

4.0 ENVIRONMENTAL CONSEQUENCES AND MITIGATION MEASURES

The analysis of environmental impacts and proposed mitigation measures presented in the following sections of this document are based on preliminary project design and current environmental information and circumstances. Technical reports were prepared as part of the environmental studies for the proposed action. These reports analyzed existing conditions and identified potential impacts for the Preferred Alternative (Freeway - Central Alignment Alternative) and the other Freeway and Tollway build alternatives. This section summarizes the findings of these reports and incorporates information that may be more current than the information contained in the final technical studies.

As discussed in Chapter 2, the Freeway and Tollway alignment alternatives consist of six lanes and include right-of-way (ROW) for two additional (future) HOV lanes. The Tollway alignment alternative footprints are analogous to the Freeway alignment alternative footprints, the only difference being the additional ROW required to accommodate the Tollway's toll booths and administration facilities. Therefore, the engineering plans for the Tollway alignment alternatives were not updated since the Route 905 DEIS/DEIR was circulated. The Department was, nevertheless, able to assess impacts and infer the locations and extent of the additional Tollway impact footprint by using the previous differences between the Freeway and Tollway alternatives within the DEIS/DEIR. This allowed the Department to reduce the number of graphics for the reader's convenience; separate figures that once depicted impacts for the Tollway and the Freeway were combined into one graphic for the FEIS/FEIR.

The following technical reports were prepared for the DEIS/DEIR.

Air Quality, Geier & Geier Associates; June, 1999.
Biology, Helix Environmental Planning, Inc.; March, 1999.
Biology-Addendum, Helix Environmental Planning, Inc.; February, 2000
Biology-Addendum, Helix Environmental Planning, Inc.; March 2000
Wetland Delineation, Helix Environmental Planning, Inc.; April, 1999.
Cultural Resources, Gallegos & Associates; February, 1999.
Noise, Geier & Geier Associates; May, 1999.
Socioeconomic, Helix Environmental; June, 1999.
Socioeconomic-Addendum, Helix Environmental Planning, Inc.; September, 2000
Draft Relocation Impact Study, CIC Research, Inc.; March, 1999.
Visual, KTU+A; June, 1999.
Hazardous Materials, Ninyo and Moore; April, 1999.
Location Hydraulic Study, Caltrans; March, 1999.
Geotechnical, Ninyo and Moore; February, 1999.
Hydrology, Sutherlin Consulting Service; April, 1999.
Transportation, Urban Systems Associates, Inc.; June, 1999.
Water Quality/Erosion, Helix Environmental Planning, Inc.; February, 1999.
Paleontology, San Diego Natural History Museum; February, 1999.
Major Investment Study, Helix Environmental Planning, Inc.; June, 1999

The following technical reports were updated/finalized for the FEIS/FEIR.

Socioeconomic, Helix Environmental; April, 2004.
Final Relocation Impact Study; January, 2004.
Biology-Addendum, Helix Environmental Planning, Inc.; March 2004
Wetland Delineation, Helix Environmental Planning, Inc.; January 2004
Wetland Mitigation Plan, April 2004
Noise Abatement Decision Report, April 2004
Cultural Resources, 2004.

They are incorporated by reference into this FEIS/FEIR.

The FEIS/FEIR and these study reports are available at the following locations:

Caltrans District – 11
2829 Juan Street
San Diego, CA 92186

City of San Diego – Central Library
820 E Street
San Diego, CA 92101

Otay Mesa – San Diego Branch Library
3003 Coronado Avenue
San Diego, CA 92154

San Ysidro – San Diego Branch Library
101 West San Ysidro Boulevard
San Diego, CA 92173

South Chula Vista Library
389 Orange Avenue
Chula Vista, CA 91911

4.1 GEOLOGIC HAZARDS

The most notable geotechnical hazards which have the potential for affecting any of the build alignment alternatives include surface rupture at potentially active fault crossings, strong ground motion generated from onsite and nearby active and potentially active faults, and slope instabilities. Somewhat less important conditions, which the project will need to address during design include expansive soils, corrosive soils, erosion, and soil settlement. Geotechnical hazards are nearly identical between the build alignment alternatives. The most notable differences between the alignment alternatives are that more extensive design measures may be required under the Tollway Alignment alternatives since structures (tollbooths, utility structure, administrative building) are more sensitive to subsurface soil movement than roadway surfaces or embankments.

The maximum credible earthquake and maximum probable event likely to affect the project area vary depending on the information source, but the California Seismic Hazard Map indicates a

maximum credible earthquake magnitude of 7.0 for the fault trace nearest the project while available information suggests that a seismic event probability of less than 0.01/year is applicable to the project.

Potential surface rupture from movement along splays of the La Nacion fault is a higher concern for the two South Alignment alternatives, since two fault splays have been mapped adjacent to, and crossing this alignment alternative. All six alignment alternatives will cross over the undocumented fills adjacent to Heritage Road, however, the two North Alignment alternatives have a larger area underlain by undocumented fill. The two Central and two South Alignment alternatives cross over documented fill at Heritage Road, which appears to be exhibiting signs of settlement as evidenced by longitudinal cracking of the existing paved roadway surface. The two North Alignment alternatives bypass this area. Potentially compressible soils (documented and undocumented fill) is a consideration for all alignment alternatives in this area, as well as at the "Tripp Landfill."

The presence of adverse geotechnical conditions with the potential for affecting the project does not preclude the construction of any of the alignment alternatives. Standard design measures (the use of Department Standard Specifications) and the use of other relevant construction practices and codes, will eliminate or reduce the effects of these potential hazards. A detailed geotechnical evaluation, consisting of subsurface exploration, laboratory testing, and engineering analyses, will be performed during the latter design phases of the project, so that appropriate geotechnical design parameters and measures can be formulated. The potential impact of strong ground motions on proposed structures can be mitigated through enhanced reinforcement, increased concrete strength, seismic damping members, and other recognized techniques. Slopes with the potential for failure from both static and seismic forces can be reduced in height and/or inclination, or stabilized through the construction of buttresses and walls. Surficial slope instabilities and slope erosion can be reduced by constructing terrace drains and brow ditches and by planting deep- and shallow-rooted, drought tolerant vegetation. Expansive and compressible soils, which have a potential for impacting the proposed improvements, may be removed or possibly mitigated through the construction of deep and/or specially reinforced foundations. Corrosive soils may be mitigated by removing the corrosive soils or by using materials insensitive to corrosive conditions, such as plastic.

4.2 PALEONTOLOGY

Portions of the Study Corridor are underlain with geologic deposits that contain high-sensitivity paleontological resources. These resources include the San Diego Formation and the Otay Formation. The San Diego Formation is confined to canyon and mesa slopes within the West Segment of the Study Corridor and to slopes within Spring Canyon in the Middle Segment. The Otay Formation is exposed in the West Segment of the Study Corridor below outcrops of the San Diego Formation. These resources are known to include diverse and well-preserved fossil assemblages of marine vertebrates and invertebrates in the Pliocene-aged (2-3 million years old) San Diego Formation and well-preserved fossil assemblages of terrestrial vertebrates in the Oligocene-aged (30 million years old) Otay Formation. Portions of the Study Corridor are also underlain by geologic deposits that contain moderate-sensitivity paleontological resources. These resources are known to include usually poorly preserved fossils of marine invertebrates and rare fossil remains of terrestrial mammals in the Pleistocene-aged (1-2 million years old) Lindavista Formation.

Evaluation of the potential for negative impacts to paleontological resources is done by superimposing the construction footprint on geologic maps showing the areal distribution of high- and moderate-sensitivity resources. The proposed construction footprint for each alignment alternative represents the maximum possible horizontal area of potential impact and does not necessarily reflect the extent of actual, direct excavation impact on paleontological resources. The areas of direct excavation impact are more limited and occur in sections where grading will produce cut slopes in excess of 4 meters (13 feet) in depth. Burial of sensitive paleontological resources is not assessed as an impact to those resources; only cuts through these materials will be impactful. All of the alignment alternatives have potential impacts to high- and moderate-sensitivity paleontological resources. In those locations where grading operations will cut deeply into the San Diego, Otay, and Lindavista formations, the fossil remains will be physically destroyed.

The Tollway Alignment alternatives would have a large impact footprint and correspondingly large volume of grading, due to the inclusion of the toll facilities. The depth and volume of grading impacts for the Tollway Alignment alternatives would be more than the Freeway Alignment alternatives.

The No Build Alternative will not impact paleontological resources.

Mitigation Measures

For the Preferred Alternative, potential impacts caused by grading will be mitigated by the Department through implementation of a comprehensive program of construction monitoring, fossil salvage, fossil preparation, fossil curation, fossil storage, and summary report preparation. The mitigation program will be identical for all build alignment alternatives. Details of the program are as follows:

- A qualified paleontologist will be at the pre-construction meeting to consult with the grading and excavation contractors concerning excavation schedules, paleontological field techniques, and safety issues.
- A paleontological monitor will be on-site at all times during the original cutting of previously undisturbed deposits of high sensitivity formations (San Diego Formation and Otay Formation) to inspect exposures for fossils. A paleontological monitor will be on site on a half-time basis to inspect cuts in moderate sensitivity formations (Lindavista Formation). In the event that fossils are discovered in moderate sensitivity formations, it may be necessary to increase the amount of monitoring time. Conversely, if fossils are not being found in these rock units, the monitoring may be reduced. Mitigation and monitoring will not be necessary when grading occurs in areas of low or zero sensitivity (Quaternary alluvial deposits, Quaternary stream terrace deposits, and artificial fill materials).
- When fossils are discovered, the paleontologist (or paleontological monitor) will recover them. In most cases, this fossil salvage can be completed in a short period of time. However, some fossil specimens, such as a complete large mammal skeleton, may require an extended salvage period. In these instances, the paleontologist (or paleontological monitor) will be allowed, using the assistance of the project's Resident Engineer, to temporarily direct, divert, or halt grading to allow the recovery of these large fossil remains. Because of the

potential for the recovering of small fossil remains, such as isolated mammal teeth, it may be necessary to set up a screen-washing operation on the site.

- Fossil remains collected during the monitoring and salvage portion of the mitigation program will be cleaned, repaired, sorted, and cataloged.
- Prepared and cataloged fossils, along with copies of all pertinent field notes, photos, and maps, will be deposited (as a donation) in a scientific institution with permanent paleontological collections, such as the San Diego Natural History Museum. Appropriate steps for curation will be taken.
- A final report will be completed by the qualified paleontologist summarizing the results of the mitigation program. This report should include discussions of the methods used, stratigraphic section(s) exposed, fossils collected, and significance of recovered fossils. The report should also contain an inventory of all cataloged fossil remains.

While sensitive resources may be encountered during project grading, the recovery of these resources for scientific study will minimize potential impacts.

4.3 HYDROLOGY/DRAINAGE

Each of the alignment alternatives have similar impacts upon hydrology and drainage. There will be no modifications of water bodies, relocations of streams, or effects on stream uses. There will be minor impacts to the drainages (some of which are classified as Waters of the U.S.) in Spring Canyon (covered in Section 4.10.1, Biological Resources). Standard drainage design will maintain normal flow in these drainages and ensure there is no substantial increase in erosion. Numerous pipes and culverts will be required to convey storm waters through the project corridor. There will also be a need for detention basins, all of which will be located within the proposed project footprint or disturbance limits.

The project will cause increased runoff as the impervious area of the road replaces the natural surface. The Hydrology Study used the Modified Rational Method for all drainage basins in this study to determine peak flow rates. The Modified Rational Method estimates the travel time for rainfall to flow from the uppermost subarea in a drainage basin to a specific concentration point. The method then continues routing the flow through each downstream subarea, determining confluence flows where necessary, until the resulting peak flow and time of concentration at the area's outlet point are reached. The Soil Conservation Service's Unit Hydrograph was used in conjunction with peak runoff values from the Modified Rational Method to determine the retention volumes for sizing the detention basins. This analysis shows that with standard drainage design and construction of detention basins, the increase in runoff will be mitigated, for all alignment alternatives, to the point where the runoff flow rates will not exceed those coming from the area currently. The project will therefore not cause any substantial impact to drainage, and no extra mitigation measures are proposed.

The proposed improvements along I-805 between Route 905 and Palm Avenue will cause a minor increase to the current runoff. Runoff from this area can be left in current flow paths (it enters the current storm drain system) without improvement. The increase for this area is negligible and should cause no measurable impact to the downstream system.

Improvements to the area between Airway Road and the POE on existing Route 905 will match much of the existing roadways already in place. The increase to runoff caused by improvements in this portion of the project were included in the design of the detention basin built as part of the Siempre Viva Interchange Project.

The off-site runoff is expected to be similar for each of the build alignment alternatives.

The Tollway Alignment alternatives would cause a slight increase in on-site runoff due to a larger area of impervious surfaces near toll plazas, administration buildings, parking areas, and other toll-related facilities. The potential increase of flow would require minor additions to the capacity of the detention basin.

With the No Build Alternative, increases in the amount of runoff would be expected to continue to increase, due to the planned, future developments on Otay Mesa. Each proposed development is now required to meet International Boundary Water Commission (IBWC) recommendations to reduce proposed runoff conditions back to pre-development conditions for runoff peaks.

Considerations for Final Design

The IBWC recommended (December 2000 and October 2001) that any increase in stormwater runoff flow rates and volumes caused by development in the Otay Mesa area be reduced so that prior to development existing flow conditions are not exceeded and that project sponsors provide assurances that the appropriate jurisdiction's requirements to guard downstream properties from flows greater than those in predevelopment conditions. The IBWC delegated authority to the City of San Diego to monitor the development of the Otay Mesa area.

Because of the planned developments that will be constructed on Otay Mesa, storm water runoff will continue to increase. Each proposed development is required to satisfy the local agencies drainage design criteria and be consistent with the regional drainage masterplan. In order to meet these recommendations, mitigation (such as detention basins), may be needed to reduce runoff generated from this project. Route 905's final design features will meet the criteria outlined by the City and IBWC. These design features will have the capacity to detain the increase in flow. Facility outlets will be designed so as to not increase the flow rate from 5-, 10-, 25-, and 50-year flood events. As a result of these design measures, the flows associated with a 100-year flood flow rate will also be detained.

Detention storage is short-term storage, which reduces the peak outflow to a rate less than the peak inflow and thereby lengthens the time of the basin runoff. The total volume of stormwater discharged is the same, it is simply distributed over a longer duration. The location and nature of storage basins will be determined during final design. Basins will be located to avoid impacting environmentally sensitive areas such as vernal pools. Conventional detention basins are designed not only to provide the needed reduction in flow characteristics, but to provide some degree of water quality improvement. These basins are left in a "natural" condition to reduce erosion potential and promote infiltration. A basin constructed as such has dirt side slopes and a dirt bottom which may be planted with grasses. These detention facilities are included as an engineering/hydraulic element of the proposed project, and are not intended to provide mitigation for other project impacts. Any incidental vegetation which occurs will be consistently cleared during periodic and necessary maintenance procedures. The "soft-bottom" condition will allow initial storm water to infiltrate the ground where soil conditions permit, thereby providing

“first flush” capability and helping to prevent contaminants from flowing into the downstream watershed.

4.4 WATER QUALITY

The proposed Route 905 project could result in a number of impacts related to water quality and the beneficial uses discussed in Section 3.5 of this FEIS/FEIR and also in the San Diego Basin Plan produced by the Regional Water Quality Control Board (RWQCB). Designated beneficial uses within the Study Corridor are non-contact water recreation, warm freshwater aquatic habitat, wildlife (terrestrial) habitat and habitat for rare, threatened, or endangered species. The potential aforementioned impacts (both short-term [construction] and long-term [operational]) include erosion/sedimentation, existing on-site and construction-related hazardous materials, traffic-related hazardous materials spills, disposal of groundwater extracted during construction (if required), and the generation of contaminants from vehicle operation and roadway maintenance (e.g., landscaping-related irrigation and pesticide/herbicide/fertilizer use). Beneficial uses of both surface water and groundwater resources will be affected by all of the build alternatives.

The Freeway and Tollway Alignment alternatives have negligible differences in water quality impacts. Potential impacts would be slightly greater for the Tollway Alignment alternatives due to the small increase in the total area of disturbance.

Differences in the level of impact between the Freeway and Tollway North, Central, and South alignment alternatives are negligible as each of the alignment alternatives will have erosion and sedimentation potential due to the extent of grading and construction associated with the bridges proposed within Spring Canyon.

Constructing any of the alignment alternatives will impact an unpermitted inactive landfill (Tripp Landfill). This impact may release constituents of concern (e.g. metals, organics) and, in turn, could impact the beneficial uses of downstream waters and groundwater. As discussed in detail in Section 4.12, a mitigation plan for the Tripp Landfill site will be implemented prior to project construction and pursuant to direction from those applicable regulatory agencies.

The No Build Alternative would not have construction impacts, however, the redistribution of increasing traffic on local roads in the long term would cause an increase in vehicle-generated contaminants.

Measures to Minimize Water Quality Impacts

The Department routinely uses a number of standard specifications and requirements related to water quality for its roadway development projects, including: stormwater pollution prevention guidelines, environmental assessment guidelines, procedures for conducting water quality technical assessments, and estimating highway runoff. In addition, the Department was issued an approved National Pollution Discharge Elimination System (NPDES) Storm Water Permit by the Regional Water Quality Control Board on July 15, 1999. Permit conditions include the adoption of a Storm Water Management Plan (SWMP), which was completed by the Department. The Department also formulated a series of Storm Water Quality Handbooks, which provide guidelines for planning, design, construction, and maintenance activities as they

relate to storm water quality management. In accordance with this guidance, preparation and implementation of a Storm Water Pollution Prevention Plan (SWPPP) will be necessary.

Compliance with the Department's July 15, 1999, NPDES permit (issued by the RWQCB, Order 99-06-DWQ, CAS000003) and all the guidelines and manuals that were produced as a result of the permit will help prevent or minimize impacts to water quality. These guidelines include but are not limited to, the SWMP, the Storm Water Quality Handbooks, and standard specifications. These guidelines will allow conformance with the San Diego Basin Plan water quality objectives and beneficial uses. This would be achieved by using temporary and permanent BMPs. Potential temporary BMPs include fiber rolls, hydro-seeding, temporary drainage inlet protection, construction entrance, preserve existing vegetation, scheduling, stabilized construction entrances, temporary concrete washout and material delivery and storage. Potential permanent BMPs will include vegetating all disturbed slopes, implementing biostrips or bioswales, and detention basins. These BMPs would be used to prevent pollutants from entering the Waters of the United States.

Any potential impacts relative to the disposal of extracted groundwater will be effectively avoided or mitigated through conformance with a Dewatering Waste Discharge Permit, that will be reviewed and issued when the state takes possession of the affected properties. Such conformance will ensure that the Basin Plan water quality standards are met and that existing beneficial uses will continue unimpaired.

All impacts from construction related erosion and sedimentation, as well as facility operation, will be effectively avoided or mitigated through implementation of the Department SWMP, the guidance provided in Storm Water Quality Handbooks, the standard specifications and special provisions, and the applicable BMPs. BMPs may include such measures as preserving existing vegetation, mulching, use of diversion and drainage structures, use of sediment containment structures, and use of retention/detention basins.

No further measures are needed.

4.5 SOCIOECONOMIC IMPACTS

4.5.1 Relocation

The following is a discussion of the proposed project's displacement impacts. In the Route 905 DEIS/DEIR, relocation information was summarized from the Draft Relocation Impact Study (DRIS), and two addenda, dated February 8 and March 16, 2000. For this FEIS/FEIR, the DRIS and its addenda were updated and a Final Relocation Impact Study (FRIS) was completed. Interviews with potential displaces were conducted only for the DRIS.

Residential and business displacements can have adverse effects on the displaced individuals, as well as on the community and affected neighborhoods. The ability of groups or individuals to handle the disruption and change in living conditions brought about by relocation is often subjective. Nonetheless, it is recognized that displacement impacts to individuals and families can occur and may result in the severance of established relationships and patterns of interactions. The elderly, disabled, minorities, and children of school age may experience a variety of problems adjusting to relocation; including anxiety and difficulty establishing new

friendships. Persons who have resided in an area for a long period of time, or are homeowners, tend to experience a greater sense of loss when compelled to relocate.

All of the build alternatives will require the acquisition of new right-of-way. Right-of-way issues include impacts to residences, businesses, and existing utilities.

Residential Displacements and Relocations

All of the residential properties impacted by the proposed project are located along Cactus Road (please see Figure 4-1). Please see Figure 4-19 for an aerial photograph of the residences in the Cactus Road area.

With respect to 1704 and 1812 Cactus Road, all of the build alternatives have similar partial residential impacts; 1704 and 1812 Cactus Road could potentially lose a portion of their driveways to Cactus Road. Both of these residences also have associated businesses. Access to these residences will be restored.

1708 Cactus Road (Figure 4-1, Location #1) is a residential property that consists of an owner-occupied single family residence with an attached chapel and two detached dwelling units: 1708B and 1708C (mobile homes) (Figure 4-1, Location #2) which appear to be tenant occupied.

The chapel is advertised as the “Chapel of Good News.” This is considered a non-conforming use which represents an existing land use that is in conflict with the appropriate local jurisdiction's land use designation. Therefore, the chapel will most likely have to operate separate from the residence if relocation becomes necessary. It is assumed that the residence and chapel can be separated. It will be difficult to relocate with all of the uses intact.

In this case, the Uniform Relocation Act does not require the chapel to be relocated together, however, the Department will attempt to find suitable relocation sites if available and should the owner request it. The residences will be difficult to replace in the immediate Otay Mesa area. Replacement housing will most likely have to be in nearby San Ysidro or Otay Nestor areas. Although these replacement areas include comparable dwellings, the displaced residents may experience a life style change because the location is more urban compared to the current rural character of Otay Mesa. The character of Otay Mesa is changing, however, as rapid urbanization is taking place.

The Preferred Alternative and the other two Freeway alignment alternatives will not require the relocation of 1708, 1708B, or 1708C Cactus Road. They all incorporate a retaining wall which will allow a partial acquisition and allow the residents to remain in occupancy and the chapel to continue with its services. The three Tollway alignment alternatives would necessitate the full acquisition of this parcel due to direct impacts.

1724 Cactus Road (Figure 4-1, Location #3) is a tenant occupied single-family residence that rests upon a very large parcel (1.29 hectares [3.2 acres]) and is owned by an individual who purchases and then stores vehicles on the parcel on a temporary basis. All of the build alternatives will necessitate the full acquisition of this parcel due to direct impacts. The combination of this residence and large lot could be a challenging relocation, but not necessarily an unusual one.

Business Displacements

The Preferred Alternative will, and the other Freeway and Tollway alternatives would, necessitate the part take of three businesses: a batch yard; various auto businesses (located on one parcel owned by one individual); and a storage facility that is under construction. In addition, the Preferred Alternative will, and the other Freeway and Tollway alternatives would, necessitate the full relocation of three additional businesses: a recycling yard, six industrial condos, and a truck distribution center.

A portion of a batch plant located at 1696 Cactus Road (Figure 4-1, Location #5) will be needed in order to construct the proposed project. Despite the need for this partial acquisition, the batch plant operations will not be impacted since vital operations are not located in the area needed for project right-of-way. The relocation will likely involve minor personal property only.

On Saint Andrews Avenue, there is a 6.9 hectares (17.25 acres) parcel that is subdivided into 11 car-related businesses. Although a small portion of this property will be needed for the proposed project, the businesses operating on this parcel should remain intact and will not be impacted. Again, only minor personal property may need to be relocated to the remainder.

The Otay Crossing Self Storage (under construction at the time the FRIS was produced), at the corner of Harvest and Airway Roads, will be impacted by the project; the two-story office structure is located within the proposed right-of-way. Although the FRIS noted that it was not possible to determine if the business could continue to operate with this impact, it concluded that the acquisition will only be partial in nature.

Cactus Recycling, located at 1703 Cactus Road (Figure 4-1, Location #4), is situated upon a 2.5 hectares (6.2 acres) lot. Based on a field inspection conducted for the DRIS, this business utilizes the entire lot. Available data indicates the displaced business will have adequate replacement resources available in Otay Mesa, however, most of the identified available properties are in established business parks, which may not rent to this unique type of business. The FRIS concluded that the acquisition will be partial in nature; however, a full relocation of the business operations is anticipated due to the proposed project's right-of-way requirements. The nature of this business may require a longer lead time in order to find a suitable replacement site.

6700 Gateway Park Drive (Figure 4-1, Location #6) is a new industrial condominium complex consisting of six units (one has been sold while the remaining are currently available for sale or lease). Due to the project's right-of-way requirements, this business will be relocated from its present location on the east side of Heritage Road.

Adjacent to 6700 Gateway Park Drive (Figure 4-1, Location #7) is a truck distribution center for General Electric. Due to the project's right-of-way requirements, this business will be relocated from its present location on the east side of Heritage Road.

The first DRIS Addendum identified the Martin Furniture factory on St. Andrews Avenue as a full-take acquisition. This relocation will have represented an expensive and time-consuming effort. The relocation of the Martin Furniture factory has since been avoided via an alignment variation. The alignment variation involves an 8-meter (24 feet) project shift to the south. This alignment shift to the south also avoids partial impacts to businesses immediately west and east

of Martin Furniture. A man-made drainage ditch will be impacted by this southerly alignment shift. This drainage impact is discussed within the biological resources section of this document. This minor design change is also included in the appropriate updated graphics.

Finally, seven additional will be partially impacted by all of the build alternatives, however, relocations are not anticipated as a result of these impacts. These partial acquisitions will require minimal property rights and alteration or loss of existing access points. If access is altered or eliminated, sufficient access will be maintained or new access restored.

Replacement Resources and Mitigation Measures

The replacement area used for residential and non-residential resource analysis includes the Otay Mesa/San Ysidro zip code 92173 (displacement area) and the Otay Nestor area (zip code 92154). Relocation resources exist within the area for all displacements, however, adequate lead-time to locate replacement resources will be necessary. The magnitude of disruption to displaced residents and businesses will be diminished by the Department's Relocation Assistance Program. This minimizes impacts in an economic sense; it may not minimize the loss of social ties and upheaval experienced by the displacees forced to relocate.

For those displaced, relocation assistance payments, moving costs, and counseling will be provided in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended (Uniform Act). A summary of important relocation assistance information covered by the Uniform Act is included in Appendix B. Eligible displacees will be assisted by a Relocation Assistance Advisor to ensure that they are relocated to decent, safe, and sanitary homes and that all benefits of the Relocation Assistance Program are made available to them. All benefits and services will be provided equitably to all residential relocatees without regard to race, color, religion, age, national origins, and handicap as recorded under Title VI of the 1964 Civil Rights Act (see Appendix B). Eligible tenants will also be entitled to certain supplemental payments to compensate for increased rents or payments for a portion of a down payment on a home. Eligible homeowners will also be entitled to certain supplemental payments to compensate for increased cost of replacement homes over and above the amount received for their homes, increased interest costs, and certain other expenses.

The replacement areas discussed were selected as the most comparable replacement areas because of compatibility of community facilities, population characteristics and close proximity to the displacees' current residence/business. The San Ysidro and Otay Nestor areas were added because of the limited residential resources found in Otay Mesa. Market availability of replacement resources are expected to be available through the time of displacement for all alignment alternatives. Adequate lead-time to locate replacement resources will be essential given the current vacancy rate limitations.

At the time the FRIS was produced, there were 49 residential relocation resources available for all displacees (owners and renters) within the Otay Nestor and San Ysidro communities (92173 and 92143 zip code area). This determination was made using the San Diego Union Tribune classifieds, housing web sites, and the San Ysidro and Otay Mesa Chambers of Commerce.

The analysis for the project alignment alternatives assumes a relocation schedule of one year. Normally an 18- to 24-month period will be needed to accomplish the relocation of residents and

businesses. Expediting the relocation process will be difficult, but it is expected to be achievable.

Given the low number of displacements necessitated by the Preferred Alternative and the mitigation measures discussed above, the relocation impacts are not considered substantial.

4.5.2 Local and Regional Accessibility

Otay Mesa Road provides primary access for area residents to the San Diego region and local public services. Accessibility within Otay Mesa is currently constrained and congested, however, some short-term improvements have been implemented by the City of San Diego Otay Mesa Road widening project. Residents and businesses will benefit from the construction of Route 905, due to safer and more convenient vehicle travel. Congestion will be substantially reduced by all build alternatives. The Freeway and Tollway Alignment alternatives would provide acceptable traffic conditions through the year 2025. Temporary impacts to local residents' vehicular access and circulation will occur during construction. Responsibility for maintaining access to new schools and parks as part of the planned development will be the responsibility of the developers. The proposed project is considered a compatible land use with existing and planned public facilities in the vicinity, and it will improve accessibility for public services.

The No Build Alternative will not improve the safety of residents' access to local services and the region. Impacts to existing public services or public facilities that will occur as a result of any of the alignment alternatives will be minimized.

Mitigation is not considered to be necessary.

4.5.3 Community Cohesion and Character

The project will neither separate residents from existing neighborhoods nor from public services and facilities, most of which are located out of the area. None of the alignment alternatives will substantially alter the current physical arrangement of the area. Vehicular access will be maintained, during construction and ultimately enhanced for residents and businesses for all build alternatives.

The proposed project will have minimal impact on the overall character of the area. This project is an integral part of the ongoing development and future urban conversion of this area. This transition is governed by the Otay Mesa Community Plan and East Otay Mesa Specific Plan. The No Build Alternative will not result in changes to the existing character of the area.

Mitigation is not considered to be necessary.

4.5.4 Public Safety and Health

The construction, operation, and use of major transportation facilities like the proposed Route 905 involve potential accident risk. Construction of Route 905 will contribute to the improvement of the health, safety, and welfare of the area's residents by reducing the high accident rate and traffic-related fatalities associated with Otay Mesa Road. One particular safety issue shared with other highway segments in San Diego County near the International Border is

the crossing of highways by pedestrians. In the past, those killed or injured have been undocumented immigrants from Mexico or Central America who attempted to cross freeways in an effort make their way north and avoid detection by the Border Patrol.

It is difficult to predict if or where along the proposed Route 905 alignments safety risks will develop. Response times for emergency services will not be adversely affected as no existing or future cross streets will be closed during construction. On-site detours will not require the re-routing of traffic. Traffic levels are forecast to increase over time with or without the project, and studies indicate future local street traffic will improve in Otay Mesa, particularly along Otay Mesa Road, with the proposed project.

No Build Alternative

With the projected increase in traffic volumes, the number of accidents and the severity of occurrences on local streets could increase under the No Build Alternative. Pedestrian and bicycle safety could be affected. As future traffic increases occur, it may become appropriate for local jurisdictions to focus efforts on identifying signalized crossing locations, speed limits, fencing, and other measures. Mitigation will be the responsibility of local agencies.

4.5.5 Environmental Justice

All federal agencies and departments are directed to comply with Executive Order (E.O.) 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, signed by President Clinton on February 11, 1994. The E.O. directs federal agencies to take the appropriate and necessary steps to identify and address disproportionately high and adverse effects of federal projects on the health or environment of minority and low-income populations to the greatest extent practicable and permitted by law (low income is defined based on the Department of Health and Human Services poverty guidelines; for year 2003, this is \$18,850 for a family of four). The Department is committed to embracing the objectives of the E.O. and Title VI of the Civil Rights Act by promoting nondiscrimination in its programs, policies and activities that affect human health and the environment.

The Department of Transportation's Final Environmental Justice Strategy, published on June 29, 1995, outlines various goals and policies for achieving environmental justice in its projects and programs. Specifically, the objectives are to: (1) improve the environment, public health and safety in the transportation of people and goods, along with the development and maintenance of transportation systems and services; (2) coordinate transportation policies and investments with environmental concerns, with consideration of economic and social interests; and (3) consider the interests, issues, and contributions of affected communities, disclose appropriate information, and give communities an opportunity to be involved in decision making. The Department of Transportation and FHWA have issued the Department of Transportation Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (published in the April 15, 1997 *Federal Register*, Vol. 62, No. 72) and FHWA Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (FHWA Technical Advisory 6640.23, December 2, 1998) to ensure compliance with Executive Order 12898.

Each federal agency is required to provide opportunities for community input in the NEPA process, including identifying potential effects of and mitigation measures for projects, programs or activities they undertake. Local residents have been given opportunities during the

environmental process for Route 905 to participate in meetings and hearings. A public scoping meeting was held on April 10, 1995 to solicit input regarding project alignment alternatives and concerns, and a public information meeting was held on September 25, 1997 to update the public on the project alignment alternatives and the status of the impacts analysis. Two years prior to the public circulation of the DEIS/DEIR, project status updates were reported at monthly meetings of the Citizens for Border Transportation (CBT). The CBT was formed by the Otay Mesa Chamber of Commerce in 1990. This group monitors and supports the agencies involved in infrastructure planning and development on Otay Mesa. Flyers (in English and in Spanish) advertising the September 20, 2001 Public Hearing were posted in local markets, stores, health and educational centers, and nearby trolley station. Since the public circulation of the DEIS/DEIR, the Department attended monthly Otay Mesa Chamber of Commerce Transportation Committee meetings.

According to the 2000 Census, the demographic trends for the Otay Mesa area indicate that a smaller percentage of the residents are low-income and minority populations than during Census 1990. Data on population characteristics is presented in the April 2004 Socioeconomic Technical Study Addendum and is summarized in 3.6.6 of this document. The Hispanic component of the population in this area is still, however, greater than that within the San Diego regional population base as a whole (38.5% versus 26.7%). The median income in the area has increased and now exceeds the median for the County (\$60,400 versus \$47,067). Only 3.9% of the population are over the age of 65. Minority or low-income individuals are likely to be impacted (the impacts would be those associated with proximity) by the proposed project. However, these individuals are dispersed, and there does not appear to be an established community within the project corridor. Individuals on Otay Mesa would be similarly impacted by the project. The growth in the number of housing units in the area has occurred outside of the project Study Corridor. The amount of residential relocation for Route 905 is low and has remained unchanged since the socioeconomic technical study was prepared.

Local residents will benefit from the construction of Route 905. Route 905 will contribute to the health and welfare of the community by providing a safer alternative to Otay Mesa Road, which has historically had a high number of vehicle accidents, many involving pedestrians. The large volume of truck traffic on this roadway is a contributing factor. Other benefits will include improved accessibility, response times for emergency vehicles, and potential increased employment and construction wages. Residents were given opportunities to participate in the environmental process and comment letters were received from property owners within the Study Corridor and have been addressed in this document.

Based on the above discussion and analysis, Route 905 will not disproportionately impact low-income or minority populations as per E.O. 12898 regarding environmental justice.

4.6 LAND USE/LOCAL PLANS

The six build alignment alternatives have similar land use impacts. Figures 4-2, 4-3A, 4-3B, and 4-3C show the impact footprints of the alignment alternatives superimposed upon existing land uses. The most common impacted zoned land uses are undeveloped, agriculture, graded/developing, and light industrial. Construction of the proposed project will convert the listed land uses to transportation-related uses associated with Route 905. The Tollway Alignment alternatives will impact slightly more land than the Freeway Alignment alternatives due to the need for additional right-of-way for toll facilities.

Preferred Alternative

The permanent land use impacts of the Preferred Alternative total 189.9 hectares (469.2 acres) and include: 13.4 hectares (33.2 acres) of light industrial land use, 2.6 hectares (6.3 acres) of commercial land use, 1.0 hectares (2.4 acres) of airport open space, 3.0 hectares (7.4 acres) of mixed use, 19.0 hectares (46.8 acres) of graded and/or developing land, 87.1 hectares (215.2 acres) of undeveloped land, 25.9 hectares (61.7 acres) of agricultural land use, 38.7 hectares (95.7 acres) of roadways, and 0.2 hectares (0.5 acres) of utilities.

The undeveloped land includes: property between Old Otay Mesa Road and the northern finger of Spring Canyon; the southwest corner of the former Brown Field sewage treatment plant site; undeveloped land within Spring Canyon and south of the OCCS Preserve; vacant parcels between Heritage Road and Cactus Road; most of the impacted land between Cactus Road and La Media Road; area south of Otay Mesa Road and west of Piper Ranch Road; property between Interim Route 905 and Sanyo Avenue; and land northwest of Enrico Fermi Drive and Airway Road.

The agricultural areas that will be impacted are in the East Segment northwest of Airway Road/Interim Route 905 and southwest of Enrico Fermi Drive/Otay Mesa Road.

Graded and/or developing lands impacted include: parcels near the proposed Heritage Road/Route 905 interchange; a lot southeast of Pacific Rim Court; former agricultural land use east of La Media Road; land to the west of Interim Route 905 and immediately north of Airway Road; and several lots near Interim Route 905 intersection with Siempre Viva Road.

Light industrial uses include a truck container storage area east of Heritage Road; recently constructed industrial buildings east of Heritage Road; landscaping along the frontage of an industrial building west of Heritage Road; parking and loading areas along the southern edge of industrial developments that are south of St. Andrews Avenue and the existing drainage facilities along the south side of these buildings; a portion of a truck/container storage area at the southwest corner of Otay Mesa and La Media roads; a portion of an industrial property frontage east of La Media Road and north of Otay Mesa Road; a portion of a truck/container storage yard at the southeast corner of Airway and Harvest roads; and portions of the landscaping, flood control channel and parking lots for existing industrial developments within the proposed alignment, east of Sanyo Avenue. The areas between Heritage and Cactus roads and south of St. Andrews Avenue between Otay Mesa Center and La Media Roads contain new industrial development. Many of the truck/container storage uses were granted temporary use permits by the City of San Diego, pending approval of the Route 905 project.

Commercial property impacts include a minor impact to the southwest corner of a commercial property southeast of the Heritage Road/Otay Mesa Road intersection, as well as landscaped areas associated with existing commercial developments at the northwest corner of Siempre Viva Road/Interim Route 905 and on the east side of Route 905 just north of the U.S./Mexico border. Completion of Otay Mesa Road west of Harvest Road will also take a portion of the frontage of a commercial property along this road.

Although much of the Otay Water District storage yard is included within the project impact footprint, the only impacts that will occur are those to the landscaped edges of this property along Airway and Heritage roads, due to the widening of these city streets. Permanent impacts

the SDG&E power plant site will not occur. An undeveloped portion of the Calpeak property will be acquired.

Direct impacts would occur to four properties within the mixed use area along Cactus Road. These properties include a batching facility, recycling yard, and two residential properties, one of which has a church associated with it. One of the residences will be a full take, while the other properties in this location would involve partial takes. No direct impacts will occur to the existing San Ysidro High School or the recently constructed homes along the east side of I-805 and southeast of the I-805/Route 905 interchange. The construction work along I-805 will be completely within the existing right-of-way.

The proposed project could result in indirect, construction-related impacts to the new single and multi-family residential developments northeast and southeast of the I-805/Route 905 interchange, the San Ysidro High School, and the remaining homes along Cactus Road. Such impacts would primarily be associated with construction noise, dust and visual conditions and are not substantial.

Freeway - North Alignment Alternative

Within that area that will become permanent ROW, the impacts for the North Alignment Alternative would have totaled 182.3 hectares (450.4 acres). Specifically, the North Alignment Alternative would impact: 12.3 hectares (30.5 acres) of light industrial uses, 2.6 hectares (6.3 acres) of commercial uses, 2.7 hectares (6.6 acres) of airport open space, 2.9 hectares (7.0 acres) of mixed use, 18.5 hectares (45.8 acres) of graded and/or developing land, 80.1 hectares (197.8 acres) of undeveloped land, 25.9 hectares (61.7 acres) of agriculture use, 38.1 hectares (94.2 acres) of roadways, and 0.2 hectares (0.5 acres) of other public utilities.

The land use impacts of the North Alignment Alternative are generally similar to those of the Preferred Alternative described above; variations occur only in the Middle Segment of the alignment.

Freeway - South Alignment Alternative

Within that area that would have become permanent ROW, the impacts for the South Alignment Alternative would have totaled 186.8 hectares (461.5 acres). Specifically, the South Alignment Alternative would impact: 12.7 hectares (31.3 acres) of light industrial uses, 2.6 hectares (6.3 acres) of commercial uses, 0.6 hectares (1.5 acres) of airport open space, 2.8 hectares (6.9 acres) of mixed use, 17.5 hectares (43.2 acres) of graded/developing land, 86.9 hectares (214.6 acres) of undeveloped land, 25.9 hectares (61.7 acres) of agriculture land use, 38.7 hectares (95.6 acres) of roadways, and 0.2 hectares (0.5 acres) of other public utilities.

The land use impacts of the South Alignment Alternative are generally similar to those of the Preferred Alternative and North Alignment Alternative described above.

Tollway Alternatives

The construction of seven toll booths and two toll plazas along the Route 905 corridor, as well as administration and utility structures, would have increased the project footprint by an estimated 4 to 7 hectares (11 to 17 acres). This would not have substantially increased impacts to existing or

planned land uses, farmland, the social environment, fiscal and economic conditions, cumulative impacts, and growth inducement. Some differences in the impacts to existing land uses would have occurred, however. The Tollway alternatives would result in a wider project footprint between Heritage Road and Britannia Boulevard due to the construction of two buildings. A Route 905 utility building and associated parking lot between Heritage and Cactus roads would impact a greater area of undeveloped land and roadway, compared to Freeway alternatives. A Route 905 administration building and associated parking lot between Cactus Road and Britannia Boulevard would impact more undeveloped land and existing roadway than the Freeway alternatives. Additionally, a frontage road to provide access to the utility building from Cactus Road would increase the project impact on the mixed use land in that area. The Tollway alternatives would require the total acquisition of 1708, 1708A, 1708B, and 1724 Cactus Road. East of Britannia Boulevard, the wider footprint would potentially result in a larger take of the landscaping and parking facilities associated with the industrial buildings in this area.

No Build Alternative

There would be no impacts to existing land uses resulting from the No Build Alternative.

4.6.1 Consistency with Plans/Planned Land Use

City of San Diego plans have always included Route 905 and local jurisdictions have developed their land use plans with Route 905 in mind. Route 905 is shown on plans, including tentative maps, for specific development projects. The general alignment of the proposed project is consistent with these plans although the Route 905 alignment alternative anticipated in tentative and final tract maps for these developments is similar to the Freeway - South Alignment Alternative. A more detailed discussion for each build alignment alternative is provided below, with specific impacts to plans identified. Despite these minor impacts, it can be concluded that all build alignment alternatives are consistent with local plans.

The SANDAG 2030 Regional Transportation Plan (RTP) represents the comprehensive transportation plan for the San Diego region. The 2030 RTP includes Route 905 as a six-lane freeway. Therefore, the proposed project, including all alignment alternatives, is consistent with the Highway Element of this plan. The 2030 RTP does not mention a tollway, however the differences between the Tollway and Freeway Alignment alternatives are minor. Chapter 1 (Section 1.4, Transportation Plans) provides further details of the inclusion of the proposed project in state and regional transportation plans.

The City of San Diego - Otay Mesa Community Plan (Figure 3-3) represents the most applicable land use-planning document for the proposed project. This plan identifies Route 905 as a future freeway traversing the planning area. The alignment depicted on the Plan is conceptual and approximate with the full knowledge that the ultimate placement of Route 905 would only be decided after the close of the environmental process. The Route 905 project is consistent with this plan.

The County of San Diego's East Otay Mesa Specific Plan (Figure 3-4) includes Route 905 and has applicability to the northern part of the proposed 905/125 interchange and the local access ramp (LAR) to Enrico Fermi Drive. This plan identifies Route 905 as a future freeway traversing the planning area. The alignment depicted on the plan is conceptual and approximate with the full knowledge that the ultimate placement of Route 905 would only be decided after the

close of the environmental process. The LAR and the Route 905/SR-125 interchange is consistent with the planned land uses associated with the East Otay Mesa Specific Plan and neither will preclude the development depicted on the plan.

There are a total of 33 private development plans and proposals located within the Study Corridor (Figure 4-4). Each of these plans have tentative or final map approval and consist primarily of residential development in the western portion of the Study Corridor and industrial/commercial development in its remainder. These development plans, in addition to 11 public development projects, are described in detail in Appendix C.

Projects with master and specific plans reviewed for this project are also depicted on Figure 4-4. These include, but are not limited to, the following:

- Brown Field Airport Master Plan
- California Terraces (Ocean View Hills) Precise Plan
- Santee Investments Precise Plan
- Otay International Center Precise Plan
- Otay Ranch General Development Plan/Subregional Plan

Two additional active development projects are immediately adjacent to the Study Corridor boundaries. Remington Hills, a 40-hectare (100-acre) subdivision project located south of the existing Route 905 right-of-way and east of I-805, was approved in July 1995. Route 905 is consistent with plans for these two projects. This development obtained the necessary federal permits and constructed 250 single-family residential units.

The South Palm/Palm Ridge area, which covers 66 hectares (162 acres) also warrants discussion. This site, located in the northeast quadrant of the I-805/Route 905 interchange, was originally proposed (January 1995) to contain 376 single-family dwelling units. Although the applicant is no longer pursuing this project, a new applicant could propose a similar development for this site.

Other projects within the Study Area, but not immediately adjacent to the Study Corridor, include Dennery Ranch, Robinhood Ridge, and Hidden Trails. All are located north of the Study Corridor. The Dennery Ranch proposal includes 99 hectares (245 acres) and proposes 1,316 residential units (including 496 single family and 820 multi-family units) as well as elementary school/neighborhood park sites. The precise plan was approved in 1993 for 1,503 units and approximately 300 homes have been constructed. The Robinhood Ridge proposal includes 112.5 hectares (278 acres). The precise plan was originally approved in 1991 for 1,116 residential units as well as industrial and commercial uses, however, a revised precise plan to conform to the adopted MSCP has been submitted to the City. The approved proposal totals 993 dwelling units; 739 of which have been built. The Hidden Trails development consists of 91 hectares (225 acres). In process for several years, the current proposal is to develop the site with 558 residential units (228 single family and 330 multi-family), as well as a portion of a neighborhood park. This project is currently in construction.

Brown Field Airport Master Plan

The original and controlling Master Plan is a 1980 document that was adopted and certified (EIR) in 1981. Planned uses include utilities south of Otay Mesa Road, aircraft operating area,

aviation commercial, aviation reserve, administrative area and non-aviation commercial north of Otay Mesa Road. Commercial categories, aviation reserve and utilities categories are located within the Study Corridor. A draft 1992 Master Plan Update proposing a new runway and substantially greater commercial and industrial uses was completed by the City, but not adopted. Although the 1992 plan was not environmentally cleared, several elements, within an Immediate Action Plan, relating to runway and taxiway upgrades or realignment, instrument landing system issues and bulk fuel storage were addressed in a 1992 City-approved mitigated negative declaration. An environmental assessment was also prepared for the FAA on the Immediate Action Plan following adoption of the City document. This was submitted to the FAA in December 1992 and revised in May 1993.

A new master plan, titled the San Diego Air Commerce Center Master Plan at Brown Field, and the plan's FEIR, which was signed by the City of San Diego on January 20, 2000, were prepared and were slated for hearings with the Planning Commission/City Council. (The NEPA document was an EA and the FAA was the lead agency.) This Master Plan proposed conversion of Brown Field to a cargo-focused airport with capabilities to serve an increased commercial-industrial market. The proposed plan also included a maximum runway extension from its current length of 2400 meters (8,000 feet) up to 3500 meters (11,500) feet with expansion of the current Brown Field boundaries. Among other improvements, a new administration center, child-care center, hotel(s) and new fixed base operator facilities were proposed on the airport site. Brown Field's Airport Director communicated to the Department that the Brown Field Airport administration decided not to move forward with completing the Master Plan for Brown Field because it was not cost effective or beneficial to the airport. The CEQA EIR was never certified and a Finding of No Significant Impact (FONSI) was never produced.

An Airport Layout Plan is being developed, which includes upgrading existing equipment such as fencing, drainage, and the taxiway. At this time, it was communicated to the Department that Brown Field Airport has no plans for expansion or increasing capacity of its facility. Route 905 will be consistent with the Airport Layout Plan, and will be beneficial in providing improved access.

The City of San Diego Airports Division's property, which contains the remains of a sewage treatment plant southwest of the intersection of Otay Mesa Road and Heritage Road, is no longer planned for commercial uses or as open space since the improvements called for in the new master plan will not be constructed. Therefore, previously identified impacts to planned airport-related improvements on the airport parcel at the southwest corner of the Otay Mesa road and Heritage Road intersection will not occur. This parcel is still a part of the Brown Field property, however, and is shown on the adopted 1981 Land Use Plan for Brown Field property with a "utilities" designation.

California Terraces Precise Plan

This plan was adopted and the project approved by the San Diego City Council in April, 1994 (see Figure 3-9). The plan area covers approximately 269 hectares (665 acres) located immediately north and south of the existing Route 905 right-of-way and approximately 0.8 kilometer (0.5 mile) east of I-805. A revised dwelling unit count of 4,118 (1,215 detached and 2,903 attached homes) was assessed by the City as substantially conforming to the approved plan. Other uses, including a commercial center, neighborhood and community parks, elementary and junior high schools, and open space are also planned.

A revised Precise Plan (1998) incorporated the State Route 905 alignment as proposed in the DEIS/DEIR and in this FEIS/FEIR. Planned California Terraces land uses located within the Study Corridor include: Route 905 ROW; open space; single family residential (south of the state route); and, north of the state route, single family and multi-family residential, residential/church, and commercial. The non-Route 905 uses identified in the plan are not located within any of the Route 905's impact footprints. There are two conceptual planned uses adjacent to the Study Corridor on its northern side (where the corridor boundary and the existing Route 905 ROW correspond). These uses call for a school and community park, however, and to date, the ultimate location of these uses is unknown. A two to three meter (six to nine feet) noise abatement barrier, with a 36 meters (120 feet) setback, will be constructed by the developer, as conditioned by the City of San Diego. After Route 905 is complete, Department Noise Specialists will conduct surveys to verify that the developer's noise abatement is functioning properly. Federal and state resource permits were obtained and grading began in February 1997. Home sales began in 1998. Route 905 is consistent with this plan.

Santee Investments Precise Plan

The Santee Investments Otay Mesa Precise Plan, which was adopted in November of 1993, encompasses approximately 52 hectares (129 acres) south of the Route 905 right-of-way and west of Caliente Avenue. As illustrated in Figure 3-10, proposed land uses include a high school, open space, residential, and commercial. Subsequent to the adoption of the precise plan, Airway Road was realigned to the north and the Sweetwater Union High School District initiated condemnation proceedings on 20 hectares (50 acres) of land south of the realigned road. The current land use types and locations shown on Figure 3-10 (including the Airway Road alignment) are derived from the adopted Precise Plan. While proposed changes to this plan are pending, the current Precise Plan must be used until the proposed changes are formally adopted. Route 905 is consistent with this plan.

Otay International Center Precise Plan

First evaluated by the County in 1983 (prior to annexation of western Otay Mesa into the City of San Diego), the Otay International Center (see Figure 3-11) is a planned development focusing on border services, truck and freight facilities, warehousing, and associated commercial, industrial, business park and motel/restaurant facilities. The precise plan area is the same as that analyzed for the County Otay International Center Specific Plan, and includes a total of 182 hectares (449 acres). Following adoption of the precise plan, a development plan/tentative map was filed with the City. Now largely built out, uses within the Study Corridor are associated with Lots 1B, 2A, 4, and 5A and are related to motel/ restaurant, business park, and commercial border services. Route 905 is consistent with this plan.

Multiple Species Conservation Program (MSCP)

The MSCP is a comprehensive habitat conservation planning program that addresses multiple species habitat needs and the preservation of native vegetation communities. The MSCP creates a preserve system to replace the previous approach of using fragmented project-by-project biological mitigation areas, which by themselves do not contribute adequately to the continued existence of sensitive species, or to maintenance of natural bio-diversity. Within the Study Corridor, the City of San Diego MSCP maps show preserve areas associated with the Mesa and the Spring Canyon habitat complex south of OMR. The preserve areas identified are part of the

Multi-Habitat Planning Area (MHPA), a subarea of the MSCP. The MHPA Guidelines identified/recognized the proposed Route-905 alignment as a future impact within the Otay Mesa and Otay River Valley areas of the MHPA.

The MSCP/MHPA maps also show a corridor linkage area extending north from the Spring Canyon complex across OMR toward Denney Canyon. The Central and North alignments previously incorporated an arch culvert that did not meet the minimum dimensions specified in the MSCP. The project design was modified such that these alignments incorporate a bridge crossing of Spring Canyon, the corridor linkage will not be compromised by the project and Route is consistent with this stipulation of the MSCP.

In addition, the biological mitigation measures recommended for the project comply with and support the MSCP. Impacts within the Multi-Habitat Preserve Area (MHPA) will total 8.4 hectares (20.6 acres) for the Central Alignment alternatives, 6.2 hectares (15.2 acres) for the North Alignment alternatives, and 13.3 hectares (32.9 acres) for the South Alignment alternatives.

This FEIS/FEIR includes mitigation for biological resources impacts to sensitive vegetation, consistent with the City of San Diego Land Development Code Biology Guidelines. All impacts to sensitive species are also addressed and mitigation is provided to reduce impacts to less than substantial levels.

Resource Protection Ordinance

The analysis of project impacts with respect to the City of San Diego and County of San Diego resource protection ordinances identified no substantial impacts.

Open Space

The MHPA delineates areas with biological resources and wildlife corridors that have been deemed critical for purposes of long-term conservation. Each of the build alternatives would cause permanent loss of MHPA lands, and thus have a corresponding impact to land zoned as Open Space. These impacts are disclosed above.

In addition to the MHPA, there are two open space areas within or adjacent to the proposed alignments. The privately owned Otay Corporate Center South (OCCS) Preserve is located south of Otay Mesa Road and approximately 200 meters (660 feet) west of Heritage Road. The privately owned San Diego Button Celery Preserve, associated with the Empire Center Development, is located northwest of the intersection of La Media and Airway roads. These are the only areas in the Study Corridor that are preserved as open space by zoning and/or acquisition of easements or fee title.

The North alignments would impact the OCCS preserve while the Central and South alignments would not. Each alignment alternative would equally impact approximately 0.14 hectare (0.346 acre) (of non-sensitive vegetation) of the San Diego Button-celery Preserve.

Other open land area impacted include the portions of land categorized as undeveloped land, agriculture, and airport open space.

No substantial impacts to open space are anticipated from any of the proposed alignments and mitigation for Open Space impacts are not required.

Additional Developments

As discussed above, the City of San Diego has long designated the easterly portion of the mesa as an appropriate locale for industrial development. Based on records obtained from Long Range Facility Planning, Development Services, and Engineering Maps and Records, 24 tentative and/or final development maps (held as open or approved projects by the City) have been submitted for development within the Study Corridor (see Figure 4-4). These projects are also listed in Appendix C. Although final maps are good indefinitely, tentative maps are valid for 36 months, with a possible one-time extension of an additional 36 months. It is expected that some of the tentative maps/projects may not be carried forward by their proponents and may be dropped from the development catalogue.

Five of the projects, as described above, have submitted precise or master plans. The remainder (19) consist of single use (industrial or commercial) developments of varying size. As indicated in Appendix C, most of the parcels in the middle of the Study Corridor were designed with sufficient ROW included so as to accommodate the future Route 905. Those development projects that have the potential to be directly impacted by Route 905 are also identified in Appendix C.

4.6.2 Impacts to Plans/Planned Land Use

The Preferred Alternative will traverse several planned industrial developments and will be adjacent to three planned residential developments (Figure 4-4). The industrial developments that will be impacted include a small portion of the Brown Field Master Planning Area (Parcel J), Pacific Gateway (Parcel F), Mesa Business Park (Parcel G), Otay Heights Business Park (Parcel H), Otay Mesa Business Park (Parcel I) and Brown Field Business Park (Parcel K) while the residential developments are Remington Hills (A), Ocean View Hills (B), and Santee Investments (C).

Impacts to the Brown Field Master Planning Area, Pacific Gateway Mesa Business Park, Otay Heights Business Park, Otay Mesa Business Park, and Brown Field Business Park will be minor.

The residential developments of Remington Hills, Ocean View Hills, and Santee Investments could be indirectly impacted by the project. If freeway construction occurs these developments are built and occupied, residents could experience temporary impacts associated with construction, including visual, noise, and dust effects. The California Terraces (Ocean View Hills) land use plan was amended to incorporate Route 905. No further amendment of the Precise Plan will be required. The land use plan for Santee Investments also shows an alignment for Route 905, it is consistent with Route 905.

The Preferred Alternative will also traverse the Otay International Center Precise Plan Area. This development, located in the eastern portion of the Study Corridor, is primarily built out and includes reserved right-of-way for Route 905, impacts outside the reserved corridor will not occur.

The alignment of the proposed local access ramp (LAR) to Enrico Fermi Drive will traverse one planned industrial development, Jet Air (Parcel V). The LAR will preclude development within the center of this parcel and require a revised tentative map to allow development of the parcel. Construction easements will be required for portions of the material site that are outside of the proposed ROW; inconsistency with any plans in this area is not expected.

Freeway – North Alignment Alternative

This alternative would have the same minor impacts to planned industrial development and the same temporary construction impacts to residential development impacts as those described above for the Preferred Alternative.

Freeway – South Alignment Alternative

This alternative is consistent with the alignment shown in the approved tentative and final tract maps for parcels including Pacific Gateway, Mesa Business Park, Otay Heights Business Park, Otay Mesa Business Park, and Brown Field Business Park. It would not impact Otay Corporate Center South. It would have the same temporary impacts to the residential development adjacent to the project.

Tollway – North Alignment Alternative

The area of disturbance for this alternative and the resulting impacts are similar to those outlined above for the Freeway - North Alignment Alternative. However, additional development of the Mesa Business Park and Otay Heights Business Park would be affected due to the construction of the Tollway's parking and utilities lot on the Otay Mesa Business Park parcel and a tollway administration building on the Otay Heights Business Park parcel. In other words, it would preclude additional development on these planned industrial parcels.

Tollway – Central and South Alignment alternatives

The area of disturbance for these alternatives and the resulting impacts are identical to those outlined above for the Freeway - Central and South Alignment alternatives.

Impact Minimization Measures

Standard construction practices will be used to minimize any temporary construction impacts, such as increased noise and dust, to the future residents of the Remington Hills and California Terraces projects. Further details are provided in Section 4.18 of this FEIS/FEIR.

The City of San Diego, through their development review process, will be responsible to ensure that the developers of the aforementioned developments include noise mitigation as part of their projects.

Impacts to the biological resources present within the MHPA will be mitigated through negotiation with relevant regulatory agencies and reference to guidelines within the MSCP Subarea Plan.

All property acquisition will occur according to applicable federal and state laws. The Department will coordinate with affected property owners.

A revised tentative map for the Jet Air parcel will be necessary to show the location of the LAR to Enrico Fermi Drive.

Impacts to Plans and Planned Land Use are not substantial.

4.6.3 Park and Recreation Resources

There are no existing park facilities located within any of the project's build alternative impact footprints or near the proposed right-of-way. Therefore, no 4(f) impacts or constructive uses will occur. Section 4(f) of the Department of Transportation Act, codified in Federal law at 49 U.S.C. §303, declares that it is the policy of the United States Government that special effort should be made to preserve the natural beauty of the countryside and public park and recreation lands, wildlife and waterfowl refuges, and historic sites.

Section 4(f) specifies that the Secretary of Transportation may approve a transportation program or project requiring the use of publicly owned land of a public park, recreation area, or wildlife and waterfowl refuge of national, State, or local significance, or land of an historic site of national, State, or local significance, (as determined by the Federal, State, or local officials having jurisdiction over the park, area, refuge, or site) only if there is no prudent and feasible alternative to using that land and the program or project includes all possible planning to minimize harm to the park, recreation area, wildlife and waterfowl refuge, or historic site resulting from the use.

Section 4(f) further requires consultation with the Department of the Interior and, as appropriate, the involved offices of the Departments of Agriculture and Housing and Urban Development in developing transportation projects and programs which use lands protected by section 4(f). Constructive use occurs when a transportation project does not incorporate land from a Section 4(f) resource but the project's impacts due to proximity are so severe that the activities, features, or attributes that qualify a resource for protection under Section 4(f) are substantially impaired. Substantial impairment will occur only when the protected activities, features, or attributes of the resource are substantially diminished.

A corridor for Route 905 was incorporated into the California Terraces and Santee Investments developments which helped avoid the potential for a direct Section 4(f) impact. The former includes planned park facilities adjacent to the Route 905 corridor. The proposed location of this parks continues to be conceptual in nature; final plans have yet to be prepared.

The joint development of the proposed Route 905 project and the adjacent developments will continue. As the highway planning process moves forward and park plans advance, the Department, on behalf of FHWA, will continue to coordinate with the City of San Diego to ensure that the highway and parks are jointly planned.

The conceptual locations of the planned park facilities are provided on Figures 3-6 and 3-9. The MHPA lands impacted by the project are privately owned, they lack planned trails and are devoid of other recreational activities. The proposed highway project does not conflict with any existing parks or planning for any future public parks. The existing bikeway along Otay Mesa

Road, which will be re-routed, as discussed in Chapter 1, Section 1.5, will also not qualify as a Section 4(f) resource. This bikeway is used as a transportation mode, not for recreation, and will be re-routed to maintain continuity.

The OCCS Preserve and the San Diego Button Celery Preserve, both preserved as open space by zoning and/or acquisition of easements or fee title, are privately owned and therefore not Section 4(f) resources.

No 4(f) impacts or constructive uses will occur.

4.6.4 Farmland

Section 3.6.4 discusses the affected farmland; Figure 3-5 shows the distribution of farmlands. Farmland impact estimates have been calculated for each of the six build alignment alternatives, using the Farmland Conversion Impact Rating Form AD-1006. The completed forms are provided in Appendix F. This impact rating form provides a number rating based on land evaluation and site assessment criteria with a maximum achievable score of 260 points. When the DEIS/DEIR was prepared, the land evaluation criterion relative value of farmland to be converted for each of the build alternatives was 40 out of a possible 100. This led to scores for each of the build alignment alternatives that totaled between 101 or 102 points, which are low ratings. According to Farmland Protection Policy Act (FPPA) guidelines, sites with an assessment of less than 160 points should be given a minimal level of consideration for protection. According to these guidelines and the evaluation results, project impacts to farmland are considered minor. For this FEIS/FEIR, the updated land evaluation criterion relative value of farmland to be converted for each of the build alternatives was 37 out of a possible 100, which again leads to similar minor impacts.

Agricultural parcels south of Otay Mesa Road that will potentially be divided or landlocked by the proposed project will have alternative access provided. The National Resource Conservation Service has identified the percentage of farmland within the county to be converted by the proposed project to be two-tenths to four-tenths of one percent of the total inventory. Additionally, the FPPA definition of farmland does not include land already committed to urban development, and since the entire mesa is planned for future urban use, farmlands are considered an interim use.

Conservation Measures

Topsoil, within a proposed material site at the east-end of the project, will be stored in piles. The topsoil will be replaced after grading is completed unless the affected properties are in the process of grading and developing. No additional mitigation measures are recommended since the farmland impacts are considered minor and since there is an absence of existing major active agricultural operations in this area. Because the timing, size and location of farmland takes, on a cumulative basis, are not under the control of the Department, it cannot assume responsibility for mitigation of these cumulative impacts. Local jurisdictions are responsible for land use and zoning decisions, and the conversion of farmland to new development.

The impact to farmland is minor and not substantial.

4.7 ECONOMICS

Economic impacts, which can be adverse and beneficial, are not expected to be substantially different for the alignment alternatives.

4.7.1 Effects of Right-of-Way Acquisition on Business

Economic effects to businesses from ROW acquisition and displacement include the cost of moving, replacing buildings, and the effects of relocation on revenues and profits. All of the build alternatives will require the displacement of three businesses, the No Build Alternative will not displace businesses (although it would result in higher congestion/less accessibility for existing properties). Should the businesses relocate to an area off the Mesa, their loss would be a minor impact to the local economy. Relative to the local economy and the local businesses on the Mesa, the impact would be negligible.

Given the small number of businesses affected by the Preferred Alternative and the other Build Alternatives, the right-of-way impacts are minor and they will not have a substantial negative effect on Business.

The proposed project design will maintain access to all businesses affected by Route 905, both during and after project construction. Access impacts are expected to be minor and will not have a substantial negative effect on the viability of the businesses' operations.

4.7.2 Public Finance/Fiscal Impacts

Fiscal impacts include direct and indirect effects on local jurisdictions and taxing agencies. These impacts can include displacement of public facilities or acquisition of private property for the conversion to state-owned, non-taxable right-of-way. The property tax revenues for both the City and County of San Diego will be directly affected. The direct fiscal impact for all alignment alternatives are detailed below in Table 4-1.

Table 4-1
PROPERTY TAX LOSS BY PROJECT ALTERNATIVE

Alignment Alternatives	Total Area of Take		Average Tax Collected		Estimated Annual Property Tax Loss	Total Study Area Property Tax	Percent of Total
	Hectares	Acres	Hectare	Acre			
Freeway - North	108	268	\$1,620	\$656	\$176,000	\$5,170,000	3.4%
Freeway - Central	107	264	\$1,620	\$656	\$173,000	\$5,170,000	3.4%
Freeway - South	108	268	\$1,620	\$656	\$176,000	\$5,170,000	3.4%
Tollway - North	119	294	\$1,620	\$656	\$193,000	\$5,170,000	3.7%
Tollway - Central	114	281	\$1,620	\$656	\$184,000	\$5,170,000	3.6%
Tollway - South	119	294	\$1,620	\$656	\$193,000	\$5,170,000	3.7%

These figures will represent a long-term loss of tax-generating industrial acreage on the mesa. These figures provided are for raw land, and by including the full takes an additional \$12,800 per year will be lost.

The indirect impacts include properties that are converted into small economically non-viable remnants, as a result of a partial take. The resulting indirect impacts are minimal with a tax base impact ranging from \$2,000 to \$3,000 per year.

The approved and planned developments supported by Route 905 with improved accessibility, as well as the possible relocation of displaced businesses within Otay Mesa will offset long term property tax losses. Sales tax revenues are limited within Otay Mesa, due to the types of business conducted. Based on these conclusions and assumptions, property tax and sales tax impacts will be minimal for all alignment alternatives.

4.7.3 Property Value Changes

Property value impacts are dynamic and not easily quantified. Negative impacts, such as increased noise or negative visual effects, are not expected to adversely affect the primarily commercial/industrial areas that are planned adjacent to the proposed project corridor. These uses are typically compatible with high traffic areas.

Positive effects on the values of existing and planned industrial and commercial properties are expected due to better accessibility and exposure to higher traffic volumes. Positive impacts to residential property values are also anticipated. A more efficient transportation system in the area will increase the potential marketability of all properties. The higher marketability will translate into increased values, which will result in increased property tax revenues. Updated economic trends in the area indicate that property values have risen substantially in recent years. The above impacts will be similar for all alignment alternatives. For the No Build Alternative, there will be no expected change in property values.

4.7.4 Construction Impacts

Direct expenditures on construction workers' income and purchases of materials and equipment when injected into the local economy will continue to circulate, generating additional income and sales (indirect impacts). No substantial negative impacts to nearby business are anticipated during construction. Access will be maintained using detours, although there may be some delays. Due to the limited amount of retail uses and development that are dependent on accessibility and visibility from major roads, no construction impacts as a result of the proposed project are anticipated. The majority of uses in the area are industrial, which are typically less dependent on visibility.

Benefits

Both direct and indirect construction-related business and employment incomes will increase as a result of the Route 905 project.

4.8 GROWTH EFFECTS

The Council on Environmental Quality (CEQ) regulations, which implement the National Environmental Policy Act of 1969, require evaluation of the potential environmental consequences of all proposed federal activities and programs. This provision includes a requirement to examine indirect consequences, which may occur in areas beyond the immediate influence of a proposed action and at some time in the future. The CEQ regulations, 40 CFR

1508.8, refer to these consequences as secondary impacts. Secondary impacts may include changes in land use, economic vitality, and population density, which are all elements of growth.

The California Environmental Quality Act (CEQA) also requires the analysis of a project's potential to induce growth. CEQA Guidelines, section 15126.2(d), require that environmental documents "...discuss the ways in which the proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment..."

This analysis builds on the discussion in Section 3.6.9, Growth Conditions and Management Policies. The construction of the proposed project will provide a major transportation link to a developing area. Otay Mesa's build out will form contiguous urbanized growth along the international border stretching east to the Otay Mesa POE.

4.8.1 Growth Management Initiatives

The growth management initiatives of SANDAG's Regional Growth Management Strategy and the Governor of California stress that growth should not occur prior to the provision of adequate infrastructure. Projections of population, housing and employment in the study area indicate rapid growth. These forecasts take into account the construction of Route 905, therefore growth resulting from Route 905 is not expected beyond what is anticipated by regional forecast models. Planned development is expected to continue until full buildout in accordance with the plans and policies of local governing agencies.

Construction of any Route 905 alternative will facilitate planned residential, commercial, and industrial development in the area. Development of surrounding properties will be in accordance with adopted plans and policies, which have all anticipated planned development. Construction of Route 905 will facilitate planned growth on Otay Mesa by improving access and providing an alternative route to OMR, which has recently been widened but is becoming increasingly congested with traffic. Route 905 will remove an obstacle to growth and result in growth-inducing impacts on the community. Substantial indirect environmental effects of growth inducement are beyond the control of the Department and are being addressed through local and regional planning efforts, such as the MSCP and SANDAG Regional Growth Management Strategy.

4.8.2 Existing and Planned Land Use

Consistent with the Otay Mesa Community Plan, the mesa is slated for large-scale development. Residential developments are currently planned for the western portion of the mesa and industrial/commercial developments are planned for the remainder of the mesa (Appendix C). It is expected that commercial development opportunities will be enhanced at major intersection and interchange locations along Route 905, as has already occurred along areas of Otay Mesa Road. It is not likely that the City or the County will permit much greater encroachment of commercial uses onto the mesa beyond current limits of the community plan.

4.8.3 Project Alternative Impacts on Growth

The growth inducement analysis for Route 905 focuses on the project's responsiveness to facilitating planned growth. Transportation projects, which improve traffic capacity, generally

support higher population and employment levels in an area, to the extent allowed by local land use plans. Projections of population, housing and employment growth in the Study Area (represented by Census Tract 100.07) show that by 2025, this area will have 82,000 residents in 24,000 housing units, and almost 49,000 employees. Route 905 will facilitate this growth by serving the access needs of the area's future residents and employees.

Existing traffic volumes for Otay Mesa Road range from 32,000 to 55,500 ADT. The project will provide an improvement in traffic capacity over existing levels on Otay Mesa Road. By opening day, the project is forecast to serve approximately 153,500 ADT. Implementation of the project will greatly facilitate planned growth on the mesa. With greater accessibility and the current economic conditions of the region, build out of the mesa will occur more quickly than with the No Build Alternative.

4.8.4 Secondary Impacts of Growth

Route 905 will provide access to the regional transportation system for an area which is presently inadequately served. The development potential of this subregion is substantial and depends upon the provision of adequate infrastructure, to include transportation systems, water delivery systems, sewer facilities and public services. While growth can be facilitated by other factors such as market demand, political support and social support, the infrastructure to support economic activity must be in place for planned growth to be realized. The market attractiveness of Otay Mesa and East Otay Mesa will be limited without the provision of adequate and safe access. Therefore, the construction of Route 905 and related transportation projects will contribute to secondary, or indirect, impacts on growth in Otay Mesa and East Otay Mesa.

The potentially adverse environmental impacts from continued development/growth are substantial and will result in loss of biological, cultural, and open space resources, loss of land suitable for agriculture, and increased noise/air pollution. These impacts are discussed in Section 4.21. The impacts of and necessary mitigations for the developments on Otay Mesa are discussed in the respective project environmental document processed through the local jurisdictions.

4.9 VISUAL QUALITY

4.9.1 Methodology - Impact Categories

As summarized below, specific elements evaluated as part of the overall assessment of visual resource impacts include visual quality, landform quality, view quality, and community character.

Visual quality generally concentrates on the visual organization of the environment and can be used to identify project effects that introduce a chaotic appearance, negative aesthetic condition, or a non-harmonizing change to an intact natural environment.

Landform quality deals with the topographic and/or geologic characteristics that make up the visible landform. Major grading changes or removal of unique geologic features represent potential impacts to this visual resource.

View quality is specifically limited to regionally and sub-regionally important broad views of

unique features. For the project to have an effect on these views, it must either remove the view location, block the view corridor, or dramatically alter the view scene.

Community character deals with those visual resources that are identified as important landmarks or resources to the local community. This impact can also include those changes to the visual environment that may prevent the attainment of various planning, design, and/or aesthetic goals that have been adopted through a formal process such as community plans.

Levels of Impact

Four levels of impacts are used in the evaluation of the proposed alternatives. A generalized discussion of the criteria applied to each impact level follows:

1. Highly Adverse: the project will contrast highly with a high-quality visual setting, dramatically change an existing high quality landform, negatively affect community visual resources, or substantially block a sub-regionally important high quality view.
2. Moderately to Highly Adverse: the project will contrast highly with a moderate-quality visual setting or contrast moderately with a high quality visual setting, landform, visual resource, or view.
3. Moderately Adverse: the project will contrast moderately with a moderate-quality visual setting, landform, visual resource, or view.
4. Low or Slightly Adverse: the project will only slightly contrast with a moderate- or low-quality visual setting, landform, visual resource, or view.

Key View Simulations

Visual simulations are used as an analytical tool for determining the level of contrast between a proposed project element and the existing visual environment. Contrast ratings are used to define the level of impact. Visual simulations were prepared for six candidate sensitive visual receptors based on visibility, sensitive viewer receptors, and locations where major project elements are being proposed (see Figure 4-6 for view locations). Each visual simulation includes an existing conditions photograph, a computer-generated simulation of the final project without mitigation, and another simulation of the project with mitigation. Each simulation also includes a contrast rating table used to show the level of impact.

The simulations include those features that are part of the proposed project, as well as any recommended mitigation. The simulations utilize the roadway geometrics of the Tollway Alignment alternatives since they are so similar to the Freeway Alignment alternatives and include the largest number of different project elements. The simulations therefore depict what could be assumed as the “worst case maximum” and provide a tool for comparison of the other alignment alternatives. Although the South Alignment Alternative was used, the geometrics on most of the simulations will be the same regardless of the alignment alternative depicted.

Contrast rating tables were completed for each simulation to assess the perception of the proposed project elements. A negative contrast between the post-project setting and the existing setting is the primary determining factor for impact levels. The simulations were used to

represent changes that may occur in each visual character assessment unit.

4.9.2 Visual Impacts

The project will be highly visible and it will cause major changes in the existing views and landform. Vegetation removal will occur and, in some locations, existing plantings will be removed. Such plantings will be replaced and new bare slopes will be planted or seeded so that revegetation may occur. Irrigation will be required at some locations. Extensive mitigation measures are detailed below for all visual impacts.

In general, the physical elements of the alignment alternatives are the same in terms of their impacts to the visual environment. They are all expected to have a moderately adverse to highly adverse impact on the visual quality of the area. Although design elements regarding road alignments and canyon crossings are different, and certain facilities are only applicable to the Tollway Alignment alternatives (e.g., the toll plazas and toll booths), the differences among the alignment alternatives are not great enough to change the assessed level of impact. However, none of these design differences result in the reclassification of the assessed impact. Though some slight differences exist for the impact categories discussed below, the proposed alignment alternatives will have a moderately to highly adverse impact on the visual environment. The impact differences between the alignment alternatives will be negligible with the implementation of mitigation, which includes landscaping and contour grading.

Due to the size of the proposed bridge structures, all of the alignment alternatives will have an impact on the visual quality of Spring Canyon . Since the bridge will allow for the reduced grading of slopes in the bridge area, and thus allow the landform to remain relatively intact, a moderately adverse impact on the landform quality of the Spring Canyon area is expected.

Community character impacts will be minor. As part of the visual treatment to the structures and landscape, Otay Mesa's character will be emphasized by using color, texture, form, and scale to provide a sense of place. At this time, no design goals, policies, or adopted plans indicate visual community resources within the project area. Community landmarks or visual identification resources are also absent.

The impacts of the Route 905 alignment alternatives are summarized below and in Table 4-2, along with mitigation measures. The discussion is organized to help explain the results provided in Table 4-2. Since different views are affected at various locations along the project, the impacts are discussed in order by segment and keyview (shown on Figure 4-6).

Freeway Alignment Alternatives

West Segment

Visual Quality Impacts

The project will have a potentially low or slightly adverse impact on the existing visual quality of this portion of the mesa. Figure 4-7 shows a simulation for motorists traveling east up to the mesa-top, this is Keyview #1.

Landform Quality Impacts

Moderate-sized slopes will be created; however, the overall size and contrast with the setting will

be low, resulting in potentially low or slightly adverse effects. With the inclusion of revegetation and landform contour grading, these slight impacts will not be substantial.

View Quality Impacts

Viewers on top of the mesa are sufficiently high in elevation so as not to be affected by any of the proposed project improvements in this area. Future viewers (residents of planned developments located immediately to the south and the north) will have distant views of the ocean and San Diego Bay. These views are considered unique and important in the sub-region. The proposed Route 905 project does not include sound walls at this location and therefore the project will not impact these views. However, since walls are expected to be built by the adjacent project developer as part of the housing development process, the developer will be responsible for any mitigation as a result of the wall's impacts.

Middle Segment – West of Caliente Avenue – All Alignment alternatives

This portion of the project will have approximately the same location and design, regardless of alignment alternative. Figure 4-8 shows a simulation for westbound motorists in this segment, this is Keyview #2.

Visual Quality Impacts

The project will create a moderate contrast with the visual quality of the area. This potential moderately adverse impact results from the proposed grading, vegetation removal, and extensive amounts of paving and other physical improvements that will change the visual character of the existing mesa edge and mesa top units. Grading and construction will necessitate the removal of 10% to 20% of the eucalyptus trees found in a grove at the crest of the hill. This applies to all alignment alternatives. With re-vegetation and tree replacement in the immediate area of the grove at a 5:1 ratio, these impacts will be mitigated. Above-standard landscape treatments are proposed.

Landform Quality Impacts

There will be moderately adverse to highly adverse effects on the landform quality of the area. An extensive volume of grading will occur, and these graded slopes will be visible to motorists and residents in planned, adjacent developments. The proposed curve and depressed grade of the project will limit the number of residential viewers. Grading at the crest of the hill west of Caliente Avenue will be moderately adverse to the landform of the area, because a cut slope located along the westbound travel lanes at the crest of the hill will be highly visible to motorists and planned adjacent residents.

View Quality Impacts

Several important or unique views occur from and through this segment. Views originating on top of the mesa (as seen by existing drivers on Otay Mesa Road) are sufficiently high in elevation to be unaffected by any project features. Therefore, view quality impacts are not expected.

Middle Segment – From Caliente Avenue to the Western Terminus of the East Segment – Preferred Alternative

Visual Quality Impacts

This portion of the project, between Caliente Avenue and Britannia Boulevard (the western terminus of the East Segment), is expected to have only a slightly adverse impact on existing visual quality. Please refer to Figure 4-9 (please note that the tollway facilities will be absent for the Freeway Alignment alternatives [simulation for Keyview 3]).

Vegetation changes in the Spring Canyon area immediately west of the Heritage Road interchange may have a moderately adverse effect on visual character. These changes are likely to entail an initial change from primarily native communities to ruderal (non-native) grasslands. However, the implementation of BMPs, such as the application of duff and hydroseeding, should help reduce the chances of the native communities becoming ruderal. The impact is considered only slightly adverse since the existing viewer group in the area is small and will have limited visibility. After a 5-7 year period, revegetation is likely to blend the disturbances back into its existing setting, though landform alterations will still be noticeable. Above-standard (the use of larger container-size plant material and/or the use of a planting scheme that focuses on increased plant density) landscape materials and design will be used, with an emphasis on drought-tolerant native and non-native plants (trees, shrubs, and ground covers) that once established, can survive with little to no irrigation or maintenance. A moderately to highly adverse impact will occur once the noise walls are added at Cactus Road because of the number of viewers (existing residential properties) and the high visibility of the walls. Walls along both the northern and southern sides of the project will affect highway viewers and residents. The smaller half-box wall option (where walls wrap around the three affected residences) would have only a moderately adverse effect. These impacts apply to all alignment alternatives.

Landform Quality Impacts

The addition of the bridge, a large concrete structure, will be noticeable and will contrast with the natural setting. This alignment alternative will potentially have a moderately adverse effect on the canyon landform. The bridge abutments will encroach into the canyon and contrast moderately with the landform. Abutment fill will not be highly noticeable.

View Quality Impacts

The Preferred Alternative will have a potential moderate visual quality effect as a result of the bridge over Spring Canyon. The bridge may also be subject to graffiti, further lowering aesthetic quality. The number of potential viewers, however, is expected to be low. Bridge enhancements will be proposed to lessen the impact upon the limited viewer groups found in adjacent areas. The addition of noise walls at Cactus Road will have a moderately to highly adverse impact to the view quality in that the existing view quality afforded the current residents and future highway viewers will be impaired when the walls are erected.

Middle Segment – From Caliente Avenue to the East Segment – North Alignment Alternative

All impacts discussed under the Preferred Alternative above will be the same as those for the Central Alignment Alternative.

Middle Segment – From Caliente Avenue to the East Segment –South Alignment Alternative

All of the impacts listed under the Preferred Alternative will also occur with the South Alignment Alternative.

East Segment

As noted in Chapter 2 above, the Siempre Viva Interchange project, with limits from Airway Road to the POE, was processed as a separate project; a Categorical Exclusion (NEPA) was approved on May 10, 2002. The Route 905 DEIS/DEIR, under the subheading East Segment of Section 4.9.2 and in Section 4.9.3, included text regarding the Siempre Viva project and its visual impacts and mitigation measures. This impact and mitigation discussion, although relevant to an independent project situated within the overall footprint of the 905 project, was deleted from the Route 905 FEIS/FEIR since it did not directly pertain to the subject project. All of the visual mitigation and minimization measures for the Siempre Viva project, as detailed in the Route 905 DEIS/DEIR, are included in the construction contract for the Siempre Viva/Interim Route 905 grade separation, awarded in November 2002.

Visual Quality Impacts

The eastern half of the existing mesa top and the urban visual character units is considered to have moderate visual quality and sensitivity to change. Please refer to Figure 4-10 (simulation for Keyview 5). Bridges, interchanges, overpasses, and large abutment slopes will all contribute to changes in the character of this area. A number of cast-in-place concrete retaining walls will be built, resulting in impacts to the visual quality. These walls will range in length from approximately 80 meters (260 feet) to 400 meters (1,300 feet), and will be between 1.2 meters (4 feet) and 6.5 meters (21 feet) in height.

Based on a review of the visual quality impact threshold criteria, moderate to high adverse visual quality impacts are expected in the east segment. Special design measures addressing signage, lighting, bridge architecture, landscape plantings, and median configurations will be incorporated.

Landform Quality Impacts

Most of the grading in this area is expected to be limited to roadbed preparation and will not generate substantial cut or fill slopes. A portion of this segment, however, along the proposed local access ramp to Enrico Fermi Drive, will involve the movement of up to 1,000,000 cubic meters (1,300,000 cubic yards). Though the amount of earth movement will be substantial, the cut and fill slopes will be of moderate steepness (6 horizontal : 1 vertical) and will be contour graded. Also the Route 905/SR-125 Freeway to Freeway Interchange will have substantial fill slopes and a potential for moderate to high adverse impact to the existing landform of the area.

View Quality Impacts

Existing views occur through portions of the east segment including distant views of Otay Mountain to the east and the San Miguel Mountains to the north. These views will also occur along the majority of Route 905. The duration of the view blockage of these mountains for drivers on proposed Route 905 will be only for a few seconds, and is not considered adverse.

Utility Relocations

Utility relocations will occur within the project's disturbance limits (footprint). All existing overhead power lines, which will be relocated, consist of distribution lines with wooden poles. These poles have a height of approximately six to eight meters (20 to 25 feet). No impacts to views will arise from the relocation of overhead power lines.

Tollway Alignment Alternatives

Impacts are similar to those documented in the discussion of the Freeway Alignment alternatives. Minor differences relate to the slightly larger footprint and more facilities, such as toll plazas, which makes this alignment alternative slightly higher in visual impact potential. However, due to the current visual environment, the larger footprint and the toll facilities can easily be absorbed into the visual setting without noticeable contrasts. The differences compared with the Freeway Alignment alternatives are inconsequential and do not change the impact rating.

No Build Alternative

No visual impacts would result from the No Build Alternative. However, the recommended improvement in layout and design immediately north of the POE would not occur.

4.9.3 Mitigation Measures

Within the eastern portion of the project where the above standard plantings are proposed, the character of the landscape is urban; as opposed to the rural character of the western portion. Within this urban landscape, the Department's Route 905 General Design Concept reflects the developed and landscaped character of this portion of Otay Mesa. In addition, the design concept is congruent with the landscape treatment (above standard landscaping) of the Siempre Viva Interchange Project. For the urbanized portion of Route 905, and the POE area (which is part of the aforementioned Siempre Viva Interchange Project), the Department is committed to coordinating with the community regarding design, all of whom desire the above standard landscaping with a focus on urban design.

The focus within the eastern portion of the project area is contrasted with those portions of the Route 905 project which are not urban in character and will be planted with native species. Here, the use of non-natives is entirely inappropriate and they will not be used. Between the two distinct landscape units, a transition, or buffer zone, will be provided for visual fluidity.

Revegetation Measures

Removal of mature eucalyptus trees from the grove at the project's west end will be mitigated by extensive planting. Five trees will be planted for each tree removed. This ratio is justified given the fact that the very large mature trees that will be lost could not be visually replaced with smaller container plant material. Sycamores, willows, oaks, or other indigenous trees are recommended as the most appropriate trees to plant. The disturbed slopes at the crest of the hill, and the abandoned Otay Mesa Road segment (within the project footprint) will be the most likely locations for this tree replacement mitigation. Care will be taken to avoid planting trees in areas where westbound drivers currently have a distant ocean view (generally at the crest of the hill prior to heading down to I-805).

Graded and disturbed slopes will be planted with appropriate vegetation in conjunction with erosion control plans. Native seed may be necessary to provide appropriate cover and protection from erosion during the establishment periods. Native habitat will be restored adjacent to Route 905 within the MHPA, and in the canyon at the west end. Non-native seed mixes and shrubs may be used along other portions of the alignment alternatives. The final seed mix design will be developed by the District Landscape Architect and District Biologist. Neither a non-irrigated hydroseed mix nor straw are considered adequate for the purposes of erosion control and visual mitigation. Supplemental water through an irrigation system will be required to assure establishment. This is also the case for all plantings. Revegetation of canyon slopes will emphasize the canyon bottom with riparian species of trees such as sycamore, willow and cottonwood. Upper slopes will mimic adjacent species and include shrub masses in a similar form and density as found on adjacent slopes. Trees and shrub masses will be used to help meander the appearance of slopes, screen bridges/ abutments and walls.

Table 4-2
SUMMARY OF VISUAL IMPACTS AND MITIGATION MEASURES

	Visual Quality	Landform Quality	View Quality	Community	Impacts Notes	Composite Impact Before Mitigation	Mitigation Required	Special Mitigation Notes	Composite Impact After Mitigation
PROJECT ALIGNMENT ALTERNATIVES									
Freeway and Tollway Alignment Alternatives (Impacts are the same)									
West Segment	L	L	MH	L		L	2,3,6	Sound walls, if built by Department, will consider see-thru panels	L
Middle Seg./All Align. West of Caliente	M	MH	L	L		M	1,2,3,6,	Plant new trees for lost eucalyptus trees & contour grade	L
Middle Seg./North Align. East of Caliente	L	MH	M	L		M	1,2,4,6	Replace native vegetation in canyon and contour grade	L
Middle Seg./Central Align. E. of Caliente	L	MH	M	L		M	1,2,4,6	Replace native vegetation in canyon	L
Middle Seg./South Align. E. of Caliente	L	MH	M	L		M	1,2,4,6	Replace native veg. in canyon, upgrade bridge aesthetics	L
East Segment	MH	MH	L	M		MH	1,2,4,5,6	Improve POE aesthetics/upgrade landscape, walls & bridges	L
Summary Impact for Freeway/Tollway	MH	MH	M	L	OVERALL COMPOSITE IMPACT:	MH	OVERALL COMPOSITE IMPACT AFTER MITIGATIONS:		L
Cumulative Impacts	C	C	L	L	Development increases landform/visual impacts	L	1,2,3	Coordination of design/ grading to match landforms	L
No Project Alternative	L	L	L	L		L			L

LEGEND

IMPACT CATEGORY

MITIGATION

- H** Highly Adverse
- MH** Moderately to Highly Adverse
- M** Moderately Adverse
- L** Low or Slightly Adverse/No Effect
- C** Cumulatively Adverse

- 1** Add landscape screening/buffering
- 2** Incorporate landform (contour) grading
- 3** Standard revegetation for erosion control and blending with adjacent vegetation
- 4** Upgrade landscape treatments above standards
- 5** Upgrade design elements such as fencing, lighting and signage
- 6** Improve aesthetics of element by incorporating art in architecture or other change in form, color or texture

Above-standard landscape treatments will be used east of Caliente Avenue, with an emphasis on drought-tolerant native and non-native plants (trees, shrubs, and ground covers) that once established, can survive with little to no irrigation or maintenance. Trees will be massed in low points along the right-of-way to de-emphasize adjacent slopes. Though not considered as above standard landscape treatments, the median will contain a combination of native/naturalized grasses and flowers. Above-standard plantings will occur for all canyon fills and grading to help blend the disturbance back into the native slopes.

Measures for Landform, Drainages, and Walls

Mitigation for landform changes will include an effort at rounding slopes (toe, top, and ends), blending slopes back into the natural landform, and providing a variation in slope steepness and extent. Slight variations in final surface form, the avoidance of flat-topped fill slopes, and the elimination of a constant grade (with less than 10% variation in height and slope angle) cut slopes will mitigate this impact.

Any required brow ditches and other drainage structures will be screened by vegetation. Design of drainages will consider use of other materials rather than concrete (such as geo-fabric or vegetation); if concrete is required for hydraulic reasons, it will be stained to lower the reflectivity and decrease the contrast with the color, tone, and texture of the adjacent undisturbed areas.

The impacts associated with retaining or noise walls will be reduced with the addition of split-face block worked into interesting geometric patterns with the precision cut block. The planting of vines will also minimize graffiti and reduce the monotonous surface by adding color and texture. Anti-graffiti treatment will also be needed on these walls. For walls greater than two-meters (six-feet) in height, walls with surface variations should be used.

4.10 BIOLOGICAL RESOURCES

The data used in this FEIS/FEIR and in the Biological Resources Technical Report Addendum were collected from various sources, including biology surveys of the study area and a review of 16 years of specific studies completed on habitats and/or species within the Study Corridor. Focused surveys were conducted for the following sensitive plant and animal species: fairy shrimp (*Branchinecta* and *Streptocephalus* spp.), coastal California gnatcatcher (*Polioptila californica californica*), San Diego cactus wren (*Campylorhynchus brunneicapillus sandiegense*), Quino checkerspot butterfly (*Euphydryas editha quino*), orange-throated whiptail (*Cnemidophorus hyperythrus beldingi*), and several sensitive plant species associated with vernal pool habitat. Additional sensitive species, vegetation communities, vernal pools, and coastal California gnatcatcher territories were also documented and mapped, and a federal wetland delineation was completed for the entire Route 905 Study Corridor. Avoidance and minimization of biological impacts has been a major consideration throughout the process of developing project alignment alternatives.

4.10.1 Habitats

The direct impacts of project construction are summarized below and in Tables 4-3 through 4-12. The following discussion outlines impacts for the North, South, and Central alignment

alternatives. Figures 4-12A, 4-12B, 4-12C, 4-13A, 4-13B, 4-14A, 4-14B, 4-15A, 4-15B and 4-16 illustrate impacts to biological resources for these alignment alternatives.

In the discussion below, direct vernal pool impacts are those which occur to vernal pools within an alignment alternative's footprint (the vernal pool is removed). When a vernal pool lies outside an alignment alternative's footprint, but the alignment alternative impacts the watershed within which the vernal pool is located (the vernal pool is not removed), this is classified as a vernal pool watershed impact.

Habitat Impacts by Alignment Alternative

Preferred Alternative

Ten vernal pools, three of which support the San Diego and Riverside fairy shrimp, will be directly impacted by the Preferred Alternative (Figure 4-16). This represents an area of approximately 0.04 hectare (0.11 acre). Construction activities will also disturb an estimated 0.01 hectare (0.03 acre) of road pool containing the San Diego fairy shrimp. The watershed for two of the vernal pools will be partially destroyed.

Additional impacts necessitating mitigation will include 1.3 hectares (3.2 acres) of maritime succulent scrub (including disturbed); 5.0 hectares (12.3 acres) of coastal sage scrub (including disturbed); 0.16 hectare (0.40 acre) of freshwater marsh; 1.25 hectares (3.10 acres) of southern willow scrub (including disturbed); 0.80 hectare (1.98 acres) of mule fat scrub (including disturbed); 1.22 hectares (3.02 acres) of disturbed wetlands; 0.07 hectare (0.17 acre) of seasonal pond (1 pond); and 54.3 hectares (134.1 acres) of non-native grassland, 18.2 hectares (45.0 acres) of which is disturbed (Table 4-3).

A portion of the anticipated impacts will result in vegetation removal within the MHPA (Table 4-4). The MHPA Guidelines, however, recognized the proposed Route 905 alignment as a future impact within the Otay Mesa areas of the MHPA. Overall, the habitat types in the MHPA that will be directly affected by the project include: 0.02 hectare (0.05 acre) of vernal pools; 1.1 hectares (2.7 acres) of maritime succulent scrub (including disturbed); 1.2 hectares (2.9 acres) of Diegan coastal sage scrub (including disturbed); 0.01 hectare (0.03 acre) of southern willow scrub; 0.02 hectare (0.05 acre) of mule fat scrub; and 2.1 hectares (5.3 acres) of non-native grassland.

Construction associated with the proposed bridge structures across Spring Canyon will also generate some temporary disturbance (Table 4-5). These areas will undergo restoration upon completion of the structures. Permanent impacts will also occur within the canyon as a result of pier construction and shading from the bridge. Therefore, all of the vegetation located directly beneath the bridge structures was calculated as a permanent impact, while the area between the bridge footprints and the construction area needed to construct the bridges (limits of disturbance) were assessed as a temporary impact. Collectively, the temporary impacts for the Preferred Alternative in Spring Canyon will amount to 1.02 hectares (2.51 acres), including: 0.38 hectare (0.93 acre) of maritime succulent scrub (including disturbed); 0.33 hectare (0.81 acre) of disturbed Diegan coastal sage scrub; 0.21 hectare (0.52 acre) of non-native grassland; and 0.10 hectare (0.25 acre) of disturbed habitat.

Table 4-3
IMPACTS* TO HABITAT TYPES

BIOLOGICAL RESOURCE	North Alignment (Hectares [Acres])	Preferred Alternative (Hectares [Acres])	South Alignment (Hectares [Acres])
Vernal pool	0.14 (0.34)	0.04 (0.11)	0.07 (0.18)
Road pool with sensitive species	0.01 (0.03)	0.01 (0.03)	0.02 (0.05)
Vernal/Road Pool Subtotal	0.15 (0.37)	0.06 (0.14)	0.09 (0.23)
Maritime succulent scrub	1.8 (4.4)	1.2 (3.0)	1.4 (3.4)
Maritime succulent scrub – disturbed	0.1 (0.2)	0.1 (0.2)	--
Maritime Succulent Scrub Subtotal	1.9 (4.6)	1.3 (3.2)	1.4 (3.4)
Diegan coastal sage scrub	1.9 (4.6)	2.1 (5.3)	3.2 (7.8)
Diegan coastal sage scrub – disturbed	2.1 (5.1)	2.5 (6.1)	4.1 (10.0)
Diegan coastal sage scrub/non-native grassland	0.4 (0.9)	0.4 (0.9)	0.4 (0.9)
Diegan Coastal Sage Scrub Subtotal	4.3 (10.6)	5.0 (12.3)	7.6 (18.7)
Freshwater marsh	0.25 (0.62)	0.16 (0.40)	0.16 (0.40)
Southern willow scrub	1.37 (3.38)	1.19 (2.95)	1.18 (2.92)
Southern willow scrub – disturbed	0.06 (0.15)	0.06 (0.15)	0.06 (0.15)
Mule fat scrub	0.63 (1.56)	0.60 (1.49)	0.62 (1.53)
Mule fat scrub – disturbed	0.20 (0.49)	0.20 (0.49)	0.20 (0.49)
Disturbed wetlands	1.22 (3.02)	1.22 (3.02)	1.22 (3.02)
Seasonal pond	0.25 (0.62)	0.07 (0.17)	0.07 (0.17)
Tamarisk scrub	--	--	--
Riparian Habitats Subtotal	3.98 (9.84)	3.50 (8.67)	3.51 (8.68)
Non-native grassland	35.1 (86.8)	36.0 (89.1)	34.8 (85.9)
Non-native grassland/disturbed habitat	39.3 (97.2) ^a	39.9 (98.5)^b	38.3 (94.6) ^c
Non-native vegetation	2.4 (6.0)	2.4 (6.0)	2.4 (6.0)
Eucalyptus woodland	1.3 (3.3)	1.3 (3.3)	1.3 (3.3)
Agriculture	13.2 (32.7)	13.2 (32.7)	13.2 (32.7)
Disturbed habitat	100.8 (249.0)	103.4 (255.5)	102.6 (253.5)
Developed	86.3 (213.2)	90.6 (223.9)	90.7 (224.1)
TOTAL IMPACT AREA**	267.5 (661.1)	275.1 (679.8)	275.4 (680.5)
<p>* Areas are approximate and include both temporary and permanent impacts. Wetland acreages are reported to the nearest hundredth and uplands to the nearest tenth. All values are approximate. Hectare totals are calculated from acre totals to minimize rounding errors.</p> <p>** Totals may not reflect the sum of the impact numbers due to rounding.</p> <p>^a Total includes approximately 18.1 hectares (44.7 acres) of non-native grassland and 21.2 hectares (52.5 acres) of disturbed habitat.</p> <p>^b Total includes approximately 18.2 hectares (45.0 acres) of non-native grassland and 21.7 hectares (53.5 acres) of disturbed habitat.</p> <p>^c Total includes approximately 17.8 hectares (44.0 acres) of non-native grassland and 20.5 hectares (50.6 acres) of disturbed habitat.</p>			

Table 4-4
IMPACTS* TO HABITAT TYPES WITHIN THE MHPA

HABITAT TYPE	North Alignment (Hectares [Acres])	Preferred Alternative (Hectares [Acres])	South Alignment (Hectares [Acres])
Vernal pool	0.11 (0.27) ^d	0.02 (0.05)	0.04 (0.10)
Road pool with sensitive species	--	--	<0.01 (0.01)
Maritime succulent scrub	1.7 (4.1) ^e	1.1 (2.6)	1.2 (3.0)
Maritime succulent scrub – disturbed	<0.1 (0.1)	<0.1 (0.1)	--
Diegan coastal sage scrub	<0.1 (0.1)	0.4 (0.9)	1.4 (3.5)
Diegan coastal sage scrub – disturbed	0.4 (1.0)	0.8 (2.0)	2.4 (6.0)
Non-native grassland/Diegan coastal sage scrub	--	--	--
Freshwater marsh	0.08 (0.21)	--	0.01 (0.02)
Southern willow scrub	0.16 (0.39)	0.01 (0.03)	--
Southern willow scrub – disturbed	--	--	--
Mule fat scrub	0.05 (0.12)	0.02 (0.05)	0.04 (0.08)
Mule fat scrub – disturbed	--	--	--
Disturbed wetlands	--	--	--
Seasonal pond	0.17 (0.43)	--	0.03 (0.08)
Non-native grassland	1.0 (2.6)	2.1 (5.2)	1.1 (2.8)
Non-native grassland/disturbed habitat	0.2 (0.5) ^f	0.2 (0.5)^f	1.9 (4.8) ^g
Non-native vegetation	0.2 (0.1)	0.2 (0.1)	0.2 (0.1)
Eucalyptus woodland	0.1 (0.1)	0.1 (0.1)	0.1 (0.1)
Agriculture	--	--	--
Disturbed habitat	1.8 (4.4) ^h	2.8 (7.0)	4.1 (10.2)
Developed	0.4 (0.9)	0.9 (2.1)	1.0 (2.3)
TOTAL IMPACT TO MHPA PRESERVE AREA**	6.2 (15.2)ⁱ	8.4 (20.6)	13.3 (32.9)
<p>* Areas are approximate and include both temporary and permanent impacts. Wetlands are reported to the nearest hundredth and uplands to the nearest tenth.</p> <p>** Totals may not reflect the sum of the impact numbers due to rounding.</p> <p>^d Includes impacts to 0.10 hectare (0.26 acre) of vernal pools within the OCCS preserve.</p> <p>^e Includes impacts to 1.4 hectares (3.5 acres) of maritime succulent scrub within the OCCS preserve.</p> <p>^f Total includes less than 0.05 hectare (0.1 acre) of non-native grassland and approximately 0.2 hectare (0.4 acre) of disturbed habitat.</p> <p>^g Total includes approximately 0.5 hectare (1.2 acres) of non-native grassland and 1.5 hectares (3.6 acres) of disturbed habitat.</p> <p>^h Includes impacts to less than 0.05 hectare (0.1 acre) of disturbed habitat within the OCCS preserve.</p> <p>ⁱ Includes impacts to the OCCS preserve totaling 1.5 hectares (3.8 acres).</p>			

The Preferred Alternative will displace other vegetation types that are not considered sensitive and, therefore, do not require mitigation. These various habitats are: 2.4 hectares (6.0 acres) of non-native vegetation; 1.3 hectares (3.3 acres) of eucalyptus woodland; 13.2 hectares (32.7 acres) of agricultural land; 125.1 hectares (309.0 acres) of disturbed habitat; and 90.6 hectares (223.9 acres) of developed land.

The Preferred Alternative will not impact the privately owned OCCS Preserve. A portion of the Preferred Alternative's impacts to non-sensitive vegetation will occur within the privately owned San Diego Button-celery Preserve west of La Media Road, which is located within the MHPA. The impacts will include: 0.04 hectare (0.1 acre) of non-native grassland and less than 0.1 hectare (0.1 acre) of disturbed habitat.

Freeway-North Alignment Alternative

Thirty-one vernal pools would be directly impacted by the Freeway-North Alignment Alternative, including 24 pools within the privately owned OCCS Preserve (Figure 4-16). This translates into an area of approximately 0.14 hectare (0.34 acre). The pools in the OCCS preserve support both San Diego and Riverside fairy shrimp, as well as several federally-listed plant species (Figures 4-15A and 4-15B). One pool supports both listed species of fairy shrimp. In addition, the Freeway-North Alignment Alternative would impact 0.01 hectare (0.03 acre) of road pool containing fairy shrimp and approximately 0.06 hectare (0.16 acre) of the watershed for one vernal pool. Additional vernal pool watershed impacts may also occur within the OCCS Preserve, reducing the flow of water to the remaining vernal pools.

Additional direct impacts necessitating mitigation would include 1.9 hectares (4.6 acres) of maritime succulent scrub (including disturbed); 4.3 hectares (10.6 acres) of Diegan coastal sage scrub (including disturbed); 0.25 hectare (0.62 acre) of freshwater marsh; 1.43 hectares (3.53 acres) of southern willow scrub (including disturbed); 0.83 hectare (2.05 acres) of mule fat scrub (including disturbed); 1.20 hectares (2.96 acres) of disturbed wetlands; 0.25 hectare (0.62 acre) of seasonal pond (two ponds); and 53.2 hectares (131.5 acres) of non-native grassland, 18.1 hectares (44.7 acres) of which is disturbed (Table 4-3).

A subset of the impacts listed above would occur within the MHPA (Table 4-4). These impacts would include: 0.11 hectare (0.27 acre) of vernal pools; 1.7 hectares (4.2 acres) of maritime succulent scrub (including disturbed); 0.4 hectare (1.1 acres) of Diegan coastal sage scrub (including disturbed); 0.08 hectare (0.21 acre) of freshwater marsh; 0.16 hectare (0.39 acre) of southern willow scrub; 0.05 hectare (0.12 acre) of mule fat scrub; 0.17 hectare (0.43 acre) of seasonal pond (one pond); and 1.1 hectares (2.7 acres) of non-native grassland. Within the OCCS Preserve, impacts to the MHPA include 1.4 hectares (3.5 acres) of maritime succulent scrub and 0.10 hectare (0.26 acre) of vernal pools.

A portion of the vegetation impacts associated with construction of the two proposed bridge structures across Spring Canyon would be temporary (Table 4-5). These temporary vegetation impacts would total 0.44 hectare (1.09 acres), including: 0.08 hectare (0.19 acre) of disturbed maritime succulent scrub; 0.14 hectare (0.36 acre) of disturbed Diegan coastal sage scrub; 0.17 hectare (0.41 acre) of non-native grassland; and 0.06 hectare (0.14 acre) of disturbed habitat.

The Freeway-North Alignment Alternative would displace other vegetation types that are not considered sensitive and, therefore, do not require mitigation. These various habitats are: 2.4 hectares (6.0 acres) of non-native vegetation; 1.3 hectares (3.3 acres) of eucalyptus woodland; 13.2 hectares (32.7 acres) of agricultural land; 122.0 hectares (301.5 acres) of disturbed habitat; and 86.3 hectares (213.2 acres) of developed land. A portion of the North Alignment impacts to non-sensitive vegetation would occur within the San Diego Button-celery Preserve. The impacts would include: 0.04 hectare (0.1 acre) of non-native grassland and less than 0.1 hectare (0.1 acre) of disturbed habitat.

Table 4-5
TEMPORARY* VEGETATION IMPACTS WITHIN SPRING CANYON

BIOLOGICAL RESOURCE	North Alignment (Hectares [Acres])	Preferred Alternative (Hectares [Acres])	South Alignment (Hectares [Acres])
Maritime succulent scrub	--	0.30 (0.74)	0.50 (1.22)
Maritime succulent scrub – disturbed	0.08 (0.19)	0.08 (0.19)	--
Maritime Succulent Scrub Subtotal	0.08 (0.19)	0.38 (0.93)	0.50 (1.22)
Diegan coastal sage scrub	--	--	0.41 (1.00)
Diegan coastal sage scrub – disturbed	0.14 (0.36)	0.33 (0.81)	--
Diegan Coastal Sage Scrub Subtotal	0.14 (0.36)	0.33 (0.81)	0.41 (1.00)
Mule fat scrub	--	--	0.02 (0.05)
Non-native grassland	0.17 (0.41)	0.21 (0.52)	0.09 (0.21)
Disturbed habitat	0.06 (0.14)	0.10 (0.25)	0.03 (0.07)
TOTAL TEMPORARY IMPACT AREA	0.44 (1.09)	1.02 (2.51)	1.04 (2.55)

*Temporary impacts refer to areas that would be disturbed from the crossing at Spring Canyon and restored after bridge construction. All the temporary impacts would occur within the boundaries of the MHPA. The area beneath the proposed bridges is not included in the impact calculations as the disturbance is assumed to be permanent due to pier construction and the effects of shading

Freeway-South Alignment Alternative

The Freeway-South Alignment Alternative would directly impact 17 vernal pools (Figure 4-16). This translates into an area of approximately 0.07 hectare (0.18 acre). It would also disturb approximately 0.02 hectare (0.05 acre) of road pools containing fairy shrimp and partially impact three watersheds (including 0.10 hectare [0.25 acre] of the watershed for a vernal pool complex mapped as part of the J14 Group) currently supporting vernal pools. The watershed containing the J14 Group is approximately 0.76 hectare (1.87 acres) in size and, although currently degraded due to unauthorized off-road vehicle activity and recent drought conditions, has been documented as supporting 14 vernal pools; populations of Otay Mesa mint (over 630 plants); Otay tarplant (over 16,600 plants); and spreading navarretia (approximately 129 plants).

Other vegetation impacts include: 1.4 hectares (3.4 acres) of maritime succulent scrub (including disturbed); 7.6 hectares (18.7 acres) of coastal sage scrub (including disturbed); 0.16 hectare (0.40 acre) of freshwater marsh; 1.24 hectares (3.07 acres) of southern willow scrub (including disturbed); 0.82 hectare (2.02 acres) of mule fat scrub (including disturbed); 1.20 hectares (2.96 acres) of disturbed wetlands; 0.07 hectare (0.17 acre) of seasonal pond (two ponds); and 52.6 hectares (129.9 acres) of non-native grassland, 17.8 hectares (44.0 acres) of which is disturbed (Table 4-3).

A subset of the sensitive habitat impacts listed above would occur within the MHPA (Table 4-4). These impacts would include 0.04 hectare (0.10 acre) of vernal pools, less than 0.01 hectare (0.01 acre) of road pools (two pools), 1.2 hectares (3.0 acres) of maritime succulent scrub, 3.8 hectares (9.5 acres) of Diegan coastal sage scrub (including disturbed), 0.01 hectare (0.02 acre) of freshwater marsh, 0.04 hectare (0.08 acre) of mule fat scrub, 0.03 hectare (0.08 acre) of seasonal pond (one pond), and 1.6 hectares (4.0 acres) of non-native grassland (including 0.5 hectare [1.2 acres] of non-native grassland from the non-native grassland/disturbed habitat type).

A portion of the vegetation impacts associated with construction of the two proposed bridge structures across Spring Canyon would be temporary in nature. The temporary vegetation

impacts for the Freeway-South Alignment Alternative (Table 4-5) would total 1.04 hectares (2.55 acres), including: 0.50 hectare (1.22 acres) of maritime succulent scrub; 0.41 hectare (1 acre) of Diegan coastal sage scrub; 0.02 hectare (0.05 acre) of mule fat scrub; 0.09 hectare (0.21 acre) of non-native grassland; and 0.03 hectare (0.07 acre) of disturbed habitat.

The Freeway-South Alignment Alternative would displace other vegetation types that are not considered sensitive and, therefore, do not require mitigation. These various habitats are: 2.4 hectares (6.0 acres) of non-native vegetation; 1.3 hectares (3.3 acres) of eucalyptus woodland; 13.2 hectares (32.7 acres) of agricultural land; 123.1 hectares (304.1 acres) of disturbed habitat; and 90.7 hectares (224.1 acres) of developed land.

The Freeway-South Alignment Alternative would not impact the OCCS mitigation site. A portion of the Freeway-South Alignment Alternative's impacts to non-sensitive vegetation would occur within the San Diego Button-celery Preserve. The impacts would include: impacts to 0.04 hectare (0.1 acre) of non-native grassland and less than 0.1 hectare (0.1 acre) of disturbed habitat and would be mitigated as described above for the two habitat types.

Tollway Alignment Alternatives

The Tollway Alignment Alternatives would require a larger project footprint than the Freeway-Alignment Alternatives due to construction of facilities associated with the Tollway, such as utility and administration buildings. Overall, the Tollway Alternatives would result in a wider project footprint between Heritage Road and Britannia Boulevard due to the construction of two buildings. A utility building and associated parking lot between Heritage and Cactus roads would impact a greater area of Diegan coastal sage scrub occupied by the federally listed coastal California gnatcatcher, than would the Freeway Alternatives. An administration building and associated parking lot between Cactus Road and Britannia Boulevard would disturb more non-native grassland than the Freeway Alternatives. Additionally, a frontage road to provide access to the utility building from Cactus Road would increase the project impact on eucalyptus woodland, which is not a sensitive habitat, but can support raptors.

Based on the previous Freeway and Tollway designs, construction of seven toll booths and two toll plazas along the Route 905 corridor would not appreciably increase the project footprint, and therefore, would not substantially increase impacts to biological resources. The Tollway Alternatives would result in greater impacts to gnatcatcher-occupied coastal sage scrub and non-native grassland.

All Alignment Alternatives and Linne Soils

For all the build alternatives, an estimated 3.6 hectares (8.8 acres) of the series would be disturbed by construction within the West Segment of the Route 905 project where the build alignments are identical (Figure 4-12A and Table 4-6). This area accounts for approximately 2.4 percent of the series within the southern Otay Mesa region. Developed areas with underlying Linne soils (4.2 hectares [10.3 acres]) were not included in the acreage calculations due to their loss as functioning habitat.

Table 4-6
ROUTE 905 IMPACT SUMMARY FOR LINNE SOIL SERIES*

VEGETATION COMMUNITY	IMPACTS (Hectares [Acres])
Diegan coastal sage scrub - disturbed	0.6 (1.6)
Non-native grassland/Diegan coastal sage scrub	0.2 (0.4)
Non-native grassland	0.6 (1.4)
Non-native vegetation	1.5 (3.7)
Eucalyptus woodland	0.4 (1.1)
Disturbed habitat	0.3 (0.6)
TOTAL**	3.6 (8.8)

*All calculations are based on Linne soils mapping, with impact areas adjusted to reflect the current limits of disturbance for each alignment. Impacts occur in the West Segment only and are identical for the North, Central, and South alignments.

**Developed areas with underlying Linne soils (4.2 hectares [10.3 acres]) are not included in the total acreage calculations due to their loss as functioning habitat.

4.10.2 Jurisdictional Wetlands and Waters of the United States

This section addresses the disturbance generated by each alignment that would be subject to the jurisdiction of the ACOE and CDFG. The following analysis is based primarily on the data within Figures 4-15A and 4-15B, Table 4-7, and the State Route 905 Jurisdictional Delineation.

Jurisdictional Impacts by Alignment Alternative

Preferred Alternative

The Preferred Alternative will impact 3.10 hectares (7.68 acres) of ACOE regulated areas, including 1.50 hectares (3.72 acres) of wetlands and 1.60 hectares (3.96 acres) of other Waters of the United States (Figures 4-15A and 4-15B and Table 4-7). Linear impacts will range from 19.24 linear meters (63.14 linear feet) in Drainage 1 to 2,094.71 linear meters (6,872.31 linear feet) in Drainage 7. Drainage 3 will not be disturbed by the Preferred Alternative.

For California Fish and Game jurisdictional wetlands, the disturbance will total 4.37 hectares (10.82 acres), and involve the permanent loss of freshwater marsh, southern willow and mule fat scrubs, disturbed wetlands, seasonal ponds, and streambeds (Table 4-7).

Grading and construction, associated with the two bridge structures across Spring Canyon, will result in temporary disturbance to the jurisdictional features within Drainage 4. Such areas will undergo restoration upon completion of the structures. Permanent impacts will also result from the placement of the piers and bridge shading. For purposes of evaluation, the areas located directly beneath the bridges were considered a permanent disturbance, with the habitat between the bridge footprint and limits of disturbance being assessed as a temporary impact. As estimated, 0.02 hectare (0.04 acre) of ACOE and CDFG jurisdictional areas will be temporarily impacted in Spring Canyon. Half of the disturbance will be to other Waters of the United States/streambed and the remaining half will be to southern willow scrub. Permanent impacts to ACOE and CDFG jurisdictional habitat in Spring Canyon will occur to approximately 0.01 hectare (0.02 acre) of existing streambeds/other Waters of the United States and 69.9 linear meters (213.0 linear feet) of drainage.

Freeway-North Alignment Alternative

The Freeway-North Alignment Alternative would result in 3.43 hectares (8.49 acres) of direct impacts to ACOE jurisdictional areas, including 1.65 hectares (4.09 acres) of wetlands and 1.78 hectares (4.40 acres) of other Waters of the United States (Figures 4-15A and 4-15B and Table 4-7). Linear impacts would range from 19.24 linear meters (63.14 linear feet) in Drainage 1 to 2,094.71 linear meters (6,872.31 linear feet) in Drainage 7. Drainage 3 would not be impacted by this alternative

Direct impacts to CDFG jurisdictional habitats would total 4.85 hectares (11.98 acres), including the loss of freshwater marsh, southern willow and mule fat scrubs, disturbed wetlands, seasonal ponds, and streambeds (Table 4-7).

Grading and construction associated with the two bridge structures across Spring Canyon would result in temporary disturbance to the jurisdictional features within Drainage 4. Permanent effects would also result from the placement of the piers and bridge shading. For the purposes of evaluation, the areas located directly beneath the bridges were considered a permanent disturbance. The habitat between the bridge footprint and limits of disturbance were assessed as a temporary impact. The temporary impacts to ACOE and CDFG jurisdictional areas would be equally divided between other Waters of the United States/streambeds, and southern willow scrub, at 0.01 hectare (0.02 acre) each. The permanent disturbance to ACOE and CDFG jurisdictional features under the two proposed bridges in Spring Canyon would total 40 square meters (0.01 acre) of streambeds/other Waters of the United States and 69.9 linear meters (213.0 linear feet) of drainage 4.

Freeway-South Alignment Alternatives

The Freeway-South Alignment Alternative would cause direct impacts to 3.09 hectares (7.66 acres) of ACOE regulated areas, including 1.49 hectares (3.70 acres) of wetlands and 1.60 hectares (3.96 acres) of other Waters of the United States (Figures 4-15A and 4-15B and Table 4-7). Linear impacts would range from 19.24 linear meters (63.14 linear feet) in Drainage 1 to 2,094.71 linear meters (6,872.31 linear feet) in Drainage 7. Drainage 5 would not be impacted by this alternative

Direct impacts to State jurisdictional habitats would total 4.65 hectares (11.51 acres), including the loss of freshwater marsh, southern willow and mule fat scrubs, disturbed wetlands, seasonal ponds, and streambeds (Table 4-7).

Grading and construction associated with the two bridge structures across Spring Canyon would result in temporary disturbance to the jurisdictional features within Drainage 4. Permanent effects would also result from the placement of the piers and bridge shading. The areas located directly beneath the bridges were considered a permanent disturbance. The habitat between the bridge footprint and limits of disturbance was assessed as a temporary impact. The temporary impacts to ACOE regulated areas in Spring Canyon would consist of 0.01 hectare (0.02 acre) of other Waters of the United States. The temporary impacts to CDFG habitat in Spring Canyon would be 0.04 hectare (0.11 acre), with nearly all of the impacts to mule fat scrub (0.04 hectare [0.09 acre]) and the remainder limited to streambeds (0.01 hectare [0.02 acre]). The permanent disturbance to ACOE and CDFG jurisdictional features under the two proposed bridges in Spring

Table 4-7
SUMMARY OF ACOE AND CDFG JURISDICTIONAL IMPACTS

IMPACT AREA	FREEWAY ALIGNMENT ALTERNATIVE			TOLLWAY ALIGNMENT ALTERNATIVE		
	North ¹	Preferred	South	North ¹	Central	South
ACOE Jurisdictional Areas (Hectares [Acres])						
Wetlands	1.65 (4.09)	1.50 (3.72)	1.49 (3.70)	1.65 (4.09)	1.50 (3.72)	1.49 (3.70)
Other waters of the U.S. ²	1.78 (4.40)	1.60 (3.96)	1.60 (3.96)	1.78 (4.40)	1.60 (3.96)	1.60 (3.96)
Total ACOE Jurisdictional Impacts ³	3.43 (8.49)	3.10 (7.68)	3.09 (7.66)	3.43 (8.49)	3.10 (7.68)	3.09 (7.66)
CDFG Jurisdictional Areas (Hectares [Acres])						
Freshwater marsh	0.24 (0.59)	0.15 (0.38)	0.15 (0.38)	0.24 (0.59)	0.15 (0.38)	0.15 (0.38)
Southern willow scrub	1.36 (3.35)	1.18 (2.92)	1.17 (2.89)	1.36 (3.35)	1.18 (2.92)	1.17 (2.89)
Mule fat scrub ⁴	0.81 (1.99)	0.78 (1.92)	0.79 (1.96)	0.81 (1.99)	0.78 (1.92)	0.79 (1.96)
Disturbed wetland	1.20 (2.97)	1.20 (2.97)	1.20 (2.97)	1.20 (2.97)	1.20 (2.97)	1.20 (2.97)
Total Wetlands ³	3.61 (8.90)	3.31 (8.19)	3.31 (8.20)	3.61 (8.90)	3.31 (8.19)	3.31 (8.20)
Streambed ⁵	1.25 (3.08)	1.06 (2.63)	1.34 (3.31)	1.25 (3.08)	1.06 (2.63)	1.34 (3.31)
Total CDFG Jurisdictional Impacts ³	4.85 (11.98)	4.37 (10.82)	4.65 (11.51)	4.85 (11.98)	4.37 (10.82)	4.65 (11.51)
Linear Impacts to ACOE Jurisdictional Areas (Linear Meters [Linear Feet])						
Drainage 1	19.24 (63.14)	19.24 (63.14)	19.24 (63.14)	19.24 (63.14)	19.24 (63.14)	19.24 (63.14)
Drainage 2	19.77 (64.86)	19.77 (64.86)	19.77 (64.86)	19.77 (64.86)	19.77 (64.86)	19.77 (64.86)
Drainage 3	0.00 (0.00)	0.00 (0.00)	23.15 (75.96)	0.00 (0.00)	0.00 (0.00)	23.15 (75.96)
Drainage 4 ³	198.61 (651.59)	291.53 (956.46)	88.05 (288.88)	198.61 (651.59)	291.53 (956.46)	88.05 (288.88)
Drainage 5	181.56 (595.66)	<0.1 (<0.5)	0.00 (0.00)	181.56 (595.66)	<0.1 (<0.5)	0.00 (0.00)
Drainage 6	30.53 (100.17)	39.00 (127.95)	39.00 (127.95)	30.53 (100.17)	39.00 (127.95)	39.00 (127.95)
Drainage 7	2,094.71 (6,872.31)	2,094.71 (6,872.31)	2,094.71 (6,872.31)	2,094.71 (6,872.31)	2,094.71 (6,872.31)	2,094.71 (6,872.31)
Drainage 8	1,800.37 (5,906.67)	1,800.37 (5,906.67)	1,800.37 (5,906.67)	1,800.37 (5,906.67)	1,800.37 (5,906.67)	1,800.37 (5,906.67)
Total ACOE Linear Impacts	4,344.74 (14,254.40)	4,264.73 (13,991.89)	4,084.25 (13,399.77)	4,344.74 (14,254.40)	4,264.73 (13,991.89)	4,084.25 (13,399.77)
¹ Watershed boundaries for the OCCS preserve were not available; such impacts would be in addition to those reported here. ² Includes linear streambeds and seasonal ponds. ³ Includes both temporary and permanent impacts to Drainage 4. ⁴ Includes disturbed habitat. ⁵ Includes seasonal ponds, which are not wetlands but are jurisdictional.						

Canyon would total approximately 40 square meters (0.01 acre) of existing streambeds/other Waters of the United States and 46.6 linear meters (152.9 linear feet) of drainage.

Tollway Alignment Alternatives

The impacts discussed above for the Freeway-North, Central, and South Alignment alternatives are identical for their respective Tollway equivalents.

4.10.3 Sensitive Plant Species

Sensitive Plant Impacts by Alignment Alternative

The sensitive plant analysis (including listed species) addresses the issue of impacts based on the data for annual and perennial plants, and other historical numbers for annual plants. The data were combined onto Figures 4-13A and 4-13B, and the total number of loci (i.e., separate areas containing one or more plants) and individuals of each species that would be impacted by the alignment alternatives were estimated (Table 4-8). In situations where only a portion of a mapped population would be affected, the number of individuals was estimated based on the percentage of the area that was within the alignment footprint. For ashy spike-moss, individuals could not be counted and the impact is reported as numbers of populations. In addition, the 2001 annual plant locations for the OCCS preserve did not include actual counts, but instead represent loci of populations within the preserve.

Preferred Alternative

The Preferred Alternative will impact one federally and state-listed annual plant, the San Diego button-celery. Other sensitive species that will be impacted by the Preferred Alternative include variegated dudleya, San Diego County needle grass, San Diego sunflower, San Diego barrel cactus, ashy spike-moss, cliff spurge, San Diego bur-sage, little mousetail, seaside calandrinia, and western dichondra.

Freeway-North Alignment Alternative

The Freeway-North Alignment Alternative would impact the following federally and/or state-listed plants within 24 vernal pools located inside the OCCS Preserve: spreading navarretia, San Diego button-celery, Otay Mesa mint, and California Orcutt grass.

Other sensitive species that would be impacted by the Freeway-North Alignment Alternative include variegated dudleya, San Diego sunflower, San Diego barrel cactus, ashy spike-moss, cliff spurge, San Diego bur-sage, seaside calandrinia, and western dichondra.

Freeway-South Alignment Alternative

The Freeway-South Alignment Alternative would impact the following federally and/or state-listed plants: spreading navarretia, Otay tarplant, and Otay Mesa mint. Other sensitive species that would be impacted by the Freeway-South Alignment Alternative include variegated dudleya, San Diego County needle grass, San Diego sunflower, San Diego barrel cactus, ashy spike-moss, cliff spurge, San Diego bur-sage, little mousetail, seaside calandrinia, and western dichondra.

Table 4-8
SENSITIVE PLANT SPECIES IMPACTS

PLANT SPECIES	North Alignment	Preferred Alternative	South Alignment
LISTED SPECIES		(# observed) Loci (Individuals)	
Otay Mesa mint	3 (U) ¹	0 (0)	1 (7)
California Orcutt grass	1 (U) ¹	0 (0)	0 (0)
San Diego button-celery	3 (U) ¹	1 (15)	0 (0)
Otay tarplant	0 (0)	0 (0)	1 (5,140)
Spreading navarretia	2 (U) ¹	0 (0)	1 (40)
SENSITIVE SPECIES		(# observed) Loci (Individuals)	
Orcutt's bird's-beak	0 (0)	0 (0)	0 (0)
San Diego bur-sage	3 (46)	4 (96)	3 (7)
Cliff spurge	3 (9)	4 (81+)	4 (237+)
San Diego barrel cactus	2 (53)	3 (98)	3 (196)
Little mousetail	0 (0)	1 (6)	1 (98)
San Diego County needle grass	0 (0)	1 (1+)	3 (3+)
San Diego sunflower	5 (25+)	9 (92+)	7 (330+)
Ashy spike-moss	2 (U)	2 (U)	5 (U)
Seaside calandrinia	3,372 (U)	4,279 (U)	3,639 (U)
Western dichondra	59 (1)	59 (1)	59 (1)

¹Refers to plant populations within the OCCS Preserve.

U refers to an unknown number of plant individuals within the population.

Tollway Alignment Alternatives

The impacts discussed above for the Freeway-North, Central, and South Alignment alternatives would be identical for their respective Tollway equivalents.

4.10.4 Sensitive Animal Species

Sensitive Animal Impacts by Alignment Alternative

Impacts to maritime succulent scrub and Diegan coastal sage scrub-dependent animal species (including listed species) would be similar for all the build alternatives as the anticipated habitat disturbance would not be substantially different between the alternatives. Sensitive species potentially utilizing the aforementioned habitat types include the coastal California gnatcatcher, Quino checkerspot butterfly, San Diego black-tailed jack rabbit, and orange-throated whiptail (Table 4-9).

Other sensitive species that would be affected by the loss of associated foraging habitat include raptor species, such as the white-tailed kite, Cooper's hawk, Marsh hawk, burrowing owl, and red-tailed hawk, along with the loggerhead shrike and California horned lark. Each would lose a similar extent of available habitat under all the alignments (Table 4-9).

The eucalyptus woodlands, located in the Western Segment of the Study Corridor and documented as supporting one raptor nest, will be affected by the project.

The discussion below summarizes the impacts of the alignment alternatives with respect to the most sensitive animal species recorded within the Study Corridor; the federally-listed San Diego and Riverside fairy shrimp, coastal California gnatcatcher, and Quino checkerspot butterfly.

Preferred Alternative

The Preferred Alternative's impacts to vernal pools will have corresponding impacts to both San Diego and Riverside fairy shrimp (Figure 4-14A and 4-14B). Its impacts to the 5.0 hectares (12.3 acres) of Diegan coastal sage scrub and 1.3 hectares (3.2 acres) of maritime succulent scrub are relevant in that the vegetation types could serve as potential habitat for the coastal California gnatcatcher. During 2002 protocol surveys, coastal California gnatcatchers were documented in Spring Canyon and west of Old Otay Mesa Road, within Diegan coastal sage scrub and maritime succulent scrub habitat largely designated as MHPA lands. However, gnatcatchers were not observed within the Preferred Alternative footprint during the 2002 protocol surveys. Impacts to Diegan coastal sage scrub and maritime succulent scrub will reduce potential habitat that could be used by the federally-listed, endangered Quino checkerspot butterfly.

Freeway-North Alignment Alternative

The Freeway-North Alignment Alternative's impacts to vernal pools and the one road pool would impact both San Diego and Riverside fairy shrimp. Because the majority of the Freeway-North Alignment Alternatives vernal pool impacts would occur within the OCCS Preserve, the majority of its impacts to San Diego and Riverside fairy shrimp would similarly occur within the preserve.

Table 4-9
SENSITIVE ANIMAL SPECIES IMPACTS

ANIMAL SPECIES	North Alignment	Preferred Alternative	South Alignment
LISTED SPECIES	(# of individuals observed)		
Coastal California gnatcatcher (2002)	0	0	2
Quino checkerspot butterfly (2002 and 2003)	1	0	0
San Diego fairy shrimp (1994 to 2002)	9 ^{a,b}	4	4
Riverside fairy shrimp (1994 to 2002)	7 ^{a,c}	1	1
SENSITIVE SPECIES	(# of individuals observed in 2001 to 2003)		
Burrowing owl	0	0	0
California horned lark	0	0	0
White-tailed kite	0	0	0
Cooper's hawk	0	0	0
Orange-throated whiptail	2	2	2
Red-tailed hawk	0	0	0
Bobcat	0	0	0
San Diego black-tailed jackrabbit	2	2	0
Northern harrier	0	0	0

^aNumber of basins occupied by species within the alignment footprint.

^bSeven of these basins are within the OCCS preserve.

^cSix of these basins are within the OCCS preserve.

The Freeway-North Alignment Alternative's impacts to 4.3 hectares (10.6 acres) of Diegan coastal sage scrub and 1.9 hectares (4.6 acres) of maritime succulent scrub are relevant in that gnatcatchers could utilize the habitat for foraging, sheltering, and/or breeding. The species was, however, never recorded within the alignment footprint. The permanent removal of Diegan coastal sage scrub and maritime succulent scrub would also result in the loss of potential habitat for the Quino checkerspot butterfly. In 2001, a female Quino checkerspot was incidentally sighted in a portion of the OCCS Preserve that would be traversed by the Freeway-North Alignment Alternative. During that year, host plants and nectar sources were present along the canyon rims within Spring Canyon.

Freeway-South Alignment Alternative

The Freeway-South Alignment Alternative's impacts to vernal pools and road pools would have a corresponding impact to both San Diego and Riverside fairy shrimp. Its permanent disturbance to 7.6 hectares (18.7 acres) of Diegan coastal sage scrub and 1.4 hectares (3.4 acres) of maritime succulent scrub would have corresponding impacts to the coastal California gnatcatcher as one pair of gnatcatchers was documented (in a tributary to Spring Canyon during the 2002 protocol surveys) within this vegetation habitat within the Freeway-South Alignment Alternative (Figure 4-14A and 4-14B). The impacts to Diegan coastal sage scrub and maritime succulent scrub will reduce potential habitat for the endangered Quino checkerspot butterfly. Focused surveys, conducted between 1997 and 2003, did not find evidence of the species within the project boundaries, even though suitable habitat exists and appropriate plant species were recorded in the study area.

Tollway Alignment Alternatives

The Tollway Alignment Alternatives would require a larger project footprint than the Freeway Alignment Alternatives. Overall, the Tollway Alternatives would result in a wider project footprint between Heritage Road and Britannia Boulevard due to the construction of two buildings. A utility building and associated parking lot between Heritage and Cactus roads would impact a greater area of Diegan coastal sage scrub occupied by the federally listed coastal California gnatcatcher, than would the Freeway Alternatives.

Based on the previous Freeway and Tollway designs, construction of seven toll booths and two toll plazas along the Route 905 corridor would not appreciably increase the project footprint, and therefore, would not substantially increase impacts to biological resources. The Tollway Alternatives would result in greater impacts to gnatcatcher-occupied coastal sage scrub.

No Build Alternative

Under this alternative, there would be no change within the Study Corridor and biological resources would not be impacted.

4.10.5 Preferred Alternative Mitigation Measures

Recommended mitigation, with respect to vernal pools and other sensitive vegetation types (including those within the OCCS preserve), is based on the MSCP (as outlined by the City of San Diego Biology Guidelines and County of San Diego Biological Mitigation Ordinance) and

on habitat quality. All mitigation is assumed to occur within or near the MHPA, such that the value of the MHPA will be enhanced.

Proposed Mitigation for Habitat Impacts

For the Preferred Alternative's impacts to vernal pools and road pools with fairy shrimp, mitigation will involve the enhancement, restoration/creation, and preservation of pool habitat located within or adjacent to the MHPA in Otay Mesa on the Wall-Hudson property (Figure 4-11) at a ratio of 3:1 and 2:1, respectively (Table 4-10). Additionally, a ratio of 10:1 will be applied to the acreage of pools, disturbed by construction, to generate the watershed values necessary to sufficiently support the pool complexes. A total of 0.16 hectares (0.39 acres) and 1.6 hectares (3.9 acres) of pool habitat and watershed, respectively, will be needed to mitigate the Preferred Alternative's impacts. A conceptual wetland mitigation plan was prepared and submitted to the appropriate regulatory agencies for review and consideration. A final plan, outlining the details and implementation schedule of all enhancement/restoration of the maritime succulent scrub, Diegan coastal sage scrub, grasslands, and vernal pools on Wall-Hudson and Bonita Meadows, will be prepared by the Department and approved by the USFWS and other regulatory agencies prior to the start of construction. All enhancement/restoration activities will commence the first summer/fall season prior to or concurrently with the start of construction. The following criteria will be included in the plan for enhancement/restoration of fairy shrimp pools and their contributing watersheds:

- A hydrologic evaluation and map of the enhanced and restored vernal pools and contributing watersheds will be prepared. The evaluation must demonstrate that the watersheds of newly restored pools will provide the appropriate amount of water for fairy shrimp without impacting the watersheds of existing vernal pools currently supporting San Diego fairy shrimp.
- The grading for the enhanced and restored pools will be conducted under the direction of a qualified biologist with a minimum three years of vernal pool restoration experience approved by the USFWS.
- Grading plans for the enhanced and restored pools will have 0.15 meter (0.5 foot) topographic contours. The grading plans will specify the areas of existing habitat which are to remain unaffected by enhancement/restoration activities. Grading will be done using a bobcat or small tracked dozer with ripping tines and slopeboards, rubber-tired loaders and a sheeps-foot for mound construction. All grading within the upper margins of existing pools will be done with hand tools.
- The number, location, and design of vernal pools to support Riverside fairy shrimp will be coordinated with the Service.
- Measures will be incorporated to prevent the introduction of versatile fairy shrimp (*Branchinecta lindahli*) into enhancement/restoration areas.
- Enhancement/restoration success will be determined by measuring the ponding of water; and density of viable cysts, hatched fairy shrimp, and gravid females within the enhanced/restored ponds. Water measurements will be taken in the enhanced/restored ponds to determine the depth, duration, and quality of ponding. Dry samples will be taken in the

enhanced/restored pools to determine the density of viable cysts in the soils. Wet samples will also be taken in the enhanced and restored pools to determine the density of hatched fairy shrimp and gravid females. The enhanced and restored pools must pond for a period of time similar to that of reference vernal pools during an average rainfall year and at an appropriate depth and quality to support fairy shrimp. The enhanced and restored pond's average viable cyst, hatched fairy shrimp, and gravid female density must not differ significantly ($p < 0.05$) from reference pools for at least three wet seasons before a determination of success can be made.

- Native plants and animals will be restored within the enhanced and restored pools and their watersheds. This will be accomplished by redistributing topsoil containing seeds, spores, bulbs, eggs, and other propagules from adjacent vernal pool and upland habitats; by the translocation of propagules of individual species from off-site habitats; and by the use of commercially available native plant species. Topsoil and plant materials from the native habitats to be impacted on-site will be applied to the watersheds of the enhanced and restored pools to the maximum extent practicable. Exotic weed control will be implemented within the restoration areas to protect and enhance habitat remaining on-site. The Plan will include success criteria for restoring native plants and animals.
- A 6-year maintenance and monitoring program for the enhanced and restored pools and their contributing watersheds will be implemented. The monitoring program will consist of quantitative hydrological, viable cyst, hatched fairy shrimp, and gravid female measurements, complete floral and fauna inventories, quantitative vegetation transects, and photographic documentation.
- If a performance criterion is not met for any of the enhanced and restored pools in any year, or if the final success criteria are not met, the Department will prepare an analysis of the cause(s) of failure and, if deemed necessary by the USFWS, propose remedial actions for approval. If any of the enhanced/restored pools have not met a performance criterion during the initial 6-year period, the Department's maintenance and monitoring obligations will continue until the USFWS deems the enhancement/restoration successful, or contingency measures must be implemented.
- Perimeter fencing on the west side of the mesa top at Wall-Hudson will be installed prior to construction.
- Annual reports will be submitted to the USFWS by August 1 of each year. These reports will assess both the attainment of yearly success criteria and progress toward the final success criteria. The reports will also summarize compliance with the measures discussed in the Biological Opinion (Appendix M).

All habitats to be restored, enhanced, and/or preserved will be managed and preserved in perpetuity. FHWA and the Department will place restrictive covenants and prohibited uses in the deed for Wall-Hudson, Bonita Meadows, and the La Media drainage, and these sites will be managed according to a USFWS approved Long-Term Management Plan. The draft deed and Long-Term Management Plan will be approved by the USFWS prior to the start of construction.

Because stored fairy shrimp cyst viability may decrease and the probability that cysts may otherwise be harmed in storage also increases over time, any temporal loss of vernal pools

caused by delays in initiating restoration shall be compensated through additional fairy shrimp occupied vernal pool preservation and/or restoration at a 0.5:1 ratio for every 6 months of delay (i.e., 1:1 for 12 months delay, 1.5:1 for 18 months delay, etc.). The USFWS shall waive the requirement for additional vernal pool preservation and/or restoration only if a justification for any delay is provided in writing and the USFWS concur with the justification.

All contour grading conducted near those vernal pools (within the Preferred Alternative's alignment and restoration areas) which support federally listed species will implement the following measures:

- Grading activities within the watershed of the fairy shrimp and button celery pools will be done when the soil is dry and outside the rainy season to minimize potential impacts to the avoided and enhanced/restored pools (unless erosion control measures approved by the USFWS and RWQCB are in place).
- For impacted watersheds which will continue to serve the remaining vernal pools after Route 905 is constructed, contour grading will occur to create an area of watershed equal to that lost through project construction. The final grading plans near vernal pools will be approved by the USFWS and other regulatory agencies and incorporated into the upland restoration plan.
- The Department will staff a qualified biologist with a minimum three years of vernal pool experience who will be responsible for overseeing compliance with protective measures for the fairy shrimp. The biologist will be approved by the USFWS and will have the authority to halt all associated project activities, which may be in violation of the terms and conditions of the Biological Opinion (Appendix M). This biologist will notify the USFWS within 24 hours of any observed violation.

Table 4-10

VERNAL POOL AND ROAD POOL IMPACTS AND RECOMMENDED MITIGATION

Vegetation Community	Permanent Impacts [Hectares (Acres)]*	Permanent Impacts within the MHPA [Hectares (Acres)]**	Mitigation Ratio	Total Compensation***
Vernal pool	0.04 (0.11)	0.02 (0.05)	3:1	0.13 (0.33)
Road pool with sensitive species	0.01 (0.03)	--	2:1	0.02 (0.06)
Subtotal	0.06 (0.14)			0.16 (0.39)
Watershed: vernal pool surface area	0.16 (0.39)	--	10:1	1.6 (3.9) + 0.16 (0.39) = 1.76 (4.29) of watershed + vernal pool surface area

*Vernal pool acreages are reported to the nearest hundredth. All values are approximate and only address permanent impacts. All values are approximate. Hectare totals are calculated from acre totals to minimize rounding errors.

**Compensation for impacts to MHPA lands will occur either within or near the MHPA, such that the value of the planning area would be enhanced.

***Totals may not precisely reflect the product of the impact numbers due to rounding.

The Preferred Alternative's impacts to maritime succulent scrub and Diegan coastal sage scrub will be mitigated at a ratio of 2:1 and 1:1, respectively (Table 4-11). Non-native grassland will be mitigated at a ratio of 0.5:1. Mitigation will be accomplished by preservation of maritime succulent scrub and Diegan coastal sage scrub at the Wall-Hudson property and Bonita Meadows Mitigation Parcel (Figure 4-11), which are within and adjacent to the MHPA, respectively.

As stated above, FHWA and the Department will place restrictive covenants and prohibited uses in the deed for Wall-Hudson, Bonita Meadows, and the La Media drainage, and these sites will be managed according to a USFWS approved Long-Term Management Plan. The draft deed and Long-Term Management Plan will be approved by the USFWS prior to the start of construction.

An estimated 2.6 hectares (6.4 acres) of maritime succulent scrub, 5.0 hectares (12.3 acres) of Diegan coastal sage scrub, and 27.1 hectares (67.1 acres) of nonnative grassland will be preserved.

Table 4-11
IMPACT AREAS AND RECOMMENDED MITIGATION AREAS
Hectares (Acres)

Vegetation Community	Mitigation Ratio	Impact Area*	Total Compensation**
Maritime succulent scrub (MSS)	2:1	1.3 (3.2)	2.6 (6.4)
Diegan coastal sage scrub	1:1	5.0 (12.3)	5.0 (12.3)
Nonnative grassland	0.5:1	54.3 (134.1)	27.1 (67.1)
Freshwater marsh	2:1	0.16 (0.40)	0.32 (0.80)
Southern willow scrub	2:1	1.25 (3.10)	2.50 (6.20)
Mule fat scrub	2:1	0.80 (1.98)	1.60 (3.96)
Disturbed wetlands	1:1	1.22 (3.02)	1.22 (3.02)
Seasonal pond	1:1	0.07 (0.17)	0.07 (0.17)

* Wetland acreages are reported to the nearest hundredth and uplands to the nearest tenth. All values are approximate and only address permanent impacts. Hectare totals are calculated from acre totals to minimize rounding errors.

**Totals may not precisely reflect the product of the impact numbers due to rounding.

Any graded habitat adjacent to the Spring Canyon corridor or within/near the MHPA (including the La Media drainage) will be revegetated with an appropriate native plant mix. Prior to the start of construction, the proposed seed palette and revegetation methods will be developed in coordination with the USFWS and a Department biologist.

Some areas within the ROW will be seeded/planted with native species, but due to the increased disturbance typically found along roads, mitigation credit was not be requested for these locations. Therefore, any possible, future impacts to such reestablished habitat within the ROW will not be subject to additional compensation requirements, as all impacts are fully mitigated as part of the larger Route 905 project.

As recommended by the MSCP Biology Guidelines, the Preferred Alternative's impacts to freshwater marsh, southern willow scrub, and mule fat scrub will be mitigated at a ratio of 2:1 (Table 4-11). Seasonal ponds and disturbed wetlands will be mitigated at the lower ratio of 1:1 due to poor habitat quality (within the Study Corridor) and the vegetation's limited value to wildlife. Overall, 0.32 hectares (0.80 acres) of freshwater marsh, 2.50 hectares (6.20 acres) of southern willow scrub, 1.60 hectares (3.96 acres) of mule fat scrub, 1.22 hectares (3.02 acres) of disturbed wetlands, and 0.07 hectares (0.17 acres) of seasonal pond will be mitigated. The Preferred Alternative avoids direct disturbance to the freshwater marsh at the north end of Spring Canyon that was recently restored as part of the OMR widening project. Successful avoidance of the wetland area will require staking/fencing, best management practices, and monitoring during construction. The ROW fence will be placed between Route 905 and the freshwater marsh to

prevent impacts resulting from construction and maintenance activities, but it will be open to Spring Canyon so as not to impede wildlife movement.

Linne soil sites will be surveyed for sensitive plant species prior to construction. In areas where the species are located, the soil will be salvaged for subsequent redistribution onto other similar, temporarily impacted areas. Soils will be stockpiled for the shortest time practicable and no taller than 1.2 meters (4 feet) high to assure the viability of soil biota. All work will be overseen by a project biologist familiar with the sensitive plant species associated with Linne soils. Salvaging methods will be included in the USFWS approved upland restoration plan.

The USFWS retains the right to access and inspect the Route 905 project site for compliance with the Biological Opinion (Appendix M). Any habitat destroyed that is not in the identified project footprint will be disclosed immediately to the USFWS for possible reinitiation of consultation. Compensation for such habitat loss will be requested at a minimum ratio of 5:1 (habitat in kind).

Proposed Mitigation for Jurisdictional Impacts

Three mitigation sites were identified for the purposes of mitigating the Preferred Alternative's impacts to wetlands, Waters of the United States, and vernal pools (Figure 4-11). On-site mitigation will occur within a constructed earthen, trapezoidal channel located south of Drainage 7 and west of La Media Road. Off-site wetland creation and restoration will be conducted on an approximately 81-hectare (200-acre) parcel situated on the southwest side of Proctor Valley Road between San Miguel Road and East H Street, east of the community of Bonita. The Wall-Hudson property (32-hectare [80-acre]), located just north of the current Route-905, and largely within Dennery Canyon, will also be used for the off-site mitigation of vernal pools and pool habitat. Site selection was based on a combination of factors including: lands contained within the MHPA, proximity to the project site, restoration potential, appropriate habitat types, and adequate habitat acreages.

For ACOE jurisdictional areas, it is estimated that 3.10 hectares (7.68 acres), including 1.50 hectares (3.72 acres) of wetlands and 1.60 hectares (3.96 acres) of other Waters of the United States will be disturbed by project implementation. Applying the mitigation ratios outlined above, mitigation will total 2.34 hectares (5.80 acres) for wetlands and 1.60 hectares (3.96 acres) for other Waters of the United States. Both the La Media Road drainage and Bonita Meadows site will be used to offset the impacts to ACOE habitat. Approximately 1.32 hectares (3.28 acres) exist at the La Media drainage for the creation/reestablishment of southern willow scrub and freshwater marsh habitat. Additionally, a buffer area of coastal age scrub (1.19 hectares [2.96 acres]) will be created adjacent to the riparian habitat. At Bonita Meadows, approximately 2.04 hectares (5.03 acres) of riparian enhancement, 2.76 hectares (6.81 acres) of riparian restoration, and 1.54 hectares (3.81 acres) of riparian creation will be available as mitigation. The parcel functions as part of a system of regional habitat blocks that accommodate open space for wildlife species and support resident populations of wildlife. For the project, it is estimated that mitigation for impacts to jurisdictional wetlands, Waters of the United States, and vernal pools would be approximately \$3,300,000.

A draft wetland mitigation plan was prepared and submitted to the appropriate regulatory agencies for consideration. A final wetland mitigation plan, which will outline the details of

implementation, will be prepared and submitted to these regulatory agencies for review and approval. The document will contain, but is not limited to, the following provisions:

- At a minimum, a 2-year plant establishment period and 3-year habitat management and monitoring program will be implemented on the mitigation lands.
- All of the following invasive exotic plant species including pampas grass (*Cortaderia jubata*), giant reed (*Arundo donax*), tamarisk (*Tamarix* spp.), ice plant (*Carpobrotus edulis*), tobacco tree (*Nicotiana glauca*), and acacia (*Acacia* spp.), fennel, and cocklebur plants will be removed from the La Media Road drainage and Bonita Meadows Mitigation Site. Additional species may be removed.
- Plant survival and growth will be sustained for at least two dry seasons without irrigation or human intervention. Irrigation will be gradually withdrawn from the mitigation site.
- Natural recruitment of riparian tree and shrub species will be documented within the planted site. The site should show natural recruitment through vegetative growth and/or seedlings 3 years after installation.
- Numbers of wildlife species and individuals will be monitored quarterly at each site as an indication of habitat function and values. Over time there should be a change from ground birds to riparian species. Any nesting birds, particularly sensitive species, will be identified to indicate that the habitat is functional for these species.
- Cover of wetland plant species will be evaluated at each site through several methods. Each year vegetation cover throughout the mitigation site will be mapped with GIS on a current aerial photograph. Permanent photo stations will also be set up to evaluate vegetative growth over time on-site. Vegetation cover will be monitored through visual inspection of the site and through monitoring of permanent transects.
- The grading of the mitigation sites will be completed during the first year of construction of the Route 905 Project. Grading at each site will be completed outside of the bird breeding season (September 16 through February 14), to ensure there will be no impacts to resident/migratory birds. Irrigation and planting will occur in the late fall to early winter following the first year of project construction.
- The area adjacent to the La Media drainage (to the south) will be graded down to the elevation of the existing drainage. The proposed channel will be 15.6 meters (51.1 feet) in width with 3:1 sloping banks. The mitigation will consist of 1.32 hectares (3.28 acres) of riparian creation consisting of southern willow scrub and freshwater marsh species. Freshwater marsh species will be planted in the low flow portion of the channel, transitioning to southern willow scrub 2 meters (6 feet) upslope. A buffer area of 1.19 hectare (2.96 acres) of coastal sage scrub will also be created adjacent to the southern willow scrub habitat.
- At the Bonita Meadows Mitigation Site, the areas proposed for creation will be graded down to meet the elevation of the existing drainage. The final grade will be determined during development of the final mitigation plan. A total of 1.54 hectare (3.81 acre) of riparian habitat is available for creation on the parcel.

- With respect to the La Media drainage, freshwater marsh species will be planted in the low flow portion of the channel, transitioning to southern willow scrub 2 meters (6 feet) upslope. The wetland species that will be utilized are described in the draft wetland mitigation plan. Planting within the channel will consist of a combination of 1-gallon containers, randomly mixed and planted approximately 1.8 meters (6 feet) on center, and a native seed mix. A buffer area of 1.19 hectare (2.96 acres) of coastal sage scrub will also be created adjacent to the southern willow scrub habitat, and planted and seeded with coastal sage scrub species. Quantities of seed for each species will be determined during development of the final wetland mitigation plan.
- Proposed actions for the Bonita Meadows Mitigation Site include the creation, restoration and enhancement of riparian habitat. All creation and enhancement areas on the parcel will be planted with wetland species. Plantings within the creation and restoration areas will consist of a combination of 1-gallon containers, randomly mixed and planted approximately 1.8 meters (6 feet) on center, and a native seed mix. Quantities of seed for each species will be determined during development of the final wetland mitigation plan. Some areas within the creation areas will be graded down to allow for freshwater marsh habitat within the site. Areas within the restoration portion will be planted with freshwater species where appropriate. All exotics removed within the enhancement area will be replaced with riparian and freshwater species where appropriate within the drainage. Plantings in the enhancement area will be from cuttings and seed.
- Irrigation will be applied to the wetland creation and restoration areas on site and at the Bonita Meadows Mitigation Site for the first 2 years, or as needed until the plants are established. Overhead spray heads will be used for irrigation of both the mitigation areas and areas replanted after temporary impacts. The irrigation schedule will be developed for infrequent periods of deep watering and no irrigation during periods of normal rainfall. Irrigation of the site will be tapered off after plant establishment to acclimatize the plants to less and less irrigation.
- Plant establishment during the first 2 years at the mitigation site includes: irrigation as necessary to establish plants; exotic species removal; trash and debris removal; replacement of all dead plants in the first year with plant replacement during years two and three as necessary for sections with poor survival or growth performance; maintenance and repair of permanent and temporary barriers; vegetative and wildlife monitoring; and photographs from designated stations and aerial photographs during the growing season. Habitat management monitoring during years three through five will include all of the items listed above with the exception of replacement of dead plant material.
- Vegetation and wildlife monitoring at each of the mitigation sites will be completed through a combination of methods. Wildlife monitoring will be completed quarterly and will consist of identification of all species through direct observation or identification of tracks, scat, or vocalizations. A list of wildlife species and numbers of individuals identified will be completed. The quarterly wildlife monitoring will be included in the annual mitigation site reports. Vegetation will be monitored through three methods, 1) detailed aerial photograph vegetation mapping; 2) permanent photo locations; and 3) collection of permanent transect data.

- The first annual report will be submitted August 1st after the plants have been in the ground for an entire spring and summer. The site will be maintained and monitored for a minimum of 5 years, the estimated amount of time necessary to meet the success criteria. Annual reports will be submitted to the ACOE, CDFG, and USFWS for 5 years and will follow the ACOE format.

Proposed Mitigation for Sensitive Plant Species

All the identified, sensitive plants in the survey area are located within the boundaries of the MHPA. For some of the species, the City of San Diego's MSCP guidelines recommend specific mitigation measures. Overall, the sensitive plants occur within maritime succulent scrub habitat although several occur within Diegan coastal sage scrub habitat.

Prior to any disturbance of the pool(s) which supports San Diego button-celery, all seed from button celery plants will be collected, placed in paper bags, and stored in a cool, dry location following USFWS recommended guidelines. The topsoil from the vernal pool will be salvaged, stockpiled, and redistributed into enhanced pools on Wall-Hudson. The collected seed will be sown/broadcast in the same locations as the reapplied soil or onto other appropriate habitat. All plants will be removed with hand tools by digging up the root system and surrounding soil. These individuals and their associated soil will be placed in temporary containers and stored out of direct sunlight. All individuals will be replanted within the post-grading, upper pool margins at Wall-Hudson. Button celery propagules will not be introduced into the restored pools until after the pools have been demonstrated to retain water for a minimum of 60 days. Salvaged plants will be planted to the same rooting depth as existed in the original pool.

Collected button celery seed will be introduced along the upper margins of all enhanced and restored pools once these restored/enhanced pools meet first year hydrology success criteria as per the approved restoration plan. Some seed will be stored off-site and according to horticultural practices. This seed will be used to inoculate the enhanced and restored pools in the event that initial inoculation fails. If the initial inoculation is successful, then the seed can be used for off-site restoration activities within the Dennery Canyon/Spring Canyon watersheds as approved by the USFWS. The final details of the restoration effort will be outlined in the USFWS approved restoration plan for Wall-Hudson.

Seed of Otay tarplant, Otay mesa mint, spreading navarretia, and Orcutt grass will be collected from adjacent or nearby populations and distributed throughout the vernal pools and/or uplands as part of the restoration activities on Wall-Hudson in coordination with the USFWS in accordance with the following guidelines:

- Seed will be collected from areas where at least 20 individuals of each target species occur as a sub-population.
- No more than five percent of the projected annual seed production of any individual plant or discrete population of plants will be collected.
- Collections will be made in a manner that captures the majority of the genetic variation found in the sampled populations. Different genotypes will not be intermingled during conservation activities.

- All seed collected will be placed in brown paper bags and stored off-site at an appropriate seed storage facility.
- Collection of seed will be conducted in a manner that will not significantly harm the reproductive potential of the population for that year.

Salvaging and transplantation of San Diego barrel cactus and other sensitive plant species will be conducted to the maximum extent practicable. A qualified biologist will oversee any seed collection, plant removal, or transplantation to ensure proper management of the salvaged materials. Salvaging methods will be included in the USFWS approved upland restoration plan.

Proposed Mitigation for Sensitive Animal Species

The Preferred Alternative's impacts to San Diego and Riverside fairy shrimp and Quino checkerspot butterfly will be mitigated through conformance of the final wetland mitigation plan, the MSCP, and federal regulations. Mitigation for the coastal California gnatcatcher will be accomplished through the mitigation measures for maritime succulent scrub and Diegan coastal sage scrub. Additionally, the following mitigation measures will be implemented to further reduce impacts to sensitive animal species.

All vegetation within the Preferred Alternative's footprint will be cleared between September 1 and February 14 to avoid the gnatcatcher breeding season and minimize impacts to migratory birds and raptors. If clearing activities must occur during the gnatcatcher breeding season, then pre-construction surveys will be conducted to ensure that no breeding gnatcatchers or nesting birds are present within or immediately adjacent to the proposed clearing area. Should a breeding gnatcatcher or nest be located, the USFWS will be contacted and discussions will commence to determine how to proceed.

Immediately prior to delineating ESAs or clearing of maritime succulent scrub and Diegan coastal sage scrub, the biologist will survey the Preferred Alternative for gnatcatchers. If gnatcatchers are found within the footprint outside of the breeding season, the biologist will direct construction personnel to begin initial vegetation clearing/grubbing in an area away from the gnatcatchers. In addition, the biologist will walk ahead of the clearing/grubbing equipment to flush birds towards areas of maritime succulent scrub and Diegan coastal sage scrub to be avoided. It will be the responsibility of the biologist to ensure that gnatcatchers will not be injured or killed by initial vegetation clearing/grubbing. The biologist will also record the number and map the location of gnatcatchers disturbed by initial vegetation clearing/grubbing or project construction and report these numbers and locations to the USFWS within 24 hours.

The following measures will be implemented at the Wall-Hudson and Bonita Meadows restoration sites to avoid and minimize effects to gnatcatchers during the five-year restoration period:

- When maintenance and monitoring activities are conducted during the gnatcatcher breeding season, a qualified biologist will conduct surveys for nesting gnatcatchers no more than one week prior to the start of proposed activities.
- If nesting gnatcatchers are observed on-site, no maintenance activities will be conducted within 30 meters (100 feet) of a gnatcatcher nest (exclusion zone), except repairs to broken

irrigation lines. If an irrigation line is broken and workers need to encroach into the exclusion zone, then the Department and the USFWS will be notified immediately. Prior to maintenance workers accessing the exclusion zone, the Department and the USFWS will determine the most appropriate timing and method of repair without causing harm to the nest and/or the nesting pair.

- Herbicide application will occur outside of the exclusion zone to avoid drift towards the nest. Only hand spraying downwind of the nest will be allowed. An education program will be implemented to ensure that all maintenance workers know the location of all gnatcatcher nests and are aware of the above described conservation measures.

For the Quino checkerspot butterfly, vernal pool habitat and its associated watershed will be created and will be revegetated to provide habitat for the species (approximately 1.88 hectares [4.66 acres] of vernal pool habitat, including 0.20 hectares [0.51 acres] of vernal pool surface area and 1.68 hectares [4.15 acres] of contributing watershed). These mitigation measures are separate and additional to the vernal pool restoration mitigation measures. Also, appropriate larval host plant species will be incorporated into the seed palette that will be utilized on the preserved lands. Mitigation for vernal pool habitat impacts are addressed in the wetland mitigation plan. The draft wetland mitigation plan, which outlines the details of the overall restoration effort (plant/soil salvaging, site preparation, success criteria, and monitoring requirements), will be updated, finalized, and submitted to the appropriate regulatory agencies for review. All enhancement activities will be implemented following USFWS approval of the plan.

Protocol level surveys for Quino checkerspot butterfly will be conducted prior to the start of construction. If adults are detected, clearing and grading will be postponed until the USFWS provides approval to continue. Immediately following the detection of adults, the USFWS will be contacted and the area where they were detected will be surveyed for dot seed plantain, Quino larvae, and cluster webbing for pre-diapause Quino larvae. If Quino larvae and/or cluster webbing is located, salvage efforts will be implemented in coordination with the USFWS.

The following mitigation measures will be implemented at the Wall-Hudson restoration site to avoid and minimize affects to Quino checkerspot butterfly. The first two bulleted measures below pertain only to initial implementation during the winter/spring; the remaining measures will be implemented during the entire five years of restoration:

- Prior to the start of grading activities, the perimeter of, and access to, the Wall-Hudson restoration area will be delineated with flagging. No grading or other equipment work will occur outside of the flagged limits.
- During initial implementation, locations where dot seed plantain occur will be monitored for post-diapause Quino caterpillars by an experienced USFWS approved biologist. If Quino caterpillars are detected, the biologist will assist weeders with caterpillar detection and weeders will look for Quino caterpillars while weeding, and will avoid stepping on caterpillars or dot seed plantain plants. Areas where caterpillars are detected will be flagged and only hand weeding will occur within 30.4 meters (100 feet) of the flagging.

- Beginning the first spring following restoration implementation and occurring each consecutive year thereafter, protocol level surveys for adult Quino will be conducted on the mesa fingers at Wall-Hudson.
- Beginning the first spring following restoration implementation and occurring each consecutive year thereafter, cluster webbing surveys for pre-diapause Quino larvae will be conducted at both the Quino and vernal pool restoration sites four weeks after the first reported adult is observed. These pre-diapause surveys will be conducted once a week for four weeks. Areas where webbing is detected will be flagged and only hand weeding will occur within 9.1 meters (30 feet) of flagging.
- Beginning the first spring following restoration implementation and occurring each consecutive year thereafter, the Quino and vernal pool restoration sites will be monitored for post-diapause Quino caterpillars by an experienced USFWS approved biologist. The monitoring will occur at the initiation of weeding during the post-diapause season. If Quino caterpillars are detected, the biologist will assist weeders with caterpillar detection and weeders will look for Quino caterpillars while weeding, and will avoid stepping on caterpillars or dot seed plantain plants. Areas where caterpillars are detected will be flagged and only hand weeding will occur within 30.4 meters (100 feet) of the flagging.
- In areas where caterpillars or larval cluster webbing are not detected, mechanical weeding may occur.
- All personnel who will be conducting weeding activities will be trained by a qualified biologist to recognize Quino caterpillars. A qualified biologist will be on-site during all weeding operations to assist weeders with Quino caterpillar identification.
- Flagging installed to denote areas where Quino larvae have been observed will be left in place until deemed ready for removal by the approved biologist in coordination with the USFWS. All flagging installed to denote Quino larval stages will be marked with permanent markers with the following information: date of placement, type of Quino larvae detected, and the last name of the person marking the flagging. Flagging will provide direction for all weeding activities on-site.

Within the Preferred Alternative's footprint, the soil of all pools supporting San Diego or Riverside fairy shrimp will be salvaged and stored off-site. Vernal pool soil (inoculum) will be collected when dry to avoid damaging or destroying fairy shrimp cysts. A hand trowel or similar instrument will be used to collect the inoculum. Whenever possible, soil will be collected in chunks. The trowel will be used to pry up intact chunks of soil, rather than loosening the soil by raking and shoveling.

The soil from each pond will be stored individually in labeled boxes that are adequately ventilated and kept out of direct sunlight in order to prevent the occurrence of fungus or excessive heating of the soil, and stored off-site at an appropriate facility for vernal pool inoculum. Soil will not be collected from any on-site ponds until approved by the USFWS. Soil collected from pools only containing San Diego fairy shrimp will be stored off-site until an appropriate location on Otay Mesa near Spring Canyon is found to accept the inoculum, as coordinated and approved by the USFWS.

The salvaged soil from the pools containing both Riverside and San Diego fairy shrimp cysts will be used to inoculate restored pools at Wall-Hudson. Following the Wall-Hudson restoration plan, the restored pools to be inoculated with Riverside fairy shrimp will be recontoured deep enough to pond water long enough to support Riverside fairy shrimp. Inoculum will not be introduced into the restored pools until after the restored ponds have been demonstrated to retain water for a minimum of 60 days, and will be placed in a manner that preserves, to the maximum extent possible, the orientation of the fairy shrimp cysts within the surface layer of soil.

Pursuant to the Burrowing Owl Survey Protocol and Mitigation Guidelines and the Staff Report on Burrowing Owl Mitigation, a preconstruction survey of the Preferred Alternative's footprint will be conducted for burrowing owls prior to clearing and grading. During the nonbreeding season (September 1 to January 31), a qualified biologist will survey and excavate all potential owl burrows within and immediately beyond the impact zone to discourage any on-site occupancy. If owls are found nesting within the ROW between February 1 and August 31, the burrow will be designated an ESA and no activities will be allowed within a 75 meter (246 feet) radius of the site. Surveys will be performed regularly to monitor the behavior of the owls and determine when nesting is complete, so that construction can resume.

4.10.6 Additional Project Impacts

Although a resource may not be directly impacted by an action, additional or indirect effects may result due to the relative proximity of the resource to the development. Indirect impacts refer to project-related effects on the biological resources that can occur at the time of construction or subsequent to project completion. Potential indirect impacts associated with the Route 905 project would be similar for all six of the alignment alternatives.

Temporary Construction Impacts

The potential exists for indirect, construction-related impacts to sensitive plants and wildlife, vernal pools, maritime succulent scrub, Diegan coastal sage scrub, and riparian habitats. Impacts are associated with project grading, construction staging, equipment/materials storage, and vehicle access and parking. These activities could result in encroachment into sensitive areas, leaks of chemicals and fuels, erosion of exposed soil areas, dust impacts on sensitive plants and animals, and disturbances to wildlife movement, foraging, and breeding. Vernal pools and their watersheds are particularly sensitive to impacts from erosion and chemicals, which can adversely affect the water quality and species occupying the habitat. The remainder of this section focuses on potential indirect effects to sensitive biological resources due to erosion and the degradation of water quality, as well as construction-related impacts to gnatcatchers and raptors.

Although studies concerning the effects of noise on coastal California gnatcatchers have been completed, findings on this issue have not been conclusively established. In general, project-related construction noise would vary according to the equipment used and the type of work being completed. The noise study conducted for Route 905 indicates that peak noise levels from construction equipment could range, depending on site-specific circumstances, from 68 to 96 dBA at a distance of 15 meters (50 feet) from the source. The generated noise will diminish with distance, and be further moderated by intervening topography and/or vegetation. In addition to noise, construction dust and human activity could disturb nesting birds near the project area. These impacts will be mitigated through the measures identified below.

Urban Edge Effects

Habitats adjacent to roadways can be affected in indirect ways and the effects can be subtle, with causative agents including disturbance to natural vegetation communities, a local increase in fire frequency, exotic species invasion, indirect lighting and noise, increased wildlife mortality, changes in the water regime due to irrigated landscaping, and effects of pollutant emissions. With respect to Route 905, potential urban edge effects could include:

- an increased mortality of wildlife due to vehicle strikes;
- reduced water quality, caused by stormwater runoff from the roadway, that could contribute to the degradation of adjoining areas and increase soil erosion into sensitive habitats;
- disruption of nocturnal wildlife activities as a result of fixed and vehicular lighting, especially in the vicinity of the MSCP corridor; and
- long-term noise associated with Route 905 could impact the activities of the coastal California gnatcatchers that occupy/utilize the coastal sage and maritime succulent scrub adjacent to the roadway.

With respect to the latter impact, gnatcatchers that inhabit the Diegan coastal sage scrub and maritime succulent scrub outside the ROW, but within 152 meters (500 feet) of this boundary (see Table 4-12 for the amount of habitat), were assessed as being indirectly affected by project-related noise. Within this indirect impact area, one pair of gnatcatchers was found within the West Segment, which is common to all of the build alternatives. In addition, the Preferred Alternative will, and the South alignments would, indirectly impact another gnatcatcher pair in the area of Spring Canyon.

TABLE 4-12
INDIRECT IMPACTS TO POTENTIAL COASTAL CALIFORNIA GNATCATCHER HABITAT

Vegetation Community	Preferred Alternative (Hectares [Acres])	North Alignment (Hectares [Acres])	South Alignment (Hectares [Acres])
Diegan coastal sage scrub	2.53 (6.25)	4.26 (10.52)	15.06 (37.21)
Maritime succulent scrub	6.77 (16.72)	1.85 (4.57)	2.74 (6.78)
TOTAL	9.3 (22.97)	6.11 (15.09)	17.8 (43.99)

Wildlife Corridors

The Preferred Alternative and North Alignment alternatives were originally designed to incorporate an arch culvert at the crossing of Spring Canyon, but the dimensions of the structure would have impacted the ability of wildlife to capably move across the Otay Mesa area. In response to further resource analysis, impact assessment, and public comments received on the DEIS/DEIR, the culvert design was modified to incorporate two parallel bridge structures that would be centrally supported by columns, set outside the Waters of the United States within Spring Canyon, and maintain a minimum clearance of 8.3 meters (27 feet). The bridge design

proposed and discussed in the DEIS/DEIR for the South Alignment Alternative remains unchanged. Although the wildlife corridor would be used mostly by small to medium-sized mammals, all of the proposed Spring Canyon bridge designs would meet the MSCP standards for all animals and is therefore considered effective.

Additionally, bat species may utilize Spring Canyon as foraging habitat and potential roost sites, although none were observed. The biological resources report noted three species (California State Species of Special Concern) that may forage in the area: pallid bat (*Antrozous pallidus*), greater western mastiff bat (*Eumops perotis*), and Townsend's big-eared bat (*Plecotus townsendii*). Other bats, such as myotis (*Myotis* sp.) and Mexican free-tailed (*Tadarida brasiliensis*) could potentially roost in the area, although none were observed. The Route 905 project will not impact bats, although bridge construction may impact existing foraging habitat within the canyon. The proposed design of the Spring Canyon Bridge would provide bats with potential sites for day/night roosting. Twenty-four American bat species are capable of using bridges as refugia or roost sites, including various species of myotis, Mexican free-tailed bat, and Townsend's big-eared bat.

4.10.7 Preferred Alternative Mitigation Measures for Additional Impacts

Mitigation for Temporary Construction Impacts and Urban Edge Effects

- Indirect and temporal noise impacts upon the coastal California gnatcatcher will be offset through preservation of Diegan coastal sage scrub and maritime succulent scrub at Wall-Hudson. It will be mitigated at a 1:1 ratio (see Table 4-12).
- A USFWS approved biologist will oversee compliance with protective measures for the biological resources in the project area during clearing and construction activities. The biologist will be familiar with the habitats, plants, and wildlife of Otay Mesa, and maintain communications with the RE, to ensure that issues relating to biological resources are appropriately and lawfully managed. The biologist will be made available for both the pre-construction and construction phases to review grading plans, address protection of sensitive biological resources and monitor ongoing work. The biologist will specifically monitor construction activities that may affect listed species, such as vegetation removal, and the installation of BMPs and ESA fencing to ensure that all avoidance and minimization measures are properly constructed and followed. The biologist will immediately notify the RE to halt all associated project activities which may be in violation of the USFWS Biological Opinion (Appendix M). In such an event, the RE will halt all construction activities and contact the USFWS within 24 hours. The biologist will submit weekly reports during initial grading and clearing, and when construction occurs near sensitive biological resources; and provide a final report documenting compliance with avoidance and minimization measures within 60 days of project completion.
- Each employee (including temporary, contractors, and subcontractors) will participate in a training/awareness program that will be presented by the biologist, prior to working on the Route 905 project. At a minimum, the program will include the following topics: occurrence of the listed and sensitive species in the area, their general ecology, species sensitivity to human activities, legal protection afforded listed species, penalties for violations of Federal and State laws, reporting requirements, and project features designed to reduce the impacts to these species and promote their persistence/survival within the project

area. Included in this program will be a fact sheet that includes color photographs of the listed species, which will be shown to the employees. Following the education program, the fact sheet will be posted in the contractor and RE's office, where they will remain through the duration of the Project. The Department and the biologist will be responsible for ensuring that employees are aware of the listed species.

- Pile driving associated with construction of the Spring Canyon crossing will be conducted only between September 1 and February 14 to reduce noise affects to nesting/breeding birds within the project vicinity, including, the coastal California gnatcatcher.
- Oil changing, refueling, and other actions that could result in a release of a hazardous substance will be restricted to designated areas that are a minimum of 30 meters (100 feet) from any sensitive plant populations, sensitive habitats, or drainages. Such designated areas will be surrounded with berms, sandbags, or other barriers to further prevent the accidental spill of fuel, oil, or chemicals. Any accidental spills will be immediately contained, cleaned up, and properly disposed.
- Sensitive habitat outside the Preferred Alternative's footprint will be designated an ESA and depicted as such on project maps. Sensitive vegetation types (e.g., vernal pools) or plant locations (Otay tarplant, spreading navarretia, California Orcutt grass, and Otay Mesa mint) will be marked and protected by temporary fencing or another appropriate method to prevent encroachment or unnecessary disturbance to the sites. Prior to and during construction, barriers will be established in key areas to deter public entry into the site. Additionally, fencing will be provided to restrict access to sensitive habitat adjoining the work limits. Photographs of the fencing will be submitted to the USFWS at least seven days prior to initiation of construction.
- In coordination with other appropriate Environmental Specialists, all sensitive vegetation within the ROW, but outside of the Preferred Alternative's footprint, will be delineated by the project biologist as ESAs . All parties in conjunction with the Route 905 project will strictly avoid these areas. No construction activities, materials, or equipment will be permitted in the ESAs. Work areas will be marked clearly in the field and confirmed by the biologist prior to habitat clearing, and the marked boundaries maintained throughout the construction period.
- Although not a mitigation measure, construction dust impacts will be reduced through implementation of the Department's Standard Specifications, including Section 7-1.01F Air Pollution Control, Section 10 Dust Control, Section 17 Watering, and Section 18 Dust Palliative. The project biologist will also periodically monitor the work area to ensure that construction-related activities do not generate excessive amounts of dust or cause other disturbances. Erosion control measures will be regularly checked by Department inspectors, the biologist, and/or RE.
- Temporary disturbance to both upland and riparian habitat types, within Spring Canyon, will be mitigated through native revegetation of the area (1:1 ratio) upon completion of the two bridges. All seeding/planting will occur on-site within the disturbed habitat and involve replacement with in-kind/similar species, to the maximum extent practicable, or with appropriate native species, in locations where exotics were previously established. All revegetation efforts in areas that drain directly into the MHPA or sensitive habitats will follow the USFWS approved restoration/mitigation plans for uplands and wetlands.

- Storage and staging areas will be placed as far from sensitive habitat as possible, and kept free from trash and other waste. Staging areas for construction work will be located within previously disturbed sites and not adjacent to or within sensitive habitat.
- Any night lighting for construction will be selectively placed, shielded, and directed away from all native vegetative communities.
- Although not a mitigation measure, BMPs employed during construction and operation will follow the applicable Department guidelines and be detailed in the project's SWMP, SWPPP, and WPCP. Specific plans will be reviewed by a Department biologist and modified, if necessary, prior to implementation. The biologist will have the ability to suggest changes to reduce the probability of erosion/siltation or spills of chemicals/fuels that could potentially affect sensitive habitat areas, including (but not limited to) vernal pool basins and watersheds, and rare plant populations. Photographs of installed BMPs will be submitted to the USFWS at least seven days prior to initial grading and clearing.
- Although not a mitigation measure, during construction and operation, runoff will be channeled to detention basins as a means of preventing contaminated discharge from potentially entering nearby, sensitive habitat. BMPs to address erosion and excess sedimentation will be incorporated into the project plans. Measures that could be implemented include silt fencing, gravel bags, hay bales, fiber rolls, native plantings, retaining walls or other slope stabilization techniques, and protection/velocity dissipation at drainage outlet points. Vegetation filters, such as swales or biostrips may also be used to remove sediment and other contaminants from runoff prior to off-site flow.
- Where applicable, revegetation with native plant species will follow grading and be accompanied with periodic monitoring and maintenance to ensure adequate coverage and prevent erosion and siltation into adjacent biologically sensitive areas. Native seed will be incorporated into the Bonded-Fiber-Matrix mix and sprayed onto the exposed soils prior to the onset of the rainy season.
- To ensure that the construction and operation of Route 905 does not adversely affect highly sensitive vernal pool complexes and other vernal pools south of the alignment and west of Spring Canyon, monitoring will be conducted throughout the rainy season to determine whether surface runoff is causing erosion and sediment delivery to these resources. Monitoring will occur during the construction of Route 905 and for three years following the opening of the road to the public. A monitoring report will be submitted by August 1 following each monitoring season.
- To ensure that the construction and operation of Route 905 does not adversely affect the button-celery population at La Media Road immediately south of the Preferred Alternative's footprint, monitoring will be conducted throughout the rainy season to determine whether surface runoff is causing erosion and sediment delivery to the button-celery population. Monitoring will occur during the construction of Route 905 and for three years following the opening of the facility to the public. A monitoring report will be submitted by August 1 following each monitoring season.
- The project site will be kept clear of debris to avoid attracting predators to listed wildlife. All trash and food will be placed in sealed containers and regularly removed from the site.

- No pets will be permitted inside the project boundaries at any time.
- Vehicle speeds on unpaved access roads to the project area will be restricted to a maximum of 25 MPH.

Proposed Mitigation for Wildlife Movement Impacts

The following measures will minimize impacts to wildlife movement in the vicinity of Route 905, particularly through Spring Canyon:

- A minimum 1.8 meter (6 feet) high fence will follow the length of the alignment on both sides to preclude human access into the adjacent habitat and prevent wildlife from traversing the freeway. Near the Spring Canyon wildlife crossing, the fence will be buried to a depth of approximately 0.1 meter (1 foot) to prevent animals from digging under the barrier. The fence will be installed prior to opening the new road to the public. Photographs of the installed fence will be submitted to the USFWS within two weeks of installation.
- The OCCS preserve will be connected to Spring Canyon (on the south) by a 91 meters (300 feet) long and 1.5 meters (5 feet) high culvert extending under the freeway. In addition a fenced/protected wildlife corridor (consisting of a detention basin and native vegetation) on the north side of Route 905 will be maintained between the OCCS preserve and Spring Canyon (to the west), that would be approximately 50 meters (164 feet) wide and 300 meters (984 feet) long.
- The Spring Canyon Bridge will include design features that will provide bats with potential sites for day/night roosting.
- Permanent low sodium lights will be installed at all interchanges. High pressure lighting will be used to illuminate overhead directional signs. The direction of the high pressure lighting will be focused up on the signs and away from all sensitive biological resources. No permanent lights will be installed adjacent to sensitive biological resources, except one low sodium light required by Department safety standards approximately 19.8 meters (65 feet) north of the privately owned San Diego button-celery preserve along La Media Road.

4.10.8 Invasive Species

On February 3, 1999, Executive Order 13112 was approved, requiring federal agencies “to work cooperatively to prevent and control the introduction or spread of invasive...species” in the United States. Guidance, issued by the FHWA on August 10, 1999, directed the use of the state’s noxious weed list (January 2000) to identify the invasive plants that must be considered as part of the NEPA analysis for a proposed project. Within the Otay Mesa area and the different alignment alternative footprints, extensive disturbance has occurred due to large-scale agriculture, development, illegal off-road recreation, and border patrol activities. As a result, the study corridor contains or is encompassed by areas which support non-native plants. Species, such as mustard, tocalote, tamarisk, fennel, and chrysanthemum have been recorded predominately on the mesas near Spring Canyon or in the fallow agricultural fields. No plants identified as noxious species by either the Federal Noxious Weed Regulations (7 CFR 360) or the California Department of Food and Agriculture were observed in the study corridor. However, all the mentioned weeds, with the exception of the chrysanthemum, can be found on

the California Invasive Plant Council's list of Exotic Pest Plants of Greatest Ecological Concern in California (October 1999). Consequently, invasive species already persist in the project area and have the potential to be spread as a result of activities associated with the Preferred Alignment. Accordingly, measures must be implemented to prevent/curtail the establishment of such plants into the nearby, native habitat.

4.10.9 Preferred Alternative Mitigation Measures for Invasive Species

- No invasive, exotic plant species will be seeded or planted adjacent to or near sensitive vegetation communities or Waters of the United States. In compliance with Executive Order 13112, temporarily disturbed areas will be reseeded with plant species native to the local habitat types. Species identified on Lists A & B of the California Invasive Plant Council's list of Exotic Pest Plants of Greatest Ecological Concern in California as of October 1999 will be avoided to the extent practicable. Areas hydroseeded for temporary erosion control will use native plant species, as well.
- All plants used in revegetation within the ROW will comply with Federal, State, and county laws requiring inspection for disease or insect infestations. The vendor will provide certification of inspection from the County of San Diego Department of Agriculture. The plants will also be inspected by the Project Landscape Inspector before accepting delivery. In all areas where stormwater runoff from the Preferred Alternative's alignment enters drainage systems that drain into the MHPA or other sensitive habitats, landscaping plans will be developed in coordination with the USFWS prior to implementation.
- All landscape designs and planting palettes will be submitted to the USFWS for approval at least 60 days prior to their scheduled implementation. All of the Route 905 landscaping will follow the USFWS approved landscaping plans.
- All container plants will be checked for the presence of Argentine ants prior to delivery to the planting locations. Any containers contaminated with Argentine ants will be immediately removed from the Project area.

4.11 CULTURAL RESOURCES

Cultural resource studies were done in compliance with Section 106 of the National Historic Preservation Act, 36 CFR §800, and CEQA. The Historic Properties Survey Report (HPSR) presents all the studies which inventory and evaluate the cultural resources located within the project's Area of Potential Effect (APE), and it assesses project effects to one proposed eligible historic property. Resources located within the project APE include: 16 archaeological sites/loci, two mapped historic locations, and 21 historic architectural features.

Based on evaluations conducted on the above resources, only one prehistoric archaeological site, CA-SDI-11,424, has the qualities necessary for it to be considered eligible for listing on the National Register of Historic Places and for placement on the California Register of Historical Resources. Once field and laboratory studies confirmed the importance of this site, project plans were redesigned to avoid impacting any of the subsurface components of this resource, from which this site's significance is derived.

Like many of the archaeological sites on Otay Mesa, CA-SDI-11,424 also contains a large, diffuse surface scatter of materials that may or may not be cultural in origin. The preferred lithic resource in this region for stone tool manufacturing is a metavolcanic that occurs as float across the entire Otay Mesa. It has eroded out of the San Ysidro Mountains to the east and been carried across the mesa all the way to the ocean, a distance of some 19 kilometers (12 miles). Over the past 150 years, the mesa has been extensively dry farmed, with the resulting activities further smearing, breaking, and confusing the surface archaeological record into one large incomprehensible smear. Through literally dozens of archaeological studies conducted over the past 20 years, all these efforts have shown that the surface smears in every single case lack sufficient data for them to be considered important resources under either state or federal criteria. The surface smears lack artifact variability, lack ecofacts, lack diagnostic artifacts, lack datable materials suitable for either chronometric or relative dating techniques, lack further research potential, lack Native American heritage values, and lack any features that derive their importance for being preserved in place.

When cultural studies for Route 905 commenced in 1996, the State Office of Historic Preservation (OHP) determined that it will be inefficient to investigate the “smear” portions of sites occurring within the Route 905 APE. It was decided that public funds could be best spent developing a management plan that will address the problems of Otay Mesa archaeology, and recommend procedures for the treatment of resources found on the mesa. In response to this goal, a management plan was developed as part of the Route 905 HPSR.

This plan provided archaeological treatments for the various resources that are found on Otay Mesa. The Department will attempt to make this plan a formal part of future state and federal undertakings on the mesa. This may be accomplished through dissemination of the document to all local jurisdictions, to the South Coastal Information Center (SCIC) at San Diego State University, and through a formal presentation that will be made at one of the monthly meetings held by the SCIC for cultural resource professionals working in the county. There is however no formal mechanism through the Route 905 Section 106 process to require the adoption of this management plan by the County of San Diego or the City of San Diego, the two primary jurisdictions on Otay Mesa.

Included in the cultural resource studies is a comparison of lithic assemblages from a number of Otay Mesa sites of differing functional types and chronological periods. An analysis was conducted in an attempt to establish whether lithic technology could be used to make meaningful statements about the nature of Otay Mesa archaeology, both functionally and chronologically. This comparison is an important contribution to the archaeology of Otay Mesa specifically, and to San Diego County in general. It focuses on the pursuit of meaningful results, rather than in the rote evaluation of sites whose lack of research potential is known at the survey level.

The State Historic Preservation Officer (SHPO) concurred on the adequacy of the studies involving the inventory of cultural resources located within the project’s APE, and the evaluation of those resources. Section 106 compliance was obtained on January 11, 2000 (a copy of the SHPO letter appears in Appendix E). SHPO also concurred that:

- Efforts to identify historic properties within the Route 905 APE were adequate;
- Archaeological site CA-SDI-11,424 is eligible for listing on the National Register of Historic Places and for placement on the California Register of Historical Resources;

- The following cultural resources are not eligible for either the National or California registers: Archaeological sites CA-SDI-6941/Loci G & Y, CA-SDI-7208, CA-SDI-7604, CA-SDI-10,186/Locus B, CA-SDI-10,187, CA-SDI-10,245/CA-SDI-10,734, CA-SDI-11423, CA-SDI-12337, CA-SDI-12881, CA-SDI-12882, CA-SDI-14086/H, and CA-SDI-14,087; mapped historic locations P-37-015987 and P-37-015988; and architectural features at the Otay International Center/Otay Commercial Center, San Diego Gas & Electric Substation, some partially demolished concrete block buildings, some other concrete block buildings, the Brown Field Business Park, the buildings located at 1950, 1940, 1916, 1812, 1724, 1708, 1704, 1690, and 1670 Cactus Road, the Mesa Business Park, buildings at 6450 and 1625 Heritage Road, 6275 Otay Mesa Road, and a small series of sheds;
- The proposed construction of Route 905 will have “No Adverse Effect” on any historic properties listed on, or determined eligible for listing on, the National or California registers. This is because of project redesign to avoid impacting any of the qualities that make CA-SDI-11,424 eligible for inclusion in these registers; and
- FHWA, the Department, and the City of San Diego have satisfied their requirements under 36 CFR §800 in accordance with Section 106 of the National Historic Preservation Act, as amended.

In accordance with the revised 36 CFR §800 regulations published in the Federal Register on May 18, 1999, the Advisory Council on Historic Preservation is no longer required to concur on a No Adverse Effect finding. No further cultural resource studies should be necessary unless the project APE changes to include previously unevaluated areas.

Mitigation/Monitoring Measures

Environmentally Sensitive Areas (ESAs) will be designated around the adjacent recorded sites, and declared off-limits to construction activities. These ESAs will be delineated on the project construction plans in order to avoid impacts to these resources.

The construction contractor will have the responsibility to ensure mitigation monitoring is undertaken by a qualified archaeologist while construction takes place near archaeological site CA-SDI-11,424, to ensure that there is no impact to this site. Similarly, monitoring will also be undertaken on the former grounds of St. Johns Church, where buried historical features may still be present. If buried cultural materials are unearthed during construction, Department policy stipulates that work stop in the vicinity of the find until a qualified professional archaeologist can assess its nature.

Cultural Resource studies of the proposed Biological Mitigation Parcels

As discussed above, the Department acquired one parcel (Figure 4-11) in order to mitigate some of Route 905's impacts to biological and wetland resources. This mitigation parcel, called Wall-Hudson, is 34 hectares (85 acres) in size and located less than one mile northeast of the Route 905 project. An archaeological survey of the parcel was conducted in 2002 and the Wall-Hudson APE was reviewed and approved by FHWA on October 31, 2003. Although several sites were encountered during the survey, only two will be directly impacted by activities associated with the proposed mitigation activity on the parcel. Located in areas planned for vernal pool restoration, CA-SDI-10193 and CA-SDI-10285 are sparse lithic scatters (as discussed above) and each has extremely limited research potential. FHWA concluded that neither site was eligible for listing in the National Register of Historic Places or the California Register of Historical

Resources and the SHPO concurred with this assessment on January 26, 2004. Within those portions of the Wall-Hudson parcel where ground disturbing activities will not occur, there are three archaeological sites: CA-SDI-10201, CA-SDI-10649, and CA-SDI-10650. Because these three sites will be protected within ESAs, the FHWA concluded that the restoration activities associated with the Wall-Hudson mitigation parcel will have no adverse effect on the three aforementioned sites. The SHPO also concurred with this assessment on January 26, 2004.

In addition to the above, Bonita Meadows, an existing biological mitigation bank, will be used to offset impacts to wetland resources. Cultural resource inventory efforts for the Bonita-Meadows were covered during survey efforts for the SR-125-South project. The area covered by this bank fell entirely within the study corridor for various SR-125-South highway alternatives. One historic resource and eight prehistoric archaeological sites were recorded within the mitigation bank. The residence at 3502 Proctor Valley Road and seven prehistoric archaeological sites, CA-SDI-9842, CA-SDI-9843, CA-SDI-9844, CA-SDI-9845, CA-SDI-11454, CA-SDI-12913, CA-SDI-12914, and CA-SDI-12915, were evaluated and found to be ineligible for listing on the National Register of Historic Places. The SHPO concurred with this assessment on May 25, 1995.

4.12 HAZARDOUS MATERIALS

An Initial Site Assessment (ISA), including a records search, identified 57 possible hazardous waste sites within the study corridor. These sites were categorized in order of their relative levels of potential for hazardous materials. Five category rankings were developed and these are listed in Table 4-13. Category 1 “Generators/Users” has the lowest potential, with increasing potential through Category 5 “Hazardous Waste Disposal Site.” The number of sites within the footprint for each alignment is shown for each category. To rank the relative impacts of hazardous waste, leaking underground storage tanks, and undocumented discharge of waste to land, a search and review of federal, state, and regional environmental regulatory agency databases was conducted for the study corridor. This included a review of selected County of San Diego Department of Environmental Health (DEH) Site Assessment and Mitigation Division files. This analysis was followed by reconnaissance of the corridor in an attempt to visually assess these sites and identify hazards not documented by regulatory agencies. In order to identify those sites which may have been obscured and/or undocumented, further analysis of the area was conducted through a review of historical aerial photographs. For those sites within the project footprint, additional assessment was performed by District Hazardous Materials Specialists. This assessment included a comprehensive file review and site inspections. As part of ROW demolition activities, the Department will investigate for the presence of lead paints and asbestos containing materials in those existing structures that will need to be demolished in order to construct Route 905. Proper precautions will be taken during these demolition activities and all applicable California environmental regulations will be followed.

Sites permitted to generate or use hazardous materials (Category 1) and sites with undocumented refuse piles (Category 3) constitute 56 of the aforementioned 57 identified sites. A majority of the 56 sites, although within the study corridor, are not within the impact footprint of any of the alignment alternatives. Those sites that are within or adjacent to the alignment alternatives were screened by Department specialists and found to be devoid of sumps, pits, or tanks that will be a source of soil or groundwater contamination. Based upon site visits to each of the 57 sites, and also upon detailed review of all applicable background information relevant to the sites, the Department concluded that further site investigations were necessary only at the Cactus Recycle

Center (a Category 1 site) and the Tripp Landfill (a Category 5 site). Although the Preferred Alternative (and the other alignment alternatives as well) contain undocumented refuse piles (which will be removed prior to right-of-way acquisition by the property owner), neither hazardous materials nor contaminated soil are expected within these sites. Figures 4-17A and 4-17B depict topography and those sites within the alignment alternatives.

The “Tripp Landfill,” an unpermitted and inactive landfill, occupies and fills the head of Spring Canyon in the immediate vicinity of Cactus Road (see Figure 4-17A). As mentioned above, it is a Category 5 site and it is the only documented hazardous waste site within the project footprint. (The Category 3 sites, categorized as surficial debris, may or may not contain hazardous materials, therefore they are not documented as being hazardous waste sites). Each of the alignment alternatives impact a small portion of two properties at the northern tip of the landfill. According to an Environ Corporation report prepared for the County of San Diego (May 10, 1995), the wastes contained within the landfill include auto-shredder waste, burn ash, and burn ash contaminated soil. In 1996, the Department of Toxic Substances Control (DTSC) designated the burn ash as nonhazardous and classified the auto shredder waste as a special waste. As part of the feasibility study for the evaluation of mitigation measures, five remedial alternatives were identified for the Tripp Landfill: (1) no action, (2) capping, (3) disposal of waste/soil as non hazardous or special waste, (4) disposal of the waste/soil as hazardous waste, and (5) solidification. In 1998, Environ developed a remedial action workplan (RAW) for the two properties encompassing the landfill; it recommended the second alternative; specifically, an asphalt cap.

The Tripp Landfill was under the local oversight of the County of San Diego Department of Environmental Health (DEH) Local Enforcement Agency (LEA). The asphalt cap was constructed on the properties at the northern tip of the landfill. Groundwater was monitored beneath and outside of the landfill. Because of this asphalt cap remedial action, the County of San Diego issued a no-further-action letter for the properties. The LEA also determined that the asphalt cap will mitigate any hazards associated with the landfill material. They also asserted that the Route 905 project will be compatible with the asphalt cap remedial action. After the cap was in place and the associated remedial activities at the site were complete, the County transferred responsibility for the site to the City of San Diego LEA. The Department notified the City LEA of it's proposed activities (which include recompaction of unsuitable structural fill and/or road base) at the site and the City LEA responded by asking that the Department to provide the following items for review pending approval: (1) a copy of the Community Health and Safety Plan (which the Department is currently completing) and (2) site plans showing provisions for security, grading, drainage and maintenance. Once these are completed, they will be forwarded to the City LEA as requested.

Table 4-13
INVENTORY OF POSSIBLE HAZARDOUS WASTE SITES BY CATEGORY¹ WITHIN THE
ALIGNMENT ALTERNATIVES

Design	Generators/Users (Category 1)	Closed Sites (Category 2)	Surficial Debris (Category 3)	Unauthorized Releases (Category 4)	Hazardous Waste Disposal Site (Category 5)
Freeway	1	0	13 ^(S) 14 ^(N,C)	0	1 ^(N,C,S)
Tollway	1	0	14 ^(S) 15 ^(N,C)	0	1 ^(N,C,S)

¹According to a relative ranking of potential impact, from low (1) to high (5).

^SSouth Alignment Alternative.

^NNorth Alignment Alternative.

^CCentral Alignment Alternative.

A geotechnical investigation of the waste materials present in the northern tip of the landfill was conducted by Department Geotechnical specialists in order to determine the grounds suitability for recompaction. The waste materials occupy an area of approximately 1300 square meters (14,000 square feet) at the northern extremity of the landfill. The investigation concluded that the recommended treatment option is to combine foundation treatment (recompaction of the top 1.75 meters [6 feet]) of the near-surface waste fill soils followed by placement of 1.5 meters (5 feet) clean fill surcharge, to accelerate consolidation, for a period of 60 days. It is estimated that approximately 2293 cubic meters (3,000 cubic yards) of the landfill materials will be handled during this treatment. This will be implemented prior to building the structural section of the proposed project through the landfill area. This process of recompaction and consolidation will be utilized only for that portion of the landfill the State acquires for the Route 905 construction. The State will repair or replace any sections of the existing cap that are impacted by construction of the Route 905 project. A total of \$700,000.00 was set aside in order to pay for the disposal of organic materials and the repair of any existing capping materials.

The San Diego Regional Water Quality Control Board advised the Department that an application for a general permit for Waste Discharge Requirements should be submitted. This permit application will be reviewed and a permit issued when the State takes possession of the affected properties.

As noted above, Cactus Recycling, located adjacent to the Tripp Landfill on Cactus Road, required further investigation. The Department performed a soils investigation on this property and the soil test results were analyzed according to the statistical methods recommended by the Environmental Protection Agency. Soils from this property passed the recommended confidence interval for any contaminants of concern and no further testing will be required; it is not a hazardous waste site.

In scattered locations within each of the alignment alternatives, undocumented refuse (Category 3 sites) was/continues to be discharged into the canyons and on the mesa. These deposits are illegally-disposed of refuse (landscape, household, commercial/ industrial, and construction/demolition), some so large that their inner constituents are not visible; which means they could contain undocumented hazardous waste. If a parcel contains one or more of these deposits, it/they will need to be removed prior Departmental acquisition. If the property owner refuses to remove the debris piles prior to acquisition, the Department will hold back funds in escrow and fund the removal with these funds after the parcel is purchased. At that point, the

removal will be conducted by the Department's right-of-way demolition (prior to construction) and the material will be disposed of at an appropriate disposal facility and/or recycled. After the debris piles are removed, a visual assessment of the underlying soil will be performed and, if necessary, the soil tested in order to determine if it is contaminated.

Discussion of Alternatives

Although the Preferred Alternative and the other Freeway and Tollway Alignment alternatives differ slightly in the number of sites potentially impacted, as shown in Table 4-15, these differences are negligible. Each of the alignment alternatives will impact the "Tripp Landfill," Cactus Recycling, and numerous Category 3 sites. Given the presence of the former landfill site, the project will be subject to potentially adverse hazardous materials impacts. Due to the presence of these sites (although particularly the Tripp Landfill) within all of the alignment alternatives, there is no substantial difference in the nature or level of potential hazardous materials impacts among the alignment alternatives. It is anticipated that the potential hazardous materials impacts will be primarily limited to the Tripp Landfill. The mitigation measures discussed below will minimize all identified adverse hazardous material impacts associated with the proposed project.

Mitigation Measures

Department standard specifications and requirements will be followed regarding hazardous materials. Grading and construction activities will be monitored to identify such materials. If hazardous materials are discovered during construction, the resident engineer will halt work in the area of concern, flag the area, and notify the Department's District Hazardous Waste Coordinator. When appropriate, the Coordinator will initiate the District's hazardous materials program to notify a HAZMAT team in the region, arrange for waste sampling and identification, and follow established procedures for cleanup. Best Management Practices will be followed. This will include measures to avoid or minimize the potential influx of contaminants into local runoff and surface waters. Specifically, such measures will include the use of vegetation-lined retention and detention basins to hold and filter runoff from the project site and minimize runoff discharge into sensitive habitats (including vernal pools).

During operation of the project, the Department will follow standard operations and maintenance procedures to maintain the road. As part of these standard procedures, the Department developed a standard Hazardous Waste and Spill Response Plan, which will be implemented to reduce risks of potential hazardous waste spills.

The Department will work closely with government regulators having oversight of the Tripp Landfill during design and construction of the proposed project to ensure that design and construction occur in a manner that is compatible with the remedial plan for the landfill. The project design team and contractors are prepared to address mitigation contingencies for this site, including implementation of an operations and maintenance program following completion of the project. Any disturbance to the Tripp Landfill will require a Site Health and Safety Plan (SHSP) and a Community Health and Safety Plan (CHSP), in accordance with the current DEH *Site Assessment and Mitigation Manual*. The SHSP will address the need for site workers to be informed and trained under the OSHA Hazardous Waste Operations and Emergency Response standard, 19 CFR 1910. The CHSP will address potential exposure to adjacent properties and

the general public, and prescribe control measures to protect the public from exposure to toxic substances during project activities.

The predicted level of effort to implement mitigation measures for any of the alignment alternatives will be equal. Provided the mitigation measures and standard requirements discussed above are implemented, it is anticipated that no substantial hazardous materials impacts will be associated with project implementation. Specifically, these measures are expected to avoid or minimize potential impacts to human health (including construction workers and the general public), water quality, and sensitive biological habitats (including vernal pools).

4.13 FLOODPLAIN ASSESSMENT

Executive Order 11988 (Floodplain Management) directs all federal agencies to refrain from conducting, supporting, or allowing actions in floodplains (as depicted on Department of Housing and Urban Development floodplain maps or on a more detailed map of an area, if available) unless it is the only practicable alternative. FHWA's policies and procedures for the location and hydraulic design of highway encroachments on floodplains are outlined in 23 CFR 650 Subpart A. In those policies, a base flood plain (commonly referred to as a 100-year floodplain) is defined as "the area subject to flooding by the flood or tide having a one percent chance of being exceeded in any given year" and an encroachment is defined as "an action within the limits of the base flood plain." There are no mapped regulatory floodways or mapped 100-year floodplains at any locations affected by any alignment alternative for the project currently under study. Executive Order 11988 states that if the aforementioned mentioned floodplain maps are not available, the agency shall make a determination of the location of the floodplain based on the best available information. Therefore, a 100-year floodplain was developed by the Department using the ACOE's water surface program (HEC-RAS) and previous floodplain studies for the area. It is referred to as the Otay Mesa floodplain below. The 1989 National Flood Insurance Program (NFIP) maps identifies the Otay Mesa area as an "Area of Minimal Flood Hazard."

A floodplain evaluation and hydraulic location study were prepared for the floodplain encroachment; these studies are on file in the Department's District office. Floodplain encroachment, and the proposed drainage plan for the encroachment, are shown on Figure 4-18 and 4-19, respectively. Each of the alignment alternatives will result in a longitudinal encroachment of the Otay Mesa floodplain east of La Media Road; specifically, the encroachment will cross the Otay Mesa floodplain area between Otay Mesa Road and Airway Road. Because any substantial encroachment impacts will be avoided through routine design measures, the encroachment is not considered significant.

4.13.1 Risks Associated with Implementation of the Action

Risks associated with the implementation of the project within the floodplain are not substantial. The project's permanent intrusion into the base floodplain will not present a major obstruction to flood flows. Although the proposed project will include the placement of fill within the existing base floodplain (approximately 710,000 cubic meters [930,000 cubic yards]), the incorporation of standard drainage facilities and detention basins will eliminate any flooding potential. Even in the event of a 100-year flood, adverse flooding impacts will not result from the implementation of the proposed project. None of the proposed alignment alternatives will present an increase in the potential for upstream or downstream property damage from flooding or increase the risk of

loss of life. In addition, highway operations will not be affected if such a flood occurred. None of the project's features encroachment into the Otay Mesa floodplain will substantially change the upstream water surface elevation.

4.13.2 Impacts on Natural and Beneficial Floodplain Values

The project will include longitudinal placement of fill in the floodplain of 24.5 hectares (60 acres). Section 4.10 discusses the biological impacts of the project. Those sensitive biological resources within the floodplain are shown on Figures 4-18. Biological habitats occurring within the floodplain include disturbed wetlands, freshwater marsh, southern willow scrub, disturbed Diegan coastal sage scrub, and seasonal ponds. Plant species within the floodplain include Variegated dudleya. Impacts to these natural resources are fully mitigated (see Section 4.10).

There are no parks or other recreation resources within the floodplain.

4.13.3 Support of Probable Incompatible Floodplain Development

The project (all build alignment alternatives) will increase mesa accessibility and will support planned development. Although some development within the floodplain is likely to occur, the City and County of San Diego regulate floodplain development and this prevents incompatible development. Access to the highway will be controlled and the highway will be placed within the floodplain on fill elevated above the floodplain elevation. The only points of authorized egress from the highway will be at the interchanges which connect to existing public surface streets.

4.13.4 Measures to Minimize Floodplain Impacts Associated with the Action

Routine construction procedures required by the Department for all of its projects will minimize impacts during construction. These procedures include: limiting the affected area using barriers or fences to protect sensitive areas, employing BMPs to control erosion and reduce sedimentation downstream, and restricting access to designated ESAs where appropriate. Installation of cross-culverts will allow for the continued natural flow of floodwaters and will minimize physical disturbance of the floodplain.

The floodplain administrator agency for this area is the City of San Diego and they prepared the Otay Mesa Drainage Master Plan (OMDMP). The Department is cooperating with the City in the implementation of the OMDMP. However, the funding for the downstream portion of the OMDMP has yet to be identified. The Department will provide a way for the off-site storm waters to pass through the Route 905 facility and in a manner that will not conflict with the City's implementation of the downstream portion of the OMDMP.

The project's drainage system will be designed to maintain existing drainage conditions, including several drainage systems that will intercept tributaries north of the project and convey runoff into the existing drainage pattern.

4.13.5 Measures to Restore and Preserve the Natural and Beneficial Floodplain Values Impacted by the Action

As described above, construction impacts will be minimized through adherence to standard construction practices, maintenance of the general direction of flow of the floodplain, and the designation of ESAs subject to avoidance and monitoring. All temporarily disturbed areas will be revegetated. Impacts to sensitive biological resources will be fully mitigated as described in Section 4.10.

4.13.6 Practicability of Alternatives to Any Significant Floodplain Encroachment

As discussed in Chapter 1 of this FEIS/FEIR, the general purpose of the Route 905 project is to reduce congestion; provide for the effective transportation of people, goods and services; and improve the mobility of local, regional, interregional, and international traffic. Moreover, OMR was widened from a four-lane city street to a six-lane conventional highway to increase traffic capacity, however, it will reach its capacity by the year 2005. The Route 905 is needed to, improve traffic capacity for growth beyond the year 2005; serve the POE; serve the extensive development on the Mesa (both existing, and approved planned development); complete the regional highway system to cope with the increasing regional and international trips; and provide traffic congestion relief for OMR and an alternative commercial traffic access route to the POE. To fulfill the above stated purpose and need, the requirement is for an east-west highway in the corridor stretching east from I-805 to the POE. Because the Otay Mesa floodplain crosses the mesa, any viable build alignment alternative, which meets the project's purpose and need, will encroach into the floodplain.

Based on studies carried out by the California Department of Transportation on behalf of the Federal Highway Administration, no practicable alternative to the proposed alternative exists (23 CFR 650, Subpart A). All other potential alternatives are not possible within natural, social, and economic constraints. In addition, all measures to minimize potential harm within the floodplain, consistent with the regulations issued in accord with Section 2(d) of Executive Order 11988 have been taken. Further, a public notice, as required by EO 11988, has been circulated containing an explanation of why the action is proposed to be located in the floodplain."

4.14 ENERGY

There will be no substantial wasteful energy uses caused by any of the alignment alternatives, including energy use required for construction. Energy requirements for all construction alignment alternatives will be similar. Post-construction operational energy uses of the facility will be less with the build alignment alternatives, when compared to the no-build alternative, due to the improved traffic flow/reduction in congestion. The savings in operational energy requirements will more than offset the energy used for construction, and will result in a net savings in energy use in the long term.

4.15 NOISE

The noise analysis was performed in accordance with the 1998 Caltrans Traffic Noise Analysis Protocol that is based upon FHWA's Procedures for Abatement of Highway Traffic Noise and Construction Noise (23 CFR 772). In accordance with these guidelines, existing noise levels are measured using sound meters at sensitive receptors such as homes. These existing noise levels are

compared to future predicted noise levels. The noise study complies with NEPA requirements for evaluation of noise impacts and abatement for the proposed Route 905 project. It is the policy of highway agencies to consider abatement for noise impacts if fiscally prudent and physically and technically feasible.

Table 4-14
ACTIVITY CATEGORIES AND NOISE ABATEMENT CRITERIA

Activity Category	Hourly A-Weighted Noise Level, Db(A) $L_{eq}(h)$	Description of Activities
A	57 Exterior	Lands where serenity and quiet are of extraordinary significance and serve an important public need, and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B	67 Exterior	Picnic areas, recreation areas, playgrounds, active sport areas, parks, residences, motels, hotels, schools, churches, libraries and hospitals.
C	72 Exterior	Developed lands, properties, or activities not included in Categories A or B above.
D	--	Undeveloped lands.
E	52 Interior	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums.

Source: FHWA 23 CFR 772

Traffic noise impacts occur when there is a substantial noise increase and/or when predicted noise levels approach, within 1 dBA, or exceed the Noise Abatement Criteria (NAC). A noise increase is substantial when the predicted noise levels exceed the existing noise levels by 12 dBA, $L_{eq}(h)$. The NAC lists developed land use types as Categories A, B, C, D, or E. Table 4-14 provides the category types, associated noise levels, and a description of activities within each category.

Unusual and extraordinary noise abatement strategies may be provided when severe traffic noise impacts are predicted to occur. Severe traffic noise impacts are defined for a private residential dwelling that will have after-project exterior noise levels of 75 dBA or more over the predicted noise levels if no project is constructed.

Sensitive Receptors

Noise monitoring was conducted at nine receptor locations (see Figure 3-12) within the Study Corridor. These monitoring locations were selected for detailed study because they are adjacent to the proposed project's corridor. The existing ambient noise environment consists primarily of noise from local automobile traffic and air traffic from Brown Field. Extended (24-hour) on-site noise measurements of ambient noise levels, according to the Technical Noise Supplement (TeNS), were conducted at the nine monitoring sites. Noise levels for the nine receptors were

predicted for the year 2025 using the Department's SOUND 32 model. There are no Category A uses within the project Study Corridor but several Category B residential receptors (see Figures 4-20 through 4-23) were identified. These Category B receptors are:

- Site 1 One single-family dwelling immediately south of Otay Mesa Road between Old Otay Mesa Road and Heritage Road.
- Site 2 Several single-family residences along Cactus Road in a mixed industrial, agricultural, and residential use area.

Site 1 is discussed under the No Build Alternative. The Site 2 residences along Cactus Road are 1708 Cactus Road, 1812 Cactus Road, and 1916 Cactus Road. The location of these residences relative to the proposed project impact footprint is shown on Figures 4-20, 4-21, and 4-22. The level and nature of these impacts is summarized below.

- Preferred Alternative: 1708 and 1812 Cactus Road will experience substantial noise impacts from the Preferred Alternative, a 14 dBA noise level increase. 1708 and 1812 Cactus Road future predicted noise levels are 76 and 75 dBA, respectively, which are considered severe traffic noise impacts. 1916 Cactus Road will experience a 10 dBA increase from the Preferred Alternative.
- Freeway-North and Freeway-South Alignment alternatives: 1708 Cactus Road would experience substantial noise impacts from the South alignments alternatives. The noise level increases for this site would range from 10 dBA for the North Alignment Alternative to 14 dBA for the South Alignment Alternative. 1812 Cactus Road would experience a substantial noise impact of 14 dBA from each of these alternatives. 1916 Cactus Road would experience a 10 dBA increase from each of these alternatives.
- Tollway Alignment Alternatives: 1812 Cactus Road would experience substantial noise impacts of 14dBA from each of the alternatives. 1916 Cactus Road would experience a 10 dBA increase from each of the alternatives. 1708 Cactus Road is located within the proposed Tollway Alignment Alternative right-of-way and therefore would be acquired as part of these alignment alternatives.

Except for the impacts to 1708 Cactus Road, as one can see above, the noise impacts to the three affected receptors are identical for the Freeway and Tollway Alignment alternatives. Therefore, when 1708 Cactus Road is discussed below, the noise impacts due to the "North, Central, and South Alignment Alternatives" refer only to those associated with the Freeway alternative; impacts to 1812 and 1916 Cactus Road due to "North Alignment Alternatives" are a result of the Freeway and the Tollway.

Planned/Future Developments

While there are few existing noise-sensitive uses in the Study Corridor, development plans for the western portion of the project area call for numerous homes, schools, parks and other related uses. Development plans within the Study Corridor include 33 private development projects listed in Appendix C. Four of the private development projects (California Terraces/Ocean Hills, Santee Investments/Otay Mesa, Remington Hills and Riviera Del Sol) identified in Appendix C and adjacent to the proposed project completed the necessary environmental clearances. The City of

San Diego conditioned the approval of these projects based upon the provision of adequate noise abatement measures in anticipation of Route 905. Each of the associated environmental documents for these four developments identified the need for appropriate noise abatement measures. California Terraces/Ocean Hills has not constructed any portion of their development adjacent to Route 905.

Development adjacent to Route 905 has occurred at the Santee Investments/Otay Mesa, Remington Hills and Riviera Del Sol projects. These developments consist of a high school and single-family residential located on the south side of Route 905, and single-family and multi-family residential on the north side of Route 905. The Department measured the existing exterior noise level at each of these existing developments. The existing noise level was adjusted to the peak noisiest hour and the noise level range from 56-63 dBA. The existing developments have constructed soundwalls between Route 905 and the residences. The Department also determined that each of the soundwalls feasibly abates the noise level by reducing the noise level a minimum 5 dB as required by FHWA.

The Department is tasked with the responsibility to consider noise abatement measures, based upon the reasonable and feasible findings, for all potential impact areas that are planned and permitted prior to NEPA action on the Department project. Given the City of San Diego conditioned approvals described above, Department noise abatement measures will not be considered as part of the Route 905 project. If additional planned developments, including but not limited to those described in Appendix C, receive the necessary environmental clearance prior to the NEPA action on the Route 905 project, the Department will conduct the appropriate noise analysis to determine if noise abatement measures are necessary.

Noise Abatement

The determination on whether a detailed analysis is necessary and if consideration of noise abatement is required is based on criteria established by FHWA and state noise analysis guidance. Based upon those criteria, it was determined that noise abatement should be considered. The inclusion of noise barriers in highway projects requires them to be “reasonable and feasible,” per FHWA and Department policies. A Noise Abatement Decision Report (NADR) was prepared to examine abatement options for the project's noise impacts. Noise abatement is termed feasible if the proposed barrier provides, according to the Department's Noise Protocol, a minimum 5 dBA noise reduction. A reasonable determination is more subjective and individual circumstances for each effected property is considered in the decision making process. The reasonable determination on providing noise abatement is based on multiple factors including the cost of abatement, absolute noise levels, change in noise levels, noise abatement benefits, and the date of development along the highway.

Noise abatement for this project was considered since traffic noise levels are predicted to have a substantial noise increase and/or exceed the NAC at the receptor sites described above. A range of noise barrier heights from 1.8 to 4.9 meters (6 to 16 feet), in increments of 0.6 meters (2 feet), were modeled and evaluated for the reduction of the noise level at the impacted receptor sites (Tables 4-15). Based on the noise analysis the following options were considered:

- Option A - a noise barrier within the limits of the future Route 905 ROW
- Option B - a masonry wall within private properties (Figure 4-23)

Option B proposes construction of a masonry wall for each receptor on private property. The proposed masonry wall wraps partially around each residence, providing a noise “shadow.” Implementation of this alternative will have been undertaken only if the affected property owner will have agreed to enter into a contract with the State.

Noise Abatement Measures

The following feasible/reasonable decisions were made based upon the data presented in the Route 905 Project Noise Study Report and were prepared based upon estimations made by a project engineer.

Preferred Alternative - Noise Abatement Option A:

- 1708 Cactus Road: traffic noise could be feasibly abated with a 1.8 meter (6 feet) high barrier. The barrier will be placed on a 3.0 meter (10 feet) retaining wall. As a masonry wall, this barrier is reasonable to construct.
- 1812 Cactus Road: traffic noise impacts could be feasibly abated with a 3.0 meter (10 feet) high barrier. This barrier is not reasonable to construct. However, because the noise impact to the receptor is considered severe, the earthen berm is proposed even though it is not reasonable.
- 1916 Cactus Road: traffic noise impacts could be feasibly abated with a 4.9 meter (16 feet) high barrier. This barrier is not reasonable to construct.

TABLE 4-15
TRAFFIC NOISE IMPACT ABATEMENT ANALYSIS dB(A) L_{eq} FOR PREFERRED
ALTERANTIVE
(Option A)

Receptor	Barrier Height						
	No Barrier	1.8m (6 ft)	2.4m (8 ft)	3.0m (10 ft)	3.7m (12 ft)	4.3m (14ft)	4.9m (16ft)
1708 Cactus Road	76	70	68	67	65	64	64
1812 Cactus Road	75	72	71	70	69	69	68
1916 Cactus Road	71	69	69	68	68	67	66

No Build Alternative

Under the No Build Alternative, existing noise levels for 1708, 1812, and 1916 Cactus Road will not be affected. However, as a result of the projected increases in traffic on Otay Mesa Road, substantial noise level increases will occur at the Site 1 residence between Old Otay Mesa and Heritage roads. Otay Mesa Road will continue to serve as the connection between the existing and interim Route 905 segments and will experience substantial future increases in traffic volumes and the associated noise. None of the proposed alignment alternatives will have noise impacts on the noted Old Otay Mesa Road residence.

Noise Abatement Conclusions

For the noise impacts due to the Preferred Alternative, the following noise barriers are proposed: Noise Abatement Option A, masonry wall for 1708 Cactus Road and earthen berm for 1812 Cactus Road.

4.16 AIR QUALITY

Implementation of any of the proposed project's alignment alternatives will not exceed air quality standards. The level and nature of projected air quality effects present negligible differences for all alignment alternatives. Under the No Build Alternative, Route 905 will not be completed and all projected traffic will remain on Otay Mesa Road.

Air Quality Conformity Planning

The federal Clean Air Act (CAA) forms the basis for the national air pollution control effort. A basic element of the CAA is the National Ambient Air Quality Standards (NAAQS), which require that certain pollutants do not exceed specified levels. The threshold for each pollutant ensures protection for sensitive groups of the population. California has adopted state air quality standards that are more protective than the NAAQS. Areas with levels that exceed the standard for specified pollutants are designated as "non-attainment areas."

The federal CAA requires each state containing non-attainment areas to submit a State Implementation Plan (SIP) to the federal Environmental Protection Agency (EPA), specifying measures to attain the NAAQS by a specified attainment deadline. The San Diego County Air Pollution Control District (APCD) prepares the San Diego portion of the California SIP.

The 1982 SIP anticipated attaining federal ozone and carbon monoxide standards by 1987; they were not. A lack of congressional action to reauthorize the federal CAA served as the impetus for the California Legislature to address the state's continuing effort to improve air quality. In 1988, the California Clean Air Act (CCAA) was enacted requiring the APCD to prepare a revised Regional Air Quality Strategy (RAQS) for achieving the state and federal air quality standards.

The proposed project will be located in the San Diego Air Basin. Progress has been made in the San Diego Air Basin in attaining federal and state air quality standards. Federal and state standards have been met for lead, nitrogen dioxide, sulfur dioxide, and carbon monoxide (CO), and federal standards are being met for inhalable particulates labeled as PM10. State standards

for PM10 have not been met and the possible addition of a PM2.5 standard may change the Air Basin's federal status as it relates to inhalable particulates.

San Diego County is also no longer a serious nonattainment area for ozone (as was the case when the DEIS/DEIR was circulated publicly), having been redesignated an attainment/maintenance area (for 1-hour ozone) as of July 28, 2003. On April 15, 2004, San Diego County was designated as "Nonattainment" for the new Federal 8-hour ozone standard with a "Basic (Subpart 1)" classification. Conformity requirements associated with the 8-hour ozone standard will likely become effective on June 15, 2005.

Particulate matter (PM) is the general term used for a mixture of solid particles and liquid droplets found in the air. PM2.5 describes the "fine" particles that are less than or equal to 2.5 micrometers in diameter. PM can result from primary emissions and secondary atmospheric formation. Generally, fine PM is composed mostly of secondary particles, formed in the atmosphere from primary gaseous emissions. The chemical composition of PM depends on location, time (or year), and weather. When inhaled, particles can accumulate in the respiratory system and are associated with numerous health effects. Fine particles are most closely associated with such health effects as increased hospital admissions for heart and lung disease, increased respiratory disease, and symptoms such as asthma, decreased lung function, and even premature death. In addition to health problems, PM is the major cause of reduced visibility in many parts of the United States. Airborne particles also can impact vegetation and ecosystems and can cause damage to paints and building materials.

U.S. EPA is expected to make San Diego County area PM2.5 designations by December 2004 and federal conformity requirements are expected to become effective one year after the designations. The current projected area designation for San Diego County is nonattainment.

The California Air Resources Board (CARB) found that diesel PM poses the greatest cancer risks among all identified air toxics. Diesel trucks contribute more than half of the total diesel PM emissions, with the remainder coming from stationary and other diesel combustion sources. However, total toxic risk from diesel PM is a function of lifetime exposure, and most sensitive receptors of diesel exhaust are exposed for a short duration. Thus, while diesel exhaust may pose potential cancer risks, most receptors' short-term exposure would only cause minimal harm, and these risks would also greatly diminish in the future operating years of the project due to the CARB adopted Diesel Risk Reduction Plan (DRRP), which contains control measures that will reduce the overall diesel PM emissions by about 85% from 2000 to 2020.

The project is not located in an area that contains naturally occurring asbestos.

Currently, there are no quantitative tools available to assess Route 905's air toxics related health risks. However, the Department did evaluate whether there is a potential for the project to have negative impacts by qualitatively comparing the build scenario to the no-build scenario. The Department concluded that the project would not cause any additional air toxics health risks because the build scenario would reduce congestion levels and stop-and-go conditions and change them into more free-flow conditions.

In order to protect the progress the region has made in achieving air quality standards, a conformity analysis on the proposed alternatives was required. This assessment encompassed

conformity evaluation guidelines published by the EPA and concluded that all applicable standards have been met by the proposed project.

Meeting air quality conformity standards, according to the budgets contained within the SIP, means that there will be no significant exceedances of vehicular emissions, which include reactive organic gases and nitrogen oxides. These compounds are precursors to regional smog (ozone) formation. The proposed project is not anticipated to measurably worsen regional ozone levels. According to the analysis protocols used, the proposed project is not predicted to cause CO "hot spots."

To meet air quality conformity, the proposed project must be programmed in a Regional Transportation Plan. The proposed project is included in the SANDAG Regional Transportation Plan (2030 RTP). The 2030 RTP was adopted on March 28, 2003 by SANDAG. A conformity finding on the 2030 RTP was issued by United States Department of Transportation and adopted on April 9, 2003. Additionally, the proposed project is included in the Regional Transportation Improvement Program (2002 RTIP), which was adopted on June 28, 2002 by SANDAG, a multi-year program of regional transportation improvements for major state highway, local street and road, transit, and non-motorized projects. The 2002 RTIP covers the fiscal years 2003 - 2007. FHWA issued a conformity finding on the RTIP on October 4, 2002.

The proposed project was included in all regional transportation plans and there were no substantial changes in design and scope since the adoption of these plans. Both the RTP and RTIP are required to be financially constrained and must be within air quality budgets contained in the SIP. This proposed project fully conforms to the implementation plan's purpose of attaining and maintaining national ambient air quality standards. The proposed project meets all criteria for a finding of conformity with the SIP.

Existing Air Quality Data

Existing air quality can best be characterized from measurements made at the monitoring station on Otay Mesa. However, this station does not measure the complete spectrum of particulate pollutants (specifically, PM₁₀) and was therefore supplemented with data from the downtown San Diego monitoring station.

The western portion of the project area is closer to the monitoring station in Chula Vista than the Otay Mesa monitoring station near the POE. The Chula Vista site is less affected by nearby truck traffic than the Otay Mesa site, since it better reflects the overall regional background air pollution levels, particularly for CO. Background CO levels in the project area are therefore assumed to be characterized by a combination of the Chula Vista and Otay Mesa stations data resources. The last seven years of monitoring data from the Otay Mesa station, including appropriate supplemental data resources, has shown progress toward cleaner air in almost all categories. The only federal clean air standard exceeded throughout the 7-year monitoring period was the hourly ozone standard, which was exceeded six times in seven years (once per year is allowable). The more stringent state standards for ozone and for PM₁₀ were exceeded on a somewhat higher frequency. Violations of state ozone standards occur, approximately, 13 days per year. The California PM₁₀ standard is exceeded on approximately one-fourth of all measurement days. There are no intersections or other transportation facilities identified in the San Diego County PM₁₀ SIP where violations have been monitored. However, overall air quality on Otay Mesa is generally good in comparison to other areas of the San Diego Air Basin.

Ozone levels in San Diego County are sometimes derived from the southward drift of pollution from the South Coast Air Basin (SCAB). The SCAB, which includes Los Angeles, is forecast to continue to exceed ozone standards to the year 2010. Further ambient air quality improvements from San Diego-generated emissions reductions are anticipated to continue. Any violations of ozone standards in the year 2000 or beyond are forecast to occur only on days when transport from the SCAB creates substantially elevated baseline levels which will be added to local basin levels.

Background CO concentrations in the project vicinity were determined from the second highest one-hour CO concentrations measured at the Otay Mesa and/or Chula Vista monitoring stations. The second highest one-hour CO level at Otay Mesa within the last three years, observed in 1996, was 10 ppm (parts per million), which is representative of receptors near the POE. The second highest one-hour CO level at Chula Vista was 6 ppm. This level was assumed to be representative of receptors at the western end of the Study Corridor.

Methodology: Microscale Impact Analysis

Microscale air quality was analyzed at a limited number of existing and planned sensitive receptors on Otay Mesa. There are limited existing locations that are considered sensitive receptors within the project area. Approximately eight residences are located in a mixed agricultural, industrial and residential area along Cactus Road. One additional residential site is located along the south side of Otay Mesa Road between Old Otay Mesa and Heritage roads. Planned (future) sensitive receptors within the project area include residences, health care facilities, schools and parks. Sample analysis locations for these future uses were selected, because the exact receptor locations have not been identified. A total of eleven receptor locations were included in the microscale impact analysis; they are shown on Figure 4-24.

Traffic Estimates

Traffic volumes and the vehicle mix (the type of vehicles on the highway) are vital factors/inputs in the computer models used to estimate emissions from a highway project. The most recent Otay Mesa Road vehicle counts show a medium and heavy truck usage of 16 percent. The future growth of employment-related automobiles is forecast to exceed the rate of truck growth, with a lowering in truck percentage. The assumed vehicle mix was derived from a vehicle survey for northbound traffic conducted at the Otay Mesa POE in 1993. Estimates of traffic volumes and vehicle mix were made for the design year (2025).

Air Quality Modeling

Emission factors were calculated using the EMFAC7F (V1.1) computer model. The CALINE4 model was used to predict microscale CO exposures at the eleven receptor sites. Hourly CO calculations were made for worst-case meteorological conditions with the model allowed to determine the wind direction that maximizes the predicted impact. Table 4-16 summarizes the inputs used for emissions modeling such as “average additional” versus the “average existing” vehicle volumes for the proposed project.

Results of Analysis

Microscale air pollution exposure at the selected Otay Mesa receptor sites for all alignment alternatives, as characterized by future carbon monoxide (CO) levels, range between

approximately 7 and 13 ppm (parts per million) for 1-hour CO levels, and 4.1 to 7.6 ppm for 8-hour CO levels. These levels are within the acceptable CO concentrations for state, federal and Occupational Safety and Health Administration (OSHA) standards. These standards are: 20 ppm (state) and 35 ppm (federal) for the 1-hour average, 9 ppm (state and federal) for the 8-hour average and 50 ppm (OSHA) over an 8-hour workday for commercial sites.

One-hour CO concentrations were calculated for 10 scenarios. Table 4-17 summarizes the one-hour CO impact analysis for all alignment alternatives, and Table 4-18 summarizes the eight-hour CO impact analysis. Predicted future CO levels for all alignment alternatives are similarly well below the state and/or federal Ambient Air Quality Standards (AAQS). Inclusion of a major bridge component in the South Alignment Alternative created no measurable change in air quality impacts from the at-grade assumptions of the North and Central Alignment Alternatives.

Differences in microscale air quality among the alignment alternatives were negligible, with 8-hour CO levels within 0.1-0.2 ppm, and 1-hour CO levels within 1.0 ppm for all identified alignment alternatives. Differences among the alignment alternatives are well below reportable amounts, and within applicable regulatory standards. The no project alternative will result in severe congestion on Otay Mesa Road and less pollution-efficient travel speeds.

A qualitative analysis was performed for the alignment alternatives effect on existing and new PM10 violations at a microscale level. Given the alignment alternatives characteristics and that the project is not directly upwind from the Otay Mesa-Paseo International monitoring station as well as project measures to attain the PM10 standard no new violations are anticipated. This analysis demonstrates that the project will not cause or contribute to any new localized PM10 violations or increase the frequency or severity of any existing PM10 violations.

Table 4-16
TRAFFIC/EMISSIONS INPUT DATA SUMMARY

<u>Scenario</u>	<u>Avg. Added Vol.</u> <u>(Veh/Hour/Km)</u>	<u>Avg. Base Vol.</u> <u>(Veh/Hour)</u>	<u>Cold</u> <u>Start*</u>	<u>Hot</u> <u>Start*</u>	<u>EMFAC</u> <u>(gr/km)**</u>
Existing N-S Arterials	-----	-----	95%	5%	19.6
2025 N-S Arterials	-----	-----	95%	5%	5.5
Existing Otay Mesa Road (OMR)	48	2,670	2.5%	0.5%	2.0
Existing OMR 6-lane Freeway	164	889	28.8%	5.8%	6.8
Existing 6-lane Freeway	234	5,223	6.9%	1.4%	3.1
2025 6-lane Freeway	422	8,976	8.0%	1.6%	1.6
2025 6-lane Tollway	386	7,358	8.5%	1.7%	1.6
2025 No Build	591	4,397	19.6%	3.9%	2.3
2025 Buildout	615	12,122	8.7%	1.8%	1.6

* $CS = \frac{1.373 \times \text{Added}}{\text{Base}}$ $HS = 0.2 \times CS$

** Converted to gram/km from gram/mile output from the EMFAC7F1.1 computer model.

Vehicle speed assumptions were as follows:

N-S Arterials = 40 kph (25 mph), Free/Tollway = 97 kph (60 mph), Otay Mesa Road (Existing) = 88 kph (45 mph), Otay Mesa Road (2000, 2020 No Project) = 40 kph

Table 4-17
MICROSCALE ALIGNMENT ALTERNATIVE IMPACT ANALYSIS SUMMARY
 (One-Hour CO Concentrations [ppm])*

Receptor Site No.	-1998-	----- 2025 -----				
	<u>Exist.</u>	<u>Fwy. North</u>	<u>Fwy. Cen</u>	<u>Fwy. South</u>	<u>Tllwy.</u>	<u>No Build</u>
1	9	10	10	10	10	10
2	9	9	9	9	9	10
3**	12	12	12	12	12	15
4	9	8	8	8	10	
5	10	11	11	11	11	11
6	7	7	7	7	7	7
7	7	7	7	7	7	7
8	7	7	7	7	7	7
9	7	7	7	7	7	7
10	7	7	7	7	7	7
11	7	7	7	7	7	7

Site 1 = nearest residence on Cactus Road N of Route 905

Site 2 = nearest residence on Cactus Road S of Route 905

Site 3 = AM/PM Market; Heritage @ Otay Mesa Road (OMR)

Site 4 = nearest residence on OMR W of Heritage Road

Site 5 = POE

Site 6 = California Terraces school/park site W of Palm Avenue

Site 7 = Remington Hills residential site

Site 8 = California Terraces school/park site E of Palm Avenue

Site 9 = Santee Investments community park site

Site 10 = Santee Investments high school site

Site 11 = California Terraces single-family residence site

*All "with project" calculations, except for the 2025 6-lane Freeway, were calculated for the Central Alignment Alternative because no measurable CO differences were observed among candidate alignment alternatives.

Background CO levels (1-hour) for Receptor 5 = 10 ppm, Receptor 1, 2 = 8 ppm, all others = 6 ppm.

** This location is a commercial site where the OSHA standard of 50 ppm for an 8-hour workday will apply.

Source: CALINE4 Model, results in Air Quality Technical Study.

Table 4-18
MICROSCALE ALIGNMENT ALTERNATIVE IMPACT ANALYSIS SUMMARY*
 (Eight-Hour CO Concentrations [ppm])

Receptor No.	-1998-	----- 2025 -----				
	Exist.	Fwy. North	Fwy. Cen	Fwy. South	Tllwy.	No Build
1	5.6	5.8	5.8	5.7	5.7	5.8
2	5.5	5.6	5.6	5.6	5.6	5.8
3**	7.3	7.1	7.1	7.1	7.2	9.2
4	5.5	4.9	4.9	4.9	4.9	6.1
5	6.2	6.5	6.5	6.5	6.5	6.5
6	4.0	4.3	4.3	4.3	4.2	4.3
7	4.0	4.2	4.2	4.2	4.1	4.3
8	4.1	4.1	4.1	4.1	4.1	4.4
9	4.0	4.2	4.2	4.3	4.2	4.2
10	4.0	4.2	4.2	4.2	4.1	4.2
11	4.0	4.2	4.2	4.2	4.1	4.3

Site 1 = nearest residence on Cactus Road N of Route 905

Site 2 = nearest residence on Cactus Road S of Route 905

Site 3 = AM/PM Market; Heritage Road @ Otay Mesa Road (OMR)

Site 4 = nearest residence on OMR W of Heritage Road

Site 5 = POE

Site 6 = California Terraces school/park site W of Palm Avenue

Site 7 = Remington Hills residential site

Site 8 = California Terraces school/park site E of Palm Avenue

Site 9 = Santee Investments community park site

Site 10 = Santee Investments high school site

Site 11 = California Terraces single-family residence site

* All "with project" calculations, except for the 2025 6-lane freeway, were calculated for the Central Alignment Alternative because no measurable CO differences were observed between the North, Central and South Alignment Alternatives. Persistence Factor = 0.6; Ambient Air Quality Standard = 9 ppm.

** This location is a commercial site where the OSHA standard of 50 ppm for an 8-hour workday will apply.

Source: CALINE4 Model; results in Air Quality Technical Study.

Conclusions and Measures to Minimize Harm

The project will not exceed air quality standards and is in a conforming plan (Appendix R). The air quality impacts of the proposed project are not substantial. Since the project will be in regional conformance, there are no CO exceedences, and no new PM10 violations no long term mitigation measures are proposed.

Testing will take place to determine if asbestos exists inside any of the existing bridge structures before demolition begins. The project will comply with all San Diego APCD asbestos related regulations. A National Emission Standards for Hazardous Air Pollutants (NESHAPS) survey will be completed, and a copy will be on file. The San Diego Air Pollution Control District (APCD) will be notified prior to structure demolition.

Trained personnel only shall strip, remove or otherwise disturb regulated asbestos-containing material. The trained representative shall receive training at least once every two years. Evidence that the training has been completed shall be posted and made available for inspection at the demolition or renovation site.

4.17 CONSTRUCTION IMPACTS

Construction activities cause temporary impacts with respect to air quality, noise levels, erosion, and access or traffic circulation. These impacts are not considered substantial. The proposed project will interfere with local traffic causing some delays and occasionally disrupting access. Otay Mesa Road will not be closed; detours will ensure traffic will continue to flow. Fire and safety service providers, and local businesses will therefore not experience substantial impacts. Construction impacts and mitigations measures are discussed in detail above, under each appropriate environmental topic. Despite the duration of the construction period (approximately 12 to 18 months), and noise impacts in certain areas, the overall impact will not be substantial, due to the small number of sensitive receptors near the construction zone. A summary of construction mitigation measures appears below.

Air Quality

Temporary impacts will result from construction activities. Air pollutants will be emitted by construction equipment and dust will be generated during grading and site preparation. PM_{10} is the pollutant of primary concern associated with construction activities. Construction activities for large development projects are estimated by the Environmental Protection Agency to add 1100 kilograms (1.2 tons) of fugitive dust per acre of soil disturbed per month of activity. If water or other soil stabilizers are used to control dust, the emissions can be reduced by up to 50 percent. Contractors complying with the Department's *Standard Specifications* are required to comply with all air pollution control rules including practices for minimizing dust generation.

Short term construction impacts will be mitigated through compliance with the Department's Standard Specifications and use of measures such as standard application of water and soil binders to the site, roads and parking areas, washing of equipment as necessary, proper tuning and maintenance of equipment, and use of low sulfur fuel for equipment.

Mitigation Measures

Air Quality

- Compliance with the Department's Standard Specifications - Section 10 "Dust Control".
- Compliance with the Department's Standard Specifications regarding air pollution control.
- Apply water to site and equipment as frequently as necessary to control dust.
- Spread soil binders on site, unpaved roads, and parking areas.
- Wash off trucks / equipment before leaving the site, as necessary.
- Properly tune and maintain equipment.
- Use low-sulfur fuel for equipment.

Noise

- Proposed noise barriers will be constructed as a first order of work within designated abatement areas adjacent to sensitive receptors, where feasible. If not feasible as first order of work, temporary barriers will be constructed until such time that proposed barriers can be completed.

Water Quality

- Compliance with the Department's Standard Specifications, and NPDES permit.
- Use of Best Management Practices to minimize erosion and sedimentation.

Traffic Circulation and Access

- Phase construction.
- Preparation of a traffic management plan, which ensures that clearly identifiable access to and from homes and businesses will be retained.
- Regional circulation will be maintained and local circulation will be accommodated via detours.
- A public awareness program will be developed to inform the public of the upcoming detours and construction schedule.
- Emergency providers (fire, police, and medical) will be informed of all detours. Pedestrian and bicycle access will be maintained.
- Construction signage, signalization, or flag-persons will be used during construction in areas with pedestrian access.

4.18 THE RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES OF THE ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

Project implementation will result in attainment of short-term and long-term transportation and economic objectives at the expense of some long-term aesthetic, biological, noise, and other land use impacts. Transportation improvements are based on State/ local comprehensive planning which considers the need for present and future traffic requirements within the context of present and future land use development. The local short-term impacts and use of resources by the proposed project is consistent with the maintenance and enhancement of long-term productivity for the local area, and the State as whole.

Build Alignment Alternatives

The six build alignment alternatives will have similar short- and long-term effects.

Short-term losses include:

- Economic losses experienced by businesses affected by relocation, and
- Construction impacts such as noise, traffic delays or detours.

Short-term benefits include:

- Increased jobs and revenue generated during construction.

Long-term losses will include:

- Permanent loss of plant and wildlife resources,
- Loss of open space and farmland,
- Visual impacts,
- Noise increases, and
- Use of construction materials and energy.

Long-term gains include:

- Improvement of the transportation network of the region and the project vicinity, increased access,
- Reduction of congestion on local streets and highways,
- Increased jobs and revenue through creation of new toll operation industry (Tollway Alternative only), and
- Support approved development.

No Project

This alternative would offer none of the gains listed above, nor would it have any of the losses. It would, however, not resolve worsening congestion on local streets and highways. It would not support planned development.

4.19 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

Implementation of the proposed action involves a commitment of a range of natural, physical, human, and fiscal resources. Land used in the construction of the proposed facility is considered an irreversible commitment during the time period that the land is used for a highway facility. However, if a greater need arises for use of the land or if the highway facility is no longer needed, the land can be converted to another use. However, it will be extremely expensive, and examples are rare. At present, there is no reason to believe such a conversion will ever occur.

In addition, losses of wildlife habitat and vernal pools are considered an irreversible loss. Considerable amounts of fossil fuels, labor, and highway construction materials such as cement, aggregate, and bituminous material are expended. Additionally, large amounts of labor and natural resources are used in the fabrication and preparation of construction materials. These materials are generally not retrievable. However, they are not in short supply and their use will not have an adverse effect upon continued availability of these resources in the foreseeable future.

Also, public funds will be expended (approximately \$262 to \$277 million for the Freeway Alignment Alternatives). Public funds are not considered retrievable. The commitment of these resources is based on the concept that residents in the area, region, and State will benefit by the improved quality of the transportation system. These benefits will consist of improved accessibility and safety, savings in time, and greater availability of quality services. These benefits are anticipated to outweigh the commitment/ loss of the resources.

The No Build alternative will not result in any irreversible or irretrievable commitment of resources.

4.20 UNAVOIDABLE ADVERSE ENVIRONMENTAL EFFECTS

Build Alignment Alternatives

Adverse effects will include those to displaced residents and businesses, visual quality, noise levels, open space/ farmland, biological resources, growth impacts, and temporary construction effects. To the maximum extent possible, mitigation measures are incorporated into the project to minimize impacts. Substantial unavoidable environmental effects are impacts to vernal pools, and the secondary impacts of growth.

No Project Alternative

The No Project Alternative would result in worsening traffic congestion on the local and regional transportation system. Potential safety issues may occur in the future within the Otay Mesa area since Otay Mesa Road is the only access to Otay Mesa and the Port of Entry.

4.21 CUMULATIVE IMPACTS

Introduction

The CEQA Guidelines define cumulative impacts as “two or more individual effects that, when considered together, are considerable or which compound or increase other environmental impacts” (CEQA Guidelines § 15355). A cumulative impacts analysis must include either (1) a list of past, present, and reasonably anticipated future projects, or (2) a summary of projections contained in adopted plans designed to evaluate regional or area-wide conditions.

NEPA also requires consideration of cumulative impacts (40 CFR § 1508.25(c)). The CEQ regulations define cumulative impact as “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time” (40 CFR § 1508.7).

Projections associated with general plans covering the area, and the SANDAG Series 8 growth projections, are described in the relevant local and regional planning documents. Local and regional plans associated with the project study area are discussed in Chapter Three. A number of large development projects, in various stages of approval, lie entirely or partially within the study area, and account for large amounts of undeveloped land. Proposed and reasonably anticipated future development projects, as well as transportation projects, are listed in Appendix C, Tables C-1 and C-2. Since the available land in the area is governed by these proposed or approved development plans, the cumulative impacts of such development, in conjunction with the effects of Route 905, comprise the cumulative impacts related to the project.

Although the study area is the portion of the County most closely associated with the project and so most appropriate for consideration of cumulative impacts, cumulative impacts throughout San Diego County have also been evaluated. Mitigation for cumulative impacts at the county-wide

level are most effectively provided by county-wide planning, including the MSCP and other regional planning efforts. Planned development and transportation projects in the San Diego area have been evaluated for their cumulative significance; cumulative impacts of these planned and reasonably-anticipated future projects are discussed above in this chapter, where relevant, for each environmental topic.

The only impacts of the Route 905 project which have been determined to occur, regardless of mitigation, are impacts to vernal pools and their associated endangered/ threatened species, and the secondary impacts of growth. Cumulative impacts to vernal pools and their associated species from development have been and will continue to be adverse. Mitigation measures will consist of acquisition and preservation of existing pools, creation, and/or enhancement of vernal pools. It is acknowledged that the vernal pool creation has been successful, however, the long-term effectiveness of vernal pool mitigation through the creation of new pools is variable. The proposed project will have long-term secondary growth effects in the Otay Mesa area. The project may also stimulate growth not currently planned both through intensified uses within and adjacent to the project corridor, and by allowing greater access to potentially expanding industrial and international trade uses. The environmental effects of such speculative projects are not currently foreseeable and cannot be addressed in this analysis.

Analysis of Additional Projects in the Study Corridor

This environmental document presents all available information with regard to the potential environmental effects of adjacent development projects, by summarizing the information presented in the environmental impact reports prepared for these projects. The review of the adjacent development environmental documents has not identified any project's contingent upon the completion of Route 905. Appendix C, Table C-3, describes the cumulative impacts of major development projects within the Route 905 Study Corridor, and identifies the relevant Environmental Impact Reports and other environmental documents which describe these effects in more detail.

In addition to the projects presented in Appendix C, Route 125 South is a related project, because Route 905 will include a freeway to freeway interchange at the connection to 125 South. Since the Route 125 South project is being developed on an earlier schedule than Route 905, the interchange between the two facilities is included in the Route 905 project with the appropriate mitigations to fully address its impacts. The Route 905 project is independent of the Route 125 South project, and neither the proposed interchange nor the Route 125 South project are essential elements of the proposed Route 905 project. Route 905 could be constructed and have independent merit without Route 125 South. Each of these proposed projects has independent utility and is being developed on individual planning schedules. The processing of these projects is consistent with CEQA and the FHWA NEPA regulations.

The Route 905 Study Corridor has also been evaluated as part of the analysis of the MSCP and MHPA. The MSCP/ MHPA is discussed in this document with regard to biological impacts. The MSCP planning process began in 1991, and involved extensive and ongoing interagency and public discussion, culminating in approval of the MSCP by the FWS in 1997. The MSCP was designed to provide a comprehensive habitat conservation planning program for southwestern San Diego County. It is specifically intended to allow local jurisdictions to maintain land use flexibility, by creating a regional preserve system that can meet future public and private project mitigation needs. In particular, "by identifying priority areas for conservation and other areas for

future development, the MSCP will facilitate and improve certainty of development outside the preserve area. In this way, the MSCP serves to create effective urban growth boundaries in the Route 905 area, by defining areas, which will be preserved, and areas available for development.

The EIS for the MSCP encompasses a study area of approximately 235,726 hectares (582,243 acres) or approximately 2400 square kilometers (909 square miles) in southwest San Diego County, including but not limited to, Chula Vista, Coronado, Imperial Beach, La Mesa, Lemon Grove, San Diego. The MSCP study area contains much of the current or proposed urbanization in the southern San Diego County area, and encompasses large portions of the Route 905 project area. Focusing on the establishment of a large scale preserve for conservation of biological resources, the MSCP also provides for allowing development outside the preserve area which will be mitigated by conservation inside the preserve. By establishing areas, which are off limits for development, and authorizing development to proceed, the MSCP, and the development contemplated under the MSCP and MSCP EIS, provide additional demonstration that the growth associated with the related projects, listed in Appendix C, in the Route 905 project area has been addressed on a regional basis.

Growth

Route 905, in conjunction with the construction of Route 125 South, the widening of Otay Mesa Road, and other smaller local transportation improvements, will contribute cumulatively to substantial secondary growth impacts to the southeast portion of San Diego County. The construction of these projects will also enhance development opportunities in the south county area by providing improved access within the regional and international transportation system. The resulting growth will benefit regional employment.

Mitigation for cumulative growth impacts is governed by each of the three local land use plans, which provide for the orderly, timely and environmentally sensitive nature of land use development. Additional infrastructure and public service needs resulting from future developments will be the responsibility of developers as directed by local agencies and utility districts. No measures are proposed for this project to mitigate growth impacts.

The majority of the project area has been committed to approved land uses. The document acknowledges anticipated growth which is expected to occur in the area, and addresses the cumulative impacts in Appendix C.

Most of the Route 905 project area is already subject to proposed or approved development plans, or designated for open space preservation as part of the MSCP/MHPA. As a result, the reasonably foreseeable development in the project area is described in this document by reference to the environmental documentation prepared for these development projects. These specific environmental documents are summarized in Appendix C. Appendix C, Table C-3, summarizes the size and general status of the projects anticipated in the project area, and also specifically identifies the extent of biological impacts anticipated for each of these projects. Biological resource impacts identified include endangered species, habitats, wetlands, waters of the U.S., air quality, and water quality when information was available from a project's EIR.

Unplanned Growth

The Route 905 project is expected to affect growth by accommodating planned and approved development, and by expanding access to development areas including new and improved access to previously undeveloped land. The project is expected to have effects on the rate of growth on the short term and on the location and total amount of growth over the long term. The growth inducing effects of the project, however, are minimized by the local and regional land use plans in the project area, including the MSCP/ MHPA approved by the FWS and the CDFG and being implemented by local jurisdictions in the project area. This large-scale subregional habitat conservation plan effectively limits the areas which may be subject to growth pressure, by setting aside substantial habitat reserve areas and specifically identifying areas where development is allowed in accordance with the state and federal endangered species act.

Other constraints to growth include the future availability of developable land. In general, lands in floodplains, with steep slopes, or in public ownership are constrained from urban development. Growth is also constrained in areas of rare, endangered, or sensitive biological resources. Several single and multiple species habitat conservation planning efforts are underway in the growth analysis study area (e.g. Natural Community Conservation Program, Otay Corporate Center South Preserve Area). In general, the goal of these efforts is to preserve sensitive resources and connecting corridors to avoid fragmentation of habitat and thereby maintain its long-term viability. Most prominent of these efforts in the project area is the MSCP/ MHPA.

Paleontological Resources

The eventual buildout of residential and commercial development in the Otay Mesa area could potentially remove (during mass excavation) or cover over (during construction) a majority of the paleontological resources discussed in this report. The project mitigation measures described in Section 4.2 will mitigate the cumulative impacts associated with the proposed project. The City and County of San Diego will likely impose similar mitigation requirements for future cumulative development projects on Otay Mesa.

Hydrology/Hydraulics

As described in Section 4.3, all of the project alignment alternatives (except No Project) will result in potentially adverse impacts from storm water runoff along proposed Route 905 due to increased flows and runoff volumes. All these potential impacts will be effectively mitigated on a project level through standard design and construction measures. Accordingly, the project will result in the discharge of storm water runoff rates that are equal to or less than those which are currently experienced.

Additional developments in the Otay Mesa area, including numerous large-scale industrial/commercial sites, will each require similar measures to maintain the current flow levels. Mitigation of potentially adverse cumulative water impacts entail adequate project-specific mitigation for individual development actions, as well as the implementation of region-wide measures to avoid or reduce discharge to Mexico. With increased development, most storm runoff is conveyed in pipes or channels. This shortens the travel time it takes for flows from the further basins to reach this same basin. The resultant peak under developed conditions typically is larger. A regional detention facility will account for this increase peak flow, and mitigate the

increase, before releasing it into Mexico. The design and implementation of such programs will require participation and funding by numerous agencies and private entities to be effective, and is not a proposed mitigation requirement for this project.

Water Quality

Potential for cumulative effects will result from the continued addition of developments in the Otay Mesa area, with potential for pollutant discharge related to construction and operation. Project-specific mitigation measures for each individual development action are required by local agencies with jurisdiction over land-use decisions, as well as by the RWQCB. Temporary and permanent BMPs are commonly used to prevent/minimize the tracking of pollutants into waterways while ensuring conformance with Department Permits and the Basin Plan. These measures will mitigate cumulative impacts. Region-wide measures to address cumulative impacts are beyond the scope of this project; they will involve implementing applicable programs in the Basin Plan, such as source reduction, increased pollutant removal and monitoring and conformance with water quality objectives.

Air Quality

The air quality study was conducted for the proposed project in compliance with applicable federal regulations including the provisions of 40 CFR 93.110. The regional emissions analysis conducted by SANDAG addresses the regional effects of both ozone and CO.

The region's most current model (Series 8 land use) was used to perform a thorough examination of air quality impacts. The proposed project is included in the SANDAG Regional Transportation Plan (2030 RTP). The 2030 RTP was adopted on March 28, 2003 by SANDAG. A conformity finding on the 2030 RTP was issued by United States Department of Transportation and adopted on April 9, 2003. Additionally, the proposed project is included in the Regional Transportation Improvement Program (2002 RTIP), which was adopted on June 28, 2002 by SANDAG, it is a multi-year program of regional transportation improvements for major state highway, local street and road, transit, and non-motorized projects. The 2002 RTIP covers the fiscal years 2003-2007. FHWA issued a conformity finding on the RTIP on October 4, 2002.

Both the RTP and the RTIP have been found to conform with the State Implementation Plan (SIP) as required by Section 176 of the Clean Air Act. The Project "comes from" a conforming transportation plan and transportation program as required by Section 176 of the Clean Air Act.

The cumulative impacts of planned developments were considered in both the regional emissions analysis performed by SANDAG on the RTP as well as localized CO analysis contained in this document. Both analyses' use SANDAG's Series 8 land use and traffic demand projections. The Series 8 projections did include the planned land use development expected in the project area by 2015 including, but not limited to, Brown Field (City of San Diego) and East Otay Mesa Specific Plan (County of San Diego) projects. It should be noted that Route 905 will not itself be a traffic generator. It will help relieve existing and future traffic generated by previously approved and planned development, by reducing out of direction travel and diverting stop and go traffic from local streets and arterials. The air quality study shows that the proposed project will improve regional air quality as compared to the no build alternative.

The proposed project will not exacerbate increases in traffic. On the contrary, the project is part of a comprehensive regional transportation network designed to serve the growing South San Diego County population in accordance with the development plans of the local jurisdictions. Increases in traffic generation and vehicle emissions due to developments are consistent with SANDAG's traffic projections and air quality models used in this document. The population increases were included in the Series 8 growth projections.

Farmland

The construction of Route 905, in conjunction with other road projects and the numerous developments proceeding in accordance with adopted plans, will result in cumulative impacts on farmland. Without development of Route 905, the cumulative loss of farmland will be substantially less on Otay Mesa relative to the losses incurred under any of the alignment alternatives. The farmland conservation measure described in Section 4.6.4 will mitigate the cumulative impacts associated with the project.

Economics

There is a potential for cumulative economic impacts due to the anticipated business displacements for Route 905, as well as other projects in the vicinity. Construction of the Route 125 project could coincide with Route 905, and could include displacement of 3 to 4 businesses. Given the small number of displacements and the different types of businesses with assumed different relocation needs, cumulative impacts are expected to be minor.

Visual

The visual character of the Otay Mesa area is such that it can absorb new development without negatively affecting the visual environment. For view quality impacts, only effects on a viewing scene can be considered as impacts on view quality. Since none of the project area is considered to be part of an important viewing scene, no cumulative effects are expected. Neither are cumulative community character effects expected, because there are no definitions of community resources or design goals expressed in any community plans or policies addressing Otay Mesa.

Some of the many planned projects listed in Appendix C are likely to adversely affect the landform in the project area and, along with Route 905, may cumulatively turn a slightly or moderately adverse effect into one that is adverse. Implementation of the proposed Route 905 project will contribute to a potentially adverse cumulative landform quality impact when the slight and moderate contrasts of the Route 905 project are combined with adjacent developments.

Mitigation measures for the Route 905 project are discussed in Section 4.9.3. A long-term mitigation and overall corridor plan will be developed to deal with appropriate planting, grading and specific design elements such as walls, structures and signs. Mitigation of transportation projects can be coordinated by the Department, but private development projects cannot. The Department is not in a position to control or mandate adjacent landform mitigation on private property. Mitigation for the visual impacts of adjacent private development projects through the City of San Diego CEQA compliance process will help to reduce the cumulative impact on landform quality.

Biological Resources

Future development of Otay mesa, in combination with the implementation of the Route 905 project and development that has already occurred, will result in cumulative impacts to sensitive habitats and species. Cumulative biology impacts on Otay Mesa are the result of past, current, and reasonably foreseeable future developments and other land uses, such as agriculture. The cumulative impacts that have already occurred on Otay Mesa are substantial. One hundred to 200 years ago, Otay Mesa was entirely undeveloped and, hypothetically, supported high numbers of plant and animal species that are now considered rare. Agriculture, development, and a wide variety of other uses on the mesa have altered the biological resources to such an extent that many of the resources are close to disappearing. Relatively recent industrial, residential, and commercial development has had an obvious impact on the mesa. Within the Route 905 Study Corridor, 74% of the land can be characterized as being either disturbed, agricultural, or developed. An additional 19% of the Study Corridor was mapped as being non-native grassland, which is indicative of past agricultural disturbance. This stated, since one objective of the Route 905 design was to minimize biological resource impacts, the alignment alternatives were designed to pass through areas with heavy disturbance.

A review of the adjacent development environmental documents (Appendix C, Table C-3) reveals the following cumulative impacts of major development projects within the Route 905 Study Corridor to biological resources: Non-native Grassland, 244 acres, Native Grassland, 252 acres, Maritime Succulent Scrub, 385 acres, Diegan Coastal Sage Scrub 6502 acres, Road Pools with San Diego Fairy Shrimp 1684 pools, Vernal Pool Watershed 0.67 acres, Vernal Pools 154 acres, and Wetlands, 519 acres. In addition, several other projects had impacts to these resource, but did not list specific amounts either because the project was early in the planning process or it had yet to reach to permitting stage.

Based on the Otay Mesa Community Plan, East Otay Mesa Specific Plan, and Regional Transportation Plan, most of the mesa is planned for residential, commercial, and industrial development, including associated roadways and other infrastructure. There are over 20 approved and developing residential and industrial subdivisions in the Otay Mesa region, including California Terraces, Santee Investments, Remington Hills, Otay Corporate Center (North and South), and Otay Mesa Business Park. In addition, there is a major highway construction project in the area; State Route 125. The fact remains, however, that the mesa still contains sensitive biological resources and substantial areas within the MHPA were set aside for preservation, including 54.6 hectares (134.9 acres) within the Study Corridor.

The Otay Mesa Community Plan shows Heritage Road extending south of its current terminus through an east-west branch of Spring Canyon that is within the MHPA. As the community plan shows, the subject MHPA open space area extends at least 610 meters (2,000 feet) east of the future extension of Heritage Road, perpendicular to the canyon. This area currently supports sensitive wetland and upland habitats, including tamarisk scrub, coastal scrub, Diegan coastal sage scrub, and maritime succulent scrub and is known to support coastal California gnatcatchers, as well as sensitive plant species, such as San Diego barrel cactus and San Diego sunflower. The canyon bottom supports both ACOE and CDFG jurisdictional habitat. The extension of Heritage Road by others through this MHPA area will not be required to support the proposed Route 905 project; it will only be required should full implementation of the Otay Mesa Community Plan be pursued or if the City of San Diego approved this road to support future development south of Gateway Park Drive. The MSCP Subarea Plan indicates that

roadway crossings of Spring Canyon south of Route 905 should be minimized and, where necessary, should incorporate bridges or culverts to provide for wildlife movement through the area.

Some improvements to roadways adjacent to the proposed interchanges are included as part of the Route 905 project. Impacts associated with such development are included in the overall project impacts and will be mitigated. Following construction of Route 905, the completed interchanges and adjacent roadway segments will be fully functional with no significant traffic concerns. Future improvements to these roadways will occur not as a result of the Route 905 project, but as a result of implementation of the adopted local community plan. As development occurs per the community plan, roadway improvements according to that plan will also occur. Each project will require its own CEQA review, as well.

The MSCP was implemented as a regional program to preserve land for biological purposes while maintaining and fostering sensitive flora and fauna. On Otay Mesa, the MSCP preserves these resources within the vicinity of Spring and Dennery canyons and along southern slopes of the Otay River Valley. Under the MSCP program, 365.4 hectares (903 acres) of land originally designated for urban development in the Otay Mesa Community Plan have been identified for habitat preservation, enhancement, or restoration. The mechanism of the MSCP is to allow development in certain areas while creating a linked preserve system through development mitigation requirements. Specific management measures, designed for each region of the MSCP, are implemented to prevent the local extirpation and ultimate extinction of species and mitigate cumulative biology impacts. The mitigation measures recommended for the project comply with and support the MSCP. These measures, along with the regional approach embodied in the MSCP, will not result in cumulative impacts to biological resources, with one exception. Cumulative impacts to vernal pools and their associated endangered/threatened species will be substantial, despite the proposed mitigation measures for the project and despite the regional measures embodied in the MSCP.

Cultural Resources

Route 905 will not cause substantial cumulative impacts to cultural resources, due to the mitigation and monitoring measures required for Route 905 and for all other projects in the Otay Mesa area.