5.8 BIOLOGICAL RESOURCES

The 7,196-acre study area consists of approximately 5,600 acres of agriculturally zoned land, of which approximately 750 acres are currently in greenhouse use. Because of past agricultural use, few natural communities are present along the valley floor. However, much of the study area drains into the 230-acre Carpinteria Marsh, Santa Barbara County's largest salt marsh. The marsh is an ecologically important estuary that is home to 252 plant species, 243 animal species, and over 100 invertebrate species. The marsh also serves as an important stopover location for migratory birds. In addition, creeks throughout the Valley are ecologically important and environmentally sensitive habitats.

The conversion from open field agriculture to greenhouse structures, or the retrofitting and enlargement of existing structures, could have both temporary construction-related impacts and long-term operational impacts to the biological resources reliant upon either Carpinteria Marsh or the adjacent ocean intertidal zone. Potential construction impacts to the marsh include sedimentation to the local creeks and subsequent deposition in the marsh. Potential significant long-term operational impacts include nutrient loading, and ~~pesticide and~~ stormwater runoff pollution. Seasonal sedimentation to the marsh, change in seasonal stream flow, and decrease in available open space for foraging and habitat are considered less than significant impacts. Design recommendations and other mitigation measures have been developed to reduce potential biological resources impacts to the creeks in the study area, the Carpinteria Marsh, and the adjacent ocean intertidal zone to less than significant levels.

5.8.1 Setting

The primary biological resources in the study area include the Carpinteria (El Estero) Marsh, the seven drainages (Toro Creek, Garrapata Creek, Arroyo Paredon Creek, Santa Monica Creek, Franklin Creek, Carpinteria Creek, and Rincon Creek), and the offshore intertidal zone. The intertidal zone consists of the transitional area between the coast and the ocean. This zone's inundation with water and exposure to air and/or sun is variable and fluctuates with the tides and wind. The Carpinteria Reef, a kelp-dominated rocky reef, is located just offshore of the salt marsh.

a. Carpinteria Marsh. This 93 hectare (230 acre) estuarine wetland (refer to Figure 2) is one of the few remaining salt marshes in southern California (UCSB, 1999). Approximately 90% of the estuarine wetlands in southern California have been eliminated by development over the past century (Page, 1999). The Carpinteria Marsh is one of the few relatively undisturbed coastal salt marsh habitats remaining in California and is the largest coastal wetland in Santa Barbara County. Accordingly, the Santa Barbara County Local Coastal Plan recognizes the Marsh as an Environmentally Sensitive Habitat (ESH) (SBCo, 1995).

The Marsh acts as a nursery for many aquatic species (i.e. California halibut, diamond turbot, and starry flounder) and serves as a feeding and nesting area for many waterfowl. The Marsh currently contains or is known to have contained 252 plant species, 104 of which are native, including 11 regionally rare plants and two that are considered endangered. At least 190 bird species, 37 fish species, 11 mammal species, 5 herpetofauna species, and over 100 invertebrate species have been observed, collected, or reported from Carpinteria Marsh (UCSB, 1997).

Agricultural and suburban development in the Carpinteria Valley over the last 100 years has dramatically reduced the area of Carpinteria Marsh. This development has also affected water

quality in the marsh. Water quality is identified in the *Management Plan for Carpinteria Salt Marsh Reserve – A Southern California Estuary* (UCSB, 1997) as one of the most important management issues affecting the long-term health and preservation of the marsh. The majority of runoff entering the marsh originates from Santa Monica and Franklin Creeks which together drain an area of approximately 413 ha (1,020 acres) (Page, 1999). Development activities in upland watersheds and adjacent to local stream corridors pose the greatest threats to continued viability of wetland and riparian habitat. Increased nutrient levels and sedimentation associated with urban runoff and agricultural development (greenhouse and open field) also contribute to water quality impacts affecting the marsh.

b. Creeks. Ecological processes in the Marsh are closely linked to activities in the watershed by the drainage channels that pass beneath Highway 101. Seven culverts direct agricultural and urban runoff from the watershed into the ditch south of Highway 101 along the northern border of the Southern Pacific Railroad berm. Four culverts convey flow beneath the railroad berm into Basin 3 of the Marsh. In addition, two perennial streams, Santa Monica Creek and Franklin Creek, combine for a watershed area of 5900 acres and convey flows beneath the freeway into the eastern portion of the Marsh. The lower reaches of these streams are channelized and concrete-lined where they pass through the study area. The predominant land use adjacent to these creeks is greenhouse and residential development. The smaller culverts in the west drain an approximate (750 acres) area north of the Marsh. This drainage system is referred to as the "Franciscan Channel." Land use in the lower portion of the coastal plain consists of greenhouse, open field agriculture, and urban development. The other creeks within the study area (Toro Creek, Garrapata Creek, Arroyo Paredon, Carpinteria Creek, and Rincon Creek) drain directly to the ocean, are all unlined, and support relatively high quality riparian habitat. While the lower reaches of Arroyo Paredon flows adjacent to existing greenhouse development, land uses adjacent to the other creeks consist of open field agriculture and residential development.

Important native communities in the study area are typically associated with creeks. Natural bottom creeks with naturally vegetated stream banks offer the best habitat value in terms of biological resources (i.e. food), physical conditions (i.e. shade, temperature, and dissolved oxygen), and chemical buffering (i.e. reducing erosion and associated impacts). Channelized creeks and concrete-lined culverts eliminate suitable creek bottom substrate, reduce the amount of shade and nutrient contributing riparian vegetation, and speed up the flow of water to aid in rapid evacuation of floodwaters. Of the creeks adjacent to existing or proposed greenhouse development, Arroyo Paredon is most suitable for supporting ecologically viable aquatic life.

Several creeks within the study have also been known to historically support viable runs of steelhead trout (Oncorhyncus mykiss), a federally listed endangered species. Also known to occur in the study area is the red-legged frog (*Rana aurora draytonii*), a federally listed threatened species. This frog lives in perennial and intermittent streams, but adults require dense, shrubby or emergent riparian vegetation closely associated with deep still or slow-moving water. Thus, since red-legged frogs could not survive in warm, fast moving culverts, they would not be expected in either Santa Monica Creek, Franklin Creek, or the Franciscan Channel. Only the natural bottom creeks in the study area potentially support red-legged frog habitat.

c. Intertidal and Near Offshore Zone. The immediate coastal waters and tidelands are important habitats with high biological productivity. Important habitats in this area include the open beaches, offshore kelp beds, and rocky intertidal areas. The open beach and rocky shore support significant numbers of migratory shorebirds, while the kelp beds provide forage and shelter for many fish and invertebrate species. The intertidal and near offshore zone are linked to the study area through the drainage system, which transports sediment and nutrients into these habitats. The Carpinteria Reef, located just offshore from the salt marsh in variable depths of water ranging from about 5 to 40 feet, supports a healthy marine community with numerous species. The Carpinteria Reef also supports active local commercial fisheries including crustaceans and fish.

d. Regulatory Setting. Regulatory authority over biological resources is shared by federal, state, and local authorities under a variety of legislative acts. Primary authority for the protection of biological resources is provided by the County's Local Coastal Plan (LCP), administered through the Coastal Commission and the California Coastal Act. AG-I zoning under the County's Coastal Zoning Ordinance allows conversion of natural vegetation to cultivated agriculture with only some limited grading restrictions; it also allow greenhouse development of less than 20,000 sf cumulative per legal lot with a Coastal Development Permit. These provisions are not proposed for amendment. The California Department of Fish and Game (CDFG) is a trustee agency for biological resources throughout the state under CEQA and also has direct jurisdiction under the state Fish and Game Code. Under the state and federal Endangered Species Acts, the CDFG and the U.S. Fish and Wildlife Service (USFWS) also have direct regulatory authority over specially designated organisms and their habitats. The U.S. Department of the Army, Corps of Engineers also has regulatory authority over specific biological resources, namely wetlands and waters of the United States, under Section §404 of the federal Clean Water Act.

In response to their legislative mandates, regulatory agencies have defined sensitive biological resources as those specific organisms that have regionally declining populations such that they may become extinct if population trends continue. Habitats are also considered sensitive biological resources if they have limited distributions, have high wildlife value, include sensitive species, or are particularly susceptible to disturbance.

The protection of water quality in Santa Barbara County and the creeks and salt marsh in the Carpinteria Valley is regulated at the federal and state level by the Federal Clean Water Act and the National Pollutant Discharge Elimination System (NPDES) permit requirements. The Regional Water Quality Control Board (RWQCB), Central Coastal Region, implements the federal NPDES Permit for General Construction Activities. Soil disturbances of five acres or more must comply with the NPDES requirements. The RWQCB establishes requirements prescribing the quality of point sources of water discharge including pollutants and sediment from both construction and operational activities.

5.8.2 Impact Analysis

a. Methodology and Significance Thresholds. The impact analysis of biological resources was based on a review of previous biological and biochemical studies prepared for

the site, the surrounding area, and the University of California, Santa Barbara Carpinteria Salt Marsh Management Plan.

The significance of potential impacts to biological resources was based on the County of Santa Barbara Environmental Thresholds and Guidelines Manual (January 1995). This manual primarily relies on Appendix G of the *State CEQA Guidelines* for its criteria, which state that a project would have a significant impact if it:

- *Conflicts with an adopted environmental plan or goal of the community where it is located;*
- *Substantially affects a rare or endangered species of animal or plant or the habitat of the species;*
- *Interferes substantially with the movement of any resident or migratory fish or wildlife species; or*
- *Substantially diminishes habitat for fish, wildlife or plants.*

The Santa Barbara County Local Coastal Plan (LCP) (SBCo. 1995) is the primary policy document for biological resource protection in the study area. Based on the LCP, the County has developed specific policies for the protection of biological resources within the unincorporated county area. In addition to the above criteria, the Thresholds Manual also defines impact assessment factors that consider the following: a) size of impact; b) type of impact (direct or indirect); and c) timing. The Manual also provides habitat-specific assessment guidelines for impact assessment. For example, the County Guidelines state that disturbance to habitats is considered significant if it substantially limits reproductive capacity through losses of individuals or habitat. The Manual further states that *project-created* impacts to coastal salt marshes may be considered significant due to the potential to change species composition and habitat through:

- *Adverse hydrologic changes (e.g., altered freshwater input), substantial increase of sedimentation, introduction of toxic elements or alteration of ambient water temperature*; or
- *Construction activity which creates indirect impacts such as noise and turbidity on sensitive animal species, especially during critical periods such as breeding and nesting*.

b. Project Impacts. The AG-I-OF zone district retains the provisions of the existing AG-I zone district except for greenhouse development of 20,000 sf or more. The conversion of land to open field and orchard agriculture and the construction of less than 20,000 sf of greenhouse development per legal lot are permitted under the existing zone district, as well as the proposed AG-I-OF. As stated in Section 3.0, most land that is suitable for greenhouse cultivation has already been converted to agriculture. Eliminating the *opportunity* to construct greenhouses on slopes greater than 5% will not create an incentive to bring more natural lands into cultivation, as greenhouse development would not have occurred on these slopes anyway. Furthermore, conversion of natural lands to open field and orchard cultivation could occur irrespective of the proposed project. As discussed in Section 3.0, Environmental Setting, these zone district provisions and the impacts associated with their continuation are a part of the environmental baseline and will continue whether or not the project is approved. Therefore, there are no reasonably foreseeable significant impacts to biological resources associated with the proposed AG-I-OF zone district.

The project impacts identified below would result from potential buildout of 3.0 million sf of greenhouse development in the proposed AG-I-CARP zone district.

Conversion of approximately three million square feet of existing open field agriculture to greenhouses and associated structures development could adversely affect biological resources through sediment deposition, degradation of surface water quality from nutrient loading, pesticide application, and storm water runoff. The additional greenhouses could also alter the seasonal flow pattern of the study area creeks by increasing the amount of impervious surface and/or increasing groundwater demand. The proposed project would decrease available open space (i.e., orchard, row crops) potentially used for residence or foraging habitat. In addition, potential nighttime lighting from greenhouses could interfere with wildlife movement pathways.

Impact B-1 Greenhouse development has the potential to impact aquatic biological resources of the Carpinteria Marsh through increased inputs of silt and sediment.

Silt and soil particulates coming from the greenhouses and adjoining land during construction have the potential to enter the creeks via culverts and storm drains. In addition, supporting structures and facilities associated with operational phases of greenhouse development (i.e. storage areas, landscaping, and banks of stormwater detention basins) are also potential contributors to creek-bound silt and sediment.

Both Santa Monica Creek and Franklin Creek drain directly into the Carpinteria Salt Marsh. Due to the approximately 1,100,000 square feet of additional greenhouse development potential within the watershed of these two creeks, sediment has the potential to negatively affect the water chemistry of the marsh. Sediment is a direct cause of water clarity and turbidity problems. Consequently, water temperatures may increase and dissolved oxygen levels may decrease with increased sediment inputs. These physical changes, coupled with the direct covering of eggs, larvae, and the breather holes of mollusks or other invertebrates, have the potential to negatively impact marsh organisms. In addition, certain pollutants preferentially bind (chelate) to sediments and therefore have increased mobility through and stability in the environment (Pepper et. al., 1996). Whereas pollutants would normally rapidly degrade, chelated chemicals have the potential to be transported deep within the marsh and render otherwise isolated biological resources susceptible to their toxicity.

Once construction has been completed and greenhouse structures are in place, they may protect the soil surface from erosion that could otherwise be caused by wind or storm water runoff. In contrast, agricultural operations in open fields require tilling that exposes the soil to these erosional forces. Thus, greenhouses and associated structures may reduce the overall amount of silt and sediment that enters the marsh watershed. Nevertheless, if not properly designed, greenhouses, accessory structures, and temporary structures such as shade structures and hoop houses have the potential to cause increased sedimentation resulting from both construction and operational phase erosion associated with the increase in impervious surface. This increased sediment load could negatively affect the biological resources of the Carpinteria Marsh resulting in a potentially significant impact.

Impact B-2 Greenhouse development may impact aquatic biological resources of the Carpinteria Marsh due to increased inputs of nutrients or pesticides.

As stated above, the Carpinteria Marsh has been identified as containing wildlife habitat, biological habitat of special significance, potential rare, threatened, or endangered species habitat, a marine migratory organism habitat, and a high quality aquatic spawning habitat (RWQCB, 1999). Discharge of nitrogen nutrient, ~~and~~ chemical species, and pesticides in either surface water or groundwater has the potential to detrimentally affect both the Carpinteria Marsh and its associated habitats and the ocean intertidal zone.

As indicated in *Section 5.2, Water Quality and Groundwater*, all discharged irrigation effluent entering the storm drains or irrigation effluent pipes within the study area rapidly enters the Carpinteria Marsh or the ocean. Nutrient enrichment of the Carpinteria Marsh is of potential concern because it has been shown that the addition of nitrogen (nitrate, ammonium) to estuarine systems can stimulate algal growth through a process called eutrophication (Page, 1999). When algal mats form in channels and on tidal flats, they have been found to reduce the abundance and diversity of the fauna living within and on the marsh substrate through various processes, including but not limited to smothering of the organisms. Other related processes involve changing the chemical microenvironment of the tidal flats, which could impact species that have evolved a tolerance range of physical regimes, including ambient water chemistry concentrations. Addition of pesticides to the receiving waters has the potential to not only reduce diversity and abundance of marsh and coastal waters inhabitants, but to concentrate and accumulate within the tissues of species up through the food chain, a process known as bioaccumulation. This process occurs when smaller organisms absorb the compound, then are eaten by larger organisms. The progression continues until the compound attains a relatively high concentration in macrovertebrates, such as fish, which are then eaten by humans and other large animals.

Additionally, dense algal mats may obstruct previously navigable channels used by larger fish species (i.e. halibut and shark) during low tide periods. Since the salt marsh is a known important rookery for commercially sought fish species (i.e., halibut, turbot, flounder, etc.), impacts to the juvenile stages of these fish could occur due to extreme changes in water chemistry. These impacts from elevated nitrogen levels are most pronounced during periods of reduced tidal flushing (i.e. during neap tides or inlet closure). Inlet closure is temporally associated with summer. This further corresponds with low seasonal flow of the two source creeks, Franklin and Santa Monica Creeks. During the low flow summer period, agriculture irrigation runoff is the principal flow within Santa Monica Creek and the entire flow in Franklin Creek.

Recent monitoring of nutrient content within the creeks has indicated that greenhouses can export substantial amounts of nutrients (Page, 1993, 1995), especially where irrigation tailwaters are allowed to flow directly into the creeks. Although recent changes in technology within greenhouse operations has emphasized minimizing irrigation tailwaters through the use of drip irrigators and recycled waters, recent sampling data suggests that greenhouse development concentrates nutrient inputs entering local creeks which flow in the marsh. These data indicate that nitrate levels in excess of 20,000 parts per million (ppm) have been present in effluents

entering Franklin Creek and as high a 6,800 ppm in Santa Monica Creek. These concentrations of nitrate are upwards of 100 times that found under natural conditions in marine estuaries (Page, 1999). Combined with this existing high level of nitrate inputs, the approximately three million square feet of future greenhouse development which could occur in the Carpinteria marsh watershed would result in potentially significant impacts to biological resources.

Impact B-3 Accessory use areas associated with greenhouse development may cumulatively impact aquatic biological resources of the Carpinteria Marsh from inputs of pollutants carried in stormwater runoff.

As discussed under Impact W-2, stormwater runoff from greenhouse structures would contain only those materials that are contained in dust that may be dry deposited on the glass and plastic roofs on the exterior of greenhouses. Stormwater runoff from parking lots, internal site roadways and other accessory uses could contain various pollutants associated with automobiles, including petroleum compounds, heavy metals, asbestos, rubber, etc. that may cause adverse impacts to aquatic life. In particular, heavy metals preferentially bind (chelate) to sediment particles and are thus rendered more stable, persistent, and mobile. As discussed under Impact W-2, the amount of stormwater pollutants that may be contributed to the local watershed on an individual parcel basis and the proposed additional expansion area would not be significant. However, the cumulative contribution from existing agricultural, residential, and commercial development along with future greenhouse and other development on water quality from stormwater runoff is potentially significant.

Impact B-4 The change in water runoff patterns due to greenhouse development may impact aquatic biological resources by altering the seasonal flow pattern of the creeks.

The proposed additional three million square feet of greenhouse development within the study area would cumulatively increase the amount of impervious surfaces and therefore increase the amount of stormwater runoff that may be directed to creeks and the Carpinteria Marsh. Since salt marshes naturally experience salinity fluctuations both seasonally and diurnally, the decreased amount of groundwater return flow and increased amount of stormwater runoff that could occur with conversion from open field to greenhouse use could alter the hydrologic balance of fresh and salt water in the marsh. Alternatively, during summer months the lower reaches of these coastal creeks typically carry little or no flow. With the addition of greenhouse uses, this seasonal flow regime could be altered with the addition of year round irrigation runoff, which could also affect the normal seasonal variations in marsh hydrology. Combined, these changes in seasonal hydrology could result in potentially significant impacts to the biological resources of the marsh and local creeks.

Impact B-5 Conversion of open field areas to greenhouses has the potential to reduce available habitat for foraging and residence.

The open field orchards and row crops represent limited habitat for animal foraging and residency. Orchards provide habitat for nests, and the ground cover in orchards provide limited forage for several common animals adapted to human presence, such as scrub jay, house finch, lesser goldfinch, and Anna's hummingbird. The flowers and produce grown in the row crops may also provide a limited food source for foraging animals. However, since the row crops experience frequent disturbance from human activity, including vehicles, soil disturbance / tilling, irrigation and pesticide application, it is highly unlikely that the actively farmed portions of the parcels would contain significant biological resources. Therefore, conversion of approximately 3 million square feet of open field and orchard areas would not result in the loss of any significant habitat for these species.

Greenhouse development may also impact riparian resources where greenhouse development is proposed adjacent to local creeks. However, of the areas designated for future greenhouse expansion, only those parcels adjacent to Arroyo Paredon would result in potential impacts to riparian resources. No greenhouse development is proposed adjacent to Toro, Rincon or Carpinteria Creeks, and both Santa Monica and Franklin Creeks are highly disturbed (e.g. concrete-lined channels) adjacent to areas proposed for greenhouse development. Therefore, no impacts to biological resources would result. Potential effects are controlled through regulatory activity, specifically that associated with the County's Local Coastal Plan, the California Fish and Game Section §1600 series Streambed Alteration Agreement and the U.S. Corps of Engineers Section §404 permit process. It is anticipated that implementation of these existing regulations would reduce the potential for impacts to riparian resources to a less than significant (Class III) level.

Impact B-6 Greenhouse development may cause an indirect and cumulative impact to regional fish and wildlife resources because of the interruption of wildlife corridors or habitat linkages.

Habitat linkages are generally defined as connections between habitat patches that allow for physical and genetic exchange between otherwise isolated animal populations. Such linkages may serve various functions including foraging, denning, and migration corridors. A group of habitat linkages in an area can form a wildlife corridor network. Within the study area, such corridors typically follow creek channels.

Two of the creeks, Santa Monica and Franklin Creeks, are concrete lined channels that are further impacted with debris basins at the boundary of the National Forest and urbanized areas. These two creeks provide minimal opportunity for wildlife movement. Rincon, Toro and Carpinteria Creeks and Arroyo Paredon are all natural bottom channels with riparian vegetation that potentially provide for fish and wildlife movement through the study area. In particular, the southern steelhead trout (*Oncorhyncus mykiss* - Southern California ESU), a federally listed endangered fish, is known to occur in major drainages both up and down coast from the Carpinteria Valley. It is possible that this species may occur in within the study area (both Carpinteria Creek and Rincon Creek are identified as containing potential steelhead habitat).

Movement along these creek corridors could be disrupted through the introduction of adverse pollutants within the waters of the creek or by the encroachment of greenhouses adjacent to the riparian cover habitat. As discussed above, except for two parcels adjacent to Arroyo Paredon, all proposed greenhouse development is located outside of any viable riparian habitats and therefore would not encroach into wildlife corridors.

Another potential problem associated with greenhouse location is the use of night lighting and the spillage of such light outside the greenhouses, which could affect nocturnal migrations. However, the majority of existing greenhouses in the valley use blackout curtains. Impacts associated with wildlife movement pathways resulting from encroachment into riparian corridors are considered less than significant (Class III); however, impacts from new greenhouse development related to night lighting effects are considered potentially significant (Class II).

5.8.3 Mitigation Measures

a. Existing Comprehensive Plan/Coastal Plan Policies. Existing policies that would partially mitigate potential biological impacts of the proposed Carpinteria Valley ordinance amendments and the resulting additional three million square feet of greenhouse development include the Local Coastal Plan policies related to the protection of wetland habitats, creeks, riparian habitats, and water quality. The policies are identified in Section 4.0 (Policy Consistency) and include provisions for setbacks from creeks and riparian habitats, prohibit discharges of pollutants into coastal waters and creeks, and protect wildlife habitat and migration routes. Other agency regulations (e.g., Army Corps of Engineers, US Fish and Wildlife, and California Department of Fish and Game) would also address impacts on the resources identified above where such agencies require review of specific development projects where biological resources may be affected.

b. Proposed Development Standards. No specific development standards are proposed to address impacts to biological impacts. However, development standards proposed in other sections of the EIR have been identified which will also address impacts to biological resources. These development standards include Mitigations W-1, F&D –1 and F&D-2.

Refer also to *Section 5.2, Flooding and Drainage* regarding drainage and erosion control, *Section 5.3, Water Quality and Groundwater* regarding runoff containment, and *Section 5.4, Land Use* for additional discussion on the Carpinteria Valley's greenhouse industry shift in pesticide use ~~and proposed development standards designed to address pesticide use and storage~~.

c. Additional Proposed Mitigation Measures. No additional mitigation measures are proposed to address impacts to biological impacts. However, mitigation measures proposed in other sections of the EIR have been identified which will also address impacts to biological resources. These mitigation measures include F&D-3, VIS-~~1~~2, VIS-4, ~~VIS-5~~ and W-2, and W-4 through W-7.

5.8.4 Residual Impacts

The following discussion identifies the level of significance for project impacts after all available mitigation measures have been applied.

Impact B-1. With ~~the application~~incorporation of the mitigation measure regarding siltation and sedimentation, potential impacts to aquatic biological resources in the creeks, Carpinteria Marsh, and adjacent ocean intertidal zone would be reduced to a Class II, *significant* but mitigable level.

Impact B-2. With incorporation of Mitigation Measures ~~*SW-1 (a)* through *SW-1 (g)*~~*W-2,* and *W4* through *W-7*, in *Section 5.2, Water Quality and Groundwater*, potential impacts to aquatic biological resources would be reduced to a Class II, *significant* but mitigable level.

Impact B-3. Adoption of the proposed mitigation measures related to curtailing stormwater runoff pollutants from parking lots would reduce potential impacts to aquatic biological resources to a Class II, *significant* but mitigable level.

Impact B-4. With implementation of Mitigation Measures ~~*SW-1 (h)*~~ *W-2, and W-4 through W-7* of *Section 5.2, Water Quality and Groundwater*, and *F&D-1* of *Section 5.3, Flooding and Drainage*, the biological resources of Carpinteria Marsh would not be expected to be significantly impacted. Thus, this is impact is considered Class II, *significant* but mitigable.

Impact B-5. No significant effects were identified; this ~~is~~ impact is considered Class III, *less than significant*.

Impact B-6. Implementation of mitigation measures VIS-2 and VIS-4 ~~(a & b)~~ regarding the shielding of interior and exterior lights would further assure that impacts to nocturnal wildlife movement would be Class II, *significant* but mitigable.

5.8.5 Cumulative Impacts

Significance criteria for cumulative impacts to biological resources are based upon:

- *The cumulative contribution of other approved and proposed projects to fragmentation of open space in the project vicinity;*
- *The loss of sensitive habitats and species;*
- *Contribution of the project to urban expansion into natural areas; and*
- *Isolation of open space within the proposed project by future projects in the vicinity*.

The portions of the study area that could be further developed with greenhouse development under the proposed zoning changes are characterized by urbanization or agriculture. Conversion of the open fields to greenhouse use would not increase the fragmentation of significant viable biological habitat. The conversion would likewise not destroy or reduce sensitive habitat or species. Thus, these impacts are considered ***Class III, less than significant* impacts**.

However, various practices associated with greenhouses (i.e. irrigation process water discharge) may have the potential to cause cumulative water quality impacts, thereby impacting plant and animal species in the Carpinteria Marsh and the adjacent ocean intertidal zone. With implementation of the mitigation measures included in this section and in *Section 5.2, Water Quality and Groundwater*, these potential impacts would be mitigated to ***Class II, significant but mitigable*** **levels**.

Cumulative development of residential, commercial, and industrial projects in the County of Santa Barbara and the Carpinteria Valley are anticipated to increase the inputs of nutrients, pesticides, and other pollutants into the receiving waters in the vicinity. Although the identified mitigation measures would help to improve the water quality related to the construction of new greenhouses and related development, they would not ensure that the cumulative effects on biological habitats from development throughout the Carpinteria Valley would not result in significant water quality related impacts to the Carpinteria Marsh ecosystem. Therefore, cumulative impacts to biological resources are considered ***Class I, significant and unavoidable***.