



Parkwide Communication Data Network Environmental Assessment January 2010





United States Department of the Interior

NATIONAL PARK SERVICE

Yosemite National Park
P. O. Box 577
Yosemite, California 95389

IN REPLY REFER TO:
L7617 (YOSE)

January 8, 2010

Dear Yosemite Friends:

I am pleased to provide you with this copy of the *Parkwide Communication Data Network Environmental Assessment (EA)*. Yosemite National Park proposes to upgrade the park's internal data communication system with modern technology to create a more reliable communication platform, which would greatly improve the safety and efficiency of park operations. It fulfills the requirements under the National Environmental Policy Act, the California Environmental Quality Act, and Section 106 of the National Historic Preservation Act.

This EA describes two action alternatives for how a new system can best deliver communication data throughout the park and also describes the No Action Alternative (maintenance of the current system and operations). It presents an analysis of the potential environmental impacts of each alternative and includes mitigation measures to avoid or minimize those impacts.

In December 2008, Yosemite National Park initiated a formal 30-day public scoping period and hosted public meetings to solicit comments, concerns, and ideas. Public site visits were held in spring 2009. The EA has been prepared with input from the public, American Indian Tribes, and other agencies.

A 30-day public review period commences with publication of this document. A public meeting will be held Wednesday, January 13, 2010, from 5:30 p.m. to 7:30 p.m. at the Mariposa County Government Chambers. Park staff will be available to discuss the project and provide additional copies of the EA. Project information may also be viewed online at www.nps.gov/yose/planning/parkmgmt/cdn.htm. Comments must be submitted in writing by February 5, 2010, and may be sent to:

Mail: Superintendent, Yosemite National Park
Attention: CDN EA
P.O. Box 577
Yosemite, California, 95389

Fax: (209) 379-1294
Email: yose_planning@nps.gov

You may also submit comments through the Web-based Planning, Environment and Public Comment (PEPC) tracking system at <http://parkplanning.nps.gov>. PEPC is a collaborative tool that gives the public unprecedented, easy access to documents used in developing and tracking projects within the National Park Service.

The park considers all public comments in making a decision, which will be documented in a Finding of No Significant Impact, if appropriate. If approved, construction of the communication data network would begin in spring 2010.

We appreciate your interest and welcome your continued participation.

Sincerely,

David V. Uberuaga
Acting Superintendent

Yosemite National Park

Lead Agency: National Park Service

ABSTRACT

Effective communications are critical to Yosemite National Park's success in protecting park resources and delivering a range of services to park visitors. This exchange of information requires a reliable and cost-effective telecommunications network. The purpose of the project is to create a single parkwide telecommunications backbone that would support a full range of telecommunications applications, including: computer LAN data, Narrowband P25 Land Mobile Radio (LMR), security and safety video systems, telephony, burglar / intrusion and fire alarm systems, traffic collection data, and telemetry.

This document presents environmental analysis of three alternatives that the agency is currently considering, for public input and review, in accordance with the National Environmental Policy Act of 1969 (NEPA): Alternative 1—the No Action Alternative; Alternative 2—install and improve communication data network facilities at Big Oak Flat (Rockefeller Grove), Crane Flat, Eagle Peak, El Portal, Henness Ridge, Hodgdon Meadow Maintenance Complex, Hetch Hetchy Entrance Station, May Lake Junction, Mount Bullion, Sentinel Dome, Turtleback Dome, Wawona, Wawona Point, and Yosemite Valley; and Alternative 3 – install and improve communication data network facilities using alternative sites or equipment at Crane Flat, Eagle Peak, Hetch Hetchy Entrance Station, and Yosemite Valley. Potential impacts to park resources are presented and analyzed under each alternative.

The park initiated public scoping for this project in 2008. The following public meeting will be held, where park staff will be available to answer questions, additional copies may be obtained, and written comments will be accepted: Mariposa County Government Chambers on January 13, 2010 from 5:30- 7:30 pm. This document may also be reviewed online at www.nps.gov/yose/planning. Additional copies (specify hardcopy or CD) may also be requested on-line, or by phone, as noted below:

Comments on this document should be submitted in writing to:

Mail: Superintendent, Yosemite National Park
Attn: Yosemite CDN EA
P.O. Box 577
Yosemite, California 95389

Fax: 209/379- 1294
Email: Yose_Planning@nps.gov
Phone: 209/379- 1365

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EXECUTIVE SUMMARY

INTRODUCTION

Pursuant to Section 102(2)(C) of the National Environmental Policy Act of 1969 (NEPA) (Public Law [PL] 91- 190, as amended), and the Council on Environmental Quality Regulations (40 Code of Federal Regulations [CFR] Part 1500- 1508), the Department of the Interior, National Park Service (NPS), has prepared an environmental assessment (EA) identifying and evaluating three alternatives for the Parkwide Communication Data Network (CDN) in Yosemite National Park. This document is intended also to meet the requirements of Section 106 of the National Historic Preservation Act (NHPA), and fulfills public review requirements under the California Environmental Quality Act (CEQA).

PURPOSE AND NEED FOR THE ACTION

Effective communications are critical to Yosemite National Park's success in protecting park resources and delivering a range of services to park visitors. This exchange of information requires a reliable and cost- effective telecommunications network. Yosemite currently relies on an outdated mix of technologies to provide telephone, network, and internet access. Yosemite Valley and El Portal are the only park areas with bandwidth capable of supporting high- speed internet, network access, and other technologies requiring high- speed data transmission. Other areas of the park operate on inefficient and time consuming dial- up modems. This makes it challenging for staff to engage in even the most basic computing activities, and make it impossible for the park to deploy newer technologies in those areas.

The purpose of the project is to create a single parkwide telecommunications backbone that would support a full range of telecommunications applications, including: computer LAN data, Narrowband P25 Land Mobile Radio (LMR), security and safety video systems, telephony, burglar/ intrusion and fire alarm systems, traffic collection data, and telemetry. Benefits of the telecommunication backbone include:

- Improved network access, including internet access, for remote park offices. Remote areas would share the data transfer speeds now experienced in El Portal and Yosemite Valley, allowing efficient information sharing among those offices. Network reliability during inclement weather would also be enhanced in those areas.
- Support of upgraded telephone switches that would result in a private branch exchange (PBX) phone system covering all park areas.
- Support of improved parkwide digital radio coverage with an emphasis on "Dead Zones" in Wilderness areas. New capabilities would allow for the use of portable radio repeaters, which would support emergency responses in Wilderness and other Wilderness management objectives.
- Support of enhanced employee and visitor safety by improving parkwide security video systems, panic and intrusion alarm systems, and fire alarm systems. Alarm monitoring would be centralized at the Emergency Communications Center, and emergency response can be coordinated at a parkwide level.
- Support of improved remote sensing of natural resource information for resource management personnel, such as water flows, air quality, avalanche, fire behavior, wild

land / prescribed fire smoke travel, remote weather station data, and wildlife locators. Support of extended Supervisory Control and Data Acquisition (SCADA). SCADA allows real time data acquisition for maintenance personnel, resulting in faster responses to utility breakdowns.

- Increased bandwidth for remote data terminals allowing text dispatching. This has several applications, the most important being the use in emergency vehicles to send and receive text messages directly to/from the Emergency Communications Center while on patrol or traveling to an emergency.
- Accessibility from remote areas to the Emergency Communications Center centralized Records Management System database, which stores information for Law Enforcement, Structure Fire, Wild Land Fire, and Resource Protection and Management.
- Allows for the deployment of incident command and control to different geographic locations in the park, which would enhance the park's ability to respond to emergency incidents, particularly in remote or Wilderness settings.
- Supports e- Commerce and e- Government initiatives, which would enhance service to the public, outside organizations, other governments, and park employees.

OVERVIEW OF THE ALTERNATIVES

Alternative 1: No Action

The Yosemite National Park CDN would continue to operate as it currently does under the No Action Alternative. NPS would continue with current maintenance activities at the existing facility sites. The current communications network system does not provide adequate speed, connectivity, or bandwidth for efficient park operations or adequate protection of resources, visitors, and staff. Bandwidth and speed is considerably below industry standards. The existing system is not reliable in storm conditions, which could contribute to delayed response in emergency conditions.

Alternative 2: Install Communication Data Network Microwave Facilities (Preferred)

Alternative 2 proposes the improvement of existing facility sites at the following locations: Crane Flat, Eagle Peak, El Portal, Henness Ridge, Mount Bullion, Sentinel Dome, Turtleback Dome, Wawona Point, and Yosemite Valley. The existing facility at Sentinel Reflector would be used, but would not be improved. This alternative also includes development of new facility sites at the following locations: Big Oak Flat, Hodgdon Meadow Maintenance Complex, Hetch Hetchy Entrance Station, May Lake Junction, and Wawona.

Alternative 3: Install Communication Data Network Microwave Facilities Using Alternative Sites or Equipment

Alternative 3, proposed facilities at the Crane Flat and Hetch Hetchy Entrance sites, would be located in alternate locations. A new support tower would be constructed at Eagle Peak, in close proximity to the existing facility. Microwave antennas would be installed on an existing tower in Yosemite Valley.

ENVIRONMENTALLY PREFERABLE ALTERNATIVE

The Council on Environmental Quality Regulations, implementing the NEPA and the NPS NEPA guidelines, require that “the alternative or alternatives which were considered to be environmentally preferable” be identified (Council on Environmental Quality Regulations, Section 1505.2). Environmentally preferable is defined as “the alternative that will promote the national environmental policy as expressed in the NEPA Section 101. Ordinarily, this means the alternative that causes the least damage to the biological and physical environment; it also means the alternative that best protects, preserves, and enhances historic, cultural, and natural resources” (Council on Environmental Quality 1981).

Section 101 of NEPA states that “...it is the continuing responsibility of the Federal Government to...(1) fulfill the responsibilities of each generation as trustee of the environment for succeeding generations; (2) assure for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings; (3) attain the widest range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable and unintended consequences; (4) preserve important historic, cultural, and natural aspects of our national heritage, and maintain, wherever possible, an environment which supports diversity, and variety of individual choice; (5) achieve a balance between population and resource use which will permit high standards of living and a wide sharing of life’s amenities; and (6) enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.”

Upon full consideration of the elements of Section 101 of NEPA, Alternative 2 represents the Environmentally Preferable Alternative for the Yosemite CDN project. The conclusion is analyzed in detail in Chapter 3.

ORGANIZATION OF THIS ENVIRONMENTAL ASSESSMENT

The contents of this document are as follows:

Chapter 1: Purpose and Need – This chapter includes a discussion of the project’s purpose and need, planning context, and issues and concerns that are and are not addressed in this environmental assessment.

Chapter 2: Alternatives – This chapter describes the alternatives for the proposed action, two action alternatives, and one No Action Alternative. It also discusses alternatives considered but dismissed.

Chapter 3: Affected Environment and Environmental Consequences – This chapter provides a description of the affected environment of the proposed action for each alternative. This chapter also presents the methods and analysis of the potential impacts for each topic under each alternative.

Chapter 4: Wild and Scenic Rivers Act Compliance – This chapter describes how activities proposed in the project comply with the Wild and Scenic Rivers Act requirements.

Chapter 5: Consultation and Coordination – This chapter summarizes the consultations undertaken in the preparation and review of this document.

Executive Summary

Chapter 6: List of Preparers and Reviewers – This chapter lists the names and qualifications of the individuals who have contributed to this document.

Chapter 7: Glossary and Acronyms – This chapter defines the technical terms and acronyms used in this document.

Chapter 8: Bibliography – This chapter lists the references cited in this document.

In addition, **appendices** to this document augment and provide supplemental information to that presented in the above sections.

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CHAPTER 1: PURPOSE AND NEED

PURPOSE OF AND NEED FOR ACTION

Effective communications are critical to Yosemite National Park's success in protecting park resources and delivering a range of services to park visitors. This exchange of information requires a reliable and cost-effective telecommunications network. Yosemite currently relies on an outdated mix of technologies to provide telephone, network, and internet access. Yosemite Valley and El Portal are the only park areas with bandwidth capable of supporting high-speed internet, network access, and other technologies requiring high-speed data transmission. Other areas of the park operate on inefficient and time-consuming dial-up modems. This makes it challenging for staff to engage in even the most basic computing activities, and make it impossible for the park to deploy newer technologies in those areas.

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- Support of upgraded telephone switches that would result in a private branch exchange (PBX) phone system covering all park areas.
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- Support of improved remote sensing of natural resource information for resource management personnel, such as water flows, air quality, avalanche, fire behavior, wild land / prescribed fire smoke travel, remote weather station data, and wildlife locators. Support of extended Supervisory Control and Data Acquisition (SCADA). SCADA allows real time data acquisition for maintenance personnel, resulting in faster responses to utility breakdowns.
- Increased bandwidth for remote data terminals allowing text dispatching. This has several applications, the most important being the use in emergency vehicles to send and receive text messages directly to/from the Emergency Communications Center while on patrol or traveling to an emergency.

Purpose and Need

- Accessibility from remote areas to the Emergency Communications Center centralized Records Management System database, which stores information for Law Enforcement, Structure Fire, Wild Land Fire, and Resource Protection and Management.
- Allows for the deployment of incident command and control to different geographic locations in the park, which would enhance the park's ability to respond to emergency incidents, particularly in remote or Wilderness settings.
- Supports e- Commerce and e- Government initiatives, which would enhance service to the public, outside organizations, other governments, and park employees.

RELATIONSHIP TO LAWS, EXECUTIVE ORDERS, POLICIES, AND OTHER PLANS

Below is a summary of applicable laws, executive orders, policies, and other plans. The proposed action was evaluated and determined to be consistent with the park's general management plan and other applicable laws, executive orders, policies, and plans.

Yosemite National Park Plans

Planning in the National Park Service (NPS) takes two different forms: general management planning and implementation planning. General management plans are required for national parks by the National Park and Recreation Act of 1978. The purpose of a general management plan is to set a "clearly defined direction for resource preservation and visitor use" (NPS 1998) and provide general directions and policies to guide planning and management in the park. The NPS *General Management Plan* (1980) is the overall planning document for Yosemite National Park.

Implementation plans and projects, which tier off the NPS *General Management Plan* (1980) and other park plans, focus on "how to implement an activity or project needed to achieve a long-term goal" (NPS 2001). Implementation plans may direct specific projects as well as ongoing management activities or programs, and provide a more extensive level of detail and analysis.

Yosemite National Park General Management Plan of 1980

The GMP is the overall planning document for Yosemite National Park. The proposed action is consistent with the guidance therein. The GMP sets forth five broad goals for management of the park as a whole:

- Reclaim priceless natural beauty
- Allow natural processes to prevail
- Promote visitor understanding and enjoyment
- Markedly reduce traffic congestion
- Reduce crowding

The proposed action is consistent with these goals and other guidance set forth in the GMP.

Merced Wild and Scenic River Comprehensive Management Plan

In designating the Merced River as a Wild and Scenic River, Congress directed the NPS to prepare its management plan for the river by making appropriate revisions to the park's *General Management Plan* (1980) (16 United States Code [USC] 1274[a][62]). The river plan provides a framework for decision-making on management actions within the Merced Wild and Scenic River corridor.

The NPS produced a Merced Wild & Scenic River Comprehensive Management Plan and Environmental Impact Statement (EIS) in 2000, and a Revised Comprehensive Management Plan and Supplemental EIS in 2005. However, both plans were overturned by the Court in 2008, and the park has been directed to prepare a new plan. The public planning process for a *New Merced River Plan* has been initiated, and a Draft EIS is expected in 2010.

Yosemite Resources Management Plan (1993)

The NPS *Yosemite Resources Management Plan* (1993) describes the status of park natural and cultural resources and recommends actions and programs needed to accomplish the legislative mandates applicable to the NPS and the park as well as to comply with other applicable environmental laws and NPS Management Policies (2006). The proposed action is consistent with the goals and guidance set forth in the *Yosemite Resources Management Plan*.

Yosemite National Park Vegetation Management Plan (1997)

The NPS *Yosemite National Park Vegetation Management Plan* (1997) established broad objectives for park vegetation management. Descriptions of plant communities, management issues, and management strategies and techniques were identified for achieving desired conditions for park vegetation communities (NPS 2004a:I- 20). As construction projects are implemented, existing vegetation needs to be salvaged and held on-site for short-duration projects or placed in temporary in-park holding facilities until construction is completed. Seeds, seedlings, or cuttings need to be collected. Site-specific integrity needs to be protected. The proposed action is consistent with the goals and guidance set forth in the *Yosemite National Park Vegetation Management Plan*.

Yosemite Wilderness Management Plan (1989)

The Yosemite Wilderness was established by the California Wilderness Act of 1984. The area is generally defined by the Tuolumne River and Merced River drainages, with lands ranging in elevation from 2,900 feet below Hetch Hetchy to 13,114 feet at the summit of Mt. Lyell. Of Yosemite National Park's 747,956 total acres, 704,624 acres (94%) have been designated Wilderness, and another 927 acres (0.1%) are potential Wilderness additions. None of the proposed facility sites proposed for improvements, or new facility sites, are located within Wilderness; however, some tree trimming or individual removal of trees may occur in Wilderness.

The management policies of the NPS include a chapter on Wilderness preservation and management, introduced with the statement that:

The National Park Service will preserve an enduring resource of Wilderness in the National Park System, to be managed for the use

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and enjoyment of Wilderness values without impairment of the Wilderness resource.

The NPS *Wilderness Management Plan* (1989a) states that the NPS seeks to preserve an environment in which the natural world, along with the processes and events that shape it, are largely untouched by human interference. Visitor use and enjoyment of Wilderness is encouraged as long as such use does not result in impacts that seriously compromise the Wilderness values the NPS is mandated to protect. Specifically, ecosystems—including plant and animal species and populations, along with unpolluted air and water—are protected in a natural state free from human structures, disturbances, and technology (NPS 1989a). The proposed action is consistent with the goals and guidance set forth in the Yosemite Wilderness Management Plan.

Fire Management Plan (2004)

The *Yosemite National Park Fire Management Plan* (2004b) is a fundamental strategic document that guides the full range of fire management related activities in the park, as directed and permitted under the 2001 Federal Fire Policy and NPS Director's Order 18. The proposed action is consistent with the goals and guidance set forth in this plan.

The specific purposes of the plan are to:

- Identify and implement methods to restore and maintain park ecosystems and ecosystem processes that allow fire to play its natural role in the ecosystem, both as wildland fire and prescribed fire.
- Reduce the risk of fire to cultural resources (i.e. historic buildings, pictographs) through fuels reduction, prescribed burning, or fire suppression to prevent fires from damaging cultural resources. Fire will also be used as a tool to manage cultural landscapes.
- Reduce the risk of catastrophic fire, including near the wildland/urban interface (communities, government and commercial buildings, and other developed areas), while continuing to reverse the adverse effects from past fire suppression and prevention activities.
- Execute a fire management program that provides a safe environment for firefighters and the public, including safe operations and fire management related facilities (helibases, fire camps, fire stations).

National Park Service Policy and other Relevant Guidance

National Park Service Organic Act of 1916

The NPS Organic Act of 1916 established the NPS to “promote and regulate the use of parks” and defined the purpose of the national parks as “to conserve the scenery and natural and historic objects and wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations.” (16 USC 1) The Organic Act provides overall guidance for the management of Yosemite National Park.

The Organic Act establishes the management responsibilities of the NPS. Although Congress has given the NPS management discretion to allow certain impacts within parks, that discretion is limited by the statutory requirement that park resources and values be left unimpaired, unless a particular law directly and specifically provides otherwise. This cornerstone of the Organic Act

establishes the primary responsibility of the NPS and ensures that park resources and values will continue to exist in a condition that will allow the American people to have present and future opportunities for enjoyment of them. *NPS Management Policies* (2001) provides guidance on addressing impairment. The proposed action is consistent with the goals and guidance set forth in the NPS Organic Act of 1916.

1970 National Park Service General Authorities Act (As Amended in 1978—Redwood Amendment)

This act prohibits the NPS from allowing any activities that would cause derogation (*impairment*) of the values and purposes for which the parks have been established (except as directly and specifically provided by Congress in the enabling legislation for the parks). Therefore, all units are to be managed as national parks, based on their enabling legislation and without regard for their individual titles. Parks also adhere to other applicable federal laws and regulations, such as the Endangered Species Act, the National Historic Preservation Act, the Wilderness Act, and the Wild and Scenic Rivers Act. To articulate its responsibilities under these laws and regulations, the NPS has established management policies for all units under its stewardship. The proposed action is consistent with the laws and regulations set forth in the General Authorities Act.

1999 Programmatic Agreement Among the National Park Service at Yosemite, the California State Historic Preservation officer, and the Advisory Council on Historic Preservation Regarding the Planning, Design, Construction, Operations, and Maintenance of Yosemite National Park

Under this agreement, the park has the responsibility to review and approve undertakings that are determined to have no effect or no adverse effect to historic properties that are not National Landmarks without further review by the State Historic Preservation Office (SHPO) or the Advisory Council provided the stipulations of the agreement have been fulfilled. The agreement applies to undertakings performed by NPS lessees, permittees, concessioners, cooperators, and park partners. The 1999 PA provides standard mitigation measures to resolve adverse effects on historic properties in consultation with SHPO, the public and American Indian tribes. It also requires Yosemite National Park to “make every reasonable effort to avoid adverse effects to Historic Properties identified . . . through project design, facilities’ location or other means” and to document avoidance alternatives through the National Environmental Policy Act (NEPA) process (NPS 1999).

National Park Service Director’s Orders

The proposed action and EA are consistent with the following NPS Director’s Orders:

- Director’s Order 2: Park Planning
- Director’s Order 12: Conservation Planning, Environmental Impact Analysis, and Decision- making
- Director’s Order 28: Cultural Resources Management
- Director’s Order 50B: Occupational Safety and Health
- Director’s Order 77- 1: Wetland Protection
- Director’s Order 83: Public Health

Other Applicable Federal Laws, Policies, and Executive Orders

The National Historic Preservation Act of 1966, Section 106 (16 USC 470, as amended)

Section 106 of the NHPA directs federal agencies to consider the effects of their actions on properties that are eligible for, or included on, the National Register of Historic Places (NHRP). Historical sites, objects, districts, historic structures, and cultural landscapes; archeological resources; and traditional cultural properties (TCPs) that are eligible for listing on the NRHP are known as historic properties. Yosemite National Park's Section 106 review process is governed by the 1999 Programmatic Agreement Among the NPS at Yosemite, the California State Historic Preservation Officer, and the Advisory Council for Historic Preservation regarding the Planning, Design, Construction, Operations and Maintenance, Yosemite National Park (1999 PA) (NPS 1999) developed in consultation with associated American Indian Tribes and the National Trust for Historic Preservation. The NHPA Section 106 review process for this project is integrated into this document. The analysis of impacts to historic properties included in Chapter 3 complies with Section 106.

The Archaeological Resources Protection Act of 1979 (ARPA; 16 USC 470aa- 470ll)

The Archaeological Resources Protection Act (ARPA) prohibits unauthorized excavation of archaeological sites on federal land, as well as other acts involving cultural resources, and implements a permitting process for excavation of archaeological sites on federal or Indian lands (see regulations at 43 CFR 7). ARPA also provides civil and criminal penalties for removal of, or damage to, archaeological and cultural resources. The analysis of impacts to historic properties included in Chapter 3 complies with ARPA.

The Native American Graves Protection and Repatriation Act of 1990 (25 USC 3001 et seq.; see regulations at 43 CFR 10)

The Native American Graves Protection and Repatriation Act (NAGPRA) provides for the protection and repatriation of Native American human remains and cultural items and requires notification of the relevant Native American tribe upon accidental discovery of cultural items. The analysis of cultural resources included in Chapter 3 complies with NAGPRA.

The American Indian Religious Freedom Act of 1979 (AIRFA; 42 USC 1996)

The American Indian Religious Freedom Act (AIRFA) preserves for Native Americans and other indigenous groups the right to express traditional religious practices, including access to sites under federal jurisdiction. Regulatory guidance for AIRFA is lacking, although most land managing federal agencies have developed internal procedures to comply with AIRFA. The analysis of cultural resources included in Chapter 3 complies with AIRFA.

Executive Order No. 13007: Indian Sacred Sites

Executive Order 13007 directs federal agencies with statutory or administrative responsibility for the management of Federal lands, to the extent practicable, permitted by law to accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners and avoid adversely affecting the physical integrity of such sacred sites. The analysis of cultural resources included in Chapter 3 complies with Executive Order 13007.

The proposed action and EA are consistent with the following federal laws and executive orders:

- National Environmental Policy Act (1969) (42 USC 4341 *et seq.*)
- National Historic Preservation Act (1966) (16 USC 470, as amended)
- The American Indian Religious Freedom Act of 1979 (AIRFA; 42 USC 1996)
- The Archaeological Resources Protection Act of 1979 (ARPA; 16 USC 470aa- 470ll)
- Clean Water Act (33 USC 1241 *et seq.*)
- Clean Air Act (as amended) (42 USC 7401 *et seq.*)
- Endangered Species Act (16 USC 1531 *et seq.*)
- Native American Graves Protection and Repatriation Act (NAGPRA) of 1990 (25 USC 3001- 3013)
- Secretary of the Interior's Guidelines for Architectural and Engineering Documentation (36 CFR Part 61)
- Wilderness Act (1964) (Public Law 88- 577)
- Wild and Scenic Rivers Act
- Executive Order 11593: Protection and Enhancement of the Cultural Environment
- Executive Order 11990: Protection of Wetlands
- Executive Order 12898: Environmental Justice
- Executive Order 12902: Energy Efficiency and Water Conservation at Federal Facilities
- Executive Order 13007: Indian Sacred Sites
- Executive Order 13101: Greening the Government Through Waste Prevention, Recycling, and Federal Acquisition
- Executive Order 13123: Greening the Government Through Efficient Energy Management
- Executive Order 13148: Greening the Government Through Leadership in Environmental Management

USDA Forest Service, Stanislaus National Forest

The Stanislaus National Forest Land and Resource Management Plan (Forest Plan) was approved in October 1991. The *Forest Plan Direction* (2005) includes the current Forest Plan management direction based on the 1991 Forest Plan as modified through appeals and amendments. Continued planning occurs so that the Forest Plan remains a dynamic and responsible tool for managing the Forest's land and resources in a changing social and economic climate. The Stanislaus National Forest is divided into 12 Management Areas based on land management goals. The Forest Plan Direction outlines Management Area Standards and Guidelines as well as Forest- wide Standards and Guidelines. Special Use Management Standards and Guidelines apply to Forest Service communication sites; the actions proposed in this EA (for the Eagle Peak communication site) are consistent with those standards (Non- Recreation, 8- C).

PUBLIC INVOLVEMENT

Public involvement is a key component of the NEPA process. In this process, the general public, federal, state, local agencies, tribes, and organizations are provided an opportunity to identify issues and concerns regarding the potential effects of the proposed action. The opportunity to provide this input is called "scoping."

Purpose and Need

The formal public scoping period for the Parkwide Communication Data Network Environmental Assessment began on November 12, 2008 and ran until December 26, 2008. A public open house took place during the Public Scoping Period on December 3, 2008, from 1:00 to 4:00 pm in the Valley Visitor Center Auditorium in Yosemite Valley. The Park admission fee was waived for those attending. Comments were accepted at public meetings, by mail, fax, email, and through the Planning, Environment, and Public Comment (PEPC) commenting system.

In accordance with the 1999 PA, NHPA Section 106 public involvement was coordinated with the public scoping discussed above. Pursuant to the 1999 PA, the park has responsibility to review projects of this nature and magnitude in-house with no additional consultation with SHPO or ACHP. The NHPA Section 106 review process is documented in this environmental assessment, and will be submitted to SHPO and ACHP as part of an annual report, and attached to the FONSI.

During the scoping period, the NPS held discussions, briefings, and field visits with: tribes, park staff, other agencies, and interested members of the public. The park received 9 letters during the public scoping period. Comments received included:

- Request to not expand the existing telecommunication tower at Mount Hoffman
- Requests to not facilitate expanded cell phone coverage in Yosemite back country Wilderness
- Concerns regarding effects to scenic viewsheds, and request to minimize footprint of facility, limit tower height to minimum necessary to implement microwave system, and limit microwave dish size to four feet in diameter
- Requests to include additional elements in the upgrade, including removal unburied sections of communication cable between Yosemite Valley and Tuolumne Meadows, and improvements at White Wolf, Lake Eleanor, and Cherry Lake
- Support for project, as it will allow Park staff to take additional measures necessary to resolve the unregulated day use problem that has impacted both resources and visitor experience, improving communications for Park staff (internally and with outside of the Park)
- Requests to provide for Wi-Fi and more cellular coverage in the Park

Issues and Concerns Addressed in this Document:

- Concern regarding impacts to scenic viewsheds
- Anticipated beneficial effects to park operations and visitor experience

Issues and Concerns NOT addressed in this Document:

- Concern regarding cellular communications in the park
- Requests for improvements at White Wolf, Lake Eleanor, and Cherry Lake, and removal of communication cable between Yosemite Valley and Tuolumne Meadows

Information on the preparation of an EA has been presented at Open Houses in the Yosemite Valley during public scoping and development of the EA. Public comments received during scoping have helped shape the alternatives presented. A public meeting to distribute copies of the EA, review the alternatives, and respond to questions will be held in Mariposa County Government Chambers on January 13, 2010 from 5:30- 7:30 pm. A press release distributed to a wide variety of news media, direct mailing, placement on the park's website and announcements

in Yosemite Planning Update Newsletters, as well as in local public libraries will announce the availability of the EA.

IMPACT TOPICS SELECTED FOR DETAILED ANALYSIS

During scoping, the NPS invited the public to submit ideas and concerns pertaining to the proposed CDN project. The NPS also conducted internal scoping to elicit comments from Yosemite National Park staff and associated American Indian tribes regarding potential concerns. During the public scoping comment period nine responses were received through written correspondence. These comments were systematically reviewed and categorized. Consultation with American Indian Tribes was conducted by Yosemite National Park staff and is documented in Chapter 5. Comments and concerns were incorporated into the Historic Properties and Traditional Cultural Practices Sections in Chapter 3.

The following impact topics were identified during the public scoping process and by staff of Yosemite National Park. These topics are described and possible impacts to them are addressed in the analysis presented in Chapter 3: Affected Environment and Environmental Consequences.

Natural Resources

- Geology, Geologic Hazards, and Soils
- Hydrology, Floodplains, and Water Quality
- Wetlands
- Vegetation
- Wildlife
- Rare, Threatened, and Endangered Species
- Night Sky
- Scenic Resources
- Air Quality
- Soundscape
- Energy
- Wilderness

Socio-cultural Resources

- Historic Properties
 - Archeology
 - Historic Structures, Buildings, and Cultural Landscapes
 - American Indian Traditional Cultural Properties
- American Indian Traditional Cultural Practices
- Visitor Experience and Recreation
- Park Operations
- Transportation
- Land Use

IMPACT TOPICS DISMISSED FROM FURTHER ANALYSIS

The following impact topics were considered during scoping, but dismissed from further analysis, because these resources were thought to be unaffected or negligibly affected by the various alternatives given the scale or location of the project.

- Environmental Justice
- Museum Collections
- Prime and Unique Farmlands
- Socioeconomics

CHAPTER 2: ALTERNATIVES

INTRODUCTION

This chapter describes in detail the various alternatives proposed for the Yosemite Communications Data Network (CDN) project. The comprehensive alternatives development process, which involved public and National Park Service (NPS) staff input over a one year period, is also discussed and presents the rationale for ultimately choosing the alternatives retained for further analysis in this environmental assessment (EA).

Several categories of alternatives were considered; mechanisms for the communication system, locations throughout the park which provided necessary connectivity, in a general area (i.e., Hetch Hetchy area) and options within a determined facility site (i.e., new tower or co- location).

Alternatives Refinement

On July 9, 2009, the Park issued an invitation to the public and park staff to participate in a tour of the proposed facility sites on July 21, 22, and 23, 2009. The tour focused on proposed facility sites Tuolumne Meadows/May Lake Junction, Hetch Hetchy Entrance Station, and Yosemite Valley. Discussion during the tours included how to best deliver service at these sites, discuss design options, issues, and concerns. Field visits to facility site locations were coordinated with American Indian tribes on May 22, June 10, and June 11, 2009.

On July 28 and 29, 2009, NPS staff (representing a broad range of disciplines) participated in an internal scoping, Value Analysis/Choose by Advantage (VA/CBA) workshop. Using an established set of criteria, the group evaluated site suitability and ranked the proposed facility sites as to whether they would be reasonable, feasible, and meet the project purpose and need. The overall goal of the CBA was to achieve the purpose of the park by ensuring safe, reliable and efficient communications which are critical to protection of resources, staff, visitors and operational functionality. The VA/CBA examined options for delivering service to Yosemite Valley, Hetch Hetchy area, and Tuolumne Meadows. Options were evaluated and ranked using two factors: safe, reliable, efficient communications system with expansion capacity, and; protect natural, cultural, historic and wilderness values and maximize visitor experience. The highest ranked alternatives included a facility site at Yosemite Valley, Hetch Hetchy Entrance Station (Mather Ranger Station), and May Lake Junction.

The process to select the NPS- Preferred Alternative included completion of a VA/CBA Workshop, consultation with the NPS management team, and further field review of proposed sites. Park staff presented the outcome of the workshop, and their recommendation to the Yosemite National Park management team and moved forward with the inclusion of these preferred facility sites in the overall proposed network.

Alternative 1, the No Action Alternative, represents no change in the current location and elements of existing communications facilities. Under Alternative 2 (agency- preferred), existing facility sites would be improved at the following locations: Crane Flat (CRN) helicopter base, Eagle Peak Repeater (EGP), El Portal (ELP), Henness Ridge (HEN), Mount Bullion (MTB), Sentinel Dome (SNT), Sentinel Reflector (SNTReflector), Turtleback Dome (TRT), Wawona

Alternatives

Point (WWP), and Yosemite Valley (VLY). New facility sites would be constructed at the following locations: Big Oak Flat (Rockefeller) Repeater (BOFR), Hetch Hetchy Entrance Station (HHE), Hodgdon Meadow Maintenance Complex (HMC), May Lake Junction (MLJ), and Wawona (WAW). Under Alternative 3, facilities would be constructed at each of the locations listed above, but with variations in the specific placement of equipment at the following sites: Crane Flat, Eagle Peak, and Hetch Hetchy Entrance facility sites, and Yosemite Valley. At Yosemite Valley, under a cooperative agreement, park equipment would be added to the existing AT&T tower, extending its height and adding a microwave dish.

FACILITIES COMPRISING THE PROPOSED ACTION/PREFERRED ALTERNATIVE

The project consists of fifteen facility sites (refer to Figure 2- 1). Ten of these sites have existing facilities, including towers, equipment shelters, utilities, or generators. There are five proposed additional communication sites, where new facilities would be developed. These include: BOFR, HHE, HMC, MLJ, and WAW. The proposed communications network map is shown in Figure 2- 2.

Proposed Components of New Facility Sites

The following section includes a brief description of the proposed facilities, access, utility connections, trenching, and related actions (i.e., grading and foundations, tree trimming or removal) for each new site. Any tree removal, trimming, and maintenance would be conducted in consultation with the Park Forester and Park Biologist.

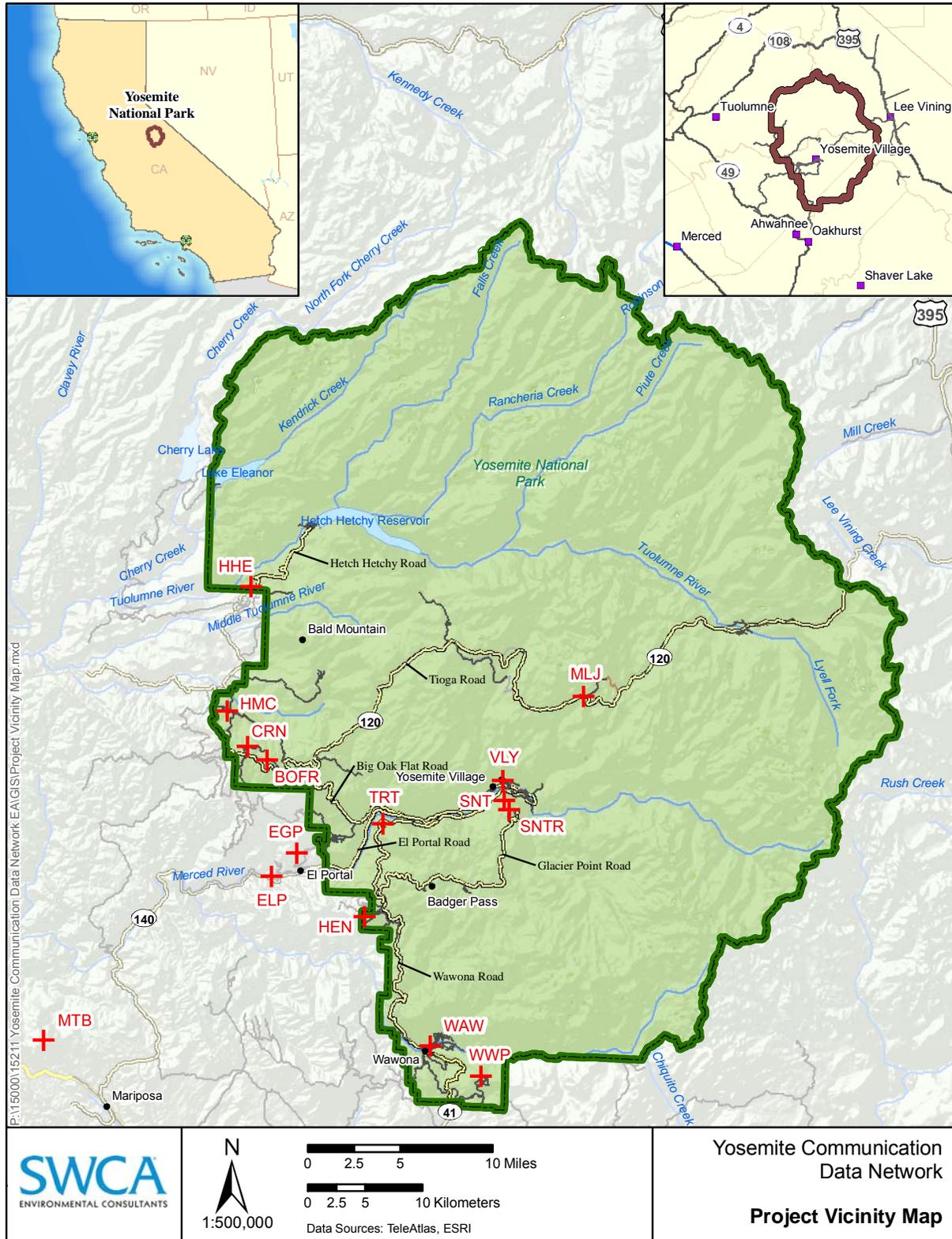
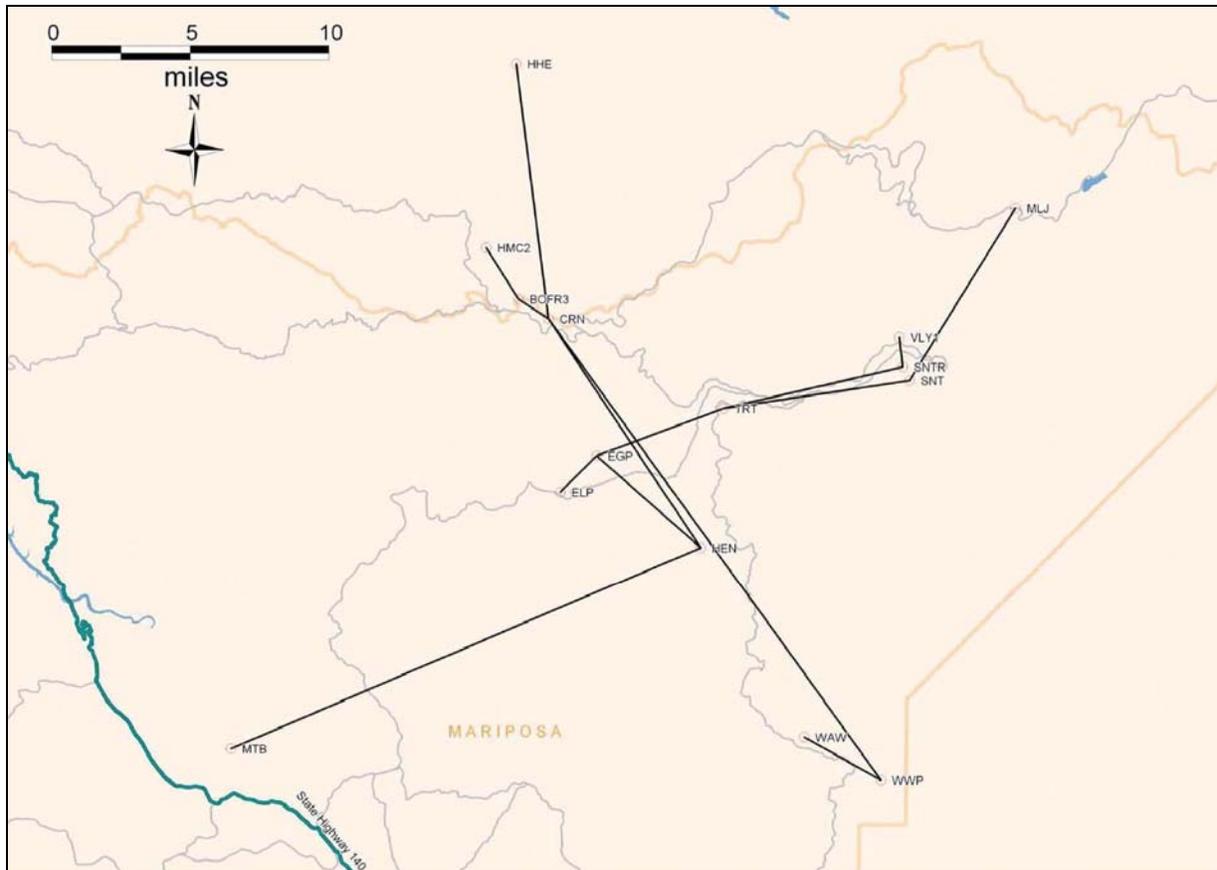


Figure 2-1. Project Vicinity Map



Source: Black and Veatch 2009

Figure 2-2. Communication Network Map

Big Oak Flat (Rockefeller Grove) Repeater (BOFR)

This passive site would include the construction of a new 85-foot tall, three-legged, self-support steel tower, which would support two six-foot antennas and associated feedline on the tower to connect the antennas. The purpose of this site is to provide microwave connectivity between the HMC and CRN sites. Without this repeater site, connectivity between HMC and CRN would not be feasible due to microwave signal blockage from terrain. The location of this site is in an undeveloped forested area, with heavy accumulations of dead and down woody debris. Installation at this site would entail creating a construction access route, extending approximately 125 feet northward off of Rockefeller Grove Road (Figure 2-3), grading, and foundation construction. This site is not within or adjacent to designated Wilderness. It would include removal or trimming and maintenance of approximately three trees (mixed conifer).

Hetch Hetchy Entrance (HHE)

The facility site is located near the Hetch Hetchy entrance station, southeast of the NPS residential area, approximately 100 feet north of Hetch Hetchy Road (refer to Figure 2-6). Proposed facilities include a 100-foot tall, three-legged self-support tower with one six-foot diameter microwave dish, and a radio cabinet, and associated grading and foundation

construction. A new power run would be required; the run would extend approximately 1,200 feet to the northwest to connect with an existing medium voltage line near the Mather Ranger Station. This facility would allow for direct microwave connection to CRN. The site is in an undeveloped area, and is not located in designated Wilderness. The site is accessible via paved roads, and access is generally available during all but the most severe weather conditions. During operation of the facility site, tree trimming within Wilderness may be required to maintain the microwave path. All vegetation management and tree trimming conducted in Wilderness would be conducted using hand tools, pursuant to the *Minimum Requirement Decision Process for Administrative Actions in Wilderness* (Appendix D).

Hodgdon Meadow Maintenance Complex (HMC)

This facility site is located within the Hodgdon Meadow Maintenance Complex near the Hodgdon Meadow Campground (refer to Figure 2- 7). The existing maintenance complex building is a non- historic building approximately 15 feet tall, and 50 × 140 feet in size. Proposed improvements include a six- foot diameter microwave antenna on the northeast side of the building using an angle- mount attached to the side of the building to place the antenna centerline slightly below the roofline. An existing 8 × 8- foot storage room, located below the proposed mounting location, would be used as an equipment room. This site would connect to CRN via MDR- 8708E- 50 using BOFR as a passive repeater. Implementation of this facility would require approximately 4,500 feet of trenched fiber cable from the site to the Big Oak Flat entrance station, within or immediately adjacent to Tuolumne Grove Road. The trenched fiber would also provide connectivity to the Hodgdon Meadow Campground entrance station, located approximately 2,000 feet northwest of the maintenance complex. Existing grid power within the building and an existing on- site generator would provide power. One approximately 70- foot pine tree would be removed. The site is accessible via paved roads, and access should be available during all but the most severe weather conditions.

May Lake Junction (MLJ)

This new communication facility site is located on the northern side of Tioga Road, approximately 2.5 miles northwest of Olmstead Point, at the intersection of the May Lake spur road (Old Tioga Road) and Tioga Road (refer to Figure 2- 8). Visitor services at the intersection include overnight parking for the May Lake/Snow Creek trail, bear boxes, and an interpretive display. No utilities currently exist at the site. The new site would include a 25- foot tall, three- leg, self- support tower with a four- foot diameter microwave antenna, a radio and equipment cabinet, photo voltaic panel or LP fuel tank, and associated grading and foundation construction. This site would provide a microwave connection to SNT and Tuolumne Meadows, which would eliminate the need to place additional equipment within Wilderness at Mount Hoffman. A microwave connection from MLJ to SNT would be constructed, and an approximately 12- mile trenched fiber connection would connect MLJ and TLM. The fiber trench would be constructed within the road prism of Tioga Road, extending from the facility site to the Tuolumne Meadows Visitors Center. The trench would be approximately one foot wide by 18 inches deep. No trees would be removed or trimmed for construction of the facility; however, during operation, tree trimming within Wilderness may be required to maintain the microwave path. All vegetation management and tree trimming conducted in Wilderness would be conducted using hand tools, pursuant to the *Minimum Requirement Decision Process for Administrative Actions in Wilderness* (Appendix D). The site is accessible via Tioga Road, and May Lake Junction during warmer months; heavy snowfall limits access.

Wawona (WAW)

Facilities include a 25-foot, three-leg, self-support tower, four-foot diameter microwave antenna, radio cabinet, and grading and foundation construction adjacent to an existing prescribed fire trailer within a maintenance complex. This site would be connected to WWP using a MDR- 8708E- 50 microwave radio link. Grid power is available; a back-up generator is located 350 feet to the south. This site is a developed area (existing NPS maintenance facility) located off Wawona Road, in the Merced Wild and Scenic River Corridor (refer to Figure 2- 12). One pine tree will be need to removed or trimmed and maintained. The site is accessible via paved roads, and access is generally available during all but the most severe weather conditions.

Proposed Components of Existing Facility Sites to Be Improved

The following section includes a brief description of proposed facilities, access, and related actions (i.e., grading/trenching, support structures, equipment shelter/vault, tree trimming or removal) for each existing site. Any tree removal, trimming, and maintenance would be conducted in consultation with the Park Forester and Park Biologist.

Crane Flat (CRN)

Existing facilities include two 25-foot wood poles and an equipment vault located at the Crane Flat Lookout Station (refer to Figure 2- 3). The site is developed, and includes the historic Crane Flat Fire Lookout, helicopter office, resource monitoring equipment and stations, and paved access, parking, and helicopter pad. Improvements include replacement of the two existing poles with a 65-foot, four-leg, self-support tower, replacement of existing vault with 10 × 20-foot vault, and associated grading and foundation construction. The tower would support two eight-foot diameter dual polarized dishes, two six-foot diameter microwave dish antennas, and one four-foot diameter microwave dish. This site would be connected via microwave radio: to/from HMC via BOFR; to/from HHE; to/from HEN; and to/from WWP. Grid power is available onsite, and generator power is located approximately 4,500 feet to the east. The site is accessible via marginally-improved roads, and access may be difficult during inclement weather.

Eagle Peak Repeater (EGP)

The existing passive facility consists of an existing AT&T repeater tower located on Eagle Peak, approximately one mile north of El Portal in the Stanislaus National Forest (refer to Figure 2- 4). Four to six 10-foot diameter microwave dishes are proposed to be placed on the existing AT&T tower, which would serve as a microwave radio passive repeater for the following paths: HEN-EGP- ELP and TRT- EGP- ELP. A photo-voltaic panel would be constructed to provide power. The site is accessible via rough-graded dirt roads, and access may be difficult during inclement weather. This site may require use of a helicopter to transport construction equipment and materials. Three conifer trees located on an intervening ridge between the EGP and ELP facility sites would be removed or trimmed and maintained

El Portal (ELP)

This facility is located within the El Portal Administrative Area, east of Highway 140 and Foresta Road in the community of El Portal (refer to Figure 2- 4). The facility is within the Merced Wild and Scenic River corridor. Proposed improvements include increasing the height of the existing

60- foot, three- leg, self- support tower to 100 feet, and a ten- foot diameter dual polarized microwave dish. A connection between a main generator and existing equipment vault would be installed. This site would be connected via microwave radio to the TRT and HEN sites via EGP. The site is accessible via paved roads, and access is generally available during all but the most severe weather conditions.

Hennes Ridge (HEN)

The existing facility is located on Hennes Ridge, approximately 0.3 mile south of Hennes Ridge Road and the Yosemite West residential area (refer to Figure 2- 5). Existing facilities include a 70- foot tall guyed communications tower and equipment vault. Proposed improvements include replacement of the tower with an 85- foot, three- leg self- support tower, three microwave antennas four, six, and twelve feet in diameter, and associated grading and foundation construction. The existing equipment vault would be used. The new facility would allow for the following microwave connections: to/from CRN, to/from ELP via EGP, and to/from MTB. Up to four pine trees would be removed or trimmed and maintained. The site is accessible via an existing gated dirt road, and access may be difficult during inclement weather.

Mt. Bullion (MTB)

The existing 120- foot tall self- support tower and equipment vault is located on a peak approximately five miles north of Mariposa, within lands administered by the state (refer to Figure 2- 9) The facility is located approximately 1.7 miles north of Highway 49. The state facility is used by NPS to provide a microwave connection to HEN. The existing grid antenna would be replaced with a six- foot diameter, high- performance parabolic antenna. The site is accessible via marginally- improved roads, and access may be difficult during inclement weather. No ground disturbance or tree trimming is proposed.

Sentinel Dome (SNT)

The SNT compound facility is located approximately 1,700 feet northeast of the peak of Sentinel Dome (refer to Figure 2- 11). The compound includes a 40- foot wood pole used by NPS and AT&T, a 40- foot wood pole occupied by Golden State Cellular, an equipment shelter, and associated equipment. The NPS/AT&T pole would be removed, and replaced with a 40- foot tall, three- leg, self- support tower and two four- foot diameter microwave antennas. The facility is proposed to support microwave antennas to provide connections to/from HOF and TRT. A 12 × 24- foot equipment vault is proposed. The site is accessible via an existing dirt road, which also serves as a portion of the Sentinel Dome trail. Access may be difficult during inclement weather. Ground disturbance includes grading and foundation construction. Two pine trees would be removed or trimmed and maintained. During operation of the facility site, tree trimming within Wilderness may be required to maintain the microwave path. All vegetation management and tree trimming conducted in Wilderness would be conducted using hand tools, pursuant to the *Minimum Requirement Decision Process for Administrative Actions in Wilderness* (Appendix D).

Sentinel Reflector (SNTReflector)

The existing facility is a “billboard”- type passive reflector located approximately one mile south of Yosemite Village, within Wilderness (refer to Figure 2- 11). The reflector is currently used by AT&T to enable a microwave connection between TRT and VLY 1. Use of the existing reflector

Alternatives

is proposed, and no improvements are proposed. Access is provided by a foot trail, and is restricted by inclement weather.

Turtleback Dome (TRT)

This facility is located near the peak of Turtleback Dome, approximately 0.25 mile southeast of Wawona Road (refer to Figure 2- 10). The existing facility includes a 100- foot tall tower and equipment vault. The existing tower would be removed and replaced by an 80- foot tall, four- leg self- support tower. The tower would support three microwave antennas four, six, and ten feet in diameter. A 12 × 24- foot equipment vault is proposed to replace the existing vault. This site would provide the following microwave radio connections: to/from SNT, to/from VLY 1 via SNTReflector, and to/from ELP via EGP. The site is accessed by an existing park service road, and may be restricted by severe weather. Ground disturbance includes grading and foundation construction. One pine tree would be removed or trimmed and maintained.

Wawona Point (WWP)

The existing facility is located adjacent to the Wawona Point Overlook, north of the Mariposa Grove, within the Merced Wild and Scenic River Corridor (refer to Figure 2- 13). The site supports an existing 70- foot wooden pole, pole- mounted photo voltaic panel, generator, equipment vault, and roof- mounted photo- voltaic panels. The existing pole is proposed to be removed and replaced with a 85- foot tall, three- leg self- support tower and two microwave antennas, four and six feet in diameter. The existing vault would be used. The facility would provide microwave paths to WAW and CRN. Ground disturbance includes grading and foundation construction. Up to three conifers would be removed or trimmed, and maintained. During operation of the facility site, tree trimming within Wilderness may be required to maintain the microwave path. All vegetation management and tree trimming conducted in Wilderness would be conducted using hand tools, pursuant to the *Minimum Requirement Decision Process for Administrative Actions in Wilderness* (Appendix D). The site is accessed by Mariposa Grove Road, and a paved extension to the overlook. The site is accessible via paved roads during all but the most severe weather conditions.

Yosemite Valley (VLY)

This facility is located within the Yosemite Village area, within a developed park maintenance facility area (refer to Figure 2- 11). The site hosts existing communications sites operated by NPS, AT&T, and Golden State Cellular. A 25- foot tall, three- leg, self- support tower and six- foot diameter microwave antenna is proposed. A microwave radio link would be established from this site to the TRT site using SNT Reflector as a connection point. The site is accessible via paved roads during all but the most severe weather conditions. Ground disturbance includes grading and foundation construction. One pine tree would be removed or trimmed and maintained.

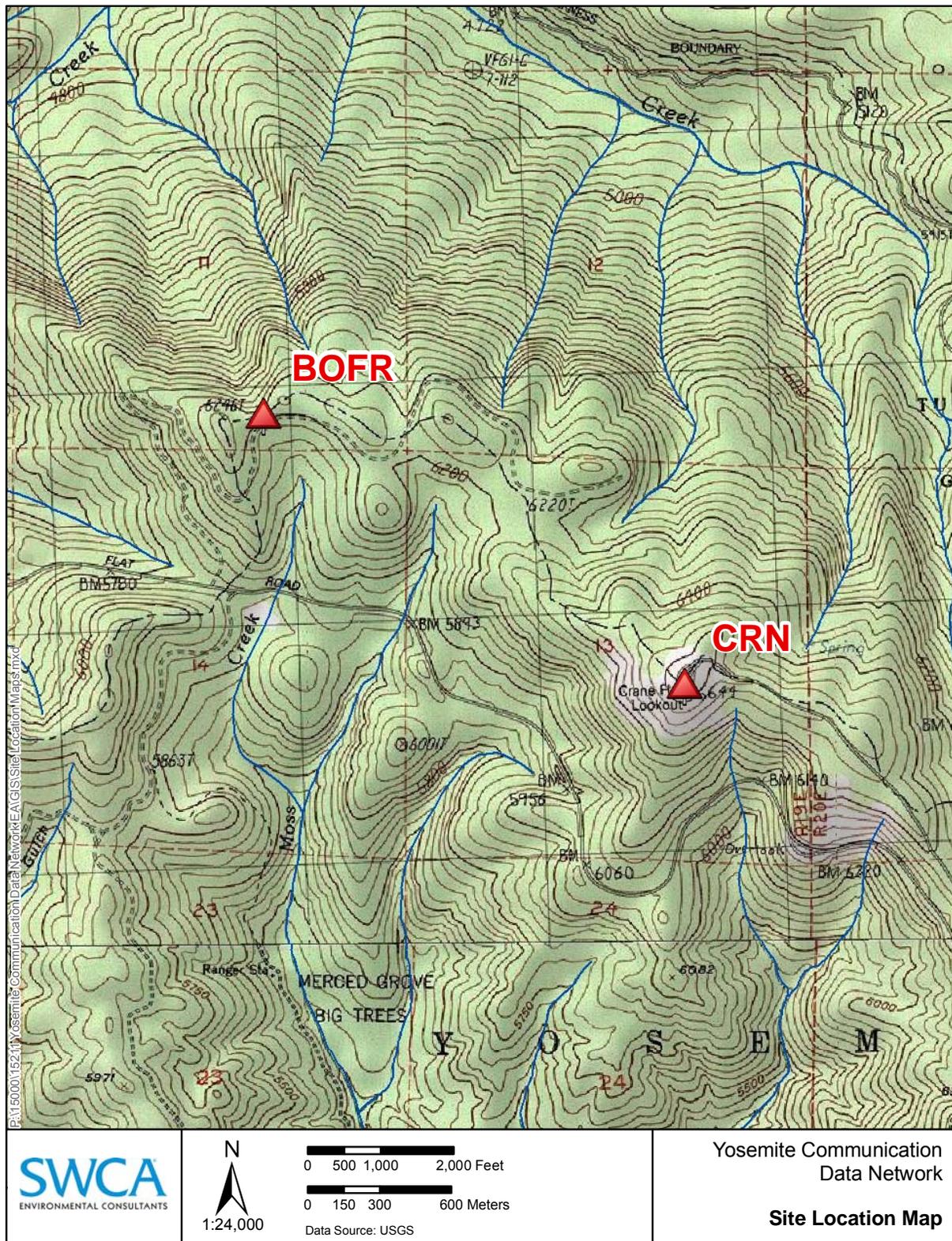


Figure 2-3. Facility Site Location Map – Big Oak Flat Repeater and Crane Flat

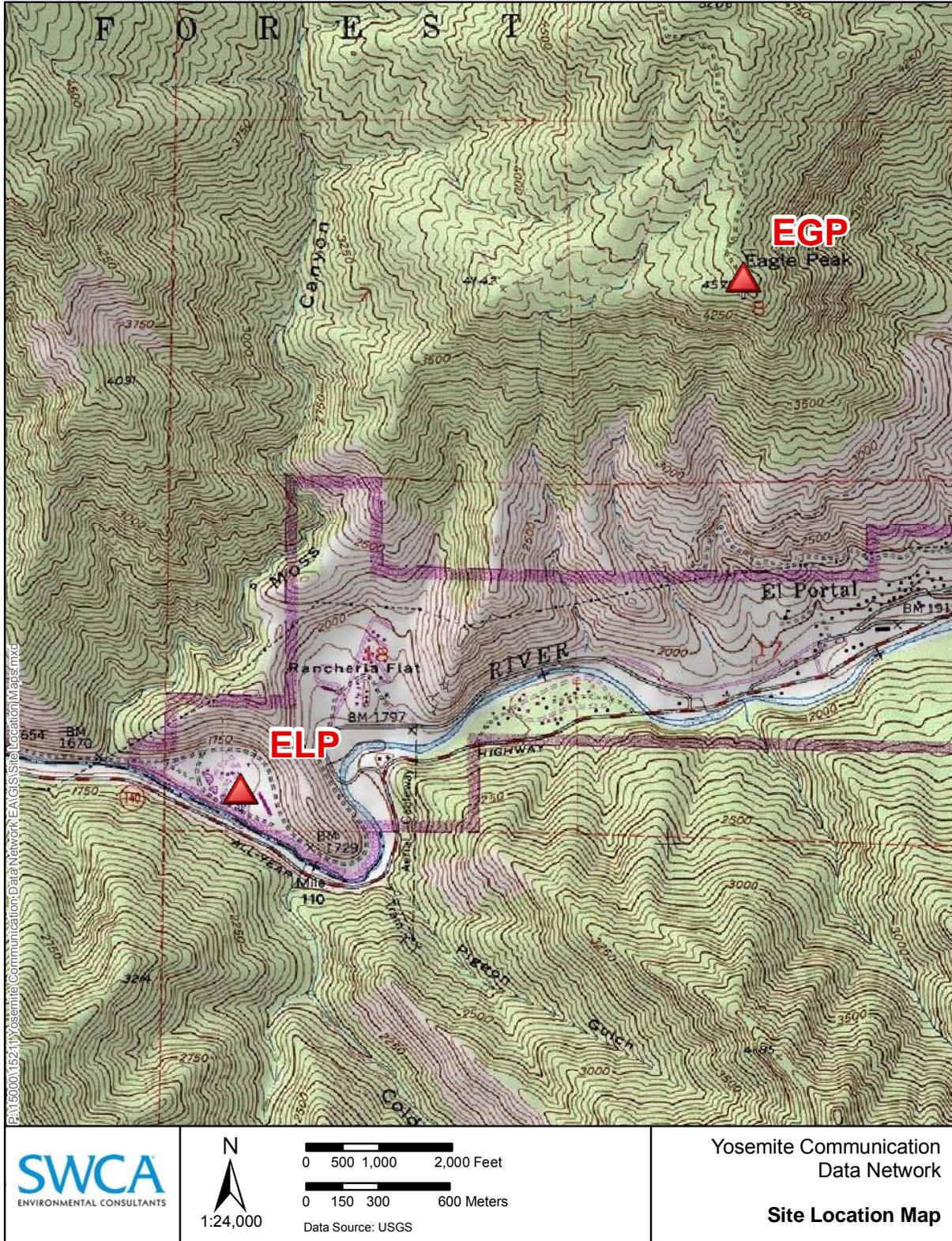


Figure 2-4. Facility Site Location Map – Eagle Peak and El Portal

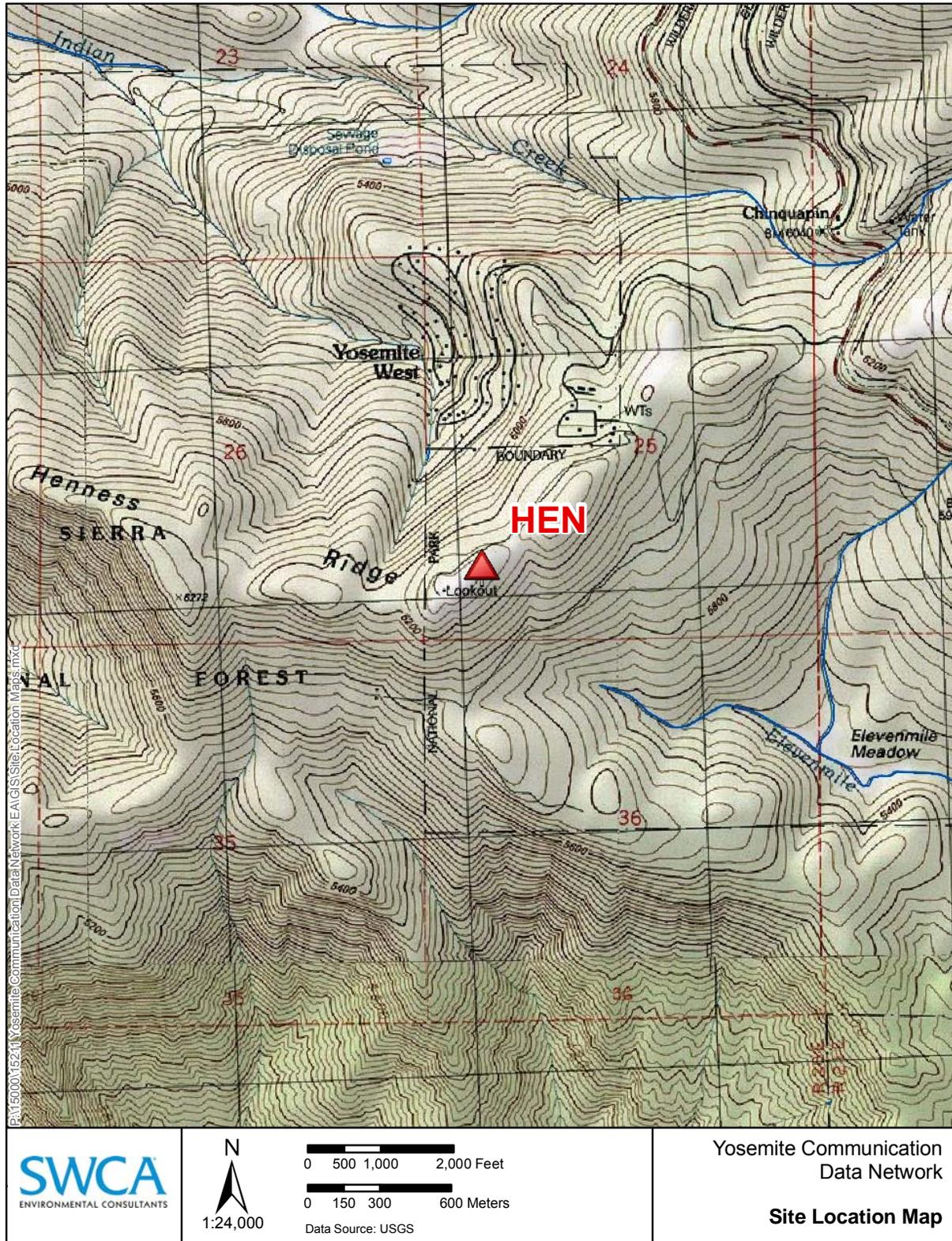


Figure 2-5. Facility Site Location Map – Henness Ridge

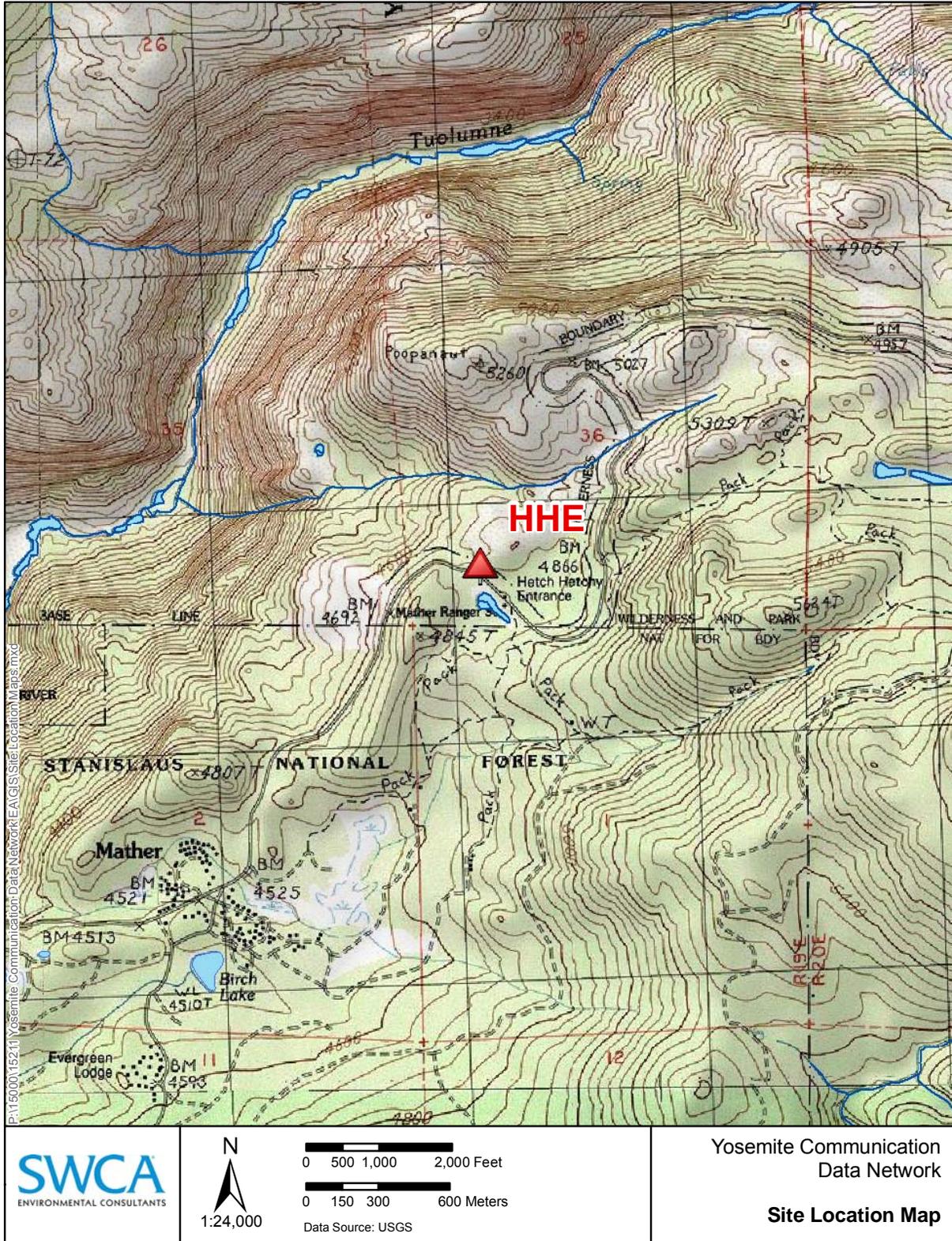


Figure 2-6. Facility Site Location Map – Hetch Hetchy Entrance

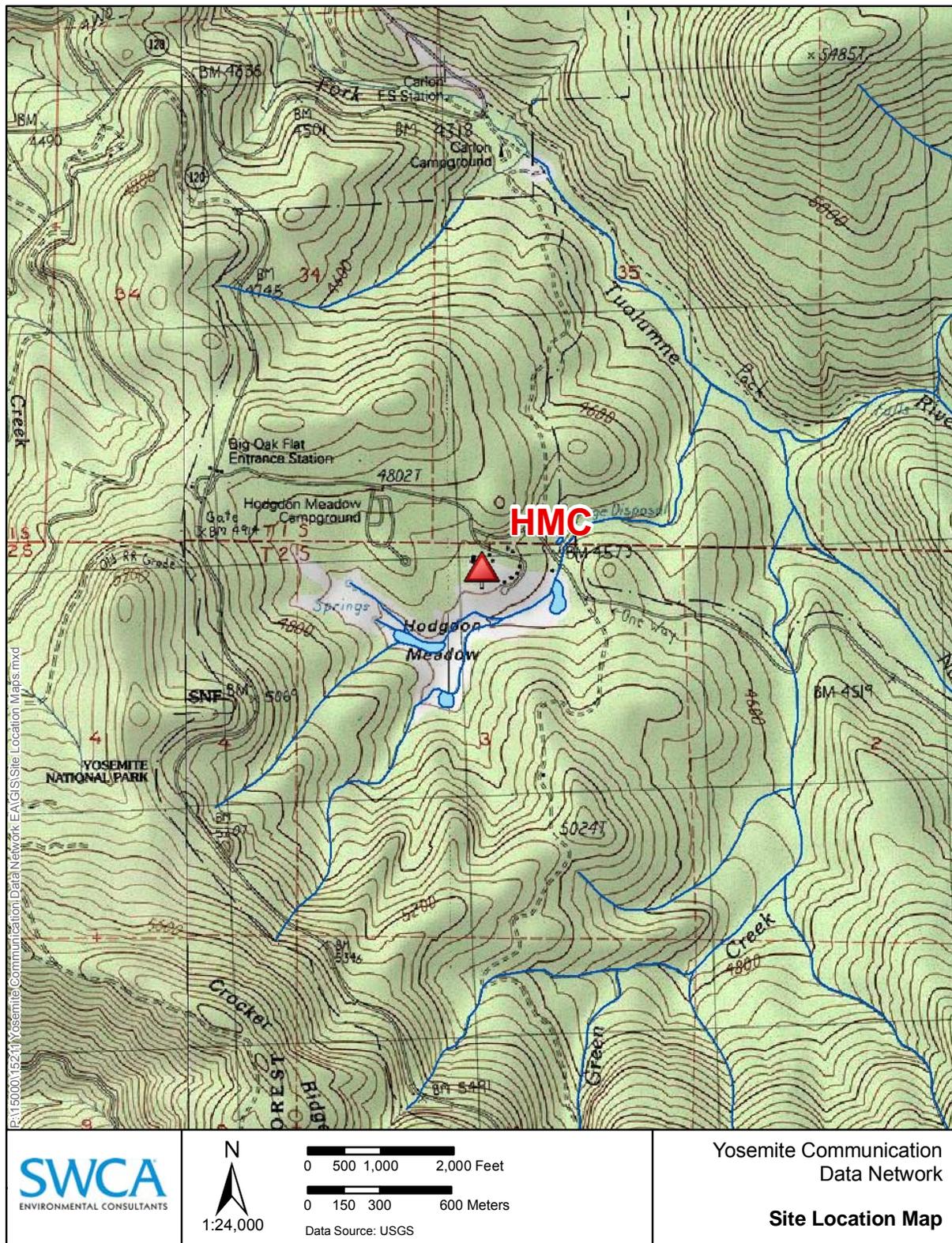


Figure 2-7. Facility Site Location Map – Hodgdon Meadow Maintenance Complex

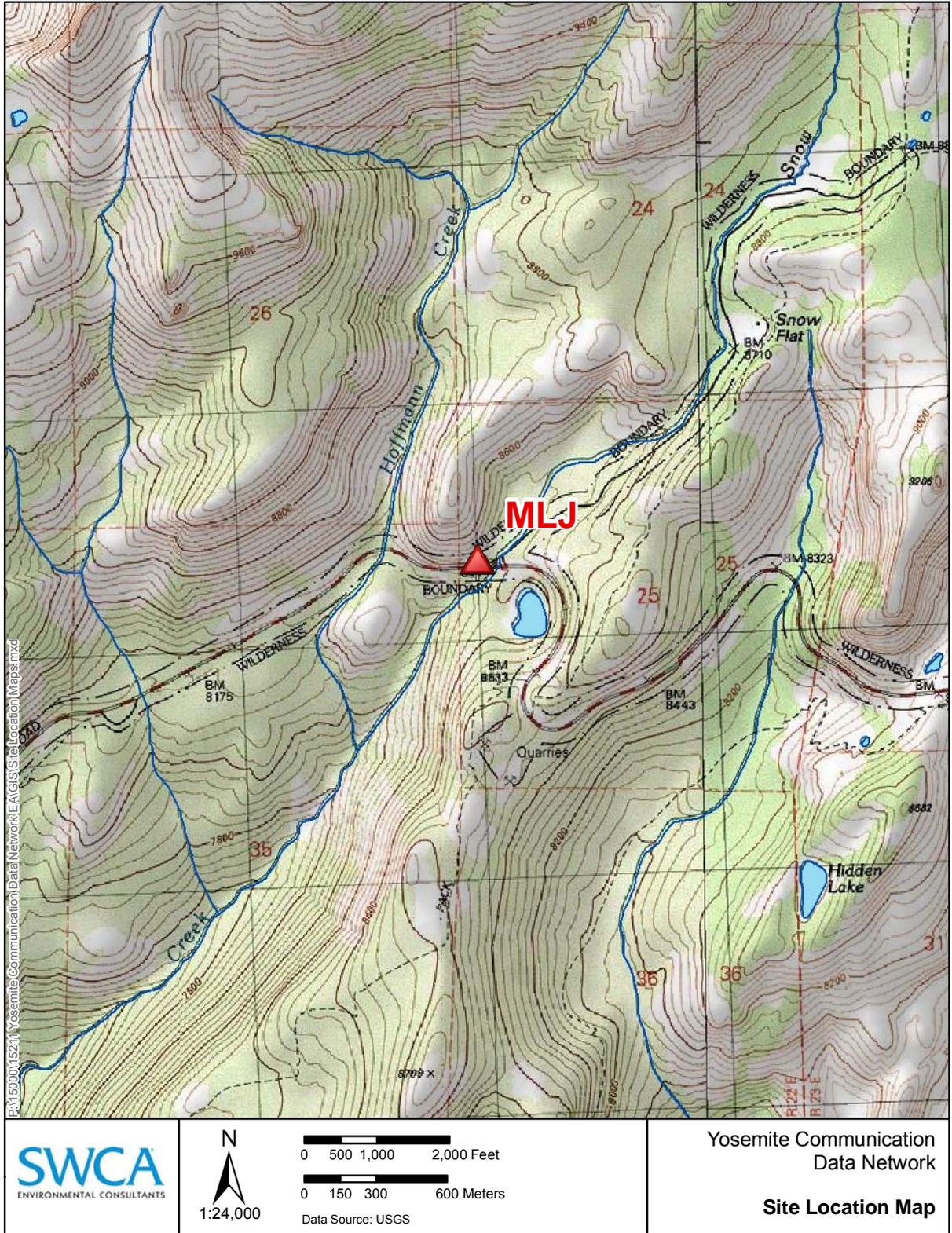


Figure 2-8. Facility Site Location Map – May Lake Junction

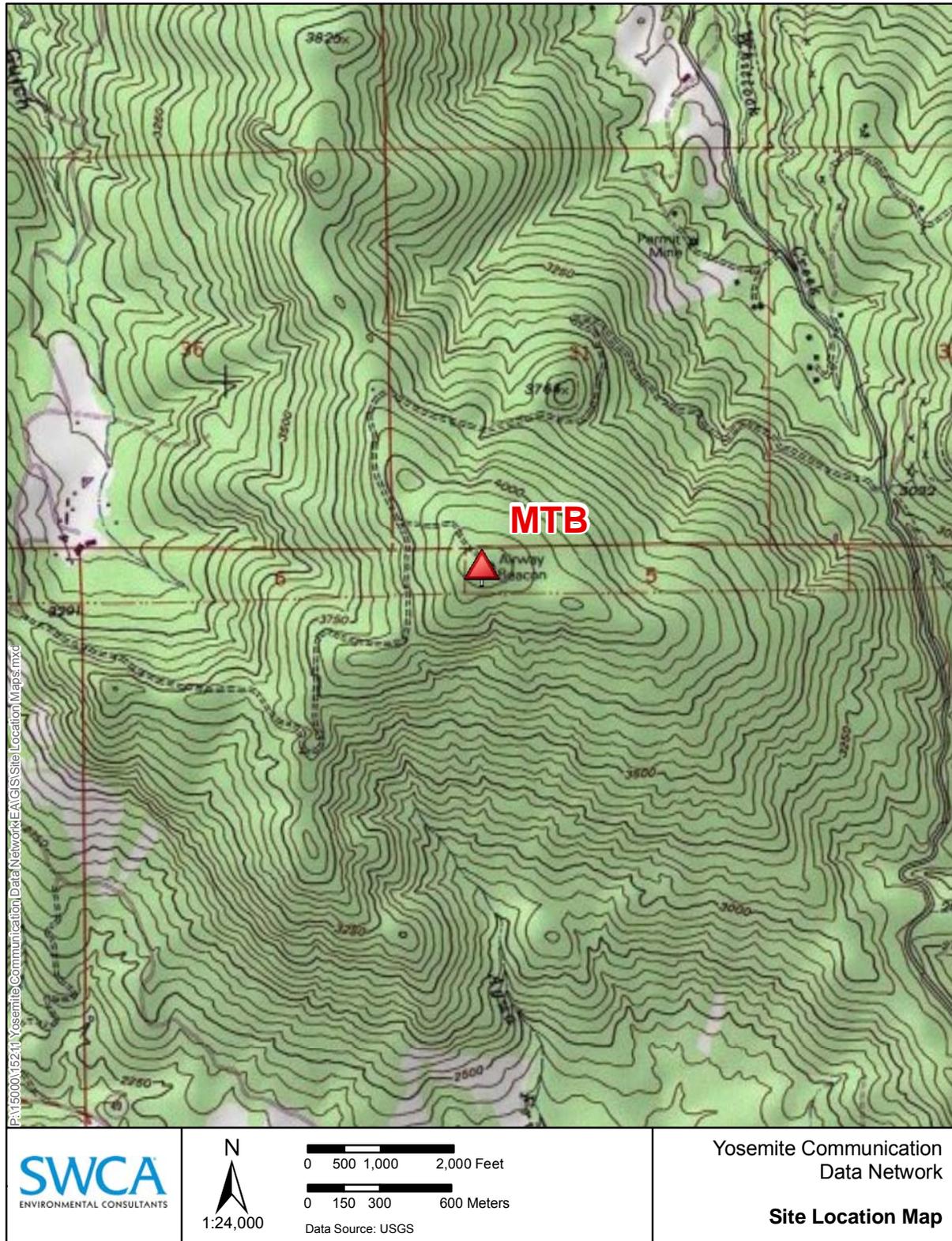


Figure 2-9. Facility Site Location Map – Mount Bullion

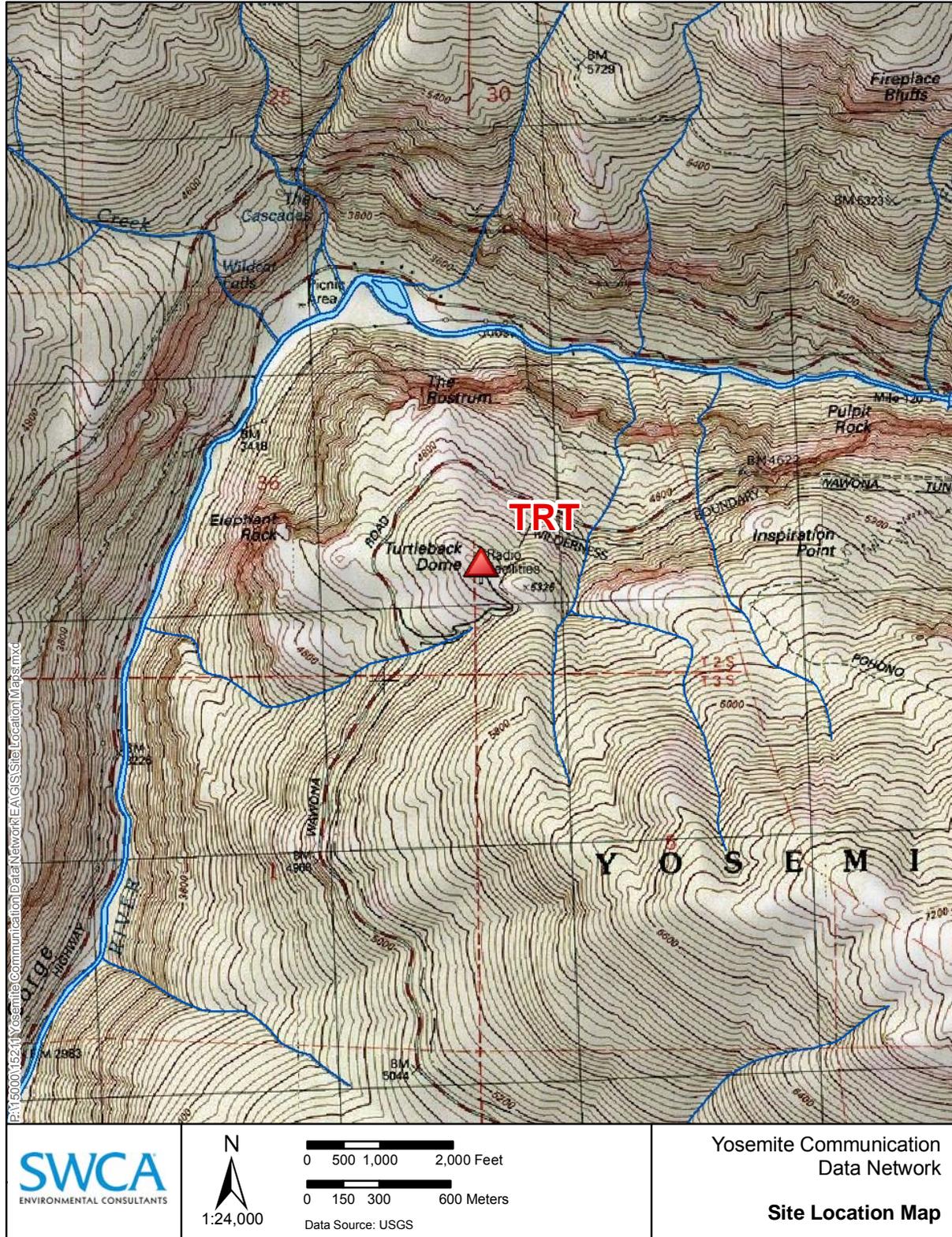


Figure 2-10. Facility Site Location Map – Turtleback Dome

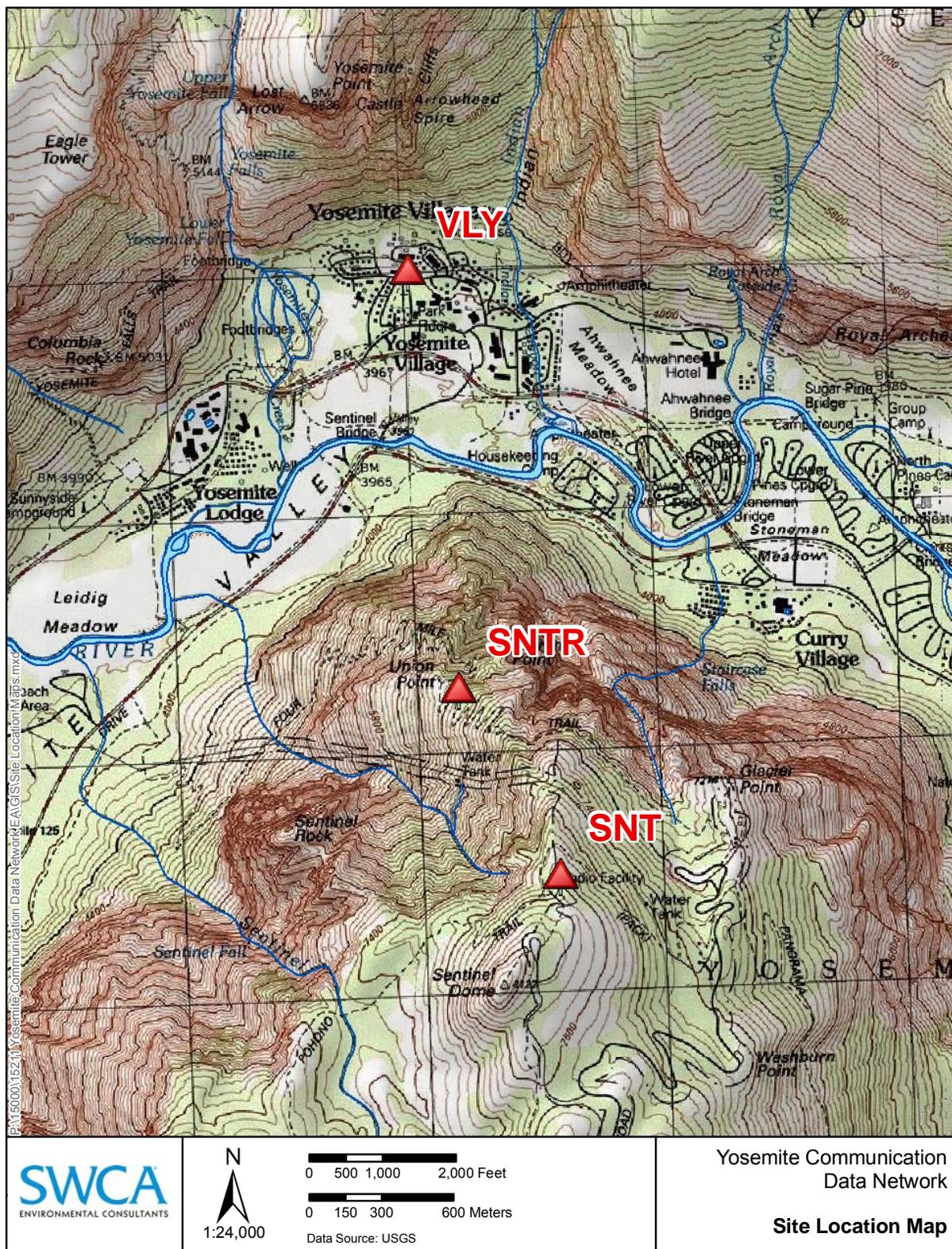


Figure 2-11. Facility Site Location Map – Yosemite Valley, Sentinel Dome, Sentinel Repeater

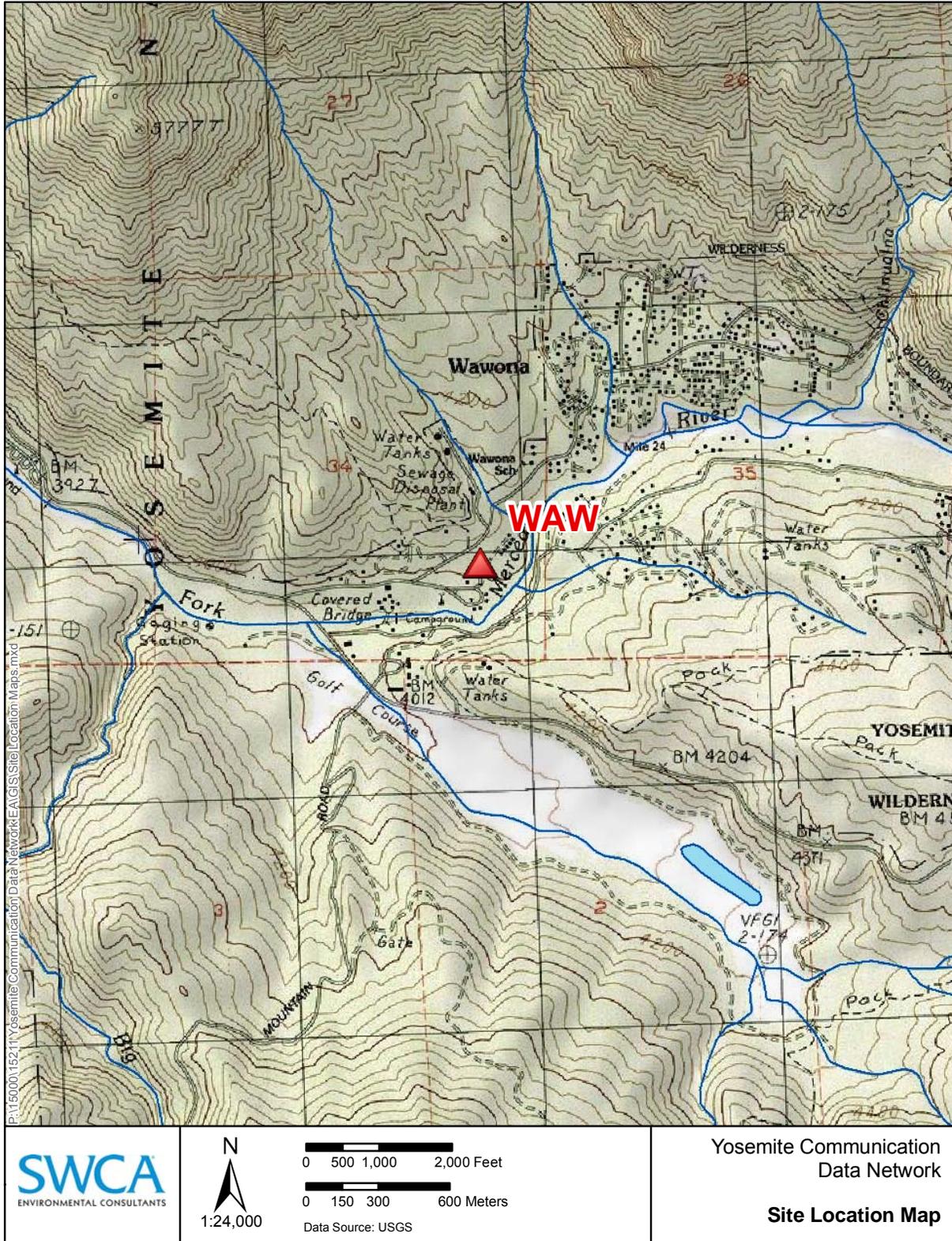


Figure 2-12. Facility Site Location Map – Wawona

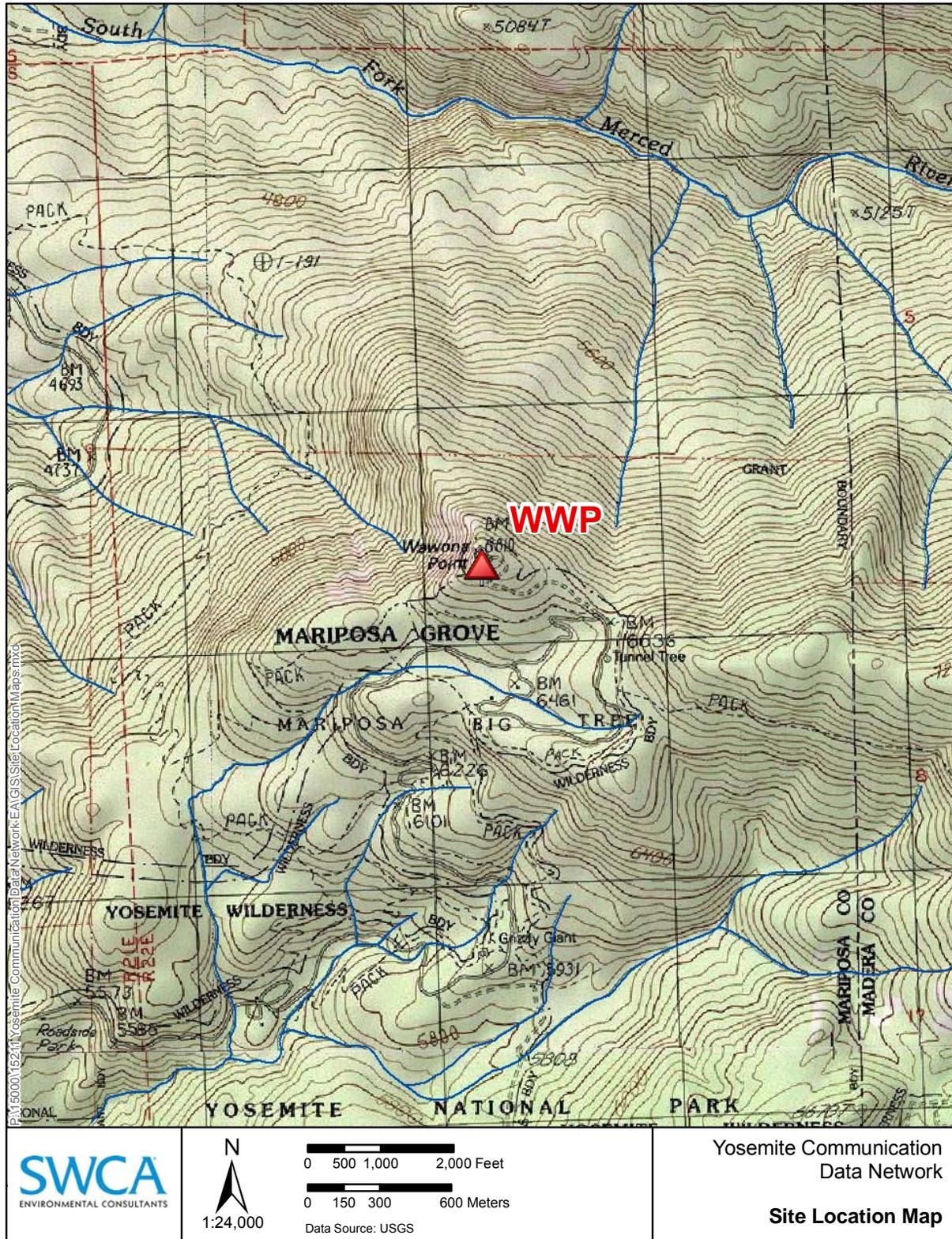


Figure 2-13. Facility Site Location Map – Wawona Point

ALTERNATIVE 1: NO ACTION

The Yosemite National Park CDN would continue to operate as it currently does under the No Action Alternative. NPS would continue with current maintenance activities at the existing facility sites. The current communications network system does not provide adequate speed, connectivity or bandwidth for efficient park operations or adequate protection of resources, visitors and staff. Bandwidth and speed is considerably below industry standards. The existing system is not reliable in storm conditions, which could contribute to delayed response in emergency conditions.

ELEMENTS COMMON TO ALL ACTION ALTERNATIVES

Construction Methods

All construction activities will be conducted according to Yosemite National Park Division 1 Specifications developed to ensure protection of park resources and values (Appendix A). Use of heavy equipment would be required during construction, including backhoes, augers, concrete trucks, cranes, excavators, front- end loaders, graders, compactors, and trenchers. Concrete would be hauled to the site. Helicopters may be required for remote sites. For sites proposing new towers, a gravity footing or rock anchor foundation is proposed. New prefabricated equipment shelters would be anchored with concrete, and placed on compacted aggregate base.

Maintenance Activities

Maintenance activities would include activities at the facility site towers and equipment shelters, and management of trees and vegetation to ensure a clear microwave path. For sites that do not require tree removal or trimming at the time of implementation, but may require trimming or removal in the future if trees grow to obstruct the microwave path, the Park Forester and Biologist will be consulted prior to commencing trimming or removal.

ALTERNATIVE 2: INSTALL COMMUNICATION DATA NETWORK MICROWAVE FACILITIES (PREFERRED)

Alternative 2 proposes the improvement of existing facility sites at the following locations: Crane Flat, Eagle Peak, El Portal, Henness Ridge, Mount Bullion, Sentinel Dome, Turtleback Dome, Wawona Point, and Yosemite Valley. The exiting facility at Sentinel Reflector would be used, but would not be improved. This alternative also includes development of new facility sites at the following locations: Big Oak Flat, Hodgdon Meadow Maintenance Complex, Hetch Hetchy Entrance Station, May Lake Junction, and Wawona. The details of the Proposed Action/Preferred Alternative are described in detail above.

ALTERNATIVE 3: INSTALL COMMUNICATION DATA NETWORK MICROWAVE FACILITIES USING ALTERNATE SITES OR EQUIPMENT

Alternative 3 proposes similar facility sites as Alternative 2, except for facility sites CRN, EGP, HHE, VLY, as described below.

Crane Flat (CRN)

Under Alternative 3, a 100- foot tower with two eight- foot diameter microwave dishes would be located approximately 130 feet southwest of the existing tower, within an undeveloped area west of a row of pine trees. The existing tower would remain. A new 210- square foot equipment shelter would be located adjacent to the Lookout Tower, and the existing shelter would remain. The site is accessible via marginally- improved roads, and access may be difficult during inclement weather. Five to ten pine trees may need to be trimmed and maintained or removed.

Eagle Peak Repeater (EGP)

Under Alternative 3, a 25- foot, three- leg, self- support tower, one ten- foot diameter dual- polarized microwave antenna, two ten- foot diameter microwave antennas, and associated grading and foundation construction are proposed. The tower would be located adjacent to the existing AT&T repeater tower. The site is accessible via rough- graded dirt roads, and access may be difficult during inclement weather. This site may require use of a helicopter to transport construction equipment and materials. Three pine trees would be removed or trimmed on an intervening ridgeline between EGP and ELP.

Hetch Hetchy Entrance (HHE)

Under Alternative 3, this facility would be located 150 feet north of the Hetch Hetchy Entrance kiosk, and approximately 100 feet north of Hetch Hetchy Road. Proposed facilities include a 100- foot tall, three- legged, self- support tower with one six- foot diameter dual polarized dish, equipment cabinet, and associated grading and foundation construction. A new power run would be required; the run would extend approximately 400 feet to the southwest, and would connect with an existing medium voltage line near the Mather Ranger Station. The site is in a developed area, outside of and adjacent to designated Wilderness. No tree removal or trimming would be needed at the time of implementation. During operation of the facility site, tree trimming within Wilderness may be required to maintain the microwave path. All vegetation management and tree trimming conducted in Wilderness would be conducted using hand tools, pursuant to the *Minimum Requirement Decision Process for Administrative Actions in Wilderness* (Appendix D). The site is accessible via paved roads, and access is generally available during all but the most severe weather conditions.

Yosemite Valley (VLY)

This facility is located within the Yosemite Village area, within a developed park maintenance facility area. The site hosts existing communications sites operated by NPS, AT&T, and Golden State Cellular. Under Alternative 3, a 15 to 20- foot extension and six- foot diameter microwave dish would be added to the existing AT&T tower. The site is accessible via paved roads during all but the most severe weather conditions.

ALTERNATIVES CONSIDERED BUT DISMISSED

The comprehensive alternatives development process, which involved public and NPS staff input over a one year period, ultimately led to the alternatives retained for further analysis in this EA. Several other site and design alternatives were considered, but dismissed from further analysis for the following reasons: (1) they were technically or economically infeasible; (2) they did not meet

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the purpose and need; (3) they conflicted with other park policies and goals; and/or (4) they would have unacceptable levels of environmental impacts. A discussion of the alternatives development process follows.

Alternatives Development Process

Initial consideration of alternatives for the communications data network are documented in a *Parkwide Communication Data Network (CDN) Feasibility Study* (Yosemite National Park Communications Branch, 2007). The public scoping period for the EA occurred between November 12 through December 26, 2008. A public open house took place on December 3, 2008 at the Valley Visitor Center Auditorium in Yosemite Valley. Public comments received during scoping have helped shape the alternatives presented. A *Preliminary Design Report* (Black & Veatch Corporation 2009) was prepared in February 2009. Key engineering and functional factors considered in the design of the proposed upgrade include safety, reliability, and the ability to build upon the system in the future. Resource-based factors considered include Wilderness, and consistency with the Park's mission and values.

2009 Choosing by Advantage Workshop

A Value Analysis and Choosing by Advantage (VA/CBA) workshop was conducted on July 28 and 29, 2009. The workshop team included Yosemite National Park staff, regional NPS staff, and NPS Denver Service Center (DSC) facilitators. The VA focused on applying value analysis principals to identify which alternative would provide the desired functions for the best value. The team recommended refinements to the alternatives to achieve the best balance of life cycle cost, performance, and durability while meeting all required functions.

The evaluation method was Choosing by Advantages (CBA). The relative importance of the advantages of each alternative was weighed and costs considered. The VA team identified two CBA factors (evaluation factors) against which the alternative actions (attributes) were measured to determine enhanced value and reduced cost. The overall goal of the CBA was to achieve the purpose of the park by ensuring safe, reliable and efficient communications which are critical to protection of resources, staff, visitors and operational functionality. The goal of the CBA for the Yosemite Communications Data Network project was to provide the rationale for the value-based decision of the selected communications infrastructure alternatives. The VA/CBA examined options for delivering service to Yosemite Valley, Hetch Hetchy area, and Tuolumne Meadows. Options were evaluated and ranked using two factors (see Tables 2- 1, 2- 2, and 2- 3). These two factors were:

Factor 1: Safe, reliable, efficient communications system with expansion capacity:

- Performance
- Reliability
- Safety
- Minimum Tool/Wilderness
- Accessibility for Maintenance

Factor 2: Protect natural, cultural, historic and wilderness values and maximize visitor experience:

- Natural Resources
- Wilderness
- Cultural and Historic Resources
- Scenic Values
- Visitor Experience

Of the 13 site options evaluated during the CBA workshop, ten alternative locations were either dismissed during the CBA workshop or received comparably low scores. Alternatives and options considered in the VA/CBA included the following:

Yosemite Valley

Yosemite Valley NPS communications are provided by an AT&T microwave connection from a dish near the AT&T building in the to a billboard reflector high on the valley wall. This facility is located within the Yosemite Village area, and hosts existing communications sites operated by NPS, AT&T, and Golden State Cellular. The existing billboard reflector is located in a designated Wilderness area.

Option 1 (No Action): Communications service would continue to be provided as above. The level of service in this area is not as good as El Portal and bandwidth does not meet industry standards.

Option 2: This option entails co-locating equipment with the existing equipment at the Yosemite Village site noted above. A compound including a 10 to 15- foot tall antenna support pole attached to a new equipment vault is proposed. A microwave radio link would be established from this site to the Turtleback Dome (TRT) site using the Sentinel Reflector as a connection point. The site is accessible via paved roads during all but the most severe weather conditions.

Option 3: This option includes removal of an existing 60- foot tall wood pole and construction of a 100- foot tall self- support tower. A 16 by 30- foot equipment vault would house NPS and private providers' equipment. This site would require additional equipment near the billboard reflector on the Valley wall. Based on the determination that the existing reflector is in Wilderness, this options was dismissed.

Hetch- Hetchy Entrance Station

Currently communications are provided through copper cable which extends from El Portal to Hetch Hetchy. Although originally a pressurized air- core cable, the seals have been compromised and the cable contains water. This proved problematic earlier this year when a lightning strike near the cable propagated through the cable and melted cable splices in several places. This resulted in several weeks of without communications service at Hetch Hetchy. It should be noted that this site is responsible for monitoring of the Hetch Hetchy dam and current bandwidth and speeds do not allow for remote video monitoring.

Option 1 (No Action): Existing communication continues through copper cable. System capacity is not adequate for remote video monitoring of Hetch Hetchy dam and storm outages continue to interrupt service.

Option 2: The facility site is an existing park entrance located on Hetch Hetchy Road, approximately one mile north of the town of Mather. Proposed facilities include a tower and equipment vault adjacent to the existing ranger station garage, or north of Hetch Hetchy Road. A new power run would be required; the run would extend approximately 100 feet to the north of the proposed vault and would connect with an existing medium voltage line. This facility would allow for direct microwave connection to CRN. The site is in a developed area, not located in or adjacent to designated Wilderness. The ranger station is considered a historic landscape, but does not have official designation. Limited number of conifer trees may be trimmed or removed. The site is accessible via paved roads, and access is generally available during all but the most severe weather conditions. Option 2A would use 7/8 GHz radios and require a 105' tower and a 6' dish. Option 2B would use a 4.5 GHz radio which does not require direct line of sight. This would allow for a 25' tower and an 8' dish (both of which would largely be hidden by the ranger station).

Option 3: This option places the tower in the existing utility corridor along the Hetch Hetchy entrance road. There are existing power and telephone lines and poles in this corridor. This site is near the location of bedrock mortars, but was moved away from these cultural resources. This road corridor is potentially eligible for National Historic Register listing. Black oak and conifer trees may be trimmed or removed. The site is accessible via paved roads, and access is generally available during all but the most severe weather conditions. Option 3A would use 7/8 GHz radios and require a 25' tower and a 12' dish. Option 3B is being explored and would use a 4.5 GHz radio which does not require direct line of sight. This would allow for a 25' tower and a 4' dish. Both 3A and 3B require additional equipment on the North Mountain Tower located in the Stanislaus National Forest near Hetch Hetchy. Option 3A would require a passive reflector on North Mountain Tower and Alternate 3B would require an active antenna and additional solar panels. The tower already supports various antennas and presents a future opportunity for integrated communications with the US Forest Service. There are no structural issues anticipated with adding the proposed equipment to the tower and the Forest Service seems amenable to working with Yosemite on this.

Highest Ranked Options

The facility sites were ranked by assigning each item a numerical value and assessing its relative advantage. Participants shared their professional expertise regarding the potential beneficial or adverse effects of each aspect of the options. The three options (one per site evaluated) that were ranked the highest were:

Yosemite Valley Option 2: This option entails co-locating equipment with the existing equipment. A compound including a 10 to 15- foot tall antenna support pole attached to a new equipment vault is proposed. A microwave radio link would be established from this site to the Turtleback Dome (TRT) site using the Sentinel Reflector as a connection point. The site is accessible via paved roads during all but the most severe weather conditions. Discussions regarding the Wilderness location of the existing billboard reflector resulted in the selection of a new active site adjacent to the AT&T building which will use the existing reflector (as opposed to adding new structures in Wilderness areas).

Hetch- Hetchy Option 2B: The facility site is an existing park entrance located on Hetch Hetchy Road, approximately one mile north of the town of Mather. Proposed facilities include a tower and equipment vault adjacent to the existing ranger station garage, or north of Hetch Hetchy Road. A new power run would be required; the run would extend approximately 100 feet to the

north of the proposed vault and would connect with an existing medium voltage line. This facility would allow for direct microwave connection to Crane Flat (CRN). The site is in a developed area, not located in or adjacent to designated Wilderness. The ranger station is considered a historic landscape, but does not have official designation. Limited number of conifer trees may be trimmed or removed. The site is accessible via paved roads, and access is generally available during all but the most severe weather conditions. This facility would use a 4.5 GHz radio which does not require direct line of sight. This would allow for a 25' tower and an 8' dish (both of which would largely be hidden by the ranger station). The preferred option for Hetch- Hetchy is a sort tower located behind the ranger station. This would require use of the 4.5 GHz radio.

Tuolumne Valley Option 2A: This site is proposed as a connection point between Sentinel Dome and Tuolumne Meadows (TLM) and is located adjacent to Tioga Road. A microwave connection from May Lake Junction (MLJ) to Sentinel Dome would be constructed, and an approximately 12- mile trenched fiber connection would connect MLJ and TLM. The fiber would be located in the road corridor (consistent with policy) and trenching for the fiber would be coordinated with the repaving of Tioga Road planned for 2013- 2014. This site would require approximately a 25- foot tower which would be partially screened by trees on the slope. This site is near the Old Wagon Road which may be eligible for National Register listing. The site is accessible via paved roads during warmer months; heavy snowfall limits access. Implementation of this option would allow eventual removal of cable in the Indian Canyon Wilderness area, which would be consistent with Wilderness values and protection of potential archeological sites within the canyon. Further, visitors are using the cable as a “handrail” along steep slopes, creating a potential safety issue.

Table 2-1. Scoring of Yosemite Valley Options from the 2009 Choosing by Advantage Workshop

Options	Factor 1: Safe, reliable, efficient communications system with expansion capacity.	Factor 2: Protect natural, cultural, historic and wilderness values and maximize visitor experience.	Total
Option 1: No Action	0	100	100
Option 2: New site adjacent to existing building	100	80	180

Table 2-2. Scoring of Hetch Hetchy Options from the 2009 Choosing by Advantage Workshop

Option	Factor 1: Safe, reliable, efficient communications system with expansion capacity.	Factor 2: Protect natural, cultural, historic and wilderness values and maximize visitor experience.	Total
Option 1: No Action	0	70	70

Table 2-2. Scoring of Hetch Hetchy Options from the 2009 Choosing by Advantage Workshop

Option	Factor 1: Safe, reliable, efficient communications system with expansion capacity.	Factor 2: Protect natural, cultural, historic and wilderness values and maximize visitor experience.	Total
Option 2A: New site at ranger station (100' tower, 6' dish)	100	0	100
Option 2B: New site at ranger station (25' tower, 4' dish)	85	60	145
Option 3A: New site on entrance road (25' tower, 12' dish)	95	25	120
Option 3B: New site on entrance road (25' tower, 4' dish)	90	50	140

Table 2-3. Scoring of Tuolumne Valley Options from the 2009 Choosing by Advantage Workshop

Option	Factor 1: Safe, reliable, efficient communications system with expansion capacity.	Factor 2: Protect natural, cultural, historic and wilderness values and maximize visitor experience.	Total
Option 1 (No Action)	0	0	0
Option 2A: New site at May Lake Junction (12-mile fiber, 25' tower, 15' dish)	100	70	170
Option 2B: New site at May Lake Junction (12-mile fiber, 25' tower, 4' dish)	30	50	80
Option 3A: New site north of NPS stables (25' tower, 12' dish), additions to Mt. Hoffman (two 4' dishes)	50	30	80
Option 3B: New site north of NPS stables (25' tower, 4' dish), additions to Mt. Hoffman (two 4' dishes)	75	65	135

Options Considered but Dismissed

Several alternative facility site locations were considered during the 2008 and 2009 planning efforts. This section discusses the alternative locations that were previously considered but dismissed from further analysis for a variety of reasons. Alternative locations initially suggested as

part of the original planning effort by the NPS included facilities at Hetch Hetchy Entrance, Tuolumne Meadows, Mount Hoffman, North Mountain, and Yosemite Valley.

Hetch Hetchy Entrance (HHE)

The facility site is an existing park entrance and historic Mather Ranger Station located on Hetch Hetchy Road, approximately one mile north of the town of Mather. Proposed facilities would include a 25- foot tall, three- legged, self- support tower with one eight- foot diameter dual polarized dish, and a new equipment cabinet. The facility would be located adjacent to the existing ranger station garage. A new power run would be required; the run would extend approximately 100 feet to the north of the proposed cabinet and would connect with an existing medium voltage line. This facility was dismissed due to potential adverse effects to the cultural landscape of the historic ranger station.

Several additional alternative facility sites within the general vicinity of the Hetch Hetchy Entrance were investigated, including three sites north of Hetch Hetchy Road. Alternatives that would be located within Wilderness, or would have an adverse effect on known archaeological resources were dismissed from further consideration.

Tuolumne (TLM)

This facility site considered a 50- foot tower approximately 50 feet north of the intersection of Tioga Road and the station entrance road. This site is an undisturbed location adjacent to a developed area to the south (Tuolumne Meadows Wilderness Center) and designated Wilderness to the north. Development of this site would result in adverse effects to historic properties, and would significantly affect the natural and spiritual cultural setting of the area. Construction of a facility site in this location would be potentially inconsistent with the *Guidelines for the Siting, Design, and Operation of Wireless Telecommunications Facilities in Yosemite National Park* (NPS [no date]); proposed facilities “must be sensitively sited to protect the Yosemite natural and cultural resources including viewsheds, landmark or historically significant structures, archeological sites, cultural landscapes, open spaces, endangered or threatened species, and recreational use areas”. Elimination of this facility site requires a new facility at the MLJ site, and 12 miles of trenched fiber within Tioga Road.

Mt. Hoffman Repeater (HOF)

An existing tower is located near the peak of Mount Hoffman, within Wilderness. Two four- foot diameter microwave antennas were proposed to be installed on the tower. This site would provide a microwave radio passive site connecting the TLM and SNT sites. The site is accessible via helicopter. This alternative was dismissed because the facility site is located within Wilderness, and improvements would perpetuate the existing development in this location, and would be inconsistent with NPS policies to minimize or remove built environments from Wilderness areas (NPS 1989).

North Mountain Repeater (NMT)

The existing facility, a 60- foot lookout tower, is located on the peak of North Mountain, within the Stanislaus National Forest, 2.7 miles northwest of Mather. If the proposed connection between HHE 2 and CRN is not feasible, the lookout tower would provide a microwave radio connection between HHE 1 and CRN by using a microwave radio passive repeater antenna

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arrangement. The site is accessible via helicopter. This alternative was dismissed because a connection between HHE and CRN is feasible without improvements to this site.

Yosemite Valley (VLY)

This alternative site would include removal of an existing 60- foot tall wood pole and construction of a 100- foot tall self- support tower. A 16 × 30- foot equipment vault would house NPS and private providers’ equipment. Development of this site would likely eliminate the possibility of using the existing SNTReflector to provide a microwave path to TRT, and would require a new tower at SNTRepeater. This alternative was dismissed because improvements to the billboard reflector would occur within Wilderness, which would be inconsistent with NPS policies to minimize or remove built environments from Wilderness areas (NPS 1989).

COMPARISON OF ALTERNATIVES

Further field review and analysis of the facility sites was conducted by NPS staff and the design consultants in October 2009 to verify that the proposed network would be feasible. A summary comparison of the three alternatives brought forward for review presented in Table 2- 4.

Table 2-4. Overview of Alternatives

Facility Site	Alternative 1: No Action (Existing)	Alternative 2: Install Communication Data Network Microwave Facilities (Preferred)	Alternative 3: Install Communication Data Network Microwave Facilities using Alternate Sites or Equipment
Big Oak Flat Repeater/ Rockefeller Grove Road (BOFR)	No existing or new communication facility or equipment	Location: 125 ft north of Rockefeller Grove Road Support: 85-ft tall tower Microwave: 2 6-ft diameter dishes Shelter: N/A Power: N/A (passive) Access: Temporary path from Rockefeller Grove Road	Location: Same Shelter: Same Support: Same Microwave: Same Power: Same Access: Same
Crane Flat Lookout (CRN)	No new communication facility or equipment Existing: 2 25-ft wood poles, and 6 x 8-sq ft equipment vault	Location: 60 ft southwest of the Crane Flat Lookout Support: Replace existing wood poles with 65-ft tall tower Microwave: 2 8-ft dual polarized dishes, 2 6-ft diameter microwave dishes, 1 4-ft diameter microwave dish Shelter: Replace existing vault with 20x10 sq ft vault Power: On-site Access: Existing road and footpath	Location: 160 ft west of the Crane Flat Lookout Support: 100-ft tall tower Microwave: Same Shelter: 20x10 sq ft Power: On-site Access: Same

Table 2-4. Overview of Alternatives

Facility Site	Alternative 1: No Action (Existing)	Alternative 2: Install Communication Data Network Microwave Facilities (Preferred)	Alternative 3: Install Communication Data Network Microwave Facilities using Alternate Sites or Equipment
Eagle Peak (EGP)	<p>No new communication facility or equipment</p> <p>Existing: 25-ft lattice tower, and passive reflector</p>	<p>Location: Eagle Peak Repeater Support: Co-locate on existing tower</p> <p>Microwave: 4 6-ft diameter microwave dishes</p> <p>Shelter: N/A</p> <p>Power: PV panel</p> <p>Access: Existing rough-graded forest road</p>	<p>Location: Adjacent to Eagle Peak Repeater</p> <p>Support: 25-ft tall steel tower</p> <p>Microwave: Same</p> <p>Shelter: N/A</p> <p>Power: Same</p> <p>Access: Same</p>
El Portal Administrative Area (ELP)	<p>No new communication facility or equipment</p> <p>Existing: 60-ft tower, and equipment vault</p>	<p>Location: El Portal Administrative Area</p> <p>Support: 40-ft expansion on existing tower</p> <p>Microwave: 1 10-ft diameter dish</p> <p>Shelter: Same</p> <p>Power: On-site</p> <p>Access: Paved road</p>	<p>Location: Same</p> <p>Support: Same</p> <p>Microwave: Same</p> <p>Shelter: Same</p> <p>Power: Same</p> <p>Access: Same</p>
Hennes Ridge (HEN)	<p>No new communication facility or equipment</p> <p>Existing: 70-foot tall guyed tower, equipment vault</p>	<p>Location: Hennes Ridge communication facility site</p> <p>Support: 85-ft tall tower</p> <p>Microwave: 1 4-ft diameter dish, 1 6-ft diameter dish, 1 12-ft diameter dish</p> <p>Shelter: Same</p> <p>Power: On-site</p> <p>Access: Unpaved road</p>	<p>Location: Same</p> <p>Support: Same</p> <p>Microwave: Same</p> <p>Shelter: Same</p> <p>Power: Same</p> <p>Access: Same</p>
Hetch Hetchy Entrance (HHE)	<p>No existing or new communication facility or equipment</p>	<p>Location: 100 ft north of Hetch Hetchy Road, near NPS residential area</p> <p>Support: 100-ft tall lattice tower</p> <p>Microwave: 6-ft diameter dish</p> <p>Shelter: 3-ft tall radio cabinet</p> <p>Power: 1,200-ft trench to power line</p> <p>Access: Temporary path from Hetch Hetchy Road or NPS residential area</p>	<p>Location: 150 ft north of entrance kiosk</p> <p>Support: Same</p> <p>Microwave: Same</p> <p>Shelter: Same</p> <p>Power: 400-ft trench to power line</p> <p>Access: Temporary path from Hetch Hetchy Road</p>

Table 2-4. Overview of Alternatives

Facility Site	Alternative 1: No Action (Existing)	Alternative 2: Install Communication Data Network Microwave Facilities (Preferred)	Alternative 3: Install Communication Data Network Microwave Facilities using Alternate Sites or Equipment
Hodgdon Meadow Campground (HMC)	No existing or new communication facility or equipment	Location: Hodgdon Meadow Maintenance Area Building Support: Building-mount Microwave: 6-ft diameter dish Shelter: Existing building Power: On-site Fiber: 4,500-ft trench from site to Big Oak Flat and campground entrance stations Access: Paved road	Location: Same Support: Same Microwave: Same Shelter: Same Power: Same Fiber: Same Access: Same
May Lake Junction (MLJ)	No existing or new communication facility or equipment	Location: May Lake Junction/Tioga Road Support: 25-ft tower Microwave: 4-ft diameter dish Shelter: Equipment vault Power: PV panel Fiber: 12-mile trench from site to Tuolumne Meadows Access: Paved road	Location: Same Support: Same Microwave: Same Shelter: Same Power: Same Fiber: Same Access: Same
Mount Bullion State of California (MTB)	No new communication facility or equipment Existing: 120-ft tall tower, equipment vault	Location: Mount Bullion communication facility site Support: Co-locate on existing tower Microwave: 6-ft diameter dish Shelter: Same Power: On-site Access: Paved road	Location: Same Support: Same Microwave: Same Shelter: Same Power: Same Access: Same
Sentinel Dome (SNT)	No new communication facility or equipment Existing: 40-ft tall wood pole (NPS/AT&T), 40-foot wood pole (Golden State Cellular), equipment shelter	Location: Sentinel Dome communication facility site Support: Replace NPS/AT&T pole with 40-ft tall tower Microwave: 2 4-ft diameter dishes Shelter: 12 x 24-sq ft equipment shelter Power: On-site Access: Unpaved road	Location: Same Support: Same Microwave: Same Shelter: Same Power: Same Access: Same

Table 2-4. Overview of Alternatives

Facility Site	Alternative 1: No Action (Existing)	Alternative 2: Install Communication Data Network Microwave Facilities (Preferred)	Alternative 3: Install Communication Data Network Microwave Facilities using Alternate Sites or Equipment
Sentinel Repeater (SNTReflector)	No new communication facility or equipment Existing: billboard passive reflector (AT&T)	Location: Sentinel Repeater communication facility site Support: Same Microwave: Same Shelter: N/A Power: N/A Access: N/A	Location: Same Support: Same Microwave: Same Shelter: Same Power: Same Access: Same
Turtleback Dome (TRT)	No new communication facility or equipment Existing: 100-ft tall tower, equipment vault	Location: Turtleback Dome communication facility site Support: Replace existing tower with 80-ft tall tower Microwave: 1 10-ft diameter dish, 1 6-ft diameter dish, 1 4-ft diameter dish Shelter: Replace existing with 12 x 24-sq ft equipment shelter Power: On-site Access: Improved road	Location: Same Support: Same Microwave: Same Shelter: Same Power: Same Access: Same
Wawona (WAW)	No existing or new communication facilities or equipment	Location: Wawona District Circle maintenance area Support: 25-ft tower Microwave: 1 4-ft dish Shelter: Radio cabinet Power: On-site Access: Paved road	Location: Same Support: Same Microwave: Same Shelter: Same Power: Same Access: Same
Wawona Point (WWP)	No new communication facility or equipment Existing: 70-ft pole, equipment vault, PV panels	Location: Wawona Point communication facility site Support: Replace existing pole with 85-ft tall tower Microwave: 1 4-ft dish, 1 6-ft dish Shelter: Same Power: Same Access: Improved road	Location: Same Support: Same Microwave: Same Shelter: Same Power: Same Access: Same

Table 2-4. Overview of Alternatives

Facility Site	Alternative 1: No Action (Existing)	Alternative 2: Install Communication Data Network Microwave Facilities (Preferred)	Alternative 3: Install Communication Data Network Microwave Facilities using Alternate Sites or Equipment
Yosemite Valley (VLY)	No new communication facility or equipment Existing: 2 60-ft poles, building-mounted antenna	Location: Yosemite Valley communications facility site (NPS, AT&T, Golden State Cellular), adjacent to AT&T facility Support: 25-ft lattice tower Microwave: 1 6-ft dish Shelter: 10 x 20-sq ft equipment shelter Power: On-site Access: Paved road	Location: Same Support: Co-locate on AT&T 25-ft lattice tower Microwave: Same Shelter: Same Power: Same Access: Same

PROCESS OF SELECTING THE NPS- PREFERRED ALTERNATIVE

The process to select the NPS- Preferred Alternative included completion of a VA/CBA Workshop, consultation with the NPS management team, and further field review of proposed sites. As discussed above, a VA/CBA Workshop to select an NPS preferred alternative for the Yosemite Valley, Hetch- Hetchy, and Tuolumne Valley CDN sites was held on July 28 and 29, 2009. The alternatives were ranked by assigning each item a numerical value and assessing its relative advantage. Participants shared their professional expertise regarding the potential beneficial or adverse effects of each aspect of the alternatives. Park staff presented the outcome and their recommendation to the Yosemite National Park management team.

The management team requested some additional information regarding the costs of the May Lake Junction option. The management team directed staff to proceed with the highest ranked alternative sites in Yosemite Valley, Hetch- Hetchy, and May Lake Junction (including the 12-mile fiber connection to Tuolumne Meadows). NPS staff moved forward with the inclusion of these preferred facility sites in the overall proposed network.

SUMMARY OF ENVIRONMENTAL CONSEQUENCES

Table 2- 5, summarizes the impacts that would result from implementation of each of the alternatives, including the No Action Alternative.

Table 2-5. Summary of Environmental Consequences by Alternative

Designation	Alternative 1: No Action	Alternative 2: CDN Facility Sites (Preferred)	Alternative 3: Alternative Sites or Equipment
Geology, Geohazards, and Soils	No construction-related impacts would occur. Operation-related impacts would include potential structural damage from ground-shaking and minor impacts to soils during continued maintenance activities.	Construction-related grading, soil compaction, soil erosion, and soil contamination. Operation-related impacts would include potential structural damage from ground-shaking and minor impacts to soils due to erosion around foundations and structures.	Impacts under Alternative 3 would be the same as Alternative 2. Additional ground disturbance at the Eagle Peak facility site would occur, because a new support tower would be constructed in this location. No ground disturbance would occur at the Yosemite Valley facility site.
Hydrology, Floodplains, and Water Quality	No grading or construction would occur; therefore, no changes to existing hydrology, floodplains, or water quality would occur.	Exposure of approximately 3 acres of disturbed construction area to stormwater runoff. Potential impacts include discharge of sediment and pollutants into surface waters. Facilities in close proximity to surface water include Hetch Hetchy Entrance and May Lake Junction.	Impacts under Alternative 3 would be the same as Alternative 2. Additional ground disturbance at the Eagle Peak facility site would occur; however, this site is not located in close proximity to surface waters. No disturbance at the Yosemite Valley facility site would occur.
Wetlands	No new grading or construction would occur. Implementation of this alternative would not result in any adverse impacts to wetlands or wetland hydrological processes.	Under Alternative 2, development of the Hetch Hetchy Entrance facility site would include trenching activities a minimum of approximately 20 feet from the edge of a mapped wetland. Development of the May Lake Junction facility would require 12 miles of trenching between the facility and Tuolumne Meadows. The proposed actions would not include direct impacts to wetland habitat; however, indirect impacts may include sediment deposition and pollutant discharge.	Impacts under Alternative 3 would be the same as Alternative 2.
Vegetation	Continued operation of existing facilities would require maintenance activities, including use of trucks and equipment.	Development of proposed facility sites would require ground disturbance and vegetation removal, including tree trimming and maintenance, or removal. Effects from heavy equipment and grading activities could include soil compaction, dust, root damage, erosion, and the introduction and spread of	Impacts under Alternative 3 would be similar to Alternative 2. Approximately 5-10 additional trees would be removed, or trimmed and maintained at the Crane Flat facility site, under this alternative. Additional ground disturbance and vegetation removal would occur at the Eagle Peak facility site.

Table 2-5. Summary of Environmental Consequences by Alternative

Designation	Alternative 1: No Action	Alternative 2: CDN Facility Sites (Preferred)	Alternative 3: Alternative Sites or Equipment
		non-native species. Effects to native vegetation during operation of the facility sites would be limited to temporary human disturbance during maintenance activities, such as trampling and vegetation/tree trimming.	
Wildlife	Continued periodic maintenance activities, including human presence and use of vehicles and equipment, may disturb wildlife in close proximity to existing communications facilities.	Development of the proposed sites would require ground disturbance and vegetation removal, including tree trimming or removal. During construction, wildlife may be affected by the following: noise, dust, and light; removal or trampling of vegetation; harm from operating construction equipment and vehicles; entrapment in pits and trenches; contamination by fuels, oils, and other toxic chemicals; disturbance of breeding and nesting behavior; and, disturbance or removal of breeding, nesting, and roosting habitat.	Impacts under Alternative 3 would be similar to Alternative 2. Approximately 5-10 additional trees would be removed, or trimmed and maintained at the Crane Flat facility site, under this alternative, potentially resulting in additional impacts to wildlife habitat.
Rare, Threatened, and Endangered Species		Construction activities are not expected to result in direct impacts to special-status plants. Operational effects may include inadvertent trampling of special-status plants in the vicinity of facility sites. Construction activities could include clearing of vegetation and habitat elements that are suitable for special-status species, including birds, bats, and other mammals. These activities would cause individuals within the habitats to scatter or relocate and could result in injury or mortality to individuals that become entrapped or cannot flee. Construction pollutants in runoff that travels off-site could potentially affect several rare, threatened, or	Impacts under Alternative 3 would be similar to Alternative 2. Approximately 5-10 additional trees would be removed, or trimmed and maintained at the Crane Flat facility site, under this alternative, potentially resulting in additional impacts to wildlife habitat.

Table 2-5. Summary of Environmental Consequences by Alternative

Designation	Alternative 1: No Action	Alternative 2: CDN Facility Sites (Preferred)	Alternative 3: Alternative Sites or Equipment
		endangered species that may occur along or near stream courses or associated wet meadow habitats.	
Night Sky	No change to the affected environment. Continued use of the Crane Flat facility site, and associated aviation light, would occur, resulting in a negligible impact to night sky.	The Crane Flat facility would include a light, due to the aviation activity associated with the heli-pad. Night sky impacts would not change substantially from the existing condition because the illumination of the light would not change.	Impacts under Alternative 3 would be the same as Alternative 2.
Scenic Resources	The communications facilities of would continue to operate and be maintained in their present condition. No construction-related impacts would occur. Operation-related impacts would be limited to the contrasts of existing facilities with its surroundings. Existing facilities offer some contrast from the respective surrounding landscapes, which vary from highly visible to hardly discernable with the naked eye.	Construction-related impacts would include temporary contrasts with the surrounding landscape from construction equipment, demolished towers and equipment shelters (as applicable), and exposed soil. Operation-related impacts would include long-term contrasts with the surrounding landscape from new towers, antennas, dishes, and equipment shelters.	Impacts under Alternative 3 would be similar as Alternative 2. Compared to Alternative 2, the Hetch Hetchy facility site would be located in an area of increased visibility, as seen from Hetch Hetchy Road. The Crane Flat facility would be 35 feet taller, and would require additional tree removal. A new tower, visible from Highway 140, would be constructed at the Eagle Peak facility site. At the Yosemite Valley site, and existing tower would support proposed microwave antennas.
Air Quality	No grading or construction would occur; therefore, no changes to existing air quality would occur. Operation of the existing facility sites would not be affected, or result in any changes to existing air quality. This alternative would not result in any adverse impacts to air quality.	Construction-related impacts would include mobile source emissions, dust, and other pollutants associated with grading, trenching, and construction. Operation-related impacts would include stationary source emissions from the occasional use of on-site generators, and periodic mobile source emissions from maintenance vehicles.	Impacts under Alternative 3 would be the same as Alternative 2.
Noise	No construction-related impacts would occur. During power outages, existing facilities require the temporary use of back-up generators. Operation-related impacts would be limited exposure to	Use of construction equipment and transport trucks would generate noise affecting sensitive receptors including park employees, visitors, trail users, and persons experiencing Wilderness.	Impacts under Alternative 3 would be the same as Alternative 2.

Table 2-5. Summary of Environmental Consequences by Alternative

Designation	Alternative 1: No Action	Alternative 2: CDN Facility Sites (Preferred)	Alternative 3: Alternative Sites or Equipment
	generator noise.	Operation of the facility sites would require the occasional use of existing generators during power outages.	
Energy	The existing facilities would continue to operate as they have in the past, with no changes in energy consumption or efficiency. No construction-related impacts would occur. Operation-related impacts would include ongoing energy consumption.	Construction-related impacts would include energy use and consumption for facility demolition and construction activities. Operation-related impacts would include energy use for facility operations and periodic use of maintenance vehicles.	Impacts under Alternative 3 would be the same as Alternative 2.
Wilderness	Proposed upgrades would not occur, and there would continue to be a need for an updated, connected communications system in the park. The Wilderness experience can be affected by overcrowding, over-use of resources, and unreliable communications among park entrances, ranger stations, and permit centers.	Construction of facility sites at Hetch Hetchy, May Lake Junction, Sentinel Dome, and Wawona Point would occur in the vicinity of the Wilderness boundary. Construction activities would not intrude on the Wilderness boundary. Operation of the facilities may require tree trimming within Wilderness.	Impacts under Alternative 3 would be the same as Alternative 2.
Archaeology	No ground disturbance or new construction would occur. Implementation of this alternative would have no effect on historic properties.	Construction and operation-related activities would result in no adverse effect to historic properties, pursuant to the 1999 Programmatic Agreement.	Impacts under Alternative 3 would be the same as Alternative 2.
Historic Structures, Buildings, and Historic Landscapes	No new construction would occur since no new sites would be developed and no improvements would be made to existing sites. Implementation of this alternative would have no effect on historic properties.	Potential impacts to the Crane Flat fire lookout would be mitigated by project design, resulting in a no adverse effect determination.	Impacts under Alternative 3 would be the same as Alternative 2.
American Indian Traditional Cultural Properties	Implementation of this alternative would have no effect on TCPs. NPS would continue consultation with American Indian tribes to avoid impacts to TCPs.	No adverse effect to resources managed as American Indian Traditional Cultural Properties. NPS would continue consultation with American Indian tribes to avoid impacts to TCPs.	Impacts under Alternative 3 and the same as Alternative 2.
American Indian	NPS would continue	The proposed facility sites	Impacts under Alternative 3

Table 2-5. Summary of Environmental Consequences by Alternative

Designation	Alternative 1: No Action	Alternative 2: CDN Facility Sites (Preferred)	Alternative 3: Alternative Sites or Equipment
Traditional Cultural Practices	consultation with American Indian tribes. Continued operation of the existing facility sites, including periodic maintenance activities, would have a negligible impact on traditional cultural practices.	would be designed and constructed and operated based on continued consultation with American Indian tribes, resulting in negligible impacts on the traditional cultural practices at Hodgdon Meadow, May Lake Junction, Crane Flat, Eagle Peak, El Portal, Sentinel Dome, Wawona Point, and Yosemite Valley.	are the same as Alternative 2.
Visitor Experience and Recreation	Proposed upgrades would not occur, and there would continue to be a need for an updated, connected communications system in the park. Visitor experience is adversely affected when park staff are unable to transfer information quickly (or at all during severe weather conditions), share information during hazardous conditions and quickly respond to emergency situations.	Some adverse impacts on visitor experience and recreation would occur during construction of the facilities (e.g., noise, dust, traffic delays). In the long term, the effects would be beneficial, because park staff will be able to better manage real-time park resource and visitor capacity data, and respond to hazardous and emergency situations.	Impacts under Alternative 3 are the same as Alternative 2.
Park Operations	Proposed upgrades would not occur, and there would continue to be a need for an updated, connected communications system in the park. The abilities of park staff to manage resources, respond to emergencies, and manage facilities would continue to be hindered by inefficient data transfer, limited communication options, and "dead zones" within remote Wilderness areas.	The long-term demand on facilities management staff is expected to be less than that currently imposed by the aging facility elements. Co-location on the existing tower at Eagle Peak would require coordination with AT&T and the U.S. Forest Service, including lease negotiations. This process will require park staff time, and budget allotment to fund the lease.	Impacts under Alternative 3 are the same as Alternative 2. Co-location on the existing tower at Yosemite Valley would require coordination with AT&T and the U.S. Forest Service, including lease negotiations.
Transportation and Traffic	No additional traffic trips would be generated by construction vehicles. Routine maintenance would continue to occur at existing communications sites with no increased trips to and from the existing sites. Traffic volumes and patterns would remain unchanged. Implementation of the No Action alternative	During construction of the Hetch Hetchy, Hodgdon Meadow, and May Lake Junction facility sites, traffic impacts may include delays on affected roadways, and traffic management may be necessary.	Impacts under Alternative 3 are the same as Alternative 2.

Table 2-5. Summary of Environmental Consequences by Alternative

Designation	Alternative 1: No Action	Alternative 2: CDN Facility Sites (Preferred)	Alternative 3: Alternative Sites or Equipment
	would have no impact on transportation.		
Land Use	No impact to land use.	No impact to land use.	No impact to land use.

CHAPTER 3: AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This chapter provides a description of the affected environment and an analysis of environmental consequences. The affected environment describes the existing environment and provides a baseline to assess impacts of the various alternatives. The environmental consequences describe the anticipated impacts of each alternative described in Chapter 2 and include intensity thresholds, impairment determinations, and mitigation measures.

ORGANIZATION OF THIS CHAPTER

The chapter is organized by resource topic. The existing affected environment of each resource topic and the environmental consequences of each alternative on this environment are described. Resource topics were selected for detailed environmental analysis based on their potential to be affected by the alternatives; federal law, regulations, and executive orders; National Park Service (NPS) management policies; and concerns expressed by the public, Yosemite National Park staff, or other agencies during the scoping process. Topics that were dismissed from further analysis are listed in Chapter 1.

AFFECTED ENVIRONMENT

The description begins with a broader regional setting and then presents details of the immediate environment in and around each facility site. The current conditions described in these sections serve as a baseline to analyze and compare the potential effects of each alternative. The facility sites are located within Yosemite National Park and Stanislaus National Forest in the Sierra Nevada. Facility upgrades and new facilities are proposed within the following areas:

- Big Oak Flat area (Rockefeller Grove), Yosemite National Park, Tuolumne County
- Crane Flat fire lookout, Yosemite National Park, Mariposa County
- Eagle Peak, Stanislaus National Forest, Mariposa County
- El Portal Administrative Area, Yosemite National Park, Mariposa County
- Henness Ridge, Yosemite National Park, Mariposa County
- Hetch Hetchy Entrance, Yosemite National Park, Tuolumne County
- Hodgdon Meadow, Yosemite National Park, Tuolumne County
- May Lake Junction, Yosemite National Park, Mariposa County
- Mount Bullion, Mariposa County
- Sentinel Dome, Yosemite National Park, Mariposa County
- Turtleback Dome, Yosemite National Park, Mariposa County
- Yosemite Valley, Yosemite National Park, Mariposa County
- Wawona, Yosemite National Park, Mariposa County
- Wawona Point, Mariposa Grove, Yosemite National Park, Mariposa County

ENVIRONMENTAL CONSEQUENCES METHODOLOGY

Following a description of the affected environment, the potential environmental consequences, or impacts, that would occur as a result of implementing each alternative are analyzed and presented for each resource topic. Direct and indirect effects, as well as impairment to park resources, are discussed for each resource. Potential impacts are described in terms of context, duration, intensity, and type. General definitions for all resources (except for historic properties subject to requirements of NHPA, which are discussed in the Historic Properties section of this chapter) are as follows; specific impact thresholds (intensity) are described at the beginning of each resource's environmental consequences section.

- **Context** describes the area or location in which the impact would occur. Are the effects site- specific, local, regional, or even broader?
- **Duration** describes the length of time an effect would last, either short- term or long-term:
 - **Short- term impacts** generally last only as long as the construction period, and the resources generally resume their preconstruction conditions following construction.
 - **Long- term impacts** last beyond the construction period, and the resources may not resume their preconstruction conditions for a longer period following construction.
- **Intensity** describes the degree, level, or strength of an impact. For this analysis, intensity has been categorized into negligible, minor, moderate, and major. Because definitions of intensity vary by resource topic, intensity definitions are provided separately for each resource topic.
- **Type** describes the classification of the impact as either beneficial or adverse, direct or indirect:
 - **Beneficial:** A positive change in the condition or appearance of the resource, or a change that moves the resource toward a desired condition.
 - **Adverse:** A change that moves the resource away from a desired condition or detracts from its appearance or condition.
 - **Direct:** An effect that is caused by an action and occurs in the same time and place.
 - **Indirect:** An effect that is caused by an action but is later in time or farther removed in distance, but is still reasonably foreseeable.
- **Impairment.** NPS Management Policies (2006a) require analysis of potential effects to determine whether actions would impair park resources (NPS 2006a). The fundamental purpose of the national park system, established by the Organic Act (16 United States Code [USC] 1) and reaffirmed by the General Authorities Act, begins with a mandate to conserve park resources and values. NPS managers must always seek ways to avoid, or minimize to the greatest degree practicable, adverse impacts on park resources and values. The laws give the NPS the management discretion to allow impacts to park resources and values when necessary and appropriate to fulfill the purposes of a park, as long as the impact does not constitute impairment of the affected resources and values.

In addition to determining the environmental consequences of the alternatives, NPS Management Policies (2006) and DO-12 requires an analysis of potential effects to determine if actions would impair park resources. As such, an impact that would harm the integrity of the park resources or values, including the opportunities that otherwise would be present for those resources or values would constitute impairment. In this environmental assessment determinations of impairment are provided in the conclusion section under each cultural and natural applicable resource topic for each alternative. No impairment consideration is given to health and safety, transportation, maintenance operations, and energy resource topics.

1.4.3 The NPS Obligation to Conserve and Provide for Enjoyment of Park Resources and Values

The fundamental purpose of the national park system, established by the Organic Act and reaffirmed by the General Authorities Act, as amended, begins with a mandate to conserve park resources and values. This mandate is independent of the separate prohibition on impairment and applies all the time with respect to all park resources and values, even when there is no risk that any park resources or values may be impaired. NPS managers must always seek ways to avoid, or to minimize to the greatest extent practicable, adverse impacts on park resources and values. The laws do give the Service the management discretion, however, to allow impacts to park resources and values when necessary and appropriate to fulfill the purposes of a park, so long as the impact does not constitute impairment of the affected resources and values.

The fundamental purpose of all parks also includes providing for the enjoyment of park resources and values by the people of the United States. The enjoyment that is contemplated by the statute is broad; it is the enjoyment of all the people of the United States and includes enjoyment both by people who visit parks and by those who appreciate them from afar. It also includes deriving benefit (including scientific knowledge) and inspiration from parks, as well as other forms of enjoyment and inspiration. Congress, recognizing that the enjoyment by future generations of the national parks can be ensured only if the superb quality of park resources and values is left unimpaired, has provided that when there is a conflict between conserving resources and values and providing for enjoyment of them, conservation is to be predominant. This is how courts have consistently interpreted the Organic Act.

1.4.4 The Prohibition on Impairment of Park Resources and Values

While Congress has given the Service the management discretion to allow impacts within parks, that discretion is limited by the statutory requirement (generally enforceable by the federal courts) that the Park Service must leave park resources and values unimpaired unless a particular law directly and specifically provides otherwise. This, the cornerstone of the Organic Act, establishes the primary responsibility of the NPS. It ensures that park resources and values will continue to exist in a condition that will allow the American people to have present and future opportunities for enjoyment of them.

The impairment of park resources and values may not be allowed by the Service unless directly and specifically provided for by legislation or by the proclamation establishing the park. The relevant legislation or proclamation must provide explicitly (not by implication or inference) for the activity, in terms that keep the Service from having the authority to manage the activity so as to avoid the impairment.

1.4.5 What Constitutes Impairment of Park Resources and Values

The impairment that is prohibited by the Organic Act and the General Authorities Act is an impact that, in the professional judgment of the responsible NPS manager, would harm the integrity of park resources or values, including the opportunities that otherwise would be present for the enjoyment of those resources or values. Whether an impact meets this definition depends on the particular resources and values that would be affected; the severity, duration, and timing of the impact; the direct and indirect effects of the impact; and the cumulative effects of the impact in question and other impacts.

- An impact to any park resource or value may, but does not necessarily, constitute impairment. An impact would be more likely to constitute impairment to the extent that it affects a resource or value whose conservation is necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park; or,
- Key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or,
- Identified in the park's general management plan or other relevant NPS planning documents as being of significance.

An impact would be less likely to constitute impairment if it is an unavoidable result of an action necessary to preserve or restore the integrity of park resources or values and it cannot be further mitigated. An impact that may, but would not necessarily, lead to impairment may result from visitor activities; NPS administrative activities; or activities undertaken by concessionaires, contractors, and others operating in the park. Impairment may also result from sources or activities outside the park.

1.4.6 What Constitutes Park Resources and Values

The "park resources and values" that are subject to the no-impairment standard include: the park's scenery, natural and historic objects, and wildlife, and the processes and conditions that sustain them, including, to the extent present in the park: the ecological, biological, and physical processes that created the park and continue to act upon it; scenic features; natural visibility, both in daytime and at night; natural landscapes; natural soundscapes and smells; water and air resources; soils; geological resources; paleontological resources; archeological resources; cultural landscapes; American Indian traditional cultural resources; historic and prehistoric sites, structures, and objects; museum collections; and native plants and animals; appropriate opportunities to experience enjoyment of the above resources, to the extent that can be done without impairing them; the park's role in contributing to the national dignity, the high public value and

integrity, and the superlative environmental quality of the national park system, and the benefit and inspiration provided to the American people by the national park system; and any additional attributes encompassed by the specific values and purposes for which the park was established.

1.4.7 Decision- making Requirements to Identify and Avoid Impairments

Before approving a proposed action that could lead to an impairment of park resources and values, an NPS decision- maker must consider the impacts of the proposed action and determine, in writing, that the activity will not lead to an impairment of park resources and values. If there would be impairment, the action must not be approved.

Impairment determinations, however, are not made for health and safety, visitor use, maintenance, operations, socio- economic resources, or other non- natural or cultural resources topics.

Although Congress has given NPS the management discretion to allow certain impacts within parks, that discretion is limited by the statutory requirement that the NPS must leave park resources and values unimpaired, unless a particular law directly and specifically provides otherwise. The prohibited impairment is an impact that, in the professional judgment of the responsible NPS manager, would harm the integrity of park resources or values. Although an impact to a park resource or value may constitute an impairment, an impact would be more likely to constitute an impairment if it has a major or severe adverse effect on a resource or value whose conservation is:

1. Necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park;
2. Key to the natural or cultural integrity of the park; or
3. Identified as a goal in the park's general management plan or other relevant NPS planning documents.

Impairment may result from NPS activities in managing the park, visitor activities, or activities undertaken by concessionaires, contractors, and others operating in the park. A determination on impairment is made in the conclusion section for each of the resource topics analyzed in this chapter.

GEOLOGY, GEOHAZARDS, AND SOILS

Affected Environment

Geology

The project is located in the Sierra Nevada of California within Yosemite National Park, Stanislaus National Forest, and an area just west of Stanislaus National Forest in the Sierra Nevada foothills. Elevation of the proposed facility sites ranges from approximately 1,600 feet to approximately 10,800 feet. The project area and much of the Sierra Nevada Range is underlain by

granitic rock that formed through repeated intrusions of magma between about 80 and 210 million years ago, creating the Sierra Nevada batholith. The term granitic has been loosely applied to the plutonic (igneous) rocks of the Sierra Nevada batholith and actually represents rock types including diorite, granodiorite, tonalite, and granite (NPS 2009a).

Most of the exposed rock in Yosemite National Park and the Stanislaus National Forest formed as igneous diapirs approximately six miles below the surface when magma bubbled to the surface along the western Pacific subduction zone. Over time, the uplift of the Sierra Nevadas and erosion stripped away the overlying rock and exposed the harder granitic rock beneath. Beginning approximately three million years ago, a series of glaciations accelerated erosion and created the dramatic geologic formations that exist today.

Geologic conditions at the existing and proposed facility sites are fairly homogenous (i.e., underlying and exposed granitic rock), with the exception of the soil types and elevations. Based on available data, none of the sites are located within recent or historical rockfall zones, nor are they underlain by active faults.

Faulting and Seismicity

The Sierra Nevada Range in the vicinity of the project is not considered an area of particularly high seismic activity due to the lack of local active faults. Therefore, the risk of fault rupture or surface displacement beneath the facility sites is negligible. However, the area has historically experienced ground shaking associated with large earthquakes on distant faults, including the Owens Valley fault, the Hilton Creek fault, the San Andreas fault, and the Hayward fault. Active fault zones in the vicinity of the project include the Sierra Nevada fault zone (including Mono Lake and Hartley Springs faults, approximately 35 miles northeast of Yosemite Valley), the Bear Mountains fault zone (approximately 60 miles west of Yosemite Valley), Hilton Creek fault, and the Owens Valley fault zone.

Rockfalls

Rockfalls are the result of the erosive forces of glaciation, weathering, and bedrock fractures, and are common in Yosemite National Park. Tectonic stresses and erosion cause the granitic rock to fracture, sometimes parallel to the surface to cause sheet joints. This creates large slabs of rock that eventually fall in a process called exfoliation. Water can speed this process by flowing through fissures in the rock and causing expansion and contraction as it freezes and thaws. Water, ice, vegetation, earthquakes, and human or other wildlife influence can cause unstable rocks to fall. In areas where rockfalls are common, large piles of rock debris or talus build up at the base of the slope. While rockfalls are unpredictable, none of the facility sites are located within recent or historic rockfall zones.

Soils

More than 50 soil types exist within the park. They are primarily derived from underlying granitic bedrock, and vary based on glacial history and ongoing weathering and erosion and deposition of materials. Except for meadow soils, most soils at high elevations were developed from glacial material or in place from bedrock. Above 6,000 feet, extensive areas are covered by glacial moraine material, fine sand, glacial flour, pebbles, cobbles, and boulders. Alluvial soils are found along streams throughout the project area and tend to have sorted horizons of sandy material.

Colluvial soils are common in areas where landslides and rockfalls occur on a regular basis. Colluvial soils are composed of variously sized particles and rocks and have high rates of infiltration and permeability (USDA 2007).

The organic content of soils in the project area varies greatly with the localized influence of moisture and drainage. Vegetative growth around water features contributes greatly to the organic content of soils near ponds, lakes, and streams. Soils in forested parts of the project area have a relatively high organic content. Many of the soils in the project area have a very low organic content and consist mostly of sand or decomposed granite. These soils typically only support drought-tolerant species.

Soils near the Merced River in the Yosemite Valley have been identified as ‘rich soil areas’ and are considered highly valued resources. These areas include soils that either support or have the potential to be restored to highly-valued vegetative communities, and include loams that are deposited by the Merced River that generally support exceptional native vegetation communities, particularly wetlands, meadows, and riparian areas. Rich soil areas also include hydric soils that support wetlands, and soils formed from morainal deposits (USDA 2007). None of the facility sites are located in rich soil areas.

Environmental Consequences

This impact assessment focuses on effects that geologic processes could have on people and facilities at the facility sites, or that construction at these sites could have on geological processes or resources. Geologic events such as earthquakes or severe soil instability can negatively affect people and facilities if they result in injury, death, or damage to facilities. Project-related actions could cause accelerated erosion, soil loss, soil removal, or soil compaction. Removal of vegetation through project activities could result in accelerated erosion of the soil surface. Soils on steep slopes and along watercourses are especially susceptible to erosion.

Several assumptions regarding facility placement, geologic design parameters, and public safety were used for assessment:

- Geologic risks to public safety are rarely predictable, and the extent of potential harm to people and property cannot be quantified. While the facility sites are not prone to earthquakes or rockfalls, it is not possible to completely avoid risks due to geologic hazards.
- Geotechnical studies to determine soil stability conditions would be performed prior to placing, designing, or relocating communication facilities at the sites where ground disturbance would occur. Facility design would conform to accepted building codes, particularly regarding seismic design parameters.

Intensity Level Definitions

Impacts to geology and soils were evaluated using the process described in the beginning of this chapter. Impact threshold definitions for geology and soils are as follows:

Negligible: Effects to geology and soils, such as excavation of bedrock or removal of topsoil, would not occur or would be so slight as to be immeasurable.

Affected Environment and Environmental Consequences

- Minor:** Effects to geology and soils would be detectable. If mitigation is needed to offset adverse effects, it would be relatively simple to implement.
- Moderate:** Effects to geology and soils would be readily apparent. Mitigation would probably be necessary to offset adverse effects.
- Major:** Effects to geology and soils would be readily apparent and would substantially change the soil or geologic characteristics of the area. Extensive mitigation would probably be necessary to offset adverse effects, and its success could not be guaranteed.
- Impairment:** A permanent adverse change would occur to geology and soils in a large area of Yosemite National Park, affecting the resource to the point that the park's purposes could not be fulfilled and enjoyment by future generations of the geology or resources supported by soils would be precluded.

Assumptions

The analysis of impacts to geology and soils is based on the assumption that the proposed action would include standard procedures related to grading and erosion control.

Grading and Erosion Control

The proposed action, which includes grading and foundation construction at facility sites and fiber optic trenching, could expose approximately three acres of disturbed construction area, particularly in the vicinity of the new facility sites at BOFR, HHE, HMC, MLJ, and WAW. Best Management Practices (BMPs) would be implemented to minimize impacts to soils. The construction contractor(s) would also be required to implement appropriate hazardous materials management practices to reduce the possibility of chemical spills or releases of contaminants. Post- construction permanent BMPs would also be implemented where deemed necessary to minimize long- term effects from land disturbances and any contaminated runoff.

Impacts under Alternative 1 (No Action Alternative)

The communication data network would continue to operate as it currently does under the No Action Alternative. No grading or construction would occur; therefore, there would be no impacts to soils or geology. This alternative would not result in any adverse impacts to geological or soil resources.

Impact Significance. Site- specific, long- term, negligible, adverse, impact.

Conclusion. No construction- related impacts would occur. Operation- related impacts would include potential structural damage from ground- shaking and minor impacts to soils during continued maintenance activities.

Impairment. Under Alternative 1, soils and geological resources in Yosemite National Park would not be impaired by the continued operation of existing communication facilities.

Impacts under Alternative 2 (Preferred)

None of the project alternatives would require the construction of structures that would house people. Therefore, people would not be exposed to significant loss, injury, or death involving earthquake or rockfall. These issues are not discussed further in this analysis.

Types of soil impacts include soil removal, soil profile mixing, soil compaction, soil erosion, and soil contamination. Construction activities that may result in soil impacts include the installation of towers, vaults, and other structures associated with the proposed action. Affected areas would be relatively small in size at each facility site. Trenching activities required for fiber installation (HMC and MLJ) would require excavation and recompaction of soil, as well as road repair. Disturbed soils would be restored following construction, and long-term impacts would be limited to the areas where new facilities were constructed. Operation-related impacts would include potential structural damage from ground-shaking and minor impacts to soils due to erosion around foundations and structures. Additional technical information, including site-specific geotechnical investigations, would further address potential geohazards (i.e., landslide, rockfall, or groundshaking), such as exposure of proposed facility sites to damage. In addition to conformance with the Uniform Building Code, site preparation and foundation geotechnical recommendations would be incorporated into the grading and construction plans.

New Facility Sites

Big Oak Flat Repeater (BOFR)

Construction and Operation-related Impacts. The location of the BOFR site is currently undisturbed. The underlying soil type is Typic Dystroxerepts- Humic Dystroxerepts complex, 0 to 20% slopes, ridge crests, frigid/mesic. This soil type has a slight erosion hazard rating. Construction at the BOFR site would likely require minor surface impacts where the new tower footing would be poured. Impacts to soil would be minor but long-term where the footing is placed. Any areas affected by short-term soil disturbance would be restored following construction.

Impact Significance. Site-specific, short- and long-term, minor, adverse, impact.

Hetch Hetchy Entrance (HHE)

Construction and Operation-related Impacts. The HHE site is in a developed area located on Hetch Hetchy Road. The underlying soil type is Typic Dystroxerepts- Ultic Haploxeralfs complex, 0 to 15% slopes, mountain slopes, moraines, mesic. This soil type has a moderate erosion hazard rating. Development of this site would require construction of a new tower, a new radio equipment cabinet, and a new power pole. These construction activities would likely result in short-term surface impacts to soil, and minor long-term impacts to soil where the new vault and footing for the tower are constructed.

Impact Significance. Site-specific, short- and long-term, minor, adverse, impact.

Hodgdon Meadow Maintenance Complex (HMC)

Construction and Operation-related Impacts. The underlying soil type at the HMC site is Humic Dystroxerepts- Typic Haploxerults complex, 5 to 35% slopes, mountain footslopes, landslides, mesic. This soil type has a moderate soil hazard rating. The site would require

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trenching for 4,500 feet of fiber. These construction activities would likely result in short- term surface impacts. Trenching would likely take place in or adjacent to an existing paved road on gently to moderately sloping terrain, and all other proposed activities would be limited to existing structures and would not likely require any surface impacts. Disturbed soils would be restored following construction, which would minimize the potential for long- term impacts.

Impact Significance. Site- specific, short- term, minor, adverse, impact.

May Lake Junction (MLJ)

Construction and Operation- related Impacts. The underlying soil type at the MLJ facility site is Canisrocks- Xeric Dystrocryepts complex, 15 to 45% slopes, mountain slopes, moraines, cryic. This soil type has a severe erosion hazard rating. This site would require trenching for 12 miles of fiber within Tioga Road. Portions of the roadway are located on or adjacent to steep slopes. The site would also require construction of a new tower, equipment cabinet, and photo voltaic panel, which would all require new footings to be poured. These construction activities would likely result in short- term surface impacts where the fiber trench is excavated and where construction activities would occur. Long- term impacts may occur where the footings of the new tower, equipment cabinet, and photo voltaic panel would be poured. Disturbed soils would be restored following construction, which would minimize the potential for long- term impacts.

Impact Significance. Site- specific, short- and long- term, minor to moderate, adverse, impact.

Wawona (WAW)

Construction and Operation- related Impacts. The WAW site is located in an existing NPS maintenance facility located off Wawona Road, and would require construction of a new tower, ice bridge, and radio cabinet in a developed area. The underlying soil type is Oxyaquic Dystroxerepts- Dystric Xerorthents- Vitrandic Xerorthents- Rubble land complex, stony, 0 to 20% slopes, mountain valleys, mesic. This soil type has a slight erosion hazard rating. Short- term surface impacts to soils could result from construction activities, and minor long- term impacts may occur where the footing for the tower, ice bridge, and radio cabinet would be constructed.

Impact Significance. Site- specific, short- and long- term, minor, adverse, impact.

Existing Facility Sites

Crane Flat (CRN)

Construction and Operation- related Impacts. The CRN site is located at an existing heliport and would require the replacement of two existing wooden poles with a self- support tower and replacement of an existing vault with a new 10×20- foot vault. The underlying soil type is Typic Dystroxerepts- Humic Dystroxerepts complex, 0 to 20% slopes, ridge crests, frigid/mesic. This soil type has a slight erosion hazard rating. Short- term surface impacts to soils could result from construction activities, and minor long- term impacts may occur at the footings for the new tower and under the new vault.

Impact Significance. Site- specific, short- and long- term, minor, adverse, impact.

Eagle Peak Repeater (EGP)

Construction and Operation- related Impacts. The EGP site is located on Eagle Peak in the Stanislaus National Forest. The underlying soil type is Humic Haploxerepts- Rock outcrop- Ultic Haploxeralfs association, 45 to 100% slopes, metasedimentary, mountain slopes, thermic. This soil type has a very severe erosion hazard rating. This site would not require the construction of a new self support tower; equipment would be installed on the existing tower. Short- term surface impacts to soils could result from the use of construction equipment at the facility site.

Impact Significance. Site- specific, short- and long- term, negligible, adverse, impact.

El Portal (ELP)

Construction and Operation- related Impacts. The ELP site is located at the existing El Portal Administrative Area, and would require the extension of an existing self- support tower from the current 60 feet to 100 feet tall. The underlying soil type is Dystric Xeropsamments- Dystric Xerorthents association, 0 to 20% slopes, mountain valleys, thermic. This soil type has a slight erosion hazard rating. Short- term surface impacts to soils could result from construction activities, but no additional long- term impacts are anticipated.

Impact Significance. Site- specific, short- term, negligible, adverse, impact.

Hennes Ridge (HEN)

Construction and Operation- related Impacts. The HEN site is located at an existing communications facility and would require the replacement of an existing guyed- tower with a self- support tower, and a new ice bridge. The underlying soil type is Typic Dystroxerepts- Humic Dystroxerepts- Rock outcrop association, 15 to 45% slopes, mountain slopes, frigid. This soil type has a severe erosion hazard rating. Short- term surface impacts to soils could result from construction activities, and minor long- term impacts may occur at the footings for the new tower.

Impact Significance. Site- specific, short- and long- term, minor, adverse, impact.

Mt. Bullion (MTB)

Construction and Operation- related Impacts. The MTB site is located at a communications facility administered by the State of California. The underlying soil type is Trabuco very rocky clay loam, 15 to 50% slopes, eroded. This soil type has a moderate erosion hazard rating. The existing grid antenna would be replaced with a parabolic antenna, and would not require any other construction. Short- term surface impacts to soils could result from construction activities, but no additional long- term impacts are anticipated.

Impact Significance. Site- specific, short- term, negligible, adverse, impact.

Sentinel Dome (SNT)

Construction and Operation- related Impacts. The SNT site is located at an existing communications compound and would require the replacement of an existing wood pole with a self- support tower, and the construction of a new 12×24- foot vault and an ice bridge. The underlying soil type is Rock outcrop- Canisrocks- Xeric Dystrocryepts complex, 5 to 45% slopes, moraines, mountain slopes, cryic. The erosion hazard for this type is not rated. Short- term

surface impacts to soils could result from construction activities, and minor long- term impacts may occur at the footings of the new tower, ice bridge, and vault.

Impact Significance. Site- specific, short- and long- term, minor, adverse, impact.

Sentinel Reflector (SNTReflector)

Operation- related Impacts. The SNTReflector is proposed to be used as a passive reflector, but no improvements are proposed at the site. The underlying soil type is Craneflat- Rock outcrop- Rubble land- Waterwheel association, 30 to 80% slopes, mountainflanks, frigid. The erosion hazard rating for this soil type is unrated. No short or long- term surface impacts would be required at the site.

Impact Significance. Site specific, long- term, negligible, adverse, impact.

Turtleback Dome (TRT)

Construction and Operation- related Impacts. The TRT site is located at an existing communications facility and would require the replacement of an existing pole and vault with a new self- support tower and 12×24- foot vault, and would include construction of a new ice bridge. The underlying soil type is Craneflat- Rock outcrop- Rubble land- Waterwheel association, 30 to 80% slopes, mountainflanks, frigid. The erosion hazard rating for this soil type is not rated. Short- term surface impacts to soils could result from construction activities, and minor long- term impacts may occur at the footings for the new tower and under the new vault.

Impact Significance. Site- specific, short- and long- term, minor, adverse, impact.

Wawona Point (WWP)

Construction and Operation- related Impacts. The WWP site is located in an existing communications compound and would require the replacement of an existing wood pole with a self- support tower, and the construction of a new ice bridge to an existing communications vault. The underlying soil type is Waterwheel- Typic Dystroxerepts complex, 30 to 70% slopes, landslides, mountain slopes, frigid. The erosion hazard for this soil type is moderate. Short- term surface impacts to soils could result from construction activities, and minor long- term impacts may occur at the footings of the new tower and ice bridge.

Impact Significance. Site- specific, short- and long- term, minor, adverse, impact.

Yosemite Valley (VLY)

Construction and Operation- related Impacts. The VLY site is located in a developed park maintenance facility. The site would require construction of a new self- support tower and a 10×12- foot vault. The underlying soil type is Happyisles complex, 1 to 5% slopes, mesic. The erosion hazard rating for this soil type is slight. Short- term surface impacts to soils could result from construction activities, and minor long- term impacts may occur at the footings for the new tower and under the new vault.

Impact Significance. Site- specific, short- and long- term, minor, adverse, impact.

Conclusion. Construction- related impacts would include grading and soil disturbance from equipment, tower and structure construction, and trenching. Operation- related impacts would include compaction of soils and possibly minor topsoil erosion around structures.

Impairment. Though there would be grading, trenching, and soil compaction, geology and soils would not be impaired under this alternative.

Impacts under Alternative 3 (Alternative Sites or Equipment)

Under Alternative 3, alternative locations for towers and equipment are proposed within the Crane Flat, Eagle Peak, and Hetch Hetchy Entrance facility sites. A new tower would not be constructed at the Yosemite Valley facility site (the equipment would be co- located on an existing tower). The geologic and soil conditions of these facility sites are similar as the locations under Alternative 2. Construction and operation- related impacts for alternative facility sites at Crane Flat, Eagle Peak, Hetch Hetchy, and Yosemite Valley are discussed below.

Crane Flat (CRN)

Construction and Operation- related Impacts. A new self- support tower would be constructed approximately 160 feet southwest of the Crane Flat fire lookout. The existing equipment vault would be removed and replaced with a new vault in approximately the same location. The underlying soil type is Typic Dystroxerepts- Humic Dystroxerepts complex, 0 to 20% slopes, ridge crests, frigid/mesic. This soil type has a slight erosion hazard rating. Short- term surface impacts due to soil disturbance and erosion could result from construction activities, and minor long- term impacts may occur at the footings for the new tower and under the new vault. Operation- related impacts would include potential structural damage from ground- shaking and minor impacts to soils during maintenance activities.

Impact Significance. Site- specific, short- and long- term, minor, adverse, impact.

Eagle Peak Repeater (EGP)

Construction and Operation- related Impacts. The EGP site is located on Eagle Peak in the Stanislaus National Forest. The underlying soil type is Humic Haploxerepts- Rock outcrop- Ultic Haploxeralfs association, 45 to 100% slopes, metasedimentary, mountain slopes, thermic. This soil type has a very severe erosion hazard rating. This site would require the construction of a new self support tower. Short- term surface impacts to soils could result from construction activities, and minor long- term impacts may occur at the footings of the new tower.

Impact Significance. Site- specific, short- and long- term, minor, adverse, impact.

Hetch Hetchy Entrance (HHE)

Construction and Operation- related Impacts. The tower would be constructed approximately 150 feet northeast of the Hetch Hetchy entrance kiosk. Development of this site would require construction of a new tower, a new radio equipment cabinet, and trenching to an existing power line. The underlying soil type is Typic Dystroxerepts- Ultic Haploxeralfs complex, 0 to 15% slopes, mountain slopes, moraines, mesic. This soil type has a moderate erosion hazard rating. Short- term surface impacts due to soil disturbance and erosion could result from construction activities, and minor long- term impacts may occur at the footings for the new tower and under

the new vault. Operation- related impacts would include potential structural damage from ground- shaking and minor impacts to soils during maintenance activities.

Impact Significance. Site- specific, short- and long- term, minor, adverse, impact.

Yosemite Valley (VLY)

Construction and Operation- related Impacts. The VLY site is located in a developed area, and proposed equipment would be installed on an existing tower, and in an existing equipment shelter. The underlying soil type is Happyisles complex, 1 to 5% slopes, mesic. The erosion hazard rating for this soil type is slight. Short- and long- term impacts would be negligible, because the surface surrounding the facility site is either paved or improved compacted soil, and no ground disturbance would occur.

Impact Significance. Site- specific, short- and long- term, negligible, adverse, impact.

Conclusion. Construction- related impacts would include grading and soil disturbance from equipment, tower and structure construction, and trenching, resulting in minor adverse impacts. Operation- related impacts would be minor, and would include compaction of soils during periodic maintenance activities, and possibly minor topsoil erosion around structures.

Impairment. Though there would be grading, trenching, and soil compaction, geology and soils would not be impaired under this alternative.

HYDROLOGY, FLOODPLAINS, AND WATER QUALITY

Affected Environment

Hydrology

Sites identified in the proposed action are predominantly located on peaks or ridges above major surface waters in Yosemite National Park (Park) and Stanislaus National Forest. All of the sites are within the watersheds of the Tuolumne and Merced Rivers, which are tributaries to the San Joaquin River, and flow approximately east to west through the project area. All sites are within the boundaries of Yosemite National Park with the exception of the EGP and site, located in Stanislaus National Forest, and the MTB site, located on State property west of Yosemite National Park. Though these two sites are located outside Yosemite National Park, they are still within the watersheds of the Merced and Tuolumne Rivers. The Tuolumne River drains approximately 428,155 acres of land within Yosemite National Park, and the Merced River drains approximately 319,840 acres of land within Yosemite National Park. Annual rainfall in Yosemite National Park ranges from 36 inches to 50 inches (NPS 2004c).

Floodplains

The floodplain of the Merced River in Yosemite Valley is well developed in some sections, such as in meadow areas in Yosemite Valley. In other areas the floodplain is lacking due to narrowing of canyon / valley walls, such as the gorge, or incision of the channel into moraine deposits. The floodplain that occurs in Yosemite Valley serves many hydrologic functions, including dissipation of flood water energy as water spreads out over the flat, expansive plain. The meadows in

Yosemite Valley occur primarily in the floodplain and are maintained and rejuvenated by periodic floodwaters. The river channel in El Portal is narrow and steep, and can shift laterally during large floods. In Wawona, the river meanders less than in Yosemite Valley, but the river channel can shift laterally during large floods (NPS 2004c).

Water Quality

Water quality throughout Yosemite National Park is considered to be good and is generally above state and federal standards. The surface water quality of most park waters is considered by the State of California to be beneficial for wildlife habitat, freshwater habitat, and for canoeing, rafting, and other recreation, as indicated in the 1998 Central Valley Regional Water Quality Control Board's (RWQCB) *Water Quality Control Plan* (NPS 2004c). The two sites that are outside of Yosemite National Park's boundaries, EGP and MTB, are in close proximity to the park. Water quality near these sites is similar to that of the water quality within Yosemite National Park.

The Merced River and the Tuolumne River are not listed as impaired on the EPA 303(d) list of water quality limited segments in the vicinity of the facility sites (RWQCB 2006).

Big Oak Flat Repeater (BOFR)

The BOFR site is located on a ridge along the border of the Merced and Tuolumne River watersheds, and is not in the immediate vicinity of any major surface water features. The headwaters of Moss Creek, a tributary to the Merced River, are located approximately 0.25 mile south of the site.

Crane Flat (CRN)

The CRN site is located on a peak along the border of the Merced and Tuolumne River watersheds and is not in the immediate vicinity of any major surface water features. The nearest surface water feature is a spring-fed tributary to North Crane Creek, approximately 0.5 mile east of the CRN site.

Eagle Peak Repeater (EGP)

The EGP site is located in the Stanislaus National Forest within the Merced River watershed and is not in the immediate vicinity of any major surface waters. The nearest surface water feature is the Merced River, approximately one mile south of the EGP site.

El Portal (ELP)

The ELP site is located in an administrative yard approximately 400 feet north of the Merced River, and is within the Merced River watershed. This site is not within the 100- year floodplain of the Merced River.

Heness Ridge (HEN)

The HEN site is located in the Merced River watershed and is not in the immediate vicinity of any major surface waters. The nearest surface water is Elevenmile Creek, approximately 0.4 mile southeast of the site, which flows into the South Fork of the Merced River.

Hetch Hetchy Entrance (HHE)

The HHE site will be located outside of a wetland feature located behind the Mather Ranger Station garage. The nearest major surface water feature is the Tuolumne River, which is approximately 0.9 mile west of the site.

Hodgdon Meadow Maintenance Complex (HMC)

The HMC site is located in the Tuolumne River watershed. A spring- fed tributary of the Tuolumne River and wetlands occur approximately 800 feet south of the site in Hodgdon Meadow.

May Lake Junction (MLJ)

The MLJ site is located in the Merced River watershed approximately 300 feet west of Snow Creek, and approximately 900 feet northwest of an unnamed lake. Snow Creek conveys flows from May Lake to Tenaya Creek. The proposed project would include trenching for and installing approximately 12 miles of fiber from the MLJ site to Tuolumne Meadow. Tioga Road crosses nine creeks between MLJ and Tuolumne Meadows, and a portion of the roadway is adjacent to Tenaya Lake.

Mt. Bullion (MTB)

The MTB site is located on the peak of Mt. Bullion along the border of the Merced River and Mariposa watersheds, and is not in the immediate vicinity of any major surface waters. Mariposa Creek flows approximately one mile east of the site.

Sentinel Dome (SNT)

The SNT site is located near the peak of Sentinel Dome in the Merced River watershed, and is not in the immediate vicinity of any major surface waters. The headwaters of an unnamed tributary to the Merced River are located approximately 1,000 feet west of the site, and the Merced River is located approximately 0.9 mile north of the site.

Sentinel Reflector (SNTReflector)

The SNTReflector site is located near Union Point in the Merced River watershed, and is not in the immediate vicinity of any major surface waters. The headwaters of an unnamed tributary to the Merced River are located approximately 1,500 feet southwest of the site and the Merced River is located approximately 0.6 mile north of the site.

Turtleback Dome (TRT)

The TRT site is located on a rocky barren area north of Highway 41 in the Merced River watershed, and is not in the immediate vicinity of any major surface waters. The Merced River is located approximately 0.6 mile north of the site.

Yosemite Valley (VLY)

The VLY site is located in Yosemite Village, in the heart of the Merced River watershed, and is not in the immediate vicinity of any major surface waters. Lehamite Creek flows approximately 0.4 mile east of the site, and Yosemite Creek flows approximately 0.25 mile west of the sites. The site is approximately 0.5 mile north of the Merced River, but is not within the 100- year floodplain.

Wawona (WAW)

The WAW site is located approximately 450 feet northwest of the South Fork of the Merced River within the Merced River watershed. This site is not within the 100- year floodplain.

Wawona Point (WWP)

The WWP site is located in the Mariposa Grove within the Merced River watershed, and is not in the immediate vicinity of any major surface waters. There are three small unnamed tributaries to the South Fork of the Merced River within approximately 0.3 mile of the site.

Environmental Consequences

Hydrology refers to hydrologic processes such as flooding, erosion and deposition, and channel movement. Floodplain values are attributes of flooding that contribute to ecosystem quality, such as recharge of riparian ground water. Particular attention was given to alterations or restoration of the floodplain (e.g., placement or restoration of facilities in a floodplain). Water quality refers to the suitability of surface water for recreational use and wildlife habitat, particularly the enhancement or degradation of water quality. The NPS *Freshwater Resource Management Guidelines*, found in NPS- 77 (NPS 2004d) requires the NPS to “maintain, rehabilitate, and perpetuate the inherent integrity of water resources and aquatic ecosystems.” The Clean Water Act (CWA) requires the NPS to comply with all federal, state, interstate, and local requirements, administrative authority, and process and sanctions respecting the control and abatement of water pollution.

The Stanislaus Forest Plan as amended, Forestwide Standards and Guidelines for Water Quality, has Water Quality Management Practice 18- A, which gives general direction to comply with all applicable federal and state water quality standards and to prevent or minimize as much as possible any water quality impacts which may be caused by Forest management activities. The Standards and Guidelines for Management Practice 18- A requires the implementation of BMPs to minimize or prevent water pollution generated by non- point sources, which is applicable to all Stanislaus Forest management activities.

Intensity Level Definitions

Impacts to hydrology were evaluated using the process described at the beginning of this chapter. Impact threshold definitions for hydrology are as follows:

Negligible: Hydrology and water quality would not be affected, or effects would not be measurable, and would not affect beneficial uses of receiving waters. Any effects to the hydrologic regime would be slight and short- term.

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- Minor:** Effects to hydrology, such as an increase or decrease in surface or groundwater flow, would be detectable. Effects to water quality would be detectable and may affect beneficial uses of receiving waters. If mitigation is needed to offset adverse effects, it would be relatively simple to implement.
- Moderate:** Effects to hydrology would be readily apparent. Effects to water quality would be readily apparent and would affect beneficial uses of receiving waters. Mitigation would probably be necessary to offset adverse effects.
- Major:** Effects to hydrology would be readily apparent and would substantially change the hydrologic regime over the area. Effects to water quality would be readily apparent and would substantially change beneficial uses of surface or groundwater. Extensive mitigation would probably be necessary to offset adverse effects, and its success could not be guaranteed.
- Impairment:** A permanent adverse change would occur to the hydrologic regime and water quality over a large area of Yosemite National Park, affecting the resource to the point that the park's purposes could not be fulfilled and enjoyment by future generations of the hydrologic resources of the park would be precluded.

Assumptions

The analysis of impacts to hydrology and water quality is based on the assumption that the Proposed Action would include standard procedures related to grading and erosion control and stormwater runoff.

Grading and Erosion Control

The proposed action, which includes development at facility sites, could expose approximately three acres of disturbed construction area to stormwater runoff, particularly in the vicinity of new facility sites and associated trenching at BOFR, HHE, HMC, MLJ, and WAW. Standard best management practices would be implemented by the park, which would minimize the potential for sediment and pollutant discharge. Prior to construction, if determined necessary, NPS would file a Notice of Intent to discharge stormwater to the RWQCB and prepare and implement provisions of a Storm Water Pollution Prevention Plan (SWPPP) to control runoff from construction activities, which would be short- term in nature. The BMPs specified in the SWPPP would specify means of waste disposal, post- construction sediment and erosion control, and maintenance responsibilities. The construction contractor(s) would also be required to implement appropriate hazardous materials management practices to reduce the possibility of chemical spills or releases of contaminants, including any non- stormwater discharge to drainage channels. Post- construction permanent BMPs would also be implemented where deemed necessary, to minimize long- term effects from land disturbances and contaminated runoff.

Impacts under Alternative 1 (No Action Alternative)

The Yosemite National Park CDN would continue to operate as it currently does under this alternative. No grading or construction would occur; therefore, no changes to existing hydrology, floodplains, or water quality would occur. This alternative would not result in any adverse impacts to hydrologic processes.

Impact Significance. Site- specific, long- term, negligible adverse, impact.

Conclusion. No construction- related impacts would occur. Operation- related impacts would not affect hydrology, floodplains, or water quality.

Impairment. Under Alternative 1, hydrological and water quality resources would not be impaired.

Impacts under Alternative 2 (Preferred)

New Facility Sites

Big Oak Flat Repeater (BOFR)

Construction and Operation- related Impacts. This site is currently undisturbed. Construction at the BOFR site would likely require minor surface impacts where the new tower footing would be poured. This site is not located near any rivers or surface waters, and would therefore have no impact on river hydrology or water quality, and would not present a potential flood hazard.

Impact Significance. Site- specific, short- and long- term, negligible, adverse, impact.

Hetch Hetchy Entrance (HHE)

Construction and Operation- related Impacts. The site is currently undisturbed. Development of this site would require construction of a new tower, a new radio equipment cabinet, trenching, and a new power pole. These construction activities would likely result in short- term surface impacts. This site is not subject to flooding. A wetland feature is located approximately 350 feet from the proposed power source for the facility, and a minimum of 20 feet from proposed trenching activities. Implementation of BMPs would prevent erosion and down- gradient sediment discharge into the wetland feature. The proposed action would therefore have negligible on surface hydrology or water quality, and would not present a potential flood hazard.

Impact Significance. Site- specific, short- and long- term, negligible, adverse, impact.

Hodgdon Meadow Maintenance Complex (HMC)

Construction and Operation- related Impacts. Development of this site would require trenching for 4,500 feet of fiber. These construction activities would likely result in short- term surface impacts. Trenching would likely take place in or adjacent to an existing paved road on gently to moderately sloping terrain, and standard erosion control measures would be implemented. All other proposed activities would be confined to existing structures, and surface impacts would be unlikely. This site is not located near any surface water and is not subject to flooding. The proposed action would therefore have no impact on surface hydrology or water quality, and would not present a potential flood hazard.

Impact Significance. Site- specific, short- term, minor, adverse, impact.

May Lake Junction (MLJ)

Construction and Operation- related Impacts. This proposed facility site is located approximately 300 feet west of Snow Creek. Development of MLJ would include 12 miles of trenched fiber installation within Tioga Road between MLJ and Tuolumne Meadows. Tioga Road crosses nine major creeks between MLJ and Tuolumne Meadows, and a portion of the roadway is adjacent to Tenaya Lake. These construction activities could result in short- term surface impacts

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to upland areas and indirect impacts to the creeks and Tenaya Lake. Short term surface impacts would include temporary disturbances to the shoulder of Tioga Road. Disturbed soils would be restored following construction, which would minimize the potential for long- term impacts. Indirect impacts could include deposition of run- off containing pollutants such as sediment and construction oils, fuels, and materials into adjacent surface waters. Implementation of standard erosion control measures and BMPs would address these issues, and avoid the potential for long-term major impacts.

Impact Significance. Site- specific, short- term, moderate, adverse, impact. Site- specific, long-term, negligible, adverse, impact.

Wawona (WAW)

Construction and Operation- related Impacts. This site would require construction of a new tower, ice bridge, and radio cabinet in a developed area. It is likely that surface impacts would be minimal and limited to the footing for the tower and possible ice bridge. This site is located approximately 450 feet northwest of the South Fork of the Merced River, but is not likely to impact surface hydrology and water quality, or present a flood hazard.

Impact Significance. Site- specific, short- and long- term, negligible, adverse, impact.

Existing Facility Sites

Crane Flat (CRN)

Construction and Operation- related Impacts. Construction activities at the CRN site would include construction of a new self- support tower within an undeveloped area, and replacement of an existing equipment vault. These activities are likely to cause short- term and long- term surface impacts where currently un- surfaced areas would be covered by the foundation and footings for the new tower and vault. This site is not located near any surface water and is not subject to flooding. The proposed action would therefore have no impact on surface hydrology and water quality, or present a flood hazard.

Impact Significance. Site- specific, short- and long- term, negligible, adverse, impact.

Eagle Peak Repeater (EGP)

Construction and Operation- related Impacts. The EGP site would require minor surface impacts where construction equipment would be operated to install equipment on the existing tower. This site is not located near any surface water and is not subject to flooding. The proposed action would therefore have no impact on surface hydrology and water quality, or present a flood hazard.

Impact Significance. Site- specific, short- and long- term, negligible, adverse, impact.

El Portal (ELP)

Construction and Operation- related Impacts. The ELP site is not likely to have any surface impacts because the existing tower would be extended and no new footprint would be required. This site is located approximately 400 feet north of the Merced River, but is not within the FEMA 100- year flood zone. The proposed action does not require expansion of the existing footprint,

and would therefore have no impact on surface hydrology and water quality, or present a flood hazard.

Impact Significance. Site- specific, short- term, negligible, adverse, impact.

Hennes Ridge (HEN)

Construction and Operation- related Impacts. The HEN site may have minor surface impacts where footings for the new tower and ice bridge would be placed. However, the total footprint of the new construction will not be much larger than the footings for the existing tower. This site is not located near any surface water and is not subject to flooding. The proposed action would therefore have no impact on surface hydrology and water quality, or present a flood hazard.

Impact Significance. Site- specific, short- and long- term, negligible, adverse, impact.

Mt. Bullion (MTB)

Construction and Operation- related Impacts. The MTB site is not likely to require ground disturbance because a new antenna would be placed on an existing tower. This site is not located near any surface water and is not subject to flooding. The proposed action would therefore have no impact on surface hydrology and water quality, or present a flood hazard.

Impact Significance. Site- specific, short- and long- term, negligible, adverse, impact.

Sentinel Dome (SNT)

Construction and Operation- related Impacts. The SNT site would likely have short- term and long- term surface impacts where a new vault and new footings for a tower would create impervious surfaces. This site is not located near any surface water and is not subject to flooding. The proposed action would therefore have no impact on surface hydrology and water quality, or present a flood hazard.

Impact Significance. Site- specific, short- and long- term, negligible, adverse, impact.

Sentinel Reflector (SNTReflector)

Operation- related Impacts. The SNTReflector is proposed to be used as a passive reflector, but no improvements are proposed at the site. The proposed action would therefore have no impact on surface hydrology and water quality, or present a flood hazard.

Impact Significance. Site- specific, long- term, negligible, adverse, impact.

Turtleback Dome (TRT)

Construction and Operation- related Impacts. Construction activities at the TRT site would include development of a new vault, tower, and ice bridge, and removal of an existing vault. These activities would create impervious surface where the new structures are placed. This site is not located near any surface water and is not subject to flooding. The proposed action would therefore have no impact on surface hydrology and water quality, or present a flood hazard.

Impact Significance. Site- specific, short- and long- term, negligible, adverse, impact.

Wawona Point (WWP)

Construction and Operation- related Impacts. Construction of a new tower and ice bridge at the WWP site would likely cause minor surface impacts where the footings would create new impervious surfaces. This site is located approximately 450 feet northwest of the South Fork of the Merced River, but is not subject to flooding and is outside of the 100- year floodplain. The proposed action would therefore have no impact on surface hydrology and water quality, or present a flood hazard.

Impact Significance. Site- specific, short- and long- term, negligible, adverse, impact.

Yosemite Valley (VLY)

Construction and Operation- related Impacts. The VLY site would likely have short- term and long- term surface impacts where a new vault and new footing for a tower would create additional impervious surfaces. This site is located between Yosemite and Lehamite creeks, but is not subject to flooding and is not in the 100- year floodplain. The proposed action would therefore have a negligible on surface hydrology and water quality.

Impact Significance. Site- specific, short- and long- term, negligible, adverse, impact.

Conclusion. Construction- related impacts resulting from facility construction would include temporary changes in surface runoff that could be managed with the proper implementation of BMPs and would be relatively small in size. Trenching activities located within Tioga Road would require implementation of BMPs to avoid pollutant and sediment discharge into adjacent surface waters. Long- term impacts resulting from the construction of new footings and vault foundations could increase the amount of impervious surface at the communication sites, but this increased amount is not likely to affect the hydrology or water quality at the sites, or to present a flood hazard. Operation- related impacts would be minimal, and would not likely affect hydrology, water quality, or flood risk at the sites.

Impairment. While ground disturbance would occur during grading and construction activities, hydrology and water quality in Yosemite National Park would not be impaired under Alternative 2.

Impacts under Alternative 3 (Alternative Sites or Equipment)

Alternative 3 proposes alternative facility site locations at Crane Flat, Eagle Peak, and Hetch Hetchy Entrance. A new tower would not be constructed at the Yosemite Valley site. Potential impacts would be similar to those discussed under Alternative 2.

Crane Flat (CRN)

Construction and Operation- related Impacts. Construction activities at the CRN site would include construction of a new self- support tower within an undeveloped area, and replacement of an existing equipment vault. These activities are likely to cause short- term and long- term surface impacts where currently un- surfaced areas would be covered by the foundation and footings for the new tower and vault. This site is not located near any surface water and is not subject to flooding. The proposed action would therefore have no impact on surface hydrology and water quality, or present a flood hazard.

Impact Significance. Site- specific, short- and long- term, negligible, adverse, impact.

Eagle Peak Repeater (EGP)

Construction and Operation- related Impacts. Construction activities at the EGP site would include construction of a new tower near the existing facility. These activities are likely to cause short- term and long- term surface impacts where currently un- surfaced areas would be covered by the foundation and footings for the new tower and vault. This site is not located near any surface water and is not subject to flooding. The proposed action would therefore have no impact on surface hydrology and water quality, or present a flood hazard.

Impact Significance. Site- specific, short- and long- term, negligible, adverse, impact.

Hetch Hetchy Entrance (HHE)

Construction and Operation- related Impacts. The site is currently undisturbed. Development of this site would require construction of a new tower, a new radio equipment cabinet, trenching, and a new power pole. These construction activities would likely result in short- term surface impacts. This site is not subject to flooding. A wetland feature is located approximately 250 feet from the proposed facility site, and 20 feet from the proposed power source for the facility, and proposed trenching activities. Implementation of BMPs would prevent erosion and down- gradient sediment discharge into the wetland feature. The proposed action would therefore have negligible on surface hydrology or water quality, and would not present a potential flood hazard.

Impact Significance. Site- specific, short- and long- term, negligible, adverse, impact.

Yosemite Valley (VLY)

Construction and Operation- related Impacts. Construction of this facility site is limited to improvements to an existing tower; therefore, the proposed action would therefore have a negligible on surface hydrology and water quality.

Impact Significance. Site- specific, short- and long- term, negligible, adverse, impact.

Conclusion. Construction- related impacts would include temporary changes in surface runoff that could be managed with the proper implementation of BMPs and would be relatively small in size. Long- term impacts resulting from the construction of new footings and vault foundations could increase the amount of impervious surface at the communication sites, but this increased amount is not likely to affect the hydrology or water quality at the sites, or to present a flood hazard. Operation- related impacts would be minimal, and would not likely affect hydrology, water quality, or flood risk at the sites.

Impairment. While ground disturbance would occur during grading and construction activities, hydrology and water quality in Yosemite National Park would not be impaired under Alternative 3.

WETLANDS

Affected Environment

Regional Setting

Generally, wetlands are lands where saturation with water is the dominant factor determining the nature of soil development and the types of plant and animal communities living in the soil and on its surface. Wetlands have many distinguishing features, the most notable of which are unique soils, saturated for at least part of the year, and vegetation adapted to or tolerant of saturated soils. Wetlands are considered highly valued resources because they perform a variety of hydrological and ecological functions vital to ecosystem integrity.

Aquatic and riparian systems are the most altered and impaired habitats of the Sierra Nevada (UC Davis 1996). Montane meadows often meet the criteria of wetlands. There are many meadows at mid- elevations in the park. Montane meadows of the Sierra Nevada are typically found in glaciated basins of the subalpine zone, but some meadows are scattered at elevations as low as 4,000 feet in the northern part of the range, and 6,000 feet in its southern portion (Whitney 1979 in Kattelman and Embury 1996).

Subalpine meadows make up a greater proportion of the landscape at elevations above 6,000 feet (Holland 1986). In general, meadows act as floodplains, capable of reducing peak downstream flows by detaining large volumes of water. As a result, sediment deposits in meadows and adds mass and nutrients (Kattelman and Embury 1996). Wetlands in the Sierra Nevada have been drained since the earliest settlers attempted to “reclaim” meadows and other seasonally wet areas with the intent of improving forage conditions and to permit agriculture (Hughes 1934 in Kattelman and Embury 1996).

The Cowardin system (1979) is used as the basis for wetland classification and protection by the NPS. The Cowardin system classifies wetlands based on the type of vegetative cover and life form, flooding regime, and substrate material. Jurisdictional wetlands are delineated and classified in accordance with Section 404 of the Clean Water Act. Cowardin wetlands include jurisdictional wetlands, but may also include certain nonvegetated sites lacking soil, if they meet specific criteria.

The NPS *Freshwater Resource Management Guidelines* (found in NPS- 77) requires the NPS to “maintain, rehabilitate, and perpetuate the inherent integrity of water resources and aquatic ecosystems.” The Clean Water Act requires the NPS to comply with all federal, state, interstate, and local requirements, administrative authority, and process and sanctions respecting the control and abatement of water pollution.

The Stanislaus Forest Plan as amended, Forestwide Standards and Guidelines for Water Quality, has Water Quality Management Practice 18- A, which gives general direction to comply with all applicable federal and state water quality standards, and to prevent or minimize as much as possible any water quality impacts which may be caused by Forest management activities. The Standards and Guidelines for Management Practice 18- A requires the implementation of BMPs to minimize or prevent water pollution generated by non- point sources, which is applicable to all Forest management activities.

Hetch Hetchy Entrance (HHE)

The HHE site is located near a U.S. Fish and Wildlife Service (USFWS) National Wetlands Institute (NWI) listed wetland feature, which is located behind the Mather Ranger Station (refer to Figure 3- 1). As described on the NWI map, this wetland area is considered palustrine, emergent and occasionally flooded. This wetland is likely generated from a nearby spring or drainage as the nearest known major surface water feature is the Tuolumne River, which is approximately 0.9 mile west of the site.

May Lake Junction (MLJ)

The MLJ facility site would be located in an upland boulder field located adjacent to Snow Creek. Snow Creek conveys flows from May Lake to Tenaya Creek. The upland site would be accessed via Tioga Road and May Lake Spur Road, both of which have existing crossings over Snow Creek. The proposed project would include trenching for and installing approximately 12 miles of fiber from the MLJ site to Tuolumne Meadow. It is assumed that the fiber optic trenching would be conducted within the existing Tioga Road prism. Tioga Road crosses nine creeks between MLJ and Tuolumne Meadows, and runs adjacent to Tenaya Lake (refer to Figure 3- 2).

Environmental Consequences

This section evaluates the potential impacts to wetlands associated with the proposed project. Evaluation of the proposed sites indicates that BOFR, CRN, EGP, HEN, HMC, MTB, SNT, TRT, WWP, and VLY are not located within or adjacent to wetlands or riparian areas. These sites would be accessed via existing roads. Since these sites are not located near any wetland resources and construction of new roads to access the sites would not be required, these sites are not assessed in this section.

Intensity Level Definitions

Impacts to wetlands were evaluated using the process described in the introduction to this chapter. Impact threshold definitions for wetlands are as follows:

- Negligible:** Wetlands would not be affected, or effects would not result in a loss of wetland function or value.
- Minor:** Effects to wetlands would be detectable and could result in a loss of wetland function or value. If mitigation is needed to offset adverse effects, it would be relatively simple to implement.
- Moderate:** Effects to wetlands would be readily apparent and would result in a loss of wetland function or value. Mitigation would probably be necessary to offset adverse effects.
- Major:** Effects to wetlands would be readily apparent and would substantially change the physical characteristics or result in a significant net loss of wetland function or value. Extensive mitigation would probably be necessary to offset adverse effects, and its success could not be guaranteed.

Impairment: A permanent adverse change would occur to wetlands in a large area of Yosemite National Park, affecting the resource to the point that the park's purposes could not be fulfilled and enjoyment by future generations of the wetlands or biological resources associated with this habitat would be precluded.

Impacts under Alternative 1 (No Action Alternative)

Under the No Action Alternative, all communication facility sites would remain in their current state, and no new grading or construction would occur. Implementation of this alternative would not result in any adverse impacts to wetlands or wetland hydrological processes.

Impact Significance. Local, long- term, negligible, adverse, impact.

Conclusion. No construction- related impacts would occur. No operation- related impacts would occur. Under Alternative 1, wetlands in Yosemite National Park would not be impaired.

Impacts under Alternative 2 (Preferred)

Hetch Hetchy Entrance (HHE)

Under Alternative 2, the HHE site is located in the vicinity of a meadow that is mapped as a palustrine emergent wetland (NWI 2009). The facility site is located approximately 250 feet from the wetland feature, within an undeveloped stand of pine trees near a NPS employee residential area. This location does not contain any documented wetlands or jurisdictional waters of the U.S. Trenching activities would be located a minimum of approximately 20 feet from the edge of the wetland. The proposed actions could result in minor impacts to the wetland feature if certain BMPs are not implemented. Such impacts could include sediment deposition and pollutant discharge.

Construction- related Impacts to Wetlands. Implementation of project activities at this facility site, including construction of a tower, equipment vault, and trenching for a power line, may indirectly impact wetland features that have been identified within the vicinity of this site. Based on field observations and the NWI maps, the adjacent wetland consist of a montane meadow that is largely undisturbed with exception to an unimproved vehicle trail that originates at the Mather Ranger Station parking area. Without adequate best management practices (BMPs), implementation of the proposed project could have short- term minor effects including inadvertent disturbance of the wetland habitat, and run- off containing pollutants such as sediment and construction oils, fuels, and materials. Implementation of standard erosion control measures and BMPs would address these issues, and avoid the potential for long- term major impacts.

Impact Significance. Site- specific, short- term, minor, adverse, impact.

Operation- related Impacts to Wetlands. Operation of the facility would include maintenance activities. Access to the facility would not require intrusion into the wetland feature; therefore impacts would be negligible.

Impact Significance. Site- specific, long- term, negligible, adverse, impact.

May Lake Junction (MLJ)

Under Alternative 2, construction of the MLJ facility would require installing approximately 12 miles of fiber optic cable within the existing Tioga Road prism. Tioga Road crosses nine major creeks that are likely jurisdictional waters of the U.S., and is located adjacent to Tenaya Lake. Installation of the fiber optic cables within the channel of these creeks would require compliance with the Clean Water Act. For the purposes of this analysis, it is assumed that: the fiber optic cable would be hung from existing creek crossing structures or above existing culverts; trenching and installation of fiber cable would be conducted entirely from the road surface, and; use of equipment within the bed and bank of creeks would be prohibited. Based on these assumptions, the proposed project would not result in direct impacts or dredge or fill in the creeks. Without adequate best management practices (BMPs), implementation of the proposed project could have short- term minor effects to wetlands including discharge of pollutants including sediment and construction oils, fuels, and materials. Implementation of standard erosion control measures and BMPs would address these issues, and avoid the potential for long- term major impacts.

Construction- related Impacts to Wetlands. This proposed facility site is located approximately 300 feet west of Snow Creek. Access to or construction of the facility site would not require any activities within Snow Creek; therefore, direct impacts to the creek are not anticipated.

Development of MLJ would include 12 miles of trenched fiber installation within Tioga Road. These construction activities could result in short- term surface impacts to upland areas and indirect impacts to nine major creeks and Tenaya Lake. Short term surface impacts would include temporary disturbances to the shoulder of Tioga Road. Disturbed soils would be restored following construction, which would minimize the potential for long- term impacts. Indirect impacts could include deposition of run- off containing pollutants such as sediment and construction oils, fuels, and materials into the creeks. Implementation of standard erosion control measures and BMPs would address these issues, and avoid the potential for long- term major impacts.

Impact Significance. Site- specific, short- term, moderate, adverse, impact.

Operation- related Impacts to Wetlands. Operation of the facility would include maintenance activities. Access to the facility, and repairs to the fiber line would not require intrusion into wetland features or creeks; therefore impacts would be negligible.

Impact Significance. Site- specific, long- term, negligible, adverse, impact.

Conclusion. Construction- related impacts would be limited to indirect stormwater runoff, which can be minimized by use of BMPs. Operation- related impacts would include effects resulting from maintenance activities.

Impairment. Grading and construction activities would occur in close proximity to wetland features adjacent to the HHE power source and Tioga Road; however, wetlands in Yosemite National Park would not be impaired under Alternative 2.



Figure 3-1. Hetch Hetchy Entrance Wetland Delineation Map

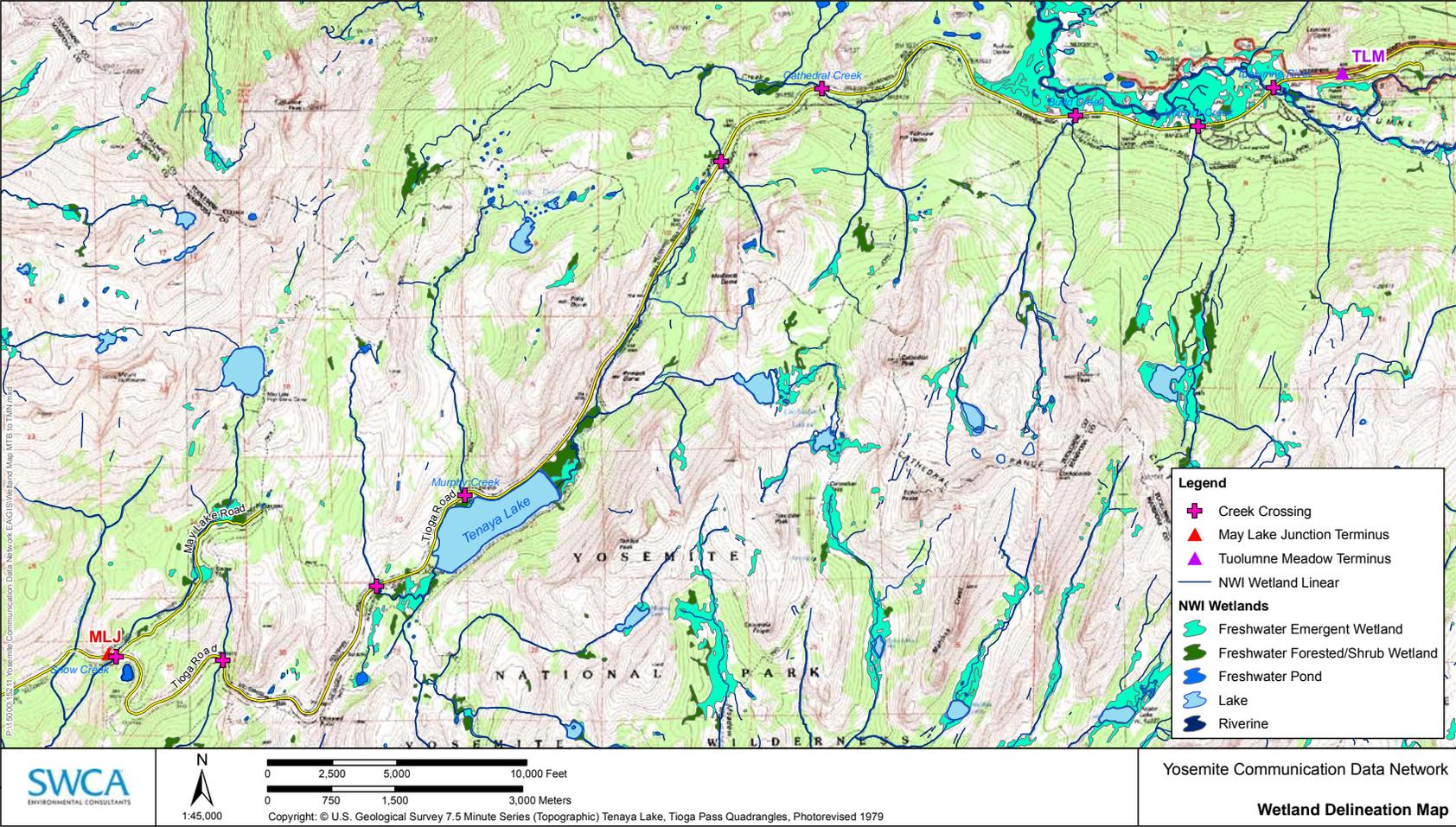


Figure 3-2. May Lake Junction to Tuolumne Meadows

Impacts under Alternative 3 (Alternative Sites or Equipment)

Alternative 3 proposes alternative facility site locations at CRN, EGP, and HHE. Equipment would be installed on an existing tower at the VLY facility site. No wetland features are located in proximity to the CRN, EGP, and VLY facility sites.

Hetch Hetchy Entrance (HHE)

Under Alternative 3, the HHE facility site is located 150 feet north of the entrance kiosk, on the northern side of Hetch Hetchy Road. This location does not contain any documented wetlands or jurisdictional waters of the U.S. Similar to Alternative 2, this facility requires trenching to an existing power line, located approximately 20 feet from the wetland feature.

Construction-related Impacts to Wetlands. Under Alternative 3, implementation of construction activities at the HHE facility site would not directly affect documented wetlands. Implementation of standard BMPs, including erosion control and management and containment of construction-related pollutant spills or leaks, would minimize the potential for indirect effects to wetlands located on the south side of Hetch Hetchy Road, adjacent to the Mather Ranger Station.

Impact Significance. Site-specific, short-term, minor, adverse, impact.

Operation-related Impacts to Wetlands. Operation of the facilities would include maintenance activities, which would be conducted outside of documented wetlands. Wetlands would not be affected during maintenance activities.

Impact Significance. Site-specific, long-term, negligible, adverse, impact.

Conclusion. Under Alternative 3, the facility sites would be located in upland areas, outside of documented wetland features. Construction-related impacts would be limited to indirect stormwater runoff affecting the hydrology of the wetlands. Due to the distance between the facility sites and documented wetlands, operational effects would be negligible.

Impairment. Grading and construction activities would occur in close proximity to a wetland feature adjacent to the HHE power source; however, wetlands in Yosemite National Park would not be impaired under Alternative 3.

VEGETATION

Affected Environment

Elevation, latitude, topography, climate, and soils influence the distribution of vegetation in the Sierra Nevada. About 1,500 plant species, subspecies, and varieties and numerous bryophytes and lichens occur in Yosemite National Park (NPS 1997). The major vegetation zones of the Sierra Nevada form readily apparent, large-scale, north-south elevational bands along the axis of the Sierra Nevada. Major east-west watersheds that dissect the Sierra Nevada into steep canyons form a secondary pattern of vegetation. The Park supports five major vegetation zones: chaparral/oak woodland, lower montane, upper montane, subalpine, and alpine. Straddling the crest of the Sierra Nevada is a zone of alpine vegetation that generally occurs above 11,000 feet.

Subalpine vegetation occurs at 8,000 to 11,000 feet above mean sea level (msl). Below the subalpine zone, upper montane coniferous forests range from about 6,000 up to 10,000 feet above msl in elevation. Lower montane mixed coniferous forests range from about 3,000 to 6,700 feet above msl. Brief discussions of the general vegetation types found in the park are provided below.

Montane Hardwood

Typically, this habitat is composed of a definite hardwood tree layer, made up primarily of California black oak and canyon live oak, with a poorly developed shrub layer. Some scattered conifers, such as Douglas- fir and ponderosa pine, may rise above the hardwood canopy. White and red fir is also present.

Lodgepole Pine

This habitat type forms open stands with sparse understory vegetation. Seedlings and saplings of lodgepole pine can, however, be abundant under the canopy of mature trees. At meadow edges, stands of lodgepole pines can contain rich herbaceous layers of grasses, forbs, and sedges.

Ponderosa Pine

This habitat type includes stands of coniferous trees dominated by ponderosa pines. Understory vegetation varies inversely with canopy closure; openings and fire- disturbed areas can support dense stands of shrubs, such as manzanita, dogwood, ceanothus, and buckthorn.

Sierra Mixed Conifer

This habitat type is found in Yosemite Valley, Henness Ridge, South Landing, Hazel Green, Big Oak Flat, Badger Pass, Wawona, and South Entrance. This habitat is a mixed assemblage of conifer and hardwood species that forms multiple forest layers. White and red fir is present.

Facility Sites

The proposed sites contain vegetation types with varying degrees of disturbance. The potential for project related impacts to native vegetation is greater when working in areas that are undisturbed. Table 3- 1 below provides a summary of the vegetative composition found at the proposed sites and identifies the presence of existing disturbances within the sites. Proposed facility sites and vegetation types within the park are shown in Figures 3- 3 through 3- 11.

Table 3-1. Summary of Vegetation Types at CDN Facility Sites

Proposed Site	Existing Disturbance	General Description
Big Oak Flat Repeater (BOFR)	No	5,000 feet elevation: Site is located in undisturbed Sierran mixed conifer forest with red fir, white-fir, ponderosa pine, and sugar pine. The understory vegetation is intact and includes <i>Arctostaphylos nevadensi</i> and <i>Rosa pinetorum</i> .

Table 3-1. Summary of Vegetation Types at CDN Facility Sites

Proposed Site	Existing Disturbance	General Description
Crane Flat (CRN)	Yes	6,600 feet elevation: Portion of site is developed, including existing communications facility. Development is surrounded by chaparral containing <i>Arctostaphylos patula</i> and <i>Ribes</i> sp., and Sierran mixed-conifer forest.
Eagle Peak Repeater (EGP)	Yes	4,600 feet elevation: Site is in an existing communications facility adjacent to chaparral containing juniper and scrub oak. Understory vegetation is intact.
El Portal (ELP)	Yes	1,600 feet elevation: Site is contained within existing urban development and adjacent to the montane hardwood forest containing Interior live oaks and black oaks.
Hennes Ridge (HEN)	Yes	6,300 feet elevation: Site contains an existing communications facility within a montane hardwood forest dominated by black oaks with a Greenleaf manzanita shrub layer.
Hetch Hetchy Entrance (HHE)	No	4,700 feet elevation: Site is within undisturbed ponderosa pine forest. Understory vegetation is sparse but intact.
Hodgdon Meadow Maintenance Complex (HMC)	Yes	4,600 feet elevation: Site is located within a developed maintenance yard adjacent to Hodgdon meadow and mixed conifer forest containing ponderosa and incense cedar.
May Lake Junction (MLJ)	No	8,400 feet elevation: Site is located in an undisturbed boulder field among red fir, western white pine, and lodgepole pine. Understory vegetation is sparse but intact.
Mt. Bullion (MTB)	Yes	4,200 feet elevation: Site supports an existing communications facility within cismontane woodland dominated by oaks.
Sentinel Dome (SNT)	Yes	7,700 feet elevation: Site supports an existing communication facility adjacent to a montane hardwood forest that includes Jeffrey pine, red oak and a huckleberry shrub layer.
Sentinel Reflector (SNTReflector)	Yes	6,400 feet elevation: Site supports an existing communication facility adjacent to Douglas-fir and Sierra mixed-conifer forest with white fir, red fir, and sugar pines.
Turtleback Dome (TRT)	Yes	5,200 feet elevation: Site supports an existing communication facility within mixed conifer forest that supports Jeffrey pine and canyon live oak.

Table 3-1. Summary of Vegetation Types at CDN Facility Sites

Proposed Site	Existing Disturbance	General Description
Yosemite Valley (VLY)	Yes	4,000 feet elevation: Site is within urban development containing various facilities and adjacent to ponderosa pine habitat.
Wawona (WAW)	Yes	4,000 feet elevation: Site supports a campground reservation office and fire department facilities located within mixed conifer forest with ponderosa pine and incense cedar.
Wawona Point (WWP)	Yes	6,800 feet elevation: Site supports an existing communication facility within a mixed conifer forest including white fir forest, sugar pine, and incense cedar.

Non- native Species. Most of the proposed sites are located within previously disturbed areas including maintenance yards and facility stations. These locations are preferred because they do not contain significant native vegetation; therefore, impacts to native vegetation are limited. However, these disturbed sites typically support various non- native or invasive species. These species have special adaptations to facilitate their spread into disturbed areas. Adaptations such as clinging seeds facilitate the species spread by attaching themselves to passing animals, cloths of personnel, or vehicle tires. Several of the proposed sites are located in undisturbed native habitat. Non- native seeds from disturbed sites can be transported to the undisturbed sites by construction equipment and personnel. Caution should be taken to prevent inadvertent transportation of seed from disturbed sites to undisturbed sites during construction of the proposed project.

Environmental Consequences

This impact assessment focuses on effects of project activities on vegetation communities. Vegetation is negatively affected when it is either temporarily or permanently removed, or when the natural processes that support it, such as hydrology, are interrupted. Disturbance that favors establishment of non- native species also affects vegetation. Non- native species can alter soil chemical and physical properties, hamper native species establishment, and ultimately alter native plant community structure and function. Impacts to vegetation communities were assessed in terms of context, duration, intensity, and type of impact, as discussed below.

Intensity Level Definitions

Impacts to native vegetation were evaluated using the process described in the introduction to this chapter. Impact threshold definitions for common vegetation are as follows:

Negligible: Native vegetation would not be affected, or effects would not be measurable.

Minor: Effects to native vegetation would be detectable. If mitigation is needed to offset adverse effects, it would be relatively simple to implement.

Moderate: Effects to native vegetation would be readily apparent. Mitigation would probably be necessary to offset adverse effects.

Major: Effects to native vegetation would be readily apparent and would substantially change the biological value of the native plant community. Extensive mitigation would probably be necessary to offset adverse effects, and its success could not be guaranteed.

Impairment: A permanent adverse change would occur to native vegetation communities in Yosemite National Park, affecting the resource to the point that the park's purposes could not be fulfilled and enjoyment by future generations of the park's vegetation would be precluded.

Impacts under Alternative 1 (No Action Alternative)

Under the No Action Alternative, all facility sites would remain in their current state, and no grading or construction activities would occur. No construction- related impacts to vegetation would occur. Operation- related impacts would be limited to maintenance activities associated with existing facilities.

Operation- related Impacts on Vegetation. Continued operation of existing facilities would require maintenance activities, including use of trucks and equipment. These activities would be limited to disturbed and developed areas adjacent to the existing towers and equipment vaults; therefore, effects to vegetation would be negligible.

Impact Significance. Local, long- term, negligible, adverse, impact.

Conclusion. No construction- related impacts would occur. Operation- related impacts would include negligible disturbance of native vegetation during maintenance activities. Under Alternative 1, vegetation communities in Yosemite National Park would not be impaired.

Impacts under Alternative 2 (Preferred)

Development of proposed facility sites would require ground disturbance and vegetation removal, including tree trimming or removal. Effects from heavy equipment and grading activities could include soil compaction, dust, root damage, erosion, and the introduction and spread of non- native species. Although vegetation removal would result in a permanent loss of vegetation, this loss would be limited to the specific sites for new foundations, towers, equipment shelters, and radio cabinets, and would not substantially fragment the existing natural plant communities, reduce species diversity, or substantially reduce the overall size or quality of the vegetation community at any proposed facility site. Effects to native vegetation during operation of the facility sites would be limited to temporary human disturbance during maintenance activities, such as trampling and vegetation/tree trimming. Disturbed areas that are outside the development footprint would be restored following construction to allow native vegetation to reestablish and prevent the spread of non- native plants.

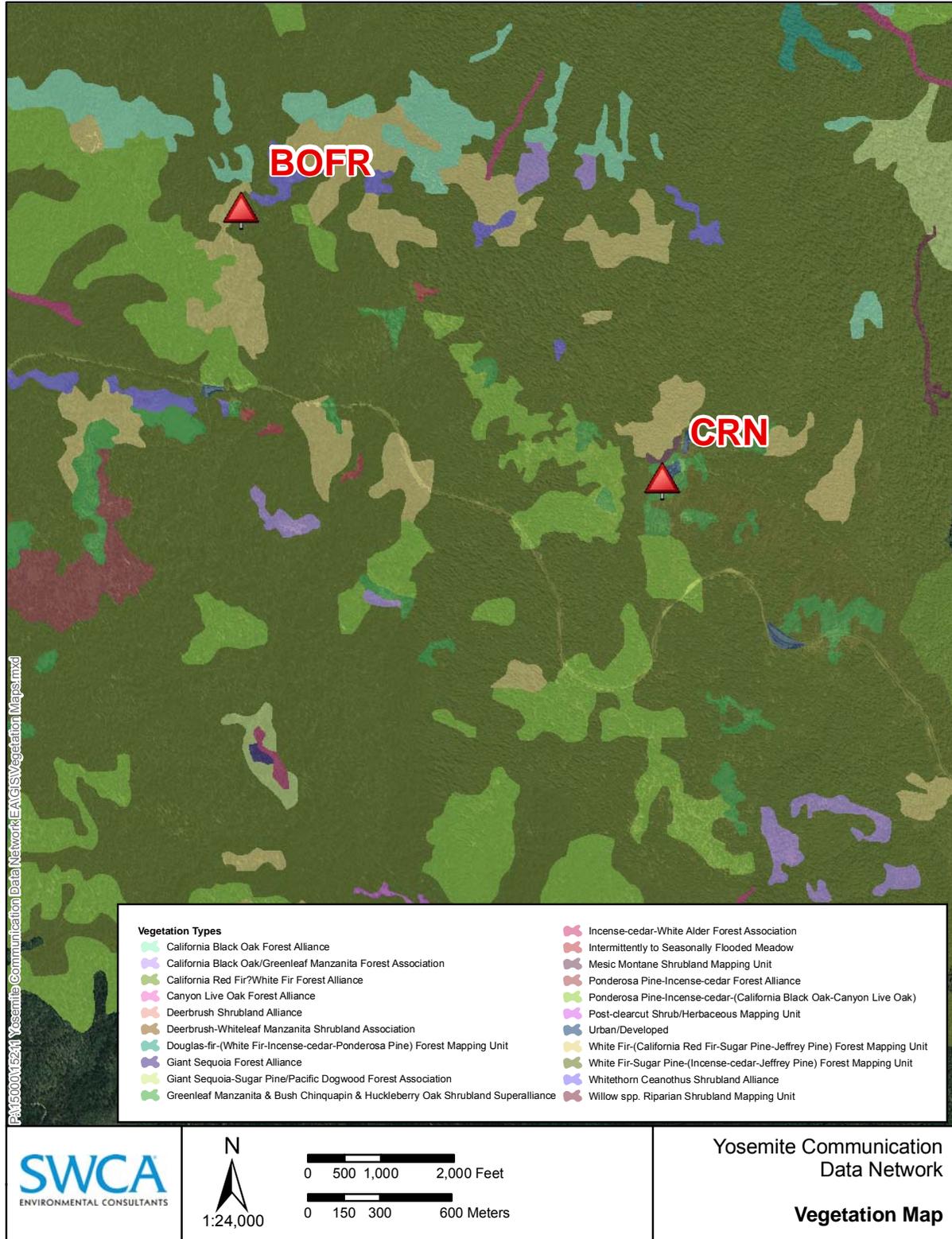


Figure 3-3. Big Oak Flat Repeater (BOFR) and Crane Flat (CRN) Vegetation Map

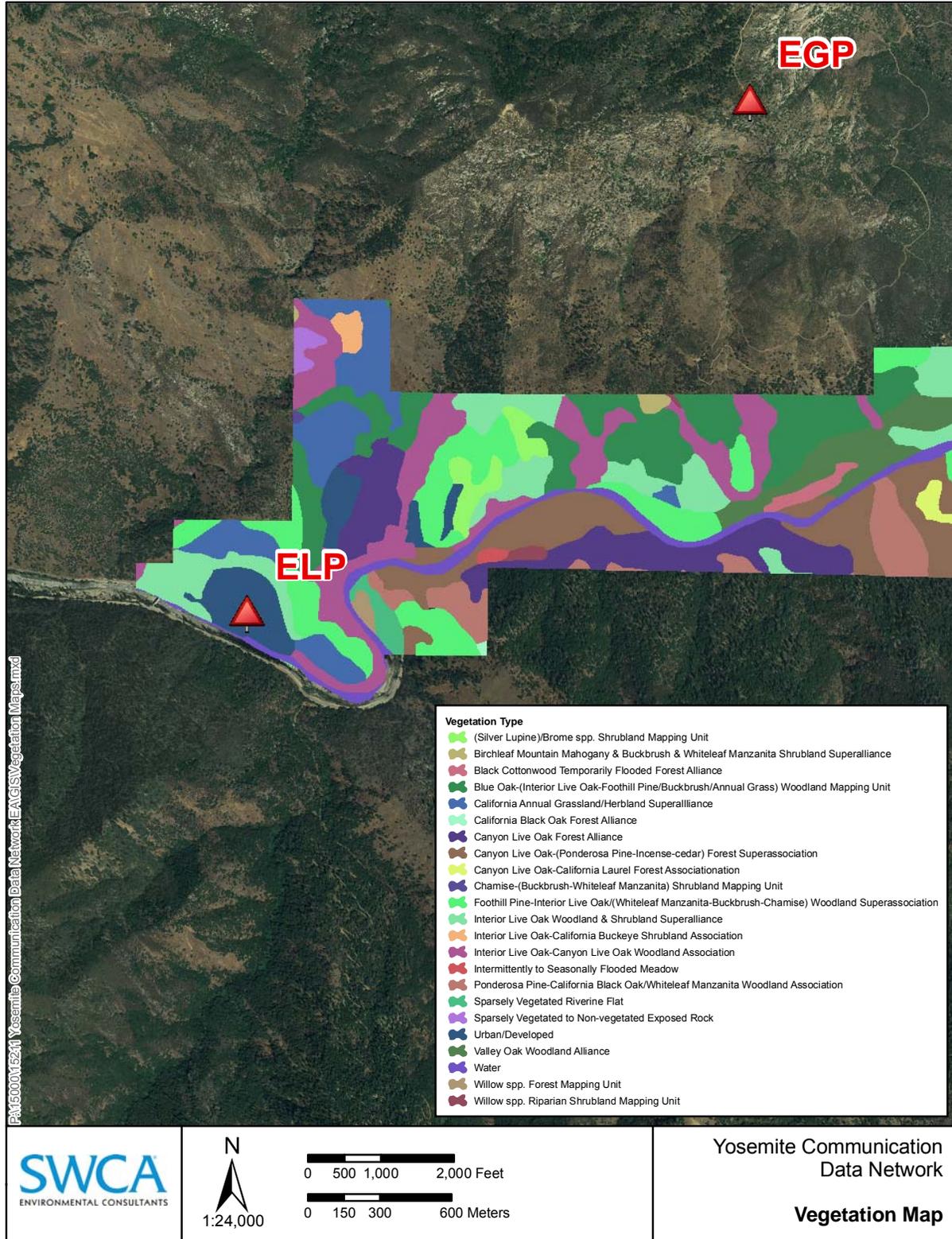


Figure 3-4. Eagle Peak Repeater (EGP) and El Portal (ELP) Vegetation Map

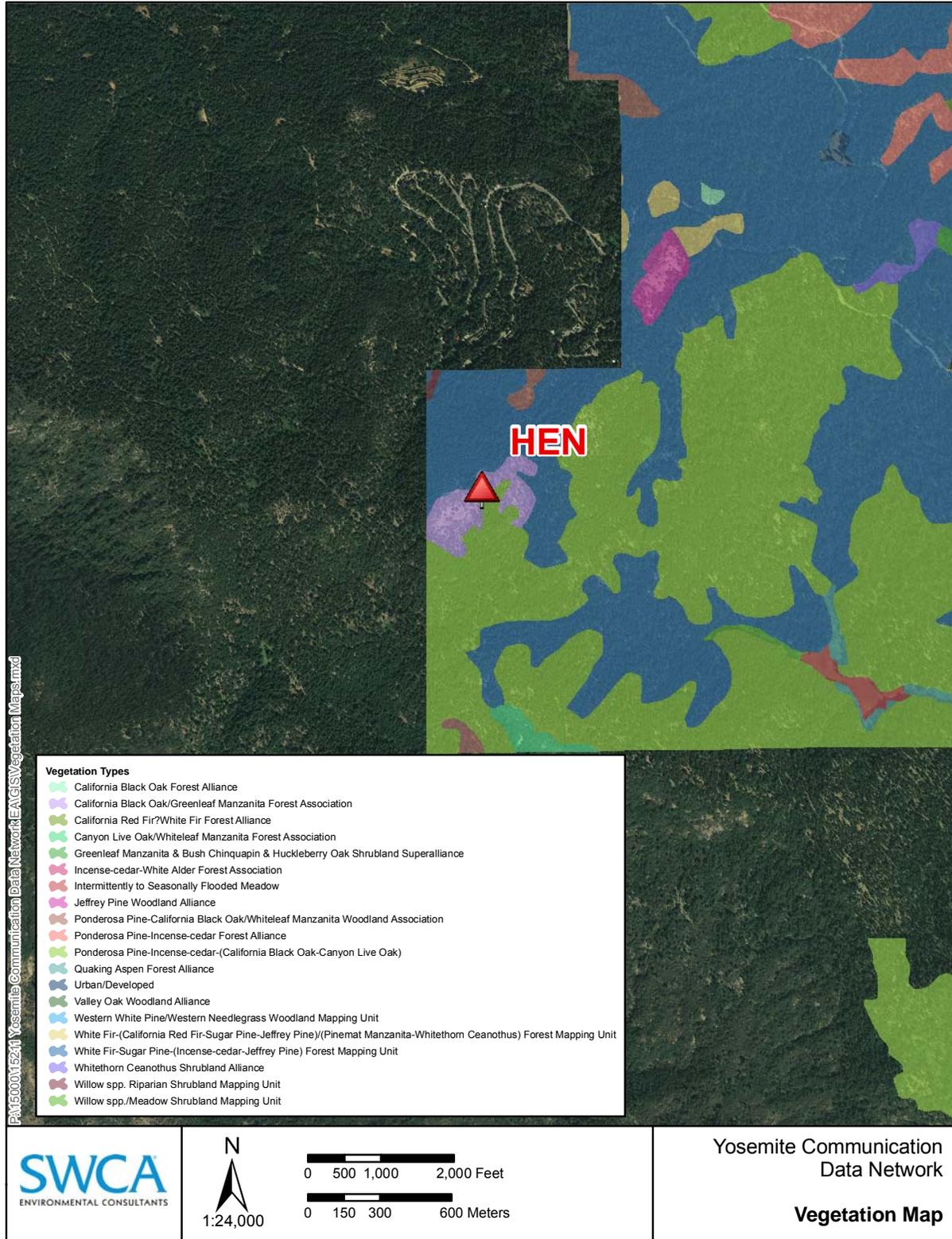


Figure 3-5. Hennes Ridge (HEN) Vegetation Map

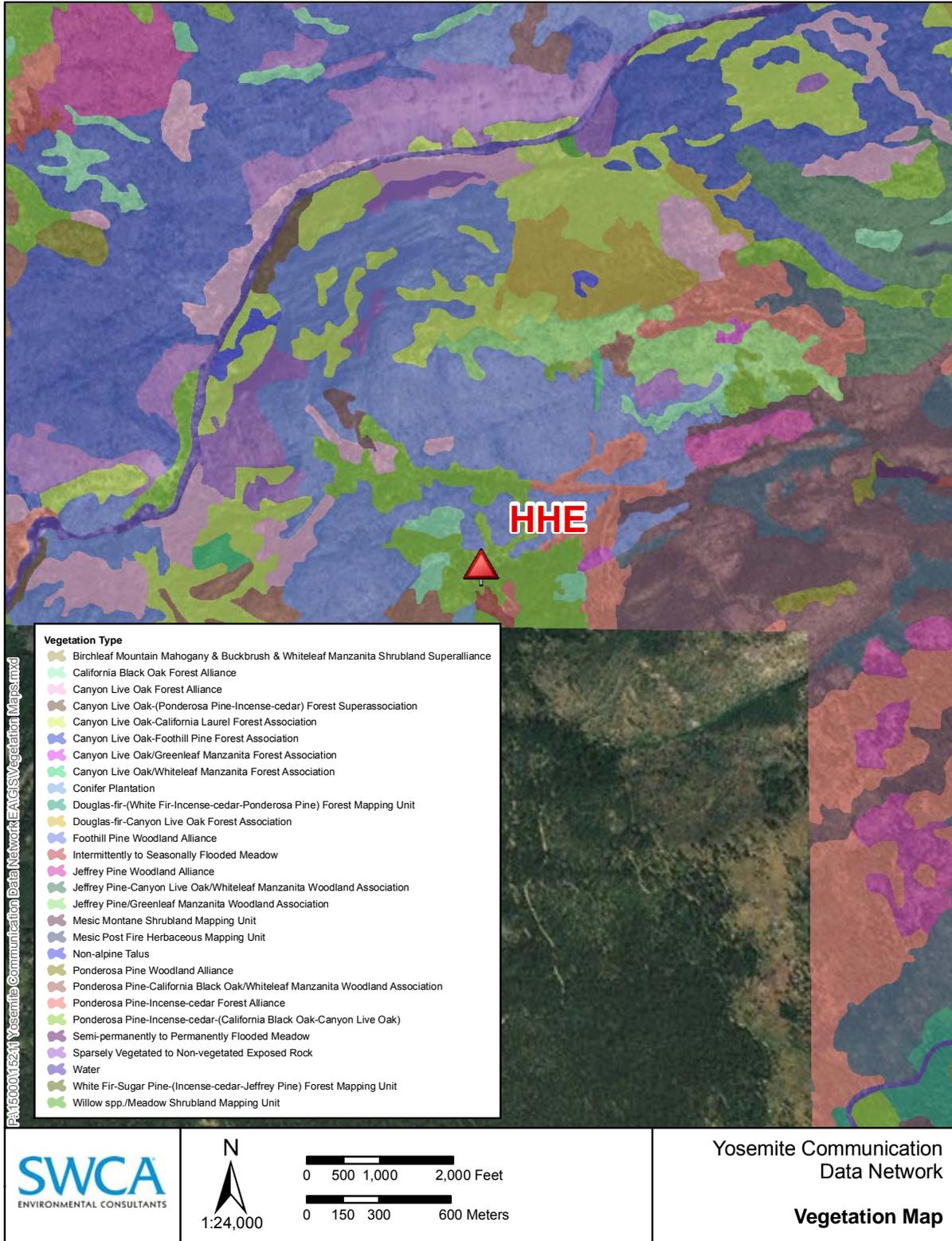


Figure 3-6. Hetch Hetchy Entrance (HHE) Vegetation Map

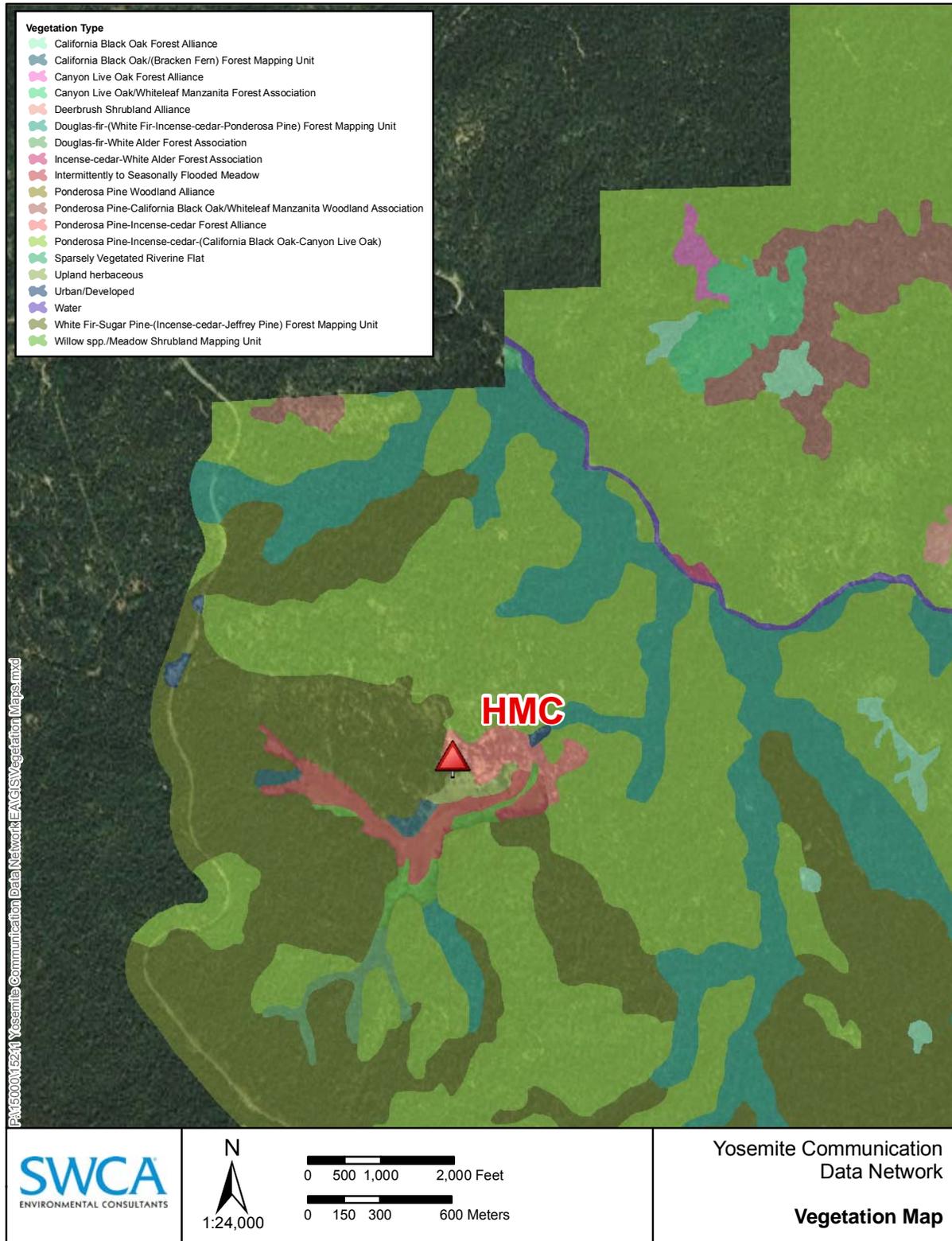


Figure 3-7. Hodgdon Meadow Maintenance Complex (HMC) Vegetation Map

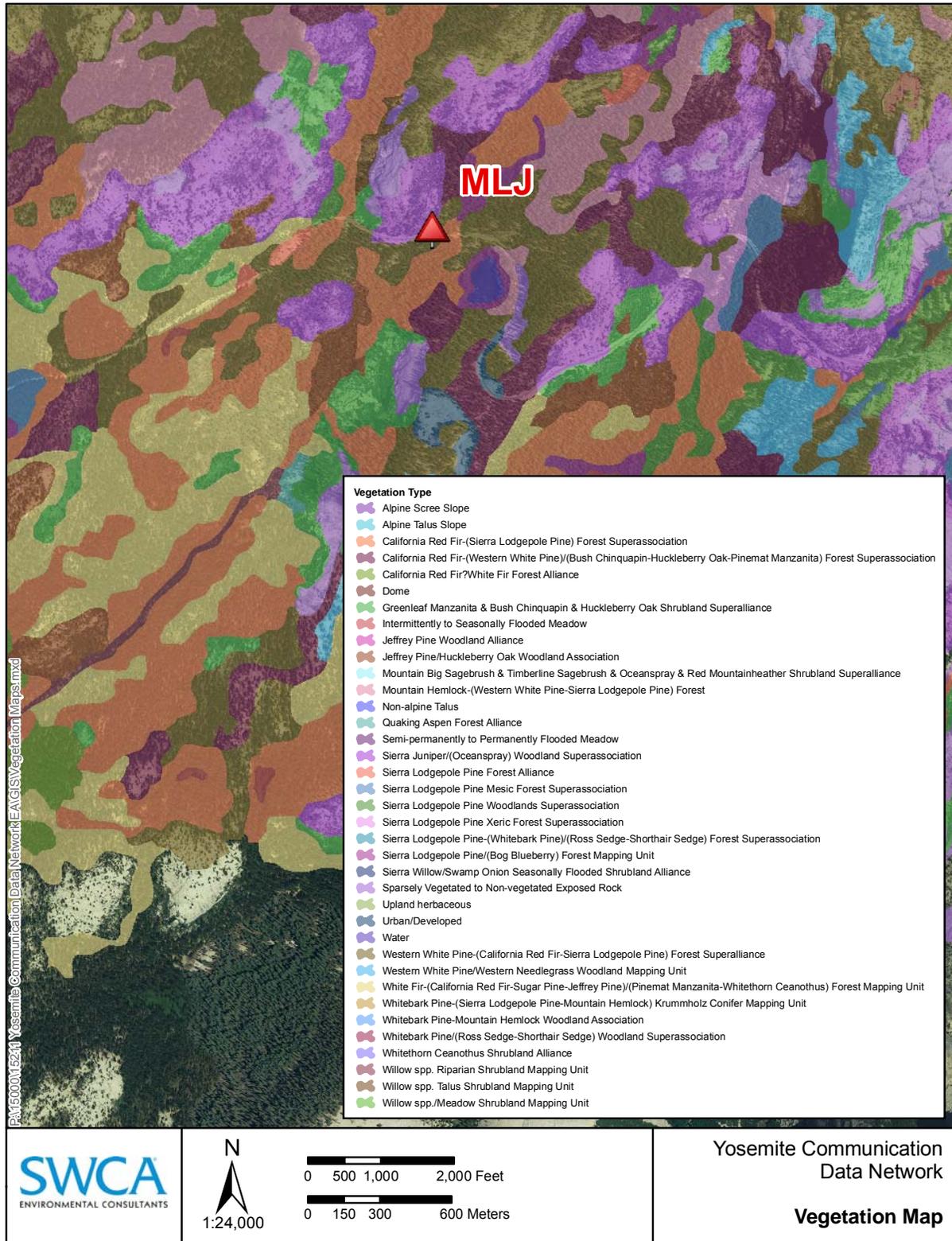


Figure 3-8. May Lake Junction (MLJ) Vegetation Map

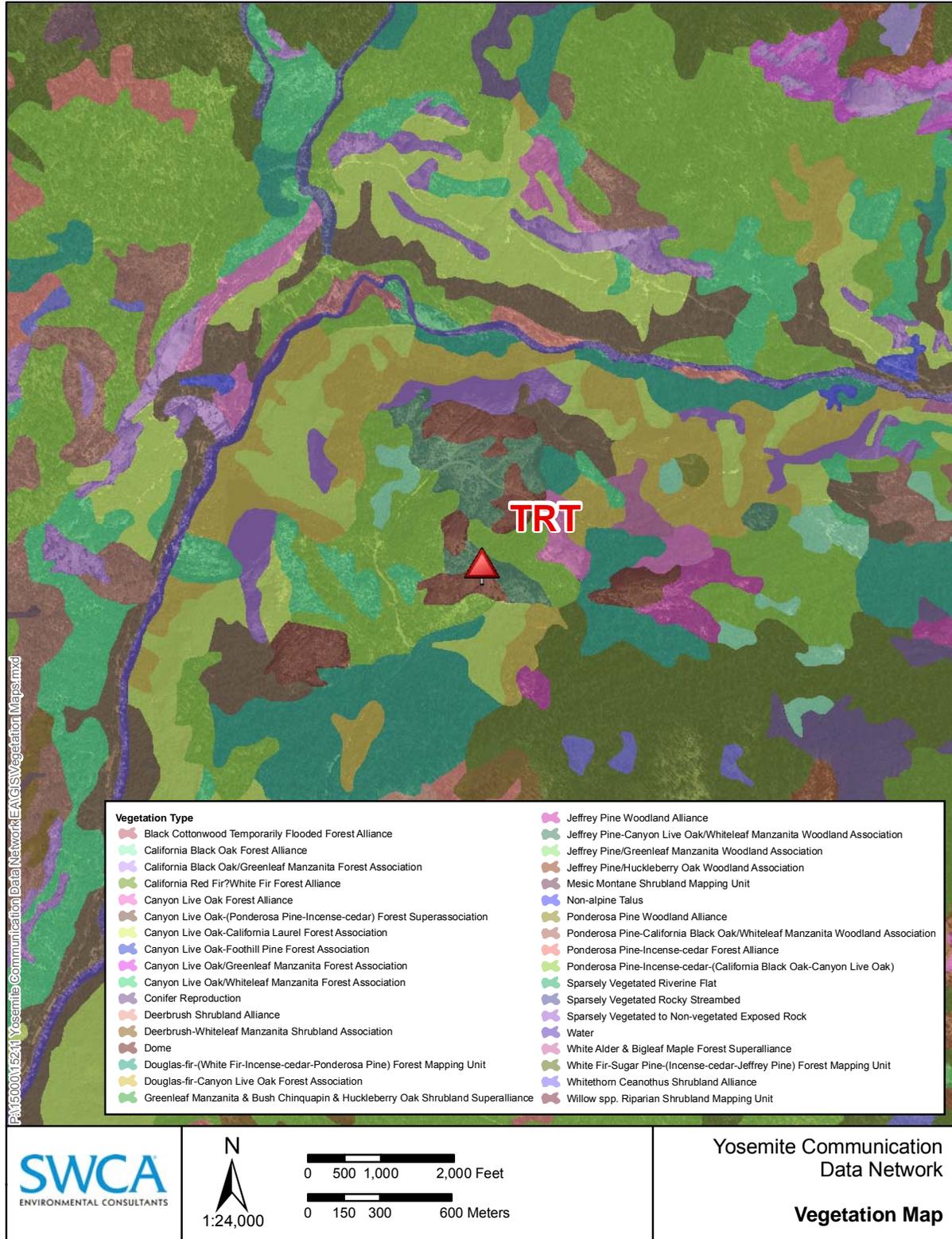


Figure 3-9. Turtleback Dome (TRT) Vegetation Map

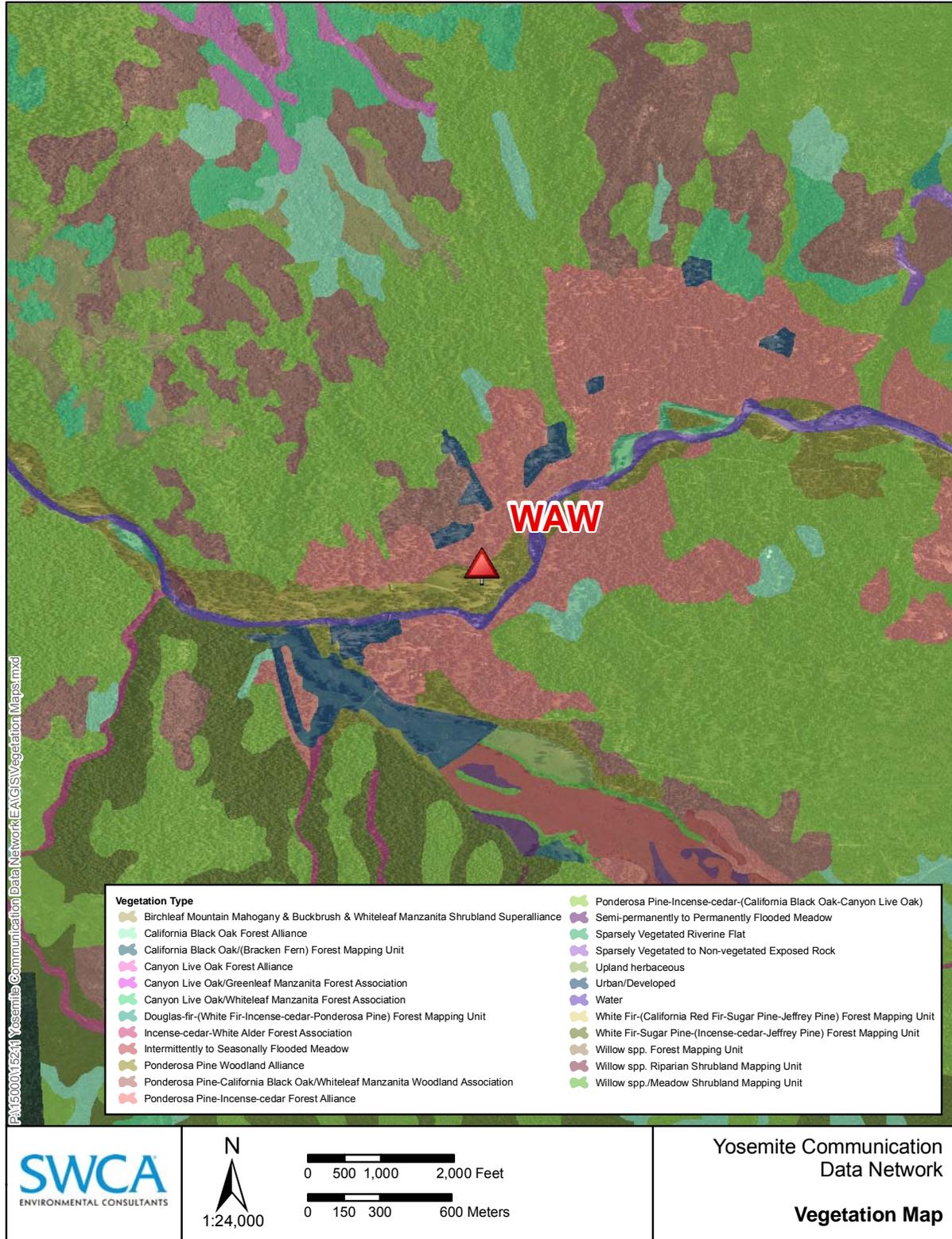


Figure 3-10. Wawona (WAW) Vegetation Map

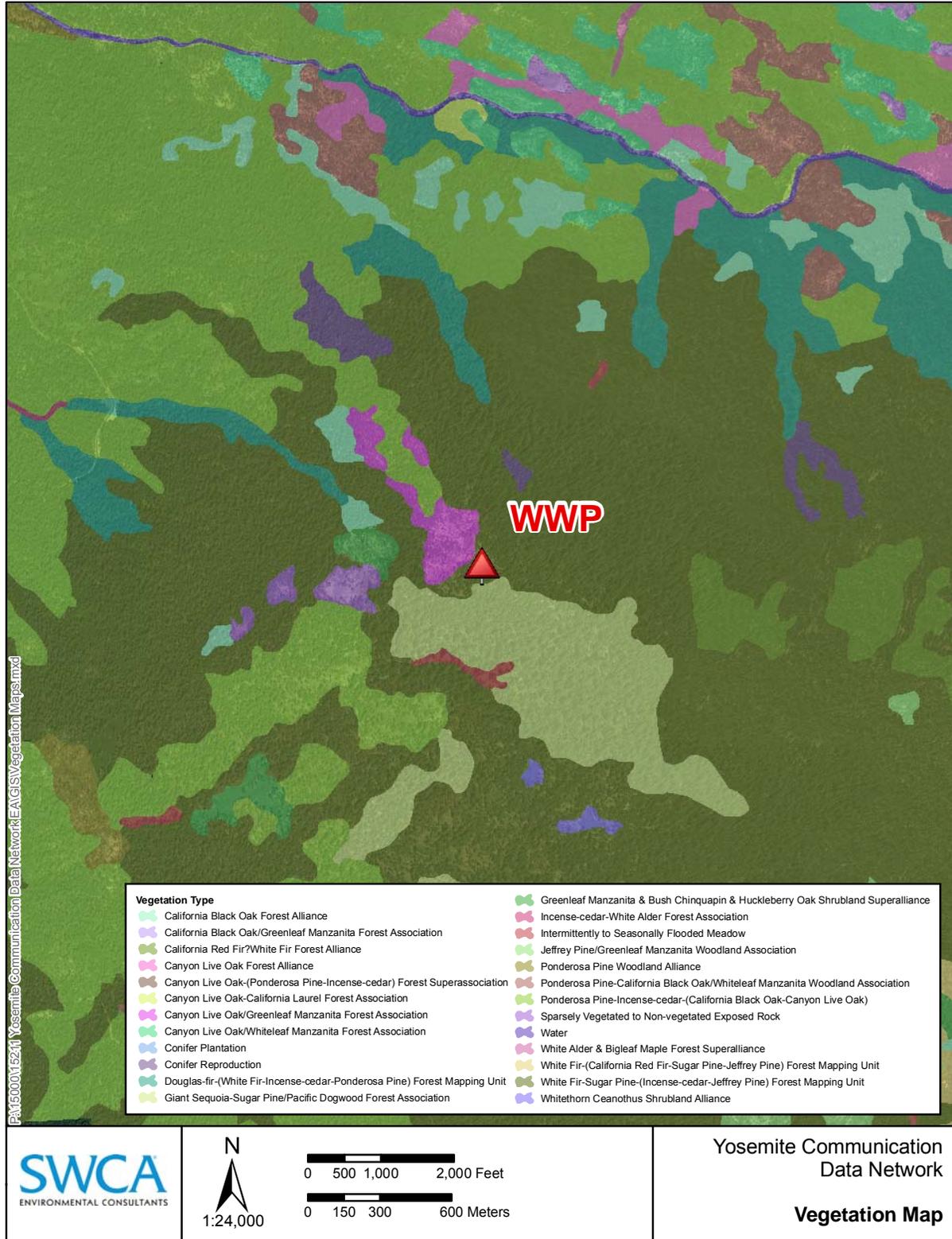


Figure 3-11. Wawona Point (WWP) Vegetation Map

New Facility Sites

Big Oak Flat Repeater (BOFR)

Construction- related Impacts on Vegetation. The proposed facility site would be located approximately 125 feet from Rockefeller Grove Road, within a dense stand of ponderosa pine and sugarpine trees. Transport and use of construction equipment would result in the temporary disturbance of native vegetation. Installation of the proposed foundation and tower would result in the permanent loss of approximately 315 square feet of ponderosa pine understory habitat, and would require the trimming of up to three trees.

Impact Significance. Site- specific, long- term, minor, adverse, impact.

Operation- related Impacts on Vegetation. During operation of the facility, periodic maintenance would be required, including management of vegetation to ensure clear microwave paths. Operational effects would include vegetation trampling and vegetation trimming to access the facility site, and trimming of pine trees.

Impact Significance. Site- specific, long- term, minor, adverse, impact.

Hetch Hetchy Entrance (HHE)

Construction- related Impacts on Vegetation. The proposed facility site would be located within an undeveloped area, approximately 100 feet north of Hetch Hetchy Road, within a stand of ponderosa pine trees. Transport and use of equipment would result in the temporary disturbance of native vegetation. Approximately 1,200 feet of trenching would be required to connect to an existing power line near the Mather Ranger Station. Installation of the facility would result in the permanent loss of approximately 315 square feet of ponderosa pine understory habitat.

Impact Significance. Site- specific, long- term, minor, adverse, impact.

Operation- related Impacts on Vegetation. During operation of the facility, periodic maintenance may be required, including trimming of black oak and pine trees.

Impact Significance. Site- specific, long- term, minor, adverse, impact.

Hodgdon Meadow Maintenance Complex (HMC)

Construction- related Impacts on Vegetation. The proposed facility elements would be installed on and within an existing structure, located within a developed area. One 70- foot pine tree would be removed to provide adequate microwave path clearance. Approximately 4,500 feet of trenching would be required to install a fiber optic line. The trenching would occur within an existing paved roadway or disturbed roadway shoulder.

Impact Significance. Site- specific, long- term, minor, adverse, impact.

Operation- related Impacts on Vegetation. During operation of the facility, periodic maintenance would be required, including trimming pine trees.

Impact Significance. Site- specific, long- term, minor, adverse, impact.

May Lake Junction (MLJ)

Construction- related Impacts on Vegetation. The proposed facility site would be located near Tioga Road, within a stand of pine and red fir trees. Transport and use of construction equipment would result in the temporary disturbance of native vegetation. Installation of the proposed foundation and tower would result in the permanent loss of approximately 500 square feet of understory habitat, and not would require tree removal or trimming.

Approximately 12 miles of trenching would be required to install a fiber optic line between the MLJ site and Tuolumne Meadows. The trenching would occur within Tioga Road, and may require vegetation trimming within the road shoulder. Disturbed areas that are outside the development footprint would be restored following construction to allow native vegetation to reestablish and prevent the spread of non- native plants.

Impact Significance. Site- specific, long- term, minor, adverse, impact.

Operation- related Impacts on Vegetation. During operation of the facility, periodic maintenance would be required, including management of vegetation to ensure clear microwave paths. Operational effects would include vegetation trampling and vegetation trimming to access the facility site, and trimming trees.

Impact Significance. Site- specific, long- term, minor, adverse, impact.

Wawona (WAW)

Construction- related Impacts on Vegetation. The proposed facility would be constructed within a developed and disturbed area adjacent to an existing building. One pine tree would be trimmed to accommodate microwave path clearance.

Impact Significance. Site- specific, long- term, minor, adverse, impact.

Operation- related Impacts on Vegetation. During operation of the facility, periodic maintenance would be required, including trimming pine trees to ensure clear microwave paths.

Impact Significance. Site- specific, long- term, minor, adverse, impact.

Existing Facility Sites

Crane Flat (CRN)

Construction- related Impacts on Vegetation. The proposed facility site would be located approximately 60 feet from existing structures associated with the Crane Flat fire lookout and helipad, within an area disturbed and developed by other communications facility structures, a propane tank, and weather tracking equipment. The permanent footprint of the tower and equipment shelter would be approximately 435 feet. No trees would be removed or trimmed to accommodate microwave path clearance.

Impact Significance. Site- specific, long- term, minor, adverse, impact.

Operation- related Impacts on Vegetation. During operation of the facility, periodic maintenance would be required, including trimming of pine trees.

Impact Significance. Site- specific, long- term, minor, adverse, impact.

Eagle Peak Repeater (EGP)

Construction- related Impacts on Vegetation. The proposed microwave dish and antenna would be installed on an existing tower. A PV panel would be installed near the tower. Vegetation in the immediate area has been disturbed by construction of the existing facility and rough graded access road. Transport and use of construction equipment would result in the temporary disturbance of native vegetation. Three conifer trees located on an intervening ridge between the EGP and ELP facility sites would be removed or trimmed and maintained.

Impact Significance. Site- specific, long- term, minor, adverse, impact.

Operation- related Impacts on Vegetation. During operation of the facility, periodic maintenance would be required. Operational effects would include vegetation trampling and vegetation trimming to access the facility site.

Impact Significance. Site- specific, short- term, negligible, adverse, impact.

El Portal (ELP)

Construction- related Impacts on Vegetation. The proposed facility site would be located within the El Portal Administrative Area. No vegetation is present within the facility site. Three conifer trees located on an intervening ridge between the EGP and ELP facility sites would be removed or trimmed and maintained.

Impact Significance. Site- specific, long- term, minor, adverse, impact.

Operation- related Impacts on Vegetation. During operation of the facility, vegetation management, including tree trimming may be required.

Impact Significance. Site- specific, long- term, minor, adverse, impact.

Hennes Ridge (HEN)

Construction- related Impacts on Vegetation. Construction of this facility site would include demolition and removal of an existing facility, and construction of the new facility. The immediately affected area is disturbed, and accessible by an existing unpaved road. Up to four cedar and pine trees would be removed or trimmed and maintained to accommodate an adequate microwave path.

Impact Significance. Site- specific, long- term, minor, adverse, impact.

Operation- related Impacts on Vegetation. During operation of the facility, periodic maintenance would be required, including tree trimming.

Impact Significance. Site- specific, long- term, minor, adverse, impact.

Mt. Bullion (MTB)

Construction- related Impacts on Vegetation. Construction of this facility site would not require permanent disturbance. The affected area is disturbed and developed by existing

communications facilities, and is accessible by an existing access road. No trees would be removed or trimmed.

Impact Significance. Site- specific, long- term, negligible, adverse, impact.

Operation- related Impacts on Vegetation. During operation of the facility, periodic maintenance would be limited to areas currently disturbed and developed by existing facilities.

Impact Significance. Site- specific, short- term, negligible, adverse, impact.

Sentinel Dome (SNT)

Construction- related Impacts on Vegetation. The proposed facility site would be located within an area currently disturbed and developed by existing communications facilities. Understory vegetation is present within the immediate area, and would be removed to accommodate the proposed tower and equipment vault, resulting in a permanent loss of approximately 600 square feet. Transport and use of construction equipment would result in the temporary disturbance of native vegetation. Two pine trees would be removed or trimmed and maintained to accommodate the microwave path.

Impact Significance. Site- specific, long- term, minor, adverse, impact.

Operation- related Impacts on Vegetation. During operation of the facility, periodic maintenance would be required. Operational effects would include vegetation trampling in the immediate area.

Impact Significance. Site- specific, short- term, negligible, adverse, impact.

Sentinel Reflector (SNTReflector)

Operation- related Impacts on Vegetation. During continued operation of the facility, periodic maintenance would be required. Operational effects would include vegetation trampling in the immediate area.

Impact Significance. Site- specific, short- term, negligible, adverse, impact.

Turtleback Dome (TRT)

Construction- related Impacts on Vegetation. Construction of this facility site would include demolition and removal of an existing facility, and construction of the new facility. The immediately affected area is disturbed, and accessible by an existing unpaved road. Adjacent understory vegetation may be disturbed by construction equipment and trampling. One pine tree would be removed or trimmed to accommodate the microwave clearance.

Impact Significance. Site- specific, long- term, negligible, adverse, impact.

Operation- related Impacts on Vegetation. During operation of the facility, periodic maintenance would be required; however, activities would be limited to developed areas and would not affect surrounding vegetation.

Impact Significance. Site- specific, long- term, negligible, adverse, impact.

Wawona Point (WWP)

Construction- related Impacts on Vegetation. Construction of the proposed facility would include demolition and removal of an existing pole and construction of a new tower and ice bridge. The area is generally disturbed and developed by existing communications facilities, the Wawona Point Overlook, and associated access road. Construction of the facility site would result in the permanent loss of approximately 400 square feet of disturbed understory habitat. Up to three trees would be removed or trimmed to accommodate microwave path clearance.

Impact Significance. Site- specific, long- term, minor, adverse, impact.

Operation- related Impacts on Vegetation. During operation of the facility, periodic maintenance would be required, including trimming of pine trees.

Impact Significance. Site- specific, long- term, minor, adverse, impact.

Yosemite Valley (VLY)

Construction- related Impacts on Vegetation. The proposed facility site would be located within Yosemite Valley, in an area currently developed and paved. No vegetation is present within the facility site. One tree would be removed or trimmed to accommodate adequate microwave path.

Impact Significance. Site- specific, long- term, minor, adverse, impact.

Operation- related Impacts on Vegetation. During operation of the facility, vegetation management, including tree trimming may be required.

Impact Significance. Site- specific, long- term, minor, adverse, impact.

Conclusion. Construction- related impacts would include minor native vegetation loss and disturbance including tree removal and trimming. Operation- related impacts would include negligible to minor native vegetation disturbance.

Impairment. Under Alternative 2, removal of vegetation, and tree trimming would result in minor adverse impacts; however, native vegetation communities in Yosemite National Park would not be impaired.

Impacts under Alternative 3

Impacts under Alternative 3 would be the same as those identified under Alternative 2, with exception to impacts associated with the development of facility sites CRN, EGP, HHE, and VLY, as described below.

Crane Flat (CRN)

Construction- related Impacts on Vegetation. Under Alternative 3, the CRN facility site would be located approximately 160 feet west of the existing developed areas and within Sierran mixed conifer forest and chaparral habitats. The vegetation in this area is largely native, but has been disturbed by past fire management activities. Transport and use of construction equipment would result in the temporary disturbance of native vegetation. Installation of the proposed foundation

and tower would result in the permanent loss of approximately 315 square feet of Sierran mixed conifer forest and chaparral habitats, and would require the removal or trimming of up to 5 – 10 trees.

Impact Significance. Site- specific, long- term, minor, adverse, impact.

Operation- related Impacts on Vegetation. During operation of the facilities, periodic maintenance would be required, including vegetation trampling and trimming of trees.

Impact Significance. Site- specific, long- term, minor, adverse, impact.

Eagle Peak Repeater (EGP)

Construction- related Impacts on Vegetation. The proposed facility site would be located on Eagle Peak, near an existing communications tower. Vegetation in the immediate area has been disturbed by construction of the existing facility and rough graded access road. Transport and use of construction equipment would result in the temporary disturbance of native vegetation. Installation of the proposed tower would result in the permanent loss of approximately 315 square feet of disturbed vegetation. Three conifer trees located on an intervening ridge between the EGP and ELP facility sites would be removed or trimmed and maintained.

Impact Significance. Site- specific, long- term, minor, adverse, impact.

Operation- related Impacts on Vegetation. During operation of the facility, periodic maintenance would be required. Operational effects would include vegetation trampling trimming to access the facility site, and tree trimming.

Impact Significance. Site- specific, short- term, negligible, adverse, impact.

Hetch Hetchy Entrance (HHE)

Construction- related Impacts on Vegetation. The proposed facility site would be located within an undeveloped area, 150 feet north of the Hetch Hetchy Road entrance kiosk, within a stand of ponderosa pine trees. Transport and use of equipment would result in the temporary disturbance of sparse native vegetation. Approximately 400 feet of trenching would be required to connect to an existing power line near the Mather Ranger Station. Installation of the facility would result in the permanent loss of approximately 315 square feet of ponderosa pine understory habitat.

Impact Significance. Site- specific, long- term, minor, adverse, impact.

Operation- related Impacts on Vegetation. During operation of the facility, periodic maintenance would be required, including trimming of black oak and pine trees.

Impact Significance. Site- specific, long- term, minor, adverse, impact.

Yosemite Valley (VLY)

Construction- related Impacts on Vegetation. Proposed improvements would be located on an existing tower within Yosemite Valley, in an area currently developed and paved. No vegetation is

present within the facility site. One tree would be removed or removed to accommodate adequate microwave clearance.

Impact Significance. Site- specific, long- term, minor, adverse, impact.

Operation- related Impacts on Vegetation. During operation of the facility, vegetation management, including tree trimming may be required.

Impact Significance. Site- specific, long- term, minor, adverse, impact.

Conclusion. Construction- related impacts would include minor native vegetation loss and disturbance including tree removal and trimming. Operation- related impacts would include negligible to minor native vegetation disturbance.

Impairment. Under Alternative 3, removal of vegetation, and tree trimming would result in minor adverse impacts; however, native vegetation communities in Yosemite National Park would not be impaired.

WILDLIFE

Affected Environment

Regional Setting

Wildlife in Yosemite National Park is diverse and abundant, reflecting the wide range of Sierra Nevada habitats. Yosemite National Park supports over 250 species of vertebrates, which include fish, amphibians, reptiles, birds, and mammals (NPS 2004e). This high diversity of species is also the result of habitats in Yosemite that are largely intact, compared to areas outside the park where various human activities have resulted in habitat degradation or destruction. Concentrated areas of human use in the park have affected wildlife and their habitats, especially in eastern Yosemite Valley, reducing use of these areas by wildlife. Montane meadow and riparian areas within Yosemite National Park are highly productive, structurally diverse habitats that support a high level of species diversity and provide important linkages between terrestrial and aquatic communities.

Along much of Yosemite's western boundary, habitats are dominated by mixed coniferous forests of ponderosa pine, sugar pine, incense cedar, white fir, and Douglas fir, and a few stands of giant sequoia, interspersed by areas of black oak and canyon live oak. A relatively high diversity of wildlife species are supported by these habitats, due to relatively mild, lower- elevation climate, and the mixture of habitat types and plant species. Wildlife species typically found in these habitats include black bear, bobcat, gray fox, mountain kingsnake, Gilbert's skink, white- headed woodpecker, brown creeper, spotted owl, and a wide variety of bat species. In the case of bats, large snags provide roost sites.

Going higher in elevation, the coniferous forests become purer stands of red fir, western white pine, jeffrey pine, and lodgepole pine. Fewer wildlife species tend to be found in these habitats, due to their higher elevation, and lower complexity. Species likely to be found include golden-mantled ground squirrel, chickaree, marten, Steller's jay, hermit thrush, and northern goshawk. Reptiles are not common, but include rubber boa, western fence lizard, and alligator lizard.

As the landscape rises, trees become smaller and more sparse, with stands broken by areas of exposed granite. These include lodgepole pine, whitebark pine, and mountain hemlock that, at highest elevations, give way to vast expanses of granite as treeline is reached. The climate in these habitats is harsh and the growing season is short, but species such as pika, yellow-bellied marmot, white-tailed hare, Clark's nutcracker, and rosy finch are adapted to these conditions. Also, the treeless alpine habitats are the areas favored by Sierra Nevada bighorn sheep. This species, however, is now found in the Yosemite area only around Tioga Pass, where a small, reintroduced population exists.

At a variety of elevations, meadows provide important, productive habitat for wildlife. Animals feed on the green grasses and use the flowing and standing water found in many meadows. Predators, in turn, are attracted to these areas. The interface between meadow and forest is also favored by many animal species because of the proximity of open areas for foraging, and cover for protection. Species that are highly dependent upon meadow habitat include great gray owl, willow flycatcher, Yosemite toad, and mountain beaver.

The facility sites are distributed along an elevation gradient on the west slope of the Sierra Nevada; the types and distribution of wildlife habitats in the project area are strongly influenced by this gradient. The hydrologic, topographic, and elevation variation present in the project area support a diverse mix of plant communities and wildlife habitats.

In addition to biophysical gradients, several other factors affect the distribution and quality of wildlife habitats, abundance and distribution of species, and wildlife community structure in portions of the area. These include recreation use, land use patterns and management activities (e.g., agriculture, logging, fuels management), and natural disturbance regimes (e.g., fire history). Overall, despite its disturbance history, the facility sites associated with the proposed action support valuable habitat for a variety of wildlife species, including amphibians, reptiles, birds, and mammals. Because many of the facility sites are disturbed or are adjacent to disturbed areas, wildlife species include a combination of those adapted to relatively disturbed or urbanized environments and those that rely on more natural environments with extensive vegetative cover. Species richness is highest during summer months when the resident avifauna is supplemented by common migratory birds.

The following summarizes habitat functions of the dominant vegetation types in the overall project area. Table 3- 1 in the Vegetation section of this document provides brief discussions of the vegetation types and wildlife habitats found at each of the sites. Because many of the facility sites are currently disturbed or developed, these descriptions may apply only to the vicinity of some facility sites.

Montane Hardwood

Acorns produced by the dense oaks within this habitat type provide an abundant food source for wildlife such as gray squirrel, acorn woodpecker, band-tailed pigeon, mule deer, and black bear. Snags and mature trees provide roosting and nesting cavities.

Lodgepole Pine

Due to the low structural diversity of this habitat type, the diversity of wildlife species it contains is relatively low. Species likely to be present include northern alligator lizard, northern goshawk, Williamson's sapsucker, mountain chickadee, and red crossbill.

Ponderosa Pine

A mosaic of areas with trees of different ages and different canopy closure provides a wide variety of habitat layers for wildlife, such as Douglas squirrel, long-eared chipmunk, western wood pewee, red-breasted nuthatch, and Steller's jay. Large snags and lightning-scarred trees can be important roosts for several bat species. Ponderosa pine habitat can be an important holding area for migratory mule deer, providing forage and thermal cover.

Sierra Mixed Conifer

The diversity within this habitat type results in numerous ecological niches for wildlife. Acorns from scattered California black oaks are an important wildlife food source, but seeds from the more abundant conifers are also a substantial source. Shrubs under canopy openings, such as manzanita, bitter cherry, and gooseberry, provide food and cover on the forest floor. Pileated woodpeckers favor this habitat, as do brown creepers, white-headed woodpeckers, Hammond's flycatcher, flammulated owl, and hermit thrush. At higher elevations, Sierra mixed conifer is the habitat of species such as marten and northern goshawk.

Environmental Consequences

Intensity Level Definitions

Impacts to general wildlife were evaluated using the process described in the introduction to this chapter. Impact threshold definitions for wildlife are as follows:

- Negligible:** Wildlife would not be affected, or effects would not be measurable.
- Minor:** Effects to wildlife, such as displacement of nests or dens or obstruction of corridors, would be detectable. If mitigation is needed to offset adverse effects, it would be relatively simple to implement.
- Moderate:** Effects to wildlife would be readily apparent. Mitigation would probably be necessary to offset adverse effects.
- Major:** Effects to wildlife would be readily apparent and would substantially change the wildlife populations in the area. Extensive mitigation would probably be necessary to offset adverse effects, and its success could not be guaranteed.
- Impairment:** A permanent adverse change would occur to wildlife in Yosemite National Park, affecting the resource to the point that the park's purposes could not be fulfilled and enjoyment by future generations of the park's wildlife would be precluded.

Impacts under Alternative 1 (No Action Alternative)

Under the No Action Alternative, all facility sites would remain in their current state, and no grading or construction activities would occur. No construction- related impacts to wildlife would occur. Operation- related impacts would be limited to maintenance activities associated with existing facilities.

Operation- related Impacts on Wildlife. Periodic maintenance activities, including human presence and use of vehicles and equipment, may disturb wildlife in close proximity to existing communications facilities. Due to the periodic and short- term nature of maintenance activities, effects would be negligible.

Impact Significance. Local, long- term, negligible, adverse, impact.

Conclusion. No construction- related impacts would occur. Operation- related impacts would include negligible human disturbance of wildlife.

Impairment. Under Alternative 1, continued operation existing facilities would result in negligible adverse impacts, and wildlife in Yosemite National Park would not be impaired.

Impacts under Alternative 2 (Preferred)

The evaluation for wildlife species in this analysis is based on the following: (1) the known or likely occurrence of a species or its preferred habitat in the vicinity of the project area; (2) the direct physical loss or adverse modification of habitat; (3) the effective loss of habitat (through avoidance or abandonment) due to construction activity or noise, or the species' sensitivity to human disturbance. Also, preliminary analysis of potential effects of installing communication towers on migratory and resident birds is based partly on the *U.S. Fish and Wildlife Service Guidance on the Siting, Construction, Operation and Decommissioning of Communications Towers* (USFWS 2000).

Each of the proposed facility sites provide a substrate for nesting, foraging, passage, shelter, perching, or other wildlife uses. The individual species observed at the various sites may differ; however, the niches that the species fill and the species' uses of the sites are similar. The magnitude of existing disturbances and adjacent human activities at each of the sites may reduce or increase the amount of wildlife usage at the individual sites; however, wildlife usage of the sites is consistent. Considering this, the construction and operational impacts described below are consistent throughout the sites proposed under Alternative 2.

Potential impacts to general wildlife species as a result of the proposed action are summarized below. Impacts to general wildlife are not discussed for each facility site, since the impacts would be similar at each location. The Big Oak Flat Repeater (BOFR) facility site is the only site that warrants specific discussion due to its relatively remote location.

All Facility Sites

Construction- related Impacts on Wildlife. Development of the proposed sites would require ground disturbance and vegetation removal, including tree trimming or removal. All tree removal, trimming, and maintenance would occur under consultation with the Park Forester and Park

Biologist. Most of these potential impacts are limited to the period of construction, and could include:

- Noise, dust, and light emanating from construction sites could affect the use of surrounding habitats by wildlife.
- Vegetation removed, trampled, or run- over during short- term use of some habitat as areas for staging of machinery or materials would affect wildlife until such areas could be restored after the project.
- Wildlife could be killed by traffic or machinery associated with construction.
- Pits and trenches could entrap wildlife, resulting in their death.
- Spills of fuel, oil, hydraulic fluid, antifreeze, and other toxic chemicals could affect wildlife, especially those in aquatic environments.
- Disturbance from construction activities could cause wildlife to relocate or avoid the area and could cause breeding birds to abandon their nests or avoid using the immediate area. Removal of trees or snags could affect breeding bats or birds by removing nests or roosts and could result in the harassment of adults from active nests or roosting sites located in the vicinity.

Impact Significance. Site- specific, short- term, minor, adverse, impact.

Operation- related Impacts on Wildlife. During operation of the facility sites, periodic maintenance would be required, including management of vegetation to ensure clear microwave paths. Operational effects would include tree trimming, which may affect nesting and roosting habitat, and temporary human presence.

Impact Significance. Site- specific, short- term, minor, adverse, impact.

Big Oak Flat Repeater (BOFR)

Construction- related Impacts on Wildlife. Unlike the other sites, the BOFR facility site is currently undeveloped and removed from normal human disturbances. The area supports mature mixed conifer forest, and sign of black bear use was observed during field surveys. The current conditions of this site indicate that typical human disturbances in the area are uncommon; therefore, wildlife in the area may be less adapted to human disturbances. Impacts would include those discussed above and the potential for wildlife usage in the area to decrease due to the increased human activity during construction. Potentially affected species include Douglas squirrel, long- eared chipmunk, western wood pewee, red- breasted nuthatch, Steller's jay, bats, black bear, and migratory mule deer.

Impact Significance. Site- specific, short- term, minor, adverse, impact.

Operation- related Impacts on Wildlife. Since construction of the BOFR site would increase typical human disturbances in the area, project activities within this site would result in long- term impacts to wildlife. Operational effects would include tree trimming, which may affect nesting and roosting habitat, and temporary human presence.

Impact Significance. Site- specific, long- term, minor, adverse, impact.

Conclusion. Construction- related impacts would include minor wildlife disturbance during construction. Operation- related impacts would include minor human disturbance of wildlife during maintenance and tree trimming activities. All tree removal, trimming, and maintenance would occur under consultation with the Park Forester and Park Biologist to ensure no wildlife is harmed by the activities.

Impairment. Under Alternative 2, construction and operation of proposed communication facilities would result in minor adverse impacts; however wildlife in Yosemite National Park would not be impaired.

Impacts under Alternative 3 (Alternative Sites or Equipment)

Impacts under Alternative 3 would be the same as those identified under Alternative 2. Use of construction equipment and human presence at the facility sites would temporarily disturb wildlife in the immediate vicinity of the activities.

Construction- related Impacts on Wildlife. Development of the proposed sites would require ground disturbance and vegetation removal, including tree trimming or removal. Most of these potential impacts are limited to the period of construction, and could include:

- Noise, dust, and light emanating from construction sites could affect the use of surrounding habitats by wildlife.
- Vegetation removed, trampled, or run- over during short- term use of some habitat as areas for staging of machinery or materials would affect wildlife until such areas could be restored after the project.
- Wildlife could be killed by traffic or machinery associated with construction.
- Pits and trenches could entrap wildlife, resulting in their death.
- Spills of fuel, oil, hydraulic fluid, antifreeze, and other toxic chemicals could affect wildlife, especially those in aquatic environments.
- Disturbance from construction activities could cause wildlife to relocate or avoid the area and could cause breeding birds to abandon their nests or avoid using the immediate area. Removal of trees or snags could affect breeding bats or birds by removing nests or roosts and could result in the harassment of adults from active nests or roosting sites located in the vicinity.

Impact Significance. Site- specific, short- term, minor, adverse, impact.

Operation- related Impacts on Wildlife. During operation of the facility sites, periodic maintenance would be required, including management of vegetation to ensure clear microwave paths. Operational effects would include tree trimming, which may affect nesting and roosting habitat, and temporary human presence.

Impact Significance. Site- specific, short- term, minor, adverse, impact.

Conclusion. Construction- related impacts would include minor wildlife disturbance during construction. Operation- related impacts would include minor human disturbance of wildlife during maintenance and tree trimming activities. All tree removal, trimming, and maintenance would occur under consultation with the Park Forester and Park Biologist to ensure no wildlife is harmed by the activities.

Impairment. Under Alternative 3, construction and operation of proposed communication facilities would result in minor adverse impacts; however wildlife in Yosemite National Park would not be impaired.

RARE, THREATENED, AND ENDANGERED SPECIES

Affected Environment

Many sensitive biological resources in California are protected and/or regulated by federal, state, and local plans, policies, regulations, and laws. The following sections provide a summary of those that may be applicable to biological resources within the facility sites included in the project action.

Regulatory Framework

Federal

Federal Endangered Species Act

Federal agencies must consult with the U.S. Fish and Wildlife Service (USFWS) to ensure their actions will not jeopardize the continued existence of any federally listed or proposed threatened or endangered species, or adversely modify designated or proposed critical habitat (ESA Section 7 (a) (2)). If listed species or their critical habitat are present, the federal agency must determine if the action will have “no effect,” “may effect, not likely to adversely affect,” or “may effect, likely to adversely affect” those species or their habitat.

The NPS makes the determination of effect for the alternatives following guidance outlined in the 1998 U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service Endangered Species Act Consultation Handbook: Procedures for Conducting Section 7 Consultations and Conference. Although special status species include state listed and sensitive species, park sensitive species, and species with other federal (i.e., BLM or Forest Service sensitive), state or local special status, in addition to species protected under the ESA, impacts are determined following the same guidance.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) implements domestically a series of international treaties that provide for migratory bird protection. The MBTA authorizes the Secretary of the Interior to regulate the taking of migratory birds; the act provides that it shall be unlawful, except as permitted by regulations, “to pursue, take, or kill any migratory bird, or any part, nest or egg of any such bird...” (US Code Title 16, Section 703). This prohibition includes both direct and indirect acts, although harassment and habitat modification are not included unless they result in direct loss of birds, nests, or eggs. The current list of species protected by the MBTA includes several hundred species and essentially includes all native birds. Permits for take of non- game migratory birds can be issued only for specific activities, such as scientific collecting, rehabilitation, propagation, education, taxidermy, and protection of human health and safety and personal property.

National Park Service Management Policies – Threatened or Endangered Plants and Animals

NPS policies related to threatened or endangered plants and animals state that the NPS will “survey for, protect, and strive to recover all species native to national park system units that are listed under the Endangered Species Act” (NPS 2006a). NPS is required to cooperate with federal resource agencies including the USFWS and NOAA Fisheries. Cooperation includes the full range of activities associated with the ESA.

Threatened and Endangered Species (FSM 2670.31)

The following summarizes the U.S. Forest Service’s general management direction for species listed as threatened or endangered under the ESA.

1. Place top priority on conservation and recovery of endangered, threatened, and proposed species and their habitats through relevant National Forest System, State and Private Forestry, and Research activities and programs.
2. Establish through the forest planning process objectives for habitat management and/or recovery of populations, in cooperation with States, the USFWS and other federal agencies.
3. Through the biological assessment process, review actions and programs authorized, funded, or carried out by the U.S. Forest Service to determine their potential for effect on threatened and endangered species and species proposed for listing.
4. Avoid all adverse impacts on threatened and endangered species and their habitat except when it is possible to compensate adverse effect totally through alternatives identified in a biological opinion rendered by the USFWS; when an exemption has been granted under the act, or when the USFWS biological opinion recognizes an incidental taking. Avoid adverse impacts on species proposed for listing during the conference period and while their federal status is being determined.
5. Initiate formal consultation or conference with the USFWS when the U.S. Forest Service determines that proposed activities may have an adverse effect on threatened, endangered, or proposed species or when U.S. Forest Service projects are for the specific benefit of a threatened or endangered species.
6. Identify and prescribe measures to prevent adverse modification or destruction of critical habitat and other habitats essential for the conservation of endangered, threatened, and proposed species. Protect individual organisms or populations from harm or harassment as appropriate.

State

California Endangered Species Act

Pursuant to the California Endangered Species Act (CESA), a permit from the California Department of Fish and Game (CDFG) is required for projects that could result in the take of a plant or wildlife species that is state listed as threatened or endangered. Under CESA, “take” is defined as an activity that would directly or indirectly kill an individual of a species, but the CESA definition of take does not include “harming” or “harassing,” as the ESA definition does. As a

result, the threshold for take is higher under CESA than under the ESA. Authorization for take of state-listed species can be obtained through a California Fish and Game Code Section 2080.1 Consistency Determination or a Section 2081 Incidental Take Permit. As a federal agency, actions by Yosemite National Park do not require a state permit; however, NPS policies in regards to state protected species promote the avoidance of impacts to the species.

California Fish and Game Code Sections 3503 and 3503.5—Protection of Bird Nests and Raptors

Section 3503 of the California Fish and Game Code states that it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird. Section 3503.5 specifically states that it is unlawful to take, possess, or destroy any raptors (i.e., species in the orders Falconiformes and Strigiformes), including their nests or eggs. Typical violations of these codes include destruction of active nests resulting from removal of vegetation in which the nests are located. Violation of Section 3503.5 could also include failure of active raptor nests resulting from disturbance of nesting pairs by nearby project construction. This statute does not provide for the issuance of any type of incidental take permit. As a federal agency, prohibitions do not apply to Yosemite National Park; however, NPS policies aim to promote the survival and integrity of native bird populations on their lands.

California Fish and Game Code—Fully Protected Species

Protection of fully protected species is described in Sections 3511, 4700, 5050, and 5515 of the California Fish and Game Code. These statutes prohibit take or possession of fully protected species and do not provide for authorization of incidental take of fully protected species. CDFG has informed nonfederal agencies and private parties that their actions must avoid take of any fully protected species.

Regional Setting

The Sierra Nevada contains bird species, mammals, amphibians, and reptiles considered at risk and afforded special status (i.e., through listing as endangered, threatened, or of special concern by the state or federal government). At least three species have been extirpated from the mountain range since the time of Euro-American settlement: Bell's vireo (*Vireo bellii*), California condor (*Gymnogyps californianus*), and grizzly bear (*Ursus arctos*). Population declines can be attributed to several factors in varying proportions, including habitat loss, disturbance or hunting by humans, environmental toxins, climatic change, and competition from non-native species. However, two of the most charismatic species associated with the park, the bald eagle (*Haliaeetus leucocephalus*) and the peregrine falcon (*Falco peregrinus anatum*), are showing signs of recovery. The bald eagle was formerly delisted on August 8, 2007; the peregrine falcon was formally delisted on August 25, 1999.

The Sierra Nevada is also rich in plant diversity. Of California's 7,000 plant species, about 50% occur in the Sierra Nevada. Of these, more than 400 are found *only* in the Sierra Nevada, and 200 are rare. As a group, Sierra Nevada plants are most at risk where habitat has been reduced or altered, or where restricted to rare local geologic formations and their derived unique soils.

Critical Habitat. The Endangered Species Act (ESA) requires federal agencies to ensure that any action authorized, funded, or carried out by them is not likely to jeopardize the continued existence of listed species or modify their critical habitat. Critical habitat is defined as specific geographic areas, whether occupied by listed species or not, that are determined to be essential

for the conservation and management of listed species and that have been formally described in the Federal Register. The proposed facility sites are not located in any designated critical habitat areas.

Special- status Species Considered. A list of special- status species was generated based on data gathered from the NPS, the U.S. Fish and Wildlife Service (USFWS 2009), and the California Department of Fish and Game (CDFG) California Natural Diversity Database which is part of the 50 state Natural Heritage Network (CDFG 2009). This list included species that are listed as threatened or endangered under the federal or California endangered species acts, that are candidates or proposed for listing, that are afforded special protection by the state of California (i.e., species of special concern or fully protected) or by the NPS (i.e., rare plants), or that are otherwise considered a special- status species based on input from NPS Yosemite Wildlife Management Branch.

Following the literature review, biologists from SWCA Environmental Consultants and NPS conducted reconnaissance surveys at CRN, HMC, HHE, BOFR, MLJ, and WAW sites. The surveys were conducted in August 2009. Sites that were not surveyed in August 2009 were evaluated for rare species occurrences by SWCA and NPS staff. The site evaluations included on-site investigations, literature reviews, and coordination with NPS biologists.

104 species were evaluated to determine the potential for them to occur at the facility sites. Appendix B includes the CNDDDB and USFWS lists of species evaluated for potential occurrence. The evaluation considered the distribution and abundance of each species, habitat requirements of each species, habitat characteristics of each facility site, and existing human disturbance at each site. Species were eliminated from consideration based on the existing conditions of the sites and the lack of suitable habitat for the particular species. Species that warranted further investigation are listed in Table 3- 2 and are described briefly in Appendix B. Discussions of the facility sites that support special- status species or have documented occurrences near the sites follow Table 3- 2.

Table 3-2. Special-status Plant Species Investigated for Presence

Species Name	Status	Habitat Preference	Flowering Period	Sites
Mountain bent grass (<i>Agrostis humilis</i>)	CNPS 2.3	Alpine boulder and rock field, meadows and seeps, subalpine coniferous forest	July – September	MLJ
Small’s southern clarkia (<i>Clarkia australis</i>)	CNPS 1B	Cismontane woodland, montane coniferous forest	May – August	HMC; HHE
Fresno ceanothus (<i>Ceanothus fresensis</i>)	CNPS 4.3	Cismontane woodland, Lower montane coniferous forest	May – July	BOFR
Congdon’s woolly sunflower (<i>Eriophyllum congdonii</i>)	CR, CNPS 1B	Chaparral, cismontane woodland, montane coniferous forest, grassland; rocky, metamorphic	April – June	EGP

Table 3-2. Special-status Plant Species Investigated for Presence

Species Name	Status	Habitat Preference	Flowering Period	Sites
Short-leaved hulsea (<i>Hulsea brevifolia</i>)	CNPS 1B	Montane coniferous forest; granitic or volcanic, gravelly or sandy	May – August	SNT, SNTReflector, WWP, BOFR
Yosemite lewisia (<i>Lewisia disepala</i>)	CNPS 1B	Montane coniferous forest, pinyon juniper woodland, granitic sand	March – June	TRT
Slender-stemmed monkeyflower (<i>Mimulus filicaulis</i>)	CNPS 1B	Cismontane woodland, montane coniferous forest, meadows and seeps	April – August	HMC; HHE
Yosemite bog orchid (<i>Platanthera yosemitensis</i>)	CNPS 1B	Meadows and seeps/mesic, montane, granitic	July – August	TRT

Notes:

CE=California Endangered; CT = California Threatened; CR = California Rare; CNPS = California Native Plant Society Listed Species

Table 3-3. Special-status Wildlife Species Investigated for Presence

Species Name	Status	Habitat Preference	Sites
Amphibians			
Yosemite toad (<i>Bufo canorus</i>)	CSC, FC	Wet mountain meadows and the borders of forests	MLJ
Mount Lyell salamander (<i>Hydromantes platycephalus</i>)	CSC	Caves, granite exposures, rock fissures and seepages from springs and melting snow. Frequents cliff faces, vertical cavern walls, and level ground. In the Yosemite Valley, is found within the spray zones of several waterfalls.	MLJ, SNT, TRT
Mountain yellow-legged frog (<i>Rana muscosa</i>)	CSC, FC	Upper elevation lakes, ponds, and slow-moving alpine streams, montane riparian habitats in lodgepole pine, ponderosa pine, Jeffrey pine, sugar pine, white fir, whitebark pine, and wet meadow vegetation types	MLJ
Mammals			
Pallid Bat (<i>Antrozous pallidus</i>)	CSC	Oak, ponderosa pine, and giant sequoia habitats	All sites
Townsend's Big-eared Bat (<i>Corynorhinus townsendii townsendii</i>).	CSC	All habitats	All sites

Table 3-3. Special-status Wildlife Species Investigated for Presence

Species Name	Status	Habitat Preference	Sites
Spotted Bat (<i>Euderma maculatum</i>)	CSC	Variety of habitats, crevices	All sites
Western Mastiff Bat (<i>Eumops perotis californicus</i>)	CSC	Desert scrub and chaparral to montane coniferous forest	All sites
Silver-haired Bat (<i>Lasionycteris noctivagans</i>)	PS	mixed conifer / hardwood forests with available water	All sites
Western Red Bat (<i>Lasiurus blossevillii</i>)	CSC	All habitats	All sites
Hoary Bat (<i>Lasiurus blossevillii</i>)	PS	Cottonwood riparian habitat and forested areas	All sites
Pacific fisher (<i>Martes pennanti pacifica</i>)	CSC	Late-successional forests	BOFR, CRN, HEN, TRT
Western Small-footed Myotis (<i>Myotis ciliolabrum</i>)	PS	Wooded and brushy habitats near water	All sites
Long-eared Myotis (<i>Myotis evotis</i>)	PS	Montane oak woodlands and coniferous habitats	All sites
Fringed Myotis (<i>Myotis thysanodes</i>)	PS	Deciduous / mixed conifer forests	All sites
Long-legged Myotis (<i>Myotis volans</i>)	PS	Montane coniferous forest habitats	All sites
Yuma Myotis (<i>Myotis yumanensis</i>)	PS	Meadows, near water, caves, crevices	All sites
Birds			
Willow flycatcher (<i>Empidonax traillii</i>)	CE	Watercourses, ponds, lakes, wet meadows, marshes, and seeps within and adjacent to forested landscapes	HMC, WAW
Great gray owl (<i>Strix nebulosa</i>)	CE	Coniferous forest	BOFR, CRN, HMC, WAW, BOFR

Notes:

PS=Park Sensitive / Special Status; FC=Federal Candidate; CE=California Endangered; CSC=California Species of Special Concern; CFP=California Fully Protected; CWL=California Watch List; BCC=Federal Bird of Conservation Concern

All Facility Sites

The conditions at the various facility sites are suitable to support a variety of nesting bird species and roosting bat species. Most bird species are protected under the Migratory Bird Treaty Act during the nesting season. Several bat species are considered to be California Species of Special Concern or Park Sensitive Species (refer to Table 3- 3) and are protected under the Fish and Game Code. NPS staff would conduct pre- disturbance surveys for nesting birds or roosting bats to ensure project activities do not disturb their nesting or roosting behavior.

Big Oak Flat Repeater (BOFR)

Rare, Threatened and Endangered Plants

Implementation of proposed communication facility upgrades at the BOFR site would take place within an undeveloped area. Short- leaved hulsea and Fresno ceanothus have been identified within the vicinity of the facility sites. Installation of the BOFR facility would require construction of a temporary access route. The exact location of the access road is not determined at this time, and would be determined based on consultation with NPS biologists to avoid effects to special-status plant species. The BOFR facility site supports suitable conditions for short- leaved hulsea; the presence or absence of this species should be verified prior to project activities to avoid or minimize disturbance to the species.

The existing Rockefeller Grove Road provides access to the BOFR site. A population of Fresno ceanothus exists on and adjacent to the lower portions of Rockefeller Grove Road. These occurrences should be avoided during project implementation.

Rare, Threatened and Endangered Wildlife

Based on a review of the CNDDDB and NPS staff observations, no special- status wildlife species have been identified within the vicinity of the BOFR. However, the BOFR facility site supports suitable habitat for a variety of bird and bat species. In addition, the site supports a late successional forest that could support Pacific fisher and great gray owl.

Crane Flat (CRN)

Rare, Threatened and Endangered Plants

Implementation of proposed communication facility upgrades at the CRN site would take place within developed and undeveloped areas. The immediate area south of the fire lookout has been cleared, and supports a variety of communications and weather monitoring equipment. No rare plants have been identified within the vicinity of the site. Although some short- term vegetation impacts may occur to surrounding common understory species, no sensitive plant species are expected to occur.

Rare, Threatened and Endangered Wildlife

The CRN facility site is located near a developed area, which is surrounded by Sierran mixed conifer forest. The forested areas in the vicinity of the facility site are known to support great gray owls, and provide suitable conditions for Pacific fisher.

Eagle Peak Repeater (EGP)

Rare, Threatened and Endangered Plants

Implementation of proposed communication facility upgrades at the EGP would take place within a previously disturbed area. No rare plants have been identified within the facility site; however, Congdon's woolly sunflower (*Eriophyllum congdonii*) has been identified within one mile of the facility site. The site access road and immediate surroundings could support Congdon's woolly sunflower.

Rare, Threatened and Endangered Wildlife

With exception to nesting bird species, no special- status wildlife species are expected to use the EGP site, due to the lack of suitable habitat. This site is disturbed from existing installation and maintenance activities associated with the existing microwave repeater. Project activities would be confined to existing disturbed areas and access routes.

Heness Ridge (HEN)

Rare, Threatened and Endangered Plants

Implementation of proposed communication facility upgrades at the HEN site would take place within a developed area. No special- status plant species have been identified within the vicinity of the facility site.

Rare, Threatened and Endangered Wildlife

Pacific fishers have been detected near the HEN site. The area surrounding this site support late succession forests with woody debris and snags. NPS staff has observed Pacific fishers near the HEN site; however, the facility site itself is currently developed and lacks significant vegetation and woody debris. The HEN site is accessed via an existing unimproved road; therefore, construction of a new road would not be necessary. Considering the lack of suitable habitat at the facility site, it is unlikely that Pacific fisher would occur in the site. However, undisturbed habitat surrounding the site likely supports this species. Project activities would be confined to existing disturbed areas and access routes to avoid impacts to Pacific fisher habitat.

Hetch Hetchy Entrance (HHE)

Rare, Threatened and Endangered Plants

Implementation of proposed communication facility upgrades at the HHE site would take place on the northern side of Hetch Hetchy Road, in the vicinity of developed areas. Slender stemmed monkeyflower has been identified within a meadow on the southern side of Hetch Hetchy Road, near the Mather Ranger Station. The meadow also supports suitable habitat for Small's southern clarkia. Small's southern clarkia has not been identified in the area. The proposed trench to the existing power line would be located within approximately 20 feet of the meadow.

Rare, Threatened and Endangered Wildlife

No special- status wildlife species have been identified within the vicinity of the HHE site. Sensitive wildlife species, including birds and bats, may use the surrounding forested habitat for breeding, foraging, or roosting.

Hodgdon Meadow Maintenance Complex (HMC)

Rare, Threatened and Endangered Plants

Implementation of proposed communication facility upgrades at the HMC site would take place within a developed area. Slender stemmed monkeyflower and Small's southern clarkia have been identified within one mile of the facility site; however, the existing development in the affected areas preclude the presence of these species.

Rare, Threatened and Endangered Wildlife

Willow flycatcher has been identified within the vicinity of the HMC site. At Hodgdon Meadow willow flycatchers were captured every year between 1991 and 1997 (Siegel et al. 2008). The Hodgdon Meadow occurrences were located in a willow thicket that is within the meadow and approximately 1,000 feet from the HMC site. The HMC site is located in a developed maintenance complex and does not support suitable willow flycatcher habitat. Based on the distance between the HMC site and suitable nesting habitat and the lack of suitable nesting habitat in the HMC site, it is unlikely that willow flycatcher would utilize the HMC site. Project activities would be confined to existing disturbed areas and access routes; therefore, avoiding any riparian vegetation.

May Lake Junction (MLJ)

Rare, Threatened and Endangered Plants

Implementation of proposed communication facility upgrades at the MLJ site would take place within a previously undisturbed area. Proposed trenching for the fiber optic line between MLJ and Tuolumne Meadows would be limited to the developed roadway. Mountain bent grass has been identified in the meadows just north of the facility site. Surveys conducted in August 2009 did not identify this species in the MLJ site. Based on the current design plans, project activities would not take place within the existing mountain bent grass population.

Rare, Threatened and Endangered Wildlife

The proposed 12- mile trench route would occur within the developed prism of Tioga Road. Vegetation and habitat types in the vicinity of the roadway support a variety of special- status wildlife species, including Yosemite toad, Mount Lyell salamander, Sierra Nevada yellow- legged frog, and numerous bat and nesting bird species.

The MLJ facility site is located within close proximity to meadows that could support Yosemite toad; however, there are no recent occurrences of this species in the area. The MLJ site is located within a rocky area on a hill slope and does not support suitable conditions for this species. Due to the dry rocky conditions at the MLJ site, Yosemite toad is unlikely to utilize the site.

The MLJ site supports marginal habitat for Mount Lyell salamander. Typically this species will seek refuge in the crevices and fissures of granitic rocks located on or at the toe of domes. Habitat areas are usually associated with massive rock areas near a water source. The MLJ site supports the rocky substrate and nearby water source necessary for the species; however, the rocky substrate is limited and does not include significant crevices or fissures for cover. Based on the site conditions and the species' habitat requirements, Mount Lyell salamander is not likely to occur in the site.

Sierra Nevada yellow- legged frog has been identified in the meadows near the MLJ site. Similar to the Yosemite toad, this species is not expected to occur within the proposed facility site, as this sensitive species prefers semi- aquatic habitat. Snow Creek is located adjacent to the MLJ site; however, this stretch of snow creek flows too rapidly to support the species. Based on the site conditions and the species' habitat requirements, Sierra Nevada yellow- legged frog is not likely to occur in the site.

Sentinel Dome (SNT)

Rare, Threatened and Endangered Plants

Implementation of proposed communication facility upgrades at the SNT site would take place within an existing communications facility that is accessed by an existing road. Short- leaved hulsea has been identified within the vicinity of the project area; however, the existing disturbances in the site preclude the presence of this species in the area proposed for development.

Rare, Threatened and Endangered Wildlife

Mount Lyell salamander has been identified within the vicinity of the SNT site. Project activities would be confined to the existing communications facility area, which is previously disturbed. In addition, the immediate SNT site does not contain the rocky substrate that Mount Lyell salamander requires. Considering the site conditions, Mount Lyell salamander is not likely to occur in the area.

Sentinel Reflector (SNTReflector)

Rare, Threatened and Endangered Plants

Short- leaved hulsea has been identified within the vicinity of the SNTReflector site. This site consists of an existing microwave reflector. No construction activities are proposed in this location, which would avoid impacts to this species.

Rare, Threatened and Endangered Wildlife

No special- status wildlife species are expected to occur in the SNTReflector site. Project activities would not result in any new ground disturbances.

Turtleback Dome (TRT)

Rare, Threatened and Endangered Plants

Yosemite bog orchid and Yosemite lewisia have been identified within the vicinity of the TRT site. The TRT site does not support suitable habitat for Yosemite bog orchid, due to the lack of meadows or seeps in the immediate area. This site consists of an existing communications facility which contains disturbed habitat. Due to the existing disturbances, it is unlikely that Yosemite lewisia exists in the site. Project activities would be confined to existing disturbed areas and access routes to avoid impacts to this plant species.

Rare, Threatened and Endangered Wildlife

Pacific fisher has been identified within the vicinity of the TRT site. The proposed facility site is located on the rocky dome, which does not support suitable fisher habitat. However, areas

surrounding the dome and existing access road are forested, and support suitable Pacific fisher habitat. Due to lack of suitable habitat, it is unlikely that Pacific fisher would occur in the facility site. However, undisturbed habitat surrounding the dome and access road may support this species.

Several occurrences of Mount Lyell salamander have been documented in the vicinity of the TRT site. The TRT site is located on Turtleback Dome, and supports suitable habitat for Mount Lyell salamander. Project activities would be conducted within a relatively small footprint and confined to the existing communications facility; however, the species has a potential to be present during snow melt on the dome.

Wawona (WAW)

Rare, Threatened and Endangered Plants

Implementation of proposed communication facility upgrades at the Wawona site would take place within a previously disturbed area. No rare plants were observed in these areas.

Rare, Threatened and Endangered Wildlife

Willow flycatcher has been detected in Wawona Meadow. The observed individuals at Wawona Meadow were utilizing riparian thickets located within the meadow system and the golf course. The WAW site is located in mixed conifer forest and approximately 1,000 to 2,000 feet from suitable willow flycatcher habitat. In addition, the WAW site is currently developed by an existing maintenance facility. Due to the lack of suitable habitat, the distance from the facility site to suitable habitat, and the existing development and activity, willow flycatcher would not likely utilize the WAW facility site for nesting.

The WAW site supports suitable habitat for great gray owl. This site is located within dense to moderately dense coniferous forest and adjacent to meadow habitats. The areas surrounding the WAW site are known to support nesting great gray owls; however, the immediate work areas are currently disturbed. Due to the current disturbances, it is unlikely that great gray owls would utilize the immediate sites for nesting; however, individuals may use areas directly adjacent to the site.

Wawona Point (WWP)

Rare, Threatened and Endangered Plants

Implementation of proposed communication facility upgrades at the WWP site would take place within a previously disturbed area. Short-leaved hulsea has been mapped throughout the area, and suitable habitat is present outside of the facility site. Due to the existing disturbances at the site, it is unlikely that short-leaved hulsea exists within areas proposed for development.

Rare, Threatened and Endangered Wildlife

Based on the site conditions and lack of documented occurrences in the area, the presence of special-status wildlife species near the WWP is unlikely. Nesting birds and roosting bats may be present.

Environmental Consequences

This section evaluates the project's environmental consequences in regards to rare, threatened, and endangered species. Facility sites that do not have the potential to support special- status species were omitted from this section, due to the lack of potential for special status species to be affected by project activities.

Intensity Level Definitions

Impacts to rare, threatened, and endangered species were evaluated using the process described in the introduction to this chapter. Impact threshold definitions for rare, threatened, and endangered species are as follows:

- Negligible:** Rare, threatened, and endangered species would not be affected, or effects would not be measurable. Any effects to abundance, distribution, and reproductive potential of species would be slight. No mitigation would be required.
- Minor:** Effects to rare, threatened, and endangered species would be detectable. Construction and operational disturbances could potentially affect breeding success and reduce habitat availability. Mitigation measures would be sufficient to offset minor adverse effects.
- Moderate:** Effects to rare, threatened, and endangered species would be readily apparent and would result in the reduction of potential habitat required to meet life requisite needs of one or more species. Mitigation would be required to offset moderate adverse effects.
- Major:** Effects to rare, threatened, and endangered species would be readily apparent and would result in the direct or indirect loss of occupied breeding sites, take of individuals, or habitat degradation resulting in reduced potential for occupancy or reproductive potential. Extensive mitigation would be necessary to offset adverse effects, and its success could not be guaranteed.
- Impairment:** A permanent adverse change would occur to one or more rare, threatened, or endangered species affecting the resource to the point that it becomes extirpated from a significant portion of the park or results in the loss of a significant proportion of the park's population such that the park's purposes could not be fulfilled and enjoyment by future generations of the resources would be precluded.

Impacts under Alternative 1 (No Action Alternative)

Construction and Operation- related Impacts. Under the No Action Alternative, all facility sites would remain in their current state, and no grading or construction activities would occur. No construction- related impacts to rare, threatened, or endangered species would occur. Operation- related impacts would be limited to maintenance activities associated with existing facilities.

Impact Significance. Local, long- term, negligible, adverse, impact.

Conclusion. No construction- related impacts would occur. Operation- related impacts would include negligible human disturbance of wildlife. Under Alternative 1, rare, threatened, and endangered species in Yosemite National Park would not be impaired.

Impacts under Alternative 2 (Preferred)

Under Alternative 2, five new facility sites would be developed, and nine existing facility sites would be improved. Construction- related impacts could include loss and disturbance of special-status plants and wildlife. Operation- related impacts would include tree trimming, which would result in disturbance and habitat loss or degradation for special- status wildlife. Generalized discussions of construction and operation related impacts are provided below. Sites that have potential to impact specific special- status species or their habitats are discussed following the generalized impact discussions.

Construction- related Impacts on Special- status Plants. Construction activities are not expected to result in direct impacts to special- status plants. The EGP, HHE, MLJ, SNT, SNTReflector, WWP, BOFR are located in the vicinity of special- status plant species; however, special- status plants have not been identified in the development footprints of these sites. Implementation of appropriate BMPs are necessary to ensure these occurrences are not adversely affected by project activities, including temporary construction routes, use of equipment, temporary storage of materials, and increased human presence.

Operation- related Impacts on Special- status Plants. During operation of the facility sites, periodic maintenance would be required. Operational effects may include inadvertent trampling of special- status plants in the vicinity of facility sites. These impacts would be minimized through education of maintenance staff and coordination with the Yosemite National Park Forester and biologists, but would be noticeable to the local plant populations if individuals were affected. Limiting disturbance to currently paved, graded, and disturbed areas would avoid effects to surrounding intact habitat areas.

Construction- related Impacts on Special- Status Wildlife. Construction activities could disturb special- status wildlife using the habitats at and near each facility site. Construction activities would result in clearing of vegetation and habitat elements that are suitable for special-status species, including birds, bats, and other mammals. These activities would cause individuals within the habitats to scatter or relocate and could result in injury or mortality to individuals that become entrapped or cannot flee. In addition, removal of or disturbance to potentially occupied nesting habitats to accommodate adequate microwave paths could result in disturbance to or mortality of breeding or roosting animals. Although the disturbance would be temporary, mortality of adults, young, or eggs; loss of reproductive potential; or abandonment of breeding sites would be considered a local, long- term, moderate, adverse, impact that could affect local populations.

Construction pollutants in runoff that travels off- site could potentially affect several rare, threatened, or endangered species that may occur along or near stream courses or associated wet meadow habitats, including the Yosemite toad, great gray owl, willow flycatcher, and the Pacific fisher. Degradation of downstream habitat conditions through runoff of sediments and toxins could affect rodent and insect prey populations for these species and result in a reduction of reproductive potential. Construction pollutants are not expected to result in a substantial reduction or degradation of the downstream wetland habitats.

In particular, great gray owl, willow flycatcher, and Pacific fisher have the highest potential to be impacted by construction activities at Crane Flat, Hodgdon Meadows, Wawona, Big Oak Flat, Henness Ridge, and Turtleback Dome. Construction noise would disturb foraging behavior of willow flycatcher and great gray owls which rely heavily on nearby wet meadow habitats and coniferous forest, and would thus compromise their reproductive success. Vegetation removal, and tree removal and trimming could result in the removal of important habitat elements, such as snags, woody debris, canopy cover, large trees for Pacific fisher and owls. Construction activity that would occur during critical breeding and nesting periods for owls (approximately February to September) could result in impacts on reproductive success, which could affect local populations which are already vulnerable to population declines.

Operation- related Impacts on Special- Status Wildlife. During operation of the facility, periodic maintenance would be required, including trimming of trees. Wildlife species potentially present within affected trees would be affected. Implementation of standard BMPs, and coordination with the Park Forester and NPS biologists would minimize the potential for these impacts to occur.

All Facility Sites

Construction and Operation- related Impacts on Special- Status Wildlife. The conditions at the various facility sites are suitable to support a variety of nesting bird species and roosting bat species. Nesting bird species may occupy vegetation to be removed or the ground surface to be graded. Vegetation removal or grading activities conducted during the typical nesting season (approximately February to September) could directly impact active nests or cause individuals to abandon a nest that is nearby. These impacts can be avoided or minimize by implementation of nesting bird surveys and BMPs prior to construction related activities.

Numerous bat species are known to occupy the various habitats in Yosemite National Park. These bat species are often found roosting in trees, on man made structures, and on cliff faces. The various habitats found at the facility sites support suitable substrates for roosting bats. Activities such as tree removal, tree trimming, grading, or other disturbances can directly impact or otherwise disturb roosting bats. These impacts can be avoided or minimize by implementation of roosting bat surveys and appropriate BMPs prior to construction related or operation related activities.

Impact Significance. Site- specific, long- term, minor, adverse, impact.

Big Oak Flat Repeater (BOFR)

Construction- related Impacts on Special- Status Plants and Wildlife. Implementation of proposed communication facility upgrades at the BOFR site would take place within an undeveloped area. Short- leaved hulsea and Fresno ceanothus has been identified within the vicinity of the facility site. The proposed facility site and surrounding area support suitable conditions for short- leaved hulsea. Vegetation removal associated with development of the facility site, and temporary disturbance resulting from the construction route has the potential to affect this species. Impacts to short- leaved hulsea can be avoided through coordination with the NPS biologists when identifying the access route and disturbance areas.

Several occurrences of Fresno ceanothus are located within and directly adjacent to Rockefeller Grove Road. Rockefeller Grove Road would be utilized to access the BOFR site. The rare plant

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occurrences could be impacted by vehicle traffic and inadvertent trampling. These impacts can be avoided or minimized by erecting protective fencing around the occurrences.

The BOFR site supports a late successional forest that could support Pacific fisher and great gray owl. Vegetation and snag removal, grading and construction, and tree trimming at this site could impact these species if individuals are located in the area. Coordination with NPS biologists and implementation of appropriate BMPs, including appropriate timing of construction activities and pre- construction surveys, would avoid potential impacts to these species.

Impact Significance. Site- specific, short- term, minor, adverse, impact.

Operation- related Impacts on Special- status Plants and Wildlife. During operation of the facility, periodic maintenance would be required, including management of vegetation to ensure clear microwave paths. Operational effects would include tree trimming, which may affect nesting and roosting habitat, and temporary human presence. Special- status plant occurrences could be impacted by inadvertent trampling or alterations to the microclimate; however, due to the relatively small footprint of disturbance, the effect would be negligible.

Impact Significance. Site- specific, long- term, negligible to minor, adverse, impact.

Crane Flat (CRN)

Construction- related Impacts on Special- status Plants and Wildlife. The forested area surrounding the CRN facility site is known to support great gray owl. The surrounding area also supports suitable habitat for Pacific fisher. Short- term disruption of these species' habitat would result from proposed tree trimming, and noise generated by construction activities. Impacts to these species could be avoided by implementing appropriate BMPs, including timing activities to avoid the nesting period and pre- construction surveys.

Impact Significance. Site- specific, short- term, minor, adverse, impact.

Operation- related Impacts on Special- status Plants and Wildlife. During operation of the facility, periodic maintenance would be required. Disturbance areas would be limited to the proposed tower and equipment shelter; therefore, the temporary effects on special- status plants and wildlife would be negligible.

Impact Significance. Site- specific, long- term, negligible, adverse, impact.

Eagle Peak Repeater (EGP)

Construction- related Impacts on Special- status Plants and Wildlife. No special- status plants or wildlife have been identified within the EGP site; however, Congdon's woolly sunflower has been identified within one mile of this existing facility site. The existing, rough- graded access road and immediate surroundings could support Congdon's woolly sunflower. If individuals are occurring in the area, they could be impacted by transport and use of equipment during construction activities. Construction activities would occur under coordination with the USFS and NPS biologists to avoid inadvertent disturbance of Congdon's woolly sunflower during construction of the facility site, including limiting disturbance to currently graded and cleared areas to the maximum extent feasible.

Impact Significance. Site- specific, short- term, minor, adverse, impact.

Operation- related Impacts on Special- status Plants and Wildlife. During operation of the facility, periodic maintenance would be required, including maintenance of trees to ensure a clear microwave path. The presence of humans in this remote location may temporarily disrupt wildlife or trample Congdon's woolly sunflower occurrences; however, due to the limited footprint of disturbance, these effects would be negligible.

Impact Significance. Site- specific, long- term, negligible, adverse, impact.

Hennes Ridge (HEN)

Construction- related Impacts on Special- status Plants and Wildlife. NPS staff has observed Pacific fishers near the HEN site; however, the site itself is currently developed and lacks significant vegetation and woody debris. Due to the present development and operations at the HEN site, it is unlikely that Pacific fisher is utilizing the immediate site footprint. The HEN site is accessed via an existing unimproved road, which traverses suitable habitat for this species. Vehicles traveling to the site could directly strike or otherwise disturb fishers in the area; however, this potential impact would be minimized by complying with standard BMPs including slow vehicle speeds. If fishers are utilizing areas immediately surrounding the HEN site, construction related noise could disturb the individuals, temporarily forcing the individuals out of the immediate area.

Impact Significance. Site- specific, short- term, minor, adverse, impact.

Operation- related Impacts on Special- status Plants and Wildlife. During operation of the facility, periodic maintenance would be required. The presence of humans in this location may temporarily disrupt Pacific fishers in the area. In addition, maintenance vehicles could strike Pacific fishers crossing the access road; however, however, this potential impact would be minimized by complying with standard BMPs including slow vehicle speeds.

Impact Significance. Site- specific, long- term, negligible, adverse, impact.

Hetch Hetchy Entrance (HHE)

Construction- related Impacts on Special- status Plants and Wildlife. Slender stemmed monkeyflower has been identified within a meadow near the Mather Ranger Station. In addition, the meadow supports suitable habitat for Small's southern clarkia. Use or storage of construction equipment in the vicinity of the ranger station and meadow could impact these plant species by inadvertent trampling and removal of the soil seed bank. Avoidance of the meadow habitat is feasible by implementation of standard BMPs and protection measures.

Impact Significance. Site- specific, short- term, minor, adverse, impact.

Operation- related Impacts on Special- status Plants and Wildlife. During operation of the facility, periodic maintenance would be required. Maintenance activities would be limited to the facility itself, which would avoid the slender- stemmed monkeyflower occurrences and meadow habitat.

Impact Significance. Site- specific, long- term, negligible, adverse, impact.

May Lake Junction (MLJ)

Construction- related Impacts on Special- status Plants and Wildlife. The proposed 12- mile trench route would occur within the developed prism of Tioga Road. The affected segment of Tioga Road crosses nine creeks between MLJ and Tuolumne Meadows, and runs adjacent to Tenaya Lake. Vegetation and habitat types in the vicinity of the roadway support a variety of special- status wildlife species, including Yosemite toad, Mount Lyell salamander, Sierra Nevada yellow- legged frog, and numerous bat and nesting bird species. Trenching activities would not directly affect habitat areas; however, indirect effects would include generation of construction noise, potential sedimentation and pollutant discharge outside of the construction area, and inadvertent trampling or compaction of vegetation and soils outside of the roadway. Special- status species present within or immediately adjacent to the construction area would be adversely affected. These effects can be mitigated by avoiding construction work during snow melt, and implementation of standard BMPs, including installation of protection fencing, use of erosion and pollution- discharge prevention measures, and education of construction crew members.

Impact Significance. Site- specific, short- term, minor to moderate, adverse, impact.

Operation- related Impacts on Special- status Plants and Wildlife. During operation of the facility, periodic maintenance would be required. Maintenance activities would be limited to the facility itself, which would avoid impacts to special- status species.

Impact Significance. Site- specific, long- term, negligible, adverse, impact.

Turtleback Dome (TRT)

Construction- related Impacts on Special- status Plants and Wildlife. Pacific fisher has been identified within the vicinity of the TRT facility site. The immediate area is developed with an existing communications facility, and does not support suitable Pacific fisher habitat, due to the lack of suitable habitat on rocky dome. The TRT site is accessed via an existing improved road, which traverses potential habitat for this species. Vehicles traveling the existing access road could strike or otherwise disturb Pacific fisher in the area; however, however, this potential impact would be minimized by complying with standard BMPs including slow vehicle speeds. In addition, construction related noise could temporarily disturb Pacific fisher in the nearby undeveloped areas.

The TRT facility site supports suitable habitat for Mount Lyell salamander. Project activities would be conducted within a relatively small footprint, and confined to the existing communications facility. Construction of the proposed support tower may require disturbance to the underlying rock substrate, which could directly affect Mount Lyell salamanders. Impacts to this species could be avoided by appropriate timing of construction work, outside of the snow melt season.

Impact Significance. Site- specific, short- term, minor, adverse, impact.

Operation- related Impacts on Special- status Plants and Wildlife. During operation of the facility, periodic maintenance would be required. Use of maintenance vehicles could result in Pacific fisher strike on the access road. Disruption of Mount Lyell salamander may occur; however, maintenance activities would be limited to the tower and equipment shelter, which

would have a negligible effect on the species. These potential impacts would be minimized by complying with standard BMPs including slow vehicle speeds and education of maintenance staff.

Impact Significance. Site- specific, long- term, negligible, adverse, impact.

Wawona (WAW)

Construction- related Impacts on Special- status Plants and Wildlife. Areas surrounding the WAW facility site are known to support nesting great gray owls. Construction related tree removal or trimming, and noise generating activities could directly or indirectly affect great gray owl in the area. Construction activities would occur under consultation with NPS biologists to ensure avoidance of nesting sites.

Impact Significance. Site- specific, short- term, minor, adverse, impact.

Operation- related Impacts on Special- status Plants and Wildlife. During operation of the facility, periodic maintenance would be required. Maintenance activities such as tree removal or trimming could personnel could directly or indirectly impact the nesting behavior of great gray owl. Construction activities would occur under consultation with NPS biologists to ensure avoidance of nesting sites.

Impact Significance. Site- specific, long- term, minor, adverse, impact.

Conclusion. Construction- related impacts special- status plants and wildlife, nesting birds and roosting bats would include minor disturbances during construction. Operation- related impacts would include minor human disturbance during maintenance and tree trimming activities. All tree removal, trimming, and maintenance would occur under coordination with the USFS (Eagle Peak), Park Forester, and NPS biologists to ensure special- status plants, nesting birds and roosting bats are not harmed by the activities.

Impairment. Under Alternative 2, construction and operation of proposed communication facilities would result in minor adverse impacts to special- status species; however, special- status species in Yosemite National Park would not be impaired.

Impacts under Alternative 3 (Alternative Sites or Equipment)

Under Alternative 3, alternative sites or equipment would be constructed at the EGP, CRN, HHE, and VLY facility sites. The general habitat conditions for special- status species are similar to those discussed under Alternative 2.

Construction- related Impacts on Special- status Plants and Wildlife. Impacts to special- status species at facility sites EGP, CRN, and HHE under Alternative 3 would be the same as those identified under Alternative 2. Activities conducted under Alternative 3 have the potential to directly and indirectly impact nesting birds, roosting bats, great gray owl, Pacific fisher and other special- status plant species as identified above. These impacts can be avoided or minimized by coordination with the USFS (EGP) and NPS Biologists, and implementation of standard BMPs, including timing activities to avoid nesting periods, pre- construction site inspections, slow vehicle speeds, and avoidance of observed species.

Impact Significance. Site- specific, short- term, minor, adverse, impact.

Operation- related Impacts on Special- status Plants and Wildlife. During operation of the EGP, CRN, and HHE facility sites, periodic maintenance would be required, including management of vegetation to ensure clear microwave paths. Operational effects would include tree trimming, which may affect nesting and roosting habitat, and temporary human presence. These activities could result in periodic disturbances to great gray owl, Pacific fisher, and special-status plant habitats. These impacts can be avoided or minimized by coordination with NPS Biologists and implementation of standard BMPs, including timing activities to avoid nesting periods, pre- construction site inspections, and avoidance and protection of observed species.

Impact Significance. Site- specific, short- term, negligible to minor, adverse, impact.

Conclusion. Construction- related impacts special- status plants and wildlife, nesting birds and roosting bats would include minor disturbances during construction. Operation- related impacts would include minor human disturbance during maintenance and tree trimming activities. All tree removal, trimming, and maintenance would occur under coordination with USFS (Eagle Peak), the Park Forester, and NPS biologists to ensure special- status plants, nesting birds and roosting bats are not harmed by the activities.

Impairment. Under Alternative 3, construction and operation of proposed communication facilities would result in minor adverse, impacts; however special- status species in Yosemite National Park would not be impaired.

NIGHT SKY

As described in the NPS's *Interim Outdoor Lighting Guidelines* (2007b), light pollution can be created by the upward spill of light from an unshielded light source. "Dust, water vapor and other particles will scatter and reflect light that is emitted into the atmosphere, creating a phenomenon called sky glow. This light that escapes directly upward into the night sky is a major contributor to the loss of the dark night sky. Thus, improper outdoor lighting can impede the view and adversely affect visitor enjoyment of a natural, dark, night sky" (NPS 2007b).

The Yosemite National Park *General Management Plan* (1980) stipulates that "unnatural sources of air, noise, visual, and water pollution be limited to the greatest degree possible" (NPS 1980). The NPS *Management Policies* (2006) direct the NPS to conserve natural lightscapes, and the policy also includes a Dark Sky Policy that promotes the "preservation and protection of the nighttime environment and dark sky heritage through quality outdoor lighting."

Affected Environment

Regional Setting

Yosemite National Park, because of its limited lighted facilities and distance from major metropolitan areas, has generally high- quality night skies. Airborne dust and pollutants from agricultural centers in the Central Valley and smoke from forest and grass fires can periodically diminish the park's night sky quality. Outdoor lighting in the park is generally scattered and in some cases is fully shielded. Accommodations and other facilities in Yosemite Valley are the primary source of artificial light in the park; most of the park is backcountry and offers exceptional night sky viewing.

Crane Flat (CRN)

The night sky at Crane Flat is generally unaffected by artificial light sources, due to limited development in the area. Crane Flat is an existing facility site located at a helicopter base station. The existing facility is equipped with a light due to the aviation activity at the site. The helipad base area is lit during use. Other sources of lighting include vehicles traveling at night along Tioga Road and Big Oak Flat Road, but there are no light poles or beacons along these roadways to illuminate the roads or parking areas.

Environmental Consequences

At present, there are no NPS lighting standards available for objectively quantifying the impacts of artificial, unshielded light sources on night sky viewing. The NPS does provide guidelines and recommendations for minimizing the potential impacts on the nighttime visual environment, as documented in the NPS *Interim Outdoor Lighting Guidelines* (2007b).

Intensity Level Definitions

Impact threshold definitions for night sky are as follows:

- Negligible:** The night sky of the area would not be affected, or effects would not be measurable. Any effects to the night sky would be slight and short- term.
- Minor:** Effects to the night sky, such as an increase or decrease in artificial light sources, would be detectable. If mitigation is needed to offset adverse effects, it would be relatively simple to implement.
- Moderate:** Effects to the night sky would be readily apparent. Mitigation would probably be necessary to offset adverse effects.
- Major:** Effects to the night sky would be readily apparent and would substantially change the quality of the night sky over the area. Extensive mitigation would probably be necessary to offset adverse effects, and its success could not be guaranteed.
- Impairment:** A permanent adverse change would occur to the night sky over a large area of Yosemite National Park, affecting the resource to the point that the park's purposes could not be fulfilled and enjoyment by future generations of the hydrologic resources of the park would be precluded.

Impacts under Alternative 1 (No Action Alternative)

The Yosemite National Park Communications Data Network (CDN) would continue to operate as it currently does under the No Action Alternative. The existing light at the CRN facility site would remain.

Impact Significance. Local, long- term, negligible, adverse, impact.

Conclusion. No change to the affected environment. Continued use of the CRN facility site, and associated aviation light, would occur, resulting in a negligible impact to night sky.

Impairment. Under Alternative 1, night sky resources in Yosemite National Park would not be impaired.

Impacts under Alternative 2 (Preferred)

Construction- related Impacts on Night Sky. Construction activities would likely have negligible impacts on night sky viewing because construction would be conducted during the day and any dust would likely disperse or settle during the night.

Impact Significance. Local, long- term, negligible, adverse, impact.

Crane Flat (CRN)

Operation- related Impacts on Night Sky. The CRN facility would include a light, due to the aviation activity associated with the heli- pad. Night sky impacts would not change substantially from the existing condition because the illumination of the light would not change.

Impact Significance. Local, long- term, negligible, adverse, impact.

Conclusion. Construction- related impacts would be negligible, because activities would occur during daytime hours. Operation- related impacts would include a light on the proposed tower due to the proximity to the heli- pad.

Impairment. Under Alternative 2, night sky viewing opportunities and the nighttime environment in and around the area would not be impaired.

Impacts under Alternative 3 (Alternative Sites or Equipment)

Under Alternative 3, the CRN facility site would be developed, resulting in the same effects as under Alternative 2.

Construction- related Impacts on Night Sky. Construction activities would likely have negligible impacts on night sky viewing because construction would be conducted during the day and any dust would likely disperse or settle during the night.

Impact Significance. Local, long- term, negligible, adverse, impact.

Crane Flat (CRN)

Operation- related Impacts on Night Sky. The CRN facility would include a light, due to the aviation activity associated with the heli- pad. Night sky impacts would not change substantially from the existing condition because the illumination of the light would not change.

Impact Significance. Local, long- term, negligible, adverse, impact.

Conclusion. Construction- related impacts would be negligible, because activities would occur during daytime hours. Operation- related impacts would include a light on the proposed tower due to the proximity to the heli- pad.

Impairment. Under Alternative 3, night sky viewing opportunities and the nighttime environment in and around the area would not be impaired.

SCENIC RESOURCES

Affected Environment

Regional Setting

Yosemite Valley is one of the most scenic and best known places in the American west. Yosemite is considered to be one of the first wilderness parks in the United States. Outstanding scenery in the park includes waterfalls, river corridors, deep valleys, dense pine forests, open grassy meadows, giant sequoia groves, and vast undeveloped areas of wilderness. In order to capture the specific scenic setting of each proposed facility site, representative viewpoints were selected using the following criteria:

- Those areas with “visual sensitivity.” These would be areas with landscapes that are most interesting and appealing, and for which any changes would likely attract public concern. As a highly scenic and popular national park, it can be assumed that most landscapes within Yosemite National Park have high visual sensitivity.
- The potential number of viewers of the area. The most comprehensive views of the area would be from major thoroughfares and travel intersections.
- The length of time the area is in view. Motorists and hikers on the above- mentioned thoroughfares that pass through or close by the area would have the best views of existing scenic quality and any changes to that quality.
- The angle of observation. More weight is given to those potential viewpoints that show more of the area, as more potential impacts would be visible. Views that are elevated, present slopes and aspects that show more of the area are preferred. Conversely, flat areas are not considered ideal representative viewpoints because a relatively small portion of the plan area is likely to be visible.

Viewpoints were selected to provide representative views of the existing landscape in and adjacent to these areas, and of potential impacts to the landscape from development. Representative photographs of each facility site are provided below.

New Facility Sites

Five new telecommunication sites are being proposed in the following locations; Big Oak Flat (Rockefeller Grove Road), Hetch Hetchy Entrance Station, Hodgdon Meadow Maintenance Complex, May Lake Junction, and Wawona. The site specific scenic resources of each new site are described in detail below.

Big Oak Flat (BOFR)

The proposed BOFR facility would be located in an undeveloped area that is densely forested with tall pine trees and thick underbrush (refer to Figure 3- 12). The proposed facility would not occur within view of any public trails, roads, or viewpoints. Although the Rockefeller Grove Road is located down slope from the proposed facility, the facility would not be visible from the road due to intervening topography and tall, dense, pine trees.

Hetch Hetchy Entrance (HHE)

The proposed HHE facility (Alternatives 2 and 3) would be located north of Hetch Hetchy Road, near the Hetch Hetchy entrance station, and the Mather Ranger Station. The landscape consists of gently sloping topography, tall, dense pine forest with limited views into the distance. Existing developments consists of dark brown wooden buildings, interpretive kiosks, dirt surface trails, asphalt roads and parking associated with the entrance station, ranger station, and park employee residences. Hetch Hetchy Road experiences a moderate level of traffic from visitors; the average annual daily traffic (AADT) count in 2005 was 123 (NPS 2004f). Visitors use Hetch Hetchy Road to access Hetch Hetchy Reservoir and Lake Eleanor in the northwest portion of the park. The reservoir is a popular destination for visitors, who view the dam and take short walks along the shore. The Camp Mather trail system is located to the south and east.

The HHE site was recorded from two viewpoints (refer to Figure 3- 13). **Viewpoint A** is located on Hetch Hetchy Road eastbound, just past the entrance station. **Viewpoint B** is located on Hetch Hetchy Road westbound, near the Mather Ranger Station. The immediate landscape includes views of the ranger station and park employee residential area, which are situated within tall pine trees. These viewpoints were chosen because travelers on Hetch Hetchy Road would have clear views of the area as they proceed east past the entrance station, and proceed west towards the entrance station (refer to Figures 3- 14 and 3- 15).

Hodgdon Meadow Maintenance Complex (HMC)

The proposed HMC facility would be located south of Hodgdon Road, and east of the Hodgdon Campground. The landscape consists of gently sloping topography, and dense pine forest. Hodgdon Meadow and the South Fork Tuolumne River Trail are located to the south and east, though the area is not visible from either location. Existing developments consist of paved roads and parking, single story buildings, fuel storage tanks, soil stockpiles, and heavy equipment storage. The proposed facility would only be visible from within the Maintenance Complex (refer to Figure 3- 18). The proposed facility was not recorded from any other public viewpoints.

May Lake Junction (MLJ)

The proposed MLJ facility would be located approximately 160 feet north of the Tioga Road and May Lake Road junction. The area is currently undeveloped and has moderate to steeply sloping topography. The landscape is dominated by tall pine trees interspersed with a patchy understory of shrubs and dry grasses, brown exposed soils and grey, rock boulders and outcrops. Existing developments consist of the asphalt road and narrow shoulder. Tioga Road experiences a high level of traffic from visitors traveling within and through the park, the average annual daily traffic (AADT) count in 2005 was 1,053 (NPS 2004f). Visitors to the park traveling along Tioga Road have views of valleys, ridges, lakes, waterfalls, forests, and unique geologic features characteristic of Yosemite Valley.

The MLJ site was recorded from two viewpoints (refer to Figure 3- 24), which represent the public views as seen by travelers approaching the facility site on Tioga Road. **Viewpoint A** is located on Tioga Road eastbound. The immediate landscape from this point consists of the roadway and steep, rock covered slope coming down to the roads edge (refer to Figure 3- 25). Views include the surrounding pine forest, and grey rock outcrops. The distant landscape is obscured by tall pine trees and rugged topography. **Viewpoint B** is located on Tioga Road westbound. The immediate landscape from this point is similar to that described for Viewpoint A. The distant landscape consists of heavily forested rolling topography interspersed with rugged

grey rock outcrops and cliff faces. These points were chosen because travelers on Tioga Road would have views of the area from both directions. The facility site is clearly visible to travelers passing directly in front of the site on Tioga Road.

Wawona (WAW)

The proposed WAW facility would be located approximately 0.5 mile northeast of Wawona, and Wawona Road, within the Wawona District Circle. The proposed facility would be located within an existing NPS maintenance facility within the Merced Wild and Scenic River Corridor. The surrounding area is generally developed. Chilnualna Road is located to the north, and provides access to a residential area. Trail systems are located to the west. The landscape is dominated by tall pine trees interspersed with an understory of younger, brighter green pine trees, shrubs, and dry grasses. Existing developments consist of dark, brown wooden buildings, the asphalt road and parking area, soil stockpiles, equipment storage and a wide open dirt surface parking area. Large equipment, trailers, and other vehicles are regularly kept on site.

The WAW site was recorded from two viewpoints (refer to Figure 3- 16). **Viewpoint A** is located on Chilnualna Road, heading westbound. **Viewpoint B** is located on Chilnualna Road, heading eastbound. The immediate landscape consists of a mix of pine forest and development. The rooftops of the maintenance facility structures can be seen intermittently through the pine forest (refer to Figure 3- 17). A representative photo from viewpoint A was selected, because travelers on the Chilnualna Road would have intermittent views of the proposed facility from this location.



Figure 3-12. Big Oak Flat View of Site



Figure 3-13. Hetch Hetchy (Alternatives 2 and 3) Viewpoints A and B



Figure 3-14. Hetch Hetchy Alternative 2 Viewpoint A



Figure 3-15. Hetch Hetchy Alternative 3 Viewpoint B

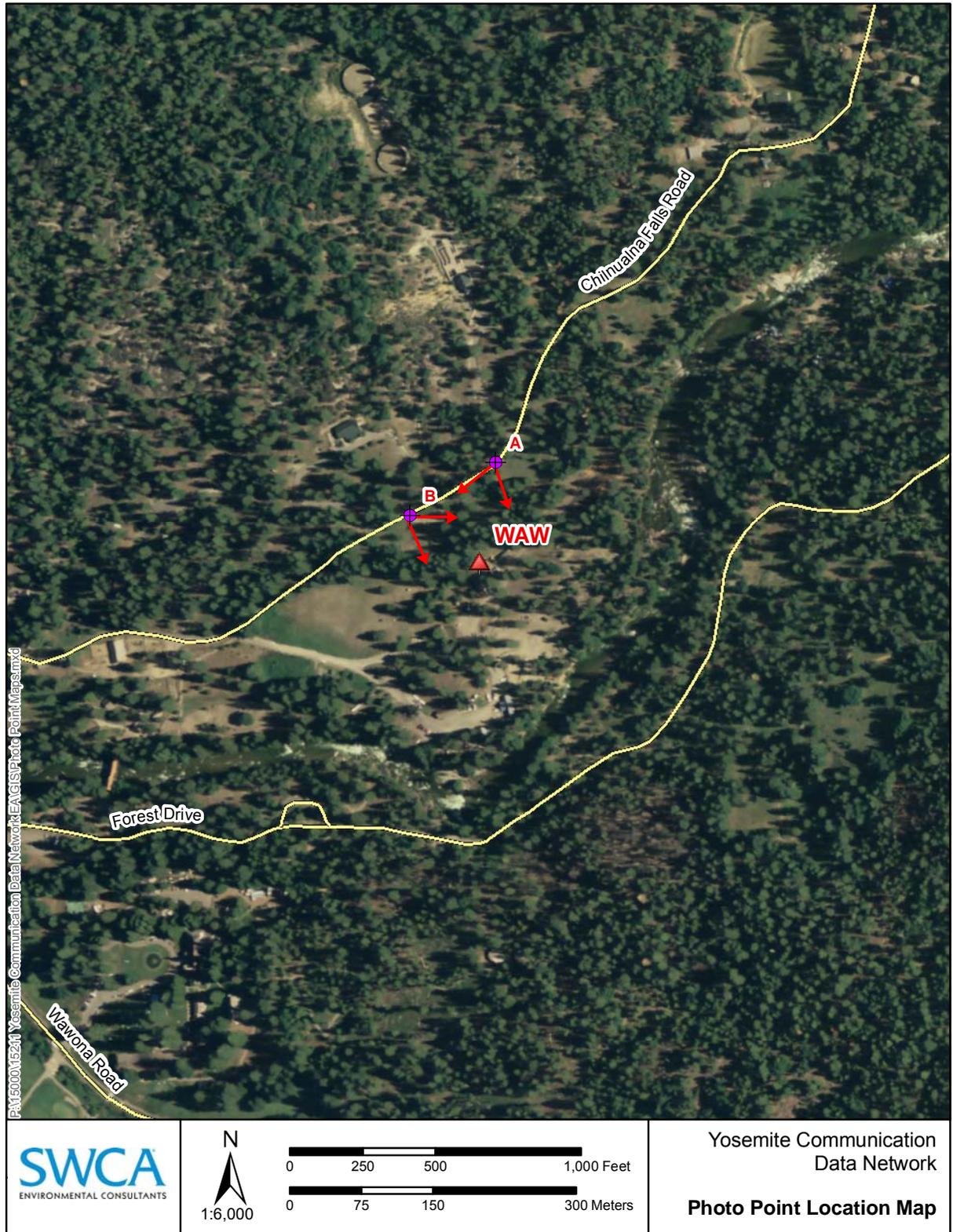


Figure 3-16. Wawona Viewpoints A and B



Figure 3-17. Wawona Photo from Viewpoint A



Figure 3-18. Hodgdon Meadow Maintenance Complex View of Site

Existing Facilities

Improvements or modifications to existing components of the CDN are necessary at the following ten sites: Crane Flat, Eagle Peak, El Portal, Henness Ridge, Mount Bullion, Sentinel Dome, Sentinel Reflector Turtleback Dome, Yosemite Valley, and Wawona Point. The site specific scenic resources of each existing site are described in detail below.

Crane Flat (CRN)

The proposed CRN facility would be located at the helicopter base station at the Crane Flat fire lookout, which is accessible to the public via the Crane Flat Fire Lookout Trail. The landscape immediately surrounding the base station consists of rocky and bare soil, low lying shrubs and dried grasses. Existing developments in the area consist of a paved helicopter pad, communications poles, square equipment shelter, enclosed restroom facility, propane tank, and weather equipment. A paved parking area is located below the paved helicopter pad. A trail extends from the parking area to the Crane Flat fire lookout, diverting the public away from the helicopter pad. The landscape of the middle ground is undeveloped and consists of rolling hills covered in pine forest and manzanita.

The proposed CRN facility was visually recorded from three viewpoints (refer to Figure 3- 28). **Viewpoint A** is from the Crane Flat fire lookout structure. The project area is clearly visible from viewpoint A (refer to Figure 3- 29). The immediate view is dominated by the white reflective roof of the adjacent building, tall vertical poles, grey asphalt parking lot and helicopter pad, roadway, and equipment surrounding the lookout. The immediate landscape consists of moderate to steep sloping topography dominated by dense stands of dark green pine forest extending into the middle ground. This viewpoint was selected because visitors can access this historic lookout, which provides 360- degree views of the entire area.

Viewpoint B is from the Fire Lookout Trail, which extends to the fire lookout and is located down slope from the proposed facility. Foreground views are of the gently sloping terrain covered with scrub and chaparral near the structure, and dense, tall pine forest down slope. The immediate landscape is developed. This point was chosen because hikers on the Fire Lookout Trail would have clear views of the proposed facility.

Viewpoint C is from Big Oak Flat Road, heading northbound. The existing facility and structures are clearly visible from along the road. The landscape consists of gently to moderately sloping topography dominated by tall, dense pine forest. The existing CRN facility and associated structures can be seen along the ridgeline against the sky. The duration of visibility is approximately three to five seconds. This point was chosen because travelers on the Big Oak Flat Road would have clear views of the proposed facility.

Eagle Peak (EGP)

The proposed EGP facility would be located at an existing facility on Eagle Peak, approximately one mile north of the community of El Portal. The landscape immediately surrounding the existing facility consists of rocky and bare soil, patchy, tall shrubs interspersed with dried grasses and grey boulders. Existing developments in the area consist of rough graded dirt roads to the peak, and an existing tower and billboard reflector mounted to a metal lattice tower. The landscape, as seen from Highway 140, consists of consists of steep, rocky, rugged hills covered with a patchwork of green and grey trees and understory shrubs and grasses.

The proposed EGP facility was visually recorded from two viewpoints (refer to Figure 3- 42). **Viewpoint A** is from a point on Highway 140 eastbound. This roadway experiences a high level of traffic from visitors accessing the western gate of Yosemite. The immediate landscape includes views of the Merced River, pine forest, steep grey canyon walls, and forested ridgelines. The existing facility is intermittently visible due to intervening pine trees along the highway. This point was chosen because travelers on the Highway 140 would have intermittent views of the proposed facility.

Viewpoint B is from a point on Highway 140 westbound. This roadway experiences a high level of traffic from visitors exiting the western gate of Yosemite. The immediate landscape is similar to that described from Viewpoint A. The existing facility is faintly visible for approximately 0.7 mile (refer to Figure 3- 43). This point was chosen because travelers on Highway 140 would have clear views of the proposed facility.

El Portal (ELP)

The proposed ELP facility would be located within an existing facility within the El Portal Administrative Area, within the Merced Wild and Scenic River corridor. The El Portal Administrative Site includes approximately 1,139 acres located directly outside of the boundary of Yosemite National Park, near the park's westernmost entrance along State Highway 140. The landscape within El Portal consists of a mix of natural areas and development. The landscape consists of a flat to gently sloping river valley, the Merced River, steep canyon walls, and a mix of tall pine trees interspersed with low lying trees, shrubs and grasses. Existing developments consist of hotels, restaurants, a gas station, local grocery store and deli, housing, a picnic area, and the NPS administrative facility. Additionally, the existing 60 foot tall metal lattice tower is clearly visible.

The proposed ELP facility was visually recorded from two viewpoints (refer to Figure 3- 31). **Viewpoint A** is from a point on Highway 140 eastbound. This roadway experiences a high level of traffic from visitors accessing the western gate of Yosemite. The immediate landscape includes views of the Merced River, and the NPS administrative facility. The existing tower located within the facility is intermittently visible from this location, due to pine trees located between the highway and administrative facility. This point was chosen because travelers on the Highway 140 would have clear views of the proposed facility.

Viewpoint B. This viewpoint is from a point on Highway 140 westbound. The immediate landscape is similar to that described for Viewpoint A. The existing tower located within the facility is clearly visible from this location for several seconds (refer to Figure 3- 32). This point was chosen because travelers on the Highway 140 would have clear views of the proposed facility.

Heness Ridge (HEN)

The proposed HEN facility would replace existing facilities located on Henness Ridge 0.3 mile south of the Henness Ridge Road and the Yosemite West residential area. The proposed facility is within an existing communications facility site located on Henness Ridge. The immediate surrounding landscape is largely forested with tall pines interspersed with open grassy areas. Existing developments in the area consist of the Henness Ridge fire lookout, a lattice metal communications facility pole, antennas, and brown equipment shelter. A second communications facility is located in the immediate area. The proposed facility is not visible from any public roads,

trails, or the Yosemite West residential area as a result of intervening topography and dense pine forest. No public viewpoints were identified for the proposed HEN facility.

Mount Bullion (MTB)

The proposed MTB facility would replace an existing grid antenna on a prominent ridgeline, visible from northbound and southbound lanes of Highway 49 in the communities of Mount Bullion and Mariposa. The landscape along Highway 49 varies from urban development in Mariposa, mixed urban/rural character in Mount Bullion, and natural vegetation along the roadway. Intervening topography and dense pine trees screen views of the facility from a majority of the travel segment between the two communities. Existing developments consist of paved road, wooden distribution line poles, residential structures, and towers associated with the existing communications facilities. Highway 49 experiences moderate to high levels of traffic. The existing communication facilities are most prominent from the southbound travel lane of Highway 49, heading through and out of Mariposa.

The proposed MTB facility was recorded from two viewpoints. **Viewpoint A** is from a point on Highway 49, heading south towards Mariposa, near the airport. The immediate landscape consists of gently sloping topography, and patchy juniper and pine forest. Developments consist of the airport, larger-lot residences, and the existing communications facilities clearly visible along the ridgeline. These points were chosen because travelers on the Highway 49 in both directions would have clear views of the proposed facility.

Viewpoint B is from a point on Highway 49, heading north. The immediate landscape consists of the roadway, tall thick grasses covering gently sloping topography, and patches of dark green juniper and pine. Existing developments consist of buildings associated with residential, commercial, and retail uses. Additionally, the existing communications facilities are clearly visible along the ridgeline.

Sentinel Dome (SNT)

The proposed SNT facility would replace an existing tower and facilities within a developed, multi-carrier facility. The landscape surrounding the existing facilities is largely undeveloped, and consists of gently to moderately sloping topography, tall dense conifers interspersed with younger trees, shrubs and grasses, and rocky brown soils. Existing developments consist of two wooden communications poles, antennas, and a brown equipment shelter. The Sentinel Dome Trail passes immediately adjacent to the existing facility. The facility is not readily discernable by the naked eye, as seen from Tioga Road and the crest of Half Dome, due to distance and intervening pine trees.

The proposed SNT facility was recorded from two viewpoints (refer to Figure 3- 34). **Viewpoint A** is from the Sentinel Dome trail, heading down slope. The existing facility is clearly visible from the trail, which traverses the ridgeline (refer to Figure 3- 35). The surrounding landscape consists of gently to moderately sloping topography, and is dominated by dense pine forest. Distant views from the trail include Half Dome to the north.

Viewpoint B. This viewpoint is from the Sentinel Dome trail, heading upslope. The existing facility is clearly visible from the trail. The surrounding landscape is similar to that described from Viewpoint A. These points were chosen because hikers in the trail in both directions would have clear views of the proposed facility.

Sentinel Reflector (SNTReflector)

Use of the existing passive “billboard” style reflector is proposed for the SNTReflector site. No improvements or additions are being proposed. The surrounding area is undeveloped. The landscape surrounding the existing reflector is largely undeveloped, and consists of rocky and rugged topography, tall dense pine trees interspersed with younger trees, shrubs and grasses, and rocky brown soils.

Turtleback Dome (TRT)

The proposed TRT facility would replace an existing tower near the peak of Turtleback Dome, 0.25 mile southeast of Wawona Road. The existing facility is located on an open high point, surrounded by rugged, rocky topography, tall conifers interspersed with younger trees, shrubs and grasses, and rocky soils.

Because there are no designated trails in the immediate vicinity, and there are limited public viewing opportunities of the proposed TRT facility, it was recorded from only one viewpoint (refer to Figure 3- 37). **Viewpoint A** is from the Half Dome Overlook. The Overlook was redesigned and upgraded in September 2009, and is a popular location for visitors. The highly scenic panoramic views include Half Dome, El Capitan, and Glacier Point. Turtleback Dome is located within the viewshed, and the existing facilities are visible, although they appear very small to the naked eye as a result of the 1.2- mile distance and wide open panorama of the surrounding geologic features (refer to Figure 3- 38). This point was chosen because visitors to the overlook would have clear, but distant, views of the proposed facility. The existing facility is intermittently visible from Big Oak Road, heading towards the Half Dome Overlook. Due to intervening topography, the facility is not visible from Highway 140 or Wawona Road.

Wawona Point (WWP)

The proposed WWP facility would replace an existing wooden pole adjacent to the Wawona Point Overlook. This existing site is located approximately 200 feet south of the Wawona Point peak, adjacent to designated Wilderness. The site is located adjacent to the Wawona Point Vista, which is accessible to the public via Mariposa Grove Road. The road is closed to private vehicles, but can be hiked or accessed by a tram system. The vista provides a 180- degree panoramic view of the Wawona Basin and surrounding mountains. The existing facility is clearly visible to visitors hiking up to the vista, and returning down towards the Mariposa Grove. While the facility is located adjacent to the access trail, it is not within the panoramic viewshed. The surrounding landscape consists of gently to moderately sloping topography, and supports redwood and Giant Sequoia forest.

The proposed WWP facility was recorded from two viewpoints (refer to Figure 3- 19). **Viewpoint A** is from Wawona Road, near the Wawona Golf Course. This viewpoint was considered to determine if the facility site would be visible as seen from Wawona Road. Based on field inspection and photo- documentation, the existing facility is not readily discernable to the naked eye as seen from this location. Views are hindered by distance, the grand scale of the ridgelines, and dense pine forest. Due to intervening topography and dense Giant Sequoia forest, the existing facility is not visible from the Mariposa Grove. Because the facility is not readily visible from Wawona Road or Mariposa Grove, the proposed WWP facility was recorded from one viewpoint in close proximity to the site. **Viewpoint B** is located on Wawona Point, heading downslope from the vista. This point was selected because the existing facility pole is clearly visible in the immediate vicinity of the trail (refer to Figure 3- 21).

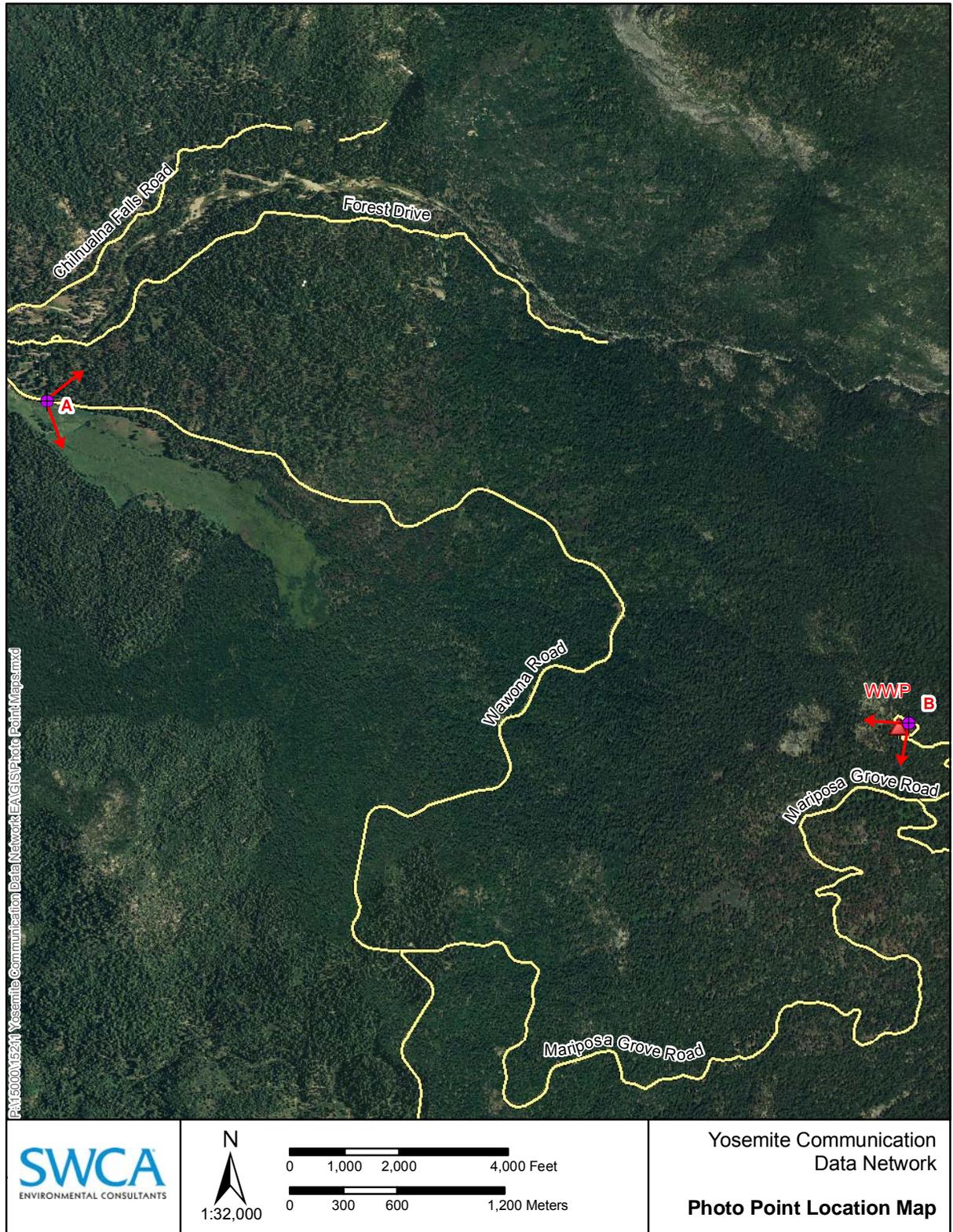


Figure 3-19. Wawona Point Viewpoints A and B

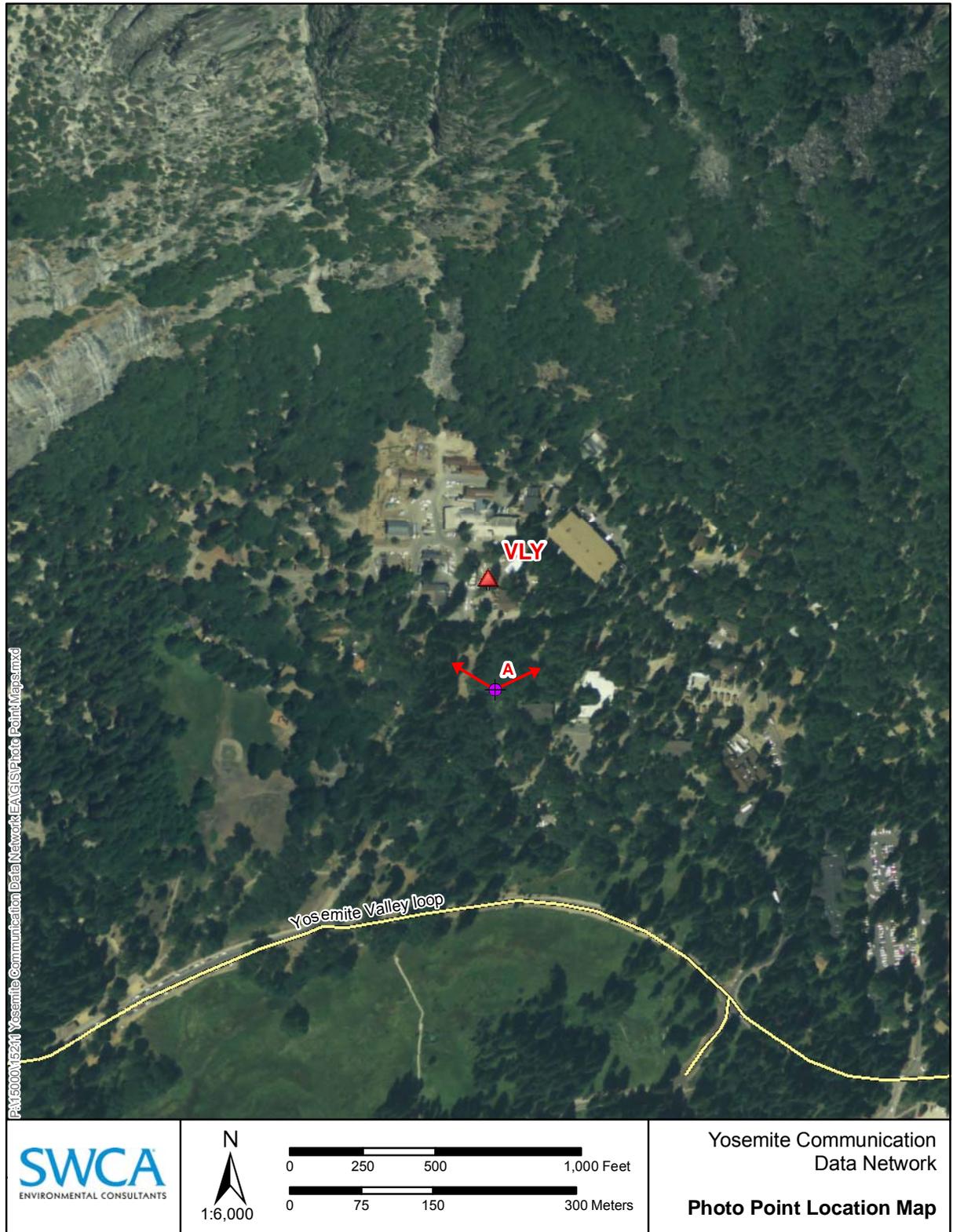


Figure 3-20. Yosemite Valley (Alternatives 2 and 3) Viewpoint A



Figure 3-21. Wawona Point Photo from Viewpoint B



Figure 3-22. Yosemite Valley (Alternatives 2 and 3) Photo from Viewpoint A

Yosemite Valley (VLY)

The proposed VLY facility would be located within an existing, multi-carrier facility located within the Yosemite Village area, near the Merced Wild and Scenic River Corridor. Immediate views in the area are dominated by development consisting of NPS buildings and stables, storage areas fenced with metal chain link, parking areas, vehicles and equipment. The existing communications facility is visible only in the immediate area. Yosemite Valley is a popular destination for visitors, and provides a variety of uses including camping, lodging, food services, and trails. Trails located upslope from the facility site are surrounded by dense trees, which block views of the site.

Because the facility is not visible from trails in the area, the proposed VLY facility was recorded from only one viewpoint (refer to Figure 3- 20). **Viewpoint A** is from park road adjacent to the Yosemite Cemetery, located approximately 450 feet south of the proposed facility site. This point was chosen because visitors would have a clear view of the proposed facility from the road (refer to Figure 3- 22).

Environmental Consequences

NPS Scenic Resource Management Direction

The NPS does not apply a classification system to managing scenic quality within national parks. As mandated under the Organic Act, all visual resources and scenic quality within national parks are to be conserved the scenery, unimpaired for the enjoyment of future generations. For purposes of this analysis, potential impairment of the resource is determined using context, intensity, duration, and timing to gauge the level of impacts of proposed actions within the park system. Through the National Environmental Policy Act (NEPA) process, threshold values have been developed to assist the evaluator in determining if an action's activities would constitute an impairment of visual resources. The threshold values used for assessing impacts are described below and are an adaptation of threshold values used to assess impacts within Glacier National Park (NPS 2003). Note that a major determination would constitute an impairment of the resource because of substantive changes in scenic quality. Substantive changes in visual quality are defined as those project-related landscape contrasts imposed on the existing landscape that would be obviously visible to the casual viewer, be a focus of attention, and dominate the view, in the short term or long term. Temporary impacts are defined as those that would persist during the period of construction. Short-term impacts are defined as those that would persist for less than five years (e.g., during reclamation vegetation establishment and growth); long-term impacts would persist for longer than five years.

As discussed in the *Yosemite National Park General Management Plan* (1980), a purpose of the park is to "preserve resources that contribute to the park's uniqueness and attractiveness, including its scenic beauty...." Park operations, under the plan, stipulate that the NPS "participate with...private interests in planning for compatible management and use of scenic...resources" (NPS 1980).

The management objectives of the park include preserving, protecting, and restoring scenic resources by: (1) identifying the major scenic resources and the places from which they are viewed, (2) provide for protection and preservation of existing scenic resources, and (3) permit only those types and levels of use that are compatible with preservation, protection of those resources.

Methodology

A method used by NPS land use planners and managers to assess impacts to scenic resources is contrast analysis. The visual contrast analysis concept can be summarized as “the degree to which a project or activity affects scenic quality or visual resources depends on the visual contrasts created or imposed by a project on the existing landscape. The contrasts can be measured by comparing the project’s features with the major features in the existing landscape” (BLM 1986).

In general, the contrast analysis concept assumes that development- related landscape changes that repeat the natural features of the landscape or are well integrated with existing landscape features are considered to be in harmony with their surroundings. These changes produce low levels of contrast and are considered to have a low impact on existing scenic quality or on the aesthetic values of the landscape. Landscape modifications that do not harmonize with the surrounding landscape are considered to be in contrast with that landscape. The contrasts appear obvious, they stand out, and they can be scenically displeasing to viewers because they are not well integrated with the existing natural landscape.

For the purposes of this analysis, aesthetic or visual analysis involves determining the degree of visual change between the existing landscape (including any existing structures and infrastructure) and the landscape that would result from new development.

Given the methodology and assumptions described above, the following criteria have been developed to assess the level of impact to scenic resources from each of the alternatives:

Intensity Level Definitions

- Negligible:** No short- term or long- term changes to the views of the area or the degree of contrast would occur. Some transient (temporary) visual changes may occur, caused by construction or by the movement of equipment.
- Minor:** Changes to scenic quality or in the degree of contrast would be short- term only. Limited mitigation would be required.
- Moderate:** Short- term changes to scenic quality or in the degree of contrast could occur both within and beyond the site. Long- term changes would be limited to the site.
- Major:** Both short- term and long- term changes in scenic quality or in the degree of contrast would occur both within and beyond the immediate area, and some of these changes may be substantive.
- Impairment:** Long- term, development- related landscape contrasts imposed on the existing natural landscape would be extensive and would be obviously visible to the casual viewer. They would be a focus of attention and dominate the view resulting in an inability to fulfill the park’s mission of protecting viewsheds.

Impacts under Alternative 1 (No Action Alternative)

Construction- related Impacts on Scenic Resources. Under the No Action Alternative, the communications facilities of the CDN would continue to operate and be maintained in their

present condition. No construction- related impacts would occur. Operation- related impacts would be limited to the contrasts of existing facilities with its surroundings.

Impact significance. Local, long- term, negligible, adverse, impact.

Operation- related Impacts on Scenic Resources. Existing facilities offer some contrast from the respective surrounding landscapes, which vary from highly visible to hardly discernable with the naked eye.

Impact significance. Local, long- term, negligible, adverse, impact.

Conclusion. No construction- related impacts would occur. Operation- related impacts would include negligible contrast from respective surrounding landscapes. Under Alternative 1, scenic resources at Yosemite National Park would not be impaired.

Impacts under Alternative 2 (Preferred)

Under Alternative 2, the communications facilities would be constructed and operated in the locations described in Chapter 2. Construction- related impacts would include temporary contrasts from construction equipment, demolished towers and equipment shelters (as applicable), and exposed soil. Operation- related impacts would include long- term contrasts from new towers, antennas, dishes, and equipment shelters.

Big Oak Flat (Entrance Station) Repeater (BOFR)

Construction- related Impacts on Scenic Resources. Dense stands of trees grow up to the road shoulder and prevent public views into the site; therefore, construction activities would not be visible from Rockefeller Grove Road. Occasionally, exposed soils, fugitive dust, and construction equipment would be visible from the road, but these activities would create a negligible contrast with the surroundings due to the low visibility of the site from the road.

Impact significance. Local, short- term, negligible, adverse, impact.

Operation- related Impacts on Scenic Resources. Because the proposed BOFR facility would be screened from public view by dense trees and intervening topography, there would be no apparent contrast with the existing landscape from the Rockefeller Grove Road.

Impact significance. Local, long- term, negligible, adverse, impact.

Hetch Hetchy Entrance (HHE)

Construction- related Impacts on Scenic Resources. Construction activities associated with the HHE facility would be clearly visible from Hetch Hetchy Road. Exposed soils during trenching, fugitive dust, and construction equipment would be visible from the road and would create a minor contrast with the surrounding landscape.

Impact significance. Site- specific, short- term, minor, adverse, impact.

Operation- related Impacts on Scenic Resources. The facility site would generally be screened by surrounding dense forest as seen from the eastbound travel lane of Hetch Hetchy Road (viewpoint A) (refer to Figure 3- 15). The upper third of the proposed HHE facility would be

clearly visible to travelers passing the facility site on Hetch Hetchy Road, as seen from an angle looking up towards the treetops (refer to Figure 3- 23). The base of the tower, and equipment cabinet would be screened from view by dense forest. The 100- foot tall self supporting tower would be located amongst the straight and tall conifers in the project area and would repeat the straight vertical line element dominant in the forest, but would result in a contrasting color and texture with the dark, rough textured tree trunks. The introduction of the tower and 6- foot diameter dish would result in a moderate contrast with the surrounding landscape.

Impact significance. Site- specific, long- term, moderate, adverse, impact.

Hodgdon Meadow Maintenance Complex (HMC)

Construction- related Impacts on Scenic Resources. Construction activities associated with the HMC facility would be visible from within the existing Hodgdon Meadow Maintenance Complex and the Tuolumne Grove Road. The removal of one 70- foot pine tree would result in short term linear contrasts with the surrounding landscape. The 4,500 foot trench adjacent to the Tuolumne Grove Road would result in short term color contrasts from exposed soils. Fugitive dust and construction equipment would be clearly visible from the road during active construction periods. All construction activities would create a minor contrast with the surrounding landscape.

Impact significance. Site- specific, short- term, minor, adverse, impact.

Operation- related Impacts on Scenic Resources. The introduction of a 6- foot diameter microwave antenna to the side of the maintenance building would result in moderate contrasts with the existing developments in the maintenance complex. The proposed HMC facility would only be visible from within the existing Hodgdon Meadow Maintenance Complex. No other new structures or facilities would be introduced, and there would be no further contrast to the existing landscape.

Impact significance. Site- specific, long- term, negligible, adverse, impact.

May Lake Junction (MLJ)

Construction- related Impacts on Scenic Resources. Construction activities associated with the MLJ facility would be clearly visible to travelers passing the facility along the Tioga Road. The 12- mile trench from MLJ to Tuolumne Meadows Visitor center would be adjacent to the Tioga Road and would repeat the linear contrast of the road, but would result in short term contrasts to the form and color of the existing landscape from exposed soils. Fugitive dust and construction equipment would also be clearly visible along the road for the duration of the construction period and would create a moderate contrast with the surrounding landscape.

Impact significance. Site- specific, short- term, moderate, adverse, impact.

Operation- related Impacts on Scenic Resources. The proposed MLJ facility would be partially screened by pine forest surrounding the facility, as seen from the eastbound approach on Tioga Road. Based on a visual simulation of the facility as seen from eastbound Tioga Road (viewpoint A), the facility would not extend above the treeline (refer to Figure 3- 26). The facility would be clearly visible at a point immediately in front of the facility on Tioga Road (refer to Figure 3- 27), and to visitors stopping or parking near the May Lake Junction approach to Tioga Road. The 25- foot tall self supporting tower, new equipment cabinet, photovoltaic panel, and 4- foot diameter

antenna would result in long term contrasts to the color and texture of the dark and rough textured tree trunks and smooth grey boulders and soils that make up the existing landscape.

Impact significance. Site- specific, long- term, moderate, adverse, impact.

Wawona (WAW)

Construction- related Impacts on Scenic Resources. Construction activities associated with the WAW facility would be visible from within the NPS maintenance facility, and intermittently visible from Chilnualna Road. The removal or trimming of one pine tree would result in short term linear contrasts with the surrounding landscape. Fugitive dust and construction equipment would be clearly visible from the road during active construction periods. Construction activities would create a minor contrast with the surrounding landscape.

Impact significance. Site- specific, short- term, minor, adverse, impact.

Operation- related Impacts on Scenic Resources. The proposed WAW facility would be intermittently visible from Chilnualna Road (viewpoint A) (refer to Figure 3- 17). The 25- foot tall self supporting tower and four- foot diameter antenna would result in long term contrasts to the color and texture of the dark and rough textured tree trunks and soils that make up the existing landscape. Additionally, the proposed tower would result in a minor contrast to the existing landscape.

Impact significance. Site- specific, long- term, minor, adverse, impact.

Crane Flat (CRN)

Construction- related Impacts on Scenic Resources. Construction activities associated with the CRN facility would be visible from the Crane Flat fire lookout (viewpoint A), the Fire Lookout Trail (viewpoint B), and intermittently from Big Oak Flat Road (viewpoint C). Exposed soils, fugitive dust and construction equipment would be clearly visible from the road during active construction periods. Construction activities would create a minor contrast with the surrounding landscape.

Impact significance. Site- specific, short- term, minor, adverse, impact.

Operation- related Impacts on Scenic Resources. The proposed CRN facility would be clearly visible from the Crane Flat fire lookout, the Fire Lookout Trail, and intermittently from Big Oak Flat Road. The 65- foot tall, four- leg tower would repeat the basic linear elements of the existing 25- foot tall towers. The facility would not be clearly discernable from the existing development on the ridgeline, as seen from Big Oak Flat Road. As seen from the trail and fire lookout, the facility would result in a long- term, moderate linear contrast with the surrounding landscape. The 10 x 20 vault would repeat the visual elements of the existing structures and facilities present at developed site, but would result in long term contrasts to the color, texture of the dark and rough textured tree trunks and soils that make up the surrounding landscape. A visual simulation of the proposed CRN facility is provided in Figure 3- 30, as seen from the Crane Flat fire lookout.

Impact significance. Site- specific, long- term, moderate, adverse, impact.

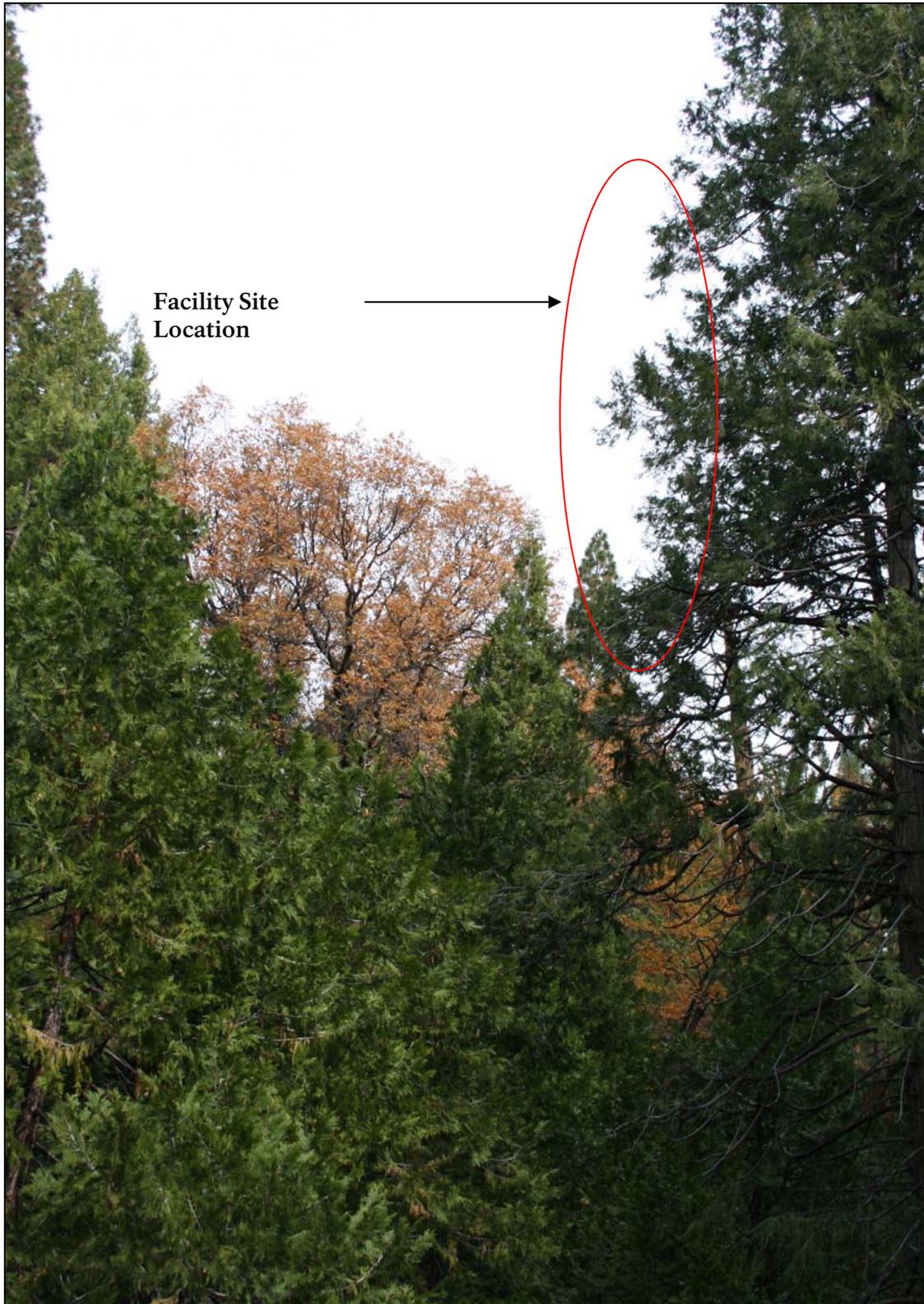


Figure 3-23. Hetch Hetchy Entrance (Alternative 2) (direct view on Hetch Hetchy Road)



Figure 3-24. May Lake Junction Viewpoints A and B



Figure 3-25. May Lake Junction Photo from Viewpoint A



Figure 3-26. May Lake Junction Visual Simulation at Viewpoint A



Figure 3-27. May Lake Junction Visual Simulation (direct view at facility site)

Eagle Peak Repeater (EGP)

Construction- related Impacts on Scenic Resources. Construction activities associated with the EGP facility would be faintly visible from points along Highway 140. As a result of the distance, speed of travel, and aspect of viewers along Highway 140, exposed soils, fugitive dust and construction equipment would be faintly visible from the road during active construction periods. Additionally, there would be short term localized impacts from the presence of helicopters flying equipment and materials to the site. Construction activities would create a negligible contrast with the surrounding landscape.

Impact significance. Site- specific, short- term, negligible, adverse, impact.

Operation- related Impacts on Scenic Resources. As a result of the distance, viewer aspect, and speed of travel, the proposed improvements to the EGP facility would be faintly visible from points along Highway 140. Proposed improvements would not be readily discernable from the existing condition.

Impact significance. Site- specific, long- term, negligible, adverse, impact.

El Portal (ELP)

Construction- related Impacts on Scenic Resources. Construction activities associated with the ELP facility would be visible from points along Highway 140. Exposed soils, fugitive dust and construction equipment would be clearly visible from the road during active construction periods. Construction activities would create a minor contrast with the surrounding landscape.

Impact significance. Site- specific, long- term, minor, adverse, impact.

Operation- related Impacts on Scenic Resources. The proposed ELP facility would be intermittently visible as seen from the eastbound travel lane of Highway 140 (viewpoint A). Mature trees adjacent to the roadway generally screen views of the ELP facility and surrounding administrative area. The facility is clearly visible from Highway 140 westbound (viewpoint B). The 100- foot tall, four- leg tower would repeat the basic line, color and textural elements of the existing 60- foot tall tower, but would be visible from a further distance. Because of the increased height and greater visibility, a moderate linear contrast with the existing square buildings and structures and rounded and low lying juniper trees that make up the surrounding landscape would occur. A visual simulation of the proposed ELP facility, as seen from Highway 140 westbound is provided in Figure 3- 33.

Impact significance. Site- specific, long- term, moderate, adverse, impact.

Heness Ridge (HEN)

Construction and Operation- related Impacts on Scenic Resources. Because the proposed HEN facility would be within an existing facility and is screened from public view by dense trees and intervening topography, there would be no apparent visual contrast with the existing landscape.

Impact significance. Site- specific, short- and long- term, negligible, adverse, impact.

Mt. Bullion (MTB)

Construction- related Impacts on Scenic Resources. Although the proposed MTB facility would be clearly visible from points along Highway 49, no new ground disturbance or tree removal or trimming is proposed for the facility. Some construction equipment necessary for replacing the antenna would be clearly visible from the road for a brief time. Construction activities would create a negligible contrast with the surrounding landscape.

Impact significance. Site- specific, short- term, negligible, adverse, impact.

Operation- related Impacts on Scenic Resources. The existing 120- foot tall, self support tower is clearly visible in the landscape and would remain in place. A new 6- foot diameter antenna would be hung on the existing tower and would repeat the basic color and textural elements present on the site. Operations would create a negligible contrast with the existing landscape.

Impact significance. Site- specific, long- term, negligible, adverse, impact.

Sentinel Dome (SNT)

Construction- related Impacts on Scenic Resources. Construction activities associated with the SNT facility would be visible from points along the Sentinel Dome Trail heading in both directions. Exposed soils, fugitive dust and construction equipment would be clearly visible from the road during active construction periods. Construction activities would create a minor contrast with the surrounding landscape.

Impact significance. Site- specific, short- term, minor, adverse, impact.

Operation- related Impacts on Scenic Resources. The proposed SNT facility would be clearly visible from the Sentinel Dome Trail (viewpoint A). The 40- foot tall, three- leg tower would repeat the basic line, color and textural elements of the existing 40- foot tall tower it is replacing. A negligible linear contrast with the existing square buildings and remaining tower, and straight tall pine trees that make up the surrounding landscape would occur. A visual simulation of the proposed SNT facility, as seen from the Sentinel Dome Trail (heading downslope) is provided in Figure 3- 36.

Impact significance. Site- specific, long- term, negligible, adverse, impact.

Sentinel Reflector (SNTReflector)

Construction- related Impacts on Scenic Resources. Because the proposed SNTReflector facility would utilize existing infrastructure, there would be no new visual contrast with the surrounding landscape as a result of the proposed action.

Impact significance. Site- specific, long- term, negligible, adverse, impact.

Turtleback Dome (TRT)

Construction- related Impacts on Scenic Resources. Construction activities associated with the TRT facility would be faintly visible from the Half Dome Overlook (viewpoint A). Exposed soils, fugitive dust and construction equipment would be faintly visible from the overlook during active construction periods. Construction activities would create a minor contrast with the surrounding landscape.

Impact significance. Site- specific, short- term, minor, adverse, impact.

Operation- related Impacts on Scenic Resources. The proposed TRT facility would be faintly visible from the Half Dome Overlook. The existing 100- foot tall, tower would be replaced with similar 80- foot four- leg self- support tower which would repeat the basic line, color and textural elements of the existing tower it is replacing (refer to Figure 3- 39). As a result of the distance and reduced height, there would be a negligible linear contrast with the existing rocky and rugged terrain that makes up the surrounding landscape.

Impact significance. Site- specific, long- term, negligible, adverse, impact.

Wawona Point (WWP)

Construction- related Impacts on Scenic Resources. Construction activities associated with the WWP facility would be visible from the Wawona Point access trail. Proposed tree removal or trimming would result in a minor contrast to the existing line, color and texture of the surrounding forested area. Exposed soils, fugitive dust and construction equipment would be clearly visible from the trail during active construction periods. Construction activities would create a minor contrast with the surrounding landscape.

Impact significance. Site- specific, short- term, minor, adverse, impact.

Operation- related Impacts on Scenic Resources. Long- range views from Wawona Road include the ridgeline and landscape that surrounds the Wawona Point Overlook (viewpoint A). The proposed WWP facility would not be discernable as seen from Wawona Road due to distance, vegetation, and the overall scale of the landscape. Clear views of the facility are limited to areas immediately adjacent to the site, including the Wawona Point access trail (viewpoint B). The 85- foot tall, four- leg tower would repeat the basic line, color and textural elements of the existing 70- foot tall tower. Because of the increased height, a moderate contrast with to the line, texture and form of the existing structures surrounding pine trees that make up the surrounding landscape would occur.

Impact significance. Site- specific, long- term, moderate, adverse, impact.

Yosemite Valley (VLY)

Construction- related Impacts on Scenic Resources. Construction activities associated with the VLY facility would be faintly visible from the Yosemite Cemetery in Yosemite Valley. Exposed soils, fugitive dust and construction equipment would be faintly visible from the cemetery during active construction periods. Construction activities would create a minor contrast with the surrounding landscape.

Impact significance. Site- specific, short- term, minor, adverse, impact.

Operation- related Impacts on Scenic Resources. Although the proposed VLY facility would be clearly visible from the Yosemite Cemetery, the 25- foot tall, three leg, self- support tower would repeat the basic line, color and textural elements of the three existing towers and associated facilities currently present on site. Because the proposed facility is being located with similar facilities and structures, there would be a negligible contrast with the existing landscape.

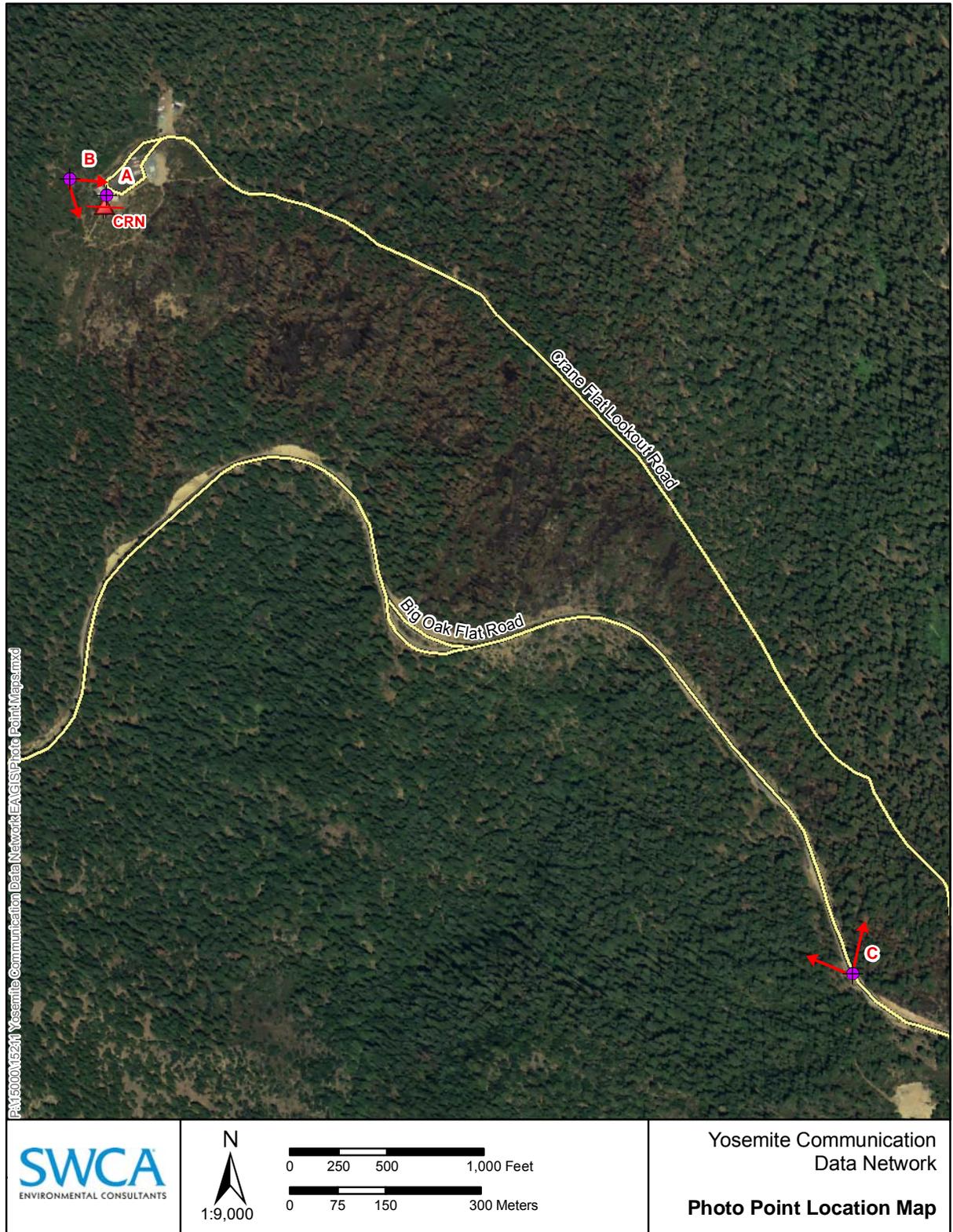


Figure 3-28. Crane Flat Viewpoints A, B, and C



Figure 3-29. Crane Flat (Alternative 2) Photo from Viewpoint A (Crane Flat fire lookout, south view)



Figure 3-30. Crane Flat (Alternative 2) Visual Simulation at Viewpoint A (Crane Flat fire lookout)



Figure 3-31. El Portal Viewpoints A and B



Figure 3-32. El Portal Photo from Viewpoint B

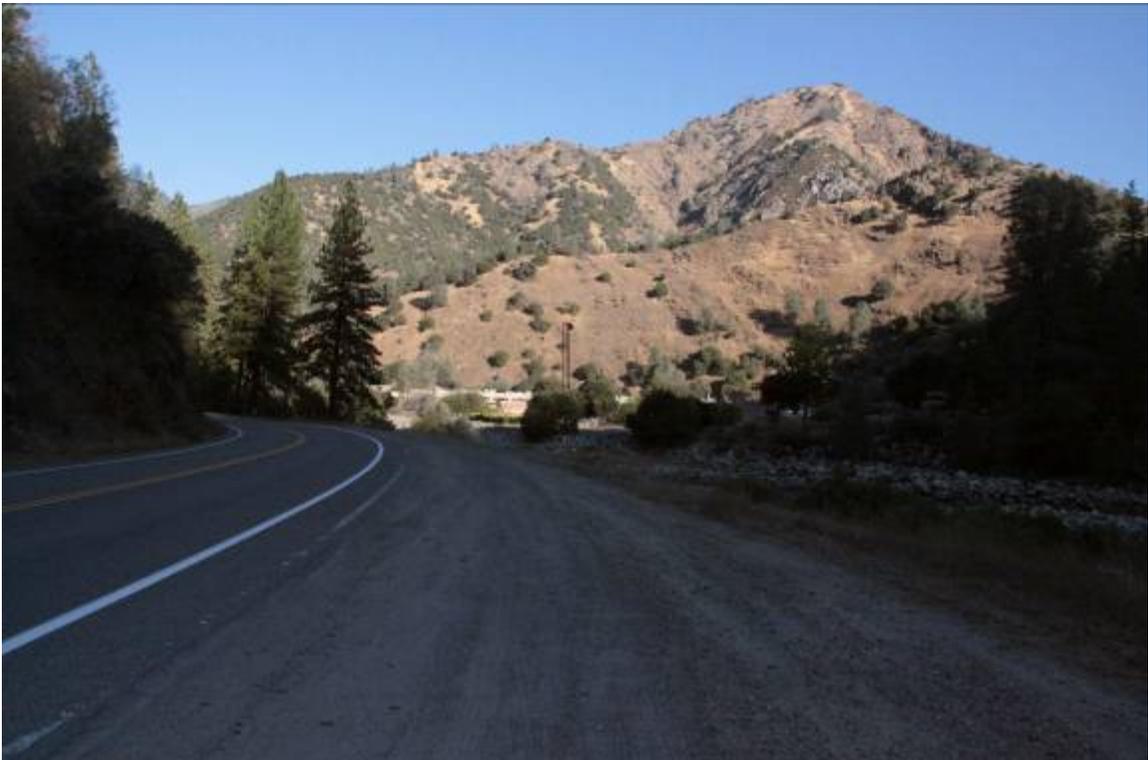


Figure 3-33. El Portal Visual Simulation at Viewpoint B

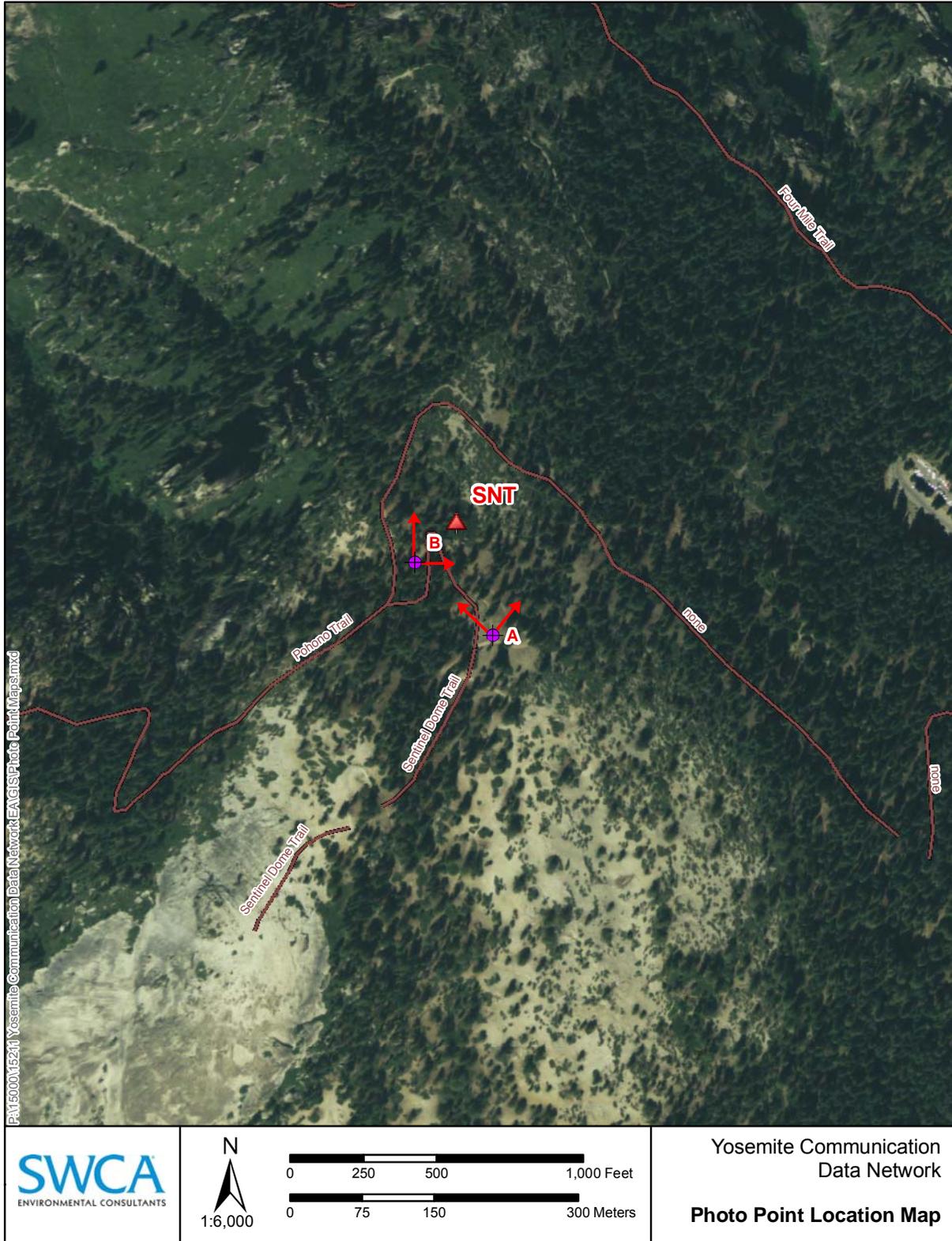


Figure 3-34. Sentinel Dome Viewpoints A and B



Figure 3-35. Sentinel Dome Photo from Viewpoint A



Figure 3-36. Sentinel Dome Visual Simulation at Viewpoint A

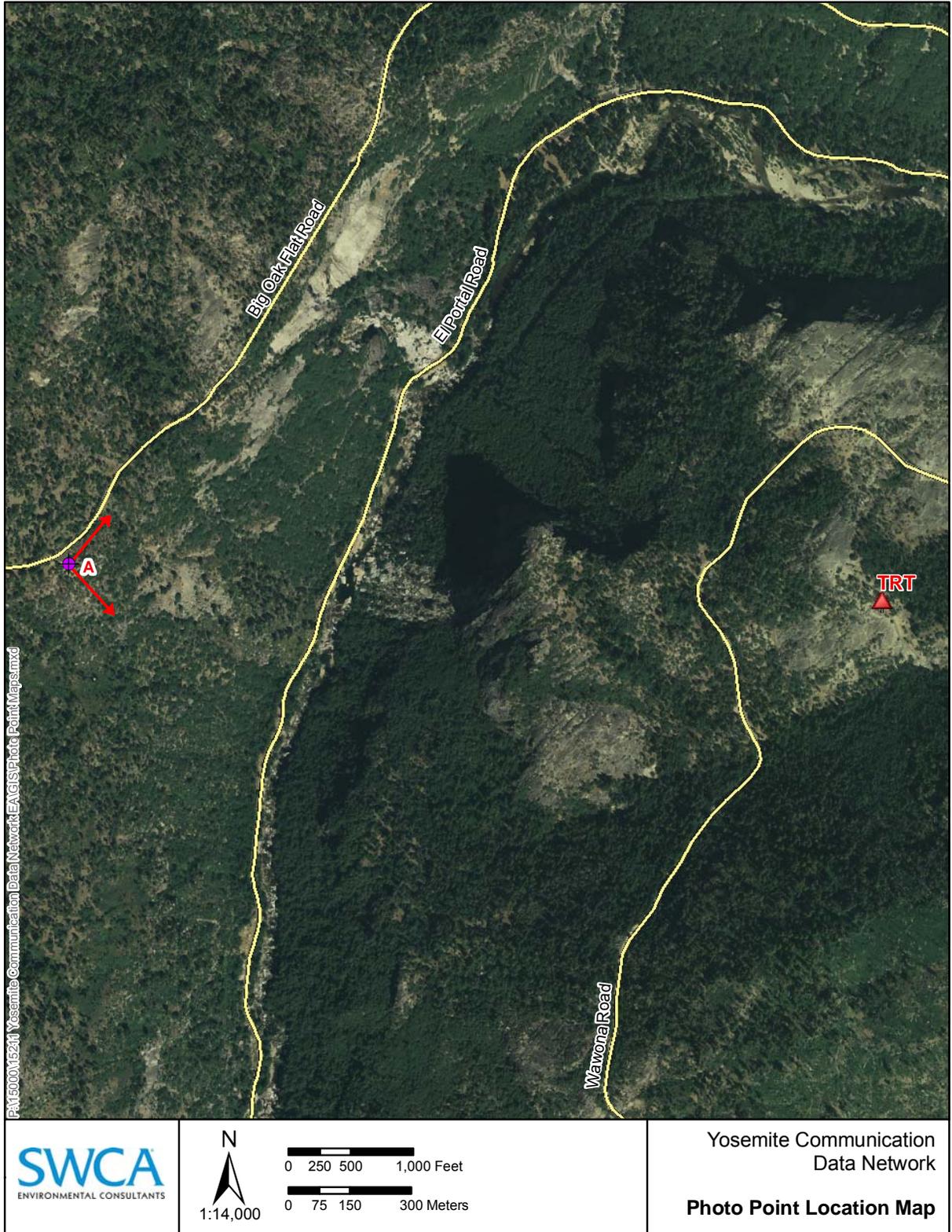


Figure 3-37. Turtleback Dome Viewpoint A



Figure 3-38. Turtleback Dome Photo from Viewpoint A



Figure 3-39. Turtleback Dome Visual Simulation at Viewpoint A

Impact significance. Site- specific, long- term, negligible, adverse, impact.

Conclusion. Under Alternative 2, construction- related activities would result in localized, short-term visual contrasts to the landscape surrounding both new and existing facilities. Collectively, operations of the new CDN facilities under Alternative 2 would result in long term, moderate, adverse visual contrasts with elements of the existing landscape. Locating new towers in association with existing facilities, replacing old towers, and utilizing existing infrastructure all serve to reduce those contrasts.

Impairment. Though construction- and operation- related impacts would include some contrast from existing facilities and landscapes, scenic resources in the park would not be impaired under Alternative 2.

Impacts under Alternative 3 (Alternative Sites or Equipment)

Under Alternative 3, new facilities would be constructed in alternative locations at Crane Flat, Eagle Peak, and Hetch Hetchy Entrance. Co- location on an existing facility tower is proposed at Yosemite Valley. Impacts associated with these facility sites are discussed below.

Crane Flat (CRN)

Construction- related Impacts on Scenic Resources. Under Alternative 3, construction activities associated with the CRN facility would be clearly visible from the Crane Flat fire lookout, the Fire Lookout Trail, and Big Oak Flat Road. The base of the structure would be screened from view by existing trees to remain. The removal and trimming of pine trees would result in moderate linear contrasts with the surrounding landscape. Exposed soils, fugitive dust and construction equipment would be clearly visible from the lookout, trail, and road during active construction periods. Construction activities would create a minor contrast with the surrounding landscape.

Impact significance. Site- specific, long- term, minor, adverse, impact.

Operation- related Impacts on Scenic Resources. The proposed CRN facility would be clearly visible from the Crane Flat fire lookout, the Fire Lookout Trail, and intermittently from Big Oak Flat Road. The 100- foot tall, four- leg tower would be located 160 feet west of the existing towers and would result in contrasts to the basic linear, color, and textural elements of the surrounding pine trees. Because of the increased height, would result in a long- term, moderate linear contrast with the surrounding landscape. The 10 x 20 equipment vault would repeat the visual elements of the adjacent, existing fire lookout. A visual simulation of the CRN alternative facility is provided in Figure 3- 41.

Impact significance. Site- specific, long- term, moderate, adverse, impact.



Figure 3-40. Crane Flat (Alternative 3) Photo from Viewpoint A (Crane Flat fire lookout, view southwest)



Figure 3-41. Crane Flat (Alternative 3) Visual Simulation at Viewpoint A (Crane Flat fire lookout)

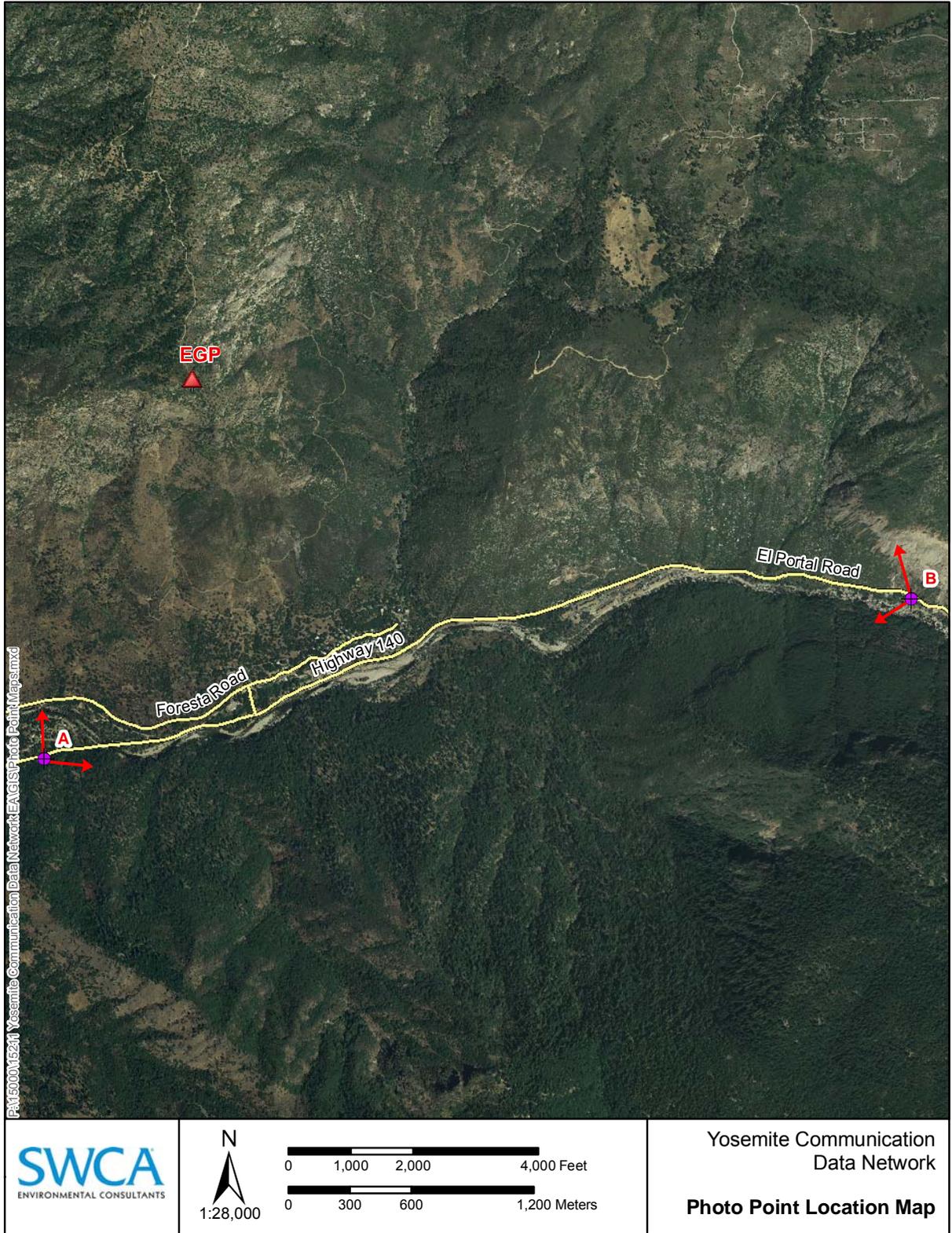


Figure 3-42. Eagle Peak Viewpoints A and B

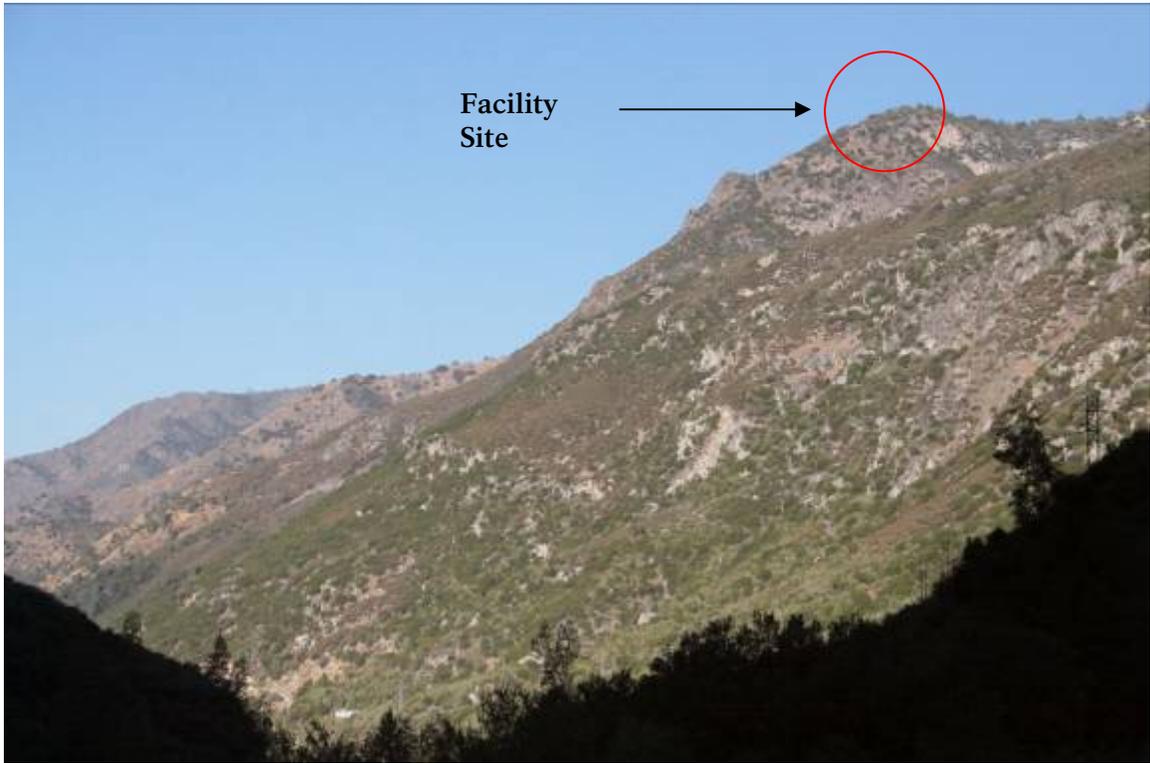


Figure 3-43. Eagle Peak Photo from Viewpoint B



Figure 3-44. Eagle Peak Visual Simulation at Viewpoint B

Eagle Peak (EGP)

Construction- related Impacts on Scenic Resources. Construction activities associated with the EGP facility would be faintly visible from points along Highway 140. As a result of the distance, speed of travel, and aspect of viewers along Highway 140, exposed soils, fugitive dust and construction equipment would be faintly visible from the road during active construction periods. Additionally, there would be short term localized impacts from the presence of helicopters flying equipment and materials to the site. Construction activities would create a negligible contrast with the surrounding landscape.

Impact significance. Site- specific, short- term, negligible, adverse, impact.

Operation- related Impacts on Scenic Resources. As a result of the distance, viewer aspect, and speed of travel, the proposed EGP facility would be faintly visible from points along Highway 140. The 25- foot tall, three- leg tower would repeat the basic linear elements of the existing Eagle Peak towers contributing to minor visible contrasts with the color and line of the dark, forested, and rugged horizon line. No other new structures or facilities are proposed. A visual simulation of the proposed EGP facility is provided in Figure 3- 44.

Impact significance. Site- specific, long- term, minor, adverse, impact.

Hetch Hetchy Entrance (HHE)

Construction- related Impacts on Scenic Resources. Construction activities associated with the HHE facility would be clearly visible from Hetch Hetchy Road. Trimming and removal of trees, exposed soils during trenching, fugitive dust, and construction equipment would be visible from the road and would create a minor contrast with the surrounding landscape.

Impact significance. Site- specific, short- term, minor, adverse, impact.

Operation- related Impacts on Scenic Resources. The proposed HHE facility would be clearly visible from viewpoints close to the facility site along Hetch Hetchy Road. The 100- foot tall self supporting tower would be located amongst the straight and tall conifers in the project area and would repeat the straight vertical line element dominant in the forest, but would result in a contrasting color and texture with the dark, rough textured tree trunks. The introduction of the tower and 6- foot diameter dish would result in a moderate contrast with the surrounding landscape. The immediate location has been managed for vegetation fuel reduction; however, vegetative screening (i.e., native trees) would be planted near the base of the structure, and fuel management would occur outside of the vegetative screen.

Impact significance. Site- specific, long- term, moderate, adverse, impact.

Yosemite Valley (VLY)

Construction- related Impacts on Scenic Resources. Construction activities associated with the VLY facility would be faintly visible from the Yosemite Cemetery in Yosemite Valley. Construction equipment would be faintly visible from the cemetery during active construction periods. Construction activities would create a minor contrast with the surrounding landscape.

Impact significance. Site- specific, short- term, minor, adverse, impact.

Operation- related Impacts on Scenic Resources. The existing facility is partially visible from the Yosemite Cemetery. Existing mature trees are located between the facility site and public areas. The proposed improvements would repeat the basic line, color and textural elements of the three existing towers and associated facilities currently present on site. Because the proposed facility is being co- located with similar facilities and structures, there would be a negligible contrast with the existing landscape.

Impact significance. Site- specific, long- term, negligible, adverse, impact.

Conclusion. Under Alternative 3, construction- related activities would result in localized, short-term visual contrasts to the landscape surrounding both new and existing facilities. Collectively, operations of the new CDN facilities under Alternative 3 would result in long term, moderate, adverse visual contrasts with elements of the existing landscape.

Impairment. Though construction- and operation- related impacts would include some contrast from existing facilities and landscapes, scenic resources in the park would not be impaired under Alternative 3.

AIR QUALITY

Affected Environment

Regulatory Framework

Yosemite National Park is classified as a mandatory Class I area under the federal Clean Air Act (42 USC 7401 et seq.). This air quality classification is aimed at protecting parks and Wilderness areas from air quality degradation. The federal Clean Air Act gives federal land managers the responsibility for protecting air quality and related values from adverse air pollution impacts, including visibility, plants, animals, soils, water quality, visitor health, and cultural and historic structures and objects. The U.S. Environmental Protection Agency (EPA) and the California Air Resources Board (CARB) designate whether counties in California are in attainment of federal and state (respectively) ambient air quality standards for criteria air pollutants.

Proposed sites within Yosemite National Park, and proposed sites outside of the park boundaries, are located within the Mountain Counties Air Basin (MCAB), under the jurisdiction of the Tuolumne County Air Pollution Control District (TCAPCD) and Mariposa County Air Pollution Control District (MCAPCD). Air quality is also regulated by the EPA and CARB. Each of these agencies develops rules, regulations, policies, and guidelines / goals to comply with applicable legislation. EPA regulations may not be superseded; however, both state and local regulations may be more stringent.

The ambient concentrations of air pollutant emissions are determined by the amount of emissions released by pollutant sources and the atmosphere's ability to transport and dilute the emissions. Terrain, wind, atmospheric stability, and the presence of sunlight affect the transport and dilution of emissions. Portions of Tuolumne and Mariposa Counties located within Yosemite National Park are designated non- attainment for national and state ozone standards (see Appendix C). The portion of Mariposa County within Yosemite National Park is also designated non- attainment for the state particulate matter smaller than 10 microns (PM- 10) standard. Both

counties are designated either attainment or unclassified for the remaining national and state standards (CARB 2006).

The California Environmental Protection Agency (CalEPA) concluded that all of the ozone exceedances in 1995 in the southern portion of the Mountain Counties Air Basin (i.e., Tuolumne and Mariposa Counties) were caused by transport of ozone and ozone precursors from San Joaquin Valley Air Basin (CARB 1996). Air quality in the Mountain Counties Air Basin is also significantly affected by pollutant transport from the metropolitan Sacramento area and the San Francisco Bay Area. In contrast, the San Joaquin Valley Air Basin is considered both a source and a receptor of pollutant transport.

Air quality in the park is affected by emission sources both inside and outside of Yosemite National Park. Air pollution sources in the park include stationary sources such as furnaces, boilers, wood stoves, campfires, generators, barbecues, and prescribed fires. Motor vehicles are mobile sources, and emissions primarily include carbon monoxide, nitrogen oxides, and hydrocarbons (or volatile organic compounds). The air quality in Yosemite National Park is also affected by the transport of pollutant emissions from stationary sources outside of Yosemite National Park, including various power plants, food processors, and industrial facilities, which emit PM 10, sulfur dioxide, volatile organic compounds, carbon monoxide, and nitrogen dioxide.

Turtleback Dome Monitoring Station

The Turtleback Dome Monitoring Station monitors ozone, visibility, dry deposition, and meteorology. At this station, data recorded between 2004 and 2008 indicate multiple- day exceedances of the state one- hour and eight- hour ozone standards and multiple- day exceedances of the national nine- hour ozone standard (Appendix C). The general trend of the data, however, indicated a decrease in ozone pollutants from 2004 to 2007, and an increase in 2008.

Yosemite Valley Monitoring Station

The Yosemite Valley Monitoring station monitors PM 10, PM 2.5, ozone, nitrous oxides, and meteorology. Data recorded between 2000 to 2003 at this station indicate multiple- day exceedances of the state PM 10 standard (data after 2003 was not available). No exceedances of the national PM 10 standard were recorded between 2004 to 2008. The general trend of the data indicates an increase in particulate matter at this station (Appendix C).

Sensitive Receptors

Land uses such as residences, schools, and hospitals are considered to be more sensitive than the general public to poor air quality because the population groups associated with these land uses have an increased susceptibility to respiratory distress. Residential areas are considered more sensitive to air quality conditions than commercial and industrial areas because people generally spend longer periods of time at their residences. Potential sensitive receptors in the vicinity of proposed communication facility sites include park staff within residential living facilities in the Wawona and Hetch Hetchy area, visitors using campsites in the Hodgdon Meadow area, and visitors using trails and park facilities. Potential sensitive receptors identified for each facility site are listed in Table 3- 4 below.

Table 3-4. Potential Sensitive Receptors

Facility Site	Location	Potential Sensitive Receptors
Big Oak Flat Repeater (BOFR)	Rockefeller Grove Road	Trail users on Rockefeller Grover Road (125 feet from site)
Crane Flat (CRN)	Crane Flat fire lookout	Trail users on Crane Flat Fire Lookout Trail and Crane Flat fire lookout, park employees at Crane Flat heli-pad
Eagle Peak (EGP)	Eagle Peak Reflector communication facility site	None in proximity
El Portal (ELP)	El Portal Administration Area	Park employees
Hennes Ridge (HEN)	Hennes Ridge communication facility	Visitors to Hennes Ridge fire lookout (620 feet from site)
Hetch Hetchy Entrance (HHE)	Hetch Hetchy entrance station	Visitors to Mather Ranger Station, park and USFS employees
Hodgdon Meadow Maintenance Complex (HMC)	Hodgdon Meadow Maintenance Complex, Tuolumne Grove Road	Park employees, visitors on Tuolumne Grove Road
May Lake Junction (MLJ)	Intersection of May Lake Junction and Tioga Road	Visitors on Tioga Road
Mount Bullion (MTB)	Mount Bullion communication facility site	None in proximity
Sentinel Dome (SNT)	Sentinel Dome communication facility site	Visitors on Sentinel Dome Trail
Sentinel Reflector (SNTReflector)	Sentinel Dome Reflector communication facility site	Visitors on Four-Mile Trail
Turtleback Dome (TRT)	Turtleback Dome	No sensitive receptors in immediate vicinity
Wawona (WAW)	Wawona District Circle	Park employees
Wawona Point (WWP)	Wawona Point Overlook	Visitors to Wawona Point Overlook
Yosemite Valley (VLY)	NPS/AT&T communication facility site	Park employees

Environmental Consequences

To quantify emissions of the proposed action, a computer program (URBEMIS2007) was used to calculate construction emissions based on default parameters. Exact project- specific data (e.g., construction equipment types and number requirements, and maximum daily acreage disturbed) were not available at the time of this analysis, but on- site equipment for installation of foundations would likely include backhoes, excavators, compactors, concrete trucks, cranes, and augers. Worst- case project- generated, construction- related emissions were modeled based on the default parameters contained in the computer model for the MCAB. Air pollutant thresholds are determined by the San Joaquin Valley Air Pollution Control District. Emissions exceeding 10 tons per year (ROG and NOx) would result in a significant effect (San Joaquin Valley Air Pollution Control District 2002). Operation- related effects include mobile sources generated by the periodic use of vehicles for maintenance, and use of back- up generators.

Intensity Level Definitions

Impacts to air quality were evaluated using the process described in the introduction to this chapter. Impact threshold definitions are as follows:

- Negligible:** Air emissions would not be noticeable or visible.
- Minor:** Air emissions would be slightly visible and may be noticeable to highly sensitive receptors. Mitigation would be relatively simple to implement.
- Moderate:** Air emissions would be visible and noticeable to sensitive receptors. Mitigation would probably be necessary to offset adverse effects.
- Major:** Air emissions would be visible and noticeable to nonsensitive receptors. Extensive mitigation would be necessary to offset adverse effects.
- Impairment:** Effects to the park's air quality would be severe and long- term and would preclude the protection of the park's air quality for future generations.

Impacts under Alternative 1 (No Action Alternative)

The communication data network would continue to operate as it currently does under this alternative. No grading or construction would occur; therefore, no changes to existing air quality would occur. Operation of the existing facility sites would not be affected, or result in any changes to existing air quality. This alternative would not result in any adverse impacts to air quality.

Impact Significance. Site- specific, long- term, negligible, adverse, impact.

Conclusion. No construction or operation- related impacts would occur.

Impairment. Under Alternative 1, air quality in Yosemite National Park would not be impaired.

Impacts under Alternative 2 (Preferred)

Under Alternative 2, five new facility sites would be constructed, and nine existing facility sites would be upgraded. Construction- related impacts would include mobile source emissions, dust, and other pollutants associated with grading, trenching, and construction. Estimated emissions are presented in Tables 3- 5 and 3- 6 below. Operation- related impacts would include stationary source emissions from the occasional use of on- site generators, and periodic mobile source emissions from maintenance vehicles. Due to the limited number of trips generated by new facilities, and short- term use of emergency generators, long- term emissions are qualitatively assessed.

Construction- related Impacts on Air Quality. Air quality effects associated with the demolition of existing communication facilities and construction of new facilities under Alternative 2 include temporary equipment and dust emissions. Both mobile and stationary equipment would generate emissions of ozone precursors, carbon monoxide, and PM 2.5 (criteria air pollutants) as well as toxic air contaminants from use of diesel- powered equipment. Toxic air contaminants are less pervasive in the atmosphere than criteria air pollutants, but they are linked to short- term (acute) and long- term (chronic or carcinogenic) adverse human health effects. Toxic air contaminants do not have corresponding ambient air quality standards. The temporary duration of the construction period, and dispersed nature of the facility sites would limit the potential for tailpipe emissions and diesel particulates to adversely affect local air quality.

Grading and construction activities for facility sites would be limited to relatively small areas of disturbance (less than 1,000 square feet per site). Potentially- affected sensitive receptors include park employees and visitors in the immediate vicinity of proposed facility sites. Proposed fiber optic cable installation associated with the MLJ facility site includes 12 miles of trenching along Tioga Road, which may generate dust visible to visitors and travelers on the roadway. Total construction activities would not exceed 10 tons per day for ROG or NOx; therefore, construction- related effects would be negligible.

Table 3-5. Predicted Short-term Construction-Related Emissions Alternatives 2 and 3 (pounds/day)

Source	Emissions (pounds/day)				
	ROG	NOx	CO	PM-10	PM 2.5
Grading (dust generation)	0	0	0	5.0	1.04
Grading (diesel)	3.0	24.99	12.46	1.25	1.15
Construction Worker Trips	0.07	0.11	1.76	0.01	0
Total	3.07	25.10	14.22	6.26	2.20

*Emissions were calculated using the URBEMIS2007 computer program, based on emission factors default parameters contained in the model, and assumptions based on the project description and site plans.

**Table 3-6. Predicted Short-term Construction-Related Emissions
Alternatives 2 and 3 (tons/year)**

Source	Emissions (tons/year)				
	ROG	NOx	CO	PM-10	PM 2.5
Grading (dust generation)	0	0	0	0.17	0.3
Grading (diesel)	0.10	0.84	0.42	0.04	0.04
Construction Worker Trips	0	0	0.06	0	0
Total	0.10	0.84	0.48	0.21	0.07

*Emissions were calculated using the URBEMIS2007 computer program, based on emission factors default parameters contained in the model, and assumptions based on the project description and site plans.

Impact Significance. Local, short- term, negligible to minor, adverse, impact.

Operation- related Impacts of Stationary Source Emissions. Operation of the facility sites would require the occasional use of existing back- up generators. No new generators are proposed to be installed at the facility sites. Operation of the generators would comply with best available control technology (BACT) requirements for both criteria air pollutant and ozone precursor emissions, and toxic air contaminant emissions.

Impact Significance. Local, long- term, negligible, adverse, impact.

Operation- related Impacts of Mobile Source Emissions. Mobile source emissions would be generated by the use of vehicles accessing facility sites for periodic maintenance. Trips generated by maintenance activities would be negligible, and would not result in a significant increase in mobile- source emissions.

Impact Significance. Local, long- term, negligible, adverse, impact.

Conclusion. Construction- related impacts would include negligible mobile source emissions and construction pollutants. Operation- related impacts would include negligible stationary source emissions and mobile source emissions.

Impairment. Though construction- related impacts would include some adverse effects to air quality, air quality in the park would not be impaired under Alternative 2.

Impacts under Alternative 3

Under Alternative 3, new and upgraded facility sites would be constructed similar to the facilities identified under Alternative 2. Construction- related impacts would include mobile source emissions, dust, and other pollutants associated with grading, trenching, and construction. Operation- related impacts would include stationary source emissions from the occasional use of on- site generators, and periodic mobile source emissions from maintenance vehicles.

Construction- related Impacts on Air Quality. Air quality effects associated with the demolition of existing communication facilities and construction of new facilities under Alternative 3 include temporary equipment and dust emissions. Both mobile and stationary equipment would generate emissions of ozone precursors, carbon monoxide, and PM 2.5 (criteria air pollutants) as well as toxic air contaminants from use of diesel- powered equipment. Toxic air contaminants are less pervasive in the atmosphere than criteria air pollutants, but they are linked to short- term (acute) and long- term (chronic or carcinogenic) adverse human health effects. Toxic air contaminants do not have corresponding ambient air quality standards. The temporary duration of the construction period, and dispersed nature of the facility sites would limit the potential for tailpipe emissions and diesel particulates to adversely affect local air quality.

Grading and construction activities would be limited to relatively small areas of disturbance (less than 1,000 square feet per site). Potentially- affected sensitive receptors include park employees and visitors in the immediate vicinity of proposed facility sites.

Impact Significance. Local, short- term, negligible, adverse, impact.

Operation- related Impacts of Stationary Source Emissions. Operation of the facility sites would require the occasional use of existing back- up generators. No new generators are proposed to be installed at the facility sites. Operation of the generators would comply with best available control technology (BACT) requirements for both criteria air pollutant and ozone precursor emissions, and toxic air contaminant emissions.

Impact Significance. Local, long- term, negligible, adverse, impact.

Operation- related Impacts of Mobile Source Emissions. Mobile source emissions would be generated by the use of vehicles accessing facility sites for periodic maintenance. Trips generated by maintenance activities would be negligible, and would not result in a significant increase in mobile- source emissions.

Impact Significance. Local, long- term, negligible, adverse, impact.

Conclusion. Construction- related impacts would include negligible mobile source emissions and construction pollutants. Operation- related impacts would include negligible stationary source emissions and mobile source emissions.

Impairment. Though construction- related impacts would include some adverse effects to air quality, air quality in the park would not be impaired under Alternative 3.

SOUNDSCAPES

Affected Environment

In accordance with *NPS Management Policies* (2001) and Director's Order 47 (NPS 2000), *Sound Preservation and Noise Management*, an important part of the NPS mission is preservation of natural soundscapes associated with national park units. Natural soundscapes exist in the absence of human- caused sound. The natural ambient soundscape is the aggregate of all the natural sounds that occur in park units, together with the physical capacity for transmitting natural

sounds. Natural sounds occur within and beyond the range of sounds that humans can perceive and can be transmitted through air, water, or solid materials.

By definition, noise is human- caused sound that is considered unpleasant and unwanted. Whether a sound is considered unpleasant depends on the individual who hears the sound and the setting and circumstance under which the sound is heard. While performing certain tasks, people expect and, as such, accept certain sounds that are considered unpleasant under other circumstances. For example, if a person works in an office, sounds from printers, copiers, telephones, and keyboards are generally acceptable and not considered unduly unpleasant or unwanted. By comparison, when resting or relaxing, these same sounds may be intolerable.

Sound levels are usually measured in A- weighted decibels (dBA), and descriptors, such as the energy equivalent noise level (Leq) and the day- night average noise level (Ldn), are commonly used to account for fluctuations of sound over time. Generally, a 3- dBA increase in ambient sound levels is considered the minimum threshold at which most people can detect a change in the sound environment; an increase of 10 dBA is perceived as a doubling of the ambient sound level.

Sounds found desirable during times of rest and relaxation are referred to as natural quiet, and include natural, outdoor ambient sounds, without the intrusion of human- caused sounds. Natural sounds throughout Yosemite National Park—including waterfalls, flowing water, wildlife, and rustling leaves—are not considered noise. The enjoyment of natural sounds along the river contributes to the Yosemite National Park visitor's experience, and natural quiet can be essential in order for some individuals to achieve a feeling of peace and solitude.

Regional Setting

Natural sources of sound in Yosemite National Park include waterfalls, rushing water, wind, and wildlife. There is also noise from human activities and mechanical devices such as automobiles, trucks, and transit buses. Ambient sound levels in Yosemite National Park vary by location and also by season (the volume of water in the waterfalls and rivers is lower in the fall and higher in the spring). Ambient sound levels are also influenced by the number of visitors to the park and by the proximity of mechanical noise sources. The existing sound environment changes dramatically throughout the year in direct proportion to the level of park use with ambient levels during the summer generally being higher than winter levels. Changes are due primarily to increases in vehicle traffic on area roadways and visitor- related noise (NPS 2000).

Some land uses are considered more sensitive to ambient noise levels than others because of the amount of noise exposure (in terms of both exposure duration and insulation from noise) and the types of activities typically involved. Residences, hotels, campgrounds, schools, hospitals, and outdoor recreation areas are generally more sensitive to noise than commercial and industrial land uses.

Big Oak Flat Repeater (BOFR)

The facility site is located approximately 125 feet north of Rockefeller Grover Road, an unpaved park road, which is accessible to the public for hiking. Ambient noise in the area is generally limited to natural sounds in the forest (e.g., wind, birds, wildlife) and occasional man- made noise

sources such as airplanes and helicopters. Potential sensitive receptors include visitors on Rockefeller Grove Road.

Crane Flat (CRN)

CRN is an existing site located at a helicopter base station. The facility site is located at the Crane Flat fire lookout, which is accessible via the Crane Flat Fire Lookout Trail. The trail loops around the base station to divert the public away from the heli- pad. Ambient noise in the area includes natural sounds, and transportation- related noise generated by vehicles on Big Oak Flat Road and air traffic. Significant levels of noise are generated during use of the heli- pad. Potential sensitive receptors include visitors using the trail, and employees at the station.

Eagle Peak Repeater (EGP)

This is an existing site on Eagle Peak. Ambient noise in the area is limited to natural sounds, distant road traffic, and occasional air traffic. This site is not located in close proximity to any sensitive receptors.

El Portal (ELP)

This existing facility is within the El Portal Administrative Area. Ambient noise in the area includes transportation- related noise generated by vehicles on Highway 140, and operational activities in the administration area. Potential sensitive receptors are limited to park employees.

Heness Ridge (HEN)

This is an existing facility located near the peak of Henness Ridge, approximately 0.3 mile south of the Yosemite West residential area. The facility is accessed by an unimproved road, which is occasionally used by the public. Ambient noise is generally limited to natural sounds, and occasional air traffic. Potential sensitive receptors include visitors on the road.

Hetch Hetchy Entrance (HHE)

This site is located north of Hetch Hetchy Road, southeast of a NPS employee housing area, and approximately 500 feet southeast of the Mather Ranger Station. The Camp Mather trail system is located to the south and east. Ambient noise in the area includes natural sounds, transportation- related noise generated by vehicles on Hetch Hetchy Road and occasional air traffic. Potential sensitive receptors include visitors stopping at the ranger station, and park employees.

Hodgdon Meadow Maintenance Complex (HMC)

This existing site is located at the Hodgdon Meadow Maintenance Complex building. The site is located south of Tuolumne Grove Road, and approximately 0.2 mile southeast of Hodgdon Meadow Campground. Ambient noise includes natural sounds, vehicle traffic on area roadways, and operational activities within the maintenance yard. Potential sensitive receptors include visitors and park employees.

May Lake Junction (MLJ)

This alternative site is located approximately 160 feet north of the Tioga Road and May Lake Road junction. The closest trail is approximately 0.4 mile to the east. Several trails and visitor use areas are located in the immediate vicinity of proposed trench locations on Tioga Road, including Olmstead Point, Tenaya Lake, and Tuolumne Meadows. Ambient noise includes natural sounds and transportation- related noise generated by vehicles on Tioga Road. Potential sensitive receptors include visitors in the area.

Mt. Bullion (MTB)

This site includes an existing facility located on a 4,250- foot peak approximately five miles northwest of Mariposa. Ambient noise in the area includes air traffic associated with the airport, and vehicles on Highway 49. There are no sensitive receptors in the immediate area.

Sentinel Dome (SNT)

This site is a developed, multi- carrier site located adjacent to the Sentinel Dome Trail. Ambient noise is generally limited to natural sounds and occasional air traffic. Potential sensitive receptors include trail users.

Sentinel Reflector (SNTReflector)

This site is an existing reflector located approximately 100 feet from the Four Mile Trail. Ambient noise is generally limited to natural sounds and occasional air traffic. Potential sensitive receptors include trail users; however, no improvements are proposed in this location.

Turtleback Dome (TRT)

This site consists of an existing facility located near the peak of Turtleback Dome. Ambient noise is generally limited to natural sounds, transportation- related noise generated by vehicles on Wawona Road, and occasional air traffic. There are no sensitive receptors in the immediate vicinity.

Wawona (WAW)

This site consists of an existing maintenance facility located within the Wawona District Circle. Ambient noise includes transportation- related noise generated by vehicles on nearby roadways, and operational activities in the Circle. Potential sensitive receptors include visitors to the campground office within the Circle, and park employees.

Wawona Point (WWP)

This existing site is located adjacent to the Wawona Point Vista, located at the highest elevation of the Mariposa Grove trail, in the Upper Mariposa Grove. The Mariposa Grove of Giant Sequoias is a popular destination for visitors. Ambient noise is generally limited to natural sounds, and occasional air traffic. Potential sensitive receptors include visitors to the vista, and Mariposa Grove.

Yosemite Valley (VLY)

This site is an existing, multi- carrier facility located within the Yosemite Village area. Ambient noise includes transportation- related noise generated by vehicles within the valley, and operational noises including the nearby stables. Potential sensitive receptors include visitors and park employees.

Environmental Consequences

Factors affecting the soundscape include short- term use of equipment, transport trucks, and helicopters to deliver materials and implement construction activities. Long- term effects include the generation of noise from facilities and associated generators. An increase in the ambient, built noise environment would likely be more noticeable by park visitors and employees in remote areas, including adjacent designated Wilderness, and trail sites where there is an expectation for silence and natural sounds (e.g., flowing water, wildlife). Impacts will be assessed based on the current noise environment, and the proposed action's change (increase or decrease in ambient noise) on the soundscape.

Intensity Level Definitions

Negligible: Negligible impacts would not be detectable.

Minor: Minor impacts would be slightly detectable, but would not be expected to have an appreciable effect on ambient noise levels.

Moderate: Moderate impacts would be clearly detectable and could have an appreciable effect on ambient noise levels; moderate adverse impacts may include introduction of noise associated with an activity or facility into an area with little or no ambient noise.

Major: Major impacts would be clearly audible against ambient noise levels, or would have a substantial, highly noticeable effect on ambient noise levels.

Impairment: Effects to the park's soundscape would be severe and long- term and would preclude the protection of the park's soundscape for future generations.

Impacts under Alternative 1 (No Action Alternative)

Under the No Action Alternative, the communication data network would continue to operate as it currently does. No construction- related impacts would occur. During power outages, existing facilities require the temporary use of back- up generators. Operation- related impacts would be limited exposure to generator noise.

Impact Significance. Local, long- term, minor, adverse, impact.

Conclusion. No construction- related impacts would occur. Operation- related impacts would include minor noise generated by emergency generators.

Impairment. Though operation of the existing facilities would include occasional use of emergency generators, soundscape in Yosemite National Park would not be impaired under Alternative 1.

Impacts under Alternative 2 (Preferred)

The environmental consequences of new site development depend on the existing noise environment, and the potential increase in noise due to construction activities, and short-term use of generators or other noise generating equipment. Use of construction equipment and transport trucks would generate noise affecting sensitive receptors including park employees, visitors, trail users, and persons experiencing Wilderness. These effects would be short-term, and likely minor at most facility sites. Similar impacts to the soundscape would occur at each facility site, as discussed below.

Construction-related Impacts on Soundscape. The type of noise generated during the construction period would include the operation of heavy equipment, voices of construction workers, and noise associated with material haul vehicles; such noise could affect nearby recreational users on trails, campsites, and within the Mariposa Grove. Use of helicopters to transfer construction materials to remote site EGP would generate noise within the flight path. Table 3-7 provides typical noise levels generated by various types of heavy equipment that could be used during construction activities. These noise levels are substantially higher than the existing ambient noise at a majority of the facility sites, with some equipment almost doubling the noise levels.

Table 3-7. Typical Construction Equipment Noise Levels

Equipment	Typical Noise Level (dBA) 50 Feet from the Source
Air Compressor	81
Backhoe	80
Compactor	82
Concrete Mixer	85
Concrete Pump	82
Crane, Derrick	88
Crane, Mobile	83
Dozer	85
Generator	81
Grader	85
Impact Wrench	85
Jack Hammer	88

Table 3-7. Typical Construction Equipment Noise Levels

Equipment	Typical Noise Level (dBA) 50 Feet from the Source
Loader	85
Paver	89
Pneumatic Tool	85
Pump	76
Rock Drill	98
Roller	74
Saw	76
Scraper	89
Truck	88

dBA = A-weighted decibels
 Source: Federal Transit Administration 2006

Operation of heavy equipment could generate substantial amounts of noise in the vicinity of the facility sites, and could occur within close proximity to nearby recreational uses. Other sensitive land uses, such as the Mather Ranger Station and NPS employee housing at the HHE facility site, Wawona Campground office and employee offices at the WAW facility site, and NPS employee work areas at the HMC facility site would be affected. Visitor serving facilities, trails, and destination sites (e.g., Olmstead Point, Tenaya Lake, Tuolumne Meadows) would be affected by noise generated by trenching activities along Tioga Road, associated with the MLJ facility site.

Noise effects in the construction area would vary depending upon a number of factors, such as the number and types of equipment in operation on a given day, usage rates, the level of background noise in the area, and the distance between sensitive uses and demolition and construction activities. Although limited to the construction period, construction noise would be noticeable to visitors at nearby recreation areas and could dominate the noise environment during heavy equipment use or grading and demolition.

Impact Significance. Local, short- term, minor to moderate, adverse, impact.

Operation- related Impacts of Stationary Source Emissions. Operation of the facility sites would require the occasional use of existing generators during power outages. Typically, generators produce 81 dB, as measured 50 feet from the source (FTA 2006). Existing active facility sites would continue to use existing emergency generators, which would not result in an increase in the current ambient noise environment. Proposed new facility sites HMC and WAW would use existing generators associated with the maintenance and operation yards. In these locations, the short- term use of an emergency generator would not be discernable from the ambient noise

environment, which includes the use of heavy equipment. Emergency generators are not proposed at the HHE and MLJ facility sites.

Impact Significance. Local, long- term, negligible, adverse, impact.

Conclusion. Construction- related impacts would include moderate construction equipment noise. Operation- related impacts would be limited to the occasional use of existing generators during power outages, which would have a negligible effect on the ambient noise environment.

Impairment. Though construction and operation- related impacts would include some adverse effects to the soundscape, the park's soundscape would not be impaired under Alternative 2.

Impacts under Alternative 3 (Alternative Sites or Equipment)

Impacts to the soundscape under Alternative 3 would be similar to Alternative 2. Alternative sites would be located in the same general area, and would affect the same identified groups of sensitive receptors.

Construction- related Impacts on Soundscape. The type of noise generated during the construction period would include the noise sources described under Alternative 2. Park visitors in the vicinity of the CRN, HHE, and VLY facility sites would be affected by construction noise. Depending on the level of activity (e.g., visitor traffic, maintenance activities) during the construction period, the impact on the soundscape would be minor to moderate.

Impact Significance. Local, short- term, minor to moderate, adverse, impact.

Operation- related Impacts of Stationary Source Emissions. Under Alternative 3, operation of the CRN and VLY facility sites would require the occasional use of existing generators during power outages. The generators currently provide back- up power to the existing communication facilities; therefore, there would be no change to the existing soundscape.

Impact Significance. Local, long- term, negligible, adverse, impact.

Conclusion. Construction- related impacts would include minor to moderate construction equipment noise. Operation- related impacts would be limited to the occasional use of existing generators, which would have a negligible adverse effect on the soundscape.

Impairment. Though construction- related impacts would include some adverse effects to the soundscape, the park's soundscape would not be impaired under Alternative 3.

ENERGY

Affected Environment

Regional Setting

In April 1999, the U.S. Department of the Interior entered into a formal Memorandum of Understanding with the Department of Energy to promote the use of energy- efficient and renewable energy technologies and practices in the national parks. This partnership officially

inaugurated the program titled “Green Energy Parks: Making the National Parks a Showcase for a Sustainable Energy Future.” This initiative would help to fulfill provisions of the Energy Policy Act of 1992, which directs the use of energy- efficient building designs and equipment and the use of alternative motor fuels where practicable. The Energy Policy Act of 2005 incorporates previous Energy Policy Acts and directs the federal government to increase its renewable energy use, with a goal of using 3%, 5%, and 7.5% in incremental years through 2013. The initiative would also help fulfill the goal of Executive Order 13031, Federal Alternative Fueled Vehicle Leadership, which promotes increasing use of alternative- fueled vehicles in the federal motor vehicle fleet.

NPS *Management Policies* (2006) includes a section (Section 9.1.1.6) on sustainable energy design in the operation of park facilities. Section 9.1.1.6 states that any facility development must include improvements in energy efficiency and reduction in greenhouse gas emissions, and that such efficiencies should be achieved using solar thermal and photovoltaic applications, as well as appropriate insulations, energy- efficient lighting and appliances, and renewable energy technologies. Furthermore, this section states that energy- efficient construction projects should be used as an educational opportunity and that those built primarily for visitors must incorporate Leadership in Energy and Environmental Design (LEED) standards to achieve a silver rating.

NPS *Management Policies* (2006) also includes a section (Section 9.1.7) on energy management in the operation of park facilities. Section 9.1.7 states that the National Park Service shall conduct its activities in ways that use energy wisely and economically, and that encourages the implementation of alternative transportation programs and the use of bio- based and alternative fuels. It also calls for the use of renewable sources of energy and new developments in energy efficiency technology, including products from the recycling of materials and waste, where appropriate and cost- effective over the life cycle of a facility. The National Park Service shall also interpret for the public the overall resource protection benefits resulting from the efficient use of energy and shall actively educate and motivate park personnel and visitors to use sustainable practices in conserving energy. These policies are derived from the laws that have been enacted to establish and guide the administration of the national park system, including Executive Order 13423, Strengthening Federal Environmental, Energy and Transportation Management, which sets goals in energy efficiency, renewable energy, sustainable building, and water conservation.

Title 24, Part 6 of the California Code of Regulations establishes the energy efficiency standards for buildings in response to a legislative mandate to reduce the state’s energy consumption. Although established in 1978, the standards have been periodically updated to allow the incorporation of new energy efficiency technologies and methods. Most recently, the 2005 Standards were adopted to respond to the state’s energy crisis to reduce energy bills and increase energy delivery system reliability.

Yosemite National Park is striving to meet the direction outlined in the aforementioned management policies and Executive Orders.

Existing Facility Sites

Energy consumed by stationary sources at the existing communications facilities (excluding passive sites) includes electricity, gasoline, propane, and diesel fuel. Electricity and back- up generators are provided to the following existing facilities: CRN, HEN, MTB, SNT, TRT, and VLY. Photo voltaic (PV) panels are located on the WWP site.

New Facility Sites

Energy consumed by stationary sources at the proposed communications facilities (excluding passive sites) includes electricity, gasoline, propane, and diesel fuel. Grid electricity and back-up generators would be provided at the HMC and WAW facilities. An existing voltage line would provide energy for the HHE facility site. A PV panel or LP fuel tank is proposed for the MLJ facility site.

The peak electrical and fuel use has not been quantified. In addition, energy required for the repairs and maintenance of the existing facilities, including transporting materials and construction vehicles has also not been quantified.

Environmental Consequences

Intensity Level Definitions

The analysis of energy was based on a qualitative comparison of energy use for the operation, construction, and maintenance (including repairs) of and to each facility site under each alternative. For purposes of this analysis, implementation of an alternative is assumed to have an impact on energy if it results in the following:

Adverse impact:

- Increase overall per capita energy consumption
- Increased reliance on natural gas and oil

Beneficial impact:

- Decrease in overall per capita energy consumption
- Decrease reliance on natural gas and oil
- Increase use of renewable energy (e.g., photovoltaic cells, wind, geothermal)
- Incorporate energy efficient design

Negligible: Energy use would not be affected, or effects would not be measurable.

Minor: Effects to energy use, such as increase/decrease in overall consumption would be measurable.

Moderate: Effects to energy use, such as increase/decrease in overall consumption, would be readily apparent.

Major: Effects to energy use such as increase/decrease in overall consumption would be readily apparent.

Impairment: Impairment analysis is not applicable to this impact topic.

Impacts under Alternative 1 (No Action Alternative)

Operation- related Impacts. Under Alternative 1, the existing facilities would continue to operate as they have in the past, with no changes in energy consumption or efficiency. No

construction- related impacts would occur. Operation- related impacts would include ongoing energy consumption.

Impact Significance. Site- specific, long- term, negligible, adverse, impact.

Conclusion. No construction- related impacts would occur. No long- term change in energy use would occur.

Impacts under Alternative 2 (Preferred)

Under Alternative 2, five new facility sites would be developed, and nine existing facility sites would be improved. Construction- related impacts would include energy use and consumption for facility demolition and construction activities. Operation- related impacts would include energy use for facility operations and periodic use of maintenance vehicles.

Construction- related Impacts on Energy. Construction energy expenditures for the development of facility sites under Alternative 2 would include both direct and indirect uses of energy. Combustion of petroleum products needed to operate construction equipment would be included in the direct energy use during the construction period. The energy consumed through mining and extraction of raw materials, manufacturing, and transportation to produce the construction materials is considered indirect energy use. Indirect energy typically represents about three- quarters of total construction energy, while direct energy represents about one- quarter of the total construction energy (Hannon et al. 1978). Though construction energy would be consumed only during the construction period, it would represent the irreversible consumption of finite natural energy resources.

Construction activities under Alternative 2 would consume fuel and electricity, along with indirect energy for materials used in constructing development components. Construction equipment, including haul trucks and vehicles on- site, is expected to consume a majority of the energy resources. Electricity would be used by construction equipment, such as welding machines and power tools. Energy consumed by construction power equipment would be relatively minimal.

The amount of energy consumed each day would vary depending on a number of factors, such as the number and types of equipment in operation on a given day, usage rates, the number of construction workers needed, the number of haul trips, and trip length. Construction energy consumption would occur for the duration of the construction period and therefore would not be an ongoing drain on finite natural resources. Construction energy consumption would primarily be in the form of fuel, would not have a significant effect on the energy resources of the park, and would not require new infrastructure. BMPs for air quality and noise would help reduce fuel consumption by construction equipment (e.g., ensuring all construction equipment is properly tuned and maintained, turning off equipment when not in use). Furthermore, materials removed as part of the demolition of existing facilities would be sorted and salvaged for reuse or recycling.

Impact Significance. Site- specific, short- term, negligible, adverse, impact.

Operation- related Impacts on Energy. Under Alternative 2, three of the proposed facility sites would require connection to existing sources of power (HMC, WAW, and HHE), and MLJ would be constructed to include on- site power. Operation of these new facility sites would result in a

negligible demand for energy resources. The remaining active facility sites would be improved, and would continue to require similar levels of energy for operation. Use of existing emergency generators would require the use of fuel. Gasoline consumption for maintenance vehicles would be negligible, due to the periodic nature of expected trips.

Impact Significance. Site- specific, long- term, negligible, adverse, impact.

Conclusion. Construction- related impacts, including demolition, would include some fossil-fuel based energy use by equipment and vehicles. Although operation- related impacts would include an increase of energy consumption, the demand would be negligible.

Impacts under Alternative 3 (Alternative Sites or Equipment)

Under Alternative 3, the proposed equipment and energy demand would be similar to the facilities proposed under Alternative 2. Construction- related impacts would include energy use and consumption for facility demolition and construction activities. Operation- related impacts would include energy use for facility operations and periodic use of maintenance vehicles.

Construction- related Impacts on Energy. Construction energy expenditures for the facility sites under Alternative 3 would be similar to those summarized under Alternative 2. Construction activities under Alternative 3 would consume fuel and electricity, along with indirect energy for materials used in constructing development components. Construction equipment, including haul trucks and vehicles on- site, is expected to consume a majority of the energy resources. Electricity would be used by construction equipment, such as welding machines and power tools. Energy consumed by construction power equipment would be relatively minimal.

Impact Significance. Site- specific, short- term, negligible, adverse, impact.

Operation- related Impacts on Energy. Under Alternative 3, the anticipated energy demand would be similar to Alternative 2. Energy consumption would occur during operation of the facilities, use of emergency generators, and periodic maintenance trips.

Impact Significance. Site- specific, long- term, negligible, adverse, impact.

Conclusion. Construction- related impacts, including demolition, would include some fossil-fuel based energy use by equipment and vehicles. Although operation- related impacts would include an increase of energy consumption, the demand would be negligible.

WILDERNESS

Affected Environment

The designated Yosemite Wilderness of Yosemite National Park offers an escape from human-made structures, crowds, artificial light, and noise, and allows visitors to experience solitude, natural quiet, and spectacular scenery. The vast Wilderness also allows visitors to explore and discover the incredible natural beauty of the many geologic features, rivers, streams, lakes, and many species of plants and animals. Visitors find that they can hike for considerable lengths of time without encountering other people along the trail. The remote areas of the Wilderness

provide outstanding opportunities for solitude and a primitive and unconfined type of recreation. This is the basis of a Wilderness experience.

The Yosemite Wilderness was established by the California Wilderness Act of 1984. Of Yosemite National Park's 761,266 total acres, 704,624 acres (94.2%) have been designated Wilderness and another 927 acres (0.1%) are potential Wilderness additions. The Yosemite Wilderness is generally accessed by the almost 750 miles of marked and maintained trails. Visitor day use is unregulated, but overnight use and access to the Wilderness is controlled by trailhead quotas implemented through a Wilderness permit system administered by the National Park Service. Trailhead quotas have been established to reduce resource impacts and to increase opportunities for solitude. Compared with the developed areas, visitor use is significantly less.

Camping is generally allowed anywhere in the Wilderness, provided it is at least 100 feet from any water body. Camping is discouraged in sensitive areas (i.e., meadows and other areas with fragile vegetation). In some areas there are no-camping or no-fire zones. No-camping zones include all areas within one mile of public access roads and within 4 trail-miles of Yosemite Valley, Tuolumne Meadows, Wawona, and Hetch Hetchy. Campfires are generally allowed below 9,600 feet, although restrictions exist in certain areas. Toilets have been installed in most designated campgrounds, and food lockers have been installed at all Wilderness trailheads. The control of human waste is among the most critical management issues in the Wilderness. Other practices designed to minimize or eliminate impact are either recommended or required.

The Yosemite Wilderness has 69 trailheads starting within the park, and 48 trailheads on U.S. Forest Service (USFS) lands, that access almost 750 miles of marked trails. These trails are maintained by the National Park Service with crews augmented by the California Conservation Corps. NPS rangers and volunteers patrol the Wilderness area on foot, skis, or horseback. All marked and maintained Wilderness trails are open to private or commercial stock, with minor exceptions. Stock are generally not allowed more than 0.25 mile off marked and maintained trails, and then only for feeding and watering. Hikers in groups of eight persons or less are allowed to use cross-county routes and are encouraged to practice minimum-impact techniques.

None of the proposed facility sites are located within Wilderness, with the exception of SNTReflector. SNTReflector would be used as part of the communication network, but no improvements are proposed. Facility sites in the vicinity of Wilderness areas include Hetch Hetchy (HHE), May Lake Junction (MLJ), Sentinel Dome (SNT), and Wawona Point (WWP).

Hetch Hetchy Entrance (HHE)

The Wilderness boundary is located 200 feet from the Hetch Hetchy Road corridor. The HHE facility site is located north of Hetch Hetchy Road, less than 200 feet from the edge of the roadway. The Wilderness boundary is roughly 200 feet from the edge of the roadway. Surrounding development includes the Hetch Hetchy entrance station, Mather Ranger Station, and a NPS employee housing area.

May Lake Junction (MLJ)

The MLJ site is currently undeveloped, and is located approximately 160 feet north of the Tioga Road and May Lake Road junction, outside of designated Wilderness. The Wilderness boundary is approximately 200 feet from the edge of the roadway.

Sentinel Dome (SNT)

The SNT site is a developed, multi- carrier site located in the vicinity of Wilderness, near the Sentinel Dome Trail.

Sentinel Reflector (SNTReflector)

The SNTReflector facility site is an existing reflector located within Wilderness. The site is located approximately 100 feet from the Four Mile Trail, which traverses Wilderness from Glacier Point to the Sentinel Beach Picnic area in Yosemite Valley. No improvements are proposed in this location.

Wawona Point (WWP)

The site is located adjacent to the Wawona Point Vista, located at the highest elevation of the Mariposa Grove 3 trail, in the Upper Mariposa Grove. This site is located adjacent to designated Wilderness.

Environmental Consequences

Impacts to the Wilderness experience may occur as a result of changes to access, availability of backcountry permits, and management of transient populations within Wilderness areas. The experience is also affected by actions that influence natural and cultural resources, including air quality, water quality, ambient noise, vegetation, scenic resources. Enhancement or degradation of these resources can directly or indirectly enhance or degrade the quality of the experience. Construction activities (i.e., generation of noise and dust, delays due to work within or adjacent to roadways), and changes to the visual setting including introduction of built environments can result in both short and long term effects.

Impacts to the Wilderness experience have been assessed by considering the following: Wilderness characteristics and values, including the primeval character and influence of the Wilderness; preservation of natural conditions, including the lack of man- made noise; and assurances that there will be outstanding opportunities for solitude, that the public will be provided with a primitive and unconfined type of recreational experience, and that Wilderness will be preserved and used in an unimpaired condition.

Intensity Level Definitions

Impacts to Wilderness were evaluated using the process described in the introduction to this chapter. Impact threshold definitions for Wilderness are as follows:

- Negligible:** Wilderness would not be affected, or effects would not be measurable. Any effects to Wilderness would be slight and short- term.
- Minor:** Effects to Wilderness, such as increase in trail use, would be detectable. If mitigation is needed to offset adverse effects, it would be relatively simple to implement.
- Moderate:** Effects to Wilderness would be readily apparent. Mitigation would probably be necessary to offset adverse effects.

Major: Effects to Wilderness would be readily apparent and would substantially change the characteristics of the Yosemite Wilderness. Extensive mitigation would probably be necessary to offset adverse effects, and its success could not be guaranteed.

Impairment: A permanent adverse change would occur to Wilderness in Yosemite National Park, affecting the resource to the point that the park's mission could not be fulfilled and enjoyment by future generations of Wilderness would be precluded.

Impacts under Alternative 1 (No Action Alternative)

Operation- related Impacts on Wilderness. Under the No Action Alternative, the Yosemite National Park CDN would continue to operate as it currently does. Proposed upgrades would not occur, and there would continue to be a need for an updated, connected communications system in the park. The Wilderness experience can be affected by overcrowding, over- use of resources, and unreliable communications among park entrances, ranger stations, and permit centers.

Impact Significance. Regional, long- term, minor, adverse, impact.

Conclusion. No construction- related impacts would occur. Operation- related impacts would include minimal disturbance to Wilderness due to potential over- crowding and inefficient management of visitor use data.

Impairment. Because there would be no change to the natural and cultural integrity of Yosemite National Park under Alternative 1, Wilderness in Yosemite National Park would not be impaired.

Impacts under Alternative 2 (Preferred)

Construction- related Impacts on Wilderness. Under Alternative 2, the construction of facility sites at Hetch Hetchy (HHE), May Lake Junction (MLJ), Sentinel Dome (SNT), and Wawona Point (WWP) would occur in the vicinity of the Wilderness boundary. Construction activities would not intrude on the Wilderness boundary. Short- term effects would include the generation of noise and dust, potentially affecting visitors in the immediate area. HHE, MLJ, and WWP facility sites would be located near existing roadways or developed areas; therefore, would not directly affect the primeval character and influence of the Wilderness, degrade natural conditions including generation of man- made noise, interfere with opportunities for solitude and a primitive and unconfined experience, or impair the condition of the Wilderness. Construction of the facility at SNT would have a short- term effect on trail users passing the site while proceeding towards the Wilderness area.

Impact Significance. Local, short- term, negligible, adverse, impact.

Operation- related Impacts on Wilderness. Operation of the HHE, MLJ, SNT, and WWP facility sites would be limited to periodic maintenance by park employees. Emergency use of an existing generator during power failures may occur at the SNT facility site, which would generate noise in the immediate area. Operation of the existing generator would be similar to its current use, and would be short- term. To maintain the microwave path line of sight, minor tree trimming or removal of individual trees may be necessary. In Wilderness, minimum tool analysis will be used on a case by case basis, to ensure that only the appropriate techniques and non- mechanized

equipment are used, and that tree trimming or vegetation removal is specific and minimal (Appendix D).

Based on the location of the facility sites near existing developed areas or facilities, operation of the facilities would not directly affect the primeval character and influence of the Wilderness, degrade natural conditions including generation of man- made noise, interfere with opportunities for solitude and a primitive and unconfined experience, or impair the condition of the Wilderness.

Impact Significance. Local, long- term, negligible, adverse, impact.

Conclusion. No construction- related impacts would occur. Operation- related impacts would include negligible effects during periodic maintenance of the facilities, and short- term use of an existing generator.

Impairment. Because there would be no change to the natural and cultural integrity of Yosemite National Park under Alternative 2, Wilderness in Yosemite National Park would not be impaired.

Impacts under Alternative 3 (Alternative Site or Equipment)

Under Alternative 3, an alternative site would be developed at the Hetch Hetchy Entrance, which is also located near Hetch Hetchy Road, outside of designated Wilderness.

Construction- related Impacts on Wilderness. Under Alternative 3, the construction of HHE would occur in the vicinity of the Wilderness boundary. Construction activities would not intrude on the Wilderness boundary. Short- term effects would include the generation of noise and dust, potentially affecting visitors in the immediate area. The HHE facility site would be located near an existing roadway and development; therefore, would not directly affect the primeval character and influence of the Wilderness, degrade natural conditions including generation of man- made noise, interfere with opportunities for solitude and a primitive and unconfined experience, or impair the condition of the Wilderness.

Impact Significance. Local, short- term, negligible, adverse, impact.

Operation- related Impacts on Wilderness. Operation of the HHE facility site would be limited to periodic maintenance by park employees. To maintain the microwave path line of sight, minor tree trimming or removal of individual trees may be necessary. In Wilderness, minimum tool analysis will be used on a case by case basis, to ensure that only the appropriate techniques and non- mechanized equipment are used, and that tree trimming or vegetation removal is specific and minimal (Appendix D).

Based on the location of the HHE facility site near existing developed areas or facilities, operation of the facilities would not directly affect the primeval character and influence of the Wilderness, degrade natural conditions including generation of man- made noise, interfere with opportunities for solitude and a primitive and unconfined experience, or impair the condition of the Wilderness.

Impact Significance. Local, long- term, negligible, adverse, impact.

Conclusion. No construction- related impacts would occur. Operation- related impacts would include negligible effects during periodic maintenance of the facilities.

Impairment. Because there would be no change to the natural and cultural integrity of Yosemite National Park under Alternative 3, Wilderness in Yosemite National Park would not be impaired.

HISTORIC PROPERTIES

NHPA Methods for Determination of Effect (Impact Analysis)

Pursuant to Director's Order (DO) 12 Sections 2.14(6) (3), 6.2 F, and 6.3 F and Appendix 3; 40 Code of Federal Regulations (CFR) 1508.7, 1508.8, and 1508.27; and 36 CFR 800.8, impact intensity, duration, context, and type as they relate to historic properties are determined with the criteria established in 36 CFR Part 800. When the impact of an action results in an alteration to the characteristics of a cultural resource that qualifies it for inclusion on the National Register of Historic Places (NRHP) as a historic property, the action is considered to have an adverse effect under Section 106 of the National Historic Preservation Act (NHPA). NHPA defines that three types of effects can be considered pursuant to 36 CFR 800.5 as applied to historic properties. These include no effect to historic properties, no adverse effect, and adverse effect.

- **No Historic Properties Effect.** A “no historic properties effect” determination indicates that no historic properties are in the area of potential effects (APE) or that there are historic properties in the APE, but the undertaking would not alter the characteristics that qualify it for inclusion in or eligibility for the NRHP.
- **No Adverse Effect.** A no adverse effect determination indicates that there would be an effect on the historic property by the undertaking, but the affect does not meet the criteria in 36 CFR 800.5 (a)(1) and would not alter characteristics that make it eligible for listing on the NRHP in a manner that would diminish the integrity of the historic property.
- **Adverse Effect.** An adverse effect indicates that the undertaking would alter, directly or indirectly, the integrity of design, setting, materials and workmanship, feeling, or association characteristics of the property, making it eligible for listing on the NRHP. An adverse effect may be resolved in accordance with Stipulation VIII of the park's 1999 Programmatic Agreement (PA) among the National Park Service (NPS), the California State Historic Preservation Officer (SHPO), and the Advisory Council on Historic Preservation (ACHP) regarding planning, design, construction, operations, and maintenance of Yosemite National Park (NPS 1999). Alternatively, adverse effects can be resolved by developing a three- party memorandum or PA with the SHPO and the ACHP, in consultation with the associated American Indian tribal governments, other consulting parties and the public, to avoid, minimize, or mitigate the adverse impacts (36 CFR 800.6).

NEPA Significant Impact

For purposes of NEPA and DO- 12, Conservation, Planning, Environmental Impact Analysis, and Decision- making, an impact to a historic property would be considered significant when an adverse effect cannot be resolved by agreement among the SHPO, ACHP, American Indian tribal governments, other consulting and interested parties, and the public. The resolution must be documented in a memorandum or PA or the NEPA decision document.

ARCHAEOLOGY

This section analyzes potential effects to prehistoric and historic archeological sites, and was designed to provide the substantial evidence required to address the scope of analysis recommended in Section 106 of the NHPA.

Affected Environment

Regional Setting

To date, approximately 12% of Yosemite National Park lands have been inventoried for archeological resources, and more than 1,700 archeological sites have been documented. Most of the inventories focused on lower- elevation developed areas and road corridors; however, some Wilderness areas have also been surveyed. In most cases, inventories have been conducted in support of park development actions as part of the environmental and historic preservation compliance processes. Prehistoric archeological sites within Yosemite National Park include milling stations (granite boulders with mortar cups or milling slicks, the most common feature documented to date); artifact caches and scatters (including obsidian waste flakes, obsidian and ground stone tools, soapstone vessel fragments, and dietary faunal remains); midden soils; rock shelters; pictograph panels; human burials; house floors; fire hearths; and rock alignments. Historical archeological sites include refuse deposits, building foundations, privy pits, utilities, human burials, and landscape features such as ditches, roads, rock alignments, non- native plants, and trails. Individual sites vary by type, size, depth, complexity, length of occupation, variety of remains, and potential to yield important scientific information.

Yosemite National Park has been inhabited by people for thousands of years. Evidence of American Indian occupation dates to approximately 6000 years before the present. These thousands of years of American Indian habitation of the park have left a rich material culture throughout the park.

Yosemite National Park is regarded as the first unit of the later designated national park system (Kirk and Palmer 2004; Greene 1987). Establishment of Yosemite also constituted the establishment of the first state park and was thus the beginning not only of the California State Park System but of state parks nationwide (Greene 1987). In the fall of 1890, Acts of Congress established Yosemite National Park, Sequoia, and General Grant National Parks. In 1892, the establishment of the Sierra Club had a significant impact on the success and formation of Yosemite National Park as well as other federal parks. In the early 1900s, a consortium of landscape architects, architects, and engineers led by Sierra Club president John Muir developed a cohesive landscape design that fulfilled the demands for park development yet preserved the noticeable natural qualities for which Yosemite National Park and other parks had been designated (McClelland 1993). The intention was to maintain the naturalness of the park as best as possible while at the same time providing facilities for lodging, camping, and supplies to the tourists. These concepts formed the foundation of future park policy and evolved into the creation of park development outlines and general development plans (McClelland 1993).

A significant quantity of data applicable to the reassessment of the archaeology of the Yosemite region has been produced. These data sets include: cultural resource management studies within the Park; overviews of the southern and central Sierra; and, more extensive excavations in Wawona, Mariposa Grove, Glacier Point Road, Dana Meadows, Tuolumne Meadows, Tamarack

Flat, Crane Flat, Yosemite Valley, and El Portal. The new data have allowed for a reassessment of the cultural sequences for the southern and central Sierra. For the Yosemite region, these data have provided an opportunity for a more thorough evaluation of Bennyhoff's (1956) Yosemite chronology. A number of instances have been noted where Bennyhoff's sequence failed to correlate with the current data. The three primary divergences are: the relative abundance of data that indicate significant human occupation of the region prior to Crane Flat occupation (i.e., before 1000 BC); the complexity of culture change indicated by ethnographies of the historic period; and, the complexity of prehistoric culture change indicated by the archeological record.

Taking into account these discrepancies as well as other problems with the original cultural sequence, Hull and Moratto (1999) proposed a new cultural chronology. Their chronology identified a pre- Crane Flat Phase (named El Portal) and created finer temporal resolution within the earlier phase and stage chronologies. Hull and Moratto (1999:181) cautioned that "the culture history ... must be viewed as tentative and subject to revision as archeological research continues." The least well defined portion of Hull and Moratto's chronology was the historic period following the Gold Rush, identified as the Tenaya Complex. Phases identified by Moratto and Hull (199:182) include the El Portal (7500- 6000B.C.), Merced, Clyde and other unidentified Phases (6000 - 3500 B.C.), tentative Wawona (3500 – 1200 B.C.), Crane Flat and possibly Cowhorn (1200 B.C. – A.D. 650), Tamarack (A.D. 650- 1350), Mariposa, and Klondike (A.D. 1350- 1800), Yosemite (A.D. 1800- 1847), and Tenaya (A.D. 1848).

Historical archaeology is closely tied to the development of Yosemite, beginning with the vestiges from early explorers and continuing through NPS management of the Park. In addition to Anglo-American historical use of Yosemite, a subset of historical archaeology represented at the Park includes historical Native American properties. Hull and Moratto (1999:507- 510) present an integrated list of historical archeological site types found in Yosemite that include transportation, exploration and survey, historical Native American, hunting/trapping, residential, water diversion/use, mine and quarry, logging, ranching/herding/farming, environmental management, tourism, park operations and administrative, and other types such as cemeteries or locations. Hull and Moratto (1999:511- 531) then developed Yosemite specific themes were oriented to historical archaeology. Themes relevant to the Yosemite Institute project include exploration and surveying, transportation, national resource management (e.g., California Coastal Commission [CCC]), and industrial (e.g., logging).

During the nineteenth century, the Yosemite area and its natural resources were used and exploited by individuals for private gain and included mainly mining, herding, logging, and tourism. The progression of such development was particularly evident in the transportation and lodging infrastructure. At the end of the nineteenth century, the area became the first major piece of federal land to be set aside for preservation purposes as a result of the movement to preserve the natural wonders of Yosemite Valley and the groves of "big trees" that surrounded it. This resulted in the formation of the Yosemite Grant in 1864 that became a national park in 1890. The creation of this park and its policies on the nature of acceptable land use fostered tensions between private entrepreneurs, who used public lands for their own means, and state and federal governments. These tensions resulted in a number of lawsuits that tested the rights of private individuals versus the federal government. Ultimately, the federal government prevailed in preserving Yosemite Valley and the surrounding lands for the public. The preservation of this area reduced the environmental impacts caused by private enterprises, such as stock grazing, logging, and mining, within and adjacent to the Park.

Proposed New Facility Locations

Big Oak Flat Repeater (BOFR)

No historic properties have been previously recorded within this proposed facility site. Access to the proposed facility will be from State Route 120, via a branchline of the Northside logging road, a NRHP- eligible resource (CA- MRP- 720H), which is open to the public. The nearest recorded prehistoric and historic archeological sites are situated within two Archeological Districts; the NRHP- listed Hodgdon Meadow district (National Register Information System [NRIS], #79003811), and the Crane Flat district, which was determined eligible for listing in the NRHP. Since the districts are located approximately 1.3 miles north and 2.13 miles southeast of the subject facility respectively, the BOFR facility site is considered moderately sensitive for discovery of prehistoric and historic material, cultural deposits, or features.

Hetch Hetchy Entrance (HHE)

The HHE site contains no previously recorded historic properties. The nearest known cultural resource, a prehistoric archeological site (CA- TUO- 929), is located approximately 0.05 mile to the south. A second prehistoric archeological site (CA- TUO- 214) is located approximately 0.06 mile to the northwest. HHE would be accessed via the previously recorded Hetch Hetchy Road (CA- TUO- 2007H), a publicly- accessible road which was determined eligible for listing in the NRHP. Because known historic properties are nearby, the HHE facility site is considered moderately sensitive for discovery of prehistoric and historic material, cultural deposits, or features.

Hodgdon Meadow Maintenance Complex (HMC)

The proposed HMC site is located on a non- historic maintenance building. The building is situated within the boundaries of the Hodgdon Meadow Archeological District, a discontiguous archaeological district found eligible for listing in the NRHP. No historic properties have been recorded at the proposed facility site. The nearest previously recorded cultural resource is prehistoric archeological site CA- TUO- 236, which is 0.06 mile southeast of the HMC facility. Trenching will be required along a non- historic road; no historic properties have been recorded within the affected segment of Tuolumne Grove Road. Because the HMC facility site has been previously disturbed, this area is considered to have a low sensitivity for discovery of prehistoric and historic material, cultural deposits, or features.

May Lake Junction (MLJ)

No historic properties have been recorded within the proposed facility site. Development of this site would include 12 miles of fiber optic cable to be installed within Tioga Road. The trenched cable would extend from the MLJ site to Tuolumne Meadows. The route would traverse 21 prehistoric and historic archeological sites (CA- MRP- 1947; CA- MRP- 1950; CA- MRP- 0194; CA- MRP- 1952; CA- MRP- 1953; CA- MRP- 1958; CA- TUO- 2805; CA- TUO- 2807; CA- TUO- 0108; CA- TUO- 0109/110/509/510/511/H; CA- TUO- 0111; CA- TUO- 0113; CA- TUO- 0112; CA- TUO- 0114; CA- TUO- 0116; CA- TUO- 0120; CA- TUO- 0166). The trench would traverse the NRHP- eligible Tuolumne Meadows Archeological District, and a non- historic segment of the NRHP- eligible Tioga Road (CA- TUO- 4028H/CA- MRP- 1410H). The Tuolumne Meadows Archeological District encompasses numerous prehistoric archeological sites. This area is considered highly sensitive for discovery of prehistoric archeological artifacts, deposits, or

features. Areas adjacent to the trench route are considered highly sensitive for discovery of prehistoric and historic material, cultural deposits, or features.

Wawona (WAW)

No historic properties have been recorded within the proposed facility site. The proposed WAW site is within the Wawona Archeological District; a large prehistoric archeological district that was determined eligible for the NRHP. The nearest district contributors are archaeological site CA-MRP- 8, which is located 0.05 mile west of the facility and CA- MRP- 645 is located 0.08 mile north of the facility. The proposed WAW facility site has been previously disturbed by the construction of the existing prescribed fire trailer and maintenance facility; therefore this area is considered to have a low sensitivity for discovery of prehistoric and historic material, cultural deposits, or features.

Existing Facility Locations

Crane Flat (CRN)

There are no archaeological resources recorded within the existing CRN site. Situated approximately 60 feet to the north of the facility is the Crane Flat fire lookout (Building 626); a NRHP- listed building. The facility site is situated between two segments of a recorded historic roadway system (CA- MRP- 720H), located approximately 0.25 mile east and 0.6 mile to the west. The facility is also located approximately 0.75 mile west of the NRHP- eligible Crane Flat Archeological District and a previously recorded historic archeological site (CA- MRP- 1512H/CA- TUO- 4240H) to the north of the district. Despite its close proximity to an Archeological District and several historic- period resources, the CRN site has been previously disturbed; therefore this area is considered to have a low sensitivity for discovery of prehistoric and historic material.

Eagle Peak Repeater (EGP)

There are no historic properties recorded within the existing EGP site. The nearest recorded historic properties are located approximately 0.6 mile to the south (NRHP- eligible El Portal Archeological District, which encompasses prehistoric and historic archeological sites) and 1.3 miles to the east (CA- MRP- 457 and CA- MRP- 1136) of the EGP facility. Although historic properties are located less than one mile from the EGP facility, the site is considered to have a low sensitivity for discovery of prehistoric and historic material, because the area has been previously disturbed by the existing communications facility.

El Portal (ELP)

The ELP site is located within a multi- component archeological site (CA- MRP- 183/H). It is also situated approximately 0.25 mile west of the NRHP- listed El Portal Archeological District, (NRIS #78000359). Although the facility site is located within a multi- component archeological site, the ELP facility site is considered to have a low sensitivity for discovery of prehistoric and historic material, because the area has been previously disturbed by the existing communications facility and surrounding administration buildings.

Heness Ridge (HEN)

No historic properties have been recorded within the existing facility site at HEN. The nearest known historic properties are isolated obsidian flakes, considered not eligible for listing in the

NRHP. A multi- component archeological site (CA- MRP- 1067/H) and a historic roadway (CA- MRP- 1485H) are located approximately 0.08 mile to the southwest and 0.25 mile southeast, respectively. The NRHP- eligible Henness Ridge fire lookout is located approximately 0.4 mile from the existing communication facility. Because the HEN site has been previously disturbed by the construction of the existing facility, it is considered to have a low sensitivity for discovery of prehistoric and historic material.

Mt. Bullion (MTB)

The existing facility site at MTB is situated on a 4,250- foot peak outside the park within lands administered by the state. No archeological resources have been recorded within the facility site or its immediate surroundings. Because the MTB facility site contains no historic properties and has been previously disturbed, this area is considered to have a low sensitivity for discovery of prehistoric and historic material. In addition, no ground disturbance would occur at this facility site.

Sentinel Dome (SNT)

No historic properties have been recorded within the existing SNT facility. The nearest known historic properties include NRHP- eligible Yosemite Valley Archeological District and Yosemite Village Historic District within Yosemite Valley, which include numerous prehistoric and historic archeological sites, located a minimum of approximately 0.5 mile to the north. Because the SNT facility site has been previously disturbed by the existing communications facility, this area is considered to have a low sensitivity for discovery of prehistoric and historic material.

Sentinel Reflector (SNTReflector)

No historic properties have been recorded at the existing SNTReflector facility site, which is located approximately one mile south of Yosemite Village. Because the SNTReflector facility site contains no historic properties this area is considered to have a low sensitivity for discovery of prehistoric and historic material. In addition, no ground disturbance or construction would occur at this facility site.

Turtleback Dome (TRT)

No historic properties are recorded within the existing TRT site. The TRT facility site is situated 1.6 miles to the west of the NRHP- eligible Foresta- Big Meadow Archeological District and 1.2 miles east of the NRHP- eligible Bridalveil- Meadow Historic Site. The nearest cultural resource to the TRT facility site is a prehistoric archeological site (CA- MRP- 197), located approximately 0.2 mile to the southeast. Although known historic properties are located less than one mile from the TRT facility, the site is considered to have a low sensitivity for discovery of prehistoric and historic material, because the area has been previously disturbed by the existing communications facility.

Wawona Point (WWP)

The existing WWP facility site is located approximately 200 feet south of the Wawona Point Overlook near the intersection of Mariposa Grove Loop Road and the NRHP- eligible Mariposa Grove Road, (CA- MRP- 1618H). The nearest archeological sites, CA- MRP- 1612H and CA- MRP- 1611H, are located approximately 0.25 mile to the southwest and southeast, respectively. Although known historic properties are located less than one mile from the WWP facility, the site

is considered to have a low sensitivity for discovery of prehistoric and historic material, because the area has been previously disturbed by the existing communications facility.

Yosemite Valley (VLY)

Facility site VLY is situated within an American Indian traditional cultural resource, the Ahwahne Village site. The Village is a re-constructed site, and is not considered a historic property. The facility site is located approximately 0.04 mile north of recorded prehistoric archeological site CA- MRP- 0056/61/196/298/299/300/301. This area is considered highly sensitive for discovery of prehistoric or historic material. Grading and construction would occur in an area currently developed by existing communications facilities and structures.

Environmental Consequences

Impacts and Determination of Effect under Alternative 1 (No Action Alternative)

Under the No Action alternative, no ground disturbance or new construction would occur since no new sites would be developed and no improvements would be made to existing sites. Implementation of this alternative would have no effect on historic properties.

Impact Significance. Under Alternative 1, no historic properties would be affected by continued use and operation of the existing facility sites.

Conclusion. Under the No Action Alternative, the existing facility sites would remain in their current condition, and operations would continue to be limited to maintenance activities. No construction- related effects would occur. Continued operation of the existing facility sites under Alternative 1 would result in no effect to historic properties.

Impairment. Because there would be no change to the natural and cultural integrity of Yosemite National Park under Alternative 1, historic properties in Yosemite National Park would not be impaired.

Impacts and Determination of Effect under Alternative 2 (Preferred)

Based on review of survey records and internal scoping with the Yosemite National Park Branch Chief for Anthropology and Archeology in the Division of Resources Management and Science, construction of facility sites at Hodgdon Meadow, Wawona, Crane Flat, Henness Ridge, Sentinel Dome, Sentinel Reflector, and Turtleback Dome and Yosemite Valley would have no effect on historic properties. The facility sites at El Portal, Mount Bullion and Sentinel Reflector would not require ground disturbance.

In the event of unexpected discovery of archaeological resources, in accordance with Stipulation X of the Park's 1999 PA with the SHPO and the ACHP, mitigation measures would include procedures for accidental discovery of historic properties, including treatment of human remains and funerary objects, sacred objects, and objects of cultural patrimony in accordance with the requirements of the Native American Graves Protection and Repatriation Act (NAGPRA) of 1990 (25 USC 3001- 3013) and implementing regulations at 43 CFR 10.4.

Big Oak Flat Repeater (BOFR)

Construction and Operation- related Impacts on Archaeological Resources. There are no historic properties previously recorded within the BOFR site. Construction of the BOFR facility would require access on a branchline of the Northside logging road (CA- MRP- 720H). The weight of the construction vehicles when fully loaded could damage the roadway, which is publicly accessible. Transport of any equipment over the historic roadway (CA- MRP- 720H) may require oversight by the Yosemite National Park since the weight of the vehicles when fully loaded could damage a NRHP- eligible roadway. Prior to the start of project implementation at BOFR, vehicle weights per axle (including weights when fully loaded) would be provided to Yosemite National Park and vehicular restrictions may need to be monitored. Operation of the facility would be limited to periodic maintenance, which would have no adverse effect on CA- MRP- 720H.

Impact Significance. Construction of the BOFR facility site would have no adverse effect on the historic roadway (CA- MRP- 720H) since project design would avoid adverse effects.

Hetch Hetchy Entrance (HHE)

Construction and Operation- related Impacts on Archaeological Resources. There are no historic properties previously recorded within the HHE site. Construction of the HHE facility would require access to the NRHP- eligible Hetch Hetchy Road (CA- TUO- 2007H). The weight of the construction vehicles when fully loaded could damage the roadway, which is publicly accessible. Transport of any equipment over Hetch Hetchy Road may require oversight by the Yosemite National Park since the weight of the vehicles when fully loaded could damage a NRHP- eligible roadway. Prior to the start of project implementation at BOFR, vehicle weights per axle (including weights when fully loaded) would be provided to Yosemite National Park and vehicular restrictions may need to be monitored. Operation of the facility would be limited to periodic maintenance, which would have no adverse effect on CA- MRP- 2007H.

Impact Significance. Construction of the HHE facility site would have no adverse effect on the historic roadway (CA- TUO- 2007H) since project design would avoid adverse effects.

May Lake Junction (MLJ)

Construction and Operation- related Impacts on Archaeological Resources. Construction of the MLJ facility site will require approximately 12 miles of trenching that will traverse 21 archaeological sites, including sites within the NRHP- eligible Tuolumne Meadows Archeological District. This 12- mile route is considered highly sensitive for discovery of prehistoric and historic material. The proposed trenching of a 12- mile segment of roadway would likely result in no adverse effect to historic properties because trenching will occur in areas previously disturbed by the construction of the road, and would be limited to fill underlying the roadway. The project would be designed to avoid construction and staging activities require ground disturbance outside the current road prism and road fill, and within the boundaries of historic properties. Pursuant to the 1999 PA, archeological monitoring may be appropriate throughout any ground-disturbing activities in proximity to archaeological historic properties. If monitoring is recommended, members of appropriate American Indian tribes would be invited to participate in the monitoring.

Impact Significance. Construction of the MLJ facility site would have no adverse effect to historic properties pursuant to the 1999 PA.

Eagle Peak Repeater (EGP)

Construction and Operation- related Impacts on Archaeological Resources. There are no historic properties recorded within the existing EGP facility site; proposed improvements would have no adverse effect on historic properties.

The EGP facility site is located outside Yosemite National Park; therefore, the USFS would review the planned improvement and determine the effect of the undertaking on any historic properties in compliance with the Section 106 process. The USFS may recommend monitoring by a qualified professional archaeologist of any ground- disturbing activities. In addition, NPS will continue consultation with American Indian tribes with traditional cultural ties to the area.

Impact Significance. Improvements to the EGP facility would have no adverse effect on historic properties with the implementation of appropriate mitigation measures.

Wawona Point (WWP)

Construction and Operation- related Impacts on Archaeological Resources. Proposed improvements to the exiting WWP facility would have no adverse effect on historic properties. Access to the WWP facility would require the transport of construction equipment and materials on a previously recorded road (Mariposa Grove Road; CA- MRP- 1618H). The weight of the construction vehicles when fully loaded could damage the roadway. Prior to the start of project implementation at WWP, vehicle weights per axle (including weights when fully loaded) are provided to Yosemite National Park and if so, vehicular restrictions may need to be monitored. Operation of the facility would be limited to periodic maintenance, which would have no adverse effect on Mariposa Grove Road.

Impact Significance. Construction of the HHE facility site would have no adverse effect on the historic roadway (CA- MRP- 1618H) since project design would avoid adverse effects.

Conclusion. Under Alternative 2, construction of facility sites at BOFR, HHE, and WWP would require the transport of construction equipment on the following historic roadways: branchline of the Northside logging road (CA- MRP- 720H), Hetch Hetchy Road (CA- TUO- 2007H), and Mariposa Grove Road (CA- MRP- 1618H). Proposed trenching activities within Tioga Road would traverse the Tuolumne Meadows Archeological District, in addition to 21 documented archaeological sites (CA- MRP- 1947; CA- MRP- 1950; CA- MRP- 0194; CA- MRP- 1952; CA- MRP- 1953; CA- MRP- 1958; CA- TUO- 2805; CA- TUO- 2807; CA- TUO- 0108; CA- TUO- 0109/110/509/510/511/H; CA- TUO- 0111; CA- TUO- 0113; CA- TUO- 0112; CA- TUO- 0114; CA- TUO- 0116; CA- TUO- 0120; and CA- TUO- 0166). Adverse effects would be avoided by project design, and pursuant to the 1999 PA; therefore, there would be no adverse effect on historic properties.

Impairment. Adverse effects associated with Alternative 2 would be avoided by project design, and pursuant to the 1999 PA. Therefore, this alternative would not impair the park's archeological resources for future generations.

Impacts and Determination of Effect under Alternative 3 (Alternative Sites or Equipment)

Hetch Hetchy Entrance (HHE)

Construction and Operation- related Impacts on Archaeological Resources. Similar to Alternative 2, construction of the HHE facility would require access to the NRHP- eligible, Hetch Hetchy Road, (CA- TUO- 2007H). Prior to the start of project implementation at HHE, vehicle weights per axle (including weights when fully loaded) would be provided to Yosemite National Park and vehicular restrictions may need to be monitored. Operation of the facility would be limited to periodic maintenance, which would have no adverse effect on CA- MRP- 2007H.

Impact Significance. Construction of the HHE facility site would have no adverse effect on the historic roadway (CA- TUO- 2007H) since project design would avoid adverse effects.

Eagle Peak Repeater (EGP)

Construction and Operation- related Impacts on Archaeological Resources. There are no historic properties recorded within the existing EGP facility site; proposed improvements would have no adverse effect on historic properties.

The EGP facility site is located outside Yosemite National Park; therefore, the USFS would review the planned improvement and determine the effect of the undertaking on any historic properties in compliance with the Section 106 process. The USFS may recommend monitoring by a qualified professional archaeologist of any ground- disturbing activities. In addition, NPS will continue consultation with American Indian tribes with traditional cultural ties to the area.

Impact Significance. Improvements to the EGP facility would have no adverse effect on historic properties with the implementation of appropriate mitigation measures.

Impairment. Adverse effects associated with Alternative 3 would be avoided by project design, and pursuant to the 1999 PA. Therefore, this alternative would not impair the park's archeological resources for future generations.

HISTORIC STRUCTURES, BUILDINGS, AND CULTURAL LANDSCAPES

Affected Environment

Regional Setting

Yosemite National Park is regarded as the first unit of the later designated national park system (Kirk and Palmer 2004; Greene 1987). Establishment of Yosemite also constituted the establishment of the first state park and was thus the beginning not only of the California State Park System but of state parks nationwide (Greene 1987). In the fall of 1890, Acts of Congress established Yosemite National Park, Sequoia, and General Grant National Parks. In 1892, the establishment of the Sierra Club had a significant impact on the success and formation of Yosemite National Park as well as other federal parks. In the early 1900s, a consortium of landscape architects, architects, and engineers led by Sierra Club President John Muir developed a cohesive landscape design that fulfilled the demands for park development yet preserved the

noticeable natural qualities for which Yosemite National Park and other parks had been designated (McClelland 1993). The intention was to maintain the natural quality of the park as best as possible while at the same time providing facilities for lodging, camping, and supplies to the tourists. These concepts formed the foundation of future park policy and evolved into the creation of park development outlines and general development plans (McClelland 1993).

No historic structures, buildings, or cultural landscapes have been identified within or adjacent to the proposed facility sites at BOFR, HHE, HMC, MLJ, or WAW. Additionally, no historic structures, buildings, or cultural landscapes have been identified within or adjacent to the existing facility sites at EGP, ELP, MTB, SNT, SNTReflector, TRT, WWP, and VLY. Facility sites located within or adjacent to historic structures, buildings, or cultural landscapes are discussed below.

Crane Flat (CRN)

The existing CRN facility site is located south of the Crane Flat fire lookout (Building 626); a NRHP- listed building. The Crane Flat fire lookout was constructed in 1931, and was the first fire lookout built in Yosemite National Park. The lookout is one of only four Rustic style fire lookouts in the state (the second is Henness Ridge, discussed below). Fire lookouts were used not only to help detect fires in remote areas but were also used by visitors to enjoy the view. The Crane Flat fire lookout is significant because it perfectly illustrates the conservation and architectural themes of the National Park Service in the 1930s. It has continued to be used as a fire lookout since being built, and although technologies have changed, the building's functions are essentially the same (NRHP 1996).

The lookout is square in shape, and was built with native stone and wood. The first story functioned as a garage, and is slightly larger than the second floor. The second story functioned as an observation level, and provided panoramic views of the Rockefeller grant recently added to the park. With the exception of a single door, the second story has operable wood casement windows on all sides to allow for panoramic viewing. The door also has a large pane of glass, and the walls are primarily windows. A staircase on the west side leads up to a second floor catwalk which surrounds the building. At the time the lookout was constructed, the surrounding area was cleared of dense vegetation in order to improve visibility.

The lookout is locally significant in the areas of conservation and architecture because it illustrates the development of fire policy within federal land management agencies. In addition, the structure represents an early application of Rustic architecture for the development of park and recreation facilities. Construction of the lookout was the result of the fire protection plan developed for Yosemite National Park by John D. Coffman, Chief Forester at the time. In 1932, Superintendent Thomson noted a definite effort to get visitors to the lookout as a lesson in conservation. Visitation averaged 100 people per day (Greene 1987).

Currently, the lookout is accessed via a paved road extending from Big Oak Flat Road. The area surrounding the lookout is developed by a large, paved, heliport pad, unpaved parking area, NPS employee parking area, NPS operations buildings and facilities, a communications facility, and weather monitoring equipment. The heliport is restricted to NPS use only; a public trail extends from the unpaved parking area and around the western slope of the heliport, leading to the lookout. There is a stone retaining wall at one edge of the heliport, but it is not known when it was built (NRHP 1996).

Affected Environment and Environmental Consequences

The Crane Flat fire lookout is still used as a fire lookout as well as a base for the helitack crews, which conduct both fire fighting and search and rescue operations because of its strategic location. It is fully staffed during fire season, from May to mid- November. In addition, it is open to visitors and offers them a chance to learn about fire ecology and the history of fire management.

Henness Ridge (HEN)

The existing HEN facility site is located approximately 620 feet northeast of the Hennes Ridge fire lookout; a NRHP- eligible building. The fire lookout was constructed in 1934, and was another step in the implementation of the fire protection program for Yosemite National Park. The structure is three stories, and is one of four Rustic fire lookouts in the state (Greene 1987).

The area immediately surrounding the fire lookout is undeveloped, with the exception of the unpaved access road, which passes the lookout and terminates at the existing HEN facility site. An AT&T communications facility and equipment shelter are located approximately 440 feet northeast of the fire lookout.

Yosemite Valley (VLY)

Yosemite Valley is one of the most culturally significant natural places in America. The Valley's cultural landscape includes unique geologic and hydrological features, meadows, roads, trails, and buildings. The Yosemite Valley Historic District is a NRHP- listed district. The determination recognizes both a prehistoric and historic period of significance for Yosemite Valley as a cultural landscape. The historic period of significance extends from 1851 to 1945 (NPS 1994).

Environmental Consequences

Impacts and Determination of Effect under Alternative 1 (No Action Alternative)

Under the No Action alternative, no new construction would occur since no new sites would be developed and no improvements would be made to existing sites. Implementation of this alternative would have no adverse effect on historic properties.

Impact Significance. Under Alternative 1, continued use and operation of the existing facility sites would have no effect on historic properties.

Conclusion. Under the No Action Alternative, the existing facility sites would remain in their current condition, and operations would continue to be limited to maintenance activities. No construction- related adverse effect would occur. Continued operation of the existing facility sites under Alternative 1 would result in no effect to historic properties.

Impairment. Because there would be no change to the natural and cultural integrity of Yosemite National Park under Alternative 1, historic structures, buildings, or cultural landscapes in Yosemite National Park would not be impaired.

Impacts and Determination of Effect under Alternative 2 (Preferred)

Based on review of survey records, construction of facility sites at BOFR, HHE, HMC, MLJ, WAW, EGP, ELP, MTB, SNT, SNTReflector, TRT, and WWP would have no effect on historic properties.

Crane Flat (CRN)

Construction and Operation- related Impacts on Historic Resources and Cultural Landscapes. Construction of the proposed CRN facility site under Alternative 2 would include removal of the two 25- foot facility poles and equipment vault located immediately south of the lookout tower, and construction of a new 65- foot tower and equipment vault 60 feet southwest of the lookout tower. The lower third of the proposed tower would be screened from view by existing vegetation. Construction activities would not directly affect the fire lookout structure (listed on the NRHP). Removal of the existing communication facilities would improve the integrity of the landscape in the immediate vicinity of the structure. While the presence of the 65- foot tower would have an adverse effect on the cultural landscape, the facility would be similar to the existing, modern, built environment, which currently surrounds the fire lookout. Design measures would be incorporated, including use of muted brown colors, and screening of the equipment shelter. Activities would not significantly alter, directly or indirectly, any of the characteristics of the Crane Flat fire lookout historic property that qualifies it for inclusion on the NRHP in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association.

Impact Significance. Construction of the CRN facility site would have no adverse effect on the Crane Flat fire lookout historic property since project design would avoid adverse effects.

Heness Ridge (HEN)

Construction and Operation- related Impacts on Historic Properties and Cultural Landscapes. Construction of the HEN facility will require construction of a new 85- foot tower, over 600 feet from the Henness Ridge fire lookout. Intervening topography and tall trees are located between the fire lookout and the facility site. Based on the location of the facility site, activities would not significantly alter, directly or indirectly, any of the characteristics of the Henness Ridge fire lookout that qualifies it for inclusion on the NRHP in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association.

Impact Significance. Construction of the HEN facility site would have no adverse effect on the Henness Ridge fire lookout historic property.

Yosemite Valley (VLY)

Construction and Operation- related Impacts on Historic Resources and Cultural Landscapes. Construction of the proposed VLY facility site would include a new 25- foot tall support tower and a six- foot diameter microwave dish, and a 10x20- square foot equipment shelter within an existing communications facility compound. Design measures would be incorporated, including use of muted brown colors, similar to existing communication facilities.

Construction of the facility site would have no adverse effect on historic structures within the Yosemite Valley Historic District. Based on the location of the facility site, activities would not

significantly alter, directly or indirectly, any of the characteristics of the Yosemite Valley Historic District that qualifies it for inclusion on the NRHP in a manner that would diminish the integrity of the district's location, design, setting, materials, workmanship, feeling, or association.

Impact Significance. Construction of the VLY facility site would have no adverse effect on historic properties in Yosemite Valley.

Conclusion. Under Alternative 2, there would be no adverse effect to the Crane Flat fire lookout, Henness Ridge fire lookout, and Yosemite Valley Historic District historic properties since project design would avoid adverse effects.

Impairment. Because there would be no change to the natural and cultural integrity of Yosemite National Park under Alternative 2, built historical resources and cultural landscapes in Yosemite National Park would not be impaired.

Impacts and Determination of Effect under Alternative 3 (Alternative Sites or Equipment)

Crane Flat (CRN)

Construction and Operation- related Impacts on Historic Properties and Cultural Landscapes. Construction of the CRN facility will require construction of a new 100- foot tower and an equipment shelter. The tower will be located approximately 160 feet west of the Crane Flat fire lookout. The lower third of the proposed tower would be screened from view by existing vegetation. Construction activities would not directly affect the fire lookout structure (listed on the NRHP). Removal of the existing communication facilities would improve the integrity of the landscape in the immediate vicinity of the structure. While the presence of the 65- foot tower would have an adverse effect on the cultural landscape, the facility would be similar to the existing, modern, built environment, which currently surrounds the fire lookout. Design measures would be incorporated, including use of muted brown colors, and screening of the equipment shelter. Activities would not significantly alter, directly or indirectly, any of the characteristics of the Crane Flat fire lookout historic property that qualifies it for inclusion on the NRHP in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association.

Impact Significance. Construction of the CRN facility site would have no adverse effect on the Crane Flat fire lookout historic property since project design would avoid adverse effects.

Yosemite Valley (VLY)

Construction and Operation- related Impacts on Historic Resources and Cultural Landscapes. Under Alternative 3, proposed equipment would be installed on an existing AT&T tower. Design measures would be incorporated, including use of muted brown colors, similar to existing communication facilities.

Based on the location of the facility, there would be no adverse effect on historic structures within the Yosemite Valley Historic District. Activities would not significantly alter, directly or indirectly, any of the characteristics of the Yosemite Valley Historic District that qualifies it for inclusion on the NRHP in a manner that would diminish the integrity of the district's location, design, setting, materials, workmanship, feeling, or association.

Impact Significance. Construction of the VLY facility site would have no adverse effect on historic properties.

Conclusion. Under Alternative 3, there would be no adverse effect to the Crane Flat fire lookout and Yosemite Valley Historic District since project design would avoid adverse effects.

Impairment. Because there would be no change to the natural and cultural integrity of Yosemite National Park under Alternative 3, built historical resources and cultural landscapes in Yosemite National Park would not be impaired.

AMERICAN INDIAN TRADITIONAL CULTURAL PROPERTIES

Traditional cultural properties (TCP) are tangible resources to which American Indian tribes attach cultural and religious significance that are eligible for listing or listed on the NRHP and include structures, objects, districts, and geological features and archaeology (*Standard Operating Procedure for Coordinating NHPA and NEPA Review Process* 2008). A dynamic relationship exists between these tangible entities and traditional cultural practices or beliefs. It is these intangible practices or beliefs associated with a TCP that are of central importance in defining the property's significance. Typically, practices or beliefs that give a TCP its significance are still observed in some form at the time the property is evaluated, but it is the entity that is evaluated for listing or listed on the NRHP.

Affected Environment

Regional Setting

American Indian people have ongoing traditional cultural associations with park lands and resources. Limited research has been conducted to inventory and document traditional resources important to contemporary American Indian people. Some ethnohistoric studies, which focused on Yosemite Valley, Crane Flat, and El Portal, have been conducted.

Yosemite National Park borders several "traditional tribal territories," most notably the Central Sierra Miwok, the Southern Sierra Miwok, the Bridgeport Paiute, the Bishop Paiute, the Mono Lake Paiute, the North Fork Mono Rancheria, and the Chukchansi. Crane Flat has generally been associated with the Central Sierra Me-wuk and the Mono Lake Paiute, and is located on the boundary of Southern Sierra Miwok territory (Barrett 1908; Kroeber 1925; Merriam 1902- 1930, 1907).

NPS does not currently manage resources as TCPs in the Big Oak Flat (Rockefeller Grove), Hetch Hetchy Entrance, Wawona, Mount Bullion, or Turtleback Dome areas. Facility sites located within or adjacent to TCPs in Yosemite National Park, or within areas of traditional practices are discussed below.

Proposed New Facility Locations

Hodgdon Meadow Maintenance Complex (HMC)

A field inspection of the Hodgdon Meadow area was conducted with the Tuolumne Band of Me-Wuk Indians on May 23, 2007 (NPS 2007c). The tribe identified plants in the meadow that were used for medicine, food, or crafts. They noted that, although all of the identified plants grow in

other locations, the meadow has a grouping of plants that don't generally come together in such abundance or sizes. They believed that the meadow was a Native American managed landscape. The proposed facility and associated fiber optic trenching would occur within developed areas, and would not affect the Hodgdon Meadow TCP.

May Lake Junction (MLJ)

On June 11, 2009, the Tuolumne Band of Me- Wuk Indians and the Southern Sierra Miwuk Nation visited this proposed site with resource staff. At that time it was determined that plants having traditional cultural value are located in the area. The May Lake Junction site was identified as an area used by contemporary American Indians, but it was not identified as a TCP (compare with discussion in American Indian Traditional Cultural Practices section). Proposed trenching for fiber optic cable would occur within the Tioga Road roadway prism, and are therefore unlikely to affect potential TCPs adjacent to the route, including the Tenaya Lake and Tuolumne Meadows areas.

Existing Facility Locations

Crane Flat (CRN)

Pacific Legacy and Davis- King Associates (2006) conducted a base- line study of existing data and limited oral histories for the Crane Flat area. While not definitive, Pacific Legacy and Davis- King Associates (2006) determined that Crane Flat and Meadow may represent a "TCP" as defined in Parker and King (1998). The study (Pacific Legacy and Davis- King Associates 2006) determined there was sufficient information from the American Indian traditional cultural resources record and limited oral history to support the initial identification of Crane Flat and Meadow as a TCP. Pacific Legacy and Davis- King Associates (2006) recommended that a formal evaluation of Crane Flat and Meadow as a TCP be undertaken and the identification and evaluation efforts should follow the guidelines established in *National Register Bulletin 38* (Parker and King 1998). They recommended that additional work should include: archival research; interviews with informants; and, field inspection and recordation. Consequently, NPS is managing the Crane Flat and Meadow Area as a TCP.

The Crane Flat area is considered a crossroads by many American Indian people (Pacific Legacy and Davis- King Associates 2006). At least six trails have been identified in the vicinity of Crane Flat. The trails went to Tamarack, Crocker, "toward the lookout" (presumably the Crane Flat fire lookout), Big Meadow, Foresta, and toward the Valley. Among the more prominent early trails was the Mono Trail that connected the El Portal/Big Meadow area with Tamarack and Gin Flats slightly east of Crane Flat, and then proceeded down Bloody Canyon to Mono Lake. Variations of these trails' routes are in use today. Although it is not known if these trails are the remains of prehistoric routes or more modern routes, American Indian trails likely abounded in the area before the advent of the Big Oak Flat Road with its antecedent and subsequent variations. Several prehistoric archeological sites have been recorded in the general area of Crane Flat and Meadow.

Although no specific instances related to the American Indian settlement of Crane Flat have been discovered, the area has continued to be of cultural significance to local California American Indian tribes with ancestral cultural association with park lands. The most significant traditional practice associated with Crane Flat and Meadow is the use of the area as a meeting and gathering place because of their location at a crossroads. The area is also an important gathering place due to the presence of abundant resources associated with economic, medicinal, and spiritual

traditional practices. Most notably, great gray owl feathers, moth cocoons, angelica root, and other food, medicinal, and other traditional plants were gathered in the area.

Sufficient information was available from the American Indian traditional cultural resources record and limited oral history to support the preliminary evaluation of Crane Flat and Meadow as a TCP (Pacific Legacy and Davis- King Associates 2006), and the National Park Service is managing the area as a TCP. Although no boundaries have been established, the CRN facility site is located at the Crane Flat fire lookout, which is approximately one mile northwest of the Crane Flat Meadow, and adjacent to a potential prehistoric trail associated with the Crane Flat TCP.

El Portal (ELP)

The ELP facility site is located approximately 0.1 mile from traditional natural resource areas. The facility site is located within the developed El Portal Administration Area and does not support any natural resources; therefore, the facility site is located outside of areas potentially managed as a TCP.

Hennes Ridge (HEN)

On behalf of the North Fork Mono Rancheria, Picayune Rancheria, and the American Indian Council of Mariposa County (also known as the Southern Sierra Miwuk Nation), Gaylen Lee (2009) prepared a brief overview of American Indian use at Hennes Ridge for the Yosemite Institute Environmental Education Campus project. The Hennes Ridge site was identified as an area used by contemporary American Indians, but it was not identified as a TCP (compare with discussion in American Indian Traditional Cultural Practices section).

Although there is currently not enough available information to identify and manage the Hennes Ridge area as a TCP, it is regarded by the associated tribes as a location of cultural significance with potential for education. The three associated tribes expressed interest in collaborating with Yosemite Institute on educational programs for this area.

Sentinel Dome (SNT)

Two culturally significant sites, Sentinel Rock and Glacier Point cliff face, are located approximately 0.45 mile west and northeast, respectively, of the proposed SNT facility site. There is currently not enough available information to identify and manage the Sentinel Dome area as a TCP.

Wawona Point (WWP)

During a visit to this proposed site on June 10, 2009, the North Fork Mono Rancheria of Mono Indians determined that the site possessed cultural and/or religious significance. The WWP site was identified as an area used by contemporary American Indians, but there is currently not enough available information to identify and manage the area as a TCP.

Yosemite Valley (VLY)

A traditional cultural study of Yosemite Valley identified and documented many cultural and natural resources associated with some of the American Indian occupation and use of Yosemite Valley (NPS 2006d). Proposed actions within Yosemite Valley have the potential to affect the following properties that are associated with cultural practices or beliefs of associated American Indian people: areas of past and present resource materials and food processing; sites of

traditional and contemporary spiritual value; places that figure into oral traditions; areas of historic habitation of humans; marked and unmarked graves. The proposed facility site is located in a developed area, including existing communication facilities, parking areas, and facility structures.

Environmental Consequences

Impacts and Determination of Effect under Alternative 1 (No Action Alternative)

Under the No Action alternative, no ground disturbance or new construction would occur since no new sites would be developed and no improvements would be made to existing sites. Implementation of this alternative would have no effect on TCPs.

Operation- related Impacts on TCPs. Use of the proposed and existing facility locations would continue as the area is used today. Consultation by the National Park Service with associated tribes would continue. No operations impacts have been identified.

Impact Significance. A no effect determination for would be appropriate under this alternative.

Conclusion. Under the No Action Alternative, the existing facility sites would remain in their current condition, and operations would continue to be limited to maintenance activities. No construction- related impacts would occur. Continued operation of the existing facility sites under Alternative 1 would result in no effect to historic properties.

Impairment. Because there would be no change to the natural and cultural integrity of Yosemite National Park under Alternative 1, TCPs in Yosemite National Park would not be impaired.

Impacts and Determination of Effect under Alternative 2 (Preferred)

The construction and operation of facility sites at El Portal, Hodgdon Meadow, Hennes Ridge, May Lake Junction, Sentinel Dome, Wawona Point, and Yosemite Valley would have no effect on TCPs, because the location of these sites are within developed areas that do no support managed resources. Potential effects to the Crane Flat and Meadow TCP are discussed below.

Crane Flat (CRN)

Construction and Operation- related Impacts on TCPs. The treatment of resources managed as TCPs in the Crane Flat and Meadow area would continue with ongoing consultation between the National Park Service and American Indians with traditional cultural ties to the Crane Flat area. Use of the Crane Flat and Meadow area would continue as the area is used today, which would result in no effect to resources managed as a TCP.

Impact Significance. A no effect determination is appropriate for the Crane Flat and Meadow TCP under this alternative, because construction and operation of the CRN facility site would not affect resources managed under the TCP.

Conclusion. Under Alternative 2, construction would occur within or adjacent to a TCP; however, based on the location of the facility, there would be no effect on resources managed as TCPs.

Impairment. Because there would be no change to the natural and cultural integrity of Yosemite National Park under Alternative 2, TCPs in Yosemite National Park would not be impaired.

Impacts and Determination of Effect under Alternative 3 (Alternative Sites or Equipment)

Crane Flat (CRN)

Construction and Operation- related Impacts on TCPs. The treatment of resources managed as TCPs in the Crane Flat and Meadow area would continue with ongoing consultation between the National Park Service and American Indians with traditional cultural ties to the Crane Flat area. Use of the Crane Flat and Meadow area would continue as the area is used today, which would result in no effect to resources managed as a TCP.

Impact Significance. A no effect determination is appropriate for the Crane Flat and Meadow TCP under this alternative, because construction and operation of the CRN facility site would not affect resources managed under the TCP.

Conclusion. Under Alternative 3, construction would occur within or adjacent to a TCP; however, based on the location of the facility, there would be no effect on resources managed as TCPs.

Impairment. Because there would be no change to the natural and cultural integrity of Yosemite National Park under Alternative 3, TCPs in Yosemite National Park would not be impaired.

AMERICAN INDIAN TRADITIONAL CULTURAL PRACTICES

Traditional cultural practices are resources which are culturally- valued social use of the biophysical, geophysical, or built environment; and socio- cultural attributes, including social cohesion, lifeways, religious practices, and other social institutions such as education and recreation that play out in the biophysical and built environment. The cultural value of these resources may have acquired a historic merit by their repeated use over time, but they do not meet the standards for consideration as historic properties listed in the NRHP.

Affected Environment

Regional Setting

American Indian people have ongoing traditional cultural associations with park lands and resources. Minimal research has been conducted to inventory and document traditional resources important to contemporary American Indian people. Some studies, which focused on Yosemite Valley, Crane Flat, and El Portal, have been conducted.

Yosemite National Park borders several “traditional tribal territories,” most notably the Central Sierra Miwok, the Southern Sierra Miwok, the Bridgeport Paiute, the Bishop Paiute, the Mono Lake Paiute, the North Fork Mono Rancheria, and the Chukchansi. Crane Flat has generally been associated with the Central Sierra Me- wuk and the Mono Lake Pauite, and is located on the boundary of Southern Sierra Miwok territory (Barrett 1908; Kroeber 1925; Merriam 1902- 1930, 1907).

Based on available information and consultation with American Indian tribes, the affected areas at Big Oak Flat (Rockefeller Grove), Hetch Hetchy Entrance, Wawona, Mount Bullion and Turtleback Dome do not support resources or culturally significant areas used by American Indian tribes. Facility sites located within or adjacent to areas of traditional practices are discussed below.

Proposed New Facility Locations

Hodgdon Meadow Maintenance Complex (HMC)

A field inspection of the Hodgdon Meadow area was conducted with the Tuolumne Band of Me-Wuk Indians on May 23, 2007 (NPS 2007c). The tribe identified plants in the meadow that were used for medicine, food, or crafts. They noted that, although all of the identified plants grow in other locations, the meadow has a grouping of plants that don't generally come together in such abundance or sizes. They believed that the meadow was a Native American managed landscape.

May Lake Junction (MLJ)

On June 11, 2009, the Tuolumne Band of Me- Wuk Indians and the Southern Sierra Miwuk Nation visited this proposed site with resource staff. At that time it was determined that plants having traditional cultural value are located in the area. The two groups recommended continued Native American participation during planning and project development, and recommended Native American monitoring of construction activities in areas where plant and ground disturbances were planned. Proposed trenching for fiber optic cable would occur within the Tioga Road roadway prism, and is therefore unlikely to affect potential traditional practices adjacent to the route, including traditional trails, and uses within the Tenaya Lake and Tuolumne Meadows areas.

Existing Facility Locations

Crane Flat (CRN)

The Crane Flat area is considered a crossroads by many American Indian people (Pacific Legacy and Davis- King Associates 2006). At least six trails have been identified in the vicinity of Crane Flat. Variations of these trails' routes are in use today. Although no specific instances related to American Indian settlement of Crane Flat have been discovered, the area has continued to be of cultural significance to local California American Indian tribes with ancestral cultural association with park lands. The most significant traditional practice associated with Crane Flat and Meadow is the use of the area as a meeting and gathering place because of their location at a crossroads. The area is also an important gathering place due to the presence of abundant resources associated with economic, medicinal, and spiritual traditional practices. Most notably, great gray owl feathers, moth cocoons, angelica root, and other food, medicinal, and other traditional plants were gathered in the area. The National Park Service is managing the area as the Crane Flat and Meadow TCP.

Eagle Peak Repeater (EGP)

During agency scoping associated with this project, USFS noted that the Eagle Peak area may possess cultural and/or religious significance. The facility would include a collocation on an existing telecommunications facility or construction immediately adjacent to the existing site and is therefore unlikely to affect potential traditional cultural practices.

El Portal (ELP)

The ELP facility site is located approximately 0.1 mile from traditional natural resource collecting areas. The facility site is located within the developed El Portal Administration Area, and does not support any natural resources.

Hennes Ridge (HEN)

The Hennes Ridge area has been traditionally used by American Indians during travel to higher elevations in the Sierra (Lee 2009). Miwok, Chukchansi, and Mono tribes indicate that this was a place where chinquapin nuts and other food sources such as fungi and gooseberry that still grow in the area were gathered during their travels (Lee 2009). The tribes continue to value the area for those resources as well as the “cat face” sugar pine trees that produce a form of candy in the sap that releases from the cat face scars caused by fires.

During a visit to this proposed facility site on June 10, 2009, the North Fork Rancheria of Mono Indians determined that the site possessed cultural and/or religious significance. They recommend that a tribal member be present during construction activity involving ground disturbance to ensure that impacts to American Indian resources and value will be avoided or minimized.

Sentinel Dome (SNT)

Two American Indian traditional cultural resources, Sentinel Rock and Glacier Point cliff face, are located approximately 0.45 mile west and northeast, respectively, of the proposed SNT facility site; however no traditional cultural practices are identified within the SNT facility site.

Wawona Point (WWP)

During a visit to this proposed site on June 10, 2009, the North Fork Rancheria of Mono Indians determined that the site possessed cultural and/or religious significance. They recommend that a tribal member be present during construction activity involving ground disturbance to ensure that impacts to American Indian resources and value will be avoided or minimized.

Yosemite Valley (VLY)

A traditional cultural study of Yosemite Valley identified and documented many cultural and natural resources associated with some of the American Indian occupation and use of Yosemite Valley (NPS 2006d). Proposed actions within Yosemite Valley have the potential to affect the following properties that are associated with cultural practices or beliefs of associated American Indian people: areas of past and present resource materials and food processing; sites of traditional and contemporary spiritual value; places that figure into oral traditions; areas of historic habitation of humans; marked and unmarked graves. The proposed facility site is located in a developed area, including existing communication facilities, parking areas, and facility structures.

Environmental Consequences

Impacts under Alternative 1 (No Action Alternative)

Operation- related Impacts on Traditional Cultural Practices. Continued operation of the existing facility sites, including periodic maintenance activities, would have no adverse effects on traditional cultural practices. Local American Indian tribes would continue to have access to and have use of special resources. Ongoing use of the communication facilities would not restrict local American Indian tribes' use of the area pursuant to the American Indian Religious Freedom Act of 1979 (AIRFA) or Executive Order 13007.

Impact Significance. Under Alternative 1, no impact on traditional cultural practices is anticipated under this alternative.

Conclusion. Under Alternative 1, operation of existing facilities would continue. No construction or operation related impacts would occur. Under Alternative 1, existing uses of the areas would not be changed.

Impairment. Because there would be no change to the natural and cultural integrity of Yosemite National Park under Alternative 1, traditional cultural practices in Yosemite National Park would not be impaired.

Impacts under Alternative 2 (Preferred)

Hodgdon Meadow Maintenance Complex (HMC)

Construction and Operation- related Related Impacts on Traditional Cultural Practices. Construction activities at the HMC facility site would be limited to developed areas within the maintenance complex, and within Tuolumne Grove Road. Operation of the HMC facility would be limited to periodic maintenance within the developed maintenance complex; therefore, there would be no impact to traditional cultural practices in the meadow area. Local American Indian tribes would continue to have access to and have use of special resources in the meadow. Ongoing use of the communication facilities would not restrict local American Indian tribes' use of the area pursuant to the American Indian Religious Freedom Act of 1979 (AIRFA) or Executive Order 13007.

Impact Significance. Based on the location of the facility site and associated improvements, there would be no adverse impact on traditional cultural practices in Hodgdon Meadow.

May Lake Junction (MLJ)

Construction and Operation- related Impacts on Traditional Cultural Practices. Construction of the proposed MLJ facility may result in the disturbance of plants with traditional cultural value, resulting in a negligible impact under NEPA. The management or treatment of American Indian traditional cultural practices in the May Lake Junction, Tioga Pass, Tenaya Lake, and Tuolumne Meadows areas would continue with ongoing consultation between the National Park Service and American Indians with traditional cultural ties to the area. Construction activities would result in local, short- term, and negligible impacts. Local American Indian tribes would continue to have access to and have use of special resources. Ongoing use of the

communication facilities would not restrict local American Indian tribes' use of the area pursuant to the American Indian Religious Freedom Act of 1979 (AIRFA) or Executive Order 13007.

Impact Significance. Local, short and long- term, negligible, adverse, impact on traditional cultural practices in the May Lake, Tenaya Lake, Tuolumne Meadows, and Tioga Pass areas.

Crane Flat (CRN)

Construction and Operation- related Impacts on Traditional Cultural Practices. The management or treatment of American Indian traditional cultural practices in the Crane Flat area would continue with ongoing consultation between the National Park Service and American Indians with traditional cultural ties to the Crane Flat area. Operation of the facility would be limited to periodic maintenance activities, similar to existing conditions. Because of the short-term nature of the construction activities, they would have no impact on traditional cultural practices. Local American Indian tribes would continue to have access to and have use of special resources in the Crane Flat and Meadow. Ongoing use of the communication facilities would not restrict local American Indian tribes' use of the area pursuant to the American Indian Religious Freedom Act of 1979 (AIRFA) or Executive Order 13007.

Impact Significance. Local, short and long- term, negligible, adverse, impact on resources associated with traditional cultural practices in the Crane Flat area.

Eagle Peak Repeater (EGP)

Construction and Operation- related Impacts on Traditional Cultural Practices. The management or treatment of American Indian traditional cultural practices in the Eagle Peak area would continue with ongoing consultation between the National Park Service and USFS. American Indians with traditional cultural ties to the Eagle Peak area would be consulted to avoid effects to traditional cultural practices during construction. Operation of the facility would be limited to periodic maintenance activities, similar to existing conditions. Local American Indian tribes would continue to have access to and have use of special resources in the Eagle Peak area. Ongoing use of the communication facilities would not restrict local American Indian tribes' use of the area pursuant to the American Indian Religious Freedom Act of 1979 (AIRFA) or Executive Order 13007.

Impact Significance. Local, short and long- term, negligible, adverse, impact on resources associated with traditional cultural practices in the Eagle Peak area.

El Portal (ELP)

Construction and Operation- related Impacts on Traditional Cultural Practices. The ELP facility site is an existing communications facility located within a developed area (El Portal Administration Area). There are no natural resources within the administration area. Operation of the ELP facility site would continue, similar to current conditions. Due to the location of the facility, traditional cultural practices would not be affected. Local American Indian tribes would continue to have access to and have use of special resources in the El Portal area. Ongoing use of the communication facilities would not restrict local American Indian tribes' use of the area pursuant to the American Indian Religious Freedom Act of 1979 (AIRFA) or Executive Order 13007.

Impact Significance. Based on the location of the facility site, there would be no adverse impact on traditional cultural practices in the El Portal Area.

Hennes Ridge (HEN)

Construction and Operation- related Impacts on Traditional Cultural Practices. The proposed facility would be constructed adjacent to an existing facility, in a disturbed area. Construction activities would not include the disturbance or removal of local “cat face” trees. The management or treatment of American Indian traditional cultural practices in the Hennes Ridge area would continue with ongoing consultation between the National Park Service and American Indians with traditional cultural ties to the area. The operation of the HEN facility would continue, similar to current conditions. Local American Indian tribes would continue to have access to and have use of special resources in the Hennes Ridge area. Ongoing use of the communication facilities would not restrict local American Indian tribes’ use of the area pursuant to the American Indian Religious Freedom Act of 1979 (AIRFA) or Executive Order 13007.

Impact Significance. Local, short and long- term, negligible, adverse, impact on resources associated with traditional cultural practices in the Hennes Ridge area.

Sentinel Dome (SNT)

Construction and Operation- related Impacts on Traditional Cultural Practices. The facility site is located 0.45 mile from the Sentinel Rock and Glacier Point cliff face. Because of the location of the facility site, and the short- term nature of the construction activities, these activities would have no effect on the traditional use of Sentinel Rock or Glacier Point. Operation of the facility would be limited to periodic maintenance activities, similar to existing conditions; therefore there would be no impact to traditional cultural practices. Ongoing use of the communication facilities would not restrict local American Indian tribes’ use of the area pursuant to the American Indian Religious Freedom Act of 1979 (AIRFA) or Executive Order 13007.

Impact Significance. Based on the location of the facility site, there would be no adverse impact on traditional cultural practices in the Sentinel Dome area.

Wawona Point (WWP)

Construction and Operation- related Related Impacts on Traditional Cultural Practices. The management or treatment of American Indian traditional cultural practices in the Wawona Point area would continue with ongoing consultation between the National Park Service and American Indians with traditional cultural ties to the Wawona Point area. Operation of the facility would be limited to periodic maintenance activities, similar to existing conditions. Because of the short- term nature of the construction activities, they would have no impact on traditional cultural practices. Ongoing use of the communication facilities would not restrict local American Indian tribes’ use of the area pursuant to the American Indian Religious Freedom Act of 1979 (AIRFA) or Executive Order 13007.

Impact Significance. Local, short and long- term, negligible, adverse, impact on resources associated with traditional cultural practices in the Wawona Point area.

Yosemite Valley (VLY)

Construction- related Impacts on Traditional Cultural Practices. The management or treatment of American Indian traditional cultural practices in the Yosemite Valley area would continue with ongoing consultation between the National Park Service and American Indians with traditional cultural ties to the Yosemite Valley area. The VLY facility site is located within a developed area, which includes existing communications facilities, parking areas, and park facility structures; therefore, there would be no impact on traditional cultural practices. Ongoing use of the communication facilities would not restrict local American Indian tribes' use of the area pursuant to the American Indian Religious Freedom Act of 1979 (AIRFA) or Executive Order 13007.

Impact Significance. Based on the location of the facility site, there would be no adverse impact on traditional cultural practices in the Yosemite Valley area.

Conclusion. Under Alternative 2, the proposed facility sites would be constructed and operated based on continued consultation with American Indian tribes. Under Alternative 2, adverse impacts on traditional cultural practices would be localized, short and long- term, and negligible.

Impairment. Because there would be no change to the natural and cultural integrity of Yosemite National Park under Alternative 2, traditional cultural practices in Yosemite National Park would not be impaired.

Impacts under Alternative 3 (Alternative Sites or Equipment)

Under Alternative 3, proposed facility sites would be located in the general proximity of facility sites identified under Alternative 2; therefore, impacts to traditional cultural practices would be the same those as discussed under Alternative 2.

Crane Flat (CRN)

Construction and Operation- related Impacts on Traditional Cultural Practices. The management or treatment of American Indian traditional cultural practices in the Crane Flat area would continue with ongoing consultation between the National Park Service and American Indians with traditional cultural ties to the Crane Flat area. Operation of the facility would be limited to periodic maintenance activities, similar to existing conditions. Because of the short-term nature of the construction activities, they would have no impact on traditional cultural practices. Local American Indian tribes would continue to have access to and have use of special resources in the Crane Flat and Meadow. Ongoing use of the communication facilities would not restrict local American Indian tribes' use of the area pursuant to the American Indian Religious Freedom Act of 1979 (AIRFA) or Executive Order 13007.

Impact Significance. Local, short and long- term, negligible, adverse, impact on resources associated with traditional cultural practices in the Crane Flat area.

Eagle Peak Repeater (EGP)

Construction and Operation- related Impacts on Traditional Cultural Practices. The management or treatment of American Indian traditional cultural practices in the Eagle Peak area would continue with ongoing consultation between the National Park Service and USFS. American Indians with traditional cultural ties to the Eagle Peak area would be consulted to avoid

effects to traditional cultural practices during construction. Operation of the facility would be limited to periodic maintenance activities, similar to existing conditions. Local American Indian tribes would continue to have access to and have use of special resources in the Eagle Peak area. Ongoing use of the communication facilities would not restrict local American Indian tribes' use of the area pursuant to the American Indian Religious Freedom Act of 1979 (AIRFA) or Executive Order 13007.

Impact Significance. Local, short and long- term, negligible, adverse, impact on resources associated with traditional cultural practices in the Eagle Peak area.

Yosemite Valley (VLY)

Construction- related Impacts on Traditional Cultural Practices. The management or treatment of American Indian traditional cultural practices in the Yosemite Valley area would continue with ongoing consultation between the National Park Service and American Indians with traditional cultural ties to the Yosemite Valley area. The VLY facility site is located within a developed area, which includes existing communications facilities, parking areas, and park facility structures; therefore, there would be no impact on traditional cultural practices. Ongoing use of the communication facilities would not restrict local American Indian tribes' use of the area pursuant to the American Indian Religious Freedom Act of 1979 (AIRFA) or Executive Order 13007.

Impact Significance. Based on the location of the facility site, there would be no adverse impact on traditional cultural practices in the Yosemite Valley area.

Conclusion. Under Alternative 3, the proposed facility sites would be constructed and operated based on continued consultation with American Indian tribes. Under Alternative 3, adverse impacts on traditional cultural practices would be localized, short and long- term, and negligible.

Impairment. Because there would be no change to the natural and cultural integrity of Yosemite National Park under Alternative 3, traditional cultural practices in Yosemite National Park would not be impaired.

VISITOR EXPERIENCE AND RECREATION

Affected Environment

Regional Setting

Visitor experiences in Yosemite National Park are highly individualized. Some come simply to see Yosemite National Park's icons—its waterfalls and geologic features. Others visit to experience a place they have found unique, for personal challenges, timelessness, a place and pace different from their day- to- day experiences, or a personal connection with the grandeur or intricacies of Yosemite National Park.

Recreation opportunities in the park include sightseeing, walking, hiking, bicycling, climbing, stock use, picnicking, winter activities, rafting, swimming, fishing, and tours. The park includes several visitor services, including but not limited to overnight lodging, camping, food service, and a medical and dental clinic. The park also includes several orientation and interpretation

opportunities, such as at the park's visitor centers, the Yosemite Museum, the Nature Center at Happy Isles in Yosemite Valley, the Pioneer Yosemite History Center in Wawona, and Parsons Lodge and Soda Springs in Tuolumne Meadows.

In 2008, Yosemite National Park received 3,431,514 recreation visits (NPS 2008c). Based on a *Visitor Study Summer 2005* (NPS 2006b) conducted in July 2005, 60% of respondents listed "sightseeing or taking a scenic drive" as their primary summer activity and 20% listed "hiking." The most common activities were sightseeing /taking a scenic drive (87%), visiting visitor centers (55%), eating in park restaurant (49%), and taking a day hike (48%). The most visited places in the summer included Yosemite Falls (70%), Bridalveil Falls (61%), and Yosemite Valley Visitors Center (58%).

Based on winter visitor surveys, 36% of respondents listed "viewing scenery or taking a scenic drive" as their primary activity, 18% "skiing", 12% day hiking, and 12% "taking photographs/painting/ drawing" (NPS 2008b). The most common winter activities include viewing scenery/taking a scenic drive (84%), taking photographs/painting/drawing (73%), and day hiking (35%). The most visited places in the winter included Yosemite Falls (59%), Yosemite Valley Visitor Center (55%), and Bridalveil Falls (43%), and Badger Pass (31%).

Big Oak Flat Repeater (BOFR)

BOFR is located outside of designated Wilderness. The facility site is located approximately 125 feet north of Rockefeller Grove Road, an unpaved park road, which is accessible to the public for hiking. The road is bordered by dense, mature, pine forest.

Crane Flat (CRN)

CRN is an existing site located at a helicopter base station, outside of designated Wilderness. The facility site is located at the Crane Flat fire lookout, which is accessible via the Crane Flat Fire Lookout Trail. The trail loops around the base station to divert the public away from the helicopter pad. The existing structures and facilities are clearly visible as seen from the trail.

Eagle Peak Repeater (EGP)

This is an existing site on Eagle Peak, within the Stanislaus National Forest, outside of designated Wilderness. The facility site is accessible via a rough- graded forest service road. There are no designated trails in the area.

El Portal (ELP)

This existing facility is within the El Portal Administrative Area, within the Merced Wild and Scenic River corridor. The El Portal reach of the Merced River is home to world- class fishing and whitewater sports. The El Portal Administrative Site includes approximately 1,139 acres located directly outside of the boundary of Yosemite National Park, near the park's westernmost "Arch Rock" entrance along State Highway 140. Visitor- serving facilities in the area include lodging, restaurants, stores, a gas station, and picnic areas.

Heness Ridge (HEN)

This is an existing facility located near the peak of Henness Ridge. The site is accessed by an unpaved road, which may be used by Yosemite West residents and visitors; however, there are no designated trails or recreational opportunities in the immediate area. Old Glacier Point Road and Deer Camp Road trails are located approximately three miles to the east.

Hetch Hetchy Entrance (HHE)

This site is located north of Hetch Hetchy Road, east of the entrance station, near a NPS employee residential area. Visitors use Hetch Hetchy Road to access Hetch Hetchy Reservoir and Lake Eleanor in the northwest portion of the park. The Camp Mather trail system is located to the south and east. The reservoir is a popular destination for visitors, who view the dam and take short walks along the shore. Backcountry hikers use this area an entry or exit point. Use of the reservoir for water recreation is restricted by its function as a source of water supply for the city of San Francisco. Recreational opportunities at Lake Eleanor include backcountry use.

Hodgdon Meadow Maintenance Complex (HMC)

This site consists of a developed area, including the Hodgdon Meadow Maintenance Complex building. The maintenance complex is surrounded by dense pine forest, and is not visible from public use areas. The site is located south of Tuolumne Grove Road, and approximately 0.2 mile southeast of Hodgdon Meadow Campground. The campground is open year- round, and includes 105 campsites, a ranger kiosk, and restrooms Hodgdon Meadow and the South Fork Tuolumne River Trail are located to the south and east of the complex building.

May Lake Junction (MLJ)

This site is currently undeveloped, and is located approximately 160 feet north of the Tioga Road and May Lake Road junction, outside of designated Wilderness. Tioga Road is a highly- traveled scenic route, and provides access to popular destinations including Olmstead Point, Tenaya Lake, and Tuolumne Meadows. Visitors use May Lake Road to access May Lake, which is approximately three miles north of the MLJ facility site. The May Lake High Sierra Camp includes eight tent cabins. Several trail systems are present in the area.

Mt. Bullion (MTB)

This site includes an existing facility located on a 4,250- foot peak approximately five miles northwest of Mariposa. The site is outside of Yosemite National Park boundaries, within lands administered by the state. No recreational opportunities are available in the immediate area.

Sentinel Dome (SNT)

This site is a developed, multi- carrier site located adjacent to designated Wilderness. SNT is accessed from an existing unpaved utility road. The site is located adjacent to the Sentinel Dome Trail, an approximately one- mile hiking trail extending from Glacier Point Road to the top of Sentinel Dome. The existing facilities are clearly visible from the trail.

Sentinel Reflector (SNTReflector)

This site is an existing reflector located approximately one mile south of Yosemite Village, within designated Wilderness. The Village is a developed area, including visitor serving uses and park residential facilities. The site is located approximately 100 feet from the Four Mile Trail, an approximately five mile trail extending from Glacier Point to the Sentinel Beach Picnic area in Yosemite Valley.

Turtleback Dome (TRT)

This site consists of an existing facility located near the peak of Turtleback Dome, outside of designated Wilderness. There are no designated trails in the immediate vicinity. Turtleback Dome can be seen from the Half Dome Overlook, located on Big Oak Flat Road, approximately one mile to the northwest. Existing facilities at TRT are visible, but difficult to discern, due to the grand scale of the surrounding unique geologic formations and presence of trees surrounding the facilities.

Wawona (WAW)

This site consists of an existing maintenance facility located approximately 0.5 mile northeast of Wawona, and Wawona Road, within the Wawona District Circle. The site is within the Merced Wild and Scenic River Corridor. The Wawona Campground Office is located within the District Circle, to the west of the proposed facility site. Alder Creek Trail is located approximately 1,000 feet to the northwest.

Wawona Point (WWP)

This existing site is located adjacent to the Wawona Point Vista, located at the highest elevation of the Mariposa Grove trail, in the Upper Mariposa Grove. The Mariposa Grove of Giant Sequoias is a popular destination for visitors. Public access within the Grove is limited to a one- hour tram tour, or hiking. The Wawona Point Vista provides overlooks of the Wawona Basin and the Coast Range across the San Joaquin Valley. The existing facilities are not located within the overlook viewshed, but can be seen as visitors approach or descent from the overlook.

Yosemite Valley (VLY)

This site is an existing, multi- carrier facility located within the Yosemite Village area, near the Merced Wild and Scenic River Corridor. The Village is a developed area, including administrative and visitor services, paved access, camping, housing, lodging, museum / interpretive facilities, stables / kennels, religious services, scenic overlooks and viewpoints, open / undeveloped space, and open / recreational space.

Environmental Consequences

Impacts to visitor experience and recreation opportunities may occur as a result of changes to road circulation, interpretive facilities, campgrounds, lodging areas, backcountry and hiking areas, scenic vistas, and other facilities and resources, which contribute to the type and quality of the visit to public lands. Impacts may also occur due to direct actions affecting the availability or perceived quality of an experience or recreational activity. Visitor experience is also affected by actions that influence natural and cultural resources, including air quality, water quality,

vegetation, scenic resources. Enhancement or degradation of these resources can directly or indirectly enhance or degrade the quality of the visitor experience. Construction activities (i.e., generation of noise and dust, delays due to work within or adjacent to roadways), and changes to the visual setting including introduction of built environments can result in both short and long term effects.

Intensity Level Definitions

Impacts to visitor experience and recreation were evaluated using the process described in Chapter 7. Impact threshold definitions for visitor experience and recreation are as follows:

- Negligible:** Visitor experience and recreation would not be affected. Any effects to visitor experience and recreation would be slight and short-term.
- Minor:** Effects to visitor experience and recreation, such as an increase in the number of visitors, would be detectable. If mitigation is needed to offset adverse effects, it would be relatively simple to implement.
- Moderate:** Effects to visitor experience and recreation would be readily apparent. Mitigation would probably be necessary to offset adverse effects.
- Major:** Effects to visitor experience and recreation would be readily apparent and would substantially change visitor experience and recreation in Yosemite National Park. Extensive mitigation would probably be necessary to offset adverse effects, and its success could not be guaranteed.
- Impairment:** Impairment is not applicable to this resource topic.

Impacts under Alternative 1 (No Action Alternative)

The Yosemite National Park Communications Data Network (CDN) would continue to operate as it currently does under the No Action Alternative. No grading or construction would occur; therefore there would be no construction-related impacts to visitor experience or recreation. Not upgrading the communication system would result in the continued need for a single parkwide telecommunications backbone that would support a full range of telecommunications applications.

Operation-related Impacts on Visitor Experience and Recreation. Under the No Action Alternative, the Yosemite National Park CDN would continue to operate as it currently does. Proposed upgrades would not occur, and there would continue to be a need for an updated, connected communications system in the park. Visitor experience is affected by park overcrowding, over-use of resources, and unreliable communications among park entrances, ranger stations, and permit centers. Park staff rely on the CDN to share information regarding visitor capacity, weather conditions, traffic flow, issued Wilderness permits, and other data that factors into visitor experience. The CDN is also used for emergency response, and to share pertinent information regarding hazards including wildfires, rockfall, avalanche, and wildlife interactions. Visitor experience is adversely affected when park staff are unable to transfer information quickly (or at all during severe weather conditions), and provide an appropriate response. The ability of park staff to share information during hazardous conditions and quickly respond to emergency situations has a direct effect on visitor safety.

Impact Significance. Regional, long- term, moderate, adverse, impact.

Conclusion. Maintaining the existing CDN under the No Action Alternative would have a moderate adverse impact on visitor experience and recreation.

Impacts under Alternative 2 (Preferred)

Construction- related Impacts on Visitor Experience and Recreation. During the construction phase, the use of equipment and materials may result in short- term adverse impacts to visitor experience due to decreased aesthetic value within the construction area(s), and generation of noise and dust.

Facility sites BOFR, CRN, HEN, SNT, and WWP are located in the vicinity of designated and undesignated trails, which are accessible to the public. During the construction period, visitors in these areas would be adversely affected by diminished visual quality due to the appearance of ground disturbance and construction equipment and materials. Visitors in both the immediate and surrounding area would be adversely affected by man- made, obtrusive noise, odors from construction equipment emissions, and dust. Construction of the facility at SNT would have a short- term effect on trail users passing the site while proceeding towards the Wilderness area.

Facility sites located in close proximity to popular scenic roadways and overlooks, or visible within scenic viewsheds include HHE, MLJ, and TRT. EGP is located outside the park; however the facility is faintly visible to visitors entering or exiting the Arch Rock park entrance from points along Highway 140. During the construction period, visitor experience would be adversely affected by diminished visual quality due to the appearance of ground disturbance and construction equipment and materials.

Facility sites HMC and MLJ would require trenching and installation of fiber within or immediately adjacent to public roadways. During construction, traffic management and partial lane closure would likely be required, resulting in increased traffic delays and congestion.

Construction of facility sites within developed areas including ELP, HMC, VLY, and WAW would likely have a negligible effect on visitor experience based on the existing presence of equipment, man- made noise, and development.

Impact Significance. Local, short- term, negligible to minor, adverse, impact.

Operation- related Impacts on Visitor Experience and Recreation. Under the Alternative 2, the Yosemite National Park CDN would be upgraded to provide an integrated, parkwide telecommunications backbone, which would be used in part to improve and respond to visitor experience. As discussed on Chapter 1 (Purpose and Need), proposed upgrades would enhance staff's ability to share information and respond to data and conditions that affect visitor experience, including, but not limited to the following: traffic management, crowding, weather conditions, air quality, wildlife interactions, hazardous conditions (e.g., fire, avalanche, rockfall, flooding), utility failures or disruptions, and emergency response.

Operation of a proposed facility sites would not result in a change in visitor demands, affect recreational needs in surrounding areas, increase the use of public recreational areas and open space, or physically degrade existing visitor use and recreational areas.

Impact Significance. Regional, long- term, moderate, beneficial, impact.

Conclusion. The development of facility sites under Alternative 2 would have some adverse impacts on visitor experience and recreation in the short term. In the long term, the effects would be beneficial, because park staff will be able to better manage real- time park resource and visitor capacity data, and respond to hazardous and emergency situations.

Impacts under Alternative 3 (Alternative Sites or Equipment)

Construction- related Impacts on Visitor Experience and Recreation. During the construction phase, the use of equipment and materials may result in short- term adverse impacts to visitor experience due to decreased aesthetic value within the construction area(s), and generation of noise and dust, similar to Alternative 2.

Impact Significance. Local, short- term, negligible to minor, adverse, impact.

Operation- related Impacts on Visitor Experience and Recreation. Under the Alternative 3, the Yosemite National Park CDN would be upgraded to provide an integrated, parkwide telecommunications backbone, which would be used in part to improve and respond to visitor experience, similar to Alternative 2. Operation of a proposed facility sites under Alternative 3 would not result in a change in visitor demands, affect recreational needs in surrounding areas, increase the use of public recreational areas and open space, or physically degrade existing visitor use and recreational areas.

Impact Significance. Regional, long- term, moderate, beneficial, impact.

Conclusion. The development of facility sites under Alternative 3 would have some adverse impacts on visitor experience and recreation in the short term. In the long term, the effects would be beneficial, because park staff will be able to better manage real- time park resource and visitor capacity data, and respond to hazardous and emergency situations.

PARK OPERATIONS

Affected Environment

Effective communications are critical to Yosemite National Park's success in protecting park resources and delivering a range of services to park visitors. Many developed areas of the park, including Wawona, Crane Flat, Hodgdon Meadow, Hetch Hetchy, and Tuolumne Meadows are currently serviced by old telephone wires; employees therefore rely on time- consuming dial- up modems for computer network and internet access, and many types of data cannot be transferred. El Portal and Yosemite Valley have an upgraded system that provides shared network access, private branch exchange telephones (that use extensions), and high speed internet.

Regional Setting

Park operations fall into four basic categories: resources management, visitor protection, interpretation, and facility management. Resources management staff protects the natural, historic, and cultural resources of the park. Visitor protection staff performs various visitor management and resource protection duties, including enforcing laws, resolving disputes,

providing emergency medical treatment, fighting fires, staffing Wilderness ranger stations, and conducting search and rescue operations. Interpretation personnel conduct programs, such as ranger- led walks, talks, and tours, as well as staff visitor centers, produce park publications, and maintain the park's website. Facility management staff perform preventive and corrective maintenance on park infrastructure, including water, wastewater, and electrical utility systems, and park roads, trails, and structures. The extent and condition of park infrastructure and facilities within Yosemite National Park are described below. A discussion on roads is included in the Transportation section of this document.

There are 20 public water systems in the park; the Tuolumne Meadows and Wawona areas have the only large surface water systems. Three wells, a 2.5- million gallon water storage tank, and several distribution lines supply Yosemite Valley users with water. Five wastewater treatment facilities serve the park in El Portal, Hodgdon Meadow, Tuolumne Meadows, Wawona, and White Wolf. The NPS purchases power from the Pacific Gas and Electric Company, which it distributes and resells to end users in Yosemite Valley, predominantly to the concessionaire. End users in Wawona, El Portal, Foresta, and Hodgdon Meadow are served directly by Pacific Gas and Electric Company, which has facilities within the park in several places. SBC Communications supplies telephone service to Yosemite National Park and El Portal, primarily through microwave transmission. Connection between park office locations is provided by AT&T. Overhead and underground lines serve various other locations throughout the park and El Portal.

Environmental Consequences

Intensity Level Definitions

Impacts to park operations and facilities were evaluated using the process described at the beginning of this chapter. Impact threshold definitions for park operations and facilities are as follows:

- Negligible:** Impacts to park operations and facilities would be largely unnoticed by staff and the visiting public. Existing programs and activities would remain essentially unchanged.
- Minor:** Park operations and facilities would be affected, but the impacts would be limited in scope and not generally noticed by visitors. Increases or decreases in the park's operating costs and staffing workload would require some realignment of funds, but would not require substantial changes in the park's overall operating budget.
- Moderate:** Park operations and facilities would be measurably affected, and the impacts would be noticeable to some visitors. Increases or decreases in the park's operating costs and/or workload would require realignment of funds and would alter the scope or quality of some programs.
- Major:** Impacts to park operations and facilities would be widespread and readily apparent to most visitors. Increases or decreases in operating costs and/or workload would require substantial changes in funding allocation and would alter the scope and quality of multiple programs or basic operational activities.

Impairment: Impairment analysis is not applicable to this resource topic.

Impacts under Alternative 1 (No Action Alternative)

Construction- related Impacts. Under the No Action Alternative, the communication data network would continue to operate as it currently does. No grading or construction would occur; therefore, there would be no effect to park operations.

Impact Significance. Regional, long- term, negligible, adverse, impact.

Operation- related Impacts. Proposed upgrades would not occur, and there would continue to be a need for an updated, connected communications system in the park. The abilities of park staff to manage resources, respond to emergencies, and manage facilities would continue to be hindered by inefficient data transfer, limited communication options, and “dead zones” within remote Wilderness areas. Under Alternative 1, the interpretation services division would not be affected.

Impact Significance. Regional, long- term, minor, adverse, impact.

Conclusion. Maintaining the existing CDN under the No Action Alternative would have a minor adverse impact on park operations.

Impacts under Alternative 2 (Preferred)

Construction- related Impacts. It is anticipated that during the reconstruction phase, there would be temporary adverse impacts on facilities management staff addressing traffic concerns and coordinating with the construction contractor.

Impact Significance. Local, short- term, minor, adverse, impact.

Operation- related Impacts. Under Alternative 2, the Yosemite National Park CDN would be upgraded to provide an integrated, parkwide telecommunications backbone, which would be used to improve park operations, including resources management, resources management, and visitor protection. Proposed upgrades would enhance staff’s ability to complete work tasks requiring inter- office communications and data management, and improve efficiency of daily park operations. Real- time weather, hazard, traffic, and air quality information could be transferred to emergency, visitor protection, and maintenance personnel for rapid response.

Replacement of existing facilities, such as wood poles, with improved structures including steel, three- leg, support towers would reduce existing demand on facilities management staff for maintenance and repair services. Although these new facilities would require initial installation and ongoing maintenance, the long- term demand on facilities management staff is expected to be less than that currently imposed by the aging facility elements. Co- location on the existing tower at EGP would require coordination with AT&T and the U.S. Forest Service, including lease negotiations. This process will require park staff time, and budget allotment to fund the lease. Under Alternative 2, the interpretation services division would not be affected.

Impact Significance. Regional, long- term, minor, beneficial, impact.

Conclusion. The CDN upgrade would support a full range of modern telecommunications applications, which would result in a beneficial impact to park operations and facilities over the long term.

Impacts under Alternative 3 (Alternative Sites or Equipment)

Construction- related Impacts. It is anticipated that during the reconstruction phase, there would be temporary adverse impacts on facilities management staff addressing traffic concerns and coordinating with the construction contractor.

Impact Significance. Local, short- term, minor, adverse, impact.

Operation- related Impacts. Under the Alternative 3, the Yosemite National Park CDN would be upgraded, resulting in similar beneficial impacts as Alternative 2. Co- location on the existing tower at VLY would require coordination with AT&T, including lease negotiations. This process will require park staff time, and budget allotment to fund the lease. Under Alternative 3, the interpretation services division would not be affected.

Impact Significance. Regional, long- term, minor, beneficial, impact.

Conclusion. During the construction phase, adverse impacts to park operations would be minor. The CDN upgrade would support a full range of modern telecommunications applications, which would result in a beneficial impact to park operations and facilities over the long term.

TRANSPORTATION AND TRAFFIC

Affected Environment

Regional Setting

Yosemite National Park has four main entrances (Big Oak Flat, Arch Rock, Tioga Pass, and South), with three highways providing the primary access (Highways 120, 140, and 41). Highway 120 is also known as Tioga Road within the park and provides primary access from the Big Oak Flat entrance to the Tioga Pass entrance. Highway 140 is also referred to as El Portal Road and provides access from the El Portal entrance (Arch Rock) to the Yosemite Valley. Highway 41 is also known as Wawona Road and provides access from the South entrance through Wawona to the Yosemite Valley. Park visitors can use the Yosemite Area Regional Transportation System, which connects with Amtrak and Greyhound in Merced, or via busses from communities outside the park. Amtrak also provides bus service to Yosemite Valley.

Big Oak Flat Repeater (BOFR)

The BOFR site is located off Garnett Fire Road, which loops through the forest approximately 0.5 mile until it reaches State Highway 120. Garnett Fire Road is an unpaved, marginally improved road and may be difficult to access during inclement weather.

Crane Flat (CRN)

The CRN site is located at the Crane Flat fire lookout, which is accessed from Crane Flat Lookout Road, a marginally improved road off State Highway 120/Big Oak Flat Road. The site is developed as a helicopter base station, and can also be accessed by helicopter. Ground access along Crane Flat Lookout Road may be difficult during inclement weather.

Eagle Peak Repeater (EGP)

The EGP site is located near the top of Eagle Peak in the Stanislaus Forest. The site is just north of the town of El Portal on Forest Route 2S91. Forest Route 2S91 connects to the north with Old Coulterville Road, which runs east toward Yosemite National Park, and Forest Route 1S12, which runs northwest. A foot trail leads to the site. Because the site is accessed via rough-graded roads, access may be difficult during inclement weather. The EGP site may require the use of a helicopter to transport construction equipment and materials.

El Portal (ELP)

The ELP site is located within the El Portal Administrative Area, just east of State Highway 140 and Foresta Road, near the Merced River. The site is accessed from Foresta Road, which is paved and connects to State Highway 140. The site is accessible in all but the most severe weather conditions.

Heness Ridge (HEN)

The HEN site is accessible from a gated dirt road, which extends from Henness Ridge Lookout Road. Henness Ridge Lookout Road intersects with Azalea Road before reaching Henness Circle and Henness Ridge Road within the Yosemite West residential area. Henness Circle and Henness Ridge Road are paved and are located outside of Yosemite National Park. Site access may be difficult during inclement weather.

Hetch Hetchy Entrance (HHE)

The HHE site is at an existing park entrance on Hetch Hetchy Road, approximately one mile north of the town of Mather. Hetch Hetchy Road is paved and is open all year during all but the most severe weather conditions.

Hodgdon Meadow Maintenance Complex (HMC)

The HMC site is located on Tuolumne Grove Road between State Highway 120 and Tioga Road. Tuolumne Grove Road is paved, and provides access to the Hodgdon Meadow Campground, west of the maintenance complex. The road is closed to through visitor-vehicle traffic from the campground road turnoff. The site can be accessed by State Highway 120 and Big Oak Flat Road. Access to the site should be available during all but the most severe weather conditions.

May Lake Junction (MLJ)

The MLJ site is just north of Tioga Road at the junction of May Lake Road. Tioga Road is closed in the winter, and during snowfall.

Mt Bullion (MTB)

The MTB site is located on the peak of Mt. Bullion, approximately 5 miles northwest of the town of Mariposa. The site can be accessed from Morrissey Lane via Mt. Bullion Ridge Road, both marginally improved roads; however access may be difficult during inclement weather.

Sentinel Dome (SNT)

Access to the SNT site is via an existing dirt road, which also serves as a portion of the Sentinel Dome trail. The site is just north of the end of the Glacier Point utility road. The Glacier Point utility road is closed from November to May.

Sentinel Reflector (SNTReflector)

Access to the SNTReflector site is via the Four Mile foot trail, which can be reached from either State Highway 41/Southside Drive to the west, or from the east via the Glacier Point parking lot at the end of the utility road. The Glacier Point utility road is closed from November to May.

Turtleback Dome (TRT)

The TRT site is accessible via a marginally improved Park Service road off of State Highway 41/Wawona Road. State Highway 41/Wawona Road is open all year, but the Park Service road may be restricted by severe weather.

Wawona (WAW)

The WAW site is located off State Highway 41/Wawona Road and is accessible via Wawona District Circle, a marginally improved road, via Chilnualna Falls Road, which is a paved road that intersects with State Highway 41/Wawona Road. Access to the site is generally available during all but the most severe weather conditions.

Wawona Point (WWP)

The WWP site is located at the end of Mariposa Grove Road, a two- mile paved extension to the overlook. Mariposa Grove Road intersects with State Highway 41/Wawona Road at the south entrance to the park. The WWP site is accessible during all but the most severe weather conditions.

Yosemite Valley (VLY)

The VLY site is located in Yosemite Village and is accessible via paved roads off of State Highway 140, including Indian Canyon Road, Village Drive, and Castle Cliff Court. The VLY site is accessible during all but the most severe weather conditions.

Environmental Consequences

Intensity Level Definitions

This impact assessment focuses on the effect of temporary changes to the roadway system and associated traffic flow, access and circulation, and safety conditions. Transportation impacts are

Affected Environment and Environmental Consequences

evaluated in terms of their duration, intensity, and whether impacts are considered to be beneficial or adverse.

Duration of Impact

A short- term impact could occur during the implementation phase of an action and is considered temporary. A permanent change in traffic generation or circulation patterns as a result of an action would create a long- term impact.

Intensity of Impact

The Federal Highway Administration (FHWA) has designated LOS C as the minimum acceptable LOS standard on federal facilities; however, discussions with the FHWA indicated that LOS standards vary by facility type (i.e., urban freeways, mountainous roads, etc.). In this report, a peak- hour LOS C is taken as the threshold for acceptable traffic operations at the study intersections. Impact threshold definitions for traffic are as follows:

- Negligible:** There would be no change in the number of vehicles. Road intersections would operate at LOS A or LOS B.
- Minor:** There would be a small increase in the number of vehicles. Road intersections would experience a decrease to LOS B.
- Moderate:** Increases in the number of vehicles would be apparent. Road intersections would experience a decrease to LOS C.
- Major:** Increases in the number of vehicles would be noticeable to all motorists. Road intersections would experience a decrease to LOS D or F.
- Impairment:** Impairment is not considered for transportation because this resource topic is peripheral to the protection of the park for future generations.

Assumptions

This analysis considers the following assumptions:

- Construction activities would occur between April/May and November when all the roads should be open.
- Emergency personnel would be available by helicopter for sites accessed by helicopter or foot trail.
- Trucks would be allowed on foot trails to bring equipment and personnel to sites accessed by foot trail.
- Trenching under roads at the HHE, HMC and MLJ sites would be conducted by directional bore.
- All roads would remain open during trenching activities.

Impacts under Alternative 1 (No Action Alternative)

Under the No Action alternative, the communication data network would continue to operate as it currently does. The BOFR, HHE, HMC, MLJ, and WAW sites would not be developed and the park would continue to provide telephone, network, and Internet access using the current mix of technologies at the existing sites. No additional traffic trips would be generated by construction vehicles since no new sites would be developed and no improvements would be made to existing sites. Routine maintenance would continue to occur at existing communications sites with no increased trips to and from the existing sites. Traffic volumes and patterns would remain unchanged. Implementation of the No Action alternative would have no impact on transportation.

Impact significance. Local, long- term, negligible, adverse, impact.

Conclusion. No construction- related impacts would occur. Operation- related impacts would remain unchanged.

Impacts under Alternative 2 (Preferred)

Alternative 2 proposes the improvement of existing facility sites at nine locations. The existing facility at SNTReflector would be used, and no improvements would be made to the site. These sites would be located within developed areas with sufficient space for parking and impacts to traffic would be short- term and negligible. Alternative 2 also includes development of new facility sites at five locations: BOFR, HHE, HMC, MLJ, and WAW. Traffic impacts to the new sites would be considered short- term and negligible, except for the HHE, HMC, and MLJ sites, which would involve trenching activities. While all roads are expected to remain open during trenching, impacts to the HHE and HMC sites are expected to be minor and traffic management may be necessary. Impacts to the MLJ site will be moderate during construction because a lane may be closed and traffic management will be necessary.

The proposed new site development and site improvements would not change air traffic patterns, create hazards due to design features, result in inadequate emergency access or parking capacity, or conflict with any alternative transportation plans or policies. No roads would be built or improved as a result of the proposed action. No residential, commercial, or industrial development is proposed; therefore, no new parking or alternative transportation would be needed as a result of the proposed action. The five new sites and most of the improved sites are accessed via paved or marginally improved roads, and would be accessible to emergency personnel. Emergency personnel would be available by helicopter for sites accessed by helicopter or foot trail.

Big Oak Flat Repeater (BOFR)

Construction and Operation- related Impacts. This is an undeveloped site just off an unpaved fire road. Truck trips and parking would be required during construction of a new steel pole that would support two antennas, and associated feedline to connect the antennas. Construction vehicles would park on or along the sides of the fire road. Traffic circulation would not be significantly disrupted because it is not likely that other vehicle traffic would occur. There would be no long- term changes in traffic circulation or parking demand because routine maintenance trips would be negligible. Impacts to State Highway 120 would be short- term and negligible.

Impact significance. Local, short- and long- term, negligible, adverse, impact.

Crane Flat (CRN)

Construction and Operation- related Impacts. Construction trips and associated parking demand would involve trucks entering and leaving the CRN site. Parking during the upgrade would be available within both paved and unpaved parking areas adjacent to the existing facilities. No long- term change to traffic circulation or parking demand would occur as a result of the proposed action because no additional trips to the CRN site would be generated once the upgrades were completed. Maintenance and operator staff would continue to enter and leave as they currently do. Impacts to Crane Flat Lookout Road and State Highway 120/Big Oak Flat Road would be short- term and negligible.

Impact significance. Local, short- and long- term, negligible, adverse, impact.

Eagle Peak Repeater (EGP)

Construction and Operation- related Impacts. Truck trips and helicopter transport to the EGP site would occur during construction. Parking during the upgrade would be accommodated within a cleared area at the terminus of the access road (Forest Route 2S91). The proposed action would not generate long- term change in parking demand, and no additional traffic would occur once construction was completed. Maintenance and operator staff would continue to access the site in the same manner they do currently. Impacts to Forest Route 2S91 would be short- term and negligible.

Impact significance. Local, short- and long- term, negligible, adverse, impact.

El Portal (ELP)

Construction and Operation- related Impacts. Upgrades at the ELP site would require truck trips to increase the height of an existing tower and connect the main generator to the equipment vault. Truck trips and additional parking needs during the upgrade would be short- term and parking would be available at various locations in the surrounding developed area. No long- term change in traffic or parking demand would occur after construction was completed. Maintenance and operator staff would continue to access the site as they currently do. Impacts to Foresta Road and State Highway 140 would be short- term and negligible.

Impact significance. Local, short- and long- term, negligible, adverse, impact.

Heness Ridge (HEN)

Construction and Operation- related Impacts. Truck trips to the HEN site during the replacement of a guyed tower with a self- support tower and during potential tree trimming and/or removal would be short- term. Parking would be accommodated within the disturbed area. Once construction was completed, there would be no long- term changes in traffic circulation or parking demand. Maintenance and operator staff would continue to access the site as they currently do. Impacts to Henness Ridge Lookout Road would be short- term and negligible.

Impact significance. Local, short- and long- term, negligible, adverse, impact.

Hetch Hetchy Entrance (HHE)

Construction and Operation- related Impacts. The HHE site is in a developed area at the existing Hetch Hetchy park entrance. Truck trips to and from the site would be short- term and would be required during construction of a new tower and equipment vault, during trenching and installation of a new underground power line, and during tree trimming and/or removal. Parking during construction would be available in a gravel lot at the Mather Ranger Station, and NPS employee residential area. Trenching and installation of the power line under Hetch Hetchy Road would be via directional bore. Partial lane closure may be required; however, road would remain open to traffic. No long- term changes in traffic circulation or parking demand because routine maintenance trips would be negligible. There would be no changes to site access for maintenance and operator staff. The increase in traffic on Hetch Hetchy Road during construction would be short- term and minor.

Impact significance. Local, short- and long- term, negligible, adverse, impact.

Hodgdon Meadow Maintenance Complex (HMC)

Construction and Operation- related Impacts. Truck trips to and from the HMC site would occur during installation of a microwave antenna on the existing maintenance complex building, trenching, and installation of approximately 4,500 feet of fiber optic cable from the HMC site to the Big Oak Flat entrance station, and during tree trimming and/or removal. Parking would be accommodated at the existing maintenance complex. Trenching and installation of the fiber cable under Tuolumne Grove Road would be via directional bore. The road would remain open to traffic during the directional bore and during trenching along the north side of the road; however, traffic management may be necessary. Once construction was completed, there would be no long- term impacts to traffic circulation or parking demand because routine maintenance trips would be negligible. There would be no changes to site access for maintenance and operator staff. The increased truck trips on Tuolumne Grove Road, Big Oak Flat Road, and State Highway 120 during construction would be short- term and minor.

Impact significance. Local, short- and long- term, negligible, adverse, impact.

May Lake Junction (MLJ)

Construction and Operation- related Impacts. Truck trips to the MLJ site would be short- term and would involve trucks entering and leaving during trenching and installation of an approximate 12- mile fiber cable from MLJ to Tuolumne Meadows. Trenching for the underground fiber cable will be within Tioga Road. While Tioga Road is expected to remain open during construction, one lane may be closed and traffic management will be necessary. Therefore, impacts to traffic circulation on Tioga Road are expected to be moderate during construction. Once construction was completed, there would be no long- term impacts to traffic circulation or parking demand because routine maintenance trips would be negligible.

Impact significance. Local, short- and long- term, negligible to moderate, adverse, impact.

Mt Bullion (MTB)

Construction and Operation- related Impacts. Truck trips to the MTB site would involve construction access to replace an existing grid antenna with a high- performance parabolic antenna in same mounting location. During the replacement activities, parking would be available

in the existing disturbed area on-site. No long-term change to traffic circulation or parking demand would occur as a result of the proposed action because no additional trips to the MTB site would be generated once the upgrades were completed. Maintenance and operator staff would continue to access the site as they currently do. Impacts to Morrissey Lane and Mt. Bullion Ridge Road would be short-term and negligible.

Impact significance. Local, short- and long- term, negligible, adverse, impact.

Sentinel Dome (SNT)

Construction and Operation- related Impacts. Upgrades at the SNT site would require truck trips to construct a new tower and a new equipment vault. During the replacement activities, parking would be available on-site in the developed area. There would be no long-term impacts to parking demand or traffic circulation because no additional traffic would be generated after the upgrades were complete. Maintenance and operator staff would continue to access the site as they currently do. Impacts to the Glacier Point utility road would be short-term and negligible.

Impact significance. Local, short- and long- term, negligible, adverse, impact.

Sentinel Reflector (SNTReflector)

Operation- related Impacts. The existing passive reflector at SNTReflector would continue to be used, with no additional improvements. The site is approximately one mile south of Yosemite Village and access is restricted to foot trail. Parking is available on State Highway 41 at the Four Mile trailhead, or along Four Mile Trail. There would be no long-term impacts to traffic circulation or parking demand.

Impact significance. Local, long- term, negligible, adverse, impact.

Turtleback Dome (TRT)

Construction and Operation- related Impacts. Truck trips to the TRT site would be short-term and would involve trucks entering and leaving during construction of a new tower and replacement of an existing vault. Parking would be accommodated in developed areas of the site during the upgrade activities. After construction was completed, there would be no long-term changes in traffic circulation or parking demand. Maintenance and operator staff would continue to access the site as they currently do. Impacts to Turtleback Dome Road and Highway 41 would be negligible.

Impact significance. Local, short- and long- term, negligible, adverse, impact.

Wawona (WAW)

Construction and Operation- related Impacts. The WAW site is located within the existing National Park Service maintenance facility. Truck trips to and from the site would be short-term and would occur during tree trimming and/or removal and construction of a new tower adjacent to the Campground Reservation Office. Parking during construction would be available at the maintenance facility. No long-term impacts to traffic circulation or parking demand would occur because routine maintenance trips would be negligible. Maintenance and operator staff would continue to enter and leave as they currently do. Increased traffic on Mariposa Grove Road and State Highway 41/Wawona Road would be short-term and negligible.

Impact significance. Local, short- and long- term, negligible, adverse, impact.

Wawona Point (WWP)

Construction and Operation- related Impacts. Truck trips to the WWP site would be short-term and would be required to remove an existing pole and replace it with a self- support tower and during tree trimming and/or removal. Parking would be available on- site during construction. No long- term change to traffic circulation or parking demand would occur once construction was completed. Maintenance and operator staff would continue to access the site as they currently do. Impacts to Mariposa Grove Road and State Highway 41/Wawona Road would be negligible.

Impact significance. Local, short- and long- term, negligible, adverse, impact.

Yosemite Valley (VLY)

Construction and Operation- related Impacts. Truck trips to the VLY site would involve trucks entering and leaving the site during construction of a new communications compound that would include an equipment vault and an attached antenna support pole. During construction, parking would be accommodated on- site. Traffic circulation and parking demand would not be impacted long- term because no additional trips to the VLY site would be generated once the upgrades were completed. Maintenance and operator staff would continue to access the site as they currently do. Impacts to the paved roads in Yosemite Village would be short- term and negligible.

Impact significance. Local, short- and long- term, negligible, adverse, impact.

Conclusion. Construction- related impacts would include negligible traffic impacts from construction personnel and negligible traffic impacts from transportation of equipment and materials at all sites except the HHE, HMC, and MLJ sites, which would involve trenching activities. Construction impacts to the HHE and HMC sites are expected to be minor, while impacts to the MLJ site will be moderate. Operation- related impacts would be negligible at all sites.

Impacts under Alternative 3 (Alternative Sites or Equipment)

Alternative 3 proposes essentially the same facility sites as Alternative 2, except a new tower would be constructed at Eagle Peak, and proposed antennas would be co- located on an existing tower at Yosemite Valley. Because the Alternative 3 locations at both sites are within feet of the Alternative 2 locations, impacts to traffic and circulation would be the same as for Alternative 2.

Crane Flat (CRN)

Construction and Operation- related Impacts. The proposed tower would be located approximately 160 feet west of the fire lookout, within an undeveloped area west of a row of pine trees. Construction trips and associated parking demand would involve trucks entering and leaving the CRN site. Parking during the upgrade would be available within both paved and unpaved parking areas adjacent to the existing facilities. No long- term change to traffic circulation or parking demand would occur as a result of the proposed action because no additional trips to the CRN site would be generated once the upgrades were completed. Maintenance and operator staff would continue to enter and leave as they currently do. Impacts

to Crane Flat Lookout Road and State Highway 120/Big Oak Flat Road would be short- term and negligible.

Impact significance. Local, short- and long- term, negligible, adverse, impact.

Eagle Peak Repeater (EGP)

Construction and Operation- related Impacts. Truck trips and helicopter transport to the EGP site would occur during construction. Parking during the upgrade would be accommodated within a cleared area at the terminus of the access road (Forest Route 2S91). The proposed action would not generate long- term change in parking demand, and no additional traffic would occur once construction was completed. Maintenance and operator staff would continue to access the site in the same manner they do currently. Impacts to Forest Route 2S91 would be short- term and negligible.

Impact significance. Local, short- and long- term, negligible, adverse, impact.

Hetch Hetchy Entrance (HHE)

Construction and Operation- related Impacts. The proposed tower and equipment cabinet would be constructed approximately 150 feet northeast of the Hetch Hetchy Entrance kiosk. Truck trips to and from the site would be short- term and would be required during construction of the new equipment cabinet and a new tower, during trenching and installation of a new underground power line, and during tree trimming and/or removal. Parking during construction would be available in a gravel lot at the Mather Ranger Station and NPS employee residential area. Trenching and installation of the power line under Hetch Hetchy Road would be via directional bore, and the road would remain at least partially open to traffic. No long- term changes in traffic circulation or parking demand would occur once construction was complete. There would be no changes to site access for maintenance and operator staff. The increase in traffic on Hetch Hetchy Road during construction would be short- term and minor.

Impact significance. Local, short- and long- term, negligible, adverse, impact.

Yosemite Valley (VLY)

Construction and Operation- related Impacts. Truck trips to the VLY site would involve trucks entering and leaving the site during construction. Parking would be accommodated on- site. Traffic circulation and parking demand would not be impacted long- term because no additional trips to the VLY site would be generated once the upgrades were completed. Maintenance and operator staff would continue to access the site as they currently do. Impacts to the paved roads in Yosemite Village would be short- term and negligible.

Impact significance. Local, short- and long- term, negligible, adverse, impact.

Conclusion. Overall, construction- related impacts would include negligible to moderate traffic impacts. Operation- related impacts would be negligible.

LAND USE

Affected Environment

National Park Service

Land use within and adjacent to Yosemite National Park is primarily publicly managed parkland. The gross area within the park's authorized boundary is 747,956 acres. This includes nonfederal ownership totaling 1,736 acres, of which approximately 10 acres are easements. There are 366 privately owned tracts within the park boundaries, totaling 233 acres. Local governments manage 21 tracts within the park boundaries, totaling 1,502 acres.

The National Park Service (NPS) was established in the U.S. Bureau of the Interior by the Organic Act of 1916, which gave authority to the NPS to promote and regulate the use of national parks and monuments, including Yosemite National Park. The 1970 National Park System General Authorities Act, amended in 1978, prohibits the NPS from allowing any activities that would be adverse to the values and purpose for which the NPS was established. Together, the two laws provide a strict mandate for the NPS to protect park resources and values. The Yosemite National Park General Management Plan (GMP 1980) for Yosemite National Park, adopted in 1980, is the main policy document guiding park management.

The GMP divided land within Yosemite National Park into four primary zones and six subzones based on management objectives, resource significance, and legislative constraints. The GMP zoning is broad-based and was meant to give general guidance for future implementation of specific plans. The four primary zones are natural, cultural, development, and special-use. These zones may overlap, and thus management decisions must be based on equal recognition of resources.

Natural Zone

This zone includes lands and waters that are managed to conserve natural resources and ecological processes and to provide for visitor use and enjoyment in ways that would not adversely affect natural environments. This zone includes all lands in the following four subzones: Wilderness, environmental protection, outstanding natural features, and natural environment. Areas classified as natural zones make up almost 94% of the park. Almost 95% of Yosemite National Park is designated Wilderness, which includes a small amount of land currently designated as potential Wilderness additions.

Cultural Zone

This zone is managed for the preservation, protection, and interpretation of cultural resources and their settings while providing for visitor use and enjoyment. This zone is composed of significant architectural, historic, and archeological resources that would be preserved unless such action causes unacceptable alteration of natural resources and/or processes. These areas are identified within two subzones, the historic and archeological subzones. In 1980, it was estimated that areas classified as cultural zones make up less than 3% of the park. Since that time, both cultural landscapes and traditional cultural properties have been included, as have many additions as listings or nominations to the National Register of Historic Places (NRHP). To date, only a small portion of the park has been surveyed.

Development Zone

This zone includes lands managed to provide and maintain roads and facilities serving visitors and park operations. Areas classified as development zones make up approximately 2% of the park. No subzones are within the development zone.

Special- use Zone

This zone includes lands and waters used for activities that are not appropriate in other zones. The reservoir subzone includes the Lake Eleanor and Hetch Hetchy reservoirs, which are managed by the San Francisco Water Department under the terms of the Raker Act. The special-use zone also includes private parcels in Wawona, Foresta, and Aspen Valley, as well as parcels managed by the City and County of San Francisco. Areas classified as special- use zones make up less than 0.5% of the park. No subzones are included within the special- use zone.

U.S. Forest Service

The Stanislaus National Forest Land and Resource Management Plan (Forest Plan) was approved in October 1991. The *Forest Plan Direction* (2005) includes the current Forest Plan management direction based on the 1991 Forest Plan as modified through appeals and amendments. The Stanislaus Forest is divided into 12 Management Areas based on land management goals. The *Forest Plan Direction* (2005) outlines Management Area Standards and Guidelines as well as Forestwide Standards and Guidelines.

Applicable Forestwide Standards and Guidelines are shown below:

Special Use Management – Non- Recreation (8- C)

General Direction. Review and process applications and administer authorizations for non-recreation special uses.

Standards and Guidelines.

- Consider the long- term effects of encumbering National Forest land prior to issuance of all authorizations.
- Do not grant authorizations for uses which are incompatible with the purposes for which the National Forest was created.
- Avoid authorizations which legitimize unauthorized uses of the National Forest such as trespasses involving physical improvements, livestock, and encroachments when other remedies are available to terminate or control such use.
- Authorizations for new electronic sites will be considered only when the proposed improvements are incompatible with existing uses of approved sites or the location of existing approved sites cannot fulfill the objectives for the proposed communications use.

County of Mariposa

The *Mariposa County General Plan* was adopted in 2006 and provides the long- range vision and policy direction for the County. The General Plan is implemented through adoption of ordinances and standards to manage land use within the County. Several government agencies control a large portion of the land within the County, and more than 55% is in public ownership.

The federal government owns most of the public land, and the State of California has minor land ownership. The *Mariposa County General Plan (2006)* integrates its planning with other land use agencies.

Applicable County land use policies are as follows:

- Policy 5- 1a: New development shall be in keeping with the County's rural character.
- Policy 5- 7a: Public facilities and services may be sited in all General Plan land use classifications with due consideration for land use- specific areas.

Big Oak Flat Repeater (BOFR)

The BOFR site is located in Yosemite National Park, approximately 0.5 mile north of State Highway 120 on the western side of the Park. The site is within the natural environment subzone of the natural zone, as identified in the GMP. No special- use or cultural zones occur within the vicinity of the BOFR site.

Crane Flat (CRN)

The CRN site is located in the western portion of Yosemite National Park at the Crane Flat fire lookout, and is within the natural environment subzone of the natural zone, as designated by the GMP. Existing facilities in the vicinity of the CRN site include a heliport and heliport office, meter panel, equipment vault, lookout tower, two communications towers, and a propane tank. Nearby Tuolumne Grove is considered an outstanding natural feature and is part of the natural zone. A development zone is present at Crane Flat, approximately two miles southeast of the CRN site. No special- use or cultural zones occur within the vicinity of the CRN site.

Crane Flat Development Concept. The GMP includes a Crane Flat Development Concept. Crane Flat is a minor service area that provides opportunities for camping in the summer, and Nordic skiing and other snow- play activities in the winter. The Crane Flat development zone is approximately two miles from the CRN site.

Stated goals and actions of the GMP Crane Flat Development Concept include the following:

Visitor Use Goals

- Increase opportunities for camping
- Provide adequate support facilities to accommodate existing levels of winter use
- Provide experimental day parking area for Valley visitors

Visitor Use Actions

- Increase size of campground from 164 to not more than 200 sites
- Renovate and winterize the store and provide cross- country ski rental and snow play equipment rental
- Keep gas station open all year
- Provide parking for 200 cars for winter activities; use in summer as experimental staging area for Valley day visitors

Affected Environment and Environmental Consequences

- Provide comfort station and ranger contact shelter at parking area

Park Operations Goals

- Improve utilities to bring them up to state and federal standards
- Retain essential employee housing

Park Operations Actions

- Drill well(s) to provide a reliable year- round domestic water source
- Construct sewage treatment facility
- Provide commercial electrical power through a commercial hookup from Hodgdon via South Landing Road
- Provide enclosed storage for sand and sand truck at South Landing for winter snow operations
- Retain existing ranger residence
- Retain old blister rust camp

Eagle Peak Repeater (EGP)

The EGP site is located in the Stanislaus National Forest, approximately one mile north of the town of El Portal. The site is within the General Forest Management Area of the Forest Plan, which is managed for wood, water, fish and wildlife, recreation, and range. An existing antenna tower is located on Eagle Peak in the vicinity of the EGP site. The EGP site is within the General Forest Management Area, which is managed for wood, water, fish and wildlife, recreation, and range. This includes intensive timber management while providing for wildlife values, dispersed motorized recreation, off- highway vehicle use, and mountain bicycle opportunities.

El Portal (ELP)

The ELP site is located in the El Portal Administrative Area, just inside the Yosemite National Park boundary. It is just north of State Highway 140 and the Merced River. The El Portal Administrative Area consists of schools, residential areas, commercial services, visitor services, and administrative facilities. The existing ELP site is in an area that includes maintenance, warehouse, and storage facilities and a wastewater treatment plant. The ELP site is within the development zone, as designated by the GMP. No special- use, natural, or cultural zones occur within the vicinity of the ELP site, and the site is not adjacent to Wilderness. The site is located within the Merced Wild and Scenic River corridor.

El Portal Development Concept. The GMP includes an El Portal Development Concept. Visitors coming from the west along State Highway 140 enter the park at El Portal, and it is the park's primary winter access route.

Stated goals and actions of the GMP El Portal Development Concept include the following:

Visitor Use Goals

- Provide orientation and information/reservation system for overnight accommodations and campgrounds

- Provide a variety of commercial services for visitors and residents
- Provide experimental remote staging area for Valley day visitors

Visitor Use Actions

- Provide an information/reservation station and develop a community museum at the Bagby Station
- Provide a commercial facilities area for services, including automobile service, restaurants, grocery store, clothing and gift sales, bank, beauty, and barber shop
- Provide up to a 150- car day parking area and bus service into the Valley
- Reserve space for possible expansion of staging area

Park Operations Goals

- Create a model community for parkwide management functions, services, and housing in terms of livability, efficient land use, minimal impacts on the landscape, residential amenities, efficient use of energy, aesthetics, recycling, water conservation, and significant cultural resources
- Engage in cooperative planning with Parkline businesses and Mariposa County
- Avoid floodplain and geologic hazards

Park Operations Actions

- Implement a comprehensive plan for El Portal with provisions for the following facilities and services:
 - NPS administrative building
 - Yosemite Park and Curry Company (YP&CC) administrative building
 - Employee parking
 - NPS and YP&CC maintenance, warehousing, laundry, and bus service area
 - NPS and YP&CC open air storage
 - NPS permanent housing for a maximum of 70 employees
 - NPS seasonal housing for a maximum of 80 employees
 - YP&CC permanent housing for a maximum of 390 employees
 - YP&CC seasonal housing for a maximum of 60 employees
 - Permanent and seasonal housing for other employees associated with the management and operation of El Portal (about 80 employees)
 - Residential amenities, including community recreation and services, open space and landscaping, utilities, meeting hall, fire station, post office, and law enforcement facilities
- Expand elementary school as needed
- Convert domestic water system supply to an underground source
- Provide adequate water storage
- Complete final phase of wastewater treatment system

- Provide long- term leases for El Portal homeowners

Heness Ridge (HEN)

The HEN site is located in the southwest portion of Yosemite National Park, approximately 0.3 mile south of Henness Ridge Road and the Yosemite West residential area. The HEN site is within the natural environment subzone of the natural zone, as designated by the GMP, No special- use or cultural zones occur in the vicinity of Henness Ridge. Wilderness subzone occurs to the northeast across the Wawona Road. Existing facilities in the vicinity of the HEN site include an AT&T communications facility, an NPS communications vault, and two communications towers. A small development zone occurs at Chinquapin–Henness Ridge near the junction of Glacier Point Road and Wawona Road, approximately one mile northeast of the HEN site.

Glacier Point Road Development Concept, Chinquapin. The GMP includes a Glacier Point Development Concept that encompasses the Chinquapin–Henness Ridge area (NPS 1980b). Chinquapin- Henness Ridge is a minor service area that provides parking and telephone services for visitors traveling between the Yosemite Valley, Wawona, and Glacier Point.

Stated goals and actions of the Chinquapin- Henness Ridge area of the Glacier Point Road Development Concept include the following:

Visitor- Use Goals

- Remove intensive development

Visitor- Use Actions

- Remove gas station and comfort station
- Redesign intersection and restore site

Park Operations Goals

- Improve efficiency of road maintenance during winter months
- Remove nonessential housing

Park Operations Actions

- Construct a covered sand storage structure at Chinquapin- Henness Ridge
- Remove residence

Hetch Hetchy Entrance (HHE)

The HHE site is located at the Hetch Hetchy Park Entrance along Hetch Hetchy Road within Yosemite National Park. The site is within the natural environment subzone of the natural zone, as designated in the GMP. No special- use or cultural zones occur within the vicinity of the HHE site. The site is not adjacent to Wilderness. Existing facilities in the vicinity of the HHE site include the Hetch Hetchy Entrance Station, the Mather Ranger Station, a garage and gravel parking lot, and a power pole.

Hodgdon Meadow Maintenance Complex (HMC)

The HMC site is located at the maintenance complex along Hodgdon Road in Yosemite National Park. It is just north of Hodgdon Meadow and east of the Hodgdon Campground. The site is within the development zone as identified in the GMP. The HMC site begins at the maintenance complex, and approximately 4,500 feet of trenched fiber cable will run from the site along Tuolumne Grove Road to the Big Oak Flat entrance station. Existing facilities in the vicinity of the HMC site include a maintenance building and parking area, Hodgdon Meadow Campground entrance station, and the Big Oak Flat entrance station and guard facility.

Hodgdon Meadow Development Concept. The GMP includes a Hodgdon Meadow Development Concept. Hodgdon Meadow is the site of the Big Oak Flat Entrance Station and Mather district headquarters. This northwest entrance to the park is primarily an administrative site, but camping opportunities in a low- elevation environment are also available.

Stated goals and actions of the GMP El Portal Development Concept include the following:

Visitor Use Goals

- Provide an information/reservation system for visitors entering the park along Big Oak Flat Road
- Increase camping opportunities in the Big Oak Flat entrance

Visitor Use Actions

- Expand existing information station
- Retain entrance station
- Increase the Hodgdon Meadow campground from 110 to not more than 200 sites

Park Operations Goals

- Provide a central administrative and maintenance area for the Mather District
- Provide employee housing only when housing is not available outside the park
- Provide adequate wastewater treatment for the entire developed area
- Provide adequate domestic water supply

Park Operations Actions

- Construct a maximum of 10 apartment units and 20 seasonal housing units
- Provide recreational opportunities for employees in housing area
- Construct district office building to accommodate district law enforcement, resource management, and interpretive functions
- Connect all facilities at entrance station to the existing wastewater treatment plant; expand plant and provide for year- round use
- Retain utility building
- Convert existing surface water system to an underground source
- Retain existing residences

May Lake Junction (MLJ)

The MLJ site is located in Yosemite National Park approximately 125 feet north of Tioga Road. The site is within the natural environment subzone of the natural zone identified in the GMP, and borders on the Wilderness subzone. No special- use or cultural zones occur within the vicinity of the MLJ site. The site is new, and there are no existing facilities in the vicinity.

Mt Bullion (MTB)

The MTB site is located on the peak of Mt. Bullion, approximately five miles northwest of the town of Mariposa in unincorporated Mariposa County. The site is on lands administered by the State of California, and is within the Natural Resource land use classification in the *Mariposa County General Plan (2006)*. The Natural Resource land use classification defines lands for open space, recreation, ecosystem conservation, watershed protection, environmental protection, conservation of natural resources, and protection of public health and safety. The base zoning districts that are consistent with the purpose of the Natural Resource land use classification include Agriculture Exclusive, General Forest, Mountain General, Public Domain, and Public Sites. Existing facilities in the vicinity of the site include a self- support tower and an equipment vault.

Sentinel Dome (SNT)

The SNT site is located approximately two miles southeast of Yosemite Village in Yosemite National Park. The site is within the natural environment subzone of the natural zone, as designated in the GMP. The Glacier Point development zone is approximately 0.3 mile east of the SNT site. No special- use or cultural zones occur within the vicinity of the SNT site. Existing facilities in the vicinity of the SNT site include two wood poles and an equipment shelter.

Glacier Point Road Development Concept, Glacier Point. The GMP includes a Glacier Point Road Development Concept. The road from Chinquapin to Glacier Point parallels the Yosemite Valley rim. Visitors to this part of the park enjoy opportunities for scenic viewing and downhill skiing. This road also provides access to most of the backcountry in the southern half of the park, making it a popular entry point of hikers, backpackers, campers, horseback riders, and cross-country skiers. Facilities at Glacier Point include a ranger residence, parking, shops, and trailheads.

Stated goals and actions of the Glacier Point area of the Glacier Point Road Development Concept include the following:

Visitor Use Goals

- Maximize the drama of the visual experience at Glacier Point
- Provide interpretive programs
- Remove intrusive facilities

Visitor Use Actions

- Construct a gentle, winding loop trail from the parking area through the trees to the Glacier Point Overlook
- Remove unused paved roads and trails

- Provide 150- seat interpretive program area suitable for daytime and nighttime interpretive programs, including storage for astronomy equipment
- Continue bus service from Yosemite Valley to Glacier Point
- Relocate comfort station to parking area
- Remove unnecessary and unused paved trails
- Remove existing gift sales and fast- food service facilities and provide minimum food service and merchandise directly related to the interpretive experience at Glacier Point

Park Operations Goals

- Provide adequate housing for essential employees
- Provide underground powerline from Union Point to Glacier Point

Park Operations Actions

- Retain ranger residences
- Replace four tent cabins and shower house with four- unit dormitory
- Construct underground powerline from Union Point to Glacier Point along road shoulder
- Improve water and sewer system

Sentinel Reflector (SNTReflector)

The SNTReflector site is located approximately one mile south of Yosemite Village in Yosemite National Park. It is approximately 0.5 mile northwest of the SNT site. The site is within the Wilderness subzone of the natural zone, as designated in the GMP. Outstanding natural features are to the north of the site and are part of the natural zone. No special- use or cultural zones occur within the vicinity of the SNTReflector site. A billboard- type passive reflector exists at the site. No improvements are proposed for this site. The preferred project includes use of the existing reflector.

Turtleback Dome (TRT)

The TRT site is located in Yosemite National Park, approximately 0.25 mile southeast of State Highway 41/Wawona Road near the entrance to Yosemite Valley. The site is within the natural environment subzone of the natural zone, as designated in the GMP. The site is adjacent to the Wilderness subzone, and the outstanding natural features subzone is nearby to the east. No special- use or cultural zones occur within the vicinity of the TRT site. Existing facilities in the vicinity of the TRT site include an AT&T communications facility, an NPS vault, and a communications pole.

Wawona (WAW)

The WAW site is located at an existing NPS maintenance facility inside Yosemite National Park. The site is within the development zone, as designated in the GMP, and is surrounded by the natural environment subzone of the natural zone. No special- use or cultural zones occur within the vicinity of the WAW site, and the site is not adjacent to Wilderness. The WAW site is within the Merced Wild and Scenic River Corridor. Existing facilities within the maintenance complex in

the vicinity of the WAW site include a prescribed fire trailer, a power pole and transformer, and a generator building.

Wawona Development Concept. Wawona has a historic mountain resort character, and the historic hotel complex provides a unique experience. Wawona is convenient to Glacier Point, Badger Pass, and Mariposa Grove, and it is a major access point to the southern portion of Yosemite's backcountry.

Stated goals and actions of the Wawona Development Concept include the following:

Visitor Use Goals

- Interpret early non- Indian history of Yosemite
- Provide a year- round traditional overnight experience at the Wawona Hotel
- Create a historically consistent visual quality within the historic zone
- Provide year- round camping opportunities
- Provide picnicking opportunities
- Use as a staging area for winter skiing trips

Visitor Use Actions

- Retain the Pioneer History Center
- Redesign the parking area for the Pioneer History Center so that users are not required to cross traffic
- Provide 145 overnight accommodation units by utilizing historic structures and an new structure compatible with the historic district
- Retain Thomas Hill Studio
- Retain golf course, YP&CC stables, tennis court, and swimming pool
- Remove parking from in front of the hotel complex and construct a 145- car area north of the complex
- Redesign the store, service station, post office, and gift shop and design a new comfort station so that all facilities are compatible with the historic scene
- Rehabilitate the existing 100- site campground and 30- person group camp for year- round use
- Relocate campground amphitheater
- Construct 200- site campground in Section 35
- Provide additional picnicking and parking areas as needed
- Provide winter bus service to Badger Pass and year- round bus service to Yosemite Valley
- Provide 50 day use parking spaces adjacent to Wawona Hotel complex
- Retain 25- horse campground
- Provide trailhead parking (50 spaces) at Chilnualna Falls trailhead

Park Operations Goals

- Provide for district headquarters and maintenance operation
- Provide housing for NPS and concession employees when housing is not available outside the park boundary
- Upgrade utilities to meet NPS and concession needs and state and federal standards
- Improve the water quality of the Merced River by eliminating sources of water pollution

Park Operations Actions

- Construct office buildings for NPS district law enforcement, resource management, and interpretive functions
- Construct a new district maintenance facility, including space for storage of snow removal equipment and sand
- Provide facilities for employee housing and recreational amenities to accommodate a maximum of 60 permanent and 110 seasonal NPS employees, a maximum of 40 permanent and 170 seasonal YP&CC employees, and 20 permanent and 30 seasonal other employees, only if housing is unavailable outside the park boundary
- Construct a new water treatment, storage, and distribution system
- Construct a new wastewater treatment plant with provisions for year- round disposal
- Connect new and existing visitor and employee facilities and Section 35 structures to the new wastewater treatment plant
- Retain elementary school

Wawona Point (WWP)

The WWP site is located in the southern portion of Yosemite National Park, adjacent to the Wawona Point Overlook, north of Mariposa Grove and approximately two miles from the south entrance to the park. The site is within the outstanding natural features subzone of the natural zone, as designated in the *General Management Plan* (1980), and is surrounded by the natural environment subzone. The historical subzone of the cultural zone is located nearby, and the Wilderness subzone is in the vicinity to the north. No special- use zones occur within the vicinity of the WWP site. Existing facilities in the vicinity of the WWP site include a generator and transformer, equipment vault, propane tanks, an NPS pole, and a pole- mounted photovoltaic panel.

Yosemite Valley (VLY)

The VLY site is located in Yosemite National Park, within a developed park maintenance facility area in Yosemite Village. The site is within the developed zone, as identified in the *General Management Plan* (1980). Existing facilities in the vicinity of the VLY site include communications sites operated by NPS, AT&T, and Golden State Cellular.

Yosemite Village Development Concept. Yosemite Valley is the most heavily used recreation area in Yosemite National Park. The Valley contains major development areas, such as Yosemite Village, Yosemite Lodge, The Ahwahnee, Curry Village, Housekeeping Camp, and several

Affected Environment and Environmental Consequences

campgrounds. In addition to the recreation areas and visitor facilities located in the Valley, many park and concessionaire administrative and maintenance facilities are located there.

Stated goals and actions of the Yosemite Village Development Concept include the following:

Visitor Use Goals

- Interpret the natural and cultural environments
- Provide minimal food, postal, and banking services
- Redesign visitor facilities to blend with natural environment
- Phase out other facilities and activities that are not directly related to resource enjoyment or that exceed visitor demand

Visitor Use Actions

- Redesign village mall area to remove parking spaces and include interpretive spaces, pedestrian circulation areas, shuttle bus stops, and public restrooms
- Redesign the interior of the visitor center
- Immediately remove unneeded parking behind the Village Store. Retain a maximum of 50 spaces for service and employee needs
- Adaptively use the NPS headquarters building, the old museum, post office, and bank building to accommodate a natural history museum, a museum of Man in Yosemite, Valley district offices, minimal banking, personal services, and post office services
- Remove Degnans, which includes a restaurant, fast- food service, delicatessen, and gift sales
- Adaptively use Pohono Gift Shop
- Remove service station
- Remove car rental garage
- Redesign Village Store for grocery sales, YP&CC offices, and food service
- Retain Best's Studio

Park Operations Goals

- Remove nonessential functions and facilities from the Valley
- Retain functions and facilities that are essential to the operation of the district: Maintenance for Valley facilities, NPS stables, emergency medical care, and housing for essential employees
- Consolidate essential functions of NPS and YP&CC
- Remove nonessential housing

Park Operations Actions

- Relocate NPS and YP&CC headquarters to El Portal
- Relocate administrative offices of the Yosemite Institute outside Valley
- Relocate Yosemite Natural History Association office outside the Valley

- Remove heavy maintenance and warehousing facilities; redesign NPS, YP&CC and Pacific Telephone Company essential maintenance functions, emergency visitor protection facilities, detention facility, and magistrate's office
- Remove the concessioner headquarters building
- Retain the hospital/dental building as an emergency medical center
- Retain the NPS stables
- Relocate nonessential NPS and YP&CC personnel, plus employees of the school, Pacific Telephone Company, Wells Fargo Bank, Yosemite Institute, post office, and Yosemite Church outside the Valley
- Remove the Lower Tecoya residential area, the Ahwahnee Row houses, and Camp 6; also remove houses in the southern portion of the NPS housing area if not needed
- Retain the Upper Tecoya residential area (34 homes) and the northern half of the NPS residential area (44 homes) for essential permanent NPS and YP&CC employees
- Convert school building to residential use
- Provide for community recreation needs
- Remove facilities and restore the Church Bowl area to a natural condition

Environmental Consequences

Significant land use and planning impacts would occur if the action would have measureable effects on physical, natural, or cultural resources as they relate to the following:

- Land use (e.g., occupancy, income, values, ownership, type of use)
- Agency or tribal use plans or policies
- Urban quality, gateway communities
- Long- term management of resources or land/resource productivity

Intensity Level Definitions

Impacts to land use were evaluated using the process described in the introduction to this chapter. Impact threshold definitions for land use are as follows:

Negligible: Land use would not be affected, or effects would not be measurable. Any effects to any of the four primary zones would be slight and short- term.

Minor: Effects to land use, for example a change from undeveloped forest habitat to a park facility, would be detectable. If mitigation were needed to offset adverse effects, it would be relatively simple to implement.

Moderate: Effects to land use would be readily apparent. Mitigation would probably be necessary to offset adverse effects.

Major: Effects to land use would be readily apparent and would substantially change any of the four primary zones in Yosemite National Park. Extensive mitigation would

probably be necessary to offset adverse effects, and its success could not be guaranteed.

Impairment: Impairment is not applicable to this resource topic.

Impacts under Alternative 1 (No Action Alternative)

Construction and Operation- related Impacts. Under the No Action Alternative, the Yosemite CDN would continue to operate as it currently does. The BOFR, HHE, HMC, MLJ, and WAW sites would not be developed and the park would continue to provide telephone, network, and Internet access using the current mix of technologies at the existing sites. There would continue to be a need to create a single, parkwide telecommunications backbone to support high- speed data transmission throughout most areas of the park. No impacts to land use would occur.

Impact significance. Site- specific, long- term, negligible, adverse, impact.

Conclusion. No construction- related impacts would occur. Operation- related impacts would remain unchanged.

Impacts under Alternative 2 (Preferred)

Alternative 2 proposes the improvement of existing facility sites at nine locations. The existing facility at Sentinel Reflector would be used, but would not be improved. These sites would be located within developed areas and impacts to land use (i.e., dust, noise, visual impacts) would be short- term and negligible. Alternative 2 also includes development of new facility sites at five locations: BOFR, HHE, HMC, MLJ, and WAW. Land use impacts to the new sites would be considered long- term because new equipment would be permanently installed on previously undisturbed sites. In addition, trenching at the HHE, HMC, and MLJ sites would involve short- term impacts (i.e., dust, noise, visual impacts) because the area would be returned to preconstruction conditions after completion. Development at each of the project sites would be minimal and impacts would be negligible.

Big Oak Flat Repeater (BOFR)

Construction- related Impacts on Land Use. During the construction phase, there would be a local, short- term, negligible, adverse, impact on land use. Construction of this new site would involve minimal development of a tower, which is consistent with the stated goals of the natural environment subzone of the natural zone.

Impact Significance. Local, short- term, negligible, adverse, impact.

Operation- related Impacts on Land Use. Construction of the new site would alter the existing character of the immediate vicinity, but impacts would be negligible. Therefore, the activities would not conflict with the management objectives outlined in the GMP, or any other applicable land use plans, policies, or regulations. Impacts to land use would be long- term because new permanent equipment would be installed.

Impact Significance. Local, long- term, negligible, adverse, impact.

Crane Flat (CRN)

Construction- related Impacts on Land Use. The CRN site is an existing communications facility, and construction activities would occur within the site's developed area. During the construction phase, there would be a local, short- term, negligible, adverse impact on land use. Construction of this new site would involve minimal development of a tower, which is consistent with the stated goals of the natural environment subzone of the natural zone.

Impact Significance. Local, short- term, negligible, adverse, impact.

Operation- related Impacts on Land Use. No new land uses would be introduced, and no new access roads or other structures would be built. Replacement of two wood poles with a self-support tower and replacement of an equipment vault would be consistent with existing uses and would not substantially impact the existing character of the vicinity. Therefore, the activities would not conflict with the management objectives outlined in the GMP for the natural environment subzone, or any other applicable land use plans, policies, or regulations.

Impact Significance. Local, long- term, negligible, adverse, impact.

Eagle Peak Repeater (EGP)

Construction- related Impacts on Land Use. The EGP facility site is an existing communications facility within the General Forest Management Area of Stanislaus National Forest, which is managed for timber, water, fish and wildlife, recreation, and range. During the construction phase, there would be a local, short- term, negligible, adverse impact on land use. Construction of this new site would be consistent with applicable Forestwide and Management Area Standards and Guidelines.

Impact Significance. Local, short- term, negligible, adverse, impact.

Operation- related Impacts on Land Use. Installation and operation of the co- located facility would be consistent with the applicable Forestwide and Management Area Standards and Guidelines for land use and would not impact the existing character of the vicinity. No new land uses would be introduced, and no new trails or other structures would be built.

Impact Significance. Local, long- term, negligible, adverse, impact.

El Portal (ELP)

Construction - related Impacts on Land Use. The ELP facility site is an existing communications site, and improvements would occur within the site's developed area. Because construction activities would be located entirely within the development zone and would be consistent with the development zone uses, adverse impacts to land use would be considered negligible.

Impact Significance. Local, short- term, negligible, adverse, impact.

Operation- related Impacts on Land Use. The ELP site is an existing communications site, and improvements would occur within the site's developed area. Upgrade of an existing tower and connection of the main generator to the equipment vault would be consistent with existing uses and would not substantially impact the existing character of the vicinity. No new land uses would be introduced and no new trails or other structures would be built. Therefore, the activities would not conflict with the management objectives outlined in the GMP, or any other applicable land use plans, policies, or regulations. Because the facility would be located entirely within the development zone and would be consistent with the development zone uses, adverse impacts to land use would be considered negligible.

Impact Significance. Local, long- term, negligible, adverse, impact.

Heness Ridge (HEN)

Construction - related Impacts on Land Use. The HEN site is an existing communications facility, and construction activities would occur within the site's developed area. Construction activities would not conflict with the management objectives outlined in the *Yosemite National Park General Management Plan* (1980), or any other applicable land use plans, policies, or regulations.

Impact Significance. Local, short- term, negligible, adverse, impact.

Operation- related Impacts on Land Use. No new land uses would be introduced, and no new trails or other structures would be built. Replacement of a guyed tower with a self- support tower would be consistent with existing uses and would not substantially impact the existing character of the vicinity. Therefore, the activities would not conflict with the management objectives outlined in the *Yosemite National Park General Management Plan* (1980), or any other applicable land use plans, policies, or regulations.

Impact Significance. Local, long- term, negligible, adverse, impact

Hetch Hetchy Entrance (HHE)

Construction- related Impacts on Land Use. The new facilities would be constructed within an undeveloped area, near a NPS employee residential area. A new tower and equipment vault would be constructed, and a new underground powerline would extend approximately 1,200 feet to connect with an existing line. Minimal tree trimming and/or removal would be necessary. While construction would constitute a new land use, it would not substantially impact the existing character of the vicinity. Activities would not conflict with the management objectives outlined in the *General Management Plan* (1980) for the natural environment subzone, or any other applicable land use plans, policies, or regulations. Trenching for the powerline would be short-term and the land would be returned to preconstruction conditions after completion.

Impact Significance. Local, short- term, negligible, adverse, impact.

Operation- related Impacts on Land Use. Operation of the HHE facility would be consistent with the stated goals for the natural environment subzone. Activities would not conflict with the management objectives outlined in the *General Management Plan* (1980), or any other applicable land use plans, policies, or regulations. Impacts to land use would be long- term because new permanent equipment would be installed.

Impact Significance. Local, long- term, negligible, adverse, impact

Hodgdon Meadow Maintenance Complex (HMC)

Construction- related Impacts on Land Use. Construction at the HMC site would involve trenching and installation of an approximate 4,500- foot fiber cable almost entirely parallel to the road from the existing maintenance complex to the Big Oak Flat entrance station and installation of an antenna on an existing building. Minimal tree removal would be necessary. While construction would constitute a new land use, it would not substantially impact the existing character of the vicinity. Activities would not conflict with the management objectives outlined in the *Yosemite National Park General Management Plan (1980)*, or any other applicable land use plans, policies, or regulations. Trenching for the fiber cable would be short- term and the land would be returned to preconstruction conditions after completion.

Impact Significance. Local, short- term, negligible, adverse, impact.

Operation- related Impacts on Land Use. Operation of the HMC facility would not conflict with the management objectives outlined in the *Yosemite National Park General Management Plan (1980)*, or any other applicable land use plans, policies, or regulations.

Impact Significance. Local, long- term, negligible, adverse, impact

May Lake Junction (MLJ)

Construction- related Impacts on Land Use. The MLJ site is currently undeveloped. Construction activities would include construction of a self- support tower, a radio and equipment cabinet, and a photovoltaic panel, as well as trenching and installation of approximately 12 miles of fiber cable. The fiber cable would be constructed within Tioga Road. While construction would constitute a new land use, it would not substantially impact the existing character of the vicinity. The activities would be consistent with the stated goals for the natural environment subzone. Therefore, the activities would not conflict with the management objectives outlined in the *General Management Plan (1980)*, or any other applicable land use plans, policies, or regulations. Impacts to land use would be long- term because new permanent equipment would be installed.

Impact Significance. Local, short- tem, negligible, adverse, impact

Operation- related Impacts on Land Use. Operation of the MLJ facility would be consistent with the stated goals for the natural environment subzone, and would not conflict with the management objectives outlined in the *General Management Plan (1980)*, or any other applicable land use plans, policies, or regulations.

Impact Significance. Local, long- tem, negligible, adverse, impact

Mt Bullion (MTB)

Construction- related Impacts on Land Use. The MTB site is an existing communications facility within lands administered by the State of California. Improvement activities would involve replacement of an existing antenna with a high- performance parabolic antenna in same mounting location. The activities would be consistent with existing uses and would not substantially alter the existing character of the vicinity. Therefore, the improvements would be consistent with the

Affected Environment and Environmental Consequences

Mariposa County General Plan (2006) policies and guidelines for the Natural Resource land use classification. Because no ground disturbance or tree trimming is proposed, there would be no impacts to land use.

Impact Significance. Local, short- term, negligible, adverse, impact.

Operation- related Impacts on Land Use. Operation of the MTB facility would be consistent with existing uses and would not substantially alter the existing character of the vicinity. Therefore, the improvements would be consistent with the *Mariposa County General Plan (2006)* policies and guidelines for the Natural Resource land use classification.

Impact Significance. Local, long- term, negligible, adverse, impact.

Sentinel Dome (SNT)

Construction- related Impacts on Land Use. The SNT site is an existing communications facility, and activities would occur within the site's developed area. No new land uses would be introduced, and no new trails would be built. Construction of a new tower and equipment vault would be consistent with existing uses and would not substantially impact the existing character of the vicinity. Therefore, the activities would not conflict with the management objectives outlined in the *Yosemite National Park General Management Plan (1980)* for the natural environment subzone, or any other applicable land use plans, policies, or regulations.

Impact Significance. Local, short- term, negligible, adverse, impact.

Construction- related Impacts on Land Use. Operation of the new tower and equipment vault would be consistent with existing uses and would not substantially impact the existing character of the vicinity. Therefore, the activities would not conflict with the management objectives outlined in the *Yosemite National Park General Management Plan (1980)* for the natural environment subzone, or any other applicable land use plans, policies, or regulations.

Impact Significance. Local, short- term, negligible, adverse, impact

Sentinel Reflector (SNTReflector)

Operation- related Impacts on Land Use. The SNTReflector site is within a Wilderness area; however, a passive microwave reflector exists on the site. The action proposes use of the existing reflector and no improvements to the site. No new land uses would be introduced, and no new trails would be built. Because no ground disturbance is proposed, there would be no impacts to land use.

Impact Significance. Local, long- tem, negligible, adverse, impact.

Turtleback Dome (TRT)

Construction- related Impacts on Land Use. The TNT site is an existing communications facility, and activities would occur within the site's developed area. No new land uses would be introduced. Replacement of an existing tower an existing equipment vault would be consistent with existing uses and would not substantially impact the existing character of the vicinity. Therefore, the activities would not conflict with the management objectives outlined in the *General Management Plan (1980)*, or any other applicable land use plans, policies, or regulations.

Impact Significance. Local, short- term, negligible, adverse, impact.

Construction- related Impacts on Land Use. Operation of the proposed facility would be consistent with existing uses and would not substantially impact the existing character of the vicinity. Therefore, the activities would not conflict with the management objectives outlined in the *Yosemite National Park General Management Plan (1980)*, or any other applicable land use plans, policies, or regulations.

Impact Significance. Local, long- term, negligible, adverse, impact.

Wawona (WAW)

Construction- related Impacts on Land Use. The WAW site is a new site at an existing NPS maintenance facility, and construction activities would occur within the developed area. No new land uses would be introduced, and no new trails or other structures would be built. Construction of a new tower and radio cabinet would be consistent with existing uses and would not substantially impact the existing character of the vicinity. Therefore, the activities would not conflict with the management objectives outlined in the *General Management Plan (1980)*, or any other applicable land use plans, policies, or regulations. Because activities would be located entirely within the development zone and would be consistent with the development zone uses, adverse impacts to land use would be considered negligible.

Impact Significance. Local, short- term, negligible, adverse.

Operation- related Impacts on Land Use. Operation of a new tower and radio cabinet would be consistent with existing uses and would not substantially impact the existing character of the vicinity. Therefore, the activities would not conflict with the management objectives outlined in the *General Management Plan (1980)*, or any other applicable land use plans, policies, or regulations. Because activities would be located entirely within the development zone and would be consistent with the development zone uses, adverse impacts to land use would be considered negligible.

Impact Significance. Local, long- term, negligible, adverse

Wawona Point (WWP)

Construction- related Impacts on Land Use. The WWP site is within an existing communications facility and activities would occur within a developed area. No new land uses would be introduced, and no new trails or other structures would be built. The removal of an existing pole and replacement with a self- support tower would be consistent with existing uses and would not substantially impact the existing character of the vicinity. Therefore, the activities would not conflict with the management objectives outlined in the *General Management Plan (1980)*, or any other applicable land use plans, policies, or regulations. Impacts to land use would be short- term and negligible.

Impact Significance. Local, short- term, negligible, adverse.

Operation- related Impacts on Land Use. Operation of the proposed facility would be consistent with existing uses and would not substantially impact the existing character of the vicinity. Therefore, the activities would not conflict with the management objectives outlined in

the *General Management Plan* (1980), or any other applicable land use plans, policies, or regulations. Impacts to land use would be short- term and negligible.

Impact Significance. Local, long- term, negligible, adverse.

Yosemite Valley (YVL)

Construction- related Impacts on Land Use. The VLY site is within an existing NPS facility in Yosemite Village, and activities would occur within a developed area. No new land uses would be introduced. Construction of a new microwave antenna would be consistent with existing uses and would not substantially impact the existing character of the vicinity. Therefore, the activities would not conflict with the management objectives outlined in the *General Management Plan* (1980), or any other applicable land use plans, policies, or regulations. Because activities would be located entirely within the development zone and would be consistent with the development zone uses, adverse impacts to land use would be considered negligible.

Impact Significance. Local, short- term, negligible, adverse.

Operation- related Impacts on Land Use. Operation of the proposed facility would be consistent with existing uses and would not substantially impact the existing character of the vicinity. Therefore, the activities would not conflict with the management objectives outlined in the *General Management Plan* (1980), or any other applicable land use plans, policies, or regulations. Because activities would be located entirely within the development zone and would be consistent with the development zone uses, adverse impacts to land use would be considered negligible.

Impact Significance. Local, long- term, negligible, adverse.

Conclusion. Construction- related effects to land use at the existing sites would be short- term and negligible. Impacts at the new facility sites would be considered long- term because a new land use would be introduced in these locations. Development at all of the facility sites would be minimal and impacts would be negligible.

Impacts under Alternative 3 (Alternative Sites or Equipment)

Alternative 3 proposes essentially the same facility sites as the preferred alternative, except alternative locations are proposed at the CRN, EGP, and HHE sites. While the Alternative 3 locations at CRN and HHE are in undeveloped areas, they are sufficiently close to developed areas within the natural environment subzone that impacts to land use would be negligible. Land use impacts at the CRN, EGP, HHE, and VLY facility sites are discussed below.

Crane Flat (CRN)

Construction- related Impacts on Land Use. The proposed tower would be located approximately 160 feet west of the fire lookout, within an undeveloped area west of a row of pine trees. While construction would constitute a new land use, it would not substantially impact the existing character of the vicinity. The activities would be consistent with the stated goals for the natural environment subzone. Therefore, the activities would not conflict with the management objectives outlined in the *General Management Plan* (1980), or any other applicable land use plans, policies, or regulations.

Impact Significance. Local, short- term, negligible, adverse, impact

Operation- related Impacts on Land Use. Operation of the facility would be consistent with the stated goals for the natural environment subzone. Therefore, the activities would not conflict with the management objectives outlined in the *General Management Plan* (1980), or any other applicable land use plans, policies, or regulations. Impacts to land use would be long- term because new permanent equipment would be installed.

Impact Significance. Local, long- term, negligible, adverse, impact

Eagle Peak Repeater (EGP)

Construction- related Impacts on Land Use. The EGP facility site is an existing communications facility within the General Forest Management Area of Stanislaus National Forest, which is managed for timber, water, fish and wildlife, recreation, and range. During the construction phase, there would be a local, short- term, negligible, adverse impact on land use. Construction of this new site would be consistent with applicable Forestwide and Management Area Standards and Guidelines.

Impact Significance. Local, short- term, negligible, adverse, impact.

Operation- related Impacts on Land Use. Installation and operation of the facility would be consistent with the applicable Forestwide and Management Area Standards and Guidelines for land use and would not impact the existing character of the vicinity. No new land uses would be introduced, and no new trails or other structures would be built.

Impact Significance. Local, long- term, negligible, adverse, impact.

Hetch Hetchy Entrance (HHE)

Construction- related Impacts on Land Use. The proposed tower and equipment cabinet would be constructed approximately 150 feet northeast of the Hetch Hetchy entrance kiosk, north of Hetch Hetchy Road. The site is undeveloped and consists of an open area within a dense forest of pine trees. While construction would constitute a new land use, it would not substantially impact the existing character of the vicinity. The activities would be consistent with the stated goals for the Natural Environment subzone. Activities would not conflict with the management objectives outlined in the *General Management Plan* (1980), or any other applicable land use plans, policies, or regulations.

Impact Significance. Local, short- term, negligible, adverse, impact.

Operation- related Impacts on Land Use. Operation of the HHE facility would be consistent with the stated goals for the natural environment subzone. Activities would not conflict with the management objectives outlined in the *General Management Plan* (1980), or any other applicable land use plans, policies, or regulations. Impacts to land use would be long- term because new permanent equipment would be installed.

Impact Significance. Local, long- term, negligible, adverse, impact

Yosemite Valley (VLY)

Construction and Operation- related Impacts. Under this alternative, proposed antennas would be co- located on an existing AT&T tower, within a developed area. Construction of a new microwave antenna would be consistent with existing uses and would not substantially impact the existing character of the vicinity. Therefore, the activities would not conflict with the management objectives outlined in the *General Management Plan* (1980), or any other applicable land use plans, policies, or regulations. Because activities would be located entirely within the development zone and would be consistent with the development zone uses, adverse impacts to land use would be considered negligible.

Impact Significance. Local, short- and long- term, negligible, adverse, impact.

Conclusion. Construction- related effects to land use at the existing sites would be short- term and negligible. Impacts at the new facility sites would be considered long- term because a new land use would be introduced in these locations. Development at all of the project sites would be minimal and impacts would be negligible.

CUMULATIVE IMPACTS

Council on Environmental Quality (CEQ) regulations (42 USC 4321 et seq.) require an assessment of the cumulative impacts of proposed federal actions in NEPA documents. Cumulative impacts are defined 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” (40 CFR 1508.7).

In this EA, cumulative impacts are assessed for each alternative. Cumulative impacts were assessed by combining the impacts of each alternative with the impacts of other past, present, and reasonably foreseeable future actions. The geographic scope for this analysis includes Yosemite National Park and the immediate area and communities near the alternative sites. The following actions are considered reasonably foreseeable future, present, and past actions:

Past Actions

- Cascades Diversion Dam Removal
- Cook’s Meadow Ecological Restoration
- Curry Village Employee Housing
- El Portal Road Improvement Project – Park Boundary to Big Oak Flat Road
- El Portal Road Improvements Project (Narrows to Pohono Bridge)
- Happy Isles Dam Removal
- Happy Isles Fen Habitat Restoration Project
- Happy Isles Gauging Station Bridge Removal
- Hodgdon Meadow Housing Area Trailer Replacement Project
- Lower Yosemite Fall Project
- Merced River Ecological Restoration at Eagle Creek Project
- Invasive Plant Management Plan

- Tunnel View Overlook Rehabilitation
- Yosemite Valley Shuttle Bus Procurement

Present Actions

- Aquatic Management Plan
- Comprehensive Transportation Plan
- Crane Flat Utilities
- Curry Village and East Yosemite Valley Campgrounds Improvements
- Glacier Point Road Rehabilitation
- Hetch Hetchy Communication System Upgrade Project
- Indian Cultural Center
- Rehabilitation of the Yosemite Valley Loop Road
- Tuolumne Meadows Concept Plan
- Utilities Master Plan/East Yosemite Valley Utilities Improvement Plan
- Tenaya Lake Area Plan
- Scenic Vista Programmatic Management Plan

Reasonably Foreseeable Future Actions

- El Capitan Meadow Restoration Project
- El Portal Concept Plan
- New Merced Wild and Scenic River Comprehensive Management Plan
- Visitor Use and Floodplain Restoration in East Yosemite Valley
- Tuolumne Wild and Scenic River Comprehensive Management Plan
- Wawona Road Maintenance Facility
- Wawona Road Rehabilitation Project
- Wilderness Management Plan
- Yosemite Institute Environmental Education Campus
- Yosemite Museum Master Plan
- Yosemite Valley Loop Trail to West Yosemite Valley
- Yosemite Valley Shuttle Bus Stop Improvements

Of these, the following were particularly relevant and formed the basis of the cumulative impact analysis:

Visitor Use and Floodplain Restoration in East Yosemite Valley Project. The ecological restoration program seeks to restore natural processes to ecosystems so that portions of Yosemite Valley can recover from past human development and activities. A plan is being developed for the ecological restoration of the Upper River, Lower River, North Pines, and the northwest end of Lower Pines campgrounds; Group Camp, Backpackers Camp; Housekeeping Camp within the River Protection Overlay of the Merced River; and The Ahwahnee tennis court in Yosemite Valley. As part of this project, surveys are being conducted for archeological sites; the history of human disturbance in the area is being investigated; the former distribution of meadow, wetland,

and forest communities is being investigated; a restoration prescription is being developed that recognizes the retention, modification, or removal of bridges, bicycle paths, riprap, and roads; the necessity and extent of revegetation is being determined; a revegetation strategy is being developed; and monitoring of river channel morphology is being conducted.

Ecological restoration may include the following:

- Removal of imported fill material
- Removal of abandoned roads and infrastructure
- Re- establishment of natural contours on the land
- Restoration of natural surface and groundwater movement
- Replanting of native vegetation
- Removal of non- native plant and animal species
- Restoration of carbon and nitrogen cycles in degraded soils

El Capitan Meadow Restoration Project. The 60- acre El Capitan Meadow is located in west Yosemite Valley between El Capitan and the Merced Wild and Scenic River. A popular destination for many park visitors, El Capitan Meadow affords people an opportunity to enjoy magnificent views of Cathedral Spires and El Capitan, as well as take part in other recreational activities. El Capitan is also a world- renowned “big wall” that attracts rock climbers from all over with hopes of completing one of its many routes to the top. This often attracts people to the meadow where they wander the area and gaze, with necks craned, searching the massive rockface for climbers making the 3,589- foot ascent.

Vegetation and soils in the meadow are becoming increasingly degraded due to trampling from visitor foot- traffic and inappropriate vehicle parking. A significant impact to the meadow was the removal of a portion of the El Capitan Moraine in 1879, which lowered the water level 4 to 6 feet in the area. Although this was beneficial to early settlers because it allowed for more useable dry land, it greatly reduced the amount of water available to the meadow. Other historic actions such as tilling, ditching, culverts, and road building have also contributed to meadow deterioration.

The major goals of the proposed project are the following:

- Restore meadow vegetation and natural processes
- Minimize social trails
- Develop ecologically appropriate visitor access
- Improve visitor experience
- Protect sensitive meadow areas

Hodgdon Meadow Housing Area Trailer Replacement Project. The project is to construct a duplex in the Hodgdon Meadow Housing Area. This project will replace two obsolete trailers that were previously removed from the housing area. The new duplex, which will house up to eight park employees or two park employees and their families, will be located on a previously affected site formerly occupied by one of the two trailers. This project is part of an agency- wide effort to replace trailers and other substandard housing with new cost- effective, energy- efficient structures. Upgrades to the well water disinfection system will accompany the duplex construction. The project is complete.

Rehabilitation of the Yosemite Valley Loop Road. The Yosemite Valley Loop Road is a historic feature in Yosemite National Park, first built as a stagecoach road in 1872. The initial pavement was laid in 1909, and culverts were first installed a year later beneath stretches of Southside Drive. Spot repairs have been made along the roadway as required over time. However, much-needed comprehensive maintenance and repair of the roadway and associated drainage structures has not been performed for many decades. Since 1980, annual visitation to Yosemite National Park has averaged 3.4 million people, 95% of which is focused in Yosemite Valley. Dramatic scenery, the Merced Wild and Scenic River, and diverse recreational opportunities draw visitors to the Valley year-round, making it one of the most heavily developed areas of the park. As a result, the Yosemite Valley Loop Road experiences the heaviest traffic volumes of any area in Yosemite National Park. Automobiles make up the majority of the volume, but tour buses and public transportation vehicles also contribute to Yosemite Valley traffic. Bus transportation in Yosemite National Park includes regional public transportation, charter and tour bus operators, concessionaire-operated tours, and shuttle bus services provided by the park concessionaire. With the exception of shuttle bus services in Tuolumne Meadows and between the Mariposa Grove and Wawona, nearly all park buses travel to, from, and within Yosemite Valley.

The purpose of this project is to repair and resurface existing roadway pavement, rehabilitate or replace adjacent drainage features (e.g., culverts, diversion ditches, and headwalls), and improve the condition of adjacent roadside parking along approximately 12.5 miles of the Yosemite Valley Loop Road in Yosemite Valley. No roadway widening (outside of the original road prism width of 22 feet), realignment, or changes to vehicular or pedestrian circulation patterns will be undertaken.

The need for this project is evidenced by the fact that the existing road surface and associated drainage features are in poor condition because major maintenance repairs have not been undertaken for many years. Numerous existing culverts are undersized, in disrepair, and/or ineffectively located to capture peak seasonal runoff. In addition, informal roadside parking along stretches of the Yosemite Valley Loop Road presents visitor safety and resource impact concerns.

Tuolumne Meadows Concept Plan. The Tuolumne Meadows, at an elevation of 8,600 feet above msl, is the Sierra's largest subalpine meadow. Current facilities in the Tuolumne Meadows area include a 304-site campground, a visitor center, a service station, a 104-bed lodge, food services, government and concession stable operations, employee housing, a wastewater treatment plant, and several administrative buildings. These facilities support approximately 5,000 park visitors and 200 park staff daily from May through October. Although improvement or relocation has been considered for many of these facilities, there is no comprehensive plan that looks at the entire Tuolumne Meadows area as a whole and determines the desired extent and location of development. A Concept Plan will define management objectives, including resource protection goals for the entire area, and it will identify boundaries for specific types of development. This will allow implementation of management objectives and appropriate facility construction as incremental funding becomes available. The environmental compliance process for the Tuolumne Meadows Concept Plan is currently in progress.

Wawona Road Rehabilitation. This project will rehabilitate 24.5 miles of pavement on Wawona Road between the South Entrance Kiosk Area and Southside Drive in Yosemite Valley. Delays will be up to 15 minutes during commuter hours, up to 30 minutes during the day, and up to 60 minutes during the night. The project is scheduled to begin in March or April of 2010 with completion in November of 2011.

Yosemite Institute Environmental Education Campus. For more than 35 years, the Yosemite Institute has based its environmental education programs at park facilities at Crane Flat. The YI campus at Crane Flat has served as an educational facility since 1971, and consists of dormitories, a dining hall/gathering area, and bathhouses. The campus was assembled over time from older park structures not intentionally designed for educational purposes. Most of the structures and utilities are more than 60 years old, inefficient, and in need of costly repairs and upgrades to achieve modern standards for health, safety, and accessibility. In addition, the Crane Flat campus can accommodate only a fraction of the students enrolled in the program; the remainder (a majority) must be based elsewhere in the park in expensive commercial lodging that is secure through three- year agreements. As a result, long- term availability for student lodging is unreliable and the costs of the overall program are significantly higher because of this use of off-site lodging. The proposed action includes redevelopment of the Crane Flat

The purpose of the proposed action is to:

- Promote the development of future stewards for the environment and our national parks
- Provide an environmental education campus location and program that better serves the combined missions of the Yosemite Institute and Yosemite National Park
- Provide a safe and universally accessible campus facility that meets modern health and safety standards
- Increase overall program student capacity and reduce reliance upon commercial lodging (i.e., reduce the number of students currently staying overnight in Yosemite Valley) to make the program more affordable and more accessible to all children.
- Provide a location conducive to multi- day experiential programs that complement California state educational standards and offer opportunities for research and study of the natural world
- Provide a campus facility that meets or exceeds national Leadership in Energy and Environmental Design (LEED) standards
- Create a campus design that better encourages responsible interaction with the environment
- Establish an ecologically sensitive campus that protects park resources and provides exemplary environmental educational learning opportunities

The environmental compliance process for the Yosemite Institute Environmental Education Campus is currently in progress (completion anticipated December 2009).

Scenic Vista Programmatic Management Plan. The purpose of the Scenic Vista Programmatic Management Plan for Yosemite National Park is to develop a systematic program to protect and restore Yosemite's important viewpoints, vistas, and the natural processes that created them. This plan will fulfill the park's obligations under the National Historic Preservation Act (NHPA) and National Environmental Policy Act (NEPA). The program will replace the park's current case by case approach and will enable and guide management actions by the National Park Service to:

- Develop an objective process to determine what methods would be used to manage vistas
- Preserve the historic and cultural settings in which the viewpoints were established
- Restore and maintain scenic vistas through appropriate vegetation management actions such as trimming or removing trees and clearing brush

- Accomplish scenic vista management, whenever practicable, by restoring natural species composition, structure, and function to systems, preferably by using traditional American Indian vegetation management practices, including fire

The environmental assessment is currently underway.

Hetch Hetchy Communication System Upgrade. The project is a telecommunication system that would link the San Francisco Public Utility Commission's (SFPUC) communication system in the San Joaquin Valley to that at the SFPUC's sites in the Hetch Hetchy region. The proposed project include the installation of new communication equipment and/or power sources at 26 previously developed locations, and the installation of three new facilities on previously undeveloped sites. A FONSI was completed in 2008.

Cook's Meadow Ecological Restoration. This project is restoring a dynamic and diverse wetland ecosystem. The Cook's Meadow restoration project involves the following actions:

- Filling four drainage ditches created by early Euro- American settlers
- Removing a raised, abandoned roadbed and a trail that bisected the meadow
- Reconstructing the trail on an elevated boardwalk that now allows water to flow freely and reduces foot traffic on sensitive meadow plants
- Installing culverts under Sentinel Road to direct runoff into the meadow and restore the natural flow of water from the Merced River during seasonal periods of high water
- Reducing non- native plant species encroaching on native species by using manual, mechanical, and chemical control methods

This project was completed at the end of 2005, and ongoing monitoring will continue.

Curry Village Employee Housing. This project includes the design and construction of new employee housing and related facilities to accommodate approximately 217 concessionaire employees in the area west of Curry Village in Yosemite Valley. This housing will replace concessionaire housing lost in the January 1997 flood. The employee housing units have been designed in accordance with the character of the area, with particular focus on the Curry Village Historic District. The scope of this housing project includes providing parking and access, an employee wellness center, concessionaire housing, management offices, maintenance facilities, postal facilities, and housing related storage. The compliance for this project was completed in 2004, and construction was completed in 2007.

Happy Isles Fen Habitat Restoration Project. The Happy Isles Fen is a 2- acre wetland immediately west of the Nature Center at Happy Isles in east Yosemite Valley. In 1928, the National Park Service filled in about 3 additional acres of the fen to create a parking lot. The asphalt parking lot was removed in 1970, though imported fill remained. The area affected by parking lot construction was restored to wetland conditions by removing imported fill and associated upland vegetation and revegetating with native wetland plants. This project was completed in the fall of 2003.

Glacier Point Road Rehabilitation. Rehabilitation of the Glacier Point roadway will repair and resurface existing roadway pavement and drainage facilities. Pavement rehabilitation will involve some sort of in- place recycling of the existing deteriorated pavement, followed by the placement of new asphalt paving. All drainage culverts will be examined for condition, capacity, and proper

location. Culverts found to be in poor condition, undersized, and/or poorly located will be replaced in improved locations with properly sized pipes. As necessary, the drainage channels to and downstream of existing culverts will be examined for potential improvements. Existing stone masonry at culvert headwalls and outlets will be salvaged and reused. The proposed pavement rehabilitation work can be accomplished within the existing disturbed road corridor. However, culvert relocation or rehabilitation and the improvement of drainage channels to existing culverts will require disturbance of some new areas. This project is underway.

Fern Spring Restoration Project. The Fern Spring Restoration Project includes the restoration of the Fern Spring area, including plant relocation, construction of a split-rail fence, and the installation of interpretive signage. The compliance for this project was completed in 2004, and the project was completed in 2005.

Geology, Geologic Hazards, and Soils

Alternative 1. Cumulative effects on soils would be negligible because under this alternative local, negligible adverse impacts would not contribute to geologic hazards or soils impacts of related actions in other locations. Restoration projects, e.g., East Yosemite Valley, El Capitan Meadow, would have long-term beneficial effects on soils.

Alternatives 2 and 3. Related actions, such as construction and grading for facilities, roads, and fiber optic installation, could result in degradation of geology and soils. Restoration projects (identified above) would have a beneficial effect. A majority of the proposed facility sites are located in areas currently disturbed by existing communication facilities, park operations, and roadways. Applying conventional BMPs would reduce the potential for contributing to regional soil loss. Negligible cumulative adverse impacts to soils and geology are expected to occur under Alternatives 2 and 3 because under this alternative local minor impacts would not add appreciably to impacts from related actions in other locations.

Hydrology, Water Quality, and Flooding

Alternative 1. Cumulative effects on hydrology, water quality, and flooding would be negligible because under this alternative local, negligible adverse impacts on hydrology, water quality, and flooding would not add appreciably to impacts of related actions in other locations. Restoration projects, e.g., East Yosemite Valley, El Capitan Meadow, would have long-term beneficial effects on hydrology, water quality, and flooding.

Alternatives 2 and 3. Cumulative effects on hydrology would be negligible because the operating facility sites are not located in areas that affect surface waters. Cumulative effects on water quality would be negligible because under this alternative the localized, minor to moderate, adverse impacts on water quality would not add to water quality impacts of related actions in other locations. Related actions, such as construction and grading activities, could result in degradation of water quality. Restoration efforts would have long-term beneficial cumulative effects on both surface and groundwater quality.

Development of the proposed facility sites would contribute to soil loss and subsequent sedimentation. Application of BMPs during construction and the relatively small increases of impervious areas would limit the potential for impacts to water quality. Negligible cumulative

impacts to water quality are expected to occur under Alternatives 2 and 3 because the localized minor to moderate impacts would not add to impacts from related actions in other locations.

Wetlands

Alternative 1. The protection and enhancement of other wetland resources throughout the park under past, present, and reasonably foreseeable actions that would increase the size, connectivity, and integrity of wetland resources within the Yosemite National Park region would result in a long-term, major, beneficial, cumulative effect on wetland resources in Yosemite National Park. There would be no contribution to this effect under Alternative 1.

Alternatives 2 and 3. Cumulative effects to wetland resources would be negligible because localized minor impacts would not affect wetlands in other locations throughout the park. In addition, the protection and enhancement of other wetland resources throughout the park under past, present, and reasonably foreseeable actions that would increase the size, connectivity, and integrity of wetland resources within the Yosemite National Park region would result in a long-term, major, beneficial, cumulative effect on wetland resources in Yosemite National Park. No direct impact to wetlands would occur under Alternatives 2 and 3. Application of BMPs during construction and the relatively small increases of impervious areas would limit the potential for off-site impacts to wetlands. Negligible cumulative impacts to wetlands are expected to occur under Alternatives 2 and 3 because the localized minor to moderate impacts would not add to impacts from related actions in other locations.

Vegetation

Alternative 1. Although vegetation is a key resource in the park, effects under this alternative on vegetation would be local. The extent and quality of vegetation throughout the vicinity of the proposed facility sites would remain unaffected. Cumulative effects on vegetation from past, present, and reasonably foreseeable future actions in the Yosemite National Park region could result in a net long-term, major, beneficial effect on vegetation within Yosemite National Park. There would be no contribution to this effect under Alternative 1.

Alternatives 2 and 3. Cumulative effects to vegetation would be negligible because continued localized minor impacts under Alternatives 2 and 3 would not affect vegetation in other locations throughout the park. Proposed actions could contribute to minor localized vegetation loss; however, overall, related actions within the vicinity, especially habitat restoration actions, would increase the size, connectivity, and integrity of vegetation within the park, resulting in a long-term, major, beneficial cumulative effect on vegetation.

Wildlife

Alternative 1. Cumulative effects on wildlife would be negligible because the localized negligible impacts on wildlife would not add to impacts of related actions in other locations.

Alternatives 2 and 3. Related actions, such as construction of facilities, road improvements, and utility installation, would result in effects to wildlife and loss of wildlife habitat. However, restoration efforts in the park would have long-term beneficial effects on vegetation communities and wildlife habitat and populations. A majority of the proposed facility sites are located in areas currently disturbed by existing communication facilities, park operations, and roadways.

Negligible cumulative impacts to wildlife are expected to occur under this alternative because the localized minor impacts would not add to impacts from related actions in other locations.

Rare, Threatened, and Endangered Species

Alternative 1. Cumulative effects on rare, threatened, and endangered species would be negligible because the localized negligible impacts would not exceed existing ongoing levels and thus would not contribute to the effects of related actions in other locations.

Alternatives 2 and 3. The overall cumulative effect under Alternatives 2 and 3 on rare, threatened, and endangered species would be considered minor because of the negligible amount of habitat disturbance and assuming implementation of mitigation measures to avoid or minimize direct and indirect effects.

Night Sky

Alternative 1. Cumulative effects on night sky would be negligible because projects are designed to preserve the natural lightscape of the park. Localized negligible impacts would not add to impacts from actions in other locations.

Alternatives 2 and 3. The overall cumulative effect under Alternatives 2 and 3 on night sky would be negligible because the park is managed to preserve the natural lightscape of the park, and installation of a red aviation light at Crane Flat would not add to negligible impacts from actions in other locations.

Scenic Resources

Alternative 1. Cumulative effects on scenic resources are based on analysis of past, present, and reasonable foreseeable future actions, in combination with potential effects under this alternative. New structures and improvements, such as the Yosemite Institute Environmental Education Campus, would introduce new elements into undeveloped areas. Implementation of the Scenic Vista Management Plan is intended to restore scenic views by vegetation management and other methods.

Under the No Action Alternative, there would be no surface disturbance impacts, construction, or visually intrusive contrasts introduced into the existing landscape. Therefore, the cumulative impacts would be negligible because the impacts under this alternative would not contribute to impacts from other actions in other locations in the Park.

Alternatives 2 and 3. Construction of facilities and associated improvements would have localized impacts on scenic quality within the park. The minor to moderate effects to scenic resources would be reduced by siting and design. There would be negligible cumulative impacts to scenic quality because the localized minor impacts would not appreciably add to impacts from related actions in other locations, or conflict with actions proposed under the Scenic Vista Management Plan.

Air Quality

Alternative 1. Cumulative effects on air quality are based on analysis of past, present, and reasonably foreseeable future actions in the Yosemite National Park region, in combination with potential effects under this alternative.

Since 1950, the population of California has tripled, and the rate of increase in vehicle miles traveled has increased six- fold. Air quality conditions within the park have been influenced by this surge in population growth and associated emissions from industrial, commercial, and vehicular sources in upwind areas. Since the 1970s, emissions sources operating within the park, as well as California as a whole, have been subject to local stationary- source controls and state and federal mobile- source controls. With the passage of time, such controls have been applied to an increasing number of sources, and the associated requirements have become dramatically more stringent and complex. In the 1980s, a Restricted Access Plan was developed for use when traffic and parking conditions in Yosemite Valley are over- congested. The plan has the effect of reducing the number of incoming vehicles and their related emissions until the traffic volume and parking demand in Yosemite Valley decrease sufficiently (as visitors leave the Valley) to stabilize traffic conditions. Implementation of the Yosemite Area Regional Transportation System and the Yosemite Valley Shuttle Bus Improvements also has the effect of reducing regional vehicle trips and associated air emissions.

Short- term adverse impacts on air quality could result from many of the reasonably foreseeable actions planned or approved within the park, such as the Yosemite Institute Environmental Education Campus, Glacier Point Road Rehabilitation, and Wawona Road Rehabilitation projects. The adverse effects of these actions would be localized and short- term in nature, and primarily related to construction- generated traffic on roadways serving the development site. The intensity of the adverse effects from construction- related emissions would be negligible to minor, depending on the intensity of truck trips generated along park roads from simultaneously occurring construction actions.

Although cumulative growth in the region would tend to adversely affect air quality, implementation of ongoing state and federal mobile- source control programs would ameliorate this effect to some degree. With respect to particulate matter, conditions at in the park would be determined by both regional sources and local sources and could be beneficial or adverse, because the level of particulate matter resulting from regional sources changes frequently. Considered together with the adverse impacts associated with regional air quality influences, the cumulative actions would have a local, long- term, minor, beneficial effect on air quality.

Alternatives 2 and 3. The cumulative impacts to local and regional air quality under Alternatives 2 and 3 would be the same as those described under Alternative 1. Negligible cumulative adverse impacts to air quality are expected to occur under this alternative because local negligible to minor impacts would be short- term, and would not add appreciably to impacts from related actions in other locations.

Soundscapes

Alternative 1. Cumulative effects to the ambient noise environment are based on the analysis of past, present, and reasonably foreseeable future actions in the Yosemite National Park region, in

combination with potential effects under this alternative. The actions identified below are examples of actions that could affect noise in combination with the alternatives.

Short- term adverse impacts on ambient noise levels could result from construction activities associated with some of the reasonably foreseeable actions planned or approved within the park, such as the rehabilitation of Wawona Road and Yosemite Valley Loop Road and Yosemite Institute Environmental Education Campus. The adverse effects from construction of these developments would be localized and short- term in nature, and primarily related to construction- generated traffic on roadways. Noise generated by the construction of cumulative actions would result in a local, short- term, negligible to minor, adverse impact to the ambient noise environment along park roads.

Over the long term, the gradual increase in annual visitation to the park could potentially result in a local, long- term, minor, adverse effect on the noise environment. Implementation of Alternative 1 would not increase noise levels or generate any new sources of noise related to construction or operation of the facility and would not contribute to this cumulative impact.

Alternatives 2 and 3. The cumulative impact analysis for noise under Alternative 2 is the same as described under Alternative 1. See the discussion of cumulative impacts under Alternative 1.

The cumulative actions would result in a local, long- term, minor, adverse effect on the noise environment. Implementation of Alternatives 2 and 3 would result in a local, short- term, minor to moderate, adverse impact on the noise environment and would contribute to this cumulative effect. Overall, the impacts under Alternatives 2 and 3 when combined with other actions would result in a local, short- term, minor, adverse cumulative effect on the noise environment.

Energy

Alternative 1. Cumulative effects to energy resources are based on the analysis of past, present, and reasonably foreseeable future actions in Yosemite National Park, in combination with potential effects under this alternative. The actions identified below are examples of actions that influence energy consumption and resources in Yosemite National Park.

Short- term adverse impacts on energy consumption could result from construction activities associated with some of the reasonably foreseeable actions planned or approved within the park, such as the Yosemite Institute Environmental Education Campus, Yosemite Valley Loop Road, and Glacier Point Road Rehabilitation projects. The adverse effects from construction of these developments would primarily be related to the consumption of fuel and construction materials. However, the adverse effects from construction of these developments would be localized and short- term in nature; they would occur for the duration of the construction period and therefore would not be an ongoing drain. Energy consumed by the construction of cumulative actions would result in a local, short- term, minor, adverse impact to energy.

Over the long term, the gradual increase in annual visitation to the park could potentially increase energy use required to maintain park facilities and programs. This could potentially result in a parkwide, long- term, minor, adverse cumulative impact on energy resources. However, using renewable resources and energy- efficient designs for any new construction effort and transportation infrastructure in the park could offset this adverse effect by providing low-

maintenance and low- energy use facilities. Alternative 1 would not contribute to this cumulative impact in the long term.

Alternatives 2 and 3. The cumulative impact analysis for energy under Alternative 2 is the same as described under Alternative 1. See the discussion of cumulative impacts under Alternative 1.

The cumulative actions would result in a parkwide, long- term, minor, adverse effect on energy resources. The local, long- term, negligible, impact under Alternative 2 would contribute to this cumulative effect. Overall, implementation of Alternative 2 and the cumulative developments would result in a parkwide, long- term, minor, adverse effect on energy consumption.

Wilderness

Alternative 1. Cumulative effects on Wilderness would be negligible because the localized minor impacts would not add to Wilderness impacts of related actions in other locations.

Alternatives 2 and 3. Under Alternatives 2 and 3, actions within Wilderness would be limited to tree trimming, in order to maintain the microwave path for communication facilities. Actions within Wilderness would be conducted using the hand tools to ensure minimal effect. Cumulative effects on Wilderness would be negligible because the localized minor impacts would not add to Wilderness impacts of related actions in other locations.

Archaeology

Alternative 1. Cumulative impacts to archeological resources are based on analysis of past, present, and reasonably foreseeable future actions in Yosemite National Park, in combination with potential effects under this alternative. In general, the archeological resources of the park are the result of thousands of years of human occupation. Archeological resources have been affected by past actions in the park since its inception. During all future actions, measures would be taken to avoid or minimize impacts in accordance with the 1999 PA.

Continued operation of the existing facility sites would result in no effect to historic properties. Reasonably foreseeable future actions proposed in the region could affect archeological resources that may qualify as historic properties. Specific impacts, and the determination of effect, would depend upon the nature, location, and design of ground- disturbing actions, as well as the quantity and data potential of the archeological resource(s) affected. Historic properties would be evaluated pursuant to the 1999 PA.

Alternatives 2 and 3. Construction of the proposed facilities under Alternatives 2 and 3 would have no adverse effect on historic properties. The cumulative impact analysis for Archeology under Alternatives 2 and 3 is the same as described under Alternative 1.

Historic Structures, Buildings, and Cultural Landscapes

Alternative 1. Cumulative impacts to historic structures, buildings, and cultural landscape resources reflect the analysis of past, present, and reasonably foreseeable future actions in Yosemite National Park, in combination with potential effects of this alternative. Cultural landscape resources have been lost or damaged through past development, visitor use, and natural events. In Wilderness areas, cultural landscape resources include remnants of early stock

grazing, trails, and work camps. In the Crane Flat area, cultural landscape resources include the Crane Flat fire lookout. Structures and sites in other areas within Yosemite National Park include homestead cabins, barns, road and trail segments, bridges, mining complexes, railroad and logging facilities, blazes, and campsites. These resources are reminders of the area's ranching, grazing, lumbering, and mining history.

Although continued operation of the existing communication data network would result in no adverse effect to historic structures, buildings, and cultural landscapes considered historic properties, reasonably foreseeable future actions proposed in the park could affect historic structures, buildings, and cultural landscape resources. Any site-specific planning and compliance actions associated with these actions would be evaluated and performed in accordance with stipulations in the park's 1999 PA. Specific impacts would depend upon the nature, location, and design of the facility to be developed or removed, as well as the quantity and data potential of the cultural landscape resource(s) affected.

Alternatives 2 and 3. Construction of the Crane Flat facility would result in no adverse effect on historic properties. The cumulative impact analysis for historic structures, buildings, and cultural landscape resources under Alternatives 2 and 3 is the same as described under Alternative 1.

American Indian Traditional Cultural Properties

Alternative 1. Cumulative impacts to American Indian TCPs and practices reflect the analysis of past, present, and reasonably foreseeable future actions in Yosemite National Park, in combination with potential effects under this alternative. American Indian TCPs and their traditional cultural associations have been lost or damaged in the park through past development, visitor use, natural events, and widespread disruption of cultural traditions. Nevertheless, Yosemite National Park retains many sites and resources of significance to local and culturally associated American Indians.

Alternative 1 would result in no effect on historic properties. Reasonably foreseeable future actions proposed in the region that could affect American Indian TCPs would be performed in accordance with stipulations in the park's 1999 PA and with ongoing consultation between the National Park Service and American Indians with traditional cultural ties to the area. Specific impacts would depend upon the nature, location, and design of the facility to be developed or removed, as well as the quantity and data potential of the American Indian traditional cultural resource(s) affected.

Alternatives 2 and 3. Construction of proposed facility sites and associated improvements would have no adverse effect on historic properties. The cumulative impact analysis for TCPs under Alternatives 2 and 3 is the same as described under Alternative 1.

American Indian Traditional Cultural Practices

Alternative 1. Cumulative impacts to American Indian traditional cultural practices reflect the analysis of past, present, and reasonably foreseeable future actions in Yosemite National Park, in combination with potential effects under this alternative. American Indian traditional cultural practices have been lost or damaged in Yosemite National Park through past development, visitor use, natural events, and widespread disruption of cultural traditions. Nevertheless, Yosemite

National Park retains many sites and resources of significance to local and culturally associated American Indians.

Although continued operation of the existing facility sites would not affect traditional cultural practices, reasonably foreseeable future actions proposed in the region that could affect American Indian traditional cultural practices would be performed in concert with ongoing consultation between the National Park Service and American Indians with traditional cultural ties to the area. Specific impacts would depend upon the nature, location, and design of the facility to be developed or removed, as well as the quantity and data potential of the American Indian traditional cultural resource(s) affected.

Alternatives 2 and 3. Construction and operation of facilities proposed under Alternatives 2 and 3 would result in negligible adverse effects to American Indian traditional cultural practices. The cumulative impact analysis for traditional cultural practices under Alternatives 2 and 3 is the same as described under Alternative 1.

Visitor Experience and Recreation

Alternative 1. Cumulative effects on visitor experience and recreation would be minor because the adverse impacts would be partially offset by visitor experience improvements associated with other reasonably foreseeable and present actions in other locations (e.g., Yosemite Motels Expansion and Yosemite Museum Master Plan). Under Alternative 1, the long-term, moderate adverse impact would contribute to the cumulative impacts to visitor experience and recreation.

Alternatives 2 and 3. Under Alternatives 2 and 3, site-specific, short-term negligible to minor adverse impacts would occur during the construction period. The long term effect would be beneficial, because the improved communication system would facilitate faster data sharing and would improve management of visitor facilities and natural resources. In addition, reasonably foreseeable and present actions are expected to improve the visitor experience in other park locations. Overall, the proposed action under Alternatives 2 and 3, in combination with the other proposed action within the park would create a minor beneficial cumulative impact to visitor experience and recreation.

Park Operations and Facilities

Alternative 1. Cumulative effects on park operations and facilities are based on analysis of past, present, and reasonably foreseeable future actions in the immediate Yosemite National Park region, in combination with potential effects of this alternative. The extent to which past, present, or reasonably foreseeable actions could have a cumulative effect on NPS management is determined largely by whether such actions would affect demand for park operations services and facilities. Park operations services include maintenance of utility systems, provision of interpretation programs, visitor protection, and resource management.

Examples of actions that affect park operations and facilities include planning and implementation developments related to the Parkwide Invasive Plant Management Plan, the Utilities Master Plan, the Yosemite Lodge Area Redevelopment Plan, and the Tuolumne Wild and Scenic River Comprehensive Management Plan. These proposed actions have mixed adverse and beneficial effects on park operations. For example, comprehensive management plans have short-term adverse effects on park operations related to planning, but enable more effective and

efficient management of park facilities, a long- term beneficial effect. Implementation of development actions such as the Yosemite Lodge Area Redevelopment Plan increases demand on park operations during the planning and construction phases and could increase long- term demand for various park operations services and facilities, but over the long term, such improvements reduce demand for maintenance and repair services.

These past, present, and reasonably foreseeable future actions could have adverse cumulative effects on park operations and facilities because of the increased demand on park operations services and facilities over both the short and long term. The cumulative impact of all actions would result in a local, long- term, moderate, adverse impact because of the increased demand for park operations services and facilities. Under Alternative 1, the continued operation of the outdated communications system would contribute to the cumulative impacts.

Alternatives 2 and 3. Under Alternatives 2 and 3, the long- term effect would be beneficial, because the upgraded communication system would improve communications and data sharing among park staff. Past, present, and reasonably foreseeable future actions could have adverse cumulative effects on park operations and facilities because of the increased demand on park operations services and facilities over both the short and long terms. The cumulative impact of all actions would result in a local, long- term, moderate, adverse impact because of the increased demand for park operations services and facilities. However, because the beneficial impact on park operations under Alternatives 2 and 3 would reduce cumulative adverse impacts.

Transportation and Traffic

Alternative 1. Under Alternative 1, the effect on transportation and traffic would be negligible. Past, present, and reasonably foreseeable actions would have a mix of adverse and beneficial impacts on transportation and traffic. Actions that would improve management of traffic and road conditions (Comprehensive Transportation Plan, Glacier Point Road Rehabilitation, Wawona Road Rehabilitation, Rehabilitation of the Yosemite Valley Loop Road, Yosemite Valley Shuttle Bus Stop Improvements) would have a long- term beneficial effect. Any construction activities within or adjacent to roadways (i.e., Wawona Road, Tioga Road, Yosemite Valley Loop Road) would have a short- term, adverse effect, due to traffic delays. Development projects that would increase traffic (Yosemite Institute Environmental Education Campus) would have a minor adverse effect. Under Alternative 1, the continued operation of existing facility sites would not contribute to the cumulative impacts.

Alternatives 2 and 3. The cumulative impact analysis for transportation and traffic under Alternatives 2 and 3 is the same as described under Alternative 1. Under Alternatives 2 and 3, construction of proposed facility sites within or adjacent to public roadways would have short-term negligible to moderate adverse effects on transportation and traffic. The long- term effect would have a minor beneficial contribution to the cumulative impact, due to improved management of data among park staff.

Land Use

Alternative 1. Cumulative effects on land use would be negligible because the local minor impacts on affected management zones would not add to land use impacts of related actions in other locations.

Alternatives 2 and 3. Development and land use management actions within the natural environment and development zones (Yosemite Institute Environmental Education Campus, Tenaya Lake Area Plan, El Portal Concept Plan, Tuolumne Wild and Scenic River Comprehensive Management Plan) would have negligible adverse or beneficial effects on land use. Negligible cumulative impacts to land use are expected to occur under Alternatives 2 and 3 because the local negligible impacts would not add to impacts from related actions in other locations.

Global Climate Change

Scientific Studies. A series of reports issued by the United Nations Intergovernmental Panel on Climate Change (UNIPCC) has synthesized the results of recent scientific studies of climate change (UNIPCC 2007a, 2007b, 2000c). Key findings of these reports include the following:

- Global atmospheric concentrations of carbon dioxide, methane, and nitrous oxide have increased markedly as a result of human activities since 1750, and now far exceed pre-industrial levels. Global increases in carbon dioxide concentration are due primarily to fossil fuel use and land use change, and global increases in methane and nitrous oxide are due primarily to agriculture.
- Warming of the global climate due to greenhouse gases (GHGs) is unequivocal, as evidenced by increases in air and water temperatures, widespread melting of snow and ice, and rising global average sea level. Most of the increase in global average temperatures since the mid- 20th century is very likely due to increases in GHGs from human activities. GHG emissions increased 70% between 1970 and 2004.
- Numerous long- term climate changes observed have included changes in arctic temperatures and ice, precipitation, ocean salinity, wind pattern, and the frequency of extreme weather events such as droughts, heavy precipitation, heat waves, and tropical cyclone intensity.
- Continued GHG emissions at current rates would cause further warming and climate change during the 21st century that would very likely be larger than that observed in the twentieth century.
- Climate change is expected to have adverse impacts on water resources, ecosystems, food and forest products, coastal systems and low- lying areas, urban areas, and public health. These impacts would vary regionally.

California GHG Emissions and Climate Change. In California, the main sources of GHG emissions are from the transportation and energy sectors. According to CARB, draft GHG emission inventory for the year 2004, 39% of GHG emissions result from transportation and 25% of GHG emissions result from electricity generation. California produced 497 million metric tons of CO₂ equivalent (MMtCO₂e) in 2004 (CARB 2007). California produces about 2% of the world's GHG emissions.

The potential effects of future climate change on California resources include (California Climate Change Portal [CCCCP] 2007):

- Air temperature: increases of 3 to 10.4 degrees Fahrenheit by the end of the century, depending on the aggressiveness of GHG emissions mitigation.
- Sea level rise: 6 to 30 inches by the end of the century, depending on the aggressiveness of GHG emissions mitigation.

Affected Environment and Environmental Consequences

- Water resources: reduced Sierra snowpack, reduced water supplies, increased water demands, changed flood hydrology.
- Forests: changed forest composition, geographic range, and forest health and productivity.
- Ecosystems: changed habitats, increased threats to certain endangered species.
- Agriculture: changed crop yields, increased irrigation demands.
- Public health: increased respiratory illness and weather- related mortality.

Yosemite National Park Climate Action Plan. Yosemite National Park participates in the Climate Friendly Parks Program implemented by the U.S. Environmental Protection Agency (EPA) and the National Park Service, and has been designated a “Climate Friendly Partner.” To obtain this designation, Yosemite has conducted a baseline GHG emissions inventory, developed a Climate Action Plan (Yosemite National Park 2006), and committed to educating park staff, visitors, and community members about climate change.

In 2005, Yosemite’s GHG emissions from non- fire management activities totaled more than 16,000 MMtCO₂e. Of this total, 64% was caused by mobile combustion, 21% by stationary combustion, and 10% by purchased electricity, with the remainder caused by other sources.

The objective of Yosemite’s Climate Action Plan is to identify actions that Yosemite can undertake to reduce GHG emissions and thus address climate change. A specific goal is to reduce non- fire management–related GHG emissions to 10% below 2005 levels by 2010 through implementing emission mitigation actions. The Plan recommends three strategies:

- Reduce fuel use and GHG emissions from park facilities and operations
- Increase climate change outreach and education efforts
- Perform subsequent emission inventories to evaluate progress and develop future emission mitigation actions

Alternatives 2 and 3 are consistent with and help implement the following Climate Action Plan energy use actions to reduce GHG emissions:

- Use alternative energy where feasible (PV panels)

Impacts

Methodology

Sources of GHG emissions for the alternatives are the same as for criteria air pollutants (see Air Quality). GHG emissions from the alternatives would contribute to cumulative global climate change caused by global GHG emissions. However, cumulative impacts of the alternatives on global climate change are not considered significant because it is not possible to discern the effects of these emissions on global climate change.

Alternative 1. No construction- related GHG emissions would occur. Operation- related emissions would include stationary source emissions (e.g., operation of existing facilities, occasional use of generators) and periodic mobile source emissions from maintenance vehicles.

Alternatives 2 and 3. Construction- related GHG emissions would be generated by construction vehicles. Operation- related GHG emissions would be generated by stationary source emissions and periodic mobile source emissions from maintenance vehicles. Under Alternatives 2 and 3, four new facility sites would require the use of energy for operation, and two of these sites would have access to existing emergency generators. Operation of the proposed new facilities would result in a negligible increase in emissions of GHGs compared with Alternative 1.

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CHAPTER 4: WILD AND SCENIC RIVER COMPLIANCE

MERCED WILD AND SCENIC RIVER

Introduction

U.S. Congress designated the Merced and South Fork Merced Rivers as Wild and Scenic River under the Wild and Scenic River Act (WSRA) in 1987 (16 United States Code [USC] 1271 et. seq.). This designation was authorized to protect the river's free-flowing condition and to protect and enhance its unique values for the benefit and enjoyment of present and future generations. The designation grants the Merced River special protection under the WSRA, and requires managing agencies to prepare a comprehensive management plan for the river and its immediate environment. This chapter evaluates the consistency of the proposed action with the Wild and Scenic River Act and the 1982 Wild and Scenic Rivers Guidelines (Secretarial Guidelines).

The National Park Service manages 81 miles of the Merced and South Fork Merced Rivers, within Yosemite National Park and the El Portal Administrative Site. The Merced Wild and Scenic River contains eight segments within the National Park Service jurisdiction. There are four segments on the main stem of the Merced River: (1) Wilderness, (2) Yosemite Valley, (3) Gorge, and (4) El Portal, and four segments on the South Fork of the Merced River: (5) Wilderness, (6) Impoundment, (7) Wawona, and (8) Below Wawona.

The *Revised Merced River Plan / Environmental Impact Statement* (NPS 2006) was legally challenged in 2006, and the U.S. District Court declared the plan invalid and mandated that a new Merced River plan be prepared within three years. A Settlement Agreement was completed on September 29, 2009, which marked the beginning of a new planning process, which will lead to a Comprehensive Management Plan for the Merced River in Yosemite National Park. The settlement provides guidance on procedures, process, and content for a new Merced River Plan.

Pursuant to the September 29, 2009 Settlement Agreement, the National Park Service may conduct operations and maintenance activities, correct accessibility deficiencies, and carry out all other activities necessary to address the daily, routine, and intermittent operational requirements of Yosemite National Park, as long as such operations and activities will not influence or predetermine the NPS analysis of user capacity, including the types, levels and location of uses, and are in full compliance with NEPA. Typical projects may include utility system repair and maintenance, and other building and grounds maintenance that, if left uncorrected, the deficiencies would lead to deterioration or loss of the facility, or both. The NPS may build minor structures, which are defined as "those that are small, temporary, easily removed, not habitable, and that are designed to support existing uses, systems and programs."

Proposed actions would be limited to the repair and maintenance of the existing communication data network, in order to rectify existing deficiencies in the system. Improved operations are necessary for the National Park Service to address the operational requirements of the park; if the system is not improved, the deficiencies would lead to further deterioration of the communication network.

Classification Consistency

The proposed action includes two facility sites located within the boundary of the Merced Wild and Scenic River in El Portal and Wawona. The El Portal (ELP) facility site located within the El Portal Administrative and Maintenance Complex is north of the river and the Wawona (WAW) facility site is located within the Wawona District Circle, near the South Fork of the Merced River. Because the classification of river segments are identified at the time of designation, the Recreational classification of both segments reflects the higher level of development in these areas and their more abundant roads and trails. Proposed improvements at the ELP site include increasing the height of the existing 60- foot tower to 100 feet. The existing facility is located within the interior of the maintenance complex. The proposed tower within the WAW facility site would be constructed adjacent to existing structures in the District Circle. Based on the location of the proposed facilities, the proposed action would result in minimal new development within existing developed footprint; therefore, therefore, the action is compatible with the Recreational classification.

Outstanding Remarkable Values

Outstandingly Remarkable Values (ORV) are defined by the Wild and Scenic Rivers Act as those characteristics that make the river worthy of special protection. These can include scenery, recreation, fish and wildlife, geology, history, culture, and other similar values, which are to be considered in determining eligibility for Wild and Scenic River designation. Outstandingly Remarkable Values are typically identified in a study prior to the designation of a Wild and Scenic River. Outstandingly Remarkable Values were identified for the Merced River prior to its Wild and Scenic designation in 1987.

The Draft ORVs defined in the Merced and South Fork Merced River Draft Outstandingly Remarkable Values Report includes: Geologic Process, Hydrogeologic, Biologic, Scenic, Recreational, and Cultural Values. These ORVs were developed based on suggestions from the public, consultation with local, state, and federal agencies, and input from resource experts. These ORVs will be revisited during the new Merced River Plan process.

TUOLUMNE WILD AND SCENIC RIVER

Introduction

Because of its free- flowing condition and "outstandingly remarkable values," in 1984, Congress added 83 miles of the Tuolumne River to the Wild and Scenic Rivers System, 54 miles of which flow through Yosemite National Park. In accordance with the Wild and Scenic Rivers Act, the NPS must prepare a comprehensive management plan to establish the long- term guidance for protecting water quality, free- flowing condition, and unique values for the portion of the Tuolumne River that flows through the park. The process to create the Tuolumne Wild and Scenic River Comprehensive Management Plan and its accompanying environmental impact statement (Tuolumne River Plan/EIS) began in 2006, and a draft document for public review is anticipated for release in early 2010. If approved, the plan will become finalized by the end of 2010.

Classification Consistency

The proposed action includes trenching within Tioga Road for fiber installation between the May Lake Junction (MLJ) facility site and Tuolumne Meadows. The affected section is Tuolumne Segment 3, which is designated as Scenic. Proposed improvements are limited to utility improvements (fiber optic cable installation) within the roadway, which would not have a long-term effect on the scenic values of the area. The action is compatible with the Scenic classification.

Outstanding Remarkable Values

The ORVs of the Tuolumne Wild and Scenic River that have been identified in the Tuolumne Planning Workbook (2008) for the Tuolumne Meadows segment is shown in Table 4- 1 below.

Table 4-1. Outstandingly Remarkable Values of the Tuolumne Meadows Segment

Segment	Outstandingly Remarkable Values
Tuolumne Meadows	<p>3a. Hydrologic Basins of alluvial fill, perennially high groundwater conditions, seasonal flooding, and active channel migration combine to sustain one of the largest subalpine meadow/wetland complexes in the Sierra Nevada at Tuolumne Meadows. This segment also contains a classic and well-known example of an alkaline spring at Soda Springs.</p> <p>3b. Geologic This segment contains exceptionally well-preserved geologic features, such as glacial striations and erratics, that provide dramatic evidence of glaciation and the convergence of several large glaciers during the last major glacial period. This convergence resulted in the basin that is now Tuolumne Meadows. Notably, this area contains some of the best examples of glacial polish in the United States.</p> <p>3c. Biologic Tuolumne Meadows represents some of the most extensive subalpine meadow and riparian habitat in the Sierra Nevada. This meadow/wetland complex provides habitat for a diversity of plant and animal species, including special-status species (e.g., slender lupine, Yosemite bulrush, Yosemite toad, and several species of bats) and migratory bird populations. In addition, Soda Springs supports localized populations of specialstatus plant species (e.g., Buxbaum’s sedge and marsh arrow-grass).</p> <p>3d. Prehistoric and American Indian Cultural This river segment is flanked by concentrations of pre-contact archeological sites containing materials that are uncommon in the region, as well as prehistoric resources that are important for maintaining cultural traditions among groups of American Indian people affiliated with the Tuolumne River. Materials and culturally important landscape features in the Tuolumne Meadows Archeological District include hearth features, structural remains, bedrock mortars, intact volcanic ash deposits, traditional campsites, ceremonial sites, and a sacred water source. American Indian traditions of trans-Sierra trade and travel are maintained by an annual ceremonial walk and sharing of oral history along this segment of the river.</p> <p>3e. Historic Historic sites along this segment of the river commemorate the significance of Tuolumne Meadows as a place inspiring conservation activism on a national scale. Specific sites that are either eligible or potentially eligible for listing on the National Register of Historic Places include Parsons Memorial Lodge (a National Historic Landmark) and the Soda Springs Enclosure, where significant gatherings influenced</p>

Table 4-1. Outstandingly Remarkable Values of the Tuolumne Meadows Segment

Segment	Outstandingly Remarkable Values
	<p>the creation of Yosemite National Park, early conservation activism, and national environmental legislation.</p> <p>3f. Scenic Tuolumne Meadows offers breathtaking views of the large, low-lying river valley, adjacent meadows, glacially carved domes, rugged mountain peaks, and expansive skies. Specific views from the bed and banks of the river include the Cathedral Range, Lumbert, Pothole, and Fairview Domes, Kuna Crest, Mount Dana, Mount Gibbs, Juniper Ridge, and the river meandering through subalpine meadows. The low-relief topography of the meadows allows for magnificent skyward views, including some of the darkest night skies in the Sierra Nevada. Ephemeral wildflower displays, congregations of wildlife, and weather phenomena enhance these vistas.</p> <p>3g. Recreational The natural sights, sounds, and other sensations particular to the river and adjacent open meadows are exceptionally attractive to visitors, who find outstanding opportunities for a wide range of recreational activities. Tuolumne Meadows provides easily accessible recreational opportunities for people of all ages and abilities, and many individuals, families, and groups establish traditional ties with the area. The National Park Service and other organizations depend on the river and adjacent meadows as a centerpiece of nature interpretation and education in the Sierra Nevada. The Pacific Crest Trail, one of eight National Scenic Trails, follows the river corridor in this segment.</p>

WILD AND SCENIC RIVERS ACT SECTION 7 DETERMINATION PROCESS

Pursuant to WSRA, the NPS must carry out a Section 7 determination on all proposed water resources projects that are within the bed or banks of the Merced River or Tuolumne River to ensure that they do not affect free flow and do not directly and adversely affect the ORVs for which the river was designated.

No components of the CDN project would occur within the bed or banks of the Merced River or Tuolumne River; therefore, Section 7 determination is not required.

USER CAPACITY

The proposed action is not expected to result in any change in the types or levels of visitor use within the Merced Wild and Scenic River boundaries, nor would it change existing vehicular or pedestrian circulation patterns.

CHAPTER 5: CONSULTATION AND COORDINATION

The formal public scoping period for the Parkwide Communication Data Network Environmental Assessment began on November 12, 2008 and ran until December 26, 2008. A public open house took place during the Public Scoping Period on December 3, 2008, from 1:00 to 4:00 pm in the Valley Visitor Center Auditorium in Yosemite Valley. During this planning process, comments on this project have been accepted at public meetings as well as by mail, fax, email, and through the Planning, Environment, and Public Comment (PEPC) electronic commenting system.

A public site visit was held to tour the various proposed facility sites from July 21- 23, 2009, which focused on the new sites proposed for Tuolumne Meadows/May Lake Junction, Hetch Hetchy Entrance Station, and Yosemite Valley. Topics discussed included siting options, facility and structure designs, ways to best protect resources and values, and other ideas and concerns.

Information on the preparation of an EA has been available at Open Houses in the Yosemite Valley during public scoping and throughout development of the EA. Public comments received during scoping have helped shape the alternatives presented.

During the public review of this EA, NPS will host a public meeting to present and review the alternatives respond to questions, and distribute additional copies of the EA, at the Mariposa County Government Chambers on January 13, 2010 from 5:30- 7:30 pm. The EA will be mailed directly to those who have expressed interest, and be made available to the general public, as well as distributed to federal, state, and local agencies and organizations. There will be a 30 day public review period during which the public and agencies can review and submit comments regarding the proposed action. The availability of the document for review was distributed with a press release sent to a wide variety of news media, through placement on the park's website, and with an electronic news bulletin to those on the Yosemite National Park's planning mailing list. Comments received during the public review will be given full consideration in the park's decision regarding the proposed action.

AGENCY CONSULTATION

U.S. Army Corps of Engineers

The conclusions of this environmental analysis are that none of the alternatives presented herein will adversely affect waters of the United States or special aquatic sites in such a manner that would require a permit from the U.S. Army Corps of Engineers (USACE). The National Park Service has notified the USACE of this conclusion and is requesting their concurrence.

U.S. Fish and Wildlife Service

The Endangered Species Act of 1973, as amended (16 United States Code [USC] 1531 et seq.), requires all federal agencies to consult with the U.S. Fish and Wildlife Service to ensure that any action authorized, funded, or carried out by the agency does not jeopardize the continued

existence of listed species or adversely modify critical habitat. The National Park Service requested a list of federally listed endangered and threatened species for the project sites and surrounding areas. The list received from the U.S. Fish and Wildlife Service on July 15, 2009, was used as a basis for the special- status analysis in this environmental assessment. This environmental assessment has determined that the alternatives will not adversely affect species that are federally listed as threatened or endangered. The NPS has notified the U.S. Fish and Wildlife Service of this finding and has requested the agency review these findings and response.

State Water Quality Control Board

If necessary, NPS would file a Notice of Intent to discharge stormwater to the State Water Quality Control Board (SWQCB) and prepare and implement provisions of a Storm Water Pollution Prevention Plan (SWPPP) to control runoff from construction activities. The SWPPP would be prepared by the Contractor, and approved by NPS and the SWQCB prior to construction.

California State Historic Preservation Officer/Advisory Council on Historic Preservation

The 1999 Park Programmatic Agreement Among The National Park Service At Yosemite, The California State Historic Preservation Officer and The Advisory Council On Historic Preservation Regarding Planning, Design, Construction, Operations And Maintenance, Yosemite National Park, California (1999 PA) was developed among NPS at Yosemite, the California State Historic Preservation Officer, and the Advisory Council on Historic Preservation, in consultation with American Indian tribes and the public and stipulates methods for the Park to carry out its responsibilities under Section 106 of the NHPA.

In accordance with the 1999 PA, public involvement was coordinated with the public involvement and scoping discussed above. Pursuant to the 1999 PA, the park has responsibility to review projects of this nature and magnitude in- house with no additional consultation with SHPO or ACHP. The NHPA Section 106 review process is documented in this environmental assessment, and will be submitted to SHPO and ACHP as part of an annual report, and attached to the FONSI.

American Indian Consultation

Yosemite National Park is consulting with American Indian tribes having spiritual cultural associations with the area, including the American Indian Council of Mariposa County, Inc. (aka Southern Sierra Miwuk Nation), Tuolumne Band of Me- Wuk Indians, North Fork Mono Rancheria, Picayune Rancheria of Chukchansi Indians, Bridgeport Indian Colony, Mono Lake Kutzadika^a Tribe, and Bishop Paiute Tribe on proposed actions under the Parkwide Communication Data Network project. Field visits to facility site locations were coordinated with American Indian tribes, including the Tuolumne Band of Me- Wuk Indians on May 22, 2009 and June 11, 2009, the North Fork Mono Rancheria on June 10, 2009, and the Southern Sierra Miwuk Nation on June 11, 2009. Consultation and partnering will continue with the American Indian tribes throughout the planning and implementation of the Parkwide Communication Data Network project.

ENVIRONMENTAL ASSESSMENT REVIEW

Copies of this Environmental Assessment have been distributed to those that have requested it, including the public, state and local governments and representatives, federal agencies, tribes, organizations, local businesses, public libraries, and the news media.. This document and project planning information is also available on the Yosemite National Park Planning web page (www.nps.gov/yose/planning/parkmgmt/cdn.htm). For full considerations, written comments regarding this EA should be submitted in writing and directed to:

Mail: Superintendent, Yosemite National Park Email: Yose_Planning@nps.gov
ATTN: CDN EA Fax: (209) 379- 1294
P.O. Box 577
Yosemite, California 95389

For additional copies (CD or hardcopy), refer to the information directly above or phone (209)379- 1365.

LIST OF AGENCIES AND ORGANIZATIONS RECEIVING THIS DOCUMENT

American Alpine Club	Mariposa County Visitors Bureau
American Indian Council of Mariposa County, Inc. (aka Southern Sierra Miwuk Nation)	Mariposa Public Utility District
Bishop Paiute Tribe	Mariposans for Environmental Responsible Growth
Bridgeport Indian Colony	Mono Lake Kutzadika ^a Tribe
Bureau of Land Management	National Park Service - Water Resources Division
California Air Resources Board	National Parks Conservation Association
California Department of Fish & Game	NPCA National Office
California Department of Transportation	National Park Service, DSC – Planning Division
California State Library	North Fork Mono Rancheria
California State Water Resources Control Board	Oakhurst Public Library
California State Clearinghouse	Office of Assemblyman Dave Cogdill
Caltrans Central Region Environmental Analysis Office	Picayune Rancheria of Chukchansi Indians
Central Sierra Environmental Resource Center	Sacramento County Public Library
Civic Center Library	Salazar Library, Sonoma State University
Delaware North Corporation	San Francisco City Public Library
Delaware North Corporation	San Francisco Planning Department
Department of the Interior, Regional Solicitor	San Francisco Public Utilities Commission
El Portal Town Planning Adv Committee	Senator Barbara Boxer
Federal Highway Administration	Senator Dianne Feinstein
Friends of the River/American Rivers	Sequoia & Kings Canyon National Parks
Friends of Yosemite Valley	Sierra Club, Executive Director
George Radanovich, Representative	Tehipite Chapter
Government Information Shields Library	Sierra Club Yosemite Committee
Groveland Community Services District	Sonoma County Library
Groveland Ranger District	Stanford University Green Library
House Subcommittee on National Parks & Public Lands	Stanislaus Council of Government
Inyo National Forest	The Access Fund
	Tuolumne Band of Me-Wuk Indians

Consultation and Coordination

Madera County Board of Supervisors
Mammoth Mountain Ski Area
Mariposa County Board of Supervisors
Mariposa County Chamber of Commerce
Mariposa County Dept of Public Works
Mariposa County Fire Department
Mariposa County Planning Department

Tuolumne County Board of Supervisors
Tuolumne County Visitor Bureau
USDOI Office of Env. Policy & Compliance
Virginia Lakes Pack Outfit
Wawona Area Property Owners Association
Wawona Town Plan Advisory Committee

CHAPTER 6: LIST OF PREPARERS AND REVIEWERS

Table 6-1. List of Preparers and Reviewers

Name	Responsibility	Education	Years Experience
<i>National Park Service, Yosemite National Park</i>			
David V. Uberuaga	Acting Superintendent	M. Business Administration B.A. Biology	25 NPS
Dennis Schramm	Acting Deputy Superintendent	B.S. Biology M.S. Biology	32 NPS
Mark Butler	Chief, Division of Project Management	M.P.A. Public Administration B.S. Soils and Water Science	27 NPS 2 other
Paul Laymon	Acting Chief, Division of Facilities Management	Undergraduate studies, 2 yrs.	25 NPS
Niki Nicholas	Chief, Division of Resources Management and Science	Ph.D. Forestry, M.S. Ecology, B.A. Biology	3 NPS 18 other
Kristina Rylands	Acting Chief of Planning		
Steve Schackelton	Chief Ranger, Protection Div.	B.S. Criminology, M.S. Criminology M. of Public Administration	32 NPS 6 public, other
<i>Yosemite National Park Technical Experts and Contributors</i>			
Lisa Acree	Park Botanist	B.A. Environmental Studies	18 NPS
Tony Brochini	Facilities Management Liaison		31 NPS
Mark Fincher	Wilderness Specialist	B.A. Geography and Environmental Studies	18 NPS
Randy Fong	Branch Chief, Design	B.A. Architecture M. Architecture	32 NPS 1 yr. other
Dave Humphrey	Branch Chief, History, Architecture, and Landscapes	B.S. Landscape Architecture	21 NPS 6 public, 3 other
Mark Husbands	CDN Project Manager	B.A. Geography M.S. Natural Resources Social Science MPA Public Administration PMP Certification	6 NPS 2 USFS
Laura Kirn	Park Archeologist	B.S. Anthropology	20 NPS

Table 6-1. List of Preparers and Reviewers

Name	Responsibility	Education	Years Experience
Carol Knipper	Division Liaison, Resources Management and Science	B.S. Natural Resource Management	23 NPS
Kelly Martin	Chief, Fire & Aviation Management	B.S. Outdoor Education, Natural Resources Management	9 NPS 17 USFS
Brian Mattos	Park Forester	B.S. Forest Resources Management, Registered Professional Forester	26 NPS and USFS
Elexis Mayer	Compliance Program Manager	B.S. Natural Resources Management	6 NPS 2 other
Ann Roberts	NEPA Compliance Specialist, USFWS consultation coordinator, technical reviewer	M.S. Forestry-Ecological Restoration B.S. Wildlife	5 NPS 6 USFS 5 other public
Daniel Schaible	Historic Landscape Architect	B. Landscape Architecture	5 NPS
Jeannette Simons	Park Historic Preservation Officer and American Indian Liaison	M.A. Anthropology B.A. Anthropology	14 Public 14 Private
Steve Thompson	Branch Chief, Wildlife Management	M.S. Ecology – Wildlife B.S. Biology	21 NPS 5 other
David Thorpe	Communications Branch Chief	Undergraduate Studies, 2 years	12 NPS 8 other
SWCA Environmental Consultants			
Bill Henry, AICP	Principal in Charge	M.C.R.P. Masters of City and Regional Planning B.S. Natural Resources Management	1 Public, 19 Private
Shawna Scott	Project Manager - EA Night Sky, Energy Wilderness, Visitor Experience and Recreation, Park Operations and Facilities	B.S. Natural Resources	2 Public, 8 Private
Benjamin Hart	Geology, Geologic Hazards, and Soils Hydrology, Floodplains, and Water Quality	B.A. Biology	4 Public, 5 Private
Kathleen Cooney	Land Use Transportation	B.A. Communication Arts M.A. Candidate, Geography	5 Private
Travis Belt	Wetlands, Vegetation, Wildlife Rare, Threatened, and Endangered Species	B.S. Forestry & Natural Resources	3 Public, 4 Private

Table 6-1. List of Preparers and Reviewers

Name	Responsibility	Education	Years Experience
Steve Leslie	Scenic Resources	B.S. Natural Resource Management	10 Public, 2 Private
David Morrow, AICP	Air Quality Soundscape	B.A. Environmental Studies	7 Public, 16 Private
Shannon Carmack	Historic Properties American Indian Traditional Cultural Practices	B.A. History	9 Private
Clarus Backes	Historic Properties American Indian Traditional Cultural Practices	B.A. Anthropology M.A. Candidate, Anthropology	10 Public, 10 Private
Jaimie Jones	Document Editing/Formatting	Coursework, Liberal Arts and Fire Science	5 Private
Kevin Doyle	Maps and Graphics/GIS	B.S. Forestry and Natural Resources Management	11 Private
David Reinhart	Maps and Graphics/GIS	B.A. Anthropology	10 Public, 10 Private

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CHAPTER 7: GLOSSARY AND ACRONYMS

GLOSSARY OF TERMS

Area of Potential Effect (APE): The geographic area or areas where an undertaking has potential to affect historic properties. Consider physical, visual, auditory and atmospheric effects; potential changes in land or building use, change in the setting and potential for neglect.

Archeological resources: Historic and prehistoric deposits, sites, features, structure ruins, and anything of a cultural nature found within, or removed from, an archeological site.

Best Management Practices: Effective, feasible (including technological, economic, and institutional considerations) conservation practices and land- and water- management measures that avoid or minimize adverse impacts to natural and cultural resources. Best Management Practices may include schedules for activities, prohibitions, maintenance guidelines, and other management practices.

Biodiversity: Biodiversity, or biological diversity, is generally accepted to include genetic diversity within species, species diversity, and a full range of biological community types. The concept is that a landscape is healthy when it includes stable populations of native species that are well distributed across the landscape.

Critical habitat: The area of land and water with physical and biological features essential to the conservation of federally listed threatened and endangered species and which may require special management considerations or protection.

Cultural Resources: The broad category of socio- cultural resources and historic properties that reflect the relationship of people with their environment.

Day visitor: Visitors that do not stay overnight in the park. Includes both local overnights and day excursion visitors.

Decibel (dBA): A unit of measure of sound intensity.

Ecosystem: An ecosystem can be defined as a geographically identifiable area that encompasses unique physical and biological characteristics. It is the sum of the plant community, animal community, and environment in a particular region or habitat.

El Portal Administrative Site: The area outside the western boundary of the park along Highway 140 under the jurisdiction of the National Park Service used to locate park operations and administrative facilities for Yosemite National Park.

Emergent wetland: A wetland characterized by frequent or continual inundation dominated by herbaceous species of plants typically rooted underwater and emerging into air (e.g., cattails, rushes). The emergent wetland class is characterized by erect, rooted, herbaceous hydrophytes (e.g., cattails, rushes), excluding mosses and lichens. This vegetation is present for most of the

growing season in most years. Perennial plants usually dominate these wetlands. All water regimes are included, except sub-tidal and irregularly exposed.

Environmental Assessment (EA): A public document required under the National Environmental Policy Act that identifies and analyzes activities that might affect the human and natural environment. An environmental assessment is considered a concise public document which provides sufficient evidence and analysis for determining whether to prepare an Environmental Impact Statement (EIS), aids an agency's compliance with NEPA when no EIS is necessary, and it facilitates preparation of an EIS when one is necessary.

Excavator: A piece of heavy equipment that is used to dig or scoop material with a bucket attached to a hinged pole and a boom.

Facilities: Buildings, communications support structures, and the associated supporting infrastructure such as roads, trails, and utilities.

Fiber optic: Involves the transmission of information by light through long transparent fibers made from glass or plastic. A light source modulates a light-emitting diode (LED) or laser turns on or off or varies in intensity in a manner that represents the electrical information input signal. The modulating light is then coupled to an optical fiber that propagates the light. An optical detector at the opposite end of the fiber receives the modulating light and converts it back to an electrical signal which is identical to the input signal.

Finding of No Significant Impact (FONSI): The public document describing the decision made on selecting the "Preferred Alternative" in an environmental assessment. See "environmental assessment."

Floodplain: A nearly level alluvial plain that borders a stream and is subject to flooding unless protected artificially.

Grader: A piece of heavy equipment used to level or smooth road or other surfaces to desired gradient.

Granitic rocks: Igneous rocks (intrusive magma) that have cooled slowly below the Earth's surface typically consisting of quartz, feldspar, and mica. In contrast to granitic rocks, if magma erupts at the Earth's surface, it is referred to as lava. Lava, when cooled, forms volcanic rocks.

Hazardous material: A substance or combination of substances, that, because of quantity, concentration, or physical, chemical, or infectious characteristics, may either: (1) cause or significantly contribute to an increase in mortality or an increase in serious, irreversible, or incapacitating illness; or (2) pose a substantial present or potential hazard to human health or environment when improperly treated, stored, transported, disposed of, or otherwise managed.

Hazardous waste: Hazardous wastes are hazardous materials that no longer have practical use, such as substances that have been discarded, spilled, or contaminated, or that are being stored temporarily prior to proper disposal.

Headwaters: The point or area of origin for a river or stream.

Historic and Cultural Resources: Under NEPA, culturally valued pieces of real property (not historic properties) and non- tangible values such as cultural use of the biophysical and built environments, and sociocultural attributes such as social cohesion, lifeways, religious practice and other social institutions (40 CFR 1508.27(b)(3)).

Historic Properties: Under NHPA and NEPA, a prehistoric or historic district, site, building, structure, object, landscape, or traditional cultural resource to which American Indians attach cultural and religious significance that is listed in, or eligible for listing in, the NRHP (36 CFR 800.16(l)(1) 40 CFR 1508.27(b)(8)).

Microwave Radio: Point- to- point fixed links that operate in duplex mode, meaning each radio frequency (RF) channel consists of a pair of frequencies for the respective transmit and receive directions. The broadband signal, which contains the user information, occupies a limited bandwidth depending on the modulation scheme used. This signal is modulated onto an RF carrier and is transmitted over the air as an electromagnetic wave front. The microwave radio links cover the frequency spectrum from 300 MHz to approximately 60 GHz. Mitigation: Activities that will avoid, reduce the severity of, or eliminate an adverse environmental impact.

National Environmental Policy Act (NEPA): The federal act that sets national environmental policies and requires preparation of an EIS for major federal actions that may significantly affect the quality of the human environment.

National Park Service Management Policies: A policy is a guiding principle or procedure that sets the framework and provides direction for management decisions. National Park Service (NPS) policies are guided by and consistent with the Constitution, public laws, Executive proclamations and orders, and regulations and directives from higher authorities. Policies translate these sources of guidance into cohesive directions. Policy direction may be general or specific. It may prescribe the process by which decisions are made, how an action is to be accomplished, or the results are to be achieved. The primary source of National Park Service policy is the publication Management Policies 2001. The policies contained therein are applicable Service- wide. They reflect National Park Service management philosophy. Director's Orders supplement and may amend Management Policies. Unwritten or informal “policy” and people’s various understandings of National Park Service traditional practices are never relied on as official policy.

National Park Service Organic Act: In 1916, the National Park Service Organic Act established the National Park Service in order to “promote and regulate use of parks...” and defined the purpose of the national parks as “to conserve the scenery and natural and historic objects and wild life therein and to provide for the enjoyment of the same in a manner and by such means as will leave them unimpaired for the enjoyment of future generations.” This law provides overall guidance for the management of Yosemite National Park.

Natural processes: All processes (such as hydrologic, geologic, ecosystemic) that are not the result of human manipulation.

No Action Alternative: The alternative in an EIS that proposes to continue current management direction. “No action” means the proposed activity would not take place, and the resulting environmental effects from taking no action would be compared with the effects of permitting the proposed activity or an alternative activity to go forward.

Non- native species: Species of plants or wildlife that are not native to a particular area and often interfere with natural biological systems.

Particulate matter (PM- 10 and PM- 2.5): Fractions of particulate matter characterized by particles with diameters of 10 microns or less (PM- 10) or 2.5 microns or less (PM- 2.5). Such particles can be inhaled into the air passages and the lungs and can cause adverse health effects. High levels of PM- 2.5 are also associated with regional haze and visibility impairment.

Photo- voltaic panel: Arrays of cells containing a material that converts solar radiation into direct current electricity.

Riparian areas: The land area and associated vegetation bordering a stream or river.

Riverine: Of or relating to a river. A riverine system includes all wetlands and deepwater habitats contained within a channel, with two exceptions: (1) wetlands dominated by trees, shrubs, persistent emergents, emergent mosses, or lichens, and (2) habitats with water containing ocean-derived salts in excess of 0.5%. A channel is an open conduit either naturally or artificially created which periodically or continuously contains moving water, or which forms a connecting link between two bodies of standing water.

Sediment: A particle of soil or rock that was dislodged, entrained, and deposited by surface runoff or a stream. The particle can range in size from microscopic to cobble stones.

Snag: A standing dead tree.

Socio- Cultural Resources: Under NEPA, culturally valued pieces of real property (not historic properties) and non- tangible values such as social use of the biophysical and built environments and socio- cultural attributes such as social cohesion, lifeways, religious practice and other social institutions (40 CFR 1508.27(b)(3)), including those that may have acquired an historical relevance by virtue of their continued use over time but do not meet the NR standards to qualify as historic properties (see Historic and Cultural Resources above).

Succession: The process by which vegetation recovers following a disturbance or initially develops on an unvegetated site.

Threatened and endangered species: Species of plants that receive special protection under state and/or federal laws. Also referred to as “listed species” or “endangered species.”

Traditional Cultural Properties: A resource to which American Indian tribes attach cultural and religious significance that is eligible for listing or listed in the NR and includes structures, objects, districts, geological and geographical features and archaeology. National Register Bulletin 38 provides guidance for identifying and evaluating such properties for eligibility.

Traditional cultural resource: Any site, structure, object, landscape, or natural resource feature assigned traditional, legendary, religious, subsistence, or other significance in the cultural system of a group traditionally associated with it.

Treatment: Work carried out to achieve a historic preservation goal. The four primary treatments are Preservation, Rehabilitation, Restoration, and Reconstruction (as stated in Secretary of Interior’s Standards for the Treatment of Historic Properties).

User capacity: As it applies to parks, user capacity is the type and level of visitor use that can be accommodated while sustaining the desired resource and social conditions based on the purpose and objectives of a park unit.

Visitor experience: The perceptions, feelings, and reactions a park visitor has in relationship with the surrounding environment.

Watershed: The region drained by, or contributing water to, a stream, lake, or other body of water. Synonym: basin or drainage basin.

Wetland: Wetlands are defined by the U.S. Army Corps of Engineers (Code of Federal Regulations, Section 328.3[b], 1986) as those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands, as defined by the U.S. Fish and Wildlife Service (often referred to as the Cowardin classification system) and adopted by the National Park Service, are lands in transition between terrestrial and aquatic systems, where the water table is usually at or near the surface or the land is covered by shallow water. For purposes of this classification, wetlands must have one or more of the following attributes: the land supports predominantly hydrophytes, at least periodically; the substrate is predominantly undrained hydric soils; and/or the substrate is saturated with water or covered by shallow water at some time during the growing season of each year.

Wilderness: Those areas protected by the provisions of the 1964 Wilderness Act. These areas are characterized by a lack of human interference in natural processes.

Wilderness Act of 1964: The Wilderness Act restricts development and activities to maintain certain places where wilderness conditions predominates.

ACRONYMS

ACHP	Advisory Council on Historic Preservation
AIRFA	American Indian Religious Freedom Act of 1979
APE	Area of potential effects
ARPA	Archeological Resources Protection Act of 1979
BLM	Bureau of Land Management
BMP	Best Management Practices
BOFR	Big Oak Flat Repeater facility site
CARB	California Air Resources Board
CalEPA	California Environmental Protection Agency
CBA	Choosing by Advantage
CDFG	California Department of Fish and Game
CDWR	California Department of Water Resources
CEQ	Council on Environmental Quality
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
CNDDB	California Natural Diversity Database
CRN	Crane Flat facility site
dB	decibels
dBA	Decibels on the “A”- weighted scale
dbh	diameter at breast height
DO	Director’s Order
DOE	Determination of Eligibility
EA	environmental assessment
EGP	Eagle Peak facility site

ELP	El Portal facility site
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
FHWA	Federal Highway Administration
HABS	Historic American Buildings Survey
HAER	Historic American Engineering Record
HEN	Hennes Ridge facility site
HHE	Hetch Hetchy Entrance facility site
HMC	Hodgdon Meadow Maintenance Complex facility site
LEED	Leadership in Energy and Environmental Design
Ldn	day- night average sound level
Leq	energy equivalent level
Lmax	maximum A- weighted noise level
LOS	level of service
MAPS	Monitoring Avian Productivity and Survivorship
MLJ	May Lake Junction facility site
msl	mean sea level
MTB	Mount Bullion facility site
NAGPRA	Native American Graves Protection and Repatriation Act
NEPA	National Environmental Policy Act
NFPA	National Fire Protection Act
NHPA	National Historic Preservation Act
NPS	National Park Service
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places

Glossary and Acronyms

NWI	National Wetlands Inventory
PA	Programmatic Agreement
PL	Public Law
PM- 10	particulate matter less than 10 microns
ROD	Record of Decision
RWQCB	Regional Water Quality Control Board
SHPO	State Historic Preservation Officer
SMM	standard mitigating measures
SNT	Sentinel Dome facility site
SNTReflector	Sentinel Reflector facility site
SIP	State Implementation Plan
SWPPP	Stormwater Pollution Prevention Plan
TCP	Traditional Cultural Properties
USA	Underground Services Act
TRT	Turtleback Dome facility site
USC	United States Code
USDA	United States Department of Agriculture
USACE/Corps	U.S. Army Corps of Engineers
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
VERP	Visitor Experience and Resource Protection
WAW	Wawona facility site
WWP	Wawona Point facility site
VLY	Yosemite Valley facility site

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APPENDIX A: MITIGATION MEASURES COMMON TO ALL ACTION ALTERNATIVES

Mitigation Measure	Impact Topic	Responsibility	Critical Milestones
<p>The Construction Contractor shall prepare a Health and Safety Plan to address all aspects of Contractor health and safety issues compliant with OSHA standards and other relevant regulations. The Plan shall be submitted for park review and approval prior to construction.</p>	<p>Construction Mitigation Measures</p>	<p>Contractor</p>	<p>Prior to project activities</p>
<p>An Oil and Hazardous Materials Spill Prevention, Control, and Countermeasure Plan shall be prepared by the Construction Contractor for the project to address hazardous materials storage, spill prevention and response. The Plan shall be submitted for park review and approval prior to construction.</p>		<p>Yosemite National Park, Project Manager, Contractor</p>	<p>Prior to project activities</p>
<p>A Storm Water Pollution Prevention Plan (SWPPP) shall be prepared by the Construction Contractor and implemented for construction activities to control surface run-off, reduce erosion, and prevent sedimentation from entering water bodies during construction. The SWPPP shall be submitted for park review and approval prior to construction.</p>		<p>Yosemite National Park, Project Manager, Contractor</p>	<p>Prior to project activities</p>
<p>Construction plans shall include a site-specific Revegetation Plan for each facility site. The plan shall be implemented in all disturbed areas. The plan shall include the use of native species from the local gene pool, and shall specify soil preparation, native seed/plant mixes, and mulching for all areas disturbed by construction activities.</p>		<p>Yosemite National Park, Project Manger, Contractor</p>	<p>Prior to project activities</p>
<p>Construction plans shall include a noxious weed abatement program including measures that ensure that: vehicles and equipment arrive on site free of mud or seed-bearing material, all plant materials brought onto the site are weed-free, and existing weed populations would be controlled.</p>		<p>Yosemite National Park, Project Manger, Contractor</p>	<p>Prior to project activities</p>
<p>The park shall develop a Visitor Outreach and Communications Strategy Plan to alert necessary park and Concessionaire employees, residents and visitors to pertinent elements of the construction work schedule.</p>		<p>Yosemite National Park, Project Manger</p>	<p>Prior to project activities</p>
<p>Supervisory construction personnel shall attend an Environmental Protection briefing provided by the park prior to working on site. This briefing is designed to familiarize workers with statutory and contractual environmental requirements and the recognition of and protection measures for archeological sites, sensitive habitats, water resources, and wildlife habitats.</p>		<p>Yosemite National Park, Project Manger</p>	<p>Prior to project activities</p>

Appendix A

Mitigation Measure	Impact Topic	Responsibility	Critical Milestones
<p>The Contractor shall establish a “Minimum Disturbance Protocol” for activities at all sites that includes: Clearly defined access routes that have been established through coordination with NPS biologists. Minimizes impacts to or removal of rock substrates. Limits tree removal or trimming to those trees that impede microwave paths. Stockpiles and reapplies native topsoil, where grading is necessary. Minimizes soils compaction and erosion. Minimizes the removal of woody debris or other ground cover.</p>	<p>Construction Mitigation Measures (continued)</p>	Contractor	Prior to project activities
<p>Protective barriers shall be placed around areas adjacent to the project area that require special attention as identified by the park, such as specified staging areas, trees, plants, root zones, river edges, aquatic habitats, wetlands, sensitive wildlife habitats, cultural resource features, and infrastructure. Barriers shall be installed prior to construction and field inspected by natural and cultural resource personnel to verify proper placement.</p>		Yosemite National Park, Project Manger, Contractor	Prior to project activities
<p>Construction Contractor shall ensure that any imported soils, fills or aggregates are free of deleterious materials. Sources of imported materials shall be compiled by Construction Contractor and submitted for park review and approval prior to construction.</p>		Yosemite National Park, Project Manger, Contractor	Prior to project activities
<p>The Underground Services Alert (USA) shall be informed by construction personnel 72 hours prior to any ground disturbance to enable Valley Utilities staff to verify the on site location and depth (elevation) of all existing utilities and services through field survey (potholing).</p>		Contractor	Prior to project activities
<p>The NPS shall apply for and comply with all federal and state permits required for construction-related activities.</p>		Yosemite National Park, Project Manger,	
<p>Trenching and grading operations using manual or heavy equipment shall follow industry-standard stabilization methods. After trenching and grading are complete, backfill compaction and regrading operations shall be initiated as soon as possible to establish and maintain stable soil surfaces. Soil surfaces shall be treated and restoration within approved NPS guidelines and specifications shall be performed.</p>		Contractor	Prior to and concurrent with project activities
<p>The Construction Contractor shall implement and comply with all requirements of the Oil and Hazardous Materials Spill Prevention, Control, and Countermeasure Plan prepared and approved for the project.</p>		Contractor	Concurrent with project activities

Mitigation Measure	Impact Topic	Responsibility	Critical Milestones
The Construction Contractor shall implement and comply with all operational compliance required by the Storm Water Pollution Prevention Plan (SWPPP) issued for the project.	Construction Mitigation Measures (continued)	Contractor	Concurrent with project activities
The Construction Contractor shall implement and comply with the requirements of the Revegetation Plan.		Contractor	Concurrent with project activities
The Construction Contractor shall implement and comply with the requirements of the noxious weed abatement program.		Contractor	Concurrent with project activities
Construction activities shall be monitored by qualified park natural and cultural resource specialists to ensure proper compliance with the implementation of mitigation measures.		Yosemite National Park, Project Manger	Concurrent with project activities
Construction waste shall be separated into recyclable materials, green waste, and other debris that shall be placed in refuse containers daily and disposed of weekly. Recycled, toxic-free, and environmentally sensitive materials, equipment, and products shall be utilized whenever possible. Burning or burying of waste is strictly prohibited.		Contractor	Concurrent with project activities
Wastewater contaminated with silt, grout, or other by-products from construction activities shall be contained in a holding or settling tank to prevent contaminated material from entering watercourses or wetlands.		Contractor	Concurrent with project activities
Hazardous or flammable chemicals shall be prohibited from storage in staging areas, except for those substances identified in the Oil and Hazardous Materials Spill Prevention, Control, and Countermeasure Plan. Hazardous waste materials shall be immediately removed from project site in approved containers.		Contractor	Concurrent with project activities
Machinery and equipment shall be parked over containment pads designed to trap any leaking oil, fuel or hydraulic fluids and inspected daily.		Contractor	Concurrent with project activities
Secondary containment shall be required for all fuel storage. Routine oiling, lubrication, and refueling shall be conducted with secondary containment and is prohibited in the River Protection Overlay, water courses or wetlands at any time.		Contractor	Concurrent with project activities
Spill response materials including absorbent pads, booms, and other materials to contain hazardous material spills shall be maintained on the project site to ensure rapid response to spills.	Contractor	Concurrent with project activities	

Appendix A

Mitigation Measure	Impact Topic	Responsibility	Critical Milestones
The Park Project Manager shall be immediately notified of all spills or releases of hazardous materials. Any spill release shall be digitally photographed or videotaped as part of response activities.	Construction Mitigation Measures (continued)	Contractor	Concurrent with project activities
Disruption of utility service will require advanced notification to the park, concessionaire and residents prior to scheduled disruptions. Unexpected interruptions due to construction activities shall promptly be reconnected.		Contractor	Concurrent with project activities
All construction tools and equipment entering the park shall be cleaned by means of pressure washing and/or steam cleaning to arrive on-site free of mud or seed-bearing material. Each piece of equipment shall undergo inspections immediately prior to entry of the park.		Contractor	Concurrent with project activities
Clearing of vegetation and ground disturbance shall be minimized to the greatest extent possible.		Contractor	Concurrent with project activities
Topsoil shall be salvaged, segregated during storage, and reused in the proper location and depth. Wetland soils shall be salvaged and reused as fill in wetland areas. Stockpiles of soils infected with fungal pathogens (root rot) must not be moved and reused in non-infected areas of the park. Equipment buckets, tires and hand tools used in areas containing root rot shall be cleaned prior to removal.		Contractor	Concurrent with project activities
A Construction Contractor representative shall be designated to monitor the worksite daily for proper disposal of waste, wrappers, and food packaging.		Contractor	Concurrent with project activities
All tools, equipment, barricades, signs, surplus materials, debris, and rubbish shall be removed by the Construction Contractor from the project work limits upon project completion.		Contractor	Upon completion of project activities
Vehicle or equipment tracks shall be raked out or eradicated and revegetated after construction activities to reduce visual impact and reduce the possibility of visitors driving through soil-disturbed areas.		Contractor	Upon completion of project activities
The park will monitor the success of the Revegetation Plan. Plant materials used for revegetation shall remain alive and in a healthy, vigorous condition for a period of one year after final acceptance of planting. The project site shall be monitored by qualified park personnel.		Yosemite National Park, Project Manager	Upon completion of project activities

Mitigation Measure	Impact Topic	Responsibility	Critical Milestones
<p>Construction plans shall identify the boundaries of wetland features, and shall show the location of a silt fence along the perimeter of staging and work areas. The plans shall clearly show the silt fence as being located in previously developed substrates and shall include details for proper silt fence installation. The silt fence shall create a continuous barrier between the staging and work areas and the wetland features.</p>	<p>Wetlands</p>	<p>Yosemite National Park, Project Manager, Contractor</p>	<p>Prior to project activities</p>
<p>All work activities shall be limited to the surface of the staging and work areas. All stockpiles, equipment storage, and materials storage shall be prohibited within the wetland features.</p>		<p>Contractor</p>	<p>Concurrent with project activities</p>
<p>The silt fence shall remain in place and functional throughout the duration of work activities.</p>		<p>Contractor</p>	<p>Concurrent with project activities</p>
<p>A construction work schedule shall be prepared by the Construction Contractor for the project that minimizes effects on wildlife in adjacent habitats, peaks in visitation, and noise levels. The work schedule shall be submitted for park review and approval prior to construction.</p>	<p>Wildlife</p>	<p>Yosemite National Park, Project Manager, Contractor</p>	<p>Prior to construction</p>
<p>Excavation sites shall be monitored or covered to avoid trapping wildlife and routes of escape should be maintained. The construction site shall be inspected daily for appropriate covering and flagging of excavation sites. Each morning the project area shall be inspected for wildlife trapped in excavation pits. A qualified biologist shall be available to inspect all excavations before refilling occurs.</p>		<p>Yosemite National Park, Project Manager, Contractor</p>	<p>Concurrent with project activities</p>
<p>Prior to determination of temporary staging areas and access routes, the park biologist shall survey for and assist with the delineation of special-status plant species. Construction activities shall avoid special-status plant populations to the greatest extent feasible during construction activities.</p>	<p>Rare, Threatened, and Endangered Species</p>	<p>Yosemite National Park, Project Manager, Contractor</p>	<p>Prior to project activities</p>
<p>Populations of special-status plant species shall be marked for protection by temporary fencing or clear flagging.</p>		<p>Yosemite National Park, Project Manager</p>	<p>Prior to and concurrent with project activities</p>
<p>If it is not feasible for construction activities to avoid special-status plant species, species conservation measures shall be developed in coordination with Yosemite National Park natural resources staff. Measures shall include, but not be limited to: salvage of special-status plants for use in revegetating disturbed areas, transplantation of special-status plants wherever feasible using methods and monitoring identified in the revegetation plan, and monitoring to ensure successful revegetation, protection of plantings, and replacement of unsuccessful plant materials if practicable.</p>		<p>Yosemite National Park, Project Manager</p>	<p>Prior to and concurrent with project activities</p>

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Mitigation Measure	Impact Topic	Responsibility	Critical Milestones
<p>If individuals of special-status plants must be removed for construction, salvage the plants or seeds (if annual) for propagation and reintroduction into the disturbance area.</p>	<p>Rare, Threatened, and Endangered Species (continued)</p>	<p>Yosemite National Park, Project Manager</p>	<p>Prior to and concurrent with project activities</p>
<p>If ground disturbing or vegetation removal activities are to occur during the typical nesting bird season (February through September), pre-disturbance nesting bird surveys shall be conducted. Nesting bird surveys shall be conducted within the immediate project footprint and all suitable habitats within 500 feet of the project footprint. If nesting birds (common or special-status) are identified, construction activities within 100 feet of the nest (500 feet if raptor) shall be delayed until the nestlings have fledged. If surveys conducted immediately prior to construction do not reveal any nesting bird species present within the project area, the action shall begin within three days to prevent the destruction of any nesting birds that may move into the area after the survey.</p>		<p>Yosemite National Park, Project Manager</p>	<p>Prior to and concurrent with project activities</p>
<p>Avian surveys for great gray owl shall be conducted at Big Oak Flat (Rockefeller Grove), Crane Flat, Hodgdon Meadow, and Wawona. Surveys shall be conducted using standard survey protocols within an area that extends 500 feet from the development footprint. In the event of occurrence, the park wildlife biologist shall be notified to evaluate whether construction will impact an active nest or disrupt reproductive behavior. If disruption of nesting behavior is evident, construction and tree removal or trimming shall be avoided within 500 feet of the nest until the park wildlife biologist determines that project activities will no longer disturb nesting or until all nestlings have fledged.</p>		<p>Yosemite National Park, Project Manager</p>	<p>Prior to and concurrent with project activities</p>
<p>Prior to removing any trees or existing facilities, a roosting bat survey shall be conducted utilizing standard protocols (e.g., careful inspection of potentially occupied sites, night vision scopes, Anabat recordings, mist netting). If bats are utilizing the tree or facility for a night or day roost, passive exclusion measures (netting or other deterrents) shall be employed to deter further roosting. If a natal roost is identified, all disturbing activities shall be avoided within 100 feet of the natal roosts. Facility demolition, tree removal, and tree trimming shall be limited to periods of the year when neither maternity nor hibernation colonies are likely (generally April 15 through May 15 and August 15 through October 31). If facility demolition, tree removal, or tree trimming is scheduled to occur between November and March or between June and July, a qualified bat biologist shall survey trees and facilities to be removed or trimmed,</p>		<p>Yosemite National Park, Project Manager</p>	<p>Prior to and concurrent with project activities</p>

Mitigation Measure	Impact Topic	Responsibility	Critical Milestones
<p>and other potential habitat for breeding or hibernating bats prior to project activities. If surveys conducted immediately prior to construction do not reveal any bat species present within the project area, the action shall begin within three days to prevent the destruction of any bats that may move into the area after the survey.</p>	<p>Rare, Threatened, and Endangered Species (continued)</p>		
<p>Pacific fisher surveys shall be conducted at the Henness Ridge, Turtleback Dome, Big Oak Flat (Rockefeller Grove), and Crane Flat facility sites. The survey area shall include the development footprint and a 500-foot buffer, and shall include inspection for essential habitat elements (e.g., downed logs, hollow trees, etc.) or sign of Pacific fisher. Based on consultation with the park wildlife biologist, more intensive surveys may be necessary to determine the presence or absence of active dens. If Pacific fisher individuals or active dens are identified, the park wildlife biologist shall be notified to determine the appropriate actions.</p>		<p>Yosemite National Park, Project Manager</p>	<p>Prior to and concurrent with project activities</p>
<p>Key habitat features for Pacific fisher shall be retained, including overhead cover, large diameter snags, large diameter down logs, large diameter live conifer and oak trees with decadence such as broken tops or cavities, root masses, live branches, and multi-layered vegetation.</p>		<p>Yosemite National Park, Project Manager</p>	<p>Prior to and concurrent with project activities</p>
<p>Construction activities at the Turtleback Dome and May Lake Junction facility sites, and trenching activities between May Lake Junction and Tuolumne Meadows shall be avoided during snowmelt. Survey of the construction areas shall be conducted to verify that habitat conditions would not support Mount Lyell salamander during the construction period.</p>		<p>Yosemite National Park, Project Manager</p>	<p>Prior to and concurrent with project activities</p>
<p>Construction equipment, truck, and maintenance vehicle speeds shall be limited to 15 miles per hour on facility site access routes to minimize the potential for harm to Pacific fisher, and other wildlife within the roadway.</p>		<p>Yosemite National Park, Project Manager</p>	<p>Prior to and concurrent with project activities</p>
<p>Construction plans shall incorporate the use of dark, muted exterior colors (e.g., dark browns) for all proposed facility support structures, equipment shelters, microwave dishes, and antennas. Visible wiring and cables shall be dark brown or black.</p>	<p>Scenic Resources</p>	<p>Yosemite National Park, Project Manager, Contractor</p>	<p>Prior to project activities</p>
<p>The Revegetation Plan shall include the use of native trees and vegetation to shield the base of facility support structures, and new equipment shelters from public view.</p>		<p>Yosemite National Park, Project Manager, Contractor</p>	<p>Prior to project activities</p>

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Mitigation Measure	Impact Topic	Responsibility	Critical Milestones
Construction equipment and materials shall be consolidated in designated staging areas when not in operation, to limit the visual intrusion of construction equipment during nonwork hours. Staging areas located outside of existing NPS maintenance yards shall be fenced to the maximum extent feasible to visually screen construction materials.	Scenic Resources (continued)	Contractor	Prior to and concurrent with project activities
Cover and/or seal stockpiles to minimize blowing dust or loss of debris.	Air Quality	Contractor	Concurrent with project activities
Truck and related construction equipment speeds in active construction areas shall be limited to 15 miles per hour. All park regulations and posted speed limits shall be strictly adhered to within the park boundaries.		Contractor	Concurrent with project activities
When hauling dry materials, truck beds shall be securely covered to prevent blowing dust or loss of debris.		Contractor	Concurrent with project activities
The Contractor shall maintain adequate dust suppression equipment, and shall use clean water to control excess airborne particulates at the staging area, access roads or trails, and all park roads leading to or from the site. Water shall not applied when construction caused dust is not present.		Contractor	Concurrent with project activities
Hydraulic or electric-powered impact tools shall be used when feasible.	Soundscapes	Contractor	Concurrent with project activities
All construction equipment shall be equipped with mufflers kept in proper operating condition.		Contractor	Concurrent with project activities
Idling of motors shall be limited, except as necessary.		Contractor	Concurrent with project activities
To the extent possible, all on-site noisy work above 76 dBA (such as the operation of heavy equipment) shall be conducted between the hours of 8:30 a.m. and 5:00 p.m.		Contractor	Concurrent with project activities
Construction plans shall include measures to reduce effects of construction on visitor safety and experience. A barrier plan shall indicate locations and types of barricades to protect public health and safety during both work and non-work hours.	Visitor Experience and Recreation	Yosemite National Park, Project Manager, Contractor	Prior to and concurrent with project activities
The park shall develop and implement a comprehensive traffic control plan for park review/approval that complies with necessary U.S. Department of Transportation and Federal Highway Administration regulations.	Transportation and Traffic	Yosemite National Park, Project Manager, Contractor	Prior to and concurrent with project activities

Mitigation Measure	Impact Topic	Responsibility	Critical Milestones
<p>The park shall adhere to the Park Programmatic Agreement Among the National Park Service at Yosemite, the California State Historical Preservation Officer, and the Advisory Council on Historic Preservation Regarding Planning, Design, Construction, Operations, and Maintenance, Yosemite National Park, California (1999 PA) to mitigate adverse effects.</p>	<p>Historic Properties</p>	<p>Yosemite National Park, Project Manager</p>	<p>Prior to and concurrent with project activities</p>
<p>Mitigation measures include avoiding impacts and designing new development to be compatible with surrounding historic resources. Standard mitigation measures, as defined in the 1999 PA, include photo documentation, salvage, and reevaluation of National Register status (updating National Register Nomination form).</p>		<p>Yosemite National Park, Project Manager</p>	<p>Prior to and concurrent with project activities</p>
<p>A Cultural Resources Monitoring Plan shall be prepared by the park to ensure proper compliance with the implementation of cultural resource mitigation measures as described in this section and as stipulated in the 1999 Programmatic Agreement.</p>		<p>Yosemite National Park, Project Manager</p>	<p>Prior to and concurrent with project activities</p>
<p>Undertake all treatments within historic landscapes in keeping with the Secretary of the Interior's Standards for the Treatment of Historic Properties.</p>		<p>Yosemite National Park, Project Manager</p>	<p>Prior to and concurrent with project activities</p>
<p>Continue to consult with culturally associated American Indian tribes throughout the site-specific design process and project implementation to avoid or mitigate damage to American Indian traditional resources.</p>	<p>American Indian Traditional Cultural Practices</p>	<p>Yosemite National Park, Project Manager</p>	<p>Prior to and concurrent with project activities</p>

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APPENDIX B: SPECIAL- STATUS SPECIES ACCOUNTS

A total of 104 special- status species were considered in the evaluation of the Yosemite CDN project sites (see Tables C- 1 and C- 2). These special- status species include those listed as endangered, threatened, proposed, or candidate under the Federal Endangered Species Act of 1973, as amended (USFWS 2008), species listed as endangered, threatened, candidate, or sensitive under the California Endangered Species Act or accorded “special status” (i.e., considered rare or sensitive by the California Department of Fish and Game), and park sensitive wildlife species and park rare plants. The purpose of this document appendix is to:

- Evaluate whether special- status species or their critical habitat are known to be or could be present within the project area;
- Determine the need for consultation and conference with the U.S. Fish and Wildlife Service
- Conform to requirements of the Endangered Species Act (19 United States Code [USC] 1536 [c], 50 Code of Federal Regulations [CFR] 402) and the National Environmental Policy Act, 42 USC 4321 et seq., implemented at 40 CFR Parts 1500–1508)

Each species in the following tables was evaluated to determine (1) the known or likely occurrence of a species or its preferred habitat in the vicinity of the project area, and the possibility of a species or its preferred habitat types occurring in areas expected to be affected; (2) the direct physical loss of habitat; (3) the loss of habitat from its modification; and (4) the effective loss of habitat due to construction activity, noise, trampling, or other types of direct and indirect effects. Habitat fragmentation was also considered. Special- status species are considered further in this Environmental Assessment (in Chapter 3, Affected Environment and Environmental Consequences) if actions proposed in the alternatives could have direct, indirect, or cumulative impacts on the species.

As a result of the preliminary assessment, including an analysis of distribution and abundance, habitat requirements of each species, and habitat characteristics of each project site, and existing human disturbances at each facility site, it was determined that 25 of the 104 special- status species listed in the tables warrant further consideration in the body of this Environmental Assessment and are discussed below the tables. The remaining 79 special- status species do not occur in the project areas and there would be no direct, indirect, or cumulative effect on these species from actions proposed in the alternatives. These species are not evaluated further in this environmental assessment.

Special- Status Species Categories

The federal, state, and National Park Service special- status species listed in Tables C- 1 and C- 2 are categorized as:

- Federal endangered (FE): Any species that is in danger of extinction throughout all or a significant portion of its national range.
- Federal threatened (FT): Any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its national range.
- Federal candidate species (FC): Any species for which there is sufficient information on their biological status and threats to propose them as endangered or threatened under the

Endangered Species Act (ESA), but for which development of a proposed listing regulation is precluded by other higher priority listing activities.

- State of California endangered (CE): Any species that is in danger of extinction throughout all or a significant portion of its range in the state.
- State of California threatened (CT): Any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its state range.
- State of California species of special concern (CSC): Any species that may become vulnerable to extinction on a state level from declining population trends, limited range, and/or continuing threats; could become threatened or endangered.
- State of California fully protected species (FP). Species (including federal and state listed) that are rare or face possible extinction for which the State provides additional protection. The State of California regulates the possession and taking of these species.
- CDFG Special Animal (SA): These species are not formally listed but included on the CDFG “Special Animal” List. These species occupy much of their native range, but were formerly more widespread or abundant within that range. The populations of such species need to be assessed periodically and included in long- term plans for protection.
- Yosemite National Park sensitive or special status (PS): Identified by the National Park Service as special- status or sensitive. Park sensitive plants include those that are locally rare natives, listed by the California Native Plant Society, endemic to the park or its local vicinity, at the furthest extent of their range, of special importance to the park (identified in legislation or park management objectives), the subject of political concern or unusual public interest, vulnerable to local population declines, or subject to human disturbance during critical portions of their life cycle.
- California Native Plant Society Listed species (CNPS [List 1B, 2, 3, and 4]): List 1B plants are rare throughout their range with the majority of them endemic to California. Most of the plants of List 1B have declined significantly over the last century. List plants are Rare, Threatened, or Endangered in California, But More Common Elsewhere. List 3 includes plants that need further review. List 4 plants are known to have a limited distribution and are watched in their range.

Table B-1. Special-Status Plant Species Investigated for Potential Occurrence

Species Name	Habitat and Distribution	Flower Season	Legal Status Federal/ State/CNPS	Rationale for Expecting Presence or Absence
mountain bent grass <i>Agrostis humis</i>	Perennial grass that occurs in alpine boulder and rock fields, meadows and seeps, and subalpine coniferous forests. 2,670 – 3,200 meters	July-September	--/--/2.3	The MLJ site supports suitable habitat and is within the known elevation range for this species. A population of Mountain bent grass is located northwest of the MLJ site; however, surveys conducted in August 2009 did not identify this species on the site.
three-bracted onion <i>Allium tribracteatum</i>	Bulbiferous herb that occurs in chaparral, lower montane coniferous forest and upper montane coniferous forest. 1,100-3,000 meters.	April-August	--/--/1B.2	The MLJ and BOFR sites are within the known elevational range for this species and support suitable habitat. Surveys conducted in August 2009 did not identify this species.
Yosemite onion <i>Allium yosemitense</i>	Bulbiferous herb that occurs in chaparral, broadleafed upland forest, cismontane woodland, and lower montane coniferous forest (rocky, metamorphic or granitic). 535-2200 meters.	April-July	--/SR/1B.3	Removed from further evaluation. Due to existing disturbances, none of the proposed facility sites support suitable habitat.
slender silver moss <i>Anomobryum julaceum</i>	Moss that occurs in broadleafed upland forest, lower montane coniferous forest and north coast coniferous forest (damp rock and soil on outcrops). 100-1000 meters.	N/A	--/--/2.3	Removed from further evaluation. Due to existing disturbances, none of the proposed facility sites support suitable habitat.
Tiehm's rock-cress <i>Arabis tiehmii</i>	Perennial herb that occurs in boulder and rock field. 2,970-3,590 meters.	July-August	--/--/1B.3	The MLJ site supports suitable habitat and is within the known elevation range for this species. Surveys conducted in August 2009 did not identify this species. Based on NPS data, this species is not known to occur in the park (Hutten 2009).
big-scale balsamroot <i>Balsamorhiza macrolepis</i> var. <i>macrolepis</i>	Perennial herb that occurs in chaparral, cismontane woodland, and valley and foothill grassland (sometimes serpentinite). 90-1,555 meters.	March-June	--/--/1B.2	Removed from further evaluation. Due to existing disturbances, none of the proposed facility sites support suitable habitat.

Table B-1. Special-Status Plant Species Investigated for Potential Occurrence

Species Name	Habitat and Distribution	Flower Season	Legal Status Federal/ State/CNPS	Rationale for Expecting Presence or Absence
scalloped moonwort <i>Botrychium crenulatum</i>	Rhizomatous herb that occurs in bogs and fens, meadows and seeps, lower montane coniferous forest, marshes and swamps, and upper montane coniferous forest. 1,268-3,280 meters.	June-September	--/--/2.2	Removed from further evaluation. None of the proposed facility sites support suitable habitat. Based on NPS data, this species is not known to occur in the park (Hutten 2009).
Bolander's bruchia <i>Bruchia bolanderi</i>	Moss that occurs in meadows and seeps, lower montane coniferous forest and upper montane coniferous forest. (damp soil). 1,700-2,800 meters.	N/A	--/--/2.2	Removed from further evaluation. None of the proposed facility sites support suitable habitat.
Hoover's calcyadenia <i>Calcyadenia hooveri</i>	Annual herb that occurs in cismontane woodland, and valley and foothill grassland. 65-300 meters.	July-September	--/--1B.3	Removed from further evaluation. Due to existing disturbances, none of the proposed facility sites support suitable habitat.
Mariposa pussypaws <i>Calyptridium pluchellum</i>	Annual herb that occurs in cismontane woodland (sandy or gravelly) and chaparral. 400-1,220 meters.	April-August	--/--1B.1	Removed from further evaluation. Due to existing disturbances, none of the proposed facility sites support suitable habitat.
Mono Hot Springs evening-primrose <i>Camissonia sierrae</i> ssp. <i>alticola</i>	Annual herb that occurs in lower montane coniferous forest and upper montane coniferous forest (granitic, gravel and sand pans). 1,035-2,410 meters	May-August	--/--1B.2	Removed from further evaluation. None of the proposed facility sites support suitable habitat.
mud sedge <i>Carex limosa</i>	Rhizomatous herb that occurs in bogs and fens, meadows and seeps, lower montane coniferous forest, marshes and swamps, and upper montane coniferous forest. 1,200-2,700 meters.	June-August	--/--/2.2	Removed from further evaluation. None of the proposed facility sites support suitable habitat.
northern meadow sedge <i>Carex praticola</i>	Perennial herb that occurs in meadows and seeps (mesic). 0-3,200 meters.	May-July	--/--/2.2	Removed from further evaluation. None of the proposed facility sites support suitable habitat.

Table B-1. Special-Status Plant Species Investigated for Potential Occurrence

Species Name	Habitat and Distribution	Flower Season	Legal Status Federal/ State/CNPS	Rationale for Expecting Presence or Absence
Tompkins' sedge <i>Carex tompkinsii</i>	Rhizomatous herb that occurs in chaparral, cismontane woodland, upper montane coniferous forest, and lower montane coniferous forest. 420-1,830 meters.	May-July	--/SR/4.3	The BOFR site is within the known elevational range for this species and supports suitable habitat. Species not observed during August 2009 surveys.
green yellow sedge <i>Carex viridula</i> var. <i>viridula</i>	Perennial herb that occurs in bogs and fens, marshes and swamps (freshwater), and north coast coniferous forest. 0-1,600 meters.	(June) July-September (November)	--/--/2.3	Removed from further evaluation. None of the proposed facility sites support suitable habitat.
Bolander's woodreed <i>Cinna bolanderi</i>	Perennial herb that occurs in meadows and seeps, within upper montane coniferous forest (mesic/stream sides). 1,670-2,440 meters.	July-September	--/--1B.2	Removed from further evaluation. None of the proposed facility sites support suitable habitat.
Small's southern clarkia <i>Clarkia australis</i>	Annual herb that occurs in cismontane woodland and lower montane coniferous forest. 800-2,075 meters.	May-August	--/--1B.2	The BOFR site is within the known elevational range for this species and support suitable habitat. Surveys conducted in August 2009 did not identify this species.
Mariposa clarkia <i>Clarkia biloba</i> ssp. <i>australis</i>	Annual herb that occurs in chaparral and cismontane woodland (serpentinite). 300-985 meters	May-July	--/--1B.2	Removed from further evaluation. Due to existing disturbances and lack of serpentine soil, none of the proposed facility sites support suitable habitat.
Merced clarkia <i>Clarkia lingulata</i>	Annual herb that occurs in chaparral and cismontane woodland. 400-455 meters.	May-June	FE/--1B.2	The ELP site is within the known elevation range and adjacent areas may contain habitat for this species. However, the site is contained within an existing urban development and is not expected.
beaked clarkia <i>Clarkia rostrata</i>	Annual herb that occurs in cismontane woodland, and valley and foothill grassland. 60-500 meters	April-May	--/--1B.3	The ELP site is within the known elevation range and adjacent areas may contain habitat for this species. However, the site is contained within an existing urban development and is not expected

Table B-1. Special-Status Plant Species Investigated for Potential Occurrence

Species Name	Habitat and Distribution	Flower Season	Legal Status Federal/ State/CNPS	Rationale for Expecting Presence or Absence
fell-fields claytonia <i>Claytonia megarhiza</i>	Perennial herb that occurs in boulder and rock field, and subalpine coniferous forest (rocky or gravelly). 2,600-3,532 meters.	July-September	--/--/2.3	The MLJ site supports suitable habitat and is within the known elevation range for this species. Surveys conducted in August 2009 did not identify this species.
<i>Rawson's flaming trumpet</i> <i>Collomia rawsoniana</i>	Rhizomatous herb that occurs in riparian forest (mesic), meadows and seeps, and lower montane coniferous forest. 780-2,200 meters.	July-August	--/--/1B.2	Removed from further evaluation. None of the proposed facility sites support suitable habitat.
Mariposa cryptantha <i>Cryptantha mariposa</i>	Annual herb that occur in chaparral (rocky, serpentinite). 200-650 meters.	April-June	--/--/1B.3	Removed from further evaluation. None of the proposed facility sites support suitable habitat. Based on NPS data, this species is not known to occur in the park.
Norris' beard moss <i>Didymodon norrisii</i>	Moss that occurs in cismontane woodland and lower montane coniferous forest (intermittently mesic, rock). 600-1973 meters.	N/A	--/--/2.2	Removed from further evaluation. None of the proposed facility sites support suitable habitat.
Koch's beard moss <i>Entosthodon kochii</i>	Moss that occurs in cismontane woodland. 180-1,000 meters.	N/A	--/--/1B.3	Removed from further evaluation Due to existing disturbances, none of the proposed facility sites support suitable habitat.
subalpine fireweed <i>Epilobium howellii</i>	Stoloniferous herb that occurs in meadows and seeps within subalpine coniferous forest. 2,000-2,700 meters.	July-August	--/--/4.3	Removed from further evaluation. None of the proposed facility sites support suitable habitat.
Mariposa daisy <i>Erigeron mariposanus</i>	Perennial herb that occurs in cismontane woodland. 600-800 meters.	June-August	--/--/1A	Removed from further evaluation. Due to existing disturbances, none of the proposed facility sites support suitable habitat. Based on NPS data this species is not known to exist the park.

Table B-1. Special-Status Plant Species Investigated for Potential Occurrence

Species Name	Habitat and Distribution	Flower Season	Legal Status Federal/ State/CNPS	Rationale for Expecting Presence or Absence
Congdon's woolly sunflower <i>Eriophyllum congdonii</i>	Annual herb that occurs in chaparral, cismontane woodland, valley and foothill grassland (rocky, metamorphic), and lower montane coniferous forest. 500-1,900 meters.	April-June	--/SR/1B.2	Areas surrounding the EGP site may support this species. Pre-disturbance surveys are proposed.
Yosemite woolly sunflower <i>Eriophyllum nubigenum</i>	Annual herb that occurs in chaparral, lower montane coniferous forest, and upper montane coniferous forest (gravelly, granitic). 1,525-2,750 meters.	May-August	--/--/1B.3	The MLJ and BOFR sites are within the known elevational range for this species and support suitable habitat. Surveys conducted in August 2009 did not identify this species.
small-flowered fescue <i>Festuca minutiflora</i>	Perennial herb that occurs in boulder and rock field. 3,200-4,050 meters.	July	--/--/2.3	The MLJ site is within the known elevational range for this species and support suitable habitat. Surveys conducted in August 2009 did not identify this species. Based on NPS data this species is not known to exist the park.
Bisbee peak rush-rose <i>Helianthemum suffrutescens</i>	Evergreen shrub that occurs in chaparral (gabbroic, serpentinite or lone soil). 45-840 meters.	April-June	--/--/3.2	Removed from further evaluation. None of the proposed facility sites support suitable soils.
Parry's horkelia <i>Horkelia parryi</i>	Perennial herb that occurs in chaparral and cismontane woodland with lone formation and other soils. 80-1,035meters	April-September	--/--/1B.2	Removed from further evaluation. Due to existing disturbances, none of the proposed facility sites support suitable habitat.
short-leaved hulsea <i>Hulsea brevifolia</i>	Perennial herb that occurs in lower montane coniferous forest and upper montane coniferous forest (granitic or volcanic / sandy or gravelly). 1,500-3,200 meters.	May-August	--/--/1B.2	The MLJ and BOFR sites are within the known elevational range for this species and support suitable habitat. Surveys conducted in August 2009 did not identify this species. However, pre-disturbance surveys are proposed.
Yosemite ivesia <i>Ivesia unguiculata</i>	Perennial herb that occurs in meadows and seeps within upper montane coniferous forest and subalpine coniferous forest. 1,500-2,925 meters.	June-September	--/--/4.2	Removed from further evaluation. Due to existing disturbances and lack of wetland habitat, none of the proposed facility sites support suitable habitat.

Table B-1. Special-Status Plant Species Investigated for Potential Occurrence

Species Name	Habitat and Distribution	Flower Season	Legal Status Federal/ State/CNPS	Rationale for Expecting Presence or Absence
Madera leptosiphon <i>Leptosiphon serrulatus</i>	Annual herb that occurs in cismontane woodland and lower montane coniferous forest. 300-1,300 meters.	April-May	--/--/1B.2	Removed from further evaluation. Due to existing disturbances, none of the proposed facility sites support suitable habitat.
Congdon's lewisia <i>Lewisia congdonii</i>	Perennial herb that occurs in chaparral, cismontane woodland, lower montane coniferous forest, upper montane coniferous forest, and valley and foothill grassland (granitic or metamorphic, rocky, mesic. 500-2,800 meters.	April-June	--/--/1B.3	Removed from further evaluation. Due to existing disturbances, none of the proposed facility sites support suitable habitat. The BOFR site is within the known elevational range for this species and supports suitable habitat; however does not support the appropriate soils.
Yosemite lewisia <i>Lewisia disepala</i>	Perennial herb that occurs in pinyon and juniper woodland, upper montane coniferous forest and lower montane coniferous forest with gravelly soils. 1,035-3,500 meters.	March-June	--/--/1B.2	Removed from further evaluation. Due to existing disturbances, none of the proposed facility sites support suitable habitat. The BOFR and MLJ sites are within the known elevational range for this species and support suitable habitat; however, do not support the appropriate soils.
Congdon's lomatium <i>Lomatium congdonii</i>	Perennial herb that occurs in chaparral and cismontane woodland (serpentinite). 300-2,100 meters.	March-June	--/--/1B.2	Removed from further evaluation. None of the proposed facility sites support suitable soils.
Mariposa lupine <i>Lupinus citrinus var. deflexus</i>	Annual herb that occurs in chaparral and cismontane woodland (granitic, sandy). 400-610 meters	April-May	FT/--/1B.2	Removed from further evaluation. None of the proposed facility sites support suitable habitat.
slender lupine <i>Lupinus gracilentus</i>	Perennial herb that occurs in subalpine coniferous forest. 2,500-3,500 meters.	July-August	--/--/1B.3	The MLJ site is within the known elevational range for this species and support suitable habitat. Surveys conducted in August 2009 did not identify this species.

Table B-1. Special-Status Plant Species Investigated for Potential Occurrence

Species Name	Habitat and Distribution	Flower Season	Legal Status Federal/ State/CNPS	Rationale for Expecting Presence or Absence
shaggyhair lupine <i>Lupinus spectabilis</i>	Annual herb that occurs in chaparral and cismontane woodland (serpentinite). 260-825 meters.	April-May	--/--1B.2	Removed from further evaluation. None of the proposed facility sites support suitable habitat.
elongate copper moss <i>Mielichhoferia elongata</i>	Moss that occurs in cismontane woodland (metamorphic, rock, vernal mesic). 500-1,300 meters.	N/A	--/--2.2	Removed from further evaluation. None of the proposed facility sites support suitable habitat.
slender-stemmed monkeyflower <i>Mimulus filicaulis</i>	Annual herb that occurs in cismontane woodland, meadows and seeps, lower montane coniferous forest, and upper montane coniferous forest (vernally mesic). 900-1750 meters.	April-August	--/--1B.2	This species is known to occur adjacent to the HHE site. Pre-disturbance surveys and avoidance and minimization measures are proposed.
slender-stocked monkeyflower <i>Mimulus gracilipes</i>	Annual herb that occurs in chaparral, cismontane woodland, and lower montane coniferous forest (decomposed granite, burned areas). 500-1,300 meters.	April-June	--/--1B.2	Removed from further evaluation. None of the proposed facility sites support suitable habitat.
yellow-lip monkeyflower <i>Mimulus pulchellus</i>	Annual herb that occurs in meadows and seeps (vernally mesic), and lower montane coniferous forest. 600-2,000 meters.	April-July	--/--1B.2	Removed from further evaluation. None of the proposed facility sites support suitable habitat.
Yosemite popcorn flower <i>Plagiobothrys torreyi</i> var. <i>torreyi</i>	Annual herb that occurs in meadows and seeps, and lower montane coniferous forest. 1,200-1,370 meters.	April-June	--/--1B.2	Removed from further evaluation. None of the proposed facility sites support suitable habitat.
Yosemite bog orchid <i>Platanthera yosemitensis</i>	Perennial herb that occurs in meadows and seeps (mesic, montane, granitic). 2,100-2,285 meters.	July-August	--/--1B.2	Removed from further evaluation. None of the proposed facility sites support suitable habitat.
Nuttall's ribbon-leaved pondweed <i>Potamogeton epihydrus</i> ssp. <i>nuttallii</i>	Rhizomatous-aquatic herb that occurs in marshes and swamps (shallow freshwater). 369-2,172 meters.	July-September	--/--2.2	Removed from further evaluation. None of the proposed facility sites support suitable habitat.

Table B-1. Special-Status Plant Species Investigated for Potential Occurrence

Species Name	Habitat and Distribution	Flower Season	Legal Status Federal/ State/CNPS	Rationale for Expecting Presence or Absence
slender-leaved pondweed <i>Potamogeton filiformis</i>	Rhizomatous-aquatic herb that occurs in marshes and swamps (shallow freshwater). 300-2,150 meters.	May-July	--/--/2.2	Removed from further evaluation. None of the proposed facility sites support suitable habitat.
Robin's pondweed <i>Potamogeton robbinsii</i>	Rhizomatous-aquatic herb that occurs in marshes and swamps (deep water, lakes). 1,530-3,330 meters.	July-August	--/--/2.3	Removed from further evaluation. None of the proposed facility sites support suitable habitat.
white beaked-rush <i>Rhynchospora alba</i>	Rhizomatous herb that occurs in bogs and fens, marshes and swamps (freshwater), and meadows and seeps. 60-2,040 meters.	July-August	--/--/2.2	Removed from further evaluation. None of the proposed facility sites support suitable habitat.
short-fruited willow <i>Salix brachycarpa</i> ssp. <i>brachycarpa</i>	Deciduous shrub that occurs in alpine dwarf scrub, meadows and seeps, and subalpine coniferous forest. 3,000-3,500 meters.	June-July	--/--/2.3	Removed from further evaluation. None of the proposed facility sites support suitable habitat.
snow willow <i>Salix nivalis</i>	Deciduous shrub that occurs in alpine dwarf scrub. 3,000-3,500 meters.	July-August	--/--/2.3	Removed from further evaluation. None of the proposed facility sites support suitable habitat.
Shevock's copper moss <i>Schizymerium shevockii</i>	Moss that occurs in cismontane woodland (metamorphic, rock, mesic). 750-1,400 meters.	N/A	--/--/1B.2	Removed from further evaluation. None of the proposed facility sites support suitable habitat.
water bulrush <i>Schoenoplectus subterminalis</i>	Rhizomatous-aquatic herb that occurs in bogs and fens, and marshes and swamps (lake margins). 750-2,250 meters.	June-August	--/--/2.3	Removed from further evaluation. None of the proposed facility sites support suitable habitat.
obtuse starwort <i>Stellaria obtusa</i>	Rhizomatous herb that occurs in riparian woodland, lower montane coniferous forest and upper montane coniferous forest (mesic, streambanks). 150-2,135 meters.	May- September (October)	--/--/4.3	Removed from further evaluation. None of the proposed facility sites support suitable habitat.

Table B-1. Special-Status Plant Species Investigated for Potential Occurrence

Species Name	Habitat and Distribution	Flower Season	Legal Status Federal/ State/CNPS	Rationale for Expecting Presence or Absence
Bolander's clover <i>Trifolium bolanderi</i>	Perennial herb that occurs in meadows and seeps, lower montane coniferous forest and upper montane coniferous forest (mesic). 2,039-2,600 meters.	June-August	--/--/1B.2	Removed from further evaluation. None of the proposed facility sites support suitable habitat.

General references: CDFG 2008, Hickman (ed.) 1993, Munz 1974, CNDDDB 2009

Status Codes

--= No status

Federal: FE = Federal Endangered; FT=Federal Threatened

State: SE=State Endangered; ST= State Threatened; SR= State Rare

California Native Plant Society (CNPS):

List 1B = rare, threatened, or endangered in California and elsewhere.

List 2 = rare, threatened, or endangered in California, but more common elsewhere.

List 3 = plants that about which more information is needed.

List 4 = a watch list plants of limited distribution.

Threat Code:

.1 = Seriously endangered I California (over 80% of occurrences threatened / high degree and immediacy of threat)

.2 = Fairly endangered in California (20-80% occurrences threatened)

.3 = Not very endangered I California (<20% of occurrences threatened or no current threats known)

Table B-2. Special-Status Wildlife Species Investigated for Potential Occurrence

Species Name	Habitat and Distribution	Legal Status Federal/State/CDFG	Rationale for Expecting Presence or Absence
Gastropods			
Merced canyon shoulderband (<i>Helminthoglypta allynsmithi</i>)	The Merced canyon shoulderband is known only from the Merced River Canyon, 3-6 miles below El Portal, and is limited to rockslide habitat with tree cover, on north facing slopes, between 1,500 to 1,700 feet elevation.	--/SA/--	Species removed from further evaluation; ELP is within known range, yet site is contained within existing urban development.
Insects			
Wawona riffle beetle (<i>Atractelmis wawona</i>)	Freshwater beetle found in riffles of rapid, small to medium clear mountain streams; 2,000-5,000 feet elevation.	--/SA/--	Species removed from further evaluation due to the lack of aquatic habitats in the facility sites.
Crane Flat harvestman (<i>Calicina conifera</i>)	Known only from Crane Flat Junction, by the holotype male and two female paratypes, found under fallen bark in mixed coniferous forests.	--/SA/--	Species removed from further evaluation due to limited information.
Valley elderberry longhorn beetle (<i>Desmocerus californicus dimorphus</i>)	Occurs in the central valley of California and vicinity, in association with Blue Elderberry (<i>Sambuccus mexicana</i>).	FT/--/--	Removed from further evaluation due to the lack of suitable habitat in the facility sites.
Fish			
Paiute cutthroat trout (<i>Onchorhynchus clarkia seleniris</i>)	Found in cool, clear waters with clean gravels for spawning. Historic range included the Silver King Creek system, Toiyabe National Forest, California. Introduced above Llewellyn Falls from downstream; later, the population below the falls hybridized with introduced rainbow trout (Behnke 1992). Introduced populations occur in other streams and lakes in California, including the North Fork of Cottonwood Creek (Mono County), Stairway Creek (Madera County), and Cabin and Sharktooth creeks (Behnke 1992).	FT/--/--	Species removed from further evaluation due to the lack of aquatic features in the facility sites.

Table B-2. Special-Status Wildlife Species Investigated for Potential Occurrence

Species Name	Habitat and Distribution	Legal Status Federal/State/CDFG	Rationale for Expecting Presence or Absence
Amphibians			
Yosemite toad (<i>Anaxyrus canorus</i>)	Occurs in the vicinity of wet montane meadows and seasonal ponds associated with the lodgepole pine and subalpine coniferous forest, 6,400 to 11,300 feet elevation.	FC/--/CSC	The meadows near to the MLJ site may support this species; however, the MLJ site is located on a rocky upland slope that does not support suitable habitat for this species.
Limestone salamander (<i>Hydromantes brunus</i>)	Found in limestone outcrops, caverns, talus in Digger pine chaparral belt along the Merced River and its tributaries, from 800 to 2,600 feet elevation.	--/ST/--	Species removed from further evaluation due to lack of habitat in the facility sites. The ELP site is within the species range; however, the site is located in a developed area that lacks limestone substrates.
Mount Lyell salamander (<i>Hydromantes platycephalus</i>)	Found in massive rock areas in mixed conifer, red fir, lodgepole pine, and subalpine habitats, along north and east slopes with a water source, 4,000 to 11,600 feet elevation.	--/--/CSC	Suitable habitat present at the TRT, MLJ, and SNT facility sites. Avoidance and minimization measures are proposed.
California red-legged frog <i>Rana draytonii</i>	Aquatic habitats with little or no flow and surface water depths to at least 2.3 feet. Presence of fairly sturdy underwater supports such as cattails.	FT /-- /CSC	Species removed from further evaluation due to lack of suitable habitat within the facility sites. In addition, the facility sites are located outside the species range.
Mountain yellow-legged frog (<i>Rana muscosa</i>) [Sierra Nevada yellow-legged frog (<i>Rana sierrae</i>)]	Always encountered within a few feet of water. Federal listing applies to populations within the San Gabriel, San Jacinto, and San Bernardino mountains only.	FC/--/CSC	Species removed from further evaluation due to lack of habitat within facility sites. Species could inhabit the meadows located approximately 2,000 feet from the MLJ site.

Table B-2. Special-Status Wildlife Species Investigated for Potential Occurrence

Species Name	Habitat and Distribution	Legal Status Federal/State/CDFG	Rationale for Expecting Presence or Absence
Reptiles			
Southwestern pond turtle (<i>Actinemys marmorata pallida</i>)	Quiet waters of ponds, lakes, streams, and marshes. Typically in the deepest parts with an abundance of basking sites.	--/--/CSC	Removed from further evaluation due to the lack of aquatic habitats in the facility sites.
Birds			
Northern goshawk (<i>Accipiter gentilis</i>)	Occurs within and in vicinity of coniferous forests usually with mature, open stands to promote lower canopy maneuverability and prey capture. Uses old nests and maintains alternate sites. Known to occur in Yosemite National Park.	--/--/CSC	Suitable habitat present. Avoidance and minimization measures are proposed, nesting bird surveys are proposed.
Willow flycatcher (<i>Empidonax traillii</i>)	Inhabits extensive thickets of low, dense willows on edge of wet meadows, ponds, or backwaters, between 2,000-8,000 feet elevation.	--/SE/--	Removed from further evaluation due to lack of suitable habitat in the facility sites. Suitable habitat occurs several thousand feet from the HMC and Wawona facility sites. Suitable habitat would not be impacted.
Bald eagle (<i>Haliaeetus leucocephalus</i>)	Occurs along ocean shore, lake margins and rivers for both nesting and wintering. Most nests within one mile of water.	MBTA/SE/--	Removed from further evaluation due to the lack of suitable habitat within or near the facility sites. Nesting bird surveys proposed.
Great gray owl (<i>Strix nebulosa</i>)	In the Sierra Nevada, great gray owls nest in mature red fir, mixed conifer, or lodgepole pine forests near wet meadows or other vegetated openings between 2,500 and 8,900 feet	MBTA/SE/--	Suitable habitat present. Avoidance and minimization measures are proposed, nesting bird surveys are proposed.

Table B-2. Special-Status Wildlife Species Investigated for Potential Occurrence

Species Name	Habitat and Distribution	Legal Status Federal/State/CDFG	Rationale for Expecting Presence or Absence
Mammals			
Pallid bat (<i>Antrozous pallidus</i>)	Prefers rocky outcrops, cliffs, and crevices with access to open habitats for foraging. Day roosts are in caves, crevices, mines, and occasionally in hollow trees and buildings. Night roosts may be in more open sites, such as porches and buildings.	--/--/CSC	The various facility sites contain suitable habitats for roosting bats. Avoidance and minimization measures are proposed.
Sierra Nevada mountain beaver (<i>Aplodontia rufa californica</i>)	Generally found in association with moist meadows and montane riparian habitat and occasionally with open, brushy stages of most forest types in the Sierra Nevada. Requires an abundant supply of water, wet soil, and an abundance of forbs in the Sierra Nevada & East Slope.	--/--/CSC	Removed from further evaluation due to the lack of aquatic habitats in the facility sites
Townsend's big-eared bat <i>Corynorhinus townsendii</i>	Occurs in a wide variety of habitats; most common in mesic (wet) sites. May use trees for day and night roosts; however, requires caves, mines, rock faces, bridges or buildings for maternity roosts. Maternity roosts are in relatively warm sites.	--/--/CSC	The various facility sites contain suitable habitats for roosting bats. Avoidance and minimization measures are proposed.
Merced kangaroo rat (<i>Dipodomys heermanni dixonii</i>)	Occurs in grasslands and savanna communities in eastern Merced & Stanislaus counties. Needs fine, deep, well-drained soil. Granivorous, but also eats forbs and green grasses.	--/SA/--	Removed from further evaluation due to lack of suitable habitat in the facility sites.
Spotted bat (<i>Euderma maculatum</i>)	Occurs in a wide variety of habitats including grasslands and mixed conifer forests. Forages over water and along washes, primarily for moths. Uses crevices in rock faces for roosting and reproduction.	--/--/CSC	Suitable habitat present; all facilities have potential to support roosting bats. Avoidance and minimization measures are proposed.
Western mastiff bat (<i>Eumops perotis</i>)	Found in many open, semi-arid to arid habitats, including conifer and deciduous woodlands, coastal scrub, grasslands, chaparral, etc.; roosts in crevices in cliff faces, high buildings, trees, and tunnels.	--/--/CSC	Suitable habitat present; all facilities have potential to support roosting bats. Avoidance and minimization measures are proposed.

Table B-2. Special-Status Wildlife Species Investigated for Potential Occurrence

Species Name	Habitat and Distribution	Legal Status Federal/State/CDFG	Rationale for Expecting Presence or Absence
California wolverine (<i>Gulo gulo</i>)	Found in the North Coast Mountains and Sierra Nevada in a wide variety of high elevation habitats. Needs water source, uses caves, logs, burrows for cover and den area. Hunts in more open area, capable of traveling long distances.	--/ST/--	Removed from further evaluation; existing development and site disturbances preclude potential habitat conditions from being present at the facility sites.
Silver-haired bat (<i>Lasionycteris noctivagans</i>)	The silver-haired bat is a forest bat, associated primarily with northern temperate zone conifer and mixed conifer/hardwood forests with available water (Pierson et al. 2006).	--/SA/--	Suitable habitat present; all facilities have potential to support roosting bats. Avoidance and minimization measures are proposed.
Western red bat (<i>Lasiurus blossevillii</i>)	The western red bat roosts primarily in trees, often in edge habitats adjacent to streams, fields, or urban areas (Zeiner et al., 1990). Mating occurs in August and September and young are born from late May through early July.	--/--/CSC	Suitable habitat present; all facilities have potential to support roosting bats. Avoidance and minimization measures are proposed.
Hoary bat (<i>Lasiurus cinereus</i>)	Occurs in open habitats and habitat mosaics with access to trees for cover. Roosts in dense foliage of medium to large trees.	--/SA/--	Suitable habitat present; all facilities have potential to support roosting bats. Avoidance and minimization measures are proposed.
Western white-tailed jackrabbit (<i>Lepus townsendii townsendii</i>)	Occurs in sagebrush, subalpine conifer, juniper, alpine dwarf shrub and perennial grassland. Utilizes open areas with scattered shrubs and exposed flat-topped hills with open stands of trees, brush and herbaceous understory.	--/--/CSC	Removed from further evaluation due to lack of habitat in the facility sites.
Sierra marten (<i>Martes americana sierrae</i>)	Occurs in mixed evergreen forests with more than 40% crown closure along Sierra Nevada & Cascade Mtns. Needs a variety of different aged stands, particularly old growth conifers & snags which provide cavities for dens/nests.	--/SA/--	Suitable habitat present. Avoidance and minimization measures are proposed.
Pacific fisher (<i>Martes pennanti pacifica</i>)	Fishers are generally found in stands with high percent canopy closure, large trees and snags, large woody debris, large hardwoods, and multiple canopy layers between 2,000 and 8,500 feet in elevation	FC/--/CSC	Suitable habitat present. Avoidance and minimization measures are proposed.

Table B-2. Special-Status Wildlife Species Investigated for Potential Occurrence

Species Name	Habitat and Distribution	Legal Status Federal/State/CDFG	Rationale for Expecting Presence or Absence
Western small-footed myotis (<i>Myotis ciliolabrum</i>)	Occurs mostly above 6,000 feet and in wooded and brushy habitats near water. Forages among trees and over water. Breeds in colonies in buildings, caves, and mines (NPS 1997a). Suitable habitat for this species occurs within Yosemite National Park.	--/SA/--	Suitable habitat present; all facilities have potential to support roosting bats. Avoidance and minimization measures are proposed.
Long-eared myotis (<i>Myotis evotis</i>)	Wide range, from coast to high Sierra Nevada, in montane oak woodlands and coniferous habitats, from sea level to about 9,000 ft. Roosts primarily in hollow trees, especially large snags or lightning-scarred, live trees.	--/SA/--	Suitable habitat present; all facilities have potential to support roosting bats. Avoidance and minimization measures are proposed.
Fringed myotis (<i>Myotis thysanodes</i>)	Found to at least 6,400 feet in the Sierra Nevada, in deciduous/mixed conifer forests. Feeds over water, in open habitats, and by gleaning from foliage. Roosts in caves, mines, buildings, and trees, especially large conifer snags.	--/SA/--	Suitable habitat present; all facilities have potential to support roosting bats. Avoidance and minimization measures are proposed.
Long-legged myotis (<i>Myotis volans</i>)	Found up to high elevations in the Sierra Nevada, in montane coniferous forest habitats. Forages over water, close to trees and cliffs, and in openings in forests. Roosts primarily in large-diameter snags. Forms nursery colonies numbering hundreds of individuals, usually under bark or in hollow trees.	--/SA/--	Suitable habitat present; all facilities have potential to support roosting bats. Avoidance and minimization measures are proposed.
Yuma myotis (<i>Myotis yumanensis</i>)	Near ponds, streams, lakes or other water sources supporting midges, moths, and other small insects. Maternity roosts are often found in caves, mines, buildings, or tree cavities.	--/SA/--	Suitable habitat present; all facilities have potential to support roosting bats. Avoidance and minimization measures are proposed.
Yosemite pika (<i>Ochotona princeps muir</i>)	The hare-like Yosemite pika occurs in mountainous areas, generally at higher elevations, often above the tree line up to the limit of vegetation at lower elevations. Prefers talus slopes, and talus-meadow interfaces, occasionally mine tailings.	--/SA/--	Removed from further evaluation; existing development and site disturbances preclude potential habitat conditions from being present at the facility sites

Table B-2. Special-Status Wildlife Species Investigated for Potential Occurrence

Species Name	Habitat and Distribution	Legal Status Federal/State/CDFG	Rationale for Expecting Presence or Absence
Mount Lyell shrew (<i>Sorex lyelli</i>)	Occurs in high elevation riparian areas in the southern Sierra Nevada. Requires moist soils, lives in grass or under willows. Uses logs, stumps, etc. for cover	--/--/CSC	Removed from further evaluation; due to lack of habitat in the facility sites.
American badger (<i>Taxidea taxus</i>)	Occurs in open stages of shrub, forest, and herbaceous habitats; needs uncultivated ground with friable soils.	--/--/CSC	Removed from further evaluation due to lack of habitat in the facility sites.
Sierra Nevada red-fox (<i>Vulpes vulpes necator</i>)	Occurs from the cascades down to the Sierra Nevada. Found in a variety of habitats from wet meadows to forested areas. Uses dense vegetation and rocky areas for cover and den sites. Prefers forests interspersed with meadows or alpine fell fields.	--/ST/--	Removed from further evaluation; existing development and site disturbances preclude potential habitat conditions from being present at the facility sites.

General references: Unless otherwise noted all habitat and distribution data provided by California Natural Diversity Database

Status Codes

--= No status

Federal:

FE = Federal Endangered

FT= Federal Threatened

FC= Federal Candidate

CH= Federal Critical Habitat

PCH= Proposed Federal Critical Habitat

MBTA= Protected by Federal Migratory Bird Treaty Act

State:

SE= State Endangered

ST= State Threatened

California Department of Fish and Game:

CSC= California Special Concern Species

FP= Fully Protected Species

SA= Not formally listed but included in CDFG "Special Animal" List.

Special Status Plant Species

Mountain bent grass (Agrostis humilis)

Mountain bent grass is a perennial grass that occurs in alpine meadows, rock fields, and coniferous forests. It is found at elevations ranging from 8,760 to 10,499 feet (ft). This species typically flowers from July through September (CNPS 2009). Mountain bent grass is included on CNPS list 2.3. The MLJ site provides suitable habitat for mountain bent grass. A population of Mountain bent grass is located northwest of the MLJ site. Surveys conducted in August 2009 did not identify this species in the MLJ site.

Small's southern clarkia (Clarkia australis)

Small's southern clarkia is an annual herb that occurs in cismontane woodlands and coniferous forests. It's found at elevations ranging from 2,625 to 6,808 ft. This species typically flowers from May through August (CNPS 2009). Small's southern clarkia is included on CNPS list 1B.2. Suitable habitat for this species occurs adjacent to the HMC and HHE sites. Surveys conducted in August 2009 did not identify this species in these facility sites.

Fresno ceanothus (Ceanothus fresensis)

Fresno ceanothus is a prostrate shrub in the Rhamnaceae family that forms a rigid ground cover in montane chaparral communities. This plant is endemic to the central Sierra Nevada in the vicinity of Yosemite. It's found at elevations ranging from 2,953 to 6,900 ft. Fresno ceanothus blooms from May through July (CNPS 2009). This species is a Yosemite National Park Sensitive Species and is included on the CNPS 4.3 List. Surveys conducted in August 2009 did not identify this species in any of the facility sites; however, several individuals are located on and adjacent to Rockefeller Grove Road, which provides access to the BOFR site.

Congdon's woolly sunflower (Eriophyllum congdonii)

Congdon's woolly sunflower is an annual herb in the Asteraceae family that occurs in chaparral, cismontane woodland, lower montane coniferous forest, and valley grasslands. It typically occurs at elevations ranging from 1,640 to 6,230 ft. Congdon's woolly sunflower flowers from April to June (CNPS 2009). Congdon's woolly sunflower is a California Rare species and is included on CNPS List 1B.2. Suitable habitat for this species occurs at the EGP site.

Short-leaved hulsea (Hulsea brevifolia)

Short-leaved hulsea is a perennial herb in the Asteraceae family that occurs in upper and lower montane coniferous forest. This species is typically associated with granitic or volcanic soils with a gravelly or sandy texture. It typically occurs at elevations ranging from 14,920 to 10,499 ft (CNPS 2009). Short-leaved hulsea is included in the CNPS List 1B.2. Suitable habitat for this species occurs in areas surrounding the SNT, SNTR, and WWP sites. In addition CNDDDB documents occurrences in the vicinity of these sites. These sites currently support existing facilities and are disturbed. Due to the existing disturbances at these sites, the presence of this species is unlikely.

Yosemite lewisia (Lewisia disepala)

Yosemite lewisia is a perennial herb in the Portulacaceae family that occurs in lower and upper montane coniferous forests and pinyon and juniper woodland. It typically occurs at elevations

ranging from 13,395 to 11,482 feet and in granitic soils with a sandy texture. This species blooms from March through June (CNPS 2009). Yosemite lewisia is included on CNPS List 1B.2. Areas surrounding the TRT site support suitable habitat for this species. In addition, CNDDDB documents an occurrence in the vicinity. The TRT site is currently developed and disturbed. Due to the existing disturbances at the TRT site, the presence of this species is unlikely.

Slender-stemmed monkeyflower (Mimulus filicaulis)

Slender stemmed monkey flower is an annual herb in the Scrophulariaceae family that occurs in cismontane woodlands, lower and upper montane coniferous forests, and meadows. This species is typically associated with wet areas but can be found in dry conditions. It usually occurs at elevations ranging from 4,000 and 5,000 ft. This species blooms from April through August and is included on the CNPS List 1B.2 (CNPS 2009). The wet meadow located adjacent to the proposed HHE site supports a population of slender-stemmed monkeyflower. Surveys of the immediate HHE site did not identify any individuals within the immediate work area. Hogdon Meadow located near the HMC site may also support this species; however, the HMC site is located in a developed area that is currently paved.

Special Status Wildlife Species

Yosemite Toad (Bufo canorus)

Yosemite toad is a federal candidate species, California species of special concern, and USFS sensitive species. The historic range of Yosemite toads in the Sierra Nevada occurs from the Blue Lakes region north of Ebbetts Pass (Alpine County) to 3 mi south of Kaiser Pass in the Evolution Lake/Darwin Canyon area (Fresno County) (Jennings and Hayes 1994). The historic elevational range of Yosemite toads is 4,790 to 11,910 ft (Stebbins 1985). The findings of surveys conducted by several researchers in the 1990s and early 2000s suggest that Yosemite toad populations in Yosemite Park have declined. In 2002, the U.S. Fish and Wildlife Service determined that the listing of Yosemite toad under the Endangered Species Act is “warranted” although “precluded” by other higher priority listing actions (Federal Register 2002).

Yosemite toads may be found in areas with thick meadow vegetation or patches of low willows near or in water. This species utilizes rodent burrows for overwintering and temporary refuge during the summer (Jennings and Hayes 1994). Breeding habitat includes the edges of wet meadows, slow flowing streams, shallow ponds, and shallow areas of lakes. Yosemite toads emerge from hibernation when melting snow forms pools near their overwintering sites; emergence times range from early May to the middle of June (Jennings and Hayes 1994).

The meadows adjacent to May Lake junction site support suitable habitat for Yosemite toad; however, there are no recent occurrences of this species in the area. The MLJ site is located within a rocky area on a hill slope and does not support suitable conditions for Yosemite toad. Due to the dry rocky conditions and the MLJ site, Yosemite toad is unlikely to utilize the site.

Mountain Lyell Salamander (Hydromantes platycephalus)

The mountain Lyell salamander is considered a CSC by CDFG. This species is restricted to the Sierra Nevada from Tulare to Sierra County. Known habitat associations include large rocky areas within red fire lodgepole pine, subalpine, and mixed conifer habitats (Zeiner et al 1988). The elevational range of this species is from 1260 meter (4,130 feet) to 3640 meters (11,940 feet)(Jennings and Hayes 1994). Species is nocturnal during surface activity and feeds on termites,

centipedes, larval and adult flies, and spiders. The species retreats into rock fissures and/or under slabs of granite during periods of snow melt (Zeiner et al 1988). Mountain Lyell salamander has the potential to occur within the MLJ, SNT and TRT sites due to the presence of suitable rock habitat and nearby water sources.

Mountain Yellow-legged frog (Rana muscosa)

The mountain yellow-legged frog is considered a federally listed candidate (FC) species under the ESA for all populations located north of the Tehachapi Mountains in the Sierra Nevada. Mountain yellow-legged frog is also considered a CSC by CDFG. It should be noted that mountain yellow-legged frog (*Rana muscosa*) taxonomy has recently been split into the Sierra Nevada yellow-legged frog (*Rana sierrae*), found in the northern and central Sierra Nevada. Federal listing has been granted for isolated Sierra Nevada yellow-legged frog populations located in the San Gabriel, San Jacinto, & San Bernardino Mountains only. Federal candidate listing for Sierra Nevada yellow-legged frogs refers to all populations located north of the Tehachapi Mountains in the Sierra Nevada (CDFG 2009, Special Animals List).

Mountain yellow-legged frogs typically are located at elevations above 1800 meters (5,940 feet) in the Sierra Nevada Mountains from Plumas to Tulare County. Known habitat associations include streams, lakes and ponds within subalpine conifer, wet meadow, and lodgepole pine habitats. The species feeds on terrestrial and aquatic invertebrates. Eggs are attached to gravel and/or rocks of shall waters between the months of June and August (Zeiner et al 1988). Populations of this species have declined in the Sierra Nevada with the exception of Kings Canyon and Sequoia National Parks (Stebbins 2003). Mountain yellow-legged frogs have the potential to occur in the wet meadows near the MLJ site.

Pallid Bat (Antrozous pallidus)

The pallid bat is considered a CSC species by CDFG. Pallid bats range over much of the western United States, from central Mexico to British Columbia (Zeiner et al., 1990). They are found throughout California, especially in lowland areas below 6,400 ft (1,950 m). Pallid bats are apparently not migratory, but make local, seasonal movements. This nocturnal species resides in colonies consisting of a dozen to over 100 individuals. Pallid bats roost in deep crevices, caves, mines, rock faces, bridges and buildings. Like many bat species, pallid bats maintain both day and night roosts. Night roosts are used for feeding and are typically 0.25 mile (0.4 km) from the day roosts, which are used for sleeping. Their primary food source is ground dwelling insect species including crickets, grasshoppers, beetles, and centipedes. They maintain nursery colonies with 30 to over 100 individuals. Females have one to two pups for each pregnancy, usually born between mid to late June. Due to the presence of structures in and near the facility sites, all facility sites have the potential to support pallid bats.

Townsend's Big-Eared Bat (Corynorhinus townsendii townsendii)

There are three subspecies of Townsend's big-eared bat [*Corynorhinus (= Plecotus) townsendii*]. Of these, Townsend's big-eared bat (*P. t. townsendii*) is found along the Pacific coast from Northern California to Washington. This subspecies is considered a CSC by the CDFG. This subspecies is found in all habitats but subalpine and alpine habitats, and may be found at any season throughout its range (Zeiner et al., 1990). It is most abundant in mesic (wet) habitats. The Pacific Western Townsend's big-eared bat requires caves, mines, tunnels, buildings or other human-made structures for roosting. It may use separate sites for night, day, hibernation, or maternity roosts. Maternity roosts are the most important limiting resource. Maternity roosts are

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found in caves, tunnels, mines, and buildings. Small clusters or groups (usually fewer than 100 individuals) of females and young form the maternity colony. Maternity roosts are in relatively warm sites. Most mating occurs from November- February. Births occur in May and June, peaking in late May. This species is extremely sensitive to disturbance of roosting sites (Zeiner et al., 1990). A single visit may result in abandonment of the roost. All known nursery colonies in limestone caves of California apparently have been abandoned. Numbers reportedly have declined steeply in California. Due to the presence of structures in and near the facility sites, all facility sites have the potential to support Townsend's big-eared bat.

Spotted Bat (Euderma maculatum)

The spotted bat is considered a CSC by the CDFG. It is a large bat with striking markings, including a black back with three large white spots, including two on the shoulder region and one on the rump. The ears are larger than any American bat. Little of its life history is known (Organization for Bat Conservation, 2005). The spotted bat has a patchy distribution, is seldom abundant, and is most frequently encountered in California, Arizona, New Mexico, southern Colorado, and southern Utah. Recorded observations extend from the Pacific coast of North America to the Rocky Mountains inland. Spotted bats forage in many different habitats, especially ponderosa pine forests and marshlands. It is believed that the distribution of suitable diurnal roosting sites is cause for the patchy distribution of this species (Organization for Bat Conservation, 2005). Spotted bats may roost in the small cracks found in cliffs, stony outcrops, trees, and artificial structures. Due to the presence of suitable roosting and foraging habitat, all facility sites have the potential to support spotted bats.

Western Mastiff Bat (Eumops perotis californicus)

The western mastiff bat is considered a CSC by the CDFG. Like most other North American species of bat, the western mastiff bat is threatened by low fecundity, high juvenile mortality, long generational turnover; loss of clean, open water; loss of riparian vegetation; pesticide application (Siders 2005). More specific threats include construction activities that impact cliffs or boulders, rock climbing, and human disturbance. This species ranges from central Mexico across the southwestern United States (parts of California, southern Nevada, Arizona, southern New Mexico and western Texas) (Eger 1977, Bradley and O'Farrell 1967). The western mastiff bat is found along the west side of the Sierra Nevada, primarily at low to mid- elevations, but has been detected up to 9,840 ft in the summer. The species is found in a variety of habitats, from desert scrub and chaparral to montane coniferous forest. Its presence is determined by the availability of significant rock features offering suitable roosting habitat (Pierson et al. 2006). The western mastiff bat mates in the late winter/early spring and gives birth to a single young in the early to mid- summer. Foraging habitats include dry desert washes, flood plains, chaparral, oak woodland, open ponderosa pine forest, grassland, agricultural areas, and high elevation meadows surrounded by mixed conifer forests (Siders 2005). Due to the presence of suitable roosting and foraging habitat, all facility sites have the potential to support western mastiff bat.

Silver-haired bat (Lasionycteris noctivagans)

The silver-haired bat is considered a CSC by the CDFG and is Park Sensitive. The species is a forest bat, associated primarily with northern temperate zone conifer and mixed conifer/hardwood forests with available water (Pierson et al. 2006). The species ranges from southern Alaska, throughout southern Canada, most of the United States, and into the San Carlos Mountains of northeastern Mexico (Kunz 1982). In California, the species distribution is concentrated in the northern half of the state, with most of the breeding records occurring in the

upper Sacramento drainage (Rainey and Pierson 1996), the Trinity Mountains and northern coast ranges (Pierson and Rainey 1998b), and the northern Sierra Nevada. Some individuals of this migratory species may over-winter in southern California (Pierson et al. 2006).

Maternity roosts are typically found in tree cavities, most of which have been excavated by woodpeckers (Mattson et al. 1996), and under flaking bark (Barbour and Davis 1969, Betts 1996, 1998, Campbell et al. 1996, Rainey and Pierson 1996, Vonhof 1996). The silver-haired bat forages above the canopy, in forest clearings, and in riparian habitats along water courses (Kunz 1982, Barclay 1985, 1986, Rainey and Pierson 1996). Radio-tracking has shown that the species can travel considerable distances from roost sites to foraging areas (Rainey and Pierson 1996). Due to the presence of suitable roosting and foraging habitat, all facility sites have the potential to support silver-haired bat.

Western Red Bat (Lasiurus blossevillii)

The western red bat is considered a CSC by the CDFG. It is locally common in some areas of California, occurring from Shasta County to the Mexican border, and west of the Sierra Nevada and deserts. The winter range includes western lowlands and coastal regions south of San Francisco Bay. There is migration between summer and winter ranges, and migrants may be found outside the normal range. Roosting habitat includes forests and woodlands from sea level up through mixed conifer forests. The western red bat roosts primarily in trees, and less often in shrubs. Roost sites often are in edge habitats adjacent to streams, fields, or urban areas. Preferred roost sites are protected from above, open below, and located above dark ground-cover. The western red bat feeds over a wide variety of habitats including grasslands, shrublands, open woodlands and forests, and croplands. The species feeds on a variety of insects, the most important prey being moths, crickets, beetles, and cicadas. Due to the presence of suitable roosting and foraging habitat, all facility sites have the potential to support western red bats.

Hoary Bat (Lasiurus cinereus)

The hoary bat is considered a CSC by the CDFG and is Park Sensitive. The hoary bat is the most widespread North American bat and may be found at any location in California, although its distribution is patchy in southeastern deserts (Zeiner et al., 1990). It winters along the coast and in southern California, breeding inland and north of the winter range. During migration, the hoary bat may be found at locations far from the normal range, such as the Channel Islands. Habitats suitable for bearing young include all woodlands and forests with medium to large-size trees and dense foliage. Hoary bats have been recorded from sea level to 4,125 m (13,200 ft). During migration in southern California, males are found in foothills, deserts and mountains; females in lowlands and coastal valleys. The species generally roosts in dense foliage of medium to large trees. Preferred sites are hidden from above, with few branches below, and have ground cover of low reflectivity. Females and young tend to roost at higher sites in trees. Females bear young while roosting in trees, preferring sites as described under cover requirements. Hoary bats require water and feed primarily on moths. Due to the presence of suitable roosting and foraging habitat, all facility sites have the potential to support hoary bats.

Pacific Fisher (Martes pennanti)

Pacific fisher is a federal candidate species, California species of special concern, Bureau of Land Management sensitive species, and a U. S. Forest Service sensitive species. In Yosemite National Park, field surveys conducted in 1999 and 2000 verified the presence of one fisher in the park (Campbell 2004) and surveys in 2007 verified the presence of one fisher in the southern part of

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the park by a research team led by Richard Truex (unpubl. data). In the past decade, there have also been six road kills (including a lactating female) and about 15 unverified sightings of fisher. In recent years, the majority of reported fisher sightings and road kills have occurred along the Wawona and Big Oak Flat Roads near Henness Ridge and Crane Flat.

In the Sierra Nevada, the fisher occurs from roughly 1,970 ft – 8,530 ft with occasional sightings up to 9,840 ft (Grinnell et al. 1937, Zielinski et al. 1997a). In Yosemite indicate that fishers were most commonly found between 5,905 and 6,890 ft in elevation Studies on the habitat use of fishers in the western United States demonstrate that the fisher is strongly associated with mature and late successional forests (Aubry and Houston 1992). In particular, fishers are generally found in stands with high canopy closure, large trees and snags, large woody debris, large hardwoods, and multiple canopy layers. Natal dens are commonly in tree cavities at heights of greater than 20 ft, while maternal dens, may be in cavities closer to the ground so active kits can avoid injury in the event of a fall from the den (Lewis and Stinson 1998). Most natal and maternal dens are in large conifers or oaks, which may be live or in snag form (Truex et al. 1998).

Fishers have been detected at or nearby the HEN, TRT, and BOFR sites. These areas support late succession forests with woody debris and snags. NPS staff has observed pacific fishers near the HEN site; however, the site itself is currently developed and lacks significant vegetation and woody debris. The HEN site is accessed via an existing unimproved road; therefore, construction of a new road would not be necessary. Considering the lack of pacific fisher habitat in the HEN site, it is unlikely that pacific fisher would occur in the site. However, undisturbed habitat surrounding the site likely supports this species.

The TRT site is located on the dome; the dome does not support suitable fisher habitat. However, areas surrounding the dome does support suitable Pacific fisher habitat. The TRT site is accessed via an existing improved road; therefore, construction of a new road would not be necessary. Considering the lack of pacific fisher habitat in the TRT site, it is unlikely that pacific fisher would occur in the site. However, undisturbed habitat surrounding the site may support this species.

The BOFR site is currently undeveloped and supports suitable conditions for the Pacific fisher. Anticipated project activities including site development and construction of the site access road would adversely effect fisher habitat and potentially directly effect individual fishers.

Western Small-footed Myotis (Myotis ciliolabrum)

The western small footed myotis is included on the CDFG Special Animals list (CDFG 2009) and is Park Sensitive. This is a small myotis bat species with small feet, short ears, and relatively long tail. In the western United States, these bats are inhabitants of the deserts, semi- deserts, and desert mountains (Mammals of Texas Online 2005). Daytime roosts may be in crevices and cracks in canyon walls, caves, mine tunnels, behind loose tree bark, or in abandoned houses. They hibernate in suitable caves or mine tunnels within their summer range. Bats observed in winter are often found wedged deeply into narrow cracks and crevices in the rock ceilings of old mines. When probed from these crevices they are able to fly, which indicates they do not go into a deep winter sleep. The reproductive habits of this bat are not known (Mammals of Texas Online, 2005). Records indicate that the single young born annually appears in late May to early July. Due to the presence of suitable roosting habitat near the facility sites, all facility sites have the potential to support western small- footed myotis.

Long-eared Myotis (Myotis evotis)

The long-eared myotis is included on the CDFG Special Animals list (CDFG 2009) and is Park Sensitive. This bat occurs in a variety of habitats over its range in North America, but mostly in forested areas. Where suitable roosting sites are available, this species also is found in semiarid shrublands, sage, chaparral, and agricultural areas. Females form small maternity colonies in the summer, and males and non-pregnant females live singly or in small groups, occasionally occupying the same site as a maternity colony, but not roosting with it. Daytime roosts are known to include abandoned buildings, hollow trees, loose slabs of bark, timbers of unused railroad trestles, caves and mines, fissures of cliffs, and sink holes. Females give birth late June or early July, and adults may live up to 22 years (Museum of Southwestern Biology 2006). Due to the presence of trees and structures for roosting, all facility sites have the potential to support long-eared myotis.

Fringed Myotis (Myotis thysanodes)

The fringed myotis is included on the CDFG Special Animals list (CDFG 2009) and is Park Sensitive. This species is widespread in California, occurring in all but the Central Valley and Colorado and Mojave deserts. Its abundance appears to be irregular, and it may be locally common. It occurs in a wide variety of habitats from sea level to 2,850 m (9,350 ft); optimal habitats are pinyon-juniper, valley foothill hardwood and hardwood-conifer, generally at 1,300-2,200 m (4,000-7,000 ft) (Zeiner et al. 1990). Roosts are in caves, mines, buildings, and crevices, and separate day and night roosts may be used. Maternity colonies of up to 200 individuals are located in caves, mines, buildings, or crevices. Adult males are absent from maternity colonies, which are occupied from late April through September. Mating occurs in the fall. The fringed myotis is easily disturbed at roosting sites. Due to the presence of suitable roosting and foraging habitats, all facility sites have the potential to support fringed myotis.

Long-legged Myotis (Myotis volans)

The long-legged myotis is included on the CDFG Special Animals list (CDFG 2009) and is Park Sensitive. It is a rather large myotis bat, with relatively long tail, short ears and moderately large feet. Over much of their range, long-legged bats are forest inhabitants, and they prefer high, open woods and mountainous terrain (Mammals of Texas Online 2005). Nursery colonies, which may contain several hundred individuals, form in summer in places such as buildings, cliff crevices, and hollow trees. These bats apparently do not use caves as day roosts, although they may use caves at night. The winter range and habits of this bat are not known.

Information on reproduction is limited. A single young is born in June or early July. These bats emerge shortly before dark to forage around cliffs, trees, and over water. Certain flyways seem to be used regularly, but the specific food preferences are not known. Evidence from New Mexico indicates they may feed mainly on small moths (Mammals of Texas Online 2005). Due to the presence of suitable roosting habitat, all facility sites have the potential to support long-legged myotis.

Yuma Myotis (Myotis yumanensis)

The Yuma myotis is included on the CDFG Special Animals list (CDFG 2009). It is a medium-sized bat that has pale gray to yellow fur; the under parts are yellowish white. Yuma myotis occurs widely in western North America, from central Mexico to British Columbia, Montana, and New Mexico. It is common and widespread in California, but uncommon in the Mojave and Colorado

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Desert regions. This species is found in a wide variety of habitats ranging from sea level to 3300 m (11,000 ft), but it is uncommon to rare above 2560 m (8000 ft). Suitable habitats for the Yuma myotis are open forests and woodlands near water sources such as rivers, irrigation canals, ponds, streams, or creeks, which are used for foraging habitat. The Yuma myotis is known to roost in caves, abandoned buildings, and other structures. This species is known to form maternity colonies of several thousand individuals in caves or attics. Young are born in late in spring or early in summer. Due to the presence of suitable roosting habitat, all facility sites have the potential to support Yuma myotis.

Willow Flycatcher (Empidonax traillii)

Willow flycatcher is a California state endangered species and included on the American Bird Conservancy Green List, Audubon Watch List, United States Bird Conservation Watch List, and U.S. Forest Service Sensitive species lists. Of the three willow flycatcher subspecies that breed in California, (Phillips 1948, Unitt 1987), two of these subspecies, *E. t. brewsteri* and *E. t. adastus*, are possible in Yosemite National Park, whereas the third species, *E. t. extimus*, is a federal threatened species that is not found in the park.

In 2006 and 2007, Siegel et al (2008) conducted a nearly comprehensive two- year inventory of willow flycatcher breeding habitat throughout the park. Their goal was to locate all remaining willow flycatcher territories in Yosemite. They identified and surveyed all the park's most promising habitat patches. During the two- year study, willow flycatchers were detected at Wawona Meadow (Siegel et al. 2008).

The willow flycatcher is a neotropical migrant that breeds in riparian and moist meadow willow thickets in the U.S. and southern Canada (American Ornithologists' Union 1983). The willow flycatcher typically nests in willow thickets in or adjacent to low- and mid- elevation meadows or riparian areas. Nests have also been found in willow thickets adjacent to lakes, marshes, and creeks. In the Sierra Nevada, breeding occurs from late May to September (Sibley 2001).

Evidence suggests willow flycatchers have nested in Crane Flat within the last 20 years. From 1990 to present, six willow flycatchers have been captured and banded at the Crane Flat meadow during Monitoring Avian Productivity and Survivorship standard operations (Siegel 2006). The crane flat meadow area is approximately 6,000 feet west of the CRN site. In addition, the CRN site is not located in meadow or riparian habitats; therefore willow flycatcher will not utilize the area.

At Hodgdon Meadow willow flycatchers were captured every year between 1991 and 1997 (Siegel 2006). The Hogdon Meadow occurrences were located in a willow thicket that is within the meadow and approximately 1,000 feet from the HMC site. The HMC site is located in a developed maintenance complex and does not support suitable willow flycatcher habitat. Based on the distance between the HMC site and suitable nesting habitat and the lack of suitable nesting habitat in the HMC site, it is unlikely that willow flycatcher would utilize the HMC site.

Willow flycatcher has also been detected in Wawona Meadow. Like the Hogdon Meadow occurrences, the observed individuals at Wawona Meadow were utilizing riparian thickets located within the meadow system and the golf course. The WAW site is located in mixed conifer forest and approximately 1,000 to 2,000 feet from suitable willow flycatcher habitat. In addition, the WAW site is currently developed. Due to the lack of suitable habitat within the WAW site, the distance to suitable habitat from the WAW site, and the existing development at the WAW site; willow flycatcher would not utilize the WAW site for nesting.

Great gray owl (Strix nebulosa)

Great gray owl is a California State Endangered, California Department of Forestry and Fire Protection Sensitive, and USFS Sensitive species. The great gray owl is a large forest owl that ranges across northern boreal and temperate forests in both North America and Eurasia. Throughout its circumpolar range, the species is considered rare. In California, great gray owls are restricted to the Sierra Nevada and southern Cascades. The core breeding distribution is centered on Yosemite National Park and the immediately adjacent and surrounding Stanislaus, Sierra, and Sequoia National Forests, with a few additional documented pairs in Sequoia- Kings Canyon National Park (Winter 1986, Rich 2000, Keane 2001).

In its California range, the great gray owl utilizes functioning wet montane meadow habitats for foraging. In the Sierra Nevada, great gray owls nest in mature red fir, mixed conifer, or lodgepole pine forests near wet meadows or other vegetated openings (Zeiner et al. 1990) between 2,460 to 8,860 ft elevation (Greene 1995). Great gray owls are monogamous and breed from March to August. Incubation begins in April and lasts for approximately 30 days; eggs hatch from mid- May to mid- June. The nestling period is about 3 to 4 weeks, after which the young fledge in early June to early July.

The HMC, WAW, CRN, and BOFR sites support suitable habitat for great gray owl. These sites are located within dense to moderately dense coniferous forest and adjacent to meadow habitats. The areas surrounding the WAW and CRN sites are also known to support nesting great gray owls; however, the immediate work areas are currently disturbed at these sites. Due to the current disturbances, it is unlikely that great gray owls would utilize the immediate sites for nesting; however, individuals may use areas directly adjacent to the sites. The BOFR site is currently undisturbed and could support nesting great gray owls.

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APPENDIX C: AIR QUALITY BACKGROUND INFORMATION

This appendix provides background information on air quality to support the air quality analysis in Chapter 3 of the Environmental Assessment. Results of construction emission modeling (URBEMIS) are provided at the end of this appendix.

Attainment/nonattainment designations

The U.S. Environmental Protection Agency and the California Air Resources Board designate whether counties in California are in attainment of federal and state (respectively) ambient air quality standards for criteria air pollutants. Table 1 shows the current attainment status of Tuolumne and Mariposa Counties. As shown in Table 1, portions of Tuolumne and Mariposa Counties located within Yosemite National Park are designated nonattainment for national and state ozone standards. The portion of Mariposa County within Yosemite National Park is also designated nonattainment for the state particulate matter (PM- 10) standard.

Both counties are designated either attainment or unclassified for the remaining national and state standards. While air quality in a given air basin is usually determined by emission sources within the basin, it also can be affected by pollutants transported from upwind air basins by prevailing winds. For descriptive purposes, emissions sources are typically categorized as stationary, mobile, or area. Generally, stationary sources refer to emissions sources associated with industrial or commercial processes; mobile sources refer to on- road and offroad motor vehicles; and area sources refer to a wide range of sources that are individually minor but are more substantial in the aggregate. Consumer use of paints and pesticides is an example of an area source. Another category of emissions sources is referred as a “fugitive” source. Fugitive sources refer to those sources that emit pollutants to the atmosphere through some means other than through a smokestack or tailpipe. A vehicle traveling over an unpaved road is an example of a fugitive source of dust.

Table C-1. Tuolumne and Mariposa Counties Attainment/Nonattainment Designations

Pollutant	National	State
Tuolumne County		
Ozone	Nonattainment	Nonattainment
Particulate Matter (PM10)	Unclassified	Unclassified
Fine Particulate Matter (PM 2.5)	Attainment/Unclassified	Unclassified
Carbon Monoxide	Attainment/Unclassified	Attainment
Nitrogen Dioxide	Attainment/Unclassified	Attainment
Sulfur Dioxide	Unclassified	Attainment
Lead (Particulate)	No Designation	Attainment

Table C-1. Tuolumne and Mariposa Counties Attainment/Nonattainment Designations

Pollutant	National	State
Mariposa County		
Ozone	Nonattainment	Nonattainment
Particulate Matter (PM10)	Unclassified	Nonattainment*
Fine Particulate Matter (PM 2.5)	Attainment/Unclassified	Unclassified
Carbon Monoxide	Attainment/Unclassified	Unclassified
Nitrogen Dioxide	Attainment/Unclassified	Attainment
Sulfur Dioxide	Unclassified	Attainment
Lead (Particulate)	No Designation	Attainment

* Designation applies to portion of Mariposa County that lies within Yosemite National Park
 Source: CARB 2008

Air Quality Monitoring Data

Federal, state, and local agencies operate a network of monitoring stations throughout California to provide data on ambient concentrations of air pollutants. Table 2 summarizes recent monitoring data from monitoring stations at Turtleback Dome and Yosemite Village. Ozone levels are measured at the Turtleback Dome monitoring station, and PM10 measurements are taken at the Yosemite Village monitoring station in Yosemite Valley. As shown in Table 2, exceedances of state and national standards for ozone and state standards for PM10 have been recorded on occasion within the last five years of available data (i.e., 2002- 2006). In addition, the ozone standard has recently been lowered to .075 ppm that may lead to more exceedances in the future.

Table 2 indicates that ozone concentrations in the park exceed the state standard on an average of four to 11 days per year. Elevated ozone concentrations are a summertime phenomenon, with most of the exceedances of the state standard in July, August, and September and only occasional exceedances in June and October. Ozone concentrations in Yosemite National Park are largely a function of pollutant transport from the San Joaquin Valley, Sacramento, and to a lesser extent, the San Francisco Bay Area.

Table 3 shows that exceedances of the state 24- hour average PM10 standard occurred during all five years for which data is available (2002- 2006) in Yosemite Village. No exceedances of the less stringent national 24- hour standard of 150 micrograms per cubic meter were either measured or estimated to occur during the last five years of available data. Measured annual concentrations also exceeded the state’s annual PM10 standard of 20 micrograms per cubic meter during the years 2002 and 2003. Annual data for the remaining years (2004- 2006) is currently unavailable.

Table C-2. Recent Ozone Concentration Data for Yosemite National Park

Pollutant	National Standard	State Standard	Monitoring Data By Year*				
			2004	2005	2006	2007	2008
<i>Ozone Monitoring Data</i> <i>Station: Yosemite National Park–Turtleback Dome</i>							
Highest 1-hour average, ppm	NA	0.09	0.137	0.105	0.100	0.100	0.108
Days over state standard*			6	6	4	3	11
Highest 8-hour average, ppm	0.08	0.07	0.124	0.096	0.094	0.096	0.102
Days over national standard			37	16	30	25	33

*“Days over standard” refers to the number of days in a given year during which the ozone concentration over at least one hour exceeded the hourly state or national standard.

NA = Not applicable; ppm = parts per million. Values shown in **bold** type exceed the applicable standard.

Source: CARB 2008

Table C-3. Recent PM-10 Concentration Data for Yosemite National Park

Pollutant	National Standard	State Standard	Monitoring Data By Year*				
			2002	2003	2004	2005	2006
<i>Particulate Matter (PM-10) Monitoring Data</i> <i>Station: Yosemite Village–Visitor Center</i>							
Highest 24-hour average, $\mu\text{g}/\text{m}^3$ (national/state)**	150	50	76/ 72	66/ 58	133/ 124	78/ 73	104/ 97
Days over state standard (measured/estimated)***			3/18	1/5.8	2/ND	2/ND	2/ND
Days over national standard (measured/estimated)			0/0	0/0	0/0	0/0	0/0
Annual geometric mean, $\mu\text{g}/\text{m}^3$ (national/state)**	NA	20	26	21	ND	ND	ND

*“Days over standard” refers to the number of days in a given year during which the ozone concentration over at least one hour exceeded the hourly state or national standard.

**State and national statistics may differ due to variations in sampling equipment, locations, references and equivalent methods.

***PM-10 is usually measured every sixth day (rather than continuously like other pollutants). Measured days is based on days that a measurement was greater than the standard. Estimated days mathematically estimates how many days concentrations would have been greater than the level of the standard had each day been monitored.

ND = No data available; ppm = parts per million; $\mu\text{g}/\text{m}^3$ = micrograms per cubic meter. Values shown in **bold** type exceed the applicable standard.

Source: CARB 2008

Appendix C

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Urbemis 2007 Version 9.2.4

Detail Report for Annual Construction Unmitigated Emissions (Tons/Year)

File Name: C:\Documents and Settings\kmliller\Desktop\Projects\Yosemite\Yosemite CDN.urb924

Project Name: Yosemite CDN

Project Location: Mountain Counties Air Basin

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES (Annual Tons Per Year, Unmitigated)

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10 Dust</u>	<u>PM10 Exhaust</u>	<u>PM10 Total</u>	<u>PM2.5 Dust</u>	<u>PM2.5 Exhaust</u>	<u>PM2.5 Total</u>	<u>CO2</u>
2010	0.10	0.84	0.48	0.00	0.17	0.04	0.21	0.04	0.04	0.07	78.69
Fine Grading 06/01/2010-09/01/2010	0.10	0.84	0.48	0.00	0.17	0.04	0.21	0.04	0.04	0.07	78.69
Fine Grading Dust	0.00	0.00	0.00	0.00	0.17	0.00	0.17	0.03	0.00	0.03	0.00
Fine Grading Off Road Diesel	0.10	0.84	0.42	0.00	0.00	0.04	0.04	0.00	0.04	0.04	75.29
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.41
Trenching 06/01/2010-09/01/2010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Trenching Off Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Trenching Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Phase Assumptions

Phase: Fine Grading 6/1/2010 - 9/1/2010 - All sites fine grading

Total Acres Disturbed: 3

Maximum Daily Acreage Disturbed: 0.25

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

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1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Trenching 6/1/2010 - 9/1/2010 - Trenching for May Lake Junction

Off-Road Equipment:

Appendix C

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Urbemis 2007 Version 9.2.4

Detail Report for Summer Construction Unmitigated Emissions (Pounds/Day)

File Name: C:\Documents and Settings\kmliller\Desktop\Projects\Yosemite\Yosemite CDN.urb924

Project Name: Yosemite CDN

Project Location: Mountain Counties Air Basin

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES (Summer Pounds Per Day, Unmitigated)

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10 Dust</u>	<u>PM10 Exhaust</u>	<u>PM10 Total</u>	<u>PM2.5 Dust</u>	<u>PM2.5 Exhaust</u>	<u>PM2.5 Total</u>	<u>CO2</u>
Time Slice 6/1/2010-9/1/2010 Active Days: 67	<u>3.07</u>	<u>25.10</u>	<u>14.22</u>	<u>0.00</u>	<u>5.00</u>	<u>1.25</u>	<u>6.26</u>	<u>1.05</u>	<u>1.15</u>	<u>2.20</u>	<u>2,349.10</u>
Fine Grading 06/01/2010-09/01/2010	3.07	25.10	14.22	0.00	5.00	1.25	6.26	1.05	1.15	2.20	2,349.10
Fine Grading Dust	0.00	0.00	0.00	0.00	5.00	0.00	5.00	1.04	0.00	1.04	0.00
Fine Grading Off Road Diesel	3.00	24.99	12.46	0.00	0.00	1.25	1.25	0.00	1.15	1.15	2,247.32
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.07	0.11	1.76	0.00	0.00	0.00	0.01	0.00	0.00	0.00	101.79
Trenching 06/01/2010-09/01/2010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Trenching Off Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Trenching Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Phase Assumptions

Phase: Fine Grading 6/1/2010 - 9/1/2010 - All sites fine grading

Total Acres Disturbed: 3

Maximum Daily Acreage Disturbed: 0.25

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

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1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Trenching 6/1/2010 - 9/1/2010 - Trenching for May Lake Junction

Off-Road Equipment:

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APPENDIX D: MINIMUM REQUIREMENT DECISION PROCESS FOR ADMINISTRATIVE ACTIONS IN WILDERNESS

Introduction

“ ...there shall be no commercial enterprise and no permanent road within any wilderness area designated by this act and, except as necessary to meet minimum requirements for the administration of the area for the purpose of this Act (including measures required in emergencies involving the health and safety of persons within the area), there shall be no temporary road, no use of motor vehicles, motorized equipment or motorboats, no landing of aircraft, no other form of mechanical transport, and no structure or installation within any such area.”

Sec. 4 (c), Wilderness Act

Director’s Order #41 (Wilderness Preservation and Management) states:

“A process to determine the ‘minimum requirement’ for administrative actions... and equipment use in wilderness will be identified and established. It must specify how the process is to be implemented in the park and that a record of the decisions generated through this process must be kept for public inspection.”

In accordance with section 4 of the Wilderness Act, NPS Director’s Orders, and the Yosemite National Park Wilderness Management Plan, the “minimum requirement” for the administration of Yosemite Wilderness is documented by the decision tree process. **The minimum requirement process applies to all administrative actions, programs, and activities within wilderness and potential wilderness additions.**

The minimum requirement decision process (MRDP) will be followed and documented for all proposed administrative actions in Yosemite Wilderness not specifically allowed by the Wilderness Plan. Long term, continuing actions will be evaluated before being included in the next version of the Wilderness Plan. Completed decision documents must be reviewed by the Wilderness Manager before approval by the Chief Ranger and should be used in conjunction with the Yosemite National Park Planning Clearinghouse process and any other necessary environmental compliance.

It is important to understand the difference between the terms “minimum requirement” and “minimum tool”. According to D.O. 41,

“Minimum Requirement is a documented process the NPS will use for the determination of the appropriateness of all actions affecting wilderness.

Minimum Tool means a use or activity, determined to be necessary to accomplish an essential task, which makes use of the least intrusive tool, equipment, device, force, regulation, or practice that will achieve the wilderness management objective. This is not necessarily the same as the

term “primitive tool,” which refers to the actual equipment or methods that make use of the simplest available technology (i.e., hand tools).”

Permitted Public Use: Permitting special uses in wilderness is itself an administrative action which is subject to the minimum requirement process. These special uses include all commercial use, special events, and scientific research. The minimum requirement process for these uses has specific restrictions and are covered in a supplement to this document.

Emergencies: A true emergency presents an immediate threat to human life, or natural or cultural resources within the area, and often requires a quick response beyond that available by primitive means. Emergencies do not require documented analysis prior to approval of a generally prohibited activity or use in wilderness. The Incident Commander needs to determine quickly whether a true emergency exists and should be trained in the minimum requirement concept. The flow chart attached to this document can be used as a quick tool to assist with minimum requirement decisions for emergencies. The rationale for authorizing such use should be documented in the incident report.

The Minimum Requirement Decision Process

Produce any required documentation on separate sheets.

Step 1

Determine whether the proposed action takes place in designated Wilderness or in a Potential Wilderness Addition.

In general, the Yosemite Wilderness boundary is 100’ from development and 200’ from the centerline of roads. In Yosemite Valley, the boundary is the 4200’ contour, except in the Vernal – Nevada Falls corridor. If you are unsure whether or not your proposed action will take place within the wilderness boundary, check the appropriate 7 ½ minute USGS quadrangle map or contact the Wilderness Manager.

Potential wilderness additions were designated where a previous non-conforming use precluded wilderness designation. These areas include the High Sierra Camps, Ostrander Ski hut, many utility corridors, and some access roads. The California Wilderness Act states that “lands designated as potential wilderness additions shall be managed by the Secretary insofar as practicable as wilderness until such time as said lands are designated as wilderness”.

If the proposed action will take place in designated wilderness, proceed to step 2.

If the proposed action will take place in a potential wilderness addition, proceed to step 2a.

If the proposed action will not take place in wilderness or a potential wilderness addition, proceed with the Planning Clearinghouse process.

Step 2

Determine whether the proposed action is required for the administration of the Yosemite Wilderness.

D.O. # 41 states: “In order to allow a prohibited activity, the activity must be necessary to manage the area as wilderness.”

The proposed action should contribute toward meeting the management objectives listed in the Yosemite Wilderness Management Plan, which are appended at the end of this document. The action must also comply with all other applicable laws and policies.

If the action is not required for the administration of the area, it is not allowed.

If the action is required for the administration of the area, document what wilderness management objective is being met and why this action is essential to meet that objective. Proceed to step 3.

Step 2a (For actions in Potential Wilderness Additions only)

Determine whether the proposed action is required for the continuation of the existing nonconforming use.

If the action is not required for the continuation of the existing non- conforming use, it is not allowed.

If the action is required for the continuation of the existing non- conforming use, proceed to step 3.

Step 3

Determine if the objectives of the proposed action can be met with actions outside of wilderness or potential wilderness.

Consider:

- Can the objective be met outside of wilderness or potential wilderness?
- Will increased educational efforts help attain the objective?
- Will a reduction in visitor use (through disincentives, quota reductions, or closures) eliminate or reduce the need for the action? If so, will that reduction be an acceptable impact to the visitor experience?

If the objectives of the proposed action can be met with actions outside of wilderness or potential wilderness, proceed with established compliance and conduct action outside of wilderness or potential wilderness addition.

If the objectives of the proposed action can not be met outside of wilderness or potential wilderness, document the reasons and proceed to step 4.

Step 4

Develop a list of alternatives to meet the objective of the proposed action.

Include ways to reduce or mitigate the impacts of each alternative.

Alternatives should be detailed and specific and include a no action alternative.

Proposed actions that use motorized equipment or mechanized transport should include, at the least, the following alternatives: 1) no action, 2) action using only non- motorized equipment and non mechanized transport, 3) action using motorized equipment and mechanized transport, and 4) some mixture of 1, 2, and 3.

Proposed actions that do not use motorized equipment or mechanized transport should still include a range of alternatives that include varying degrees of administrative intrusion on wilderness character.

Consider ways to reduce or mitigate the impacts of each alternative:

- Can the action be timed to minimize impacts to the visitor experience or ecological health?
- Do your alternatives include all available options, tools and techniques?
- Can increased education help mitigate the impacts of the action?
- Can reduced use (through disincentives or quota reductions) mitigate the impacts of the action?

List each alternative along with any applicable mitigation measures.

Step 5

Determine the effects of each alternative on wilderness health and character. Include cumulative effects.

Consider:

1. Biophysical effects

- Describe any effects this action will have on the ecological health of the area, including air and water quality, wildlife, introduction of exotic species, erosion, siltation, wetlands, and rare, threatened, endangered, or sensitive species. Include both biological and physical effects. Consult subject matter experts as needed.
- In potential wilderness additions, describe whether this action will make restoration to a wilderness condition more difficult when the area is designated as wilderness.

2. Experiential effects

- Describe any effects this action will have on the experience of wilderness visitors. Consider the effects on the opportunity for solitude, natural quiet, self- reliance, surprise, and discovery.

- Describe any effect this action will have on the natural appearance of the area.
3. Effects on wilderness character
- Describe any interference with natural processes, constraints on the freedom of wildlife or visitors, increase of management presence, or other reduction of wildness that this action may cause.

Proceed to step 6 before documenting these effects.

Step 6

Determine the management concerns of each alternative.

Consider:

1. Health and safety concerns
 - Describe any health and safety concerns associated with this action. Include health and safety considerations of both employees and the public.
2. Societal/political/economic effects
 - Describe any political considerations such as MOUs, agency agreements, etc. that may be affected by this action.
 - Estimate the economic costs of this action.

Describe the effects of each alternative as determined in steps 5 and 6. Quantify these effects when possible, and describe whether the effects are short or long term, adverse or beneficial, and localized or far- reaching.

Step 7

Choose an alternative

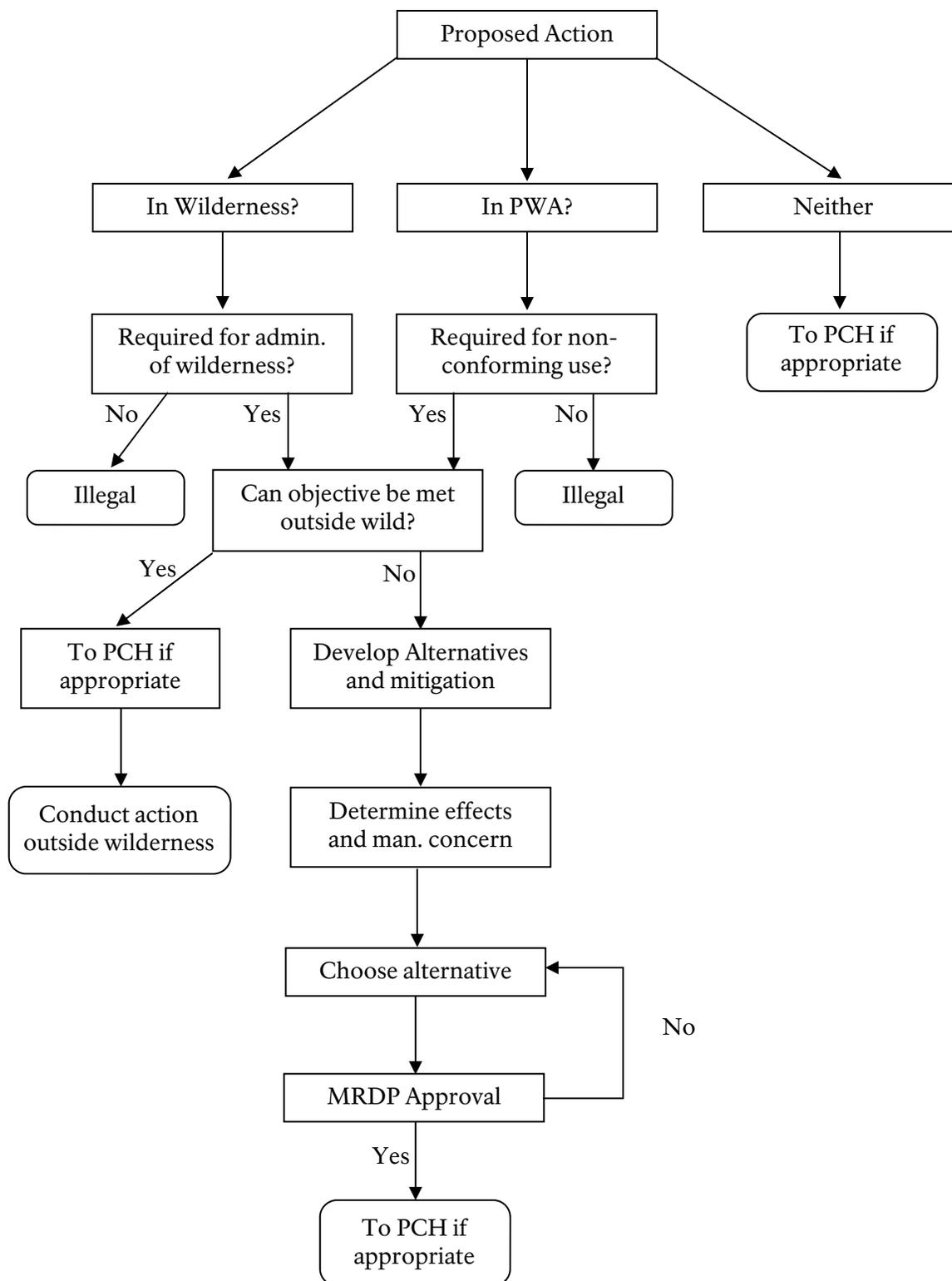
NPS management policies states:

“Potential disruption of wilderness character and resources and applicable safety concerns will be considered before, and given significantly more weight than, economic efficiency. If some compromise of wilderness resources or character is unavoidable, only those actions that have localized, short- term adverse impacts will be acceptable.

Using the information developed in steps 5 and 6, and using the law and policy guidelines presented in this document, choose a preferred action and carefully justify in writing your reasons for choosing this alternative. Submit this document to the Wilderness Manager when completed.

Attach this signature page to your documentation.

Yosemite National Park Minimum Requirement Decision Tree for Administrative Actions in Wilderness



WILDERNESS MANAGEMENT OBJECTIVES

Manage for Ecosystem Integrity. The Park Service will administer this wilderness not only as the whole of many attributes, but also as an interrelated part of the greater ecosystem of the southern and central portion of the Sierra Nevada. Decision-making efforts will link internal components of the resource with adjacent land management activities. Continued involvement with the Central and Southern Sierra Wilderness Management Group and utilization of the findings of the Sierra Nevada Ecosystem Project is paramount to achieving this objective.

Preserve Native Biodiversity. Native Biodiversity in Yosemite Wilderness will be preserved by identifying and monitoring species and communities at risk; and removing or mitigating threats to those species and communities. This can include removal of alien species; removal of structures in sensitive sites or wildlife migration corridors; limiting recreational use of such sites, and, if no other effective alternative exists, cautious management of ecological processes.

Allow Natural Processes to Continue. Natural processes such as fire, flood, disease, insect infestation, evolution, ecological succession, and predation will not be interrupted. Management of such processes will be the minimum necessary to ensure the survival of endangered species, protect threatened cultural resources, and protect human health and safety. When such processes have a significant effect on areas outside the Wilderness boundary, an ecosystem-based decision making process will be undertaken with the appropriate outside agencies to determine management response. Structures and management activities in Wilderness will be designed to minimize interference with natural processes. Some areas may be temporarily closed during natural disturbances to ensure visitor safety.

Mitigate, reduce or eliminate human induced change. Management will focus on maintaining ecological relationships and processes that would prevail if not for excessive or inappropriate human influences. The Park Service will impose limits on human activities that cause unacceptable impacts to wilderness attributes. Maximum use levels and quotas will be established and regularly monitored, and certain areas or activities may be restricted to accomplish this objective.

Park management will ensure that designated and potential wilderness in Yosemite is managed according to the principals of the Wilderness Act and the policy set forth in this plan. Significant cultural resources will be preserved in such a way that will not compromise ecological integrity.

Allow for a quality wilderness experience. Management will assure that a spectrum of high quality, diverse, but wilderness-appropriate experiences are available. Visitors have differing desires and expectations and should have the opportunity to have them met. Regulatory restrictions will be minimized to assure maximum freedom consistent with wilderness resource objectives. Wise visitor use will be encouraged through education, example and sound management.

Recognize and integrate all wilderness values. Wilderness will be managed as one resource with inseparable parts. It will be managed to provide opportunities to fulfill the recreational, scenic, scientific, educational, conservation, and historical purposes of wilderness. Interdivisional, interagency, and public consultation and cooperation will be fostered to achieve this multi-faceted approach.

Educational and interpretive outreach will be used to facilitate greater understanding, appreciation, support, and care of wilderness. These educational services will address the concept of wilderness, human uses of wilderness, and the history of the wilderness idea, as well as proper techniques for safety and care of the wilderness.

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Yosemite National Park

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Yosemite, CA 95389

www.nps.gov/yose/planning/

EXPERIENCE YOUR AMERICA

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January 2010

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