3.4 BIOLOGICAL RESOURCES

3.4.1 AFFECTED ENVIRONMENT

The project "study area," as used in this biological resources section, encompasses all project components proposed under each alternative, including treatment, storage, and distribution facilities, and adjacent habitats or resources that could be directly or indirectly affected by the construction and operation of the proposed project. The evaluation of the potential effects on biological resources is based on the footprint of the project components and operations, a 20-foot wide limit of construction along the distribution pipelines, and the location of project components relative to sensitive resources identified in the project study area, as described above. The local context for the proposed project is the Presidio of San Francisco; the greater regional context for the proposed project is the City and County of San Francisco. It is important to note that proposed project facilities were sited to avoid sensitive biological resources, and would be located either within an existing building or within existing roadways (except for two small pipeline segments that cross through a landscaped area and portion of the historic forest under Alternative 2).

VEGETATION AND WILDLIFE

Many of the native plant communities in the Presidio are remnant populations of communities that were once extensive along the coast of California. These native plant communities have been displaced by urban development or non-native species that rapidly colonize disturbed open areas. Under current conditions, both native and non-native plant communities occur in the project study area. The recently adopted the *Presidio Vegetation Management Plan* (*VMP*) (Trust and NPS 2001) delineates three management zones at the Park, historic forest, native plant communities and landscape vegetation, and prescribes management actions for each zone. Figure 3.4-1 provides an overlay of each zone with the various project components. Although species diversity is often low in the Presidio for much of the wildlife, the diversity and richness of bird species is remarkably high for such a small area. More than 200 bird species are known to occur in the Presidio, as many as 50 of these for nesting (Jones and Stokes 1997). Biological resource surveys conducted for this project documented site conditions similar to those identified in the *Presidio of San Francisco Natural Resource Inventory and Vegetation Management Options* (Jones and Stokes 1997). For additional background on Presidio wildlife, please refer to this report. A copy is available at the Presidio Trust Library.

Native Plant Communities

The native plant communities and assemblages located in the project study area, which includes areas adjacent to recycled water users and the limits of construction, include a remnant coast live oak assemblage, central coast arroyo willow riparian scrub, coastal salt marsh, northern foredune and central dune scrub. Please refer to the *VMP* (2001) for further discussion about these plant communities. These plant communities and assemblages mostly occur adjacent to roads along


Presidio Water Recycling Project
Figure 3.4-1
Vegetation Management Plan
SAN FRANCISCO BAY
PACIFIC OCEAN
Abandoned Reservoir
Alternative 1
Pipe-Phase 1
Pipe-Phase 2
Res. Overflow
Solids Return
Wastewater Supply
Alternative 2
Pipe-Phase 1
Pipe-Phase 2
Res. Overflow
Solids Return
Wastewater Supply
User Connections
Possible Storage Tank Locations
Alternative Treatment Plant Sites
VMP
Special Management
Key Historic Forest
Native Plant Communities
Landscape Vegetation
Historic Forest
500
0
500
1000 Feet

the various project alignments. Understory vegetation in the Rob Hill area section of the proposed alignment includes small patches of native plants, as do some understory areas south of Infantry Terrace and east of the Cemetery.

Presidio Vegetation Management Plan (VMP)

The adopted *VMP* (Trust and NPS 2001) was prepared jointly by the Trust and NPS to serve as a comprehensive management framework for the Presidio. It defines management actions for the revitalization of each of the three landscape management zones occurring at the Park: native plant communities, historic forest and landscape vegetation. The VMP consists of management objectives, standard protective measures (mitigation), and other actions that would be applied to this project.

SPECIAL STATUS SPECIES

A reconnaissance-level survey of the project study area was performed by ESA ecologists on November 5, 2001. The purpose of these visits was to gather information on available plant and wildlife habitats and habitat use on and surrounding the project study area, and to verify the results of previous biological reports. All undeveloped project areas not contained within roadways or developed areas were surveyed, including adjacent habitats that appeared suitable for special status species. Based on survey findings and a review of previous studies, formal protocol-level surveys for listed plant and wildlife species were not warranted for this analysis. A list of special status species potentially occurring in the Presidio or that previously occurred in the Presidio is presented in Appendix A.

Plants

A total of fourteen special status plant species are known to occur in the Presidio, five of which are federally and/or state-listed (i.e., endangered or threatened) and occur on serpentine and/or sandy soils (see Appendix A). None of these special status species occur within the limit of the construction of the project study area (NPS 2000, NPS and Trust 2001). As part of the Crissy Field marsh and dunes restoration effort, special status plant species (i.e., California seablite, San Francisco lessingia, dune gilia and San Francisco spineflower) were introduced. Of these species, California seablite occurs along coastal saltmarsh margins, and the remaining species occur in adjacent dunes. Only California seablite is located adjacent to a landscape irrigation site.

Wildlife

Of the eleven special status invertebrates that occur regionally, only monarch butterfly (*Danaus plexippus*) is believed to occur in or adjacent to the project study area (Presidio Trust 2001). While individual monarch butterflies hold no federal or state protection status, overwintering grounds for this species are considered significant and unique by the State of California and are protected by the CDFG. This species has historically overwintered in a eucalyptus grove located north of Kobbe Drive, approximately 250 feet north of a proposed pipeline segment under Alternative 2 (Presidio Trust 2001). The monarch butterfly could continue to overwinter at this

location between the months of November and March, and an analysis of the project's effect on overwintering monarch butterfly is provided below.

Many nesting passerine birds that are protected by the federal Migratory Bird Treaty Act (MBTA) and possibly nesting raptors (protected by the MBTA and CDFG Code 3503.5) may occur in the Presidio project study area during the nesting season (February 15 through August 15). This includes several locally uncommon birds that have been identified on the Presidio, and others for which suitable habitat has been identified. A brief list of these species includes great horned owl (*Bubo virginianus*), Hutton's vireo (*Vireo huttoni*), California quail (*Callipepla californica*), wrentit (*Chamaea fasciata*), common yellowthroat (*Geothlypis trichas*), sharp-shinned hawk (*Accipiter striatus*), Cooper's hawk (*Accipiter cooperii*), and American kestrel (*Falco sparverius*) among others.

A 1994 acoustic bat survey conducted in support of the *Presidio Natural Resource Inventory and Vegetation Management* report identified the occurrence of Yuma myotis (*Myotis yumanensis*), a federal Species of Concern (Pierson and Rainey 1995, as cited in Jones and Stokes 1997). Pierson and Rainey concluded that at least five additional special status bats could potentially occur at the Presidio; however, habitat conditions or available insect food at the Presidio did not appear suitable for any of these species at the time of the survey (see Appendix A) (Jones and Stokes 1997). In support of the current analysis, an independent bat biologist confirmed the absence of suitable roosting habitat for special status bats in the three existing buildings that could be altered by the proposed project (Buildings 1040, 1062, and 1063) (Tatarian 2002). No other habitat was identified near the proposed project.

WETLANDS

None of the alternatives would directly impact existing wetlands. Several wetlands occur in close proximity to the project study area and are further evaluated later in this section below (Figure 3.3-1).

REGULATORY BACKGROUND

Special Status Species

As defined in this document, species are accorded "special status" because of their recognized rarity or vulnerability to various causes of habitat loss or population decline. Some are formally listed and receive specific protection defined in federal or state endangered species legislation. Other species have no formal listing status as threatened or endangered, but have designations as "rare" or "sensitive" on the basis of adopted policies and expertise of state resource agencies or organizations with acknowledged expertise, such as the California Native Plant Society.

Migratory Bird Treaty Act (MBTA)

The Federal Migratory Bird Treaty Act (16 U.S.C., Sec. 703, Supp. I, 1989) prohibits killing, possessing, or trading in migratory birds, except in accordance with regulations prescribed by the

Secretary of the Interior. This act encompasses whole birds, parts of birds, and bird nests and eggs. Migratory birds include geese, ducks, shorebirds, raptors, songbirds and many others. The Migratory Bird Executive Order of January 11, 2001 directs executive departments and agencies to take certain actions to further implement the MBTA, and defines their responsibilities of each federal agency taking actions that have, or are likely to make, a measurable affect on migratory bird populations. All project actions within the Presidio must comply with this act; therefore, they cannot result in unauthorized take of migratory birds. The Best Management Practices (BMPs) identified in Chapter 2 as part of the project would require preconstruction surveys during the nesting season, would prohibit disturbance of active nests, and would ensure that protected bird species that are nesting would not be destroyed or disturbed by the proposed construction activities.

Invasive Species

The National Invasive Species Council oversees implementation of the Executive Order on Invasive Species (13112), which directs federal agencies to prevent the introduction of potentially invasive non-native species and control invasive species on lands for which they are responsible. The Trust implements this requirement through protective measures provided in the Vegetation Management Plan (see below).

3.4.2 ENVIRONMENTAL CONSEQUENCES & MITIGATION

ALTERNATIVE 1 (CENTRALIZED STORAGE)

Effects on Vegetation

None of the locally-occurring special status plant species (listed in Appendix A) would be directly or indirectly disturbed by the proposed project construction activities. Except for a small remnant assemblage of coast live oaks (three trees), all of the identified native plant communities lie adjacent to irrigated areas. The coast live oaks are located in the proposed Lombard Area A recycled water use area (Phase 2). The area surrounding the oaks is currently irrigated, and no adverse impacts to these oaks have been identified, and none are anticipated. All other areas to be irrigated with recycled water are comprised of landscape vegetation. Pursuant to the permit requirements associated with use of recycled water, irrigation or runoff to adjacent native plant communities would be avoided (see Section 3.3, Water Resources.

Although the proposed pipeline alignment under Alternative 1 is primarily located in the road and would have little impact on vegetation, the roots of historic forest trees (i.e., along Lincoln Boulevard) could be directly affected due to trenching activities. Since the canopy of these trees overhang the construction corridor in the road, the roots of these trees likely occur below the paved road and could be removed or damaged during trenching activities. The closer the trench is to the trunk of the tree, the greater the damage. Each root that is removed (cut) reduces the tree's capacity to supply water and nutrients to the leaves. Placement of the proposed pipeline alignment on the south side of Ruckman Road and Rod Road would avoid impacts to these trees.

Many of these trees along the proposed pipeline alignment are in poor health, and as a result, would likely be replaced as part of the Trust's forest rehabilitation program, which was proposed in the VMP. Actions proposed under Alternative 1 would be coordinated with the forest rehabilitation program to avoid effects on trees due to implementation of this proposed project.

Placement of underground reservoir facilities under alternative site A would not affect any vegetative resources. Use of alternative site B for underground storage could directly affect 5 to 10 landscape trees within the existing parking lot. Landscape vegetation would be replaced or added as part of the project under both proposed facility options consistent with BMP-4 (see Chapter 2), and no significant biological effects would occur.

> **Mitigation Measure BR-1:** Construction of the proposed pipeline along Ruckman and Rod Roads Phase 2 (Alternative 1) would be kept to the south side of the roadway to minimize potential effects on adjacent trees.
>
> *Effects on vegetation would be less-than significant following implementation of Measure BR-1 and BMPs.*

Effects on Wildlife

Common Wildlife

Effects on common wildlife species in adjacent areas could occur during equipment staging or during earthmoving or construction activities. Affected animals may include snakes, lizards, nesting birds, and small mammals such as mice and gophers. Temporary disturbance would occur during construction, and would include equipment noise and movement, which may temporarily displace animals. Relatively minor effects on common wildlife species are generally considered less-than significant, with no specific mitigation required. Larger wildlife species that may move through the Presidio (such as opossum and raccoon) would not be affected by project activities.

Birds

Construction activities have the potential to indirectly affect nesting raptors and special status birds protected under the MBTA. Nesting habitat for several non-listed special-status raptor species and other birds occurs in trees located throughout the project area. Nesting habitat for red-shoulder hawk occurs in eucalyptus and Monterey pine trees throughout the Alternative 1 proposed pipeline route, but particularly in forested areas neighboring the San Francisco National Cemetery. No active hawk nests were observed during surveys in November 2001, but this species and other raptors (including red-tailed hawk and American kestrel) are expected to nest in eucalyptus trees on the Presidio.[1] Human disturbances from construction activities have the

[1] This species, as with all raptors, is protected under the federal Migratory Bird Treaty Act.

potential to cause nest abandonment and death of young or loss of reproductive potential at active nests located near the project site.

Other special status bird species potentially breeding near the construction right-of-way include shrub-nesting species such as loggerhead shrike and birds protected under the MBTA. Effects on these species during project construction include the potential for temporary disturbance of suitable nesting and foraging habitat located near construction sites. Disturbance of raptors and other nesting birds as a result of project implementation would be avoided through the standard BMPs implemented as part of the project to reduce environmental effects (see Section 2.3, BMP-4: Biological Resource Protection).

Impacts to common and special status wildlife species during construction would be less-than significant, with the implementation of BMP-4.

Construction Effects on Wetlands

A small segment of Dragonfly Creek is located directly south of Appleton Street where a proposed recycled water distribution pipeline would be located during Phase 2 of Alternative 1 (see Figure 3.3-1). The construction activities would be contained entirely within the roadbed, and no direct impact to the creek would occur. Possible indirect effects could include sedimentation from runoff at the adjacent construction site. This potential impact would be effectively reduced through the implementation of the BMPs identified in Chapter 2. The remaining downstream segment of the creek is captured in an underground culvert that crosses under Lincoln Avenue en-route to the San Francisco Bay. The recycled water distribution pipeline would also be located within Lincoln Avenue, and future construction activities would be designed to avoid the existing culvert. Crissy Marsh is located adjacent to a proposed Phase 1 pipeline; however, construction activities would be contained entirely within the Mason Street roadway, and construction activities would not impact the marsh (directly or indirectly).

The impacts to wetlands from project construction would be less-than significant, with the implementation of Measures BMP-1 and BMP-4.

Indirect Operational Effects on Biological Resources

As discussed in Section 3.3, Water Resources, recycled water would contain low levels of soluble salts and nutrients. During the winter rainy season, a small amount of salts and nutrients (such as nitrogen and phosphorus) would be flushed from the soil column and mixed with native groundwater. Theses constituents would be substantially diluted by the rainfall and groundwater, and would not be expected to have a measurable effect on adjacent vegetation which includes California seablite (at Crissy Marsh) or groundwater quality. With implementation of Mitigation

Measure WR-1, the Trust would monitor and modify fertilizer application accordingly to avoid production of excess nutrients, such as nitrogen, that could cause plant stress.

Recycled water could also potentially contain trace amounts of pharmaceutical compounds such as antibiotics, steroids, antidepressants, pain killers, and hormones (endocrine disruptors) in the range of a few parts per billion to a few parts per trillion. These and other compounds are collectively known as "emerging contaminants," which are not presently regulated at the federal or state level, although their environmental effects, fate, and transport are the subject of on-going research. A general concern with treated effluent discharges is the potential for endocrine disruptors to modify the normal functioning of human or wildlife endocrine systems, for example, by mimicking natural hormones, blocking the effects of natural hormones, or stimulating the overproduction or underproduction of natural hormones (EPA 2000, Tucker 2002). However, neither of the project alternatives evaluated in this EA would result in the discharge of treated effluent into surface waters. Recycled water would only be used for landscape irrigation.

It is unlikely that the minute quantities of these pharmaceutical compounds present in the recycled water would migrate through the soil and into groundwater after a storm event, and subsequently migrate to the near-shore waters of San Francisco Bay and Crissy Marsh. Consistent with the permit requirements (see Section 3.3) associated with recycled water use, water would be carefully applied to landscaped areas in quantities intended to meet the evapotranspiration requirements of the area, and to preclude surface runoff. However, if the compounds were to migrate from adjacent landscaped areas into surface waters, concentrations would be so low that no measurable effects would occur, and would likely be comparable to existing background levels present in San Francisco Bay. In addition, the proposed water recycling treatment process (membrane bioreactor and UV disinfection) would remove a greater portion of these compounds from the wastewater than are typically removed in conventional wastewater treatment processes. For additional discussion of water quality effects, please refer to Section 3.3 of this EA.

> *No adverse effects are anticipated to adjacent marsh plants, or biological resources associated with the aquatic habitats of Crissy Marsh and San Francisco Bay, and therefore no mitigation is required or recommended.*

ALTERNATIVE 2 (MULTIPLE STORAGE SITES)

Effects on Vegetation

The majority of the proposed pipeline construction would occur within existing roadways or paved areas, and would not directly impact vegetation. Construction of Phase 1 facilities would be identical to those described under Alternative 1, and minimal effects on vegetation would occur. There are several areas where Phase 2 pipelines would leave existing roadways, and cross

through forested or landscaped areas. A description of each and the potential impact on existing vegetation are provided below.

Approximately 300 feet of pipeline would be constructed along the slope separating Washington Boulevard and Thomas Avenue (at Infantry Terrace). The proposed pipeline would be contained within an existing utility corridor. In 1995, the NPS cleared the vegetation along this corridor to construct a fiber optic line. This alignment was identified specifically to avoid or minimize impacts to vegetation. Existing vegetation within this corridor is sparse.

Another pipeline segment (approximately 600 feet in length) that would deviate from paved areas occurs between the abandoned reservoir (near Central Magazine) and Hitchcock Street. This area contains historic forest, primarily eucalyptus trees. Based on the age and condition of these trees, this area has been identified for reforestation and rehabilitation as part of the adopted VMP. Construction of the proposed pipeline in this area would likely require tree removal and, consistent with the VMP, this activity would be coordinated with the planned reforestation to ensure that removal of healthy vegetation is minimized and the long-term viability of the forest is protected. Additionally, vegetation clearing would also occur within the fenced perimeter of the abandoned reservoir during its rehabilitation. Consistent with BMP-4, Trust Natural Resource staff would identify plant material to be salvaged and/or invasive non-native plants that must be carefully managed in accordance with this measure. There is also one small segment (approximately 150 feet) of proposed pipeline that leaves the road prism and crosses an existing trail between the San Francisco National Cemetery and Nauman Road. Although the area surrounding the trail consists of eucalyptus trees, no tree removal would occur as the pipeline would be located within the existing trail corridor.

All construction activities would be done in accordance with the BMPs set forth in Chapter 2, which include erosion control practices and measures to prevent the spread and/or introduction of invasive, non-native plant materials into the project area. Because the proposed recycled water use areas are the same under both action alternatives, the operational effects are also the same and would be less-than significant (see analysis provided for Alternative 1). The removal of existing vegetation at the Presidio would be conducted in compliance with the VMP, which provides for the phased removal and replacement of aging forest resources.

> *Project effects on vegetation would be less than significant following implementation of Measure BMP-4 and adherence to the VMP.*

Effects on Overwintering Monarch Butterflies

The monarch butterfly has been observed overwintering on the Presidio during the months of November through March in areas that support dense, sheltered eucalyptus groves. This overwintering phenomenon is considered sensitive by the California Department of Fish and Game (CDFG), and the Trust seeks to minimize potential effects on this activity. The Presidio is

located within the northern unit (which extends from San Mateo to Sonoma Counties) of the monarch's overwintering range (Monroe 2002). The only project component located near potential overwintering habitat under Alternative 2 would occur during Phase 2, along one small segment of the proposed pipeline at Rob Hill, between Compton Road and Hitchcock Street. In the past, monarchs have been observed overwintering in eucalyptus trees within the general vicinity (approximately 250 feet north of the proposed pipeline segment). Last year, monarchs were not detected in this location; however, it is possible that they may return in the future. Although monarchs have not been observed in the eucalyptus trees within or directly adjacent to the proposed pipeline corridor, there appears to be suitable overwintering habitat in this area.

During overwintering, monarchs do not appear to be highly sensitive to noise, movement or visual intrusion from nearby people or vehicles. Smoke (i.e., from control burns or wildfires), excessive dust, or exhaust can agitate the butterflies, causing excessive movement and corresponding reduction in their limited fat supplies/strength. What appears to have the greatest potential influence on overwintering, however, are long-term microclimate changes. Prolonged cold and moist conditions are considered adverse to overwintering. Vegetation removal, manipulation of water bodies, or other activities that can alter local wind, temperature or moisture settlement patterns can lead to such changes in microclimate (Monroe 2002).

Prior to construction of the proposed Phase 2 pipeline (in approximately 10 years), current monarch monitoring data would be reviewed to determine the presence/absence of overwintering activity in the general area. If monarchs have been observed, the Trust would seek to minimize the potential short- and long-term effects. Construction activities would be scheduled, to the degree feasible, outside of the overwintering period. However, based on the monarch's relative tolerance of human presence and the short construction period (likely to be less than a week in this location), the impact would not be considered significant. In addition, implementation of the BMPs for dust control and other relevant measures would further reduce the potential for construction-related disturbances.

Construction of the proposed pipeline would likely require the removal of individual trees, which has the potential to generate short-term microclimate changes until newly planted saplings mature. If monarchs are determined to be present in this general area, the pipeline corridor would be evaluated and the alignment and/or proposed tree removal designed such that it ensures adequate buffers to prevent indirect microclimate changes in the overwintering areas. As described in the analysis of vegetation effects, this entire area of historic forest has been identified for reforestation and rehabilitation in the adopted VMP. Consistent with the VMP, the proposed pipeline construction activities would be coordinated with this effort. Future implementation of the rehabilitation and reforestation project within or adjacent to potential overwintering habitat may require additional analysis at the time this activity is proposed. Information on the current conditions of the area, as well as the design and layout of the proposed reforestation effort, would be fully evaluated, and mitigation identified and implemented as needed.

> **Mitigation Measure BR-6:** Prior to construction of the proposed Phase 2 (Alternative 2) pipeline near Rob Hill, Trust natural resource staff would review the last several years of

overwintering data to determine the presence and extent/absence of monarch activity surrounding the proposed construction area. If overwintering activity has occurred within this area, construction would be scheduled outside of the November to March period to the greatest extent feasible. The location and extent of overwintering habitat will also be considered in the refinement of the proposed pipeline alignment and corresponding need for tree removal. This refinement would be done to ensure that appropriate buffers are established so that adverse changes in the microclimate of the overwintering area are avoided.

Following implementation of Measure BR-6, project effects on monarch butterfly would be less-than significant.

Effects on Wildlife

Under Alternative 2, project effects to common wildlife, nesting raptors and special status bird species would be essentially the same as described as Alternative 1. Effects on common wildlife and bird species have the potential to be slightly greater under Alternative 2, as the project route would traverse three undeveloped eucalyptus woodland areas under this alternative (i.e., (1) between San Francisco cemetery and Nauman Street along an existing social trail, (2) in an existing utility corridor north of building 1469 (existing reservoir), and (3) between Washington Boulevard to Thomas Avenue).

As discussed under Alternative 1, relatively minor impacts to common wildlife species are generally considered less-than significant, with no mitigation required. Direct project-related disturbance to raptors and other nesting birds as a result of project implementation would be avoided through the implementation of BMP-4. As a result, additional mitigation is not required for these potential project effects.

Alternative 2 would have similar impacts as Alternative 1, and are considered less-than significant.

Construction Effects on Wetlands

Approximately 300 feet of pipeline would be constructed along the slope separating Washington Boulevard and Thomas Avenue (at Infantry Terrace). The proposed pipeline would be contained within an existing utility corridor. Existing vegetation along the corridor is sparse; however, there are vegetation indicators that a wetland could be forming. Existing vegetation would be removed during construction activities. Prior to Phase 2 construction (in approximately 10 years), the site would be inspected again to evaluate wetland indicators.

An USACE jurisdictional unnamed wetland lies approximately two feet from Compton Road adjacent to a proposed pipeline. This feature lies outside the limit of construction and would not

be directly affected by project construction activities. Implementation of BMP-4 would prevent indirect effects including potential sedimentation and runoff from trenching activities into these wetlands.

> **Mitigation Measure BR-8:** Prior to construction of the proposed Phase 2 (Alternative 2) pipeline along the slope separating Washington Boulevard and Thomas Avenue (at Infantry Terrace), the water-associated feature will be delineated using U.S. Army Corps of Engineers USACE methods by a qualified specialist. If this feature meets jurisdictional requirements of the USACE, the Trust would ensure compliance with Section 404 of the Clean Water Act.

Impacts to wetlands would be less-than significant under Alternative 2 with the implementation of Mitigation Measure BR-8, BMP-1 and BMP-4.

Indirect Operational Effects on Biological Resources

Under Alternative 2, potential indirect effects of project operation would be the same as described for Alternative 1. No adverse effects are anticipated to adjacent marsh plants, or biological resources associated with the aquatic habitats of Crissy Marsh and San Francisco Bay.

No adverse effects to biological resources are anticipated as a result of project operation, and thus no mitigation is required or recommended.

ALTERNATIVE 3 (NO ACTION)

General Effects on Biological Resources

Under the No Action Alternative, none of the proposed water recycling facilities would be implemented, and all on-site irrigation demands would continue to be met with potable water from Lobos Creek and/or purchased from the CCSF. Although the No Action alternative would result in increased demands placed on the Presidio's water supply system in the future, the 500,000-gallon minimum flow requirement would continue to protect natural resources along the creek. None of the biological impacts described above for the two action alternatives would occur.

Under Alternative 3, all of the biological effects associated with the two action alternatives would be avoided.