



United States
Department of
Agriculture

Forest
Service

August 2011



Environmental Assessment

Lincoln Avenue Water Company Project

Los Angeles River Ranger District, Angeles National Forest
Los Angeles County, California

For Information Contact: Michael J. McIntyre, District Ranger, Angeles National Forest
12371 North Little Tujunga Road, San Fernando, CA 91342
818-899-1900 x. 223
mmcintyre@fs.fed.us

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD).

To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410, or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

Table of Contents

Summary.....1

1. Introduction.....2

2. Alternatives, including the Proposed Action

 2.1 Alternatives11

 2.2 Environmental Commitments Common to All Alternatives20

3. Environmental Consequences

 3.1 Air Quality29

 3.2 Biological Resources39

 3.3 Cultural Resources55

 3.4 Environmental Contamination and Hazards60

 3.5 Geological/Soil Resources64

 3.6 Hydrology and Water Quality68

 3.7 Land Use74

 3.8 Noise77

 3.9 Public Service and Utilities.....80

 3.10 Socioeconomics and Environmental Justice84

 3.11 Traffic and Transportation86

 3.12 Visual Resources90

 3.13 Wilderness and Recreation93

 3.14 Wildfire Suppression and Prevention96

4. Comparison of Alternatives100

5. Consultation and Coordination107

6. References108

APPENDICES

- A. Air Quality Calculations
- B. Biological Evaluation/Biological Assessment
- C. Operation and Maintenance Plan
- D. Archaeology Survey
- E. Final National Register Determination of Eligibility

LIST OF TABLES

1-1 Summary of Issues Raised during Public Scoping7
 1-2 Summary of Significant Issues Raised during Internal Scoping9
 2-1 Daily and Annual Water Flow Averages at LAWC Locations from 2004-201016
 2-2 Monthly Water Flow Recordings at LAWC Locations from 2004-201017
 3-1 National and California Ambient Air Quality Standards.....29
 3-2 Air Quality Monitoring Summary 2006-200930
 3-3 Attainment Status for South Coast Air Basin31
 3-4 SCAQMD Air Quality Significance Thresholds, lbs/day.....32
 3-5 Worst Case Daily Construction Emission Estimates for LAWC Project, lbs/day.....34
 3-6 Operating Emission Estimates for LAWC, lbs/day34
 3-7 Construction Emissions vs. LST Criteria for LAWC Project, lbs/day35
 3-8 LAWC Project Greenhouse Gas Emissions, tons/year38
 3-9 Vegetation Communities Occurring in the Work Area40
 3-10 Archaeological Survey Completed within 0.5 Mile of the APE.....56
 3-11 Archaeological Sites Recorded within 0.5 Mile of the APE57
 4-1 Comparison of Alternatives101
 5-1 List of Preparers and Reviewers107

LIST OF FIGURES

1 Regional Location.....3
 2 Millard Canyon Equipment and Facilities13
 3 El Prieto Canyon Equipment and Facilities14
 4 Conditions at Millard Canyon diversion structure that would require minor
 debree removal activities19
 5 Conditions at Millard Canyon diversion structure that would require major
 debree removal activities19
 6 Pipeline Replaceent and Reroute Project Area21

LIST OF ACRONYMS

amsl above mean sea level
 ANF Angeles National Forest
 APE Area of Potential Affects
 AQMP Air Quality Management Plan
 BE/BA Biological Evaluation/Biological Assessment
 BMP Best Management Practice
 CAAQS California Ambient Air Quality Standards
 Cal-OSHA California Occupations Safety and Health Administration
 CARB California Air Resources Board
 CDFG California Department of Fish and Game
 CEQ Council on Environmental Quality
 CEQA California Environmental Quality Act

cfs	cubic feet per second
CNPS	California Native Plant Society
CWA	Clean Water Act
DAI	Developed Area Interface
DoD	Department of Defense
DTSC	Department of Toxic Substances Control
EA	Environmental Assessment
FEMA	Federal Emergency Management Agency
FESA	Federal Endangered Species Act
FHA	Flood Hazard Area
FLPMA	Federal Land Policy and Management Act of 1976
FSS	Forest Service Sensitive
GACC	Southern California Geographic Coordination Center
GHG	Greenhouse Gas
gpm	gallons per minute
HAS	Hydrologic Subarea
HR	Hydrologic Region
HU	Hydrologic Unit
LACFD	Los Angeles County Fire Department
LAWC	Lincoln Avenue Water Company
LRA	Local Responsibility Area
LST	Localized Significance Threshold
LUFT	Leaking Underground Fuel Tank
MBTA	Migratory Bird Treaty Act
MFCV	Modulated Flow Control Valve
MWD	Metropolitan Water District of Southern California
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NFS	National Forest Service
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NRHP	National Register of Historic Places
OSHA	Federal Occupational Safety and Health Administration
PSD	Prevention of Significant Deterioration
SCAQMD	South Coast Air Quality Management District
SCE	Southern California Edison
SIO	Scenic Integrity Objective
SIP	State Implementation Plan
SLIC	Spills-Leaks-Investigations-Cleanups
SoCAB	South Coast Air Basin
SRA	State Responsibility Area
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TEPCS	Threatened, Endangered, Proposed for Listing, or Candidate Species
TRTP	Tehachapi Renewable Transmission Project
USEPA	United States Environmental Protection Agency

USFWS United States Fish and Wildlife Service\
USGS United States Geological Survey
WEAP Worker Environmental Awareness Program

SUMMARY

Lincoln Avenue Water Company (LAWC) provides water to a service area encompassing approximately 1,500 acres of west Altadena with an estimated 16,000 residents and roughly 4,500 service connections. Water to meet the needs of LAWC customers is drawn from several sources, including: (1) surface water from Millard Canyon; (2) Wells No. 3 and 5, which pump groundwater from the Raymond Basin; and, (3) treated surface water from Metropolitan Water District of Southern California (MWD). LAWC also has emergency connections with Las Flores Water Company and the City of Pasadena.

The Proposed Action (Alternative 2 – Pipeline Replacement and Reroute Alternative) would consist of two components, including the renewal of U.S. Forest Service (Forest Service) Special Use Permits #LAR412601 (Water Trans Pipeline < 12”) and #LAR412602 (Water Diversion, Weir) to support ongoing operation and maintenance of LAWC facilities and equipment on Angeles National Forest (ANF) lands and the replacement and reroute of approximately 1,400 linear feet of corroded 10-inch steel water pipeline along the LAWC alignment in Millard Canyon.

In addition to the Proposed Action, the Forest Service evaluated one other alternative:

- A No Action Alternative (Alternative 1), under which the Forest Service would deny the renewal of LAWC’s Special Use Permits #LAR412601 and #LAR412602. All existing LAWC facilities and equipment that are currently located on ANF lands would be decommissioned and abandoned in place. Consequently, surface waters would no longer be diverted on ANF lands and the full capacity of natural flows would be restored in Millard and El Prieto Canyons. As a subsequent effect of implementation of the No Action Alternative, no pipeline replacement and reroute activities would occur on ANF lands. Additionally, it is likely that construction of new equipment and facilities would be required to maintain at least the minimum level of service for LAWC customers. These facilities would be constructed at locations outside of ANF boundaries that have yet to be determined.

Two additional alternatives (Pipeline Replacement and Removal Alternative and Permits Renewal Only Alternative) were considered, but eliminated from detailed evaluation in this report due to infeasibility related to financial, engineering, and environmental factors discussed below.

Pipeline Removal and Replacement Alternative. This alternative would be similar to the Proposed Action in that it would include the renewal of Special Use Permits #LAR412601 and #LAR412602. However, approximately 1,400 linear feet of corroded 10-inch steel pipeline would be removed and replaced at its current location. This alternative was eliminated from further analysis because it would introduce substantially greater engineering and construction risks. The current location of the pipeline occurs approximately fifteen feet below and down-slope from the edge of Mount Lowe Road. Ground disturbance activities in this area have the potential to alter the integrity of the

existing slope and access road and would constitute a far greater level of ground disturbance to native vegetation than the Proposed Action.

Permits Renewal Only Alternative. This alternative would include only the renewal of Special Use Permits #LAR412601 and #LAR412602. The existing LAWC water transmittal pipeline would remain in its current condition and location under this alternative. This alternative was eliminated from further analysis because the current condition of the pipeline is likely to result in long-term, damaging effects to the existing slope and access road.

1. INTRODUCTION

This document is an Environmental Assessment (EA) for the LAWC Project located on federal lands on the ANF (Figure 1). It provides the required National Environmental Policy Act (NEPA) documentation for the Proposed Action and feasible alternatives (42 United States Code [U.S.C.] §§ 4321 et seq). This EA has been prepared, specifically, to assess potential environmental impacts and benefits associated with the Proposed Action and feasible alternatives.

Station Fire Note: A majority of the analysis, including field surveys, database inquiries, and record searches for this report was conducted prior to the Station Fire that originated on August 26, 2009. While it is recognized that the fire, which burned over 160,000 acres on ANF lands, resulted in a variety of adverse effects to natural resources on the ANF, any effects resulting from the implementation of the Proposed Action would be considered negligible within the context of broad-scale fire-related impacts. Recent LAWC inspections concluded that some components (pipeline, meters, etc.) of their existing equipment on ANF lands were damaged as a result of the fire. Consequently, LAWC and the Forest Service coordinated efforts to conduct emergency repairs to LAWC equipment in the fire-affected areas. All repairs were completed within one month of their initiation and were subject to Forest Service approval.

1.1 Document Structure

LAWC has conducted relevant environmental studies and has prepared this EA in compliance with NEPA and other applicable federal and State laws and regulations. This EA discloses the direct, indirect, and cumulative environmental impacts that would result from implementation of the Proposed Action and the No Action Alternative. The document is organized into four parts:

Introduction: The section includes information on the history of the project proposal, the purpose of and need for the Proposed Action, and the LAWC's proposal for achieving that purpose and need. This section also details how the public was informed of the proposal and how the public responded.

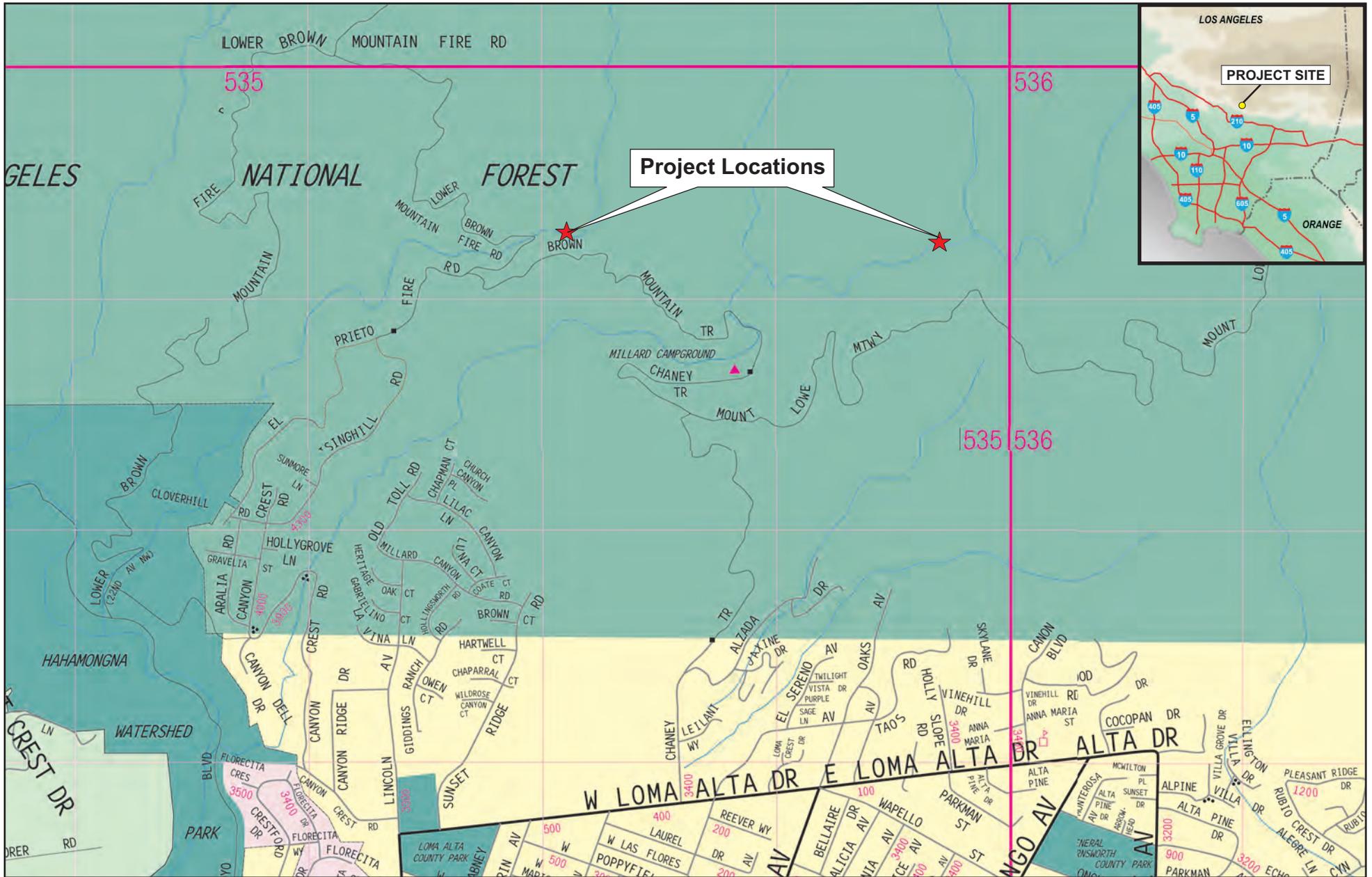


Figure 1

Project Vicinity Map with Project Location

Comparison of Alternatives, including the Proposed Action: This section provides a more detailed description of LAWC's Proposed Action as well as alternative methods for achieving the stated purpose, which were developed based on significant issues raised by the public and other agencies. This discussion also includes Environmental Commitments to be incorporated and implemented as part of the alternatives. Finally, this section provides a summary table of the environmental consequences associated with each alternative.

Environmental Consequences: This section describes the environmental effects of implementing the Proposed Action and No Action Alternative. This analysis is organized by pertinent issue areas. Within each section, the affected environment is described first, followed by the effects of the Proposed Action and No Action Alternative.

Agencies and Persons Consulted: This section provides a summary of regulatory agency consultation during the development of the EA and a list of preparers and reviewers of this document.

Appendices: The Appendices provide more detailed information to support the analyses presented in this EA.

Additional documentation, including more detailed analyses of project-area resources, may be found in the project planning record located at the Los Angeles River Ranger District Office in San Fernando, California.

1.2 Background

This action responds to the Special Use Permit application, submitted to the Forest Service by LAWC on July 3, 2008, and Proposed Action construction plans, to continue operation and maintenance of existing LAWC facilities and equipment on the ANF and to repair the corroding water pipeline, respectively.

LAWC currently conducts water diversion activities at locations within the jurisdiction of the ANF, including sites in Millard and El Prieto Canyons, to measure surface flows in compliance with terms and conditions presented in Civil Code Section 1410 *ad seq.* and the Raymond Basin Judgment, discussed below.

Under existing laws and agreements, LAWC has statutory rights to divert surface water at an amount of water measured by the maximum capacity of its diversion works and other facilities, totaling 6.59 cubic feet per second [(cfs); over 24 hours = 1.983 acre-feet] from Millard and El Prieto Canyons. According to Civil Code Section 1410 *ad seq.* these water rights were established pursuant to public postings and records of appropriated areas prior to the establishment of the State Water Board in 1914. Therefore, LAWC, which has conducted activities on the ANF since their incorporation in 1896, retained exclusive water rights pertaining to diversion in Millard and El Prieto Canyons.

LAWC is one of sixteen Raymond Basin water producers that serve various public jurisdictions. Historically, the Raymond Basin has provided water to its surrounding communities for a variety of beneficial uses. To ensure that all of these communities received a portion of this water, legal actions beginning in 1937 established the Raymond Basin as the first adjudicated ground water basin in California. Under the adjudication, a court of law determined who had a right to extract water and the maximum annual

amount of water allowed to be pumped by each producer (RBMB, 2009). A series of judgments followed, most recently the modification of the *City of Pasadena vs. City of Alhambra, et al.* judgment (or The Raymond Basin Judgment), dated March 26, 1984. This modification reiterated LAWC's (as one of sixteen public suppliers) right to spread collected surface water in the Arroyo Seco spreading grounds and to extract groundwater from well fields located in the Monk Hill Subarea of the Raymond Basin. As stated in the Raymond Basin Judgment:

“Each such party shall have the right to pump from any wells in the Monk Hill Basin an amount of water equal to eighty percent (80%) of the amount which it has diverted for such spreading therein and which is available for recapture...”

Measurements that are recorded at a metering station located in El Prieto Canyon dictate the amount of water that LAWC is permitted to recapture and extract from wells in the Raymond Basin. One condition stipulated in the Raymond Basin Judgement states as follows:

“A metering device, or devices, shall be installed and maintained by each diverting party at such party's expense to measure all amounts of water diverted by such party for spreading purposes. Such metering facilities, and the continued accuracy thereof, shall be subject to the approval of the Watermaster and the Los Angeles County Flood Control District, and all such measurements shall be available to them. The Watermaster, with such assistance as the Los Angeles County Flood Control District may provide, shall determine and account for all water diverted for spreading, the amount of water spread and available for recapture, and the amount so recaptured, and shall include such determination and accounting in its reports.”

With respect to Forest Service lands, the Forest Service has the responsibility to protect surface resources within their jurisdiction to the extent provided by law. Forest Service water extraction and diversion management goals state that “Where new or re-authorized water extraction or diversion is allowed, those facilities should be located to avoid long-term adverse impacts to national forest water and riparian resources” (USDA Forest Service, 2005). The Proposed Action would include the reauthorization of Special Use Permits #LAR412601 and #LAR412602 for the ongoing diversion of water in Millard and El Prieto Canyons. The continual dewatering of portions of the drainages that traverse these areas could potentially result in long-term consequences; however, activities conducted by LAWC in these areas are consistent with existing LAWC water rights and practices and LAWC would implement a series of Environmental Commitments, discussed below, to avoid and/or minimize temporary and long-term impacts associated with implementation of the Proposed Action.

1.3 Purpose and Need for Action

The purpose and need for the Proposed Action is to: (1) replace and reroute an aged and corroded section of existing water pipeline located along Mount Lowe Road on the ANF; (2) seek approval for the renewal of LAWC's Special Use Permits #LAR412601 and #LAR412602 while maintaining consistency with goals and objectives outlined in the 2005 ANF Land and Resource Management Plan; (3) allow for the continued safe and efficient operation of LAWC facilities and equipment on ANF lands; and, (4) allow for the continued delivery of a reliable, low-cost, high-quality domestic water resource to roughly 16,000 LAWC customers in Altadena.

1.4 Proposed Action

The Proposed Action would consist of two components, including the renewal of Special Use Permits #LAR412601 and #LAR412602 to support ongoing maintenance and operation activities to LAWC existing facilities and equipment and the replacement of an approximately 1400-foot section of corroded water pipeline along the existing LAWC alignment, located along Mount Lowe Road in Millard Canyon. Construction activities associated with the Proposed Action are scheduled for implementation in 2011 and would be completed within no more than 2 weeks while operation and maintenance would continue throughout the life of LAWC equipment and facilities. The Proposed Action is not related to other actions with individually insignificant, but cumulatively significant impacts, and is not likely to establish a precedent for future actions. The effects of the Proposed Action are not uncertain, and do not involve unique or unknown risk. The effects on the quality of the human environment are not likely to be highly controversial.

1.5 Decision Framework

Given the purpose and need, the deciding official reviews the Proposed Action and the other alternatives in order to make the following decisions:

- Should LAWC's Special Use Permits #LAR412601 and #LAR412602 be approved for renewal to allow for the continued operation and maintenance of existing LAWC facilities and equipment on the ANF?
- Should repairs be completed to approximately 1,400 feet of corroded water pipeline in Millard Canyon?

1.6 Public Involvement

The proposal was listed in the Schedule of Proposed Actions on July 1, 2008. The proposal was provided to the public and other agencies for comment during scoping between June 22 and July 31, 2009. In addition, as part of the public involvement process, the agency mailed letters to affected parties on June 22, 2009 and posted the letter on the ANF website (www.fs.fed.us/r5/angeles).

1.7 Issues

Using the comments from the public and other agencies, an interdisciplinary team of Forest Service specialists and LAWC representatives developed a list of issues to address. For purposes of analysis, potential issues were classified under two groups, including non-significant and significant. Non-significant issues are identified as those: 1) outside the scope of the Proposed Action; 2) already decided by law, regulation, Forest Plan, or higher level decision; 3) irrelevant to the decision being made; or, 4) conjectural and not supported by scientific or factual evidence. The Council on Environmental Quality (CEQ) NEPA regulations require this delineation in Sec.1501.7, "...identify and eliminate from detailed study the issues which are not significant or which have been covered by prior environmental review (Sec. 1506.3)...."

1.7.1 Issues Raised during Public Scoping

A total of fourteen comments were received during the public scoping period between June 22 and July 31, 2009. These comments, along with whether each comment was considered significant or non-significant, are summarized in Table 1-1.

Table 1-1 Summary of Issues Raised during Public Scoping

Issue	Further Analysis
<p>Three commenters recommended that as much water as possible should be kept in Millard Canyon.</p>	<p>LAWC possesses existing water rights to surface waters in Millard and El Prieto Canyons; however, in order to minimize impacts associated with the ongoing diversion of water flows within Millard Canyon, LAWC would implement Environmental Commitment GEN-9 (Install Modulated Flow Control Valve at North Coulter Reservoir). Additionally, as required by law, LAWC would comply with the regulations regarding conducting project activities in waterbodies under the jurisdiction of the State and federal government. As such, LAWC would obtain and comply with required permits pursuant to Section 401 and 404 of the Clean Water Act and the State Porter-Cologne Act and CDFG Code 1602.</p>
<p>One commenter suggested that all work should be conducted with oversight to assure that adverse effects to riparian resources be avoided.</p>	<p>As part of the Proposed Action, LAWC would implement a variety of Environmental Commitments that would ensure compliance with federal, State, and local laws, plans, and policies. All activities associated with implementation of the Proposed Action would be conducted in accordance with Forest Service oversight and approval. Additionally, LAWC will conduct all operation and maintenance activities in compliance with required regulatory permits/authorizations, including those issued by the California Department of Fish and Game, the U.S. Army Corps of Engineers, and the Los Angeles Regional Water Quality Control Board.</p>
<p>Two commenters recommended that modifications be made to water diversion such that water is returned geographically closer to the diversion points.</p>	<p>As part of the Proposed Action, LAWC would implement Environmental Commitment GEN-9 (Install Modulated Flow Control Valve at North Coulter Reservoir). Implementation of this commitment would ensure that water is released from the North Coulter reservoir at the same geographic location as the initial intake point.</p>
<p>One commenter requested that, where work is conducted on or alongside trails, LAWC should assure that re-contoured surfaces meet County of Los Angeles and Forest Service multi-use trail standards.</p>	<p>Considered non-significant as all construction activities would be limited to existing paved surfaces. Access for operation and maintenance activities would occur along existing roads and trails; however, these activities would not alter existing road and trail use and conditions.</p>
<p>One commenter suggested that pipeline removal and replacement activities should be conducted to avoid and/or minimize future trail erosion.</p>	<p>All construction activities associated with implementation of the Proposed Action would be limited to existing paved surfaces; however, LAWC would implement a variety of Environmental Commitments to avoid and/or minimize potential erosion impacts, including GEN-4 (Limit Work Areas), GEO-1 (Seismic Design and Contingency Plan), HYD-1 (Implement an Erosion Control Plan/SWPPP), and HYD-2 (Dry Weather Construction). Operation and maintenance activities would occur primarily by foot, utilizing existing roads and trails. These activities would be conducted on an "as-needed basis" by small (2-3 person) crews. The level of impacts to trails resulting from operation and maintenance of LAWC equipment and facilities is not expected to differ from currently existing use and conditions.</p>
<p>One commenter recommended that LAWC be required to post advanced notice of work that could impact trail use or cause trail closures.</p>	<p>In order to limit and/or avoid disruption to recreational users, LAWC would stage personnel at each end of the work area, stop work when necessary, and only continue work once pedestrian traffic has safely exited the work area. Additionally, as part of the Proposed Action, LAWC would implement Environmental Commitments GEN-4 (Limit Work Areas) and LU-1 (Advance Notification of Construction).</p>

Issue	Further Analysis
<p>One commenter suggested that LAWC should work with the Forest Service to restore water services to the horse trough and drinking fountain at the Sunset Ridge Trail trailhead and Millard Campground.</p>	<p>Considered non-significant as recommendations are outside the scope of the Proposed Action.</p>
<p>One commenter suggested that water diversion in Millard Canyon may exacerbate the effects of the long-term drought on vegetation and wildlife living in the canyon</p>	<p>It is understood that riparian habitats represent crucial environments for a wide variety of common and special-status plant and wildlife species. Several biological surveys were conducted for the Proposed Action to determine the potential for special-status species to occur in the Proposed Action area and to assess potential impacts of the Proposed Action, should these species occur. A detailed analysis for biological resources is presented in Section 3.2 of this report and in the Biological Evaluation/Biological Assessment (LAWC, 2011a; Appendix B) and Management Indicator Species Reports (LAWC, 2011b) prepared for the Proposed Action.</p> <p>In order to minimize impacts to biological resources in Millard Canyon, LAWC will implement Environmental Commitment GEN-9 (Install Modulated Flow Control Valve at North Coulter Reservoir), which would ensure that water that is released from the North Coulter reservoir would be returned at the same geographic location as the initial intake point. Additionally, as required by law, LAWC would comply with the regulations regarding conducting project activities in waterbodies under the jurisdiction of the State and federal government. As such, the Applicant would obtain required permits pursuant to Section 401 and 404 of the Clean Water Act and the State Porter-Cologne Act and CDFG Code 1602.</p>
<p>Two commenters noted that alder trees are dying and falling in the canyon.</p>	<p>While the concern for a healthy and diverse riparian habitat in Millard and El Prieto Canyons is recognized, several biological studies were conducted for the Proposed Action, including targeted assessments conducted in August 2009 and October 2010 that specifically focused on the condition of alder trees in the portion of Millard Creek subject to LAWC's current diversion practices. Results from these assessments determined that conditions in this portion of the creek are similar to conditions occurring at locations along Millard Creek both above and below the diversion. This portion of the creek continues to exhibit a broad diversity of tree age classes, canopy structure, and native recruitment. Alder trees are typically sensitive to alterations in ground water conditions and, although, existing LAWC operations consist of diverting water through this portion of the creek, these operations are only one factor related to current conditions. It is very likely that the cycle of alder recruitment and mortality throughout Millard Canyon due to age, storms, and access to water has been occurring on a regular cycle over the past several decades. Nonetheless, the diversion of water through this portion of the creek cannot be entirely dismissed as having potentially adverse effect to alder trees. In order to minimize impacts to alder trees and other native vegetation in Millard Canyon, LAWC will implement Environmental Commitment GEN-9 (Install Modulated Flow Control Valve at North Coulter Reservoir), which would ensure that water that is released from the North Coulter reservoir would be returned to the same geographic location as the initial intake point.</p>

Issue	Further Analysis
One commenter expressed concern over silty water entering the creek as a result of LAWC operation and maintenance activities.	As part of the Proposed Action, LAWC would implement Environmental Commitment GEN-10 (Prepare and Implement an Operation and Maintenance Plan), which would be subject to Forest Service approval and would include required conditions to avoid and/or minimize impacts associated with ongoing operation and maintenance. Additionally, as required by law, LAWC would comply with the regulations regarding conducting project activities in waterbodies under the jurisdiction of the State and federal government. As such, the Applicant would obtain required permits pursuant to Section 401 and 404 of the CWA and the State Porter-Cologne Act and CDFG Code 1602.
One commenter noted that the water table through Millard Canyon between the waterfall and the campground has dropped approximately two feet.	Considered non-significant as LAWC possesses existing water rights to surface waters in Millard and El Prieto Canyons and this observation is based on non-scientific observations.
One commenter recommended that LAWC should implement a tiered rate system.	Considered non-significant as recommendations are outside the scope of the Proposed Action.
Several commenters requested the establishment of a standard for the minimum allowable flow rate required in Millard Canyon.	Considered non-significant as these standards have already been established within the context of existing water rights.
Several commenters requested a restriction on the number of cubic feet of water LAWC may divert from Millard Canyon.	Considered non-significant as the amount of water that LAWC may divert is within the amount allowed by existing water rights.

1.7.2 Issues Raised during Internal Scoping

In addition to issues raised during the public scoping period, a series of significant issues, defined as those that could be potentially directly or indirectly caused by implementing the Proposed Action, were recognized during internal scoping between LAWC and the Forest Service. Each of these issues was categorized according to the appropriate issue area and is presented in Table 1-2.

Table 1-2 Summary of Significant Issues Raised during Internal Scoping

Issue Area	Indicator
Air Quality	<ul style="list-style-type: none"> • Conflict with or obstruct implementation of the AQMP or the ANF Forest Plan • Violate any air quality standards or contribute to an existing or projected air quality violation. • Result in a cumulatively considerable net increase of any criteria non-attainment pollutant. • Expose the public (especially schools, day care centers, hospitals, retirement homes, convalescent facilities, and residences) to substantial pollutant concentrations. • Create objectionable odors affecting a substantial number of people. • Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment • Conflict with an applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases
Biological Resources	<ul style="list-style-type: none"> • Result in impacts to federal waters/wetlands of the U.S. and/or waters of the State. • Result in impacts to threatened, endangered, candidate, or proposed for listing species. • Result in impacts to a Forest Service sensitive species.

Issue Area	Indicator
Cultural Resources	<ul style="list-style-type: none"> ● Adversely affect through alteration, direct or indirect, of the characteristics of a historic property that qualifies for inclusion in the National Register in a manner that would diminish the integrity of the property’s location, design, setting, materials, workmanship, feeling, or associaton.
Environmental Contamination and Hazards	<ul style="list-style-type: none"> ● Result in soil contamination, including flammable and/or toxic gases at levels exceeding federal, State, or local hazardous waste limits established by CFR Part 261 and Title 22 CCR 66262.21, 66261.22, 66261.23, and 66261.24. ● Result in mobilization of contaminants currently existing in the soil, creating potential pathways of exposure to humans or other sensitive receptors. ● Cause contamination of soils or groundwater within the proposed Project area during operation of the Project, resulting in exposure of workers and/or the public to contaminated or hazardous materials at levels in excess of those permitted by the California Occupations Safety and Health Administration (Cal-OSHA) in CCR Title 8 and the Federal Occupational Safety and Health Administration (OSHA) in Title 29 CFR Part 1910.
Geological/Soil Resources	<ul style="list-style-type: none"> ● Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault, strong seismic ground shaking, seismic-related ground failure, such as liquefaction and/or landslide. ● Result in substantial soil erosion or the loss of topsoil. ● Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the Project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse.
Hydrology and Water Quality	<ul style="list-style-type: none"> ● Violate any water quality standards or waste discharge requirements, create any substantial new sources of polluted runoff, or otherwise degrade water quality. ● Substantially deplete groundwater supplies or interfere with groundwater recharge, such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table. ● Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion, siltation, or other flood-related damage on- or off-site. ● Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site, or otherwise create or contribute to runoff water which would exceed the capacity of existing or planned stormwater drainage systems. ● Place housing within a 100-year floodplain as shown of the FEMA Insurance Rate maps.
Land Use	<ul style="list-style-type: none"> ● Inconsistency or non-compliance with applicable land use plans or policies. ● Preclude the viability of existing land use. ● Be incompatible with land uses adjacent to or in the vicinity of the proposed Project area to the extent that public health or safety is threatened.
Noise	<ul style="list-style-type: none"> ● Result in a permanent and substantially higher level of ambient noise source in the vicinity of sensitive receptors. ● Result in a substantial temporary or periodic increase in ambient noise levels during construction in the vicinity of sensitive receptors above levels existing without the Project.
Public Service and Utilities	<ul style="list-style-type: none"> ● Increase demand for public services that cannot be readily met by existing public service providers and facilities. ● Impede or interfere with existing public services emergency access. ● Result in a major reduction or interruption of existing utility systems or cause a collocation accident. ● Substantially change the ability of water treatment, wastewater treatment, or solid facilities to adequately supply water and accommodate solid waste and wastewater.

Issue Area	Indicator
Socioeconomics and Environmental Justice	<ul style="list-style-type: none"> • Substantial shifts in population trends. • Adversely affect regional spending and earning patterns. • Introduction of a new and overwhelming demand for public services and/or utilities.
Traffic and Transportation	<ul style="list-style-type: none"> • A major roadway would be closed to through traffic as a result of construction activities and there would be no suitable alternative route available. • An increase in vehicle trips associated with construction workers or equipment would result in an unacceptable reduction in level of service on the roadways in the Project vicinity. • Construction activities would impede pedestrian movements in the construction area and there would be no suitable alternative pedestrian/bicycle access routes. • An increase in roadway wear in the vicinity of the construction zone would occur as a result of heavy truck or construction equipment movements, resulting in noticeable deterioration of a roadway surface or other features in the road right-of-way.
Visual Resources	<ul style="list-style-type: none"> • Have a substantial adverse effect on the existing landscape character and visual quality of the site and its surroundings. • Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area. • Substantially damage scenic resources within a scenic highway viewshed or a national scenic trail viewshed (including, but not limited to, trees, rock outcroppings, and historic buildings).
Wilderness and Recreation	<ul style="list-style-type: none"> • Directly and/or indirectly disrupt or preclude activities in an established recreation area or wilderness area, including through substantially contributing the long-term degradation of the “outdoor experience” for recreationists.
Wildfire Suppression and Prevention	<ul style="list-style-type: none"> • Activities associated with the Project adversely affect fire prevention and suppression activities. • Project-related activities or the presence of the Project expose communities, firefighters, personnel, and/or natural resources to an increased risk of wildfires.

2. ALTERNATIVES, INCLUDING THE PROPOSED ACTION

This chapter describes and compares the alternatives considered in this EA, including the Proposed Action and No Action Alternative. This section also presents the alternatives in comparative form, sharply defining the differences between each alternative and providing a clear basis for choice among options by the decision maker and the public.

2.1 Alternatives

Alternative 1

No Action Alternative

Under the No Action Alternative, current management plans would continue to guide management on the ANF. The Forest Service would deny renewal of LAWC’s Special Use Permits #LAR412601 and #LAR412602. Additionally, no pipeline repair activities associated with the Proposed Action would occur on ANF lands and all LAWC

equipment and facilities on ANF lands would be decommissioned and abandoned in place. As such, impacts associated with the Proposed Action would not occur on ANF lands, including those related to pipeline replacement and reroute activities and operation and maintenance. Subsequently, drainages located in Millard and El Prieto Canyons would no longer be subject to dewatering practices as they currently exist. It is likely that the elimination of water diversion activities in these areas would result in long-term beneficial effects to overall stream functions.

In order to continue to provide reliable service to its customers, LAWC would be required to implement a new action plan that would include the following: (1) new equipment and facilities would be constructed at sites occurring off ANF lands, the locations of which are undetermined; and, (2) future public demands would need to be met by obtaining water from alternative sources, including, but not limited to, MWD, the City of Pasadena, and the Las Flores Water Company. If the No Action Alternative is selected, LAWC would possibly be required to increase rates to their customers to offset costs of new equipment and facilities and/or alternative water resources. While impacts associated with the pipeline replacement and reroute and routine operation and maintenance under the Proposed Action would not occur on ANF lands, construction activities, and associated impacts, would likely be required at locations that have yet to be determined.

Alternative 2

Pipeline Replacement and Reroute Alternative (Proposed Action)

The Proposed Action would consist of two components: (1) the renewal of Special Use Permits #LAR412601 and #LAR412602 to support ongoing maintenance and operation activities to LAWC existing facilities and equipment; and, (2) the replacement and reroute of an approximately 1400-foot section of corroded water pipeline located along Mount Lowe Road in Millard Canyon.

Special Use Permits Renewal in Support of Operation and Maintenance of Existing Equipment and Facilities

LAWC currently maintains and operates a network of water diversion and transmittal equipment and facilities on the ANF. Equipment includes pipelines, weirs, diversion structures, and measuring stations. Facilities are limited to the North and South Coulter Reservoirs. All LAWC equipment and facilities that would be covered under the renewal of Special Use Permits #LAR412601 and #LAR412602 are located in Millard and El Prieto Canyons (Figures 2 and 3).

LAWC equipment and facilities on the ANF are typically accessed by vehicle along Chaney Trail Road, Mount Lowe Road, and Brown Mountain Road. Additional equipment (i.e. weirs and diversion structures) located in Millard Canyon is accessed by foot along the Sunset Ridge Trail.

Millard Canyon. The system in Millard Canyon consists of an approximately 1.25 mile, 10-inch steel water pipeline that transports water from an upstream portion of Millard Creek to the North Coulter Reservoir. Water is passively diverted into the pipeline at a

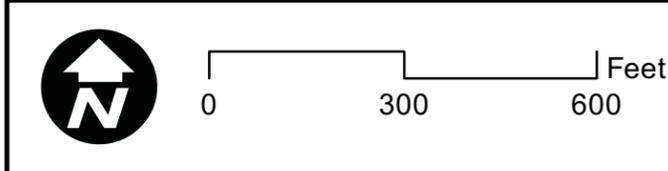
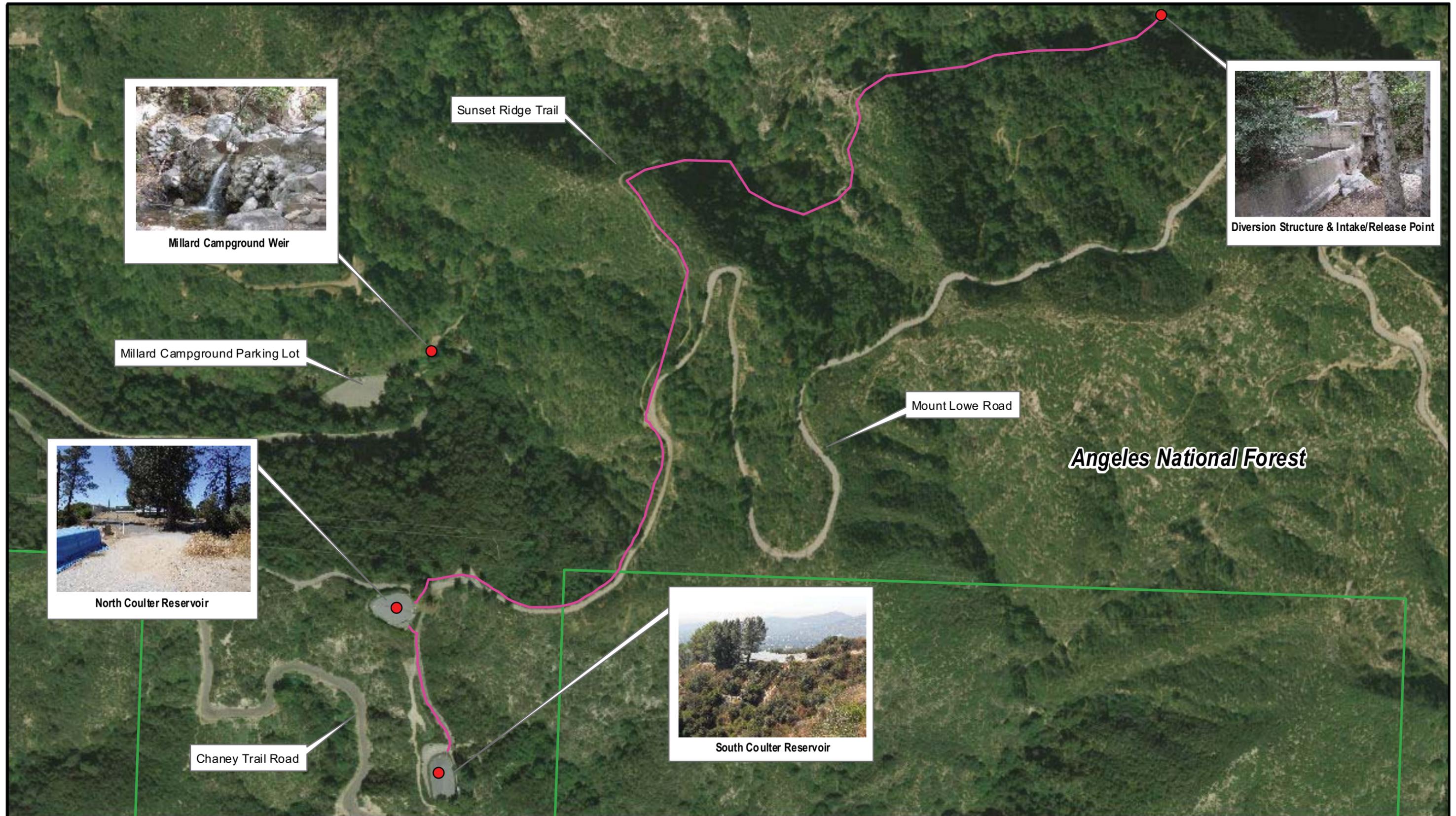
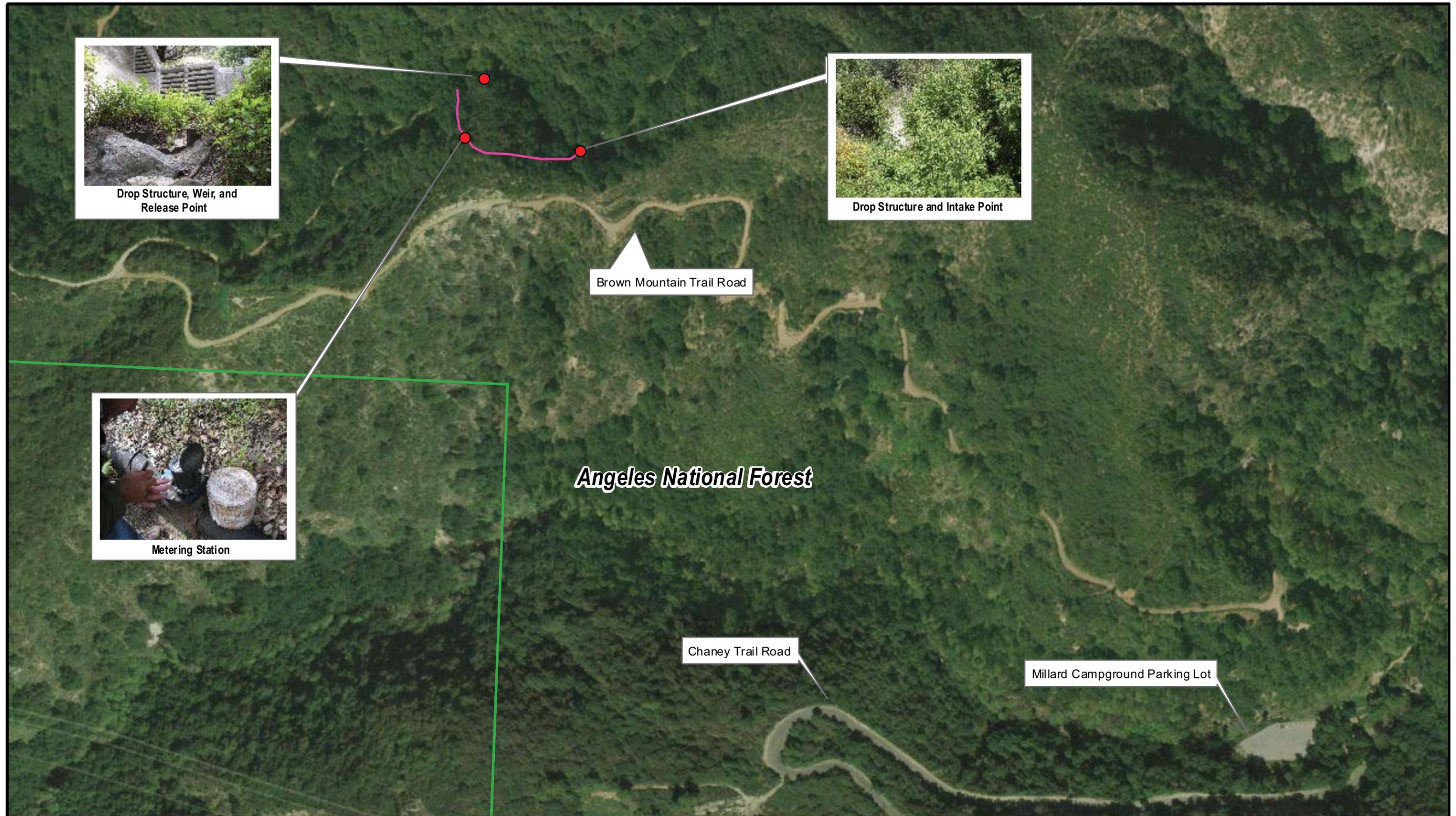


Figure 2 - Millard Canyon Equipment and Facilities



0 200 400 Feet

● LAWCC Equipment & Facilities

— El Prieto Pipeline

□ ANF Boundary

Figure 3 - El Prieto Canyon Equipment and Facilities

roughly 400-square foot concrete diversion structure located on Millard Creek adjacent to the Sunset Ridge Trail. The structure consists of a concrete basin that diverts a portion of the creek flow into the LAWC pipeline. From this location, water travels through the pipeline in a southwest direction generally adjacent to the Sunset Ridge Trail and Mount Lowe Road. With the exception of one short section where the pipeline is exposed along a nearly vertical bedrock slope approximately forty feet above the trail, the remaining length is either embedded in bedrock or covered by earth and vegetation along the slope of the hill. The southern terminus of the pipeline ties into the North Coulter Reservoir underneath a paved portion of Mount Lowe Road. From the North Coulter Reservoir, water is either transported through an 8-inch steel pipeline to the South Coulter Reservoir for further treatment before exiting Forest Service lands or is released back into Millard Creek via a manually operated release valve. Water that is currently released back into the creek is transported through an 8-inch steel pipeline that extends down slope from the North Coulter Reservoir approximately 300 feet along a small unnamed drainage. At the termination of the release pipeline, water flows freely through the unnamed drainage to its confluence with Millard Creek located approximately 2,500 feet downstream of the initial diversion point. Water that is not diverted at the upstream diversion structure flows along Millard Creek where it is measured at a weir located downstream and just northeast of the Millard Campground. This weir serves as a secondary method to measure stream flow and diverted water through Millard Canyon.

El Prieto Canyon. In addition to collecting surface water from Millard Canyon, LAWC draws water from underground wells Nos. 3 and 5, located within the Raymond Basin, south of the ANF. In order to determine adequate periods of withdrawal and the amounts of water that LAWC may collect from these wells, flow measurements are analyzed along portions of El Prieto Canyon.

To assess flow measurements, water is passively diverted through a 6-inch steel pipe that initiates at an approximately 25-square foot concrete diversion structure along the upstream portion of the drainage. The pipeline, located along the southern bank of the drainage extends to the west for approximately 300 feet where water is released back into the drainage below a small weir and large concrete drop structure located above Brown Mountain Road. Measurements are recorded at a locked meter that occurs approximately midway along the pipeline. Additional measurements of stream flow are recorded at a weir located at the downstream diversion structure.

Recent Data. Table 2-1 illustrates daily and annual flow averages measured at various LAWC locations over a seven year period from 2004 to 2010. As shown in Table 2-1, daily averages of diverted water measured at meters in Millard and El Prieto Canyons are primarily below the 1.983 acre-feet per day allowed, pursuant to LAWC's existing water rights. Table 2-2 presents monthly water flow measurements recorded at the same locations over the same period of time. As mentioned above, LAWC operates a network in which diverted water passively enters the pipelines prior to arriving at metering stations. Surface water must obtain a minimum flow rate of 200 gallons per minute (0.88 acre/feet/day) in order for water to enter the process of diversion. Consequently, less water enters the system during periods of seasonal low flows, typically from June to December, as exhibited in Table 2-2.

**Table 2-1 Daily and Annual Water Flow Averages at LAWC Locations
from 2004-2010**

Year	Daily Average Acre-Feet	Annual Average Acre-Feet
<i>Total Millard Canyon Water Flow (before any withdrawal)</i>		
2010	1.10	400.72
2009	0.86	314.91
2008	0.83	303.89
2007	0.34	124.58
2006	1.87	682.40
2005	2.47	602.66
2004	0.86	313.31
<i>Surface Water Production (EPD Treatment Plant)</i>		
2010	0.00	0.00
2009	0.28	100.55
2008	0.26	94.56 Mar-Jul/Dec (Apr-May peak)
2007	0.11	39.16 Jan – May (Jan-Mar peak)
2006	0.84	305.70 Jan-Aug (Mar-May peak)
2005	1.47	536.60 Jan-Dec (Mar-May peak)
2004	0.33	121.90 Jan-Apr/Oct-Dec (Nov-Dec peak)
<i>Millard Canyon Diversion Meter (North Coulter)</i>		
2010	0.00	0.00
2009	0.30	110.18
2008	0.17	63.30
2007	0.12	43.08
2006	0.33	121.44
2005	0.30	110.80
2004	0.12	191.41
<i>Millard Canyon Weir (Millard Campground)</i>		
2010	1.10	400.72
2009	0.29	104.18
2008	0.40	146.03
2007	0.12	42.34
2006	0.70	255.26
2005	0.70	255.26
2004	0.40	146.40
<i>Total Millard Canyon Water Flow (to spreading grounds)</i>		
2010	1.10	400.72
2009	0.59	214.36
2008	0.57	209.33
2007	0.23	85.42
2006	1.03	376.70
2005	1.00	366.06
2004	0.52	191.41
<i>El Prieto Weir (before any withdrawal)</i>		
2010	0.51	184.33
2009	0.17	61.38
2008	0.21	75.13
2007	0.06	21.52
2006	0.38	137.25
2005	2.44	891.86
2004	0.22	79.98

Year	Daily Average Acre-Feet	Annual Average Acre-Feet
<i>El Prieto Meter (after withdrawal)</i>		
2010	0.00	0.00
2009	0.02	8.02
2008	0.02	5.67
2007	0.03	10.08
2006	0.02	7.52
2005	0.02	6.93
2004	0.01	3.47

Table 2-2 Monthly Water Flow Recordings at LAWC Locations from 2004-2010

Year	Monthly Water Flow (acre/feet)											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<i>Millard Canyon Recorded Water Flow</i>												
2010	155.68	274.30	295.30	288.42	199.68	118.16	73.50	40.11	13.10	14.39	19.95	39.97
2009	21.41	120.19	48.86	27.80	23.30	17.74	20.01	15.45	16.58	16.47	10.28	29.90
2008	174.74	112.34	61.85	39.27	30.75	23.77	14.49	9.06	8.58	9.29	13.90	18.67
2007	13.34	12.61	15.78	13.42	13.14	7.47	8.30	8.43	8.60	8.92	6.04	8.53
2006	86.97	40.15	95.66	225.84	76.29	40.80	21.88	17.05	11.54	13.34	13.93	12.62
2005	391.89	292.69	446.21	207.62	146.34	99.42	62.05	38.94	29.35	31.73	28.00	26.59
2004	15.32	47.06	55.53	12.68	8.45	5.29	1.83	0.74	0.43	90.96	57.94	71.41
<i>EPD Surface Water Treatment Plant Recorded Water Production</i>												
2010	0	0	0	0	0	0	0	0	0	0	0	0
2009	13.52	24.85	34.60	14.92	6.44	6.23	0	0	0	0	0	0
2008	0	0	15.49	30.64	20.45	14.05	5.05	0	0	0	0	8.88
2007	9.34	6.83	9.36	7.22	6.41	0	0	0	0	0	0	0
2006	32.87	20.23	64.36	72.11	61.44	29.42	9.50	5.69	0	0	7.05	3.08
2005	12.63	47.48	86.51	83.20	85.67	76.12	44.15	26.79	18.89	18.34	18.33	18.51
2004	7.10	11.10	30.10	8.20	0	0	0	0	0	5.60	41.90	17.90
<i>Millard Weir Reading</i>												
2010	155.68	274.30	295.30	288.42	199.68	118.16	73.50	40.11	13.10	14.39	19.95	39.97
2009	4.73	89.18	8.30	3.78	2.91	0	1.69	1.36	2.22	5.91	7.28	29.90
2008	174.68	112.16	42.04	4.79	5.06	3.01	1.95	1.88	1.37	2.02	3.51	6.40
2007	3.47	4.96	4.94	4.45	3.66	2.76	2.15	1.67	1.58	2.85	2.74	7.11
2006	42.30	17.29	16.43	113.41	8.69	7.20	4.28	4.24	2.69	3.61	3.72	5.02
2005	377.81	237.82	346.07	92.46	31.22	16.19	13.52	7.71	6.98	8.06	8.08	7.49
2004	4.46	31.23	7.23	3.93	2.65	2.05	1.06	0.32	0.35	80.89	13.18	53.38
<i>North Coulter Turn-Out</i>												
2010	0	0	0	0	0	0	0	0	0	0	0	0
2009	3.16	6.17	5.96	9.10	13.95	11.51	18.32	14.09	14.36	10.56	3.00	0
2008	0.06	0.18	4.34	3.84	5.24	6.71	7.49	7.18	7.21	7.27	10.39	3.39
2007	0.53	0.82	1.48	1.75	3.07	4.71	6.15	6.76	70.2	6.07	3.30	1.42
2006	11.80	2.63	14.87	40.32	6.16	4.18	8.10	7.12	8.85	9.73	3.16	4.52
2005	1.45	7.39	13.63	31.96	29.45	7.11	4.38	4.44	3.48	5.33	1.59	0.59
2004	3.76	4.73	18.20	0.55	5.80	3.24	0.77	0.42	0.08	4.47	2.86	0.13
<i>El Prieto/Big Negro/Little Negro Water Flow</i>												
2010	26.28	39.71	32.71	31.38	14.54	4.68	2.47	1.01	0.47	1.10	2.27	27.71
2009	3.57	36.39	3.52	0.53	0.37	0	0.02	0	0.86	2.64	2.23	11.25
2008	25.59	18.47	8.14	4.31	4.88	2.36	1.22	1.20	1.03	1.50	2.27	4.20

Year	Monthly Water Flow (acre/feet)											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2007	6.73	3.12	3.46	4.91	6.10	0.64	7.58	46.88	0.89	1.29	0.69	1.78
2006	17.78	17.81	13.18	53.89	10.38	6.10	4.71	4.51	4.08	4.31	3.71	4.31
2005	334.16	213.37	178.68	70.00	30.59	17.00	10.41	12.83	9.25	8.44	8.56	5.50
2004	3.07	2.33	0	0	0	0	0	0	0	53.69	0.64	23.04

Operation and Maintenance Activities. Operations of equipment and facilities at Millard and El Prieto Canyons occur through a passive process that primarily requires no active attention. Therefore, operational activities are limited to inspections of the entire Millard and El Prieto Canyons networks and recording measurements at the metering stations and weirs. Maintenance activities are expected to include debris clearance at intake and release points and repairs of equipment and facilities when necessary. Typically, a small (2 to 3 person) crew will be dispatched to conduct and/or resolve any necessary operation and/or maintenance issues. Access to equipment and facilities will be restricted to existing access roads and recreational trails.

Some of the LAWC equipment and facilities on the ANF (e.g., intake points and weirs) occur in areas that are constantly changing under natural conditions. Depending on the time of year, the frequency and amount of rainfall, and various other factors, the extent to which debris and/or sediment accumulate at water intake points varies greatly. Consequently, debris and/or sediment removal activities are periodically required at intake points to maintain efficient water flows through the systems. These are categorized under two levels of severity, including minor and major debris and sediment removal activities. Each of these is described in greater detail below.

Minor Debris Removal. Typically, minor activities include the removal of debris, such as small rocks, branches, and leaf litter that have accumulated in negligible levels within the immediate area of the intake points. Negligible levels are defined as those that would only require removal by hand over a minimal period of time (e.g. less than 1 hour). The immediate area of the intake points includes the intake and the area within a four foot radius of the intake. These activities would be conducted when the accumulation of debris does not extend continuously beyond the immediate area of the intake point. These activities would be conducted concurrently with routine inspections, or as necessary to maintain safe and efficient LAWC practices. Figure 4 provides an example of conditions at the Millard Canyon diversion structure and intake that would require minor debris removal activities.

Major Debris and/or Sediment Removal. Any activities that include the removal of debris that exceed the above description for minor debris removal and/or include the removal of accumulated sediment are considered major debris and/or sediment removal activities. Major activities are most likely to be limited to periods following substantial storm events and are expected to occur less frequently than minor activities described above. Major debris and/or sediment removal activities include the removal of debris composed of sediment, rocks, vegetation, and leaf litter that have accumulated at levels substantial enough to compromise the full functionality of equipment and facilities. Any and all sediment that is removed from the work area would be relocated to an area downstream that is outside of the active drainage channel and would not be subject to

water flow under normal conditions. Sediment that is removed and relocated would be spread evenly to minimize the potential for impediments of flow. Figure 5 provides an example of conditions at the Millard Canyon diversion structure and intake point that would require major debris and/or sediment removal activities.



Figure 4. Conditions at the Millard Canyon diversion structure and downstream intake point that would require minor debris removal. Note the immediate area surrounding the intake point is exposed and the system is fully functional. Activities, such as removing small rocks, would be considered minor debris removal.



Figure 5. Conditions at the Millard Canyon diversion structure and intake point that would require major debris and sediment removal. Note the accumulated sediment that covers the intake point and continuously extends beyond the immediate area surrounding the intake point. The full functionality of the system has been compromised. Conditions such as these would require the presence of a biological monitor during all removal activities.

Replacement and Rerouting of Pipeline in Millard Canyon

The water pipeline in Millard Canyon extends from the diversion structure to the North Coulter Reservoir. This component of the Proposed Action would replace and reroute an approximately 1,400-foot section of the pipeline that has been subject to failure from age and corrosion along a currently paved section of Mount Lowe Road (Figure 6). The 10-inch steel pipeline would be replaced using C900 class PVC pipe. The new pipeline would tie into the existing line at the Sunset Ridge Trailhead and run southwest along a paved section of Mount Lowe Road to the North Coulter Reservoir. To avoid damaging the integrity of the roadway the existing steel pipeline would be sealed, abandoned, and left in its current location, which is approximately ten feet down the slope from the western edge of Mount Lowe Road.

Construction would require excavation of a section of Mount Lowe Road and transport of material to the site. A 40-foot long flatbed truck would transport the new PVC pipeline in 20-foot sections to the site via existing roads. To accommodate the new pipe an approximately 2-foot wide and 2½ to 3-foot deep trench would be excavated by initially saw cutting the existing pavement and removing soil with a backhoe. Excavation activities would occur in stages so that the exposed trench would be limited to no more

than 40 to 60 feet in length at any given time. Upon placement of the new pipeline, the trench would be backfilled by either using fill removed from the site or local borrow subject to approval by the Forest Service. Filled sections would then be compacted and an asphalt basecoat of no less than 2-inches (consisting of a standard Caltrans mix) would be applied. At the completion of the pipeline installation, the entire trenched area would be asphalt-capped. Additionally, crews would repair localized patches of damaged asphalt along Mount Lowe Road between the trailhead and the reservoir. Remaining spoils, if any, would either be subject to disposal or utilized to create earthen berms, pending Forest Service approval.

Major activities for this component of the Proposed Action would occur in an area that is currently developed and subject to relatively high levels of disturbance due to recreational and Forest Service use. Access to this site would be provided via Chaney Trail and Mount Lowe Roads, each of which portions are paved and open to public travel, both on and off Forest Service lands. However, the section of Mount Lowe Road that would be subjected to Proposed Action activities is not open to public vehicular use. In order to limit and/or avoid disruption to recreational users, LAWC would stage personnel at each end of the work area, stop work when necessary, and only continue work once pedestrian traffic has safely exited the work area.

2.2 Environmental Commitments Common to All Alternatives

LAWC has incorporated a variety of Environmental Commitments as part of the Proposed Action to avoid and/or minimize project-related effects to sensitive natural resources. These Environmental Commitments are listed below and categorized in such a way as to relate to specific issue areas. General (GEN) Environmental Commitments are presented along with more specific commitments, including those related to Air Quality (AQ), Biological Resources (BIO), Cultural Resources (CUL), Geological Resources (GEO), Environmental Contamination and Hazards (HAZ), Hydrology and Water Quality (HYD), Land Use (LU), Noise (N), Public Services and Utilities (PSU), Wilderness and Recreation (REC), Traffic and Transportation (T), and Wildfire Suppression and Prevention (WF).

GEN-1 Regulatory Compliance. LAWC will comply with all applicable federal, State, and local plans, policies, and regulations, including but not limited to, the Forest Land and Resource Management Plan and the South Coast Air Quality Management Plan.

LAWC shall acquire and comply with all necessary regulatory permits and/or authorizations prior to conducting ongoing maintenance activities associated with equipment and facilities on ANF lands. These include a California Department of Fish and Game Streambed Alteration Agreement, pursuant to California Fish and Game Code Section 1602; and, authorizations of exemption/non-regulated activities from the U.S. Army Corps of Engineers and the Los Angeles Regional Water Quality Control Board, pursuant to Sections 404 and 401 of the Clean Water Act, respectively. LAWC shall submit to the Forest Service evidence of possession of all required permits and/or authorizations prior to engaging in any major debris and/or sediment removal activities. LAWC personnel shall maintain possession of copies of all required permits and/or authorizations at all times while conducting operation and maintenance activities on ANF lands.



 0 300 600 Feet	 Pipeline Replacement Area	 Existing Pipeline	 ANF Boundary
---	---	---	--

Figure 6 - Pipeline Replacement and Reroute Construction Area

- GEN-2 Limit Work Hours.** LAWC contractors may work 8 to 10 hours a day, Monday through Friday. Unforeseen and unavoidable circumstances may require additional hours and work days. If these circumstances occur, LAWC shall inform and coordinate with the Forest Service to the extent practicable.
- GEN-3 Limit Work Crew Personnel.** The maximum number of workers should not exceed 10 people for the pipeline replacement and reroute component of the Proposed Action. The maximum number of LAWC personnel shall not exceed 4 workers during routine operation and maintenance activities. Unforeseen and unavoidable circumstances may require additional personnel. If these circumstances occur, LAWC shall inform and coordinate with the Forest Service to the extent practicable.
- GEN-4 Limit Work Areas.** LAWC contractors and personnel shall limit access to and from work sites to existing access roads and trails at all times. During operation and maintenance activities, LAWC personnel may access facilities and equipment located adjacent to existing roads and trails only for the duration of time necessary to resolve operation and maintenance issues. All vehicles shall be parked in areas that do not impede access for emergency vehicles.
- GEN-5 Worker Environmental Awareness Program.** A Worker Environmental Awareness Program (WEAP) shall be implemented for construction crews by a qualified biologist provided by LAWC prior to the commencement of any construction activities. Training materials and briefings shall include, but not be limited to: discussion of the applicable State and federal laws and regulations; consequences of non-compliance with applicable State and federal laws and regulations; identification and values of plant and wildlife species; cultural resources (including unanticipated discoveries); fire protection measures; sensitivities of working on Forest Service lands and identification of Forest Service sensitive species; hazardous substance spill prevention and containment measures; appropriate contacts in the event of the discovery of injured or dead wildlife; and, review of all Environmental Commitments. Training materials and a course outline shall be provided to the Forest Service at least 14 days prior to the start of construction. LAWC shall provide the Forest Service with a list of all construction personnel who have completed the WEAP prior to the start of construction. This list shall be updated by LAWC as required if and when new construction personnel begin work.
- All LAWC personnel shall receive similar WEAP training prior to conducting any subsequent operation and maintenance activities on Forest Service lands.
- GEN-6 Equipment Fueling.** During the pipeline replacement and reroute component of the Proposed Action, equipment fueling would likely occur off Forest Service lands. However, in the event that equipment requires fueling at the work site, these actions would only be conducted within designated areas approved by the Forest Service and would not occur within 100 feet of drainages or riparian areas.
- GEN-7 Trash Disposal.** Project generated trash must be properly stored and/or disposed of on a daily basis. When project-related activities are completed, any excess materials and/or debris must be removed from work areas.
- GEN-8 Backfill/Borrow Limitations.** During pipeline replacement and reroute activities, borrowed soils will only be used if necessary and will be obtained from a local source subjected to approval by the Forest Service. LAWC will consult with the Forest Service prior to importing any borrow materials.
- GEN-9 Install Modulated Flow Control Valve at North Coulter Reservoir.** LAWC shall install a modulated flow control valve (MFCV) at the North Coulter Reservoir that would automatically regulate flows between the Millard Canyon diversion structure and North Coulter Reservoir. The MFCV will operate in such a way as to trigger a reversal of water flow along the Millard Canyon distribution system when capacity at the North Coulter Reservoir reaches 18 feet in height (1 million gallons). Installation of the MFCV shall occur concurrently with the replacement and reroute of the Millard Canyon pipeline and completed prior to the termination of all construction activities associated with that component of the

Proposed Action. Installation and operation of the MFCV shall be subject to review and approval by the Forest Service.

- GEN-10 Prepare and Implement an Operation and Maintenance Plan.** LAWC shall prepare and implement an Operation and Maintenance Plan (O&M Plan) that details specific actions required to maintain ongoing operations of equipment and facilities on ANF lands. Furthermore, the O&M Plan shall identify potential maintenance activities that would be required under normal and post-storm conditions. The O&M Plan shall provide guidelines for LAWC personnel to follow during all operation and maintenance activities. The O&M Plan shall be submitted to the Forest Service for final approval prior to implementation.
- AQ-1 Meet Tier 2 California Emissions Standards.** During pipeline replacement and reroute activities, LAWC shall require that all off-road construction diesel engines not registered under CARB's Statewide Portable Equipment Registration Program, which have a rating of 50 hp or more, to meet, at a minimum, the Tier 2 California Emissions Standards.
- AQ-2 Require Level 3 Emission Controls.** During pipeline replacement and reroute activities, LAWC shall require the use of on-road heavy diesel trucks that have 2006 or newer engines or pre-2006 engines with CARB certified Level 3 diesel emission controls.
- AQ-3 Minimize Idling Time.** During all construction and operation and maintenance activities, LAWC shall minimize on-road and off-road equipment idling timed duration to no more than five minutes per idling event.
- AQ-4 Maintain Engines.** During all construction and operation and maintenance activities, LAWC shall maintain equipment engines in good condition and ensure they are in accordance with recommendations.
- BIO-1 Avoid Animal Entrapment.** During pipeline replacement and reroute activities, all trenching activities must be implemented in a way that reduces the potential for entrapment of small mammals, reptiles, or amphibians. LAWC has indicated that trenching would occur along short (no more than 40-60 feet) segments and that trenched areas would be backfilled immediately after pipeline placement has been completed along each segment. However, in the unforeseen event that an excavated area is to remain open for more than 12 hours, it must either be covered with trench plating or include some means for small mammals, reptiles, and amphibians to escape. This can be accomplished by placement of a ramp that reasonably allows trapped individuals to crawl or walk out of the excavated area. Before backfilling, any excavated area must be thoroughly inspected to ensure that there are no live animals inside. Backfilling will not occur until the excavated area is clear of all live individuals.
- BIO-2 Reporting Special-Status Species.** During pipeline replacement and reroute activities, LAWC shall cease work and report to the Forest Service if any special-status plant or wildlife species are identified in the work site. Work at the site shall only commence upon Forest Service approval.
- BIO-3 Pre-Construction Surveys.** For any work conducted within the recognized breeding season for migratory birds (March through September), LAWC shall provide a qualified, Forest Service approved biologist to conduct pre-construction surveys for nesting birds and other special-status wildlife species. Surveys shall be conducted in all areas within a 500-foot buffer of any area proposed for project disturbance and within 48 hours of the initiation of any activities associated with the pipeline replacement and reroute component of the Proposed Action. If breeding birds with active nests are identified within the 500-buffer of any area proposed for project disturbance, a 300-foot buffer shall be established around the nest site and no construction activities shall be allowed within the buffer until the young have fledged from the nest or the nest fails. The 300-foot buffer may be adjusted based on existing conditions, including ambient noise, topography, and disturbance upon approval by the Forest Service, as appropriate. A Forest Service approved biological monitor shall be responsible for recording the results of pre-construction surveys and copies of all monitoring reports shall be submitted to the Forest Service.

- BIO-4 Biological Monitor.** LAWC shall ensure that a qualified, Forest Service approved biologist/monitor is onsite at least twice a week during pipeline replacement and reroute activities. During this component of the Proposed Action, the monitor will be responsible for ensuring that impacts to special-status species, including nesting birds, would be avoided to the fullest extent possible. Where appropriate, the biologist/monitor would flag the boundaries of areas where activities need to be restricted to protect native plants and wildlife, or special-status species. These restricted areas would be monitored to ensure their protection during construction.
- LAWC shall ensure that a qualified, Forest Service approved biologist/monitor is present, in perpetuity, throughout the duration of any major debris and/or sediment removal activities during operation and maintenance, unless otherwise authorized by the Forest Service. The biologist/monitor shall inspect and, if present, clear any aquatic and/or terrestrial wildlife species from immediate work areas prior to maintenance crews entering the areas. All individual animals removed from the work sites shall be relocated to suitable habitat outside of the work areas. Any relocation activities would be conducted in compliance with accepted guidelines and protocols and shall be immediately reported to the Forest Service.
- BIO-5 Invasive Plant Monitoring and Removal Plan.** LAWC will be responsible for monitoring and management of any invasive plants located within the area authorized under Special Use Permits issued by the Forest Service. Within six months of the execution of the Special Use Permits, LAWC will submit an Invasive Plant Monitoring and Removal Plan that will detail the monitoring and prevention/elimination of the occurrence of invasive plants within their authorized area. This includes both invasive species present at the time of permit issuance and any introduction of invasive species associated with the activities authorized by the Special Use Permits. Once the plan is approved by the Forest, it will be considered to be part of the annual Operation and Maintenance Plan for the Special Use Permits.
- CUL-1 Report Unforeseen Archaeological Resources.** The contractor shall monitor all ground disturbing activities for the presence of cultural resources (excavating, trenching). In the event a potential archeological resource is discovered, all work shall cease within 100 feet of the find until the site can be assessed by a qualified archeologist and shall continue thereafter only with Forest Service approval. If the material is determined to be significant, an adequate course of action shall be determined in consultation with the State Historic Preservation Officer and the Forest Service cultural resource specialist. Construction activity shall not resume within 100 feet of the site until authorization has been provided by the Forest Service cultural resource specialist.
- CUL-2 Notify Proper Authorities upon Discovering any Human Remains.** In the event that human remains or potential human remains are discovered, construction activities within 250 feet of the find shall be immediately halted. The Construction Project Manager shall immediately notify the Forest Service specialist, who in turn shall immediately notify the County of Los Angeles coroner in compliance with California Health and Safety Code § 7050.5 and CEQA Guidelines §15064.5(e). Construction may continue once compliance with all relevant sections of the California Health and Safety Code has been completed, all necessary investigations have been completed by the Forest Service cultural resource specialist, and a written authorization to proceed has been issued by the Forest Service.
- CUL-3 Avoidance of Historic Pipeline Features.** All historic pipeline features encountered during implementation of the Proposed Action shall remain in-ground and undisturbed during construction. These historic pipeline features include:
- Late 1880s vitrified (cement) pipe;
 - Early 1890s (prior to 1892) iron pipe; and,
 - Early to mid-1890s riveted iron pipe.
- CUL-4 Built Environment Monitor.** Construction activities shall be monitored by a qualified, Forest Service approved specialist, and any historic pipeline features encountered during construction shall be photographed for a complete NRPH evaluation (see CUL-5).

CUL-5 NRHP Evaluation of the Millard Canyon Alignment. A comprehensive NRHP evaluation of the entire historic LAWC Millard Canyon pipeline alignment shall be prepared by a qualified Principal Investigator and Built Environment specialist. This report shall document and evaluate the entire historic LAWC Millard Canyon pipeline alignment, including all built features depicted on the *Plan and Profile, Millard Canyon Line, Lincoln Avenue Water Company, Altadena, California*, as prepared by William A. Michael, Civil Engineer, on October 15, 1926, and as updated in the early 1930s. Minimally, a detailed DPR 523 Historic Resource Inventory Form, including a Primary Record, Linear Feature Record, Photo Record, and appropriate Location Maps and Photographs, shall be completed as part of the mitigation report of various tunnels, reservoirs, structures, dams, buildings, etc. as depicted in the 1926 Plan and Profile.

GEO-1 Seismic Design and Geotechnical Studies. LAWC shall conduct a geotechnical study to identify site-specific geologic conditions and potential geologic hazards in enough detail to support good engineering practice. The geotechnical study shall be performed by professional civil or geotechnical engineers and engineering geologists licensed in the State of California, and shall provide design and construction recommendations, as appropriate, to reduce potential impacts from geologic hazards or soil conditions.

HAZ-1 Spill Prevention and Contingency Plan. LAWC shall prepare a Spill Prevention and Contingency Plan for earth-moving activities associated with the pipeline replacement and reroute component of the Proposed Action. The Plan shall be implemented prior to and during site disturbance and construction activities, and shall include measures to prevent or avoid an incidental leak or spill, including identification of materials necessary for containment and clean-up and contact information for management and agency staff. The Plan and necessary containment and clean-up materials shall be kept within the construction area during all construction activities. Workers shall be educated on measures included in the Plan at the pre-construction meeting or prior to beginning work on the Proposed Action.

HYD-1 Implement an Erosion Control Plan/SWPPP and Best Management Practices. LAWC shall develop and submit to the Forest Service (ANF), at least 30 days prior to construction activities associated with the pipeline replacement and reroute component of the Proposed Action, an Erosion Control Plan, and implement Best Management Practices (BMPs), as described below. The Erosion Control Plan may be part of the same document as the Stormwater Pollution Prevention Plan (SWPPP), as required under Section 402 of the federal Clean Water Act. The Erosion Control Plan shall identify all locations of soil-disturbing activities, the location and types of BMPs to be implemented, and a proposed schedule for implementation of BMPs. As part of the Erosion Control Plan, LAWC shall maintain a record of all precipitation events within the construction area that produce more than one inch of precipitation within a 24-hour period. The records shall contain the date of the precipitation event, the approximate duration of the event, and the amount of precipitation (measured as the largest amount recorded by a rain gage or weather station within one mile of the construction area). Additionally, the record shall include a narrative evaluation of the erosion prevention effectiveness of the implemented BMPs, as well as a description of any post-storm modifications to those BMPs. All records shall be submitted to the Forest Service within 30 days of all and any recorded precipitation event.

Best Management Practices. Best Management Practices (BMPs) are applied to reduce impacts of an action to resources of concern. Specific BMPs have not yet been identified for the Proposed Action, but typical types of BMPs that would be followed include:

- Temporary sediment control through techniques including silt fencing, fiber rolls, and sandbag or straw bale barriers;
- Tracking control through techniques including stabilized construction roadways and exit/entrance areas and tire washes;
- Waste management and materials pollution control including stockpile management, spill prevention and control, and management of solid, hazardous, liquid, contaminated soil, concrete, or other wastes.

- HYD-2 Dry Weather Construction.** Any construction activities shall be scheduled to avoid anticipated precipitation events that are predicted to produce more than one-half inch of precipitation over a 24-hour period, unless expressly authorized by the Forest Service. If an unexpected precipitation event occurs while construction activities are already underway, LAWC shall contact the Forest Service for guidance. The Forest Service may require cessation of construction activities during any precipitation event in order to prevent excessive erosion and to protect aquatic resources.
- LU-1 Advance Notification of Construction.** LAWC shall post notice of construction in the Proposed Action work area at least 14 days prior to the start of any construction-related activities. The notice shall include the dates and location of construction activities, including access roads.
- N-1 Implement Best Management Practices for Construction Noise.** LAWC shall implement the following noise-suppression techniques during pipeline replacement and reroute activities of the Proposed Action:
- On construction equipment, use noise reduction features (e.g., mufflers and engine shrouds) that are no less effective than those originally installed by the manufacturer.
 - Install temporary sound walls or acoustic blankets around stationary noise sources (e.g., generators, pumps) to shield sensitive receptors.
 - Minimize unnecessary construction vehicle idling time by shutting off the engine if it is not required for immediate or continuous use. (Note: Certain equipment, such as large diesel powered vehicles, require extended idling for warm-up and repetitive construction tasks and would therefore not be subject to being shut off when not in use).
- N-2 Avoid Sensitive Receptors during Mobile Construction Equipment Use.** To the maximum extent feasible, LAWC shall route construction traffic away from sensitive receptors such as recreational cabins and campgrounds.
- PSU-1 Notification of Utility Service Interruption.** Prior to construction in which a utility service is known to be unavoidable, LAWC shall notify members of the public, the jurisdiction, and the service providers that would be affected by the planned outage by mail. LAWC shall also publish notice in a newspaper of local jurisdiction. The notice shall specify the estimated duration of the planned outage, and shall be published no less than seven days prior to the outage.
- REC-1 Coordinate Construction Schedule with the Forest Service.** LAWC shall develop the Project construction schedule and coordinate construction with the Forest Service in order to ensure the following occurs, unless otherwise approved by the Forest Service:
- Construction activities are scheduled to avoid heavy recreational use periods (including major holidays) to the maximum extent feasible.
 - Staging areas for project-related equipment, materials, and vehicles are located in areas with the least possible effect on recreational activities and opportunities.
 - Timetables for the required period of usage of each staging area are developed and adhered to throughout the construction period.
- T-1 Traffic Control Plan for Construction.** Prior to the start of construction, LAWC shall prepare and submit a Traffic Control Plan for Construction to the Forest Service, for all construction traffic to occur on Forest Service lands. The Plan shall define the use of flag persons, warning signs, lights, barricades, cones, etc. to provide safe work areas and to warn, control, protect, and expedite vehicular and pedestrian traffic through the work area. The Plan shall also include measures to avoid disruptions or delays in access for emergency service vehicles. Provisions shall be ready at all times to accommodate emergency vehicles, such as immediately stopping work for emergency vehicle passage.
- WF-1 Fire Preventive Construction Equipment Requirements.** LAWC shall meet the following requirements for gasoline, diesel, or other hydrocarbon fuel-powered equipment prior to construction:

- The exhausts of all equipment powered by gasoline, diesel, or other hydrocarbon fuel shall be equipped with effective spark arrestors.
- The spark arrestor shall be designed to prevent the escape from the exhaust of carbon or other flammable particles over 0.0232 inches (vehicles equipped with mufflers are not subject to this provision).
- Any welding rigs shall be equipped with a minimum of one 20-pound or two 10-pound fire extinguishers, and a minimum of five gallons of water in a fire-fighting apparatus.

WF-2 Cease Work during Red Flag Warning Events. During Red Flag Warning events, as issued daily by the National Weather Service in State Responsibility Areas (SRA) and Local Responsibility Areas (LRA), all non-emergency construction and maintenance activities shall cease in affected areas. An exception for construction during Red Flag Warning events shall only be made by the Forest Service, Los Angeles District Ranger for the ANF, via a temporary permit issued to LAWC. The permit shall specify date(s) of the exception for construction activities to continue, the location of such activities, and the types of activities allowed. Conditions of the temporary permit may also require an on-site monitor while construction activities continue under the permit.

WF-3 Remove Hazards from the Work Area. LAWC shall clear dead and decaying vegetation from the work area prior to starting construction and/or maintenance work. The work area includes only those areas where personnel are active or where equipment is in use or stored. Cleared dead and decaying vegetation shall either be removed or chipped and spread onsite in piles no higher than six (6) inches.

2.2.1 Forest Service Construction Requirements

In addition to implementing the above Environmental Commitments, LAWC would comply with construction requirements set forth by the Forest Service. FSM 2081.03 directs that all equipment be cleaned when working in a site contaminated with noxious weeds. Pursuant to FSM 2081.03, the following components will be required at all Proposed Action work sites during construction.

- 1) **WASH ALL EQUIPMENT AND VEHICLES:** Vehicles and all equipment must be washed **BEFORE AND AFTER** entering all project sites. This includes wheels, undercarriages, bumpers and all parts of the vehicle. In addition, all tools such as chain saws, hand clippers, pruners, etc must also be washed **BEFORE AND AFTER** entering all project sites. For example, vehicles traveling into contaminated areas are the main dispersal mechanism for yellow star-thistle. All washing must take place where rinse water is collected and disposed of in either a sanitary sewer or a landfill.
- 2) **KEEP WRITTEN LOGS:** When vehicles and equipment are washed, a daily log must be kept stating:

• Location	• Staff present
• Date and time	• Equipment washed
• Methods used	• Signature of responsible crew member
- 3) **TURN IN WRITTEN LOGS:** These written logs will be turned in to the Forest Botanist every week.

3. ENVIRONMENTAL ANALYSIS

This section summarizes the physical, biological, social and economic environments of the affected study area and the potential changes to those environments due to implementation of the alternatives.

For purposes of this analysis, the study area is defined as the location at which the pipeline will be replaced and rerouted; existing (and currently operating) LAWC equipment and facilities; existing trails and roads used to access LAWC equipment and facilities; and, a 50-foot buffer surrounding the aforementioned LAWC equipment and facilities and roads and trails. Additionally, the construction site mentioned in the following analysis includes only that portion of the study area that would be subject to activities associated with the pipeline replacement and reroute component of the Proposed Action.

3.1 Air Quality

3.1.1 Environmental Setting

3.1.1.1 Air Quality Standards

Ambient air quality is determined by comparing contaminant levels in ambient air samples to national and State standards. These standards are set by the United States Environmental Protection Agency (USEPA) and the California Air Resources Board (CARB) at levels determined to be protective of public health and welfare with an adequate margin of safety. National Ambient Air Quality Standards (NAAQS) were first established by the federal Clean Air Act of 1970. California Ambient Air Quality Standards (CAAQS) were established in 1967. The NAAQS and CAAQS have been periodically updated and expanded. An area with air quality continuously below or equal to the standards is designated as an area that attains the standards. California standards are generally more stringent than national standards.

Air quality standards specify the upper limits of concentrations and duration in the ambient air consistent with the management goal of preventing specific harmful effects. There are national and State standards for ozone, carbon monoxide (CO), nitrogen dioxide (NO₂), airborne particulate matter with an aerodynamic diameter of less than ten microns (PM₁₀), and sulfur dioxide (SO₂). These are “criteria pollutants.” Federal and State Ambient Air Quality Standards are shown in Table 3-1.

Table 3-1 National and California Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards*	National Standards*
Ozone	1 hour	0.09 ppm	--
	8 hours	0.07 ppm	0.075 ppm
Respirable Particulate Matter (PM ₁₀)	24 hours	50 µg/m ³	150 µg/m ³
	Annual Mean	20 µg/m ³	—
Fine Particulate Matter (PM _{2.5})	24 hours	—	35 µg/m ³
	Annual Mean	12 µg/m ³	15 µg/m ³
Carbon Monoxide (CO)	1 hour	20 ppm	35 ppm
	8 hours	9.0 ppm	9.0 ppm
Nitrogen Dioxide (NO ₂)	1 hour	0.18 ppm	0.100 ppm
	Annual Mean	0.03 ppm	0.053 ppm
Sulfur Dioxide (SO ₂)	1 hour	0.25 ppm	0.075 ppm
	3 hours	—	0.5 ppm
	24 hours	0.04 ppm	—

* ppm=parts per million; $\mu\text{g}/\text{m}^3$ = micrograms per cubic meter;
 “—” = no standard.

Source: CARB Ambient Air Quality Standards Chart, CARB 20011a.

3.1.1.2 Existing Air Quality

The nearest ambient air quality monitoring station to the study area is the Pasadena-S Wilson Avenue monitoring station, which monitors ambient concentrations of ozone, PM_{2.5}, carbon monoxide, and nitrogen dioxide. The nearest monitoring station which monitors ambient concentrations of PM₁₀ and sulfur dioxide is the Burbank-W Palm Avenue monitoring station. The last three years of maximum ambient monitored concentrations from these two monitoring stations are provided in Table 3-2.

Table 3-2 Air Quality Monitoring Summary 2007-2009

Pollutant	Averaging Time	2007	2008	2009
Ozone (O ₃)	1-hour	0.149 ppm	0.102 ppm	0.176 ppm
	8-hour	0.101 ppm	0.090 ppm	0.114 ppm
Respirable particulate matter (PM ₁₀)	24-hour	57 $\mu\text{g}/\text{m}^3$	44 $\mu\text{g}/\text{m}^3$	80.0 $\mu\text{g}/\text{m}^3$
	Annual Average	24.0 $\mu\text{g}/\text{m}^3$ *	35.6 $\mu\text{g}/\text{m}^3$ *	38.9 $\mu\text{g}/\text{m}^3$
Fine particulate matter (PM _{2.5})	24-hour	68.8 $\mu\text{g}/\text{m}^3$	66.0 $\mu\text{g}/\text{m}^3$	51.9 $\mu\text{g}/\text{m}^3$
	Annual Average	14.3 $\mu\text{g}/\text{m}^3$ *	12.8 $\mu\text{g}/\text{m}^3$	12.2 $\mu\text{g}/\text{m}^3$ *
Carbon monoxide (CO)	8-hour	2.28 ppm	2.21 ppm	2.13 ppm
Nitrogen dioxide (NO ₂)	1-hour (federal)	0.074 ppm	0.083 ppm	0.075 ppm
	1-hour (state)	0.092 ppm	0.105 ppm	0.080 ppm
	Annual Average	0.024 ppm	0.023 ppm	0.022 ppm
Sulfur dioxide (SO ₂)	24-hour	0.003 ppm	0.003 ppm	0.003 ppm
	Annual Average	0.001 ppm	0.000 ppm	N/A

*National Annual Average

N/A = not available

Source: CARB 2011b; USEPA 2009a.

This table shows, by comparison with Table 3-1, that exceedances of the federal and/or state ozone, PM₁₀, and PM_{2.5}, and NO₂ standards are occurring near the study area. This table also shows that carbon monoxide, nitrogen dioxide, and sulfur dioxide concentrations near the study area are all well below both federal and State standards.

3.1.1.3 Attainment Status

The South Coast Air Basin (SoCAB) is designated by the USEPA as an extreme nonattainment area for ozone, a serious nonattainment area for PM₁₀, and a nonattainment area for PM_{2.5}. The SoCAB is designated by the State as an extreme nonattainment for ozone, and a nonattainment area for PM₁₀ and PM_{2.5}, and NO₂. The SoCAB is attainment of the federal NO₂ ambient air quality standard, and the federal and State CO and SO₂ ambient air quality standards. The current attainment status for all criteria pollutants is shown in Table 3-3.

Table 3-3 Attainment Status for South Coast Air Basin

Pollutant	Federal Designation	State Designation
Ozone	Extreme Nonattainment	Extreme Nonattainment
PM10	Serious Nonattainment	Nonattainment
PM2.5	Nonattainment	Nonattainment
CO	Unclassified/Attainment	Attainment
NO ₂	Unclassified/Attainment	Nonattainment
SO ₂	Attainment	Attainment

Source: CARB 2011c. USEPA 2011b.

3.1.1.4 Regulatory Framework

The South Coast Air Quality Management District (SCAQMD) implements and periodically updates the Air Quality Management Plan (AQMP). The AQMP uses projections of population growth and trends in energy and transportation demand to predict future emissions and determine control strategies to eventually achieve attainment with the ambient air quality standards. The control strategies are then either codified into the SCAQMD rules and regulations or otherwise set forth as formal SCAQMD recommendations to other agencies.

The SCAQMD Plan includes policies that require consistency with the AQMP and specify review according to the recommendations in their guidelines. Other policies are aimed at reducing emissions from transportation demand or from major stationary sources. Because this assessment is prepared according to the recommendations of the SCAQMD guidelines, consistency with the air quality policies of the SCAQMD Plan is assured.

The Proposed Action does not include ongoing stationary emissions sources; therefore, it would not be subject to most SCAQMD rules and regulations. However, the Proposed Action would be subject to the following general regulations during implementation of construction activities associated with the pipeline replacement and reroute component:

- Rule 401 – Visible Emissions
- Rule 402 – Nuisance
- Rule 403 – Fugitive Dust

Additionally, the Proposed Action is subject to Federal General Conformity regulations. However, the construction and operation and maintenance emissions resulting from the Proposed Action would be significantly below the most restrictive General Conformity Applicability threshold (25 tons/year of NO_x), so compliance with this regulation is assumed.

3.1.2 Conformance to 2005 ANF Forest Plan

The study area is located entirely within the boundaries of the ANF and the Forest Service has prepared a Land Management Plan (Forest Plan) for the ANF (USDA Forest Service, 2005). The ANF air quality strategies are limited to the following:

- AIR 1: Minimize Smoke and Dust
- AIR 2: Forest Air Quality Emissions

The ANF strategy AIR 1 is very general and is directed to “control and reduce fugitive dust to protect human health, improve safety and moderate or eliminate environmental impacts.” The only action item of this strategy is to “incorporate visibility requirements into project plans.” The ANF air quality strategy AIR 2 relates to providing an air quality inventory for prescribed burns and wildfires and therefore does not directly relate to the Proposed Action’s construction and operation and maintenance emissions.

3.1.3 Air Quality Impacts

The air quality impacts associated with the Proposed Action are primarily characterized by using the SCAQMD significance criteria presented in Table 3-4, below, and are discussed in this section with regards to the indicator criteria presented in Table 1-2, and Environmental Commitments, included as part of the Proposed Action, are identified where applicable.

Additionally, for greenhouse gas emissions the draft SCAQMD California Environmental Quality Act (CEQA) significance level (SCAQMD, 2009) for industrial projects of 7,000 tons of CO₂ equivalent (CO₂E) emissions per year is used to characterize greenhouse gas/climate change impacts; where a project’s construction emissions are divided by its anticipated lifetime and added to the project’s annual operating emissions per SCAQMD guidance for infrastructure projects.

Table 3-4 SCAQMD Air Quality Significance Thresholds, lbs/day

Regional Thresholds	ROG/VOC	NOx	SOx	CO	PM10	PM2.5
Construction	75	100	150	550	150	55
Operation	55	55	150	550	150	55
Localized Thresholds ^a	ROG/VOC	NOx	SOx	CO	PM10	PM2.5
Construction	n/a	161	n/a	2,500	51	18

Source: SCAQMD, 2009

a – Localized criteria are from the SCAQMD construction emissions lookup tables for Source Receptors Area 15 assuming a one-acre project site size and a distance to the nearest sensitive receptors in Millard Campground of 200 meters.

3.1.3.1 Proposed Action

3.1.3.1.1 Conflict with or obstruct implementation of the AQMP or the ANF Forest Plan

Pipeline Replacement and Reroute

A project would be inconsistent with air quality plans if it would result in population and/or employment growth that exceeds the growth estimates included in the AQMP or if it would require a local General Plan amendment to increase population or employment growth. Construction activities associated with the pipeline replacement and reroute component of the Proposed Action would create work for no more than 10 persons for 10 days, but it would not create any new full-time positions of employment. Because no notable population or employment growth would be generated by construction activities,

this component of the Proposed Action would not be inconsistent with the AQMP, and it would not conflict with or obstruct implementation of the AQMP.

Uncontrolled construction activity, however, would not be consistent with region-wide control strategies recommended by the SCAQMD in the AQMP. Environmental Commitments, when feasible, must be applied to minimize the temporary impacts and the contribution of emissions to regional air pollution. In order to avoid and/or minimize impacts associated with the contribution of construction activity emissions to regional air pollution, LAWC would implement Environmental Commitments AQ-1 (Meet Tier 2 California Emissions Standards), AQ-2 (Require Level 3 Emission Controls), AQ-3 (Minimize Idling Time), and AQ-4 (Maintain Engines).

All construction activities conducted with the implementation of the recommended Environmental Commitments would occur in conformance with SCAQMD rules, and there are no activities that would not conform to the State Implementation Plan (SIP). Therefore, the pipeline replacement and reroute component of the Proposed Action would comply with both the SCAQMD SIP and the ANF air quality strategies.

Operation and Maintenance

Operation and maintenance activities associated with implementation of the Proposed Action would only require small (2 to 3 person) crews that would make an approximately 30 mile round trip an average of once a month to conduct such activities. No notable population or employment growth would be generated by operation and maintenance activities, therefore this component of the Proposed Action would be consistent with the AQMP, and would not conflict with or obstruct implementation of the AQMP.

There are no operation and maintenance activities that would fail to conform to the SIP. Therefore operation of the Proposed Action would comply with both the SCAQMD SIP and the ANF air quality strategies.

3.1.3.1.2 Violate any air quality standards or contribute to an existing or projected air quality violation

Pipeline Replacement and Reroute

SCAQMD has developed recommended regional CEQA emissions significance criteria to evaluate a project's potential regional effect on air quality. These regional criteria are used to assess whether the project has a potential to violate or contribute to a violation of an air quality standard.

Activities associated with the pipeline replacement and reroute component of the Proposed Action would result in short-term emissions generated by trenching and replacing a section of underground pipe, paving, and onroad activities associated with the construction. For trenching, pipe replacement, and backfilling, a backhoe, a loader, a dump truck, and an air compressor would be used. For repaving activities, a roller, a dump truck, and an air compressor would be used. Small equipment and some hand tools, such as jack hammers, whacker tampers, and power saws would be used as necessary throughout the construction period. Emissions associated with these activities include equipment and vehicle exhaust emissions, earth handling fugitive dust emissions, and

paved road fugitive dust emissions. Specific equipment and vehicle assumptions are presented in Appendix A.

Emissions were estimated using 2009 off-road and on-road vehicle emissions factors recommended by the South Coast Air Quality Management District in their updated CEQA Air Quality Handbook (SCAQMD, 2009). Fugitive dust emissions were estimated using USEPA’s Compilation Air Pollutant Emissions Factors, Volume 1: Stationary Sources, Section 13 (USEPA, 2009). Construction emission estimates for the Proposed Action in comparison to SCAQMD significance criteria are presented in Table 3-5. Total emissions associated with the pipeline replacement and reroute component of the Proposed Action are also provided in Appendix A.

Table 3-5 Worst Case Daily Construction Emission Estimates for LAWC Project, lbs/day

	ROG/VOC	NOx	SOx	CO	PM10	PM2.5
Off-road						
Pipe Replacement	26.66	19.10	0.02	90.53	1.17	1.08
On-road						
Passenger	0.12	0.12	0.00	1.16	0.01	0.01
Delivery Truck	0.07	0.56	0.00	0.50	0.02	0.02
Heavy Duty Vehicle	0.18	2.26	0.00	0.69	0.11	0.09
Fugitive Dust	---	---	---	---	4.68	1.13
Total Emissions	27.03	22.04	0.02	92.88	5.99	2.33
Significance Criteria	75	100	150	550	150	55

Appendix A.

As shown in Table 3-5, the Proposed Action’s construction emissions would be below the significance thresholds for all criteria pollutants.

Operation and Maintenance

Implementation of operation and maintenance activities would not introduce any stationary emission sources. Upon completion of construction, the Proposed Action would require small (2-3 person) crews to make an approximately 30 mile round trip an average of 2-3 times per month. Therefore, emissions from operation and maintenance activities would be well below the significance thresholds for all criteria pollutants as shown in Table 3-6.

Table 3-6 Operating Emission Estimates for LAWC, lbs/day

	VOC	NOx	SOx	CO	PM10	PM2.5
Vehicle Emissions	0.06	0.06	0.00	0.58	0.35	0.08
Significance Criteria	55	55	150	550	150	55

Appendix A.

3.1.3.1.3 Result in a cumulatively considerable net increase of any criteria non-attainment pollutant

Pipeline Replacement and Reroute

As shown in Table 3-5, construction of the Proposed Action would not result in emissions of criteria pollutants that exceed significance thresholds. Contribution of the

Proposed Action to a cumulatively considerable net increase of any pollutants would not be substantial.

Operation and Maintenance

Operation and maintenance emissions sources of the Proposed Action would most likely be limited to 2 to 3 maintenance vehicle trips per month. As shown in Table 3-6, operation and maintenance emissions would be well below the significance thresholds, therefore the contribution of operation emissions would not be substantial.

3.1.3.1.4 Expose the public to substantial pollutant concentrations

Pipeline Replacement and Reroute

Some land uses are considered more sensitive to air pollution than others due to the types of population groups or activities involved. Sensitive population groups include children, the elderly, the acutely ill and the chronically ill, especially those with cardio-respiratory diseases.

Recreational land uses are considered moderately sensitive to air pollution. Although exposure periods are generally short, exercise places a high demand on respiratory functions, which can be impaired by air pollution. In addition, noticeable air pollution can detract from the enjoyment of recreation.

The construction site is located along Mount Lowe Road, just southwest of the trailhead to Sunset Ridge Trail in Millard Canyon. There are also two recreational log cabins near the study area. These recreational areas would stay open during construction, therefore, the trail path and log cabins are considered as potential sensitive land uses.

SCAQMD has developed recommended localized significance thresholds (LST) significance criteria and Table 3-7 presents a comparison of the onsite daily emissions and these significance criteria.

Table 3-7 Construction Emissions vs. LST Criteria for LAWC Project, lbs/day

	NOx	CO	PM10	PM2.5
Maximum Onsite Construction Emissions	19.10	90.53	1.37	1.14
Significance Criteria	161	2,500	51	18

Appendix A.

As presented in Table 3-7, the worst case on-site emissions are below the relevant SCAQMD LST criteria for all criteria pollutants.

Operation and Maintenance

The localized impacts of operation and maintenance activities are negligible as the minimal maintenance emissions are from vehicle travel and do not occur in a single location that can impact specific receptors. Additionally, the minor amount of air toxics emissions from these limited duration activities would not pose an adverse human health risk.

3.1.3.1.5 Create objectionable odors affecting a substantial number of people

Pipeline Replacement and Reroute

Any odors (e.g., odors from construction vehicle emissions, repaving, etc.) that would be generated by activities associated with the pipeline replacement and reroute component of the Proposed Action would be controlled in accordance with SCAQMD Rule 402 (Nuisance Emissions). There are no activities anticipated to occur, other than normal construction activities, and no materials or chemicals would be stored in staging areas, that would have the potential to cause significant odors during construction.

Operation and Maintenance

Once construction is complete there would only be minor maintenance activities that would not include odor causing activities.

3.1.3.2 No Action Alternative

Under the No Action Alternative, the Forest Service would not renew LAWC's Special Use Permits #LAR412601 and #LAR412602. Additionally, pipeline replacement and reroute construction activities on ANF lands would not occur. As a result, any impacts to air quality due to implementation of this alternative would not occur within ANF boundaries. The Forest Service would continue management of ANF lands, regardless of whether or not the Proposed Action is implemented. Under the No Action Alternative, LAWC would be required to implement an alternative action plan in order to continue to provide a reliable water supply service and to meet future public demands. This new action plan may include the construction of new equipment and facilities on non-ANF lands at locations that have yet to be determined. However, it is reasonably expected that these new facilities would require extensively greater construction activities compared to those discussed for repairs to existing equipment under the Proposed Action.

Potential location options for these new facilities are unknown, but considering the nature of the project and the area of water collection and service for LAWC, the possible new locations would remain within the SoCAB. The air quality emissions related to the construction of these new water collection facilities cannot be determined precisely and it is unknown whether or not they would be located near sensitive receptors. However, it is reasonably expected that these new water collection facilities would require extensively greater construction activities compared to those discussed for repairs to existing equipment under the Proposed Action. Although it is unknown whether or not emissions from construction activities under the No Action Alternative would be below SCAQMD regional and localized significance thresholds, it can be reasonably assumed, given the higher degree of construction that may be required, that impacts to air quality would be greater in magnitude under this alternative as compared to the Proposed Action. Air quality impacts due to the operation and maintenance of any new facilities and equipment would be identical to those described for the Proposed Action.

3.1.3.3 Cumulative Impacts

The study area is mainly open space with Millard Campground approximately 600 feet away and residences more than 1,200 feet away. There is no other nearby major projects

proposed which would have significant emissions at the same time or which would cause significant ongoing cumulative impacts along with the Proposed Action. In addition, the Proposed Action would generate negligible emissions associated with operation and maintenance activities. As noted above, emissions resulting from implementation of the Proposed Action are minor, occurrences are very short in duration, and there are no known nearby major air quality cumulative projects. Therefore, the Proposed Action would have minimal cumulative impacts.

3.1.4 Greenhouse Gas Impacts

Greenhouse gas impacts are unlike air quality impacts as they do not cause direct localized effects and are a very long-term impact. Therefore, project construction and operation are evaluated together rather than as separate impact scenarios. The draft SCAQMD CEQA significance level (SCAQMD, 2009) for industrial projects of 10,000 tons of CO₂ equivalent (CO₂e) emissions per year is used to characterize greenhouse gas/climate change impacts; where a project's construction emissions are divided by its anticipated lifetime and added to the project's annual operating emissions per SCAQMD guidance for infrastructure projects.

3.1.4.1 Proposed Action

3.1.4.1.1 Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment

Greenhouse gases (GHGs) are defined as any gas that absorbs infrared radiation in the atmosphere. Common GHGs include water vapor, carbon dioxide (CO₂), methane, nitrous oxide (N₂O), chlorofluorocarbons (CFCs), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF₆), ozone and aerosols (Hendrix et al., 2007). GHGs are emitted by both natural processes and human activities, and lead to the trapping and buildup of heat in the atmosphere near the earth's surface, commonly known as the "Greenhouse Effect." There is increasing evidence that GHGs and the Greenhouse Effect are leading to global warming and climate change (USEPA, 2007). "The potential adverse impacts of global warming include the exacerbation of air quality problems, a reduction in the quality and supply of water to the State from the Sierra snowpack, a rise in sea levels resulting in the displacement of thousands of coastal businesses and residences, damage to marine ecosystems and the natural environment, and an increase in the incidences of infectious diseases, asthma, and other human health-related problems" (California Health & Safety Code, Division 25.5, Part 1). The primary source of GHGs in the United States is energy-use related, primarily including activities involving fuel combustion.

Currently there are no formally adopted thresholds of significance or specific methodologies established for determining impacts related to a project's potential contribution to global climate change in CEQA documents. However, there is a draft guideline from SCAQMD that proposes the use of an annual CO₂ equivalent (CO₂e) emission limit of 10,000 tons per year as a significance criteria for industrial projects (SCAQMD, 2009). SCAQMD guidance for infrastructure projects is to add a prorated amount of construction emissions based on project life to the operation emissions for

comparison with this significance criteria. The Proposed Action's CO₂e annual emissions estimate is shown in Table 3-8.

Table 3-8 shows that construction and operation and maintenance activities associated with the Proposed Action would have GHG emissions well below the SCAQMD's interim significance thresholds.

Table 3-8 LAWC Project Greenhouse Gas Emissions, tons/year

	CO ₂ e ^a
Prorated Construction Emissions ^b	0.2
Annual Operating Emissions	0.4
Project Total	0.6
Significance Criteria	10,000

Appendix A.

^a – The CO₂e emissions are essentially equivalent to the CO₂ emissions for the project's emissions sources.

^b – The project life is assumed to be 50 years for prorating the construction emissions.

3.1.4.1.2 Conflict with an applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases

Currently there are no formally approved specific plans, policies or regulations for the control of heavy construction GHG emissions from this Proposed Action. There are existing regulations/policies that would apply indirectly to reduce GHG emissions from project construction and operation, such as fuel and equipment standards, and the project would be constructed or maintained in compliance with these plans, policies and regulations.

The USEPA has developed 40 CFR Part 98, the Mandatory Reporting of Greenhouse Gases rule, to require mandatory reporting of GHG emissions for facilities that emit more than 25,000 metric tons of CO₂ equivalent (CO₂e) emissions per year. On September 30, 2009, USEPA proposed 40 CFR Part 52 to apply Prevention of Significant Deterioration (PSD) requirements to facilities whose stationary source CO₂e emissions exceed 75,000 tons per year (USEPA, 2009). Since the Proposed Action would not include any stationary source of CO₂e emissions, it would not trigger GHG reporting or PSD permitting under federal regulations.

In 2006, in response to concerns related to global warming and climate change, the California State Legislature adopted Assembly Bill 32 (AB 32), the "California Global Warming Solutions Act of 2006." CARB promulgated regulations for mandatory GHG emission reporting to comply with AB 32 (CARB, 2011b). On December 16, 2010, the structure of the cap and trade regulations were adopted and specific enabling regulations must be adopted by the CARB by October 2011 to allow these requirements to become effective January 2012. The approved GHG cap and trade regulations still have several remaining action items and will have several amendments until they will have final state approval by the end of 2011. The Proposed Action would not be subject to cap and trade regulation because its regulated operating emissions would be below the regulation's 25,000 MTCO₂e annual emissions applicable threshold. Construction and operation of the Proposed Action are not directly subject to any GHG emission reduction plan, policy

or regulation, therefore the Proposed Action would not conflict with any plan, policy or regulation.

3.1.4.2 No Action Alternative

Under the No Action Alternative, the Forest Service would not renew LAWC's Special Use Permits #LAR412601 and #LAR412602. Additionally, pipeline replacement and reroute construction activities on ANF lands would not occur. As a result, any impacts associated with GHG emissions due to implementation of this alternative would not occur within ANF boundaries. The Forest Service would continue management of ANF lands, regardless of whether or not the Proposed Action is implemented. Under the No Action Alternative, LAWC would be required to implement an alternative action plan in order to continue to provide a reliable water supply service and to meet future public demands. This new action plan may include the construction of new equipment and facilities on non-ANF lands at locations that have yet to be determined. However, it is reasonably expected that these new facilities would require extensively greater construction activities compared to those discussed for repairs to existing equipment under the Proposed Action.

Potential location options for these new water collection facilities are unknown, but considering the nature of the project and the area of water collection and service for LAWC, the possible new locations would remain within the SoCAB. The GHG emissions related to the construction of these new water collection facilities cannot be determined precisely and it is unknown whether or not they would be located near sensitive receptors. It is expected that the GHG emissions from the construction of these new facilities would be below the SCAQMD's interim significance thresholds. However, due to the extent of construction activities that may be required under this alternative, impacts associated with GHG emissions would be greater in magnitude to those described for the Proposed Action.

3.1.4.3 Cumulative Impacts

Greenhouse gas impact assessment addressed in Section 3.1.4.1 is a cumulative impact assessment. The Proposed Action alone would not be sufficient to change global climate, but would emit greenhouse gases and, therefore, has been analyzed as a potential cumulative impact in the context of long term global impacts and existing GHG regulatory requirements and GHG energy policies.

3.2 Biological Resources

This section describes the current biological conditions observed in the study area during reconnaissance level surveys conducted by Aspen Environmental Group (Aspen) in May, June, and August 2009 and October 2010. Detailed descriptions of the biological setting and existing conditions for the study area are presented in the Biological Evaluation/Biological Assessment (BE/BA) for the Lincoln Avenue Water Company Project completed in April 2011 and included as Appendix B of this EA (LAWC, 2011a).

The study area occurs on the ANF and within the Front Country Place, as defined by the Forest Service Land Management Plan, Part 2 – Angeles National Forest Strategy

(USDA Forest Service, 2005). The Front Country Place is extensive, including the sixty miles from Lytle Creek west to Newhall Pass, and in many areas, serves as the portal for visitors from the greater Los Angeles region. The Front Country Place ranges in elevation from approximately 300 to 6,000 feet above mean sea level (amsl). Typically, southern slopes are steep with sharp to rounded summits and deep, narrow canyons. Canyons are characteristically rocky and often strewn with large, distinctive boulders. The Mediterranean climate of southern California affects vegetation types and water availability. Perennial water is present only in the largest creeks and rivers.

Chaparral vegetation communities dominate the Front Country Place with canyon and coast live oaks occurring along the shaded slopes of the canyons. Deciduous trees and shrubs occupy riparian areas. Degradation of air quality (in surrounding communities) is a factor affecting forest health in a variety of ways, including stressed plant communities, lower water productivity, and lower water quality. Human disturbance has resulted in the presence and proliferation of noxious and invasive weed infestations in many areas.

The diversity of plant and animal species occurring in the Front Country Place is rich, particularly along riparian areas associated with the many streams and tributary drainages throughout the area. These areas provide habitat for numerous riparian dependant species and serve as valuable linkages between Forest Service lands and adjacent habitat on private lands.

Millard and El Prieto Canyons are adjacent, northeast to southwest trending topographic features located within the Front Country Place and just inside the southern boundary of the ANF. Typical of canyons throughout the area, upland slopes are steep and dominated by chaparral vegetation communities. Canyon bottoms, such as those present in Millard and El Prieto Canyons, consist of dense riparian canopies. Elevations in each of these areas reach roughly 2,100 feet amsl. Both areas are easily accessible to recreational hikers and consequently subjected to relatively high levels of disturbance.

3.2.2 Vegetation

LAWC facilities and equipment located in Millard and El Prieto Canyons extend across a variety of vegetation communities that are characteristic of the general region. The communities occurring in the study area and the acreages potentially affected by Proposed Action activities are presented in Table 3-9. Maps of the vegetation communities occurring in the study area and detailed descriptions for each of these communities are presented in the BE/BA for the Lincoln Avenue Water Company Project completed in April 2011 (LAWC, 2011a; Appendix B).

Table 3-9 Vegetation Communities Occurring in the Study Area

Vegetation Community		Acres*	
		Study Area	Construction Site
Chaparral	Mixed Chaparral	20.07	2.32
	Scrub Oak Chaparral	0.65	0
Oak Woodlands	Coast Live Oak Woodland	8.80	0.06
	Canyon Live Oak Woodland	3.19	0
Riparian Woodland		10.02	0

Vegetation Community	Acres*	
	Study Area	Construction Site
Pine Forest	0.26	0
Disturbed/Developed/Ruderal	8.50	0.67
Total	51.49	3.05

* - The pipeline replacement area lies within the entire study area; therefore these acreages overlap and are not additive.

3.2.3 Wildlife

Riparian communities support some of the most diverse assemblages of wildlife and provide access to water, shade, and protection from predation. These areas also provide foraging habitat and are used for nesting and breeding by a number of species. Additionally, the diversity of wildlife found in chaparral and woodland communities is often underestimated as these communities provide habitat for an exhaustive number of vertebrate species. The community types that occur in and adjacent to Millard Creek and El Prieto Canyon represent an excellent example of these habitat characteristics. A complete discussion of common and special-status wildlife occurring, or expected to occur, in the study area is presented in the BE/BA and the Management Indicator Species Report for the Lincoln Avenue Water Company Project (LAWC, 2011a, Appendix B; 2011b).

3.2.4 Special-Status Species

Special-status species considered in this EA are those listed as threatened, endangered, proposed for listing, or candidate species (TEPCS) by the U.S. Fish and Wildlife Service (USFWS) or National Marine and Fisheries Service (NMFS) and/or those species considered Forest Service sensitive (FSS) by the Regional Forester.

3.2.4.1 Special-Status Plants

A total of five special-status plant taxa were identified in the study area during surveys conducted by Aspen in May 2009, including ocellated Humboldt lily (*Lilium humboldtii* ssp. *ocellatum*), Plummer's mariposa lily (*Calochortus plummerae*), San Gabriel Mountains leather oak (*Quercus durata* var. *gabrielensis*), hybrid San Gabriel Mountains leather oak X Engelmann oak (*Q. engelmannii*), and southern California black walnut (*Juglans californica*). Of the taxa identified, none are listed as federally threatened or endangered or proposed or candidates for listing. Only one species, Plummer's mariposa lily is considered FSS on the ANF; however, ocellated Humboldt lily and southern California black walnut are identified as watch list species by the Regional Forester. Aside from Plummer's mariposa lily, the remaining four taxa are classified as California Native Plant Society (CNPS) list 4.2, which defines these taxa as having a limited distribution and fairly endangered in California. Although potential impacts to these taxa should be considered with implementation of the Proposed Action, the intent of this analysis is to assess potential impacts to taxa federally listed as threatened, endangered, proposed or candidate and/or those considered sensitive by the Regional Forester. In addition to Plummer's mariposa lily, the study area supports suitable habitat, although limited for most taxa, for the following FSS plants: Braunton's milk-vetch (*Astragalus brauntonii*); slender mariposa lily (*Calochortus clavatus* var. *gracilis*); Parry's spinyflower (*Chorizanthe parryi* var. *parryi*); San Gabriel River dudleya (*Dudleya*

cymosa ssp. *crebrifolia*); San Gabriel Mountains dudleya (*D. densiflora*); San Gabriel bedstraw (*Galium grande*); mesa horkelia (*Horkelia cuneata* ssp. *puberula*); California satintail (*Imperata brevifolia*); fragrant pitcher sage (*Lepechinia fragrans*); Hall's monardella (*Monardella macrantha* ssp. *hallii*); rock monardella (*M. viridis* ssp. *saxicola*); San Bernardino aster (*Symphotrichum defoliatum*); and, Sonoran maiden fern (*Thelypteris puberula*). Consequently, only these plant taxa are carried forward for analysis in this report. A complete and comprehensive list of all special-status plant species with the potential to occur in the study area, along with detailed species accounts, is provided in the BE/BA for the Lincoln Avenue Water Company Project (LAWC, 2011a; Appendix B).

3.2.4.2 Special-Status Wildlife

Riparian communities support a diverse variety of wildlife species and the riparian corridors associated with Millard Canyon and El Prieto Canyon are no exception. These areas provide suitable nesting, breeding, foraging, and cover habitat for a broad assemblage of common and special-status wildlife species. Although many of these species were not included for purposes of this analysis, they are protected by both federal and State regulations such as the Migratory Bird Treaty Act (MBTA) pursuant to Title 50 of the Code of Federal Regulations (CFR) and California Department of Fish and Game (CDFG) Codes §§3503.5 and §§3503 that prohibit the take of nests or eggs of any bird. The Proposed Action would avoid and minimize impacts to non-threatened species such as nesting birds by implementing appropriate pre-construction and monitoring commitments. Additionally, routine operation and maintenance activities would consist of small (2-3 person) crews accessing equipment and facility locations by foot, and, would not constitute a substantial change to existing conditions.

No federally listed or FSS wildlife species were observed or detected in the study area during reconnaissance level surveys conducted for the Proposed Action. Only two special-status wildlife species were identified, coast range newt (*Taricha torosa*), a CDFG Species of Special Concern and ringtail (*Bassariscus astutus*), a CDFG Fully Protected Species. Suitable habitat occurs within the study area for a variety of FSS wildlife species, including California legless lizard (*Anniella pulchra*), San Bernardino ringneck snake (*Diadophis punctatus modestus*), San Bernardino mountain kingsnake (*Lampropeltis zonata parvirubra*), coastal rosy boa (*Lichanura trivirgata roseofusca*), San Diego horned lizard (*Phrynosoma coronatum blainvillii*), two-striped garter snake, pallid bat (*Antrozous pallidus*), Townsend's big-eared bat (*Corynorhinus townsendii*), and western red bat (*Lasiurus blossevillii*). A complete and comprehensive list of all special-status wildlife species with the potential to occur in the study area, along with detailed species accounts, is provided in the BE/BA for the Lincoln Avenue Water Company Project (LAWC, 2011a; Appendix B)

3.2.5 Conformance to 2005 ANF Forest Plan

The governing 2005 ANF Forest Plan includes objectives and direction for managing resources on the ANF, including plant and wildlife species that are federally listed and/or Forest Service sensitive. The Plan includes Management Strategy WL-1 (Threatened, Endangered, Proposed, Candidate, and Sensitive Species Management) which requires

that the Forest Service manage habitat to move listed species toward recovery and de-listing and to prevent listing of proposed and sensitive species. Additionally, Management Strategy WL-2 (Management of Species of Concern) directs the Forest Service to maintain and improve habitat for fish, wildlife, and plants, including those designated as game species, harvest species, management indicator species, and watch list species. Finally, the Plan directs Forest Service management activities to prevent the introduction of new invaders, to conduct early treatment on new infestations, and contain and control established infestation of invasive species through Management Strategy IS-1. As part of the Proposed Action, LAWC would implement a series of Environmental Commitments, discussed below, to comply with program strategies pursuant to the 2005 ANF Forest Plan. Implementation of these commitments would ensure that the Proposed Action is compliant with the 2005 ANF Forest Plan.

3.2.6 Impacts to Biological Resources

Potential effects to biological resources are discussed in this section with regards to the indicator criteria presented in Table 1-2, and Environmental Commitments, included as part of the Proposed Action, are identified where applicable. As previously mentioned, this report evaluates the potential impacts associated with implementation of the Proposed Action to species that are listed or proposed for listing by the USFWS or NMFS and species considered FSS by the Regional Forester. Potential impacts to federally listed species are evaluated in accordance with the legal requirements set forth under Section 7 of the federal Endangered Species Act of 1973 (FESA) (16 U.S.C. 1536 [c]).

For federally listed species and those proposed for listing, direct effects are those impacts which would lead to the take of an individual listed species as defined in Section 9 and/or Section 10 of the FESA, as amended. Section 9 of the FESA prohibits the taking (i.e., harm, harass, pursue, hunt, wound, kill, etc.) of listed species without special exemption. "Harm" is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, or access to shelter. "Harass" is further defined as actions that create the likelihood of injury to listed species to an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or access to shelter. For all species, direct impacts are those that are caused by the action and occur at the same time and place (40 CFR 1508.8). Indirect impacts are defined as those that are caused by the project, occur later in time, but are still reasonably certain to occur (40 CFR 1508.8).

The Forest Service Land and Resource Management Plan and Forest Service Manual 2760 provide goals, policies, and guidelines that address effects to TEPCS species and FSS species. For purposes of this analysis, impacts are determined within the context of the long-term trend and viability for populations of these species occurring within the study area. The Forest Service has implemented a number of conservation practices specifically directed at maintaining populations and suitable habitat for FSS species. Subsequently, impacts resulting from implementation of the Proposed Action have been analyzed to determine if Proposed Action activities would conflict with or minimize the efficacy of any of these conservation practices. Although all TEPCS and FSS species that are known to occur in the regional vicinity of the study area are considered in the

following impact analysis and impacts to species that were observed, or for which potential habitat is found, are described and analyzed below.

3.2.6.1 Proposed Action

3.2.6.1.1 Result in impacts to federal waters/wetlands of the U.S. and/or waters of the State

A study to determine the jurisdictional limits for federal waters/wetlands of the U.S. and waters of the State (jurisdictional waters) was conducted by Aspen in October 2010. This study was focused around locations within the study area where potential impacts to jurisdictional waters could occur, including the intake structures along Millard Creek and the unnamed tributary in El Prieto Canyon. The results of this study determined that implementation of the Proposed Action would result in periodic, temporary, and local impacts to approximately 0.009 acre and 0.0005 acre of jurisdictional waters at Millard Creek and the unnamed tributary in El Prieto Canyon, respectively. Any impacts to jurisdictional waters as a result of implementation of the Proposed Action would be restricted to those that would potentially occur during operation and maintenance activities and would be limited to work areas that support existing diversion structures in Millard and El Prieto Canyons.

As required by law, LAWC would comply with all regulations regarding conducting any Proposed Action activities in water bodies under the jurisdiction of the federal and State governments. As such, LAWC would obtain the required permits pursuant to federal requirements, including Sections 401 and 404 of the Clean Water Act (CWA) and State requirements, including California Fish and Game Code Section 1600 *et seq.*

Pipeline Replacement and Reroute

Activities associated with the pipeline replacement and reroute component of the Proposed Action would occur in an area characterized by an existing paved access road and upland vegetation. As such, these activities would not occur in waters that would be considered under federal or State jurisdiction. Therefore, no direct or indirect impacts to federal waters/wetlands of the U.S. and/or waters of the State would occur as a result of implementation of the pipeline replacement and reroute component of the Proposed Action.

Operation and Maintenance

Direct Impacts. Direct impacts to federal and State jurisdictional waters could occur during major debris and/or sediment removal activities if such activities result in an alteration of natural flow regimes, modifications to the bed, channel, or bank of a stream, or degradation to water quality.

Of primary importance to riparian ecosystems is the maintenance of the natural hydrologic regime (Busch and Smith, 1995). Since the onset of water diversion practices in the early twentieth century, Millard and El Prieto Canyons have been subjected to altered hydrological regimes. While these practices have remained relatively consistent throughout the past several decades, the direct removal of water from drainages that flow within these canyons is expected to affect their associated riparian habitats to some degree. However, it is difficult to identify a single factor that can fully address the

complex interactions likely to result from changes to riparian ecosystems. While a number of studies provide insight to the effects of flow regulation on riparian habitats, current ecological theory suggests that a flow regime that reflects a natural or nearly natural hydrologic cycle is necessary to maintain the complete native biodiversity and integrity of an aquatic ecosystem (Richter et al., 1997). Additionally, the recruitment, establishment, maintenance, and survival of riparian plant communities are closely tied to the existing hydrologic conditions and associated level of natural disturbance (Ward and Stanford, 1995). The Millard and El Prieto Canyon drainages represent riparian ecosystems that are not excluded from these conclusions. During periods of low-flow, the amount of water available for use by plants and wildlife is reduced as a consequence of diversion along portions of each of these drainages. Natural processes, such as the creation of pooling habitat for wildlife and natural plant recruitment, are likely limited as a result of alterations to the natural flow regime and water surface elevations. However, it should be noted that the ongoing diversion of water in these canyons does not introduce a relatively new alteration to their hydrologic regimes. As previously mentioned, water diversion practices have been continuously occurring in Millard and El Prieto Canyons for nearly a century. Therefore, continuing these practices does not reflect an abrupt and sudden change to what could be considered existing baseline conditions. Additionally, during periods of time (i.e. summer months) when water becomes a limiting factor, the existing water distribution systems only allow for a fraction of water, if any, to be taken. The amount of precipitation received and other environmental factors contribute to determining how much this water diversion will impact riparian vegetation and riparian associated species. Diversions that do not completely dewater the stream will allow for the continued availability of suitable habitat for these species.

A habitat assessment of the portion of Millard Creek through which water is passively diverted was conducted by Aspen in August 2009. The focus of this assessment was to qualitatively analyze and compare habitat in this section of the creek with similar upstream and downstream habitats outside of the affected area. The conclusion of the visual assessment was that a substantial and noticeable difference amongst plant mortality, age class, diversity, and structure does not occur between the affected section of the creek and upstream or downstream habitats. Water is only diverted from the drainages in Millard and El Prieto Canyons when flow rates exceed 200 gallons per minute (gpm), which allows, at any given time, for the majority of water in these drainages to assume a natural flow regime, even during drier months when less, or even no, water is diverted. It is likely that, because only a fraction of water available in the drainages of Millard and El Prieto Canyons is diverted and water typically flows year-round, no distinguishable differences between the affected areas and upstream and downstream habitats were identified. Nonetheless, LAWC has recognized the concerns of local citizens and groups and has committed to implementing measures to minimize potential impacts associated with alterations of natural flows along Millard Creek. Most significantly, LAWC would implement Environmental Commitment GEN-9 (Install Modulated Flow Control Valve at North Coulter Reservoir). The installation of the MFCV would automatically regulate flows between the Millard Canyon diversion structure and the North Coulter Reservoir in such a way as to release water from the reservoir back to the original point of diversion. Consequently, affects associated with dewatering of the portion of Millard Creek between the diversion structure and the

former water release location below Millard Campground would be substantially minimized.

Direct impacts associated with modifications to the bed, bank, and channel could occur during major debris and/or sediment removal efforts and would be limited to the small, localized area around the existing, concrete-lined diversion structures along Millard Creek and the unnamed tributary in El Prieto Canyon. At certain times, these areas may support flowing or pooled surface water, including periods when the active channels are directed towards the diversion structures. In order to divert surface water around areas that would require major debris and/or sediment removal, LAWC would construct a small, temporary earthen berm using handtools, such as pick axes and shovels. Additionally, LAWC personnel would manually remove release valve plates located at the downstream end of the diversion structures to allow surface water to empty. Upon completion of debris and/or sediment removal activities, the earthen berm would be deconstructed to pre-existing conditions. Direct impacts associated with degradation to water quality could occur as a result of increased sedimentation during major debris and/or sediment removal activities. To avoid and/or minimize impacts associated with streambed modifications and degradation to water quality, LAWC would implement Environmental Commitments GEN-1 (Regulatory Compliance), which would require that all operation and maintenance activities be conducted under the context of the appropriately obtained regulatory permits; GEN-10 (Prepare and Implement an Operation and Maintenance Plan), which would ensure that any operation and maintenance activities are conducted in compliance with Forest Service approval; and, BIO-4 (Biological Monitor), which would require that a qualified, Forest Service approved biological monitor is present during all major debris and/or sediment removal activities.

Indirect Impacts. Indirect impacts would include the continued dewatering of portions of Millard Creek and the unnamed tributary in El Prieto Canyon during operation of the existing LAWC equipment and facilities. Implementation of the Proposed Action, including all operation and maintenance activities, would be consistent with existing water rights and laws. Nonetheless, LAWC would implement Environmental Commitment GEN-9 (Install Modulated Flow Control Valve at North Coulter Reservoir) to minimize impacts associated with dewatering of the portion of Millard Creek between the diversion structure intake point and the existing location where water is currently released from North Coulter Reservoir. Implementation of this Environmental Commitment would ensure that water returned from North Coulter Reservoir is released at the diversion structure, thus minimizing the current dewatering practices associated with that portion of Millard Creek. As all operation and maintenance activities would be temporary and local in nature, indirect impacts associated with modification to the streambed, bank, or channel and degraded water quality are not expected to occur. As previously mentioned, minor water diversions may be required during major debris and/or sediment removal activities. However, any diversion would include the deconstruction of earthen berms to pre-existing conditions immediately upon the completion of work activities.

3.2.6.1.2 Result in impacts to threatened, endangered, candidate, or proposed for listing plant species.

No federally listed plant species were identified in the study area during May 2009 botanical surveys. The study area does not contain designated or proposed critical habitat for any federally listed plant species. Although not identified in the study area during May 2009 botanical surveys, fire could increase the potential for the federally endangered (FE) and FSS Braunton's milk-vetch to occur. This species is endemic to the foothills of the San Gabriel, Santa Ana, and Santa Monica Mountains in southern California. Braunton's milk-vetch is typically conspicuous when in bloom; however, it is fire-emergent and has the ability to remain in the seed bank until post-fire conditions are present. Most of the region surrounding the study area had not burned within the past 50 to 100 years prior to the August 2009 Station Fire. The study area supports suitable habitat and post-fire conditions for this species. All components, including access, of the Proposed Action would occur within areas that are characterized by existing paved and dirt roads, maintained trails, and currently operating equipment and facilities. These areas are routinely subject to disturbance via recreational users and Forest Service personnel. The Proposed Action would avoid disturbance to habitats, including those undergoing post-fire recovery, which could potentially support Braunton's milk-vetch. Based on this, implementation of the Proposed Action would not result in direct and/or indirect impacts to Braunton's milk-vetch, if present. No other threatened, endangered, candidate, or proposed for listing plant species are expected to occur.

3.2.6.1.3 Result in impacts to threatened, endangered, candidate, or proposed for listing wildlife species.

No federally listed or FSS wildlife species were observed or detected in the study area during surveys conducted in May 2009. The study area supports limited habitat, at best, for four federally listed avian species, including the endangered southwestern willow flycatcher, least Bell's vireo, California condor, and the threatened coastal California gnatcatcher. However, these species have not been reported from the study area and are not expected to breed or nest in the study area. Because of the lack of suitable nesting habitat, the potential for southwestern willow flycatcher, least Bell's vireo, and coastal California gnatcatcher to occur would likely be limited to transient individuals. Use of the area would be associated with foraging and/or roosting. Any individuals present at the time of activities associated with the Proposed Action may avoid these areas until the noise/disturbance generating activities ceased. No modifications to designated critical habitat and no permanent displacement or impacts to reproductive success would occur as a result of implementation of the Proposed Action. Based on this, implementation of the Proposed Action would not result in direct and/or indirect impacts to southwestern willow flycatcher, least Bell's vireo, and coastal California gnatcatcher.

California condor has not been reported from the study area; however, as the current range for the California condor continues to expand, this wide-ranging species could fly over the area. This species prefers to forage over broad, open landscapes. Millard and El Prieto are relatively deep canyons that provide very limited foraging habitat for this species. The study area does not support suitable nesting habitat. Based on this, implementation of the Proposed Action would not result in direct and/or indirect impacts to California condor.

3.2.6.1.4 Result in impacts to Forest Service sensitive plant species

Only one FSS plant species, Plummer's mariposa lily, was detected in the study area during surveys conducted by Aspen in May 2009. Additionally, suitable habitat and conditions, although limited for some taxa, occur that could potentially support a number of special-status plants, including the following FSS, which are carried forward for analysis: slender mariposa lily; Parry's spineflower; San Gabriel River dudleya; San Gabriel Mountains dudleya; San Gabriel bedstraw; mesa horkelia; California satintail; fragrant pitcher sage; Hall's monardella; rock monardella; San Bernardino aster; and, Sonoran maiden fern.

Pipeline Replacement and Reroute

Direct Impacts. Although no FSS plant species are expected to occur in the immediate construction site, areas within the study area and immediately adjacent to the construction site do support suitable habitat for these species. If any individuals of these species were to be identified in these areas during implementation of construction activities, they would be flagged and avoided. This would reduce any possible impacts to special-status plant individuals. The Proposed Action has been designed to minimize erosion and sediment transport along the western edge of Mount Lowe Road that drops down into the canyon below. This would be accomplished by routing the new pipeline within the paved portion of the road as close to the toe of the slope that abuts the eastern edge of Mount Lowe Road as technically possible. Exposure to excessive dust in these areas could decrease or limit plant survivorship by restricting photosynthetic output, reducing transpiration, and adversely affecting reproductive success, should special-status plant species occur. However, the Proposed Action would meet basic SCQAMD Rule 403 requirements and would, therefore, not result in substantial impacts related to fugitive dust.

As part of the Proposed Action, LAWC would implement Environmental Commitments to further minimize and/or avoid impacts to special-status plant species, should they occur. These would include GEN-4 (Limit Work Areas), which would ensure that all activities associated with this component of the Proposed Action would be restricted to existing access roads and recreational trails; GEN-5 (Worker Environmental Awareness Program), which would provide training to construction personnel; and, HYD-1 (Implement an Erosion Control Plan/SWPPP and Best Management Practices), which would further minimize and/or avoid impacts associated with increased erosion and sediment transport.

Indirect Impacts. Indirect impacts associated with pipeline replacement and reroute activities would include the loss of habitat due to colonization of non-native and invasive plant species. Soil disturbance may lead to the spread of already present non-native and invasive species. These species may then compete with native species for space, nutrients, and water. Because non-native and invasive weeds can permanently degrade habitat suitable for supporting special-status plants, their proliferation as a result of Proposed Action activities could adversely affect special-status plants, should they occur. Propagation of non-native and invasive plants can be initiated when these species are unknowingly transported from one area into another via vehicles, machinery, or humans. In order to avoid and/or minimize the effects associated with the propagation of non-

native and invasive plant species, LAWC would implement Environmental Commitment BIO-5 (Invasive Plant Monitoring and Removal Plan), which would require monitoring and management of invasive plants. Forest Service construction requirements related to the spread of these species (per FSM 2081.03) would also be implemented throughout the duration of all construction activities associated with the Proposed Action.

Operation and Maintenance

Direct Impacts. Direct impacts associated with operation and maintenance activities would primarily occur during major debris and sediment removal events. The majority of these activities would be conducted at diversion structures and intake points located along Millard Creek and the unnamed tributary in El Prieto Canyon. Direct impacts to special-status plants, should they occur, resulting from operation and maintenance activities could include trampling by vehicular and/or foot traffic, temporary and localized disruption to native seed banks, and alteration to existing hydrology regimes due to continued dewatering of portions of Millard and El Prieto Canyons.

Operation and maintenance activities would be limited to small (2-3 person) crews accessing equipment and facility sites by foot. All foot traffic related to carrying out these activities would be restricted to minimal areas adjacent to existing access roads and trails where diversion structures, weirs, and metering stations are located. As a result, impacts related to trampling and disruptions to native seed banks are expected to be minimal in duration and scope. As discussed above, the success of riparian systems is closely linked to existing hydrologic conditions. A habitat assessment of the portion of Millard Creek through which water is passively diverted was conducted by Aspen in August 2009. The focus of this assessment was to qualitatively analyze and compare habitat in this section of the creek with similar upstream and downstream habitats outside of the affected area. The conclusion of the visual assessment was that a substantial and noticeable difference amongst plant mortality, age class, diversity, and structure does not occur between the affected section of the creek and upstream or downstream habitats. Water is only diverted from the drainages through Millard and El Prieto Canyons when flow rates exceed 200 gpm, which allows, at any given time, for the majority of water in these drainages to assume a natural flow regime, even during drier months when less water is diverted. It is likely that, because only a fraction of water available in the drainages of Millard and El Prieto Canyons is diverted and water typically flows year-round, no distinguishable differences between the affected areas and upstream and downstream habitats were identified. Nonetheless, LAWC would implement several Environmental Commitments to minimize and/or avoid impacts to special-status plant species during operation and maintenance activities. These include GEN-1 (Regulatory Compliance), which would ensure that all operation and maintenance activities are conducted in compliance with federal and State laws and guidelines and required regulatory permits; GEN-4 (Limit Work Areas), which would restrict access to equipment and facilities to existing roads and trails; GEN-5 (Worker Environmental Awareness Training), which would provide training to LAWC personnel; GEN-9 (Install Modulated Flow Control Valve at North Coulter Reservoir), which would minimize impacts associated with previous dewatering practices in Millard Creek; GEN-10 (Prepare and Implement an Operation and Maintenance Plan), which would provide LAWC personnel with guidelines to protect

sensitive resources; and, BIO-4 (Biological Monitor), which would ensure that a qualified biological monitor is onsite during all major sediment and/or debris removal activities.

Indirect Impacts. Indirect impacts associated with ongoing operation and maintenance activities would include the loss of habitat due to colonization of non-native and invasive plant species and degradation of habitat due to increased erosion and sedimentation. Because non-native and invasive weeds can permanently degrade habitat, their proliferation as a result of Proposed Action activities could adversely affect special-status plants, should they occur. Propagation of non-native and invasive plants can be initiated when these species are unknowingly transported from one area into another via vehicles, machinery, or humans. In order to avoid and/or minimize the effects associated with the propagation of non-native and invasive plant species, LAWC would implement Environmental Commitment BIO-5 (Invasive Plant Monitoring and Removal Plan), which would require monitoring and management of invasive plants. Forest Service construction requirements related to the spread of these species (per FSM 2081.03) would also be implemented throughout the duration of all operation and maintenance activities associated with the Proposed Action. Additionally, LAWC would implement Environmental Commitments to minimize and/or avoid impacts associated with increased erosion and sedimentation. These include GEN-10 (Prepare and Implement an Operation and Maintenance Plan), which would identify guidelines to protect sensitive resources and BIO-4 (Biological Monitor), which would ensure that a qualified biological monitor is onsite to direct activities during major sediment and/or debris removal activities.

3.2.6.1.5 Result in impacts to Forest Service Sensitive wildlife species

No FSS wildlife species were observed or detected in the study area during surveys conducted in May 2009; however, the study area supports suitable habitat for a variety of FSS wildlife species, including California legless lizard, San Bernardino ringneck snake, San Bernardino mountain kingsnake, coastal rosy boa, San Diego horned lizard, two-striped garter snake, pallid bat, Townsend's big-eared bat, and western red bat.

Pipeline Replacement and Reroute

Direct Impacts. Typically, developed areas do not support suitable habitat for these FSS species; however, it is possible that some terrestrial species, such as California legless lizard, San Bernardino ringneck snake, San Bernardino mountain kingsnake, coastal rosy boa, and San Diego horned lizard could use these areas for foraging and/or basking opportunities. Additionally, native vegetation communities within the study area, and immediately adjacent to the affected construction site, could potentially support these species. Although not identified within the study area, direct impacts to terrestrial FSS species, including California legless lizard, San Bernardino ringneck snake, San Bernardino mountain kingsnake, coastal rosy boa, and San Diego horned lizard, if present, could occur as a result of the removal or disturbance of vegetation, erosion or changes in topography that modify the persistence of friable soils or limit leaf litter, mechanical crushing, entrapment, and increased noise levels from heavy equipment. Because all activities associated with the pipeline replacement and reroute component of the Proposed Action would be limited to a paved section of an existing access road, direct effects related to vegetation removal would be avoided. Additionally, the Proposed Action has been designed to minimize erosion and sediment transport along the western

edge of Mount Lowe Road that drops down into the canyon below. This would be accomplished by routing the new pipeline within the paved portion of the road as close to the toe of the slope that abuts the eastern edge of Mount Lowe Road as technically possible. Nonetheless, LAWC would implement Environmental Commitments HYD-1 (Implement an Erosion Control Plan/SWPPP and Best Management Practices) and HYD-2 (Dry weather construction) to further minimize and/or avoid direct effects resulting from erosion.

If present at the time of implementation of construction activities, California legless lizard, San Bernardino ringneck snake, San Bernardino mountain kingsnake, coastal rosy boa, and San Diego horned lizard could be subjected to mechanical crushing and/or entrapment in trenches. The immediate construction site does not support suitable conditions for wildlife though many reptilian species are known to utilize paved roads for thermoregulation, most often during dawn and dusk periods. Furthermore, several common reptilian species were observed along paved roadways in the region during surveys. In order to minimize and/or avoid impacts related to crushing or entrapment, LAWC would implement a variety of Environmental Commitments as part of the Proposed Action. These would include GEN-2 (Limit Work Hours), which would minimize the potential to disrupt thermoregulation or basking activities; GEN-3 (Limit Work Crew Personnel), which would minimize the potential of crushing or trampling; GEN-4 (Limit Work Areas), which would ensure that construction activities are restricted to the immediate work site and access is restricted to existing roads and trails; GEN-5 (Worker Environmental Awareness Program), which would provide training to all construction personnel; BIO-1 (Avoid Animal Entrapment), which would provide strict guidelines to be followed during any trenching activities; BIO-2 (Report Special-Status Species), which would provide notification to the Forest Service in the event that special-status species are identified in any work areas; and, BIO-4 (Biological Monitor), which would ensure that a qualified biologist is onsite to periodically inspect work areas for special-status species.

Increases in noise during construction activities could potentially affect these terrestrial FSS species by disturbing nesting, breeding, and basking sites, should they occur in the study area. In order to minimize and/or avoid effects associated with increases in noise during the pipeline replacement and reroute component of the Proposed Action, LAWC would implement Environmental Commitment N-1 (Implement Best Management Practices for construction noise).

The two-striped garter snake is a highly aquatic species that tends to occupy streamside sites during the summer and move to nearby upland habitats during the winter (Rathburn et al., 1993). Although the study area supports suitable habitat for this species, two-striped garter snake is not likely to utilize the area that would be affected by pipeline replacement and reroute activities. All activities associated with this component of the Proposed Action would be limited to a paved section of an existing access road. As a result, direct effects to two-striped garter snake as a result of construction activities associated with the Proposed Action are not expected to occur. Nonetheless, LAWC would implement Environmental Commitments HYD-1 (Implement an Erosion Control Plan/SWPPP and Best Management Practices) and HYD-2 (Dry weather construction) to further minimize and/or avoid direct effects resulting from erosion.

No FSS bat species were identified in the study area during surveys; however, focused surveys for bats were not conducted and the study area supports potential foraging and roosting habitat for some species. Direct impacts to pallid bat, Townsend's big-eared bat, and western red bat, should these species occur, would include disturbance to individuals due to construction activities resulting in increased levels of noise and human disturbance. Suitable roosting habitat occurs in adjacent habitats within the study area, particularly for those species, such as western red bat, that typically select roost sites in trees associated with riparian habitats. Bats may also utilize the study area during foraging opportunities.

Increased noise levels and human presence associated with construction activities could introduce adverse effects to bat species, if present. The decline of bat populations is often due to roost site disturbance. Many bat species, such as Townsend's big-eared bat, are extremely sensitive to disturbance of roosting sites and may abandon these sites upon even slight disturbances (Barbour and Davis, 1969; Zeiner et al., 1990). Construction activities that would generate increased noise levels and human presence could result in the direct loss of roosting sites and subsequent mortality to adult bats or pups if any were present in, or adjacent to, the study area. In order to minimize and/or avoid impacts related to increased noise levels and human presence, LAWC would implement appropriate Environmental Commitments. As discussed above, these would include GEN-3 (Limit Work Crew Personnel), GEN-4 (Limit Work Areas), and N-1 (Implement Best Management Practices for Construction Noise).

Indirect Impacts. Indirect impacts associated with pipeline replacement and reroute activities to California legless lizard, San Bernardino ringneck snake, San Bernardino mountain kingsnake, coastal rosy boa, San Diego horned lizard, two-striped garter snake, pallid bat, Townsend's big-eared bat, and western red bat, if present, could include loss of habitat due to colonization of non-native and invasive plant species. Because non-native and invasive weeds can permanently degrade habitat suitable for supporting wildlife, their proliferation as a result of Proposed Action activities could adversely affect FSS species, should they occur. Propagation of non-native and invasive plants can be initiated when these species are unknowingly transported from one area into another via vehicles, machinery, or humans. In order to avoid and/or minimize the effects associated with the propagation of non-native and invasive plant species, LAWC would implement Environmental Commitment BIO-5 (Invasive Plant Monitoring and Removal Plan), which would require monitoring and management of invasive plants. Forest Service construction requirements related to the spread of these species (per FSM 2081.03) would also be implemented throughout the duration of all construction activities associated with the Proposed Action.

Operation and Maintenance

Direct Impacts. Any impacts associated with operation and maintenance activities would primarily occur during major debris and sediment removal events. The majority of these activities would be conducted at diversion structures and intake points located along Millard Creek and the unnamed tributary in El Prieto Canyon. Direct impacts associated with major debris and sediment removal activities to FSS wildlife species, if present, could include crushing by vehicular and/or foot traffic, an increase in human presence, and alterations to natural hydrology regimes that degrade riparian habitat. Access to

conduct operation and maintenance activities would be restricted to existing access roads and trails. Existing conditions in the study area currently include a high frequency of use by recreational users and Forest Service personnel. As such, LAWC maintenance crews are not expected to contribute to a substantial increase in pedestrian traffic. Nonetheless, LAWC would implement several Environmental Commitments to further avoid and/or minimize impacts to these species during operation and maintenance activities. These include GEN-4 (Limit Work Areas), which would ensure that LAWC personnel limits access to existing roads and trails; GEN-5 (Worker Environmental Awareness Program), which would provide all LAWC personnel with environmental training; GEN-10 (Prepare and Implement an Operation and Maintenance Plan), which would provide guidelines to protect sensitive resources while conducting maintenance activities; and, BIO-4 (Biological Monitor), which would ensure that a qualified biologist is onsite during all major debris and/or sediment removal activities.

Two-striped garter snake is closely tied to riparian habitats and uses these areas for breeding, foraging, and refuge. Ongoing dewatering along portions of the drainages associated with Millard and El Prieto Canyon could result in degradation to riparian habitat for two-striped garter snake. Additionally, the areas where operation and maintenance activities would occur, along with portions of the drainages upstream and downstream of the diversion structures, provide potential foraging habitat for FSS bats. The proximity of preferred foraging habitat, which includes the presence of water, appears to be a determining factor in roost selection for many bat species, including western red bat, which typically select roost sites in riparian trees, such as cottonwoods and sycamores. A habitat assessment of the portion of Millard Creek through which water is passively diverted was conducted by Aspen in August, 2009. The focus of this assessment was to qualitatively analyze and compare habitat in this section of the creek with similar upstream and downstream habitats outside of the affected area. The conclusion of the visual assessment was that a substantial and noticeable difference amongst plant mortality, age class, diversity, and structure does not occur between the affected section of the creek and upstream or downstream habitats. Water is only diverted from the drainages through Millard and El Prieto Canyons when flow rates exceed 200 gpm, which allows, at any given time, for the majority of water in these drainages to assume a natural flow regime, even during drier months when less water is diverted. It is likely that, because only a fraction of water available in the drainages of Millard and El Prieto Canyons is diverted and water typically flows year-round, no distinguishable differences between the affected areas and upstream and downstream habitats were identified. Nonetheless, to minimize impacts to two-striped garter snake associated with the diversion of flows from Millard Creek, LAWC would implement Environmental Commitment GEN-9 (Install Modulated Flow Control Valve at North Coulter Reservoir), which would minimize impacts associated with previous dewatering practices in Millard Creek.

Indirect Impacts. Indirect effects as a result of ongoing operation and maintenance activities to FSS wildlife species, should they occur, would be similar to those described for the pipeline replacement and reroute component of the Proposed Action and would include the loss of habitat due to colonization of non-native and invasive plant species. In order to avoid and/or minimize the effects associated with the propagation of non-native and invasive plant species, LAWC would implement Environmental Commitment BIO-5

(Invasive Plant Monitoring and Removal Plan), which would require monitoring and management of invasive plants. Forest Service construction requirements related to the spread of these species (per FSM 2081.03) would also be implemented throughout the duration of all operation and maintenance activities associated with the Proposed Action.

3.2.6.2 No Action Alternative

Under the No Action Alternative, the Forest Service would not renew LAWC's Special Use Permits #LAR412601 and #LAR412602. Additionally, pipeline replacement and reroute construction activities on ANF lands would not occur. As a result, any impacts to biological resources due to implementation of this alternative would not occur within ANF boundaries. The Forest Service would continue management of ANF lands, regardless of whether or not the Proposed Action is implemented. Under the No Action Alternative, LAWC would be required to implement an alternative action plan in order to continue to provide a reliable water supply service and to meet future public demands. This new action plan may include the construction of new equipment and facilities on non-ANF lands at locations that have yet to be determined. However, it is reasonably expected that these new facilities would require extensively greater construction activities compared to those discussed for repairs to existing equipment under the Proposed Action.

Although the decommissioning of existing LAWC equipment and facilities on ANF lands would ultimately result in a return to natural surface flows in Millard Creek and the unnamed tributary in El Prieto Canyon, it is expected that new equipment and facilities would require the diversion and collection of surface waters at locations downstream and outside of ANF lands, pursuant to existing water rights. As such, potential impacts to jurisdictional waters would be similar in nature and magnitude to those described for the Proposed Action, but would occur on non-ANF lands. Additionally, impacts to threatened, endangered, candidate, or proposed for listing species, should they occur in areas where new equipment and facilities would be constructed, would be greater in nature and magnitude to those described under the Proposed Action due to the greater degree of construction that would be required. However, since construction of any new infrastructure and subsequent operation and maintenance activities would be located outside of Forest Service lands, impacts to FSS species would not occur under the No Action Alternative.

3.2.6.3 Cumulative Impacts to Biological Resources

Cumulative effects, as defined by the Final ESA Section 7 Consultation Handbook (USFWS, 1998), are not anticipated. As described in Section 3 of the DEIS for the Revised Land Management Plans of the National Forest Service Pacific Southwest Region (USDA Forest Service, 2005b), the general habitat quality trend on National Forest System land is likely to be stable in the long-term.

There are a variety of ongoing and historic Forest Service projects that have occurred or are occurring in the vicinity of the study area. Ongoing and historic activities include major electrical utility corridors, road construction/maintenance/use, fire fighting, and routine improvements to existing facilities such as repairs to fences, pipelines, government facilities, and water storage reservoirs. Ongoing activities in the region

would include major construction activities associated with the implementation of the approved Tehachapi Renewable Transmission Project (TRTP), operation and maintenance of multiple dams and reservoirs, use and maintenance of the Angeles National Highway (SR-2) and other roadways, fire remediation of recent forest fires, ongoing fuels management activities, storm-related road repairs, slope stabilization, and road maintenance to existing Southern California Edison (SCE) transmission towers. Millard Canyon and associated day use areas provide developed recreational activities. Other recreational activities in the area include hiking, mountain biking, camping, hunting, and off highway vehicle use.

Construction activities associated with the pipeline replacement and reroute component of the Proposed Action would be limited to an existing section of a paved access road. These activities would be local and temporary in nature. Ongoing operation and maintenance would occur on an “as-needed” basis and would include periodic inspections, debris clearance, and repairs, as necessary. Furthermore, there are no other known water diversion practices occurring within the study area. As a result, effects associated with the pipeline replacement and reroute and ongoing operation and maintenance activities are expected to represent a negligible contribution to cumulative impacts.

3.3 Cultural Resources

Cultural resources include prehistoric archaeological sites, historic archaeological sites, and historic structures, and consist of artifacts, food waste, structures, and facilities made by people in the past. Prehistoric archaeological sites are places that contain the materials remains of activities carried out by the native population of the area (Native Americans) prior to the arrival of Europeans in southern California. Artifacts found in prehistoric sites include flaked stone tools such as projectile points, knives, scrapers, and drills; ground stone tools such as manos, metates, mortars, and pestles for grinding seeds and nuts; and bone tools, such as awls. Prehistoric sites and features include hearths, bedrock mortars, rockshelters, rock art, and burials.

Historic archaeological sites are places that contain the material remains of activities carried out by people during the period when written records were produced after the arrival of Europeans. Historic archaeological materials usually consist of refuse, such as bottles, cans, and food waste, deposited near structure foundations. Archaeological investigation of historic period sites is usually supplemented by historic research using written records. Historic structures include houses, commercial structures, industrial facilities, and other structures and facilities more than 50 years old.

3.3.1 Scope of Work and Area of Potential Effects

According to 36 CFR 800.16(d), the Area of Potential Effects (APE) is the geographic area or areas within which a federally funded, authorized, or permitted project (in this case, the Proposed Action) may directly or indirectly cause changes in the character or use of properties listed on, or eligible for listing on, the National Register of Historic Places, if such properties exist. For the Proposed Action, LAWAC, in consultation with the Forest Service, established the APE in which efforts to identify cultural resource impacts

may occur. The APE is influenced by the scale and nature of the Proposed Action and alternatives and includes:

- All alternative locations for all elements of the undertaking as they are currently defined;
- All locations where the undertaking may result in ground disturbance; and,
- All locations from which elements of the undertaking may be visible or audible

For the purpose of identification of existing cultural resources for this project, the APE is herein defined as a minimum 25-foot wide corridor on either side of the existing set of Millard Canyon pipelines and/or any additional historic components extending from the intake on the east to the North Coulter Reservoir on the west. This corridor is intended to provide sufficient room for the installation of the repaired section of pipeline to the existing historic riveted metal pipeline, and for sufficient room should any additional historic pipelines be discovered during installation activities.

The scope of work for this investigation included cultural resources records searches through the ANF Cultural Resources Database and pedestrian surveys of the APE by Applied Earthworks in June 2009 and Hatheway and Associates in June 2010. The Applied Earthworks investigation focused on archaeological resources while the Hatheway and Associates investigation addressed the built environment. These investigations were conducted to satisfy the cultural resources requirements of the National Environmental Policy Act of 1969 and the National Historic Preservation Act of 1966. Final reports for each investigation can be found in Appendices D and E.

3.3.2 Results from Records Search and Field Survey

Prior to the investigations conducted for the Proposed Action, the records search indicated that only one prior survey had occurred within one-half mile of study area, and did not encompass the APE of the current Proposed Action (Table 3-10). Two historical trails, the Sunset Ridge Trail (FS-05-01-51-118) and Millard Canyon Trail (FS-05-01-51-114), are within the APE. Both trails were recorded by the ANF as part of their evaluation of the Mount Lowe/Echo Mountain Trails Complex (Vance, 2002). In addition to the trail itself, Vance (2002) recorded multiple sections of historic pipeline and a small reservoir as a part of the Millard Canyon Trail. Six other previously recorded cultural sites have also been documented within a 0.5-mile radius. These sites are listed in Table 3-11.

Table 3-10 Archaeological Survey Completed within 0.5 Mile of the APE

Forest Service Archaeological Survey	Date	Recorded By	Purpose of Survey
05-01-AS-33	1986	McIntyre, M.J.	Millard Canyon Future Use Determination

Table 3-11 Archaeological Sites Recorded within 0.5 Mile of the APE

Forest Service Archaeological Sites	Date	Recorded By	Property Name	NRHP Status
05-01-51-72	1984	McIntyre, M.J.	Millard Canyon Recreation Residence Tract	Ineligible
05-01-51-86	1997	Reponen, G. & Gilliland, D.	Sunset Guard Station Site	Unevaluated
05-01-51-87	1997	Reponen, G. & Gilliland, D.	Mt. Lowe Truck Trail (lower section from Cape of Good Hope to Sunset Guard Station)	Unevaluated
05-01-51-114	2002	Vance	Millard Canyon Trail	Unevaluated
05-01-51-118	1991	McIntyre, M.J.	Sunset Ridge Trail	Unevaluated
05-01-51-143	2003	Schmidt, J.J. & Schmidt, J.A.	SCE Eagle Rock-Laguna Bell Transmission Line Corridor	Unevaluated
05-01-51-145	2003	Schmidt, J.J. & Schmidt, J.A.	Forest Road 2N68: SCE ANF Roads PIII #6	Unevaluated
05-01-51-192	2005	Huckabee, J.	Forest Road 2N65: Chaney Truck Trail	Unevaluated

No additional resources were identified during the field investigations. Only one of the eight sites has been evaluated for significance and eligibility to the National Register of Historic Places (NRHP); the Millard Canyon Recreational Residence Tract (FS-05-01-51-72) was evaluated in 2006 and found ineligible (ANF Cultural Resources Database, updated 09/29/08). The remaining seven sites within or adjacent to the study area have not been formally evaluated, and therefore must be treated as if they are eligible for inclusion in the NRHP.

3.3.3 Conformance to 2005 ANF Forest Plan

The 2005 Forest Plan for the ANF includes a description of Program Strategies (Part 2, Appendix B) which addresses goals for heritage resource protection, including protecting heritage resources for cultural and scientific value and public benefit. Heritage (cultural) resources consist of prehistoric and historic archaeological sites, standing buildings and structures, and properties of importance to Native Americans and other ethnic groups. The Proposed Action study area contains a variety of such resources; a records search and background research indicated that most of these date from the historic period and reflect past land uses such as mining, recreation, and forest management.

3.3.4 Impacts to Cultural Resources

Adverse impacts to sites and properties listed on, or eligible for, the National Register of Historic Places (National Register) are evaluated based on the Criteria of Adverse Effects as outlined in 36 Code of Federal Regulations (CFR) 800.5 of the regulations implementing Section 106 of the National Historic Preservation Act (NHPA). The Criteria of Adverse Effect is as follows:

An adverse impact is found when an undertaking may alter, directly or indirectly, the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Consideration shall be given to all qualifying characteristics of a historic property, including those that may have been

identified subsequent to the original evaluation of the property's eligibility for the National Register. Potential impacts to cultural resources are discussed in this section with regards to the indicator criteria presented in Table 1-2, and Environmental Commitments, included as part of the Proposed Action, are identified where applicable.

3.3.4.1 Proposed Action

3.3.4.1.1 **Adversely affect through alteration, direct or indirect, of the characteristics of a historic property that qualifies for inclusion in the National Register in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association**

Pipeline Replacement and Reroute

The report titled *A National Register Determination of Eligibility Report, Determination of Eligibility Report, Determination of Effects Statement, and Mitigation Plan for the Lincoln Avenue Water Company Millard Canyon Pipeline*, completed by Hatheway and Associates in September 2010 determined that select historic components of the LAWC Millard Canyon pipeline do appear to qualify as potentially eligible to the NRHP (Appendix E). Incorporated on March 26, 1896, LAWC assumed control of all water rights and associated improvements in Millard Canyon previously held by the Millard Canyon Water Company and the Pasadena Improvement Company. There are three historic Millard Canyon pipelines within the defined APE. These consist of a vitrified (cement) pipe initially constructed in the late 1880s by the Millard Canyon Water Company, an iron pipe constructed prior to 1892, and a riveted iron pipe likely constructed in the early to mid-1890s. Each of these historic features replaced and/or augmented the other as water company user needs and technologies changed over time. Today, they represent a unique historic record of LAWC as the oldest continually operating water company in the Arroyo Seco Watershed. It is suggested that any portion of these three pipelines, extending from the existing intake in Millard Canyon to North Coulter Reservoir, appear to qualify as eligible to the NRHP (Hatheway and Associates, 2010; Appendix E).

The Proposed Action (undertaking) shall not involve the removal of any historic pipeline built features and components (Hatheway and Associates, 2010; Appendix E). The 1400-foot section of corroded water pipeline to be replaced is located within the existing LAWC alignment along a paved portion of Mount Lowe Road in Millard Canyon. Pipeline replacement will involve cutting through the existing pavement, excavating an approximately 2-foot wide and 2½ to 3-foot deep trench with a backhoe, and backfilling after placement of the new pipeline. Filled sections would then be compacted and repaved. Additionally, crews would repair localized patches of damaged asphalt along Mount Lowe Road between the trailhead and the reservoir. Access to the Proposed Action work area will be via Chaney Trail and Mount Lowe Roads. None of these actions are expected to produce adverse effects on cultural resources with implementation of the avoidance measures included in a series of Environmental Commitments. While ground-disturbing activities associated with the Proposed Action have the potential to disturb or destroy cultural resources, should they occur, implementation under carefully controlled

conditions, including Environmental Commitments CUL-1 (Report Unforeseen Archaeological Resources), CUL-2 (Notify Proper Authorities upon Discovering any Human Remains), CUL-3 (Avoidance of Historic Pipeline Features), CUL-4 (Monitoring by a Built Environment Specialist), and CUL-5 (Completion of a NRHP Evaluation of the Millard Canyon Alignment). Additionally, LAWC would implement Environmental Commitments GEN-3 (Limit Work Crew Personnel), GEN-4 (Limit Work Areas), GEN-5 (Worker Environmental Awareness Program), and GEN-8 (Backfill/Borrow Limitations) to further avoid and/or minimize impacts to cultural resources during construction. Consequently, the Proposed Action is not expected to result in direct impacts on known cultural resource sites located within the APE defined for the Proposed Action.

Operation and Maintenance

Portions of the Millard Canyon and Sunset Ridge Trails traverse the APE, and Locus D of the Millard Canyon Trail, a small cobble and concrete dam and reservoir that serves as a diversion structure, is part of the LAWC system. The Sunset Ridge Trail (FS-05-01-51-118) is associated with travel routes to the former Camp Merriman/Camp Sierra, which existed from 1904 to 1934. Millard Canyon Trail (FS-05-01-51-114) was used as an access route for historic irrigation pipelines, mining ventures, and recreational residences. The trails have not been formally evaluated, and therefore must be treated as if they are eligible for inclusion in the NRHP. Operation and maintenance activities would consist of periodic inspections, measurement recordings, and clearing of debris and/or sediment. Access to LAWC equipment and facilities would occur along portions of Sunset Ridge Trail and Millard Canyon Trail and would be limited to small (2-3 person) crews on an as-needed basis. Each of these trails is frequently utilized by Forest Service personnel and recreational users. Operation and maintenance activities that would be implemented as part of the Proposed Action do not represent a level of activity that would constitute a change from the existing conditions, and are not expected to impact cultural resources.

3.3.4.2 No Action Alternative

Under the No Action Alternative, the Forest Service would not renew LAWC's Special Use Permits #LAR412601 and #LAR412602. Additionally, pipeline replacement and reroute construction activities on ANF lands would not occur. As a result, any impacts to cultural resources due to implementation of this alternative would not occur within ANF boundaries. The Forest Service would continue management of ANF lands, regardless of whether or not the Proposed Action is implemented. Under the No Action Alternative, LAWC would be required to implement an alternative action plan in order to continue to provide a reliable water supply service and to meet future public demands. This new action plan may include the construction of new equipment and facilities on non-ANF lands at locations that have yet to be determined. However, it is reasonably expected that these new facilities would require extensively greater construction activities compared to those discussed for repairs to existing equipment under the Proposed Action. Therefore, impacts to cultural resources, should they occur in areas where new equipment and facilities would be constructed, would be potentially greater in nature and magnitude to those described under the Proposed Action due to the greater degree of construction that would be required.

3.3.4.3 Cumulative Impacts to Cultural Resources

Section 106 regulations (Protection of Historic Properties) make explicit reference to cumulative impacts only in the context of a discussion of the Criteria of Adverse Effects (36 CFR § 800.5(a)(1)). Cumulative impacts are largely undifferentiated as an aspect of the potential impacts of an undertaking. Such impacts are enumerated and resolved in conjunction with the consideration of direct and indirect impacts.

There are a variety of ongoing and historic Forest Service projects that have occurred or are occurring in the vicinity of the study area. Ongoing and historic activities include major electrical utility corridors, road construction/maintenance/use, fire fighting, and routine improvements to existing facilities such as repairs to fences, pipelines, government facilities, and water storage reservoirs. Ongoing activities in the region would include major construction activities associated with the implementation of the approved TRTP, operation and maintenance of multiple dams and reservoirs, use and maintenance of the Angeles National Highway (SR-2) and other roadways, fire remediation of recent forest fires, ongoing fuels management activities, storm-related road repairs, slope stabilization, and road maintenance to existing SCE transmission towers. Millard Canyon and associated day use areas provide developed recreational activities. Other recreational activities in the area include hiking, mountain biking, camping, hunting, and off highway vehicle use.

Construction activities associated with the pipeline replacement and reroute component of the Proposed Action would be limited to an existing section of a paved access road. These activities would be local and temporary in nature. Ongoing operation and maintenance would occur on an “as-needed” basis and would include periodic inspections, debris clearance, and repairs, as necessary. Furthermore, there are no other known water diversion practices occurring within the study area. As a result, effects associated with the pipeline replacement and reroute and ongoing operation and maintenance activities are expected to represent a negligible contribution to cumulative impacts. Any potential impacts of both the Proposed Action and the No Action Alternative to cultural resources would be site-specific in nature and would not have the potential to combine with similar impacts of other projects.

3.4 Environmental Contamination and Hazards_____

According to the Department of Toxic Substances Control’s (DTSC) Hazardous Waste and Substances’ site “Cortese” List, no hazardous waste facilities subject to corrective action are located within the study area (DTSC, 2009). In addition, the Geotracker database, which is maintained by the State Water Resources Control Board (SWRCB) and tracks regulatory data about leaking underground fuel tanks (LUFT), Department of Defense (DoD) Spills-Leaks-Investigations-Cleanups (SLIC), and landfill sites, does not list any sites located within or adjacent to the study area (SWRCB, 2009).

3.4.1 Conformance to 2005 ANF Forest Plan

The governing 2005 ANF Forest Plan includes Goal 5.1 (Improve watershed conditions through cooperative management), which requires that Forest Service management activities are planned and implemented in a manner that minimizes the risk to forest

ecosystems from hazardous materials. In addition, Part 2 of the Forest Plan includes Management Strategy WAT 3 (Hazardous Materials), which is intended to manage known hazardous materials risks on ANF lands. As mentioned, the study area does not include and is not adjacent to any known hazardous sites or materials. All activities associated with the Proposed Action would occur in coordination with the Forest Service, thereby ensuring consistency with the Forest Plan Goals and Management Strategies. The Proposed Action would be in compliance with the 2005 Forest Plan.

3.4.2 Impacts from Environmental Contamination and Hazards

This section discusses potential safety concerns associated with the Proposed Action and No Action Alternative. Impacts are assessed according to the potential for increased safety risks to construction personnel, the public, and property. Impacts are identified based on the predicted interaction between construction and operation, and maintenance activities with existing (baseline) conditions. Potential impacts with respect to environmental contamination and hazards are discussed in this section with regards to the indicator criteria presented in Table 1-2, and Environmental Commitments, included as part of the Proposed Action, are identified where applicable.

3.4.2.1 Proposed Action

3.4.2.1.1 Result in soil contamination, including flammable and/or toxic gases at levels exceeding federal, State, or local hazardous waste limits established by CFR Part 261 and Title 22 CCR 66262.21, 66261.22, 66261.23, and 66261.24

Pipeline Replacement and Reroute

Construction and excavation activities associated with the pipeline replacement and reroute component of the Proposed Action would include the use of heavy equipment and vehicles. Gasoline, diesel fuel, oil, hydraulic fluid, lubricants, paints, solvents, adhesives, and cleaning chemicals used in construction activities, equipment, and vehicles may be released during construction as a result of accidents, and/or leaking equipment or vehicles. Environmental Commitment HAZ-1 (Spill Prevention and Contingency Plan) would be implemented as part of the Proposed Action and would avoid and/or minimize the potential for an accidental release of hazardous materials to occur. In the case that an accidental release does occur, provisions included in Environmental Commitment HAZ-1 would ensure that appropriate actions are taken to avoid environmental effects such as degradation of soils or water resources in the area.

Operation and Maintenance

Operation and maintenance activities considered under the Proposed Action would consist of small (2-3 person) crews utilizing non-motorized handtools, such as pick axes and shovels. As such, the use of heavy equipment and/or motorized handtools that could potentially result in accidental releases of pollutants that contaminate soil would be prohibited during these activities. Access to locations where operation and maintenance activities would occur would be by vehicle or on foot and would be limited to existing roads and trails that are frequently used by Forest Service personnel and recreational users. Operation and maintenance activities would occur on an “as needed” basis and

would not constitute a significant increase to existing activities along roads and trails. This level of activity would not introduce the potential for environmental contamination or release of hazardous materials to occur at a level in excess of those permitted by federal or State OSHA standards. Therefore, impacts associated with soil contamination are not expected to occur as a result of implementation of operation and maintenance activities under the Proposed Action.

3.4.2.1.2 Result in mobilization of contaminants currently existing in the soil, creating potential pathways of exposure to humans or other sensitive receptors

Pipeline Replacement and Reroute

The proposed construction activities would occur within a previously disturbed area where no known hazardous materials have been identified. It is not expected that these activities would result in encountering contaminants or potentially hazardous materials. Environmental Commitment HYD-1 (Implement an Erosion Control Plan/SWPPP and Best Management Practices), which is included as part of the Proposed Action, requires that a SWPPP is prepared in compliance with Section 402 of the Clean Water Act, and that the SWPPP includes hazardous materials handling procedures to reduce the potential for a spill during construction, as well as an emergency response program to ensure quick and safe cleanup of accidental spills.

Operation and Maintenance

Operation and maintenance activities would include major debris and/or sediment removal from intake structures when necessary. Sediment that is removed from intake areas would be relocated to an area downstream that is outside of the existing low flow channel. These activities could potentially result in the mobilization of contaminants should they exist in sediment that is being removed and relocated downstream. However, Millard and El Prieto Canyons are relatively undisturbed and constrained with minimal activities occurring in upstream reaches that would provide contamination point sources. Additionally, Millard Creek and the unnamed tributary in El Prieto Canyon exhibit periodic flows that would be substantial enough to carry sediment from the diversion structures to areas downstream under natural conditions. Therefore, impacts associated with the mobilization of contaminants currently existing in the soil are not expected to occur as a result of implementation of the operation and maintenance component of the Proposed Action.

3.4.2.1.3 Cause contamination of soils or groundwater within the study area during operation of the Project, resulting in exposure of workers and/or the public to contaminated or hazardous materials at levels in excess of those permitted by the California Occupations Safety and Health Administration (Cal-OSHA) in CCR Title 8 and the Federal Occupational Safety and Health Administration (OSHA) in Title 29 CFR Part 1910

Pipeline Replacement and Reroute

Soil or groundwater contamination could result from accidental spill or release of hazardous materials during replacement of the corroded water pipeline in Millard

Canyon, particularly associated with the use of construction vehicles and equipment during excavation activities. However, Environmental Commitments HAZ-1 (Spill Prevention and Contingency Plan) and HYD-1 (Implement an Erosion Control Plan/SWPPP and Best Management Practices), which are described above and included as part of the Proposed Action, would avoid and/or minimize the potential for such impacts to occur.

Operation and Maintenance

Operation and maintenance activities considered under the Proposed Action would consist of small (2-3 person) crews utilizing non-motorized handtools, such as pick axes and shovels. As such, the use of heavy equipment and/or motorized handtools that could potentially result in accidental releases of pollutants that contaminate soil or groundwater would be prohibited during these activities. Access to locations where operation and maintenance activities would occur would be by vehicle or on foot and would be limited to existing roads and trails that are frequently used by Forest Service personnel and recreational users. Operation and maintenance activities would occur on an “as needed” basis and would not constitute a significant increase to existing activities along roads and trails. Therefore, impacts associated with soil and/or groundwater contamination are not expected to occur as a result of implementation of operation and maintenance activities under the Proposed Action.

3.4.2.2 No Action Alternative

Under the No Action Alternative, the Forest Service would not renew LAWC’s Special Use Permits #LAR412601 and #LAR412602. Additionally, pipeline replacement and reroute construction activities on ANF lands would not occur. As a result, any impacts associated with environmental contamination and hazards due to implementation of this alternative would not occur within ANF boundaries. The Forest Service would continue management of ANF lands, regardless of whether or not the Proposed Action is implemented. Under the No Action Alternative, LAWC would be required to implement an alternative action plan in order to continue to provide a reliable water supply service and to meet future public demands. This new action plan may include the construction of new equipment and facilities on non-ANF lands at locations that have yet to be determined. However, it is reasonably expected that these new facilities would require extensively greater construction activities compared to those discussed for repairs to existing equipment under the Proposed Action.

Although the locations for any new facilities have yet to be determined, any selected sites with known environmental contamination would be required by law to be investigated and remediated in accordance with regulatory agency standards prior to redevelopment. In addition, areas with previously unknown contamination discovered during planning would be subject to reporting and cleanup pursuant to current laws and agency standards. As described under the Proposed Action, use of heavy equipment and vehicles during construction would include the use of potentially hazardous materials such as gasoline, diesel fuel, oil, hydraulic fluid, lubricants, paints, solvents, adhesives, and cleaning chemicals. As activities implemented under this alternative may require a greater degree of

construction on non-ANF lands, the potential for accidental release or spills of environmental contaminants would be substantially greater as compared to the Proposed Action.

3.4.2.3 Cumulative Impacts

There are a variety of ongoing and historic Forest Service projects that have occurred or are occurring in the vicinity of the study area. Ongoing and historic activities include electrical utility corridors, roadway construction and usage, fire fighting, and routine improvements to existing facilities such as repairs to fences, pipelines, government facilities, and water storage reservoirs. Ongoing activities in the study area and surrounding vicinity include major construction activities associated with the implementation of the approved TRTP, operation and maintenance of multiple dams and reservoirs, use and maintenance of the Angeles National Highway (SR-2) and other roadways, fire remediation of recent forest fires, ongoing fuels management activities, storm-related road repairs, slope stabilization, and road maintenance to existing SCE transmission towers. Millard Canyon and associated day use areas provide developed recreational activities. Other recreational activities in the area include hiking, mountain biking, camping, hunting, and off highway vehicle use.

Construction activities associated with the Proposed Action would be limited to an existing section of a paved access road. These activities would be local and temporary in nature. As described above, there is potential for construction of the Proposed Action to result in impacts to environmental contamination and hazards, including those related to the accidental release of hazardous materials and potential encountering of unknown hazardous materials. With implementation of Environmental Commitment HYD-1 and compliance with existing laws and regulations, including preparation of a SWPPP, these potential impacts would be minimized and/or avoided. During operation of the Proposed Action, ongoing maintenance activities would occur on an as-needed basis and would include periodic inspections, debris clearance, and repairs, as necessary. These activities would include the use of vehicles for transport to and from the site, although non-motorized handtools such as pick axes and shovels would be used to perform any required maintenance activities, thus minimizing the potential for impacts to occur, including as associated with the accidental release of hazardous materials. Due to the temporary and localized nature of potential impacts, the potential for environmental contamination and hazards impacts of the Proposed Action to combine with similar impacts of other projects is considered unlikely and impacts associated with the pipeline replacement and reroute and ongoing operation and maintenance activities are expected to represent a negligible contribution to cumulative impacts.

3.5 Geological/Soil Resources

The study area is located within the San Gabriel Mountains, which are part of the Transverse Ranges. This is a 35 km-wide by 110 km-long, WNW-trending uplift bounded by the right-lateral San Andreas Fault on the north and the Fernando-Sierra Madre-Cucamonga faults on the south. The range is mainly composed of a complex of igneous and metamorphic rocks of Precambrian to early Cenozoic age. These igneous rocks include a diverse assemblage of Precambrian anorthosite-gabbro and Mesozoic granitic rocks (granodiorite, quartz monzonite, quartz diorite, gabbro) which complexly

intrude various metamorphic rocks (gneiss, schist, and mylonite) of Precambrian to Mesozoic age. Sedimentary rocks (sandstone, shale, siltstone, and conglomerate) of Cenozoic age locally overlie the crystalline rocks mostly in the westernmost part of the range and occur extensively in the Santa Susana Mountains and unnamed hills to the north (McCalpin & Hart, 2002).

3.5.1 Conformance to 2005 ANF Forest Plan

The Forest Service issues permits authorizing both project-related identification and mitigation efforts in addition to research-related investigations based on the provisions of the Federal Land Policy and Management Act of 1976 (FLPMA) (43 USC 1701 1782) and the Antiquities Act of 1906. Regulations promulgated under 36 CFR 261 state that each Regional Forester has jurisdiction over “protection of objects or places of historical, archaeological, geological or paleontological interest” (36 CFR 261.70(a)(5)), and that the following are prohibited: “Excavating, damaging, or removing any vertebrate fossil or removing any paleontological resource for commercial purposes without a special use permit” (36 CFR 261.9 (g)). FSM Chapter 2880 - Geologic Resources, Hazards, and Services contains policies and regulations related to paleontologic resource management and preservation. Forest Service policy makes the salvage of known paleontological resources a standard condition of their Special Use Permits. Treatment standards are specific to each forest and rely heavily upon implementation of a mitigation plan developed under the auspices of professional paleontologists at regional museums and universities.

3.5.2 Impacts to Geological/Soil Resources

Protection of unique geologic features and minimization of soil erosion are considered when evaluating potential impacts to geological resources, as well as limitations due to potential geologic hazards. Impacts to geological resources are identified based on the predicted interaction between construction and operation, and maintenance activities with existing (baseline) conditions. Potential impacts to geological resources are discussed in this section with regards to the indicator criteria presented in Table 1-2, and Environmental Commitments, included as part of the Proposed Action, are identified where applicable.

3.5.2.1 Proposed Action

3.5.2.1.1 Expose people or structures to substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault, strong seismic ground shaking, seismic-related ground failure, such as liquefaction and/or landslide

Pipeline Replacement and Reroute

The study area is located within a seismically active area of southern California, and it is reasonably foreseeable that seismic activity will occur following implementation of construction activities associated with the pipeline and replacement component of the Proposed Action. Environmental Commitments included as part of the Proposed Action would minimize and/or avoid potential adverse effects associated with the rupture of a

known earthquake fault, strong seismic ground shaking, seismic-related ground failure, and/or landslides. In accordance with Environmental Commitment GEO-1 (Seismic Design and Geotechnical Studies), LAWC will conduct a geotechnical study prior to any construction activities to identify site-specific geologic conditions and potential hazards to support good engineering practice. The geotechnical study will include design and construction recommendations to avoid and/or minimize potential impacts from geologic hazards or soil conditions.

Operation and Maintenance

Operation and maintenance activities would be limited to small (2-3 person) crews and would be short-term and local in nature. Therefore, these activities are not expected to be conducted at a level that would result in impacts associated with major seismic events or ground failure.

3.5.2.1.2 Result in substantial soil erosion or the loss of topsoil

Pipeline Replacement and Reroute

Relocation of the corroded water pipeline in Millard Canyon would require excavation of an approximately 2-foot wide and 2½ to 3-foot deep trench within an existing paved roadway, which would be backfilled, compacted, and capped with an asphalt basecoat of no less than 2 inches following placement of the new pipeline. Implementation of the Erosion Control Plan and SWPPP, along with Best Management Practices, as described under Environmental Commitment HYD-1 (Implement an Erosion Control Plan/SWPPP and Best Management Practices) and HYD-2 (Dry Weather Construction) would avoid and/or minimize potential impacts associated with these soil-disturbing activities. The Proposed Action is not expected to result in substantial erosion or loss of topsoil.

Operation and Maintenance

Operation and maintenance activities would include major debris and/or sediment removal, when necessary. These activities, which would be short-term and localized, would involve removing accumulated sediment from the intake structures located along Millard Creek and the unnamed tributary in El Prieto Canyon and relocating it to downstream locations outside of the active low flow channel. The levels and frequency at which these activities would occur are not expected to result in substantial soil erosion or the loss of topsoil. Additionally, major debris and/or sediment removal efforts would occur within areas that are routinely subject to flows that are substantial enough to naturally carry sediment downstream. Nonetheless, LAWC would implement Environmental Commitments GEN-1 (Regulatory Compliance), which would ensure that all operation and maintenance activities are in compliance with issued regulatory permits/authorizations; GEN-10 (Prepare and Implement an Operation and Maintenance Plan), which would ensure that all operation and maintenance activities are conducted under the context of a Forest Service approved plan; and, BIO-4 (Biological Monitor), which would require the presence of a Forest Service approved biological monitor throughout the duration of any major debris and/or sediment removal activities, to further avoid and/or minimize impacts associated with substantial soil erosion or the loss of topsoil.

3.5.2.1.3 Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the Project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse

Pipeline Replacement and Reroute

The pipeline replacement would occur in a previously disturbed area, an existing roadway, where soils are stable. The proposed construction activities would be isolated to the roadway, and would not result in soil instability. Soil surveys of the roadway are not necessary to ensure that the proposed 1,400-foot replacement pipeline would not be located on a geologic unit or soil that is unstable or that would become unstable as a result of implementation of the Proposed Action. Therefore, impacts associated with the location of features on an unstable geologic unit or soil are not expected to occur.

Operation and Maintenance

All operation and maintenance activities associated with the Proposed Action would be conducted at existing equipment and facilities which would be accessed along existing roads and trails. As such, this level of activity is not expected to result in impacts related to the instability, or the potential to induce the instability, of any geologic unit or soils.

3.5.2.2 No Action Alternative

Under the No Action Alternative, the Forest Service would not renew LAWC's Special Use Permits #LAR412601 and #LAR412602. Additionally, pipeline replacement and reroute construction activities on ANF lands would not occur. As a result, any impacts to geologic or soil resources due to implementation of this alternative would not occur within ANF boundaries. The Forest Service would continue management of ANF lands, regardless of whether or not the Proposed Action is implemented. Under the No Action Alternative, LAWC would be required to implement an alternative action plan in order to continue to provide a reliable water supply service and to meet future public demands. This new action plan may include the construction of new equipment and facilities on non-ANF lands at locations that have yet to be determined. However, it is reasonably expected that these new facilities would require extensively greater construction activities compared to those discussed for repairs to existing equipment under the Proposed Action.

New developments would be subject to existing and new building codes that restrict development in geologically unstable areas. In addition, areas with previously unknown geologic hazards and unsuitable soil that could be potentially discovered during planning would require analysis, implementation of the required design and construction standards, or avoidance. However, due to the substantially greater degree of construction that may be required under the No Action Alternative, subsequent impacts related to erosion or the loss of topsoil would be potentially more substantial compared to the Proposed Action.

3.5.2.3 Cumulative Impacts

There are a variety of ongoing and historic Forest Service projects that have occurred or are occurring in the vicinity of the study area. Ongoing and historic activities include

electrical utility corridors, roadway construction and usage, fire fighting, and routine improvements to existing facilities such as repairs to fences, pipelines, government facilities, and water storage reservoirs. Ongoing activities in the study area and surrounding vicinity include major construction activities associated with the implementation of the approved TRTP, operation and maintenance of multiple dams and reservoirs, use and maintenance of the Angeles National Highway (SR-2) and other roadways, fire remediation of recent forest fires, ongoing fuels management activities, storm-related road repairs, slope stabilization, and road maintenance to existing SCE transmission towers. Millard Canyon and associated day use areas provide developed recreational activities. Other recreational activities in the area include hiking, mountain biking, camping, hunting, and off highway vehicle use.

The Proposed Action would be implemented in accordance with Environmental Commitment GEO-1, including preparation of a geotechnical study to identify site-specific geologic conditions and potential hazards to support good engineering practice. Through consideration of the findings of this study, conformance with good engineering practice, and compliance with Environmental Commitments HYD-1 (Implement an Erosion Control Plan/SWPPP and Best Management Practices) and HYD-2 (Dry Weather Construction), impacts associated with geologic hazards or soil conditions as a result of implementation of the Proposed Action would be minimized and/or avoided. Due to the site-specific nature of construction activities within the roadway and the minimization of potential impacts as described above, potential geologic and/or soils impacts during construction of the Proposed Action would not have potential to combine with similar impacts of other projects such that a significant cumulative effect would occur. Ongoing operation and maintenance would occur on an as-needed basis and would include periodic inspections, debris clearance (with hand-held non-motorized tools), and infrastructure repairs, as necessary. These activities would be temporary and site-specific, limited to the pipeline alignment, and would not result in impacts to geology and soils that would have potential to combine with impacts of other projects such that cumulative effects would occur during operation and maintenance.

3.6 Hydrology and Water Quality

The study area is located within the Monk Hill Hydrologic Subarea (HSA) of the Raymond Hydrologic Area (HA), which is located within the Los Angeles River Hydrologic Unit (HU) and the South Coast Hydrologic Region (HR). The Monk Hill HSA encompasses approximately 20,359 acres, or 31.8 square miles (CSUS, 2009). Water quality regulation for this area is governed by the Los Angeles RWQCB.

The study area includes two perennial streams, which are waterways that flow all or most of the year and are shown as a solid or broken blue line on 7.5 Minute Series quadrangle maps prepared by the U.S. Geological Survey (USGS). One perennial stream is located in Millard Canyon (Millard Creek) and one is located in El Prieto Canyon (unnamed tributary). Millard Creek is a perennial spring-fed waterway that connects downstream with the Arroyo Seco (AFC, 2009). The Los Angeles RWQCB lists ten existing beneficial uses for this waterway, including municipal and domestic water supply, groundwater recharge, warm freshwater habitat, and wetland for the creek (AFC, 2009). Neither Millard Creek nor the unnamed tributary in El Prieto Canyon is listed as impaired

on the 2006 Clean Water Act Section 303(d) List of Water Quality Limited Segments (SWRCB, 2006).

3.6.1 Conformance to 2005 ANF Forest Plan

The governing 2005 Forest Plan for the ANF includes a description of Program Strategies (Part 2, Appendix B) which address goals for hydrology and water quality, including the following: Watershed Function (Protect, maintain and restore natural watershed functions including slope processes, surface water and groundwater flow and retention, and riparian area sustainability); Water Management (Manage groundwater and surface water to maintain or improve water quantity and quality in ways that minimize adverse effects); and, Hazardous Materials (Manage known hazardous materials risks). Proposed Action activities would include the implementation of Environmental Commitments that avoid and/or minimize potential hydrology and water quality impacts, thus complying with the Forest Service’s goals towards Watershed Function, Water Management, and Hazardous Materials.

3.6.2 Impacts to Hydrology and Water Quality

Impacts to hydrology and water quality are assessed and identified based on the predicted interaction between construction and operation and maintenance activities with existing (baseline) conditions. Potential impacts to hydrology and water quality are discussed in this section with regards to the indicator criteria presented in Table 1-2, and Environmental Commitments, included as part of the Proposed Action, are identified where applicable.

3.6.2.1 Proposed Action

3.6.2.1.1 Violate any water quality standards or waste discharge requirements, create any substantial new sources of polluted runoff, or otherwise degrade water quality

Pipeline Replacement and Reroute

During construction, temporary water quality degradation could potentially occur as a result of soil erosion and sedimentation, or due to the accidental spill or release of hazardous materials. Construction activities associated with the replacement and reroute of the water pipeline in Millard Canyon include soil disturbance, particularly associated with the excavation within Mount Lowe Road, which could potentially result in soil erosion, particularly if a precipitation event occurs while soils are disturbed. In addition, the use of heavy construction equipment and vehicles could result in an accidental release or discharge of pollutants such as sediments, oils, fuels, and other equipment fluids. The release of pollutants into surface waters could result in contamination of surface and/or groundwater if released materials are mobilized and eventually percolate into the Raymond Groundwater Basin, located downstream of the study area. However, the implementation of Environmental Commitments included as part of the Proposed Action would ensure that construction activities are in compliance with all water quality standards and waste discharge requirements, and would avoid and/or minimize the potential for such activities to create new sources of polluted runoff or otherwise degrade water quality. In addition, construction activities would not occur in waters under federal

or State jurisdiction; no direct or indirect impacts to federal waters/wetlands of the U.S. and/or waters of the State would occur as a result of implementation of the pipeline replacement and reroute component of the Proposed Action.

Environmental Commitment HYD-1 (Implement an Erosion Control Plan/SWPPP and Best Management Practices) requires that LAWC prepare an Erosion Control Plan and implement Best Management Practices with approval from the Forest Service, and that the Project's SWPPP, to be prepared in compliance with Section 402 of the Clean Water Act, is approved by the Los Angeles RWQCB. In addition, Environmental Commitment HYD-2 (Dry Weather Construction) would prevent excessive erosion and protect aquatic resources by restricting construction activities during precipitation events. No new impervious area would be introduced as a result of construction activities and existing rates and quality of runoff in the study area would not be altered.

Operation and Maintenance

Potential direct and indirect impacts to jurisdictional waters are described in Section 3.2 (Biological Resources). Operation and maintenance of the Proposed Action would include regular inspections of infrastructure, monitoring of flow levels, and debris and sediment removal conducted as needed to ensure functionality of the water distribution system and to avoid potential issues associated with the accumulation of excess materials. Debris and sediment removed during operation and maintenance would be evenly spread downstream of the diversion structure and outside of the active flow channel. These materials could potentially be mobilized during a precipitation event and transported downstream to the active flow channel; however, under without-project conditions such materials would naturally mobilize through the watershed, and the presence of the Proposed Action would not result in an adverse effect associated with the introduction of a new source of polluted runoff. In addition, Environmental Commitment GEN-1 (Regulatory Compliance) requires that LAWC personnel shall possess copies of all applicable regulatory permits and/or authorizations, including NFS Special Use Permits #LAR412601, #LAR412602, Section 404 Authorization, Section 401 Water Quality Certification/Authorization, and a Section 1602 Streambed Alteration Agreement. Operation and maintenance of the Proposed Action would be in compliance with all water quality standards and waste discharge requirements, would avoid creating new sources of polluted runoff, and would not otherwise degrade water quality.

3.6.2.1.2 Substantially deplete groundwater supplies or interfere with groundwater recharge, such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table

Pipeline Replacement and Reroute

The study area is not underlain by a named or identified groundwater basin. The Raymond Groundwater Basin is located just to the south of the study area, and receives natural recharge through percolation of streamflow from the San Gabriel Mountains (DWR, 2003). Groundwater resources would not be encountered during implementation of activities associated with the proposed pipeline replacement. Therefore, this component of the Proposed Action would not deplete groundwater supplies or interfere with groundwater recharge.

Operation and Maintenance

One of the concerns that was addressed during public scoping included the depletion of water that may serve as a source for groundwater recharge in Millard Canyon. One commenter suggested that the water table in Millard Canyon had receded by more than two feet between the waterfall and Millard Campground. While this issue was determined to be non-significant due to a lack of scientific evidence, it is likely that the continual diversion of water from the area upstream of this location has limited the amount of water available for recharge. However, LAWC continues to conduct current operations, including the diversion of surface water along Millard Creek, within the context of their existing water rights, which were established several decades ago. Nonetheless, the implementation of Environmental Commitment GEN-9 (Install Modulated Control Valve at North Coulter Reservoir) would minimize impacts associated with the potential depletion of groundwater recharge in Millard Canyon by releasing flows from North Coulter Reservoir at the intake point above the waterfall, rather than at the current release point below Millard Campground. Additional operation and maintenance activities, such as inspections, measurement recordings, and debris and/or sediment removal, are not expected to result in impacts to groundwater supplies.

3.6.2.1.3 Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion, siltation, or other flood-related damage on- or off-site

Pipeline Replacement and Reroute

Following installation of the replacement pipeline within Mount Lowe Road, the excavated trench would be backfilled, compacted, and capped with an asphalt basecoat, thus returning the roadway to existing conditions. No new impervious area would be introduced as a result of construction activities associated with the Proposed Action. Therefore, implementation of this component of the Proposed Action would not result in impacts associated with the altering of the existing drainage pattern of the construction site or study area.

Operation and Maintenance

Although current operational activities include the diversion of surface flows in Millard Canyon and El Prieto Canyon, these activities have been occurring over the past several decades. As such, continuing current operations of the LAWC alignments at these locations would not introduce impacts that would substantially alter existing drainage patterns in a manner which would result in new incidents of erosion or siltation. Additional operation and maintenance activities, including major debris and/or sediment removal would be conducted under the context of required regulatory permits, as defined in Environmental Commitment GEN-1 (Regulatory Compliance), and a Forest Service approved Operation and Maintenance Plan, as defined under Environmental Commitment GEN-10 (Prepare and Implement an Operation and Maintenance Plan). Implementation of these Environmental Commitments would avoid and/or minimize any operation and maintenance impacts associated with substantial alterations to existing drainage patterns.

3.6.2.1.4 Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site, or otherwise create or contribute to runoff water which would exceed the capacity of existing or planned stormwater drainage systems

Pipeline Replacement and Reroute

The rate and amount of surface runoff is determined by multiple factors, including the following: (1) amount and intensity of precipitation; (2) amount of other imported water that enters a watershed; and (3) amount of precipitation and imported water that infiltrates to the groundwater. Construction activities associated with the Proposed Action would not alter any precipitation amounts or intensities, nor would they require any additional water to be imported into the study area. Additionally, no new impervious surfaces would be introduced as a result of this component of the Proposed Action. Therefore, activities associated with the pipeline replacement and reroute component of the Proposed Action would not increase the rate or amount of surface runoff, and would not result in flooding on- or off-site, or otherwise create or contribute to runoff water which would exceed the capacity of existing or planned stormwater drainage systems.

Operation and Maintenance

As with construction, operation and maintenance of the Proposed Action would not alter any precipitation amounts or intensities, would not require water to be imported into the study area, and would not introduce new impervious surfaces. Inspections, monitoring, and clearing activities that would occur during operation and maintenance of the Proposed Action would not increase the rate or amount of surface runoff, and would not result in flooding on- or off-site, or otherwise create or contribute to runoff water which would exceed the capacity of existing or planned stormwater drainage systems.

3.6.2.1.5 Place housing within a 100-year floodplain as shown in the FEMA Insurance Rate maps

Pipeline Replacement and Reroute

The study area is not located within a Flood Hazard Area (FHA), as designated by the Federal Emergency Management Agency (FEMA) and no infrastructure, including housing, would be placed within a 100-year floodplain (FEMA, 2005).

Operation and Maintenance

Operation and maintenance activities that would be implemented as part of the Proposed Action would not introduce new infrastructure and the study area is not located within a FHA. Therefore, impacts associated with placing housing within a 100-year floodplain would not occur.

3.6.2.2 No Action Alternative

Under the No Action Alternative, the Forest Service would not renew LAWC's Special Use Permits #LAR412601 and #LAR412602. Additionally, pipeline replacement and reroute construction activities on ANF lands would not occur. As a result, any impacts to hydrology and water quality due to implementation of this alternative would not occur within ANF boundaries. The Forest Service would continue management of ANF lands,

regardless of whether or not the Proposed Action is implemented. Under the No Action Alternative, LAWC would be required to implement an alternative action plan in order to continue to provide a reliable water supply service and to meet future public demands. This new action plan may include the construction of new equipment and facilities on non-ANF lands at locations that have yet to be determined. However, it is reasonably expected that these new facilities would require extensively greater construction activities compared to those discussed for repairs to existing equipment under the Proposed Action.

Under the No Action Alternative, surface waters in Millard Creek and the unnamed tributary in El Prieto Canyon would no longer be diverted and these drainages would return to natural conditions, supporting flow in response to natural hydrologic conditions. As such, the No Action Alternative would result in improved hydrologic conditions, compared to the existing environmental setting and impacts associated with the Proposed Action. However, the No Action Alternative would require that LAWC implement an alternative action plan which may include construction on non-ANF lands, and such construction of new facilities would involve more extensive construction activities than required for repairs to existing infrastructure as included under the Proposed Action. As such, although the No Action Alternative would return Millard Creek and the El Prieto Canyon tributary to natural conditions, it would likely result in greater water quality impacts on non-ANF lands, potentially affecting downstream waterways in the same hydrologic system described for the Proposed Action. Therefore, depending on existing conditions at that site/area affected by construction of the aforementioned alternative action plan, additional hydrology and water quality effects could occur under the No Action Alternative, including as related to effects to groundwater, alteration of existing drainage patterns, increased rate or amount of surface water runoff, and the placement of infrastructure within a designated Flood Hazard Area. It is reasonably anticipated that the replacement pipeline would introduce impacts associated with hydrology and water quality that are similar in nature and magnitude to those described under the Proposed Action, except that under the No Action Alternative such impacts would occur on non-ANF lands.

3.6.2.3 Cumulative Impacts

There are a variety of ongoing and historic Forest Service projects that have occurred or are occurring in the vicinity of the study area. Ongoing and historic activities include electrical utility corridors, roadway construction and usage, fire fighting, and routine improvements to existing facilities such as repairs to fences, pipelines, government facilities, and water storage reservoirs. Ongoing activities in the study area and surrounding vicinity include major construction activities associated with the implementation of the approved TRTP, operation and maintenance of multiple dams and reservoirs, use and maintenance of the Angeles National Highway (SR-2) and other roadways, fire remediation of recent forest fires, ongoing fuels management activities, storm-related road repairs, slope stabilization, and road maintenance to existing SCE transmission towers. Millard Canyon and associated day use areas provide developed recreational activities. Other recreational activities in the area include hiking, mountain biking, camping, hunting, and off highway vehicle use.

Construction activities associated with the Proposed Action would be limited to an existing section of a paved access road. These activities would be local and temporary in

nature. Ongoing operation and maintenance would occur on an as-needed basis and would include periodic inspections, debris clearance, and repairs, as necessary. Furthermore, there are no other known water diversion practices occurring within the study area. As a result, effects to hydrology and water quality associated with the Proposed Action are expected to be location-specific and would represent a minor contribution to cumulative impacts.

3.7 Land Use

The study area is located entirely on ANF lands, and is predominantly characterized by open space and recreation, with some rural residential uses. Proposed Action activities would occur in an area that is currently subjected to relatively high levels of disturbance due to recreational use. Access to the study area would be provided via Chaney Trail Road, Mount Lowe Road, and Brown Mountain Road, each of which portions are open to public travel; however, the section of Mount Lowe Road that would be subjected to pipeline replacement and reroute construction activities is not open to public vehicular use.

3.7.1 Conformance to 2005 ANF Forest Plan

The study area is situated within the Developed Area Interface (DAI) Land Use Zone of The Front Country Place, as designated by the governing 2005 Forest Plan. Management emphasis is on protecting communities from the threat of fire, accommodating high levels of recreational use, and maintaining urban and ANF infrastructure (facilities). An extensive trail network is managed to provide opportunities for hiking, biking, equestrian trips, and linkages to the national forest trail network and the Pacific Crest Trail (USDA Forest Service, 2005a). The study area is used by the public for recreational purposes, and for access to recreational trails, cabins, and other areas of the ANF. The portion of Mount Lowe Road within which the replacement pipeline would be placed is not open to public vehicular use, but is open to pedestrian traffic.

As described above under “Purpose and Need for Action,” this Proposed Action responds to the goals and objectives outlined in the 2005 Forest Plan, and helps move the study area towards desired conditions described in the Forest Plan. Within the strategic management direction provided in Part 2 of the Forest Plan, land use zones are designated to show allowable uses and opportunities. Part 2 of the Forest Plan additionally contains a suite of special designation overlays to the primary land use zones. Suitable uses established by the land use zones are generally suitable with these overlays unless specifically excluded. Part 2 of the Forest Plan also subdivides the ANF into geographical “Places,” for which the desired condition and the program emphasis is described for each. Part 2 of the Forest Plan notes the program emphasis and objectives for non-recreation special uses is to manage infrastructure needs to support communities while preserving open space and natural settings. Special uses are authorized only when they cannot be reasonably accommodated on non-NFS lands. Maintaining open space is given priority over accommodating urban needs (USDA Forest Service, 2005a).

3.7.2 Impacts to Land Use

Land use impacts are evaluated based on the predicted interaction between construction, operation, and maintenance activities with existing (baseline) conditions. Potential impacts with respect to land use are discussed in this section with regards to the indicator criteria presented in Table 1-2, and Environmental Commitments, included as part of the Proposed Action, are identified where applicable.

3.7.2.1 Proposed Action

3.7.2.1.1 Inconsistency or non-conformance with applicable land use plans or policies

Pipeline Replacement and Reroute

As required by Environmental Commitment GEN-1 (Regulatory Compliance), which is included as part of the Proposed Action, LAWC would coordinate with the Forest Service to ensure the Proposed Action is consistent with the Forest Plan, and LAWC would also submit proof to the Forest Service that all required permits have been issued by the applicable agencies and/or jurisdictions prior to the start of construction. The Proposed Action would be consistent with applicable land use plans and policies, including the 2005 Forest Plan.

Operation and Maintenance

Operation and maintenance of the Proposed Action would include routine inspections, water flow monitoring, and clearing of sediment and debris on an as-needed basis. These activities are consistent with current activities in the area. Operation and maintenance of the Proposed Action would not be inconsistent or in non-conformance with applicable land use plans or policies, including the Forest Plan.

3.7.2.1.2 Preclude the viability of existing land uses

Pipeline Replacement and Reroute

Implementation of the Proposed Action would not preclude the viability of existing land uses within or adjacent to the study area. Excavation activities would occur in stages and public access throughout the study area would be maintained during construction. The portion of Mount Lowe Road that would be subjected to construction activities is regularly used by hikers and other outdoor recreationists. During construction, personnel staged at each end of the construction site would control traffic, stopping construction when necessary, in order to avoid disruption of public access through the area. The installation of replacement pipeline in Mount Lowe Road would not have the potential to preclude the viability of existing land uses.

Operation and Maintenance

Operation and maintenance associated with the Proposed Action would include activities consistent with current and ongoing activities in the area, would be consistent with existing land uses, and would not preclude the viability of existing land uses.

3.7.2.1.3 Be incompatible with land uses adjacent to or in the vicinity of the study area to the extent that public health or safety is threatened

Pipeline Replacement and Reroute

Actions included under the Proposed Action would be compatible with land uses adjacent to and within the vicinity of the study area. Implementation of Environmental Commitment LU-1 (Advance Notification of Construction), which is included as part of the Proposed Action, requires LAWC to post notice of construction activities in the affected area at least 14 days prior to the start of construction, thereby minimizing temporary construction-related disruptions to existing and surrounding land uses, particularly as related to recreation. Personnel would also be staged at each end of the construction site during pipeline replacement and reroute activities, in order to stop construction activities when needed so that pedestrians can pass through. In addition to avoiding public access interruptions through the area, this effort would also protect public health and safety. Activities associated with the pipeline replacement and reroute component of the Proposed Action would be compatible with land uses adjacent to and within the study area, and would not introduce a threat to public health and/or safety.

Operation and Maintenance

Operation and maintenance of the existing water diversion infrastructure in Millard and El Prieto Canyons would be characterized by existing operation and maintenance activities, including periodic inspections, debris clearance, and repairs when necessary. This level of activity would not introduce the potential for new land use impacts to occur, as such activities would represent no change from existing conditions.

3.7.2.2 No Action Alternative

Under the No Action Alternative, the Forest Service would not renew LAWC's Special Use Permits #LAR412601 and #LAR412602. Additionally, pipeline replacement and reroute construction activities on ANF lands would not occur. As a result, any impacts associated with land use due to implementation of this alternative would not occur within ANF boundaries. The Forest Service would continue management of ANF lands, regardless of whether or not the Proposed Action is implemented. Under the No Action Alternative, LAWC would be required to implement an alternative action plan in order to continue to provide a reliable water supply service and to meet future public demands. This new action plan may include the construction of new equipment and facilities on non-ANF lands at locations that have yet to be determined. However, it is reasonably expected that these new facilities would require extensively greater construction activities compared to those discussed for repairs to existing equipment under the Proposed Action.

Under the No Action Alternative, existing LAWC equipment and facilities on ANF lands would be decommissioned and abandoned in-place, with replacement infrastructure installed on non-ANF lands, in a presently unknown location. As described above, the Proposed Action would not result in impacts to ANF lands associated with inconsistency or non-conformance with land use plans or policies, preclusion of the viability of existing land uses, or incompatibility with land uses adjacent to or within the vicinity of the study area such that public health or safety is threatened. Under the No Action alternative such impacts

could occur on non-ANF lands. The potential for land use impacts to occur under the No Action Alternative depends upon the location and site-specific conditions affected by relocation activities.

3.7.2.3 Cumulative Impacts

There are a variety of ongoing and historic Forest Service projects that have occurred or are occurring in the vicinity of the study area. Ongoing and historic activities include electrical utility corridors, roadway construction and usage, fire fighting, and routine improvements to existing facilities such as repairs to fences, pipelines, government facilities, and water storage reservoirs. Ongoing activities in the Proposed Action area include major construction activities associated with the implementation of the approved TRTP, operation and maintenance of multiple dams and reservoirs, use and maintenance of the Angeles National Highway (SR-2) and other roadways, fire remediation of recent forest fires, ongoing fuels management activities, storm-related road repairs, slope stabilization, and road maintenance to existing SCE transmission towers. Millard Canyon and associated day use areas provide developed recreational activities. Other recreational activities in the area include hiking, mountain biking, camping, hunting, and off highway vehicle use. Construction of the Proposed Action may temporarily interrupt these land uses, and associated cumulative impacts would be negligible due to the temporary and site-specific nature of such impacts. During operation and maintenance of the Proposed Action, existing conditions relevant to land use would continue and cumulative impacts are not anticipated to occur.

3.8 Noise

Noise-sensitive land uses are typically defined as locations where people reside or where the presence of unwanted sound could adversely affect designated land use(s). Noise-sensitive land uses generally include residential, hospitals, places of worship, libraries, schools, wildlife preserves, and parks. Within the study area, existing noise conditions are characterized by intermittent traffic on surrounding roads and recreational trails, including as generated by vehicles used in ongoing maintenance of LAWC infrastructure. Sensitive noise receptors in the study area include recreationists on trails and access roads in the vicinity, and residents of recreational cabins.

3.8.1 Conformance to 2005 ANF Forest Plan

The governing 2005 Forest Plan for the ANF does not explicitly identify noise as an issue and does not suggest any specific noise strategies, standards, or regulations.

3.8.2 Impacts from Noise

Noise impacts are assessed through evaluation of the potential change to existing noise conditions that are expected to be instigated by Proposed Action activities. Potential changes could be beneficial if they reduce the number of sensitive receptors exposed to unacceptable noise levels and conversely, changes could be adverse if they result in increased exposure to unacceptable noise levels. Potential impacts with respect to noise are discussed in this section with regards to the indicator criteria presented in Table 1-2,

and Environmental Commitments, included as part of the Proposed Action, are identified where applicable.

3.8.2.1 Proposed Action

3.8.2.1.1 Result in a permanent and substantially higher level of ambient noise source in the vicinity of sensitive receptors

Pipeline Replacement and Reroute

Under the Proposed Action, approximately 1,400 feet of an existing LAWC water pipeline would be replaced and rerouted within Mount Lowe Road, and two Special Use Permits would be renewed to allow continued maintenance and operation of existing LAWC facilities and equipment in Millard Canyon and El Prieto Canyon. The Proposed Action would not introduce any permanent noise sources which do not currently exist within the Project area. No sensitive receptors would experience permanent noise impacts as a result of implementation of construction activities associated with the Proposed Action.

Operation and Maintenance

Operation and maintenance activities implemented as part of the Proposed Action would be characterized by intermittent vehicular noise from periodic inspections, repairs, and sediment removal. As such, no sensitive receptors would experience permanent noise impacts as a result of implementation of this component of the Proposed Action.

3.8.2.1.2 Result in a substantially temporary or periodic increase in ambient noise levels during construction in the vicinity of sensitive receptors above levels existing without the Project

Pipeline Replacement and Reroute

On-site noise during construction activities associated with the pipeline replacement and reroute component of the Proposed Action would be generated through the use of vehicles and equipment, while off-site noise would be generated through the transport of vehicles and equipment to the construction site. Recreationists in the study area and vicinity and traveling through the construction site would be exposed to higher than normal levels of ambient noise due to the use of construction vehicles and equipment. However, recreationists do not remain stationary and would only be exposed to construction-related noise while passing through the construction site, or within the near vicinity. Residents of recreational cabins in the study area are more stationary than other recreationists; however, excavation activities would be phased and the noise that would occur in any given location along the pipeline alignment would be of short duration. Environmental Commitments N-1 (Implement Best Management Practices for Construction Noise) and N-2 (Avoid Sensitive Receptors during Mobile Construction Equipment Use), which are included as part of the Proposed Action, would minimize temporary construction noise effects by requiring the implementation of BMPs, and the avoidance of sensitive receptors (such as recreational cabins) during mobile equipment use. Therefore, construction activities would result in temporarily elevated ambient noise, but the effect to sensitive receptors would be intermittent and not substantial.

Operation and Maintenance

Operation and maintenance activities included as part of the Proposed Action would be limited to small (2-3 person) crews conducting periodic inspections, repairs, and debris removal, when necessary. As such, this level of activity would not result in substantial increases in ambient noise levels.

3.8.2.2 No Action Alternative

Under the No Action Alternative, the Forest Service would not renew LAWC's Special Use Permits #LAR412601 and #LAR412602. Additionally, pipeline replacement and reroute construction activities on ANF lands would not occur. As a result, any noise impacts due to implementation of this alternative would not occur within ANF boundaries. The Forest Service would continue management of ANF lands, regardless of whether or not the Proposed Action is implemented. Under the No Action Alternative, LAWC would be required to implement an alternative action plan in order to continue to provide a reliable water supply service and to meet future public demands. This new action plan may include the construction of new equipment and facilities on non-ANF lands at locations that have yet to be determined. However, it is reasonably expected that these new facilities would require extensively greater construction activities compared to those discussed for repairs to existing equipment under the Proposed Action.

The potential locations for new LAWC equipment and facilities on non-ANF lands are not currently known, and may result in the exposure of new sensitive receptors to both temporary construction impacts and permanent operational noise. As described under preceding issue area discussions, construction activities under the No Action Alternative would likely be more intense than under the Proposed Action. As a result, noise generated during such construction activities would also be more intense. Additionally, the noise generated under the Proposed Action would occur in an unpopulated rural area, where noise receptors would be characterized primarily by recreationists traveling through the area. In comparison, the No Action Alternative would introduce construction-related noise to non-ANF lands, which may be populated and/or characterized by more sensitive noise receptors than would be affected under the Proposed Action. Operation and maintenance activities would be the same and therefore, noise impacts associated with permanent and substantially higher ambient noise would be the same as described for the Proposed Action, but noise impacts associated with temporarily increased ambient noise during construction would likely be greater under the No Action Alternative.

3.8.2.3 Cumulative Impacts

There are a variety of ongoing and historic Forest Service projects that have occurred or are occurring in the vicinity of the study area. Ongoing and historic activities include electrical utility corridors, roadway construction and usage, fire fighting, and routine improvements to existing facilities such as repairs to fences, pipelines, government facilities, and water storage reservoirs. Ongoing activities in the Proposed Action area include major construction activities associated with the implementation of the approved TRTP, operation and maintenance of multiple dams and reservoirs, use and maintenance of the Angeles National Highway (SR-2) and other roadways, fire remediation of recent

forest fires, ongoing fuels management activities, storm-related road repairs, slope stabilization, and road maintenance to existing SCE transmission towers. Millard Canyon and associated day use areas provide developed recreational activities. Other recreational activities in the area include hiking, mountain biking, camping, hunting, and off highway vehicle use.

Construction of the Proposed Action would temporarily increase ambient noise levels in the area, which may affect recreationists moving within proximity to construction activities and occupants of recreational cabins in the vicinity. As described, implementation of Environmental Commitments N-1 (Implement Best Management Practices for Construction Noise) and N-2 (Avoid Sensitive Receptors during Mobile Construction Equipment Use) would ensure that any potential noise impacts of the Proposed Action to sensitive receptors would occur intermittently and would be minimized to acceptable levels. Other projects in the cumulative scenario may also result in temporary increases in ambient noise levels; however, due to the intermittent and localized nature of potential noise impacts under the Proposed Action, the potential for cumulative noise impacts to occur is considered minimal. During operation and maintenance of the Proposed Action, existing conditions relevant to noise would continue and cumulative noise impacts would not occur.

3.9 Public Services and Utilities

Public Services include fire protection, police protection, schools, healthcare facilities, and public works, while utility systems include networks and facilities associated with natural gas, electricity, wastewater, stormwater, domestic (potable) water, and solid waste disposal. The Proposed Action is located entirely within the ANF, where fire and police protection are provided by the Forest Service. There are no schools, healthcare facilities, or public works in the study area. As described in Section 1 (Introduction, Purpose and Need for Action), the Proposed Action would replace and reroute a section of existing water pipeline, allow for continued maintenance and operation of LAWC facilities and equipment on ANF lands, and facilitate the continued delivery of potable water to LAWC customers in Altadena. Therefore, the environmental setting for public services and utilities is characterized by the water facilities to be upgraded and maintained under the Proposed Action.

3.9.1 Conformance to 2005 ANF Forest Plan

The governing 2005 Forest Plan for the ANF includes regulations related to utilities, which apply to all NFS lands used for utilities. The Forest Plan addresses utilities by discussing the demand for water in terms of maintaining a healthy and stable watershed and providing for utility and infrastructure uses through special-use authorizations. In addition, the ANF Fire Management Plan provides a framework for the management of wildland fire, prescribed fire, and hazard fuel reduction, as tools to safely accomplish the resource protection and management objectives of the Forest Plan for the ANF. The Forest Plan emphasizes that special uses are only authorized when they cannot be reasonably accommodated on non-Forest System lands. The Proposed Action would address needed upgrades to LAWC water infrastructure, and would be in compliance with the 2005 Forest Plan.

3.9.2 Impacts to Public Service and Utilities

Any unplanned disruption of public services or utilities, or physical impact to facilities not included under the Proposed Action would represent an impact to public services and utilities. In addition, impacts to public service and utilities providers could potentially occur with an increase to the size of the population and geographic area served, the number and type of calls for service, physical development, or an increase in demand for service that could result in capacity constraints to existing public service and utilities providers. Potential impacts to public services and utilities are discussed in this section with regards to the indicator criteria presented in Table 1-2, and Environmental Commitments, included as part of the Proposed Action, are identified where applicable.

3.9.2.1 Proposed Action

3.9.2.1.1 Increase demand for public services that cannot be readily met by existing public service providers and facilities

The Proposed Action is needed in order to allow LAWC to continue supplying a reliable, low-cost, high-quality water source to approximately 16,000 residents of Altadena. Implementation of the Proposed Action, including replacement and reroute of the pipeline and operation and maintenance activities, would ensure that reliable water service to residents of Altadena is able to continue uninterrupted. As such, activities associated with the Proposed Action, including those described for construction and operation and maintenance, would not increase demand for public services.

3.9.2.1.2 Impede or interfere with existing public services emergency access

Pipeline Replacement and Reroute

Access along Mount Lowe Road, through the construction site, would be maintained for the duration construction, including for access of public service vehicles such as police, fire, and emergency medical response. Metal plates would be kept at the construction site at all times so that open trenches may be covered to allow passage of emergency vehicles. Therefore, the pipeline replacement and reroute component of the Proposed Action would not impede or interfere with existing public services emergency access.

Operation and Maintenance

Operation and maintenance activities would occur on an as-needed basis and would be conducted by small (2-3 person) crews. Access would be gained by utilizing existing roads and/or trails, either by vehicle or foot. As such, this level of activity is not expected to impede or interfere with emergency access by public service vehicles, including police, fire, and emergency medical response. Therefore, impacts associated with impeding or interfering with existing public services emergency response are not expected to occur as a result of implementation of operation and maintenance activities associated with the Proposed Action.

3.9.2.1.3 Result in a major reduction or interruption of existing utility systems or cause a collocation accident

Pipeline Replacement and Reroute

The corroded water pipeline that would be replaced under the Proposed Action connects to North Coulter Reservoir, from where water is either transported to South Coulter Reservoir for treatment, or is released back into Millard Creek using a manually operated release valve. Replacement of the corroded portion of pipeline may result in a temporary disruption of the transport of water between the diversion structure on Millard Creek and North Coulter Reservoir, but it would have no effect on the transport of water from North Coulter Reservoir or to LAWC customers. No major reduction or interruption of existing utility systems would occur as a result of the Project. Additionally, Environmental Commitment PSU-1 (Notification of Utility Service Disruption), which is included as part of the Proposed Action, requires that LAWC will notify members of the public, the jurisdiction, and affected service providers if a planned utility service outage will be unavoidable during the construction period. This Environmental Commitment minimizes potential impacts related to the interruption of utility service which, if necessary, would be temporary and of short duration.

Operation and Maintenance

Operation and maintenance activities associated with implementation of the Proposed Action would include inspections, repairs, and debris and/or sediment removal on an as-needed basis. These activities would not be conducted at a level that would require a major reduction or interruption of the existing water distribution system or cause a collocation accident.

3.9.2.1.4 Substantially change the ability of water treatment, wastewater treatment, or solid waste facilities to adequately supply water and accommodate solid waste and wastewater

Pipeline Replacement and Reroute

Construction activities associated with implementation of the Proposed Action would have no effect on the ability of water treatment, wastewater treatment, or solid waste facilities to adequately supply water and accommodate solid waste and wastewater.

Operation and Maintenance

Operation and maintenance activities associated with implementation of the Proposed Action would have no effect on the ability of water treatment, wastewater treatment, or solid waste facilities to adequately supply water and accommodate solid waste and wastewater.

3.9.2.2 No Action Alternative

Under the No Action Alternative, the Forest Service would not renew LAWC's Special Use Permits #LAR412601 and #LAR412602. Additionally, pipeline replacement and reroute construction activities on ANF lands would not occur. As a result, any impacts associated with public services and utilities due to implementation of this alternative would not occur within ANF boundaries. The Forest Service would continue

management of ANF lands, regardless of whether or not the Proposed Action is implemented. Under the No Action Alternative, LAWC would be required to implement an alternative action plan in order to continue to provide a reliable water supply service and to meet future public demands. This new action plan may include the construction of new equipment and facilities on non-ANF lands at locations that have yet to be determined. However, it is reasonably expected that these new facilities would require extensively greater construction activities compared to those discussed for repairs to existing equipment under the Proposed Action.

Under the No Action Alternative, LAWC would maintain rights to the water currently diverted from Millard Creek, and would still have an obligation to provide potable water to customers in Altadena. Without the special use permits to maintain infrastructure on ANF lands, LAWC would need to meet Altadena customers' water needs with water drawn from the Raymond Basin, from which 16 other water providers also draw water, or from other sources. At this time, it is not known how that change in water supply would affect LAWC's ability to maintain existing water service. As such, impacts to public services and utilities associated with water supply are expected to be slightly greater in nature and magnitude to those described for the Proposed Action. Additionally, the increased construction activities required under the No Action Alternative may include an increased demand for water, such as required for dust suppression, and may introduce increased construction traffic that could have the potential to temporarily interfere with emergency access. It is reasonably anticipated that a sufficient water supply for construction would be identified prior to implementation of an action plan resulting from the No Action Alternative, and that construction methods similar to those described for the Proposed Action would occur, and would include the use of metal plates in disturbed areas to maintain emergency access over trenches. As such, potential impacts associated with public services and utilities may be more substantial than would occur under the Proposed Action.

3.9.2.3 Cumulative Impacts

There are a variety of ongoing and historic Forest Service projects that have occurred or are occurring in the vicinity of the study area. Ongoing and historic activities include electrical utility corridors, roadway construction and usage, fire fighting, and routine improvements to existing facilities such as repairs to fences, pipelines, government facilities, and water storage reservoirs. Ongoing activities in the Proposed Action area include major construction activities associated with the implementation of the approved TRTP, operation and maintenance of multiple dams and reservoirs, use and maintenance of the Angeles National Highway (SR-2) and other roadways, fire remediation of recent forest fires, ongoing fuels management activities, storm-related road repairs, slope stabilization, and road maintenance to existing SCE transmission towers. Millard Canyon and associated day use areas provide developed recreational activities. Other recreational activities in the area include hiking, mountain biking, camping, hunting, and off highway vehicle use.

As described, the Proposed Action would not impede or interfere with existing public services emergency access, result in impacts associated with the interruption of existing utility systems, or change the ability of existing facilities to adequately supply water

and/or accommodate waste and wastewater. Therefore, construction of the Proposed Action is not anticipated to contribute to cumulative impacts associated with public services and utilities. During operation and maintenance of the Proposed Action, existing conditions relevant to public services and utilities would continue and cumulative impacts are not anticipated to occur.

3.10 Socioeconomics and Environmental Justice _____

The study area is located entirely on ANF lands and does not include any permanent residences or population.

3.10.1 Conformance to 2005 ANF Forest Plan

The governing 2005 Forest Plan does not specifically address socioeconomics and environmental justice. However, the Forest Service Handbook 1909.17 (Economic and Social Analysis Handbook) provides guidance on the evaluation of economic and social effects of policies, plans, programs, and projects with the goal of promoting consistent use of social and economic analysis in Forest Service projects. In addition to providing guidance on using economic estimates and measures, the document also provides direction on selecting and analyzing social variables. Social variables discussed in the Forest Service Handbook include: lifestyles; attitudes; beliefs and values; population; housing characteristics; employment; social organization; and land use patterns. Some of these variables, such as population, housing, and employment, are addressed in this section; however, due to the type of this project and the qualitative nature of variables such as lifestyles, attitudes and beliefs, and social organization, these variables were not selected for analysis in this section.

3.10.2 Impacts to Socioeconomics and Environmental Justice

Impacts to socioeconomics are characterized by whether implementation of a project would result in substantial shifts in population trends, adversely affect regional spending and earning patterns, or introduce overwhelming demand for public services or utilities, socioeconomic impacts would be considered significant. In addition, environmental justice would be affected by a project if impacts would be predominantly borne by any segment of the population including a minority population and/or a low-income population, or if impacts would be suffered by a minority population and/or low-income population and is appreciably more severe than the impact suffered by a non-minority and/or non-low-income population. However, the Proposed Action would occur entirely on NFS lands within the ANF, where there is no permanent population and therefore, environmental justice would not be affected. Potential impacts with respect to socioeconomics and environmental justice are discussed in this section with regards to the indicator criteria presented in Table 1-2, and Environmental Commitments, included as part of the Proposed Action, are identified where applicable.

3.10.2.1 Proposed Action

3.10.2.1.1 Substantial shifts in population trends

The study area is located entirely on ANF lands and does not include any permanent residences or population. Therefore, any activities associated with implementation of the

Proposed Action, including the replacement and reroute of the pipeline and operation and maintenance activities, would not result in impacts related to substantial shifts in population trends.

3.10.2.1.2 Adversely affect regional spending and earning patterns

The Proposed Action would have no affect on regional spending and earning patterns.

3.10.2.1.3 Introduction of a new and overwhelming demand for public services and/or utilities

The Proposed Action would ensure continuation of an existing water diversion and transport services (via the pipeline replacement), and would provide for the continuation of operation and maintenance on existing water diversion infrastructure in the ANF. Implementation of the Project would not increase the existing demand for public services and/or utilities.

3.10.2.2 No Action Alternative

Under the No Action Alternative, the Forest Service would not renew LAWC's Special Use Permits #LAR412601 and #LAR412602. Additionally, pipeline replacement and reroute construction activities on ANF lands would not occur. As a result, any impacts socioeconomics and environmental justice due to implementation of this alternative would not occur within ANF boundaries. The Forest Service would continue management of ANF lands, regardless of whether or not the Proposed Action is implemented. Under the No Action Alternative, LAWC would be required to implement an alternative action plan in order to continue to provide a reliable water supply service and to meet future public demands. This new action plan may include the construction of new equipment and facilities on non-ANF lands at locations that have yet to be determined. However, it is reasonably expected that these new facilities would require extensively greater construction activities compared to those discussed for repairs to existing equipment under the Proposed Action. The location of construction activities required for the alternative action plan is not known; however, such activities would occur on non-ANF lands and would therefore have a greater potential to affect existing populations and to result in impacts to socioeconomics and/or environmental justice. For instance, socioeconomic and/or environmental justice impacts would occur if the alternative action plan introduces construction activities where impacts are predominantly borne by a minority population and/or a low-income population. Therefore, depending on where replacement infrastructure would be placed on non-ANF lands, and demographics of that area, the No Action Alternative could result in impacts to socioeconomic and/or environmental justice that would not occur under the Proposed Action.

3.10.2.3 Cumulative Impacts

There are a variety of ongoing and historic Forest Service projects that have occurred or are occurring in the vicinity of the study area. Ongoing and historic activities include electrical utility corridors, roadway construction and usage, fire fighting, and routine improvements to existing facilities such as repairs to fences, pipelines, government facilities, and water storage reservoirs. Ongoing activities in the Proposed Action area

include major construction activities associated with the implementation of the approved TRTP, operation and maintenance of multiple dams and reservoirs, use and maintenance of the Angeles National Highway (SR-2) and other roadways, fire remediation of recent forest fires, ongoing fuels management activities, storm-related road repairs, slope stabilization, and road maintenance to existing SCE transmission towers. Millard Canyon and associated day use areas provide developed recreational activities. Other recreational activities in the area include hiking, mountain biking, camping, hunting, and off highway vehicle use.

Construction of the Proposed Action would occur on the ANF and would not result in impacts associated with substantial shifts in population trends, would not adversely affect regional spending and earning patterns, and would not introduce a new and overwhelming demand for public services and/or utilities. Therefore, the Proposed Action would not have the potential to result in impacts that could combine with impacts of other projects to result in cumulative impacts to socioeconomics and/or environmental justice. During operation and maintenance of the Proposed Action, existing conditions relevant to socioeconomics and environmental justice would continue and cumulative impacts would not occur.

3.11 Traffic and Transportation _____

Roads located within the Project area include portions of Chaney Trail Road, Mount Lowe Road, and Brown Mountain Road. Recreationists use these roadways for access to the ANF, including recreational cabins in the study area and recreational trails within and adjacent to the study area. Access to the proposed excavation and pipeline replacement activities in Millard Canyon would be provided via Chaney Trail and Mount Lowe Roads, each of which portions are open to public travel, both on and off NFS lands. However, the section of Mount Lowe Road that would be subjected to construction activities is not open to public vehicular use.

3.11.1 Conformance to 2005 ANF Forest Plan

Part 2 of the governing 2005 Forest Plan includes Management Strategy TRANS 1 (Transportation System), which is intended to safely accommodate the anticipated levels and types of use for designated areas throughout the Forest. The Proposed Action includes renewal (by the Forest Service) of two special use permits that allow LAWC to operate and maintain existing equipment and facilities on ANF lands; as part of the special use permit application process, LAWC is required to obtain approval for any maintenance of Forest System roads or construction and/or maintenance on non-Forest System Roads on NFS lands. Through this application process, the Proposed Action would be in compliance with all Forest System regulations associated with traffic and transportation, including as described in the Forest Plan.

3.11.2 Impacts to Traffic and Transportation

Impacts to transportation and circulation are assessed with respect to the potential for disruption or improvement of current transportation patterns and systems, deterioration or improvement to existing levels of service, and changes in existing levels of transportation safety during construction or operation of a project. Impacts may arise from physical changes to circulation (e.g., closing, rerouting, or establishing roads), or changes in daily

or peak hour traffic volumes created by either direct or indirect workforce and population changes relative to project activities. Potential impacts with respect to traffic and transportation are discussed in this section with regards to the indicator criteria presented in Table 1-2, and Environmental Commitments, included as part of the Proposed Action, are identified where applicable.

3.11.2.1 Proposed Action

3.11.2.1.1 A major roadway would be closed to through traffic as a result of construction activities and there would be no suitable alternative route available

Pipeline Replacement and Reroute

Roads located within the study area include portions of Chaney Trail Road, Mount Lowe Road, and Brown Mountain Road. Recreationists use these roadways for access to the ANF, including recreational cabins in the study area and recreational trails within and adjacent to the study area. Access to the proposed excavation and pipeline replacement activities in Millard Canyon would be provided via Chaney Trail and Mount Lowe Roads, each of which portions are open to public travel, both on and off NFS lands. However, the section of Mount Lowe Road that would be subjected to construction activities is not open to public vehicular use. In order to maintain pedestrian traffic throughout the construction period, LAWC would stage personnel at each end of the construction site and stop work when necessary to allow for pedestrian traffic, only continuing work once pedestrian traffic has safely exited the construction site. Construction activities associated with the Proposed Action would not result in a major roadway being closed to through traffic, and no alternative traffic routes would be necessary.

Operation and Maintenance

Operation and maintenance activities would occur through access along existing roads and trails, including Chaney Trail Road, Mount Lowe Road, Brown Mountain Road, and Sunset Ridge Trail. These activities would be limited to small (2-3 person) crews utilizing vehicles or foot traffic to access sites. As such, operation and maintenance activities associated with the Proposed Action would not result in a major roadway being closed to through traffic, and no alternative traffic routes would be necessary.

3.11.2.1.2 An increase in vehicle trips associated with construction workers or equipment would result in an unacceptable reduction in level of service on the roadways in the Project vicinity

Pipeline Replacement and Reroute

Construction activities associated with the Proposed Action would require vehicles, equipment, and crews to be transported to and from the construction site. However, the duration of construction would be no longer than two weeks, and would not result in an unacceptable reduction in level of service on the roadways in the Project vicinity. Additionally, Environmental Commitment T-1 (Traffic Control Plan for Construction) requires LAWC to prepare and submit a Traffic Control Plan to the Forest Service for approval prior to the start of construction. The plan will include measures to avoid and/or

minimize potential effects of construction traffic on existing traffic patterns and level of service in the study area, and would ensure minimal disruption to typical pedestrian and vehicular traffic in the study area.

Operation and Maintenance

Operation and maintenance activities would be limited to small (2-3 person) crews utilizing vehicles or foot traffic along existing roads to access work sites. Portions of these roads are frequently used by Forest Service personnel, cabin residents, and recreationists. As such, the level of activity required to conduct operation and maintenance at LAWC equipment and facilities would not result in an increase in vehicle trips associated with such activities, or lead to an unacceptable reduction in the level of service on the roadways in the Project vicinity.

3.11.2.1.3 Construction activities would impede pedestrian movements in the construction area and there would be no suitable alternative pedestrian/bicycle access routes

Pipeline Replacement and Reroute

Access through the construction site would be maintained for the duration of all pipeline replacement and reroute activities. LAWC would station personnel at either end of the construction site to regulate pedestrian traffic and to stop work when necessary, so that pedestrians may pass through the area safely. Therefore, pipeline replacement and reroute activities associated with the Proposed Action would not impede pedestrian movements in the construction site and/or study area.

Operation and Maintenance

Operation and maintenance activities would be conducted at existing LAWC equipment and facility locations. These locations occur in areas adjacent to roads and trails that are frequently utilized by recreational users. All operation and maintenance activities would be limited to small (2-3 person) crews that would access work sites by vehicle or foot traffic. As such, this level of activity would not result in impeding pedestrian movements at work areas.

3.11.2.1.4 An increase in roadway wear in the vicinity of the construction zone would occur as a result of heavy truck or construction equipment movements; resulting in noticeable deterioration of a roadway surface or other features in the road right-of-way

Pipeline Replacement and Reroute

The section of pipeline to be replaced and rerouted under the Proposed Action would be installed in an excavated trench along Mount Lowe Road. Once the new pipeline is in place, the excavated trench would be backfilled, compacted, and asphalted over with a standard Caltrans mix. During work on Mount Lowe Road, crews would also asphalt areas where the existing asphalt is damaged or missing. As a result, following completion of the installation of the pipeline, it is anticipated that Mount Lowe Road would be in better condition than the existing conditions. Consequently, construction activities associated with the Proposed Action would not result in an increase in roadway wear or in noticeable deterioration of a roadway surface.

Operation and Maintenance

Operation and maintenance activities would occur on an as-needed basis and would be limited to small (2-3 person) crews that would access work sites by vehicle or foot traffic along existing roads. These roads are frequently utilized by Forest Service personnel, cabin residents, and recreational users. As such, the level of activity associated with conducting operation and maintenance efforts would not result in an increase in roadway wear or in noticeable deterioration of a roadway surface.

3.11.2.2 No Action Alternative

Under the No Action Alternative, the Forest Service would not renew LAWC's Special Use Permits #LAR412601 and #LAR412602. Additionally, pipeline replacement and reroute construction activities on ANF lands would not occur. As a result, any traffic and transportation impacts due to implementation of this alternative would not occur within ANF boundaries. The Forest Service would continue management of ANF lands, regardless of whether or not the Proposed Action is implemented. Under the No Action Alternative, LAWC would be required to implement an alternative action plan in order to continue to provide a reliable water supply service and to meet future public demands. This new action plan may include the construction of new equipment and facilities on non-ANF lands at locations that have yet to be determined. However, it is reasonably expected that these new facilities would require extensively greater construction activities compared to those discussed for repairs to existing equipment under the Proposed Action. These increased construction activities are anticipated to include proportionately increased traffic associated with the transport of construction crews, equipment, and machinery to and from the construction area as well as associated with the extent of construction, such that more truck trips and equipment use would be required for increased construction activities. Depending on existing traffic and transportation conditions at the replacement site for LAWC equipment and facilities, the No Action Alternative could potentially result in the closure of a major roadway, a reduction in level of service, impediment to pedestrian movement, and/or deterioration of roadway surfaces or features. Therefore, while the No Action Alternative would avoid traffic and transportation impacts on ANF lands, it would potentially introduce traffic and transportation impacts to non-ANF areas and such impacts would be more substantial that would occur under the Proposed Action.

311.2.3 Cumulative Impacts

There are a variety of ongoing and historic Forest Service projects that have occurred or are occurring in the vicinity of the study area. Ongoing and historic activities include electrical utility corridors, roadway construction and usage, fire fighting, and routine improvements to existing facilities such as repairs to fences, pipelines, government facilities, and water storage reservoirs. Ongoing activities in the Proposed Action area include major construction activities associated with the implementation of the approved TRTP, operation and maintenance of multiple dams and reservoirs, use and maintenance of the Angeles National Highway (SR-2) and other roadways, fire remediation of recent forest fires, ongoing fuels management activities, storm-related road repairs, slope

stabilization, and road maintenance to existing SCE transmission towers. Millard Canyon and associated day use areas provide developed recreational activities. Other recreational activities in the area include hiking, mountain biking, camping, hunting, and off highway vehicle use.

Construction of the Proposed Action would temporarily increase the number of vehicles in the study area and traveling to and from the construction site, but would not result in a major roadway being closed to through traffic and would not require alternative traffic routes. With implementation of Environmental Commitment T-1 (Traffic Control Plan for Construction), construction activities would occur in compliance with a Traffic Control Plan to ensure that potential impacts associated with reduced level of service on area roadways, including disruption to pedestrian and vehicular traffic patterns, would not be minimized and/or avoided. It is possible that temporarily increased traffic associated with construction of the Proposed Action could result in impacts to traffic and transportation that would contribute to the cumulative scenario and would have the potential to combine with similar impacts of other projects in the area. However, with implementation of the Proposed Action's Traffic Control Plan, any potential contribution of the Proposed Action to cumulative traffic and transportation impacts would be temporary and minimized. During operation and maintenance of the Proposed Action, existing conditions relevant to traffic and transportation would continue and cumulative impacts are not anticipated to occur.

3.12 Visual Resources

The study area is located entirely on NFS lands within the ANF, and is predominantly characterized by open space and recreation, with some rural residential uses. Proposed Action activities would occur in an area that is currently subject to relatively high levels of disturbance due to recreational use.

3.12.1 Conformance to 2005 ANF Forest Plan

For the purpose of managing visual resources, the Forest Service uses Scenic Integrity Objectives (SIOs), which define the degrees of deviation from the natural or natural-appearing landscape character that may occur at any given time. SIOs represent the minimum standard of scenic integrity to which landscapes are to be managed. The Project area is situated within the DAI Land Use Zone of The Front Country Place, where the established SIO is "High." This SIO applies to landscapes where the valued landscape character "appears" intact. Visual deviations (human-made structures) may be present but must repeat the form, line, color, texture, and pattern common to the landscape character so completely and at such a scale that they are not evident. All land management activities in the study area must ensure that these minimum levels are achieved, or a project-specific amendment to the governing 2005 Forest Plan would be required. The Proposed Action would not alter the existing visual landscape and would be in compliance with established SIOs for the study area.

3.12.2 Impacts to Visual Resources

Impacts to visual resources are evaluated based on the level of visual sensitivity in an area, as defined by the degree of public interest in a visual resource and concern over adverse changes in the quality of that resource. In general, an impact to a visual resource

would occur if implementation of a project would result in a substantial alteration to an existing sensitive visual character or setting. Potential impacts to visual resources are discussed in this section with regards to the indicator criteria presented in Table 1-2, and Environmental Commitments, included as part of the Proposed Action, are identified where applicable.

3.12.2.1 Proposed Action

3.12.2.1.1 Have a substantial adverse effect on the existing landscape character and visual quality of the site and its surroundings

Pipeline Replacement and Reroute

Construction activities associated with the pipeline replacement and reroute component of the Proposed Action would occur in an area that is currently developed and subjected to relatively high levels of disturbance due to recreational use. Once the section of replacement pipeline is installed along Mount Lowe Road, it would not be visible, and the trenched portion of the roadway would be re-surfaced with asphalt to match the existing roadway cover. This re-covered portion of the road would be darker in color than the existing road, but would not result in a substantial adverse effect on the existing landscape character and visual quality of the area.

Operation and Maintenance

Operation and maintenance activities would occur at existing LAWC equipment and facilities and would not result adverse effects to existing landscape character and visual quality of work sites or their surroundings.

3.12.2.1.2 Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area

Pipeline Replacement and Reroute

The presence of construction equipment and vehicles at the construction site would temporarily affect the visual character in the area; however, the Proposed Action does not include installation of any above-ground infrastructure. The portion of replacement pipeline that would be installed along Mount Lowe Road would not be visible following the construction period. Therefore, construction activities associated with the Proposed Action would not create a new source of substantial light or glare, and would not adversely affect day or nighttime views in the area.

Operation and Maintenance

Operation and maintenance activities would not include the introduction of new sources of substantial light or glare, and would therefore, not result in adverse impacts that affect day or nighttime views in the area.

3.12.2.1.3 Substantially damage scenic resources within a scenic highway viewshed or a national scenic trail viewshed (including, but not limited to, trees, rock outcroppings, and historic buildings)

Pipeline Replacement and Reroute

As described above, the proposed pipeline replacement and reroute activities would occur in a disturbed area which is currently subject to relatively high levels of disturbance associated with recreational activities. The presence of construction vehicles and equipment along the pipeline route would be visible to ANF visitors moving through the area, but such effects would be temporary and would not characterize an adverse impact to visual resources. Implementation of the Proposed Action would not damage scenic resources within a scenic highway viewshed, a national scenic trail viewshed, or any other viewsheds within the Proposed Action area.

Operation and Maintenance

Operation and maintenance of the Proposed Action would be characterized by the continuation of existing operation and maintenance activities associated with LAWC equipment and infrastructure. The presence of occasional vehicles and crews accessing the Project area would be visible to ANF visitors moving through the area, but this would represent no change from existing conditions, and would not substantially damage scenic resources within a scenic highway viewshed, a national scenic trail viewshed, or any other viewsheds within the study area.

3.12.2.2 No Action Alternative

Under the No Action Alternative, the Forest Service would not renew LAWC's Special Use Permits #LAR412601 and #LAR412602. Additionally, pipeline replacement and reroute construction activities on ANF lands would not occur. As a result, any impacts to visual resources due to implementation of this alternative would not occur within ANF boundaries. The Forest Service would continue management of ANF lands, regardless of whether or not the Proposed Action is implemented. Under the No Action Alternative, LAWC would be required to implement an alternative action plan in order to continue to provide a reliable water supply service and to meet future public demands. This new action plan may include the construction of new equipment and facilities on non-ANF lands at locations that have yet to be determined. However, it is reasonably expected that these new facilities would require extensively greater construction activities compared to those discussed for repairs to existing equipment under the Proposed Action.

The No Action Alternative would avoid potential visual impacts associated with landscape character, visual quality, light or glare, and scenic viewsheds on the ANF, but would introduce such impacts on non-ANF lands as a result of the alternative action plan mentioned above. Due to the location of the Proposed Action on ANF lands, limited visual receptors are anticipated to be affected by potential impacts to visual resources associated with the Proposed Action. In comparison, implementation of an alternative action plan on non-ANF lands would likely affect a greater concentration of visual receptors, and would likely occur over a longer period of time due to the more extensive construction activities described above. Therefore, depending on existing visual conditions at the undetermined location for the alternative action plan, the No Action Alternative could result in more substantial impacts to visual resources than would occur under the Proposed Action.

3.12.2.3 Cumulative Impacts

There are a variety of ongoing and historic Forest Service projects that have occurred or are occurring in the vicinity of the study area. Ongoing and historic activities include electrical utility corridors, roadway construction and usage, fire fighting, and routine improvements to existing facilities such as repairs to fences, pipelines, government facilities, and water storage reservoirs. Ongoing activities in the Proposed Action area include major construction activities associated with the implementation of the approved TRTP, operation and maintenance of multiple dams and reservoirs, use and maintenance of the Angeles National Highway (SR-2) and other roadways, fire remediation of recent forest fires, ongoing fuels management activities, storm-related road repairs, slope stabilization, and road maintenance to existing SCE transmission towers. Millard Canyon and associated day use areas provide developed recreational activities. Other recreational activities in the area include hiking, mountain biking, camping, hunting, and off highway vehicle use.

Construction of the Proposed Action may introduce temporary impacts to visual resources associated with the presence of construction crews, vehicles, and equipment, but such effects would be temporary and localized, and primarily limited to the construction site. Due to the site-specific nature of potential visual impacts, such effects of the Proposed Action are not anticipated to combine with similar impacts of other projects such that cumulative impacts would occur. During operation and maintenance of the Proposed Action, existing conditions relevant to visual resources would continue and cumulative impacts would not occur.

3.13 Wilderness and Recreation

The study area is located in the Altadena foothills of the San Gabriel Mountains, where public accessibility for recreational purposes is high. Millard Canyon and El Prieto Canyon are extensively utilized by the public for recreational activities including hiking, camping, mountain biking, canyoneering (especially in El Prieto Canyon), wildlife viewing, and general outdoor enjoyment. Recreational cabins are also located in the study area, on land leased from the Forest Service. Access to these cabins is provided via roads such as Mount Lowe Road, Chaney Trail Road, and Brown Mountain Road, which are frequently utilized by Forest Service personnel, cabin residents, and recreational users. The study area does not include any designated Wilderness Areas or Open Riding Areas for off-highway vehicle use.

3.13.1 Conformance to 2005 ANF Forest Plan

The governing 2005 Forest Plan for the ANF includes Goals, Objectives, and Management Strategies relevant to wilderness and recreation. Part 2 of the Forest Plan describes the Management Strategies, or the trends and expectations as well as anticipated resource improvements planned over the next three to five years in the Forest. The program emphasis and objectives for non-recreation special uses is to manage infrastructure needs to support communities while preserving open space and natural settings. Special uses are authorized only when they cannot be reasonably accommodated on non-NFS lands. Maintaining open space is given priority over accommodating urban

needs. The Proposed Action would be in compliance with management direction provided in the 2005 Forest Plan for wilderness and recreation.

3.13.2 Impacts to Wilderness and Recreation

Wilderness and recreation impacts would occur if a project's activities directly and/or indirectly disrupt or preclude activities in an established recreation area or wilderness area, including through substantially contributing to the long-term degradation of the "outdoor experience" for recreationists. Potential impacts with respect to wilderness and recreation are discussed in this section with regards to the indicator criteria presented in Table 1-2, and Environmental Commitments, included as part of the Proposed Action, are identified where applicable.

3.13.2.1 Proposed Action

3.13.2.1.1 Directly and/or indirectly disrupt or preclude activities in an established recreation area or wilderness area, including through substantially contributing to the long-term degradation of the "outdoor experience" for recreationists

Pipeline Replacement and Reroute

Due to the study area's location in the Altadena foothills of the San Gabriel Mountains, it is highly accessible to the public for recreational purposes. Millard Canyon and El Prieto Canyon are extensively utilized by the public for recreational activities including hiking, camping, mountain biking, canyoneering (especially in El Prieto Canyon), wildlife viewing, and general outdoor enjoyment. Recreational cabins are also located in the Project area, on land leased from the Forest Service. Access to these cabins is provided via roads such as Mount Lowe Road, Chaney Trail Road, and Brown Mountain Road. Portions of Mount Lowe Road and Chaney Trail Road would also be used during construction activities associated with the Proposed Action. The study area does not include any designated Wilderness Areas or Open Riding Areas for off-highway vehicle use.

The proposed replacement pipeline in Millard Canyon would be installed underground, along a portion of Mount Lowe Road that is not open to public vehicular use, but is open to foot traffic and is used by the public for recreational purposes. However, as described in Section 7 (Traffic and Transportation), excavation and construction activities would occur in phases, with LAWC personnel staged at either end of the construction site to control public traffic and to stop work when necessary to allow for the safe passage of pedestrian traffic. Due to the temporary presence of construction vehicles and equipment at the construction site, installation of the replacement pipeline would temporarily alter the character of the area (for the maximum construction duration of two weeks), but would not permanently affect the "outdoor experience" for recreationists in the area. In addition, recreationists that would be exposed to construction activities along Mount Lowe Road are considered mobile, in that they would be moving through the area, and their exposure to construction activities would be both temporary and intermittent.

Environmental Commitment REC-1 (Coordinate Construction Schedule with the ANF Los Angeles District Ranger) requires LAWC to develop and coordinate the construction

schedule with the Forest Service to ensure that construction activities avoid periods of heavy recreational use, staging areas are located in areas with minimal effects to recreational opportunities, and timetables for the required period of usage for each staging area are adhered to throughout the construction period. Implementation of this Environmental Commitment would minimize and/or avoid potential wilderness and recreation effects of the Proposed Action.

Operation and Maintenance

Operation and maintenance of the Proposed Action would be characterized by the continuation of existing operation and maintenance activities associated with LAWC equipment and infrastructure. Ongoing operation of LAWC equipment and facilities on the ANF would include continued diversion of water along portions of Millard Creek and the unnamed tributary in El Prieto Canyon. It is likely that current diversion practices, among other factors, contribute to long-term degradation of those portions of Millard Creek and the unnamed tributary in El Prieto Canyon. Consequently, these practices result in adverse impacts to the “outdoor experience” for recreationists in the area. However, LAWC has been conducting water diversions at these locations for several decades and continued operation would not represent a substantial change to what could be considered baseline conditions. Nonetheless, LAWC, in order to avoid and/or minimize this impact, would implement Environmental Commitment GEN-9 (Install Modulated Flow Control Valve at North Coulter Reservoir), which would ensure that water that is released from North Coulter Reservoir would be returned to the intake point along Millard Canyon.

During ongoing maintenance activities, the presence of occasional vehicles and crews accessing the study area would represent no change from existing conditions relevant to wilderness and recreation, and would not result in long-term degradation of the “outdoor experience” for recreationists. Operation and maintenance activities would not preclude activities within an established recreation area or wilderness area.

3.13.2.2 No Action Alternative

Under the No Action Alternative, the Forest Service would not renew LAWC’s Special Use Permits #LAR412601 and #LAR412602. Additionally, pipeline replacement and reroute construction activities on ANF lands would not occur. As a result, any impacts associated with wilderness and recreation due to implementation of this alternative would not occur within ANF boundaries. The Forest Service would continue management of ANF lands, regardless of whether or not the Proposed Action is implemented. Under the No Action Alternative, LAWC would be required to implement an alternative action plan in order to continue to provide a reliable water supply service and to meet future public demands. This new action plan may include the construction of new equipment and facilities on non-ANF lands at locations that have yet to be determined. However, it is reasonably expected that these new facilities would require extensively greater construction activities compared to those discussed for repairs to existing equipment under the Proposed Action.

Under the No Action Alternative, water diversion would not occur on the ANF, and streamflow would be restored to natural conditions. Drainages located in Millard and El

Prieto Canyons would no longer be subject to dewatering practices as they currently exist, and it is anticipated that the elimination of water diversion activities in these areas would result in long-term beneficial effects to overall stream functions. This effect of the No Action Alternative could result in increased recreational value of Millard and El Prieto Canyons, with regards to the “outdoor experience” for recreationists. However, as described above, the No Action Alternative would require implementation of an alternative action plan on non-ANF lands. Depending on the baseline conditions for wilderness and recreation at the relocation site for new LAWC equipment and facilities, the alternative action plan required under the No Action Alternative may introduce additional adverse impacts to wilderness resources and/or recreational opportunities. Therefore, while the No Action Alternative would avoid wilderness and recreation impacts on ANF lands, it would potentially introduce such impacts on non-ANF lands.

3.13.2.3 Cumulative Impacts

There are a variety of ongoing and historic Forest Service projects that have occurred or are occurring in the vicinity of the study area. Ongoing and historic activities include electrical utility corridors, roadway construction and usage, fire fighting, and routine improvements to existing facilities such as repairs to fences, pipelines, government facilities, and water storage reservoirs. Ongoing activities in the Proposed Action area include major construction activities associated with the implementation of the approved TRTP, operation and maintenance of multiple dams and reservoirs, use and maintenance of the Angeles National Highway (SR-2) and other roadways, fire remediation of recent forest fires, ongoing fuels management activities, storm-related road repairs, slope stabilization, and road maintenance to existing SCE transmission towers. Millard Canyon and associated day use areas provide developed recreational activities. Other recreational activities in the area include hiking, mountain biking, camping, hunting, and off highway vehicle use.

Construction of the Proposed Action may temporarily interrupt current access to recreational opportunities in the immediate vicinity of the construction site, but would not result in adverse impacts to wilderness and recreation. Due to the temporary and localized nature of potential impacts to wilderness and recreation, such effects of the Proposed Action are not anticipated to have the potential to combine with similar effects of other projects such that adverse cumulative impacts would occur. During operation and maintenance of the Proposed Action, existing conditions relevant to wilderness and recreation would continue and cumulative impacts would not occur.

3.14 Wildfire Suppression and Prevention _____

The study area is located entirely on ANF lands, and fire protection for this area is provided by the Forest Service, which has primary wildland fire suppression responsibility on NFS lands. The Southern California Geographic Coordination Center (GACC) has responsibility for the mobilization of federal resources within the sphere of influence of the ANF. The Forest Service also has a Mutual Aid agreement with the Los Angeles County Fire Department (LACFD) to provide fire services and the California Department of Forestry has contracts with the LACFD to protect privately owned SRAs, including forestlands, watersheds, and rangelands.

3.14.1 Conformance to 2005 ANF Forest Plan

The ANF Fire Management Plan provides a framework for the management of wildland fire, prescribed fire and hazard fuel reduction, and tools to safely accomplish the resource protection and management objectives of the ANF in accordance with the 2005 Forest Plan. The Proposed Action would be in compliance with the ANF Fire Management Plan, including through the implementation of Environmental Commitments described below.

3.14.2 Impacts to Wildfire Suppression and Prevention

Impacts related to wildfire suppression and prevention would occur if a project's activities adversely affect fire prevention and suppression activities, or if a project or the presence of a project exposes communities, firefighters, personnel, and/or natural resources to an increased risk of wildfires. Potential impacts with respect to wildfire suppression and prevention are discussed in this section with regards to the indicator criteria presented in Table 1-2, and Environmental Commitments, included as part of the Proposed Action, are identified where applicable.

3.14.2.1 Proposed Action

3.14.2.1.1 Activities associated with the Project adversely affect fire prevention and suppression activities

Pipeline Replacement and Reroute

As described in Section 7 (Land Use), the study area is located within The Front Country Place of the ANF. Per the 2005 Forest Plan, "Fire safe conditions along the urban interface within the [Front Country] Place are inconsistent...The numbers of fire starts are not consistent with natural disturbance cycles," and additionally, "Management emphasis is on protecting communities from the threat of fire, managing for high recreation use levels, and maintaining urban and national forest infrastructure (facilities) consistent with the natural setting" (USDA Forest Service, 2005a). In this area, major wildfire events that do the most damage typically occur between October and January during severe weather conditions involving Santa Ana winds. Another peak in Santa Ana winds can occur in late February through early April. Wind-driven major events typically run their course until weather conditions change as they are difficult to contain regardless of firefighting resources. Fire suppression in the wildland-urban interface typically involves a multi-agency firefighting response with hundreds of firefighters participating in coordinated air and ground operations.

Installation of the segment of replacement pipeline along Mount Lowe Road would involve trench excavation by first saw-cutting the existing pavement, then removing soil with a backhoe. Once the pipeline is in place, the trench would be backfilled, compacted, and covered with asphalt. These activities would require the use of large vehicles and equipment along Mount Lowe Road, over the construction period of no more than two weeks. Implementation of Environmental Commitments F-1 (Fire Preventive Construction Equipment Requirements), F-2 (Cease Work during Red Flag Warning Events), and F-3 (Remove Hazards from the Work Area) would minimize and/or avoid the potential for construction activities associated with the Proposed Action to result in impacts to wildfire prevention and suppression.

As required by Environmental Commitment T-1 (Traffic Control Plan for Construction), , emergency vehicle access through the construction site would be maintained at all times during construction. Construction crews would be equipped at all times during excavation and trenching activities with metal plates, to be used in covering open trench areas as necessary to provide for the passage of emergency vehicles, including fire trucks. Therefore, the pipeline replacement and reroute component of the Proposed Action would not adversely affect fire prevention or suppression activities.

Operation and Maintenance

Operation and maintenance of the Proposed Action would be characterized by the continuation of existing operation and maintenance activities associated with LAWC equipment and infrastructure. The presence of occasional vehicles and crews accessing the Project area would represent no change from existing conditions relevant to wildfire suppression. Operation and maintenance of the Proposed Action would not adversely affect fire prevention and suppression activities.

3.14.2.1.2 Project-related activities or the presence of the Project expose communities, firefighters, personnel, and/or natural resources to an increased risk of wildfires

Pipeline Replacement and Reroute

As previously described, construction activities associated with the Proposed Action would occur over a period of no more than two weeks along Mount Lowe Road. These activities would not introduce any new above-ground infrastructure, impede the travel of emergency vehicles, or adversely affect fire prevention or suppression activities. Therefore, neither the construction activities nor the presence of this component of the Proposed Action would expose communities, firefighters, personnel, and/or natural resources to an increased risk of wildfire.

Operation and Maintenance

Operation and maintenance of the Proposed Action would be characterized by the continuation of existing operation and maintenance activities associated with LAWC equipment and infrastructure. The presence of occasional vehicles and crews accessing the Project area to conduct operations and maintenance activities would represent no change from existing conditions relevant to wildfire suppression. The presence of the Proposed Action related activities would not introduce new adverse impacts associated with the exposure of communities, firefighters, personnel, and/or natural resources to an increased risk of wildfires.

3.14.2.2 No Action Alternative

Under the No Action Alternative, the Forest Service would not renew LAWC's Special Use Permits #LAR412601 and #LAR412602. Additionally, pipeline replacement and reroute construction activities on ANF lands would not occur. As a result, any impacts associated with wildfire suppression and prevention due to implementation of this alternative would not occur within ANF boundaries. The Forest Service would continue management of ANF lands, regardless of whether or not the Proposed Action is implemented. Under the No Action Alternative, LAWC would be required to implement

an alternative action plan in order to continue to provide a reliable water supply service and to meet future public demands. This new action plan may include the construction of new equipment and facilities on non-ANF lands at locations that have yet to be determined. However, it is reasonably expected that these new facilities would require extensively greater construction activities compared to those discussed for repairs to existing equipment under the Proposed Action.

Under the No Action Alternative, construction and operation/maintenance activities would not occur on ANF lands, resulting in decreased potential for impacts associated with wildfire suppression to occur, because the use of vehicles and equipment required for construction and operation (currently ongoing in the area) would be removed from ANF lands. As such, effects associated with the potential for increased risk of wildfire (such as accidental ignition from vehicle or equipment usage) and/or the potential to adversely affect fire prevention and suppression activities would not occur on ANF lands as a result of the Proposed Action. However, the alternative action plan that would be required under the No Action Alternative would introduce similar potential impacts to another, as yet undetermined location. Depending on the baseline conditions for wildfire prevention and suppression at the relocation site for LAWC equipment and facilities, potential impacts to wildfire suppression could be greater under the No Action Alternative. Therefore, although the No Action Alternative would avoid impacts to wildfire suppression on ANF lands, it is anticipated that impacts to wildfire suppression would be introduced on non-ANF lands.

3.14.2.3 Cumulative Impacts

There are a variety of ongoing and historic Forest Service projects that have occurred or are occurring in the vicinity of the study area. Ongoing and historic activities include electrical utility corridors, roadway construction and usage, fire fighting, and routine improvements to existing facilities such as repairs to fences, pipelines, government facilities, and water storage reservoirs. Ongoing activities in the Proposed Action area include major construction activities associated with the implementation of the approved TRTP, operation and maintenance of multiple dams and reservoirs, use and maintenance of the Angeles National Highway (SR-2) and other roadways, fire remediation of recent forest fires, ongoing fuels management activities, storm-related road repairs, slope stabilization, and road maintenance to existing SCE transmission towers. Millard Canyon and associated day use areas provide developed recreational activities. Other recreational activities in the area include hiking, mountain biking, camping, hunting, and off highway vehicle use.

As described above, Environmental Commitments F-1 through F-3 (Fire Preventive Construction Equipment Requirements; Cease Work during Red Flag Warning Events; Remove Hazards from the Work Area) and T-1 (Traffic Control Plan for Construction) would be implemented during construction of the Proposed Action to ensure that potential impacts associated with adverse effects to fire prevention and suppression activities do not occur as a result of the Proposed Action, and that the Proposed Action would not expose communities, firefighters, personnel, and/or natural resources to an increased risk of wildfire. Therefore, construction of the Proposed Action is not anticipated to result in impacts to wildfire suppression that would have the potential to combine with impacts of other projects such that adverse cumulative effects would occur.

During operation and maintenance of the Proposed Action, existing conditions relevant to wildfire suppression would continue and cumulative impacts would not occur.

4. COMPARISON OF ALTERNATIVES

This section provides a summary of the potential impacts of implementing each alternative as discussed in Section 3, above. Information in the table is focused on activities and where different levels of impacts or outputs can be distinguished quantitatively or qualitatively among the Proposed Action and No Action Alternative.

Table 4-1 Comparison of Alternatives

Issue Area	Proposed Action	No Action Alternative
Air Quality	<p>The Proposed Action’s estimated emissions have been determined to be well below the General Conformity applicability thresholds; therefore, by statute the Proposed Action is presumed to conform with the State Implementation Plan (SIP). The Proposed Action does not have emission sources that are directly subject to the air quality strategies of the ANF Land Management Plan, and the Proposed Action would not otherwise impact the Forest Service’s ability to meet those air quality strategies, so the Proposed Action will conform with the ANF Land Management Plan.</p> <p>The construction emissions for the Proposed Action are estimated to be well below South Coast Air Quality Management District (SCAQMD) regional significance thresholds and localized significance thresholds for all criteria pollutants. Additionally, Environmental Commitments to minimize emissions, especially NOx and PM10 emissions, during construction would ensure that the air quality impacts are less than significant.</p> <p>The Proposed Action would not create significant incremental operating emissions, nor the potential for significant operating emission impacts as the Proposed Action would require minimal maintenance activities. Therefore, the Proposed Action’s operating emissions would not be significant.</p> <p>The Proposed Action would have minimal air toxics emissions that would not pose an adverse human health risk. Additionally, Environmental Commitments to reduce diesel engine emissions will ensure that the Proposed Action will have less than significant impacts from air toxics.</p> <p>Odor impacts from the Proposed Action’s construction and operation would be less than significant.</p>	<p>Construction activities required for new water collection facilities under No Action Alternative would be extensively greater than those under the Proposed Action. Consequently, construction emissions and air quality impacts would also be greater in magnitude. Air quality impacts due to the operation and maintenance activities would be identical to those under the Proposed Action.</p>
Greenhouse Gas	<p>The Proposed Action’s Greenhouse gas (GHG) emissions are well below the draft SCAQMD GHG significance criteria. Therefore, the Proposed Action will have less than significant GHG impacts.</p>	<p>No Action Alternative would also result in increased GHG emissions compared to the estimated GHG emissions under the Proposed Action, due to greater construction activities.</p>
Biological Resources	<p>No impacts to federal waters/wetlands of the U.S. and/or waters of the State would occur as a result of construction activities associated with the pipeline replacement and reroute component of the Proposed Action. Operation and maintenance activities would result in periodic, temporary, and local impacts to approximately 0.009 and 0.0005 acre of federal waters/wetlands of the U.S. and/or waters of the State at Millard Creek and the unnamed tributary in El Prieto Canyon, respectively. Additionally, ongoing operation of LAWV equipment and facilities would continue to divert water from portions of these drainages below the intake points. Implementation of Environmental Commitments would avoid and/or minimize impacts to jurisdictional waters/wetlands and include: obtaining all required regulatory permits, pursuant to Section 401 and 404 of the Clean Water Act and Section 1600 <i>ad seq.</i> of the State Fish and Game Code; development of a Forest Service-approved Operation and Maintenance Plan; biological monitoring during all major debris and/or sediment removal activities; and the installation of a</p>	<p>Construction of new equipment and facilities would be much more intensive than repairs to existing facilities. As such, impact associated with construction activities are expected to result in substantially greater impacts to waters/wetlands of the U.S. and waters of the State. Implementation of the No Action Alternative would ultimately provide a return to natural surface flows along Millard Creek and the unnamed tributary in El Prieto Canyon. However, it is expected that the construction of new equipment and facilities on non-ANF lands would require similar diversion and collection of surface waters at locations that have yet to be determined. Therefore, operation and maintenance activities are expected to be similar under this alternative as compared to the Proposed Action; however, impacts would occur on non-ANF lands.</p> <p>As locations for new equipment and facilities that would likely be required</p>

Issue Area	Proposed Action	No Action Alternative
	<p>modulated flow control valve at North Coulter Reservoir.</p> <p>Implementation of the Proposed Action is not expected to result in impacts to any species that is federally listed as threatened, endangered, candidate, or proposed for listing.</p> <p>Impacts to Forest Service Sensitive species could occur as a result of implementation of the Proposed Action; however, several Environmental Commitments would be implemented to avoid and/or minimize impacts to Forest Service Sensitive species. These include, but are not limited to, limiting work areas, provided worker training, conditions to control erosion, invasive plant monitoring and removal, avoiding animal entrapment, reporting special-status species, and biological monitoring requirements.</p>	<p>under this alternative have yet to be identified, it is unknown if any species that are federally listed as threatened, endangered, candidate, or proposed for listing would occur. However, should these species occur, impacts resulting from implementation of this alternative would be expected to be greater in magnitude compared to the Proposed Action due to the substantially greater degree of construction activities that would be required.</p> <p>Implementation of the No Action alternative would include the decommissioning and abandonment of existing equipment and facilities that occur on ANF lands. Additionally, construction of new equipment and facilities would likely be required at locations that have yet to be determined. However, any locations that would be selected would occur on non-ANF lands. Therefore, impacts to Forest Service Sensitive species would not occur with implementation of the No Action Alternative.</p>
Cultural Resources	<p>The Proposed Action is not expected to result in adverse effects to cultural resources. While ground disturbing activities associated with the pipeline replacement and reroute have the potential to disturb or destroy cultural resources, should they occur, implementation under carefully controlled conditions, including Environmental Commitments CUL-1 (Report unforeseen archaeological resources), CUL-2 (Notify proper authorities upon discovering any human remains), CUL-3 (Avoidance of Historic Pipeline Features), CUL-4 (Monitoring by a Built Environmental Specialist), and CUL-5 (Completion of a NRHP Evaluation of the Millard Canyon Alignment), would avoid and/or minimize impacts.</p> <p>Routine operation and maintenance to existing equipment and facilities are not expected to impact cultural resources.</p>	<p>Implementation of the No Action Alternative would likely require construction of new equipment and facilities at locations on non-ANF lands that have yet to be determined. As such, impacts to cultural resources, should they occur, are expected to be greater in magnitude compared to the Proposed Action due to the much more intensive degree of construction that would be required.</p>
Environmental Contamination and Hazards	<p>No known hazardous materials or hazardous waste facilities are located within the study area. Accidental spills or leaks of potentially hazardous materials during construction activities could result in soil and/or groundwater contamination. In order to avoid and/or minimize impacts associated with hazardous materials, LAWC would prepare a Spill Prevention and Contingency Plan in accordance with Environmental Commitment HAZ-1.</p>	<p>Implementation of the No Action Alternative would require more substantial construction activities than the Proposed Action, due to the construction of new equipment and facilities that would likely occur on non-ANF lands. Although implementation of Environmental Commitment HAZ-1 would avoid and/or minimize impacts associated with hazardous materials, it is expected that this greater degree of construction would introduce a higher potential for an accidental spill or release of potentially hazardous materials to occur.</p>
Geological Resources	<p>Under the Proposed Action and in compliance with Environmental Commitment GEO-1 (Seismic design and geotechnical studies), LAWC will conduct a geotechnical study to identify site-specific geologic conditions and potential hazards to support good engineering practice, thus ensuring that potential impacts from geologic hazards or soil conditions would be avoided and/or minimized.</p> <p>A Stormwater Pollution Prevention Plan (SWPPP) would be developed and implemented in compliance with Environmental Commitment HYD-1, and would include erosion control measures and best management practices to avoid or minimize impacts related to soil erosion and/or the loss of topsoil.</p> <p>The excavation activities required to install the portion of replacement pipeline in</p>	<p>Under the No Action Alternative, any construction of new equipment and facilities would be subject to existing and future building codes that restrict development in geologically unstable areas. Any areas with previously unknown geologic hazards and unsuitable soils that could potentially be discovered during site selection would require analysis, implementation of design and construction standards, or avoidance. However, due to the substantially greater degree of construction that would likely be required under this alternative, subsequent impacts related to geological resources would be potentially more substantial compared to the Proposed Action.</p>

Issue Area	Proposed Action	No Action Alternative
	<p>Millard Canyon would occur within an existing roadway (Mount Lowe Road), and would not be located on a geologic unit or soil that is unstable or that would become unstable as a result of construction. Activities included under the Proposed Action would not result in a landslide, lateral spreading, subsidence, liquefaction, or collapse.</p>	
<p>Hydrology and Water Quality</p>	<p>Construction activities associated with the Proposed Action could cause or contribute to the degradation of surface water quality if pollutants are released during construction activities, and groundwater could be affected if released materials are mobilized and eventually percolate into the Raymond Groundwater Basin, located downstream of the study area. However, Environmental Commitments that include the preparation of an Erosion Control Plan/SWPPP, best management practices, and dry weather construction would be implemented to avoid and/or minimize impacts to hydrology and water quality.</p> <p>The Project area is not underlain by a named or identified groundwater basin, and would have no effect on groundwater supply.</p> <p>No new impervious area would be introduced as a result of the Proposed Action, and existing drainage patterns in the Project area would not be altered from currently existing conditions.</p> <p>Under the Proposed Action, ongoing operation and maintenance would include the continued diversion of surface waters from Millard Creek and the unnamed tributary in El Prieto Canyon. In accordance with Environmental Commitment GEN-1, LAWC would obtain and comply with all required regulatory permits from the Corps, RWQCB, and CDFG, as applicable, to avoid and/or minimize impacts associated with operation and maintenance activities associated with the Proposed Action.</p>	<p>The No Action Alternative would likely include the construction of new equipment and facilities at locations on non-ANF lands that have yet to be determined. As such, impacts associated with the degradation of surface water and groundwater quality are expected to be greater in magnitude as those identified for the Proposed Action due to substantially greater degree of construction that would be required. Under this alternative, it is expected that LAWC would obtain and comply with all regulatory permits pursuant to Sections 401 and 404 of the CWA and Section 1600 <i>ad seq.</i> of the State Fish and Game Code and would implement Environmental Commitments, including preparation of an Erosion Control Plan/SWPPP, best management practices, and dry weather construction to avoid and/or minimize impacts.</p> <p>Implementation of the No Action Alternative would ultimately result in a return to natural flows along Millard Creek and the unnamed tributary in El Prieto Canyon. As such, implementation of this alternative would subsequently result in beneficial impacts associated with hydrology and water quality on ANF lands. However, similar adverse impacts during operation and maintenance of new equipment and facilities would result in similar impacts on non-ANF lands as those described for the Proposed Action and Environmental Commitments, including regulatory permit compliance, would be implemented.</p>
<p>Land Use</p>	<p>The Proposed Action would be in full compliance with applicable land use plans or policies. The pipeline replacement activities and continued operation and maintenance activities included under the Proposed Action would not preclude the viability with existing land uses, and would not be incompatible with land uses adjacent to or within the vicinity of the study area. In addition, Environmental Commitment LU-1, which requires advanced notice of construction, would avoid and/or minimize temporary land use effects, particularly as related to public access through the study area.</p>	<p>The potential for land use impacts to occur under the No Action Alternative would depend upon the location and site-specific conditions where construction of new equipment and facilities would likely be required.</p> <p>The No Action Alternative would likely require more extensive construction activities than the Proposed Action at locations on non-ANF lands that have yet to be determined. As such, the potential for temporary land use impacts to occur, particularly as related to public access, would be greater under the No Action Alternative. In addition, depending on site-specific land uses at and adjacent to the site for relocation of infrastructure and facilities, additional land use restrictions and/or impacts may be introduced.</p>
<p>Noise</p>	<p>Implementation of the Proposed Action would not result in a permanent and substantially higher level of ambient noise source in the vicinity of sensitive receptors. Approval of the Special Use permits to continue operation and maintenance of existing facilities and infrastructure in the study area would include periodic inspections, debris clearance, and repairs when necessary; these activities would not alter existing noise conditions.</p>	<p>Although potential sites for new equipment and facility construction have not been identified, the No Action Alternative is not expected to result in a permanent and substantially higher level of ambient noise sources in the vicinity of sensitive receptors.</p> <p>It is expected that the No Action Alternative would require construction of new equipment and facilities at locations on non-ANF lands that have yet to be</p>

Issue Area	Proposed Action	No Action Alternative
	<p>Temporary noise impacts would be introduced during the construction period, particularly along Mount Lowe Road, but would be minimized through implementation of Environmental Commitments that include best management practices for construction noise and avoidance of sensitive receptors during mobile construction equipment use.</p>	<p>determined. Due to the increased level of construction that would likely be required under this alternative, temporary noise impacts, although minimized through the implementation of Environmental Commitments that include best management practices for construction noise, would be greater in magnitude and duration than those identified for the Proposed Action.</p>
<p>Public Service and Utilities</p>	<p>Implementation of the Proposed Action would allow LAWC to continue supplying a reliable, low-cost, high-quality water source to residents of Altadena; the Proposed Action would not increase demand for public utility service. Through the upgrade and replacement of corroded pipeline in Millard Canyon, existing LAWC facilities would be more reliable and less likely to result in disruptions to existing water service. Any potential for utility service interruption would be avoided and/or minimized through the notification of utility service disruption.</p> <p>Measures employed during construction of the Proposed Action, such as placing metal plates over open trenches, would ensure that emergency access through the Project area remains uninterrupted.</p> <p>The Proposed Action would have no effect on the ability of water treatment, wastewater treatment, or solid waste facilities to adequately supply water and accommodate solid waste and wastewater.</p>	<p>Under the No Action Alternative, LAWC would require the implementation of a new action plan in order to provide ongoing services to its customers. Upon denial of Forest Service Special Use Permits, which would occur under this alternative, all current water diversion practices on ANF lands would cease. Consequently, services to LAWC customers would likely be adversely affected as the new action plan is developed and implemented. As such, impacts to public services and utilities associated with water supply are expected to be greater in nature and magnitude under this alternative as those described for the Proposed Action. These impacts would potentially include service disruptions and increased water rates for LAWC customers in order to offset costs associated with new construction and/or alternative water resources.</p> <p>Due to more extensive construction activities, the No Action Alternative may introduce greater potential for emergency access restriction(s) in the Project area.</p>
<p>Socio-economics and Environmental Justice</p>	<p>The Project area is located entirely on ANF lands, and does not include any permanent residences or population. The Proposed Action would have no effect on regional population or spending and earning patterns. In addition, the Proposed Action would ensure the continuation of existing water delivery and would not increase existing demand for public services or utilities. No impacts to socioeconomics and environmental justice would occur.</p>	<p>Under the No Action Alternative, LAWC would be required to implement a new action plan in order to continue to provide water services and meet future public demands. It is likely that this alternative would require the construction of new equipment and facilities at locations on non-ANF lands that have yet to be determined. As new locations would be on non-ANF lands, it is reasonably expected that activities associated with the No Action Alternative would have a greater potential to affect existing populations resulting in greater impacts to socioeconomics and environmental justice compared to the Proposed Action.</p>

Issue Area	Proposed Action	No Action Alternative
Traffic and Transportation	<p>Relocation of the corroded portion of water pipeline in Millard Canyon would require excavation and construction activities along Mount Lowe Road, with access to the Project area provided along Chaney Trail Road, Mount Lowe Road, and Sunset Ridge Trail. As a result, increased vehicle traffic would be experienced on these roads; however, pedestrian access and emergency vehicle access would be maintained throughout the construction period (no more than two weeks). With implementation of Environmental Commitment T-1, which would require a Traffic Control Plan, temporary traffic and transportation impacts associated with construction activities would be avoided and/or minimized.</p> <p>The Proposed Action would not result in permanent road closures or access restrictions, and would not result in roadway deterioration. Rather, following the completion of pipeline replacement activities along Mount Lowe Road, the excavated trench would be backfilled, compacted, and asphalted with a standard Caltrans mix, and existing roadway damage (such as cracks or potholes) would also be asphalted over, so that post-project road conditions would be better than existing conditions.</p>	<p>Increase levels of construction that would likely be required under the No Action Alternative are expected to result in proportionately increased levels of traffic due to the transport of construction crews, equipment, and machinery to and from the construction site. Additionally, the duration of construction activities associated with this alternative would likely result in more truck trips and equipment use. Depending on existing traffic and transportation conditions at selected sites for new construction, the No Action Alternative could potentially result in the closure of a major roadway, a reduction in level of service, impediment to pedestrian movement, and/or deterioration of roadway surfaces or features. Therefore, impacts associated with traffic and transportation would be slightly greater in magnitude and duration as those described for the Proposed Action.</p>
Visual Resources	<p>During the construction period, the Proposed Action would have temporary visual effects associated with the presence of construction vehicles and equipment, particularly along Mount Lowe Road. Following completion of the Proposed Action, there would be no change to the existing landscape character and visual quality of the study area.</p> <p>The Proposed Action would have no permanent effect related to the introduction of new light or glare that would affect day or nighttime views. Implementation of the Proposed Action would not damage scenic resources within any viewsheds of the study area.</p>	<p>The No Action Alternative would likely require more extensive construction activities than those described for the Proposed Action. As a result, temporary visual effects during construction would be more substantial under this alternative as compared to the Proposed Action.</p> <p>Implementation of this alternative would likely affect a greater concentration of visual receptors and would likely occur over a longer period of time due to the more extensive construction activities that would be required. Depending on locations that would be selected for new equipment and facilities, this alternative could result in more substantial impacts to visual resources than would occur under the Proposed Action.</p>
Wilderness and Recreation	<p>Due to the Proposed Action's location in the Altadena foothills of the San Gabriel Mountains, it is highly accessible to the public for recreational purposes, and construction activities could temporarily degrade the "outdoor experience" for recreationists in the area. The portion of Mount Lowe Road where the portion of replacement pipeline would be installed is not open to vehicular access, and would remain open to pedestrian access throughout the construction period, which would be no greater than two weeks. With implementation of Environmental Commitment R-1, which would require construction schedule coordination with the ANF, temporary effects to recreation in the Project area would be avoided and/or minimized.</p> <p>The Proposed Action would not result in permanent impacts to recreation, and would have no effect (temporary or permanent) on designated Wilderness Areas.</p> <p>Ongoing operation associated with surface water diversion activities likely contribute to long-term degradation of the "outdoor experience" for recreationists in</p>	<p>Although the No Action Alternative would likely result in much more extensive construction activities, these activities would occur at locations on non-ANF lands. Therefore, temporary impacts to recreationists would not be expected under this alternative.</p> <p>Under the No Action Alternative, water diversion would not occur on the ANF, and streamflow would be restored to natural conditions. Drainages located in Millard and El Prieto Canyons would no longer be subject to dewatering practices as they currently exist, and it is anticipated that the elimination of water diversion activities in these areas would result in long-term beneficial effects to overall stream functions. This effect of the No Action Alternative could result in increased recreational value of Millard and El Prieto Canyons, with regards to the "outdoor experience" for recreationists.</p> <p>The No Action Alternative would have no effect on designated Wilderness Areas.</p>

Issue Area	Proposed Action	No Action Alternative
	<p>the area. LAWC would implement Environmental Commitment GEN-9, which would ensure that water released from North Coulter Reservoir is returned to the initial intake point along Millard Creek.</p>	
<p>Wildfire Suppression and Prevention</p>	<p>Under the Proposed Action, the portion of replacement pipeline in Millard Canyon would be placed within an excavated trench in Mount Lowe Road, and the trench would then be backfilled, compacted, and covered with asphalt. These activities would require the presence and use of large construction vehicles and equipment along Mount Lowe Road, which could potential spark a fire or cause access restrictions to fire response vehicles. To avoid this impact, Environmental Commitment T-1 ensures that emergency vehicle access would be maintained throughout the construction period, and that construction crews would be equipped at all times during excavation and trenching activities with metal plates, to be used in covering open trench areas as necessary to provide for the passage of emergency vehicles, including fire trucks. In addition, Environmental Commitments would be implemented to further avoid and/or minimize potential impacts related to wildfire suppression and prevention. These include fire preventive construction equipment requirements, ceasing work during red flag warning events, and removing hazards from work areas.</p>	<p>Under the No Action Alternative, construction and operation/maintenance activities would not occur on ANF lands, resulting in decreased potential for impacts associated with wildfire suppression to occur, because the use of vehicles and equipment required for construction and operation (currently ongoing in the area) would be removed from ANF lands. As such, effects associated with the potential for increased risk of wildfire (such as accidental ignition from vehicle or equipment usage) and/or the potential to adversely affect fire prevention and suppression activities would not occur on ANF lands as a result of the Proposed Action. However, the alternative action plan that would be required under the No Action Alternative would introduce similar potential impacts to another, as yet undetermined location. Depending on the baseline conditions for wildfire prevention and suppression at the relocation site for LAWC equipment and facilities, potential impacts to wildfire suppression could be greater under the No Action Alternative. Therefore, although the No Action Alternative would avoid impacts to wildfire suppression on ANF lands, it is anticipated that impacts to wildfire suppression would be introduced on non-ANF lands.</p>

5. CONSULTATION AND COORDINATION

5.1 Agency Consultation

Consultation with regulatory agencies, including the USFWS and the CDFG was not conducted for this Proposed Action.

5.2 Preparers and Reviewers

Table 4-1 lists all personnel responsible for the preparation and review of this document.

Table 5-1 List of Preparers and Reviewers

Name	Sections	Background
U.S. Forest Service		
Mike McIntyre	Lead District Ranger	
Graham Breakwell	ID Team Leader	
Darrell Vance	Cultural Resources	
Alan Edler	Roads	
Janet Nickerman	Botany, Biological Resources	
Leslie Welch	Biological Resources	
Paul Gregory	Hydrology and Water Quality	
Mike McCorison	Air Quality	
Howard Okamoto	Recreation	
Aspen Environmental Group		
Chris Huntley	Project Manager; Biological Resources	Graduate Studies, Biology B.A. Biology Years of Experience: 18
Jamison Miner	Issue Area Coordinator, Introduction, Description of Proposed Action and Alternatives, Biological Resources, Consultation and Coordination, Graphic Artist	B.S. Biology Years of Experience: 7
Scott White	Botany, Biological Resources	M.A. Biology B.A. Biology Years of Experience: 19
Cynthia Hitchcock	Biological Resources	M.S. Biology B.A. Studio Art Years of Experience: 6
Justin Wood	Biological Resources	M.S. Biology (in progress) B.S. Biology Years of Experience: 8
Lynn Stafford	Biological Resources	B.A. Biology Years of Experience: 26
Will Walters	Air Quality	B.S. Chemical Engineering P.E. CA License CH5973 Years of Experience: 24

Name	Sections	Background
Insun Hwang	Air Quality	Master of Engineering, Chemical Engineering B.S. Chemical and Biomolecular Engineering Years of Experience: 2
Aubrey Mescher	Geological Resources, Hydrology and Water Quality, Environmental Contamination and Hazards, Land Use, Noise, Public Service and Utilities, Socioeconomics and Environmental Justice, Traffic and Transportation, Visual Resources, Wilderness and Recreation, Wildfire Suppression and Prevention	Master of Environmental Science and Management B.S. Environmental Studies and Film Theory Years of Experience: 6
Christopher Meyer	Cultural Resources	B.A. Biological Anthropology/Archaeology Years of Experience: 18
Judy Spicer	Document Production Coordinator	B.A. English Years of Experience: 44
Kati Simpson	Graphic Artist	B.A. Geography Years of Experience: 24
Applied Earthworks		
Barry Price	Cultural Resources	M.A. Cultural Resource Management B.A. Anthropology Years of Experience: 36
Charles Cisneros	Cultural Resources	M.S. Archaeology B.A. Anthropology Years of Experience: 9
Hatheway and Associates		
Roger Hatheway	Cultural Resources	M.A. History B.A. History Years of Experience: 34

6. REFERENCES

- AFC (Altadena Foothills Conservancy). 2009. "The Altadena Foothills: Conservation Plan".
[online]: http://www.altadenafoothills.org/af_conservationplan.html. Accessed July 10.
- Barbour, R.W. and W.H. Davis. 1969. Bats of America. Lexington: The University Press of Kentucky.
- Busch, S.E and S.S. Smith. 1995. Mechanisms associated with decline of woody species in riparian ecosystems of the southwestern U.S. Ecological Monographs Vol. 65. pp. 374-370.
- CARB (California Air Resources Board. 2011a. California Ambient Air Quality Standards.
[online]: <http://www.arb.ca.gov/research/aaqs/aaqs2.pdf>. Accessed May 20.

- _____. 2011b. California Ambient Air Quality Data Statistics. [online]: <http://www.arb.ca.gov/adam/welcome/html>. Accessed May 20.
- CSUS (California State University Sacramento). 2009. Website, Office of Water Programs. "Hydrologic Sub-Area 412.32". [online]: <http://www.water-programs.com/wqpt/HSA.asp?HSA=441232>. Accessed July 10.
- DTSC (Department of Toxic Substances Control). 2009. Hazardous Waste and Substances Site List - Site Cleanup (Cortese List). [online]: http://www.dtsc.ca.gov/SiteCleanup/Cortese_List.cfm. Accessed July 13.
- DWR (California Department of Water Resources). 2003. California's Groundwater, Bulletin 118 - Update 2003, October.
- FEMA (Federal Emergency Management Agency). 2005. [online]: <http://www.fema.gov>. Accessed July 10.
- Hatheway and Associates. 2010. A National Register Determination of Eligibility Report, Determination of Effects Statement, and Mitigation Plan for the Lincoln Avenue Water Company Millard Canyon Pipeline. September.
- Hendrix, M., Wilson, C., Held, T., Rivasplata, T. Rimpo, T, Walter, R. and Bogdan, K. 2007. Draft White Paper - Alternative Approaches to Analyze Greenhouse Gas Emissions and Global Climate Change in CEQA Documents. Prepared for the California Association of Environmental Professionals. April 27. [online]: <http://www.califaep.org/climate%20change/default.html>. Accessed June 16, 2009.
- LAWC (Lincoln Avenue Water Company). 2011a. Biological Evaluation/Biological Assessment for the Lincoln Avenue Water Company Project. Prepared by Aspen Environmental Group. April.
- _____. 2011b. Management Indicator Species Report for the Lincoln Avenue Water Company Project. Prepared by Aspen Environmental Group. April.
- McCalpin, J.P., and E.W. Hart. 2002. Ridgetop Spreading and Relationship to Earthquakes, San Gabriel Mountains Region, Southern California, Final Technical Report, National Earthquake Hazards Reduction Program, USGS.
- Rathburn, G. B., M. R. Jennings, T. G. Murphey, and N. R. Sipel. 1993. Status and ecology of sensitive aquatic vertebrates in lower San Simeon and Pico Creeks, San Luis Obispo County, California. Unpublished report, National Ecology Research Center, Piedras Blancas Research Station, San Simeon, California, under Cooperative Agreement (14-16-0009-91-1909).
- Raymond Basin Management Board (RBMB). 2009. [online]: <http://raymondbasin.org/about-us/timeline.html>. Accessed October 24.
- Richter, B.D., J.V. Baumgartner, R. Wiginton, and D.P. Braun. 1997. How much water does a river need? *Freshwater Biology* Vol. 37. pp. 231-249.
- SCAQMD (South Coast Air Quality Management District). 2009. [online]: <http://www.aqmd.gov/ceqa/handbook/signthres.pdf>. Accessed May 20.

- SWRCB (State Water Resources Control Board). 2009. Geotracker. [online]: <http://www.geotracker.swrcb.ca.gov/>. Accessed July 13.
- _____. 2006. "2006 Clean Water Act Section 303(d) List of Water Quality Limited Segments." [online]: http://www.swrcb.ca.gov/tmdl/303d_lists2006.html. Accessed July 10.
- USDA Forest Service. 2005a. Final Environmental Impact Statement, Volume 2 (Appendices) Land Management Plans: Angeles National Forest, Cleveland National Forest, Los Padres National Forest, San Bernardino National Forest. [online]: <http://www.fs.fed.us/r5/scfpr/projects/lmp/docs/feis-v2.pdf>.
- _____. 2005b. Final Environmental Impact Statement, Volume 2 (Appendices) Land Management Plans: Angeles National Forest, Cleveland National Forest, Los Padres National Forest, San Bernardino National Forest. [online]: <http://www.fs.fed.us/r5/scfpr/projects/lmp/docs/feis-v2.pdf>.
- USEPA (U.S. Environmental Protection Agency). 2011a. AirData database ambient air quality data for Pasadena and Burbank, California. [online]: http://www.epa.gov/aqspubl1/annual_summary.html. Accessed May 20.
- _____. 2009. Compilation Air Pollutant Emissions Factors, Volume 1: Stationary Sources, Section 13. [online]: <http://www.epa.gov/ttn/chief/ap42/index.html>. Accessed June 30.
- _____. 2007. Climate Change – Science – State of Knowledge. [online]: <http://www.epa.gov/climatechange/science/stateofknowledge.html>. Accessed June 30.
- USFWS (United States Fish and Wildlife Service). 1998. Final ESA Intra-Service Consultation Handbook, March 1998. U.S. Fish and Wildlife and National Marine Fisheries Service.
- Vance, D.W. 2002. Heritage Resource Evaluation of the Mount Lowe/Echo Mountain Trails Complex. Los Angeles River Ranger District, Angeles National Forest. ARR #05-01-00671.
- Ward, J.V. and J.A. Stanford. 1995. Ecological connectivity in alluvial river ecosystems and its disruption by flow regulation. *Regulated Rivers: Research and management* Vol. 11. pp. 105-119.
- Zeiner, D.C., W.F. Laudenslayer, Jr., K.E. Mayer, and M. White, (eds.). 1990. California's Wildlife: Volume II: Birds. California Statewide Wildlife Habitat Relationship System. State of California, the Resources Agency, CDFG. Sacramento, CA.