

to major. Potential minor adverse impacts to salmonid habitat or salmonids would be expected to occur during construction of the wetland restoration component.

California black rail and California clapper rail: Alternative C would have very similar major beneficial effects to Alternative B in terms of increasing habitat for California black rail and California clapper rail, with the proposed project restoring more than 350 acres of low-, mid- and high Tidal Salt Marsh. During the transitional period following construction, only negligible to minor beneficial effects would be expected. Impacts during construction would be moderate adverse, because of construction actions on and near the north levee in the West Pasture and in Olema Marsh. The primary change to California black rail and California clapper rail under Alternative D would come from the slight increase in habitat relative to Alternative C from excavation of higher elevation intertidal and grassland areas to lower intertidal elevations. This increase and shift in intertidal habitats would be expected to have beneficial effects on rails.

Other Special Status Species: The effects of Alternative D on other special status species would be identical to Alternative C and generally range from minor beneficial effects to moderate adverse effects depending on the species.

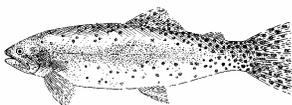
Cultural Resources

Laws, Regulations, Policies, and Criteria Guiding Impact Analysis

Since the early 1900s, a number of laws and policies have been enacted to protect cultural resources, including the Antiquities Act of 1906 (16 USC §432), the Archeological Resources Protection Act of 1979 (16 USC §470aa et seq.), and the National Historic Preservation Act of 1966, as amended (NHPA; 16 USC §470 et seq.). In addition to federal and state laws governing protection of cultural resources, Executive Order 11593 instructs all federal agencies to support the preservation of cultural properties. The Park Service incorporated direction from law and federal policy into development of the Cultural Resources Management Guidelines (NPS 1998), which recognizes five types of cultural resources: archeological resources, historic structures, ethnographic resources, cultural landscapes, and museum objects.

The California Office of Historic Preservation is responsible for oversight of the NHPA in California. The Office of Historic Preservation also is responsible for oversight of California Public Resources Codes Section 21083.2-21084.1, which state and local agencies to evaluate impacts of proposed projects to archaeological and historic structure resources. Federal and federally-sponsored programs and projects are reviewed pursuant to Sections 106 and 110 of the NHPA. Section 106 of the NHPA requires federal agencies to consider the effects of proposed federal undertakings on historic properties. NHPA requires federal agencies to initiate consultation with the State Historic Preservation Officer (SHPO) as part of the Section 106 review process. The State Office of Historic Preservation maintains the California Register of Historic Places. The California Register includes resources listed in or formally determined eligible for listing in the National Register of Historic Places, as well as some California State Landmarks and Points of Historical Interest. Properties of local significance that have been designated under a local preservation ordinance (local landmarks or landmark districts) or that have been identified in a local historical resources inventory may be eligible for listing in the California Register and are presumed to be significant resources for purposes of CEQA unless a preponderance of evidence indicates otherwise (PRC Section 5024.1, 14 CCR § 4850). The California Register is an authoritative guide to the state's historical resources and to which properties are considered significant for purposes of CEQA.

DOI has included the presence of historic or cultural resources and/or on properties listed or eligible for listing on the National Register of Historic Places and potential for impacts to them in its criteria for determining potential significance under NEPA for the purposes of determining whether an EIS should be prepared. Under CEQA, significant effects on cultural resources would be considered to occur if the proposed project causes a substantial adverse change in the significance of a historical or archaeological resource; directly or indirectly destroys a unique paleontological resource or site; or disturb any human remains, including those interred outside of formal cemeteries. Mandatory findings of significance under CEQA are triggered by elimination of important examples of the major period of California history and prehistory. CEQA guidelines for Marin and the Community Plan also examine the potential for the proposed project to cause a physical change that would adversely affect unique ethnic cultural values or religious or sacred sites within the Project Area.



General Assumptions and Methodologies:

- Cultural resource and historic structure surveys conducted as part of baseline studies found no potentially significant archaeological resources or historic structures, although some cultural landscape features were identified.
- The proposed project has the potential to affect cultural landscape features and other possible culture resources that have not yet been discovered through removal of agricultural and hydrologic management infrastructure and restoration of natural tidal and freshwater hydrologic processes. Because no other non-landscape cultural resources have been discovered in surveys conducted to date, this analysis is restricted to cultural landscapes only.
- While construction could have the potential to uncover previously undiscovered paleontological, archaeological, or historic resources, for the purposes of this evaluation, only the potential for impacts to known resources are assessed.
 - Evaluation takes into consideration compliance with standard BMPs that would require cultural resources specialist or tribal representative to be on-call during construction and, should resources be found, halting of construction until proper action can be taken.
- Intensity of impacts is evaluated with respect to their effects within the context of a cultural landscape. The proposed actions are evaluated at the cultural landscape scale (Table 71).

TABLE 71. CULTURAL RESOURCES -- CULTURAL LANDSCAPES

| | |
|--|---|
| <p>Source: Antiquities Act, ARPA, NHPA, SHPO, Park Service Management Policies, CCC/LCP Zone II, Marin CWP, Community Plan Nature: Beneficial, Adverse Context: Project Area Duration: Construction, Short-Term/Long-Term</p> | |
| No Impact | There would be no potential for impact to cultural landscape features or other cultural resources associated with the proposed project. |
| Negligible | The proposed project would have barely detectable effects (i.e., no effect on integrity, and value and significance not compromised) on recorded features that are part of, but not integral to , the park's 12 cultural landscapes or that are listed in, nominated for, or proposed for nomination to the National or California Register of Historic Places; OR would have a measurable effect (i.e., some effect on integrity, but value and significance not compromised) on recorded features, but features are NOT part of the Seashore's 12 cultural landscapes and are not being listed, nominated for, or proposed for nomination to the National or California Register of Historic Places. |
| Minor | The proposed project would have barely detectable effects (i.e., no effect on integrity, value, or significance) on recorded features that are integral to the park's 12 cultural landscapes or that are listed, nominated for, or proposed for nomination to the National or California Register of Historic Places; OR would have measurable effects (i.e., some effect on integrity, but value and significance not compromised) on recorded features that are part of, but not integral to , the Seashore's 12 cultural landscapes or that are listed, nominated for, or proposed for nomination to the National or California Register of Historic Places; OR would have appreciable or striking effects (i.e., moderate to major effects on integrity that affect value and significance) on recorded features, but features are NOT part of the Seashore's 12 cultural landscapes and are not listed, nominated for, or proposed for nomination to the National or California Register of Historic Places. |
| Moderate | The proposed project would have measurable effects (i.e., some effect on integrity, but value and significance not compromised) on recorded features that are integral to the park's 12 cultural landscapes or that are listed, nominated for, or proposed for nomination to the National or California Register of Historic Places; OR would have appreciable effects (i.e., moderate effects on integrity that affect value and significance) on recorded features that are part of, but not integral to , the Seashore's 12 cultural landscapes or that are listed, nominated for, or proposed for nomination to the National or California Register of Historic Places. |

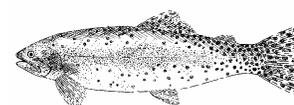


TABLE 71. CULTURAL RESOURCES -- CULTURAL LANDSCAPES

| | |
|----------------------|--|
| Major or Substantial | The proposed project would have appreciable effects (i.e., moderate effects on integrity that affect value and significance) on recorded features that are integral to the park's 12 cultural landscapes or that are listed, nominated for, or proposed for nomination to the National or California Register of Historic Places; OR would have substantial or major effects (i.e., major effects on integrity that have appreciable effects on value and significance) on recorded features that are part of, but not integral to , the Seashore's 12 cultural landscapes or that are listed, nominated for, or proposed for nomination to the National or California Register of Historic Places. |
|----------------------|--|

Impact Analysis

TABLE 72. INTENSITY, NATURE, TYPE, DURATION, AND CONTEXT OF IMPACTS FOR CULTURAL RESOURCES

All impacts would be considered Project Area and are considered Short-Term/Long-Term, unless otherwise specified.

| Impact Indicator | No Action | Alternative A | Alternative B | Alternative C | Alternative D |
|--|--|-----------------|-----------------|-----------------|-----------------|
| | Intensity, Nature, Type, Duration, and Context of Impact | | | | |
| Cultural Resources – Cultural Landscapes | No Impact | Adverse - Minor | Adverse - Minor | Adverse - Minor | Adverse - Minor |

No Action Alternative

Analysis: The No Action Alternative would have no impact on known cultural resource landscape features identified in the Project Area (Table 72). Under the No Action Alternative, levees, tidegates, and culverts in the Giacomini Ranch are not breached or removed, except for the 11-acre wetland restoration area in the northeastern corner of the East Pasture. The Park Service is required under its existing agreement with CalTrans to restore wetlands as mitigation for impacts caused by CalTrans to aquatic habitat from a road repair on State Route 1 in Marin County in exchange for the Park Service receiving monies to purchase and restore the Giacomini Ranch. The remainder of the levee would not be deconstructed, although there would be no levee maintenance. Olema Marsh is also not restored, and there would be no new public access facilities.

Surveys of the Giacomini Ranch in 2002 identified two previously unrecorded cultural landscape features: a portion of the North Pacific Coast Railroad grade (ASC-69/01-01) and a historic-period levee system and dam (ASC-69/01-02; Newland 2003). The dam was a temporary gravel dam that the Giacomini installed each summer to provide freshwater for irrigation purposes. The Giacomini stopped summer dam installation in 1998 prior to selling the property to the Park Service. While the original levee system was constructed more than 50 years ago, the degree of alteration to this system due to repairs and reinforcement (e.g., rip-rap) reduces its value as a historic resource (Mark Rudo, Park Service, *pers. comm.*). The study determined that neither resource was eligible for listing on the National Register of Historic Places (Newland 2003). In 2004, four additional landscape features were recorded by Garcia and Associates (2004): two manure lagoons and two corrals in the main complex. The corrals are not on Park Service property. None of these features was considered eligible for National Register of Historic Places listing (Garcia and Associates 2004).

Under the No Action Alternative, none of these landscape features would be impacted. This alternative would have no impact on historic properties. It is considered unlikely that the negligible amount of construction that would occur as part of the mitigation/restoration component would unearth other potentially significant archaeological or historic features, although the likelihood is considered extremely low. Construction BMPs would be instituted to ensure that any finds that occur during construction are handled properly.

Possible Additional Mitigation Measures: No mitigation measures would be proposed under this alternative.

Effectiveness of Possible Additional Mitigation Measures: Not applicable

Cumulative Impacts: There would be no potential for cumulative effects with other projects, because the No Action Alternative would have no impact.



Impairment Analysis: The No Action Alternative would not result in impairment to park cultural resources.

Conclusions: The No Action alternative would have no impact on known cultural resources or cultural landscape features or historic properties, as there would be no large-scale restoration, demolition of agricultural infrastructure, or construction of public access facilities.

Alternative A

Analysis: Alternative A would have a minor adverse effect on cultural resource landscape features identified in the Project Area (Table 72). Under Alternative A, only the East Pasture would be restored, with new public access facilities limited to the eastern and southern perimeters of the East Pasture. There would be no restoration or construction of new public access facilities in the West Pasture or Olema Marsh. The levees along and tidegate/culvert in the West Pasture and Tomasini Creek would be retained. In the East Pasture, restoration would involve breaching of levees in the East Pasture along Lagunitas Creek, and excavation of new tidal channels. The southwestern corner of the creek bank would be regraded to a more stable profile. Most of the actions under this alternative focus on removal or restoration of dairy infrastructure such as barn removal, filling of ditches, ripping of compacted roads, fence removal, and removal of pumps, pipelines, and concrete spillways.

As discussed under the No Action Alternative, surveys of the Giacomini Ranch in 2002 identified two previously unrecorded cultural landscape features: a portion of the North Pacific Coast Railroad grade (ASC-69/01-01) and a historic-period levee system and dam (ASC-69/01-02; Newland 2003). The dam is no longer in existence, although the pump housing remains. While the original levee system was constructed more than 50 years ago, the degree of alteration to this system due to repairs and reinforcement (e.g., rip-rap) reduces its value as a historic resource (Mark Rudo, Park Service, *pers. comm.*). The study determined that neither resource was eligible for listing on the National Register of Historic Places (Newland 2003). In 2004, four additional landscape features were recorded by Garcia and Associates (2004): two manure lagoons and two corrals in the main complex. The corrals are not on Park Service property. None of these features was considered eligible for National Register of Historic Places listing (Garcia and Associates 2004). None of the buildings on the property were considered to have cultural significance. Therefore, this alternative would have no impact on historic properties.

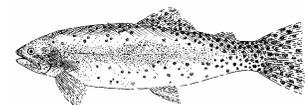
Under Alternative A, the two manure lagoons would be filled and regraded to blend with surrounding topography. This area would serve as a Viewing Area, with interpretative exhibits and other simple visitor facilities. An eastern perimeter trail would be constructed on the historic railroad bed using a combination of minor grading and placement of fill and culverts on a 3,200- linear-foot section that has problems with drainage from adjacent hillside and toeslope seeps. These actions would have striking effects on the integrity, significance, and value of these recorded features, but as the features are not part of or integral to the park's 12 cultural landscapes or considered eligible for listing to the National or California Register of Historic Places, these effects are considered adverse, but minor. There is a possibility that some of the earthwork that occurs in the East Pasture during construction would unearth other potentially significant archaeological or historic features, but the likelihood is considered relatively low. Construction BMPs would be instituted to ensure that any finds that occur during construction are handled properly.

Possible Additional Mitigation Measures: No mitigation measures would be proposed under this alternative.

Effectiveness of Possible Additional Mitigation Measures: Not applicable

Cumulative Impacts: There is potentially one project that would have cumulative effects should Alternative A be implemented. The Giacomini Trust owns parcels along C Street on the eastern side of the dairy facility. These parcels are zoned Commercial-Residential (CRAB-2), with a minimum 10,000 square-foot-lot. It is unlikely that possible future development along C Street would have more than a cumulatively minor impact on cultural resources under Alternative A.

Impairment Analysis: Alternative A would not result in impairment to park cultural resources.



Conclusions: Alternative A would have minor adverse impacts on known, recorded landscape features through filling and regrading of manure lagoons and construction of a culverted berm trail on the historic railroad bed. However, this alternative would have no impact on historic properties.

Alternative B

Analysis: Alternative B would have very similar minor adverse effects on recorded cultural resource landscape features identified in the Project Area as Alternative A (Table 72), although, under this alternative, the culverted berm trail on the historic railroad bed would be replaced with a low-elevation boardwalk trail that would have slightly less impact on this cultural landscape feature (Table 72). Under Alternative B, the East and West Pastures would be restored, but not Olema Marsh. Most of the new public access facilities would continue to be limited to the eastern and southern perimeters of the East Pasture, although a viewing area would replace the informal existing trail on the West Pasture north levee, which would be removed. Restoration would involve complete removal of levees in the East Pasture along Lagunitas Creek and excavation of even more new tidal channels. Breaches would be created in the West Pasture levee. The whole southern East Pasture creek bank would be restored through removal of rip-rap bank stabilization and regraded, where needed, to a more stable profile. As with Alternative A, this alternative would involve removal or restoration of dairy infrastructure and discontinuation of agricultural management practices.

With this and other alternatives, there is a possibility that some of the earthwork that occurs in the East and West Pastures during construction would unearth other potentially significant archaeological or historic features, but the likelihood is considered relatively low. Construction BMPs would be instituted to ensure that any finds that occur during construction are handled properly.

Possible Additional Mitigation Measures: No mitigation measures would be proposed under this alternative.

Effectiveness of Possible Additional Mitigation Measures: Not applicable

Cumulative Impacts: Cumulative impacts would be the same as discussed under Alternative A.

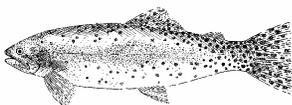
Impairment Analysis: Alternative B would not result in impairment to park cultural resources.

Conclusions: Alternative B would have very similar minor adverse effects on recorded cultural resource landscape features identified in the Project Area as Alternative A, although, under this alternative, the culverted berm trail on the historic railroad bed would be replaced with a low-elevation boardwalk trail that would have slightly less impact on this cultural landscape feature. This alternative would have no impact on historic properties.

Alternative C

Analysis: Alternative C would have very similar minor adverse effects on recorded cultural resource landscape features identified in the Project Area as Alternative B (Table 72). However, under this alternative, there would be no through trail on the historic railroad bed, but rather two spur trails that would only require minor clearing and grading and negligible amounts of fill, if any. Under Alternative C, the East and West Pastures would be restored, along with Olema Marsh. Restoration would involve complete removal of levees in the East and West Pastures along Lagunitas Creek and excavation of even more new tidal channels. Tomasini Creek would be realigned into one of its historic alignments midway through the East Pasture. In Olema Marsh, an adaptive restoration approach would be undertaken, with initial excavation of a shallow berm and the Bear Valley Creek channel to improve hydraulic connectivity and improve drainage of currently impounded waters. As with the other alternatives, this alternative would involve removal or restoration of dairy infrastructure and discontinuation of agricultural management practices.

No archaeological or historic structures have been identified in or near Olema Marsh, although there is one recorded archaeological site, CA-MRN-378, to the west of Bear Valley Creek upstream of Bear Valley Road (Rudo 2006). This alternative would be unlikely to impact this recorded feature, either directly or indirectly. As with the other alternatives, there is a possibility that some of the earthwork that occurs in the East and



West Pastures and Olema Marsh during construction would unearth other potentially significant archaeological or historic features, but the likelihood is considered relatively low. Construction BMPs would be instituted to ensure that any finds that occur during construction are handled properly.

Possible Additional Mitigation Measures: No mitigation measures would be proposed under this alternative.

Effectiveness of Possible Additional Mitigation Measures: Not applicable

Cumulative Impacts: Cumulative impacts would be the same as discussed under Alternative A.

Impairment Analysis: Alternative C would not result in impairment to park cultural resources.

Conclusions: Alternative C would have very similar minor adverse effects on recorded cultural resource landscape features identified in the Project Area as Alternative B, although, under this alternative, a through trail would not be constructed on the historic railroad bed. The two spur trails proposed would involve only minor clearing and grading and possibly negligible fill. This alternative would have no impact on historic properties.

Alternative D

Analysis: Alternative D would have very similar minor adverse effects on recorded cultural resource landscape features identified in the Project Area as Alternative C (Table 72). However, under this alternative, there would be only one spur trail on the historic railroad bed that would only require minor clearing and grading. Under Alternative D as with Alternative C, the East and West Pastures would be completely restored, along with Olema Marsh. Almost all of the differences between Alternative D and C relate to excavation of a limited portion of the East Pasture to intertidal elevations, complete realignment of Tomasini Creek into one of its historic alignments, replacement of the Tomasini Creek Mesa Road culvert with a bridge or arch culvert, and further scaling back of new public access facilities through elimination of the bridge across Lagunitas Creek and one of the spur trails on the eastern perimeter. As with the other alternatives, this alternative would involve removal or restoration of agricultural infrastructure and discontinuation of agricultural management practices.

As discussed under Alternative C, no archaeological or historic structures have been identified in or near Olema Marsh, although there is one recorded archaeological site, CA-MRN-378, to the west of Bear Valley Creek upstream of Bear Valley Road (Rudo 2006). This alternative would be unlikely to impact this recorded feature, either directly or indirectly. As with the other alternatives, there is a possibility that some of the earthwork that occurs in the East and West Pastures and Olema Marsh during construction would unearth other potentially significant archaeological or historic features, but the likelihood is considered relatively low. Construction BMPs would be instituted to ensure that any finds that occur during construction are handled properly.

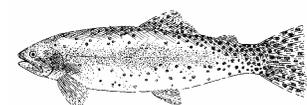
Possible Additional Mitigation Measures: No mitigation measures would be proposed under this alternative.

Effectiveness of Possible Additional Mitigation Measures: Not applicable

Cumulative Impacts: Cumulative impacts would be the same as discussed under Alternative A.

Impairment Analysis: Alternative D would not result in impairment to park cultural resources.

Conclusions: Alternative D would have very similar minor adverse effects on recorded cultural resource landscape features identified in the Project Area as Alternative C, although, under this alternative, only one spur trail would be constructed on the historic railroad bed through minor clearing and grading. This alternative would have no impact on historic properties.



Public Health and Safety – Flooding

Laws, Regulations, Policies, and Criteria Guiding Impact Analysis

Federal and local regulations have been promulgated to reduce both the exposure of communities and parks to damaging flooding and the funds required to rebuild communities and parks following such major floods (Clearwater Hydrology and Nichols-Berman 2002). The National Flood Insurance Act of 1968 and the Flood Disaster Prevention Act of 1973 established the National Flood Insurance Program (NFIP) which is administered by the Federal Emergency Management Agency (FEMA; Clearwater Hydrology and Nichols Berman 2002). The NFIP provides insurance coverage to property owners within flood hazard areas that are delineated on published Flood Insurance Rate Maps (FIRMs) for both the 100-year and 500-year flood events (Clearwater Hydrology and Nichols-Berman 2002). In order to qualify for the program, candidate municipalities and unincorporated county areas must adopt local floodplain development policies and enforce flood control measures for new construction and redevelopment projects within their jurisdictions (Clearwater Hydrology and Nichols-Berman 2002).

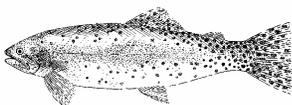
The Park Service specifically addresses flooding in its 2006 Management Policies, which are consistent with Executive Order 11988 and Directors Order 77-2. Parks are directed to “minimize potentially hazardous conditions associated with flooding” (NPS 2001; Section 4.6.4). Furthermore, parks should “avoid direct and indirect support of floodplain development and actions that could ... increase flood risk” (NPS 2006, Section 4.6.4). When development must occur within a floodplain, non-structural measures should be used to reduce hazards to human life and property, while minimizing impacts to the natural resources of floodplains (NPS 2006; Section 4.6.4). Development must also be consistent with the standards and criteria of the NFIP (NPS 2006; Section 4.6.4). County policies and policies of LCP Zone II requires that new development not create a flood hazard, and the Coastal Resources Management Plan stipulates that projects should “minimize risks to life and property in areas of high geologic, flood, and fire hazard” (Section 30253).

The emphasis on public health and safety is reiterated under significance criteria developed by the DOI for NEPA and by the state for CEQA. Under NEPA, potentially significant impacts on public health and safety trigger the need to prepare an EIS. CEQA characterizes projects that place structures that would impede or redirect flood flows in 100-year flood hazard areas or that would expose people or structures to a significant risk of loss, injury or death involving flooding as having significant impacts. County CEQA guidelines focus on exposure of people or property to water-related hazards such as flooding without requiring that exposure creates a significant risk of loss, injury, or death.

General Assumptions and Methodologies

- Based on the Marin CWP, the Project Area falls within the 100-year flood hazard zone (Clearwater Hydrology and Nichols-Berman 2002).
- Hydrologic modeling shows that the existing levees control and constrain water level and process in association with 2-12 year flooding events. During larger scale events, the levees are predicted to overtop in many areas, and would play a very small role in controlling flooding conditions and water levels.
- The proposed project has the potential to affect flood risk to adjacent homes, properties, and roads through removal/replacement of agriculture and hydrologic management infrastructure and restoration of tidal and freshwater hydrologic processes. Specific actions that have the potential to affect flooding include removal or breaching of levees, excavation, construction of berms and bridges, and changes in sediment transport processes within the Project Area that affect net aggradation or erosion of the creek channel bottoms.
- In keeping with Park Service Management Policies, the project proponents identified flood risk and not elevating flood risk above currently existing levels as one of the project’s primary constraints.

Public Health and Safety – Flooding: For this document, the intensity of impacts related to flood hazards associated with the proposed project will be analyzed by assessing increases in flood risk to homes, properties, and roads. As NEPA, CEQA, and local ordinances focus on increases in risks to public safety, analysis will target actions that increase flooding of homes, garages, driveways, and public roads such that flooding of these areas could **increase** the risk of injury or **increase** the risk that homeowners could not leave to access emergency services or that emergency services such as ambulances or paramedics could not



access the property or properties. Because adjacent properties and roads already flood frequently, impact thresholds will be based on **changes** in flooding that could pose risks to public safety, not just the presence or absence of flooding. Changes in flooding will be evaluated using changes in vertical flood height (feet).

Impact thresholds are based on potential increases in vertical flood elevation that could pose negligible to major or substantial risks to public health and safety (Table 73). Changes in vertical flood elevation will be assessed using results of computer hydraulic modeling (KHE 2006a) and topographic information (USGS 2003b). Changes in vertical flood elevation and risk to public health and safety will be assessed using the threshold criteria outlined below for three general areas (Figure 41):

- 1) East Levee Road and properties and homes along Levee Road;
- 2) West Levee Road adjacent to White House Pool County Park and Olema Marsh, and
- 3) Sir Francis Drake Boulevard in Inverness Park and properties and homes on the east side of the road contiguous with the Giacomini Ranch West Pasture.

Based on information provided by County public works, roads are assumed for analysis purposes to be closed to the public when there is ≥ 1 foot of water. Changes in vertical flood elevations would differ depending on the severity of the flood event, which were analyzed through hydraulic modeling for the 2- to 100-year flood events. When differences exist in changes in vertical flood elevations, either the largest beneficial change or the largest adverse change is used to rate the intensity of effects, however, some alternatives could involve both adverse and beneficial effects. These are discussed under each of the alternatives.

TABLE 73. PUBLIC HEALTH AND SAFETY - FLOODING

| | |
|---|---|
| Source: Flood Disaster Prevention Act, Park Service Management Policies, Marin CWP, CCC/LCP Zone II Nature: Beneficial, Adverse Context: Local Community Duration: Long-Term | |
| No Impact | There would be no potential for impact to flooding of adjacent properties, homes, and public roads associated with the proposed project. |
| Negligible | There would be a negligible change in vertical flood elevations for adjacent homes, garages, driveways, and public roads (<0.25 vertical feet) associated with the proposed project; <i>OR</i> If adverse and increases in flooding exceed 0.25 vertical feet, the increase would NOT impact any private properties or properties owned by other agencies, homes, garage, driveways, or public roads or increase flooding to levels that would increase risk to public health and safety by decreasing ability of homeowners to access emergency services or decrease of emergency services to properties and public roads. |
| Minor | There would be a minor change in vertical flood elevations for adjacent properties, homes, garages, driveways, and public roads (>0.25 and ≤ 0.5 vertical feet) associated with the proposed project; <i>OR</i> If increases in flooding exceed 0.5 vertical feet, the increase would cause only minor flooding of undeveloped portions of private properties or properties owned by other agencies. It would NOT increase flooding to levels that would increase risk to public health and safety by decreasing ability of homeowners to access emergency services or decrease of emergency services to properties and public roads. |
| Moderate | There would be a moderate change in vertical flood elevations for adjacent properties, homes, garages, driveways, and public roads (>0.5 and ≤ 1.0 vertical feet) associated with the proposed project; <i>OR</i> If adverse and increases in flooding exceed 1.0 vertical foot, the increase might cause moderate flooding of undeveloped portions of private properties or properties owned by other agencies, but it would NOT increase flooding to levels that would increase risk to public health and safety by decreasing ability of homeowners to access emergency services or decrease of emergency services to properties and public roads. |
| Major or Substantial | There would be a substantial or major change in vertical flood elevations for adjacent homes, garages, driveways, and public roads (>1.0 vertical feet) associated with the proposed project. If adverse, the increase would potentially increase risk to public health and safety by substantially increasing flooding of homes, driveways, and public roads to levels that would decrease ability of homeowners to access emergency services or decrease of emergency services to properties and public roads. |

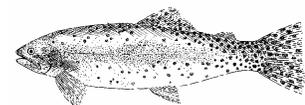


Figure 41. Flood Assessment Areas



Impact Analysis

TABLE 74. INTENSITY, NATURE, TYPE, DURATION, AND CONTEXT OF IMPACTS FOR PUBLIC HEALTH AND SAFETY - FLOODING
All impacts would be considered Local Community and are considered Short-Term/Long-Term, unless otherwise specified.

| Impact Indicator | No Action | Alternative A | Alternative B | Alternative C | Alternative D |
|---|--|-----------------------|------------------------------|------------------------------|------------------------------|
| | Intensity, Nature, Type, Duration, and Context of Impact | | | | |
| Public Health and Safety – Flooding Levee Road - East | No Impact | Beneficial - Minor | Beneficial - Minor | Beneficial - Minor | Beneficial - Minor |
| Public Health and Safety – Flooding Levee Road - West | No Impact | Beneficial - Moderate | Beneficial – Moderate/ Major | Beneficial – Moderate/ Major | Beneficial – Moderate/ Major |
| Public Health and Safety – Flooding Sir Francis Drake Blvd- Inverness Park | No Impact | No Impact | Adverse - Minor | Adverse - Moderate | Adverse - Moderate |

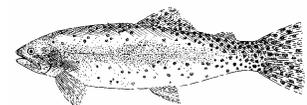
No Action Alternative

Analysis: The No Action Alternative would have no impact on risks to public health and safety associated with flooding in the Project Area and local community (Table 74). Under the No Action Alternative, levees, tidegates, and culverts in the Giacomini Ranch are not breached or removed, except for the 11-acre wetland restoration area in the northeastern corner of the East Pasture. The remainder of the levee would not be deconstructed, although there would be no levee maintenance. Olema Marsh is also not restored, and there would be no new public access facilities.

Under existing conditions, the Project Area and homes and county roads adjacent to the Project Area flood frequently. The Project Area and vicinity occurs in a low-lying alluvial valley at the confluence of at least five medium to large creeks, including Lagunitas Creek, Olema Creek, Bear Valley Creek, Fish Hatchery Creek, and Tomasini Creek. There are a number of smaller creeks that also cause flooding of roads and adjacent properties and homes.

Sir Francis Drake Blvd- Inverness Park: The closest homes to the Project Area are four homes along Sir Francis Drake Boulevard that are contiguous with the Giacomini Ranch West Pasture. While the West Pasture levees keep Lagunitas Creek waters far to their east, each of these properties is subject to flooding from the smaller Inverness drainages flowing adjacent to their property. Site surveys indicate that the elevation of these structures is 4- to 7 feet higher than the elevation of the West Pasture levee (10-12 feet). Hydrologic modeling suggests that the West Pasture levees overtop during flood events with 12-year recurrence interval (e.g. that occur, on average, every 12 years). For these homes, the West Pasture levees provide little in the way of protection for these homes from Lagunitas Creek flooding under flood events greater than the 12 year event. Hydrologic investigations and modeling conducted as part of baseline studies point to the primary flood risk currently for these properties and portions of Sir Francis Drake Boulevard in Inverness Park being the drainages that flow off the Inverness Ridge. These tributaries are culverted underneath Sir Francis Drake Boulevard and run either through or directly adjacent to at least three of these four properties and often deposit large amount of sediment that increase flood water stage or vertical flood elevation and cause back-up of floodwaters onto their properties (KHE 2006a).

Levee Road /Olema Marsh: Properties on Levee Road, directly south of the Giacomini Ranch East Pasture, are frequently flooded by Lagunitas Creek. A number of these homes have been elevated since the 1982 flood to decrease flood frequency. Hydrologic investigations and modeling conducted as part of baseline studies suggest that the height of the Giacomini Ranch East Pasture levees east of the Old Summer Dam locations is higher than the opposite creek bank where the Levee Road homes are located (KHE 2006a). This disparity between levee and creek bank height directs flood flows toward the homes (KHE 2006a). On average, flood flows overtop the southern bank of Lagunitas Creek during 3-year flood events (KHE 2006a). Local roads are typically posted with caution signs when there is approximately 4-6 inches of water on the road, and they are



typically closed when there is somewhere between 1- to 2 feet of water, although emergency vehicles would be able to continue to use roads unless there is more than 2 feet of water (P. Maendle, Senior Road Maintenance Supervisor, County Public Works, *pers. comm.*).

Under the No Action Alternative, there would be no short term changes to levees in portions of the Project Area that would affect flooding. Over time, it is possible that levees would degrade and start to increase flood relief for homes along Levee Road, particularly as there would be no levee maintenance under the No Action Alternative. Some of the levees breached during the December 2005 storm event, and, according to some Levee Road residents, this breaching was accompanied by a large drop in flood stage or floodwater elevations. These levees are currently in the process of being repaired by the Giacomini family.

Flood risks are sometimes elevated when creek or streambeds aggrade or increase in elevation due to excessive sediment deposition or discontinuities in sediment transport. Based on field investigations and results of hydraulic modeling, streambed elevations in the portion of Lagunitas Creek within the Project Area appear to be relatively stable and not actively decreasing or increasing (KHE 2006a). Under the No Action Alternative, stream power and transport capacity in Lagunitas Creek would remain to baseline conditions, with transport of at least silts and fine sands occurring throughout the Project Area, except in between White House Pool and the cattle crossing (KHE 2006a). These results suggest that sediment transport processes in Lagunitas Creek under the No Action Alternative should not affect channel and streambed morphology or change the potential for flooding.

Within the Levee Road section, some of the worst flooding has occurred with the combination of high tides (>6.0 feet MLLW) and watershed flooding. This occurred in 1982 and during the New Year's Eve storm in 2005. Table 20 in Chapter 3 under Public Health and Safety shows the frequency of flooding relative to the vertical flood elevations predicted by computer hydraulic modeling (2006a) and topographic surveys (USGS 2003b).

In Olema Marsh, surface water levels have increased nearly 6 feet since the early 1990s. These elevated static water levels would continue to threaten Levee and Bear Valley Roads, which are already frequently flooded during even smaller flood events. These roads serve as important connecting roadways for residents of Inverness Park, Inverness, and other areas on the Point Reyes Peninsula and are the only connection to the "mainland" portion of Marin County.

While levee degradation is not predictable, this analysis assumes that breaches in the levees could occur within 5 years depending on climatic conditions and other factors. Therefore, the No Action Alternative is considered to have no effect on flooding in the short term. Over the long-term, flooding could increase under the No Action Alternative, because of the projected increases in sea level due to sea level rise. Recently published studies suggest that sea level rise rates may be much greater than originally predicted, with water levels rising as much as 3 feet by 2100 (Overpeck et al. 2006).

Possible Additional Mitigation Measures: No mitigation measures would be proposed under this alternative.

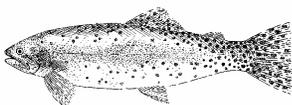
Effectiveness of Possible Additional Mitigation Measures: Not applicable

Cumulative Impacts: There would be no potential for cumulative effects with other projects, because the No Action Alternative would have no impact.

Conclusions: The No Action alternative would have no impact on public health risks associated with flooding on Sir Francis Drake and Levee Road. The effects of levee degradation may be counter acted by sea level rise. Overall, long-term effects of the no action alternative would not impact existing public health risks associated with flooding on Sir Francis Drake and Levee Road.

Alternative A

Analysis: Alternative A would have beneficial minor to major effects by reducing risks to public health and safety associated with flooding in the Project Area and local community (Table 74). Under Alternative A, only the East Pasture would be restored, with new public access facilities limited to the eastern and southern



perimeters of the East Pasture and western margin of the West Pasture (programmatic evaluation of a trail access to Inverness Park). The southern perimeter trail would include construction of a single span bridge across Lagunitas Creek, near the old summer dam location. There would be no restoration or construction of new public access facilities in the West Pasture or Olema Marsh. The levees along and tidegate/culvert in the West Pasture and Tomasini Creek would be retained. In the East Pasture, restoration would involve breaching of levees in the East Pasture along Lagunitas Creek, and excavation of new tidal channels. The southwestern corner of the creek bank would be regraded to a more stable profile. Most of the actions under this alternative focus on removal or restoration of agricultural infrastructure such as filling of ditches, ripping of compacted roads, fence removal, and removal of pumps, pipelines, and concrete spillways.

Sir Francis Drake Blvd- Inverness Park: In the West Pasture, the potential effects with respect to flooding of the four homes along Sir Francis Drake Boulevard would be the same as those described under the No Action Alternative. No change in vertical flood elevations would occur under the 2- to 10-year flood events.

As discussed under the No Action Alternative, hydrologic investigations and modeling conducted as part of baseline studies point to the primary flood risk currently for these properties and portions of Sir Francis Drake Boulevard in Inverness Park being the drainages that flow off the Inverness Ridge. These tributaries are culverted underneath Sir Francis Drake Boulevard and run either through or directly adjacent to at least three of these four homes and often deposit large amount of sediment that increase flood water stage or vertical flood elevation and cause back-up of floodwaters onto their properties (KHE 2006a).

Under Alternative A, public access facilities in the Sir Francis Drake/Inverness Park area include programmatic analysis of the trail between White House Pool and Inverness Park. There would be no overlooks in this area. The trail route to Inverness Park would be subject to flooding, but would be constructed in a manner that could withstand most flood flows.

Levee Road /Olema Marsh: As discussed under the No Action Alternative, properties on Levee Road, directly south of the Giacomini Ranch East Pasture, are frequently flooded by Lagunitas Creek. A number of these homes have been elevated since the 1982 flood to decrease flood frequency. As noted above, hydrologic investigations and modeling conducted as part of baseline studies show that the levees in the East Pasture maintain a disparate water level which acts to direct flows toward the homes.

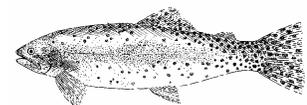
Under Alternative A, the frequency of overbank flooding of the southern bank of Lagunitas Creek would be reduced. Because the greatest potential for flooding occurs when high creek discharge from storm events is combined with an extreme high tide (>6.0 feet MLLW), all hydraulic modeling of changes in vertical flood elevation assume an extreme high tide, as well as creek flooding (KHE 2006a).

For the eastern portion of Levee Road, modeling indicates that vertical flood elevations could drop as much as 0.3 to 0.5 feet during most flood event scenarios (2 to 100 year events) based on hydraulic modeling results, resulting in a minor beneficial effect on flooding for the local community (KHE 2006a).

Changes in vertical flood elevations in Lagunitas Creek increase with distance downstream from the Green Bridge due to changes in slope of the water surface (KHE 2006a). Based on results from hydraulic modeling, the portions of Levee Road directly adjacent to White House Pool County Park and Olema Marsh would have reductions in vertical flood elevations ranging as high as 0.5- to 0.9 feet during 10-year flood events under Alternative A (KHE 2006a), resulting in a moderate beneficial effect on flooding and flood risks in the local community. Levee Road is the primary connecting roadway for the local community and would be one of the exit routes for people in Inverness Park, Inverness, and other areas on the Point Reyes Peninsula.

During a 5-year flood event, this alternative would decrease the potential for flooding along at least short (~300 feet) section of Levee Road and reduce the depth of flooding in the lowest sections near Olema Marsh by as much 0.5- to 0.8 feet relative to baseline conditions (KHE 2006a). This reduction in flooding depth could potentially reduce the number of times, or duration of Levee Road closure. Based on these changes, Alternative A would have a moderate beneficial effect on the western portions of Levee Road.

Flood risks are sometimes be elevated when creek or streambeds aggrade or increase in elevation due to excessive sediment deposition or discontinuities in sediment transport. Based on field investigations and results of hydraulic modeling, streambed elevations in the portion of Lagunitas Creek within the Project Area would be relatively stable and not actively decreasing or increasing (KHE 2006a). Under Alternative A, stream power and transport capacity in Lagunitas Creek would be expected to remain very similar to that



under baseline conditions, at least in the reach upstream of White House Pool (KHE 2006a). Downstream of White House Pool, stream power would decrease slightly, although the capacity to transport at least silts and fine sands would remain equivalent (KHE 2006a). These results suggest that any changes in sediment transport processes in Lagunitas Creek caused by breaching of the East Pasture levee and other restoration or public access components should not affect channel and streambed morphology or change the potential for flooding.

Alternative A would include construction of the southern perimeter through-trail, including a new pedestrian-bicycle bridge across Lagunitas Creek. The approximately 2,750-foot enhanced trail from the Giacomini dairy facility would lead to construction of a 200-foot-long, 8-foot-wide bridge on Lagunitas Creek at the location of the old summer gravel dam that the Giacomini used to install for irrigation purposes. The bridge would be constructed at a relatively narrow portion of the Lagunitas Creek channel, which would enable the Park Service to construct the bridge such that none of the footings would be within the active floodplain. The bridge, however, would be within the 100-year floodplain, as would all of the other trail facilities constructed. Trails would be developed and maintained with the assumption that they would be flooded on a regular basis and would be constructed accordingly in terms of construction materials and methods. Therefore, trails are not included within development totals.

The bicycle-pedestrian bridge would be constructed to accommodate flows equal to or greater than the Green Bridge, which is located directly immediately upstream. Design elevations for the bridge would take into account reductions in vertical flood elevations in Lagunitas Creek with removal of the Lagunitas Creek levees under Alternative A. Based on hydraulic modeling analyses, the portions of Levee Road directly adjacent to White House Pool County Park and Olema Marsh would have reductions in vertical flood elevations ranging as high as in vertical flood elevations ranging as high as 0.5- to 0.9 feet during 10-year flood events under Alternative A (KHE 2006a). As a result, under restored conditions, elevation of the bridge would only need to exceed 15 feet NAVD88 to allow for conveyance of 10-year flood flows and 17.2 feet NAVD88 to allow for conveyance of the 50- and 100-year flood flows at the proposed location (KHE 2006a). The bridge would likely be designed to have at least 1- to 2-feet of freeboard. Using this type of approach, hydraulic modeling results suggest that the bridge would not have more than negligible adverse impacts on flooding in the Project Area.

Over the long-term, some of the benefits provided by Alternative A could be offset by increases in flooding related to projected increases in sea level due to sea level rise. Recently published studies suggest that sea level rise rates may be much greater than originally predicted, with water levels rising as much as 3 feet by 2100 (Overpeck et al. 2006). This rate of sea level rise could lead to regular inundation of large portions of the East Pasture below 4 ft NAVD88.

Possible Additional Mitigation Measures: No mitigation measures would be proposed under this alternative.

Effectiveness of Possible Additional Mitigation Measures: Not applicable.

Cumulative Impacts: The Bear Valley Creek Watershed Enhancement and Fishery Restoration Project would replace failing or underperforming hydrologic infrastructure at a number of locations on Bear Valley Creek within the Seashore boundaries. There is no definitive timeframe for construction of this project. This project would be expected to benefit hydrologic and ecological processes on Bear Valley Creek and Olema Marsh, which may have direct and indirect impacts on flooding in Olema Marsh and even Lagunitas Creek. The effect of this project on flooding in Olema Marsh and Lagunitas Creek would be expected to have no more than a minor beneficial effect on flooding. Cumulatively, Alternative A, in combination with the Bear Valley Creek Watershed Enhancement and Fishery Restoration Project, would be expected to still have minor beneficial effects on flooding and risks from flooding to public health and safety.

Conclusions: Alternative A would have minor beneficial effects on flooding and risks from flooding to public health and safety through a reduction in flood frequency on Levee Road and vertical flood elevations along Levee Road. These reductions would not only benefit safety and emergency access for homeowners adjacent to the Project Area, but would decrease the extent of flooding along a short section of Levee Road and possibly reduce the potential for closure of Levee Road due to excessive flooding during more frequent (up to 5-year) flood events. Alternative A would not result in changes to the existing conditions to the properties along Sir Francis Drake and Inverness Park. Construction of a bridge as part of the southern perimeter trail



would have no more than negligible adverse impacts on flooding, because bridge footings would be placed outside of the active floodplain, and the bridge would be high enough in elevation to allow for conveyance for larger flood flows.

Alternative B

Analysis: Alternative B would have beneficial minor to major effects on flooding and flood risks to public safety along Levee Road, but would have potentially minor adverse effects on private properties, if not homes, in Inverness Park adjacent to the West Pasture (Table 74). Under Alternative B, the East and West Pastures would be restored, but not Olema Marsh. Most of the new public access facilities would continue to be limited to the eastern and southern perimeters of the East Pasture and western margin of the West Pasture (programmatic evaluation of a trail access to Inverness Park). The southern perimeter trail would include construction of a single span bridge across Lagunitas Creek, near the old summer dam location. A viewing area would replace the informal existing trail on the West Pasture north levee, which would be removed. Restoration would involve complete removal of levees in the East Pasture along Lagunitas Creek and excavation of even more new tidal channels. Breaches would be created in the West Pasture levee. The armored reach of Lagunitas Creek in the East Pasture would be restored through removal of rip-rap bank stabilization, regraded and revegetated. As with Alternative A, this alternative would involve removal or restoration of agricultural infrastructure and discontinuation of agricultural management practices.

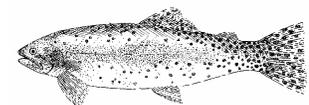
Sir Francis Drake Blvd- Inverness Park: The closest homes to the Project Area are four homes along Sir Francis Drake Boulevard that are contiguous with the Giacomini Ranch West Pasture. While the West Pasture levees keep Lagunitas Creek waters far to their east, each of these properties is subject to flooding from the smaller Inverness drainages flowing adjacent to their property. Site surveys indicate that the elevation of these structures is 4- to 7 feet higher than the elevation of the West Pasture levee (10-12 feet). Hydrologic modeling suggests that the West Pasture levees overtop during flood events with 12-year recurrence interval (e.g. that occur, on average, every 12 years). For these homes, the West Pasture levees provide little in the way of protection for these homes from Lagunitas Creek flooding under larger flood events.

As discussed under the No Action Alternative, hydrologic investigations and modeling conducted as part of baseline studies point to the primary flood risk currently for these properties and portions of Sir Francis Drake Boulevard in Inverness Park being the drainages that flow off the Inverness Ridge. These tributaries are culverted underneath Sir Francis Drake Boulevard and run either through or directly adjacent to at least three of these four homes and often deposit large amount of sediment that increase flood water stage or vertical flood elevation and cause back-up of floodwaters onto their properties (KHE 2006a).

Under Alternative B, the frequency of flooding in the West Pasture would increase from 12-year flood events to 2-year flood events (KHE 2006a). Hydraulic modeling indicates that, under Alternative B, because levees in the southern portion of the pasture would not be completely removed, but outflow of waters would be increased by removal of the West Pasture north levee and Fish Hatchery Creek tidegate, vertical flood elevations in the West Pasture would decrease by as much as 0.4 feet under 2- to 10-year flood events (KHE 2006a). However, during 50-year flood events, vertical flood elevations would increase up to potentially 1.0 foot within the easternmost undeveloped portion of some of the private properties, because of the increase in the volume of water and the loss of the channeling effect that the levees might have on Lagunitas Creek flood flow (KHE 2006a). This increase in vertical flood elevation would cause increased flooding of the lower and one-tenth to one-third of the two private properties north of Fish Hatchery Creek. The latter is an undeveloped, marshy area that would already be flooded to a lesser degree under baseline conditions, while the former is pasture (KHE 2006a). While the flood peak under the 50-year event would be expected to be higher, the duration of flooding would be expected to decrease considerably, because the removal of the north levee and tidegate would not cause extensive ponding as they do under baseline conditions. Because the maximum 1-foot increase in vertical flood elevation would not negatively affect homes, driveways, or access routes to roads, the adverse changes under Alternative B during the 50-year flood event are characterized as minor.

Potential effects of flooding on public access facilities such as the bridge in the Sir Francis Drake/Inverness Park area would be the same under Alternative B as described under Alternative A.

Levee Road /Olema Marsh: Properties on Levee Road, directly south of the Giacomini Ranch East Pasture, are frequently flooded by Lagunitas Creek. A number of these homes have been elevated since the 1982 flood to



decrease flood frequency. As noted above, hydrologic investigations and modeling conducted as part of baseline studies show that the differences in height of the levees or creek banks between the East Pasture and the south bank of Lagunitas Creek/Levee Road acts to direct flows toward the homes.

Under Alternatives A and B, the frequency of overbank flooding of the southern bank of Lagunitas Creek would drop from a 3- year to 4-year flood recurrence interval or flood event. As some of the worst flooding occurs when high creek discharge from storm events is combined with an extreme high tide (>6.0 feet MLLW), all hydraulic modeling of changes in vertical flood elevation assume an extreme high tide, as well as creek flooding (KHE 2006a). Similar to Alternative A, vertical flood elevations for the eastern portion of Levee Road, where most of the homes occur, could drop as much as 0.3 to 0.5 feet during 5- to 10-year flood events based on hydraulic modeling results, resulting in a minor beneficial effect on flooding for the local community (KHE 2006a). As flood frequency either increases to a 2-year flood event or decreases to a 50-year flood event or greater, the change in vertical flood elevations under Alternative A relative to baseline conditions is actually smaller, ranging from approximately 0.1 to 0.3 feet (KHE 2006a). This decrease in vertical flood elevation reduction during larger storm events probably relates to the higher volumes of floodwater that offset, to some degree, increases in floodwater storage capacity in the Project Area with removal and/or breaching of the East Pasture and West Pasture levees.

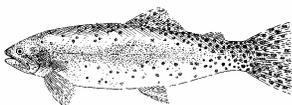
Changes in vertical flood elevations in Lagunitas Creek increase with distance downstream from the Green Bridge due to changes in slope of the water surface (KHE 2006a). Based on results from hydraulic modeling, the portions of Levee Road directly adjacent to White House Pool County Park and Olema Marsh would have reductions in vertical flood elevations ranging as high as 0.6- to 1.1 feet during 10-year flood events under Alternative B (KHE 2006a), resulting in a moderate beneficial effect on flooding and flood risks in the local community. Levee Road is a major connecting roadway for the local community and would be one of the exit routes for people in Inverness Park, Inverness, and other areas on the Point Reyes Peninsula. Similar to Alternative A, this alternative would decrease the potential for flooding during a 5-year flood event along at least short (~300 feet) section of Levee Road relative to baseline conditions(KHE 2006a). Relative to Alternative A, it would also slightly further reduce the depth of flooding in the lowest sections near Olema Marsh, with water depths decreased by as much 0.75- to 0.9 feet relative to baseline conditions (KHE 2006a). This change in flooding depth could potentially change total flooding depth to the extent that Levee Road would be posted with a caution sign rather than closed, with water depths averaging less than 1 foot. Based on these changes, Alternative B would have a moderate to major beneficial effect on the western portions of Levee Road.

Under Alternative B, stream power and transport capacity in Lagunitas Creek would be expected to remain very similar to that under baseline conditions, at least in the reach upstream of White House Pool (KHE 2006a). Downstream of White House Pool, stream power would decrease considerably, causing a sufficient enough loss in transport capacity to cause potential deposition silts and fine sands carried by floodwater flows (KHE 2006a). The magnitude of this change, however, would not be expected to appreciably change channel or streambed morphology or to elevate flood risks for private properties, particularly as this reach is well downstream of directly adjacent residential areas. These results suggest that any changes in sediment transport processes in Lagunitas Creek caused by breaching and removal of levees and other restoration or public access components should not affect channel and streambed morphology or change the potential for flooding.

Potential effects of flooding on public access facilities such as the bridge in the Levee Road/Olema Marsh area would be the same under Alternative B as described under Alternative A.

Over the long-term, some of the benefits potentially provided by this alternative for Levee Road and Sir Francis Drake Boulevard properties may be negated by sea level rise, should rates of sea level rise be close to the much higher ones that were recently projected of 3 feet by 2100.

Possible Additional Mitigation Measures: One of the potential mitigation measures for reducing flood impacts to private properties on the east side of Sir Francis Drake Boulevard would be to construct levee or berms on the property perimeter, particularly for some of the lower elevation homes or developed properties or portions of properties. Levees would need to be at least 2- to 3- vertical feet in height to maintain existing flood protection under 50- and 100-year flood events. Levees would need to be constructed such that creek flow and surface run-off from the Inverness Ridge could be conveyed to the West Pasture without causing flooding in leveed areas. As discussed earlier, hydrologic investigations and modeling conducted as part of



baseline studies point to the primary flood risk currently for many of these properties and portions of Sir Francis Drake Boulevard in Inverness Park being the drainages that flow off the Inverness Ridge.

Effectiveness of Possible Additional Mitigation Measures: Levees would be effective at precluding inundation from Lagunitas Creek, but would tend to impound at least temporarily creek flow and surface runoff from the Inverness Ridge even if hydrologic infrastructure such as one-way flapgates on culverts were installed, thereby increasing the potential for flooding of these properties by upstream sources.

Cumulative Impacts: As with Alternative A, Alternative B, in combination with the Bear Valley Creek Watershed Enhancement and Fishery Restoration Project, would be expected to still have minor to major beneficial effects on flooding and risks from flooding to public health and safety.

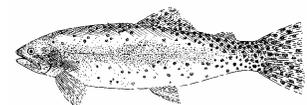
Conclusions: Alternative B would have minor to major beneficial effects on flooding and risks from flooding to public health and safety for Levee Road and adjacent homes, however, modeling does show that on 50 year events and higher, there may be some minor increases in flood elevation on undeveloped portions of private properties adjacent to the West. As with Alternative A, Alternative B would reduce flooding of properties, homes, and driveways along Levee Road and decrease the extent, as well as the depth of flooding, on some of the lower elevation portions of Levee Road relative to baseline conditions during 5-year flood events. These reductions would not only benefit safety and emergency access for homeowners adjacent to the Project Area, but would reduce the potential for closure of Levee Road due to excessive flooding during at least 5-year flood events. While this alternative may increase vertical flood elevation effecting undeveloped portions of West Pasture properties, flood elevations during smaller and more frequent flood events, would likely decrease relative to baseline conditions. Construction of a bridge as part of the southern perimeter trail would have no more than negligible adverse impacts on flooding, because bridge footings would be placed outside of the active floodplain, and the bridge would be high enough in elevation to allow for conveyance for larger flood flows.

Alternative C

Analysis: Alternative C would have identical beneficial minor to major effects on flooding and flood risks to public safety along Levee Road, but would have potentially moderate adverse effects on undeveloped portions of private properties in Inverness Park adjacent to the West Pasture (Table 74). Under Alternative C, the East and West Pastures would be restored, along with Olema Marsh. Most of the new public access facilities would continue to be limited to the eastern and southern perimeters of the East Pasture and western margin of the West Pasture (programmatic evaluation of a trail access to Inverness Park). The southern perimeter trail would include construction of a single span bridge across Lagunitas Creek, near the old summer dam location. Access along the eastern perimeter would be scaled back through removal of the through-trail component. Restoration would involve complete removal of levees in the East and West Pastures along Lagunitas Creek and excavation of even more new tidal channels. Tomasini Creek would be realigned into one of its historic alignments midway through the East Pasture. In Olema Marsh, an adaptive restoration approach would be undertaken, with initial excavation of a shallow berm and the Bear Valley Creek channel to improve hydraulic connectivity and improve drainage of currently impounded waters. As with the other alternatives, this alternative would involve removal or restoration of agricultural infrastructure and discontinuation of agricultural management practices.

Sir Francis Drake Blvd- Inverness Park: The closest homes to the Project Area are four homes along Sir Francis Drake Boulevard that are actually contiguous with the Giacomini Ranch West Pasture. While the West Pasture levees keep Lagunitas Creek waters far to their east, each of these properties is subject to flooding from the smaller Inverness drainages flowing adjacent to their property. Site surveys indicate that the elevation of these structures is 4- to 7 feet higher than the elevation of the West Pasture levee (10-12 feet). Hydrologic modeling suggests that the West Pasture levees overtop during flood events with 12-year recurrence interval (e.g. that occur, on average, every 12 years). For these homes, the West Pasture levees provide little in the way of protection for these homes from Lagunitas Creek flooding under larger flood events.

Under Alternative C, the frequency of flooding in the West Pasture would be identical to that under Alternative B, with frequency increasing from 12-year flood events under baseline conditions to 2-year flood events (KHE 2006a). Hydraulic modeling indicates that vertical flood elevations in the West Pasture would increase by as



much as 0.3 to 1.6 feet under 2- to 50-year flood events (KHE 2006a). This is because the levees would be completely removed, allowing flood flows full access to the West Pasture floodplain. However, during the 100-year flood event, the rate of increase would be reduced to between 0.5 to 0.75 feet (KHE 2006a). These increases in vertical flood elevation under the 2- to 50-year flood events would cause increased flooding of the lower, undeveloped (e.g., pastures, backyards, open space) portions of some properties during the 10-year and 50-year flood events. The largest increase in flooding of private property would take place at the parcel directly adjacent to Fish Hatchery Creek, however, flooding would occur only in the lower, undeveloped, marshy portions of the property that would already be flooded to a lesser degree during at least 50-year events under baseline conditions (KHE 2006a). Based on modeling results, the only flood event under which flooding of private property would occur during restored, but not baseline conditions, for parcels adjacent to the 1906 drainage would be the 50-year flood event, and flooding would be limited to a very small portion of the eastern perimeter of the properties. These properties actually have a fence that could limit floodwater intrusion to some degree, although floodwaters could back up into the 1906 drainage box culvert that runs through one of these properties. While the flood peaks under some of the flood events would be expected to be higher, the duration of flooding would be expected to decrease considerably, because the removal of the north levee and tidegate would not cause extensive ponding as they do under baseline conditions.

Because the maximum 1.6-foot increase in vertical flood elevation would not negatively affect homes, driveways, or access routes to roads, the adverse changes under Alternative C during the 50-year flood event were characterized as moderate. As discussed under the No Action Alternative, hydrologic investigations and modeling conducted as part of baseline studies point to the primary flood risk currently for these properties and portions of Sir Francis Drake Boulevard in Inverness Park being the drainages that flow off the Inverness Ridge. These tributaries are culverted underneath Sir Francis Drake Boulevard and run either through or directly adjacent to at least three of these four homes and often deposit large amount of sediment that increase flood water stage or vertical flood elevation and cause back-up of floodwaters onto their properties (KHE 2006a).

Potential effects of flooding on public access facilities in the Sir Francis Drake/Inverness Park area would be the same under Alternative C as described under Alternative A.

Levee Road/Olema Marsh: Changes in flood frequency and vertical flood elevations along Levee Road, as well as sediment transport and deposition patterns in Lagunitas Creek, would be identical to those discussed under Alternative B.

One of the largest changes under Alternative C relative to the other alternatives would come from restoration of Olema Marsh. By decreasing surface water levels by as much 4- to 6- feet in the now highly impounded marsh through improvements in hydraulic connectivity and drainage, this alternative would reduce the flood risk to Levee and Bear Valley Roads from Bear Valley Creek associated with the steadily increasing water levels in Olema Marsh. These roads serve as important connecting roadways for residents of Inverness Park, Inverness, and other areas on the Point Reyes Peninsula and are a bottleneck for access to the rest of Marin County.

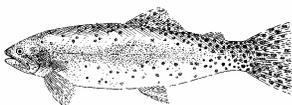
Potential effects of flooding on public access facilities in the Levee Road/Olema Marsh area would be the same under Alternative C as described under Alternative A and B.

Over the long-term, some of the benefits potentially provided by this alternative for Levee Road and Sir Francis Drake Boulevard properties may be negated by sea level rise, should rates of sea level rise be close to the much higher ones that were recently projected of 3 feet by 2100.

Possible Additional Mitigation Measures: Possible mitigation measures would be the same as discussed under Alternative B.

Effectiveness of Possible Additional Mitigation Measures: The effectiveness of the proposed mitigation measures would be the same as discussed under Alternative B.

Cumulative Impacts: As with Alternative A and B. Alternative C, in combination with the Bear Valley Creek Watershed Enhancement and Fishery Restoration Project, would be expected to still have minor to major beneficial effects on flooding and risks from flooding to public health and safety.



Conclusions: Alternative C would have identical minor to major beneficial effects on flooding and risks from flooding to public health and safety for Levee and Bear Valley Roads and adjacent homes as Alternative B. However, it could have a moderate adverse effect on flooding of private properties in the Sir Francis Drake – Inverness Park portion of the evaluation area during at least the 50-year flood event. As with Alternative B, Alternative C would reduce flooding of properties, homes, and driveways along Levee Road and decrease the extent, as well as the depth of flooding, on some of the lower elevation portions of Levee Road relative to baseline conditions during 5-year flood events. These reductions would not only benefit safety and emergency access for homeowners adjacent to the Project Area, but would reduce the potential for closure of Levee Road due to excessive flooding during at least 5-year flood events. Construction of a bridge as part of the southern perimeter trail would have no more than negligible adverse impacts on flooding, because bridge footings would be placed outside of the active floodplain, and the bridge would be high enough in elevation to allow for conveyance for larger flood flows.

Alternative D

Analysis: Alternative D would have identical effects on flooding and flood risks to public health and safety as Alternative C, with minor to major beneficial effects for Levee and Bear Valley Roads and adjacent homes and moderate adverse effects during 50-year flood events for properties adjacent to the West Pasture (Table 74). Removal and replacement of the Mesa Road culvert would alleviate potential road flooding hazards in that local area.

Possible Additional Mitigation Measures: Possible mitigation measures would be the same as discussed under Alternative B.

Effectiveness of Possible Additional Mitigation Measures: The effectiveness of the possible mitigation measures would be the same as discussed under Alternative B.

Cumulative Impacts: Cumulative impacts would be the same as described under Alternative A.

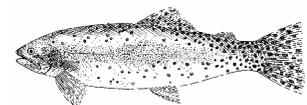
Conclusions: Alternative D would have identical effects on flooding and flood risks to public health and safety as Alternative C, with minor to major beneficial effects for Levee Road and adjacent homes and moderate adverse effects during 50-year flood events for properties adjacent to the West Pasture.

Public Health and Safety – Disease and Public Health

Laws, Regulations, Policies, and Criteria Guiding Impact Analysis

One of the strongest concerns currently about wetlands and public health is the rapid spread of West Nile Virus. While the reservoir host for this virus is considered to be birds, it can be transmitted by mosquitoes. Unlike malaria and dengue fever, which is carried by only one type or genus of mosquito, several genera – a total of 44 species within all genera -- can carry West Nile, many of which also carry other mosquito-borne diseases, as well, including encephalitis and malaria. California law requires that, if a problem source of mosquito production exists in waters or lands that have been artificially altered from natural conditions, the party responsible for altering conditions is liable for the cost of abatement or control of mosquitoes (California Health and Safety Code 2000 *et seq.*). Enforcement of this law is the responsibility of local mosquito abatement districts, which are governmental organizations that are responsible for controlling specific disease vectors within their jurisdiction. As their name implies, mosquito abatement districts are primarily responsible for controlling mosquitoes as pest species and as disease vectors. Jurisdiction of mosquito abatement districts extends over private, county, and state lands, but not federal lands. Federal agencies are responsible for vector control on federal lands. Because of concerns regarding West Nile, the western portion of Marin County was annexed into the Marin-Sonoma Mosquito and Vector Control District (District) in 2005.

While vector-borne diseases are not specifically discussed in its significance criteria, DOI has established the potential for significant impacts to public health and safety as one of the triggers requiring preparation of an EIS under NEPA. The county's CEQA guidelines focus on the potential for the project to create a health hazard or the potential for a health hazard.



General Assumptions and Methodologies

- None of the mosquitos tested to date in Marin County have tested positive for West Nile, but the county has seven mosquito species present that have tested positive elsewhere in California or the United States, including mosquitos in the genera *Culex*, *Ochlerotatus*, and *Anopheles* (District, unpub. data). The western encephalitis and northern house mosquitoes represent the largest West Nile Virus threats (District 2006).
- The proposed project has the potential to affect mosquito breeding conditions through changes in tidal and freshwater hydrologic processes, as well as changes in vegetation communities.
- Areas that would tend to favor mosquito production are those that would meet most of the following criteria:
 - Areas NOT subject to daily tidal action (Collins and Resh 1989);
 - Inundated areas NOT subject to vigorous mixing through wind, current, or tide (Jones & Stokes Associates 1995);
 - Inundated areas with extended water residence times and stagnant conditions (Collins and Resh 1989);
 - Inundated areas with poor water quality (high water temperature, high organic content; Collins and Resh 1989);
 - Areas with slowly increasing or receding water levels as opposed to either stable or rapidly fluctuating water levels (Jones & Stokes Associates 1995);
 - Inundated areas with emergent marsh on perimeter or scattered throughout;
 - Areas inundated permanently, seasonally, or temporarily (even for a few days; Jones & Stokes Associates 1995).
- Analysis of potential changes in mosquito breeding conditions, relative to baseline conditions, with implementation of the proposed project focuses on change in areal extent of habitat that would meet most of the criteria listed above (Table 75).
 - Areal extent of mosquito habitat was weighted during analysis to reflect low, medium, or high potential for providing optimal conditions for mosquito breeding.
- Some of the habitats with higher potential for providing optimal breeding conditions include:
 1. **Unvegetated:** Muted Tidal Open Water-Channel and Pond/Subtidal and Intertidal
 2. **Unvegetated:** Non-Tidal Open Water-Channel and Pond/Permanently, Seasonally, and Temporarily Flooded
 3. **Vegetated:** Non-Tidal and Muted Tidal – Permanently, Seasonally, and Temporarily Flooded habitats – All
 4. **Vegetated:** Tidal – Areas not inundated daily by tides, but frequently enough to cause temporary inundation or saturation of ground conditions.

TABLE 75. DISEASE AND PUBLIC HEALTH – DISEASE VECTORS

| | |
|--|--|
| <p>Source: NPS Management Policies, California Public Health and Safety Code Nature: Beneficial, Adverse Context: Local Community Duration: Construction, Short-Term, Long-Term</p> | |
| No Impact | There would be no potential for impact to mosquito breeding conditions associated with the proposed project. |
| Negligible | There would be a negligible change (≤ 5 percent) in optimal mosquito breeding conditions associated with the proposed project related to the areal extent of habitats meeting some or all of the criteria for optimal breeding conditions. |
| Minor | There would be a minor change (> 5 percent and ≤ 15 percent) in optimal mosquito breeding conditions associated with the proposed project related to the areal extent of habitats meeting some or all of the criteria for optimal breeding conditions. |
| Moderate | There would be a moderate change (> 15 percent and ≤ 25 percent) in optimal mosquito breeding conditions associated with the proposed project related to the areal extent of habitats meeting some or all of the criteria for optimal breeding conditions. |
| Major or Substantial | There would be a major or substantial change (>25 percent) in optimal mosquito breeding conditions associated with the proposed project related to the areal extent of habitats meeting some or all of the criteria for optimal breeding conditions. |



Impact Analysis

TABLE 76. INTENSITY, NATURE, TYPE, DURATION, AND CONTEXT OF IMPACTS FOR PUBLIC HEALTH AND SAFETY – DISEASE AND PUBLIC HEALTH – DISEASE VECTORS

All impacts would be considered Local Community and are considered Construction/Short-Term/Long-Term, unless otherwise specified.

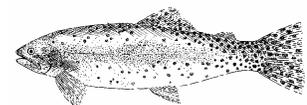
| | No Action | Alternative A | Alternative B | Alternative C | Alternative D |
|--|--|-----------------------|-----------------------|-----------------------|-----------------------|
| Impact Indicator | Intensity, Nature, Type, Duration, and Context of Impact | | | | |
| Public Health and Safety – Disease Vectors | Beneficial - Minor | Beneficial - Moderate | Beneficial - Moderate | Beneficial - Moderate | Beneficial - Moderate |

No Action Alternative

Analysis: The No Action Alternative would have minor beneficial effects on risks to public health in the local community associated with breeding of disease vectors such as mosquitoes in the Project Area (Table 76). Under the No Action Alternative, levees, tidegates, and culverts in the Giacomini Ranch are not breached or removed, except for the 11-acre wetland restoration area in the northeastern corner of the East Pasture. The Park Service is required under its existing agreement with CalTrans to restore wetlands as mitigation for impacts caused by CalTrans to aquatic habitat from a road repair on State Route 1 in Marin County in exchange for the Park Service receiving monies to purchase and restore the Giacomini Ranch. The remainder of the levee would not be deconstructed, although there would be no levee maintenance. Olema Marsh is also not restored, and there would be no new public access facilities. The largest change under the No Action Alternative comes with expiration of the Reservation of Use agreement with the Giacomini Trust in March 2007 and discontinuation of active agricultural management and management practices.

Most of the beneficial effect of the No Action Alternative on breeding of mosquitoes stems from discontinuation of agricultural management practices. Under baseline conditions, infrastructure (e.g., levees, culverts, tidegates) or management practices have increased potential mosquito breeding habitat in the Giacomini Ranch and Olema Marsh by 1) creating water impoundments that increase water residence time and decrease flow and exchange, leading to stagnant water conditions; and 2) increasing the duration and extent of inundation. As described under Vegetation Resources, the Giacomini Ranch has remained largely wetland despite being diked more than 60 years ago. Flooding from creeks, run-off, groundwater, and, to a certain degree, tides, creates areas with variable duration of inundation and saturation, lasting from a few days to year-round. While levees were constructed to prevent flooding from Lagunitas Creek and Tomasini Creek into the pastures, they also act to impound waters within the pastures, thereby prolonging the duration of inundation and saturation (KHE 2006a). Construction of extensive ditch systems to drain pastures and/or convey irrigation waters also creates stagnant standing water in areas that often become vegetated. Tidegates installed on Fish Hatchery and Tomasini Creeks do not allow waters within these creeks to fully drain during low tides, further perpetuating the extent of stagnant conditions. Most of the southern portion of the East Pasture is flood irrigated for several months during the summer, often creating standing water for several weeks. Fields in the northern portion are typically spray-irrigated. Near the dairy facility, the Giacomini also maintain several waste ponds.

Six species of mosquitoes were found in the Project Area during some limited sampling conducted in June 2005 (District, unpub. data). These species included the Western encephalitis mosquito, tule mosquito (*Culex erythrothorax*), banded foul water mosquito (*Culex stigmatosoma*), *Culiseta particeps*, *Culiseta inornata*, and *Ochlerotatus dorsalis* (District, unpub. data). Based on this limited sampling, the most common species were the Western encephalitis mosquito, tule mosquito, *Culiseta particeps*, and *Culiseta inornata*. Of the mosquito species identified on the Giacomini Ranch, three of these have tested positive in California for West Nile: the Western encephalitis mosquito, tule mosquito, and banded foul water mosquito (District, unpub. data). The western encephalitis and northern house mosquitoes represent perhaps the largest threats in terms of the West Nile Virus (District 2006). The Western encephalitis mosquito is a standing water species that lay its eggs in water. Adults can emerge continuously throughout the summer and fall in areas that have been flooded for more than 2- to 3 weeks such as rice fields, poorly drained pastures, semi-permanent and permanently flooded wetlands, sewer treatment plants, and dairy farms (Kwasny et al. 2004).



Without irrigation during the summer, many higher elevation portions of the Giacomini Ranch East Pasture would convert into upland non-native grassland that would only be inundated when floodwaters in Lagunitas Creek would be able to overtop the existing levees. The Giacomini Ranch West Pasture is not irrigated. There would also be some benefit from the small restoration/mitigation component, which restores tidal action to the very northern tip of the East Pasture and the adjacent East Pasture Old Slough. Functional tidal marshes typically do not produce significant mosquito breeding populations (R. Keith, Assistant Manager, District, *pers. comm.*). However, tidally influenced areas that are inundated on a regular, but not daily, basis or areas that do not drain completely at low tide still have some potential for supporting breeding of mosquitoes (Collins and Resh 1989). Mid-marsh intertidal elevation zones or mid-marsh marshplains in the mitigation/restoration component were still rated as having the potential to support mosquito breeding, although the potential would be lower than that of the pastures and non-tidal brackish marsh the restored area is replacing. Under this alternative, the extent of habitat with some of the highest potential for supporting breeding mosquitoes would potentially drop from approximately 410 acres under baseline conditions to approximately 350 acres.

Some elements of the No Action Alternative could lead to an enhancement of mosquito habitat. Under this alternative, the ditch system in the East Pasture would remain, but it would not be dredged, and it is likely that the ditches would become overgrown with freshwater marsh vegetation, which would potentially increase its attractiveness to breeding mosquitoes. This conversion is reflected in the acreage numbers provided above. In addition, creeks and ditches in both the East and West Pastures support populations of mosquitofish (*Gambusia affinis*) that were probably introduced by the Giacomini for mosquito control purposes. This non-native species can survive under unmanaged conditions and is expected to remain in the Project Area under the No Action Alternative.

Possible Additional Mitigation Measures: No mitigation measures would be proposed under this alternative.

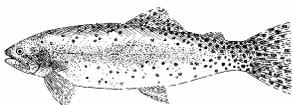
Effectiveness of Possible Additional Mitigation Measures: Not applicable

Cumulative Impacts: There would be no potential for cumulative effects with other projects under the No Action Alternative, with the possible exception of potential mosquito control efforts initiated by the District on adjacent private, local, and state lands. These lands could include private ranch lands to the south, County park lands, and CSLC lands to the north. In the past 18 months, since west Marin was annexed into the District, the District has treated many areas adjacent to the Project Area. The West Marin Mosquito Control Council (WMMCC) was formed about the time of the District annexation and has negotiated with the District in the past year to limit the type of treatments applied in West Marin relative to other parts of the district. The District has also agreed not to distribute mosquitofish in west Marin due to the potential ecological impacts of this non-native fish in the wild. Since annexation, both the District and the WMMCC have increased public awareness about reducing standing water and screening vents to limit mosquito breeding areas around homes.

Conclusions: The No Action alternative would have minor beneficial effects on risks to public health in the local community associated with decreased breeding of disease vectors such as mosquitoes in the Project Area. This would result from decreasing seasonally flooded grasslands and conversion of a small portion of the East Pasture to intertidal marsh. These beneficial effects are tempered to some degree by the fact that discontinuation of practices such as ditching would lead some unvegetated portions of ditches to become choked with freshwater marsh vegetation, which is more attractive for mosquito breeding, and there would be no active restocking of mosquitofish. Impounded conditions within Olema Marsh would continue to provide optimal breeding habitat for mosquitoes. The No Action Alternative would result in discontinuation of flood irrigation and closure of dairy facilities adjacent to populated areas. Overall, these changes would result in minor beneficial effects on public health.

Alternative A

Analysis: Alternative A would have moderate beneficial effects on risks to public health and safety associated with breeding of disease vectors such as mosquitoes in the Project Area and local community (Table 76). Under Alternative A, only the East Pasture would be restored, with new public access facilities limited to the eastern and southern perimeters of the East Pasture. There would be no restoration or



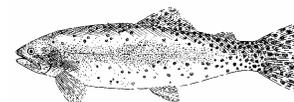
construction of new public access facilities in the West Pasture or Olema Marsh. The levees along and tidegate/culvert in the West Pasture and Tomasini Creek would be retained. In the East Pasture, restoration would involve breaching of levees in the East Pasture along Lagunitas Creek, and excavation of new tidal channels. The southwestern corner of the creek bank would be regraded to a more stabile profile. Most of the actions under this alternative focus on removal or restoration of agricultural infrastructure such as filling of ditches, ripping of compacted roads, fence removal, and removal of manure ponds, pumps, pipelines, and concrete spillways. As with the No Action Alternative, agricultural management practices such as ditching, irrigation, and spreading of manure would be discontinued.

As with the No Action Alternative, most of the beneficial effect of Alternative A on breeding of mosquitoes stems from discontinuation of agricultural management practices and deconstruction of agricultural infrastructure, including filling ditches, in the East Pasture. Under baseline conditions, infrastructure (e.g., levees, culverts, tidegates) or management practices have increased potential mosquito breeding habitat in the Giacomini Ranch and Olema Marsh by 1) creating water impoundments that increase water residence time and decrease flow and exchange, leading to stagnant water conditions; and 2) increasing the duration and extent of inundation. Flooding from creeks, run-off, groundwater, and, to a certain degree, tides, creates areas within the wetland-dominated Giacomini Ranch with highly variable periods of inundation and saturation, lasting from a few days to year-round. Levees and tidegates do not allow waters to drain fully during low tides, thereby increasing water residence time and extending the seasonal period of inundation or saturation. Construction of extensive ditch systems in the East Pasture to drain pastures and/or convey irrigation waters has also created stagnant standing water areas. Most of the East Pasture has been flood or spray-irrigated for several months during the summer, often creating standing water for at least several weeks. Near the dairy facility, the Giacomini also maintain several manure waste ponds.

A large proportion of the Wet Pasture in the East Pasture would convert to Tidal Salt Marsh, which would decrease, if not eliminate, the propensity for mosquito breeding. Under this alternative, the extent of habitat with some of the highest potential for supporting breeding mosquitoes would potentially drop from approximately 410 acres under baseline conditions to approximately 165 acres, a decrease of almost 60 percent. Functional tidal marshes typically do not produce significant mosquito breeding populations (R. Keith, Assistant Manager, District, *pers. comm.*). In San Francisco Bay, full tidal action has been shown to decrease mosquito numbers by as much as 98.7 percent relative to either pre-restoration conditions (Kramer et al. 1995) or adjacent impounded marshes (Liu 2001). Relative to unrestored areas, reintroducing tidal action decreases mosquito populations in two ways: by providing habitat for the natural predators of mosquitoes and by reducing flooding in areas that are not normally wet (IWCP 2001). At least one mosquito control agency in Massachusetts actually opted to eliminate ditching and chemical control practices in favor of restoring tidal morphology and hydrology, including ponded features such as salt pannes, and observed a 97 percent effectiveness rate (J. MacDougall, *pers. comm. in* (Dalia 1998). However, tidally influenced areas that are inundated on a regular, but not daily, basis or areas that do not drain completely on low tides still have some potential for supporting mosquito breeding (Collins and Resh 1989).

Tidal restoration would be most effective for controlling mosquitoes in tidal channels and low marsh intertidal elevations. As in the undiked marsh north of the Giacomini Ranch, portions of the mid-marsh intertidal elevations or mid-marsh marshplains that are not inundated regularly by tidal action, but that receive at least infrequent surface flooding, would most likely continue to support mosquito breeding, although numbers would drop relative to baseline conditions. The highest upland elevations would continue to have low mosquito numbers, except where emergent groundwater from the Point Reyes Mesa creates localized freshwater marsh and wet meadow habitats on the perimeter of the East Pasture. The expanded extent of riparian habitat would also support lower numbers of mosquitoes, except where prolonged ponding occurs. Existing riparian habitat with marshy conditions, where higher mosquito numbers may occur, include the portion of Tomasini Creek just upstream of Mesa Road and the riparian habitat at the south end of the West Pasture.

Species composition would shift under restored versus impounded conditions, as well. Based on limited sampling, the most common species on the Giacomini Ranch are the Western encephalitis mosquito, tule mosquito, *Culiseta particeps*, and *Culiseta inornata*. Two of these species have tested positive elsewhere in California for West Nile Virus -- the Western encephalitis mosquito and tule mosquito. A third species, the banded foul water mosquito, was also found in the Project Area, but does not appear to be common (District, unpub. data). The Western encephalitis and tule mosquitoes are both standing water species. The former has been linked to areas that are flooded for more than 2 to 3 weeks, such as poorly drained pastures, semi-permanent and permanently flooded wetlands, and dairy farms (Kwasny et al. 2004). Without irrigation



during the summer, many higher elevation portions of the Giacomini Ranch East Pasture would convert into upland non-native grassland that would only be infrequently inundated when floodwaters in Lagunitas Creek overtop the existing levees. Under Alternative A, flooding frequency would increase to at least every 2 years or more. The Giacomini Ranch West Pasture has not been irrigated. Reintroduction of more saline waters into lower elevation areas would likely attract higher numbers of saltmarsh mosquitoes of the genus, *Ochlerotatus*, such as *Ochlerotatus squamiger*. This mosquito breeds in prolific numbers in brackish intertidal waters and drainage ditches, laying eggs just above the high tide mark beginning each spring, as water levels recede until the following winter. *O. squamiger* is known to transmit certain strains of encephalitis, but is not a documented carrier of West Nile Virus.

Breaching of the East Pasture levee would reintroduce tidal action into the northern portion of the East Pasture Old Slough, while most of the ditch system would be eliminated through fill and grading. Drawdown would not be as pronounced in the East Pasture as in many other managed tidal units, which may limit breeding areas for *Ochlerotatus*. Portions of the East Pasture Old Slough with strong tidal velocities or that drain fully during low tide would have less potential to support mosquito breeding than areas where residual pools remain at low tide. Reintroduction of tidal influence into the East Pasture Old Slough would also increase the diversity and number of mosquito predators through increased access for native estuarine fish. During higher high tide events, overbank flooding would occur, allowing fish species access to the marshplain and mosquito larvae that may have been deposited in these areas.

Muted tidal or impounded freshwater conditions would continue to persist in the Giacomini Ranch West Pasture and Olema Marsh, respectively. There would be no restoration component in the West Pasture or Olema Marsh under Alternative A. As with the Giacomini Ranch, levees and other infrastructure have created impounded conditions within Olema Marsh that increase the potential for mosquito breeding. Sampling conducted in 2005 found five species of mosquitoes. Three of these species have tested positive for the West Nile Virus elsewhere in California (District, unpub. data).

Possible Additional Mitigation Measures: No mitigation measures would be proposed under this alternative.

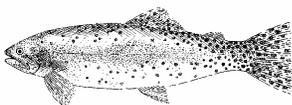
Effectiveness of Possible Additional Mitigation Measures: Not applicable

Cumulative Impacts: Cumulative impacts would be the same as discussed under the No Action Alternative.

Conclusions: Alternative A would have moderate beneficial effects on risks associated with breeding of disease vectors such as mosquitoes in the Project Area by decreasing the extent of seasonally flooded grasslands in the East Pasture. Conversion to salt marsh would be expected to reduce, if not eliminate, mosquito breeding, with the highest benefits associated with well-draining, fast-moving tidal creeks and low intertidal and very high vegetated intertidal elevation marsh "zones." Portions of mid-marsh "zones" or marshplains that are not regularly inundated by tides, but receive infrequent tidal inundation, may continue to provide breeding habitat for mosquitoes, particularly saltmarsh mosquitoes of the genus, *Ochlerotatus*, such as *Ochlerotatus squamiger*. While *O. squamiger* is known to transmit certain strains of encephalitis, it is not a documented carrier of West Nile Virus. Reconnection of the East Pasture Old Slough to Lagunitas Creek would increase the diversity and number of estuarine mosquito predators. While this alternative would reduce habitats with the highest potential for supporting mosquito breeding by almost 60 percent, muted tidal and/or impounded conditions within the West Pasture and Olema Marsh would continue to provide optimal breeding habitat for mosquitoes. Overall, this alternative would be expected to reduce numbers of mosquitoes through reintroduction of tidal flushing and conversion to tidal salt marsh and discontinuation of agricultural management practices such as irrigation.

Alternative B

Analysis: Alternative B would have moderate beneficial effects on risks associated with breeding of disease vectors such as mosquitoes in the Project Area and local community (Table 76). Under Alternative B, the East and West Pastures would be restored, but not Olema Marsh. Restoration would involve complete removal of levees in the East Pasture along Lagunitas Creek and expanded excavation of tidal channels. Breaches would be created in the West Pasture levee. The whole southern East Pasture creek bank would be restored through removal of rip-rap bank stabilization and regraded, where needed, to a more stable profile. The



levee adjacent to the Hunt Shack would be lowered to allow for overflow during flood events between the East Pasture and Tomasini Creek, but during regular flow conditions, Tomasini Creek would remain in its current channel with the tidegate/flashboard dam structure still in place. Most of the new public access facilities would continue to be limited to the eastern and southern perimeters of the East Pasture, although a viewing area would replace the existing informal trail on the West Pasture north levee, which would be removed. As with Alternative A, this alternative would involve removal of agricultural infrastructure and discontinuation of agricultural management practices such as ditching, irrigation, and spreading of manure.

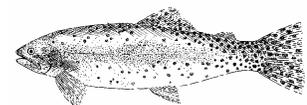
As with Alternative A, most of the beneficial effect of Alternative B to public safety stems from discontinuation of agricultural management practices and deconstruction of agricultural infrastructure. Under baseline conditions, infrastructure (e.g., levees, culverts, tidegates) or management practices such as flood and spray irrigation in the summer months, have increased potential mosquito breeding habitat in the Giacomini Ranch and Olema Marsh by 1) creating water impoundments that increase water residence time and decrease and exchange, leading to stagnant water conditions; and 2) increasing the duration and extent of inundation.

Under this alternative, a large proportion of the wet pasture habitat in the East Pasture and a smaller proportion of the wet and salt marsh pasture habitat in the West Pasture would convert to tidal salt marsh, which would decrease the propensity for mosquito breeding. Under this alternative, the extent of habitat with the highest potential for supporting breeding mosquitoes would decrease from approximately 410 acres under baseline conditions to approximately 96 acres, a 75 percent reduction. As described under Alternative A, functional tidal marshes typically do not produce significant mosquito breeding populations (R. Keith, Assistant Manager, District, *pers. comm.*), with reduction in of mosquitoes in areas where full tidal action has been restored of up to 98.7 percent relative to pre-restoration conditions (Kramer et al. 1995) or adjacent impounded marshes (Liu 2001). Some tidally influenced areas which may not drain completely on low tides will still have some potential for supporting breeding of mosquitoes (Collins and Resh 1989).

Tidal restoration would be most effective for controlling mosquitoes in tidal channels and low marsh intertidal elevations. Similar to the undiked marsh north of the Giacomini Ranch, portions of the mid-marsh intertidal elevations or mid-marsh marshplains that are not inundated regularly by tidal action, but that receive at least infrequent surface flooding, would be most likely to continue to support mosquito breeding, although numbers would drop relative to baseline conditions. Marsh elevations would generally be lower in the East Pasture than the West Pasture, with much of the West Pasture above Mean High Water (MHW) elevations. Higher upland elevations would have naturally low mosquito numbers, except where emergent groundwater from the Point Reyes Mesa and Inverness Ridge creates localized freshwater marsh and wet meadow habitats on the perimeter of the East Pasture. Because the creek and groundwater influence is stronger in the West Pasture, most of the western and southern perimeters of the West Pasture would remain largely unchanged, dominated by considerable expanses of freshwater marsh and wet meadow. The expanded extent of riparian habitat would also support lower numbers of mosquitoes, except where prolonged ponding occurs. Existing riparian habitat with marshy conditions, where higher mosquito numbers may occur, include the portion of Tomasini Creek just upstream of Mesa Road and the riparian habitat at the south end of the West Pasture.

As with Alternative A, species composition in restored areas would shift relative to baseline conditions. This shift would be expected to be more dramatic in the East Pasture than the West Pasture. Based on limited sampling, the most common species on the Giacomini Ranch are the Western encephalitis mosquito, tule mosquito, *Culiseta particeps*, and *Culiseta inornata*. Two of these species have tested positive elsewhere in California for West Nile Virus -- the Western encephalitis mosquito and tule mosquito. A third species, the banded foul water mosquito, was also found in the Project Area, but does not appear to be common (District, unpub. data). The Western encephalitis and tule mosquitoes are both standing water species, the former linked to areas that are flooded for more than 2- to 3 weeks (Kwasny et al. 2004). Without irrigation during the summer, many higher elevation portions of the Giacomini Ranch East Pasture would convert into upland non-native grassland that would only be infrequently inundated when floodwaters in Lagunitas Creek spread onto the floodplain. The Giacomini Ranch West Pasture has not been irrigated. Reintroduction of more saline waters into lower elevation areas would likely attract higher numbers of saltmarsh mosquitoes of the genus, *Ochlerotatus*, such as *Ochlerotatus squamiger*. This mosquito breeds in prolific numbers in brackish intertidal waters and drainage ditches, laying eggs just above the high tide mark beginning each spring, as water levels recede until the following winter. *O. squamiger* is known to transmit certain strains of encephalitis, but is not a documented carrier of West Nile Virus.

As described under Alternative A, removal or breaching of the Giacomini Ranch levees would reintroduce tidal action into the northern portion of the East Pasture Old Slough, while most of the ditch system would be



eliminated through fill and grading. The tidal channel network would be expanded relative to Alternative A through additional excavation. In the West Pasture, Fish Hatchery Creek and the West Pasture Old Slough would be converted from muted tidal to fully tidal. Drawdown following heavy winter rains may be more pronounced in the West Pasture than the East Pasture, which may maintain breeding for mosquitoes such as *Ochlerotatus*. Creeks and tidal channels with strong tidal velocities or that drain fully during low tide would have less potential to support mosquito breeding than areas where residual pools remain at low tide. Reintroduction of tidal influence into the East Pasture Old Slough would also increase the diversity and number of mosquito predators through increased access for native estuarine fish. During higher high tide events, overbank flooding would occur, allowing fish species access to the marshplain and mosquito larvae that may have been deposited in these areas.

Impounded freshwater conditions would continue to persist in Olema Marsh. As with the Giacomini Ranch, levees and other infrastructure have created impounded conditions within Olema Marsh that increase the potential for mosquito breeding. Sampling conducted in 2005 found five species of mosquitoes. Three of these species have tested positive for the West Nile Virus elsewhere in California (District, unpub. data).

Possible Additional Mitigation Measures: No mitigation measures would be proposed under this alternative.

Effectiveness of Possible Additional Mitigation Measures: Not applicable

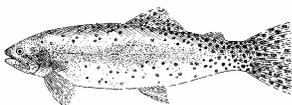
Cumulative Impacts: Cumulative impacts would be the same as discussed under the No Action Alternative.

Conclusions: Alternative B would have moderate beneficial effects on public health in the local community by reducing availability of freshwater mosquito breeding habitat in the Project Area. Conversion to salt marsh would be expected to reduce mosquito breeding habitat, with the highest benefits coming from well-draining, fast-moving tidal creeks and low intertidal and very high vegetated intertidal elevation marsh "zones." Portions of mid-marsh "zones" or marshplains that are not regularly inundated by tides, but receive infrequent tidal inundation, may continue to provide breeding habitat for mosquitoes, particularly saltmarsh mosquitoes of the genus, *Ochlerotatus*, such as *Ochlerotatus squamiger*. While *O. squamiger* is known to transmit certain strains of encephalitis, it is not a documented carrier of West Nile Virus. Reconnection of the expanded East Pasture Old Slough and Fish Hatchery Creek to Lagunitas Creek would increase the diversity and number of estuarine fish predators. While this alternative would be expected to reduce existing mosquito breeding habitat by 75 percent, impounded conditions within Olema Marsh would persist. In addition, the restoration actions will result in expansion of potential salt marsh mosquito breeding habitat. Overall, the beneficial effects would primarily result from decreases in the extent of seasonally flooded grasslands in the East and West Pastures through reintroduction of tidal flushing and conversion to tidal salt marsh and from discontinuation of agricultural management practices such as irrigation and ditching.

Alternative C

Analysis: As with Alternative B, Alternative C would have moderate beneficial effects on risks to public health and safety associated with breeding of disease vectors such as mosquitoes in the Project Area and local community (Table 76). Under Alternative C, the East and West Pastures would be restored, along with Olema Marsh. Most of the new public access facilities would continue to be limited to the eastern and southern perimeters of the East Pasture, although access along the eastern perimeter would be scaled back through removal of the through-trail component. Restoration would involve complete removal of levees in the East and West Pastures along Lagunitas Creek and excavation of even more new tidal channels. A small tidal channel would be initiated off Lagunitas Creek, as well as in the interior of the East Pasture. Tomasini Creek would be realigned into one of its historic alignments midway through the East Pasture. In Olema Marsh, an adaptive restoration approach would be undertaken, with initial excavation of a shallow berm and the Bear Valley Creek channel to improve hydraulic connectivity and improve drainage of currently impounded waters. As with the other alternatives, this alternative would involve removal or restoration of agricultural infrastructure and discontinuation of agricultural management practices such as ditching, irrigation, and spreading of manure.

As with the other alternatives, most of the beneficial effect of Alternative C on breeding of mosquitoes stems from discontinuation of agricultural management practices and conversion of seasonally flooded grasslands to



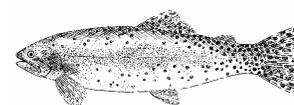
intertidal salt marsh through deconstruction of infrastructure such as levees, tidegates, and ditches in the Giacomini Ranch. Under this alternative, the extent of habitat with some of the highest potential for supporting breeding mosquitoes would potentially drop from approximately 410 acres under baseline conditions to approximately 84 acres, a decrease of nearly 80 percent. These effects are discussed in detail under Alternative B. As referenced above, one relevant change in restoration of the Giacomini Ranch under Alternative C involves rerouting of the lower two-thirds of Tomasini Creek within the Project Area into the East Pasture. This could decrease stream velocities and increase water residence time in the former Tomasini Creek channel that runs along the edge of the Point Reyes Mesa. The former channel would remain and function as a brackish slough, continuing to receive muted tidal influence from Lagunitas Creek/Tomas Bay and freshwater influence from hillside and toeslope groundwater seeps on the Point Reyes Mesa. The increase in water residence time could increase the attractiveness of the open water and emergent portions of this backwater slough channel to breeding mosquitoes.

One of the largest changes under Alternative C comes from incorporation of Olema Marsh into the restoration project. As with the Giacomini Ranch, levees and other infrastructure have created impounded conditions within the marsh that increase the potential for mosquito breeding. Sampling conducted in October 2005 found five species of mosquitoes, with the tulle mosquito (*Culex erythrothorax*) by far the most prevalent (District, unpub. data). Other species observed included the banded foul water mosquito (*Culex stigmatosoma*), northern house mosquito (*Culex pipiens*), *Culiseta particeps*, and *Culiseta inornata*, many of the same species that occur at the Giacomini Ranch (District, unpub. data). Three of these species, northern house mosquito, tulle mosquito, and banded foul water mosquito, have tested positive for West Nile Virus elsewhere in California. Like the western encephalitis mosquito, the tulle mosquito is another standing water mosquito that deposits its eggs among thick vegetation on the edges or margins of lakes and inland ponds. It is also one of the few mosquitoes that feeds actively during the day (Kwasny et al. 2004).

Under this alternative, an adaptive restoration approach is undertaken to improve hydraulic connectivity and drainage through removal of berms, shallow excavation within the Bear Valley Creek channel, and possible replacement of two culverts. Over the last decade, water surface levels within the marsh appear to be rapidly increasing, possibly due to loss of one of what was once two culverts, with water surface levels increasing by as much as 6 feet since the early 1990s (KHE 2006a). This adaptive restoration approach could potentially lower the surface water level within the highly impounded marsh by as much as 4- to 6 feet over an extended period of time (KHE 2006a).

Over the short term, lowering of the water surface levels would be accompanied by some dramatic sediment, water, and vegetation changes that are described in detail in this chapter under Soil, Water Resources-Water Salinity and Water Quality, and Vegetation Resources. In summary, lowering of the water surface level would expose the upper surface layers of the organic-rich peat soils to air, causing them to decompose and compact, causing temporary pulses of nutrients and dissolved organic material into the overlying waters, as well as transient episodes of acidification. This dewatering would lead to an extensive die-back in the tall emergent freshwater marsh vegetation that currently dominates almost 39 acres of Olema Marsh. During this period, poor water quality conditions could continue to attract mosquitoes, although residence time of waters within the marsh would decrease appreciably, with the possible exception of some of the areas on the western perimeter, where small drainages and emergent groundwater would continue to create ponded conditions.

Ultimately, over the long term, freshwater marsh vegetation would be expected to recolonize at a lower marsh surface elevation throughout most of the marsh, although tall emergent brackish marsh vegetation could colonize a small (~2 acres) portion of the marsh directly near the Bear Valley Creek outlet to Lagunitas Creek. Water surface levels, in general, would be lower than under baseline conditions, but inundation and ponding would continue to persist throughout most of the marsh, due to the influence of perennial freshwater sources such as Bear Valley Creek and some of the drainages and emergent groundwater on the western perimeter. The long-term effect of these actions on mosquito populations is hard to predict, but, overall, the adaptive restoration component would be expected to have a very minor to minor beneficial effect on mosquito breeding conditions, due to the decrease in water residence time, long-term improvement expected in water quality conditions, and improved access to the marsh for estuarine fish predators. These beneficial effects would be expected to offset any increase in mosquito breeding habitat that results from creation of approximately 2 acres of seasonally flooded freshwater marsh ponds on the west side of Olema Creek as mitigation for impacts to California red-legged frog.



Possible Additional Mitigation Measures: No mitigation measures would be proposed under this alternative.

Effectiveness of Possible Additional Mitigation Measures: Not applicable

Cumulative Impacts: Same as described under the No Action Alternative.

Conclusions: Alternative C would have moderate beneficial effects on risks to public health in the local community associated with breeding of disease vectors such as mosquitoes in the Project Area. Most of these benefits would result from decreasing the extent of seasonally flooded grasslands in the Giacomini Ranch through reintroduction of tidal flushing and conversion to salt marsh and from discontinuation of agricultural management practices such as irrigation and ditching. Conversion to salt marsh would be expected to reduce, if not eliminate, breeding of mosquitoes, with the highest benefits coming from well-draining, fast-moving tidal creeks and low intertidal and very high vegetated intertidal elevation marsh “zones.” Portions of mid-marsh “zones” or marshplains that are not regularly inundated by tides, but receive infrequent tidal inundation, may continue to provide breeding habitat for mosquitoes, particularly saltmarsh mosquitoes of the genus, *Ochlerotatus*, such as *Ochlerotatus squamiger*. While *O. squamiger* is known to transmit certain strains of encephalitis, it is not a documented carrier of West Nile Virus. Reconnection of the expanded East Pasture Old Slough and Fish Hatchery Creek to Lagunitas Creek would increase the diversity and number of estuarine fish predators. Improved connection between Project Area creeks and restoration of natural tidal marsh conditions is expected to reduce stagnant water in the Project Area, thereby limiting potential mosquito breeding areas.

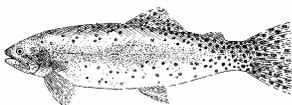
In addition, under this alternative, hydraulic connectivity and drainage within Olema Marsh would be improved through an adaptive restoration approach that would result in dramatically lower water surface levels relative to baseline conditions. Continued inflow from permanent freshwater sources would continue to create breeding conditions for mosquitoes over the long-term, leading this alternative to have only minor beneficial effects on mosquito breeding conditions in this particular portion of the Project Area. Overall, this alternative would be expected to reduce habitats with the highest potential for supporting mosquito breeding by almost 80 percent, although mosquitoes would continue to reproduce in lower numbers within both the Giacomini Ranch and Olema Marsh. These beneficial effects would be expected to offset any increase in mosquito breeding habitat that results from creation of approximately 2 acres of seasonally flooded freshwater marsh ponds in the adjacent Olema Creek watershed as mitigation for impacts to California red-legged frog.

Alternative D

Analysis: Alternative D would have very similar moderate beneficial effects on breeding of disease vectors such as mosquitoes in the Project Area as Alternative C (Table 76). Under Alternative D as with Alternative C, the East and West Pastures would be completely restored, along with Olema Marsh. Almost all of the relevant differences between Alternative D and C relate to excavation of a limited portion of the East Pasture to intertidal elevations, complete realignment of Tomasini Creek into one of its historic alignments, replacement of the Tomasini Creek Mesa Road culvert with a bridge or arch culvert, and excavation of even more new tidal channels in the East Pasture.

As with all the other alternatives, most of the beneficial effect of Alternative D on breeding of mosquitoes stems from discontinuation of agricultural management practices and conversion of seasonally flooded grasslands to intertidal salt marsh through deconstruction of infrastructure such as levees, tidegates, and ditches in the Giacomini Ranch. These effects are discussed in detail under Alternative B. Under this alternative, the extent of habitat with some of the highest potential for supporting breeding mosquitoes would potentially drop from approximately 410 acres under baseline conditions to approximately 70 acres, a decrease of almost 83 percent. The small decrease in extent of high potential habitat relative to Alternative C results from lowering of the southwestern portion of the East Pasture to elevations subject to more frequent tidal inundation. As was discussed under Alternative C, restoration of Olema Marsh would be expected to have only minor beneficial effects over the long-term on mosquito breeding conditions, with possible increases during the short-term as the marsh adjusts to dramatically lower water surface levels.

Possible Additional Mitigation Measures: No mitigation measures would be proposed under this alternative.



Effectiveness of Possible Additional Mitigation Measures: Not applicable

Cumulative Impacts: Cumulative impacts would be the same as discussed under Alternative C.

Conclusions: Alternative D would have very similar moderate beneficial effects as Alternative C on risks to public health in the local community associated with breeding of disease vectors such as mosquitoes in the Project Area. Most of these benefits would result from decreasing the extent of seasonally flooded grasslands in the Giacomini Ranch through reintroduction of tidal flushing and conversion to salt marsh and from discontinuation of agricultural management practices such as irrigation and ditching. Conversion to salt marsh would be expected to reduce, if not eliminate, breeding of mosquitoes, with the highest benefits coming from well-draining, fast-moving tidal creeks and low intertidal and very high vegetated intertidal elevation marsh “zones.” Excavation of the southwestern portion of the East Pasture to lower intertidal elevations would increase the frequency of tidal inundation in this area relative to Alternative C. Portions of mid-marsh “zones” or marshplains that are not regularly inundated by tides, but receive infrequent tidal inundation, may continue to provide breeding habitat for mosquitoes, particularly saltmarsh mosquitoes of the genus, *Ochlerotatus*, such as *Ochlerotatus squamiger*. While *O. squamiger* is known to transmit certain strains of encephalitis, it is not a documented carrier of West Nile Virus. Reconnection of the expanded East Pasture Old Slough and Fish Hatchery Creek to Lagunitas Creek would increase the diversity and number of estuarine fish predators. Improved connection between Project Area creeks and restoration of natural tidal marsh conditions is expected to reduce stagnant water in the Project Area, thereby limiting potential mosquito breeding areas.

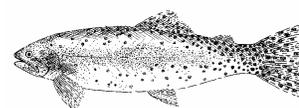
In addition, under this alternative, hydraulic connectivity and drainage within Olema Marsh would be improved through an adaptive restoration approach that would result in dramatically lower water surface levels relative to baseline conditions, although, ultimately, continued inflow from permanent freshwater sources would continue to create breeding conditions for mosquitoes over the long-term, leading this alternative to have only minor beneficial effects on mosquito breeding conditions in this particular portion of the Project Area. Overall, this alternative would be expected to reduce habitats with the highest potential for supporting mosquito breeding by almost 83 percent, although mosquitoes would continue to reproduce in lower numbers within both the Giacomini Ranch and Olema Marsh. These beneficial effects would be expected to offset any increase in mosquito breeding habitat that results from creation of approximately 2 acres of seasonally flooded freshwater marsh ponds in the adjacent Olema Creek watershed as mitigation for impacts to California red-legged frog.

Public Services – Municipal Water Supply and Distribution

Laws, Regulations, Policies, and Criteria Guiding Impact Analysis

Federal and state regulations and policies protect both the supply and quality of drinking water for the public. The Safe Drinking Water Act (SDWA) was originally passed by Congress in 1974 to protect public health by regulating the nation's public drinking water supply. SDWA authorizes the USEPA to set national health-based primary standards for drinking water to protect against both naturally-occurring and man-made contaminants that may be found in drinking water. Within California, the authority for implementation of the SDWA has been delegated to the California Department of Health Services (DHS). The California Safe Drinking Water Act (CA SDWA) was passed to build on and strengthen the federal SDWA. In addition to strengthening primary standards through the CA SDWA, DHS has also set secondary drinking water standards and maximum contaminant levels for analytes or contaminants of lesser concern that affect the taste, odor, or appearance of drinking water such as chlorides.

Protection of safe drinking water supplies also occurs through the Porter-Cologne Act. Water quality control plans designate beneficial uses of water for specific water bodies, establish water quality objectives to protect those uses, and provide a program to implement the objectives: one of those beneficial uses for Lagunitas Creek is municipal and domestic water supply. Through CEQA review, Marin County also regulates activities that substantially degrade or deplete groundwater resources, interfere with groundwater recharge, substantially degrade surface or groundwater quality, or substantially reduce the amount of water otherwise available for public water supplies.



Water districts are required by law to provide safe drinking water for customers. DHS sets chloride levels in potable water as a secondary drinking water standard (NMWD 1997). DHS has set the recommended maximum contaminant level (MCL) for chloride at 250 mg/L (NMWD 1997). The upper MCL is 500 mg/L (NMWD 1997). A chloride concentration of 250 mg/L is considered the taste threshold for most people, however, often people can taste levels as low as 100 mg/L (NMWD 1997). NMWD has established 100 mg/L as its taste and odor threshold (NMWD 1997).

General Assumptions and Methodologies

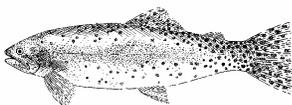
- NMWD currently obtains its water supply for the Point Reyes Station service area from two groundwater wells located along Lagunitas Creek on the U.S. Coast Guard (USCG) property in Point Reyes Station (Figure 37).
- NMWD supplies water to its customers using a network of pipelines, which are either buried belowground or suspended below bridges. There are no water collection, treatment, or storage facilities within the Project Area, but some of distribution pipeline systems are present.
- NMWD has experienced episodes of elevated chlorides in its two groundwater wells since 1976. DHS has established chloride as a secondary drinking water standard. Water districts are required by law to provide safe drinking water for customers.
- NMWD has implemented off-tide pumping practices to reduce potential for salinity intrusion into the Coast Guard Wells.
- Through increasing the extent of tidally influenced areas and replacing culverts, the proposed project has the potential to affect both distribution and supply of municipal water.

Chlorides occur in waters derived from both marine and terrestrial sources such as surface waters (fluvial or creek, run-off, etc.) and groundwater, with mineral content of terrestrial sources determined by weathering of rocks native to the area. While there has been a considerable amount of study into the salinity intrusion problem, the exact cause or mechanisms by which salinities become elevated is still not totally understood. However, it is safe to assume that the system involves both surface water-recharge of alluvial aquifers with tidally influenced and non-tidally influenced waters in Lagunitas Creek, as well as, to some degree, lateral or horizontal inflow from the terrace groundwater aquifer, which has also been shown to be elevated in chlorides (KHE 2006a; Questa 2000).

The NMWD has documented salinity intrusion events in their Coast Guard well facility dating back to 1976. With the mandated removal of the Giacomini summer dam, beginning in 1997, the potential for, and frequency of salinity intrusion events increased at the Coast Guard well facility. In response, NMWD has operated under an off-tide pumping regime, first recommended in an NMWD commissioned salinity investigation (NMWD 1997). The off-tide pumping regime avoids pumping for 6 hours around a predicted tide of 6 feet MLLW or greater (3 hours before and 3 hours after predicted peak). Continuous water level monitoring in the reach of Lagunitas Creek near the Coast Guard wells during fall 2005 showed, however, that salts are quickly flushed out of the creek once tides recede, lowering salinities down to freshwater levels (KHE 2006a). The implementation of the off-tide pumping regime is storage- and demand-dependent. Based on NMWD data, with implementation of the off-tide pumping practices, there have been a few periods since 1997 in which the salinity intrusion threshold of 100 mg/L either came very close to being exceeded (>90 mg/L; August 2001, October 2002 June 2003) or was exceeded (>100 mg/L; November – January 2003; July – September 2004; NMWD, unpub. data). There were no salinity intrusion events in 2005 or 2006 as of September 2006.

Salinity intrusion events during which NMWD experience chlorides exceeding 100 mg/L appear to correlate with predicted tide elevations exceeding 5.9 to 6.0 feet MLLW, although continuous conductivity monitoring suggests that changes in salinity occur with tides as low as 5.5 to 5.7 feet MLLW (NMWD 1997, NMWD, unpub. data). Preliminary conclusions by KHE (2006a) identify additional factors and conditions that are generally correlated with salinity spike occurrences in the Coast Guard Wells:

- 1) Periods of low flows less than 9-10 cfs;
- 2) Periods of maximum well-pumping rates (summer-time pumping rates);
- 3) Spring tides exceed 5.5 - to 5.7 feet MLLW (even though higher salinity waters reach the vicinity of the Coast Guard wells when predicted tides at Inverness are as low as 4.8 to 5.0 feet MLLW).
- 4) Spikes typically show up in the wells approximately 5- 10 days after a 5.5 to 5.7 feet MLLW spring or high tide event, typically during a neap or low tide event;



- 5) The spikes typically manifest as a single peak regardless of the number of days of high tide events the previous week;

While the exact location at which tidally and non-tidally influenced surface waters infiltrate into the alluvial aquifer is unknown, a review of available data and information on stratigraphy and creek bathymetry in the vicinity of the Coast Guard wells, predicted tide “thresholds” at which increases in groundwater salinity occur, and the consistent 5- to 7-day lag time between high tide- and intrusion events point to the infiltration location being some distance upstream from the Coast Guard wells (KHE 2006a). One of the possible infiltration locations could be the Downey well, which was originally constructed in the active floodplain of Lagunitas Creek in 1977, but has since become located in the middle of Lagunitas Creek due to subsequent migration or movement of the channel. This shallow well has not surprisingly had numerous operational problems during its life (NMWD 1997). Currently, this well is only being used during the summer and early fall to provide the Giacomini with irrigation water. Its location and operation suggest that the Downey well could be at least one of the major infiltration points for tidally influenced waters into the alluvial aquifer.

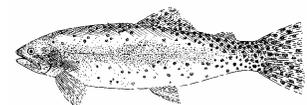
Ultimately, salinity intrusion appears to be controlled by a combination of factors, including tidal height, streamflow discharge, pumping rates, and possible influence from the adjacent terrace groundwater aquifer (KHE 2006a). A more detailed description of current theories regarding salinity intrusion can be found in Chapter 3 under Public Services – Municipal Water Supply and Distribution.

Effects of the Proposed Project on Municipal Water Supply. The proposed project would restore natural tidal and freshwater hydrologic processes. It has the potential of both increasing tidal prism in southern Tomales Bay by removing levees on the Giacomini Ranch and improving hydraulic connectivity with Olema Marsh and increasing freshwater flow by designating the appropriative water right purchased from the Giacomini Trust for beneficial in-stream uses. Because the exact mechanism by which salinity intrusion occurs is not understood, it is important that this document incorporate the most relevant impact indicator for analysis.

Restoring tidal hydrologic processes may affect surface water recharge of the alluvial aquifer in three ways: 1) increases in the **duration** or amount of time that saltwaters remain in the creek where infiltration into the alluvial aquifer occurs; 2) **frequency unrelated to volume of saltwater** through either decreases in streamflow (freshwater) or removal of in-stream barriers such as gravel bars or debris jams that would reduce the predicted tide elevation that tidal waters reach well recharge area (changes in salinity occur with tides as low as 5.5 to 5.7 feet MLLW (NMWD 1997, NMWD, unpub. data).); and/or 3) **frequency related to volume of saltwater** or increases in the volume of salts during spring tide events, thereby potentially increasing the frequency of salinity intrusion events by lowering the threshold tide level at which problematic volumes of salts develop. Evaluation of the monitoring data related to the NMWD Coast Guard well site indicate that the frequency of events that may affect salinity levels in the wells will not be affected as a result of proposed restoration activities. Modeling results do indicate potential change in the chloride load within the water adjacent to the Coast Guard well site in association with different restoration alternatives. It should be noted that these results did not incorporate the off-tide pumping practices employed by NMWD. As described above, these practices are generally effective at preventing occurrences of chlorides reaching the Coast Guard Wells.

For this document, analysis of the potential for the proposed project to increase the volume of salts in upstream portions of Lagunitas Creek was based on the results of computer hydrodynamic models that assessed changes in surface water salinity in Lagunitas Creek at the Coast Guard wells during peak high tides under the various alternatives (Table 77). Because most of the potential salinity intrusion events occur during the summer or fall, the model was specifically calibrated to represent a mean tidal month during the summer with characteristic high or spring tides that exceeded 5.5 feet MLLW, reaching more than 6 feet MLLW on several occasions, and mandated minimum summertime stream discharge for both 1) normal (8 cfs) and 2) dry (6 cfs) years. This particular hydrodynamic model uses a depth-averaged process for salinity results. Because the Coast Guard well location on Lagunitas Creek represented the extreme end of the modeling frame, there was some disparity during calibration runs between expected and observed salinities, however, numbers fell within the range of acceptable tolerance limits. The differences between observed and expected varied depending on the tide, but, during some of the higher tides, the model underestimated observed salinities in Lagunitas Creek by approximately 0.14 ppt (~5 mg/L) to 0.35 ppt (~12 mg/L; KHE 2006a).

The total mass of salts or chlorides occurring in Lagunitas Creek under existing conditions and the various alternatives was calculated as average salinity concentration (mg/L) by summing the mass of chlorides expected to be present on tides greater than 5.5 feet MLLW (relative to Inverness predicted tides) during the



second half of the summer Mean Tidal Month within a defined 330-foot cross-sectional area adjacent to the Coast Guard wells under both 1) dry-year (6 cfs) and 2) normal-year flows (8 cfs). The predicted average concentration of salts or chlorides during these events under baseline conditions was estimated at 700 mg/L during normal-year flows and almost 1,700 mg/L during dry-year flows (KHE 2006a). Because the correlation between changes in the volume of salts in surface waters and the volume of salts within groundwater wells is not known, increases in average chloride concentration is weighted more heavily in the impact analysis than decreases in the concentration.

TABLE 77. PUBLIC SERVICES – MUNICIPAL WATER SUPPLY AND DISTRIBUTION

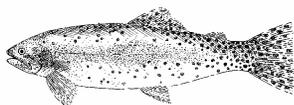
| | |
|---|---|
| <p>Source: Safe Water Drinking Act (SDWA), CA SDWA, Porter-Cologne Act, Marin CWP Nature: Beneficial, Adverse Context: Local Community Duration: Long-Term</p> | |
| No Impact | There would be no potential for impact to municipal groundwater supply associated with the proposed project. |
| Negligible | There would be the potential for a barely detectable effect on municipal water supply, including, but not limited to, a negligible decrease (≤ 5 percent) in the average concentration of salts or chlorides during spring or high tide conditions (>5.5 feet MLLW) in upstream areas of Lagunitas Creek adjacent to the Coast Guard wells associated with the proposed project during normal flow years. |
| Minor | <p>There would be the potential for a measurable effect on municipal water supply, including, but not limited to, a minor decrease (> 5 percent and ≤ 15 percent) in the average concentration of salts or chlorides during spring or high tide conditions (>5.5 feet MLLW) in upstream areas of Lagunitas Creek adjacent to the Coast Guard wells associated with the proposed project during normal flow years <i>OR</i></p> <p>There would be an increase (≤ 5 percent) in the average concentration of salts or chlorides during spring or high tide conditions (>5.5 feet MLLW) in upstream areas of Lagunitas Creek adjacent to the Coast Guard wells associated with the proposed project during normal flow years.</p> |
| Moderate | <p>There would be the potential for an appreciable effect on municipal water supply, including, but not limited to, a moderate decrease (> 15 percent and ≤ 25 percent) in the average concentration of salts or chlorides during spring or high tide conditions (>5.5 feet MLLW) in upstream areas of Lagunitas Creek adjacent to the Coast Guard wells associated with the proposed project during normal flow years; <i>OR</i></p> <p>There would be an increase (> 5 percent and ≤ 15 percent) in the average concentration of salts or chlorides during spring or high tide conditions (>5.5 feet MLLW) in upstream areas of Lagunitas Creek adjacent to the Coast Guard wells associated with the proposed project during normal flow years. There would be no change in frequency of potential intrusion events.</p> |
| Major or Substantial | <p>There would be the potential for a major effect on municipal water supply, including, but not limited to, a substantial decrease (> 25 percent) in the average concentration of salts or chlorides during spring or high tide conditions (>5.5 feet MLLW) in upstream areas of Lagunitas Creek adjacent to the Coast Guard wells associated with the proposed project during normal flow years; <i>OR</i></p> <p>There would be more than an increase (> 15 percent) in the average concentration of salts or chlorides during spring or high tide conditions (>5.5 feet MLLW) in upstream areas of Lagunitas Creek adjacent to the Coast Guard wells associated with the proposed project during normal flow years. There would be a change in the frequency of potential salinity intrusion events.</p> |

Impact Analysis

TABLE 78. INTENSITY, NATURE, TYPE, DURATION, AND CONTEXT OF IMPACTS FOR PUBLIC SERVICES – MUNICIPAL GROUNDWATER DISTRIBUTION AND SUPPLY

All impacts would be considered Local Community and Construction or Short-Term/Long-Term, as specified.

| | No Action | Alternative A | Alternative B | Alternative C | Alternative D |
|--|--|-----------------------|-----------------------|--------------------|--------------------|
| Impact Indicator | Intensity, Nature, Type, Duration, and Context of Impact | | | | |
| Public Services – Municipal Groundwater Supply | Beneficial - Major | Beneficial - Moderate | Beneficial - Moderate | Adverse – Moderate | Adverse – Moderate |



No Action Alternative

Analysis: The No Action Alternative would have major beneficial effects on reducing salinities within portions of Lagunitas Creek that could potentially affect the quality of the municipal water supply in the local community (Table 78). Under the No Action Alternative, levees, tidegates, and culverts in the Giacomini Ranch are not breached or removed, except for the 11-acre wetland restoration area in the northeastern corner of the East Pasture. The remainder of the levee would not be deconstructed, although there would be no levee maintenance. Olema Marsh is also not restored, and there would be no new public access facilities. The largest relevant change under the No Action Alternative comes with expiration of the Reservation of Use agreement with the Giacomini Trust in March 2007 and discontinuation of active agricultural management and management practices, particularly irrigation.

With expiration of the Reservation of Use agreement, the Park Service would follow its stated intention at the time of purchase to re-designate the purchased appropriative water right on Lagunitas Creek, which has been used for irrigation since 1959, for beneficial in-stream uses under State Water Code 1707. Under the No Action Alternative and all the action alternatives, the Park Service as the new owner would discontinue water diversion from the Downey Well and re-designate the 2.0 cfs of Lagunitas Creek streamflow for beneficial instream uses, including fish resources such as central California coast coho salmon (*Oncorhynchus kisutch*; FE), central California coastal steelhead (*Oncorhynchus mykiss*; FE), and California coastal chinook salmon (*Oncorhynchus tshawytscha*; FT). The remaining 0.67 cfs under this appropriative water right was purchased by NMWD for municipal water supply purposes. During the summer, NMWD has been providing the Giacomini Ranch with irrigation waters pumped from the Downey Well as part of its purchase agreement with the Giacomini Trust: this agreement would expire at roughly the same time as the Reservation of Use Agreement. Under this agreement, NMWD supplies the Giacomini Ranch up to 2 cfs per summer season, although the Giacomini sometimes pump directly from Lagunitas Creek to augment supply from the Downey Well.

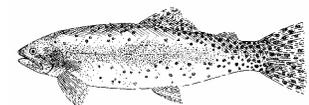
By ending irrigation and re-designating 2.0 cfs for beneficial in-stream flow, NMWD would indirectly benefit through an increase in freshwater streamflow or discharge that flows down the reach of Lagunitas Creek upstream of the Green Bridge during the summer. While the relationship between surface flows and the groundwater supply is not well understood, an increase in stream discharge directly within the well intake area could have several beneficial effects. Salts carried by some of the spring tides would be further diluted relative to baseline conditions by the greater volume of freshwater flow, thereby decreasing the volume of salts that infiltrate into the alluvial aquifer during these higher high tide events. Based on hydrodynamic modeling of both average (8-cfs) and dry (6 cfs) instream flows as mandated by the SWRCB³, the No Action Alternative would potentially decrease average salinity or chloride concentrations during spring or high tide conditions (>5.5 feet MLLW) in Lagunitas Creek adjacent to the NMWD Coast Guard wells by as much as 37-41 percent relative to simulated average salinity concentrations during dry-year and normal-year streamflow scenarios, respectively, for baseline conditions, where average chloride concentrations ranged from approximately 700 to 1,692 mg/L (KHE 2006a). While the Giacomini only use irrigation waters during the summer and late fall, these months represent the exact period when salinity intrusion events are the most common, even though some of the highest high tides occur during the winter.

This drop in average salinity or chloride concentration during spring or high tide conditions (>5.5 feet MLLW) of Lagunitas Creek streamflows would probably reduce the frequency of salinity intrusion events, although the magnitude of this reduction cannot be predicted with the current level of information on the relationship between salinities of surface waters and groundwater. Currently, NMWD attempts to avert salinity intrusion events by conducting off-tide pumping or reduced pumping such that at least one of the two wells at the Coast Guard station is turned off when predicted tides at Inverness reach 5.9 to 6.0 feet MLLW.

Use of the Downey well would be discontinued once its contract with the Giacomini Ranch for provision of irrigation waters ends. The effect that decommissioning of the well might have cannot be predicted with available information, but it is directly correlated with the re-designation of the appropriated water right.

Over the long term, the benefits of the No Action Alternative have to be considered in the overall context of large-scale trends in climatic change, such as global warming and sea level rise. Recently published studies suggest that sea level rise rates may be much greater than originally predicted, with water levels rising as

³ Measurement of mandated instream flows to be provided by Marin Municipal Water District (MMWD) through reservoir releases occurs at Samuel P. Taylor State Park, more than 7 miles upstream of the Coast Guard Wells.



much as 3 feet by 2100 (Overpeck et al. 2006). This rate of sea level rise could alter the frequency, duration, and chloride concentration adjacent to the Coast Guard Wells, regardless of the proposed project alternative.

Possible Additional Mitigation Measures: No mitigation measures would be proposed under this alternative.

Effectiveness of Possible Additional Mitigation Measures: Not applicable

Cumulative Impacts: There is one proposed project that could have cumulative impacts on municipal water supply. NMWD is evaluating means of improving water supply reliability within the area. NMWD has developed a well at the Gallagher Ranch, upstream of the Coast Guard wells, that could be used during high tide periods when one of the Coast Guard wells is typically shut down to avoid salinity intrusion events. The intent of the auxiliary well is not to expand the volume of water withdrawn from the groundwater, but maintain existing withdrawal rates during high tide events. NMWD is currently seeking funds for this proposed project. In combination with management actions proposed under the No Action Alternative and all action alternatives, these projects would still be expected to have a moderate to major effect on reducing salinities within upstream portions of Lagunitas Creek that could affect the quality of municipal water supply for the local community, though potential implications of sea level rise could eliminate all potential cumulative benefits.

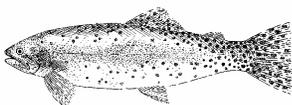
Conclusions: The No Action alternative would potentially have major beneficial effects on municipal water supply for the local community by reducing salinities in Lagunitas Creek upstream of the Green Bridge. Closure of the Downey Well and dedication of the 2.0 cfs of an appropriative water right on Lagunitas Creek to in stream flow would increase existing summer base flows up to 20 percent through the Coast Guard Wells and Project Area. Relative to baseline conditions, the increased volume of freshwater inflow would reduce salt concentrations in surface flows during spring tide events and may increase recharge of the alluvial aquifer during neap or low tide periods, thereby potentially decreasing the frequency of salinity intrusion events and the need for NMWD to conduct either off-tide pumping or reduced pumping during high tides.

Based on hydrodynamic modeling, the increase in instream flow during the summer months could result in anywhere from a 37 to 41 percent decrease in average salinity or chloride concentrations during spring or high tide conditions (>5.5 feet MLLW) in the portion of Lagunitas Creek directly adjacent to the Coast Guard wells during dry-year (6 cfs) and normal-year (8 cfs) mandated instream flow regimes, respectively, relative to baseline conditions (KHE 2006a). Closure of the Downey Well would also eliminate one of the potential areas in which tidally influenced waters infiltrate into the alluvial aquifer.

Alternative A

Analysis: Alternative A would have minor to moderate beneficial effects on reducing salinities within portions of Lagunitas Creek that could potentially affect the quality of the municipal water supply in the local community (Table 78). Under Alternative A, only the East Pasture would be restored. There would be no restoration in the West Pasture or Olema Marsh. The levees along and tidegate/culvert in the West Pasture and Tomasini Creek would be retained. In the East Pasture, restoration would involve breaching of levees in the East Pasture along Lagunitas Creek and excavation of new tidal channels. The southwestern corner of the creek bank would be regraded to a more stable profile. Most of the actions under this alternative focus on removal or restoration of agricultural infrastructure such as filling of ditches, ripping of compacted roads, fence removal, and removal of pumps, pipelines, and concrete spillways in addition to discontinuation of agricultural management practices such as irrigation. Public access facilities proposed under Alternative A would not affect water supply issues associated with the project.

Municipal Water Supply: With expiration of the Reservation of Use agreement, the Park Service would follow its stated intention at the time of purchase to re-designate the purchased appropriative water right on Lagunitas Creek, which has been used for irrigation since 1959, for beneficial in-stream uses under State Water Code 1707. Under the No Action Alternative and all the action alternatives, the Park Service as the new owner would discontinue pumping from the Downey Well and re-designate the 2.0 cfs of Lagunitas Creek streamflow for beneficial instream uses, including fish resources such as central California coast coho salmon (*Oncorhynchus kisutch*; FE), central California coastal steelhead (*Oncorhynchus mykiss*; FE), and California coastal chinook salmon (*Oncorhynchus tshawytscha*; FT). Discontinuation of Downey Well operations would



increase the volume of freshwater flowing down the portion of Lagunitas Creek upstream of the Green Bridge during the summer.

Under Alternative A, the beneficial effects of increasing instream freshwater flow are tempered to some degree by an increase in tidal prism within the Project Area resulting from selective breaching of the East Pasture levee. Tidal prism – or the volume of water exchanged through tidal action on a daily basis – would increase from 8.1 acre-feet under baseline conditions to approximately 235.4 acre-feet under Alternative A (KHE 2006a). The extent of area inundated by tides on a daily basis would climb from approximately 11.0 acres under baseline conditions to approximately 200 acres under Alternative A, with all of the increase occurring in the approximately 350-acre East Pasture of the Giacomini Ranch (KHE 2006a).

This increase in the volume of saltwater moving in and out of the southern portion of Tomales Bay has implications for salinities or concentrations of salts in Lagunitas Creek upstream of the Project Area. Based on results of hydrodynamic modeling, the reintroduction of tidal action to the East Pasture would reduce the magnitude or degree of dilution in salinities or concentrations of chlorides in upstream reaches of Lagunitas Creek that transfer of the appropriative water right from irrigation to beneficial in-stream uses would have provided. Under Alternative A, concentrations of chlorides as simulated by hydrodynamic modeling would potentially drop from 14 to 15 percent within the creek during spring tides in the summer and early fall under both average (8 cfs) and dry-year (6 cfs) streamflow conditions, respectively, relative to baseline conditions (KHE 2006a). These results suggest that, even with increased volume of saltwater in the southern portion of Tomales Bay, the East Pasture is capable of absorbing most of these waters, thereby maintaining a considerable portion of the benefits to reduced creek salinities provided by re-designation of the appropriative water right.

These hydrodynamic modeling results suggest that Alternative A could have similar beneficial effects on the quality of municipal groundwater supply for the local community, although lower in magnitude than the No Action Alternative. Salt concentrations in the creek would be reduced relative to baseline conditions, thereby decreasing the volume of salts infiltrating into the alluvial aquifer. The concentration of salts could be further diluted by infiltration of higher volumes of freshwater in-stream flow into the aquifer during neap or low tide periods, particularly when pumping rates are high. Both of these factors could potentially reduce the frequency of salinity intrusion events. NMWD off-tide pumping practices would further reduce potential for salinity intrusion under Alternative A

Over the long term, the benefits of the No Action Alternative have to be considered in the overall context of large-scale trends in climatic change, such as global warming and sea level rise. Recently published studies suggest that sea level rise rates may be much greater than originally predicted, with water levels rising as much as 3 feet by 2100 (Overpeck et al. 2006). This rate of sea level rise could alter the frequency and duration of tides causing salinity intrusion into the alluvial aquifer, as well as the overall chloride concentrations adjacent to the Coast Guard Wells, regardless of the proposed project alternative.

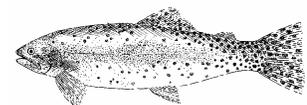
Municipal Water Supply Distribution: There would be no effect on municipal water supply distribution.

Possible Additional Mitigation Measures: No mitigation measures would be proposed under this alternative.

Effectiveness of Possible Additional Mitigation Measures: Not applicable

Cumulative Impacts: Cumulative impacts would be the same as discussed under the No Action Alternative.

Conclusions: Alternative A would potentially have minor to moderate beneficial effects on municipal water supply for the local community by reducing predicted salinities in Lagunitas Creek upstream of the Green Bridge, although the magnitude of this change would be less than that under the No Action Alternative. Discontinuation of Downey Well pumping and dedication of the 2.0 cfs appropriative water right to in-stream beneficial use will ensure increased freshwater flow through the Coast Guard Well and Green Bridge. Under Alternative A, tidal prism would increase with breaching of the East Pasture levee, which would somewhat offset the benefits provided by increased volume of freshwater in-stream flow to some degree. Based on hydrodynamic modeling, average salinity or chloride concentrations could drop to between 14- to 15 percent during spring or high tide conditions (>5.5 feet MLLW) in the portion of Lagunitas Creek directly adjacent to the Coast Guard wells during SWRCB dry-year (6 cfs) and normal-year (8 cfs) streamflow regimes (KHE



2006a). Increased freshwater between the Downey Well and Coast Guard Wells, in conjunction with NMWD off-tide pumping practices, would reduce or dilute the volume of salts introduced into the alluvial aquifer and potentially decrease the frequency of salinity intrusion events and the need for NMWD to conduct off-tide or reduced pumping during high tide events. There would be no effect on municipal water supply distribution.

Alternative B

Analysis: As described in Alternative A, Alternative B would have minor to moderate beneficial effects on reducing salinities within portions of Lagunitas Creek that could potentially affect the quality of the municipal water supply in the local community (Table 78). Under Alternative B, the East and West Pastures would be restored, but not Olema Marsh. Restoration would involve complete removal of levees in the East Pasture along Lagunitas Creek and excavation of even more new tidal channels. Breaches would be created in the West Pasture levee. Some connection would be established between the East Pasture and Tomasini Creek through lowering of levees to allow overflow during flood events, but otherwise Tomasini Creek would remain in its current channel with tidegate/flashboard dam structure still in place. As with Alternative A, this alternative would involve removal or restoration of agricultural infrastructure and discontinuation of agricultural management practices such as irrigation. Public access facilities proposed under Alternative B would not affect water supply issues associated with the project.

Municipal Water Supply: While tidal influence would be reintroduced to the West Pasture with breaching of the levees, the increase in tidal prism would be so minimal relative to Alternative A – approximately 6.3 acre-feet – that there would be no to only very negligible differences between Alternatives A and B in terms of average salinity concentrations in upstream portions of Lagunitas Creek (KHE 2006a). Based on hydrodynamic modeling, average salinity or chloride concentrations could be reduced 14 - 15 percent during spring or high tide conditions (>5.5 feet MLLW) in the portion of Lagunitas Creek directly adjacent to the Coast Guard wells during both dry-year (6 cfs) and normal-year (8 cfs) streamflow regimes mandated by the SWRCB, respectively, relative to baseline conditions (KHE 2006a). Modeling results suggest that due to proximity, the East Pasture has a much stronger influence on salinity dynamics and patterns in Lagunitas Creek above the Green Bridge than the West Pasture.

Over the long term, the benefits of Alternative B have been considered in the overall context of large-scale trends in climatic change, such as global warming and sea level rise, which would alter the frequency and duration of tides causing salinity intrusion into the alluvial aquifer, as well as the overall chloride concentrations in surface waters of Lagunitas Creek, regardless of the proposed project alternative.

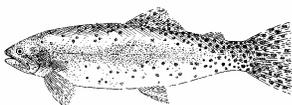
Municipal Water Supply Distribution: There would be no effect on municipal water supply distribution.

Possible Additional Mitigation Measures: No mitigation measures would be proposed under this alternative.

Effectiveness of Possible Additional Mitigation Measures: Not applicable

Cumulative Impacts: Cumulative impacts would be the same as discussed under the Alternative A.

Conclusions: As with Alternative A, Alternative B would potentially have minor to moderate beneficial effects on municipal water supply for the local community by reducing salinities in upstream reaches of Lagunitas Creek upstream of the Green Bridge. Discontinuation of Downey Well pumping and dedication of the 2.0 cfs appropriative water right to in-stream beneficial use will ensure increased freshwater flow through the Coast Guard Well and Green Bridge. Under Alternative A, tidal prism would increase with breaching of the East Pasture levee, which would somewhat offset the benefits provided by increased volume of freshwater in-stream flow to some degree. Based on hydrodynamic modeling, average salinity or chloride concentrations could drop to between 14- to 15 percent during spring or high tide conditions (>5.5 feet MLLW) in the portion of Lagunitas Creek directly adjacent to the Coast Guard wells during SWRCB dry-year (6 cfs) and normal-year (8 cfs) streamflow regimes (KHE 2006a). Increased freshwater between the Downey Well and Coast Guard Wells, in conjunction with NMWD off-tide pumping practices, would reduce or dilute the volume of salts introduced into the alluvial aquifer and potentially decrease the frequency of salinity intrusion events and the need for NMWD to conduct off-tide or reduced pumping during high tide events. There would be no effect on municipal water supply distribution.



Alternative C

Analysis: Alternative C would have moderate adverse effects on salinities within Lagunitas Creek upstream of the Green Bridge that could potentially affect the quality of the municipal water supply in the local community (Table 78). Under Alternative C, the East and West Pastures would be restored, along with Olema Marsh. Restoration would involve complete removal of levees in the East and West Pastures along Lagunitas Creek and excavation of even more new tidal channels. A small tidal channel would be initiated off Lagunitas Creek, as well as in the interior of the East Pasture. Tomasini Creek would be realigned into one of its historic alignments midway through the East Pasture. In Olema Marsh, an adaptive restoration approach would be undertaken, with initial excavation of a shallow berm and the Bear Valley Creek channel to improve hydraulic connectivity and improve drainage of currently impounded waters. As with the other alternatives, this alternative would involve removal or restoration of agricultural infrastructure and discontinuation of agricultural management practices such as irrigation. Public access facilities proposed under Alternative B would not affect water supply issues associated with the project.

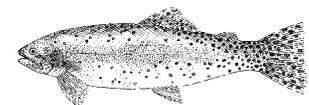
Municipal Water Supply: Unlike the other alternatives, Alternative C may cause a net increase in average salinity or chloride concentrations during high or spring tide events in the portion of Lagunitas Creek adjacent to the Coast Guard wells during both dry-year and normal-year streamflow scenarios based on results of hydrodynamic modeling (KHE 2006a). Modeling results suggest that average chloride concentrations in this reach of Lagunitas Creek would increase by 15 to 16 percent over baseline conditions during spring or high tide conditions (>5.5 feet MLLW) under normal-year and dry-year streamflow regimes, respectively (KHE 2006a).

The dramatic change in simulated salinities in upstream portions of Lagunitas Creek under Alternative C is associated with the inclusion of Olema Marsh in the restoration project. While Alternative C would involve complete removal of levees in the West Pasture, one of the primary drivers that influences the volume of saltwater that moves into upstream portions of Lagunitas Creek is tidal prism, and the volume of water exchanged with daily tidal action in the Giacomini Ranch under Alternative C would be identical to that of Alternative B (approximately 242 acre-feet; KHE 2006a). Inclusion of Olema Marsh into the restoration project only slightly increases tidal prism for the overall project. As noted above, Olema Marsh would be restored using an adaptive restoration approach that would involve removal of a sediment berm and shallow excavation of an improved flow path for Bear Valley Creek, as well as potentially replacement of one or both of the Levee Road and Bear Valley Road culverts. Combined, these restoration actions would be expected to increase the volume of water exchanged on spring or high tides to approximately 5 acre-feet depending on which actions are implemented (KHE 2006a).

The large effect that Olema Marsh has on salinity structure of upstream portions of Lagunitas Creek despite its relatively small tidal prism appears to relate to the location of its exchange point with Lagunitas Creek (KHE 2006a). The outlet of Bear Valley Creek, which flows through Olema Marsh, empties into a deep section of Lagunitas Creek upstream of White House Pool. Conversely, because the Giacomini Ranch delta is shaped like a wedge, most of the tidal exchange would occur much further north in the Project Area where elevations in the “wedge” are lowest. While the concentrations and load of chloride predicted to occur adjacent to the Coast Guard wells would increase under Alternative C, there would be no change in the frequency of such events. As they do currently, NMWD off-tide pumping would avoid some of these higher chloride concentrations during tides greater than 6.0 feet MLLW.

Municipal Water Supply Distribution: The NMWD distribution pipeline for Inverness Park, Silver Hills, and Bear Valley Road area follows State Route 1 to Levee Road, where it is buried or suspended on the north side of Levee Road until it reaches the intersection with Bear Valley Road. Potential replacement of the Levee Road culvert on Bear Valley Creek as part of the Olema Marsh restoration would likely require excavation of the pipeline and replacement or relocation. It is possible that the pipeline would be turned off during certain portions of the construction process, thereby temporarily cutting off service to NMWD customers in Inverness Park, Silver Hills, and Bear Valley Road areas. As discussed under BMPs in Chapter 2, customers in these areas would be notified of a possible disruption in service approximately one week prior to excavation near or replacement or movement of the pipeline. These construction-related distribution issues would represent a minor to moderate adverse effect on municipal water supply and distribution to the local community.

Possible Mitigation Measures: Implementation of restoration actions at the Olema Marsh would likely result in increases of chloride concentration during spring or high tide events in the portion of Lagunitas Creek



adjacent to the Coast Guard wells, but it would not increase the frequency or duration of salinity intrusion events. To mitigate the potential impacts to NMWD operations and the quality of the groundwater supply from restoration of Olema Marsh, the project has identified a staged approach to restoration. The initial stage of implementation on the Olema Marsh is the creation of a flow path through shallow excavation. Limited excavation at the lower end of the Olema Marsh would be conducted to initiate downcutting through the elevation control sill. Monitoring of salinity exiting the Olema Marsh and in Lagunitas Creek adjacent to the Coast Guard wells would be conducted to determine the level of influence associated with actions in the Olema Marsh. Future steps, including replacement of the Levee Road and Bear Valley Road culverts would be conducted after evaluation of salinity dynamics.

Additional efforts to characterize the zone of influence between the Coast Guard Wells and Downey Wells would also be evaluated. The Park Service will continue to collaborate with, and support the NMWD pursuit of water supply reliability through development of the Gallagher well or others that may provide a dependable water supply to the west Marin Service Area.

Effectiveness of Possible Mitigation Measures: Implementation of this staged approach will allow for managers to gage general response in salinity dynamics in Olema Marsh and Lagunitas Creek and changes in habitat and accessibility for salmonids in the Olema Marsh. Using these criteria, managers would be able to evaluate the advisability and timing of any potential next steps that would lead to more intensive restoration of Olema Marsh.

Cumulative Impacts: Cumulative impacts would be the same as discussed under Alternative A.

Conclusions: Alternative C would have the potential for moderate adverse effects on distribution and quality of the municipal water supply for the local community. The dramatic change in effect between Alternative C and other alternatives on salinity or chloride concentrations in upstream reaches of Lagunitas Creek appears to result from inclusion of Olema Marsh in the restoration project. While the Olema Marsh only increases the tidal prism -- one of the major factors driving the volume of saltwater in upstream reaches -- by 1.8 percent, the proximity of Olema Marsh to the Coast Guard well site likely magnifies its effect on salinity structure on upstream reaches. Based on hydrodynamic modeling, restoration of Olema Marsh could cause a potential increase in average chloride concentrations by 15- to 16 percent in upstream reaches of Lagunitas Creek during spring tide events (KHE 2006a). Because the frequency that tide water reaches the Coast Guard recharge zone would not change, and NMWD off-tide pumping avoids the peak tide period when predicted tides exceed 6.0 MLLW, the potential effects of Alternative C are considered adverse moderate. In addition, implementation of a staged approach to restoration in Olema Marsh would allow the Park Service and NMWD to better define the exact relationship between Olema Marsh and upstream reaches of Lagunitas Creek, as well as explore other options for precluding salinity intrusion events such as locating an additional well upstream of tidally influenced areas. Potential replacement of the Levee Road culvert on Bear Valley Creek as part of the Olema Marsh restoration would likely require excavation of the pipeline and replacement or relocation, which could result in a temporarily cut off of service to NMWD customers in Inverness Park, Silver Hills, and Bear Valley Road areas. This construction-related distribution issues would represent a minor to moderate adverse effect on municipal water supply and distribution to the local community.

Alternative D

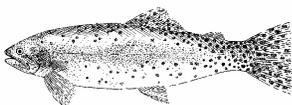
Analysis: Alternative D would have the potential for identical minor to major adverse effects as Alternative C on distribution and quality of the municipal water supply to the local community (Table 78).

Proposed Mitigation Measures: Proposed mitigation measures would be the same as described under Alternative C.

Effectiveness of Proposed Mitigation Measures: The effectiveness of the proposed mitigation measures would be the same as described under Alternative C.

Cumulative Impacts: Cumulative impacts would be the same as discussed under Alternative A.

Conclusions: Similar to Alternative C, Alternative D would have the potential for moderate adverse effects on distribution and quality of the municipal water supply for the local community. The dramatic change in



effect between Alternative C and other alternatives on salinity or chloride concentrations in upstream reaches of Lagunitas Creek appears to result from inclusion of Olema Marsh in the restoration project. While the Olema Marsh only increases the tidal prism one of the major factors driving the volume of saltwater in upstream reaches, by 1.8 percent, the proximity of Olema Marsh to the Coast Guard well site likely magnifies its effect on salinity structure on upstream reaches. Based on hydrodynamic modeling, restoration of Olema Marsh could cause a potential increase in average chloride concentrations by 15- to 16 percent in upstream reaches of Lagunitas Creek during spring tide events (KHE 2006a). Because the frequency that tide water reaches the Coast Guard recharge zone would not change, and NMWD off-tide pumping avoids the peak tide period when predicted tides exceed 6.0 MLLW, the potential effects of Alternative C are considered adverse moderate. In addition, implementation of a staged approach to restoration in Olema Marsh would allow the Park Service and NMWD to better define the exact relationship between Olema Marsh and upstream reaches of Lagunitas Creek, as well as explore other options for precluding salinity intrusion events such as locating an additional well upstream of tidally influenced areas. Potential replacement of the Levee Road culvert on Bear Valley Creek could result in a temporarily cut off of water service to NMWD customers in Inverness Park, Silver Hills, and Bear Valley Road areas, which would have a minor to moderate adverse effect on municipal water supply and distribution to the local community.

Public Services - Traffic and Transportation

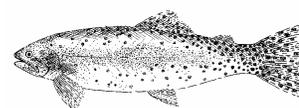
Laws, Regulations, Policies, and Criteria Guiding Impact Analysis

The Marin County Congestion Management Agency (CMA) creates, updates, and administers a Congestion Management Plan (CMP) for the county. The purpose is to establish Levels of Service (LOS) for designated freeways, state highways, and local arterials and to maintain those standards by increasing capacity or managing travel demand on those roads. The CMA annually monitors service levels on freeways, state highways, and routes of regional significance as part of the annual update. State Route 1 from Sir Francis Drake Boulevard to Point Reyes Station is part of the designated roadway network. Under CEQA, the County also evaluates changes in traffic conditions, with projects creating changes dropping the Level of Service (see description below) below Level D considered a substantial or “significant” impact.

Within the Coastal Zone, which incorporates the Project Area, the Local Coastal Program (LCP; Marin County Comprehensive Planning Department 1981) specifically identifies Sir Francis Drake Boulevard as providing a scenic driving experience for coastal visitors and an important access road for local residents. The LCP (Marin County Comprehensive Planning Department 1981) notes that, “in order to protect its scenic rural character, the road shall be maintained as a two-lane roadway.” The LCP (Marin County Comprehensive Planning Department 1981) concluded that “Sir Francis Drake has adequate capacity to handle increased recreational and local traffic, although traffic patterns do occasionally create hazardous conditions for pedestrians and bicyclists in the areas of Inverness and Inverness Park.”

The Point Reyes Station Community Plan (Marin County Community Development Agency 2001) focused on the lack of off-street parking as a concern, given the steady increase in numbers of visitors and area residents. All new structures and uses are required to provide off-street parking scaled to the level of use (Marin County Community Development Agency 2001). The Community Plan (2000) also supports efforts to reduce congestion through alternative transportation, including efforts to identify appropriate locations for paths that could be used for both bicycle commuting and recreation, including investigations into the feasibility of using the abandoned railroad right-of-way.

Significance criteria developed by the state and county under CEQA address: 1) substantial increases in vehicle trips or traffic congestion such that existing levels of service on affected roadways would deteriorate below acceptable county standards; 2) traffic hazards related to safety from design features (e.g., sharp curves or dangerous intersections), barriers to pedestrians or bicyclists; or incompatible uses (e.g., farm equipment); 3) inadequate emergency access or access to nearby uses; 4) insufficient parking capacity on-site or off-site; and 5) substantial impacts upon existing transportation systems, including rail, waterborne, or air traffic systems.

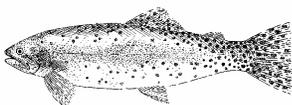


General Assumptions and Methodologies

- The proposed project has the potential to impact traffic and transportation through changes in vehicular and truck traffic patterns associated with construction of the proposed project, as well as through changes in traffic volume and parking demand in local communities associated with potential increases in vehicles and visitors who might come to view the restored wetland or use the public access facilities.
- Existing and projected future transportation issues are defined for roads and intersections, using Level of Service (LOS) criteria. Separate criteria are established for roads, signalized intersections, and stop sign-controlled intersections. LOS for roadways uses a Volume-to-Capacity ratio based on conditions of free flow and the amount of restriction on maintaining speed limits or safe speeds for roadway conditions within designated areas. LOS for intersections is typically based on the amount of delay measured in seconds between when a vehicle reaches an intersection, including a queue or the amount of waiting in a line of traffic, and when it passes through the intersection.
- The County has established a minimum LOS for urban and suburban arterials, including highways that serve as arterials such as State Route 1, as LOS D or better and LOS E or better for Highway 101, Highway 580, State Route 37, and rural expressways. Although standards for rural roads or portions of roads are not clearly specified, for the purposes of this evaluation, Sir Francis Drake Boulevard (including Levee Road), Bear Valley Road, and Pierce Point Road would be interpreted as needing to meet LOS standards of D or better.
- BRW and Lee Engineering (1998) analyzed trends in the San Francisco Bay region population growth and trends in visitation and concluded that visitation and traffic would increase 1 percent annually from 1998-2010. Based on projections of 1 percent annual growth rate in visitation and traffic through 2010, LOS was not predicted to change for State Route 1, Sir Francis Drake Boulevard (Olema – Pierce Point Road), or Bear Valley Road between 1998 and 2010 (BRW and Lee Engineering 1998). However, Point Reyes-Petaluma Road was projected to decrease from LOS C in the afternoon to LOS D starting in 2005 (BRW and Lee Engineering 1998).
- Since 1998, park visitation has not increased 1 percent annually. Visitation reached a peak of 2,579,949 in 1992, but by 2004, visitation actually had decreased to 1,960,055, a drop of 21 percent (NPS, unpub. data). Visitation rose slightly in 2005 to 1,988,585 (NPS, unpub. data). However, BRW and Lee Engineering had projected that visitation would total 2,750,000 in 2005 based on a 1 percent annual increase, a difference of 28 percent or 761,415 more annual visitors than actual numbers of visitors in 2005.
- Based on the fact that visitation rates have not kept pace with projected visitation trends through 2005, the proposed project may be able to serve as many as 2,504 additional daily visitors through 2010 without causing any change in LOS for state and regional roadways and/or causing a drop in LOS below LOS D. Depending on the number of people per vehicle, an increase in visitation of 2,504 people would generate approximately 656 (4 people per car) additional daily vehicle trips. For public reporting purposes, the Seashore uses a multiplier of 4 persons per vehicle for traffic counts on Sir Francis Drake Boulevard and Pierce Point Road.
- BRW and Lee Engineering (1998) did not analyze parking capacity in the Project Area and immediate vicinity. However, parking capacity was qualitatively assessed for existing and future parking needs by rating parking capacity as ranging from very high (occupancy does not exceed 90 percent of capacity during weekdays and weekends regardless of season) to very low (occupancy exceeds 90 percent of capacity during most weekdays and weekends regardless of season).
- Pedestrian and bicycle transportation will be addressed under Visitor and Resident Experience.

Described below are methodologies for impact indicators related to traffic and transportation, including specific assumptions or details on methodologies.

Traffic and Transportation – Construction-Related: Impact thresholds for construction-related traffic are based on analyses by BRW and Lee Engineering of increases in traffic related to park visitation and effects on LOS in the Point Reyes area and effects. The number of vehicles expected at Project Area during construction was based on daily round trips generated by construction personnel and the total number of round trips for dump trucks hauling excavated sediment and other materials. For the purposes of this analysis, it was assumed that approximately 30 percent of the construction personnel would car-pool or ride with at least one other employee, resulting in a multiplier of 1.3 times total number of employees expected at any one point in the construction period to derive average daily vehicle trips. Sediment excavated from the Project Area would largely be disposed of within quarries in the Seashore, most of which are located on the northern portion of the Point Reyes Peninsula off Pierce Point Road (Figure 10). Most non-soil materials would be disposed of at a



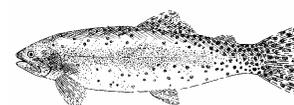
municipal or commercial landfill such as the Redwood Landfill in Petaluma, which is approximately 20-25 miles away.

Impact thresholds for project-related traffic associated with implementation of the proposed project are based on analyses by BRW and Lee Engineering of the effects of increases in park visitation on LOS of specific roadway segments in the Point Reyes area. The effects of the proposed project on traffic and LOS are evaluated using a rough estimation of the potential number of vehicle and truck trips and the duration and intensity of hauling under the various alternatives. Potential increases in traffic from construction-related vehicle and truck trips are assessed using projected traffic volume and LOS of key roadway segments generated by BRW and Lee Engineering (1998) and adjusting these projections based on current trends in visitation. As directed by Park Service NEPA guidelines, impact thresholds incorporate a broad range of potential increases in construction-related traffic under the various alternatives (Table 79). In addition, construction analyses also factor in the potential for temporary road closures that could affect transportation patterns (i.e., rerouting of traffic) and access by emergency personnel and services. The effects of temporary road closures are differentiated between sole access arterial roadways or roadways that have no alternate routes or detour capabilities and alternate access roadways or roadways that have alternate routes or detour capabilities. Construction activities on weekends would be restricted, so construction-related closures would be unlikely to affect heavier weekend traffic patterns.

TABLE 79. PUBLIC SERVICES – TRAFFIC AND TRANSPORTATION – CONSTRUCTION-RELATED IMPACTS

| | |
|---|--|
| Source: Marin CWP, Point Reyes Station Community Plan, LCP Zone II Nature: Adverse Context: Local Community, Regional Duration: Construction | |
| No Impact | There would be no potential for impact to traffic or transportation in the local community associated with construction of the proposed project. |
| Negligible | There would be a negligible or barely detectable increase (≤ 5 percent) in traffic in the local community associated with construction of the proposed project that would not cause LOS to drop below Level D. Construction would not be anticipated to result in any temporary road closures on sole access or other types of arterial roadways during the construction period that would last longer than 5 minutes for each closure. No rerouting of traffic would be necessary. |
| Minor | There would be a minor or measurable increase (> 5 percent and ≤ 15 percent) in traffic in the local community associated with construction of the proposed project that would not cause LOS to drop below Level D. Construction would not be anticipated to result in any temporary road closures on sole access arterial roadways during the construction period that would last longer than 15 minutes for each closure. For roadways with alternate routes or detour potential, temporary road closures would not exceed 10 hours. On these roads, traffic, including emergency services, would be temporarily rerouted to alternative roads, when necessary. |
| Moderate | There would be a moderate or appreciable increase (> 15 percent and ≤ 30 percent) in traffic in the local community associated with construction of the proposed project that would not cause LOS to drop below Level D. Construction would not be anticipated to result in any temporary road closures on sole access arterial roadways during the construction period that would last longer than 30 minutes for each closure. For roadways with alternate routes or detour potential, temporary road closures would not exceed 20 hours. On these roads, traffic, including emergency services, would be temporarily rerouted to alternative roads, when necessary. |
| Major or Substantial | There would be a major or substantial increase (> 30 percent) in traffic in the local community associated with construction of the proposed project that might cause LOS to drop below Level D. Construction would be anticipated to result in any temporary road closures on sole access arterial roadways during the construction period that would last longer than 30 minutes for each closure. For roadways with alternate routes or detour potential, temporary road closures would exceed 20 hours. On these roads, traffic, including emergency services, would be temporarily rerouted to alternative roads. |

Traffic and Transportation – Project-Related: Impacts to traffic and transportation from implementation or operation of the proposed project would result primarily from the potential increase in the number of visitors, residents, and vehicles coming to view the restored wetland or use public access facilities. Impact thresholds for project-related traffic associated with implementation of the proposed project are based on analyses by BRW and Lee Engineering of the effects of increases in park visitation on traffic volume and LOS of specific roadway segments in the Point Reyes area. Potential increases in traffic related to visitation are assessed using projected traffic volume and LOS of key roadway segments generated by BRW and Lee Engineering (1998) and adjusting these projections based on current trends in visitation. The potential effects of the proposed project on visitation are analyzed using information on the number of public access-related



structures, facilities and attractions/uses provided under each of the various alternatives. The number of potential users of public access-related facilities at each major destination point within the Project Area (i.e., southern perimeter trail, eastern perimeter trail, etc.) is then projected as low, medium, or high based on the number of public access-related structures, facilities, and attractions/uses that would be available for use, as well as the current number of users of existing facilities in the Project Area. For comparison purposes, projections took into account the recorded number of users of other structures, facilities, and attractions/uses within the Seashore at major destination points. To ensure that the analysis was conservative or cautious such it errs on the side of overestimating impacts, peak visitation for each major destination point within the Project Area was assumed to occur simultaneously. These peak visitation numbers were then converted to vehicle numbers based on the assumption that approximately 70 percent of the visitors would be driving alone, while 30 percent would be paired in vehicles. As directed by Park Service NEPA guidelines, impact thresholds incorporate a broad range of potential increases in project-related traffic under the various alternatives (Table 80).

TABLE 80. PUBLIC SERVICES – TRAFFIC AND TRANSPORTATION – PROJECT-RELATED EFFECTS

| | |
|--|--|
| Source: Marin CWP, Point Reyes Station Community Plan, LCP Zone II Nature: Adverse Context: Local Community Duration: Long-Term | |
| No Impact | There would be no potential for impact to traffic or transportation in the Point Reyes area associated with implementation of the proposed project. |
| Negligible | There would be a negligible or barely detectable change (≤ 5 percent) in traffic associated with implementation of the proposed project that would cause no change in the LOS or cause LOS to drop below Level D. |
| Minor | There would be a minor or measurable change (> 5 percent and ≤ 15 percent) in traffic associated with implementation of the proposed project that would cause no change in the LOS or cause LOS to drop below Level D. |
| Moderate | There would be a moderate or appreciable change (> 15 percent and ≤ 30 percent) in traffic associated with implementation of the proposed project that might cause a change in the LOS, but would not cause LOS to drop below Level D. |
| Major or Substantial | There would be a major or substantial change (> 30 percent) in traffic associated with implementation of the proposed project or an increase in traffic of any magnitude that would cause LOS to drop below Level D. |

Parking – Project-Related Effects: Impacts to parking from implementation or operation of the proposed project would result primarily from the potential increase in the potential number of visitors and residents that would be driving to the Project Area to use public access facilities and therefore require parking. Impact thresholds for project-related parking associated with implementation of the proposed project are based on analyses of increases in project-related vehicular trips and the presence or absence of parking for key destination areas or points for public access proposed under the various alternatives. To assess effects on parking, the number of spaces within each formal and informal parking lot was taken into consideration, along with estimated capacity or qualitative assessments of how heavily particular lots are currently used (e.g., low, medium, and high), with high characterized as those lots with occupancy of 90 percent of capacity or higher during weekdays or weekends (BRW and Lee Engineering 1998). Because there are no formal visitor parking lots in Point Reyes Station, parking was assumed to be at capacity on weekends and possibly some weekdays most of the year based on concerns regarding the lack of parking expressed in the Community Plan (Marin County Community Development Agency 2001) and by local residents during scoping. Using the projected increase in vehicles and qualitative assessment of parking availability and demand, impact thresholds focus qualitatively on the potential for increases in visitation associated with the proposed project to cause exceedance of the capacity of both formal and informal parking lots and areas during weekday and weekend periods and to adversely effect already congested parking conditions in Point Reyes Station (Table 81).

TABLE 81. PUBLIC SERVICES – PARKING – PROJECT-RELATED EFFECTS

| |
|---|
| Source: Marin CWP, Point Reyes Station Community Plan Nature: Adverse Context: Local Community Duration: Long-Term |
|---|

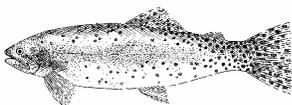


TABLE 81. PUBLIC SERVICES – PARKING – PROJECT-RELATED EFFECTS

| | |
|----------------------|--|
| No Impact | There would be no potential for impact to parking in the Point Reyes area associated with implementation of the proposed project. |
| Negligible | There would be only a barely detectable change in parking demand relative to baseline conditions such that capacity of formal and informal parking lots. If parking demand increases, areas within the vicinity of the Project Area would generally be sufficient to handle parking demand even on busy weekends. There might be a negligible or barely detectable change (average daily \leq 5 cars) relative to baseline conditions in parking demands in Point Reyes Station associated with implementation of the proposed project. |
| Minor | There would be a minor change in parking demand relative to baseline conditions. If parking demand increases, capacity of formal and informal parking lots within the vicinity of the Project Area would be generally sufficient to handle parking demand during the weekdays and most weekends, although parking lots would be at or near capacity on some of the very busiest weekends in the highest visitation months (President’s Day weekend and weekends in May and August, BRW and Lee Engineering 1998). There might be a minor, but measurable change (average daily \leq 10 cars) relative to baseline conditions in parking demands in Point Reyes Station associated with implementation of the proposed project. |
| Moderate | There would be a moderate change in parking demand relative to baseline conditions. If parking demand increases, capacity of formal and informal parking lots within the vicinity of the Project Area would be generally sufficient to handle parking demand during the weekdays and off-peak season (November through February) weekends, although parking lots would be at or near capacity on weekends during the peak visitation season (May – August). There might be a moderate and appreciable change (average daily \leq 20 cars) relative to baseline conditions in parking demands in Point Reyes Station associated with implementation of the proposed project. |
| Major or Substantial | There would be a major or substantial change in parking demand relative to baseline conditions. If parking demand increases, capacity of formal and informal parking lots within the vicinity of the Project Area would only be sufficient to handle parking demand during the weekdays. Parking lots would be at or near capacity on almost all weekends. There would be a major and substantial change (average daily $>$ 20 cars) relative to baseline conditions in parking demands in Point Reyes Station associated with implementation of the proposed project. |

Alternative Transportation (Pedestrian and Bicycle Circulation) – Project-Related Effects: Impact thresholds focus on changes in alternative transportation routes or segments of routes resulting from implementation of the proposed project (Table 82). For the purposes of this analysis, alternative transportation is considered as alternative transportation routes or segments of routes that provide connectivity between communities and/or community business and residential areas and that would allow residents and visitors to walk or bicycle rather than use cars. Alternative transportation routes or segments of routes are differentiated from trails on the basis that trails do not necessarily provide connection between communities, but rather are intended to provide visitors and residents opportunities to enjoy natural resources of the region through passive and active activities (e.g., hiking, birdwatching, swimming, wildflower areas, etc.). Public access components that meet these criteria are assessed separately under Visitor and Resident Experience, although there may be overlap with facilities that serve both trail and alternative transportation needs. For this analysis, the number of alternative transportation routes and route segments under the various alternatives is totaled and compared with the existing number of routes and route segments to evaluate potential changes to alternative transportation resources. Improvements to existing alternative transportation routes or segments of routes that increase accessibility through increasing bicycle and pedestrian safety or the quality of the access -- e.g., adding guardrails, moving path away from edge of road, leveling or paving path, etc. -- are incorporated, as well, although weighted lower in analysis than new routes and route segments.

TABLE 82. PUBLIC SERVICES – ALTERNATIVE TRANSPORTATION (PEDESTRIAN AND BICYCLE CIRCULATION)

| | |
|---|---|
| Source: Park Service Management Policies, Marin CWP, Point Reyes Station Community Plan, LCP Zone II Nature: Beneficial, Adverse Context: Local Community Duration: Long-Term (Construction Effects addressed under Visitor and Resident Experience) | |
| No Impact | There would be no potential for impact to alternative transportation resources in the local community associated with implementation of the proposed project. |
| Negligible | The proposed project would result in an undetectable or barely detectable change in the number or accessibility/quality of alternative transportation routes and route segments in the local community. |
| Minor | The proposed project would result in a measurable change in the number or accessibility/quality of alternative transportation routes and route segments in the local community. |



| | |
|----------------------|---|
| Moderate | The proposed project would result in an appreciable change in the number or accessibility/quality of alternative transportation routes and route segments in the local community. |
| Major or Substantial | The proposed project would result in a major or substantial change in the number or accessibility/quality of alternative transportation routes and route segments in the local community. |

Impact Analysis

TABLE 83. INTENSITY, NATURE, TYPE, DURATION, AND CONTEXT OF IMPACTS FOR TRAFFIC AND TRANSPORTATION

All impacts would be considered Local Community and are separately analyzed for Construction and/or Short-Term/Long-Term. Hyphenated entries refer to the range of impact intensity estimated for individual pollutants.

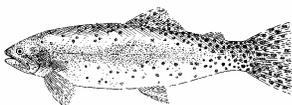
| Impact Indicator | No Action | Alternative A | Alternative B | Alternative C | Alternative D |
|------------------------------|--|--------------------------|--------------------------|--------------------------|-------------------------|
| | Intensity, Nature, Type, Duration, and Context of Impact | | | | |
| Construction-Related Effects | Adverse-Negligible | Adverse-Negligible/Minor | Adverse-Minor | Adverse-Minor/Moderate | Adverse-Minor/Moderate |
| Project-Related Effects | Adverse - Negligible | Adverse-Negligible/Minor | Adverse-Negligible/Minor | Adverse-Negligible/Minor | Adverse-Negligible |
| Parking | Adverse-Negligible | Adverse-Minor/Moderate | Adverse-Minor/Moderate | Adverse-Minor | Adverse-Minor |
| Alternative Transportation | No Impact | Beneficial-Moderate | Beneficial - Moderate | Beneficial - Minor | Beneficial - Negligible |

No Action Alternative

Analysis: The No Action Alternative would generally have no impact to minor adverse effects on traffic and transportation in the local community during construction and after implementation (Table 83). Under the No Action Alternative, levees, tidegates, and culverts in the Giacomini Ranch are not breached or removed, except for the 11-acre wetland restoration area in the northeastern corner of the East Pasture. The Park Service is required under its existing agreement with CalTrans to restore wetlands as mitigation for impacts caused by CalTrans to aquatic habitat from a road repair on State Route 1 in Marin County in exchange for the Park Service receiving monies to purchase and restore the Giacomini Ranch. The remainder of the levee would not be deconstructed, although there would be no levee maintenance. Olema Marsh is also not restored, and there would be no new public access facilities.

Negligible adverse effects on traffic in the local community would potentially occur during construction of the small wetland restoration/mitigation component in the East Pasture. Construction of this component would occur approximately over a two- to three-month period in the late summer-early fall during one construction year. Most of the impacts to transportation on state and local roadways in or near Point Reyes Station such as State Route 1 and Mesa Road during the construction period would result from increases associated with commuting of construction personnel to the Project Area, trailoring of construction equipment, and hauling of excavated sediments from the Project Area to local quarries on the Point Reyes Peninsula. A much smaller volume of non-soil material would be generated. This non-soil material would need to be hauled to a municipal landfill such as the Redwood Landfill in Petaluma, approximately 20-25 miles away, using other local roadways such as Point Reyes- Petaluma Road and Novato Boulevard: the number of truck trips would keep effects of regional hauling on traffic negligible. No construction-related temporary road closures would be anticipated. Hauling of excavated sediments would be expected to generate only approximately 44 truck trips total under the No Action Alternative. For the purposes of this analysis, the potential number of truck roundtrips per day was assumed to total up to 32, based on running of three (3) to four (4) trucks per day. Hauling would, therefore, be expected to have only very temporary, negligible adverse impacts on local arterial roadways such as Levee Road and the eastern portion of Sir Francis Drake Boulevard.

The duration of construction and particularly hauling is short enough to keep the overall impacts to the local community very negligible and to not change the LOS or decrease LOS below Level D, the county's minimum

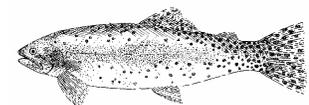


standard for arterial roadways. Based on the fact that visitation rates have not kept pace with projected visitation trends through 2005, the proposed project may be able to have as many as 656 additional daily vehicle trips without causing a change in the LOS estimated in 1998 (BRW and Lee Engineering 1998). In fact, because of decreases in park and regional visitation, most of these roads appear to be potentially operating at a LOS of B or C currently, an improvement since 1998 when several roads such as Bear Valley had high enough traffic levels to be rated as operating at a Level D LOS (BRW and Lee Engineering 1998).

The No Action Alternative would not generate more than a very negligible increase in project-related traffic. As part of the existing purchase agreement with the Giacomini Trust, the Giacomini family received a 7-year Reservation-of-Use agreement under which the Giacomini Ranch will continue to operate as a dairy until the lease expires in spring 2007. At that time, the dairy will be closed, and there would be no potential for future operation of a dairy, because the dairy facility would be split approximately in half in terms of ownership. However, in keeping with management directives in the Seashore's GMP (1980), the Giacomini Ranch could be leased for grazing of dairy heifers or beef cattle through a separate environmental review process. Should grazing be allowed, livestock trucks would be expected to infrequently access the East and/or West Pastures for drop-off and pick-up of animals. Park Service staff would also occasionally access the Project Area for flood control maintenance, existing trail repair, and other management-related purposes. Assumption of full management of the Giacomini Ranch by the Park Service may also encourage more visitors to use existing public access facilities, but any increase would be expected to be very negligible and to not change the LOS of any of the state and local roadways or cause LOS to drop below Level D.

Because of the negligible increase in visitation, the No Action Alternative would also be expected to have very negligible effects on parking demand in the local community relative to baseline conditions. Two formal parking lots serve existing trails in the Project Area and vicinity. There is a Park Service-maintained parking lot at the trailhead for Tomales Bay Trail with approximately 14 parking spaces that generally have, based on the BRW and Lee Engineering criteria, very high parking capacity such that occupancy does not ever exceed 90 percent of capacity. Another parking lot at White House Pool County Park with approximately 43 parking spaces probably ranges in capacity from medium (occupancy does not exceed 90 percent of capacity except during weekdays and weekends in holiday and high season periods) to high (occupancy does not exceed 90 percent of capacity on weekdays and most weekends except some holiday and high season period weekends) capacity. Parking for the informal social path on the Giacomini Ranch north levee consists of one or more roadside pull-outs that can fit approximately 23 vehicles. During most of the year, parking capacity is very high, although parking often overflows onto the street during the winter high tide periods because of the high number of birdwatchers. There are no designated formal or informal parking areas for the Giacomini Ranch East Pasture and Green Bridge County Park trail network, with most people parking alongside homes on 3rd and C Street in Point Reyes Station or walking to the trail from other parts of town. Street parking is often at a premium on many, if not all, weekends in the town of Point Reyes Station, with people parking often some distance from the downtown district. Therefore, parking capacity for this trail is rated as low to possibly medium.

Alternative transportation in the form of pedestrian and bicycle routes and segments of routes in the Project Area and vicinity is restricted to limited pedestrian and bicycle use of Sir Francis Drake Boulevard near Inverness Park, with slightly higher numbers of pedestrians and bicyclists using White House Pool County Park and Levee Road to move between Silver Hills and Inverness Park areas and Point Reyes Station. Use has been limited by the lack of dedicated formal bike and pedestrian paths along arterial roadways such as Sir Francis Drake Boulevard, Levee Road, State Route 1, and Bear Valley Road. As described in Chapter 3 under Public Services – Traffic and Transportation, several studies have been conducted over the past few decades that have identified the need for or evaluated the feasibility of constructing a bike path in the Point Reyes Station, Inverness Park, and Inverness portion of Tomales Bay, including the West Marin Pathways study (Brian Wittenkeller & Associates and Copple Foreaker & Associates 1988) and an alternative transportation study contracted by Marin County (Alta Transportation Consulting 2001). Many of these proposed bike path alignments have been incorporated as objectives in county, community, and LCP plans and planning documents. The LCP (Marin County Comprehensive Planning Department 1981), *Marin County Unincorporated Area Bicycle and Pedestrian Master Plan* (Alta Transportation Consulting 2001), and the Point Reyes Station Community Plan (Marin County Community Development Agency 2001) support exploration of the feasibility of creating an East/West Greenway along the railroad-right-of-way and the concept of bike and pedestrian trail network in the West Marin area. However, implementation has seemingly been stymied by lack of funding and technical challenges and constraints of construction within or along west Marin's narrow road corridors. Although changes to alternative transportation may occur under other alternatives, no changes to alternative transportation conditions would occur under this alternative.



Possible Additional Mitigation Measures: No mitigation measures would be proposed under this alternative.

Effectiveness of Possible Additional Mitigation Measures: Not applicable

Cumulative Impacts: There are no currently proposed or reasonably foreseeable projects that would have the potential to cause cumulative impacts should the No Action alternative be implemented. While the county has underscored the need for alternative transportation corridors in this portion of west Marin in its planning documents and has even identified some possible path locations, none of these proposals could be currently construed as reasonably foreseeable projects.

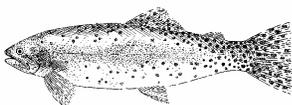
Conclusions: The No Action alternative would result in generally either no or only very negligible impacts on traffic and transportation in the local community, with most of the impacts from construction-related effects associated with the 11-acre wetland restoration/mitigation component. The most noticeable effects on traffic during the relatively short two to three-month construction period would occur on less heavily used local roadways such as C Street, Mesa Road, and Pierce Point Road, which would be subject to very temporary adverse impacts from hauling of excavated sediments to local quarries and/or commuting of construction personnel to and from the Project Area. Project-related effects on traffic and parking demands would be very negligible relative to baseline conditions and limited to vehicles and trucks associated with visitors and residents using existing public access facilities, flood control-related maintenance, and livestock transport. No changes in alternative transportation conditions would occur within the local community.

Alternative A

Analysis: Alternative A would generally have negligible to moderate effects on traffic and transportation in the local community during construction and after implementation (Table 83). Under Alternative A, only the East Pasture would be restored, with new public access facilities limited to the eastern and southern perimeters of the East Pasture. There would be no restoration or construction of new public access facilities in the West Pasture or Olema Marsh, except for the possible future extension of the southern perimeter trail to Inverness Park. In the East Pasture, restoration would involve breaching of levees in the East Pasture along Lagunitas Creek. Most of the actions under this alternative focus on removal or restoration of agricultural infrastructure such as filling of ditches, ripping of compacted roads, fence removal, and removal of pumps, pipelines, and concrete spillways.

Similar to the No Action Alternative, Alternative A would have the potential for negligible to minor adverse effects on traffic in the local community during restoration of the East Pasture and construction of public access facilities. Construction of the restoration component is estimated to take approximately five months or one construction season, while the public access component would be constructed after restoration is completed and is estimated to take an additional two construction seasons. Most of the negligible to minor impacts to transportation on state and local roadways in or near Point Reyes Station such as State Route 1, C Street, and Mesa Road during the construction period would result from increases associated with commuting of construction personnel to and from the Project Area, trailoring of construction equipment, and hauling of excavated sediments from the Project Area to local quarries on the Point Reyes Peninsula. No road closures would be anticipated unless the southern perimeter trail is extended to Inverness Park through widening of Sir Francis Drake Boulevard.

Over the life of the proposed project, hauling would generate approximately 2,000 truck trips compared to 44 truck trips under the No Action Alternative. This number does not include hauling associated with extension of the southern perimeter trail to Inverness Park: this component would be subject to further environmental compliance through a separate review process. The approach to disposal of excavated soils has not been defined yet, however, it would either involve stockpiling of excavated soils with hauling concentrated in a short time period, resulting in a high number of daily trips, or no stockpiling with fewer daily truck trips occurring over the entire construction period. For the purposes of this analysis, the potential number of daily truck roundtrips was assumed to be 32, based on use of three (3) to four (4) trucks per day for a period of approximately two months during one construction season.



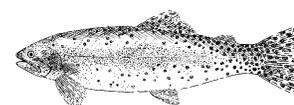
Hauling would be expected to have negligible to minor adverse impacts on local arterial roadways such as Levee Road and the eastern portion of Sir Francis Drake Boulevard during those two months, with temporary increases in traffic roughly estimated at around 4 percent. Impacts to traffic from repeated haul trips would be more apparent further north on Sir Francis Drake Boulevard and Pierce Point Road, which leads to several of the high priority quarries. Truck trips would potentially cause roughly an estimated 5 to 8 percent increase in traffic on these roads, which would be characterized as a minor adverse effect. A much smaller volume of non-soil material would be generated, and this material would need to be hauled to a municipal landfill such as the Redwood Landfill in Petaluma, approximately 20-25 miles away, using other local roadways such as Point Reyes- Petaluma Road and Novato Boulevard: the number of truck trips (~32) would keep effects of regional hauling on traffic negligible.

In general, the effects of construction on traffic would be highest on smaller and more local roadways such as C Street, Mesa Road, Levee Road, and Pierce Point Road, however, under Alternative A, hauling and other construction-related traffic would generally be low enough to keep the overall impacts to the local community negligible to minor and to not change the LOS or decrease LOS below Level D, the county's minimum standard for arterial roadways. Based on the fact that visitation rates have not kept pace with projected visitation trends through 2005, the proposed project may be able to have as many as 656 additional daily vehicle trips without causing a change in the LOS estimated in 1998 (BRW and Lee Engineering 1998). In fact, because of decreases in park and regional visitation, most of these roads appear to be potentially operating at a LOS of B or C currently, an improvement since 1998 when several roads such as Bear Valley had high enough traffic levels to be rated as operating at a Level D LOS (BRW and Lee Engineering 1998).

Alternative A would also have the potential for a negligible to minor adverse effect on traffic after construction is completed due to the potential increase in use of expanded and improved public access facilities by park visitors and residents. Visitor and resident use of the newly constructed or enhanced southern and eastern perimeter trails would be expected to have minor adverse effects on roadways directly adjacent to the trail such as Levee Road, C Street, and Mesa Road, as well as some of the roads used to access these areas such as Bear Valley Road. Under this alternative, an ADA-compliant trail would originate from 3rd and C Street and follow the perimeter of the Point Reyes Mesa northwards to a viewing area located at the western edge of the former dairy facility. This trail --and increased use of existing trails such as the Olema Marsh trail due to better connectivity with other trails -- would be expected to potentially increase traffic by as much as 4- to 10 percent in the immediate vicinity of the southern perimeter trail relative to baseline conditions. Expansion of public access facilities, including conversion of the Tomales Bay Trail to a through-trail on the eastern perimeter of the Giacomini Ranch, would have only negligible effects on larger access roads such as State Route 1 south and north of Point Reyes Station, with increases in traffic roughly estimated at less than 2 percent.

Given the negligible to minor increases expected in vehicular traffic, Alternative A would also be expected to have minor to perhaps moderate effects on parking demand in the local community relative to baseline conditions. Under this alternative, capacity of formal and informal parking lots within the vicinity of the Project Area would generally be sufficient to handle parking demand during the weekdays and most weekends, although parking lots would be at or near capacity on some of the very busiest weekends in the highest visitation months (President's Day weekend and weekends in May and August). Formal parking for the western end of the southern perimeter trail would be located at White House Pool County Parking lot, which has 43 designated spaces. However, this trail would serve a considerable number of local residents who would walk, bicycle, or ride horses to the trail, thereby resulting in only a minor increase in parking demand for this lot.

As the eastern trail entrance would continue to exist at the corner of 3rd and C Streets, residents and visitors would also continue to park along adjacent streets in western Point Reyes Station. Street parking is often at a premium on many, if not all, weekends in the town of Point Reyes Station, with people parking often some distance from the downtown district. A minor to perhaps moderate increase in parking demand in western Point Reyes Station would potentially result from enhancement and expansion of the existing Giacomini Ranch East Pasture levee trail, with parking demand expected to increase by as much as three (3) to 10 cars on an average daily basis depending on the season and time of week. Parking for the eastern perimeter trail would be available at a newly created parking area off Mesa Road (approximately 5 cars), as well as the Tomales Bay Trailhead (approximately 14 cars). As with the southern perimeter trail, this enhanced through-trail would be expected to attract many local residents who would walk or ride to the trailheads.



Alternative A would have a moderate beneficial effect on alternative transportation in the local community. The southern perimeter trail would increase connectivity between Inverness Park and Point Reyes Station through construction of a through-trail from White House Pool County Park to an improved trail that would replace the existing path on the Giacomini Ranch East Pasture levee via a new bridge over Lagunitas Creek. In addition, the Park Service and CSLC would explore collaborating with the County to extend the trail northward along Sir Francis Drake Boulevard into Inverness Park at some point in the future. This trail would serve pedestrians, bicyclists, and equestrians. The eastern perimeter trail would also provide some alternative transportation benefits to the Point Reyes Station community, although opportunities to connect communities or businesses and residential areas are comparatively more limited.

Possible Additional Mitigation Measures: No mitigation measures would be proposed under this alternative.

Effectiveness of Possible Additional Mitigation Measures: Not applicable

Cumulative Impacts: Cumulative impacts would be the same as described under the No Action Alternative.

Conclusions: Alternative A would generally have negligible to minor adverse effects on traffic and transportation in the local community. The most noticeable effects on traffic during the construction period would occur on less heavily used local roadways such as C Street, Mesa Road, and Pierce Point Road, which would be subject to minor adverse impacts from hauling of excavated sediments to local quarries and/or commuting of construction personnel to and from the Project Area. Expansion and improvement of public access facilities would result in negligible to minor adverse effects on traffic from increased visitation, although a lack of formal parking lots in Point Reyes Station might result in impacts on parking demands being moderate rather than minor in this part of town. This alternative would have moderate beneficial effects on alternative transportation by improving connectivity between Inverness Park and Point Reyes Station through construction of the southern perimeter through-trail, as well as, to a much lesser degree, by improving connecting connectivity between Point Reyes Station neighborhoods through construction of the eastern perimeter through-trail.

Alternative B

Analysis: Alternative B would have very similar negligible to moderate effects on traffic and transportation in the local community as Alternative A during construction and after implementation of the proposed project (Table 83). Under Alternative B, the East and West Pastures would be restored, but not Olema Marsh. Most of the new public access facilities would continue to be limited to the eastern and southern perimeters of the East Pasture, although a viewing area would replace the informal existing trail on the West Pasture north levee, which would be removed. There would also still be the potential for extension of the southern perimeter trail to Inverness Park.

Construction-related traffic impacts would be minor rather than negligible to minor as under Alternative A, because, under Alternative B, construction activities expand into the Giacomini Ranch West Pasture, thereby increasing traffic volume associated with construction equipment and personnel along perimeter roads such as Levee Road and the southern portion of Sir Francis Drake Boulevard near Inverness Park. The number of truck trips required to haul excavated sediments off-site to the local quarries would climb from approximately 2,000 under Alternative A to approximately 3,500 trips under Alternative B. This number does not include hauling associated with extension of the southern perimeter trail to Inverness Park: this component would be subject to further environmental compliance through a separate review process. As noted earlier, while the hauling approach has not been developed yet, analyses assume that hauling would involve continuous running of three (3) to four (4) trucks per day or 32 truck round trips per day during four months spread over two construction seasons. A much smaller volume of non-soil material would need to be hauled to a municipal landfill such as the Redwood Landfill in Petaluma, approximately 20-25 miles away, using other local roadways such as Point Reyes- Petaluma Road and Novato Boulevard: the total number of truck trips (41) would keep effects of regional hauling on traffic negligible. In addition, a small number of temporary road closures could occur on Sir Francis Drake Boulevard with movement of equipment in and out of the West Pasture, although closures would be expected to be very short-lived (< 10 minutes). A larger number may occur if the southern perimeter trail is extended to Inverness Park through widening of the Sir Francis Drake Boulevard road berm.



The effects of the new and improved public access facilities on traffic and parking volume and patterns and alternative transportation would be very similar to those described under Alternative A. With elimination of the existing informal trail on the West Pasture north levee, peak traffic and parking conditions along Sir Francis Drake Boulevard would actually improve relative to baseline conditions, as heavy visitor use during the three to four periods of extreme high tides during the winter often cause traffic and parking problems along the Inverness Park portion of this road.

Possible Additional Mitigation Measures: No mitigation measures would be proposed under this alternative.

Effectiveness of Possible Additional Mitigation Measures: Not applicable

Cumulative Impacts: Cumulative impacts would be the same as described under the No Action Alternative.

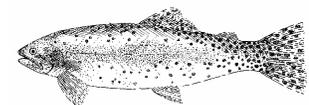
Conclusions: Alternative B would have very similar negligible to moderate impacts on traffic and transportation in the local community as Alternative A. As with Alternative A, the most noticeable effects on traffic during the construction period would occur on less heavily used local roadways such as C Street, Mesa Road, and Pierce Point Road, which would be subject to minor adverse impacts from hauling of excavated sediments to local quarries and/or commuting of construction personnel to and from the Project Area. Minor construction-related impacts would also occur under Alternative B on Levee Road and Sir Francis Drake Boulevard because of an increase of the amount of construction equipment and personnel and hauling of excavated sediments associated with expansion of restoration into the West Pasture and the potential for a small number of temporary road closures. Construction and expansion of public access facilities would result in negligible to minor adverse effects on traffic and parking demands from increased visitation, although a lack of formal parking lots in Point Reyes Station might result in the proposed project having moderate rather than minor impacts on the already low-capacity parking situation in the western portion of town. This alternative would have identical moderate beneficial effects as Alternative A on alternative transportation by improving connectivity between Inverness Park and Point Reyes Station through construction of the southern perimeter through-trail, as well as, to a much lesser degree, by improving connectivity between neighborhoods through construction of eastern perimeter through-trail.

Alternative C

Analysis: Alternative C would have negligible to moderate effects on traffic and transportation in the local community during construction and after implementation (Table 83). Under Alternative C, the East and West Pastures would be restored, along with Olema Marsh. Most of the new public access facilities would continue to be limited to the eastern and southern perimeters of the East Pasture, although access along the eastern perimeter would be scaled back through removal of the through-trail component. There would also still be the potential for extension of the southern perimeter trail to Inverness Park. In Olema Marsh, an adaptive restoration approach would be undertaken through fill excavation and possible culvert replacement to improve hydraulic connectivity and improve drainage of currently impounded waters.

Alternative C would have very similar minor to moderate adverse effects on traffic in the local community during construction as Alternative B. Construction of the restoration component would occur over a total of eight to 12 months broken into two construction seasons, while the public access component would be constructed after restoration is completed and would be expected to take two construction seasons. Most of the minor to moderate impacts to transportation on state and local roadways such as State Route 1, C Street, Mesa Road, Levee Road, Sir Francis Drake Boulevard, and Pierce Point Road during the construction period would result from temporary increases in traffic associated with commuting of construction personnel to the Project Area, trailoring of construction equipment, and hauling of excavated sediments from the Project Area to local quarries on the Point Reyes Peninsula. There may also be road closures associated with extension of the southern perimeter trail to Inverness Park through potential widening of the Sir Francis Drake Boulevard road berm.

In addition to the Sir Francis Drake Boulevard discussed under Alternative B, replacement of either or both the Levee Road culvert and the Bear Valley Road culvert as part of the Olema Marsh restoration component would likely require partial to full closure of Levee Road and Bear Valley Road, respectively, for a period of three days to several weeks depending upon the restoration approach (i.e., replace culvert or construct bridge).



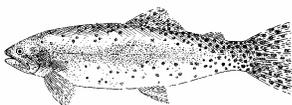
Both Bear Valley and Levee Roads serve as important links to Sir Francis Drake Boulevard, the only road connecting the “mainland” portion of Marin County to homes, businesses, ranches, and northern portions of the Seashore that occur on the Point Reyes Peninsula. Replacement of these culverts with either improved culverts or bridges would not be undertaken simultaneously, so traffic could be rerouted onto one or the other of these two key arterial roadways. Should Levee Road be fully closed on a temporary basis, a detour or alternate route to Sir Francis Drake Boulevard using State Route 1 and Bear Valley Road would add approximately 5 minutes to the commute time. These construction-related road closures would have minor to moderate effects on local traffic depending on the duration of closure.

Over the entire life of the proposed project, hauling would be expected to generate approximately 5,700 truck trips under Alternative C from 3,500 under Alternative B and 44 under the No Action Alternative. This number does not include hauling associated with extension of the southern perimeter trail to Inverness Park: this component would be subject to further environmental compliance through a separate review process. The approach to disposal of excavated soils – stockpiling with short, intense periods of hauling versus less intense, but longer term hauling over entire construction period – has not been defined yet, but, for the purposes of this analysis, a total of up to 32 truck roundtrips per day was assumed, with running of three (3) to four (4) trucks per day during a total of approximately six (6) months spread over two construction seasons. Relative to existing traffic conditions, hauling would be expected to have minor to moderate adverse impacts on local arterial roadways, with temporary increases in traffic during those six (6) months roughly estimated as ranging from 5 to 10 percent. A much smaller volume of material would need to be hauled to a municipal landfill such as the Redwood Landfill in Petaluma, approximately 20-25 miles away, using other local roadways such as Point Reyes- Petaluma Road and Novato Boulevard: the number of truck trips (41) would keep effects of regional hauling on traffic negligible.

In general, the effects of construction-related traffic would be highest on smaller and more local roadways such as C Street, Mesa Road, Levee Road, and Pierce Point Road. Under Alternative C, hauling and other construction-related traffic would be high enough to temporarily decrease the LOS from Level B to Level C, but LOS would not decrease below Level D, the county’s minimum standard for arterial roadways. Based on the fact that visitation rates have not kept pace with projected visitation trends through 2005, the proposed project may be able to have as many as 656 additional daily vehicle trips without causing a change in the LOS estimated in 1998 (BRW and Lee Engineering 1998). In fact, because of decreases in park and regional visitation, most of these roads appear to be potentially operating at a LOS of B or C currently, an improvement since 1998 when several roads such as Bear Valley had high enough traffic levels to be rated as operating at a Level D LOS (BRW and Lee Engineering 1998).

Similar to Alternative B, Alternative C would have negligible to minor adverse effect on traffic following implementation due to the projected increase in use by park visitors and residents of expanded public access facilities. Scaling back of the eastern perimeter through-trail to two spur trails would reduce effects on traffic and parking in the northern portion of Point Reyes Station somewhat, although impacts on local roadways such as Mesa Road would still be characterized as minor. Under this alternative, the ADA-compliant trail would be switched to the Mesa Road spur trail that leads out to the proposed viewing area near the Giacomini Hunt Lodge. The trail entrance at C Street in Point Reyes Station would be eliminated, with all access to the southern perimeter trail occurring through an improved entrance to the Green Bridge County Park near the Green Bridge or through White House Pool County Park. Elimination of the C Street trail entrance would reduce potential effects of the southern perimeter trail on parking demand near C Street to at least minor, if not negligible. With elimination of the existing informal trail on the West Pasture north levee, peak traffic and parking conditions along Sir Francis Drake Boulevard would actually improve relative to baseline conditions, as heavy visitor use during the three to four periods of extreme high tides during the winter often cause traffic and parking problems along the Inverness Park portion of this road.

Elimination of the C Street trail entrance for the southern perimeter trail, combined with conversion of the eastern perimeter through-trail to two spur trails, would reduce the benefits of Alternative C to alternative transportation and connectivity between communities and neighborhoods relative to the Alternatives A and B. The C Street trail entrance provides more direct access to the town of Point Reyes Station, but also has more potential for disturbance of adjacent landowners through noise, trash, and increase in on-street parking demand. Therefore, the effects of this alternative on alternative transportation would still be characterized as beneficial, but the intensity would be reduced to minor.



Possible Additional Mitigation Measures: No mitigation measures would be proposed under this alternative.

Effectiveness of Possible Additional Mitigation Measures: Not applicable

Cumulative Impacts: Cumulative impacts would be the same as described under the No Action Alternative.

Conclusions: Alternative C would generally have negligible to moderate effects on traffic and transportation in the local community. The most noticeable effects on traffic during the construction period would occur on less heavily used local roadways such as C Street, Mesa Road, Levee, Sir Francis Drake Boulevard, and Pierce Point Road, which would be subject to minor to moderate adverse impacts from hauling of excavated sediments to local quarries and/or commuting of construction personnel to and from the Project Area. In addition, there is potential for temporary road closures associated with the Olema Marsh restoration component that could result in partial or full closure of Levee Road and Bear Valley Roads for anywhere from 3 days to several weeks. Over the long-term, construction and expansion of public access facilities would result in negligible to minor adverse effects on traffic and parking demand from increased visitation, with impacts on the congested parking situation in western Point Reyes Station reduced by elimination of the C Street trail entrance. Relative to the other alternatives, this alternative would have reduced benefits for alternative transportation and connectivity between communities or neighborhoods due to a change in the trail entrance for southern perimeter trail at Point Reyes Station to a slightly less direct route and conversion of the eastern perimeter through-trail to spur trails.

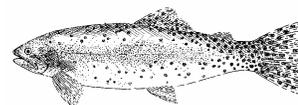
Alternative D

Analysis: Alternative D would have very similar negligible to moderate effects on traffic and transportation in the local community as Alternative C (Table 83). Under Alternative D as with Alternative C, the East and West Pastures would be completely restored, along with Olema Marsh. Under Alternative D, public access would be further scaled back through elimination of the bridge across Lagunitas Creek and one of the spur trails on the eastern perimeter. With elimination of the bridge, there would be no potential for extension of the southern perimeter trail to Inverness Park.

Alternative D would have minor to moderate adverse effects on traffic in the local community during construction as Alternative C. Construction of the restoration component would occur over a total of eight to 14 months broken into two to three construction seasons, while the public access component would be constructed after restoration is completed and would be expected to take two construction seasons. Most of the minor to moderate impacts to transportation on state and local roadways such as State Route 1, C Street, Mesa Road, Levee Road, Sir Francis Drake Boulevard, and Pierce Point Road during the construction period would result from temporary increases in traffic associated with commuting of construction personnel to the Project Area, trailoring of construction equipment, and hauling of excavated sediments from the Project Area to local quarries on the Point Reyes Peninsula.

Over the entire life of the proposed project, hauling would be expected to generate approximately 8,000 truck trips under Alternative D versus 5,700 truck trips under Alternative C. The approach to disposal of excavated soils – stockpiling with short, intense periods of hauling versus less intense, but longer term hauling over entire construction period – has not been defined yet, but, for this analysis, a total of up to 32 truck roundtrips per day was assumed, with running of three (3) to four (4) trucks per day for a total of approximately eight (8) months spread over two construction seasons. Relative to existing traffic conditions, hauling would be expected to have largely moderate adverse impacts on local arterial roadways, with temporary increases in traffic during those eight (8) months roughly estimated as ranging from 5 to 10 percent. A much smaller volume of material would need to be hauled to a municipal landfill such as the Redwood Landfill in Petaluma, approximately 20-25 miles away, using other local roadways such as Point Reyes- Petaluma Road and Novato Boulevard: the number of truck trips (49) would keep effects of regional hauling on traffic negligible.

In general, the effects of construction-related traffic would be highest on smaller and more local roadways such as C Street, Mesa Road, Levee Road, and Pierce Point Road. As with Alternative C, hauling and other construction-related traffic would be high enough to temporarily decrease the LOS from Level B to Level C, but LOS would not decrease below Level D. Because of decreases in park and regional visitation, most of these



roads appear to be potentially operating at a LOS of B or C currently, an improvement since 1998 when several roads such as Bear Valley had high enough traffic levels to be rated as operating at a Level D LOS (BRW and Lee Engineering 1998). As with Alternatives B and C, a small number of very temporary road closures may occur during construction on Sir Francis Drake Boulevard to allow for movement of construction equipment in and out of the West Pasture. In addition to temporary partial or full road closures required to replace Levee Road and Bear Valley Road culverts as part of the Olema Marsh restoration component, replacement of the Mesa Road culvert would also likely require partial to full closure of Mesa Road, respectively, for a period of three days to several weeks depending upon the restoration approach (i.e., replace culvert or construct bridge). Mesa Road is the main access road for several residential neighborhoods in the northern portion of Point Reyes Station. Should Mesa Road be fully closed on a temporary basis, residents would be required to access homes through the State Route 1 entrance, which would likely only have a negligible impact on detour times. These construction-related road closures would have minor to moderate effects on local traffic depending on the duration of closure.

Alternative D would have negligible to minor adverse effect on traffic and parking demands following implementation, but the intensity would be considerably reduced relative to Alternatives A, B, and C due to scaling back of expansion and improvement of public access facilities under this alternative. The bridge would be eliminated from the southern perimeter trail, resulting in Alternative D being really only an enhancement of existing public access facilities in the southern portion of the East Pasture and construction of a viewing area and improved entrance to the Green Bridge County Park. As with Alternative C, the trail entrance at C Street in Point Reyes Station would be eliminated, with all access to the southern perimeter trail occurring through an improved entrance to the Green Bridge County Park near the Green Bridge or through White House Pool County Park. Scaling back of the eastern perimeter trail would continue with elimination of the Mesa Road spur trail, which would leave only the proposed extension of the Tomales Bay Trail. These changes would be expected to reduce the increase in traffic and parking demand relative to baseline conditions to negligible or, at the very most, minor. With elimination of the existing informal trail on the West Pasture north levee, peak traffic and parking conditions along Sir Francis Drake Boulevard would actually improve relative to baseline conditions, as heavy visitor use during the three to four periods of extreme high tides during the winter often cause traffic and parking problems along the Inverness Park portion of this road.

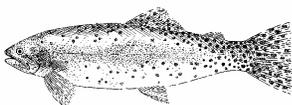
Elimination of the “through” components of both the southern and eastern perimeter trails would considerably reduce, if not entirely eliminate, the benefits of Alternative D to alternative transportation and connectivity between communities and neighborhoods relative to the Alternatives A, B, and C. Therefore, the effects of this alternative on alternative transportation would probably be characterized as having no impact or, at the very most, a minor impact on quality of existing trail systems.

Possible Additional Mitigation Measures: No mitigation measures would be proposed under this alternative.

Effectiveness of Possible Additional Mitigation Measures: Not applicable

Cumulative Impacts: Cumulative impacts would be the same as described under the No Action Alternative.

Conclusions: Alternative D would generally have negligible to moderate effects on traffic and transportation in the local community. The most noticeable effects on traffic during the construction period would occur on less heavily used local roadways such as C Street, Mesa Road, Levee, Sir Francis Drake Boulevard, and Pierce Point Road, which would be subject to largely moderate adverse impacts from hauling of excavated sediments to local quarries and/or commuting of construction personnel to and from the Project Area. In addition, there is potential for temporary road closures associated with the Olema Marsh and Tomasini Creek restoration components that could result in partial or full closure of Levee Road, Bear Valley Road, and Mesa Road for anywhere from 3 days to several weeks. Scaling back of expansion and improvement of public access facilities under this alternative would reduce the intensity of the proposed project’s effects on traffic and parking demand from increased visitation to largely negligible. Relative to the other alternatives, this alternative would have considerably reduced, if not no, benefits for alternative transportation and connectivity between communities or neighborhoods due to elimination of the “through” trail components for both the southern and eastern perimeter trails.



Visitor and Resident Experience – Public Access Resources

Laws, Regulations, Policies, and Criteria Guiding Impact Analysis

For the Park Service, “providing opportunities for appropriate public enjoyment is an important part of the Service’s mission” (NPS 2006, Section 8.1). From the Park Service perspective, public education and enjoyment are integral components of the wetland restoration process: “When practicable, the Service will not simply protect, but will seek to enhance, natural wetland values by using them for educational, recreational, scientific, and similar purposes that do not disrupt wetland functions” (NPS 2006, Section 4.6.5).

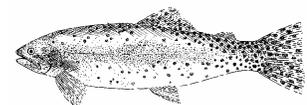
Marin County, the LCP, and the Community Plan also actively support enhancement of public access and recreation. Within the Coastal Zone, the LCP (Marin County Comprehensive Planning Department 1981) encourages enhancement of public recreational opportunities and the development of visitor-serving facilities in its coastal zone, as long as it “preserves the unique qualities of Marin’s coast and ... is consistent with the protection of natural resources and agriculture.” The LCP (Marin County Comprehensive Planning Department 1981), *Marin County Unincorporated Area Bicycle and Pedestrian Master Plan* (Alta Transportation Consulting 2001), and the Point Reyes Station Community Plan (Marin County Community Development Agency 2001) support exploration of the feasibility of creating an East/West Greenway along the railroad-right-of-way and the concept of bike and pedestrian trail network in the West Marin area. While facilitating public use, enjoyment, and appreciation of bayfront lands, projects should, however, “avoid or minimize disturbance to wetlands, necessary buffer areas, and associated important wildlife habitat” (Marin County Comprehensive Planning Department 1981). Both the LCP (Marin County Comprehensive Planning Department 1981) and the Point Reyes Station Community Plan (Marin County Community Development Agency 2001) have established policies against development of the Point Reyes Mesa bluff area above the railroad-right-of-way in the Giacomini Ranch East Pasture through setbacks.

Both the Architectural Barriers Act of 1968 (PL90-480) and the Americans with Disabilities Act (ADA) of 1990 (PL 101-336) help to ensure that buildings and other facilities meet set standards to make them accessible to all visitors, including those with disabilities. The Park Service complies with ADA standards and requires that walks or paths that connect to accessible features need to be made accessible and that key features in the park need to be made accessible. However, paths need to be kept consistent with preserving the natural and cultural resources of the park, if the same experience can be provided on some portion of the alignment or a different trail. Standards for outdoor recreational facilities are often guided by recommendations from a report issued in September 1999 by a Regulatory Negotiation Committee convened by the Architectural and Transportation Barriers Compliance Board (Access Board) to help guide development of guidelines for facilities such as trails, boating and fishing facilities, parks, and sports facilities. California has also developed handicap access standards through California Building Code, Title 24 regulations, although the Title 24 standards are intended for urban facilities and not necessarily rural and park-type trails.

Significance criteria related to public access developed by the state and county under CEQA focuses on the potential for the proposed project to: 1) substantially increase the demand for neighborhood or regional parks or other recreational facilities; 2) affect existing recreational opportunities; and 3) require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment.

General Assumptions and Methodologies

- The proposed project has the potential to affect visitor and resident experience during both construction and implementation of the proposed project.
 - Construction has the potential to adversely affect, at least temporarily, the visitor and resident experience by limiting or increasing the difficulty of access to public access facilities both in the Project Area and in other areas of the park and Point Reyes region and by disrupting the subjective quality of the visitor and resident experience in the Project Area and vicinity.
 - Implementation of the proposed project has the potential to cause both beneficial and adverse impacts to visitor and resident experience resources through potential closure of existing trails and facilities and/or construction of new trails and facilities.
- This section separately evaluates potential effects on the visitor and resident experience during the construction and project implementation phases of the proposed project. The potential for construction to affect traffic or road delays is specifically addressed under Traffic and Transportation: this impact



indicator more qualitatively evaluates how potential impacts might affect the overall visitor and resident experience.

- For this analysis, alternative transportation routes or segments of routes that connect communities or community commercial and residential areas are differentiated from public access facilities intended to allow visitors and residents to experience the natural resources of the region through attractions and uses. For this reason, alternative transportation is addressed under Public Services – Traffic and Transportation.

Described below are methodologies for impact indicators related to visitor and resident experience resources, including specific assumptions or details on methodologies.

Public Access Resources – Construction-Related Effects: Impact thresholds for construction-related impacts to visitor and resident experience focus on the potential for noise, traffic, and closures caused by construction to adversely affect the visitor and resident experience in the Project Area and in other areas of the park and Point Reyes region. To establish a broad range of intensities for potential effects, the thresholds qualitatively address a number of factors, including the projected length of time that construction might restrict access to facilities and the effects of construction noise and traffic on the subjective quality of the visitor and residence experience (Table 84). The potential for construction to increase traffic or road delays is specifically addressed under Traffic and Transportation: this impact indicator more qualitatively evaluates how potential impacts might affect the overall visitor and resident experience, although some traffic-related criteria are incorporated.

TABLE 84. PUBLIC ACCESS RESOURCES – CONSTRUCTION-RELATED EFFECTS

| | |
|---|--|
| <p>Source: Park Service Management Policies, Marin CWP, Point Reyes Station Community Plan, LCP Zone II Nature: Adverse Context: Project Area/Local Community, Regional (Seashore North District) Duration: Construction</p> | |
| No Impact | There would be no potential for impact to visitor and resident experience in the Point Reyes area associated with construction of the proposed project. |
| Negligible | There would be barely detectable changes to access or enjoyment of public access facilities both inside and outside of the Project Area such that traffic or road delays caused by construction would be perceived by visitors as negligible. That is, visitors and residents using public access facilities would barely be able to detect a change in vehicle numbers or traffic patterns on arterial roadways. Temporary road closure events on sole access arterial roadways would never exceed 5 minutes, and temporary road closure events on alternate access arterial roadways that require detours would not be expected to exceed 48 hours. Visitors and residents using existing public access facilities in the Project Area and immediate vicinity would be only barely aware of construction activities, and access to facilities would be restricted during ≤ 10 percent of the year. |
| Minor | There would be measurable changes to access or enjoyment of public access facilities both inside and outside of the Project Area such that traffic or road delays caused by construction would be present, but relatively minor. That is, visitors and residents using public access facilities would perceive a measurable change in vehicle numbers or traffic patterns on arterial roadways, but it would not detract appreciably from visitor and resident enjoyment. Temporary road closure events on sole access arterial roadways would never exceed 15 minutes, and temporary road closure events on alternate access arterial roadways that require detours would not be expected to exceed 1 week. Visitors and residents using existing public access facilities in the Project Area and immediate vicinity would be aware of construction, but noise and activities would only result in a minor disruption to access and enjoyment such that access to facilities would be restricted, and/or construction would be apparent, but not disruptive, during ≤ 25 percent of the year. |
| Moderate | There would be appreciable changes to access or enjoyment of public access facilities both inside and outside of the Project Area such that traffic or road delays caused by construction would be moderate. That is, visitors and residents using public access facilities would perceive an appreciable change in vehicle numbers or traffic patterns on arterial roadways that would detract somewhat from visitor and resident enjoyment. Temporary road closure events on sole access arterial roadways would never exceed 30 minutes, and temporary road closure events on alternate access arterial roadways that would require detours would not be expected to exceed 4 weeks. Visitors and residents using existing public access facilities in the Project Area and immediate vicinity would be moderately aware of construction activities, and noise and activities would result in an appreciable disruption to access and enjoyment such that access to facilities would be restricted, and/or construction noise would be somewhat disruptive during ≤ 50 percent of the year. |



TABLE 84. PUBLIC ACCESS RESOURCES – CONSTRUCTION-RELATED EFFECTS

| | |
|-------|--|
| Major | There would be striking changes to access or enjoyment of public access facilities both inside and outside of the Project Area such that traffic or road delays caused by construction would be major or substantial. That is, visitors and residents using public access facilities would perceive a striking change in vehicle numbers or traffic patterns on arterial roadways that would detract substantially from visitor and resident enjoyment. Temporary road closure events on sole access arterial roadways would exceed 30 minutes, and temporary road closure events on alternate access arterial roadways would be expected to exceed 4 weeks. Visitors and residents using existing public access facilities in the Project Area and immediate vicinity would be highly aware of construction activities, and noise and activities would result in a substantial disruption to access and enjoyment such that access to facilities would be restricted, and/or construction noise would be highly disruptive during > 50 percent of the year. |
|-------|--|

Public Access Resources – Project-Related Effects: Impact thresholds focus on changes in the number of structures, facilities, and attractions/uses that would be available as visitor and resident experience resources in the Project Area and immediate vicinity. To establish a broad range of intensities in effect, the number of potential future public access structures, facilities, and attractions/uses under the various alternatives is compared with the existing number of structures, facilities, and attractions/uses under baseline conditions (Table 85). Public access structures, facilities, and attractions/uses incorporate features such as visitor centers; bathrooms; parking; horse parking; water; trails; enhanced trails (including ADA-compatible facilities); and phones and attractions/uses such as biking; equestrians; dog walking, birdwatching; beach; fishing; swimming; wildflowers; whale watching; elephant seal observations, and trailheads for backpacking, etc. A simple weighting system is incorporated to reflect that the value to visitors and residents of structures, facilities, and attractions/uses associated with trails is often linked to some extent with its design as a loop, through-, or spur trail.

TABLE 85. PUBLIC ACCESS RESOURCES – PROJECT-RELATED EFFECTS

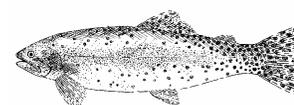
| | |
|---|--|
| Source: Park Service Management Policies, Marin CWP, Point Reyes Station Community Plan, LCP Zone II Nature: Beneficial, Adverse Context: Project Area/Local Community Duration: Long-Term | |
| No Impact | There would be no potential for impact to visitor and resident experience resources in the Project Area and immediate vicinity associated with implementation of the proposed project. |
| Negligible | The proposed project would generate a negligible change (<10 percent) in public access structures, facilities, ADA-compliant facilities, and attractions/uses in the Project Area and immediate vicinity. |
| Minor | The proposed project would generate a minor change (>10 percent and ≤ 25 percent) in public access structures, facilities, ADA-compliant facilities, and attractions/uses in the Project Area and immediate vicinity. |
| Moderate | The proposed project would generate a moderate or appreciable change (> 25 and ≤ 50 percent) in public access structures, facilities, ADA-compliant facilities, and attractions/uses in the Project Area and immediate vicinity. |
| Major or Substantial | The proposed project would generate a major or substantial change (>50 percent) in public access structures, facilities, ADA-compliant facilities, and attractions/uses in the Project Area and immediate vicinity. |

Impact Analysis

TABLE 86. INTENSITY, NATURE, TYPE, DURATION, AND CONTEXT OF IMPACTS FOR VISITOR AND RESIDENT EXPERIENCE - PUBLIC ACCESS RESOURCES

All impacts would be considered Project Area/Local Community and/or Regional (North District) and are separately analyzed for Construction and Short-Term/Long-Term.

| | No Action | Alternative A | Alternative B | Alternative C | Alternative D |
|------------------------------|---|--------------------|--------------------|---------------------|--------------------|
| Impact Indicator | Intensity, Nature, Type, Duration, and Context of Impact | | | | |
| Construction-Related Effects | Adverse-Negligible | Adverse- Minor | Adverse-Minor | Adverse-Moderate | Adverse-Moderate |
| Project-Related Effects | No Impact | Beneficial - Major | Beneficial - Major | Beneficial-Moderate | Beneficial - Minor |



No Action Alternative

Analysis: The No Action Alternative would generally have no impact to negligible adverse effects on public access resources in the Project Area, local community, and region during construction and after implementation (Table 86). Under the No Action Alternative, levees, tidegates, and culverts in the Giacomini Ranch are not breached or removed, except for the 11-acre wetland restoration area in the northeastern corner of the East Pasture. The Park Service is required under its existing agreement with CalTrans to restore wetlands as mitigation for impacts caused by CalTrans to aquatic habitat from a road repair on State Route 1 in Marin County in exchange for the Park Service receiving monies to purchase and restore the Giacomini Ranch. The remainder of the levee would not be deconstructed, although there would be no levee maintenance. Olema Marsh is also not restored, and there would be no new public access facilities.

Construction-Related Effects: Adverse effects on public access resources in the Project Area, local community, and region during construction would be very negligible and come principally from disruption of the visitor and resident experience through factors such as noise on the Giacomini Ranch East Pasture levee trail during construction of the small wetland restoration/mitigation component in the East Pasture. Construction of this component would occur approximately over a two- to three-month period in the late summer-early fall during one construction year. Construction activity would not only potentially affect access to existing trails in the Project Area and immediate vicinity, but access to public access facilities in the Seashore's North District (e.g., Lighthouse, Chimney Rock, Tomales Point, Abbott Lagoon) and Tomales Bay State Park. Under the No Action Alternative, most of the impacts to transportation on state and local roadways during construction would occur on State Route 1, Mesa Road, Levee Road, Sir Francis Drake Boulevard, and Pierce Point Road and would not be expected to have more than a very negligible effect on access to other public access resources in the local community and region, specifically the north district of the Seashore and Tomales Bay State Park. No construction-related temporary road closures would be anticipated.

Project-Related Effects-General Description: There would be no project-related effects on public access resources in the Project Area and local community.

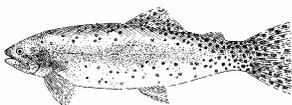
The Project Area and immediate vicinity currently incorporates approximately five (5) formal or informal trails or trail segments. Informal dirt paths have developed on the southern portion of the Giacomini Ranch East Pasture levee (0.46 mile) and the northern portion of the Giacomini Ranch West Pasture levee (0.3 mile) even before the Park Service bought the property. Formal dirt trails have been developed on the Martinelli Ranch north of Point Reyes Station (Tomales Bay Trail; Park Service – GGNRA), the White House Pool County Park (WCB lands leased by County Parks and Open Space District), and the 0.36-mile Olema Marsh Trail on the east of Olema Marsh (Park Service – Seashore). The Giacomini Ranch East Pasture trail connects with another 0.5-mile trail network in the Green Bridge County Park (WCB lands leased by County Parks and Open Space District). There are no formal overlooks, viewing areas, or platforms or areas with interpretative exhibits in the Project Area or immediate vicinity. None of the trailheads have any facilities to support visitation in terms of bathrooms, water fountains, payphones, or other structures.

Project-Related Effects-Use: Use of existing trails consists primarily of walking, dog walking, and birdwatching on the Giacomini Ranch and County park trails, with the 0.4-mile White House Pool County Park trail also being used for bicycles. The 1.37-mile Tomales Bay trail on the Martinelli Ranch primarily supports hikers. Although formal data on use of these trails do not exist, these trails are characterized as having very low, low, and low/medium number of users. All of the existing trails in the Project Area rank as very low (average of <50 people per day) in terms of use, including Tomales Bay Trail, Olema Marsh Trail, Giacomini Ranch West Pasture, Giacomini Ranch East Pasture, White House Pool county park, and Green Bridge County Park (E. Hulme, superintendent, Marin County Open Space and Park District, *pers. comm.*).

Project-Related Effects-ADA-Compliant Access: There are currently no ADA-compliant facilities within the Project Area, and there would be no construction of ADA-compliant facilities under the No Action Alternative.

Possible Additional Mitigation Measures: No mitigation measures would be proposed under this alternative.

Effectiveness of Possible Additional Mitigation Measures: Not applicable



Cumulative Impacts: There are no currently proposed or reasonably foreseeable projects that would have the potential to cause cumulative impacts should the No Action alternative be implemented. While the county has underscored the need for alternative transportation corridors in this portion of west Marin in its planning documents and has even identified some possible path locations, none of these proposals could be currently construed as reasonably foreseeable projects.

Conclusions: The No Action alternative would result generally in either no impact or negligible adverse effects on public access resources in the Project Area, local community, and region (Table 87). The most noticeable effect would come from potential disruption of the visitor and resident experience for users of the Giacomini Ranch East Pasture levee trail during the very short construction period (2-3 months) for the small wetland restoration/mitigation component in the East Pasture, largely through factors such as noise. There would be no project-related effects on public access resources, and there would be no ADA-compliant facilities, because none exist currently. Facilities would continue to serve primarily hikers and dog-walkers, with limited bicycle use.

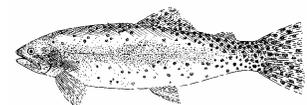
Alternative A

Analysis: Alternative A would generally have minor adverse to major beneficial effects on public access resources in the Project Area, local community, and region during construction and after implementation (Table 86). Under Alternative A, only the East Pasture would be restored, with new public access facilities limited to the eastern and southern perimeters of the East Pasture. There would be no restoration or construction of new public access facilities in the West Pasture or Olema Marsh. In the East Pasture, restoration would involve breaching of levees in the East Pasture along Lagunitas Creek, and excavation of new tidal channels. The southwestern corner of the creek bank would be regraded to a more stable profile. Most of the actions under this alternative focus on removal or restoration of agricultural infrastructure such as filling of ditches, ripping of compacted roads, fence removal, and removal of pumps, pipelines, and concrete spillways.

Construction-Related Effects: Adverse effects on public access resources in the Project Area, local community, and region during construction would be minor. Regrading of the southern portion of the East Pasture Lagunitas Creek bank and construction of the southern perimeter trail during two separate construction seasons would limit access to the Giacomini Ranch East Pasture levee trail, but access would be limited by construction activities during less than 25 percent of the construction year. Construction of the restoration component is estimated to take approximately five months or one construction season, while the public access component would be constructed after restoration is completed and is estimated to take an additional two construction seasons. In addition to restrictions on access, noise from restoration and construction activities in the southern portion of the East Pasture and possibly trucks on local roadways would also have the potential to disrupt the quality of the visitor and resident experience, particularly for users of the Giacomini Ranch East Pasture levee trail, Green Bridge County Park trail, and White House Pool County Park trail. Construction in the southern portion of the East Pasture would not be expected to extend beyond two months or 17 percent of the year. In addition, users of these trails are already exposed to a certain level of ambient noise from farm equipment and dairy operation; vehicles, motorcycles, and heavy trucks traveling on arterial roadways; and other ambient noise such as construction in adjacent towns.

Construction activity would not only potentially affect access to existing trails in the Project Area and immediate vicinity, but access to public access facilities in the Seashore's North District (e.g., Lighthouse, Chimney Rock, Tomales Point, Abbott Lagoon) and Tomales Bay State Park. Under Alternative A, most of the impacts to transportation on state and local roadways during construction would occur on State Route 1, C Street, Mesa Road, Levee Road, Sir Francis Drake Boulevard, and Pierce Point Road from commuting of construction personnel to and from the Project Area, trailoring of construction equipment, and hauling of excavated sediments from the Project Area to local quarries on the Point Reyes Peninsula. No construction-related temporary road closures would be anticipated. This alternative would not be expected to have more than a very negligible effect on access to other public access resources in the local community and region, specifically the north district of the Seashore and Tomales Bay State Park.

Project-Related Effects-General Description: Alternative A would have a major beneficial effect on public access resources in the Project Area and local community, increasing the number of structures, facilities, and attractions/uses available to visitors and residents by more than 50 percent. Two through-trails would be constructed on the southern and eastern perimeters of the East Pasture, replacing or enhancing five existing



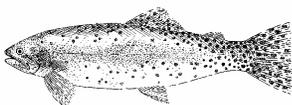
spur or through- trails either on or adjacent to the Project Area. Public access would also continue along the existing informal dirt path on the north levee of the West Pasture. With the exception of the informal dirt path on the north levee, all of these facilities would serve hikers, equestrians, and bicyclists: the informal dirt path would be open only to hikers.

The southern perimeter path would connect Point Reyes Station with the White House Pool County Park. A decomposed granite trail that would be compliant with the Americans with Disabilities Act would be constructed from C Street in the vicinity of 3rd Street along an easement to the edge of the Dairy Mesa, where there would be a viewing area to allow the public to experience and enjoy the restoration project and views of Tomales Bay. The trail would continue along the edge of the East Pasture and Lagunitas Creek bank as does the existing informal social path. The existing dirt path in the Green Bridge County Park would be maintained and would connect to the proposed trail. The approximately 2,750-foot improved trail from the Dairy Mesa would lead to a 200-foot, 8-foot-wide bridge on Lagunitas Creek at the location of the old summer gravel dam that the Giacomini used to install for irrigation purposes (Figure 8). On the north side, the trail would connect to the existing dirt path in the White House Pool County Park. It would also connect via a crosswalk to the Olema Marsh Trail, which runs on the east side of Olema Marsh towards Limantour Road. Because of the potential for flooding during large storm events, use of this path would be weather-dependent. Length of the southern perimeter trail would total approximately 3,000 linear feet.

This through-trail would be expected to attract a medium to high number of pedestrians, bicyclists, and equestrians, particularly local residents in the towns of Inverness Park and Point Reyes Station. (Comparatively, Bear Valley Trail would be characterized as attracting a very high number of users). This trail links what is currently several disjunct trails such as the Giacomini Ranch East Pasture levee trail/Green Bridge County Park trail, White House Pool County Park trail, and the Olema Marsh trail, ultimately allowing at least indirect access between the town of Point Reyes Station and the Seashore's Bear Valley complex and trail system. Relative to baseline conditions, it would enhance existing public access resource values by offering better views of the restored wetland, Lagunitas Creek, and southern Tomales Bay and better opportunities for birdwatching through viewing areas on the Dairy Facility mesa and elevated structures such as the bridge. In addition to improving connectivity between the communities of Inverness Park and Point Reyes Station, this trail would have at least minor effects on safety for pedestrians and bicyclists commuting between the two villages.

The Park Service would collaborate with the County of Marin on a future project to extend the southern perimeter trail described above to Inverness Park by connecting to the existing informal path in the White House Pool County Park with a path along Sir Francis Drake that would either run alongside Sir Francis Drake Boulevard or move off the road at the southern end of the unrestored West Pasture onto a low-elevation boardwalk that would join back with Sir Francis Drake Boulevard in Inverness Park. This future component would improve connectivity and public safety for residents in Inverness Park. It could include a potential elevated overlook at White House Pool County Park that would connect to the existing parking lot with an ADA-compliant path. As was noted in Chapter 2, undercutting of the San Francis Drake Boulevard road berm by Lagunitas Creek at White House Pool would need to be addressed before the path could be extended to Inverness Park through construction of a cantilevered section of path or other option (LandPeople 2005). Similar to the southern perimeter trail, this portion of trail would serve primarily hikers and bicyclists, with equestrian use expected to be minimal.

A second through-trail would also be constructed on the historic railroad grade on the eastern perimeter of the East Pasture. The existing unimproved Tomales Bay Trail originates on Highway 1 and runs through GGNRA lands leased to the Martinelli family to Railroad Point. This new through-trail would be extended approximately 1,700 feet south along the historic and defunct railroad grade that runs along the eastern perimeter of the East Pasture at the base of the Point Reyes Mesa. Approximately 1,700 feet south of the existing terminus of the Tomales Bay Trail, a new improved trail, approximately 3,200 lineal feet in length, would be constructed through placement of a culverted earthen berm. At the southern end, the trail would connect to the existing informal path, which leads to Mesa Road via the paved access road that runs alongside the Giacomini Hunt Lodge, a house that was constructed by the Giacomini family and is under a 25-year Reservation of Use Agreement. Viewing areas would be constructed on the Tomales Bay Trail bluff and in the vicinity of the Giacomini Hunt Lodge. Up to five (5) parking spaces may be created at the junction of the railroad grade and Mesa Road. Length of the Eastern Perimeter Trail would total approximately 6,000 lineal feet.



This through-trail would be expected to attract a medium number of users, particularly local residents in the town of Point Reyes Station. This facility would serve hikers, equestrians, and bicyclists: the existing Tomales Bay Trail is already designated as a hiking and biking trail. This trail would enhance the quality of the public access resource experience of the existing Tomales Bay Trail by extending it and allowing direct access from the town of Point Reyes Station. Relative to baseline conditions, it would enhance existing public access resource values by offering better views of Tomasini Creek and better opportunities to observe the moderately high number of shorebirds and waterfowl that use the shallowly ponded area in the eastern portion of the East Pasture during the winter months.

Project-Related Effects-ADA-Compliant Access: This alternative would measurably increase the number of ADA-compliant facilities relative to baseline conditions through ensuring that a portion of the southern perimeter trail is consistent with accessibility guidelines for outdoor developed areas issued by a special committee convened by the Access Board. The Access Board is responsible for developing ADA guidelines. A decomposed granite trail that would be compliant with these standards would be constructed from C Street in the vicinity of 3rd Street along an easement to the edge of the Dairy Mesa, where there would be a viewing area to allow the public to experience and enjoy the restoration project and views of Tomales Bay. This portion of the trail would be constructed and maintained to improve mobility for people with disabilities, who might be using wheelchairs or other assistive devices. In addition, as part of the potential future extension of the southern perimeter trail to Inverness Park, an elevated overlook compliant with ADA standards may be constructed at White House Pool County Park that would connect to the existing parking lot with an ADA-compliant path.

Possible Additional Mitigation Measures: No mitigation measures would be proposed under this alternative.

Effectiveness of Possible Additional Mitigation Measures: Not applicable

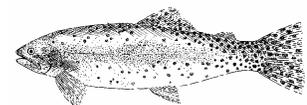
Cumulative Impacts: Cumulative impacts would be the same as described under the No Action Alternative.

Conclusions: Alternative A would generally have minor adverse to major beneficial effects on public access resources in the Project Area, local community, and region. Most of the construction-related effects would result from very temporary restriction of access on the Giacomini Ranch East Pasture levee trail, as well as temporary disruption of the quality of the visitor and residence experience on this trail and adjacent ones through noise from construction activities in the East Pasture and trucks on local roadways. Effects on regional public access resources from traffic delays or increased traffic would be very negligible.

This alternative would have major beneficial effects on enhancement and construction of public access resources in the Project Area and local community, increasing the number of structures, facilities, and attractions/uses available to visitors and residents by more than 50 percent. It would also incorporate ADA-compliant access that would allow people with disabilities to view and enjoy the restoration project. Two through-trails would be constructed on the southern and eastern perimeters of the East Pasture, replacing or enhancing five existing spur or through-trails either on or adjacent to the Project Area. Public access would also continue along the existing informal dirt path on the north levee of the West Pasture. In addition, the Park Service would collaborate with the County of Marin on a future project to extend the southern perimeter trail to Inverness Park. With the exception of the informal dirt path on the north levee, all of these facilities would serve hikers, equestrians, and bicyclists: the informal dirt path would be open only to hikers.

Alternative B

Analysis: Alternative B would have identical minor adverse to major beneficial effects as Alternative A on public access resources in the Project Area, local community, and region during construction and after implementation (Table 86). Under Alternative B, the East and West Pastures would be restored, but not Olema Marsh. Most of the new public access facilities would continue to be limited to the eastern and southern perimeters of the East Pasture, although a viewing area would replace the informal existing trail on the West Pasture north levee, which would be removed. Restoration would involve complete removal of levees in the East Pasture along Lagunitas Creek and excavation of even more new tidal channels. As with Alternative A, this alternative would involve removal or restoration of agricultural infrastructure and discontinuation of agricultural management practices.



The primary differences between Alternatives B and A are that: 1) under this alternative, the West Pasture north levee would be removed, and the existing informal path would be replaced with a viewing area at the current trail entrance off Sir Francis Drake Boulevard; 2) the culverted berm portion of the eastern perimeter trail would be replaced with a low-elevation boardwalk; and 3) there may be a small number of temporary road closures during construction on Sir Francis Drake Boulevard.

Construction-Related Effects: Construction effects would be very similar to those described under Alternative A. During construction, a small number of very temporary road closures may occur on Sir Francis Drake Boulevard to allow for movement of construction equipment in and out of the West Pasture, however, construction activities would primarily occur during the weekdays and should, therefore, not have more than a minor effect on visitor access to portions of the park on the Point Reyes Peninsula.

Project-Related Effects-General Description: Project-related effects would be very similar to Alternative A, with a few exceptions as noted above. In general, the West Pasture levee spur trail is only infrequently used by a very low number of pedestrians. The trail is relatively short (0.3 miles) and primarily offers low-elevation views of the undiked marsh north of Giacomini Ranch, Lagunitas Creek, the West Pasture of the Giacomini Ranch, and the surrounding sloped areas of the Inverness Ridge and the Point Reyes Mesa. However, during portions of at least three to four weeks every winter, this trail receives heavy use from hundreds of bird-watchers interested in seeing California black rails (*Laterallus jamaicensis coturniculus*; ST), which are very secretive birds that are rarely visible except when they move to upland refugia areas such as the levees during extreme high tides and flooding each winter. Some of these birdwatchers come from hundreds of miles away to view these unusual and interesting birds. During high tides, birdwatchers crowd onto the narrow levee, typically stringing out in small groups along its length. Replacement of the existing levee trail with a viewing area would considerably decrease the attractiveness of this particular location for “birders” interested in viewing rails, because, relative to existing conditions, the viewing area would offer less direct viewing opportunities. There are no other areas within Tomales Bay currently that support rails, so birdwatchers would either have to settle for easily accessible, but less “direct” viewing locations such as the West Pasture viewing area or hike out to the end of the 1.37-mile Tomales Bay Trail. Over the long-term, the eastern perimeter trail may offer some viewing opportunities if the rail population moves into the restored salt marsh habitat at the northern end of the East Pasture. Even with this reduction in facilities and attractions/uses, Alternative B still rates as having major beneficial effects on public access resources.

Replacement of the culverted berm portion of the eastern perimeter trail would have only negligible effects on the quality of public access resources offered by this park facility. Boardwalks sometimes pose problems for horses, but, under this alternative, a special coating may be applied to increase traction for horses that would also muffle sound. The boardwalk would be very low to the ground, so there should be no difficulty with access.

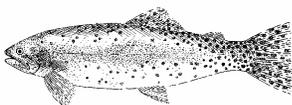
Project-Related Effects-ADA-Compliant Access: Similar to Alternative A, this alternative would have measurably increase the number of ADA-compliant facilities relative to baseline conditions through ensuring that a portion of the southern perimeter trail is consistent with accessibility guidelines for outdoor developed areas issued by a special committee convened by the Access Board. The Access Board is responsible for developing ADA guidelines.

Possible Additional Mitigation Measures: No mitigation measures would be proposed under this alternative.

Effectiveness of Possible Additional Mitigation Measures: Not applicable

Cumulative Impacts: Cumulative impacts would be the same as described under the No Action Alternative.

Conclusions: Alternative B would be identical to Alternative A, with minor adverse to major beneficial effects as Alternative A on public access resources in the Project Area, local community, and region. Most of the construction-related effects would result from very temporary restriction of access on the Giacomini Ranch East Pasture levee trail, as well as temporary disruption of the quality of the visitor and residence experience on this trail and adjacent ones through noise from construction activities in the East Pasture and trucks on local roadways. Effects on regional public access resources from traffic delays or increased traffic would be very negligible.



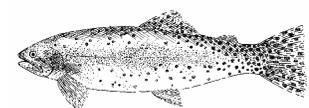
This alternative would have major beneficial effects on enhancement and construction of public access resources in the Project Area and local community, increasing the number of structures, facilities, and attractions/uses available to visitors and residents by more than 50 percent. It would also incorporate ADA-compliant access that would allow people with disabilities to view and enjoy the restoration project. Two through-trails would be constructed on the southern and eastern perimeters of the East Pasture, replacing or enhancing five existing spur or through-trails either on or adjacent to the Project Area. In addition, the Park Service would collaborate with the County of Marin on a future project to extend the southern perimeter trail to Inverness Park. The informal dirt path on the north levee of the West Pasture would be replaced with a viewing area due to the fact that the West Pasture levee would be removed, which would adversely affect a limited number of existing users – birdwatchers who come during some portion of the three or four extreme high tide events each winter to view California black rails that are seeking refugia in upland areas such as the levees. However, even with loss of this facility and a reduction in attraction/uses in this area, Alternative B would still result in major beneficial effects on public access resources, with trail facilities serving hikers, equestrians, and bicyclists.

Alternative C

Analysis: Alternative C would generally have both moderate adverse and beneficial effects on public access resources in the Project Area, local community, and region during construction and after implementation (Table 86). Under Alternative C, the East and West Pastures would be restored, along with Olema Marsh. Most of the new public access facilities would continue to be limited to the eastern and southern perimeters of the East Pasture, although access along the eastern perimeter would be scaled back through removal of the through-trail component. Restoration would involve complete removal of levees in the East and West Pastures along Lagunitas Creek and excavation of even more new tidal channels. In Olema Marsh, an adaptive restoration approach would be undertaken through fill excavation and possible culvert replacement to improve hydraulic connectivity and improve drainage of currently impounded waters. As with the other alternatives, this alternative would involve removal or restoration of agricultural infrastructure and discontinuation of agricultural management practices.

Construction-Related Effects: Adverse effects on public access resources in the Project Area, local community, and region during construction would be moderate. Regrading of the southern portion of the East Pasture Lagunitas Creek bank and construction of the southern perimeter trail during two separate construction seasons would limit access to the Giacomini Ranch East Pasture levee trail, but access would be limited by construction activities during less than 25 percent of the two construction years. Construction of the restoration component would occur over a total of eight to 12 months broken into two construction seasons, while the public access component would be constructed after restoration is completed and would be expected to take two construction seasons. In addition to restrictions on access, noise from restoration and construction activities in the southern portion of the East Pasture and possibly trucks on local roadways would also have the potential to disrupt the quality of the visitor and resident experience, particularly for users of the Giacomini Ranch East Pasture levee trail, Green Bridge County Park trail, and the White House Pool County Park trail. Construction in the southern portion of the East Pasture would not be expected to extend beyond four months or 30 percent of the year. In addition, users of these trails are already exposed to a certain level of ambient noise from farm equipment and dairy operation; vehicles, motorcycles, and heavy trucks traveling on arterial roadways; and other ambient noise such as construction in adjacent towns.

Construction activity would not only potentially affect access to existing trails in the Project Area and immediate vicinity, but access to public access facilities in the Seashore's North District (e.g., Lighthouse, Chimney Rock, Tomales Point, Abbott Lagoon) and Tomales Bay State Park. Under Alternative C, most of the impacts to transportation on state and local roadways during construction would occur on State Route 1, C Street, Mesa Road, Levee Road, Sir Francis Drake Boulevard, and Pierce Point Road from commuting of construction personnel to and from the Project Area, trailoring of construction equipment, and hauling of excavated sediments from the Project Area to local quarries on the Point Reyes Peninsula. As with Alternative B, a small number of very temporary road closures may occur during construction on Sir Francis Drake Boulevard to allow for movement of construction equipment in and out of the West Pasture, but most of these closures would occur on weekdays, which should minimize impacts during some of the highest visitation periods. In addition, replacement of either or both the Levee Road culvert and the Bear Valley Road culvert as part of the Olema Marsh restoration component would likely require partial to full closure of Levee Road and Bear Valley Road, respectively, for a period of three days to several weeks depending upon the restoration approach (i.e., replace culvert or construct bridge). Both Bear Valley and Levee Roads serve as important



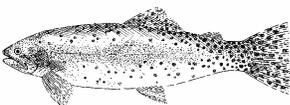
links to Sir Francis Drake Boulevard, the only road connecting the “mainland” portion of Marin County to the northern portions of the Seashore and the Tomales Bay State Park that occur on the Point Reyes Peninsula. Replacement of these culverts with either improved culverts or bridges would not be undertaken simultaneously, so traffic could be rerouted onto one or the other of these two key arterial roadways. Should Levee Road be fully closed on a temporary basis, a detour or alternate route to Sir Francis Drake Boulevard using State Route 1 and Bear Valley Road would add approximately 5 minutes to the commute time. The potential for road closures and detours increases the potential effect of this alternative relative to the other alternatives on public access resources in the vicinity of the Project Area and on the Point Reyes Peninsula from minor to moderate.

Project-Related Effects-General Description: Alternative C would have slightly less benefits for public access resources in the Project Area and local community than Alternatives A and B by increasing the number of structures, facilities, and attractions/uses available to visitors and residents by slightly less than 50 percent. The southern and eastern perimeter facilities would continue to serve hikers, equestrians, and bicyclists, but no through-trail opportunities would be offered on the eastern perimeter.

As with Alternatives A and B, a southern perimeter through-trail would be constructed on the southern perimeter of the East Pasture, replacing or enhancing at least existing spur or through-trails either on or adjacent to the Project Area. However, the Point Reyes Station entrance to the trail would be switched from 3rd and C Street, where it is located under Alternatives A and B, to an improved entrance in the Green Bridge County Park adjacent to the Green Bridge. The existing entrance at 3rd and C Street would be closed and fenced off to discourage access at this location. The trail starting at the Green Bridge would continue to connect to the eastern perimeter trail that leads either to the bridge or follows the edge of the mesa to the viewing area described under Alternative A, but the path would not be constructed as an ADA-compliant trail. The ADA-compliant trail would be constructed on the eastern perimeter of the East Pasture under this alternative. As was discussed under Traffic and Transportation, relocating the Point Reyes Station entrance would have some impacts on the value of this trail for alternative transportation purposes, although from a public access resource viewpoint, it would continue to offer many of the same attractions/uses in terms of views, birdwatching opportunities, etc. The bridge would still provide linkages with the White House Pool County Park and Olema Marsh trails, and the Park Service would collaborate with the County of Marin on a future project to extend the southern perimeter trail to Inverness Park.

In addition, under Alternative C, the eastern perimeter through-trail would be converted to two spur-trails. One spur trail would extend approximately 1,700 feet south from the terminus of the Tomales Bay Trail along the historic and defunct railroad grade that runs along the eastern perimeter of the East Pasture at the base of the Point Reyes Mesa. The other spur trail would be an ADA-compliant feature at the southern end of the railroad grade where it intersects with Mesa Road. From the small five-car parking area, an improved trail would be constructed to the viewing area in the vicinity of the Giacomini Hunt Lodge, a house that was constructed by the Giacomini family and is under a 25-year Reservation of Use Agreement. These spur trails would be expected to attract a lower number of users than a through-trail, because it decreases connectivity between neighborhoods and direct access to the Tomales Bay Trail from Point Reyes Station. However, the spur trails would still enhance existing public access resource values by offering better views and more opportunities to observe the moderately high number of shorebirds and waterfowl that use the shallowly ponded area in the eastern portion of the East Pasture during the winter months than under baseline conditions. In view of these changes, the benefits of Alternative C to public access resources are somewhat reduced relative to Alternatives A and B, with effects characterized as moderate beneficial.

Project-Related Effects-ADA-Compliant Access: This alternative would increase the number of ADA-compliant facilities relative to baseline conditions. Because the Point Reyes Station trailhead would be relocated to the Green Bridge, the ADA-compliant component of the southern perimeter trail would be eliminated. Instead, the Mesa Road spur trail would be improved so that it would be consistent with guidelines recommended under the Outdoor Recreation Standards. This portion of the trail would be constructed with decomposed granite and maintained to improve mobility for people with disabilities, who might be using wheelchairs or other assistive devices. It would connect to a viewing area near the Giacomini Hunt Lodge that would allow the public to experience and enjoy the restoration project and views of the southern portion of Tomales Bay. In addition, as part of the potential future extension of the southern perimeter trail to Inverness Park, an elevated overlook compliant with ADA standards may be constructed at White House Pool County Park that would connect to the existing parking lot with an ADA-compliant path.



Possible Additional Mitigation Measures: No mitigation measures would be proposed under this alternative.

Effectiveness of Possible Additional Mitigation Measures: Not applicable

Cumulative Impacts: Cumulative impacts would be the same as described under the No Action Alternative.

Conclusions: Alternative C would generally have both moderate adverse and beneficial effects on public access resources in the Project Area, local community, and region. Most of the construction-related effects would result from temporary road closures and detours because of the Olema Marsh restoration component. Construction activities could temporarily restrict access to the Giacomini Ranch East Pasture levee trail, as well as temporarily disrupt the quality of the visitor and residence experience on this trail and adjacent ones through noise from construction activities in the East Pasture, West Pasture, and Olema Marsh and trucks on local roadways.

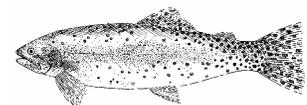
This alternative would offer slightly less benefits than Alternatives A and B in terms of enhancement and construction of public access resources in the Project Area and local community, increasing the number of structures, facilities, and attractions/uses available to visitors and residents by less than 50 percent. The southern and eastern perimeter facilities would continue to serve hikers, equestrians, and bicyclists, but no through-trail opportunities would be offered on the eastern perimeter. The southern perimeter through-trail would still be constructed, but the entrance from Point Reyes Station would be moved to a location that provides less direct access, and there would be no ADA-compliant component. The bridge would still provide linkages with the White House Pool County Park and Olema Marsh trails, and the Park Service would collaborate with the County of Marin on a future project to extend the southern perimeter trail to Inverness Park. The through-trail on the eastern perimeter would be converted to two spur trails, one of which would be ADA-compliant, and would offer the many of the same viewing and birdwatching opportunities, although there would be less connectivity between neighborhoods and no direct access to the Tomales Bay Trail from Point Reyes Station.

Alternative D

Analysis: Alternative D would generally have moderate adverse and minor beneficial effects on public access resources in the Project Area, local community, and region during construction and after implementation (Table 86). Under Alternative D as with Alternative C, the East and West Pastures would be completely restored, along with Olema Marsh. Almost all of the differences between Alternative D and C relate to excavation of a limited portion of the East Pasture to intertidal elevations, complete realignment of Tomasini Creek into one of its historic alignments, replacement of the Tomasini Creek Mesa Road culvert with a bridge or arch culvert, and further scaling back of new public access facilities through elimination of the bridge across Lagunitas Creek and one of the spur trails on the eastern perimeter. As with the other alternatives, this alternative would involve removal or restoration of agricultural infrastructure and discontinuation of agricultural management practices.

Project-Related Effects-General Description: Impacts on public access resources in the Project Area, local community, and region during construction would be identical to Alternative C. However, Alternative D would offer even less benefits for public access resources in the Project Area and local community than Alternative C, increasing the number of structures, facilities, and attractions/uses available to visitors and residents by only slightly more than 15 percent and incorporating no ADA-complaint facilities. These facilities would largely serve hikers, although they would be open to use by equestrians and bicyclists.

The southern perimeter through-trail would become more of an enhancement of the existing spur trails at the Giacomini Ranch East Pasture and Green Bridge County Park, with elimination of the bridge. As with Alternative C, the Point Reyes Station entrance to the trail would be an improved entrance in the Green Bridge County Park adjacent to the Green Bridge. The existing entrance at 3rd and C Street would be closed and fenced off to discourage access at this location. The existing Giacomini Ranch East Pasture levee trail would be improved and extended along the edge of the mesa to the viewing area described under Alternative A. As was discussed under Traffic and Transportation, maintenance of a spur trail rather than construction of a through-trail would have impacts on the value of this trail for alternative transportation purposes, although from a public access resource viewpoint, it would continue to offer some of the same attractions/uses in terms of views, birdwatching opportunities, etc.



In addition, under Alternative D, only one of the two spur-trails described under Alternative C would be constructed. The Tomales Bay Trail would still be extended approximately 1,700 feet south from the terminus of the Tomales Bay Trail along the historic and defunct railroad grade that runs along the eastern perimeter of the East Pasture at the base of the Point Reyes Mesa. As with all the other action alternatives, a simple viewing area would be constructed at the top of the Tomales Bay Trail mesa. However, there would no Mesa Road spur trail, parking area, or viewing area in the vicinity of the Giacomini Hunt Lodge. Relative to Alternative C, enhancement of the Tomales Bay Trail would be expected to attract a lower number of users, although it would still enhance existing public access resource values by offering better views and more opportunities to observe the moderately high number of shorebirds and waterfowl that use the shallowly ponded area in the eastern portion of the East Pasture during the winter months than under baseline conditions. In view of these changes, the benefits of Alternative D to public access resources are even further reduced relative to the other action alternatives, with effects characterized as minor beneficial.

Project-Related Effects-ADA-Compliant Access: This alternative would have no ADA-compliant component and would therefore have no effect on ADA-compliant facilities relative to baseline conditions. This would be considered to have an adverse effect on public access resources that would counter to some degree the benefits provided by the constructed and enhanced public access facilities proposed under Alternative D.

Possible Additional Mitigation Measures: No mitigation measures would be proposed under this alternative.

Effectiveness of Possible Additional Mitigation Measures: Not applicable

Cumulative Impacts: Cumulative impacts would be the same as described under the No Action Alternative.

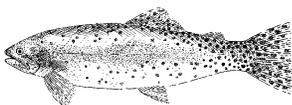
Conclusions: Alternative D would generally have moderate adverse and minor beneficial effects on public access resources in the Project Area, local community, and region. Most of the construction-related effects would result from temporary road closures and detours because of the Olema Marsh restoration component. Construction activities could temporarily restrict access to the Giacomini Ranch East Pasture levee trail, as well as temporarily disrupt the quality of the visitor and residence experience on this trail and adjacent ones through noise from construction activities in the East Pasture, West Pasture, and Olema Marsh and trucks on local roadways.

This alternative would offer considerably less benefits than Alternatives A, B, and C in terms of enhancement and construction of public access resources in the Project Area and local community, increasing the number of structures, facilities, and attractions/uses available to visitors and residents by only slightly more than 15 percent relative to baseline conditions. No through-trails would be constructed. The Giacomini Ranch East Pasture levee spur trail would instead be improved with an extension along the edge of the mesa to the viewing area near the Dairy facility. The existing Point Reyes Station entrance at 3rd and C Street would be relocated to a location that provides less direct access. On the eastern perimeter, only one spur trail would be constructed, which would extend the Tomales Bay Trail approximately 1,700 feet. These facilities would offer many of the same viewing and birdwatching opportunities, although there would be less connectivity between communities and neighborhoods and no direct access between Inverness Park and Point Reyes Station. Because of this, they would largely serve hikers, although they would be open to use by equestrians and bicyclists. In addition, there would be no ADA-compliant facilities under Alternative D, which would counter to some degree the benefits provided under this alternative in terms of constructed and enhanced public access resources.

Visitor and Resident Experience – Visual Resources and Viewsheds

Laws, Regulations, Policies, and Criteria Guiding Impact Analysis

The Park Service Management Policies (2006) direct the agency to cause no impairment to park resources and values, including “scenery, scenic features, natural visibility, both in daytime and at night, and natural



landscapes.” Furthermore, NEPA guides federal agencies to evaluate the effects of proposed actions on the quality of the visual experience of the affected environment.

State Route 1 in Marin County is a state scenic highway under the Caltrans Scenic Highway Program. The *Guidelines for the Official Designation of Scenic Highways* (Caltrans 1996) states that scenic byways are protected from imposition of negative visual intrusions and that permanent degradation of the quality of views from the highway may result in removal of scenic designation. The LCP (Marin County Comprehensive Planning Department 1981) identifies stretches of Sir Francis Drake Boulevard, including the segment of road boarding the West Pasture, as providing a scenic driving experience for coastal visitors and notes that, “in order to protect its **scenic rural character**, the road shall be maintained as a two-lane roadway” (emphasis added).

The LCP for Zone II (Marin County Comprehensive Planning Department 1981) refers to visual resource protection policies in the Coastal Act that address the importance of protection of views to scenic resources from public roads, beaches, trails, and vista points. The *Marin Countywide Plan* (draft Countywide Plan 2005) mandates that visual and esthetic resources, especially scenic vistas, shall be protected by review of planned projects and removal of inconsistent existing elements. The County has developed two policies to protect visual and esthetic resources: the Viewshed Protection Policy protects visual access to the bay front and scenic vistas of water and distinct shorelines through its land use and development review procedures; the View Corridor and Enhancement Policy urges that existing built elements, such as overhead utilities should be eliminated or blended into the environment.

General Assumptions and Methodologies

- The proposed project would affect visual resources through physical and management changes to the existing landscape in the Giacomini Ranch and Olema Marsh, as well as through construction and operation of public access facilities.
- Visual resources are considered within three contexts using two widely-accepted protocols used for evaluating visual impacts of proposed projects: the Federal Highway Administration (FHWA) technical document *Visual Impact Assessment for Highway Projects* (Federal Highway Administration 1983) and the US Forest Service (USFS) *Landscape Aesthetics: A Handbook for Scenery Management* (USDA 1995):
 - Internal esthetics, will the proposed action create or maintain internally consistent visual resources?
 - Relational esthetics, will the proposed action create or maintain visual resources that fit into the local community?
 - Environmental esthetics, will the proposed action enhance the visual quality of the environment?
- The analysis assesses effects of the proposed project on the following Visual Resource elements adopted from the FHWA (1983):
 - **Vividness:** memorability of landscape components;
 - **Intactness:** visual integrity of the landscape and relative absence of visually encroaching elements;
 - **Unity:** compositional harmony of landscape components and coherence of features within a scene.
- Air quality and visibility are evaluated under Air Resources – Air Quality.
- Impacts to natural lightscapes (dark night skies) are considered under Visual Resources.
- Visual resources were evaluated for the entire Project Area from a set of eight (8) vantage points representative of the range of viewsheds available of the Project Area from homes, roads, and walking paths. Views from these vantage points are assessed only in the direction of the Project Area.
- For each of these views, the present landscape character was described according to principles defined in FHWA (1983) and USDA (1995) and incorporated natural lightcape characteristics, as required by Park Service Management Policies. Baseline conditions were then compared to project changes to the views under all the project alternatives (Table 87).

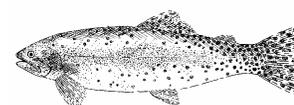


TABLE 87. VISITOR AND RESIDENT EXPERIENCE – VISUAL RESOURCES AND VIEWSHEDS

| | |
|--|---|
| Source: NPS Management Policies (2001) Nature: Beneficial, Adverse Context: Project Area, Community Duration: Construction, Short-Term, Long-Term | |
| No Impact | There would be no change in the quality of visual resources within the Project Area. The visual quality of views of the Project Area from surrounding lands within the watershed would not change. |
| Negligible/Minor | Changes to the quality of visual resources within the Project Area and to views of the Project Area from surrounding lands would be detectable, but the landscape would have the ability to absorb and incorporate the majority of the changes without disruption of integrity, diversity, prospect or natural lightscapes. |
| Moderate | Changes to the quality of visual resources within the Project Area and to views of the Project Area from surrounding lands would be readily noticeable. One or more secondary features of the site would be altered, but would not disrupt the overall integrity, diversity, prospect or natural lightscapes of the visual resources. |
| Major or Substantial | Changes to the quality of visual resources within the Project Area and to views of the Project Area from surrounding lands would be highly noticeable and dramatic. The visual resources would have substantial change in overall integrity, diversity, prospect or natural lightscapes. |

Impact Analysis

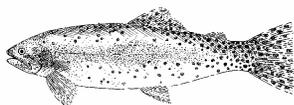
TABLE 88. INTENSITY, NATURE, TYPE, DURATION, AND CONTEXT OF IMPACTS FOR VISUAL RESOURCES AND VIEWSHEDS
 All impacts are analyzed for the Project Area and for views of the Project Area from vantage points within the Community.

| | | No Action | Alternative A | Alternative B | Alternative C | Alternative D |
|------------------|--------------|--|---------------------|---------------------|---------------------|---------------------|
| Impact Indicator | | Intensity, Nature, Type, Duration, and Context of Impact | | | | |
| Visual Resources | Construction | Negligible Adverse | Minor Adverse | Moderate Adverse | Moderate Adverse | Moderate Adverse |
| | Short-Term | Minor Adverse | Minor Adverse | Minor Adverse | Moderate Adverse | Moderate Adverse |
| | Long-term | Minor Beneficial | Moderate Beneficial | Moderate Beneficial | Moderate Beneficial | Moderate Beneficial |

No Action Alternative

Analysis: The No Action Alternative would generally have negligible to minor effects on visual resources within the Project Area (Table 88). Under the No Action Alternative, a small portion of the East Pasture (~11 acres) is converted from pasture or diked brackish marsh into tidal salt marsh. Agricultural management practices would be discontinued, but agricultural infrastructure such as levees, power poles, roads, pipes, and culverts would not be removed. There would be a potential for leased grazing through a separate environmental review and permitting process. No new public access facilities would be constructed under this alternative.

Short-Term/Long-Term: Because of these actions, the No Action Alternative would either convert a highly managed Pastoral Landscape into largely a lightly managed Pastoral or Ruderal Landscape, depending on whether leased grazing is permitted under this alternative in the future. Under the No Action Alternative, grazing would likely cease or be continued at lower densities. If grazing continues, this would preserve much of the Pastoral Landscape qualities that are currently provided under baseline conditions, although the quality of this Pastoral Landscape would continue to be low, because the unsightly intrusion of manmade elements or agricultural infrastructure such as levees, roads, pipes, power poles, and pumphouses negatively affects the visual intactness and unity of this particular landscape. However, without maintenance, unnatural linear features such as roads, levees, and irrigation ditches would eventually become less visible due to degradation and colonization by annual grasses and weedy forbs. These changes would improve the intactness and unity of visual resources,



which would be visible from vantages such as the Inverness Ridge, West Pasture North Levee, White House Pool County Park, Point Reyes Station C Street, the Hunt Lodge East Pasture, and the Tomales Bay Trail.

Within most of the Giacomini Ranch, discontinuation or a reduction in grazing pressure, along with elimination of agricultural management practices such as manure spreading, would cause a sharp, temporary increase in the areal extent or cover of weedy species such as common velvetgrass (*Holcus lanatus*), poison hemlock (*Conium maculatum*), bull thistle (*Cirsium vulgare*) and milk thistle (*Silybum marinum*). In addition, discontinuation of irrigation would convert the artificially green pastures in the East Pasture into brown grasslands during the summer. Over the short-term, these changes would negatively affect visual quality of the Project Area by converting it into a Ruderal Landscape and thereby decreasing the vividness, intactness, and unity of visual resources.

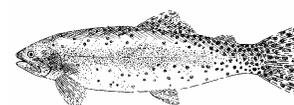
Natural Landscapes, characterized by unmanaged vegetation communities such as Tidal Salt Marsh, Tidal Brackish Marsh, Forested and Scrub-Shrub Riparian or, in some areas, Freshwater Marsh, would increase slightly under the No Action Alternative. In addition to the 11-acre restoration/mitigation component, additional acreage of natural habitats would establish or expand primarily on the Giacomini Ranch perimeters due to the lack of active agricultural management. These Natural Landscapes would introduce more visual diversity into the Giacomini Ranch portion of the Project Area, which is currently has low visual diversity due to the large extent of heavily managed pastures present. This visual diversity would result from a shift in the rather monotypic green, flat pastures to the various hues and structural types of Freshwater Marsh, Brackish Marsh, riparian, and other more natural vegetation communities. The discontinuation of agricultural management would allow passive expansion of Freshwater Marsh in portions of the Project Area such as along the perimeter of the West Pasture. In addition, Freshwater Marsh would be expected to continue to expand in Olema Marsh due to steadily increasing water levels and dieback of fringing riparian vegetation.

Over the long-term, the northern 11 acres of the East Pasture, which would be restored to undiked salt marsh habitat, would transition from pasture and Diked Brackish Marsh to Tidal Salt Marsh. During this transitional phase, the wetland restoration/mitigation area would probably become a mix of decaying vegetation with patchy establishment of opportunistic non-native and native brackish marsh species such as annual beard grass (*Polypogon monspeliensis*), brass-buttons (*Cotula coronopifolia*), and fathen (*Atriplex triangularis*). As with conversion of grasslands, this transitional phase would represent more of a Ruderal Landscape as this small area adjusts to changes in condition and would have many of the same negative impacts on visual resources over the short-term as the transitional phase in unrestored portions of the Giacomini Ranch. The restored area would not be highly visible from Project Area vantage points, but there could be some negligible adverse impacts on visual resources for people using the West Pasture north levee informal path and the Tomales Bay Trail during the transitional phase.

Riparian growth along Lagunitas Creek, Sir Francis Drake Boulevard and the existing channels in the West Pasture would be expected to expand naturally in the absence or reduction of grazing and other management practices. While riparian habitat is considered by many people to be aesthetically appealing, it also has the potential to obscure vistas or prospects of the Project Area. Any expansion of riparian habitat might conceal or shorten vistas of the Project Area in some areas, specifically the Sir Francis Drake Boulevard view corridor, West Pasture North Levee, White House Pool County Park, and Hunt Lodge East Pasture, but would also add structural and textural diversity to views. Removal of invasive plant species in riparian habitat along Sir Francis Drake Boulevard would temporarily denude the understory beneath the riparian overstory, leading to some short-term adverse impacts in terms of visual intactness to people driving along Sir Francis Drake Boulevard. Due to the dynamic growth characteristic of riparian communities, these impacts would be expected to be indiscernible after two growing seasons.

Over the long-term, some of the retained agricultural infrastructure such as the Giacomini Ranch levees would be expected to slowly degrade. This would not only break up linear features within the landscape, but it would also eventually lead to establishment of Natural Landscape over a larger percentage of the Project Area. Within the higher elevation areas that remain grassland, the sharp, immediate increase in weeds and opportunistic non-native grasses that would be expected to occur with close of the dairy would begin to taper off. Eventually, a more natural grassland community would be expected to establish, although it would continue to be dominated by non-native species. Relative to the expanse of monotypic green pasture present in the East Pasture currently, this grassland would have more visual diversity in terms of spatial variation in color and structural relief.

The No Action Alternative would be expected to have no effect on the natural lightscape of the Project Area and its environs.



Construction: While restoration is limited under the No Action Alternative, construction of the wetland restoration/mitigation component would require use of excavators, bulldozers, trucks, and other heavy equipment. Most of this equipment would be operating primarily in the northwestern corner of the East Pasture, which is only visible to residents of the Point Reyes Mesa and users of the Giacomini Ranch West Pasture informal path and the Tomales Bay Trail. Construction would take place over the dry months of one year. This equipment would disrupt visual resources in the Project Area, although impacts would be very temporary as the construction would only take a couple of months. Due to the very temporary and isolated nature of construction, impacts are characterized as only negligible or barely detectable.

Possible Additional Mitigation Measures: No mitigation measures would be proposed under this alternative.

Effectiveness of Possible Additional Mitigation Measures: Not applicable.

Cumulative Impacts: There is potentially one project that would have cumulative effects should Alternative A be implemented. The Giacomini Trust owns parcels along C Street on the eastern side of the dairy facility. These parcels are zoned Commercial-Residential (CRAB-2), with a minimum 10,000 square-foot-lot. The potential development site currently contains an unvegetated holding pen, milking barn, and manure piles. Views of the property from the C Street area are already partially obscured by a tall row of Cypress trees separating the Dairy Facility from C Street and by the existing Dairy Barns. In addition, the area is set 9 feet below street level (USGS 2003), which would reduce the extent to which structures built in this area would block the view. Structures in this area do have the potential to obscure some views of the most southern part of the pasture. In addition to shortening the prospect of the Project Area, the development would increase the human footprint of the town and degrade the visual integrity of views of the Project Area. However, relative to existing conditions and the dairy structures present, this project would be expected to have no more than a negligible effect on the overall visual resources.

Conclusions: The No Action Alternative would generally have negligible to minor effects on visual resources within the Project Area (Table 88). Under the No Action Alternative, agricultural management practices would be discontinued, but agricultural infrastructure such as levees, power poles, roads, pipes, and culverts would not be removed. Because of these actions, the No Action Alternative would either convert a highly managed Pastoral Landscape into largely a Ruderal or lightly managed Pastoral Landscape, depending on whether leased grazing is permitted under this alternative in the future.

Over the short-term, this shift would negatively affect the quality of visual resources through increasing the degree of weediness and eliminating the artificially green pastures in the East Pasture created by irrigation. Over the long-term, Natural Landscapes, characterized by unmanaged vegetation communities such as Tidal Salt Marsh, Tidal Brackish Marsh, Forested and Scrub-Shrub Riparian or, in some areas, Freshwater Marsh, would increase slightly under the No Action Alternative. In addition to the 11-acre restoration/mitigation component, more natural habitats would establish or expand primarily on the Giacomini Ranch perimeters due to the lack of active agricultural management. In other areas, the areal extent of non-native grasses and weeds that establishes with close of the dairy would eventually decline and lead over the long-term to establishment of more natural grasslands, although they would still be expected to be dominated by non-native species as are most grasslands in California. These changes would increase the visual diversity, unity, and vividness of landscapes in the Project Area by introducing more variation in the colors or hues and structural types of vegetation present.

Riparian habitat would also expand in response to the reduction in grazing pressure and discontinuation of agricultural management. This would have conflicting effects on visual resources. It would increase the extent of a habitat that many find to be visually appealing, but it would decrease the prospect or the extent of the Project Area that can be viewed from areas such as Sir Francis Drake Boulevard and White House Pool County park. There is potentially one project that would have cumulative effects should Alternative A be implemented. The Giacomini Trust owns parcels along C Street on the eastern side of the dairy facility. These parcels are zoned Commercial-Residential (CRAB-2), with a minimum 10,000 square-foot-lot. However, relative to baseline conditions and the existing dairy structures and trees already present, this reasonably foreseeable project in combination with the proposed project would be expected to have no more than a negligible adverse overall effect on visual resources.



Alternative A

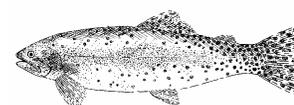
Analysis: Alternative A would generally have minor adverse to moderate beneficial effects on visual resources within the Project Area (Table 88). Under Alternative A, agricultural management would be discontinued, and agricultural infrastructure would be removed. Only the East Pasture of the Giacomini Ranch would be restored, with no restoration in either the West Pasture or Olema Marsh. Public access would either be expanded or enhanced, primarily on the southern and eastern perimeters of the East Pasture.

Short-Term/Long-Term: Because of the expanded restoration in the East Pasture of the Giacomini Ranch, Alternative A would convert from a highly managed Pastoral Landscape into eventually more of a Natural Landscape, although the West Pasture and higher elevations of the East Pasture would largely remain Ruderal Landscape. This conversion would eliminate the Pastoral Landscape that exists under baseline conditions, although the quality is relatively low because the unsightly intrusion of manmade elements or agricultural infrastructure such as levees, roads, pipes, power poles, and pumphouses negatively affects the visual intactness and unity of this particular Pastoral Landscape unit. Pastoral Landscapes that perhaps have higher scenic integrity (i.e., less unsightly power poles, pumps, levees) continue to exist within the Seashore and on private lands in the local community and southern portion of the Tomales Bay watershed.

Through breaching the levee in several locations and creating tidal channels, the areal extent of Natural Landscapes within the 350-acre East Pasture would be increased from the minimal amount expected under the No Action Alternative to approximately 218 acres over the long-term. In addition, the removal of agricultural infrastructure such as roads, fences, irrigation ditches, and “hard” structures such as the loafing barn, worker housing, pumphouse, and power lines, would enhance the integrity or intactness and overall unity of these landscapes by eliminating unsightly human-made elements. The removal of southern portion of the East Pasture levee would actually increase the prospect or the ability to view the Project Area from vantages such as the White House Pool County park that are now hidden behind 8- to 12- foot-high levees.

Over the long-term, these restoration activities would increase the unity and diversity of visual resources in the East Pasture. Restoration of the northern portion of the East Pasture would lead to the establishment of landscape features created by flood and tide waters that would be characterized by greater variation in topography and vegetation such as hummocks and mounds and texturally rough, spatially patchy groupings of vegetation of different heights. As discussed under the No Action Alternative, increased tidal influence would be expected to result in a die-off of pasture grasses and herbs followed by a gradual transition to salt-tolerant species. For the first several seasons after levee removal, the northern portion of the East Pasture would be dominated by decaying pasture grasses and herbs, which would be immediately replaced by spatially patchy occurrences of opportunistic brackish marsh species such as annual beard grass (*Polypogon monspeliensis*), brass-buttons (*Cotula coronopifolia*), and other salt-tolerant native and non-native species. This would create, at least over the short-term, a more Ruderal Landscape that would have a minor adverse effect on visual resources by decreasing visual integrity or intactness, unity, and aesthetic appeal. Over time, species more characteristic of salt marshes such as saltgrass (*Distichlis spicata*), pickleweed (*Salicornia virginica*), and jaumea (*Jaumea carnosa*), would establish, with those areas closest to the tidal creek channels transitioning more quickly. This change would considerably increase the unity, diversity, and aesthetic appeal, of visual resources.

In higher elevation areas above regular tidal inundation such as the southern 30- 40 acres of the 350-acre East Pasture, the discontinuation of grazing and irrigation practices in the rest of the southern portion of the pasture would convert Wet Pasture vegetation communities in this area to an upland mix of non-native annual grasses and weedy forbs. In the first several years, the nutrient-rich soils would likely lead to a considerable increase in cover and overall height of weedy species, including non-native grasses, poison hemlock (*Conium maculatum*), bull thistle (*Cirsium vulgare*), and milk thistle (*Silybum maritimum*). These species would eventually decrease in areal extent as nutrients reached levels more characteristic of lightly grazed areas or natural systems. Some of this weediness would be reduced by excavating and removing approximately 13 acres of heavily manured soils in the southern portion of the East Pasture. For a short period after the initial scraping, vegetation cover in this area would be sparse, but opportunistic salt-tolerant and salt-intolerant species would be expected to rapidly colonize depending upon exposure to tidal action. As with the lower-elevation portions of the East Pasture, this transitional phase would create, at least over the short-term, a Ruderal Landscape that would have a minor adverse effect on visual resources by decreasing visual integrity or intactness, unity, and aesthetic appeal.



Visual resources in the West Pasture and Olema Marsh would be much as described under the No Action Alternative. The removal of grazing could cause a temporary increase in weedy communities, however, the effect is expected to be reduced in the West Pasture relative to the East Pasture, because this pasture is not as heavily managed with lower grazing pressure and no irrigation or manure spreading. Riparian growth would be expected to expand naturally on Fish Hatchery Creek and some of the other small drainages in the absence of grazing and other management practices. Similar to the No Action Alternative, the northern half of the large freshwater marsh in the West Pasture would continue to transition to a more brackish community. In the southern end of the marsh, vegetation cover in the newly excavated marsh created as part of a separate habitat enhancement project would remain relatively sparse as vegetation would take years to become fully established. Conversely, Freshwater Marsh would continue to expand in Olema Marsh, eliminating riparian habitat on the fringe of the marsh. Over the long-term, the remaining levees in the Giacomini Ranch East and West Pastures would likely degrade over time leading to further conversion of Ruderal into Natural Landscapes.

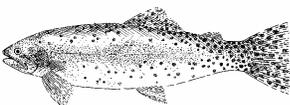
Riparian growth would be expected to expand naturally in the absence of grazing and other management practices, as well as through plantings on the south levee. This expansion would have conflicting impacts on viewshed: it would increase the areal extent of a type of natural vegetation that is often perceived by visitors and residents as aesthetically pleasing, but it would decrease prospects or opportunities for views of the restored East Pasture from the White House Pool County park trail and Levee Road residences, as well as views of Lagunitas Creek by users of the southern perimeter trail.

Several facilities are proposed to expand or enhance public access opportunities in the Project Area under Alternative A. The most prominent of the public access components proposed is the bridge spanning Lagunitas Creek for the southern perimeter trail, which would connect the town of Point Reyes Station with White House Pool County park. The path itself would follow the same alignment as the existing informal path and would not be likely to disrupt visual integrity or unity relative to baseline conditions. The new bridge, however, would likely be raised to a height equal to or exceeding the Green Bridge, but would not rise above the surrounding riparian canopy. Because it would break up the broad sweep of Lagunitas Creek as viewed from points east and west of the bridge, such as White House Pool and Inverness Ridge, it would likely have a minor to moderate adverse effect on the visual integrity or intactness and unity of visual resources in the immediate vicinity, most of which are relatively natural in appearance.

Alternative A also incorporates the eastern perimeter trail, which would follow the existing railroad grade from Mesa Road to the terminus of the Tomales Bay Trail. Construction of this trail would involve removal of wetlands and riparian vegetation. As discussed earlier, riparian vegetation has some intrinsic aesthetic value, so riparian loss could be considered adverse from a viewshed perspective, particularly as the trail would disrupt the integrity or intactness of the riparian and bluff visual resources. However, the trail would increase the number of vantage points from which the restored area can be viewed and would not be highly visible from the towns of Point Reyes Station and Inverness Park. The only potential viewshed impacts would be to residents on the Point Reyes Mesa and possibly users of the Tomales Bay Trail. Because the trail would be at the base of the Mesa, impacts to properties on the top of the mesa or bluff would be minor to moderate at most, because the trail would not be visible and would be unlikely to affect the unity of visual resources. Impacts to residents from potential noise are discussed under Air Resources – Noise and Soundscapes.

At some point, a proposed extension of the southern perimeter trail connecting White House Pool County Park to Inverness Park may be constructed in one of two locations. One proposed location is directly adjacent to Sir Francis Drake Boulevard. This alignment would potentially involve removal of riparian vegetation along Sir Francis Drake Boulevard because of the narrowness of the existing road berm along certain portions of the alignment. As discussed above, this would remove natural vegetation that is often perceived by visitors and residents as aesthetically pleasing, but it would create prospect or more opportunities for views of the unrestored West Pasture. The alternate route -- a proposed raised trail through the southern West Pasture -- would add a linear feature that might negligibly disrupt the integrity or intactness of the Natural Landscape, although it would be mostly obscured from Sir Francis Drake by the thick riparian vegetation adjacent to the road.

In addition to the trails, three constructed viewing areas would be constructed. Because they are intended to blend into the surrounding environment, these viewing areas or platforms would not be expected to detract from the scenic integrity and unity of landscapes in the Project Area.



Alternative A would be expected to have no effect on the natural lightscape of the Project Area and its environs.

Construction: Excavators, bulldozers, trucks and other heavy equipment would be temporarily visible from all sites, except along Bear Valley Road. Equipment would be visible on the East Pasture grading the levees, excavating new channels, disposing of soils with elevated nutrient content, removing infrastructure, and ripping up roads. These activities would be most visible on the eastern side of the Project Area. Construction would be expected to occur over a period of several months through the duration of one dry season. Impacts on visual quality would be moderate during actual construction activities, but of relatively limited duration.

Possible Additional Mitigation Measures: No mitigation measures would be proposed under this alternative.

Effectiveness of Possible Additional Mitigation Measures: Not applicable.

Cumulative Impacts: Cumulative impacts under Alternative A are the same as those described under the No Action Alternative.

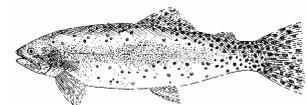
Conclusions: The effects of Alternative A on visual resources would generally range from minor to moderate adverse impacts and minor beneficial impacts to visual resources in the Project Area. Because of the expanded restoration in the East Pasture of the Giacomini Ranch, Alternative A would convert a considerable portion of the highly managed, low-quality Pastoral Landscape into more of a Natural Landscape, although the West Pasture and higher elevations of the East Pasture would remain largely Ruderal Landscape with decreased unity, diversity, vividness, and aesthetic appeal relative to baseline conditions. Even areas expected to convert to Natural Landscapes would undergo a transitional phase that would probably be characterized as Ruderal Landscapes and of lower aesthetic value than baseline conditions. These changes, combined with construction of new public access facilities, would be expected to have minor adverse impacts on visual resources in the Project Area over the short-term, even with the removal of unsightly agricultural infrastructure. Over the long-term, establishment of salt marsh communities in more than two-thirds of the 350-acre West Pasture and gradual conversion of weedy high-elevation grassland communities towards conditions more characteristic of lightly grazed or natural systems would provide moderate benefits to the Project Area by increasing the integrity, unity, and diversity of visual resources. Removal of levees would also increase prospect or opportunities to view the restored East Pasture, however, expansion of riparian habitat with discontinuation of grazing could reduce viewing opportunities in certain areas, including the southern perimeter of the East Pasture and along Sir Francis Drake Boulevard.

There is potentially one project that would have cumulative effects should Alternative A be implemented. The Giacomini Trust owns parcels along C Street on the eastern side of the dairy facility. These parcels are zoned Commercial-Residential (CRAB-2), with a minimum 10,000 square-foot-lot. However, relative to baseline conditions and the existing dairy structures and trees already present, this reasonably foreseeable project in combination with the proposed project would be expected to have no more than a negligible adverse overall effect on visual resources.

Alternative B

Analysis: Alternative B would generally have very similar minor adverse to moderate beneficial effects on visual resources within the Project Area as Alternative A (Table 88). Under Alternative B, restoration efforts are expanded into the West Pasture, although there is still no restoration of Olema Marsh. From a viewshed perspective, the public access component is almost identical to that of Alternative A.

Short-Term/Long-Term: Because of the expanded restoration efforts in the Giacomini Ranch, Alternative B would convert a highly managed, low-quality Pastoral Landscape into more of a Natural Landscape, although higher elevations of the East and West Pastures would remain largely Ruderal Landscape with decreased visual integrity, unity, vividness, and aesthetic appeal relative to baseline conditions. This conversion would eliminate the Pastoral Landscape that exists under baseline conditions, although the quality of this landscape is relatively low because the unsightly intrusion of manmade elements or agricultural infrastructure such as levees, roads, pipes, power poles, and pumphouses decreases the integrity or intactness of this particular Pastoral Landscape unit. Pastoral landscapes that perhaps have higher scenic integrity (i.e., no or much less



unsightly power poles, pumps, levees) would continue to exist within the Seashore and on private lands in the local community and southern portion of the Tomales Bay watershed.

Most of the effects of Alternative B on visual resources would be very similar to those under Alternative A, with simply an increase in the extent of Natural Landscapes. A larger extent of pasture in the East Pasture and the West Pasture would be subject to tidal influence and would convert from pastureland to transitional habitats characterized by opportunistic brackish marsh species and eventually to salt marsh vegetation. Under Alternative B, approximately 255 acres of salt marsh would be expected to establish with complete removal of the East Pasture levees and breaching of the West Pasture levee, along with removal of the Fish Hatchery Creek and East Pasture Old Slough tidesgates. This would be an 11 percent increase over the extent of salt marsh that could potentially develop under Alternative A. As with Alternative A, the higher elevation portions of the East and West Pasture would remain Ruderal Landscape or ruderal grassland dominated by non-native grasses and weeds. Despite this, overall, changes would be expected over the long-term to have a moderate beneficial effect on visual resources in the Giacomini Ranch. As discussed under Alternative A, transitional habitats would temporarily dominate the restored area, because the discontinuation of agricultural management practices such as grazing, manure spreading, and irrigation would promote establishment by weedy, opportunistic species. This would decrease visual integrity, unity, vividness, and aesthetic appeal over the short-term and result in minor adverse impacts to visual resources.

While Lagunitas Creek levees would be removed or breached under Alternative B, there would be the potential for construction of a small, low (2- to 3 vertical feet high) levee around lower elevation properties or homes on the east side of Sir Francis Drake Boulevard as a possible mitigation measure for potential flooding during larger flood events, although the extent of levee would be generally minor relative to baseline conditions. While increasing safety, these levees would decrease the prospect or vistas for these landowners, as well as at least locally detract from the visual integrity or intactness and unity of the restored pasture and Lagunitas Creek landscapes.

The public access component in Alternative B is virtually identical to that described under Alternative A. The one notable change that would affect visual resources and the ability to view the restored area would be the conversion of the informal spur path on the West Pasture north levee to an overlook at the entrance because of the deconstruction of the West Pasture north levee under Alternative B. As this, like the other overlooks would be in the form of a blind to minimize disturbance to avian species, it would be expected to have negligible adverse impact on visual resources in the Project Area and opportunities to view the Project Area.

Alternative B would be expected to have no effect on the natural lightscape of the Project Area and its environs.

Construction: The effects of construction would be similar to that of Alternative A, except that heavy equipment would be visible in both the southern and northern portions of the West Pasture. Construction of the restoration component would occur primarily during the summer and fall months over a period of two years: the public access component would be constructed separately either concurrently with restoration or after restoration is completed and would take an additional one to two construction seasons. Because the additional restoration in the West Pasture is rather minimal in terms of earthwork, Alternative B would still be expected to have a moderate adverse impact on visual quality during construction.

Possible Additional Mitigation Measures: No mitigation measures would be proposed under this alternative.

Effectiveness of Possible Additional Mitigation Measures: Not applicable.

Cumulative Impacts: Cumulative impacts under Alternative B are the same as those described under the No Action Alternative.

Conclusions: Alternative B would generally have very similar minor adverse to moderate beneficial effects on visual resources within the Project Area as Alternative A (Table 88). Under Alternative B, restoration efforts are expanded into the West Pasture, although there is still no restoration of Olema Marsh. From a viewshed perspective, the public access component and its effects on visual resources are almost identical to that of Alternative A. Because of the expanded restoration efforts in the Giacomini Ranch, Alternative B would convert a highly managed Pastoral Landscape into eventually more of a Natural Landscape, although higher



elevations of the East and West Pastures would largely remain Ruderal Landscape. Under Alternative B, approximately 255 acres of salt marsh would be expected to establish with complete removal of the East Pasture levees and breaching of the West Pasture levee, along with removal of the Fish Hatchery Creek and East Pasture Old Slough tidegates. This conversion would eliminate the Pastoral Landscape that exists under baseline conditions, although the quality of this Pastoral Landscape is relatively low because the unsightly intrusion of manmade elements or agricultural infrastructure such as levees, roads, pipes, power poles, and pumphouses. As with Alternative A, the higher-elevation portions of the East Pasture would convert into a Ruderal Landscape characterized by non-native grassland that would be lower in visual integrity, vividness, and aesthetic appeal relative to baseline conditions. Riparian vegetation would also continue to expand to some degree along Sir Francis Drake Boulevard, possibly decreasing the ability to view the restored West Pasture. Overall, these changes would have an overall moderate beneficial effect on visual resources over the long-term, however, conversion of pasture to either Natural Landscape or Ruderal Landscape would involve a transitional phase characterized by a sharp increase in weedy, opportunistic species that would detract from visual resources by decreasing intactness, unity, vividness, and aesthetic appeal, which would be a minor adverse impact over the short-term.

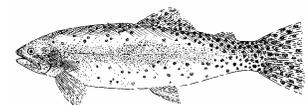
There is potentially one project that would have cumulative effects should Alternative A be implemented. The Giacomini Trust owns parcels along C Street on the eastern side of the dairy facility. These parcels are zoned Commercial-Residential (CRAB-2), with a minimum 10,000 square-foot-lot. However, relative to baseline conditions and the existing dairy structures and trees already present, this reasonably foreseeable project in combination with the proposed project would be expected to have no more than a negligible adverse overall effect on visual resources.

Alternative C

Analysis: Alternative C would generally have moderate adverse and beneficial effects on visual resources within the Project Area that would be very similar to those of Alternative B, at least for the Giacomini Ranch (Table 88). Alternative C includes restoration of both the East and West Pastures of the Giacomini Ranch, as well as restoration of Olema Marsh. Public access is scaled back slightly through conversion of the eastern perimeter through-trail to two spur trails that would not be aligned through the riparian/wetland habitat adjacent to Tomasini Creek and the Point Reyes Mesa bluff.

Short-Term/Long-Term: Alternative C would have very similar effects on visual resources to Alternative B for the Giacomini Ranch. As with Alternative B, Alternative C would convert a highly managed, low-quality Pastoral Landscape into more of a Natural Landscape. Additional restoration and revegetation efforts under this alternative would decrease the extent of Ruderal Landscape in the East Pasture by scraping off weed-dominated surface soils in 30 higher elevation acres in the southern portion of the pasture and conducting a limited revegetation effort with native grass and shrub species. While these restoration efforts would not result in a native-dominated grassland, they would decrease the extent of weediness expected in higher elevation areas of the East Pasture during the transitional and long-term phases of vegetation community establishment. Higher elevations of the West Pasture would still remain largely Ruderal Landscape with decreased visual integrity, unity, vividness, and aesthetic appeal relative to baseline conditions. As discussed under the other alternatives, this conversion would eliminate the Pastoral Landscape that exists currently, although the quality of this landscape is relatively low because the unsightly intrusion of manmade elements or agricultural infrastructure such as levees, roads, pipes, power poles, and pumphouses decreases the integrity or intactness of this particular Pastoral Landscape unit. Pastoral landscapes that perhaps have higher scenic integrity (i.e., no or much less unsightly power poles, pumps, levees) would continue to exist within the Seashore and on private lands in the local community and southern portion of the Tomales Bay watershed.

Most of the effects of Alternative C on visual resources in Giacomini Ranch would be very similar to those discussed under Alternatives A and B, with simply an increase in the extent of Natural Landscapes. Following restoration, transitional habitats would temporarily dominate the restored area, because the discontinuation of agricultural management practices such as grazing, manure spreading, and irrigation would promote establishment by weedy, opportunistic species. This would decrease visual integrity, unity, vividness, and aesthetic appeal over the short-term. However, over the long-term, complete removal of the Lagunitas Creek levees in both the East and West Pastures would result in establishment of more natural landscape features created by flood and tide waters, which would lead to more unity, vividness, and diversity in visual resources relative to baseline conditions through greater variation in topography and vegetation structure. Rather than the monotypic expanse of relatively flat green pasture currently present at least in the East Pasture, greater

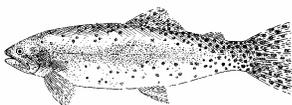


interaction between the landscape and tidal and freshwater flooding would create more swales and hummocks, as well as a mosaic of rough, patchy vegetation groupings of various heights with a range of colors such as green, tan, and red. Establishment of more natural vegetation communities such as riparian habitat and Freshwater Marsh would also occur along the Giacomini Ranch perimeter with discontinuation of grazing and other agricultural management. These physical and biological changes, along with the more extended and sinuous nature of the tidal channels created in Alternative C relative to the straightened ditches currently present, would increase integrity and unity of visual resources, as well as the diversity of color, line, and texture. These long-term changes would have a moderate beneficial effect on visual resources in the Giacomini Ranch.

One of the largest differences in visual resources between Alternatives B and C comes from adaptive restoration of Olema Marsh. Under this alternative, some initial restoration actions would be undertaken to improve hydraulic connectivity and decrease surface water levels within the currently impounded marsh. Even these actions could cause some dramatic changes in the marsh's appearance, particularly over the short-term. With water levels expected to drop as much as 1- to 4 feet, extensive die-back of the tall emergent Freshwater Marsh vegetation such as cattails (*Typha* spp.), and bulrush (*Scirpus californicus* and *Scirpus acutus*) would occur as the marsh adjusts to lowered water levels through drops in topographic elevations and at least temporary changes in water and soil chemistry. During interim conditions, as the marsh begins adjusting to lower water surface levels, there may be some invasion of weedy, opportunistic species in response to disturbance and a pulse in concentrations of soil and water nutrients. While peak die-back would taper off within a few years, a large degree of variability in vegetation communities would be expected for at least 10- 15 years in terms of the degree of die-back, the extent of invasion by non-native species, and the rate of recolonization by marsh species until some kind of equilibrium condition is reached. This extensive vegetation die-back would be highly visible to vehicles on Bear Valley and Levee Roads and would, when combined with the minor adverse impacts expected over the short-term from restoration of the Giacomini Ranch, have moderate adverse effects on visual resources.

Over the long-term, this dramatic response to lowered water levels would be reduced as the marsh comes into equilibrium with changed conditions. Brackish marshes vegetation communities, probably dominated by tall emergent species, would be expected to establish near the mouth of the eastern culvert and along the Bear Valley Creek flowpath on the eastern side of the marsh, which would remain the area most influenced by tides. Freshwater Marsh would reestablish throughout most of the rest of the marsh, with the extent dependent on the degree of drawdown in water surface levels. The extent of tall emergents such as cattails and bulrush may decrease as a result of the decrease in water impoundment in Olema Marsh, leading to establishment of short- and mid-sized emergent marsh species. In addition, the lower water surface levels would reverse the current trend of dieback of fringing riparian habitat in response to steadily increasing water levels, which promoted expansion of freshwater marsh. While the dynamics of the marsh will have changed, restoration actions would ultimately increase the diversity of the plant communities and, therefore, the visual diversity that would result from strong variations in the color and structure of vegetation.

The public access components proposed in Alternative C are similar in both structure and visual impacts to those of Alternatives A and B. The most significant change from the two previous action alternatives comes from the conversion of the eastern perimeter through-trail to two spur trails. These spur trails would not cause any wetland or riparian impacts and would therefore preserve the integrity or intactness of the Tomasini Creek riparian/Point Reyes Mesa bluff visual resources. This conversion at least slightly diminishes the degree of impact to visual resources, particularly over the short-term. As with Alternatives A and B, the most prominent effect of the public access component on visual resources would result from construction of a new bridge spanning Lagunitas Creek near the location of the old summer dam. This bridge would likely be raised to a height equal to or exceeding the Green Bridge, but would not rise above the surrounding riparian canopy. Because it would break up the broad sweep of Lagunitas Creek as viewed from points east and west of the bridge, such as White House Pool and Inverness Ridge, it would likely have a minor to moderate adverse effect on visual resources by decreasing the visual integrity or intactness and unity of the predominantly Natural Landscape. As the southern perimeter trail would follow the alignment of the existing informal path, enhancement of this facility would have only negligible effects on visual resources relative to baseline conditions. At some point, the southern perimeter trail may be extended from White House Pool County park to Inverness Park. As discussed under Alternative A, this would have varying degrees of adverse impacts on the intactness and integrity of visual resources in areas in and along Sir Francis Drake Boulevard, although one of the possible alignments, widening the road berm, would remove riparian vegetation along the road that currently screens what would be the restored West Pasture from vehicles.



Alternative C would be expected to have no effect on the natural lightscape of the Project Area and its environs.

Construction: As in Alternative B, heavy equipment would be visible during construction in the Giacomini Ranch and Olema Marsh. Construction would occur primarily during summer and fall months for a period of at least two years, with implementation of many of the adaptive restoration components for Olema Marsh in subsequent years. The public access component would be constructed either during or subsequent to the Giacomini Ranch restoration depending on funding. These construction activities would have, at most, a temporary moderate adverse impact on visual resources, although impacts in less visible, more remote areas could be Under

Possible Additional Mitigation Measures: No mitigation measures would be proposed under this alternative.

Effectiveness of Possible Additional Mitigation Measures: Not applicable.

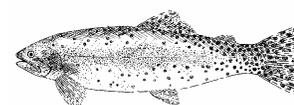
Cumulative Impacts: Cumulative impacts under Alternative C are the same as those described under the No Action Alternative.

Conclusions: Alternative C would generally have very similar minor adverse to moderate beneficial effects on visual resources within the Giacomini Ranch as Alternative B, although impacts to visual resources from restoration of Olema Marsh would elevate short-term impacts to moderate (Table 88). Under Alternative C, restoration efforts are expanded into the Olema Marsh, as well as the Giacomini Ranch. Within the Giacomini Ranch, most of the highly managed, low-quality Pastoral Landscape would be converted by complete removal of all the Lagunitas Creek levees into eventually more of a Natural Landscape, particularly with restoration and revegetation of the higher-elevation 30 acres in the southern portion of the East Pasture. Higher elevations of the West Pasture would still largely remain Ruderal Landscape. This conversion would eliminate the Pastoral Landscape that exists under baseline conditions, although the quality of this Pastoral Landscape is relatively low, because the unsightly intrusion of manmade elements or agricultural infrastructure such as levees, roads, pipes, power poles, and pumphouses detracts from the intactness or integrity of this particular type of landscape. Overall, these changes would have an overall moderate beneficial effect on visual resources over the long-term, however, conversion of pasture to either Natural Landscape or Ruderal Landscape would involve a transitional phase characterized by a sharp increase in weedy, opportunistic species that would detract from visual resources by decreasing intactness, unity, vividness, and aesthetic appeal. In addition, the inclusion of Olema Marsh in the restoration project would increase temporary impacts to visual resources through the extensive die-back of vegetation expected from improving hydraulic connectivity and decreasing surface water levels within the highly impounded marsh. This would increase short-term impacts from minor to moderate under Alternative C. However, over the long-term, restoration of the marsh would reverse some of the adverse impacts to riparian habitat that have been caused by increasing water levels and the associated increase in Freshwater Marsh. From a viewshed perspective, the public access component and its effects on visual resources are almost identical to that of Alternative B, although the eastern perimeter through-trail would be converted to two spur trails, thereby slightly decreasing impacts on the integrity of visual resources along Tomasini Creek and the Point Reyes Mesa bluff.

There is potentially one project that would have cumulative effects should Alternative A be implemented. The Giacomini Trust owns parcels along C Street on the eastern side of the dairy facility. These parcels are zoned Commercial-Residential (CRAB-2), with a minimum 10,000 square-foot-lot. However, relative to baseline conditions and the existing dairy structures and trees already present, this reasonably foreseeable project in combination with the proposed project would be expected to have no more than a negligible adverse overall effect on visual resources.

Alternative D

Analysis: Alternative D would have almost identical effects on visual resources in the Project Area as Alternative C (Table 88). Under Alternative D, the restoration components for the West Pasture and Olema Marsh would be identical to those of Alternative C, but some of the higher elevation areas in the southern portion of the East Pasture would be lowered to intertidal elevations. Tomasini Creek would also be completely realigned into one of its historic alignments, and upstream hydraulic connectivity would be



improved through replacement of the Mesa Road culvert. Public access would be scaled back considerably relative to Alternative C, with the elimination of the through-trail component for the southern perimeter trail, including the bridge spanning Lagunitas Creek.

Short-Term/Long-Term: As noted above, the effects of Alternative D on visual resources would be almost identical to those under Alternative C. The excavation of higher-elevation portions of the East Pasture to intertidal elevations could have negligible beneficial effects on visual resources over the long-term, because salt marsh would have fewer weeds than grassland and thereby increase the unity and aesthetic appeal of the Natural Landscape. The complete rerouting of Tomasini Creek could increase the visual diversity by adding a sinuous curve or line to the relatively flat landscape. These changes would provide negligible additional benefits to visual resources.

In addition, the public access component in Alternative D would slightly reduce some of the impacts from construction of public access discussed for Alternatives A-C. The southern perimeter through-trail would be converted into a spur trail with a similar alignment to the current informal path, and there would be no bridge. There would also be no potential for extension of the southern perimeter trail to Inverness Park. Public access would be further scaled back by elimination of one of the two spur trails on the eastern perimeter.

Even with these changes, the intensity of impacts on visual resources would be characterized as identical to those under Alternative C, with moderate adverse impacts over the short-term and moderate beneficial effects over the long-term relative to baseline conditions.

Alternative D would be expected to have no effect on the natural lightscape of the Project Area and its environs.

Construction: Construction impacts on visual resources would be very similar to those described under Alternative C.

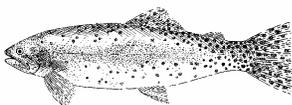
Possible Additional Mitigation Measures: No mitigation measures would be proposed under this alternative.

Effectiveness of Possible Additional Mitigation Measures: Not applicable.

Cumulative Impacts: Cumulative impacts under Alternative D are the same as those described under the No Action Alternative.

Conclusions: Alternative D would have almost identical effects on visual resources in the Project Area as Alternative C (Table 88). The excavation of higher-elevation portions of the East Pasture to intertidal elevations could have negligible beneficial effects on visual resources over the long-term, because salt marsh would have fewer weeds than grassland and thereby increase the unity and aesthetic appeal of the Natural Landscape. The complete rerouting of Tomasini Creek could increase the visual diversity by adding a sinuous curve or line to the relatively flat landscape. In addition, the considerable scaling back of public access component under Alternative D would slightly reduce some of the impacts from construction of public access discussed for Alternatives A-C. Even with these changes, the intensity of impacts on visual resources would be characterized as identical to those under Alternative C, with moderate adverse impacts over the short-term and moderate beneficial effects over the long-term relative to baseline conditions.

There is potentially one project that would have cumulative effects should Alternative A be implemented. The Giacomini Trust owns parcels along C Street on the eastern side of the dairy facility. These parcels are zoned Commercial-Residential (CRAB-2), with a minimum 10,000 square-foot-lot. However, relative to baseline conditions and the existing dairy structures and trees already present, this reasonably foreseeable project in combination with the proposed project would be expected to have no more than a negligible adverse overall effect on visual resources.



Socioeconomics

Laws, Regulations, Policies, and Criteria Guiding Impact Analysis

Park Service regulations for NEPA compliance state that, “social and economic impacts are considered an integral part of the human environment in the (Park Service) and should be analyzed in any NEPA document where they are affected. Socioeconomic impacts include those to minority and low-income communities as specified in the Environmental Justice Executive Order (EO 12898; Feb. 11, 1994).” This executive order - Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations - requires all federal agencies to incorporate environmental justice into their missions by identifying and addressing disproportionately high and adverse human health or environmental effects of their programs and policies on minorities and low-income populations and communities.

CEQA typically focuses on physical changes caused by a project. Economic or social effects of a project are not treated as significant effects on the environment in and of themselves (Section 15131(a)). However, if a project causes a physical change, economic or social effects may be used to determine the significance of physical changes caused by the project (Section 15131(b)). Under Section 21083(c), CEQA requires an agency to determine that a project may have a significant effect on the environment if it will cause substantial adverse effects on human beings, either directly or indirectly.

Significance criteria developed by the county under CEQA incorporate guidance from the state about addressing any social or economic impacts which can be traced through a chain of cause and effect to physical changes.

General Methodologies and Assumptions

- Marin County has a \$500 million annual tourist industry. It is estimated that the Seashore contributes over \$150 million to the regional economy visitor expenditures on dining, fuel, gifts, groceries, and lodging (NPS 2002). Including secondary effects, the total economic impact of the park on the local economy is \$113 million in sales, \$42 million in wages and salaries, and 1,800 jobs (Michigan State University 2001).
- The proposed project would potentially have an effect on the local economy through increases in visitation to the restored wetland and public access facilities.
- In addition to any possible effects on minority and low-income populations and communities, alternatives were evaluated for their potential direct impacts, such as increased visitation and tourist dollars, and indirect economic effects, such as potential increases in property value for properties bordering the Project Area due to the attractiveness of living adjacent to a restored wetland.
- During construction, the proposed project would have the potential to adversely affect socioeconomic conditions in the local community through any detrimental effects that the construction activities have on visitation to the Project Area and other portions of the Seashore, Tomales Bay State Park and other state and local parks, and private commercial businesses on the Point Reyes Peninsula.
- Impact thresholds are based on estimates of 2.5 million visitors generating \$150 million in 2000 (NPS 2002; Table 89). This equates to approximately \$60 per visitor contributed to the local economy.
 - Estimates of potential increases in visitation associated with implementation of the proposed project are used to evaluate the relative magnitude of potential effects on socioeconomic conditions in the local community.
 - One of the factors qualitatively taken into consideration is the number of **new** visitors drawn to the local community by facilities offered by the proposed project versus the number of users that are either residents or incidental users or visitors who come to the Region for other reasons, but who ended up using facilities. The former would be considered new dollars for the local economy.
 - For the construction period, the potential impacts in road delays or detours on visitation to the local community are qualitatively evaluated in terms of temporary effects on socioeconomic conditions.

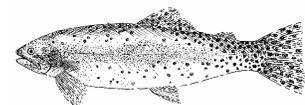


TABLE 89. SOCIOECONOMIC RESOURCES

| | |
|--|--|
| Source: CEQ. Park Service regulations, California and County CEQA policies Nature: Beneficial, Adverse Context: Local Community Duration: Construction, Short-Term, Long-Term | |
| No Impact | There would be no potential for impact to socioeconomic conditions in the local community associated with the proposed project. |
| Negligible | The proposed project would generate an undetectable or barely detectable change (≤ 1 percent) in socioeconomic conditions in the local community as based on 2000 estimates of park-generated spending in the local economy. |
| Minor | The proposed project would generate a small, but measurable change (> 1 percent and ≤ 10 percent) in socioeconomic conditions in the local community as based on 2000 estimates of park-generated spending in the local economy. |
| Moderate | The proposed project would generate an apparent or appreciable change (> 10 percent and ≤ 25 percent) in socioeconomic conditions in the local community as based on 2000 estimates of park-generated spending in the local economy. |
| Major or Substantial | The proposed project would generate a major or substantial change (>25 percent) in socioeconomic conditions in the local community as based on 2000 estimates of park-generated spending in the local economy. |

Impact Analysis

TABLE 90. INTENSITY, NATURE, TYPE, DURATION, AND CONTEXT OF IMPACTS FOR SOCIOECONOMIC RESOURCES

All impacts would be considered Local Community and Construction and Short-Term/Long-Term.

| | No Action | Alternative A | Alternative B | Alternative C | Alternative D |
|------------------------------|---|----------------------|----------------------|----------------------|----------------------|
| Impact Indicator | Intensity, Nature, Type, Duration, and Context of Impact | | | | |
| Construction-Related Effects | Adverse - Negligible | Adverse - Negligible | Adverse - Negligible | Adverse - Negligible | Adverse - Negligible |
| Project-Related Effects | Beneficial - Negligible | Beneficial - Minor | Beneficial - Minor | Beneficial - Minor | Beneficial - Minor |

No Action Alternative

Analysis: The No Action Alternative would generally have negligible effects on socioeconomic resources in the local community during construction and after implementation (Table 90). Under the No Action Alternative, levees, tidegates, and culverts in the Giacomini Ranch are not breached or removed, except for the 11-acre wetland restoration area in the northeastern corner of the East Pasture. The Park Service is required under its existing agreement with CalTrans to restore wetlands as mitigation for impacts caused by CalTrans to aquatic habitat from a road repair on State Route 1 in Marin County in exchange for the Park Service receiving monies to purchase and restore the Giacomini Ranch. The remainder of the levee would not be deconstructed, although there would be no levee maintenance. Olema Marsh is also not restored, and there would be no new public access facilities.

As discussed in detail under Public Services – Traffic and Transportation and Visitor and Resident Experience – Public Access Resources, the effects of construction on traffic and the quality of the visitor and resident experience are not large enough to have more than a very negligible impact, if any impact at all, on the local economy. Project construction would be expected to have effects on the local economy if traffic delays were considerable; facilities were closed for a long period of time; and noise and other construction-related factors disrupted the visitor and resident experience sufficiently to keep visitors from returning to the region. This alternative would have no more than a negligible effect on any of these factors. Conversely, construction can generate income through purchases in local communities, although these beneficial would be expected to be very negligible overall.



For this alternative, project-related effects would arise principally from any income generated through increased visitation to the Project Area. This alternative would have only very negligible effects on visitation, so project-related effects on the local economy would be very negligible, as well.

Possible Additional Mitigation Measures: No mitigation measures would be proposed under this alternative.

Effectiveness of Possible Additional Mitigation Measures: Not applicable

Cumulative Impacts: Other currently proposed or reasonably foreseeable projects that could have the potential to cause cumulative impacts should the No Action alternative be implemented would be residential development on private lands along C Street and the Pacific Artisans Housing Development, both of which are in Point Reyes Station. These projects cumulatively have the potential to result in development of perhaps as many as 11 to 14 new homes in the town based on zoning, although the final number of allowable homes would depend on site factors such as results of percolation tests. While it is difficult to predict the intensity of effects of projects that have not been proposed, much less fully designed, these projects would probably have negligible to at most very minor effects on the local economy, considering that the Point Reyes Affordable Home project, which resulted in construction of a much larger number of housing units (36) was characterized as having only “small” effects on economic growth in the local economy (EDAW 2001). Cumulatively, the proposed projects would be expected to have negligible to minor effects on this largely tourism- and ranching-driven local economy.

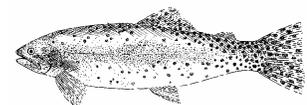
Conclusions: The No Action alternative would generally result in negligible effects on the socioeconomic resources in the local community during construction and following implementation (Table 91). Construction would cause very negligible adverse impacts to the local economy, although the project would likely not affect the economy during construction. Over the long-term, the very negligible change in visitation following implementation of this alternative would result in at the most very negligible beneficial effects on local socioeconomic resources. Cumulative effects on the local economy from small proposed and reasonably foreseeable small residential development projects would still have only negligible to minor effects on this largely tourism- and ranching-driven economy.

Alternative A

Analysis: Alternative A would generally have negligible to minor effects on socioeconomic resources in the local community during construction and after implementation (Table 90). Under Alternative A, only the East Pasture would be restored, with new public access facilities limited to the eastern and southern perimeters of the East Pasture. There would be no restoration or construction of new public access facilities in the West Pasture or Olema Marsh. In the East Pasture, restoration would involve breaching of levees in the East Pasture along Lagunitas Creek, and excavation of new tidal channels. The southwestern corner of the creek bank would be regraded to a more stable profile. Most of the actions under this alternative focus on removal or restoration of agricultural infrastructure such as filling of ditches, ripping of compacted roads, fence removal, and removal of pumps, pipelines, and concrete spillways.

As with the No Action Alternative, the effects of construction on traffic and the quality of the visitor and resident experience under Alternative A would have no more than a negligible effect to have more than a very negligible impact, if any impact at all, on the local economy. Project construction would be expected to have effects on the local economy if traffic delays were considerable; facilities were closed for a long period of time; and noise and other construction-related factors disrupted the visitor and resident experience sufficiently to keep visitors from returning to the region. This alternative would have no more than a negligible to minor effect on any of these factors. Conversely, construction can generate income through purchases in local communities, although these beneficial would be expected to be very negligible overall.

For this alternative, project-related effects would arise principally from any income generated through increased visitation to the Project Area. This alternative would have a major beneficial effect on public access resources available to visitors and residents, however, most of the people that would use these resources are either already local residents or, to a lesser degree, visitors whose use of facilities would be expected to largely incidental to the proposed project, that is, they would come to the Point Reyes region for other reasons (e.g., visit Bear Valley Visitor Center, shop in Point Reyes Station, drive out to the Point Reyes Peninsula), but



use some of the proposed facilities while they were out here. These two types of users would not be considered to bring “new” dollars to the local economy. Some visitors would potentially come specifically to view the restored wetland or to do bird-watching, but these users would represent a small proportion of the overall user group. Based on this, the overall expected effect of this alternative would be characterized as minor and beneficial.

Possible Additional Mitigation Measures: No mitigation measures would be proposed under this alternative.

Effectiveness of Possible Additional Mitigation Measures: Not applicable

Cumulative Impacts: Cumulative impacts would be the same as described under the No Action Alternative.

Conclusions: Alternative A would generally result in negligible to minor effects on the socioeconomic resources in the local community during construction and following implementation (Table 91). Construction would cause at the most negligible adverse impacts to the local economy, although the project would likely not affect the economy during construction.

Over the long-term, this alternative would potentially have minor beneficial effects on the local economy. While this alternative would increase the number of public access resources within the Project Area and local community dramatically, most of the users of these resources would be local residents and visitors who come to the Point Reyes region for other purposes and end up incidentally using public access facilities. The proportion of visitors drawn specifically to facilities in the Project Area and vicinity would be smaller, and, therefore, the number of “new” dollars for the local economy would be relatively small, as well, resulting in this alternative having at most minor beneficial effects on socioeconomic resources in the local community.

Alternative B

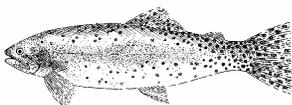
Analysis: Alternative B would generally have identical negligible to minor effects as Alternative A on socioeconomic resources in the local community during construction and after implementation (Table 90). Under Alternative B, the East and West Pastures would be restored, but not Olema Marsh. Most of the new public access facilities would continue to be limited to the eastern and southern perimeters of the East Pasture, although a viewing area would replace the informal existing trail on the West Pasture north levee, which would be removed. Restoration would involve complete removal of levees in the East Pasture along Lagunitas Creek and excavation of even more new tidal channels. As with Alternative A, this alternative would involve removal or restoration of agricultural infrastructure and discontinuation of agricultural management practices.

Possible Additional Mitigation Measures: No mitigation measures would be proposed under this alternative.

Effectiveness of Possible Additional Mitigation Measures: Not applicable

Cumulative Impacts: Cumulative impacts would be the same as described under the No Action Alternative.

Conclusions: Alternative B would generally result in identical negligible to minor effects as Alternative A on the socioeconomic resources in the local community during construction and following implementation (Table 91). Construction would cause at the most negligible adverse impacts to the local economy, although the project would likely not affect the economy during construction. Over the long-term, this alternative would potentially have minor beneficial effects on the local economy. While this alternative would increase the number of public access resources within the Project Area and local community dramatically, most of the users of these resources would be local residents and visitors who come to the Point Reyes region for other purposes and end up incidentally using public access facilities. The proportion of visitors drawn specifically to facilities in the Project Area and vicinity would be smaller, and, therefore, the number of “new” dollars for the local economy would be relatively small, as well, resulting in this alternative having at most minor beneficial effects on socioeconomic resources in the local community.



Alternative C

Analysis: Alternative C would generally have identical negligible to minor effects as Alternatives A and B on socioeconomic resources in the local community during construction and after implementation (Table 90). Under Alternative C, the East and West Pastures would be restored, along with Olema Marsh. Most of the new public access facilities would continue to be limited to the eastern and southern perimeters of the East Pasture, although access along the eastern perimeter would be scaled back through removal of the through-trail component. Restoration would involve complete removal of levees in the East and West Pastures along Lagunitas Creek and excavation of even more new tidal channels. In Olema Marsh, an adaptive restoration approach would be undertaken through fill excavation and possible culvert replacement to improve hydraulic connectivity and improve drainage of currently impounded waters. As with the other alternatives, this alternative would involve removal or restoration of agricultural infrastructure and discontinuation of agricultural management practices.

Under Alternative C, effects on traffic during construction would be slightly greater than under Alternatives A and B, because of temporary road closures and detours associated with replacement of culverts on two local arterial roadways, Levee Road and Bear Valley Road, that are important connecting routes to Inverness Park, Inverness, and the rest of the businesses, ranches, and portions of the Seashore and Tomales Bay State Park on the Point Reyes Peninsula. However, these temporary road closures are not expected to have any additional adverse effects on visitation that would impact the local economy more than the other alternatives. Conversely, construction can generate income through purchases in local communities, although these beneficial would be expected to be very negligible overall. In general, this alternative would still be expected to have only negligible, if any impacts, during construction on socioeconomic resources in the local community.

In addition, a slight scaling back of public access facilities under this alternative would be expected to have some effect on visitation, although effects of this alternative on the local economy, should it be implemented, would still be expected to be minor, at most.

Possible Additional Mitigation Measures: No mitigation measures would be proposed under this alternative.

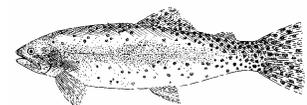
Effectiveness of Possible Additional Mitigation Measures: Not applicable

Cumulative Impacts: Cumulative impacts would be the same as described under the No Action Alternative.

Conclusions: Alternative C would generally result in identical negligible to minor effects as Alternatives A and B on the socioeconomic resources in the local community during construction and following implementation (Table 91). Even with temporary road closures and detours on some of the local arterial roadways serving the Point Reyes Peninsula, construction would cause only negligible, if any, adverse impacts to the local economy. Over the long-term, this alternative would potentially have minor beneficial effects on the local economy. While this alternative would increase the number of public access resources within the Project Area and local community dramatically, most of the users of these resources would be local residents and visitors who come to the Point Reyes region for other purposes and end up incidentally using public access facilities. The proportion of visitors drawn specifically to facilities in the Project Area and vicinity would be smaller, and, therefore, the number of "new" dollars for the local economy would be relatively small, as well, resulting in this alternative having at most minor beneficial effects on socioeconomic resources in the local community.

Alternative D

Analysis: Alternative D would generally have identical negligible to minor effects as Alternative C on socioeconomic resources in the local community during construction and after implementation (Table 90). Under Alternative D as with Alternative C, the East and West Pastures would be completely restored, along with Olema Marsh. Almost all of the differences between Alternative D and C relate to excavation of a limited portion of the East Pasture to intertidal elevations, complete realignment of Tomasini Creek into one of its historic alignments, replacement of the Tomasini Creek Mesa Road culvert with a bridge or arch culvert, and further scaling back of new public access facilities through elimination of the bridge across Lagunitas Creek



and one of the spur trails on the eastern perimeter. As with the other alternatives, this alternative would involve removal or restoration of agricultural infrastructure and discontinuation of agricultural management practices.

Scaling back of public access facilities under this alternative would be expected to result in more minor increases in visitation relative to baseline conditions, although effects of this alternative on the local economy, should it be implemented, would still be expected to be very minor, if not negligible.

Possible Additional Mitigation Measures: No mitigation measures would be proposed under this alternative.

Effectiveness of Possible Additional Mitigation Measures: Not applicable

Cumulative Impacts: Cumulative impacts would be the same as described under the No Action Alternative.

Conclusions: Alternative D would generally result in identical negligible to minor effects as Alternative C on the socioeconomic resources in the local community during construction and following implementation (Table 91). Even with temporary road closures and detours on some of the local arterial roadways serving the Point Reyes Peninsula, construction would cause only negligible, if any, adverse impacts to the local economy. Over the long-term, this alternative would potentially have minor beneficial effects on the local economy. While this alternative would increase the number of public access resources within the Project Area and local community dramatically, most of the users of these resources would be local residents and visitors who come to the Point Reyes region for other purposes and end up incidentally using public access facilities. The proportion of visitors drawn specifically to facilities in the Project Area and vicinity would be smaller, and, therefore, the number of “new” dollars for the local economy would be relatively small, as well, resulting in this alternative having at most very minor, if not negligible, beneficial effects on socioeconomic resources in the local community.

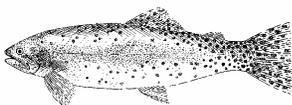
Park Management and Operations

Laws, Regulations, Policies, and Criteria Guiding Impact Analysis

To fulfill its mission, the Park Service receives funding from both the federal appropriations process and other federal revenue sources. Like most federal agencies, the Park Service relies on Federal appropriations to fund its core activities through base funding, although there is increasing use of alternative revenue sources, such as private monies and grants, to fund specific projects. In addition to base funding, certain parks receive monies from fees generated through park admissions, and parks can also apply for one-time funding through certain appropriation programs that cover cyclic maintenance, construction, etc. The Park Service requests direct Congressional funding and reports on the other federal revenue sources through an annual budget document submitted to Congress entitled “Budget Justifications,” or more popularly called, the “Green Book.” Because of the limited amount of base funding available to support the 389 park units, the Park Service directs its units to consider the effects of proposed projects on base funding, including any increases in operations and maintenance expenses.

General Methodologies and Assumptions

- The proposed project has the potential to affect park management and operations after implementation through administrative and long-term operations and maintenance or life-cycle costs.
- Potential effects of the proposed project on park operations were analyzed by assessing potential or anticipated administrative, operations, and maintenance costs that would not be covered by private funding under the various alternatives or those such as cyclic repair or rehabilitation, which is covered by a separate federal funding source other than base funding (Table 91). Cost estimates were generated, using estimates of administrative costs, as well as maintenance or repair and costs generated during preparation of Level B Cost Estimates.
- It should be noted that staffing and funding levels associated with actions in the alternatives are difficult to project until final plans are completed. The estimates were intended to facilitate the impact analysis,



- and to allow a general assessment of potential effects. The discussions of impacts focus on projects that would create a need for new operations or that would result in major changes in existing operations.

TABLE 91. PARK MANAGEMENT AND OPERATIONS

| | |
|--|---|
| Source: Park Service Management Policies Nature: Beneficial, Adverse Context: Regional (Seashore and North District of the GGNRA) Duration: <i>Construction, Short-Term/Long-Term</i> | |
| No Impact | There would be no potential for impact to park management and operations associated with the proposed project. |
| Negligible | The proposed project would generate an undetectable or barely detectable change (<1 percent) in park management and operations spending as projected by estimates of administrative and operations and maintenance costs. |
| Minor | The proposed project would generate a small, but measurable change (≥ 1 percent and < 15 percent) in park management and operations spending as projected by estimates of administrative and operations and maintenance costs. |
| Moderate | The proposed project would generate an apparent or appreciable change (≥ 15 percent and ≤ 30 percent) in park management and operations spending as projected by estimates of administrative and operations and maintenance costs. |
| Major | The proposed project would generate a major or substantial change (>30 percent) in park management and operations spending as projected by estimates administrative and operations and maintenance costs. |

Impact Analysis

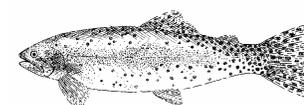
TABLE 92. INTENSITY, NATURE, TYPE, DURATION, AND CONTEXT OF IMPACTS FOR PARK OPERATIONS AND MANAGEMENT
All impacts would be considered Regional (Seashore and North District of the GGNRA) and are separately analyzed for Construction and Short-Term/Long-Term.

| | No Action | Alternative A | Alternative B | Alternative C | Alternative D |
|------------------------------|--|--------------------|--------------------|--------------------|--------------------|
| Impact Indicator | Intensity, Nature, Type, Duration, and Context of Impact | | | | |
| Construction-Related Effects | Adverse-Negligible | Adverse-Negligible | Adverse-Negligible | Adverse-Negligible | Adverse-Negligible |
| Project-Related Effects | Adverse-Negligible | Adverse-Negligible | Adverse-Negligible | Adverse-Negligible | Adverse-Negligible |

No Action Alternative

Analysis: The No Action Alternative would generally have negligible adverse effects on park operations and management during construction and following implementation, largely related to incidental administrative support and periodic maintenance requirements (Table 92). Under the No Action Alternative, intensive agricultural management practices associated with dairy operation would be discontinued, although, under the No Action Alternative, there would be the potential for leased grazing through a separate environmental review process. All levees, tidegates, and culverts in the Giacomini Ranch would remain, except for the 11-acre wetland restoration area in the northeastern corner of the East Pasture. The Park Service is required under its existing agreement with CalTrans to restore wetlands as mitigation for impacts caused by CalTrans to aquatic habitat from a road repair on State Route 1 in Marin County in exchange for the Park Service receiving monies to purchase and restore the Giacomini Ranch. While the remainder of the levee would not be deconstructed, there would be no formal levee maintenance program, although there may occasionally be some repair performed on select portions for maintenance of the limited existing public access facilities or other reasons. No new public access facilities would be constructed, and Olema Marsh would not be restored.

This alternative would have the potential to affect park operations and management through construction of the wetland restoration component, management of any future leased grazing activities, staff oversight and



management of the property (e.g., administrative staff, law enforcement, etc.), and general operations and maintenance, including management activities needed to reduce impacts to adjacent private landowners from flooding or to maintain and repair the limited number of existing public access facilities. For FY2006, the Seashore has about 75 permanent staff, 10 term employees, and 25-30 temporary staff working on a variety of projects and programs. During the peak summer months, the park staff increases to about 150 staff members. This work force is supplemented by 20,000 hours of Volunteers-in-Parks service, Student Conservation Assistants, and AmeriCorps.

The Seashore has an annual base operating budget of approximately \$5,581,000. The Seashore also receives fee revenues and special Park Service funding for specific projects. For example, the park receives about \$1.5 – \$2.0 million annually for cyclic maintenance of historic structures and other natural resources projects. As part of the San Francisco Bay Network, the Seashore benefits from monitoring information gathered as part of the \$800,000 Inventory and Monitoring (I&M) Network. The park receives about \$625,000 in fee revenues for maintenance projects and operation of the whale shuttle and campground reservation systems, and approximately \$1 million for fire management activities.

The No Action Alternative would have only negligible adverse impacts on park operations and management during construction, because construction and management of the wetland mitigation/restoration component would be funded exclusively out of non-Park Service monies. CalTrans funding paid for not only most of the purchase of the Giacomini Ranch, but planning, oversight, and implementation of the wetland mitigation/restoration component. Federal monies obtained to date include \$1.55 million in Congressional appropriations used to purchase the Giacomini Ranch and two competitive grant programs (Conservation Challenge Initiative and Park Service-USGS). In addition, permanent base-funded Seashore staff has assisted with administration of the project, such as contracting, payroll, benefits administration, personnel, and maintenance associated with immediate operations and maintenance needs. On an annual basis, it is estimated that, on average, permanent, base-funded staff contribute less than 25 FTE days each year to the proposed project. This level of support from base-funded staff would be expected to continue during construction.

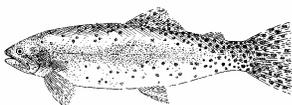
Once construction is completed, most of the recurring costs associated with this alternative would come from incidental administrative and staff support and periodic maintenance requirements. The Giacomini Ranch currently has no park facilities. Maintenance has not been performed by Park staff, as most of the maintenance with the exception of the 2003 West Pasture levee repair and sediment removal from the 1906 Drainage downstream of the Lucchesi residence has been conducted by the Giacomini as part of their on-going operation of the ranch under a Reservation of Use agreement until spring 2007. With closure of the dairy, Park staff would be required for general oversight of the facility, including administration and law enforcement, and management of future leased grazing activities, should grazing be approved through a separate review process. Because levees would not be formally maintained under this alternative, operations and maintenance expenses would be expected to be relatively minimal and limited to management activities needed to reduce impacts to adjacent private landowners from flooding or to maintain and repair the very limited number of existing public access facilities present in the Project Area. Some levee maintenance may be infrequently performed after large flood events to improve condition of the levee or creek bank in areas adjacent to the existing public access trails. Annual or periodic dredging may be required of the 1906 Drainage and Fish Hatchery Creek to continue to reduce the potential for flooding of adjacent private residences. Maintenance would either be performed in-house by park staff or by contractors through park-administered contracts.

Overall, base-funded support during construction and following implementation would be expected to total less than 1 percent or \$50,000 annually and, therefore, represent a negligible adverse impact on park operations and management.

Possible Additional Mitigation Measures: No mitigation measures would be proposed under this alternative.

Effectiveness of Possible Additional Mitigation Measures: Not applicable

Cumulative Impacts: There are no currently proposed or reasonably foreseeable projects that would have the potential to cause cumulative impacts should the No Action alternative be implemented.



Conclusions: The No Action alternative would result generally in negligible adverse effects during construction and following implementation on park operations and management, largely related to incidental administrative support and periodic maintenance requirements (Table 92).

Alternative A

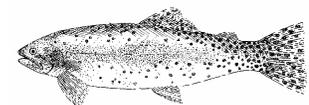
Analysis: Alternative A would generally have negligible adverse effects on park operations and management during construction and following implementation, largely related to incidental administrative and staff support and public access-related operations and maintenance requirements (Table 92). Under Alternative A, only the East Pasture would be restored, with new public access facilities limited to the eastern and southern perimeters of the East Pasture. There would be no restoration or construction of new public access facilities in the West Pasture or Olema Marsh. The levees along and tidegate/culvert in the West Pasture and Tomasini Creek would remain. In the East Pasture, restoration would involve breaching of levees in the East Pasture along Lagunitas Creek, and excavation of new tidal channels. The southwestern corner of the creek bank would be regraded to a more stable profile. Most of the actions under this alternative focus on removal or restoration of agricultural infrastructure such as filling of ditches, ripping of compacted roads, fence removal, and removal of pumps, pipelines, and concrete spillways.

This alternative would have the potential to affect park operations and management through construction of the wetland restoration and public access components, staff oversight and management of the property (e.g., administrative staff, law enforcement, etc.), and general operations and maintenance, including management activities needed to reduce impacts to adjacent private landowners from flooding or to maintain, operate, and repair constructed or enhanced public access facilities.

Alternative A would have only negligible adverse impacts on park operations and management during construction, because construction and management of the wetland restoration component would be handled by a non-profit organization, the Point Reyes National Seashore Association (PRNSA), and funded exclusively out of non-Park Service monies. The wetland restoration component has received funding from a Caltrans mitigation, SS Cape Mohican oil spill settlement funds and at least two private grant sources (Gordon and Betty Moore Foundation, National Fish and Wildlife Foundation). PRNSA is seeking additional funding for management and implementation of the wetland restoration component from other private and federal grant sources. It is anticipated that private and federal grant source monies would entirely pay for any further planning needs (i.e., permitting) and implementation or construction of the wetland restoration component. However, the Park Service may pursue federal funding for the public access component, which would be funded, managed, and constructed separately from wetland restoration. Federal monies used obtained to date include \$1.55 million in Congressional appropriations used to purchase the Giacomini Ranch and two competitive grant programs (Conservation Challenge Initiative and Park Service-USGS). In addition, permanent base-funded Seashore staff has assisted with administration of the project, such as contracting, payroll, benefits administration, personnel, and maintenance associated with immediate operations and maintenance needs. On an annual basis, it is estimated that, on average, permanent, base-funded staff contribute less than 15 FTE days each year to the proposed project. This level of support from base-funded staff would be expected to continue during construction.

Once construction is completed, most of the recurring costs associated with this alternative would come from incidental administrative and staff support and periodic maintenance requirements. Park staff would be required for general oversight of the facility, including administration and law enforcement. Because levees would not be formally maintained under this alternative, operations and maintenance expenses would be expected to be relatively minimal and limited to management activities needed to reduce impacts to adjacent private landowners from flooding or to maintain and repair the very limited number of existing public access facilities present in the Project Area. Some levee maintenance may be infrequently performed after large flood events to improve condition of the levee or creek bank in areas adjacent to the existing public access trails. Annual or periodic dredging may be required of the 1906 Drainage and Fish Hatchery Creek to continue to reduce the potential for flooding of adjacent private residences. Maintenance would either be performed in-house by park staff or by contractors through park-administered contracts.

In general, focusing on restoration of natural hydrologic processes through removal of levees, tidegates, and culverts rather than on creation of particular habitat types through intensive construction and post-construction management practices would reduce the need for long-term maintenance within the Giacomini Ranch portion of the Project Area relative to baseline conditions. Most of the maintenance needs would be



associated with public access facilities such as the southern and eastern perimeter trails, including maintenance of the trail surfaces; maintenance of the footings for the southern perimeter trail bridge; minor creek bank stabilization utilizing biological creek bank stabilization techniques; cleaning of culverts and maintenance of berm for eastern perimeter trail adjacent to Point Reyes Mesa; and upkeep and maintenance of viewing areas and interpretative exhibits. Should Lagunitas or Tomasini Creek dramatically change course or direction in the future, public access facilities would be realigned accordingly to ensure that natural hydrologic and ecological processes and functions are not impacted. This type of approach to wetland restoration and management of the public access component creates a more sustainable approach to ecosystem restoration that deemphasizes intensive annual or periodic operations and management requirements and thereby decreases associated demands on existing base funding.

Overall, base-funded support (described under the No Action Alternative) during construction and following implementation would be expected to total less than 1 percent or \$50,000 annually and, therefore, represent only a negligible adverse impact on park operations and management.

Possible Additional Mitigation Measures: No mitigation measures would be proposed under this alternative.

Effectiveness of Possible Additional Mitigation Measures: Not applicable

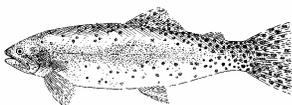
Cumulative Impacts: Cumulative impacts would be the same as described for the No Action Alternative.

Conclusions: Alternative A would result generally in negligible adverse effects during construction and following implementation on park operations and management, largely related to incidental administrative support and periodic maintenance requirements (Table 92). Monies needed for implementation of the wetland restoration component would come entirely from mitigation and private and federal grant sources, although federal funding may be pursued for the public access component, which would be funded and conducted separately. Following construction, base funds would be required for incidental administrative support and periodic maintenance requirements, including flood control maintenance on two creeks adjacent to private residences. However, the focus on restoration of natural hydrologic processes would create a more sustainable project and reduce the need for long-term maintenance needs, with the exception of the public access components. Overall, base-funded support during construction and following implementation would be expected to total less than 1 percent or \$50,000 annually and, therefore, represent only a negligible adverse impact on park operations and management.

Alternative B

Analysis: Alternative B would generally have identical negligible adverse effects on park operations and management during construction and following implementation as Alternative A (Table 93). Under Alternative B, the East and West Pastures would be restored, but not Olema Marsh. Most of the new public access facilities would continue to be limited to the eastern and southern perimeters of the East Pasture, although a viewing area would replace the informal existing trail on the West Pasture north levee, which would be removed. The culverted berm portion of the eastern perimeter trail would be replaced with a low boardwalk. Restoration would involve complete removal of levees in the East Pasture along Lagunitas Creek and excavation of even more new tidal channels. Breaches would be created in the West Pasture levee. Some connection would be established between the East Pasture and Tomasini Creek through lowering of levees to allow overflow during flood events, but otherwise Tomasini Creek would remain in its current channel with tidegate/flashboard dam structure still in place. As with Alternative A, this alternative would involve removal or restoration of agricultural infrastructure and discontinuation of agricultural management practices.

From a Park Operations and Management perspective, the primary differences would relate to replacement of the culverted berm portion of the eastern perimeter trail with a low boardwalk and the West Pasture north levee trail with a viewing area. In general, both of these changes would result in a reduction in the need for maintenance, although the low boardwalk would also require regular maintenance to maintain its structural integrity. Relative to Alternative A, the need for frequent culvert cleaning and berm repair of the eastern perimeter trail would be considerably reduced, if not eliminated. Also, removal of the West Pasture levee would also decrease the need for minor repairs of this feature to maintain trail functionality.



Overall, base-funded support (as described under the No Action Alternative) during construction and following implementation would be expected to total less than 1 percent or \$50,000 annually and, therefore, represent only a negligible adverse impact on park operations and management.

Possible Additional Mitigation Measures: No mitigation measures would be proposed under this alternative.

Effectiveness of Possible Additional Mitigation Measures: Not applicable

Cumulative Impacts: Cumulative impacts would be the same as described for the No Action Alternative.

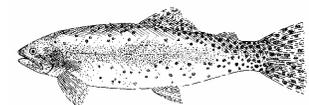
Conclusions: Alternative B would result generally in identical negligible adverse effects during construction and following implementation on park operations and management as Alternative A, largely related to incidental administrative support and periodic maintenance requirements (Table 92). Monies needed for implementation of the wetland restoration component would come entirely from mitigation and private and federal grant sources, although federal funding may be pursued for the public access component, which would be funded and conducted separately. Following construction, base funds would be required for incidental administrative support and periodic maintenance requirements, including flood control maintenance on two creeks adjacent to private residences and operations and maintenance of public access facilities. Relative to Alternative A, less maintenance related to public access facilities would be required due to replacement of the culverted berm component on the eastern perimeter trail with a low boardwalk and the West Pasture levee trail with a viewing area. The focus on restoration of natural hydrologic processes would create a more sustainable project and reduce the need for long-term maintenance needs, with the exception of the public access components. Overall, base-funded support during construction and following implementation would be expected to total less than 1 percent or \$50,000 annually and, therefore, represent only a negligible adverse impact on park operations and management.

Alternative C

Analysis: Alternative C would generally have very similar negligible adverse effects on park operations and management during construction and following implementation as Alternative A, largely related to incidental administrative and staff support and public access-related operations and maintenance requirements (Table 92). Under Alternative C, the East and West Pastures would be restored, along with Olema Marsh. Most of the new public access facilities would continue to be limited to the eastern and southern perimeters of the East Pasture, although access along the eastern perimeter would be scaled back through removal of the through-trail component. Restoration would involve complete removal of levees in the East and West Pastures along Lagunitas Creek and excavation of even more new tidal channels. Tomasini Creek would be realigned into one of its historic alignments midway through the East Pasture. In Olema Marsh, an adaptive restoration approach would be undertaken, with initial excavation of a shallow berm and the Bear Valley Creek channel to improve hydraulic connectivity and improve drainage of currently impounded waters. As with the other alternatives, this alternative would involve removal or restoration of agricultural infrastructure and discontinuation of agricultural management practices.

This alternative would have the potential to affect park operations and management through construction of the wetland restoration and public access components, staff oversight and management of the property (e.g., administrative staff, law enforcement, etc.), and general operations and maintenance, including management activities needed to reduce impacts to adjacent private landowners from flooding or to maintain, operate, and repair constructed or enhanced public access facilities. For FY2006, the Seashore has about 75 permanent staff, 10 term employees, and 25-30 temporary staff working on a variety of projects and programs. During the peak summer months, the park staff increases to about 150 staff members. This work force is supplemented by 20,000 hours of Volunteers-in-Parks service, Student Conservation Assistants, and AmeriCorps.

The Seashore has an annual base operating budget of approximately \$5,581,000. The Seashore also receives fee revenues and special Park Service funding for specific projects. For example, the park receives about \$1.5 – \$2.0 million annually for cyclic maintenance of historic structures and other natural resources projects. As part of the San Francisco Bay Network, the Seashore benefits from monitoring information gathered as part of the \$800,000 Inventory and Monitoring (I&M) Network. The park receives about \$625,000 in fee revenues for



maintenance projects and operation of the whale shuttle and campground reservation systems, and approximately \$1 million for fire management activities.

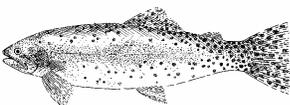
Alternative C would have only negligible adverse impacts on park operations and management during construction, because construction and management of the wetland restoration component would be handled by a non-profit organization, the Point Reyes National Seashore Association (PRNSA), and funded exclusively out of non-Park Service monies. The wetland restoration component has received funding from a Caltrans mitigation, SS Cape Mohican oil spill settlement funds and at least two private grant sources (Gordon and Betty Moore Foundation, National Fish and Wildlife Foundation). PRNSA is seeking additional funding for management and implementation of the wetland restoration component from other private and federal grant sources. It is anticipated that private and federal grant source monies would entirely pay for any further planning needs (i.e., permitting) and implementation or construction of the wetland restoration component. However, the Park Service may pursue federal funding for the public access component, which would be funded, managed, and constructed separately from wetland restoration. Federal monies used obtained to date include \$1.55 million in Congressional appropriations used to purchase the Giacomini Ranch and two competitive grant programs (Conservation Challenge Initiative and Park Service-USGS). In addition, permanent base-funded Seashore staff has assisted with administration of the project, such as contracting, payroll, benefits administration, personnel, and maintenance associated with immediate operations and maintenance needs. On an annual basis, it is estimated that, on average, permanent, base-funded staff contribute less than 25 FTE days each year to the proposed project. This level of support from base-funded staff would be expected to continue during construction.

Once construction is completed, most of the recurring costs associated with this alternative would come from incidental administrative and staff support and periodic maintenance requirements. Park staff would be required for general oversight of the facility, including administration and law enforcement. Because levees would not be formally maintained under this alternative, operations and maintenance expenses would be expected to be relatively minimal and limited to management activities needed to reduce impacts to adjacent private landowners from flooding or to maintain and repair the very limited number of existing public access facilities present in the Project Area. Some levee maintenance may be infrequently performed after large flood events to improve condition of the levee or creek bank in areas adjacent to the existing public access trails. Annual or periodic dredging may be required of the 1906 Drainage and Fish Hatchery Creek to continue to reduce the potential for flooding of adjacent private residences. Maintenance would either be performed in-house by park staff or by contractors through park-administered contracts.

In general, focusing on restoration of natural hydrologic processes through removal of levees, tidegates, and culverts rather than on creation of particular habitat types through intensive construction and post-construction management practices would reduce the need for long-term maintenance within the Giacomini Ranch portion of the Project Area relative to baseline conditions. Most of the maintenance needs would be associated with public access facilities such as the southern and eastern perimeter trails, including maintenance of the trail surfaces where present; maintenance of the footings for the southern perimeter trail bridge; minor creek bank stabilization utilizing biological creek bank stabilization techniques; and upkeep and maintenance of viewing areas and interpretative exhibits. Maintenance needs for trails would be slightly reduced relative to Alternatives A and B through removal of the "through-trail" component of the eastern perimeter trail. As discussed under Alternative A, should Lagunitas or Tomasini Creek dramatically change course or direction in the future, public access facilities would be realigned accordingly to ensure that natural hydrologic and ecological processes and functions are not adversely affected. While the adaptive restoration of Olema Marsh would not necessarily eliminate the need for maintenance of this highly managed system, it could reduce the need for certain types of maintenance through potential replacement of culverts with bridges and a reduction in the frequency of flooding of Levee and Bear Valley Roads.

This type of approach to wetland restoration and management of the public access component creates a more sustainable approach to ecosystem restoration that deemphasizes intensive annual or periodic operations and management requirements and thereby decreases associated demands on existing base funding. Overall, base-funded support during construction and following implementation would be expected to total less than 1 percent or \$50,000 annually and, therefore, represent only a negligible adverse impact on park operations and management.

Possible Additional Mitigation Measures: No mitigation measures would be proposed under this alternative.



Effectiveness of Possible Additional Mitigation Measures: Not applicable

Cumulative Impacts: Cumulative impacts would be the same as described for the No Action Alternative.

Conclusions: Alternative C would result generally in very similar negligible adverse effects during construction and following implementation on park operations and management as Alternative A, largely related to incidental administrative support and periodic maintenance requirements (Table 92). Monies needed for implementation of the wetland restoration component would come entirely from mitigation and private and federal grant sources, although federal funding may be pursued for the public access component, which would be funded and conducted separately. Following construction, base funds would be required for incidental administrative support and periodic maintenance requirements, including flood control maintenance on two creeks adjacent to private residences and operations and maintenance of public access facilities. Relative to Alternative B, less maintenance related to public access facilities would be required due to the through-trail component of the eastern perimeter trail. The focus on restoration of natural hydrologic processes would create a more sustainable project and reduce the need for long-term maintenance needs, with the exception of the public access components. Overall, base-funded support during construction and following implementation would be expected to total less than 1 percent or \$50,000 annually and, therefore, represent only a negligible adverse impact on park operations and management.

Alternative D

Analysis: Alternative D would generally have very similar negligible adverse effects on park operations and management during construction and following implementation as Alternative C, largely related to incidental administrative and staff support and public access-related operations and maintenance requirements (Table 92). Under Alternative D as with Alternative C, the East and West Pastures would be completely restored, along with Olema Marsh. Almost all of the differences between Alternative D and C relate to excavation of a limited portion of the East Pasture to intertidal elevations, complete realignment of Tomasini Creek into one of its historic alignments, replacement of the Tomasini Creek Mesa Road culvert with a bridge or arch culvert, and further scaling back of new public access facilities through elimination of the bridge across Lagunitas Creek and one of the spur trails on the eastern perimeter. Tomasini Creek would be realigned into one of its historic alignments just downstream of Mesa Road and would run through the constructed freshwater marsh area just north of the Giacomini Ranch dairy facility. There would be no change in restoration approach in the West Pasture from Alternative C, and the same adaptive management approach would be undertaken in Olema Marsh, with initial excavation of a shallow berm and the Bear Valley Creek channel to improve hydraulic connectivity and improve drainage of currently impounded waters. As with the other alternatives, this alternative would involve removal or restoration of agricultural infrastructure and discontinuation of agricultural management practices.

From a Park Operations and Management perspective, the primary differences would relate to elimination of the bridge in the southern perimeter trail and the Mesa Road spur trail. There would also be no ADA-complaint trail component, which requires more frequent and intensive maintenance than other trails.

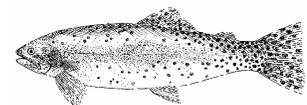
Overall, base-funded support during construction and following implementation would still be expected to total less than 1 percent or \$50,000 annually and, therefore, represent only a negligible adverse impact on park operations and management.

Possible Additional Mitigation Measures: No mitigation measures would be proposed under this alternative.

Effectiveness of Possible Additional Mitigation Measures: Not applicable

Cumulative Impacts: Cumulative impacts would be the same as described for the No Action Alternative.

Conclusions: Alternative D would result generally in very similar negligible adverse effects during construction and following implementation on park operations and management as Alternative C, largely related to incidental administrative support and periodic maintenance requirements (Table 93). Monies needed for implementation of the wetland restoration component would come entirely from mitigation and



private and federal grant sources, although federal funding may be pursued for the public access component, which would be funded and conducted separately. Following construction, base funds would be required for incidental administrative support and periodic maintenance requirements, including flood control maintenance on two creeks adjacent to private residences and operations and maintenance of public access facilities. Relative to Alternative C, less maintenance related to public access facilities would be required due to elimination of the bridge, the Mesa Road spur trail, and the ADA-compliant trail component. The focus on restoration of natural hydrologic processes would create a more sustainable project and reduce the need for long-term maintenance needs, with the exception of the public access components. Overall, base-funded support during construction and following implementation would be expected to total less than 1 percent or \$50,000 annually and, therefore, represent only a negligible adverse impact on park operations and management.

Other Impact Analyses Mandated by DO-12 and CEQA

Relationship between Short-Term Uses of the Environment and Maintenance and Enhancement of Long-Term Productivity

No Action Alternative

Under the terms of the purchase agreement with the Giacomini Trust, the 7-year Reservation of Use Agreement that has allowed the Giacomini family to continue to operate the dairy since its purchase by the Park Service in 2000 will expire in March 2007, and the dairy will close. Closure of the dairy will occur under all alternatives, including the No Action Alternative. Under the No Action Alternative, there is no wetland restoration or construction of public access facilities, except for the 11-acre wetland restoration area in the northeastern corner of the East Pasture. The Park Service is required under its existing agreement with CalTrans to restore wetlands as mitigation for impacts caused by CalTrans to aquatic habitat from a road repair on State Route 1 in Marin County in exchange for the Park Service receiving monies to purchase and restore the Giacomini Ranch. The Park Service may potentially allow leased grazing of beef cattle or dairy heifers on other portions of the Giacomini Ranch subject to a separate environmental review process. The intensity of grazing relative to baseline conditions would be expected to be much lower due to the fact that the Park Service would be likely to institute resource setbacks and limits on the duration and timing of grazing.

Because closure of the dairy under terms of an existing agreement will occur under all alternatives, the No Action Alternative would not necessarily represent a loss in long-term agricultural productivity of west Marin County, although the Waldo Giacomini Ranch has been one of the largest dairies in this region. As was discussed under Land Use and Planning – Agricultural Land Use, the Giacomini Ranch was established through diking of a historic salt marsh in 1946. Running of a viable dairy in this location has required substantial investments in terms of maintenance of levees, tidegates, culverts, ditches, and irrigation that would have made continued operation of this dairy in the future economically tenuous, if not infeasible, particularly in view of the current market dynamics in California, in which large Central Valley dairies are threatening the viability of smaller operations such as those in west Marin. While dairy operation has not eliminated wetlands from the Giacomini Ranch, it has reduced functionality of these wetlands by disconnecting them from hydrologic sources such as Lagunitas and Tomasini Creek through levees, tidegates, and culverts and introducing new sources of contamination from intensive grazing, manure spreading, and other agricultural management practices. Viewed from this perspective, the dairy represents a short-term use of the environment that has impacted long-term productivity of natural resources within the Tomales Bay watershed. The No Action Alternative would have only negligible effects on enhancing long-term productivity of natural resources, because the wetland mitigation/restoration component is relatively small, and most of the remainder of the ranch would become either fallow open space grasslands or grazed lands, albeit less intensely grazed lands.

Alternative A

Alternative A would enhance long-term productivity of natural resources in the Tomales Bay watershed. As was discussed under the No Action Alternative, closure of the dairy will occur under all alternatives in March



2007 under terms of an existing agreement with the Giacomini Trust. Therefore, Alternative A and the other alternatives, including the No Action Alternative, would not necessarily represent a loss in long-term agricultural productivity of west Marin County, although the Waldo Giacomini Ranch has been one of the largest dairies in this region.

The Giacomini Ranch was established through diking of a historic salt marsh in 1946. Running of a viable dairy in this location has required substantial investments in terms of maintenance of levees, tidegates, culverts, ditches, and irrigation that would have made continued operation of this dairy in the future economically tenuous, if not infeasible, particularly in view of the current market dynamics in California, in which large Central Valley dairies are threatening the viability of smaller operations such as those in west Marin. While dairy operation has not eliminated wetlands from the Giacomini Ranch, it has reduced functionality of these wetlands by disconnecting them from hydrologic sources such as Lagunitas and Tomasini Creek through levees, tidegates, and culverts and introducing new sources of contamination from intensive grazing, manure spreading, and other agricultural management practices. Viewed from this perspective, the dairy represents a short-term use of the environment that has impacted long-term productivity of natural resources within the Tomales Bay watershed.

Relative to the No Action Alternative, Alternative A would have much more effect on enhancing long-term productivity of natural resources in the Tomales Bay watershed because of the increase in the scale of restoration proposed. Under Alternative A, the entire 350-acre East Pasture would be restored through selected breaching of the levees. There would be no restoration or construction of new public access facilities in the West Pasture or Olema Marsh. Most of the actions under this alternative focus on removal or restoration of agricultural infrastructure such as filling of ditches, ripping of compacted roads, fence removal, and removal of pumps, pipelines, and concrete spillways, although there is some limited tidal channel creation or regrading of creek banks to more stable topographic profiles.

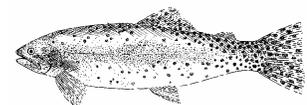
Alternative B

Alternative B would have very similar effects on enhancement of long-term productivity of natural resources in the Tomales Bay watershed as Alternative A, although the scale of restoration would be expanded to include the approximately 200-acre West Pasture, as well as the 350-acre East Pasture. Restoration would involve complete removal of levees in the East Pasture along Lagunitas Creek and excavation of even more new tidal channels. Breaches would be created in the West Pasture levee. The whole southern East Pasture creek bank would be restored through removal of rip-rap bank stabilization and regraded, where needed, to a more stable profile. Some connection would be established between the East Pasture and Tomasini Creek through lowering of levees to allow overflow during flood events, but otherwise Tomasini Creek would remain in its current channel with tidegate/flashboard dam structure still in place. As with Alternative A, this alternative would involve removal or restoration of agricultural infrastructure and discontinuation of agricultural management practices.

Alternative C

Alternative C would have very similar effects on enhancement of long-term productivity of natural resources as Alternative B, although the degree and scale of restoration would be expanded to include the 63-acre Olema Marsh, as well as the 350-acre East Pasture and 200-acre West Pasture of the Giacomini Ranch.

As was discussed under Alternative A, closure of the dairy will occur under all alternatives in March 2007 under terms of an existing agreement with the Giacomini Trust. Therefore, Alternative C and the other alternatives, including the No Action Alternative, would not necessarily represent a loss in long-term agricultural productivity of west Marin County, although the Waldo Giacomini Ranch has been one of the largest dairies in this region. Running of a viable dairy in what was once a tidal marsh system has required substantial investments in terms of maintenance that would have made continued operation of this dairy in the future economically tenuous, if not infeasible. While dairy operation has not eliminated wetlands, it has reduced functionality by disconnecting them from hydrologic sources such as Lagunitas and Tomasini Creek and introducing new sources of contamination from intensive grazing, manure spreading, and other agricultural management practices. Viewed from this perspective, the dairy represents a short-term use of the environment that has impacted long-term productivity of natural resources within the Tomales Bay watershed.



Relative to Alternative B, Alternative C would have much more effect on enhancing long-term productivity of natural resources in the Tomales Bay watershed because of the increase in the scale of restoration proposed. Under Alternative C, the East and West Pastures would be restored, along with Olema Marsh. Restoration would involve complete removal of levees in the East and West Pastures along Lagunitas Creek and excavation of even more new tidal channels. A small tidal channel would be initiated off Lagunitas Creek, as well as in the interior of the East Pasture. Tomasini Creek would be realigned into one of its historic alignments midway through the East Pasture. In Olema Marsh, an adaptive restoration approach would be undertaken, with initial excavation of a shallow berm and the Bear Valley Creek channel to improve hydraulic connectivity and improve drainage of currently impounded waters. As with the other alternatives, this alternative would involve removal or restoration of agricultural infrastructure and discontinuation of agricultural management practices.

Alternative D

Alternative D would have very similar effects on enhancement of long-term productivity of natural resources in the Tomales Bay watershed as Alternative C. The scale of restoration would be expanded slightly relative to Alternative C. Under Alternative D as with Alternative C, the East and West Pastures would be completely restored, along with Olema Marsh. Almost all of the differences between Alternative D and C relate to excavation of a limited portion of the East Pasture to intertidal elevations, complete realignment of Tomasini Creek into one of its historic alignments, replacement of the Tomasini Creek Mesa Road culvert with a bridge or arch culvert, and further scaling back of new public access facilities through elimination of the bridge across Lagunitas Creek and one of the spur trails on the eastern perimeter. There would be no change in restoration approach in the West Pasture from Alternative C, and the same adaptive management approach would be undertaken in Olema Marsh.

Irreversible or Irrecoverable Commitment of Natural or Depletable Resources

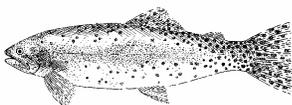
No Action Alternative

Under the No Action Alternative, the only construction component would be the wetland mitigation/restoration component. There would be no other restoration or construction or enhancement of public access facilities. This alternative would not cause irreversible changes to the environment relative to baseline conditions, as the wetland mitigation/restoration component could easily be leveed and returned to conditions similar to those currently existing. Such an action would violate the terms of the Park Service's mitigation agreement with CalTrans, however, and require the Park Service to repay funds that it received to purchase the ranch and conduct planning and implementation of the wetland mitigation/restoration component.

The construction of the 11-acre wetland restoration/mitigation component would involve irretrievable use of depletable petroleum resources, although the overall effect on this increasingly scarce resource would be expected to be extremely negligible. The amount of fuel that would be used is not known, but construction would be expected to take 6- to 8 weeks and involve use of three to five pieces of construction equipment, which would be unlikely to be operating simultaneously. Relative to baseline conditions, implementation of the No Action Alternative would not incur any additional irreversible or irretrievable commitment of natural or depletable resources through use of vehicles for travel to and from existing public access facilities and operation of construction equipment for maintenance activities or trucks for hauling livestock to and from the Giacomini Ranch should leased grazing be approved through a future environmental review process.

Alternative A

Alternative A would expand restoration actions to incorporate the entire 350-acre Giacomini Ranch East Pasture through selected breaching of levees and would construct new and enhance existing public access facilities on the southern and eastern perimeters of the East Pasture. This alternative would not cause irreversible changes to the environment relative to baseline conditions, as the wetland restoration component in the East Pasture could easily be leveed and returned to conditions somewhat similar to those currently existing, although there would be changes in the vegetation communities present without agricultural management practices such as irrigation. Unless some restored wetland remained, however, such an action



would violate the terms of the Park Service's mitigation agreement with CalTrans and require the Park Service to repay funds that it received to purchase the ranch and conduct planning and implementation of the wetland mitigation/restoration. The Park Service has also received monies from other private and public entities that were awarded on the basis of the Park Service restoring a significant portion of the Giacomini Ranch.

Construction of the wetland restoration and public access components would involve irretrievable use of depletable petroleum resources, although the overall effect on this increasingly scarce resource would be expected to be negligible. The amount of fuel that would be used is not known, but construction would be expected to take five to six months over a period of three years and involve use of three to five pieces of construction equipment, which would be unlikely to be operating simultaneously. Relative to baseline conditions, implementation of the Alternative A would incur no to extremely negligible irreversible or irretrievable commitment of natural or depletable resources. While use of vehicles for travel to and from the new and enhanced existing public access facilities would increase to some degree, use of construction equipment for maintenance would decrease, and truck trips to the Giacomini Ranch associated with twice daily milk pick-ups and hauling of livestock would be eliminated, thereby offsetting any increase in the number of personal vehicles in terms of use of depletable or non-renewable resources.

Alternative B

Alternative B would be very similar to Alternative A in terms of irreversible or irretrievable commitments of natural or depletable resources, although it would expand restoration actions to incorporate the 200-acre Giacomini Ranch West Pasture, as well as the 350-acre Giacomini Ranch East Pasture.

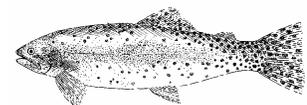
Alternative C

Alternative C would expand restoration and public access actions to incorporate the 63-acre Olema Marsh, as well as the 550-acre Giacomini Ranch. This alternative would not cause irreversible changes to the environment relative to baseline conditions, as the Giacomini Ranch could easily be leveed and returned to conditions somewhat similar to those currently existing, although there would be changes in the vegetation communities present without agricultural management practices such as irrigation. Unless some restored wetland remained, however, such an action would violate the terms of the Park Service's mitigation agreement with CalTrans and require the Park Service to repay funds that it received to purchase the ranch and conduct planning and implementation of the wetland mitigation/restoration. The Park Service has also received monies from other private and public entities that were awarded on the basis of the Park Service restoring a significant portion of the Giacomini Ranch. Proposed changes to Olema Marsh could also be reversed through replacement of larger arch culverts or bridges with smaller culverts or placement of fill that would encourage impoundment of waters.

Construction of the wetland restoration and public access components would involve irretrievable use of depletable petroleum resources, although the overall effect on this increasingly scarce resource would be expected to be negligible. The amount of fuel that would be used is not known, but construction would be expected to take three to six months over a period of three to six years and involve use of three to five pieces of construction equipment, which would be unlikely to be operating simultaneously. Relative to baseline conditions, implementation of the Alternative C would incur no to extremely negligible irreversible or irretrievable commitment of natural or depletable resources. While use of vehicles for travel to and from the new and enhanced existing public access facilities would increase to some degree, use of construction equipment for maintenance would decrease, and truck trips to the Giacomini Ranch associated with twice daily milk pick-ups and hauling of livestock would be eliminated, thereby offsetting any increase in the number of personal vehicles in terms of use of depletable or non-renewable resources.

Alternative D

Alternative D would be very similar to Alternative C in terms of irreversible or irretrievable commitments of natural or depletable resources, although it would expand the scale and degree of restoration actions slightly, at least in the East Pasture and Tomasini Creek, and decrease the scale of public access.



Avoidable and Unavoidable Major or Significant Adverse Impacts

No Action Alternative

There would be no avoidable or unavoidable major or significant adverse impacts from construction or implementation of the No Action Alternative.

Alternative A

There would be no unavoidable significant adverse impacts from construction or implementation of Alternative A. Alternative A would have only one potentially major adverse impact that would be considered substantial and significant under CEQA and major under NEPA – 1) exceedance of maximum noise levels for certain sensitive receptors that are directly adjacent to the Project Area during construction. This impact would be mitigated to less than significant under CEQA and moderate under NEPA using mitigation measures that are considered standard construction Best Management Practices (BMPs) for reducing impacts of construction noise to sensitive receptors. Potential impacts to ambient noise conditions were analyzed using a conservative or worse-case-scenario approach of having three to five pieces of construction equipment operating simultaneously, which would be unlikely to occur. While these mitigation measures are believed to be effective enough to reduce these impacts to less than significant, if their effectiveness is reduced, these impacts could become unavoidable significant adverse impacts. Over the long-term, however, this impact is very temporary and related only to construction, which lessens its severity relative to short-term or long-term permanent impacts.

Alternative B

There would be no unavoidable significant adverse impacts from construction or implementation of Alternative B. Alternative B would have only two potentially major adverse impacts that would be considered substantial and significant under CEQA and major under NEPA – 1) exceedance of BAAQMD air quality criteria for NOx emissions during construction and 2) exceedance of maximum noise levels for certain sensitive receptors that are directly adjacent to the Project Area during construction. Both of these were mitigated to less than significant under CEQA and moderate under NEPA using mitigation measures that were either recommended by BAAQMD to reduce NOx emissions or that are considered standard construction Best Management Practices (BMPs) for reducing impacts of construction noise to sensitive receptors. While these mitigation measures are believed to be effective enough to reduce these impacts to less than significant, if their effectiveness is reduced, these impacts could become unavoidable significant adverse impacts. Over the long-term, however, both of these impacts are very temporary and related only to construction, which lessens their severity relative to short-term or long-term permanent impacts.

Alternative C

There would no unavoidable significant adverse impacts from construction or over the long-term from implementation of Alternative C. As with Alternative B, Alternative C would have two potentially major adverse impacts that would be considered substantial and significant under CEQA and major under NEPA – 1) exceedance of NOx emissions for a short period during construction; and 2) exceedance of maximum noise levels for certain sensitive receptors that are directly adjacent to the Project Area for a very short period during construction. Both of these were mitigated to less than significant under CEQA and moderate under NEPA using mitigation measures that were either recommended by BAAQMD to reduce NOx emissions or that are considered standard construction Best Management Practices (BMPs) for reducing impacts of construction noise to sensitive receptors. As discussed under Alternative A, potential impacts to ambient noise conditions were analyzed using a conservative or worse-case-scenario approach of having three to five pieces of construction equipment operating simultaneously, which would be unlikely to occur. Mitigation measures for both NOx emissions and noise would include restrictions on the number of pieces of simultaneously operating construction equipment.



While these mitigation measures are believed to be effective enough to reduce these impacts to less than significant, if their effectiveness is reduced, these impacts could become unavoidable significant adverse impacts. In terms of NOx emissions and noise, both of these impacts are very temporary and related only to construction, which lessens their severity relative to short-term or long-term permanent impacts.

Alternative D

There would no unavoidable significant adverse impacts from construction or over the long-term from implementation of Alternative D, and the two potentially major adverse temporary impacts that may occur during construction and their proposed mitigation measures would be the identical to those discussed under Alternative C.

Growth-Inducing Impacts

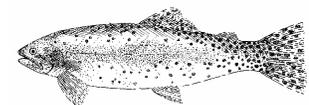
No Action Alternative

The No Action Alternative would not be expected to have growth-inducing impacts. The No Action Alternative would not affect any public services such as power, water, sewer, roads, schools, hospitals, and other facilities and services or would not affect them in such a way that would induce growth in the local community or west Marin region. Under the terms of the purchase agreement with the Giacomini Trust, the 7-year Reservation of Use Agreement that has allowed the Giacomini family to continue to operate the dairy since its purchase by the Park Service in 2000 will expire in March 2007, and the dairy will close. Closure of the dairy will occur under all alternatives, including the No Action Alternative. Discontinuation of intensive dairying operations could increase the attractiveness for future development of parcels that are already zoned for commercial or residential development along C Street in Point Reyes Station or along Sir Francis Drake Boulevard in Point Reyes Station, however, this factor would be common to all alternatives and would not necessarily be related to the proposed project.

Under the No Action Alternative, there is no wetland restoration or construction of public access facilities, except for the 11-acre wetland restoration area in the northeastern corner of the East Pasture. The Park Service is required under its existing agreement with CalTrans to restore wetlands as mitigation for impacts caused by CalTrans to aquatic habitat from a road repair on State Route 1 in Marin County in exchange for the Park Service receiving monies to purchase and restore the Giacomini Ranch. The Park Service may potentially allow leased grazing of beef cattle or dairy heifers on other portions of the Giacomini Ranch subject to a separate environmental review process. The intensity of grazing relative to baseline conditions would be expected to be much lower due to the fact that the Park Service would be likely to institute resource setbacks and limits on the duration and timing of grazing. Because the Giacomini Ranch may continue to be grazed to some degree or, if grazing is not authorized, allowed to become fallow grasslands, the No Action Alternative might result in slightly less desirable conditions adjacent to parcels zoned for commercial and residential development relative to the other alternatives, but these parcels would be likely to be developed regardless due to the high property values and quality of life present in the Point Reyes region, as well as the overall attractiveness and scenic value of the area regardless of restoration.

Alternative A

Alternative A would not be expected to have growth-inducing impacts. The proposed project does not involve construction of homes, and Alternative A would not affect any public services such as power, water, sewer, roads, schools, hospitals, and other facilities and services or would not affect them in such a way that would induce growth in the local community or west Marin region. As was discussed under the No Action Alternative, discontinuation of intensive dairying operations could increase the attractiveness for future development of parcels that are already zoned for commercial or residential development along C Street in Point Reyes Station or along Sir Francis Drake Boulevard in Point Reyes Station, however, this factor would be common to all alternatives and would not necessarily be related to the proposed project. Relative to the No Action Alternative, Alternative A might result in slightly more desirable conditions adjacent to parcels zoned for commercial and residential development, but these parcels would be likely to be developed regardless due to the high property values and quality of life present in the Point Reyes region, as well as the overall attractiveness and scenic value of the area regardless of restoration.



Alternative B

As with Alternative A, Alternative B would not be expected to have growth-inducing impacts. See Alternative A for more detailed description.

Alternative C

As with Alternatives A and B, Alternative C would not be expected to have growth-inducing impacts. See Alternative A for more detailed description.

Alternative D

As with Alternatives A, B, and C, Alternative D would not be expected to have growth-inducing impacts. See Alternative A for more detailed description.

