Chapter 2. Project Description

INTRODUCTION

On December 31, 1998, Williams applied to the California Public Utilities Commission (CPUC) for a Certificate of Public Convenience and Necessity (CPCN) authorizing it to provide and resell intrastate intraLATA[1] and interLATA interexchange telecommunications services in the State of California (see application number A.98-12-037). Williams received interim resell authority from the CPUC on May 13, 1999. Williams is currently authorized by the Federal Communications Commission (FCC) to provide interstate and international interexchange services and to construct[2]. In conjunction with a nationwide expansion of its fiber optic network, Williams also plans to construct and operate additional fiber optic facilities in California to provide telecommunications services.

Williams proposes to construct more than 99 percent of the fiber optic cable system within existing, disturbed rights-of-way (e.g., utility corridor, pipeline, road, or railroad rights-of-way) over several linear routes across California (**Figure 1-1**). A small part of the system will be installed outside these already disturbed rights-of-way, such as regenerator and optical amplification (OP-AMP) stations and small portions of the fiber optic cable routes.

Williams has prioritized its preferred installation methods and types of rights-of-way for fiber optic cable. All of Williams preferred routes will be located within previously disturbed rights-of-way. Williams is not proposing to cut any new cross country routes, in part, to avoid and minimize environmental damage. The order of preferred installation locations and the methods are described below:

- Installing inside idle natural gas and petroleum pipelines has the advantages of minimizing the amount of land disturbance and having the least chance for service interruptions because of damage to the cable. Installation within pipelines typically provides greater security and protection from cuts to the cable, thereby minimizing the risk of service disruption. Placement of additional duct during installation of the conduit provides for potential future cable installations with minimal ground disturbance. Williams former affiliates pioneered installation of fiber optic cable within idle pipelines in the 1980s and this continues to be Williams' preferred method of construction.

- Plowing or trenching within existing pipeline or other utility rights-of-way has the advantage of minimizing environmental impacts because the rights-of-way have been previously disturbed, but it has a higher potential for future damage to the cable route than installing within existing idle pipelines. Nonetheless, this type of trenching provides a highly secure route. Pipeline corridors are relatively more accessible than other routes, and the cable can be installed by plowing rather than by trenching

[1] LATA: Local Access and Transport Area. These service or market areas of the Bell Operating Companies were established by order of the Modified Final Judgment for the divestiture of the Bell Operating Companies from AT&T Corp. California is divided into 11 LATAs.

[2] Section 63.07(a) of the FCC's rules authorizes nondominant domestic interstate telecommunications carriers to construct transmission facilities and to provide domestic interstate telecommunications services.

(as occurs more frequently in congested highway corridors). Additional duct placed during the installation can provide for future expansion. Pipeline corridors typically have few additional utilities within their rights-of-way, which reduces the risk of disruption during construction. Following pipeline rights-of-way is often the most direct route and minimizes traffic issues associated with road installation.

Plowing or trenching within existing railroad rights-of-way has similar advantages to installing within utility rights-of-way, but it is more difficult to construct, has a higher potential for future damage to the cable, and a further disadvantage of requiring work around railroad operations. Derailments and the existence of other utilities within the railroad rights-of-way present risks for accidental cuts once the cable is installed.

Plowing or trenching in existing road rights-of-way has the advantage of minimizing environmental impacts because the rights-of-way have been previously disturbed. Routes in road rights-of-way can also provide for future expansion if additional conduit is installed. However, road routes do have a higher potential for future damage to the cable than the abovementioned methods and a further disadvantage of requiring work around traffic operations. Installation within road rights-of-way is less secure than the abovementioned methods because of the typically high number of other utilities with facilities within the rights-of-way.

Installing aerially on aboveground electrical transmission towers provides a means for an electric utility company to develop fiber optic projects. The potential for future expansion is limited by the existing power grid and by the fiber count within each cable. The availability of these routes is limited to the amount of fiber optic cable projects that an electric company is willing to support. Installation on transmission towers does not provide as high a level of security as installation within a pipeline.

As discussed in Chapter 1, the California network is part of a larger initiative by Williams to build a nationwide, and eventually international, fiber optic network. Entry to California will be made from four locations (**Figure 1-1**). Two of the entries will be offshore to the west (Point Arena and San Luis Obispo) and two of the entries will be across land to the east (California/Arizona border near Yuma, Arizona and California/Nevada border near Truckee, California). Pursuant to the California Environmental Quality Act (CEQA), only those routes, or segments of routes, within California are discussed in this analysis. Route segments have independent utility, which means that each specific route, although part of an overall network, can also function independently between two locations. Thus, these route segments are considered separate construction efforts that make up Williams' proposed project to construct an overall California network.

The project route segments analyzed in this document are:

Point Arena to Sacramento (the route from Point Arena to the community of Robbins),
Sacramento to the California/Nevada border,
San Francisco to Santa Clara,
Pittsburg to Sacramento,
San Luis Obispo to Bakersfield,
San Luis Obispo to Los Osos Loop,
Riverside to California/Arizona border,
Los Angeles to Riverside, and
Los Angeles to Anaheim.

Descriptions of the project routes are presented in Chapter 3.

REGULATORY ENVIRONMENT

The proposed project is subject to several state and federal regulatory schemes that help to mitigate its effects on the environment to less-than-significant levels. The permits of broadest application to the proposed project and their requirements are briefly described here to provide a context for the remainder of this chapter. Permits required by other agencies, including the State Reclamation Board; air quality districts; California Coastal Commission; and local cities, counties, and special districts, are discussed in other parts of the this initial study/mitigated negative declaration (IS/MND).

- Section 401 of the Clean Water Act requires a water quality certification (or waiver) to be obtained from the applicable regional water quality control board (RWQCB) for discharge activities that may affect water quality. The permit establishes measures to ensure water quality protection and is a required prerequisite for issuance of a Nationwide Permit No. 12 (see below).

- Section 402 of the Clean Water Act requires a National Pollution Discharge Elimination System (NPDES) certification to be obtained from the applicable RWQCB before construction that may disturb five acres or more of land. A storm water pollution prevention plan (SWPPP) containing erosion control measures is required (see **Appendix E** for a typical SWPPP).

- Section 404 of the Clean Water Act requires issuance of an individual or nationwide permit (in this instance, Nationwide Permit No. 12 for discharges associated with excavation, backfilling, or bedding of utility lines) by the U.S. Army Corps of Engineers (Corps) before discharge of fill into the waters of the United States, including wetlands.

- Section 10 of the Rivers and Harbors Act requires permit authorization for activities occurring within designated navigable waterways to maintain navigably in the interest of interstate commerce.

- Section 7 of the federal Endangered Species Act requires consultation with the U.S. Fish and Wildlife Service and National Marine Fisheries Service regarding necessary means to avoid harm to plant, fish, and wildlife species that are federally listed as threatened or endangered where there is a federal lead agency (e.g., Corps, U.S. Forest Service, U.S. Bureau of Land Management) action. Section 7 requires and establishes protocols for preconstruction wildlife surveys and mitigation measures.

- Section 10 of the Endangered Species Act requires the issuance of an incidental take permit before any public or private action may be taken that would potentially harm, harass, injure, kill, capture, collect, or otherwise hurt (i.e., take) any individual of an endangered or threatened species. The permit requires preparation and implementation of a habitat conservation plan that would offset the take of individuals, which may occur as an incidental affect of the project, by providing for the overall preservation of their species through specific mitigation measures.

- Section 106 of the National Historic Preservation Act requires examination of cultural resources before various federal agencies can provide permits under their jurisdiction. Section 106 establishes requirements and protocols for preconstruction cultural resource surveys and mitigation of impacts on cultural resources.

- Section 1603 of the California Fish and Game Code requires a streambed alteration agreement from the California Department of Fish and Game (DFG) before any action is taken that would divert or obstruct flow or alter the channel of designated drainages, rivers, streams, and lakes. Potential impacts must be mitigated.

The California State Lands Commission requires an easement (Pub. Res. Code 6301) for state lands crossed by the route below the ordinary high-water mark of tidal waters and below the low-water mark of nontidal waterways (e.g., the Sacramento River crossing). **Appendix C** provides the areas under jurisdiction of the California State Lands Commission.

A complete list of permits and approvals for the proposed project, organized by project route, is provided in **Appendix B**.

MITIGATION INCORPORATED INTO PROJECT DESIGN AND CONSTRUCTION APPROACHES

This section describes the mitigation that Williams has built into the project design and construction approaches. The additional mitigation recommended in Chapter 5 has also been adopted by Williams and incorporated into the project design.

Construction Methods for Fiber Optic Cable and Conduit Installation

The fiber optic cable system will consist of the following belowground and aboveground components. The belowground facilities are the fiber optic cable and conduit, utility access vaults, and manholes/handholes. The aboveground facilities are the cable marker posts and regenerator and OP-AMP stations.

Williams plans to install three conduits along most of the project routes. One conduit will accommodate the current proposed fiber optic cable and the remaining two conduits will be used for maintenance and future use by Williams or other carriers. Buried fiber optic cable consists of bundled glass optical fibers wrapped in thin plastic sheathing. Cable is inserted into flexible, high-density polyethylene conduit. The conduit has a typical outside diameter of 1.5 to 2 inches. Each conduit can accommodate one fiber optic cable that is about 0.85 inch in diameter and is composed of 96 to 288 hair-thin glass fibers.

Utility access vaults and manholes/handholes are usually placed at intervals of about 3 to 5 miles to serve as splice points and to assist fiber optic cable installation and maintenance. The utility access vaults and handholes measure approximately 30 by 48 by 24 inches and will typically be buried at a depth of 48 inches below the surface.

In some areas, at streets or secured regenerator and OP-AMP station sites, manholes measuring 4 by 4 by 6 feet may be installed. Only the manhole lids will be visible at the surface.

Cable marker posts will be located at approximately 700- to 1,000-foot intervals to alert people of the presence of the fiber optic cable. The posts are typically 3½-inch-diameter round PVC posts with embossed lettering 4 feet aboveground.

Regenerator and OP-AMP stations house the electronic equipment to regenerate and/or amplify the transmitted signal along the fiber optic strands within the cable. The outside elements of the regenerator/OP-AMP stations are identical (e.g., overall footprint, buildings); the only difference is the electronic equipment inside these facilities. Because the only differences between these two

facilities are the internal electronic equipment, the terms "regenerator station" and "OP-AMP station" are often used interchangeably. OP-AMP stations are the most frequently used facilities. Regenerator stations are required only for long, continuous routes (typically more than 200 miles between the beginning and end points). Williams plans to install OP-AMP stations approximately every 40 miles along the project routes where they are required. It is estimated that one regenerator station and approximately 22 OP-AMP stations will be constructed as part of the project in California. Each station will consist of a fenced area measuring approximately 150 by 275 feet. Within the fenced area an approximately 30- by 97-foot concrete pad will be installed. Three to eight precast concrete buildings will be placed side by side on the pad to house the electronic equipment. A second pad measuring approximately 150 square feet will also be installed to house an emergency back-up generator to provide power to the facility during electrical outages. Regenerator/OP-AMP station locations for each project route are described in Chapter 3.

A general discussion of the types of construction methods that will be used to install the fiber optic cable and conduit is provided below. In some cases, a combination of two or more of these methods will be used on a project route because of geographical or topographical constraints, resource avoidance considerations, or availability of rights-of-way. The specific construction methods that will be used along each project route are listed in Chapter 3.

Installation of Cable in Idle Pipelines

Williams prefers to install conduit and cable in idle pipelines because of the added security against damage to the fiber optic cables and because this construction method minimizes environmental impacts. Typical construction equipment for this installation includes a pull truck with a wire winch to pull the conduit through the pipeline, a spool truck feeding the conduit into the pipeline, and assist points in between. Assist points consist of pothole excavations to reach the pipeline where various equipment can be used to help pull the conduit through the pipeline. Assist points will be installed approximately every 3,000 to 5,000 feet.

The conduit and/or cable is inserted into the pipe at the pothole excavation, a handhole or manhole may be installed, and the pothole backfilled. Following construction, the ground surface will be reshaped to surrounding contours. The handholes or manholes will be installed approximately every 3 to 5 miles along the pipeline to provide future access for maintaining or upgrading the cable. Using the pothole method to install conduit and cable in idle pipelines results in less surface disturbance than excavating a trench to install the conduit. Aboveground regenerator/OP-AMP stations will be installed at approximately 40-mile intervals.

Handholes/manholes are installed to provide access to the cable at splice points or as needed for future maintenance of the cable. Generally, road shoulders or other easily accessible areas are the preferable locations for handholes. Handholes are buried 48 inches beneath the surface and are typically hidden from public view to minimize potential vandalism. Manholes are typically used when the cable is installed under city streets or other urban/developed areas. Only the manhole lids will be visible at the surface. The precise locations of handholes and manholes along the routes will be flexible to ensure that sensitive biological and archeological resources are avoided. See **Figure 2-1** for a typical handhole and manhole.

Running conduit and cable through existing pipelines avoids the need for new stream crossings and eliminates most concerns associated with drainage crossings (e.g., bed and bank disturbance, turbidity, loss of riparian habitat).

Williams proposes to install fiber optic cable in two idle petroleum pipelines in California. Details regarding these pipelines are provided in Chapter 3 as part of the description of the proposed San Luis Obispo to Bakersfield route and the proposed Riverside to California/Arizona border route.

Plowed and Trenched Installation in an Existing Pipeline or Other Utility Rights-of-Way

Plowed installation uses a tracked vehicle with a cable reel in front and a plow blade in back (**Figure 2-2**). As the vehicle moves, it simultaneously furrows the soil and installs the conduit or cable. In some instances, the soil may be pre-ripped by a tractor in front of the plow. Ripping is a technique in which a slit is made in the surface of the soil to loosen it. The amount of surface disturbed by plowing is typically less than with the trenching method. The construction corridor is usually 20 to 40 feet wide or less. Streams that contain flowing water, special-status species habitat, or woody riparian vegetation will be crossed by directional boring/drilling or by attaching to a bridge when available.

In almost all instances, plowing or trenching in existing pipeline or other utility rights-of-way has fewer environmental impacts than installing the cable along a cross-country route because pipeline and utility corridors have already been disturbed and are often actively maintained. These pre-existing cleared corridors are also likely to have established access for vehicles and construction equipment.

Trenched installations typically involve a rubber-tired backhoe or an excavator digging a trench approximately 12 inches wide by 48 inches deep. Typically, no more than 1,000 feet of trench will be exposed by a crew at any time during construction, and trenches will be filled at the end of each day. If conditions do not allow for small isolated areas, such as handholes or assist points, to be backfilled at the end of each day, appropriate safety, erosion, and wildlife control features will be installed. Access vaults or handholes/manholes will be installed approximately every 3 to 5 miles. The construction corridors will typically be confined to within the existing rights-of-way. If any project routes are located outside existing rights-of-way, the construction corridor will be approximately 20 to 40 feet wide, depending on if any sensitive environmental resources are present.

Although trenching or plowing can be used at some stream crossings, flowing streams with sensitive resources (e.g., high-value habitat for threatened or endangered species) will be crossed by attaching the conduit to an existing bridge or by boring under the stream (**Figures 2-3** and **2-4**). The approximate work area for bored stream crossings will be 150 by 100 feet for large stream crossings and 100 by 50 feet for smaller stream crossings; the work areas will be located outside the stream area. No in-water trenching is proposed in flowing streams with sensitive resources located at or downstream of the crossing.

Plowed and Trenched Installation in Existing Railroad Rights-of-Way

Plowing or trenching along existing railroad rights-of-way is similar to plowing and trenching in an existing pipeline or utility corridor. Railroad rights-of-way are typically fairly narrow (50 to 100 feet). In very limited cases, the contractor can use rail-mounted plowing equipment; however, if other utilities are located in the right-of-way or the policies of the railroad preclude rail plowing, rail-mounted plowing methods may be infeasible. In most cases, a standard plow or trencher is used. Stream crossing methods are the same as discussed for plowing and trenching in pipeline or other utility rights-of-way. Installation along railroad rights-of-way frequently necessitates more trenching than pipeline corridors because the surface cross section of a railroad right-of-way is uneven and/or narrow, and plowing methods cannot be used effectively.

Plowed and Trenched Installation in Existing Road Rights-of-Way

Plowing, trenching, and stream crossing methods for installations in road rights-of-way are similar to those discussed for pipeline or other utility rights-of-way. Trenches are dug or plowed in or along road shoulders or other portions of the rights-of-way parallel to the road. In some cases, the conduit and cable may be installed in the roadbed to avoid sensitive resources in the road shoulder or right-of-way margins. However, this technique will not be possible in very narrow roadbeds such as those installed on extremely steep slopes. Bridge attachments will be used at stream crossings wherever available. To avoid sensitive resources where bridges or permission to attach to bridges are not available, the cable conduit will be installed underground by directional boring/drilling.

Aerial Installation

Optical ground wire cable (OPGW) functions both as a fiber optic cable and a ground wire. Ground wires are wires that are installed on the tops of electrical transmission towers specifically to intercept lightning strikes and channel them to a ground to prevent damage to the tower or electrical lines. OPGW cable is typically installed by the electrical utility, usually replacing existing ground wires. OPGW is almost always installed on the top of the tower (**Figure 2-5**).

Along a straight alignment, a maximum of approximately 3 miles of cable can be installed at one time. Curves or changes in altitude between towers reduces this length. The cable is pulled along the towers by a tensioner truck. An additional truck may be required near the tensioner to hold the reeled-in shield wire. The OPGW cable segments must be spliced together at each pull point by running the cable down to near the bottom of the tower and splicing the two segments in a box or enclosure mounted to the tower.

The equipment used for aerial installation typically includes a tensioner truck and a spool truck, ranging in size from a tandem-axle truck with a 16-foot bed to a semi-truck and trailer. As stated above, an additional truck may be required near the tensioner truck to hold the reeled-in shield wire. In many installation operations, helicopters assist placing personnel, equipment, and the cable on the towers.

This construction technique results in minimal ground disturbance. Construction vehicles will drive within the right-of-way, but no earthmoving activities will occur.

All-dialect self-supporting (ADDS) cable does not need to be installed at the top of the tower; therefore, it is not susceptible to lightning strikes and does not need to be grounded. Under certain circumstances, ADDS cable can be installed far enough below the electrical lines that the lines do not need to be shut down while the cable is installed. However, this type of cable is more susceptible to vandalism because it is lower on the tower.

Directional Boring

Directional boring will be used in various locations along each propose project route to cross areas where surface disturbance must be avoided (e.g., crossing railroads, highways, rivers, sensitive streams). Directional bore lengths can range from less than 100 feet to more than 10,000 feet, depending on the type of equipment used. To complete the bore, a work area is established on each side of the crossing. For river, stream, and wetland crossings, the work areas will be located at least 25 feet from the bank or edge of the wetland resource. One work area contains the “pilot hole” and drilling equipment. The other work area contains the “receiving hole” where the drill bit emerges and is used to fabricate the steel casing that will be pulled through the hole.

For relatively short bores, smaller drilling equipment is used, and the two work areas measure approximately 100 by 50 feet. Larger equipment, and a correspondingly larger work area (approximately 150 by 100 feet), is needed for longer bores. Drilling equipment most suitable for site-specific conditions will be used for each bore. Silt fences, straw bails, and other erosion control measures will be installed around these work areas, consistent with sample SWPPP provided in **Appendix E**.

During the boring process a bentonite slurry is typically pumped through the bore hole to help lubricate the drill bit, prevent the bore tunnel from collapsing, and carry drill cuttings to the surface. Bentonite is a naturally occurring Wyoming clay known for its hydrophilic characteristics. Material Safety Data Sheets are readily available for bentonite if required. The slurry is pumped through the bore hole, collected at the surface, passed through machinery to remove the bore cuttings, and then recirculated through the hole. The slurry is stored in tanks at the drill site when not in use. Any excess slurry remaining after the bore is complete will be removed from the site and either reused by the drilling contractor or disposed of at an appropriate facility.

Although it is highly unlikely, the drilling slurry can escape the bore hole through cracks or fissures in the soil and reach the ground surface. All efforts will be made to complete directional bores at sufficient depths to prevent bentonite releases. For relatively short or simple bores, the drilling contractor will often determine the appropriate bore depth based on professional experience and site-specific conditions. For longer or more complex bores, a geotechnical engineer is often used to evaluate soil conditions and determine a minimal bore depth. If necessary, the geotechnical engineer will order site-specific soil borings to determine sub-surface soil conditions.

The sample SWPPP provided in **Appendix E** includes a discussion of various slurry containment measures. A specific contingency plan for bentonite releases and potential bore abandonment will be prepared for more complex river crossings (Sacramento River, Colorado River, American River, and others).

Regenerator and OP-AMP Stations

The signal transmitted on a fiber optic strand must be amplified (i.e., boosted) approximately every 40 miles and reconstructed, or "cleaned up", every 160 to 200 miles. A regenerator station houses the electrical equipment that reconstructs and boosts the optical signal. An OP-AMP station only boosts a signal. As discussed previously, the outside elements of the regenerator/OP-AMP stations are identical and the only difference is the electronic equipment inside these facilities; thus, the terms "regenerator station" and "OP-AMP station" are often used interchangeably. OP-AMP stations are the most frequently used facilities. Regenerator stations are required only for long, continuous routes (typically more than 200 miles between the beginning and end points). Williams plans to install regenerator/OP-AMP stations approximately every 40 miles along the routes where they are required. Typical regenerator/OP-AMP stations consist of three to eight, 12- by 30-foot precast concrete buildings lined up side by side on a concrete pad. More buildings can be added if network traffic levels require (**Figure 2-6**). Each building comes from the manufacturer equipped with one or two heating, ventilation, and air conditioning (HVAC) units to maintain a steady temperature for the electronic equipment. These HVAC units operate from the same electrical source as the rest of the station.

The buildings will be located within a 150- by 275-foot fenced area. The unstaffed, locked facility requires commercial electric power and periodic maintenance. Each station will have an overhead security light and a small light over the door. A diesel generator will be installed for emergency back-up power.

During the planning process, Williams developed the following criteria for siting regenerator/OP-AMP stations and their access. Regenerator/OP-AMP stations will not be sited in areas that:

have not been surveyed, documented, and ensured clear of sensitive biological and cultural resources by Williams' environmental consultant, with approval by the CPUC;

are within a designated floodplain, unless absolutely necessary;

are adjacent to waterbodies, including wetlands, drainages, vernal pools, rivers, streams, or lakes;

are on sites with known contamination; or

are in areas that are designated as scenic.

As part of the regenerator/OP-AMP selection, qualified biologists and archeologists have accompanied Williams project engineers, right-of-way, and construction personnel to ensure sites are clear of sensitive biological and cultural resources before they are selected. Where possible, Williams sited the regenerator/OP-AMP stations within existing utility substations.

If the proposed locations of regenerator/OP-AMP stations need to be modified because of environmental factors or because of the inability to negotiate with a property owner, Williams environmental consultant will fill out the environmental clearance compliance checklist shown in **Appendix G** for each regenerator/OP-AMP station and will submit it to the CPUC for review and approval. If the above criteria are not met or clearance cannot be granted as specified in the checklist, Williams will find another location that is acceptable to the CPUC, meets the above criteria, and is ensured to be environmentally clear, consistent with the checklist. No construction will occur until approval has been granted by the CPUC.

The regenerator/OP-AMP stations proposed as part of the proposed project (see Chapter 3) have been analyzed in the IS/MND.

Staging Area Establishment

Staging areas for construction equipment, materials, fuels, lubricants, and solvents will be established along the project routes during construction to allow more efficient use and distribution of materials and equipment. No new staging areas will be established in undisturbed areas or on public lands. All staging areas will be located on private lands in existing contractor yards; existing commercial areas used for storing and maintaining equipment; previously cleared, graded, or paved areas; or level areas where grading and vegetation clearing are not required.

Staging areas are typically selected by the construction contractor, as needed, before and/or during construction. This practice is consistent with construction methods used throughout California and the United States. To ensure that sensitive environmental resources are adequately protected or are avoided, the locations of staging areas will be determined in consultation with qualified biologists and archeologists. Because fuels, lubricants, and solvents will be stored on staging areas, all staging areas will be located at least 150 feet away from sensitive streams/drainages.

Access Roads

Access to the project routes will be by existing access roads to the utility, pipeline, road, or railroad rights-of-way. No new access roads will be created for cable routing; however, some of the existing roads in isolated areas may require minimal repairs to make them usable for construction. After completion of cable installation, access roads will be repaired, if necessary, to prevent future erosion.

After installation, access to the project routes for maintenance will also be by existing access roads to the utility, pipeline, road, or railroad rights-of-way. Activities following installation will consist mainly of implementing erosion control measures or repairing or replacing cable conduit because of storm damage, landslides, or other emergencies. In most emergency situations, access to inspect damaged areas will be accomplished via helicopter or public roads.

Specific access roads will not be selected until the early stages of construction planning. Selection of access roads will be determined after consultation with qualified biologists and archeologists to ensure that sensitive environmental resources are adequately protected or avoided.

Equipment Access through Streams

Because not all the rights-of-way follow improved roads and some areas lack bridges, construction equipment may need to be transported through some streams. In most cases, small or ephemeral streams along the existing utility rights-of-way to be used by Williams are already crossed by maintenance or access roads. In most of these instances the stream banks are gradually sloped and water flows would be nonexistent or low enough to allow vehicles to drive through the channel without any change in the channel. In some cases, these access points may need to be modified to accommodate construction equipment by placing clean drain rock, cutting fords, or installing temporary culverts. Such modifications will be permitted through the appropriate agencies (e.g., DFG) and will not occur in streams supporting sensitive resources.

Before beginning construction activities on specific project routes, Williams and the onsite biological monitor will review the right-of-way to determine the most appropriate access method for each stream and will note these methods on the construction drawings.

Facility Operation and Maintenance

Ground-disturbing activities associated with ongoing operation and maintenance of telecommunications projects are normally minor to nonexistent. Best management practices detailed in the SWPPPs will be implemented (see **Appendix E** for an example of a typical SWPPP). In most emergency situations requiring immediate attention, such as a fiber cut, access to inspect damaged areas will be accomplished via helicopter or public roads.

Avoidance of Sensitive Resources

Qualified biologists, archeologists, and paleontologists have been working closely with Williams project engineers in the field to design the cable routes around sensitive resources and to site regenerator/OP-AMP stations, staging areas for bore pits and assist points in areas that do not support sensitive resources.

Sensitive resources (i.e., biological and cultural resources) will be avoided through various means identified during the project design phase. However, there will also be avoidance measures occurring in the field during construction as a result of preconstruction surveys or at the direction of construction inspectors. If required, the construction technique will be coordinated through a resource specialist (i.e., wildlife biologist, wetland ecologist, botanist, archaeologist, or paleontologist) familiar with the resource issue being avoided. Typical avoidance measures include minor rerouting of the cable around the sensitive resource within the disturbed right-of-way, boring under the resource, or attaching the cable to an existing bridge. The locations of all sensitive resources and the methods to avoid them will be shown on the construction drawings.

All sensitive resources will be staked and flagged in the field and marked on the construction drawings.

Stream/Water Crossings

All significant impacts will be avoided at sensitive drainages, including perennial stream crossings or streams that are flowing at the time of construction and have sensitive resources located at or downstream of the crossing. At all streams that provide important habitat, contribute significantly to water quality, or support sensitive or listed aquatic species, conduit and cable will be installed either by boring under the drainage or by attaching the cable to bridges, where available. In some situations, these methods will also be used for wetlands. The avoidance methods for each sensitive resource will be shown on the construction drawings.

Guided or directional bore/drill machines operated at ground level will be used to bore under streams or other sensitive resources (**Figure 2-4**). The bore will return to the surface on the opposite side of the stream or sensitive resource. Equipment for guided bores comes in various sizes and can traverse distances exceeding 10,000 feet. For most bores under streams and other sensitive resources associated with the proposed project, equipment capable of boring 500 to 1,000 feet will be adequate. Guided bores typically use bentonite, a fine, nontoxic clay that, when mixed with water, provides the necessary lubricant and operating fluid for the drilling process. The mixture is injected into the drill under pressure and is recirculated back to the surface, where it is filtered and reused.

Spill prevention countermeasures contained in the SWPPPs (required under the NPDES permit mandated by the RWQCB) will be developed for each project route to prevent or minimize the risk of bentonite entering surface waters during directional boring/drilling (see **Appendix E** for an example of a typical SWPPP). Although bentonite contamination occurs rarely, bentonite can reach the ground surface and enter surface waters if the bore encounters a rock fracture during high-pressure boring operations conducted over long distances. However, the risk of bentonite reaching the surface or surface waters is minimized because contractors typically use the smallest available boring equipment, which injects the bentonite at lower pressures.

Sensitive Biological/Archeological Sites

Williams is conducting wildlife, wetlands, riparian, archeological, paleontological, and early and late-blooming botanical studies to ensure that sensitive resources are identified and completely avoided or any impacts on sensitive resources that cannot be avoided are minimized to less-than-significant levels. Biologists and archeologists are working closely with Williams' project engineers and resource agency staff to site the cable route and associated facilities (i.e., regenerator/OP-AMP stations) in areas with no sensitive resources. All sensitive resources will be staked and flagged in the field and marked on construction drawings before construction. Refer to the "Biological Resources" and "Cultural Resources" sections of Chapter 5.

The field biological and archeological results of the field surveys for each proposed project route are shown in **Appendix F**. Approximately 98 percent of the field studies necessary to support the engineering design have been completed. Sensitive resources will be avoided either by rerouting the cable and siting handhole/manhole and regenerator/OP-AMP stations away from the sensitive resource or boring the conduit and cable under the resource. Unlike pipelines, fiber optic cable conduits can be rerouted to the other side of the right-of-way or into pavement, if necessary. The avoidance methods for each sensitive resource will be staked and flagged in the field, where appropriate and necessary, and shown on the construction drawings for each project route.

Appendix G contains an environmental compliance checklist that will be completed for any site modifications to the proposed locations of the regenerator/OP-AMP stations. This checklist will ensure that the appropriate biological and archeological clearances have been documented, received, and approved by the CPUC before construction of the facilities begins.

Work Zones

Cable system installation activities will be confined to existing disturbed rights-of-way (i.e., railroad, utility, road, pipeline). In the very few areas that the facilities could be located outside these existing rights-of-way (i.e., regenerator/OP-AMP stations), the construction corridor will be confined to 20 to 40 feet. However, in areas that support sensitive resources, the work zone will be limited to the existing disturbance zone.

Work within Permanent Rights-of-Way

Utility, pipeline, and railroad companies, as well as roads, have permanent rights-of-way that vary in width. All excavation and grading activities associated with conduit and cable installation will be confined to the right-of-way corridor and their access roads. In most cases, construction will take place within the permanent right-of-way or on the access and maintenance roads.

Work outside Permanent Rights-of-Way

Only minimal excavating or grading activities may occur outside permanent rights-of-way such as for regenerator/OP-AMP stations. Construction activities associated with the fiber optic cable and conduit will be confined to the existing rights-of-way and access roads. Operation within the rights-of-way will not be allowed in any areas identified as supporting sensitive resources. Sensitive resources will be staked and flagged, as necessary and appropriate, before construction and identified on the construction drawings, and activities will be monitored by trained construction inspectors with support from qualified biologists and archeologists.

Surface Reclamation

Right-of-way reclamation is the final step in the conduit and cable installation process (**Appendix H**). The short-term objectives of reclamation are to control accelerated erosion and sedimentation and minimize impacts on adjacent waters, land uses, and other sensitive resources. Properly executed construction practices and timely progress will mitigate temporary and short-term construction impacts to less-than-significant levels. Long-term objectives include erosion and sedimentation control, as well as reclamation of topography to preinstallation conditions (i.e., conditions prevailing before installation of the conduit and cable). The reclamation effort will focus on the following objectives:

- topsoil salvage, storage, and replacement;
- reclamation of right-of-way and associated maintenance and access roads;
- reclamation of drainage and wetland crossings; and
- monitoring to ensure long-term success.

Restoration of Right-of-Way

On completion of conduit and cable installation, the plowed or trenched area will be restored to a condition equal to the preinstallation condition.

Restoration of Maintenance and Access Roads

In most instances, access and maintenance roads were constructed when the original utility, pipeline, or railroad facilities were constructed. These existing roads provide access to the rights-of-way from other public or private roads. Minimal grading of these roads may be necessary in isolated areas to prepare them for use during construction.

In addition to paved state and county roads, the access and maintenance roads also include improved and low-use, unimproved two-track jeep trails. Following construction, the rights-of-way or disturbed areas will be graded to preinstallation grades and contours. Little grading is expected because no excavation activities will occur on the roads except to correct existing erosion problems.

Topsoil Salvage, Storage, and Replacement in Wetland Communities

Trenching is the only installation technique that churns the subsoil. Trench depths will average approximately 4 feet. To retain the topsoil when trenching in wetland communities, including drainages that support wetlands (when approved by the Corps as part of Nationwide Permit No. 12 authorization), a technique that is commonly employed with telecommunication system installations called double trenching will be employed. Double trenching is the process of removing a layer of topsoil over the trench and then trenching the subsoil. Once the conduit is installed in the trench, the subsoil is placed back in the trench and compacted and the topsoil is spread over the top.

During double trenching operations, topsoil handling objectives are to remove, store, protect, and reapply the topsoil to facilitate revegetation. Topsoils are the surface soils that contain higher amounts of organic matter, as well as the soil seedbank, and generally exhibit more favorable textures and less salts or other potentially limiting characteristics than subsoils. Double trenching will be used in wetlands where the topsoils and seed banks are of particular importance and where double trenching has been authorized by the Corps.

At double trenching locations, topsoil removal width and depth will vary along the route, depending on vegetation sensitivity, soil characteristics, slope, land use, potential safety hazards, and construction techniques. The topsoil will be removed to the appropriate depth to ensure the preservation of the soil and seed bank. The actual depth will be determined by field personnel at the time of construction in consultation with biologists and archeologists, where required. Generally, a minimum of 6 inches and a maximum of 12 inches of topsoil will be removed and stockpiled. The onsite biological and/or archeological monitors will verify the appropriate depth of the topsoil to remove.

Topsoil will be stockpiled separately from excavated subsoil and subsequently replaced with a minimum of handling. Topsoil will not be piled in a manner that increases its water content, although this is not expected to be an issue. No drains or ditches will be blocked by topsoil or subsoil stockpiles. Additional measures that will be implemented to protect the topsoil include the following:

- gaps will be left in topsoil piles where drainages, drains, ditches, and livestock and farm machinery crossings are located;

- topsoil will not be used as padding in the trench or for any other use as a construction material; and

- # topsoil will be stored on the uphill side of the disturbance away from the subsoil pile.

After the excavation has been backfilled and the right-of-way returned to preinstallation contours, topsoil will be spread over those areas where topsoil was removed. Topsoil will not be handled during excessively wet or inordinately windy conditions. The following soil handling methods will be implemented to promote successful restoration:

- # any refuse and debris will be removed from the compacted trench or excavation before topsoil is replaced and

- # the length of time topsoil is stored will be minimized based on the pace of the installation activities (normally, topsoil removal and respreading activities will occur on the same day).

Restoration of Drainage and Wetland Crossings

The project routes will cross numerous drainages and wetlands. For most of these areas, the conduit and cable will be installed by boring, bridge attachment, or other nontrenching installation method that does not require excavation (e.g., installing cable through idle pipelines). However, if trenching is required in drainages or wetland crossings, the double trenching method described above will be used. Williams will ensure that drainages or wetlands to be trenched receive proper clearance and approval by the CPUC, Corps, and DFG before construction.

Drainage Crossings. Only small, nonsensitive drainages will be considered for trenching. No in-water work will occur in sensitive drainages that are flowing at the time of construction (i.e., drainages supporting threatened or endangered species or other important functions or values). After the conduit and cable is installed, the trench will be backfilled, and the drainage channel will be recontoured to its preinstallation grades and bed conditions.

When the crossing is completed, the beds and banks of the drainages will be restored in a manner that allows vegetation to reestablish to its preinstallation conditions. Where necessary, a biodegradable erosion control blanket or riprap will be used to protect and stabilize streambanks. Riprap will be used only where existing stream channels consist of rock armoring and lack woody riparian vegetation. Erosion control blankets will be used on steep slopes or where the soils otherwise have a high erosion potential. The type and locations for these measures will be determined in the field by the spread supervisor with input by the appropriate construction inspector.

Wetland Crossings. When trenching is used in a Corps-approved vegetated wetland area, the double trenching methods described above will be used. After the conduit and cable is installed, the trench will be backfilled, the surface will be recontoured to preinstallation grades, and the topsoil will be replaced. The surface topsoil will not be compacted so as to facilitate recolonization of the native wetland vegetation.

Erosion Control

Erosion is the process of soil particles being displaced and transported by wind or water. Conduit and cable installation will disturb soil and vegetation, exposing sites to possible erosion. The hazard of erosion is increased by the presence of steep slopes, concentrated or channelized water flow, and high streamflows. The best management practices that will be undertaken in accordance with the California Code of Regulations and measures that will be implemented by Williams' contractor as specified in the SWPPPs that will be prepared for each project route are summarized in this section.

Erosion and Sediment Control Measures

Erosion and sediment control measures are used to reduce the amount of soil that is carried off a land area and to control the discharge of soil particles that are carried away. The following standard erosion and sediment control measures and practices will be used during and after construction to control accelerated soil erosion and sedimentation to less-than-significant levels:

- minimize site disturbance;
- perform initial cleanup;
- compact subsurface backfill material;
- leave topsoil in roughened condition, except in road shoulders;
- install trench plugs;
- construct water bars;
- install baffle boards;
- where necessary, armor bank slopes with riprap;
- perform seeding and mulching;
- install erosion control blankets;
- install silt fencing and straw bale dikes; and
- conduct periodic maintenance of erosion and sediment control measures.

These measures (described below) are routinely implemented in the construction industry and have been proven successful for similar buried telecommunication system installations.

Minimize Site Disturbance. The most basic way to avoid erosion is to minimize site disturbance. Williams' contractor will be directed at the environmental training program described later in this chapter to implement practices that minimize site disturbance to ensure impacts are avoided or reduced to less-than-significant levels. The contractor will be directed to:

- remove only the vegetation that is absolutely necessary to remove,
- avoid off-road vehicle use,
- avoid all sensitive resource areas,
- avoid excessive trips along the right-of-way or access or maintenance roads, and
- instruct all personnel of the concepts of stormwater pollution prevention to ensure that all are conscious of how their actions affect the potential for erosion and sedimentation.

Williams inspectors will be onsite during all construction activities and will reinforce the importance of confining all vehicular traffic to the existing right-of-way and maintenance and access roads.

Perform Initial Cleanup. Williams' contractor will be directed to perform initial site cleanup immediately following conduit and cable installation. Initial cleanup includes removing debris and spoils and restoring original contours. Initial cleanup performed as part of the construction will contribute significantly to the overall site stability and will make final cleanup easier. The site will immediately begin to stabilize naturally with little additional disturbance during final cleanup. A site that is not initially cleaned up is more susceptible to erosion.

Compact Subsurface Backfill Material. Proper compaction of subsurface soil serves as an erosion control measure. Uncompacted plow or trench furrows are susceptible to subsurface erosion through the migration of surface and subsurface water. Proper compaction of the subsurface material and plow furrows is necessary to help prevent surface and subsurface migration of water along the plow or trench furrow and to prevent trench settlement.

Leave Topsoil in Roughened Condition. The reapplied topsoil in the rights-of-way will be left in roughened condition to facilitate the establishment of vegetation and reduce the potential for erosion.

Install Trench Plugs. A trench plug is a permanent mechanical erosion control measure consisting of soil-filled burlap bags placed in the excavated trench before backfilling. Trench plugs serve to control erosion by stopping subsurface water flow. Trench plugs are placed in the trench at regular intervals along areas with steep slopes. The spacing is determined by slope grade, topography, and soil characteristics. Trench plugs will be installed as shown on the construction drawings.

Perform Seeding and Mulching. Seeding consists of sowing soil-stabilizing grasses on areas disturbed by construction activities except crop land and areas surfaced with pavement or gravel. Vegetation serves both erosion and sedimentation control. The root structure of the vegetation holds soil in place to resist erosion. Grasses slow the flow of surface water, allowing suspended particles to settle. Mulch, typically consisting of wheat straw, is usually applied over the seed to protect the soil surface until the grasses become established.

Install Erosion Control Blankets. On steep slopes that are susceptible to erosion, erosion control blankets will be installed to hold seed and soil in place until vegetation is established. The onsite spread supervisor will determine where blankets are necessary.

Install Silt Fencing and Straw Bale Dikes. Silt fences and straw bale dikes will be installed, as needed, at the toe of slopes below disturbed areas to prevent sediment from reaching streams and wetlands. These sediment barriers retain sediment while allowing water to seep through. Straw bale dikes may also be installed around drop inlets and in small swales to retain sediment.

Additional Measures

The following measures may be used, but only rarely because Williams will avoid construction on steep slopes.

Construct Water Bars. A water bar consists of an earthen berm placed along the ground across the disturbed area of construction. Water bars are an erosion control measures that function by slowing runoff rates and diverging runoff from the disturbed area. Water bars are left in place and become permanent erosion control measures.

Install Baffle Boards. A baffle board is an erosion control measure consisting of pressure-treated 2- by 12-foot boards and 4-inch-diameter wooden posts. Baffle boards work like water bars but are used on slopes too steep for water bars. However, baffle boards cannot be used on roads. Board spacing is determined by slope grade, topography, and soil type. Baffle boards will be installed, as necessary, by the contractor during the final cleanup stage of installation.

Armor Bank Slopes with Riprap. Armoring drainage banks with riprap may be used on rare occasions. Riprap is an established method of permanent erosion control. Rock riprap will be used for slope stabilization, water energy dissipation, and armoring of stream banks. Riprap will be used only on stream banks where the existing channel consists of rock or in highly erodible drainages that lack woody riparian vegetation.

Assessment and Implementation of Erosion Control Measures

Permanent erosion control measures are most likely currently in place along many of the existing rights-of-way as a result of previous facility construction. The effectiveness of these measures will be evaluated before construction. Any existing measures will be restored as required and left in place after the installation of the cable system is complete. The right-of-way will also be assessed by the spread superintendent following construction activities to determine where additional erosion control measures are necessary.

Equipment Maintenance and Refueling

The equipment used for the proposed project will need periodic maintenance and refueling. These activities will be accomplished responsibly, using the prescribed spill prevention countermeasures (see **Appendix E** for a description of these measures). To reduce the potential of contamination by spills, no refueling, storage, servicing, or maintenance of equipment will take place within 150 feet of drainages or other sensitive environmental resources. No refueling or servicing will be done without absorbent material or drip pans underneath to contain spilled fuel. Any fluids drained from the machinery during servicing will be collected in leak-proof containers and taken to an appropriate disposal or recycling facility. If these activities result in damage to or accumulation of a product on the soil, it will be assessed and disposed of properly. Under no circumstances will contaminated soils be added to a spoils pile.

Onsite refueling of construction equipment will be done by mobile refueling trucks. The refueling trucks will be independently licensed and regulated to haul and dispense fuels. This licensing and regulation will ensure that the appropriate spill prevention techniques are implemented.

Restrictions will be placed on all equipment refueling, servicing, and maintenance supplies and activities. All maintenance materials, oils, grease, lubricants, antifreeze, and similar materials will be stored offsite in staging areas. If these materials are required during field operations, they will be placed in a designated area away from site activities and sensitive resources.

During construction, all vehicles and equipment required onsite will be parked or stored at least 150 feet away from rivers, streams, wetlands, known archeological sites, and other sensitive resource areas. These areas will be identified on the ground and noted on U.S. Geological Survey 7.5-minute topographic maps and on the construction drawings, as appropriate. All wash down activities will be conducted at least 150 feet away from sensitive environmental resources.

CONSTRUCTION MANAGEMENT STRUCTURE

Williams has extensive experience constructing fiber optic facilities. Since 1997, the company has installed over 6,000 miles of fiber optic cable in the United States. Before 1997, a former affiliate of Williams pioneered fiber optic installation within idle pipelines and pipeline corridors while constructing and operating a 13,000-mile fiber optic network spanning 37 states.

To provide the best potential for success of the proposed project, a proper management structure, adequate training of field personnel, an environmental training program, and the ability to respond to changing circumstances are critical. For each project route, a field management structure has been established (**Figure 2-7**) and a mitigation monitoring plan has been prepared and adopted (**Appendix I**) to oversee the construction process. Additionally, training classes for the contractor and construction crews will be held covering issues such as environmental protection, safety, spill prevention and response, fire prevention and management, and proper management of stormwater runoff.

The field management structure established for each project route will include engineering, construction, and environmental personnel such as spread superintendents, spread supervisors, contract compliance inspectors, environmental resource coordinators, and biological and archeological support. The roles and responsibilities of each onsite representative will be clearly understood and communicated during the training program and are summarized below.

Spread Superintendent

The Williams contractor and spread superintendent will be onsite to address engineering questions, make field decisions, and coordinate with permitting agencies. The spread superintendent has the overall responsibility for onsite decisions and the direct reporting responsibilities to the Williams' project manager for contract compliance as well as the ability to shut down the construction operations in case of environmental noncompliance, emergencies, safety issues, and disputes with the construction contractor.

Spread Supervisor

Williams' spread supervisor will be onsite for each contractor to oversee the individual contract compliance inspectors and work with the contractor to resolve field conflicts. The spread supervisor will report directly to the spread superintendent and also perform most of the administrative duties. The spread supervisor will communicate daily all construction activities related to compliance, safety, and administration.

Contract Compliance Inspectors

Contract compliance inspectors will be assigned to each construction crew to observe their work. Where crews work in the same area, one inspector could monitor more than one crew. The inspector will monitor the environmental resource concerns and check implementation of the erosion protection measures. The contract compliance inspector will be trained on environmental issues that may be encountered during the construction project and will have immediate access to qualified biologists, archeologists, and paleontologists when needed.

Environmental Resource Coordinator

An environmental resource coordinator will be assigned to each project route. The environmental resource coordinator will work with the contract compliance inspector and biologists and archeologists and agencies and the engineering and construction representatives to resolve conflicts and coordinate resource avoidance and protection. The environmental resource coordinator will patrol the construction site periodically (while maintaining contact with spread superintendents, spread supervisors, and contract compliance inspector) to help monitor implementation of the resource protection measures.

Biological and Archeological Resource Monitors

Qualified biologists and archeologists will locate and stake in the field and locate on the construction drawings previously identified sensitive resources and identify for the contractor the necessary protection methods. Biologists and archaeologists will also be on site during construction where their presence is needed and as required in this document or as a condition of required permits. Additionally, they will coordinate, as necessary, with monitors from the CPUC and any other appropriate agencies. Other resource monitors will be available, as necessary and appropriate (i.e., Native American and paleontological monitors).

ENVIRONMENTAL TRAINING AND AWARENESS

An important part of implementing the proposed project is education through training and awareness programs. All levels of field management and construction personnel will be informed about environmental protection and the seriousness of noncompliance. Training will take place at the Williams engineering level and at the contractor level. Appropriate personnel from the CPUC and other regulatory agencies will be invited.

Williams and its Consultant Team

Williams and its consultant team includes contract compliance inspectors, environmental resource coordinators, biologists and archeologists, resource personnel, and spread superintendents and supervisors. Training seminars led by project managers and qualified biologists and archeologists will be held before construction to explain and educate construction supervisors and managers about the following:

- the need for and importance of resource avoidance and protection,
- resource mapping format and interpretation of construction drawings,
- resource protection staking methods,
- construction process as it relates to required mitigation measures,
- roles and responsibilities, and
- project management structure and contacts.

All contract compliance inspectors will be required to complete an inspector training class. These classes will cover issues such as the environmental issues mentioned above, resource mapping and construction drawing interpretation, roles and responsibilities, and site safety.

Contractor Team

The contractors team will include the job superintendent, crew foremen, and crew members. The training and education will take place through several processes beginning with the preconstruction meetings and ending with training classes just before construction activities.

Preconstruction Meetings

Meetings with the contractor will be held before construction begins for each project route. These meetings will be used as an opportunity to reinforce the need for and importance of compliance with environmental resource avoidance and protection measures.

The following issues related to environmental protection will be explained at these meetings:

- # the need for and importance of resource avoidance and protection,
- # resource mapping format and interpretation of construction drawings,
- # resource protection staking methods,
- # construction process as it relates to required mitigation measures,
- # roles and responsibilities, and
- # project management structure and contacts.

Field Meetings - Contractor Job Superintendents and Foremen

The spread superintendents and supervisors, contract compliance inspectors, and environmental coordinators will regularly conduct meetings with the contractors' superintendents and foremen to coordinate the construction and mitigation processes.

Contractor Crew Members

The contractors' foremen will be responsible for transmitting the information discussed in the preconstruction meetings for the superintendents and foremen to the individual crew members through tailgate meetings in the field. These tailgate meetings will be attended by the contract compliance inspectors and environmental resource coordinator and will usually be held weekly to discuss safety issues. Environmental issues will be included and discussed in these meetings.

LAND USES ISSUES

The project routes cross land used by other entities, including public roads, utilities, railroads, and private property.

Public Roads

The project routes cross numerous existing public roads. In almost all cases, the cable system will be installed beneath these roads without resulting in surface disturbance. Permits will be acquired from the appropriate governing agency, including the California Department of Transportation, where necessary before construction in public road rights-of-way.

Williams, in coordination with affected jurisdictions, will develop and implement a traffic control plan for installation activities within public road and highway rights-of-way to reduce construction-related effects on traffic and circulation patterns during the construction period. All construction activities will follow the standard construction specifications of the affected jurisdictions. The traffic control plan may include the following actions:

- # Coordinate with the affected jurisdictions on construction hours of operation and road closures, if any, to minimize impacts.

- # Follow guidelines of the affected jurisdiction, if any, for temporary road closures caused by construction activities.

- # Limit lane closures during peak commuting hours to the extent possible.

- # Install traffic control devices as specified in the California Department of Transportation's Manual of Traffic Controls for Construction and Maintenance Works Zones.

- # Consult with emergency service providers and develop an emergency access plan for emergency vehicles moving through the construction zone.

Utility Crossings

Conduit and cable installation will not threaten overhead utilities because of the amount of vertical clearance under the utilities. For underground facilities, the "One Call" utility location services will be contacted a minimum of 48 hours before construction. The One Call services alert all registered utilities about the scheduled construction activities, allowing the utilities to identify the location of their underground facilities and thus greatly reducing the possibility of interruptions in utility services.

Private Property

In some instances, the project routes cross private property. Landowners will be contacted before construction. Right-of-way personnel will be available to answer landowners' questions and to negotiate any cleanup or restoration issues that may arise.

Farm and Agricultural Lands

The project routes will cross some agricultural lands. The owners and tenants of these lands will be contacted before construction. Williams will negotiate with the owners and tenants regarding any project-related crop losses. The timing of construction will, wherever practicable, be during idle field time. Any trenching activities in farmland will be done according to the aforementioned procedures

CONSTRUCTION SCHEDULE AND WORKFORCE

Construction Schedule

Clearance for construction of the fiber optic cable system is scheduled to commence on September 1, 1999, or on receipt of all necessary authorizations from the CPUC and other applicable governing agencies, and to be completed by April 1, 2000. All permits and approvals will be in place before construction commences and will be provided to the CPUC. Construction on some segments of the project routes will be subject to various schedule windows so that potential disturbance of sensitive species can be avoided.

Construction segments and schedules may vary according to environmental constraints (biological, archeological, seasonal work windows) and the completion of permitting processes.

Timing of Work

Monitoring activities associated with construction will proceed as follows:

- # locate all sensitive resources, construction methods, and avoidance measures or mitigation measures on the construction drawings;

- # acquire permits and approvals from governing agencies;
- # prepare traffic control plans, as necessary;
- # conduct preconstruction wildlife surveys in predetermined suitable habitat areas;
- # stake and flag resources as stipulated in the environmental documentation and from results of field surveys conducted for each project route;
- # prepare the rights-of-way and install sedimentation control measures where needed;
- # install conduit and fiber optic cable and construct associated facilities;
- # restore the rights-of-way and install erosion control measures;
- # apply seed and mulch as specified in the SWPPPs and reclamation plans;
- # monitor erosion control; and
- # monitor success of mitigation.

Construction Workforce

The labor and equipment associated with each type of operation were discussed previously. Discussed below is the number and types of crews associated with each spread and the flow of construction activities along the project routes. The actual number and composition of the workforces may vary with conditions at the time of construction. The contractor is responsible for determining the most efficient methods for completing the work within the parameters given.

Williams is anticipating hiring multiple contractors for most routes, depending on the length of the route and the amount of time available to install the conduit and cable and construct associated facilities after the completion of the CEQA and permitting processes and the onset of the wet season.

On past similar fiber optic installation projects with multiple contractors, each contractor has been expected to operate one spread per route. The number of spreads may vary depending on the contractor's ability to meet the schedule for cable system installation. Each spread will consist of the following crews:

- # **Preparation Crew** – The preparation crews will prepare the rights-of-way for construction by placing temporary gates in fences, clearing vegetation where necessary, and repairing erosion problems on existing roads to provide access.
- # **Conduit and Cable Installation Crew** – The conduit and cable installation crews will install the conduit and cable using the construction methods discussed in this chapter.
- # **Cleanup Crew** – The cleanup crews will perform final cleanup of the rights-of-way, restoring preinstallation ground contours, installing erosion protection measures (e.g., erosion control blankets), and restoring affected stream channels.

- # **Seeding Crew** – The seeding crews will apply seed and mulch where necessary.

SUMMARY OF MITIGATION MEASURES INCORPORATED INTO DESIGN AND CONSTRUCTION APPROACH

Williams will be responsible for implementing the mitigation measures identified in this document and other measures that will be determined by the associated permitting agencies and through the CEQA review process (e.g., DFG, Corps, California State Lands Commission, California Department of Transportation, RWQCBs). Some of the general mitigation measures that are known at the time of the preparation of this document are described below. The measures have been developed and designed as part of the proposed project to avoid or reduce all potential significant impacts to less-than-significant levels.

Specific Measures

Staging Areas

No new equipment staging areas will be established in undisturbed areas or on public lands; all staging areas will be located on private lands. To the fullest extent possible, access to the proposed project routes will be by existing access roads to the utility, pipeline, road, or railroad rights-of-way used for the proposed project. If any new access roads to regenerator/OP-AMP stations are required, surveys will be conducted to identify sensitive biological and archeological resources. These resources will be fully avoided and cleared for use by the CPUC prior to construction.

Sensitive Resources

All sensitive resources (i.e., biological and archeological resources, sensitive stream crossings, wetlands) will be identified during field studies and staked and flagged in the field and marked on construction drawings before construction. Most sensitive resources (approximately 98 percent) already have been identified along each of the project routes and are specifically addressed and documented in this IS/MND. All sensitive resources will be identified and documented for the CPUC and other regulatory agencies at the permitting stage and prior to construction. The remaining field studies (i.e., for late-blooming plants in the Sierra Nevada) will be completed by mid-August. Sensitive resources will be avoided by minor rerouting of the cable route within the disturbed right-of-way; boring under the resource; or attaching the conduit to an existing bridge, where applicable. The conduit and cable will be bored under sensitive streams (streams supporting threatened or endangered species or other resources of special value) or attached to bridges, and no construction activities will be conducted within the limits of the stream. No construction equipment will be operated in sensitive streams.

Work Scheduling

Construction activities will be scheduled so as not to interfere with the reproductive cycles of sensitive plant and animal species. Construction work windows will be included, where applicable, into the construction specifications.

Work in Wet Weather

In consultation with the contract compliance inspector and environmental professionals, as needed, no construction or routine maintenance activities will be performed during periods when the soil is too wet to support the construction equipment.

General Measures

Storm Water Pollution Prevention Plan

SWPPPs are currently being developed and will be submitted to the appropriate RWQCBs for each project route in support of NPDES regulations, as required by the RWQCBs. The plans will be completed by late August, prior to construction. The plans identify the activities that may cause pollutant discharge (including sediment) during storms and the best management practices that will be employed to control pollutant discharge. Construction techniques are identified to reduce the potential for runoff, including minimizing site disturbance, controlling water flow over construction sites, stabilizing bare soil, and ensuring proper site cleanup. Additionally, the plan specifies the erosion and sedimentation control measures to be implemented, such as silt fences, trench plugs, terraces, water bars, baffle boards, and seeding and mulching. (See **Appendix E** for an example of a typical SWPPP).

The SWPPPs also specify spill prevention countermeasures, identify the types of materials used for equipment operation (mainly vehicle fluids such as fuel and hydraulic fluids), and identify measures to prevent or cleanup hazardous material and waste spills. Emergency procedures for responding to spills is also identified.

The SWPPP will be included in the contract specifications for each specific route.

Necessary documentation has been submitted for the following project routes to comply with Section 402 of the Clean Water Act:

- Pittsburg to Sacramento (have received confirmation from the RWQCB) and
- San Luis Obispo to Los Osos Loop.

Fire Prevention and Response Plan

Fire prevention and response plans are currently being developed and will be submitted to the appropriate regulatory agencies for some routes, as required by applicable regulatory agencies. The plans are being developed with input from the fire response managers of affected agencies and will be completed prior to construction of the applicable route. The plans identify the fire precaution and suppression measures that will be implemented and the parties responsible for fire prevention and response. Prevention and response measures, such as requirements to have firefighting water tanks onsite and extinguishers and shovels in vehicles, are being identified. (See **Appendix J** for a typical fire prevention and response plan that is being prepared for the applicable project routes).

The fire prevention and response plan, as applicable, will be included in the contract specifications for each applicable route.

The following project routes require a fire prevention and response plan:

- Point Arena to Sacramento,

Sacramento to the California/Nevada border,
San Luis Obispo to Bakersfield,
San Luis Obispo to Los Osos Loop,
Riverside to California/Arizona border, and
Los Angeles to Riverside.

Reclamation Plan

Reclamation plans are being developed for various project routes, as required by applicable regulatory agencies, and will be completed prior to construction of the applicable route. The reclamation plans identify areas that will be restored and the methods that will be used. Seed mixes, schedules, success criteria, and success monitoring for restoration of wetlands and drainages are being identified. (See **Appendix H** for an example of a typical reclamation plan).

The reclamation plan, as applicable, will be included in the contract specifications for each applicable route.

The following project routes will require a reclamation plan:

Point Arena to Sacramento,
Sacramento to the California/Nevada border,
San Francisco to Santa Clara,
Pittsburg to Sacramento,
San Luis Obispo to Bakersfield,
San Luis Obispo to Los Osos Loop,
Riverside to California/Arizona border,
Los Angeles to Riverside, and
Los Angeles to Anaheim.

NO-PROJECT ALTERNATIVE

The No-Project Alternative is the circumstance under which the proposed fiber optic network is not installed. The temporary impacts of installing the network will not occur. Because the proposed project will not have significant effects that cannot be avoided or mitigated, selection of the No-Project Alternative will have no net environmental benefits.

The telecommunications market is constantly changing as new technology is introduced, and there are corresponding changes in regulations, supply, and demand. Given the increasing number of users of telecommunications services and the greater number of available devices (Internet, digital television, and video conferences), the demand for additional telecommunications capacity will continue to increase whether or not the proposed project is implemented. However, any attempt to describe how that demand will manifest itself in environmental change under the No-Project Alternative would be largely speculative. For that reason, the following discussion is very general.

One result might be an increase in the already growing demand for wireless communications (e.g., cellular telephones, satellite communications, and microwave facilities), leading to an unknown number of additional wireless facilities such as cellular towers, earth satellite antennae, and microwave towers. The lack of adequate fiber optic facilities could encourage the deployment of alternative telecommunications facilities that may result in effects on the environment. Unlike traditional bulky copper cable systems, fiber optic cable systems rely on small cables with minimum visibility and require less maintenance excavation. Intercity fiber optic networks are transporting more bits of information than all other intercity telecommunications systems combined. Adequate, reliable, inexpensive intercity telecommunications capacity can reduce travel needs by providing video conferencing, replacing door-to-door shipments of documents, and encouraging telecommuting.

FUTURE PROJECTS

Williams is investigating two future project routes to supplement the proposed California network. The first project route will run from Point Arena to Sacramento. This route, if constructed, will provide a diverse connection between Point Arena to Sacramento to supplement the similar route analyzed as part of the proposed project. The second future project route will run from Riverside to San Diego. This route will provide network connectivity to the San Diego market. Environmental data on these future projects are currently being gathered and analyzed. Williams will apply to the CPUC for CEQA review and approval of all future project routes.