT CO ₂ E per year under the slurry pipeline method of material transfer. Therefore, the maximum annual construction-related GHG emissions would be below the GHG emissions threshold of 10,000 MT CO ₂ E per year.	Impacts would be similar to those identified for Alternative B.
Contaminants	No change from the existing condition.	With avoidance of contaminated soils on the portion of the Otay River Floodplain Site east of Nestor Creek through project design, significant impacts are not anticipated.	Impacts would be similar to those identified for Alternative B.
<i>Biological Resources</i>			
Habitat and Vegetation	No change from the existing condition.	Under this alternative, the proposed restoration activities at the Otay River Floodplain Site would result in direct temporary and permanent construction-related impacts to vegetation communities. Approximately 33.51 acres of vegetation communities would be affected within the Otay River Floodplain Site, as itemized in Table 4.3-3. The proposed restoration activities at the Pond 15 Site would result in direct temporary and permanent construction-related impacts to 90.90 acres of	Under this alternative, the proposed restoration activities at the Otay River Floodplain Site would result in similar impacts to vegetation communities as Alternative B, as itemized in Table 4.3-12. The proposed restoration activities at the Pond 15 Site would result in impacts to vegetation communities similar to those under Alternative B, as itemized in

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		<p>vegetation communities, as itemized in Table 4.3-4. Implementation of the other project features in support of the overall habitat restoration activities at the Otay River Floodplain Site and Pond 15 Site would result in direct temporary and permanent construction-related impacts to approximately 40.90 acres of vegetation communities and land covers, as itemized in Table 4.3-5.</p> <p>A mix of native wetland coastal salt marsh plant species would be planted at both sites to create low, mid, and high salt marsh vegetation communities with lesser amounts of frequently flooded and frequently exposed mudflat. A summary of the vegetation communities that would be installed based on anticipated sea level and water depth in 2018 is provided in Table 4.3-1. A total of 118.49 acres of wetlands and 5.92 acres of transitional or berm will be provided per Table 4.3-1. Alternative B is focused on restoration of intertidal habitat including more salt marsh habitat and less subtidal.</p>	<p>Table 4.3-13. Implementation of the other project features in support of the overall habitat restoration activities at the Otay River Floodplain Site and Pond 15 Site would be the same as those identified for Alternative B.</p> <p>A mix of native wetland coastal salt marsh plant species would be planted at both sites to create subtidal, low, mid, and high salt marsh vegetation communities, with lesser amounts of frequently flooded and frequently exposed mudflat. A summary of the vegetation communities that would be installed based on anticipated sea level and water depth in 2018 is provided in Table 4.3-10. Alternative C is focused on restoration of subtidal habitat with less restoration of intertidal salt marsh habitat.</p>
Jurisdictional Waters	No change from the existing condition.	<p>Under this alternative, the proposed restoration activities at the Otay River Floodplain Site would result in direct temporary and permanent construction-related impacts to jurisdictional waters associated with the Otay River channel. Approximately 6.43 acres of U.S. Army Corps of Engineers (Corps), Regional Water Quality Control Board (Regional Board), and/or California Coastal Commission jurisdictional wetlands would be affected within the 33.51-acre Otay River Floodplain Site as itemized in Table 4.3-6. The proposed restoration activities at the Pond 15 Site would result in direct temporary and permanent construction-related impacts to 88.14 acres of Corps/Regional Board/ California Coastal Commission jurisdictional wetlands as itemized in Table 4.3-7. Implementation of the other project features in support of the overall habitat restoration activities at the Otay River Floodplain Site and Pond 15 Site would result in direct temporary and permanent construction-related impacts to approximately 3.16 acres of jurisdictional waters. The restoration would create low, mid, and high salt marsh vegetation communities with lesser amounts of frequently flooded and frequently exposed mudflat. A summary of the vegetation communities that would</p>	<p>Under this alternative, the proposed restoration activities at the Otay River Floodplain Site would result in similar impacts to jurisdictional waters as Alternative B as itemized in Table 4.3-14. The proposed restoration activities at the Pond 15 Site would result in impacts to jurisdictional waters similar to those under Alternative B, as itemized in Table 4.3-15. Implementation of the other project features in support of the overall habitat restoration activities at the Otay River Floodplain Site and Pond 15 Site would be the same as those identified for Alternative B.</p> <p>The restoration would create subtidal, low, mid, and high salt marsh vegetation communities, with lesser amounts of frequently flooded and frequently exposed mudflat. A summary of the vegetation communities that would be installed based on anticipated sea level and water depth in 2018 is provided in Table 4.3-10. A total of 112.57 acres of wetlands and 11.85 acres of</p>

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		<p>be installed based on anticipated sea level and water depth in 2018 is provided in Table 4.3-1. A total of 118.49 acres of wetlands and 5.92 acres of transitional habitat or berm will be provided per Table 4.3-1. The Otay River Floodplain Site would be restored to coastal salt marsh wetlands, and the Pond 15 Site would be restored to tidally influenced subtidal and intertidal wetlands with a focus on intertidal restoration.</p>	<p>transitional habitat or berm will be provided per Table 4.3-10. Unlike Alternative B, the Otay River Floodplain Site would be recontoured to include a subtidal channel encompassing about 4.5 acres of the site. The Pond 15 Site would also be recontoured to create similar, deeper tidally influenced subtidal and coastal salt marsh zones.</p>
Wildlife and Fisheries	No change from the existing condition.	<p>Currently, available habitat for wintering waterfowl and migrant and wintering shorebirds on the Otay River Floodplain Site is limited. Small patches of disturbed wetland communities, including southern coastal salt marsh, remain on approximately 1.26 acres of the site, and <i>Isocoma</i> scrub, an upland habitat, provides foraging and nesting areas for a variety of upland species. The proposed restoration activities at the Otay River Floodplain Site would represent a direct loss of 18.40 acres of potential upland and 6.43 acres of conversion of wetland foraging and nesting habitat. This loss would displace some existing species (e.g., upland bird species, reptiles, mammals), while expanding the available habitat for other species (e.g., migratory shorebirds and seabirds, waterbirds, fish, and benthic invertebrates). The loss of upland habitat in this area is offset by the proposal to establish native upland vegetation to the east of the restoration site, where the existing non-native vegetation provides limited habitat quality.</p> <p>Currently, the Pond 15 Site provides foraging, loafing, and rafting habitat for wintering waterfowl, migratory and wintering shorebirds, migratory seabirds, and other year-round waterbirds and summer visitors. Although the number of birds within the salt pond can be high, species richness is low, especially compared to the adjacent San Diego Bay. Once the Pond 15 Site is connected to San Diego Bay and the area is subject to tidal influence, the habitat quality would increase and new foraging opportunities would develop over time, providing a net benefit to a wide range of bird species. As a result, implementation of Alternative B would not result in any significant direct impacts to nesting birds in or adjacent to the Pond 15 Site.</p>	Impacts would be similar to those identified for Alternative B.

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Endangered and Threatened Species and Other Species of Concern	No change from the existing condition.	<p>The proposed restoration activities at the Otay River Floodplain Site would result in direct, construction-related impacts to special-status plant species and their habitats. The proposed restoration activities at the Otay River Floodplain Site would result in direct impacts to 1.26 acres of native southern coastal salt marsh habitat that is occupied by the State-listed threatened Belding’s Savannah sparrow.</p> <p>The proposed restoration would include planting of the special-status plant species to replace those individuals impacted. Under Alternative B, existing habitats in the 33.51-acre Otay River Floodplain Site and the 90.90-acre Pond 15 Site would be converted to tidally influenced coastal wetland habitat (i.e., low, mid, and high salt marsh) and associated transitional and seabird nesting habitat. This restoration would provide suitable foraging and nesting habitat for threatened and endangered species, including salt marsh habitat to support light-footed Ridgway’s rail and Belding’s Savannah sparrow, and transitional habitat to support foraging for San Diego black-tailed jackrabbit, short-eared owl, burrowing owl, merlin, and white-tailed kite, and mudflat areas to potentially support western snowy plover.</p> <p>Restoration of the Otay River Floodplain Site to intertidal and transitional habitats would provide benefits to the San Diego Bay ecosystem and to the special-status species known to occur or that have the potential to occur in wetland areas surrounding south San Diego Bay.</p>	Impacts would be similar to those identified for Alternative B.
<i>Cultural Resources</i>			
Historical Resources	No change from the existing condition.	With implementation of MM-CUL-1, no significant impacts are anticipated. MM-CUL-1 would require the signing of a Memorandum of Agreement by the U.S. Fish and Wildlife Service (Service) and the State Historic Preservation Office that would require supplemental photodocumentation for Ponds 13, 14, and 15 and the northern portion of Pond 20A; oral history research; history of the salt works posted on the Service site; and an interpretive panel that expands on the interpretation already developed to inform visitors of the historic significance of the salt works.	Impacts would be similar to those identified for Alternative B.

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Cultural Resources	No change from the existing condition.	A qualified archaeologist meeting the <i>Secretary of the Interior's Standards and Guidelines: Professional Qualifications Standards</i> and a Kumeyaay cultural monitor would monitor all grading and subsurface disturbance within the proposed action's area of potential effect. If cultural resources are encountered during excavation, appropriate actions per Federal regulations would be implemented to avoid the potential for significant adverse effects to cultural resources.	Impacts would be similar to those identified for Alternative B with implementation of MM-CUL-1.
<i>Social and Economic Environment</i>			
Land Use	No change from the existing condition.	The proposed restoration would not be considered incompatible with nor would it result in adverse effects to surrounding land uses.	Impacts would be similar to those identified for Alternative B.
Traffic, Circulation, and Parking	No change from the existing condition.	Implementation of this alternative would require 43,000 truck haul trips between the Otay River Floodplain Site and the Pond 15 Site. With implementation of MM-TRA-1 and MM-TRA-2, the construction trips associated with this alternative would not exceed existing roadway volume-to-capacity ratios as established by the affected jurisdictions, exceed road or intersection capacities, or substantially alter the demand for on- and/or off-street parking spaces.	An additional 54,000 cubic yards of soil would be transported from the Otay River Floodplain Site to the Pond 15 Site, resulting in 52,000 truck trips under the truck soil transport option. With implementation of MM-TRA-1 and MM-TRA-2, even with these additional trips, no significant impacts are anticipated on area roadways due to increased construction-related traffic.
Public Utilities/Easements	No change from the existing condition.	A number of public utilities and utility easements occur to the east of the proposed restoration site in the Otay River floodplain, while no utilities are located near the Pond 15 Site. To ensure that construction activities associated with the implementation of Alternative B do not interfere with or damage existing utilities in the Otay River Floodplain, the Service would coordinate with individual utility agencies prior to completion of the final construction plans. Based on this coordination, all actions deemed necessary to protect existing utilities would be included in the final construction plans.	Impacts would be similar to those identified for Alternative B.
Vectors and Odors	No change from the existing condition.	The proposed wetlands within the Otay River Floodplain Site and Pond 15 Site under Alternative B have been designed to avoid the creation of mosquito breeding habitat. No impacts related to odors are anticipated.	Impacts would be similar to those identified for Alternative B.

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Economics and Employment	No change from the existing condition.	The Pond 15 Site is one of three primary evaporation ponds currently in use by South Bay Salt Works. Under Alternative B, restoration of the Pond 15 Site would reduce the current solar salt operation, potentially reducing the annual revenues for the operation. These potential impacts have been planned and are addressed in the Comprehensive Conservation Plan for the San Diego Bay National Wildlife Refuge. The impacts are not considered significant. As a multi-million dollar construction project, Alternative B would provide temporary employment opportunities. To avoid impacts to the operation of the salt works during construction, early coordination with the South Bay Salt Works is required.	Impacts would be similar to those identified for Alternative B.
Environmental Justice	No change from the existing condition.	Any potential impacts related to this alternative would not disproportionately affect any racial, ethnic, or socioeconomic group.	Impacts would be similar to those identified for Alternative B.
Growth Inducement	No change from the existing condition.	This alternative would have no effect on growth in the region because it would not create any permanent employment opportunities or accommodate or influence the need for additional housing in the region.	Impacts would be similar to those identified for Alternative B.
Hazards and Hazardous Material	No change from the existing condition.	If hazardous materials are present, they would be stored and handled in accordance with all Federal, State, and local regulations. Additionally, standard best management practices (BMPs) would be applied to ensure that accidental release or spills of hazardous materials are avoided. No significant impacts are anticipated.	Impacts would be similar to those identified for Alternative B.
Energy	No change from the existing condition.	This alternative would not require any additional regional energy supplies.	Impacts would be similar to those identified for Alternative B.

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