CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LAHONTAN REGION

BOARD ORDER NO. R6V-2005-0020A1
WDID NO. 6B140407009

AMENDED WATER QUALITY CERTIFICATION, WASTE DISCHARGE REQUIREMENTS, AND NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM PERMIT

FOR

CITY OF LOS ANGELES DEPARTMENT OF WATER AND POWER
LOWER OWENS RIVER PROJECT

Inyo County

The California Regional Water Quality Control Board, Lahontan Region (Regional Water Board), finds:

1. Discharger and Facility

The following Discharger is authorized to discharge in accordance with the conditions set forth in Order R6V-2005-0020 and so revised in this Order:

Discharger	Los Angeles Department of Water and Power (LADWP)
Name of Facility	Lower Owens River Project (LORP)
Facility Address	300 Mandich Street
	Bishop, CA 93514
	Inyo County
Facility Contact, Title, and Phone	Brian Tillemans, Water Resources Manager, (760) 873-0214
Mailing Address	Same
Type of Facility	Habitat Restoration Project and Water Supply Station
Facility Design Flow	Continuous 40 cfs and annual 200cfs habitat flow from River Intake; up to 50 cfs flow from pump station to aqueduct

2. Order History and Reason for Action

The Regional Water Board adopted Board Order No. R6V-2005-0020 for the Discharger on July 14, 2005. Board Order No. R6V-2005-0020 requires that the Discharger develop and implement a Storm Water Pollution Prevention Plan (SWPPP) for the Lower Owens River Project (LORP) in accordance with minimum requirements specified in Attachment L of Order No. R6V-2005-0020. The Discharger must submit the SWPPP to the Regional Water Board not less than 180 days prior to initiating construction activity, for public review and incorporation of the SWPPP into the Permit after consideration by the Regional Water Board at a public meeting. The Discharger submitted a SWPPP on September 27, 2005. In response to comments by Regional Water Board staff, the Discharger made clarification changes to the SWPPP. This Order, therefore, amends

Board Order No. R6V-2005-0020 to incorporate the October 19, 2005 version of the SWPPP for the LORP.

3. California Environmental Quality Act

This action to amend an NPDES permit is exempt from the provisions of the California Environmental Quality Act (Public Resources Code Section 21000, et seq.) in accordance with Section 13389 of the California Water Code (CWC). A notice of exemption will be filed with the State Clearinghouse following adoption of this Order.

4. Notice to Interested Parties and Public

The Regional Water Board has notified the Dischargers and all known interested parties and persons of its intent to amend the Permit to incorporate the SWPPP for construction activities for the LORP.

5. Consideration of Comments

The Regional Water Board, in a public meeting, heard and considered all comments pertaining
to this Order.

IT IS HEREBY ORDERED that the following changes be incorporated into Board Order No. R6V-2005-0020:

1. Replace Provision VI.C.2.a., which reads as follows,:

"The Discharger shall develop and implement a Storm Water Pollution Prevention Plan (SWPPP) required by Order VI.C.6.a., below. The Discharger shall submit the SWPPP to the Regional Water Board **not less than 180 days prior to initiating construction activity**, for public review and incorporation into the Permit after consideration by the Regional Water Board at a public meeting. (Refer to Attachment L for minimum requirements of the SWPPP.)"

with the following:

"The Discharger has developed a Storm Water Pollution Prevention Plan (SWPPP) as required by Provision VI.C.6.a. of Order No. R6V-2005-0020. The Discharger shall implement the October 19, 2005 SWPPP as required in Provision VI.C.6.a."

2. Add *Storm Water Pollution Prevention Plan for Construction Activities on the Lower Owens River Project* to the previous Board Order as Attachment Q.

I, Harold J. Singer, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Lahontan Region on November 9, 2005.

Original Signed By

_____

HAROLD J. SINGER
EXECUTIVE OFFICER

Attachment Q: Storm Water Pollution Prevention Plan for Construction Activities on the Lower Owens River Project

TT/T:LORP SWPPP Amendment
File under: Lower Owens River Project

STORM WATER POLLUTION PREVENTION PLAN

FOR

CONSTRUCTION ACTIVITIES

LOWER OWENS RIVER PROJECT

Date Prepared: September 27, 2005
Final Revisions October 19, 2005

PROJECT INFORMATION SUMMARY

Project Location and Address:

62 miles of the Lower Owens River in Inyo County

Land Owner Name, Address, and Phone Number:

City of Los Angeles
Department of Water and Power
300 Mandich Street
Bishop, CA 93514
(760) 872-1104

Developer Name, Address, and Phone No:

Same as above

SWPPP Compliance Contact:

Charlotte Rodrigues (760) 873-0223

On-site Contact Person:

Terry Williams, Danny Miller Jr. and Jim DeSmet

Date Notice of Intent Filed:

February 4, 2005

State Water Resources Control Board
Waste Discharge Identification (WDID) Number:

WDID: 6B140407009

Order No. R6T-2005
NPDES No. CA0103225
WQ Order No. 99-08-DWQ

Estimated Start of Construction – December 12, 2005

Estimated Date of Construction Completion – April 2007

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1.0 Purpose

The Lahontan Regional Water Quality Control Board (Regional Board) issued the Los Angeles Department of Water and Power (LADWP) a Permit (Order No. R6V-2005-0020) on July 14, 2005 for the Lower Owens River Project (Project), a project to restore water flow to and implement restoration activities on 62 miles of the Owens River north of Owens Lake. The Permit requires LADWP to develop and implement a storm water pollution prevention plan (SWPPP) for the Project.

This SWPPP lists and describes Best Management Practices (BMPs) that will be used during this construction project to minimize the potential for pollutants to leave the site during construction activities. Construction BMPs can include structural devices, material storage methods, and operational procedures used to prevent, control, and treat storm water pollution emanating from the site. Construction activities can disturb large areas that result in erosion and transportation of related particulates such as sediments and dust to nearby waterways. In excess amounts, these particulates can increase water turbidity and consequently impair aquatic life and beneficial uses of the water. Pollutants such as hydrocarbons, metals, nutrients, toxic substances, trash, and other debris can be generated from a variety of construction activities and can travel with eroded sediments. Potential pollutants traveling with the sediments may include the organic components in the top soil, plant residues, nutrient elements, organic material, deposited atmospheric pollutants, and other liquid and solid wastes.

This SWPPP is designed to meet the requirements of the Permit. This SWPPP must be implemented at the appropriate level to protect water quality at all times throughout the entire construction project, including both dry and wet weather. BMPs must be implemented and maintained to control erosion, sediment, other construction pollutants, and non-storm water discharges year-round. Other requirements of this SWPPP include employee training, site inspections, and proper maintenance of BMPs. Los Angeles Department of Water and Power (LADWP) construction crews and personnel, as well as its contractors and subcontractors, are required to follow the guidelines and BMPs outlined in this SWPPP. They are also required to ensure proper implementation and maintenance of such BMPs for the entire duration of this project.

A copy of this SWPPP must be maintained at the construction site. This SWPPP must be modified as necessary to reflect any changes in personnel or construction site conditions. Documentation of amendments to this SWPPP must be documented using the forms provided in Appendix E.

2.0 Objectives and Goals

This SWPPP has two major objectives:

1. To help identify the sources of sediment and other pollutants that affect the quality of storm water discharges, and;

2. To describe and ensure the implementation of BMPs to reduce or eliminate pollutants in storm water and unauthorized non-storm water discharges.

The goals of the SWPPP are to:

1. Minimize disturbance of existing vegetated areas.

2. Restore vegetation to areas disturbed during construction.

3. Maintain flows within the construction work sites or contain storm flows in the river area which is the drainage collection for the area to allow for sediments to settle out.

4. Maintain good housekeeping practices during construction, related to storage of materials, vehicle/equipment use and maintenance, sanitation and waste facilities.

3.0 List of Contractors and Subcontractors

Unit One includes Owens River Intake, Initial Channel Clearing and Keeler Bridge Measuring Station

The tables below list the Department of Water and Power responsible construction personnel.

General Contractor: Los Angeles Department of Water and Power			
On-site Supervisors: Terry Williams, Danny Miller Jr. and Jim DeSmet			
Persons Responsible for BMP Implementation: Terry Williams			
Name	Title	SWPPP Responsibility (ex. BMP inspection. Training)	Phone, Mobile or Pager Number
Terry Williams	Construction and Maintenance Superintendent	BMP Inspection	(760) 872-1104
Danny Miller Jr.	Construction and Maintenance Supervisor	Training, Inspection, Implementation, and Compliance	(760) 878-3000
Jim DeSmet	Construction and Maintenance Supervisor	Training, Inspection, Implementation, and Compliance	(760) 873-0232
Rick Mayfield	Labor Supervisor	Implementation, Compliance	(760) 878-3000
John Emory	Labor Supervisor	Implementation, Compliance	(760) 878-3000
Steve Butler	Labor Supervisor	Implementation, Compliance	(760) 873-0232
Jim Miller	Labor Supervisor	Implementation, Compliance	(760) 873-0232
Mike Fennessey	Labor Supervisor	Implementation, Compliance	(760) 873-0232
Charlotte Rodrigues	Waterworks Engineer	Training, Compliance	(760) 873-0223

Sub-Contractor:	None

Unit Two includes the Lower Owens River Pump Station

The tables below list the contractors and subcontractors conducting work at the site.

General Contractor: **Kiewit Pacific Co.**
On-site Supervisor: Tim Luthje, Project Manager
Persons Responsible for BMP Implementation: Tim Luthje

Name	Title	SWPPP Responsibility (ex. BMP inspection. Training)	Phone, Mobile or Pager Number
Tim Luthje	Project Manager, Kiewit Pacific Co.	Implementation, Compliance and Training	(562) 946-1816
Josh Young	Project Engineer, Kiewit Pacific Co.	Implementation, Compliance and Training	(562) 946-1816
Ignacio Gomez	LADWP Inspector	BMP Inspection and Compliance	(213) 792-4837

Sub-Contractor:
On-site Supervisor:
Persons Responsible for BMP Implementation:

Name	Title	SWPPP Responsibility (ex. BMP inspection. Training)	Phone, Mobile or Pager Number

4.0 Project Information

4.1 Project Description

The Lower Owens River Project (LORP) will reestablish water releases to the lower 62 miles of the Owens River and provide habitat restoration. Water releases will be conducted from the Los Angeles Aqueduct and various discharge points. The LORP includes construction and modification of facilities for releasing, regulating or monitoring flow in the Lower Owens River channel. A pump station will be constructed by contract to recapture water released to the Lower Owens River and discharge flow to Owens Lake or the Los Angles Aqueduct. LADWP owns most of the property where project activities will take place.

4.2 Project Location

The Lower Owens River area for the project lies east of Highway 395 and the towns of Aberdeen, Independence and Lone Pine in Inyo County.

4.3 Project Schedule

Construction activities by LADWP forces are expected to begin December 2005 through December 2006. LADWP will have construction crews working simultaneously on several project components to expedite the project. It is expected that the River Intake work and the Initial Channel Clearing will have crews working at the same time. Smaller work crews will then be assigned to work on the other project components including the Blackrock area and Keeler Bridge modifications.

The pump station facility will be built by a Contractor and the schedule is January 2006 through April 2007.

The RWQCB shall be notified 48 hours prior to commencement of ground disturbance.

To the extent feasible, the construction schedule will be designed to minimize the extent of disturbed soil area at any given time, particularly during the rainy season from October through May. The timing of grading and other soil disturbing activities will be scheduled for the dry season.

Work will be minimized during storm events. If work continues during a storm event, the work area will be stabilized to reduce the potential for pollutants to leave the area and enter receiving waterways.

4.4 Existing Site Conditions

The Lower Owens River intake structure impounds and diverts all of the Owens River flows to the Los Angeles Aqueduct. In the upper 24 mile river portion the channel contains no flow except in rare instances of releases from the Aqueduct for maintenance or emergencies. This is referred to as the “dry reach” and is located between the intake structure and Billy Lake Return just above Mazourka Canyon Road. In the lower 38 mile river portion the channel contains low flows due to releases from various spillgates located along the Aqueduct.

The Owens Valley receives approximately 5.5 inches of rain per year. The area has a desert climate and usually has one snow event a year. There is no rainy season, during the summer months brief thunderstorms can be experienced of varying intensities.

The Lower Owens River Project is located in the drainage collection area of the Owens Valley. The project has parallel boundaries of Highway 395 and the Los Angeles Aqueduct to the west of the project. See Figure 1 – Index Map. The project will receive storm water drainage from the area between the Los Angeles Aqueduct and the Lower Owens River and from the east, which is undeveloped and undisturbed area bounded by the White Mountain Range.
Flows from the Los Angeles Aqueduct can be released to the Lower Owens River through spillgates installed along the east edge of the Aqueduct. Most of the storm water flows from the base of the White Mountain Range percolate into the ground due to the presence of vegetation growth.

The project area is generally undeveloped. Water bodies in the project area include the Lower Owens River and various man-made lakes and ponds sustained by releases from the Aqueduct. Existing facilities in the project area include water conveyance/control facilities and access roads operated/used by LADWP (the Aqueduct, spillgates, pipelines for dust control in the Owens Lake, etc.) and fencing and other minor facilities used for grazing operations. Other uses of the project area include outdoor recreation. Due to the generally rural nature of the project area, toxic or hazardous materials are not expected to be present in project area soils. There are no storm drains in the project area.
The LORP occurs in the jurisdiction of the California Regional Water Quality Control Board, Lahanton Region. The proposed project will restore Owens River flows to the lower 62 miles of the River. As in River systems, bottom sediments are transported by river flows. Suspension and subsequent deposition of existing sediments as a result of restoration of river flows will occur and should not constitute a discharge of waste.

Existing Impairment of Beneficial Uses

Under existing conditions, the River Intake structure (completed in 1913) impounds and diverts all of the Owens River flows to the Los Angeles Aqueduct. As a result, most of the Lower Owens River (62 river miles between the River Intake and the Delta) currently has no or minimal flows most of the time, and contains degraded riverine-riparian habitat. The Owens River (including reaches within the LORP area) is included in the 2002 Section 303(d) list of impaired bodies with "habitat alterations" as the pollutant/stressor (RWQCB, 2003).

In the upper 24-river-mile portion ("dry reach"), the channel contains no flow except in rare instances of releases from the Aqueduct for maintenance or emergencies. As a result, this reach does not support the designated beneficial uses associated with open water. The channel and the floodplain contain degraded riparian habitat and generally lack riparian woodland habitat.

In the lower 38-river-mile portion ("wet reach"), the channel contains low flows released from several spillgates along the Aqueduct since 1986 (see Final EIR page 1-3, "Lower Owens River Rewatering Project"). This reach supports some of the designated beneficial uses. However, riparian habitat is degraded in this reach due to excessive accumulation of sediments, emergent vegetation (bulrush and cattails), and invasive weeds (saltcedar) resulting from the low flows. Water quality objectives for many parameters, including DO, are currently not met in the wet reach.

Restoration of Beneficial Uses under Proposed Project

By restoring flow in the Lower Owens River below the River Intake, the project will restore the beneficial uses of the River which have been impaired due to the absence of flows in the dry reach and

the minimal amount of flows in the wet reach. Under the project, a portion of the flow currently being diverted to the Aqueduct will be restored to the River by allowing flow through the River Intake structure. The project will establish a continuous baseflow of 40 cfs from the River Intake to upstream of the Delta. In addition, higher flows of up to 200 cfs will be released annually to facilitate the establishment of riparian trees. The project overall is expected to result in the conversion of over 900 acres of upland habitat to riparian/wetland habitat. In addition, the LORP includes rangeland management actions that will complement and facilitate the habitat restoration by modifying grazing practices, especially in the riparian areas. Therefore, over time, the project would result in the restoration of designated beneficial uses.

Several alternatives to the proposed flow release regime were considered in order to limit anticipated water quality impacts. Feasible alternatives that would ensure no exceedence of Basin Plan water quality standards were not identified. The following sections summarize Basin Plan water quality standards, potential water quality impacts related to the project (including measures to reduce impacts that were incorporated into the project), and alternatives that were considered in order to reduce water quality impacts.

Basin Plan Water Quality Standards

In addition to the beneficial uses identified above, Basin Plan water quality objectives for the Lower Owens River include:

- Narrative and numerical water quality objectives for the following parameters: ammonia, bacteria, coliform, biostimulatory substances, chemical constituents, chlorine, total residual, color, dissolved oxygen, floating materials, oil and grease, nondegradation of aquatic communities and populations, pesticides, pH, radioactivity, sediment, settleable materials, suspended materials, taste and odor, temperature, toxicity, and turbidity
- Nondegradation objective

4.5 Employee Training Program

All employees working on the site shall receive training on the SWPP conducted by the SWPPP Preparer on job specific BMPs and visual inspections for water quality. A training class will be conducted several months before the start of construction and a followup refresher class will be conducted a week or two before construction begins. Additional courses will be given to people that could not attend the scheduled courses. All training attendance will be documented, LADWP has a computer database for each employee to document the training received.

As the project proceeds periodic training sessions will be conducted at monthly safety meetings to ensure employees continue to be familiar with the BMPs and reporting requirements.

Specific SWPPP training will be conducted with the responsible personnel listed in Section 3.0 of this plan. It is vital that these personnel are very familiar with the SWPPP including inspections, implementation and monitoring of BMPs and notification to the SWPPP preparer when water quality sampling needs to be conducted.

Employees have received training in general construction project and facility yard spill prevention as part of an ongoing safety program topic. Additional training will be provided via the videos 'Hold onto your Dirt' Edition 2002 and 'Keep it Clean-Preventing Pollution from Construction Sites' Edition 2003.

All employees and new employees will receive a general briefing about the importance of preventing storm water pollution, potential sources of storm water pollution, and the BMPs to be implemented at the site. New employees shall be briefed prior to work. Storm water pollution control training may be integrated with other training sessions, such as those conducted for worker safety, spill prevention, or hazardous materials management. Employees are encouraged to provide suggestions/feedback to improve training sessions and implementation of control practices.

Employees responsible for implementing, inspecting, maintaining, or repairing storm water pollution control practices will receive copies of relevant portions of this SWPPP and become familiar with their responsibilities. When such responsibilities shift from one employee to another, the outgoing employee shall pass on all necessary information to ensure the continuing effectiveness of the BMPs and SWPPP compliance, including copies of this SWPPP and inspection checklists. The table provided in Section 3, "List of Contractors and Subcontractors", may be used to identify employees and their respective SWPPP responsibilities.

The SWPPP preparer is Charlotte Rodrigues, Waterworks Engineer with LADWP and licensed Civil Engineer. She has prepared SWPP plans on two construction projects in the last four years, under the guidance of LADWP's Environmental Compliance Group in Los Angeles.

For projects that start during the dry season, refresher sessions on storm water pollution control must be conducted prior to the wet season. Additional training will be provided as necessary, based on site inspections and evidence of storm water quality problems.

Documentation of training will be maintained as part of this plan. Training documentation forms are located in Appendix D. Completed training records must be kept with this SWPPP and will be entered into the LADWP employee training database.

The same SWPPP training will be provided to the Pump Station Contractor. Prior to the training the SWPPP preparer will meet with the contractor to discuss the proposed job specific BMPs listed in this plan and obtain feed back on any additional BMPs to be added as the plan is amended to include the contractor's responsible personnel.

4.6 Water Quality Monitoring

Best Management Practices will be implemented to avoid or minimize potential adverse impacts to water quality associated with the construction and discharge activities.

The project area is generally undeveloped. Water bodies in the project area include the Lower Owens River and various man-made lakes and ponds sustained by releases from the Los Angeles Aqueduct. Existing facilities in the project area include water conveyance/control facilities and access roads, fencing and other minor facilities used for grazing operations. Other uses of the project area include outdoor recreation. Due to the generally rural nature of the project area, toxic or hazardous materials are not expected to be present in the project area soils. There are no storm drains in the project area.

The monitoring program will provide procedures for sampling and analysis to help determine whether BMPs installed and maintained are preventing pollutants in discharges from the construction site from causing or contributing to exceedance of water quality standards. If storm water runoff from construction sites contains pollutants, there is a risk that those pollutants could enter surface waters and cause or contribute to exceedance of water quality standards. For that reason, dischargers should be aware of the applicable water quality standards in their receiving waters. (The best method to ensure compliance with receiving water limitations is to implement BMPs that prevent pollutants from contact with storm water or from leaving the construction site in runoff). In California, water quality standards are published in the Basin Plans adopted by each RWQCB, the California Toxics Rule (CTR), the National Toxics Rule (NTR), and the Ocean Plan.

4.6(a) Non-Visible Pollutant Sampling

The monitoring requirements in the National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction Activity (CGP) require sampling and analysis for pollutants that are not visually detectable in storm water discharges, which are or should be known to occur on the construction site, and which could cause or contribute to an exceedance of water quality objectives. The situations where non-visible pollutants may occur in runoff from a construction site are limited. Where such non-visible pollutants are known or should be known to be present and have the potential to contact runoff and to contribute to an exceedence of a water quality objective, sampling and analysis is required.

A variety of materials are used in construction or are present on construction sites. Examples of such materials include soil stabilizers, paint, concrete and fluids from vehicles. Any of these materials can end up in the storm water runoff and contain pollutants that pose a threat to water quality. Some of these potential pollutants will leave a visible trace. For example, sediment turns water brown and oil and grease leave a sheen. Other pollutants will discolor the runoff or leave a residue or film. For pollutants that are visible in runoff, the CGP requires the discharger to perform visual monitoring of the site and does not require sampling and analysis. The sampling and analysis requirements only apply to pollutants that do not leave a visible trace or are not associated with a visible tracer. Examples of such potential non-visible pollutants include increased pH, herbicides, pesticides, and nutrients such as nitrogen or phosphorus.

The presence or use of a material on the construction site does not always mean that dischargers must sample for it in runoff. The CGP requires sampling and analysis when non-visible pollutants could "cause or contribute to an exceedance of water quality objectives in the receiving water." The most effective way to avoid the sampling and analysis requirements, and to ensure permit compliance, is to avoid the exposure of construction materials to precipitation and storm water runoff. Materials that are not exposed do not have the potential to enter storm water runoff, and therefore do not need to be sampled for in runoff. Preventing contact between storm water and construction materials is one of the most important BMPs at any construction site. Manage any potential pollutants on the site in such a way that the exposure of the pollutant to rainfall or storm water is minimized or eliminated.

Elimination of exposure of pollutants at construction sites is not always possible. Some materials, such as soil amendments, are designed to be used in a manner that will result in exposure to storm water. In these cases, it is important to make sure that these materials are applied according to the manufacturer's instructions at a time when they are unlikely to be washed away. Other materials can be exposed when

storage, waste disposal or application are not done in a manner protective of water quality or through accidental spillage. For these situations, sampling is required unless there is capture and containment of all storm water that has been exposed to pollutants. In cases where construction materials may be exposed to storm water but the storm water is contained, and is not allowed to run off the site, then sampling only needs to occur when inspections show the containment failed or is breached and there is potential for exposure or discharge.

Many common good housekeeping BMPs already limit exposure to most materials. Improving these practices to prevent exposure is a better approach to preventing pollution of runoff and will limit the amount of sampling and analysis. Improved BMPs may be less costly than an ongoing sampling and analysis program.

The first step in managing potential pollutants at a construction site is the implementation of well thought out BMP programs that are designed to minimize the mobilization of pollutants such as sediment and to minimize the exposure of storm water to pollutants. The next important step is an aggressive program of inspections both on a regular basis and before and after storms. The inspection program must also be accompanied by an equally aggressive BMP maintenance program. The receiving water is protected when appropriate BMPs are implemented, inspected and maintained. The role of sampling is to support the visual inspection of the site when necessary.

Purpose of Sampling and Analysis for Non-Visible Pollutants

The primary method of determining compliance with the CGP is visual inspections. The permit requires regular inspections as well as pre-storm and post-storm inspections to determine if there are areas where storm water can be or has been exposed to pollutants. It is possible to see if there is erosion and movement of soil, or if construction materials, chemicals and waste are exposed. This is the best way to determine if the site is in compliance. In some cases, verification of this compliance through sampling and analysis is appropriate. The purpose of the sampling and analysis requirements is to support the visual observation program and to provide information that can be used to help determine whether the BMPs employed on a construction site are effective in preventing construction site pollutants from causing or contributing to exceedances of water quality objectives in the receiving waters.

- Monitoring for non-visible pollutants at any site where the relevant triggering conditions occur. This monitoring is required at any site where there is exposure and where a discharge can cause or contribute to exceedence of a water quality objective, not just those that discharge to water bodies that are listed for a particular pollutant; and

- Monitoring for sediment in storm water discharged directly to water bodies listed as impaired for sediment/siltation, sediment, or turbidity on the SWRCB's 303(d) list of water bodies.

Most of the Lower Owens River currently has no or minimal flows most of the time, and contains degraded riverine-riparian habitat.

5.0 Pollutant Sources and BMP Identification

5.1 Introduction

The Permit requirements must be met on a year-round basis, not just during the wet season from October to May. Therefore, this SWPPP, and prescribed Best Management Practices must be implemented at the appropriate level and in a proactive manner during all seasons until the construction project is complete. Post-construction BMPs will be implemented after the project is complete as required by the Permit (refer to Section 8 of this Plan).

BMPs are defined as "any program, technology, process, siting criteria, operational methods or measures, or engineered systems, that when implemented, prevent, control, remove or reduce pollution."

This section provides a strategy for development of the BMP Plan, including a menu of potential BMPs from which specific BMPs will be selected based on site conditions and specific construction methods selected for each project component. The SWPPP requirements are comprehensive and include implementation of BMPs for both stormwater and non-stormwater discharges. Some BMP specifications may be modified in the field as existing conditions and materials may differ from what is expected to be encountered. More efficient methods of protecting water quality may be employed as necessary and when deemed appropriate by DWP staff in the field. The following list of BMPs represent the best solutions possible for the existing and foreseen conditions. Should major modifications to in field BMPs be necessary, this SWPPP will be updated to represent those changes.

Site Map and BMP Locations

Appendix B of this SWPPP includes Project maps that identify the characteristics of each project component site related to potential discharges of sediments and other pollutants (e.g., steep slopes, existing vegetation cover, and water bodies).

Appendix B also includes construction drawings that depict the following information for the construction site:

- General topography before and after the project. The majority of the grading for this project occurs within the bottom of the river channel. There will be some change in topography at the pump station site. The other project components do not result in a change of topography.
- Water bodies (including wetlands) within or in the vicinity of the project site. The Los Angeles Aqueduct is located to the west of the project. The existing Owens River is dry in the upper portion. The lower portion includes man made lakes and ponds in the Blackrock area.
- Locations where the construction site's stormwater discharges to a receiving water. Stormwater runoff at the Intake portion of the project will discharge to the dry portion of the upper river channel. Stormwater runoff at the pump station site will discharge to the river.
- Drainage patterns and slopes anticipated after major grading activities are completed. The major grading sections of the project include the grading of the River channel bottom, which is being

prepared for continuous flow and the pump station site which will be gravel base rather than pavement.

- Existing and planned paved areas and buildings – the only building structure planned is at the pump station site. There is no pavement in the project.
- Areas of vegetative cover which will remain undisturbed during the construction project. For the two major areas of construction, the river intake and pump station site, work site disturbance boundaries are shown on the drawings in Appendix B. Other areas will have minimal disturbance and follow the BMP Preservation of Existing Vegetation.
- Areas of soil disturbance including cut or fill areas which will be stabilized during the rainy season by BMPs. Areas possibly impacted would be at the pump station site.
- An outline of areas of planned soil disturbance including cut and fill areas which will not be stabilized and will therefore require alternative erosion control measures. The pump station site building footprint may have areas of cut for the foundation treatment and construction of the sump that could be impacted.
- Existing site features that may contribute pollutants to storm water. The existing area is undeveloped open land that has not been previously disturbed.
- Construction site perimeter and access roads, including primary site entrance and exit points.
- Areas designated for the a) storage of soil or wastes, b) vehicle storage and service areas, c) construction material loading, unloading, access and storage areas and d) equipment fueling, storage, and maintenance areas. Work staging areas for the River Intake and pump station site are shown within the construction boundaries.
- Locations of major structural and nonstructural controls identified in the BMP Plan including:
  - BMPs that will protect receiving water discharge points. Cofferdams and temporary diversion pipes or channels are proposed at the River intake and pump station site, dewatering and storm water runoff would be directed behind the cofferdams to the dry portion of the River channel and downstream of the work site for the pump station or to the sediment basin.
  - Run-on (runoff from off-site areas which enters the construction site) control BMPs. Most of the areas around the work site are undisturbed pervious soils with minimal chance for runoff to occur onto the work sites.

5.2 Unauthorized Non-Storm Water Discharges

Elimination or reduction of "unauthorized non-storm water discharges" to receiving waters is a major goal of the General Permit. Most non-storm water discharges are prohibited. Unauthorized non-storm water discharges can be generated from a variety of sources. Examples include, but are not limited to: waters from the rinsing or washing of vehicles, equipment, paved areas; materials that have been improperly disposed of or dumped and spilled, and leaked materials. Such discharges will be eliminated or reduced to the maximum extent practicable.

5.3 Authorized Non-Storm Water Discharges

The General Construction Permit authorizes certain non-storm water discharges that may be necessary for the completion of construction projects. Such discharges include, but are not limited to: irrigation of vegetative erosion control measures; potable water sources related to the operation and maintenance of potable water systems; drinking fountain water; atmospheric condensates including refrigeration, air conditioning, and compressor condensate from temporary construction trailers; irrigation drainage; springs; ground water; and foundation or footing drainage. These discharges are allowed provided they are: 1) not relied upon to clean up failed or inadequate construction or post construction BMPs designed to keep materials on site; 2) infeasible to eliminate; 3) include BMPs described herein; and 4) do not cause or contribute to a violation of water quality standards. The General Permit prohibits the discharge of sediment-laden water offsite without prior treatment (detention or filtering).

5.4 Project Components and Best Management Practices

The LORP consists of 12 identified work areas that will cause land disturbance of existing soil conditions. The locations are listed below.

ID No.	Project Component	Discharge of Dredged or Fill Material to Waters		Other Land Disturbances to Waters (e.g., excavation)	
		Approx. Quantity	Type	Approx. Quantity	Type
1	**River Intake Modification**				
	Temporary coffer dam in forebay	400 cy	Compacted soil or sheet pile	---	---
	Concrete lining of tailbay and channel	350 cy	Concrete	4,000 cy	Clearing and grubbing prior to concrete lining
	Bridge replacement	150 cy	Concrete	---	---
	Aqueduct bridge repair	40 cy	Concrete	---	---
2	**Temporary Flow Measuring Stations**	400 cy	Wooden boxes	~	Minor clearing of vegetation and debris
3	**Keeler Bridge Metering Station Upgrade**	~	Concrete repair of existing metering station	100 cy	Excavation of the temporary bypass trench
4	**Initial Channel Clearing**	~	Scraping of sediments and vegetation*	7,800 cy	Removal of sediment and vegetation
5	**Structural Obstacles to be Removed / Modified**				
	Five Culverts Replacement	3,000 cy	Up to five 60-inch diameter (HDP, corrugated metal, or steel) (up to 30-foot long)	---	---
	Other Structures to be Removed / Modified	---	---	TBD	Removal of in-channel rock dams, bridges, and dikes
6	**Beaver Dam Removal**	---	Removal via grabber jaws and helicopter	---	---

ID No.	Project Component	Discharge of Dredged or Fill Material to Waters		Other Land Disturbances to Waters (e.g., excavation)	
		Approx. Quantity	Type	Approx. Quantity	Type
7	**Pump Station Site**				
	Pump Station and Diversion Structure	1,625 cy 2,820 cy 12,000 cy 12,000 sf	Concrete Gravel/cobble/riprap Soils Sheet pile (steel)	15,000 cy 1,315 cy	Excavation of the bank Excavation in the channel
	West Access Road (the portion within wetland vegetation type)	2,000 cy	Onsite/offsite soils and gravel	---	---
	Sediment Basin Initial construction Maintenance	 --- ---	 --- ---	 9,000 cy TBD	 Sediment and vegetation Sediment and vegetation
8	**Temporary Stream Gages in Delta**	<2 cy	Wooden boxes	---	---
9	**Blackrock – Culverts, Spillgates, Berms and Ditches**	Minor, unquantified	Replacement of spillgates and culverts in man-made ditches	---	---
10	**Thibaut Ponds Staff Gages**	~	Staff gages (to be installed by hand)	---	---
11	**Fence Installation**	~	Fence posts on the banks at locations where the fences cross the River (estimated to be less than 30 locations)	---	---
12	**Power Line**	---	Power line will not cross a stream course.	---	---

Construction and modification of project facilities and removal of in-channel obstructions to flow will result in ground disturbances, including in upland areas. The disturbed areas would be susceptible to soil erosion and, during rain events, could contribute to discharge of sediment-laden runoff to offsite areas. The total area of temporary ground disturbance (not necessarily all simultaneous) is expected to be up to approx. 82 acres.

The project area is generally undeveloped and currently contains little or no impervious surfaces. Construction of the pump station building and facility yard and the modification of the River Intake will result in new impervious surfaces. Other new facilities (e.g., temporary stream gages, power poles, spillgates and culverts in Blackrock) will also contribute minor amounts of impervious surfaces. The total increase in impervious surfaces associated with project facilities is expected to be up to approximately 2.4 acres.

The project includes construction and modification of facilities for releasing, regulating or monitoring the flows in the Lower Owens River channel. In addition, prior to the proposed flow releases, removal of in-channel sediments and other obstructions to flow will be necessary to ensure a continuous flow throughout the River. These activities will result in discharge of dredged or fill material into and/or excavation of sediments and vegetation from the River channel and adjacent wetlands.

The total discharge quantities by types of materials are:

- Concrete – Approx. 2,165 cubic yards
- Soil, sand, and gravel (onsite or imported) – Approx. 17,220 cubic yards
- Sheet pile – Approx. 12,000 square feet
- Other materials – Wooden boxes for temporary stream gages, culverts, etc.

The total extent of waters affected by temporary disturbance during project construction is estimated to be up to approx. 11 acres of wetlands and 3.5 acres of open water. The total extent of waters permanently affected by development of new facilities is estimated to be up to approx. 2 acres of wetlands and 0.7 acres of open water.

The BMPs described in this document will be implemented to minimize the potential for pollutants to leave the project area and enter receiving waters to the maximum extent practicable. The BMPs listed below are designed to minimize non-storm water discharges, minimize pollutants in storm water drainage and minimize the release of pollutants that can eventually be carried off by runoff, wind, or tracked out into the storm drain system or local receiving waters. BMPs also include planning and preparing for rainfall. The site should be stabilized before a storm and BMPs should be checked for correct implementation prior to storm events. Appendix F lists sources for weather forecasts. Through proactive BMP implementation and good housekeeping measures, the construction site will pose a minimum threat of polluting local waterways through storm water runoff.

BMPs must be implemented to prevent or reduce the contact of non-storm water discharges with potential pollutant sources (i.e. waste storage areas, soil piles) and minimize to the extent practicable the flow or volume of non-storm water discharges.

Responsible Construction personnel will be provided the California Stormwater Quality Association (CASQA) Best Management Practices (BMPs) handbook containing detailed information on BMP descriptions. A copy will also be available at the construction yards for reference. In the discussion below the CASQA reference chapter is listed for easy reference.

5.5 Project Scheduling

For all project components, to the extent feasible, the construction schedule will be designed to minimize the extent of disturbed soil area at any given time, particularly during the rainy season. A construction schedule that identifies the timing for implementation of the BMPs in relation to construction sequencing will be included in the Plan. The timing of grading and other soil disturbing activities will be specified, and to the extent feasible, will be scheduled for the dry season.

Local weather information should be taken into consideration to reduce erosion potential. Environmental constraints such as nesting seasons should also be considered. Stabilize non active areas as soon as practical. Avoid soil disturbing activities and concrete pouring when rain events are predicted.

Inyo County has an annual rainfall of approximately 5.5 inches, due to the desert climate there is no particular rainy season and summer thunderstorms could produce more rain than winter storms. Rain events can usually be predicted by local weather forecasts and are typically very brief in nature, a

summer thunderstorm usually lasts less than an hour and winter rain events are usually a light rain during the day or through the night.

5.6 Erosion and Sediment Control

Erosion control (or soil stabilization) is the use of practices designed to protect the soil surfaces from rain, wind, and runoff so that the soil will not erode and be transported off the construction site as sediment.

The nature of this project will require a concentrated effort to prevent and minimize the transport of sediments into nearby receiving waterways. Sediment can flow into nearby receiving waterways through storm water runoff and non-storm water runoff. When the use of water is required, every effort should be made to contain that water and allow it to evaporate in a bermed area. Remaining sediment and debris must be swept and removed from any paved areas.

Impacts to wetlands and riparian habitats adjacent to the work area shall be minimized by making use of existing barren areas for staging, operations, and stockpiling; crushing vegetation in the work area rather than clearing or grading it; and mulching areas denuded during operations with vegetative debris to encourage natural vegetation and discourage noxious weeds.

Temporary Soil Stabilization

Temporary soil stabilization is the use of practices to prevent erosion from inactive disturbed areas (i.e., where grading, excavation, filling, compaction and other soil-disturbing activities have been completed or are temporarily halted). Typically, steep slopes and large exposed areas require the most robust erosion controls.

One or more of the following temporary soil stabilization measures may be applied to disturbed areas that will be inactive for extended periods. These measures may be used in conjunction with temporary linear sediment barriers.

- Hydraulic mulch (Reference CASQA BMP No. EC-3)
- Hydroseeding (Reference CASQA BMP No. EC-4)
- Soil binders (Reference CASQA BMP No. EC-5)
- Straw mulch (Reference CASQA BMP No. EC-6)
- Geotextiles & Mats (Reference CASQA BMP No. EC-7)
- Wood mulching (Reference CASQA BMP No. EC-8)

Temporary Concentrated Flow Conveyances

For construction sites with steep slopes and large exposed areas (e.g., River Intake and pump station), BMPs to divert and concentrate flows may be used to divert off-site drainage through or around the construction site.

These BMPs include:

- Earth dikes and drainage swales (Reference CASQA BMP No. EC-9)
- Slope drains (EC-11)
- Check dams (SE-4)

- Velocity dissipation devices (EC-10)
- Sediment basin (SE-2)
- Sediment trap (SE-3).

Sediment Control BMPs

Sediment control BMPs are practices designed to capture the sediments that have eroded from disturbed surface and are transported by runoff. Sediment control BMPs include:

Temporary linear sediment barriers to trap sediments in runoff.
Linear sediment barriers are typically installed downslope of exposed and erodible slopes, around temporary stockpiles, and at other appropriate locations along the site perimeter. One or more of the following linear sediment barriers will be used around disturbed areas that will be inactive for extended periods. These measures may be used in conjunction with temporary soil stabilization measures.

- Silt fence (Reference CASQA BMP No. EC-8)
- Fiber rolls (SE-5)
- Gravel bag berm (SE-6)
- Sandbag barrier (SE-8)
- Straw bale barrier (SE-9)
- Drainage ditch
- Temporary sediment basin or sediment trap. (SE-2 or SE-3) For larger construction sites (e.g., River Intake and pump station), a temporary sediment basin or trap to settle out sediments may be constructed to supplement the other erosion and sediment control BMPs.

Examples of Sediment and Erosion BMPs to be implemented include the following:

- Stabilized construction site entrances and exits onto paved roads by using a pad of gravel, grating, or equivalent methods.
- Ensure stockpiled soils are kept bermed and covered to direct or contain runoff.
- Placement of a physical barrier in disturbed areas to prevent sedimentation due to storm water runoff from entering flowing waters when sediment cannot be contained within the work area. LADWP construction forces prefer using a silt fence as the physical barrier, other options include sandbags and straw bales.
- One or more of the following temporary soil stabilization measures will be applied to disturbed areas that will be inactive for extended periods: straw mulch, hydroseeding, wood mulch, hydraulic mulch, soil binders, straw mulch, geotextiles and mats.
- One or more of the following linear sediment barriers will be used around disturbed areas that will be inactive for extended periods (in order of preference); silt fence, fiber rolls, drainage ditch, gravel bag berm, sandbag barrier, or straw bale barrier.
- Dust control in areas of earthmoving and vehicle traffic.
- Sweeping rather than rinsing as much as practicable in paved areas.

- Collected screenings and other solids removed from liquid wastes shall be disposed of in the appropriate manner, complying with all legal requirements.
- Dredged spoils and solid wastes shall be prevented from re-entering the Owens River or Los Angeles Aqueduct by being removed off site immediately or by means of physical barriers.
- Installation of a physical barrier (silt fences, filter fabric, turbidity curtain, or equivalent) at the downstream end of the temporary diversion trench or bypass pipe to minimize sediments entering the receiving waters.
- Preservation of existing vegetation to the maximum extent possible and for as long as possible to reduce or eliminate erosion in those areas. Prior to commencement of clearing and grubbing operations or other soil-disturbing activities at the larger project sites (e.g. pump station and Owens River Intake), temporary fencing, flags, or other methods of delineation will be used to delineate areas where no construction activity is planned or where construction will occur at a later date.
- Impacts to wetland and riparian habitats adjacent to the work area shall be minimized by making use of existing barren areas for staging, operations, and stockpiling; crushing vegetation in the work area rather than clearing or grading it; and mulching areas denuded during operations with vegetative debris to encourage natural revegetation and discourage noxious weeds.

Secondary BMP measures that could be implemented if the above measures are not effective include:

- Installation of velocity dissipation device (e.g. riprap) at the downstream end of the temporary diversion trench or bypass pipe to prevent scouring of the channel bed.
- Use of a suction screen with the dewatering sump pump to prevent entrainment of sediments during construction dewatering, this will be verified via water quality sampling.

Wind Erosion Control (Reference CASQA BMP No. WE-1)

To minimize dust/ PM_{10} emissions during construction activity, as necessary, one or more of the following measures shall be implemented:

- After clearing, grading, earth moving or excavation is complete, the disturbed area shall be treated by watering, or revegetating, or by spreading soil binders until the area is stabilized.
- During construction, use water trucks or sprinkler systems to keep areas of vehicle movement, temporary soil stockpiles, and construction disturbance damp enough to prevent dust from leaving the site. This may include wetting down such areas in the late morning and after work is completed for the day. The frequency of watering or other dust control measures may be increased when wind speed exceeds 15 mph.
- Minimize the amount of disturbed area and reduce on site vehicle speeds to 15 miles per hour or less.

5.7 Water Conservation Practices (Reference CASQA BMP No. NS-1)

Water conservation practices are activities that use water during construction of a project on a manner that avoids erosion and the transport of pollutants offsite. These practices can reduce or eliminate non-stormwater discharges.

Water conservation practices include:

- Keep water equipment in good working condition.
- Stabilize water truck filling areas.
- Repair water leaks promptly.
- Discourage washing of vehicles and equipment on the construction site.
- Direct construction water runoff areas to where it can soak into the ground.

5.8 Spill Prevention and Control (Reference CASQA BMP No. WM-04)

Leaks and spills from construction machinery generally contain petroleum products and heavy metals. Drip pans or some type of impermeable material will be placed under equipment that has been known to leak when such equipment is stored outdoors and not in use. Spills of any type will be cleaned up immediately. Drip pans will be cleaned as necessary to maintain their effectiveness. If absorbent is used for spills, it must be removed promptly and in a proper manner. An emergency spill kit shall be available near active work areas and maintained at the project site at all times.

5.9 Materials and Waste Management

Materials and waste management BMPs are practices that prevent pollution by limiting or reducing potential pollutants associated with use and storage of materials and waste before they come in contact with stormwater. These practices include:

- Designating specific areas of the site, away from streams and wetland/riparian vegetation, for storage, preparation, and disposal of construction materials, chemical products, and wastes
- Covering storage areas for construction materials and wastes (including fuels, solvents, etc.) with plastic sheeting, a tarp, or other cover during rainy periods
- Storing and labeling spent fluids carefully prior to recycling or proper disposal
- Berming around storage areas to prevent contact with runoff
- Appropriate cleaning and disposing of spilled materials – Portable spill kits will be available at equipment staging areas and locations of material storage that could cause a spill. LADWP vehicles also have small spill absorbent kits. Sweeping up spilled dry materials (without using water to wash the spill away), using dry cleanup methods for liquid spills on paved or impermeable surfaces (e.g., absorbent materials, rags), etc.

These practices are included in the following materials and waste management BMPs, which will be implemented for all project components as relevant:

- Material Delivery and Storage (Reference CASQA BMP No. WM-1)
- Material Use (WM-2)
- Stockpile Management (WM-3)
- Spill Prevention and Control (WM-4)
- Solid Waste Management (WM-5)
- Hazardous Waste Management (WM-6)
- Contaminated Soil Management (WM-7)
- Concrete Waste Management (WM-8)
- Sanitary/Septic Waste Management (WM-9)
- Liquid Waste Management (WM-10)

Hazardous Waste Management and Disposal
(Reference CASQA BMP No. WM-06)

Hazardous waste will be stored and handled in separate collection and containment areas in accordance with state and federal standards. Hazardous waste can be generated from equipment maintenance and refueling activities (e.g., anti-freeze, hydraulic fluids, gasoline, diesel fuel, waste oil). Other hazardous wastes include: pesticides, paints, cleaners, epoxies and sandblast grit. Hazardous waste will be stored in covered, labeled containers and secondary containment will be provided for liquid hazardous wastes. Different types of hazardous wastes will not be mixed so as to promote recycling and avoid undesirable chemical reactions.

Solid Waste Management and Disposal (Reference CASQA BMP No. WM-05)

Specific waste collection areas will be designated on site away from streams and wetland/riparian vegetation. Trash hauling dumpsters and trash containers must be covered during storm events or windy conditions as loose trash and debris can be easily transported by water or wind into nearby receiving waterways. Hazardous waste, concrete waste, and sanitary wastes will be disposed of in the appropriate manner in accordance with all federal, state, and local requirements. Store and label spent fluids carefully prior to recycling or proper disposal.

Sanitary waste facilities should be conveniently located and well maintained. Maintenance and service will be prearranged with a licensed hauler and conducted on a regular basis.

For the project components that require movement to different sites, portable trailer mounted sanitary waste facilities will be provided for construction personnel. If these facilities are left near the work site overnight, they will be parked with a 150 foot buffer from any waterway.

Concrete Truck Washing Waste

Concrete truck wash out will only be conducted over the open trench so that all concrete waste is captured and buried in the trench. When that is not feasible and the truck must be washed out in the work area, a containment area will be created to capture the wash water. When dry, concrete waste and residue will be removed. Only as much concrete as needed will be mixed or brought on site in order to

reduce the amount of concrete waste. If concrete truck rinsing must occur, it will be done in a contained area. Concrete rinse water must not enter any receiving waterways. The concrete containment area must be cleaned out and maintained periodically to minimize the potential of contamination.

Materials Use - Handling and Storage (Reference CASQA BMP No. WM-02)

The primary goal of BMPs for on-site storage of potential pollutants is to minimize the opportunity for them to come into contact with receiving waters. Hazardous materials, plasters, solvents, paints and other compounds must be properly handled and stored in order to reduce the risk of pollution or contamination. There will be a designated area for all hazardous materials storage, and for any filling or dispensing activity away from streams and wetland/riparian vegetation. This area must be located away from drainage paths and should not be directly on the ground (i.e. use plastic liners or containment pallets). This storage area will be covered, or at a minimum, the hazardous materials will be covered in some fashion, either by a tarp, within a covered construction tool bin, or within a storage container. The storage area should be surrounded by berms to prevent any materials from leaving the area should a spill or leak occur. Consideration should be paid to keeping only the minimum amount of hazardous materials on site. Follow manufacturer's instructions regarding storage and use of materials. If any product should come into contact with the soil, that soil will be removed immediately and properly disposed of as hazardous waste.

Table 5: Summary of Potential Construction Site Pollutants

As with most construction sites, sediments and other pollutants have the potential to be present in storm water discharges during construction if appropriate BMPs are not implemented. The following table lists construction products and construction site activities and the associated potential pollutants and BMPs.

Activity	Source of Potential Pollutants	Potential Pollutants	BMP Type
Equipment and supply staging	Leaks, spills	Petroleum products, cement, metals, solvents, and other chemicals	✓ Material Use WM-2 ✓ Vehicle and Equipment Maintenance NS-10
Excavation, Backfill and Grading	Fresh grading or trenching, vehicle and equipment leakage	Sediment, debris, grease, oil, fuel, other chemicals.	✓ Erosion and Sediment Controls ✓ Vehicle and Equipment Maintenance NS-10

Concrete mixing and pouring	Waste concrete, spills	Sediment, cement, acidity	✓ Solid Waste Management WM-05
Saw cutting or metal grinding	Cutting existing or newly poured concrete, Grinding of existing metal gates or structures	Concrete dust, acidity, metal shaving particles	✓ Solid and Hazardous Waste Management WM-05, WM-06
Paints, epoxy, caulking, coal tar or exterior coatings	Spills from new applications of coatings.	VOCs, phenolics, formaldehydes, benzene and mineral spirits.	✓ Material Use WM-2
Vehicle and equipment rinsing (if done on site)	Wash water, rags, leaks	Petroleum products, other chemicals, sediment	✓ Solid Waste Management WM-05 ✓ Vehicle and Equipment Cleaning NS-8 ✓ Erosion and Sediment Controls
Vehicle Maintenance (if done on site)	Leaks, spills, used parts	Grease, oils, fuel	✓ Vehicle and Equipment Maintenance NS-10
Construction site wastes	Trash cans, portable restrooms, hazardous waste storage. Spoil piles.	Trash, debris, sewage, chemicals, sediment	✓ Solid Waste Management WM-05 ✓ Erosion and Sediment Controls
Hydrostatic test water, pipe flushing	Pump station pipe pressure test	Sediments	✓ Liquid waste Management WM-10

5.10 Vehicle and Equipment Management

Vehicles and equipment may pose a threat to storm water quality if their fluids come into contact with storm water runoff. Vehicle and equipment management BMPs are general good housekeeping practices that prevent pollution by limiting or reducing potential pollutants associated with vehicle and equipment use before they come in contact with stormwater. These practices include:

- Inspecting and maintaining equipment and vehicles on a daily basis to prevent the leaking of oil or other pollutants.
- Designating specific areas of the site, away from streams and wetland/riparian vegetation, for construction vehicle and equipment parking and for routine vehicle and equipment maintenance.

These practices are included in the following vehicle and equipment management BMPs, which will be implemented for all project components as relevant:

- Vehicle and Equipment Cleaning (Reference CASQA BMP No. NS-8)
- Vehicle and Equipment Fueling (NS-9)
- Vehicle and Equipment Maintenance (NS-10)

Vehicle and Equipment Maintenance, Repair and Storage

When stored, place drip pans under vehicles or equipment. Specific areas for vehicle and equipment storage and maintenance will be designated on site, away from streams and wetland/riparian vegetation.. Vehicles and equipment will be inspected regularly to prevent leaks and drips. Equipment with chronic leakage problems will be removed from the project and returned to the yard for repair prior to continuing its use at the site. Refueling and vehicle maintenance at the construction site will be conducted only when absolutely necessary and in designated areas. When maintenance and repair of vehicles or equipment is required, every effort will be made to prevent any motor related fluids or wastes from leaving the designated repair area, which shall be located in designated areas away from drainage areas and receiving waterways. When vehicles or equipment are immobilized and need repair, drip pans and oil-absorbing mats will be placed beneath the vehicle in order to capture spilled fluids. Absorbent materials and other wastes (used oil filters, oily rags, etc.) must be disposed of properly with other hazardous wastes from the site. Vehicle washing will not be conducted onsite. Heavy equipment shall be steam cleaned off site before starting work around receiving waterways.

Tracking and Vehicle Movement Control
One or more of the following BMPs will be implemented to minimize erosion and sedimentation associated with vehicle and equipment movement during project construction.

- To minimize the amount of dirt transported onto paved roads by motor vehicles or storm water runoff, entrances/exits to paved roads will be stabilized using a pad of gravel. (Reference CASQA BMP No. TC-1)
- Temporary construction roads will be constructed and stabilized to minimize erosion.
- Construction vehicle speeds will be limited to 15 miles per hour or less on unpaved areas.

5.11 Preservation of Existing Vegetation (Reference CASQA BMP No. EC-2)

For all project components, existing vegetation will be preserved to the maximum extent possible and for as long as possible to reduce or eliminate erosion in those areas. Prior to commencement of clearing and grubbing operations or other soil-disturbing activities at the larger project sites (e.g., pump station and River Intake), temporary fencing, flags, or other methods of delineation will be used to delineate areas where no construction activity is planned or construction will occur at a later date.

Noxious Weed Management

Personnel will receive training on weed identification through safety sessions. The Eastern Sierra Weed Management Area Noxious Weed Identification Handbook will be available to work crews. Personnel will be instructed not only on weed identification but also who to notify when weeds are encountered in the field. The instruction will also detail noting accurate descriptions of weed locations to add in verification and timely treatment.

Photos of pepperweed will be posted in the Construction Yard assembly rooms. All known pepperweed locations within the project area will be treated during the growing season. In most cases, treatment will consist of herbicide applications. The herbicide utilized will be determined by site conditions and the proximity to open water. In some cases, hand removal may be the method of control that is selected. Hand removal is only appropriate when infestations are very limited in size. Alternative methods may be used in the future of they prove to be effective and appropriate for the project.

Salt cedar will be treated by herbicide, hand removal, cutting at the base and treating the stump with herbicide, basal bark herbicide applications. While saltcedar and pepperweed are the most probable exotic weeds to cause problems during the project, other weed species may be detected and they will be treated using methods most effective for the specific species.

During construction efforts will be taken to minimize the risk of spreading exotic weed species. LADWP has a standard policy to maintain equipment "weed free". Equipment will be washed at the two LADWP construction yards in Independence and Bishop prior to working on the jobsite. Equipment that is utilized in weed infested areas are inspected for weed parts prior to moving from the site.

5.12 Instream BMPs

Most of the project components involve work near or within the River. To the extent feasible, the amount of work that occurs within the water flow line will be limited by working from bank areas or scheduling for seasons with no or limited flows.

For work that must occur within the water flow line, one or more of the following clear water diversion BMPs (Reference CASQA BMP No. NS-5) will be implemented to minimize discharge of suspended sediment to downstream or surrounding areas of the water body:

- **Diverting flow around the work area** using temporary dikes and a temporary bypass trench, pipe, flume, etc. (to be used for the River Intake, Keeler Bridge Metering Station upgrade and pump station construction). This method may require additional BMPs to prevent erosion and sedimentation associated with the temporary diversion, such as minimizing erosion of trench slopes (e.g., using geotextiles and mats or check dams-Reference CASQA BMPs No. EC-7 and SE-4), and velocity dissipation devices (e.g., at points where the stream is diverted into and from the bypass) (Reference CASQA BMP No. EC-10).
- **Enclosing and dewatering the work area** using earthen or gravel berms, sheet pile, etc. (to be used during modification of the River Intake)
- **Confining suspended sediments to the work area** using filter fabric, turbidity curtain, or other methods. This BMP may be used in areas where dewatering is not necessary (areas with low

flows requiring minimal site disturbance, such as installation of temporary stream gages in the wetted reach) or in combination with one of the above two BMPs.

In addition, the following BMPs related to working within or near streams may be implemented as relevant:

- **Temporary stream crossings** will be used where frequent vehicle or equipment crossing of the River could result in erosion within the channel. (Reference CASQA BMP No. NS-4)
- **Materials and equipment use over water**. When vehicles or equipment are expected to be idle within or over water bodies for extended periods, drip pans and absorbent materials will be placed under the vehicles/equipment. (NS-14)
- **Stream bank stabilization** - Stream banks adjacent to the instream work area will be stabilized to prevent erosion using erosion control BMPs. (EC-12)
- **Demolition adjacent to water -** This BMP involves procedures to protect water bodies from debris and wastes associated with structure demolition or removal over or adjacent to water courses. This BMP is applicable to proposed removal of structural obstacles to flow such as old bridge berms and earthen dikes. (NS-15)

The following BMPs that apply to specific types of construction activities are relevant to some of the project components:

- **Dewatering Operations** such as removal of groundwater (pump station construction, River Intake modifications, and initial channel clearing) and water from coffer dams (i.e., River Intake modifications). (Reference CASQA BMP No. NS-2)
- **Pile Driving Operations** – Applicable to the River Intake modifications and pump station construction. (NS-11)
- **Concrete Curing** – Applicable to the River Intake modifications and pump station construction. (NS-12)
- **Concrete Finishing** – Applicable to the River Intake modifications and pump station construction. (NS-13)

5.13 Best Management Practices by Project Component

5.13 (a) Project Component ID No. 1 - River Intake Modification

Temporary Cofferdam in the Forebay
A temporary cofferdam or Portadam will be installed on the upstream side of the diversion. A temporary cofferdam could involve pile driving and steel plates or wood lagging or creating an earthern berm, the preferred option being investigated is a temporary Portadam steel structure and impervious rubber membrane. The temporary coffer dam or Portadam will be approx. 400 feet, covering the entire length of the Intake and extending approx. 100 feet upstream of the east end of the Intake to minimize seepage and provide a dry work area in the tailbay. As a contingency a temporary aboveground pipeline may be placed along the east end of the River intake to intercept the groundwater seepage and direct the flow back into the River channel downstream of the concrete channel work.

While the cofferdam is in place, the existing three radial spillgates on the east end of the River Intake structure will be restored to their original, fully operational condition. The zone of construction include the approximately 5.5 acre area south of the River Intake (tailbay and river channel) and a 5,000 square foot area around the existing Aqueduct Intake bridge.

Construction Dewatering
Description: To isolate the work area during modifications of the River Intake spillgates, a coffer dam or Portadam will be installed in the forebay along the entire length of the River Intake structures (approximately 400 feet). The coffer dam will consist of compacted soils and/or sheet pile. A Portadam option consists of a temporary steel framework placed in the Aqueduct with an impervious rubber membrane material liner laid over the framework along the bottom of the approx. 40 foot wide Aqueduct to the opposite bank. During installation of the coffer dam or Portadam (lasting approximately 1 to 2 weeks), the flow in the River/Aqueduct will temporarily be reduced to 25 cfs to lower the water levels in the forebay to enable the coffer dam installation. Once the coffer dam is in place, the flows around the coffer dam will be up to 600 cfs. After coffer dam installation, the water between the coffer dam and the River Intake structures will be removed to maintain a dry work area. Several sump pumps will be installed between the coffer dam and the River Intake for dewatering. The water will be pumped into the forebay at the downstream (west) end of the coffer dam. This dewatering operation will be necessary both for initial removal of water after coffer dam installation and to remove any groundwater that seeps into the area during the construction period. The groundwater will be sampled for sediment content and depending on the volume will either be discharged to a low area east of the River (limited to approximately 300 by 300 feet) or into portable tanks with separation chambers to remove sediment before discharging into the forebay. A gravity bag filter or dewatering bag of non-woven geotextile fabric may be installed on the discharge end of a dewatering pump to collect sediment. The filter bag will be purchased with an opening size to screen to the existing baseline sediment levels, filter bags are available with various openings such as 40 and 80 US standard sieve. If sump pumps are used they will be equipped with screen covers to prevent larger particles and debris from entering the pump. Sediment sampling will be conducted and compared to upstream background and reference samples and 1993 baseline data to determine if construction activities are contributing to sediment loads.

Receiving Water / Discharge Location: Los Angeles Aqueduct immediately downstream of the River Intake (estimated flow = up to 400 cfs)
Discharge Rate: Approx. 500 gpm

Duration of Diversion: Approx. 6 months – January 2006 through June 2006.

River Intake

Description: During modifications of the River Intake, sediments will be removed from the forebay and tailbay at the River Intake. In addition, 300 feet of the River channel downstream of the River Intake will require sediment and vegetation removal. Subsequently, sediments will be removed from the forebay and tailbay to maintain the capacity of the forebay and to protect the new gate and metering station from excessive sedimentation. A total of approximately 10,000 cubic yards of materials will be stockpiled at two existing stockpile locations. The main stockpile area located north of the Los Angeles Aqueduct will be used for most of the materials. There is a 100 foot buffer from the toe of the existing stockpile to the Los Angeles Aqueduct bank. New material will be added to the pile on the north end of the existing stockpile, away from the Los Angeles Aqueduct. If necessary, depressional areas will be created around the sediment stockpile to prevent water from the stockpile from entering the Los Angeles Aqueduct or River, this is not anticipated at this time since stockpiling will not occur near the River or Aqueduct banks.

Location: Work staging areas are shown on Figure 2. The main area will be south of the River Intake, equipment may be stored here overnight. Storage containers may be brought in for storage of materials that may be used on site. Construction work trailers and portable restrooms will be located in this area. Any material waste may be brought temporarily to this area before being hauled to the proper disposal site. There will be minimal equipment cleaning or maintenance onsite, other than to refuel vehicles. The Independence Yard is located south of the project and equipment requiring service will be brought to the maintenance garage facility. Another staging area may be located west of the Aqueduct, this would minimize traffic crossing the Aqueduct bridge.

Another area is shown east of the River, this area will be a work staging area during the cofferdam installation and retaining wall. Concrete trucks will also work in this area during the installation of the lined channel. Equipment will not be parked here overnight. Materials such as steel beams or framework used for the cofferdam may be staged here.

Approximately 12 acres will be disturbed during this portion of the project and an additional 0.9 acres of impervious area will be added by the new concrete lined tailbay.
Restoration of vegetation is discussed in post BMPs Section 8.

Quantity: Approx. 10,000 cubic yards of material will be removed during the initial River Intake modifications, then approx. 4,000 cubic yards annually during maintenance activities.

Schedule – Approximately 7 months – December 2005 through June 2006.
Mobilization and preparation activities will occur in December 2005.
The cofferdam will be installed within the first two months – January and February 2006.
The cofferdam and dewatering BMPs will remain in place until July 2006.
Contingency dewatering pipe will be installed in January-February 2006.
Retaining wall construction will occur in March 2006.
Improvements to the intake structure will occur from January through April 2006.
The concrete lined tailbay and channel will be installed from February through April 2006.
The existing access road will be improved from January and February 2006.
The River bridge replacement and Aqueduct bridge improvements will occur from January through March 2006.

Concrete lined tailbay and channel
A 30 foot long concrete wing wall will be constructed on the east end of the existing spillgates. Downstream of the three east end spillgates, an 85 foot long concrete spillway channel will be constructed and a new automated gate will be installed, then a 225 foot long concrete channel will be installed for a flow metering station. This work will involve grub, clear, regrade, compact and lining the tailbay with concrete.

Access to the River Intake for construction is shown in yellow on Figure 2. An existing dirt access road from the Aqueduct Intake bridge to the east side of the River Intake will be modified for additional heavy equipment traffic. The road may be slightly elevated and supported by rip-rap armoring for heavy equipment loads.

Bridge Replacement
An existing steel rail car bridge will be rehabilitated and reinstalled on new concrete bridge abutments downstream of the existing east end spillgates. A flow metering station will be installed here.

Aqueduct Bridge Repair
The existing bridge across the Aqueduct will be upgraded at the abutments for heavy equipment traffic.

Storm Water Run-on Calculations
The River Intake work site is bounded by the Los Angeles Aqueduct and the dry channel of the Owens River. This limits stormwater run on to the construction work site area and equipment staging area. The estimated drainage area for this portion of the project is 12.0 acres. The rational method runoff coefficient used for this area which is unimproved pasture type land is 0.3, obtained from LMNO Engineering Research and Software, Ltd. Website - lmnoeng.com. The rainfall intensity for the Lahontan Region of Inyo County is 0.16 inches per hour, from the Caltrans Storm Water Quality Handbooks.

The Rational equation is Q=ciA
C = rational method runoff coefficient, 0.3
I = rainfall intensity for Lahontan Region in Inyo County, 0.16 inches/hour
A = Drainage area in acres

Q = (0.3)(0.16)(12 acres) x (43,560 sq ft/acre)x(1 hour/60 min) x (1 min/60sec)(1 foot/12 in)
Q = 0.58 cubic feet per second

BMPs that may be used during the River Intake modification include:
(Reference BMPs from the California Stormwater Quality Association www.cabmphandbooks.com)
The BMPs used will be in place during the duration of this project component.

Scheduling	EC-1
Silt Fence	SE-1
Fiber Rolls	SE-5
Stabilized Construction Entrance/Exit	TC-1
Stockpile Management	WM-03
Material Delivery and Storage	WM-01

Material Use	WM-02
Spill Prevention and Control	WM-04
Solid Waste Management	WM-05
Hazardous Waste Management	WM-06
Sanitary/Septic Waste Management	WM-09
Liquid Waste Management	WM-10
Vehicle and Equipment Maintenance	NS-10
Vehicle and Equipment Cleaning	NS-8
Vehicle and Equipment Fueling	NS-9
Illicit Connection/Discharge	NS-6
Preservation of Existing Vegetation	EC-2
Wind Erosion Control	WE-1
Water Conservation Practices	NS-1

The following BMPs will be used during portions of the project –

Dewatering Operations	NS-2
Concrete Waste Management	WM-8
Material Over Water	NS-14
Pile Driving Operations	NS-11
Demolition Adjacent to Water	NS-15
Concrete Curing	NS-12
Concrete Finishing	NS-13
Clear Water Diversion	NS-5

The following BMPs may be used during the project if the BMPs listed above are not effective or if additional BMPs need to be implemented –

Sandbag Barrier	SE-8
Contaminated Soil Management	WM-7
Hydraulic Mulch	EC-3
Hydroseeding	EC-4
Geotextiles and Mats	EC-7
Soil Binders	EC-5
Temporary Stream Crossing	NS-4
Streambank Stabilization	EC-12
Earth Dikes and Drainage Swales	EC-9
Sediment Basin	SE-2
Sediment Trap	SE-3
Check Dams	SE-4
Straw Bale Barrier	SE-9
Velocity Dissipation Devices	EC-10

5.13 (b) Project Component ID No. 2 - Temporary Flow Measuring Stations

Fifteen temporary flow measuring stations will be installed along the River prior to water releases. Each station will require minimal disturbance to the river channel to grade the area for approximately a 30 by 50 foot long area to place a geotextile pervious membrane. An area velocity flow meter will be installed on the bottom of the channel. A 2 inch diameter pipe (12 feet high) will be equipped with a pole mounted solar panel and control box 2 by 2 feet for the data collection measuring equipment will be installed along the west bank of the river.

Schedule - approx. six months, from January 2006 through June 2006 to install the flow measuring stations at various locations.

Access to the various station locations will be from existing and temporary dirt roads in the area shown in yellow on Figure 3. Installation of the station will require minimal disturbance to existing vegetation. This portion of the project will not require any equipment or material staging areas. Concrete mixing for the mounting of the solar panel will be done by a portable mixer, quantities will only be mixed for the job need.

After approximately two years a determination will be made to as to which stations will remain permanent. Removal of the temporary stations will be conducted during the low flow period, the area velocity meter is easily lifted out with a small crane and the geotextile pervious membrane can be pulled out since it is not anchored to the channel bottom.

BMPs that may be used during the installation of the temporary flow measuring stations include:
(Reference BMPs from the California Stormwater Quality Association www.cabmphandbooks.com)

Scheduling	EC-1
Silt Fence	SE-1
Fiber Rolls	SE-5
Stabilized Construction Entrance/Exit	TC-1
Stockpile Management	WM-03
Material Delivery and Storage	WM-01
Material Use	WM-02
Spill Prevention and Control	WM-04
Solid Waste Management	WM-05
Hazardous Waste Management	WM-06
Sanitary/Septic Waste Management	WM-09
Liquid Waste Management	WM-10
Vehicle and Equipment Maintenance	NS-10
Vehicle and Equipment Cleaning	NS-8
Vehicle and Equipment Fueling	NS-9
Illicit Connection/Discharge	NS-6
Preservation of Existing Vegetation	EC-2
Wind Erosion Control	WE-1
Water Conservation Practices	NS-1
Sandbag Barrier	SE-8
Concrete Waste Management	WM-8

Concrete Curing	NS-12
Check Dams	SE-4

5.13 (c) Project Component ID No. 3 - Keeler Bridge Metering Station Upgrade

A permanent measuring station will be installed at Keeler Bridge. An existing concrete flow measuring wall will be cut down by 6 inches and a weir plate installed.

During construction a temporary coffer dam will be constructed approximately 25 feet upstream of the weir. The dam will be approximately 25 feet wide and 6 feet deep. A culvert (24 to 26 inch in diameter and 20 feet in length) will pass through the temporary coffer dam to temporarily divert the water around the site.

Schedule – approx. four months, from March 2006 through June 2006.

Diverted Stream Flows - Temporary stream diversion during construction
Description: To isolate the work area during modifications to the Keeler Bridge Metering Station, the flows in the River will be diverted around the work area. Average monthly flows at Keeler Gage from 2001-02 to 2003-04 water years ranged from 1 to 16 cfs (aside from an emergency Aqueduct release). This will be accomplished through installation of a coffer dam (e.g., sandbags and plastic) on the upstream and downstream sides of the bridge and excavating a temporary trench (approximately 3-feet wide by 10-feet deep) to divert the water around the north side of the bridge. The water from the work area will be pumped over the sandbag dam back into the channel downstream of the work area. Once all work has been completed, the bypass trench will be backfilled and compacted using the soils initially excavated from the trench.

Receiving Water / Discharge Location: Lower Owens River downstream of Keeler Bridge Metering Station
Discharge Rate (Estimated Flow of the Diverted Stream): Approx. 1 to 16 cfs
Duration of Diversion: Approx. 2 months

Access to the Keeler Bridge metering station will occur from existing dirt roads in the area. Installation of the station will require minimal disturbance to existing vegetation. This portion of the project will not require any equipment or material staging areas.

BMPs that may be used during the Keeler Bridge Metering Station Upgrade include:
(Reference BMPs from the California Stormwater Quality Association www.cabmphandbooks.com)

Scheduling	EC-1
Silt Fence	SE-1
Stabilized Construction Entrance/Exit	TC-1
Material Delivery and Storage	WM-01
Material Use	WM-02
Spill Prevention and Control	WM-04
Solid Waste Management	WM-05

Hazardous Waste Management	WM-06
Sanitary/Septic Waste Management	WM-09
Liquid Waste Management	WM-10
Vehicle and Equipment Maintenance	NS-10
Vehicle and Equipment Cleaning	NS-8
Vehicle and Equipment Fueling	NS-9
Illicit Connection/Discharge	NS-6
Preservation of Existing Vegetation	EC-2
Wind Erosion Control	WE-1
Water Conservation Practices	NS-1
Dewatering Operations	NS-2
Concrete Waste Management	WM-8

Additional BMPs that may be used during construction as secondary BMPs include:

Fiber Rolls	SE-5
Sandbag Barrier	SE-8
Contaminated Soil Management	WM-7
Material Over Water	NS-14
Demolition Adjacent to Water	NS-15
Earth Dikes and Drainage Swales	EC-9
Sediment Basin	SE-2
Sediment Trap	SE-3
Check Dams	SE-4

5.13 (d) Project Component ID No. 4 – Initial Channel Clearing

Schedule 4 months to complete January 2006 through April 2006.

Description: LADWP will mechanically remove sediments and marsh vegetation from 10,800 feet of the currently dry river channel downstream of the River Intake. It is estimated that approximately 7,800 cubic yards of sediment and organic material will be removed. The depth of excavation will be about 1 to 2 feet on average. A 15-foot wide swath will be excavated within the middle of the existing 40-50 foot wide channel.

Approximately 12 acres of land will be disturbed during the initial channel clearing, there will be no impervious areas created.

All channel clearing work will occur from the west bank using a tracked excavator. Both banks will remain undisturbed. Excavated material will be placed directly into dump trucks, and then hauled to a permanent sediment stockpile area adjacent to the River Intake. Approximately six trucks will be used in the operation (four 4-cubic yard trucks and two 8-cubic yard trucks). The amount of material removed and hauled will range from 192 to 288 cubic yards per day. A temporary 20-footwide haul road will be established on the top of the west bank for the excavator and trucks. It will be created by driving over the existing vegetation in flat areas, and by minor grading where the terrain is uneven. Several temporary roads will be created perpendicular to the main haul road to provide access to an

existing dirt road along the Aqueduct. These roads will be restored to pre-construction grade and revegetated as discussed in Section 8, Post BMPs.

This action would result in the removal of 3.7 acres of emergent freshwater marsh currently dominated by cattails. New emergent wetlands will be created over time along the entire lower Owens River due in response to the rewatering. The initial channel clearing will take place in the reach of the River with no surface flows. However, this reach has high groundwater. Therefore, if the presence of groundwater is inhibiting equipment use, dewatering of the immediate work area using sump pumps may be necessary. The water removed from the work area will be discharged to the channel bottom (dry) immediately downstream (working from the downstream end up).

Receiving Water / Discharge Location: Lower Owens River channel (dry) immediately below the channel clearing work area
Discharge Rate: Approx. 25 gpm
Duration of Diversion: Approx. 4 months

Storm Water Run-on Calculations
The Initial Channel Clearing work site is bounded by the Los Angeles Aqueduct to the west and the dry channel of the Owens River. This limits stormwater run on to the construction work site area and equipment staging area. The estimated drainage area for the immediate work area is estimated as 12.0 acres. The rational method runoff coefficient used for this area which is unimproved pasture type land is 0.3, obtained from LMNO Engineering Research and Software, Ltd. Website - lmnoeng.com. The rainfall intensity for the Lahontan Region of Inyo County is 0.16 inches per hour, from the Caltrans Storm Water Quality Handbooks.

The Rational equation is Q=ciA
C = rational method runoff coefficient, 0.3
I = rainfall intensity for Lahontan Region in Inyo County, 0.16 inches/hour
A = Drainage area in acres

Q = (0.3)(0.16)(12 acres) x (43,560 sq ft/acre)x(1 hour/60 min) x (1 min/60sec)(1 foot/12 in)
Q = 0.58 cubic feet per second

Mitigation Measure R-1
Temporary access roads used to clear the river channel shall be seeded with native or naturalized grasses and shrubs common to the valley, as available, after completion of the desilting operation to facilitate restoration of vegetation cover and species compatible with the surrounding vegetation. The colonization by non-native aggressive or noxious weeds shall be inhibited by weed control for 3 years after construction. *(Final EIR Section 4.5.3, page 4-33)*

Mitigation Measure RW-1
Impacts to wetlands and riparian habitats adjacent to the work area shall be minimized by making use of existing barren areas for staging, operations, and stockpiling; crushing vegetation in the work area rather than clearing or grading it; and mulching areas denuded during operations with vegetative debris to encourage natural vegetation and discourage noxious weeds.

BMPs that may be used during the Initial Channel Clearing include:

(Reference BMPs from the California Stormwater Quality Association www.cabmphandbooks.com)

Scheduling	EC-1
Silt Fence	SE-1
Stabilized Construction Entrance/Exit	TC-1
Stockpile Management	WM-03
Material Delivery and Storage	WM-01
Material Use	WM-02
Spill Prevention and Control	WM-04
Solid Waste Management	WM-05
Sanitary/Septic Waste Management	WM-09
Liquid Waste Management	WM-10
Vehicle and Equipment Maintenance	NS-10
Vehicle and Equipment Cleaning	NS-8
Vehicle and Equipment Fueling	NS-9
Illicit Connection/Discharge	NS-6
Preservation of Existing Vegetation	EC-2
Wind Erosion Control	WE-1
Fiber Rolls	SE-5
Water Conservation Practices	NS-1
Sandbag Barrier	SE-8
Contaminated Soil Management	WM-7
Dewatering Operations	NS-2
Geotextiles and Mats	EC-7
Streambank Stabilization	EC-12
Earth Dikes and Drainage Swales	EC-9
Sediment Basin	SE-2
Sediment Trap	SE-3
Check Dams	SE-4

5.13 (e) Project Component ID No. 5 – Structural Obstacles to be Removed/Modified

Five Culverts Replacement
Five 36 inch diameter steel pipe culverts will be replaced with 60 inch diameter culverts.

Other Structures to be Removed/Modified
Three instream rock dams in the dry reach of the channel between "5 Culverts" and Mazourka Canyon Road will be mechanically removed with heavy equipment (e.g. loader, excavator) and the debris would be trucked off site for proper disposal.

Access to the existing structural obstacles will occur from existing dirt roads in the area. Installation of the new culverts will occur in an area previously disturbed and will have minimal disturbance to existing vegetation. This portion of the project will not require any equipment or material staging areas.

Schedule – removal of the obstacles will occur from January through March 2006. Replacement of the five culverts will occur in March-April 2006.

BMPs that may be used during the removal of the structural obstacles and installation of the five culverts include:
(Reference BMPs from the California Stormwater Quality Association www.cabmphandbooks.com)

Scheduling	EC-1
Silt Fence	SE-1
Stabilized Construction Entrance/Exit	TC-1
Spill Prevention and Control	WM-04
Solid Waste Management	WM-05
Hazardous Waste Management	WM-06
Sanitary/Septic Waste Management	WM-09
Liquid Waste Management	WM-10
Vehicle and Equipment Maintenance	NS-10
Vehicle and Equipment Cleaning	NS-8
Vehicle and Equipment Fueling	NS-9
Illicit Connection/Discharge	NS-6
Preservation of Existing Vegetation	EC-2
Wind Erosion Control	WE-1
Concrete Waste Management	WM-8
Demolition Adjacent to Water	NS-15

BMPs that may be used as secondary or additional BMPs include:

Fiber Rolls	SE-5
Water Conservation Practices	NS-1
Sandbag Barrier	SE-8
Contaminated Soil Management	WM-7
Dewatering Operations	NS-2
Material Over Water	NS-14
Earth Dikes and Drainage Swales	EC-9
Sediment Basin	SE-2
Sediment Trap	SE-3
Check Dams	SE-4
Straw Bale Barrier	SE-9

5.13 (f) Project Component No. 6 – Beaver Dam Removal

Beaver dams that significantly obstruct flows will be breached by a pilot operated Grabber jaws attached via a cable to a helicopter or by hand to allow a more unrestricted flow. Debris from the dams will be placed on adjacent upland sites outside the floodplain and riparian corridor for wildlife use and decomposition.

Schedule – This work will be scheduled mainly between November and May to avoid disturbance to nesting waterfowl.

Since this activity occurs from a helicopter, there will be no disturbance to existing vegetation except for the placement

BMPs that may be used during beaver dam removal include:
(Reference BMPs from the California Stormwater Quality Association www.cabmphandbooks.com)

Scheduling	EC-1
Spill Prevention and Control	WM-04
Solid Waste Management	WM-05
Illicit Connection/Discharge	NS-6
Preservation of Existing Vegetation	EC-2
Wind Erosion Control	WE-1
Water Conservation Practices	NS-1
Material Over Water	NS-14
Demolition Adjacent to Water	NS-15

5.13 (g) Project Component No. 7 – Pump Station Site

Pump Station and Diversion Structure – Construction schedule 15 months
A 50 cfs maximum capacity pump station will be constructed 4.5 miles south of Keeler Bridge. The pump station site is located in an 800 to 1,000 foot wide floodplain, with an active river channel on the west side. The floodplain is about 15 to 20 feet lower than the adjacent upland area. There are steep bluffs along the western edge of the floodplain. The active channel is about 200 feet wide and 5 feet deep. The pump station facility yard will encompass about 1.25 acres, about 0.8 acres of impervious area will be created by the new structure.

Construction activities will occur within a 24 acre construction area. Within the 24 acre area exists approx. 10 acres of wetlands, only 3 acres of wetlands will be temporarily disturbed during construction. About 15,000 cubic yards will be excavated from the banks above the river to create a flat pad for the facility yard. The site will be over-excavated and backfilled with an engineered foundation. About 1,250 cubic yards will be used to construct the diversion and erosion control structure. The remainder would be spread out on the top of the riverbank west of the pump station in a barren sandy area.

The pump station yard will consist of a control building or prefabricated metal and a buried pump sump. The facility yard will be a gravel surface enclosed by a chain link fence.

Construction of the pump station structure will take approx. 5 months, May through September 2006. Completing the pump station equipment and electrical controls and pipeline will take an additional 5 months, September 2006 through January 2007.

The actual staging area will be determined by the Contractor within the construction area limits. It is expected that the Contractor will use the area south westerly of the pump station building as a staging and equipment parking area.

A diversion structure will be constructed across the river channel consisting of a 40 foot wide spillway, 30 foot wide spillway weir plate, bypass/flushing gate, 150 foot long spillway abutment and 650 foot long erosion control structure. The diversion structure will be constructed of compacted on-site material. It will have a 25 foot deep sheet pile cut off wall on the westerly 50 feet and a 10 foot deep sheet pile cutoff wall for the remaining length. The spillway abutment will have rock rip-rap on the upstream slope to protect the spillway from wash out, the crest will be about 10 feet wide. An erosion control structure of a 650 foot long earthern berm up to 2 feet in height will be constructed at the east end of the spillway abutment. It will be a sheet pile cutoff wall with a minor berm. Flows higher than 200 cfs will pass over the erosion control structure.
Construction of the diversion structure will take approx. 4 months – February 2006 through June 2006.

Temporary Cofferdam

During construction a 2-3 foot high temporary earthen berm will be constructed to divert flow from the river around the construction site. A 100-foot wide corridor across the river will be cleared and a temporary earthen berm (using riverbed materials) will be installed to divert flows to a temporary bypass pipe or open channel on the east side of the river. If an earthern berm is used a rubber membrane liner may be required to ensure sediment is not carried downstream. Alternatives would be the installation of sheet piling and steel plates or wood lagging or a temporary cofferdam composed of structural pipe or steel beam supports and an impervious rubber membrane fabric liner.
Construction will take approx. 2 months – January through March 2006. The temporary cofferdam will remain in place for approximately 12 months – January 2006 through December 2006.

Construction Dewatering
Description: To maintain a dry work area during construction of the pump station and associated facilities, a dewatering system will be designed and installed by the contractor to remove groundwater from the work area. The water will be discharged to the River channel immediately downstream of the work area. The dewatering system will be temporary and only in place during construction, the dewatering system will be removed when construction activities no longer are impacted by groundwater. The Contractor will follow the Water Quality Sampling and Analysis Plan in Appendix K and applicable BMPs such as Dewatering Operations to ensure that sediment loads from construction activities are not transmitted downstream. Water samples will be compared to reference upstream samples to ensure no additional sediment loading is discharged during dewatering activities.

Receiving Water / Discharge Location: Lower Owens River downstream of the pump station construction area
Discharge Rate: Approx. 1,000 gpm
Duration of Diversion: Approx. 12 months – January 2006 through December 2006.

Receiving Water / Discharge Location: Lower Owens River downstream of the pump station construction area.
Discharge Rate (Estimated Flow of the Diverted Stream): Approx. 1 to 16 cfs
Duration of Diversion: Approx. 12 months – January 2006 through December 2006.

Storm Water Run-on Calculations
The pump station work site is bounded by the wet portion of the Owens River on the east side. The estimated drainage area for the immediate work area is estimated as 32.0 acres. The rational method runoff coefficient used for this area which is unimproved pasture type land is 0.3, obtained from LMNO Engineering Research and Software, Ltd. Website - lmnoeng.com.
The rainfall intensity for the Lahontan Region of Inyo County is 0.16 inches per hour, from the Caltrans Storm Water Quality Handbooks.

The Rational equation is Q=ciA
C = rational method runoff coefficient, 0.3
I = rainfall intensity for Lahontan Region in Inyo County, 0.16 inches/hour
A = Drainage area in acres

Q = (0.3)(0.16)(32 acres) x (43,560 sq ft/acre)x(1 hour/60 min) x (1 min/60sec)(1 foot/12 in)
Q = 1.54 cubic feet per second

West Access Road
Approximately 3,200 feet of an existing roadway to the pump station site has been surfaced with aggregate base. The Contractor will maintain the access road in good condition throughout the duration of the project , January 2006 through April 2007.

Sediment Basin
Description: A flooded area or 'forebay", will be created in the river channel upstream of the diversion structure. Under the 40 cfs base flow condition, the forebay would be about 17 acres. A 185- by 270-foot, 4-foot deep sediment basin will be constructed and maintained in the forebay approximately 200 feet upstream of the diversion structure associated with the pump station. The total capacity of the sediment basin will be approximately 7,400 cubic yards. The basin is needed to protect the diversion structure and the pump station from excessive sedimentation.

Schedule - completed within the first 6 months of pump station construction, January through June 2006.

Both during initial construction of the basin and subsequent maintenance dredging, sediments will be removed from the basin using an excavator or a crane with a clamshell bucket. The sediments will then be placed in two upland sediment stockpile locations (approx. 1.8 acres) near the pump station for dewatering over several weeks. Depressional areas will be created around the sediment stockpiles to prevent water from the stockpiles from entering the River. The dried sediments will then be spread along the top of the west bluff well above the river in a barren sandy area, up to a height of 6 feet with a potential footprint of 100 by 150 feet. Additional sediments that accumulate over time will be transported to appropriate off-site areas.

Quantity: Approx. 9,000 cubic yards will be removed during initial construction of the sediment basin. The material will be disposed on the adjacent riverbanks. Thereafter, sediments and vegetation will be removed from the sediment basin approximately every other year.
Construction of the pump station will cause temporary and minor sedimentation, this impact would be minimized by the planned diversion of flows around the construction site in the river channel the

spillway, abutment, and erosion control structures would be stabilized with rock rip-rap prior to introducing flows back to the rover. Hence, only minor sedimentation immediately following the initial introduction of flows is anticipated. Most of the material suspended during the initial filling of the forebay and pump operations is expected to remain in the forebay, where it would settle out and be deposited.

Pump Station Pipeline and Tank Hydrostatic Testing (WQO-2003-0003)
Description: A pipeline (36-inch diameter and 400-foot long) and a 24-foot diameter air chamber associated with the pump station will require hydrostatic testing and removal of the test water. Due to the low volumes involved, the water will be discharged to land immediately around the air chamber. This is an upland area consisting of barren sand and greasewood scrub vegetation. A small depression may be excavated to hold the water until it evaporates / seeps into the ground. The area will be approximately 50 by 50 feet and the test water can be slowly discharged to the area to allow percolation into the ground.

Discharge Location: Upland area in the immediate vicinity of the air chamber
Discharge Volume: Approx. 25,000 gallons
Duration of Diversion: Approx. 1 week - Approximately December 2006.

The pump station Contractor is required to prepare a Spill Prevention Control and Countermeasure Plan prior to construction. The SPCC plan should indicate methods to prevent discharge of construction materials, contaminants, washing, concrete, fuels, and oils into the river form construction equipment and vehicles. The plan should also address prevention of accidental spills of hazardous materials used during construction.

Pump Station BMPs

- Riprap will be used to stabilize the slopes of the permanent diversion structure and the sediment basin at the pump station site.
- Stabilize the sediment stockpile at the pump station site as necessary to minimize wind-blown dust from the stockpile. Methods to reduce fugitive dust emissions include revegetating the pile, armoring it with a layer of coarse materials, soil, binders, or water application.
- Additional BMPs may be proposed by the Contractor and will be submitted via amendment.

The monitoring and reporting requirements relevant to proposed project activities include:

- For hydrostatic testing discharges, date and approximate volume of discharge at each location

Any proposed change in excavation disposal practice or location shall be reported to the Executive Office of the SRWQCB at least 90 days in advance of the change.

BMPs that may be used during the pump station facility construction include:
(Reference BMPs from the California Stormwater Quality Association www.cabmphandbooks.com)

Scheduling	EC-1
Silt Fence	SE-1

Fiber Rolls	SE-5
Stabilized Construction Entrance/Exit	TC-1
Stockpile Management	WM-03
Material Delivery and Storage	WM-01
Material Use	WM-02
Spill Prevention and Control	WM-04
Solid Waste Management	WM-05
Hazardous Waste Management	WM-06
Sanitary/Septic Waste Management	WM-09
Liquid Waste Management	WM-10
Vehicle and Equipment Maintenance	NS-10
Vehicle and Equipment Cleaning	NS-8
Vehicle and Equipment Fueling	NS-9
Illicit Connection/Discharge	NS-6
Preservation of Existing Vegetation	EC-2
Wind Erosion Control	WE-1
Water Conservation Practices	NS-1
Sandbag Barrier	SE-8
Contaminated Soil Management	WM-7
Dewatering Operations	NS-2
Concrete Waste Management	WM-8
Material Over Water	NS-14
Hydraulic Mulch	EC-3
Hydroseeding	EC-4
Straw Mulch	EC-6
Geotextiles and Mats	EC-7
Pile Driving Operations	NS-11
Demolition Adjacent to Water	NS-15
Concrete Curing	NS-12
Concrete Finishing	NS-13
Clear Water Diversion	NS-5
Soil Binders	EC-5
Temporary Stream Crossing	NS-4
Potable Water/Irrigation	NS-7
Slope Drains	EC-11
Streambank Stabilization	EC-12
Wood Mulching	EC-8
Earth Dikes and Drainage Swales	EC-9
Sediment Basin	SE-2
Sediment Trap	SE-3
Check Dams	SE-4
Straw Bale Barrier	SE-9
Velocity Dissipation Devices	EC-10

Mitigation Measure AQ-2

LADWP shall stabilize the sediment stockpile at the pump station site as necessary to minimize wind-blown dust from the stockpile. Methods to reduce fugitive dust emissions include revegetating

the pile, armoring it with a layer of coarse materials, soil binders, or water application. (Final EIR Section 5.3.3, page 5-15)

Mitigation Measure R-1

Temporary access roads used to clear the river channel shall be seeded with native or naturalized grasses and shrubs common to the valley, as available, after completion of the desilting operation to facilitate restoration of vegetation cover and species compatible with the surrounding vegetation. The colonization by non-native aggressive or noxious weeds shall be inhibited by weed control for 3 years after construction. *(Final EIR Section 4.5.3, page 4-33)*

Mitigation Measure RW-1

Impacts to wetlands and riparian habitats adjacent to the work area shall be minimized by making use of existing barren areas for staging, operations, and stockpiling; crushing vegetation in the work area rather than clearing or grading it; and mulching areas denuded during operations with vegetative debris to encourage natural vegetation and discourage noxious weeds.

Mitigation Measure P-1

Upland areas disturbed during construction at the pump station site shall be regraded to create natural contours that match adjacent topography, then shall be seeded with native plant species. Restoration shall commence within one year of completion of the pump station. The goal of the restoration shall be to restore plant species and cover to pre-construction conditions over time. The species included shall be based on the species removed, availability of seeds or plant materials, and ability to cultivate each species. The colonization by non-native aggressive or noxious weeds shall be inhibited by weed control for three years after construction. Revegetation methods, plant maintenance, performance goals, and monitoring methods shall be based on: (1) the guidance in Inyo County's Revegetation Plan prepared pursuant to the Agreement; and (2) results of LADWP's ongoing experimental dryland revegetation studies in the Owens Valley. A 7-year monitoring and maintenance program shall be implemented to ensure successful establishment of the plants. The following are the mitigation goals for revegetation: (1) at least 50 percent of the native perennial species present at the site prior to construction shall be established by year 3 and persist through year 7; (2) plant cover shall achieve 50 percent of pre-construction cover values by year 5 and 65 percent by year 7; (3) newly established plants shall exhibit normal growth rates and healthy conditions for at least two years without supplemental watering and weeding; and (4) cover by non-native noxious weeds shall not exceed pre-construction conditions. *(Final EIR Section 5.1.4, page 5-10)*

Construction activities in the river channel for the pump station diversion would temporarily disturb about 2.0 acres of vegetated wetlands (freshwater marsh, riparian forest, and alkali meadow). Most of these areas would recover through natural processes, only a small area would be affected relative to the extent of wetlands at the site, and there would be an overall gain in wetland and riparian habitats along the river associated with the LORP, including an expected increase in the extent and productivity of emergent wetlands along the river upstream of the pump station. (Final EIR Section 5.1.2, page 5-7).

Construction of the pump station facilities (i.e. paved yard, pump station sump and building, service roads, and sediment stockpile areas) would result in the permanent loss of 4.46 acres of greasewood shrub. The area is small and there will be compensation by the gain of acres of march/wet alkali meadow and alkali meadow and other habitats.

5.13 (h) Project Component ID No. 8 – Temporary Stream Gages in Delta

Two temporary stream gages will be installed at the downstream end of the Delta Habitat Area to monitor the flow through the Delta. The stream gages will consist of a redwood box and weir or an area velocity flow meter section in a short section of channel. The footprint for the stream gages will be approx 4 by 3 feet. The installations will not require large equipment.

Access – The areas will be accessed via pick up trucks or four wheel quads using existing small dirt roads or areas paralleling the delta perimeter.

Schedule – completed within the first 4 months, January 2006 to May 2006.

BMPs that may be used during the temporary Stream Gages in the Delta include:
(Reference BMPs from the California Stormwater Quality Association www.cabmphandbooks.com)

Scheduling	EC-1
Stabilized Construction Entrance/Exit	TC-1
Material Use	WM-02
Preservation of Existing Vegetation	EC-2
Wind Erosion Control	WE-1

5.13 (i) Project Component ID No.9 – Blackrock Culverts, Spillgates, Berms and Ditches

Schedule – 6 months to complete improvements December 2005 through May 2006.

The Blackrock Waterfowl Habitat Area proposed flooding portions of the area to increase wetland productivity and diversity. Areas will be flooded and cycled on an annual basis, the exact amount of acreage will be determined each year. During average and above average runoff years, approximately 500 acres of the Blackrock habitat area will be flooded on an annual average basis, subject to seasonal fluctuations.

The total area affected by the rewatering preparation of the Blackrock area is 32 acres. Most of this area will be involved in the creation of wetlands. The actual acreage being disturbed by the improvement and installation of culverts, spillgates, berms and ditches is approximately 11 acres, most of this activity will be accessed from and adjacent to existing dirt roads.

Gaging stations will be installed in the four Blackrock management units. Water will be conveyed through a series of existing channels. Various physical improvements will be necessary to facilitate water movement, including replacement or repair of small spillgates and reshaping of old ditches.

Physical Improvements in the Blackrock Area include a total of seven spillgates, 3.3 miles of berms and 1.7 miles of ditches at these locations:

Drew Unit – Two new or replaced spillgates or culverts and 1.4 miles of new or repaired berms.
Thibaut Unit – 0.7 miles of new or repaired berms.

Winterton Unit – One new or replaced spillgates or culverts, 0.2 miles of new or repaired berms, and 0.4 miles of new or repaired ditches.
Waggoner Unit – Four new or replaced spillgates or culverts, 1.0 miles of new or repaired berms, **and** 1.3 miles of new or repaired ditches.

The replacement of spillgates would involve minor earth and structural work. Construction work would require about two weeks. All berm repair would use on-site borrow material taken from the sides of the berm. New berms and ditches will use on-site material and should take about 6 months. Access to the various sites will be from existing dirt roads.

Post-construction Soil Stabilization Measures
The following Final EIR mitigation measures incorporated into the project include post-construction soil stabilization measures for areas disturbed during project construction (including temporary access roads).

Mitigation Measure B-1
Temporarily disturbed upland habitats in the Blackrock Waterfowl Habitat Area shall be seeded with native or naturalized grasses and shrubs common to the valley, as available, after construction of berms and ditches to facilitate restoration of vegetative cover and species compatible with the surrounding vegetation. The colonization by non-native weeds shall be inhibited by weed control for 3 years after construction. (Final EIR Section 7.1.4, page 7-19)

BMPs that may be used during the Blackrock Waterfowl Area improvements are:
(Reference BMPs from the California Stormwater Quality Association www.cabmphandbooks.com)

Scheduling	EC-1
Silt Fence	SE-1
Stabilized Construction Entrance/Exit	TC-1
Material Delivery and Storage	WM-01
Material Use	WM-02
Spill Prevention and Control	WM-04
Solid Waste Management	WM-05
Hazardous Waste Management	WM-06
Sanitary/Septic Waste Management	WM-09
Liquid Waste Management	WM-10
Vehicle and Equipment Maintenance	NS-10
Vehicle and Equipment Cleaning	NS-8
Vehicle and Equipment Fueling	NS-9
Illicit Connection/Discharge	NS-6
Preservation of Existing Vegetation	EC-2
Wind Erosion Control	WE-1
Demolition Adjacent to Water	NS-15
Dewatering Operations	NS-2
Concrete Waste Management	WM-8
Material Over Water	NS-14
Concrete Curing	NS-12

Concrete Finishing	NS-13

Additional BMPs that may be included as secondary or additional BMPs.

Fiber Rolls	SE-5
Water Conservation Practices	NS-1
Sandbag Barrier	SE-8
Contaminated Soil Management	WM-7
Geotextiles and Mats	EC-7
Earth Dikes and Drainage Swales	EC-9
Sediment Basin	SE-2
Sediment Trap	SE-3
Check Dams	SE-4

5.13 (j) Project Component ID No. 10– Thibaut Ponds Staff Gages

One or more staff gages will be installed to monitor pond levels, the ponds will continue to operate during the installation. The staff gage installation will be conducted from existing roads, and requires mounting a post for the gage. A small amount of concrete will be used for the base of the pole. Schedule – Three months, from January 2006 through March 2006.

BMPs that may be used during the Thibaut Ponds staff gage installation include:
(Reference BMPs from the California Stormwater Quality Association www.cabmphandbooks.com)

Scheduling	EC-1
Stabilized Construction Entrance/Exit	TC-1
Material Delivery and Storage	WM-01
Material Use	WM-02
Spill Prevention and Control	WM-04
Solid Waste Management	WM-05
Hazardous Waste Management	WM-06
Sanitary/Septic Waste Management	WM-09
Vehicle and Equipment Maintenance	NS-10
Vehicle and Equipment Cleaning	NS-8
Vehicle and Equipment Fueling	NS-9
Illicit Connection/Discharge	NS-6
Preservation of Existing Vegetation	EC-2
Wind Erosion Control	WE-1
Water Conservation Practices	NS-1
Sandbag Barrier	SE-8
Contaminated Soil Management	WM-7
Dewatering Operations	NS-2
Concrete Waste Management	WM-8
Concrete Curing	NS-12
Concrete Finishing	NS-13

Check Dams	SE-4

5.13 (k) Project Component ID No. 11 – Fence Installation

Fencing installed will be 4 or 5 wire. Fence posts will be installed by crews working from small trucks and equipment that travel overland. Construction of new roads, grading, or excavation would not be required. Minor mowing and brush clearing may be required at fence post sites along the alignment. The footprint of disturbance for each post will be several square feet. The general location of fencing installation is shown, the precise alignment of the fences will be determined based upon review of site specific factors, e.g. existing level of recreational activities along the River. Rare plant surveys will be conducted in areas prior to fence installation.

Additional fencing will be installed on the banks of the River, at locations where the fences cross the River (estimated to be less than 30 locations).

The fence post installation does not involve any concrete. The fence posts are driven into the ground about six inches with a hand held or small equipment pile driver tool,. There will be no material storage left on the job site overnight.

Cattle guards may be installed at existing dirt road crossing in areas leased for livestock grazing. The installation of a cattle guard does involve a concrete base.

Schedule 4 months – September 2006 through December 2006.

BMPs that may be used during the fence installation are:
(Reference BMPs from the California Stormwater Quality Association www.cabmphandbooks.com)

Scheduling	EC-1
Stabilized Construction Entrance/Exit	TC-1
Material Delivery and Storage	WM-01
Material Use	WM-02
Spill Prevention and Control	WM-04
Solid Waste Management	WM-05
Sanitary/Septic Waste Management	WM-09
Vehicle and Equipment Maintenance	NS-10
Vehicle and Equipment Cleaning	NS-8
Vehicle and Equipment Fueling	NS-9
Illicit Connection/Discharge	NS-6
Preservation of Existing Vegetation	EC-2
Wind Erosion Control	WE-1
Water Conservation Practices	NS-1
Sandbag Barrier	SE-8
Concrete Waste Management	WM-8
Concrete Curing	NS-12

5.13 (l) Project Component ID No. 12 – Power Line

Schedule – 6 months, February 2006 through July 2006.

The new 7 mile power line will be constructed from LADWP's Cottonwood Power Plant to the pump station. The new power line will be 12 feet or more from existing power lines, 6 miles will parallel an existing wooden pole line and the final mile parallels a transmission line. The new line will consist of single wooden poles placed approx. 250 feet apart. Construction access will be provided by existing dirt roads.

Mitigation Measure P-4
The area of temporary disturbance associated with construction of the power line shall be minimized to the extent feasible by using overland travel to reach pole sites, prohibiting construction of new roads, and minimizing soil disturbance such as scraping or excavation.

BMPs that may be used during the power line installation include:

(Reference BMPs from the California Stormwater Quality Association www.cabmphandbooks.com)

Scheduling	EC-1
Stabilized Construction Entrance/Exit	TC-1
Material Delivery and Storage	WM-01
Material Use	WM-02
Spill Prevention and Control	WM-04
Solid Waste Management	WM-05
Sanitary/Septic Waste Management	WM-09
Vehicle and Equipment Maintenance	NS-10
Vehicle and Equipment Cleaning	NS-8
Vehicle and Equipment Fueling	NS-9
Illicit Connection/Discharge	NS-6
Preservation of Existing Vegetation	EC-2
Wind Erosion Control	WE-1
Water Conservation Practices	NS-1

6.0 BMP Inspection and Maintenance Program

6.1 Inspection / Maintenance Reports

This chapter addresses maintenance, inspection, and repair procedures for all construction-related BMPs to ensure that all graded surfaces, walls, berms, drainage structures, vegetation, erosion and sediment control measures, etc., are maintained in effective condition and are promptly repaired or restored. A properly trained person must be assigned the responsibility to conduct inspections. All completed inspection/ maintenance forms must be kept with this SWPPP. Inspection forms are included in Appendix C.

The goals of the inspection program are:

1. To identify areas contributing potential pollutants to storm water discharge;
2. To evaluate whether measures to reduce pollutants identified in the SWPPP are adequate, properly installed, and functioning in accordance with the terms of the General Permit; and
3. To evaluate whether additional control practices or corrective maintenance activities are needed.
4. Not cause or contribute to a violation of any applicable water quality standard contained in the attached Basin Plan (Appendix K).

The inspector should keep in mind that construction activities that cause or contribute to an exceedance of water quality standards must be corrected immediately. If storm water runoff is visibly oily or greasy, turbid, has a strong odor, or if it is known to contain pollutants such as pesticides, debris, sediment, settleable material or suspended material (i.e. trash), then it has potentially exceeded water quality standards.

If a violation of water quality standards is suspected, the LADWP Safety and/or Engineering Section shall be immediately contacted and the emergency section of the Spill Prevention Control and Countermeasure Plan shall be implemented to contain and report a hazardous spill or water quality violation. The Regional Water Quality Control Board shall be notified by telephone as soon as possible but no later than 24 hours after the discharge violation has been discovered. This notification shall be followed by a report within 5 calendar days to the RWQCB, unless otherwise directed by the RWQCB, describing the (1) nature and cause of the water quality standard exceedance; (2) the BMPs currently being implemented; (3) any corrective actions or additional BMPs identified in the SWPPP which will be implemented to prevent or reduce pollutants that are causing or contributing to the exceedance of water quality standards; and (4) any maintenance or repair of BMPs. This report shall include an implementation schedule for corrective actions and shall describe the actions taken to reduce the pollutants causing or contributing to the exceedance.

6.2 When to Perform Inspections

Inspections must be performed prior to anticipated storm events, once each 24-hour period during extended storm events, and after storm events to identify areas contributing to discharge of storm water associated with the project construction activity. Pre-storm inspections are to ensure that all BMPs are in place and post-storm inspections are to determine whether the BMPs have functioned properly. The inspector should identify BMP effectiveness and implement repairs or design changes as soon as feasible, depending upon worker safety. Equipment, materials, and workers will be available for rapid

response to BMP failures. It is recommended that one or two individuals at the project site be designated as the inspector and weather watcher. When a storm event is predicted, this individual would be responsible for alerting other site employees and making sure that BMPs are properly implemented. Weather information resources are listed in Appendix F.

The following responsible LADWP construction personnel will be on site during construction activities and will implement inspections to ensure BMPs are in place and checked on a daily basis in critical work areas. These personnel will also conduct inspections prior to anticipated storm events, every 24 hours during extended storm events, and after actual storm events to identify areas contributing to a discharge of storm water associated with construction activity.

Terry Williams	Construction and Maintenance Supervisor	(760) 872-1104
Danny Miller Jr.	Construction and Maintenance Supervisor	(760) 878-3000
Jim DeSmet	Construction and Maintenance Supervisor	(760) 873-0232
Rick Mayfield	Labor Supervisor	(760) 878-3000
John Emory	Labor Supervisor	(760) 878-3000
Steve Butler	Labor Supervisor	(760) 873-0232
Jim Miller	Labor Supervisor	(760) 873-0232
Mike Fennessey	Labor Supervisor	(760) 873-0232

Periodic inspections will be performed by the SWPPP preparer Charlotte Rodrigues (760) 873-0223 and the Environmental Affairs Officer, Brian Tillemans (760) 873-0214.

The pump station site will have the following LADWP inspection personnel and Contractor's Supervisors on site during construction to ensure the contractor is complying with storm water and BMP requirements.

Ignacio Gomez, LADWP Inspector	(213) 792-4837
Tim Luthje, Project Manager Kiewit Pacific Co.	(562) 946-1816
Josh Young, Project Engineer Kiewit Pacific Co.	(562) 946-1816

7.0 Compliance Requirements

7.1 SWPPP Certification

This SWPPP must be certified in accordance with the signatory requirements described below. Use the Compliance Certification Form provided at the end of this section, and make additional copies as needed.

7.2 Annual Site Compliance Evaluation and Certification

This SWPPP must be certified annually to ensure that construction activities comply with the requirements of the General Construction Permit. The certification should be based upon the results of required site inspections. This certification must be completed by July 1 of each year until the construction project is completed and a Notice of Termination (NOT) has been submitted to the State Water Resources Control Board.

7.3 SWPPP Amendments

This SWPPP will be amended whenever:

a. There is a change in construction or operations which may affect the discharge of pollutants to surface waters, ground waters, or the municipal storm drain system (e.g. Additional soils will be stored onsite, or excavation outside of the project area will be necessary);

b. There is a violation of any condition of the General Permit; or

c. The SWPPP has not achieved the general objective of reducing or eliminating pollutants in storm water discharges.

Use Appendix E to document all changes made to the SWPPP. Make additional copies of Appendix E as needed. Each amendment should be signed by the site construction manager or site supervisor and include the date of initial preparation and the date of each amendment. All amendments should be directly attached to this SWPPP.

7.4 SWPPP Availability

This SWPPP must be kept on the site while the site is under construction, beginning with the initial mobilization and ending with the termination of coverage under the permit. It should be available to site employees at all times and provided upon request to the Lahontan Regional Water Quality Control Board or local storm water agency.

8.0 Post Construction Plan and BMPs

The project will be determined to be completed when:
(1) all construction activities have ceased,
(2) all elements of the Stormwater Pollution Prevention Plan have been completed,
(3) the work site has been cleaned up and all construction materials and equipment maintenance waste have been disposed of properly,
(4) the site is in compliance with all local storm water management requirements including erosion/sediment control requirements and the appropriate use permits have been obtained,
(5) a post construction storm water operation and management plan is in place,
(6) denuded areas and other areas of potential erosion are stabilized,
(7) the Notice of Termination for the Stormwater Prevention Pollution Plan has been filed.

Once construction activities have been completed the Post Construction Plan and BMPs will be in place or implemented.

The LORP area shall be patrolled daily by LADWP Aqueduct and Reservoir Keepers to monitor for illegal activities such as the dumping of trash, vehicles or hazardous materials. If unauthorized materials are found, cleanup shall be conducted promptly. The area will also be monitored for unauthorized use such as camping etc, the violations will be asked to relocate to an authorized campground and if they do not cooperate the Sheriff's Department will be called to assist.

The following Final EIR mitigation measures will be incorporated into the project completion. These measures include post-construction soil stabilization for areas disturbed during project construction by restoration of disturbed vegetation and development of water quality objectives by Ranch Management Plans.

8.1 Post-construction Soil Stabilization Measures

The following Final EIR mitigation measures incorporated into the project include post-construction soil stabilization measures for areas disturbed during project construction (including temporary access roads).

Mitigation Measure B-1

Temporarily disturbed upland habitats in the Blackrock Waterfowl Habitat Area shall be seeded with native or naturalized grasses and shrubs common to the valley, as available, after construction of berms and ditches to facilitate restoration of vegetative cover and species compatible with the surrounding vegetation. The colonization by non-native weeds shall be inhibited by weed control for 3 years after construction. (Final EIR Section 7.1.4, page 7-19)

Mitigation Measure H-1

There is a potential for localized overbank flooding that could affect public roads and lease roads that cross the river (e.g. Mazourka Canyon Road, Manzanar-Reward Road, and Keeler Road). This impact could occur if floating debris clogs the culverts and bridges at these crossings, primarily under the seasonal habitat flows.

Inyo County shall monitor culverts and bridges on County roads along the river and LADWP shall monitor culverts on other roads to determine the potential for debris plugs to form at road crossings. Obstructive debris will be removed as necessary to minimize flooding the roads. *(Final EIR Section 4.3.3, page 4-12)*

Mitigation Measure AQ-2

LADWP shall stabilize the sediment stockpile at the pump station site as necessary to minimize wind-blown dust from the stockpile. Methods to reduce fugitive dust emissions include revegetating the pile, armoring it with a layer of coarse materials, soil binders, or water application. (Final EIR Section 5.3.3, page 5-15)

Mitigation Measure P-1

Upland areas disturbed during construction at the pump station site shall be regraded to create natural contours that match adjacent topography, then shall be seeded with native plant species. Restoration shall commence within one year of completion of the pump station. The goal of the restoration shall be to restore plant species and cover to pre-construction conditions over time. The species included shall be based on the species removed, availability of seeds or plant materials, and ability to cultivate each species. The colonization by non-native aggressive or noxious weeds shall be inhibited by weed control for three years after construction. Revegetation methods, plant maintenance, performance goals, and monitoring methods shall be based on: (1) the guidance in Inyo County's Revegetation Plan prepared pursuant to the Agreement; and (2) results of LADWP's ongoing experimental dryland revegetation studies in the Owens Valley. A 7-year monitoring and maintenance program shall be implemented to ensure successful establishment of the plants. The following are the mitigation goals for revegetation: (1) at least 50 percent of the native perennial species present at the site prior to construction shall be established by year 3 and persist through year 7; (2) plant cover shall achieve 50 percent of pre-construction cover values by year 5 and 65 percent by year 7; (3) newly established plants shall exhibit normal growth rates and healthy conditions for at least two years without supplemental watering and weeding; and (4) cover by non-native noxious weeds shall not exceed pre-construction conditions. *(Final EIR Section 5.1.4, page 5-10)*

Mitigation Measure R-1

Temporary access roads used to clear the river channel shall be seeded with native or naturalized grasses and shrubs common to the valley, as available, after completion of the desilting operation to facilitate restoration of vegetation cover and species compatible with the surrounding vegetation. The colonization by non-native aggressive or noxious weeds shall be inhibited by weed control for 3 years after construction. *(Final EIR Section 4.5.3, page 4-33)*

Mitigation Measure V-1

LADWP shall implement the following management actions in an attempt to minimize saltcedar infestation: (1) construction and other disturbance of substrates will be minimized; (2) drainage and good water circulation will be provided in wetlands to the extent practicable to minimize accumulation of salts; (3) the use of fire for vegetation management will be restricted, and when fire is used, flushing or leaching will follow; (4) the timing, duration and extent of wetland water drawdowns will be managed to minimize the chance of invasion by tamarisk (i.e. these actions will occur during winter months); and (5) monitoring will be focused upon the early detection of saltcedar recruitment.

Recreation Management (Final EIR, Section 2.9, page 2-64)

- The LORP planning area is located on Los Angeles owned land where the public has mostly unrestricted access for recreational uses during the day, with the exception of irrigated pastures.
- Camping is restricted to designated campgrounds outside the LORP project area.
- Off-road vehicular travel is prohibited.
- New fencing is designed to accommodate existing public access to the recreational areas.
- LADWP will install signs at key access points describing LADWP policies on recreational uses of city-owned lands, contact information for reporting violations, and the location of fences across the river.
- LADWP will prepare a brochure that identifies major access locations to the LORP area.
- Adverse impacts from recreational uses will be investigated promptly, and appropriate management action will be implemented in a timely manner.
- Additional measures can include installing barriers (e.g. fencing, gates, boulders, etc) to prevent vehicle or foot traffic access or redirect recreational activities away from sensitive resources.
- Additional measures can also include creating designated trails, roads, wildlife viewing areas, parking areas, sanitation facilities, or other facilities to direct visitors away from sensitive resources.
- If future storm runoff causes substantial rutting, widening or pot holes to dirt roads measures can be implemented to install speed control devices or signage, conduct road maintenance by grading and compacting, install barriers to prevent access or place gravel on road surfaces.
- Livestock will be kept out of areas that could cause runoff into local receiving waters.
- Land Management Plans will be developed for all City of Los Angeles lands in Inyo County.

Revegetation and Monitoring Plan for Lands Disturbed During LORP Construction Activities

Under this plan, for all project components, existing vegetation will be preserved to the maximum extent possible to reduce or eliminate the need for revegetation. Prior to commencement of clearing and grubbing operations or other soil-disturbing activities at the larger project sites (e.g., pump station and River Intake), temporary fencing, flags, or other methods of delineation will be used to delineate areas where no construction activity is planned.

Prior to disturbing extant vegetation, a qualified biologist will determine the cover and composition of the plant community to be disturbed. If this is not possible, cover and composition of the disturbed area will be assumed to be similar to the adjacent undisturbed vegetation.

Prior to revegetation activities, a reputable seed collecting company will be contacted to supply seeds of native species. On-site revegetation activities conducted by LADWP or its contractors, such as planting, seeding will continue as needed.

Potential Disturbances Requiring Revegetation

Access Roads for Channel Clearing

Temporary access roads used to clear the river channel shall be seeded with native or naturalized grasses and shrubs common to the valley, as available, after completion of the desilting operation to facilitate restoration of vegetation cover and species compatible with the surrounding vegetation. The colonization by non-native aggressive or noxious weeds shall be inhibited by weed control. During recent preconstruction activities it was determined that existing roads should be sufficient enough such that no new temporary access roads should be required. If a new road is created, restoration shall commence within one year post-construction.

Disturbed Upland Areas Within the Pump Station Work Site

Upland areas disturbed during construction at the pump station site shall be regraded to create natural contours that match adjacent topography, then shall be seeded with native plant species. Restoration shall commence within one year post-construction. The goal of the restoration shall be to restore plant species and cover to pre-construction conditions over time. The species included shall be based on the species removed, availability of seeds or plant materials, and ability to cultivate each species. The colonization by non-native aggressive or noxious weeds shall be inhibited by weed control.

Blackrock Waterfowl Habitat Area

This area is a man-made water spreading basin with no discharge to any surface waters or jurisdictional wetlands. The limited work to be conducted in the area will be on artificial levees or on man-made spreading basin bottoms that will be inundated periodically therefore, revegetation activities are not anticipated. If there is significant disturbance, mitigation measure B-1 listed above will be followed and the criteria listed below.

Revegetation Methods

Revegetation methods, plant maintenance, performance goals, and monitoring methods are based on the results of LADWP's ongoing experimental dryland revegetation studies in the Owens Valley.

Weed Control to Facilitate Plant Establishment

LADWP is in the process of funding (as part of the LORP mitigation) a seven year annual cost of Inyo County Agricultural Commissioner's weed control in the LORP area. The amount of funding is based on an annual cost estimate received from Inyo County. This is expected to amount to $50,000 per year to treat weeds within the LORP and an additional $150, 000 per year to treat potential seed sources outside the LORP area within Inyo County. This 7 year time frame commitment is based on numerous stream enhancement projects that LADWP has implemented. LADWP has found that after 7 years the native vegetation has established to the point exotics are no longer a significant problem. In addition, LADWP is a member of the Eastern Sierra Weed Management Area Group which actively takes management actions through interagency efforts to control exotics within the region. LADWP is the most active member of that group. Therefore weed management is not only an ongoing activity but an essential part of our continuing watershed management. LADWP has dedicated permanent staff to attend annual training to remain certified for weed spraying and are diligent to deal with new weed problems early before they can become non-manageable problems later.

Criteria

A 7-year monitoring and maintenance program shall be implemented to ensure successful establishment of the plants. The following are the mitigation goals for revegetation: (1) at least 50 percent of the native perennial species present at the site prior to construction shall be established by year 3 and persist through year 7; (2) plant cover shall achieve 50 percent of pre-construction cover values by year 5 and 65 percent by year 7; (3) newly established plants shall exhibit normal growth rates and healthy conditions for at least two years without supplemental watering and weeding; and (4) cover by non-native noxious weeds shall not exceed pre-construction conditions.

Monitoring Procedures for Determining Goal Compliance

Confirmation of achieving the cover goal for an area will be verified by using the Observation Method. If it is determined that this monitoring scheme will not provide the necessary data for assessment of goal compliance, a new sampling method will be adopted.

Reporting

LADWP will prepare an annual report on this revegetation project. If after 3 yrs, revegetation is not on schedule as described in this plan, the annual report will be expanded to include identification of any areas where LADWP believes the agreed upon revegetation goals cannot be timely and/or feasibly implemented. The expanded report will describe LADWP's good faith efforts to timely implement the plan and the reasons for why LADWP believes the goals cannot be feasibly or timely achieved. If LADWP believes the goals for an area cannot be feasibly achieved, the report will provide a description of proposed alternatives for the area. If LADWP believes the goals cannot be timely implemented, the report will include a revised time schedule for implementation of the goals.

9.0 Certification Statement

This SWPPP must be evaluated and re-certified using this form annually by July 1 until the construction project is complete and a Notice of Termination has been submitted to the Regional Board. Use this form for the initial certification, annual re-certification, and re-certification following revisions. Additional blank forms can be made by copying the form included in Appendix H.

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to ensure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment for knowing violations."

Initial Certification:

Print Name: _____ Title: _____

Signature:_____ Date: _____

Telephone Number: _____

Annual Re-Certification:

Print Name: _____ Title: _____

Signature:_____ Date: _____

Telephone Number: _____

Appendix A Notice of Intent

Appendix B Site Maps and Pollution Control Drawings

APPENDIX C STORM WATER BMPS CHECKLIST

LADWP CONSTRUCTION SWPPP BMP INSPECTION REPORT	
Project Location: LORP	**Weather:**
Specific Project Area:	
Date of Inspection:	**Storm Start Time:**
Inspector:	**Duration of Storm:**
Name:	**Time Since Last Storm:**
Title:	**Approximate Rainfall (in):**
Telephone No.:	**Type of Inspection (circle or highlight one)**
	Pre-storm, storm event, post-storm, routine (dry season inspection)

YES	NO	
		Are the BMPs called for in the SWPPP installed in the proper location according to the specifications for the SWPPP?
		Are all operational receiving waterway inlets protected from sediment inflow?
		Do any structural BMPs require repair or clean out to maintain adequate function? If yes, indicate which ones:
		Is there evidence of equipment leakage/ spillage of equipment/vehicle maintenance fluids?
		Are construction on-site traffic routes, parking, and storage of equipment and supplies restricted to areas specifically designated for those uses?
		Do any seeded or landscaped areas require maintenance, irrigation, and fertilization, seeding or mulching?
		Is there any evidence that sediment is leaving the site?
		Is there any evidence of erosion of newly cut slopes?
		Is there any evidence of sediment, debris, or mud on public roads at intersections with site access roads?
		Is there any evidence of incorrect waste disposal (paints, concrete, solid wastes)?

		Is the overall housekeeping sufficiently maintained?
		Is the vehicle/ equipment maintenance and cleaning areas clean and free of oil, grease or potential pollutants?
		Is the construction area access point stabilized? Has potential for mud/ dirt tracking from the site been minimized?
		Are liquid transfer areas (equipment fueling) clean and protected from rain?
		Are there any visible non-storm water discharges? Is there evidence that non-storm water discharges occurred in the past? If so, describe the non-storm water discharge:
		Are trashcans covered?
		Are sanitary waste facilities in working order and not leaking?

Describe Corrective Actions Taken (if any):
Describe necessary revisions to the SWPPP (if any):

APPENDIX D TRAINING DOCUMENTATION

SWPPP Training Record Form

Training Date: _____		
Trainer: _____		
Topics Covered: (Check applicable topics)		
SWPPP BMPs _____	BMP Maintenance: _____	Non-Storm Water Discharges: _____
Other:		

Name	*Company*	*Telephone*	*SWPPP Duties*

Appendix E Change of Information Form and Amendments Certification

Use additional sheets if necessary.

Section Number/ Page Number	Summary of Revisions	Effective Date	Signature, Name, Title, Phone

APPENDIX F WEATHER INFORMATION GUIDE

The General Permit requires inspections of the construction site prior to anticipated storms, during prolonged storms, and after actual storm events. The following sources may be used to obtain weather forecasts:

The Weather Channel:

www.weather.com

National Weather Service:

http://www.nws.noaa.gov/

National Oceanographic Atmospheric Administration:

http://weather.gov

Local Newspapers – Inyo Register, Mammoth Times

Local Radio Stations – KIBS 100.7 FM and 95.9 FM
KBOV 1230 AM
KDAY 92.5 FM

Local Cable Television Station – Channel 12 and 33.

APPENDIX G GLOSSARY

Best Management Practices (BMPs): Any program, technology, process, siting criteria, operational methods or measures, or engineered systems, that when implemented, prevent, control, remove or reduce pollution.

Clean Water Act: The Federal Water Pollution Control Act enacted by Public Law 92-500 as amended by 95-217, 95-576, 96-483, and 97-117; 33 USC. 1251 et seq. Enacted in 1977, the CWA gave EPA the authority to control point-source storm water discharges that convey pollutants to the waters of the United States. Congress amended the CWA in 1987 to create a new section devoted to storm water permitting. In accordance with the 1987 revisions, the EPA adopted regulations in 1990 that established requirements for National Pollutant Discharge Elimination System (NPDES) permits for discharge of storm water from industries and municipalities.

Contamination: "An impairment of the quality of the waters of the state by waste to a degree which creates a hazard to the public health through poisoning or through the spread of disease...including any equivalent effect resulting from the disposal of waste, whether or not waters of the state are affected." [California Water Code Section 13050(k)].

General Permit: The National Pollutant Discharge Elimination System General Permit for Storm Water Discharges Associated with Construction Activities, issued by the State of California Water Resources Control Board (Water Quality Order 99-08-DWQ, adopted August 1999).

Good Housekeeping Practices: The act of maintaining clean, orderly site areas to prevent potential pollutants from contacting storm water.

National Pollutant Discharge Elimination System (NPDES): A permitting process established pursuant to the Clean Water Act that regulates the release of pollutants to waters of the United States.

Non-Storm Water Discharge: Any discharge to surface waters, to a storm drain, or to any other storm water drainage facility that is not composed entirely of storm water or landscape irrigation runoff.

Notice of Intent (NOI): The NOI is the application form used to obtain the General Construction Permit. The NOI indicates the facility's intent to comply with the terms of the permit.

Nuisance: "Anything which meets all of the following requirements: (1) is injurious to health, or is indecent or offensive to the senses, or an obstruction to the free use of property, so as to interfere with the comfortable enjoyment of life and property; (2) affects at the same time an entire community or neighborhood, or any considerable number of persons, although the extent of the annoyance or

	damage inflicted upon individuals may be unequal; (3) occurs during or as a result of the treatment or disposal of wastes." [California Water Code Section 13050(m)].
Pollution:	The "man-made or man-induced alternation of the chemical, physical, biological, and radiological integrity of water." [Clean Water Act Section 502 (19)]. Pollution also means "an alternation of the quality of the waters of the state by waste to a degree which unreasonably affects either...the waters for beneficial uses...or facilities which serve these beneficial uses." [California Water Code Section 13050(l)].
Regional Water Quality Control Board:	State agency responsible for administration and enforcement of the municipal and industrial NPDES storm water permits.
Sanitary Sewer System:	A network of pipelines carrying sewage to a wastewater treatment facility. Storm drains are separate pipeline and are not connected to sanitary sewers.
Significant Materials:	Includes, but is not limited to: raw materials; fuels; materials such as solvents, detergents, and plastic pellets; finished materials such as metallic products; raw materials used in food processing or production; hazardous substances designated under Section 101(14) of Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA); any chemical the facility is required to report pursuant to Section 313 of Title III of Superfund Amendments and Reauthorization Act (SARA); fertilizers; pesticides; and waste products such as ashes, slag, and sludge that have the potential to be released with storm water discharges.
Significant Quantities:	The volume, concentrations, or mass of a pollutant in storm water discharges that can cause or threaten to cause pollution, contamination, or nuisance; adversely impact human health or the environment; and cause or contribute to a violation of any applicable water quality standards for the receiving water.
Storm Water:	Storm water runoff, and surface runoff and drainage. It excludes infiltration and runoff from agricultural land.
Storm Water Discharge:	Storm water at the point where it runs off private property onto adjacent property, the street, canals, creeks, the river, or into the municipal storm drain system.
Storm Water Pollution Prevention Plan (SWPPP):	The SWPPP is a document that identifies sources and activities at a particular construction site that may contribute pollutants to storm water, and commits the property owner to implement specific control measures to prevent or treat such pollutants.
U.S. Environmental Protection Agency (EPA):	The federal agency with authority for enacting and enforcing many environmental laws, including the Clean Water Act.

APPENDIX H CERTIFICATION STATEMENT

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to ensure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment for knowing violations."

Initial Certification:

Print Name: _____ Title: _____

Signature:_____ Date: _____

Telephone Number: _____

Annual Re-Certification:

Print Name: _____ Title: _____

Signature:_____ Date: _____

Telephone Number: _____

Contractor Certification Statement

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to ensure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment for knowing violations."

Initial Certification:

Print Name: _____ Title: _____

Signature:_____ Date: _____

Telephone Number: _____

Name of Contracting Company: _____

Print Name: _____ Title: _____

Signature:_____ Date: _____
Contractor Owner/Developer

Telephone Number: _____

Annual Re-Certification:

Print Name: _____ Title: _____

Signature:_____ Date: _____

Telephone Number: _____

Name of Contracting Company: _____

Print Name: _____ Title: _____

Signature:_____ Date: _____
Contractor Owner/Developer

Telephone Number: _____

APPENDIX I BMP CONSIDERATION CHECKLIST

The BMPs listed here should be considered for each phase of the project components.
If a BMP is Not Used – indicate if it is NA – not applicable to this portion of the project or if another BMP is being used in place.

ID No.	Project Component		Date of BMP		Indicate if BMP is in place or why it is not used
1	**River Intake Modification**				
	Circle Active Areas Temporary coffer dam in forebay Concrete lining of tailbay and channel Bridge Replacement at River Intake Aqueduct Bridge Repair		Scheduling Silt Fence Fiber Rolls Stabilized Construction Entrance/Exit Stockpile Management Material Delivery and Storage Material Use Spill Prevention and Control Solid Waste Management Hazardous Waste Management Sanitary/Septic Waste Management Liquid Waste Management Vehicle and Equipment Maintenance Vehicle and Equipment Cleaning Vehicle and Equipment Fueling Illicit Connection/Discharge Preservation of Existing Vegetation Wind Erosion Control Water Conservation Practices Dewatering Operations Concrete Waste Management Material Over Water Pile Driving Operations Demolition Adjacent to Water Concrete Curing Concrete Finishing Clear Water Diversion		Prepared By :

ID No.	Project Component	Date of BMP		Indicate if BMP is in place or why it is not used	
	Circle Active Areas of the River Intake Modifications Temporary coffer dam in forebay Concrete lining of tailbay and channel Bridge Replacement at River Intake Aqueduct Bridge Repair		Streambank Stabilization Earth Dikes and Drainage Swales Sediment Basin Sediment Trap Check Dams Straw Bale Barrier Potable Water/Irrigation Velocity Dissipation Devices Others		Prepared By :

ID No.	Project Component	Date of BMP		Indicate if BMP is in place or why it is not used	
2	**Temporary Flow Measuring Stations**		Scheduling Silt Fence Fiber Rolls Stabilized Construction Entrance/Exit Stockpile Management Material Delivery and Storage Material Use Spill Prevention and Control Solid Waste Management Hazardous Waste Management Sanitary/Septic Waste Management Liquid Waste Management Vehicle and Equipment Maintenance Vehicle and Equipment Cleaning Vehicle and Equipment Fueling Illicit Connection/Discharge Preservation of Existing Vegetation Wind Erosion Control Water Conservation Practices Sandbag Barrier Concrete Waste Management Concrete Curing Check Dams Others		Prepared By :

ID No.	Project Component	Date of BMP		Indicate if BMP is in place or why it is not used	
3	**Keeler Bridge Metering Station Upgrade**		Scheduling Silt Fence Stabilized Construction Entrance/Exit Stockpile Management Material Delivery and Storage Material Use Spill Prevention and Control Solid Waste Management Hazardous Waste Management Sanitary/Septic Waste Management Liquid Waste Management Vehicle and Equipment Maintenance Vehicle and Equipment Cleaning Vehicle and Equipment Fueling Illicit Connection/Discharge Preservation of Existing Vegetation Wind Erosion Control Water Conservation Practices Dewatering Operations Concrete Waste Management Fiber Rolls Sandbag Barrier Contaminated Soil Management Material Over Water Demolition Adjacent to Water Earth Dikes and Drainage Swales Sediment Basin Sediment Trap Check Dams Others		Prepared By :

ID No.	Project Component	Date of BMP		Indicate if BMP is in place or why it is not used	
4	**Initial Channel Clearing**		Scheduling Silt Fence Stabilized Construction Entrance/Exit Stockpile Management Material Delivery and Storage Material Use Spill Prevention and Control Solid Waste Management Hazardous Waste Management Sanitary/Septic Waste Management Liquid Waste Management Vehicle and Equipment Maintenance Vehicle and Equipment Cleaning Vehicle and Equipment Fueling Illicit Connection/Discharge Preservation of Existing Vegetation Wind Erosion Control Fiber Rolls Water Conservation Practices Sandbag Barrier Contaminated Soil Management Dewatering Operations Geotextiles and Mats Streambank Stabilization Earth Dikes and Drainage Swales Sediment Basin Sediment Trap Check Dams Others		Prepared By :

ID No.	Project Component		Date of BMP		Indicate if BMP is in place or why it is not used
5	**Structural Obstacles to be Removed / Modified**				
	Circle Active Portions Five Culverts Replacement Other Structures to be Removed/Modified		Scheduling Silt Fence Stabilized Construction Entrance/Exit Material Use Spill Prevention and Control Solid Waste Management Sanitary/Septic Waste Management Liquid Waste Management Vehicle and Equipment Maintenance Vehicle and Equipment Cleaning Vehicle and Equipment Fueling Illicit Connection/Discharge Preservation of Existing Vegetation Wind Erosion Control Concrete Waste Management Demolition Adjacent to Water Fiber Rolls Water Conservation Practices Sandbag Barrier Contaminated Soil Management Dewatering Operations Material Over Water Earth Dikes and Drainage Swales Sediment Basin Sediment Trap Check Dams Straw Bale Barrier Others		Prepared By :

ID No.	Project Component	Date of BMP		Indicate if BMP is in place or why it is not used	
6	**Beaver Dam Removal**		Scheduling Spill Prevention and Control Solid Waste Management Illicit Connection/Discharge Preservation of Existing Vegetation Wind Erosion Control Water Conservation Practices Material Over Water Demolition Adjacent to Water Others		Prepared By :

ID No.	Project Component		Date of BMP		Indicate if BMP is in place or why it is not used
7	**Pump Station Site**				
	Circle Active Areas Pump Station and Diversion Structure West Access Road (the portion within wetland vegetation type) Sediment Basin		Scheduling Silt Fence Fiber Rolls Stabilized Construction Entrance/Exit Stockpile Management Material Delivery and Storage Material Use Spill Prevention and Control Solid Waste Management Hazardous Waste Management Sanitary/Septic Waste Management Liquid Waste Management Vehicle and Equipment Maintenance Vehicle and Equipment Cleaning Vehicle and Equipment Fueling Illicit Connection/Discharge Preservation of Existing Vegetation Wind Erosion Control Water Conservation Practices Sandbag Barrier Contaminated Soil Management Dewatering Operations Concrete Waste Management Material Over Water Hydraulic mulch Hydroseeding Straw Mulch Geotextiles and Mats Pile Driving Operations Demolition Adjacent to Water Concrete Curing Concrete Finishing Clear Water Diversion Soil Binders Temporary Stream Crossing Potable Water/Irrigation		Prepared By :

ID No.	Project Component		Date of BMP		Indicate if BMP is in place or why it is not used
	Pump Station Site **Circle Active Areas** Pump Station and Diversion Structure West Access Road (the portion within wetland vegetation type) Sediment Basin		Slope Drains Streambank Stabilization Wood Mulching Earth Dikes and Drainage Swales Sediment Basin Sediment Trap Check Dams Straw Bale Barrier Velocity Dissipation Devices Others		Prepared By :
8	**Temporary Stream Gages in Delta**		Scheduling Stabilized Construction Entrance/Exit Material Use Preservation of Existing Vegetation Wind Erosion Control Others		Prepared By :

ID No.	Project Component	Date of BMP		Indicate if BMP is in place or why it is not used	
9	**Blackrock – Culverts, Spillgates, Berms and Ditches**		Scheduling Silt Fence Stabilized Construction Entrance/Exit Material Delivery and Storage Material Use Spill Prevention and Control Solid Waste Management Hazardous Waste Management Sanitary/Septic Waste Management Liquid Waste Management Vehicle and Equipment Maintenance Vehicle and Equipment Cleaning Vehicle and Equipment Fueling Illicit Connection/Dischrge Preservation of Existing Vegetation Wind Erosion Control Demolition Adjacent to Water Dewatering Operations Concrete Waste Management Material Over Water Concrete Curing Concrete Finishing Fiber Rolls Water Conservation Practices Sandbag Barrier Contaminated Soil Management Geotextiles and Mats Earth Dikes and Drainage Swales Sediment Basin Sediment Trap Check Dams Others		Prepared By :

ID No.	Project Component	Date of BMP		Indicate if BMP is in place or why it is not used	
10	**Thibaut Ponds Staff Gages**		Scheduling Stabilized Construction Entrance/Exit Material Delivery and Storage Material Use Spill Prevention and Control Solid Waste Management Hazardous Waste Management Sanitary/Septic Waste Management Liquid Waste Management Vehicle and Equipment Maintenance Vehicle and Equipment Cleaning Vehicle and Equipment Fueling Illicit Connection/Discharge Preservation of Existing Vegetation Wind Erosion Control Water Conservation Practices Sandbag Barrier Contaminated Soil Management Dewatering Operations Concrete Waste Management Concrete Curing Concrete Finishing Check Dams Others		Prepared By :

ID No.	Project Component	Date of BMP		Indicate if BMP is in place or why it is not used	
11	**Fence Installation**		Scheduling Stabilized Construction Entrance/Exit Material Delivery and Storage Material Use Spill Prevention and Control Solid Waste Management Sanitary/Septic Waste Management Vehicle and Equipment Maintenance Vehicle and Equipment Cleaning Vehicle and Equipment Fueling Illicit Connection/Discharge Preservation of Existing Vegetation Wind Erosion Control Water Conservation Practices Sandbag Barrier Concrete Waste Management Concrete Curing Others		Prepared By :

ID No.	Project Component	Date of BMP		Indicate if BMP is in place or why it is not used	
12	**Power Line**		Scheduling Stabilized Construction Entrance/Exit Material Delivery and Storage Material Use Spill Prevention and Control Solid Waste Management Sanitary/Septic Waste Management Vehicle and Equipment Maintenance Vehicle and Equipment Cleaning Vehicle and Equipment Fueling Illicit Connection/Dischrge Preservation of Existing Vegetation Wind Erosion Control Water Conservation Practices Others		Prepared By :

Appendix J References

BMPs handbook from the California Stormwater Quality Association

Lower Owens River Project - Final Environmental Impact Report
Dated June 23, 2004

California Regional Water Quality Control Board – Lahontan Region
Water Quality Certification, Waste Discharge Requirements, and National Pollutant Discharge Elimination System Permit
Board Order No. R6V-2005-0020 Issued July 14, 2005
NPDES No. CA0103225
WDID No. 6B140407009

Clean Water Act Section 404 Permit Application Package for the Lower Owens River Project submitted 2003 to the US Army Corps of Engineers, Ventura, California.

Fact Sheet for Water Quality Order 99-08-DWQ
Monitoring Program and Reporting Requirements for Storm Water Discharges Associated with Construction Activity

APPENDIX K SAMPLING AND ANALYSIS PLAN

This Appendix will serve as the Project Sampling and Analysis Plan should sampling become necessary.

What the Permit Says about Sampling

The CGP requires that a sampling and analysis program be developed and conducted for pollutants which:

- Are not visually detectable in storm water discharges,
- Are known or should be known to occur on the construction site, and
- Could cause or contribute to an exceedance of water quality objectives in the receiving water.

Possible pollutants are identified in Table 5.

Sample for pollutants that would not be visible in runoff if:

- Visual inspections (required before, during and after storm events) indicate that there has been a breach, malfunction, leakage or spill from a BMP that could result in the discharge of pollutants in storm water and the pollutants would not be visually detectable; or
- Storm water comes into contact with soil amendments, other exposed materials, or other on site sources of pollution.

Sampling Program for Pollutants Not Visually Detectable in Storm Water

Sampling and analysis is required for pollutants not visually detectable in runoff, but which could cause or contribute to an exceedance of water quality objectives in the receiving water. Sample for a constituent if there is reason to expect that it may be in the discharge, regardless of whether or not it is causing or contributing to an exceedence of a water quality objective. First - attempt to eliminate the exposure of construction materials to prevent pollution of storm water and thus to limit the requirement for sampling and analysis. Many construction materials, including soil amendments, fertilizers, concrete, herbicides, pesticides, and even things like fencing and wood products, are intended for use outdoors. For such materials, minimize pollutant discharge through implementation of appropriate BMPs. If exposure to these products can contribute pollutants to the runoff at levels that could cause or contribute to exceedance of a water quality objective, then sampling is still required, even if they are used correctly.

Deciding When to Sample

Conduct proper inspections throughout the duration of the project to make sure that appropriately selected BMPs have been implemented, are being maintained, and are effective. Sample if non-visible pollutants that are known or should be known to occur on the construction site "could cause or contribute to an exceedance of water quality objectives in the receiving water."

If a determination is made that sampling is needed, collect storm water runoff samples regardless of the time of year, status of the construction site, or day of the week. Collect samples during the first two hours of runoff (during daylight hours). Storm water inspections and sample collections are required even during non-working days (including weekends and holidays).

Deciding What Constituents to Sample for: What are Pollutants Which are "Known or Should be Known " to Occur on a Construction Site?

Pollutants can be considered to be known or should be known to occur on the construction site if they are currently in use or are present as a result of previous land uses. This includes materials that:

- are being used in the construction activities
- are stored on the construction site
- were spilled during construction operations and not cleaned up
- were stored (or used) in a manner that presented the potential for a release of the materials during past land use activities
- were spilled during previous land use activities and not cleaned up
- were applied to the soil as part of past land use activities.

Table 5 lists construction material currently in use or proposed for use on the construction site.

Identify from this list those pollutants that would not be visible in storm water discharges. These are the constituents that you will likely have to sample for in runoff if the materials are exposed to storm water. Consult with your analytical laboratory or water quality chemist to determine if there are field tests or indicator parameters that can be used.

Parameters to Sample for to Determine the Presence of Non-Visible Pollutants in Runoff

The CTR pollutants currently known to be used and commonly found on construction sites can be found through http://www.swrcb.ca.gov/stormwtr/gen_const.html .

For construction discharges pollutants of concern are found in materials and exposed throughout the rainy season such as cement, fly-ash, and other recycled materials or by-products of combustion. (But many of these materials may be visible in runoff, affecting color for example.) The water quality standards for these materials will depend on their composition. Some of the more common storm water pollutants from construction activity such as glyphosate (herbicides), diazinon and chlopyrifos (pesticides), nutrients (fertilizers), and molybdenum (lubricants) are not CTR pollutants. The use of diazinon and chlopyrifos is a common practice among landscaping professionals and may trigger sampling and analysis requirements if applications come into contact with storm water.

Other more common storm water contamination problems resulting from construction activity such as high pH values from cement and gypsum, high pH and TSS from wash waters and chemical and fecal contamination from portable toilets are also not CTR pollutants. Some of these constituents do have numeric water quality objectives in individual Basin Plans, but many do not and are subject to narrative water quality standards such as not causing toxicity.

Deciding Where to Sample

Sample at all discharge locations that drain the areas from which the pollutants may have entered the runoff and at locations that have not come in contact with the pollutants (reference sampling). This allows a comparison of reference samples with the sample(s) collected from storm water suspected of containing construction-related pollutants. The collection of this sample is important in the interpretation of the potentially contaminated sample because it provides information on the characteristics of the storm water without the exposure. For example, if storm water were to come in contact with hydrated lime products, the indicator parameter for pollution would be an elevated pH. The storm water could also be polluted with other materials or minerals, but the elevated pH will provide information necessary for the discharger to make further determinations as to the cause. In this case, a sample of storm water from the same storm event that did *not* come in contact with the hydrated lime would provide an understanding of what the pH of the uncontaminated storm water was in relation to the polluted storm water.

A more accurate background sample would have also contacted the soil and vegetation of the area, further isolating the lime as the source of the elevated pH. This gives the discharger the necessary information to take immediate steps to detain the polluted storm water or to minimize or eliminate the exposure. Baseline water quality conditions have been obtained from test flow studies conducted in 1993.

There are two main areas of equipment staging – one is directly behind the Intake Structure and the other is the pump station site. Sampling could occur upstream of both locations and downstream of the staging areas. This would provide sampling locations that would show information on both the runoff quality that is affected by material storage, historic contamination or other exposed potential pollutants, and the background runoff quality (i.e., reference sampling from upstream and 1993 flow test). Collect samples at locations identified in the NPDES permit and in areas identified by visual observations/inspections where there has been a BMP failure or breach and which can be safely accessed.

- Collect samples from an upstream location that is not affected by material storage activities or by runoff as a background or reference location.

- For a widespread potential pollutant, select sampling locations at the perimeter of your site, where storm water is unaffected by the activities and compare this to areas that are affected by activities on the site. Describe the sampling procedure, the location, and the rationale for selecting these locations.

If the “reference sample” is taken from on-site and it turns out to be carrying a high level of pollutants this should trigger an evaluation of this drainage area. Are there previously undetected sources of pollutants? It may turn out that additional BMPs may be necessary on this portion of the site or that the discharge must be managed or contained.

If the "reference sample" is taken from off site and it turns out to be carrying a high level of pollutants take a sample on site to determine if the same pollutants are on site and must be managed.

Types of Test Methods

The CGP requires sampling of non-visible pollutants that "could cause or contribute to an exceedance of water quality objectives in the receiving waters". Unlike sediment, for which there are a limited number of applicable water quality objectives, the applicable water quality standards for "non-visible" pollutants will depend on the material and its chemical makeup. This guidance document contains information on what pollutants may occur on construction sites and which water quality standards may be associated with those pollutants. The best assurance of complying with the receiving water limitations is to prevent or reduce runoff of all polluting substances from construction sites through implementation of effective BMPs.

The sampling and analysis language recognizes that sampling and laboratory analysis, in and of itself, does not protect water quality. Rather, field identification and detection of the source of pollution, followed by timely action is ultimately what will protect the receiving waters. It is preferable to use field-sampling techniques that can provide immediate information and allow a timely solution.

The sampling and analysis language for non-visible pollutants contemplates field sampling using indicator parameters. The correct indicator parameter can provide a quick and immediate indication of contamination of storm water to known materials stored or used on a construction site. Field test kits and devices have been commercially available for decades and widely used for water quality applications. As an example, test strips to evaluate for ammonia, phosphate, chlorine, copper, iron, nitrate, nitrite, and low and high range pH are readily commercially available. Manufacturers and distributors provide technical support as well as training to their customers.

Deciding How Often to Sample

Determine the frequency of sampling for non-visible pollutants based on the exposure of pollutant sources. Sample runoff when BMPs do not effectively prevent or reduce exposure of a non-visible pollutant source to storm water. Sample runoff when inspections identify a BMP failure, which exposed pollutants to storm water. If spills are thoroughly cleaned up and the contaminated material is isolated, eliminating exposure to storm water runoff, sampling is not required. For instances when the potential for previously existing pollution is identified, perform laboratory screening analysis during the first one or two storm events of the season to determine if the potential pollutant is running off the construction site. If construction activity will disturb or mobilize such potential pollutant sources, take samples to determine if the pollutants are being mobilized by the construction activity.

Examples of When Sampling and Analysis for Non-Visible Pollutants Is Not Required

Sampling and analysis is not required under the following conditions. However, a contingency sampling strategy should be prepared in the event of an accidental discharge.

- Where construction takes place entirely during a period of time when there are no rainfall events. Timing construction to occur outside of the rainy season is the most effective BMP.

- Where a construction project is "self-contained", meaning that the project generates no runoff or any potential discharges containing pollutants, including no potential for tracking sediment off-site from vehicle tires, and no potential for discharging products of wind erosion.

- Where construction materials and compounds are kept or used so that they are not in contact with storm water (e.g., in water-tight containers, under a water-tight roof, inside a building, etc.).

- Where for specific pollutants, the BMPs implemented at the construction site fully contain the exposed pollutants (e.g., bermed concrete washout area).

- For building, landscaping and BMP materials that are in their final constructed or in-place form or are designed for exposure (e.g., fence materials, support structures and equipment that will remain exposed at the completion of the project, etc.).

- Where pollutants may have been spilled or released on site, but have been properly cleaned- up and storm water exposure has been eliminated prior to a storm event.

- For stockpiles of construction materials for which both cover and/or containment BMPs have been properly implemented to protect them from run-on and from contributing pollutants to storm water .

Examples of When Sampling and Analysis Is Required for Non-Visible Pollutants

Sampling and analysis is required when non-visible pollutants have the potential to contact storm water and run off the construction site into a water body at levels that may cause or contribute to exceedance of water quality standards. Some examples of this situation are:

- Where construction materials and compounds are stored or applied such that they may come in contact with storm water runoff.
- For construction projects that utilize soil amendments or soil treatments that can come in contact with storm water runoff.
- When a leak or spill occurs that is not fully contained and cleaned prior to a storm event.
- When a leak or spill occurs, during a storm event, and it cannot immediately be isolated and/or cleaned-up, and the possibility of an off-site discharge exists.
- When, during regular inspections, it is discovered that cover and containment BMPs have been compromised and storm water comes in contact with materials resulting in runoff discharging into a storm drain system or water body.
- When material storage BMPs have been compromised, breached, or have failed.

Sampling for Storm Water Flows Diverted Around the Project for Non-Visible Pollutants

If the disturbed area of the construction site is adjacent to a large area that historically has drained across the site, this happens most frequently in foothill situations where new construction is undertaken alongside or adjacent to a large undisturbed area, calculate the anticipated volume of the flow in order to size a diversion structure to divert the (usually) clean storm water around or though the site. Diversion pipes or channels are proposed at two project proponent areas, the River Intake and the pump station site.

If the run-on contains pollutants from pre-existing pollution in the watershed, the discharger is responsible to determine this before planning the diversion. Should a discharger divert contaminated

water around the site and allow it to enter surface waters, this permit does not authorize such discharge and the discharger should be aware that a separate NPDES permit may be required.

Table 4-1 shows general sample collection, preservation and analysis for monitoring non-visible pollutants.

Table 4-1
SAMPLE COLLECTION, PRESERVATION, AND ANALYSIS FOR MONITORING NON-VISIBLE POLLUTANTS

Constituents	Analytical Method	Sample Bottle	Minimum Sample Volume [2]	Sample Preservation	Reporting Limit	Maximum Holding Time
VOCs-Solvents	EPA 8260B	VOA-glass	3 x 40 mL	Store at 4°C (HCI to pH<2)	1 ug/L	14 days
SVOCs	EPA 8270C	Glass-Amber	1 x 1 liter	Store at 4°C	10 ug/L	7 days
Pesticides/PCBs	EPA 8081A/8082	Glass-Amber	1 x 1 L	Store at 4°C	0.1 ug/L	7 days
Herbicides	EPA8151A	Glass-Amber	1 x 1 L	Store at 4°C	Check Lab	7 days
BOD	EPA 405.1	Polypropylene	1 x 500 mL	Store at 4°C	1 mg/L	48 hours
COD	EPA 410.4	Glass-Amber	1 x 250 mL	Store at 4°C ,H2SO4 to pH<2	5 mg/L	28 days
DO	SM 4500-O G	Glass-Amber	1 x 250mL	Store at 4°C	Check Lab	8 hours
pH	EPA 150.1	Polypropylene	1 x 100 mL	None	Unitless	Immediate
Alkalinity	SM 2320B	Polypropylene	1 x 250 mL	Store at 4°C	1 mg/L	14 days
Metals (Al,Sb,As,Ba,Be Cd,Ca,Cr,Co,Cu,Fe,Pb,Mg,Mn,Mo, Ni,Se,Na,Th,Va,Zn)	EPA 6010B/7470A	Polypropylene	1 x 250 mL	Store at 4°C , HNO3 to pH<2	0.1 mg/L	6 months
Metals (Chromium VI)	EPA 7199	Polypropylene	1 x 500 mL	Store at 4°C	1 ug/l	24 hours

Deciding How to Sample

- Only personnel trained in water quality sampling procedures should collect storm water samples. Construction personnel will notify the SWPP preparer if sampling needs to be conducted. All samples will be obtained by LADWP water quality personnel that are trained in proper sampling methods and Chain of Custody documentation.

- Determine sampling methods and locations in advance of the runoff event in order to provide sufficient time to gather the supplies and equipment necessary to sample and plan for safe access by the sampling personnel.

How to Analyze the Data

Initiate corrective action where non-visible pollutant sample test results indicate presence of pollutants in the construction site storm water runoff. This can be determined by comparing your construction site's storm water test results with the background sample. BMPs must be used to control offsite discharge of any pollutant (e.g., pesticides) that is not naturally occurring, regardless of background levels of that pollutant.

When the site's storm water test concentrations for naturally occurring substances are considerably above (or, in the case of pH, considerably above or below) the background concentrations, or where other pollutants are found, evaluate the BMPs to determine the cause. Initiate corrective action by repairing, replacing or supplementing the BMPs on your site. Conduct additional sampling during the next runoff event after corrective actions are implemented to demonstrate and document that the problems have been corrected.

Coordinating Visual Observations with Sampling Results

If visual inspection of storm water BMPs used to contain or otherwise manage (i.e., filter or treat) non-visible pollutants at a construction site indicates that a BMP has failed or been compromised, then field monitoring of any impacted storm water from the site for non-visible pollutants is required. Immediately repair or replace any BMP that has been visually inspected and found breached or compromised. If feasible, contain the polluted discharge and prevent it from being discharged off site. After taking steps to correct the failed BMP, conduct field monitoring in the vicinity of the BMP to verify that pollutants are no longer in the storm water.
The intent of conducting field monitoring for non-visible pollutants is to obtain an immediate indication if storm water that is discharging from a site has been polluted. An immediate indication of a polluted discharge requires an immediate response in the form of backtracking from the point of discharge to find the source and take appropriate measures to prevent a recurrence of a polluted discharge.

What To Do If The Data Show a Potential Problem

If your data shows a problem, follow the reporting requirements as shown in the CGP Receiving Water Limitations. In addition, take the following steps as soon as possible:

- Identify the source
- Repair or replace any BMP that has failed

- Maintain any BMP that is not functioning properly due to lack of maintenance
- Evaluate whether additional or alternative BMPs should be implemented

If sampling and analysis during subsequent storm events shows that there is still a problem, then repeat the steps above until the analytical results of "upstream" and "downstream" samples are relatively comparable.

Where your site's storm water results show test concentrations considerably above (or below) background concentrations, evaluate the BMPs to determine what is causing the difference. Possible solutions may include repairing the existing BMPs, evaluating alternative BMPs that could be implemented, and/or implementing additional BMPs (cover and/or containment) which further limit or eliminate contact between storm water and non-visible pollutant sources at your site. Where contact cannot be reduced or eliminated, retain storm water that has come in contact with the non-visible pollutant source on-site and do not allow it to discharge to the storm drainage system or to a water body. Contact your RWQCB to determine whether it is permissible to discharge the retained storm water. Conduct additional sampling during the next runoff event after corrective actions are implemented to demonstrate and document that the problems have been corrected.

Retention of Data

Keep results of field measurements and laboratory analyses with the SWPPP, which is required to be kept on the project site until the Notice of Termination (NOT) is filed and approved by the appropriate RWQCB. Keep field training logs, Chain-Of-Custody (COC) forms and other documentation relating to sampling and analysis with the project's SWPPP. Records of all inspections, compliance certifications, and noncompliance reporting must be retained for a period of at least three years from the date generated or after project completion.

4.6(b) Sampling Program for Sedimentation/Siltation

Soils, sediments, and fine (suspended) particles that result from grading and earthwork activities and soil erosion from disturbed, un-stabilized land areas are potentially significant sources of storm water pollution at construction sites. The CGP requires construction sites to develop, implement and maintain an effective combination of erosion control and sediment control BMPs to prevent soils, sediments, debris and solids fine enough to remain suspended from leaving the construction site and moving into receiving waters at levels above preconstruction levels.

The CGP requires that a visual survey of the site be done before, during and after a storm. If the visual survey indicates either the potential for a discharge of sediment laden water or that sediment is being discharged, steps must be taken to repair or augment the BMPs to prevent the discharge as soon as possible. Discharge of sediment above predevelopment levels is not allowed.

The CGP requires sampling and analysis for sediment/silt or turbidity when the construction site runoff discharges directly into a water body that is impaired by sedimentation/siltation, sediment, or turbidity (that is, the water body is on the 303(d) list for one or more of these pollutants.) A key point is that the discharge of storm water runoff must directly enter the impaired water body or impaired segment of a water body. Construction site runoff that flows through a tributary and is commingled with other sources of flow, is not considered a direct discharge even if the flow eventually enters an impaired water body. (See the definition of direct discharge in Section 5 for further details.)

The CGP requires that the SWPPP identify a strategy for conducting the sampling and analysis, including the frequency at which sampling will be conducted. The SWPPP must also describe:

- the location(s) of direct discharges from construction activities to a water body listed on the SWRCB's 303(d) list for sedimentation/siltation, sediment and/or turbidity;
- the designated sampling location(s) in the listed water body representing the prevailing conditions up-stream of the discharge; and
- the designated sampling location(s) in the listed water body representing the prevailing conditions down-stream of the discharge.
- the sampling design which describes the sampling devices used; the sample size; the number of samples to be taken at each location, the laboratory protocol employed; and**, if applicable,** the statistical test used to determine if the upstream/downstream samples differ to a statistically significant degree.

Deciding When to Sample for Sedimentation/Siltation

- Dischargers must perform sampling if the storm water runoff directly discharges from the construction site to a 303(d) listed water body.
- Dischargers must collect samples during the first two hours of discharge (runoff) from storm events which result in a direct discharge to any 303(d) listed water body. But samples need only be collected during daylight hours (sunrise to sunset).
- Dischargers must collect samples regardless of the time of year, status of the construction site, or day of the week. Samples should be taken during the first two hours of a storm event. Storm water inspections and sample collections are required even during non-working days (including weekends and holidays). Samples must be taken from the same storm event for comparison, concentrations are not comparable across storm events.
- Dischargers do not need to perform upstream/downstream sample collection for more than four (4) rain events per month.

Deciding What Constituent(s) Require Sampling

- If the water body is listed as impaired for sedimentation or siltation, analyze samples for Setteable Solids (mL/L) and Total Suspended Solids (mg/L) according to USEPA 160.2 and USEPA 160.5, respectively. Samples may be analyzed for suspended sediment concentration (SSC) according to ASTM D3977-97 instead of or in addition to Total Suspended Solids and Setteable Solids.
- If the water body is listed as impaired for turbidity, analyze samples for turbidity per USEPA 180.1 or analyze in the field using a correctly calibrated turbidity meter.
- It is very important that consistent sampling and analysis methods are used for all sampling locations.
- Table 4-2 shows general sample handling and laboratory requirements for sediment sampling.

Table 4-2

LABORATORY REQUIREMENTS[1] FOR STORM WATER MONITORING OF SEDIMENT, SILTATION AND/OR TURBIDITY

Parameters	Analytical Method	Target Method Detection Limit	Minimum Sample Volume [2]	Container	Preservative	Holding Time
Total Suspended Solids (TSS) [2]	EPA 160.2	1 mg/L	100 mL	500 mL polypropylene	Store in ice or refrigerator at 4°C (39.2°F)	7 days
Setteable Solids (SS)	EPA 160.5	0.1 mL/L/hour	1 liter	1 liter mL polypropylene	Store in ice or refrigerator at 4°C (39.2°F)	48 hours
Suspended Sediment Concentration (SSC) [3]	ASTM D 3977-97	Contact Laboratory	200 mL	Contact Laboratory	Store in ice or refrigerator at 4°C (39.2°F)	7 days
Turbidity	EPA 180.1	1 NTU	100 mL	500 mL polypropylene or glass	Store in ice or refrigerator at 4°C (39.2°F), Dark	48 hours

[1] The data in this table is a summary of recommended laboratory requirements. For specific USEPA regulatory requirements, consult the sampling and analysis requirements found in 40 CFR 136.

[2] Minimum sample volume recommended. Specific volume requirements will vary by laboratory; please check with your laboratory when setting up bottle orders.

[3] Use either TSS or SSC, or both, for suspended solids analysis. Upstream and downstream samples should be analyzed by the same method.

Deciding Where to Sample

In-stream sampling is required, both upstream and downstream of the discharge. The CGP does not require that the effluent be sampled. However, effluent sampling is recommended. Take both upstream and downstream samples within the actual flow of the waterbody. Collect samples at the following locations:

- Sample the 303(d) listed water body upstream of the construction site discharge in a location representative of the sediment load present in the water body before it is impacted by discharge from the construction site.

- Sample the 303(d) listed water body at a point immediately downstream of the last point of discharge from the construction site.

Additionally, for the purpose of interpreting the results of the samples collected from the 303(d) listed water body, collect and analyze samples of the actual discharge from the construction site (effluent sample) prior to it being commingled in the receiving water. This sample can be used to verify whether the source of the sediment in-stream is emanating from the construction discharge. Remember that samples should only be collected from safely accessible locations.

In general, sample away from the bank in or near the main current. Avoid collecting samples directly from ponded, sluggish, or stagnant water. Be careful when collecting water upstream or downstream of confluences or point sources to minimize problems caused by backwater effects or poorly mixed flows. Note that samples collected directly downstream from a bridge can be contaminated from the bridge structure or runoff from the road surface.

Choose the upstream location in water that appears to represent the nature of the flow in the stream.

Downstream samples should represent the receiving water mixed with flow from the construction site. For instance if the flow from the site can be observed by either a color or a flow difference, collect the downstream sample from within the affected water.

What Are the Applicable Water Quality Standards

The CGP requires sampling of runoff from construction sites that discharge directly to 303(d) listed water bodies to demonstrate that discharges do not contribute to the impairment of the receiving water. Each of the listed waters is subject to water quality objectives in a RWQCB Basin Plan for sediments and solids or for turbidity. The applicable water quality objectives for each RWQCB are listed in Appendix A to this guidance document.

Deciding How to Sample

- Only personnel trained in water quality sampling procedures should collect storm water samples.

- Determine sampling methods and locations in advance of the runoff event in order to provide sufficient time to gather the supplies and equipment necessary to sample and plan for safe access by the sampling crew(s) and document them in the SWPPP.

How to Analyze Your Data

While it is desirable for sediment concentrations from a site to be as low as possible, the amount that a site can contribute is determined by a TMDL analysis and in the absence of an implemented TMDL, the instream concentrations below the point of discharge cannot be significantly different from the upstream concentrations.

In order to allow for meaningful analysis of the data, it is necessary to establish a statistical framework for it. Concentrations will vary from sample to sample. In order to obtain a statistically meaningful set of samples, it is necessary to determine how many samples will be necessary, the greater the variability between samples, the larger the number of samples (N) will be required. This may require that the water body be sampled before the start of construction to determine the variability. Collect sufficient numbers of samples (N) during each storm event monitored to represent the prevailing conditions of both locations (upstream and downstream). Depending upon which statistical test is used, and the variability between the samples, N will usually be more than a single sample. When comparing samples from a single storm event, a range of readings will be obtained. Almost all samples from that source will fall into that range. The likely range of readings can be expressed through the use of a statistical confidence interval for the parameter being sampled. Confidence intervals are expressed as probabilities, such as 95% confidence or 97% confidence. The size of a confidence interval will be determined by the variability in the samples from the single source and the number of samples collected.

Once the sampling is completed and results returned from the laboratory, compare the concentration of the appropriate parameter derived from the upstream samples to the concentration of the same parameter from the downstream samples (from the same storm event). It is expected that every sample will be different. (This would be true even if there were not construction activities, in light of the variability of stream conditions, explained above.) Rather, compare the samples to see if there is a statistically significant difference between the central tendency (arithmetic mean, geometric mean, median, etc.) of the upstream samples and the downstream samples.

Estimate the magnitude of the difference in the central tendency between the upstream and downstream concentration values. The null hypothesis to be tested is: The difference between the downstream central tendency and the upstream central tendency is less than or equal to zero. The minimum acceptable confidence interval shall be 90%. Using the data, calculate a one-sided lower confidence limit (LCL) on the difference in central tendencies. If the numeric value of zero is contained within the confidence interval (LCL), then you cannot reject the null hypothesis, and you would conclude that no impairment has occurred. If, however, the data indicates that the downstream central tendencies are significantly higher than the upstream, you cannot accept the null hypothesis. In this case there is the presumption that the discharges are contributing to the existing impairment.

If you did take samples of the effluent, and those samples are not consistent with the conclusion that the discharge is contributing to the existing impairment, take steps to determine what other source(s) is causing the increase in the downstream sampling. If you can show that there is a different source than your discharge, you should contact the appropriate RWQCB.

Sources of sediment, silt and turbidity in a construction discharge

Conditions or areas on a site that may be causing sediment, silt, and/or turbidity in your storm water runoff may include:

- Exposed soil areas with inadequate erosion control measures
- Active grading areas
- Poorly stabilized slopes
- Lack of perimeter sediment controls
- Areas of concentrated flow on unprotected soils
- Poorly maintained erosion and sediment control measures
- Unprotected soil stockpiles
- Failure of an erosion or sediment control measure

What To Do If Your Data Shows a Statistically Significant Increase Downstream of the Discharge

The CGP requires that BMPs be implemented on the construction site to prevent a net increase of sediment load in storm water discharges relative to pre-construction levels. Although the upstream reference (background) sample may not be representative of pre-construction levels at your site, it will provide a basis for comparison with the sample taken downstream of the construction site.

If the statistical tests of the upstream and downstream samples indicate an increase in silt, sediment and/or turbidity, follow the reporting requirements as shown in the Receiving Water Limitations of the CGP. If you have collected samples of the discharge from your site, use these results to help identify if it is your project that is discharging sediment into the receiving water. It is recommended that the following steps be taken as soon as possible.

- Identify the source of the silt, sediment or turbidity
- Review effectiveness of existing erosion control BMPs. The sediment may be coming from locations at the construction site where existing erosion control BMPs have been reduced in effectiveness. These BMPs should be evaluated to determine whether they are in need of maintenance.
- Review effectiveness of existing sediment control BMPs. The sediment may be coming from locations at the construction site where existing sediment control BMPs have been reduced in effectiveness. These BMPs should be evaluated to determine whether they are in need of maintenance.
- Look for evidence that there are too few sediment and erosion control BMPs. In inspecting the site, sources of sediment that either do not have BMPs or for which the BMPs appear to be insufficient in number or type may be identified.
- Repair or replace any BMP that has failed or is in need of maintenance
- Evaluate whether additional or alternative BMPs should be implemented to provide an effective combination of erosion and sediment control measures on the site. Do not rely solely on perimeter sediment controls, particularly where there are fine-grained soils (such as silts or clays) on the site.

Implement erosion controls (source controls) that keep the soil in place, even on temporary slopes and rough graded areas, wherever possible and as necessary to prevent sediment from leaving the site.

If sampling and analysis during subsequent storm events shows that there is still a statistically significant difference, then repeat the steps above until the analytical results of the upstream concentration samples are within the confidence interval.

Table 4-3 is an outline for a typical comprehensive storm water sampling and analysis plan. As some laboratories may have specific requirements for sample collection and handling, specific information or requirements on the samples should be checked with the laboratory performing the analysis.

1 PROJECT OVERVIEW/DESCRIPTION
- 1.1 Description of why the project is being conducted
- 1.2 Description of who is conducting the project
- 1.3 General scope of monitoring activities
- 1.4 Project organization/roles and responsibilities

2 MONITORING SITES
- 2.1 Site location (map)
- 2.2 Written driving directions
- 2.3 Site access instructions (gates, locks, keys, combinations)
- 2.4 Notification procedures

3 ANALYTICAL CONSTITUENTS
- 3.1 List of constituents for sampling and analysis (including sample collection methods, container type, volume required, preservation and laboratory performing analysis)

4 DATA QUALITY OBJECTIVES (DQOs)
- 4.1 Analytical reporting limits
- 4.2 Analytical precision, accuracy and completeness

5 FIELD EQUIPMENT MAINTENANCE
- 5.1 Equipment calibration
- 5.2 Equipment maintenance
- 5.3 Equipment cleaning (bottles/lids/tubing)

6 MONITORING PREPARATION AND LOGISTICS
- 6.1 Weather tracking
- 6.2 Storm selection criteria
- 6.3 Storm action levels
- 6.4 Communications/notification procedures
- 6.5 Sample bottle order
- 6.6 Sample bottle labeling
- 6.7 Field equipment preparation

7 SAMPLE COLLECTION, PRESERVATION AND DELIVERY
- 7.1 Sample collection methods
- 7.2 Field measurement methods
- 7.3 Field equipment list
- 7.4 Sample containers, preservation and handling
- 7.5 QA/QC sample collection methods
- 7.6 Sample labeling (site names, codes, etc.)
- 7.7 Composite sample splitting
- 7.8 Forms and procedures for documenting sample collection and field measurements
- 7.9 Laboratory communication procedures
- 7.10 Sample shipping/delivery, chain-of-custody

8 QUALITY ASSURANCE/QUALITY CONTROL (QA/QC)
- 8.1 Field procedures for QA/QC sample collection

9 LABORATORY SAMPLE PREPARATION AND ANALYTICAL METHODS
- 9.1 Laboratory sample preparation procedures
- 9.2 Analytical constituent table (including analytical methods, holding times and reporting limits)

10 DATA MANAGEMENT AND REPORTING PROCEDURES
- 10.1 Analytical data validation
- 10.2 Electronic data transfer
- 10.3 Filing of electronic and hard copy data
- 10.4 Reports

APPENDICES
- A Clean Sampling Techniques
- B Health and Safety Plan

Table 4-3 Outline for a Typical Storm Water Sampling and Analysis Plan

Definitions

Chain of Custody (COC) Form

The COC Form is a form used to track sample handling as samples progress from sample collection to the analytical laboratory. The COC is then used to track the resulting analytical data from the laboratory to the client. COC forms can be obtained from an analytical laboratory upon request.

Direct Discharge

Direct discharge means storm water runoff that flows from a construction site directly into a 303(d) water body listed for sedimentation, siltation, or turbidity. Storm water runoff from the construction site is considered a direct discharge to a 303(d) listed water body unless it first flows through:

1) A municipal separate storm sewer system (MS4) that has been formally accepted by and is under control and operation of a municipal entity;

2) A separate storm water conveyance system where there is co-mingling of site storm water with off-site sources; or

3) A tributary or segment of a water body that is not listed on the 303d list before reaching the 303d listed water body or segment.

Discharger

The discharger is the person or entity subject to the CGP.

Electrical Conductivity (EC)

EC is a measure of the ability of water to carry an electric current. This ability depends on the presence of ions, their concentration, valence, mobility and temperature. EC measurements can give an estimate of the variations in the dissolved mineral content of storm water in relation to receiving waters.

Field Measurements

Field measurements refers to water quality testing performed in the field with portable field-testing kits or meters.

Field Tracking Form (FTF)

The FTF is a form that serves as a guide to sampling crews to obtain sampling information and to prescribe and document sample collection information in the field. The FTF usually contains sample identifiers, sampling locations, requested analyses, Quality Control (QC) sample identifiers, special instructions, and field notes.

Holding Time

Holding time is specified by the analytical method and is the elapsed time between the time the sample is collected and the time the analysis must be initiated.

pH

The pH is universally used to express the intensity of the acid or alkaline condition of a water sample. The pH of natural waters tends to range between 6 and 9, with neutral being 7. Extremes of pH can have deleterious effects on aquatic systems.

Reference Sample

A sample taken from an undisturbed part of the construction site or from an undisturbed site immediately upstream from a construction site. The reference sample is used for comparison with samples taken from the active construction site. It is the same set of samples that is referred to as an uncontaminated sample in the Permit.

Sampling and Analysis Plan

A document that describes how the samples will be collected and under what conditions, where and when the samples will be collected, what the sample will be tested for, what test methods and detection limits will be used, and what methods/procedures will be maintained to ensure the integrity of the sample during collection, storage, shipping and testing (i.e., quality assurance/quality control protocols).

Sediment

Sediment is solid particulate matter, both mineral and organic, that is in suspension, is being transported, or has been moved from its site of origin by air, water, gravity, or ice and has come to rest on the earth's surface either above or below sea level.

Sedimentation/Siltation

Sedimentation/siltation is the process of sediment/silt deposition.

Setteable Solids

The setteable solids (SS) test measures the solid material that can be settled within a water column during a specified time frame. This typically is tested by placing a water sample into an Imhoff settling cone and allowing the solids to settle by gravity. Results are reported either as a volume (mL/L) or a weight (mg/L).

Silt

Silt are soil particles between 0.05mm and 0.002mm in size. (For the purposes of its use here, it also includes clay, which is categorized by a particle size less than 0.002mm.)

Soil Amendment

Any material that is added to the soil to change its chemical properties, engineering properties, or erosion resistance that could become mobilized by storm water. Certain soil amendments may not be visible in site runoff. Soil amendments likely to fall in this category include lime, cementitious binders, chlorides, emulsions, polymers, soil stabilizers, and tackifiers applied as a stand-alone treatment (i.e., without mulch). Even some of these products may bind with the soil, and thus be visible. In contrast, plant fibers (such as straw or hay), wood and recycled paper fibers (such as mulches and matrices), bark

or wood chips, green waste or composted organic materials, and biodegradable or synthetic blanket fibers are soil amendments that are likely to be visible in storm water runoff.

Suspended Sediment Concentration (SSC)

The suspended sediment concentration (SSC) test measures the concentration of suspended solid material in a water sample by measuring the dry weight of all of the solid material from a known volume of a collected water sample. Results are reported in mg/L.

Total Suspended Solids (TSS)

Suspended solids in a water sample include inorganic substances, such as soil particles and organic substances, such as algae, aquatic plant/animal waste, particles related to industrial/sewage waste, etc. The total suspended solids test (TSS) test measures the concentration of suspended solids in water by measuring the dry weight of a solid material contained in a known volume of a sub-sample of a collected water sample. Results are reported in mg/L.

Turbidity

Cloudiness of water quantified by the degree to which light traveling through a water column is scattered by the suspended organic and inorganic particles it contains. The scattering of light increases with a greater suspended load. Turbidity is commonly measured in Nephelometric Turbidity Units (NTU).

WATER QUALITY OBJECTIVES FOR SUSPENDED MATERIALS, SETTEABLE MATERIALS, SEDIMENT AND TURBIDITY

Below is a compilation of the water quality objectives for suspended materials, setteable material, sediment and turbidity as of August 2003 for the Lahontan Regional Water Quality Control Boards. The water quality objectives are found in chapter 3 (unless otherwise noted) of the RWQCB's Basin Water Quality Control Plan (Basin Plan).

Lahontan Regional Water Quality Control Board - Region 6
http://www.swrcb.ca.gov/rwqcb6/BPlan/Bplantxt.pdf

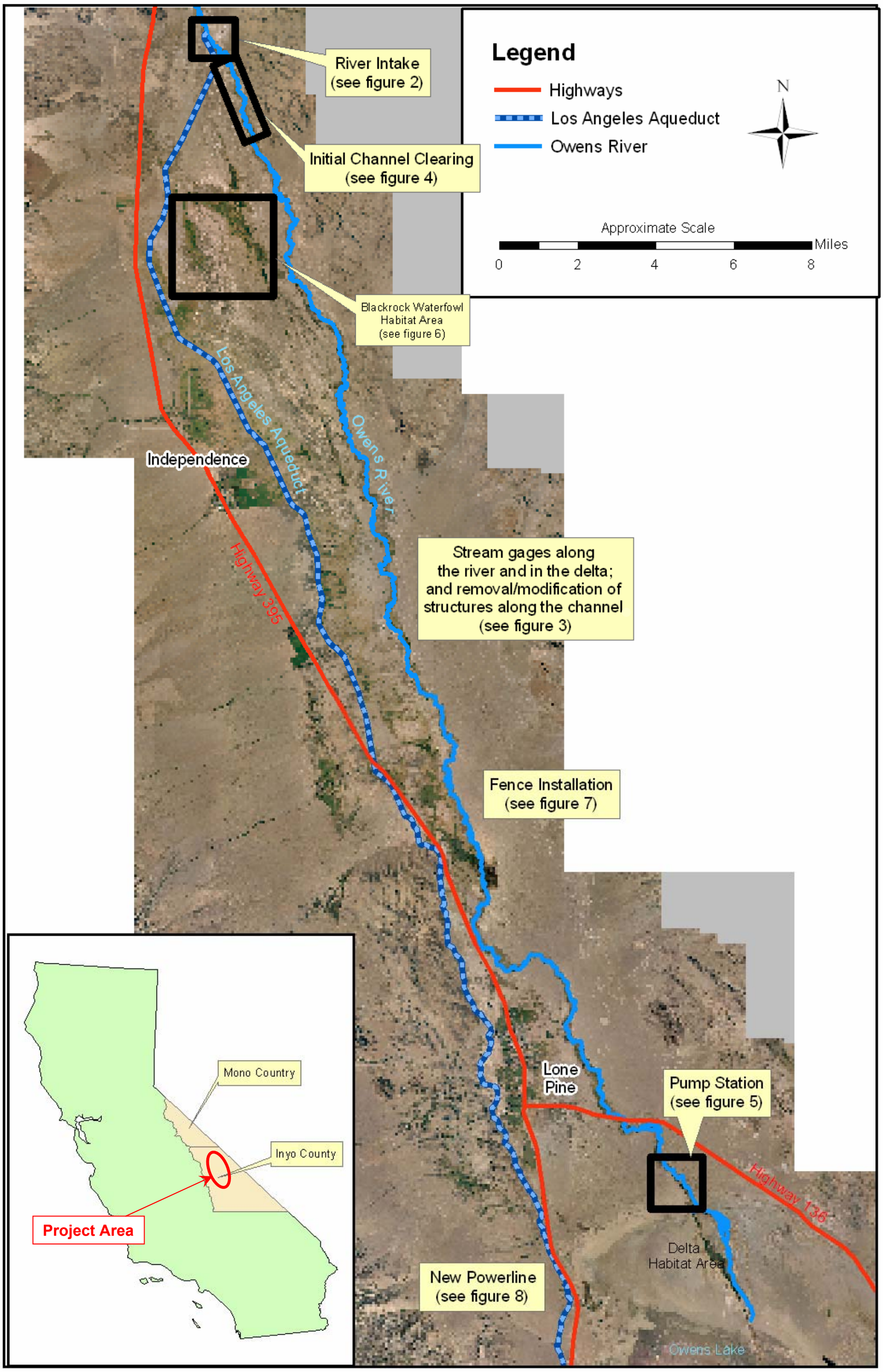
Sediment
The suspended sediment load and suspended sediment discharge rate of surface waters shall not be altered in such a manner as to cause nuisance or adversely affect the water for beneficial uses.

Setteable Materials
Waters shall not contain substances in concentrations that result in deposition of material that causes nuisance or that adversely affects the water for beneficial uses. For natural high quality waters, the concentration of setteable materials shall not be raised by more that 0.1 milliliter per liter.

Suspended Materials
Waters shall not contain suspended materials in concentrations that cause nuisance or that adversely affects the water for beneficial uses. For natural high quality waters, the concentration of total suspended materials shall not be altered to the extent that such alterations are discernible at the 10 percent significance level.

Turbidity
Waters shall be free of changes in turbidity that cause nuisance or adversely affect the water for beneficial uses. Increases in turbidity shall not exceed natural levels by more than 10 percent.

FIGURE 1 – INDEX MAP



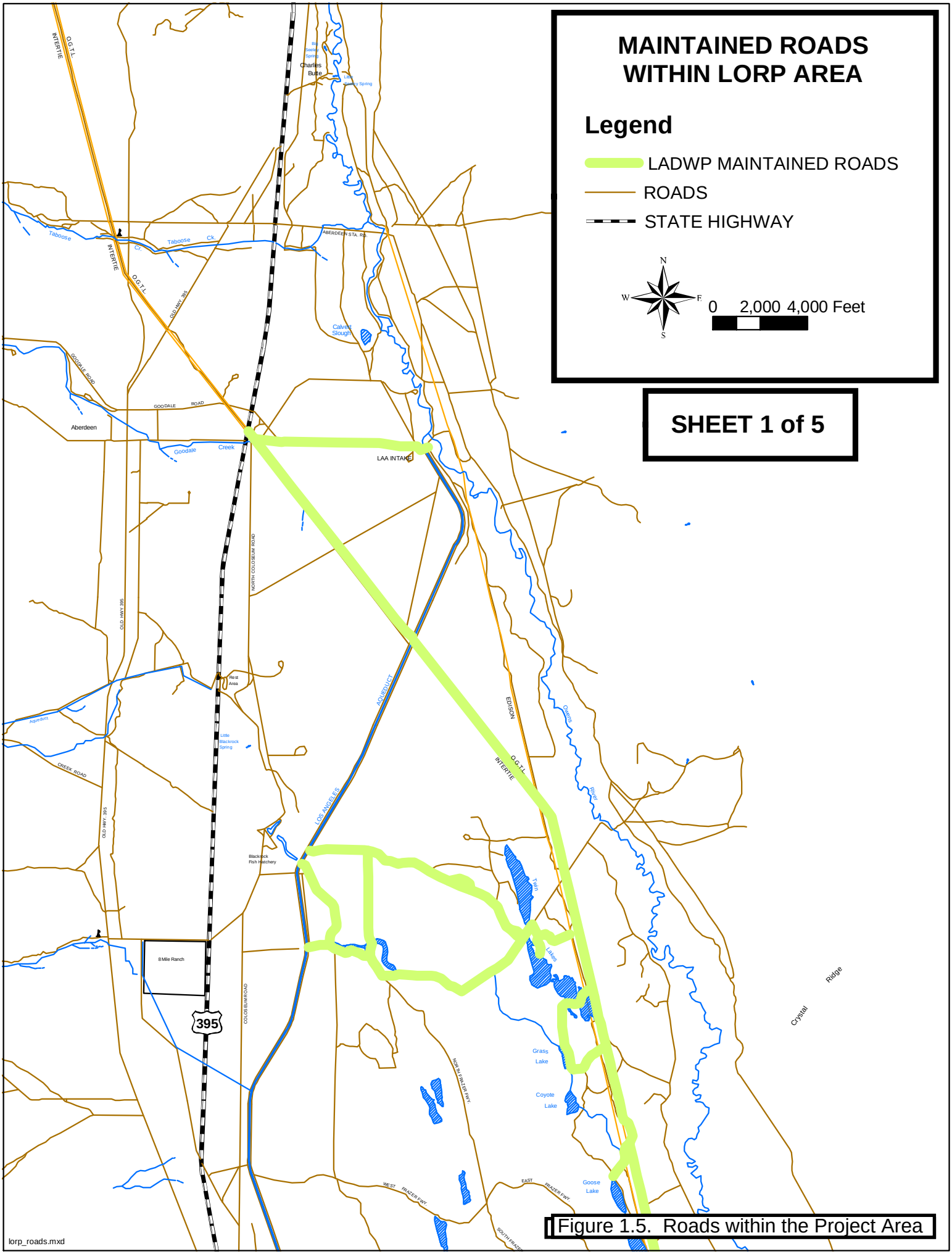


Figure 1.5. Roads within the Project Area

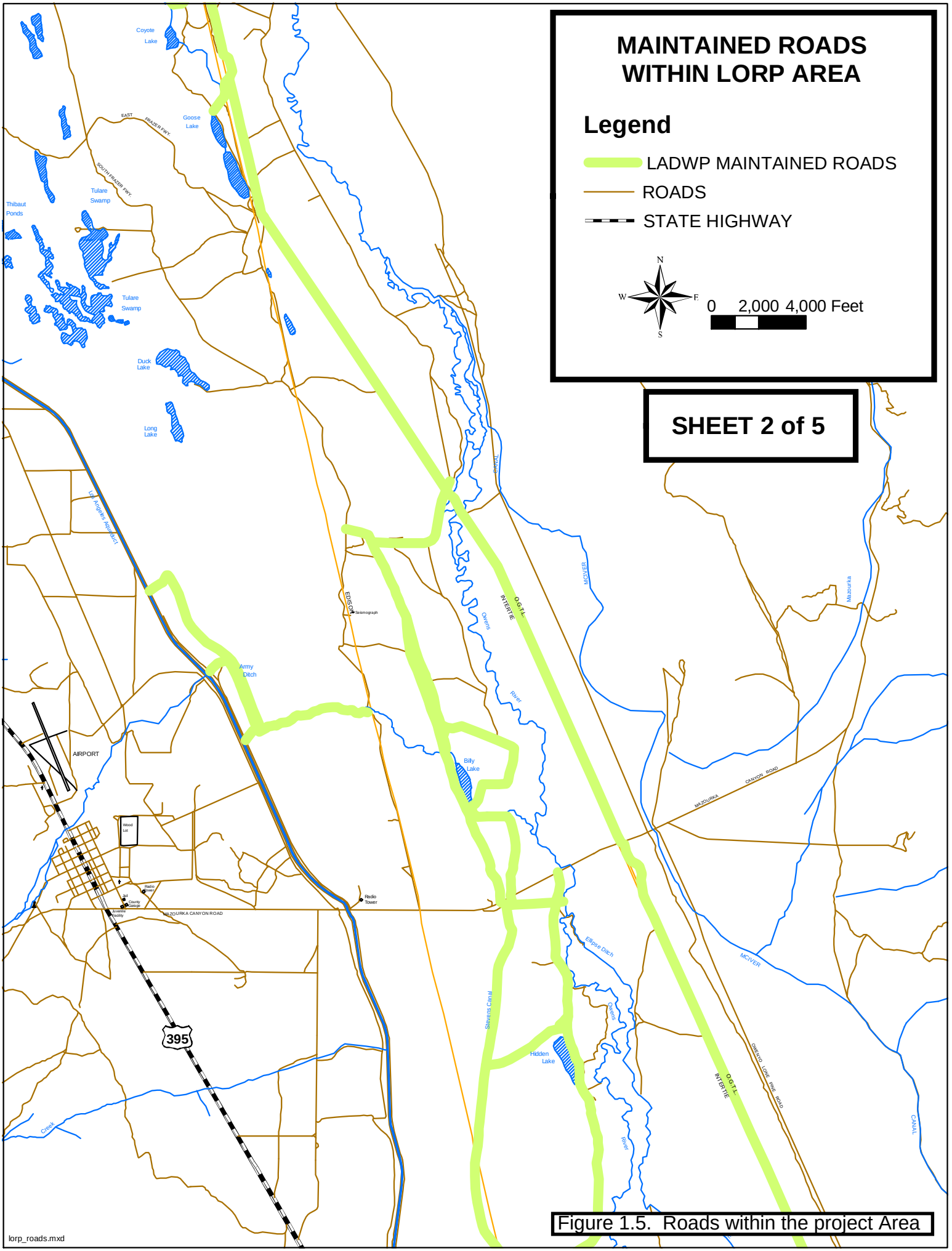


Figure 1.5. Roads within the project Area

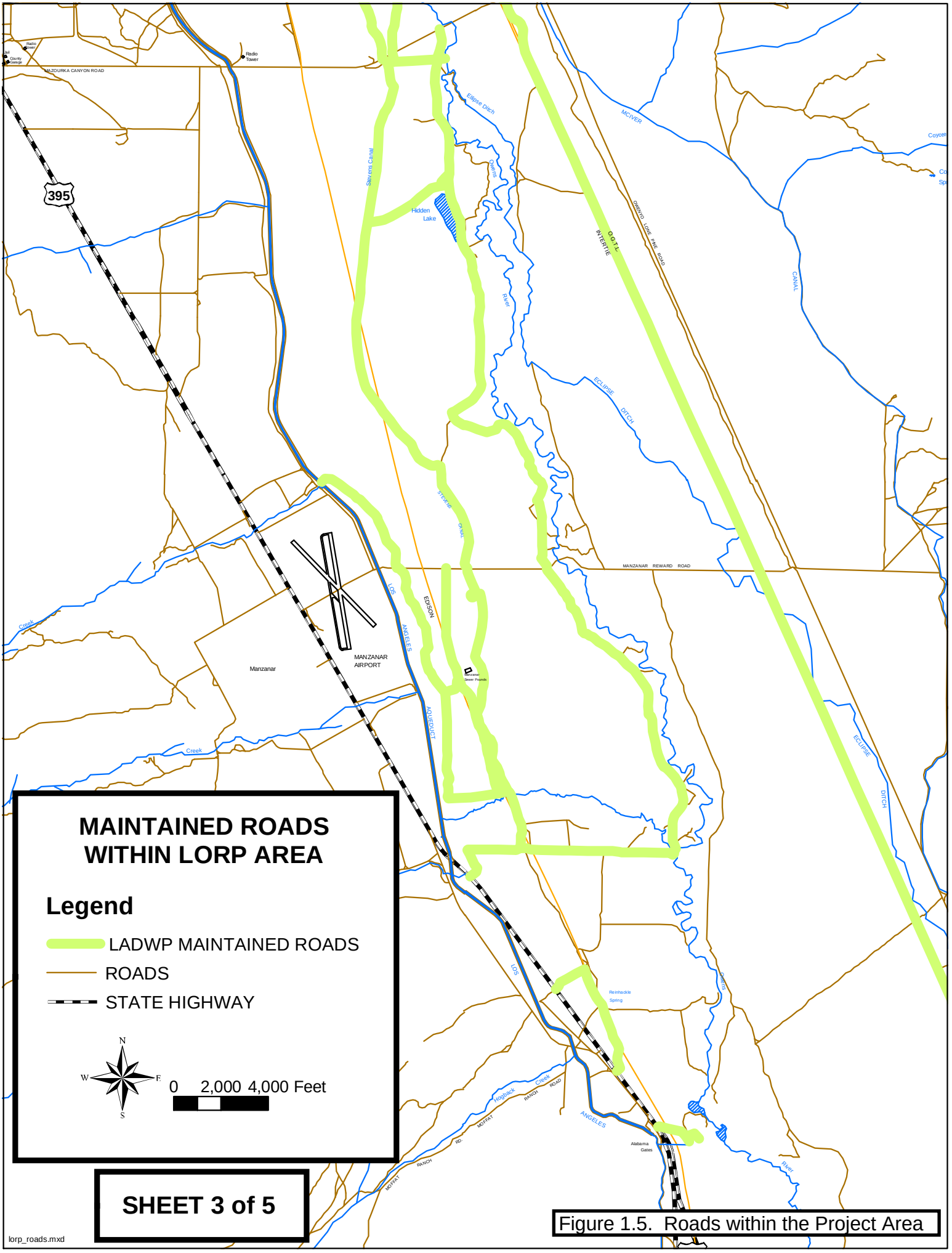


Figure 1.5. Roads within the Project Area

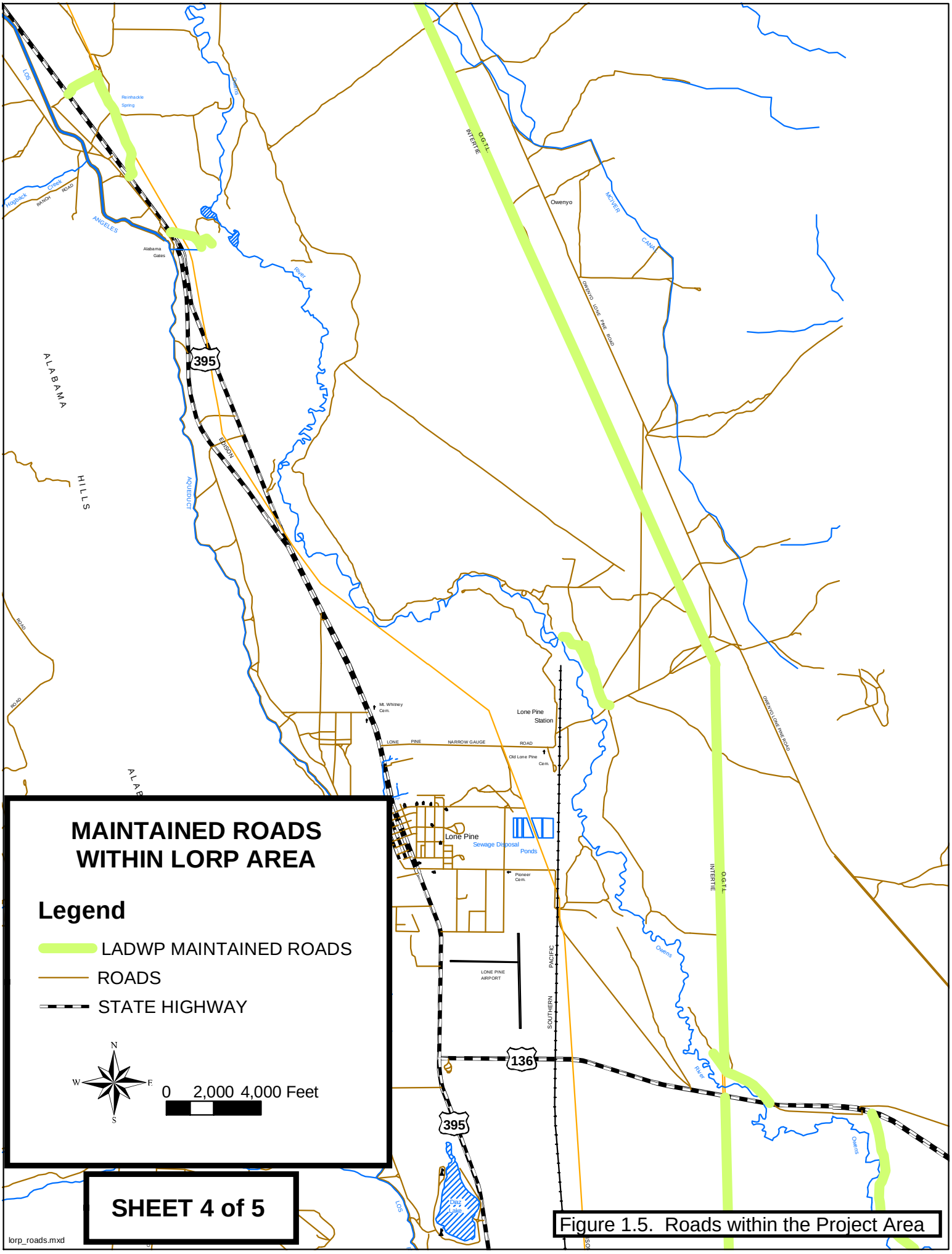


Figure 1.5. Roads within the Project Area

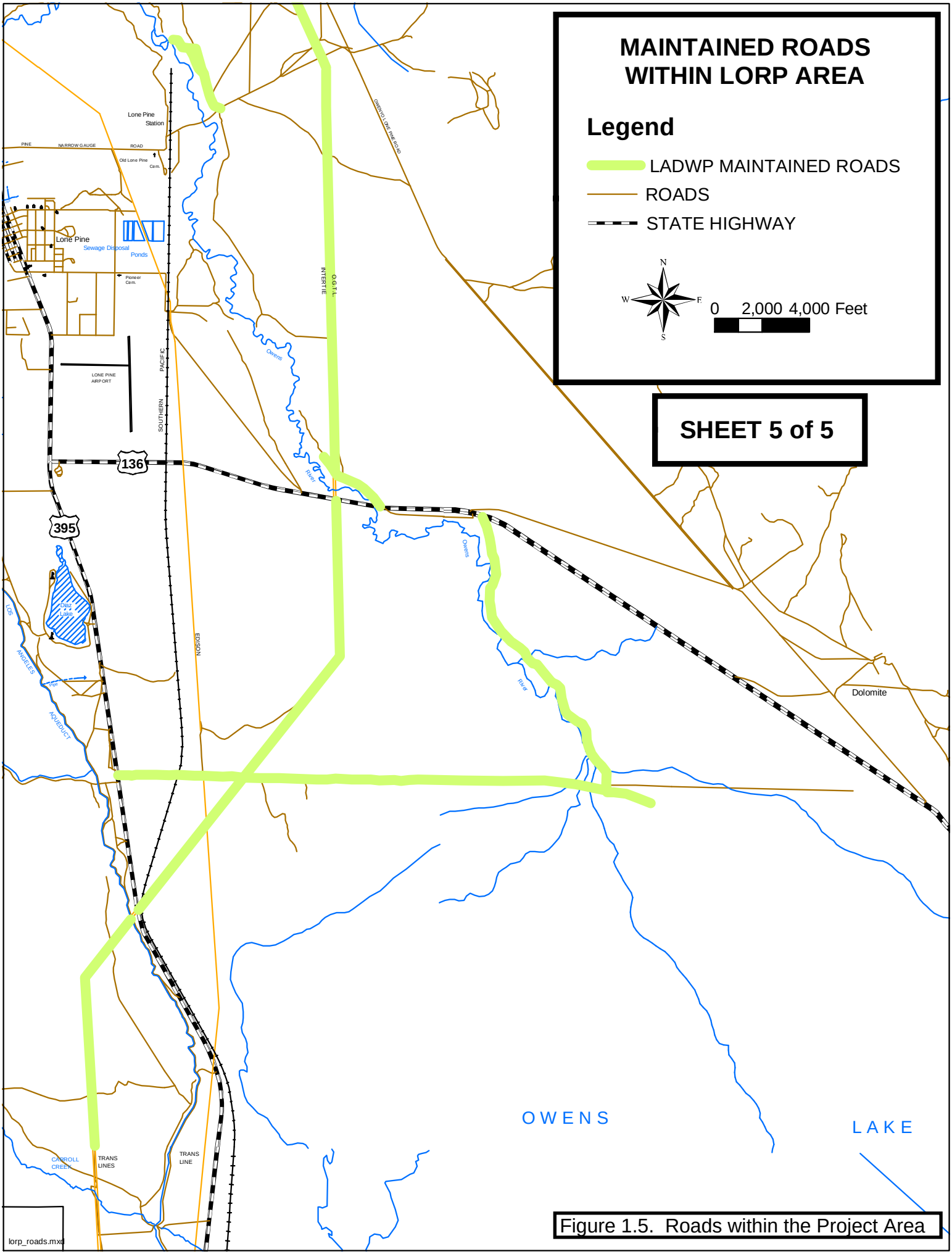
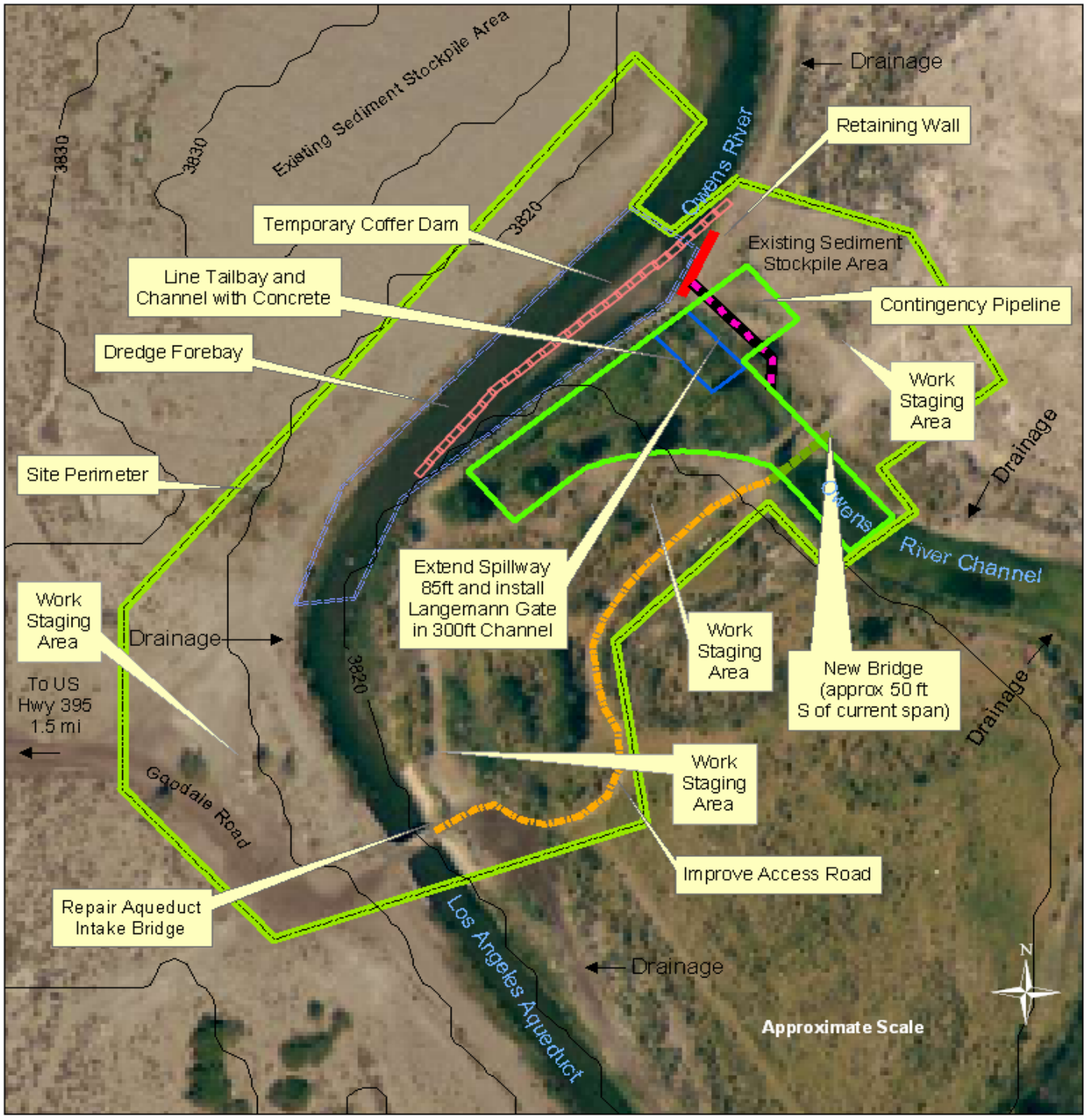


Figure 1.5. Roads within the Project Area

Figure 2 – River Intake



Site Perimeter
Temporary Coffer Dam
Dredged Forebay
Tailbay
Langemann Gate
Retaining Wall
Contingency Pipeline
New Bridge
Improved Road

Figure 2.1
Existing River Intake Structure Area (looking downstream)

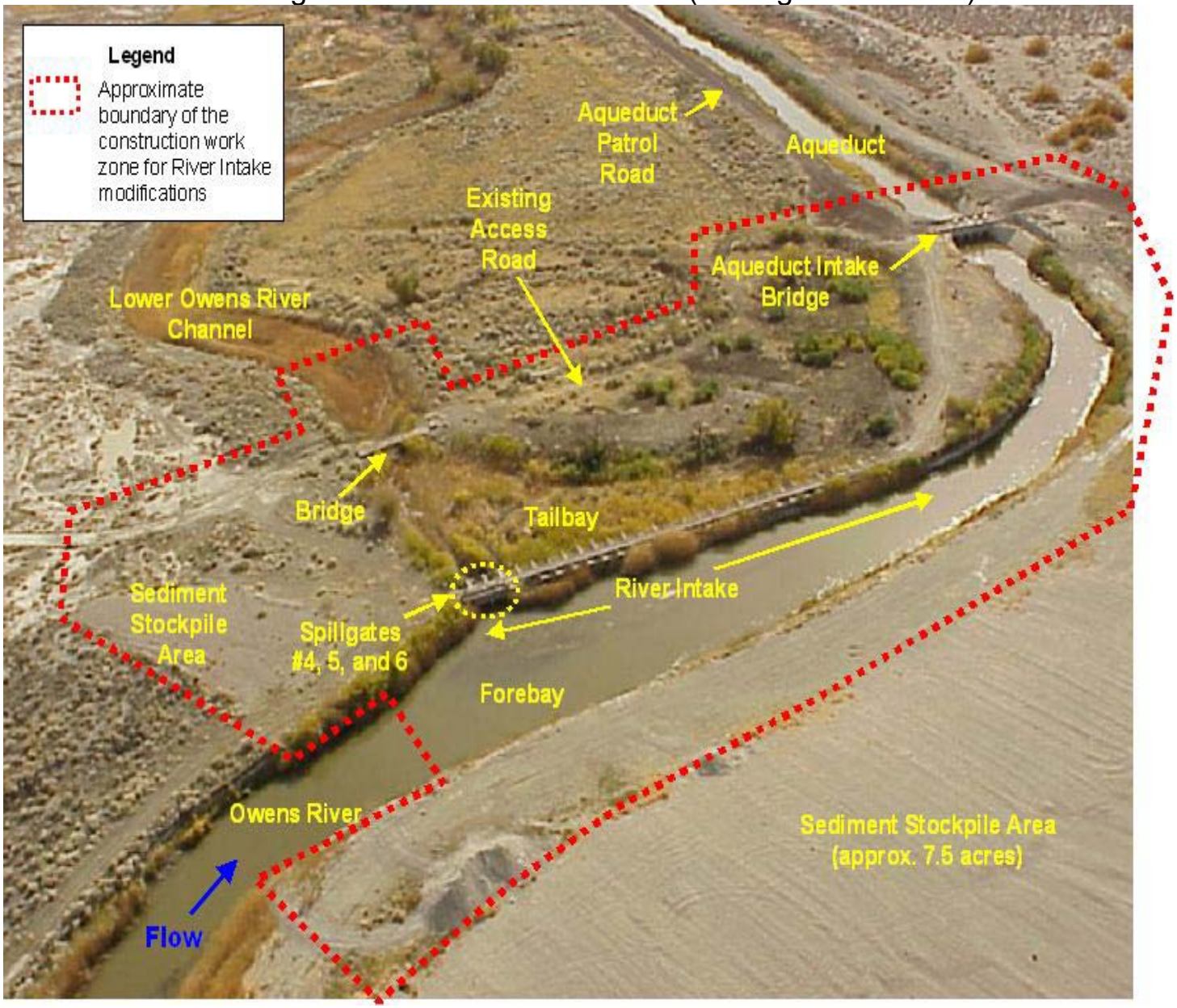


Figure 2.2
River Intake Structure and Vicinity – Proposed Modifications

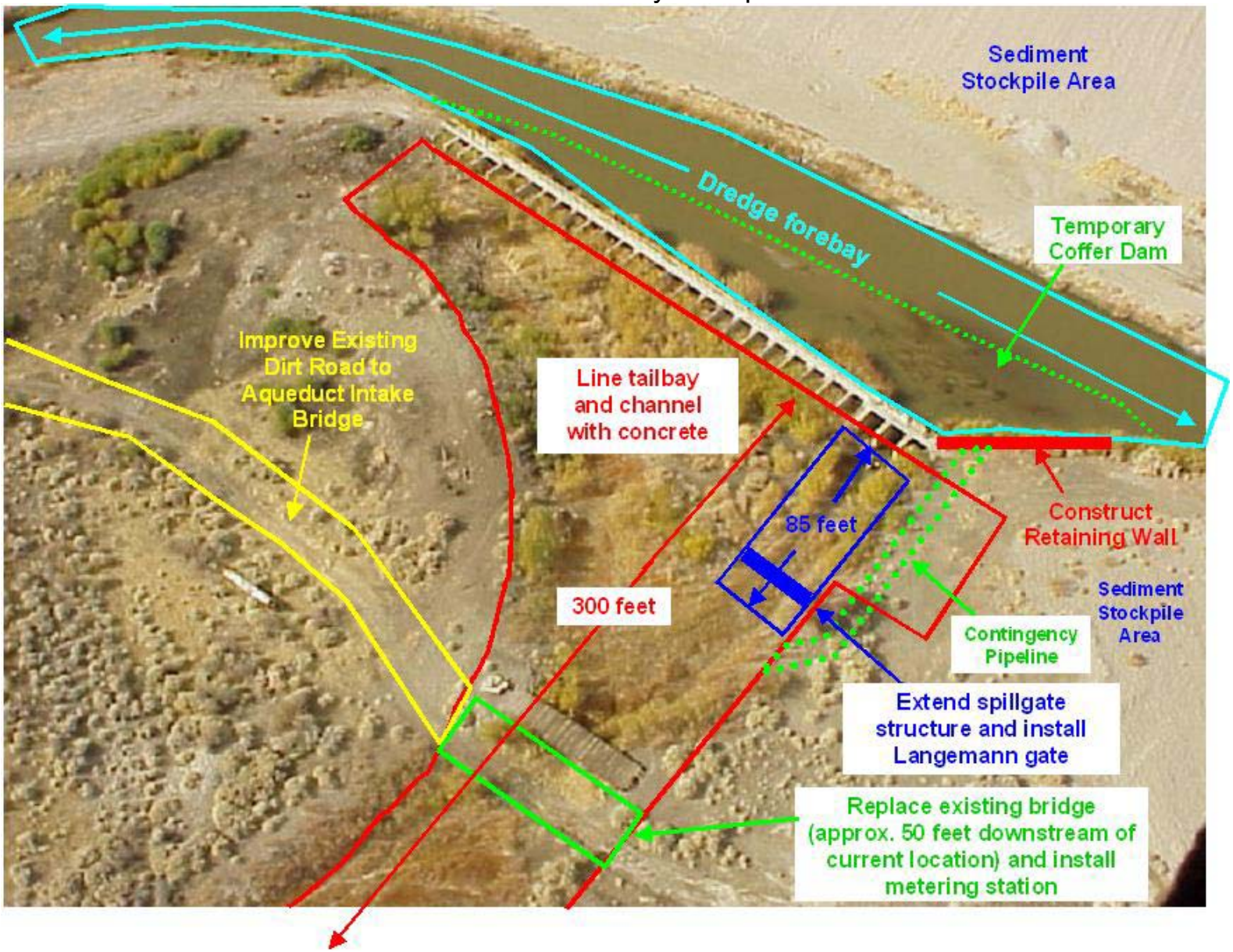


Figure 2.3 – River Intake Dewatering Areas

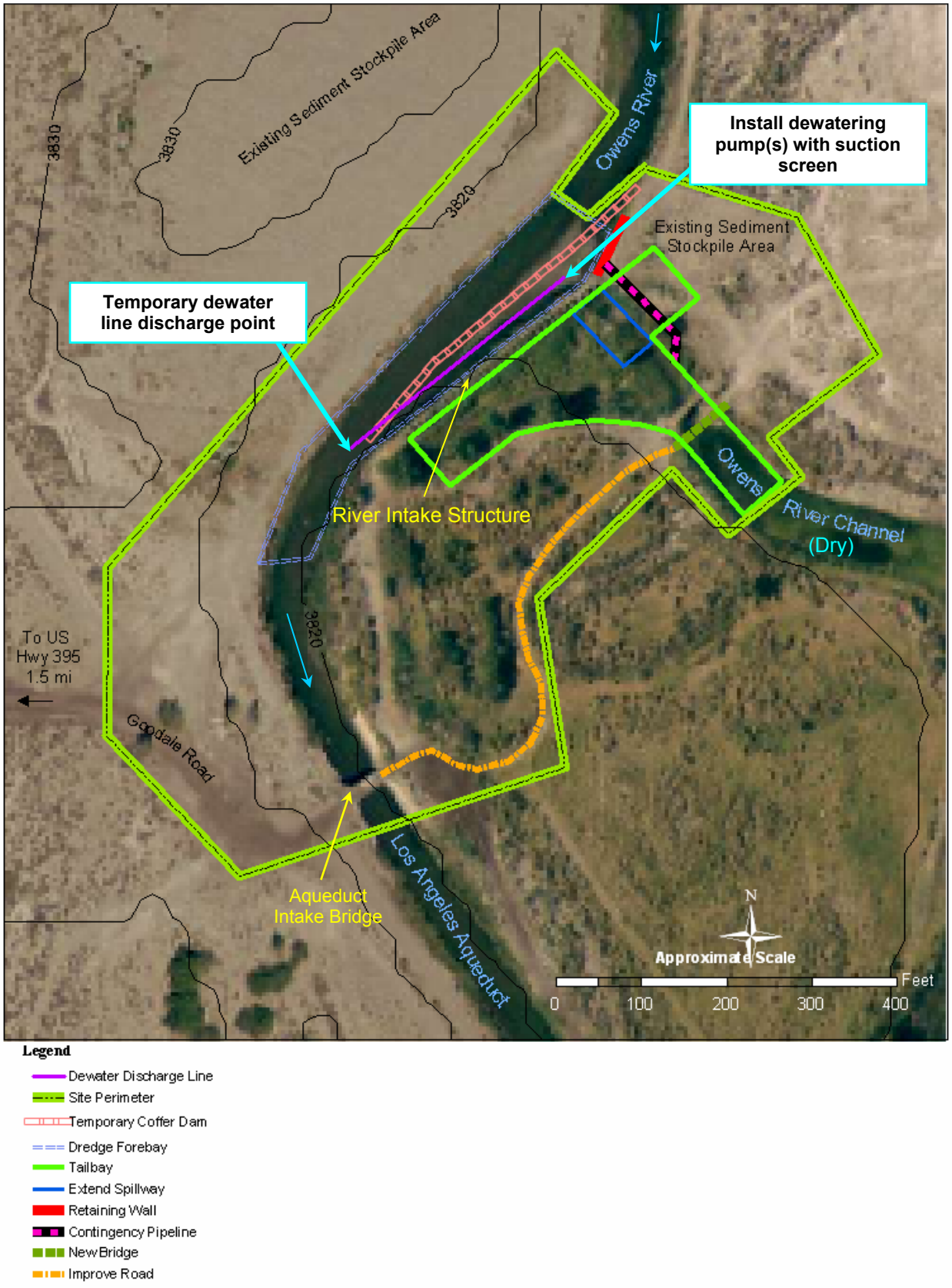


FIGURE 3 – STREAM GAGING STATIONS (PAGE 1 OF 5)

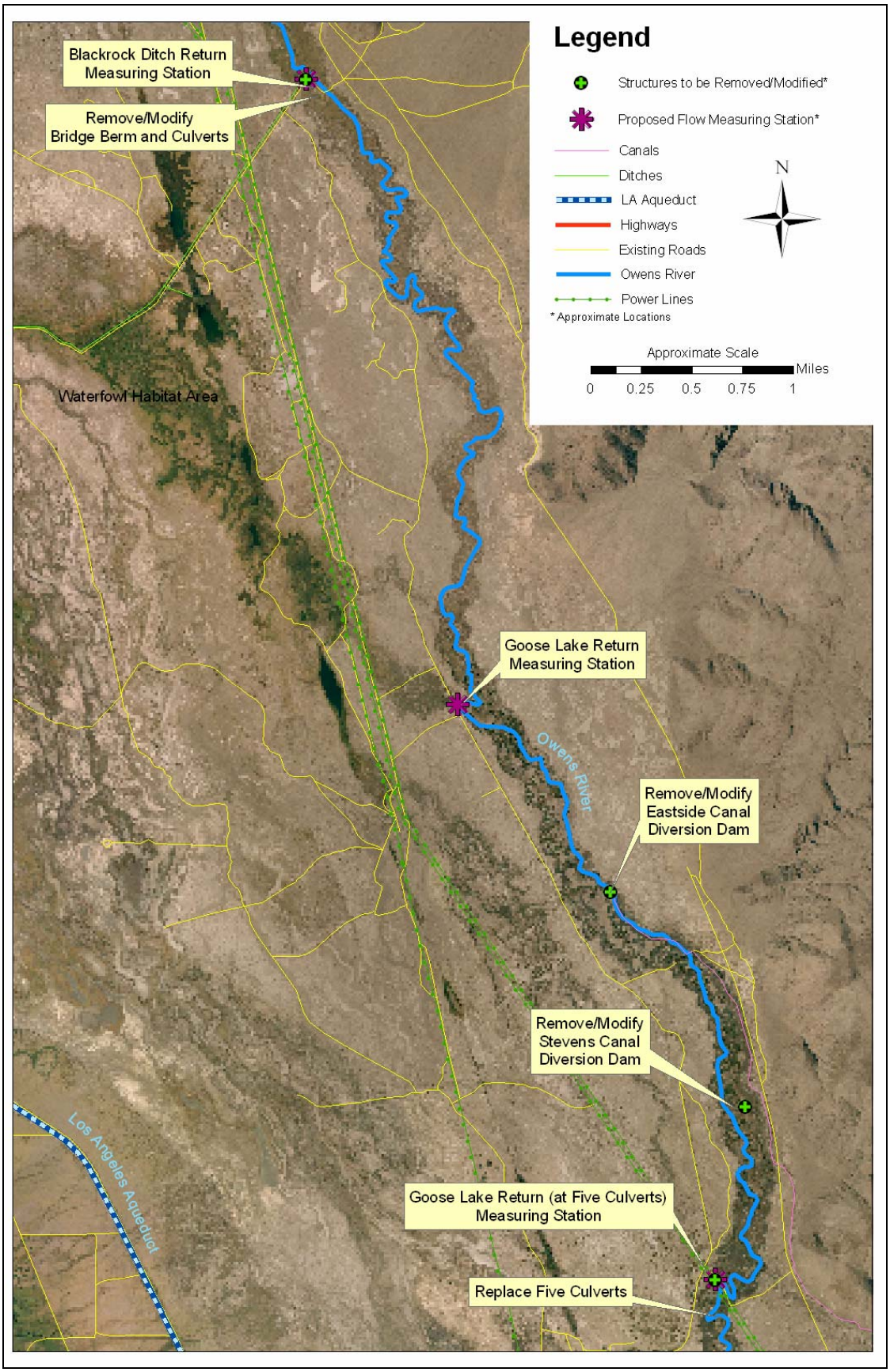


FIGURE 3 – STREAM GAGING STATIONS (PAGE 2 OF 5)

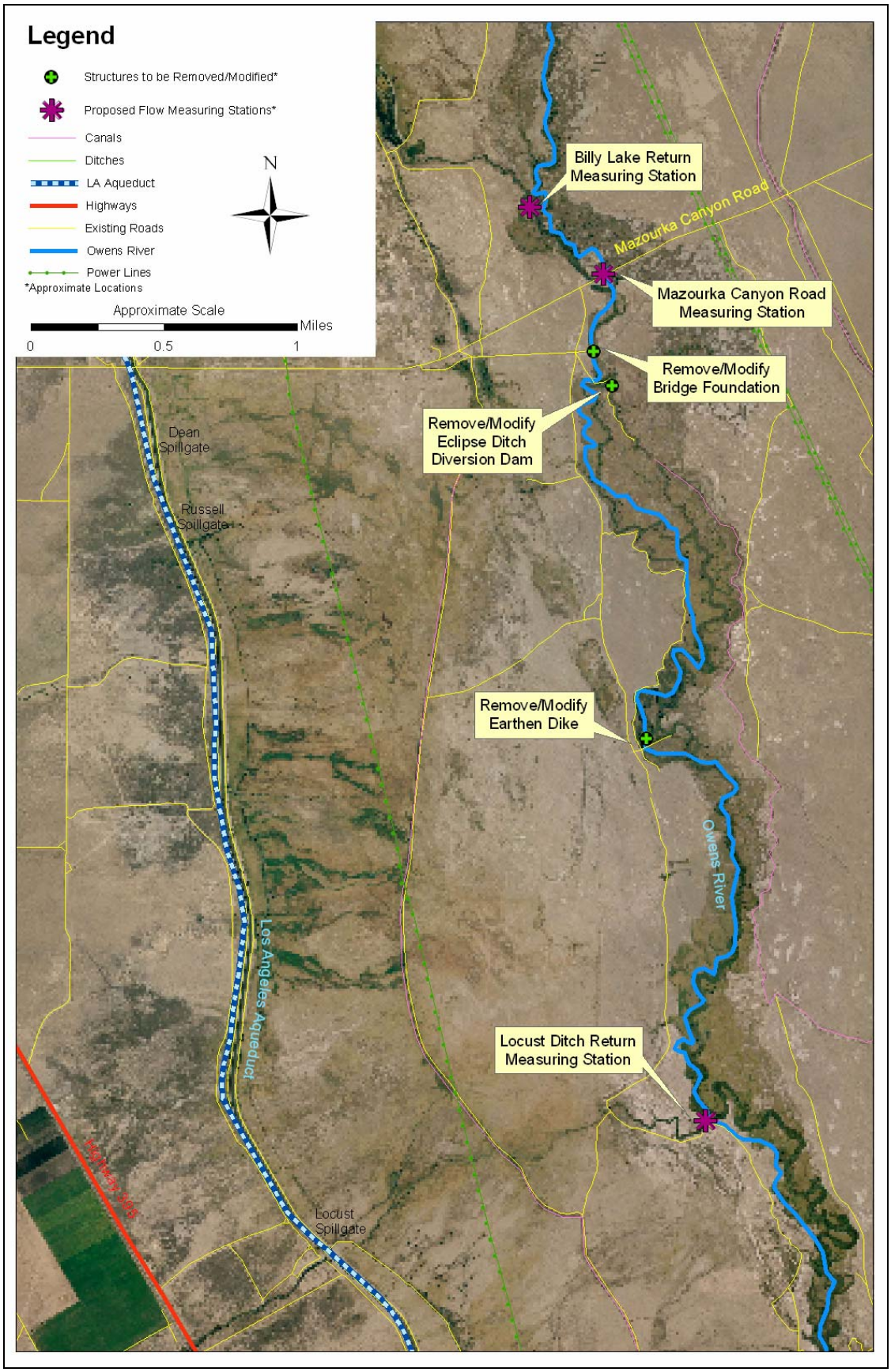


FIGURE 3 – STREAM GAGING STATIONS (PAGE 3 OF 5)

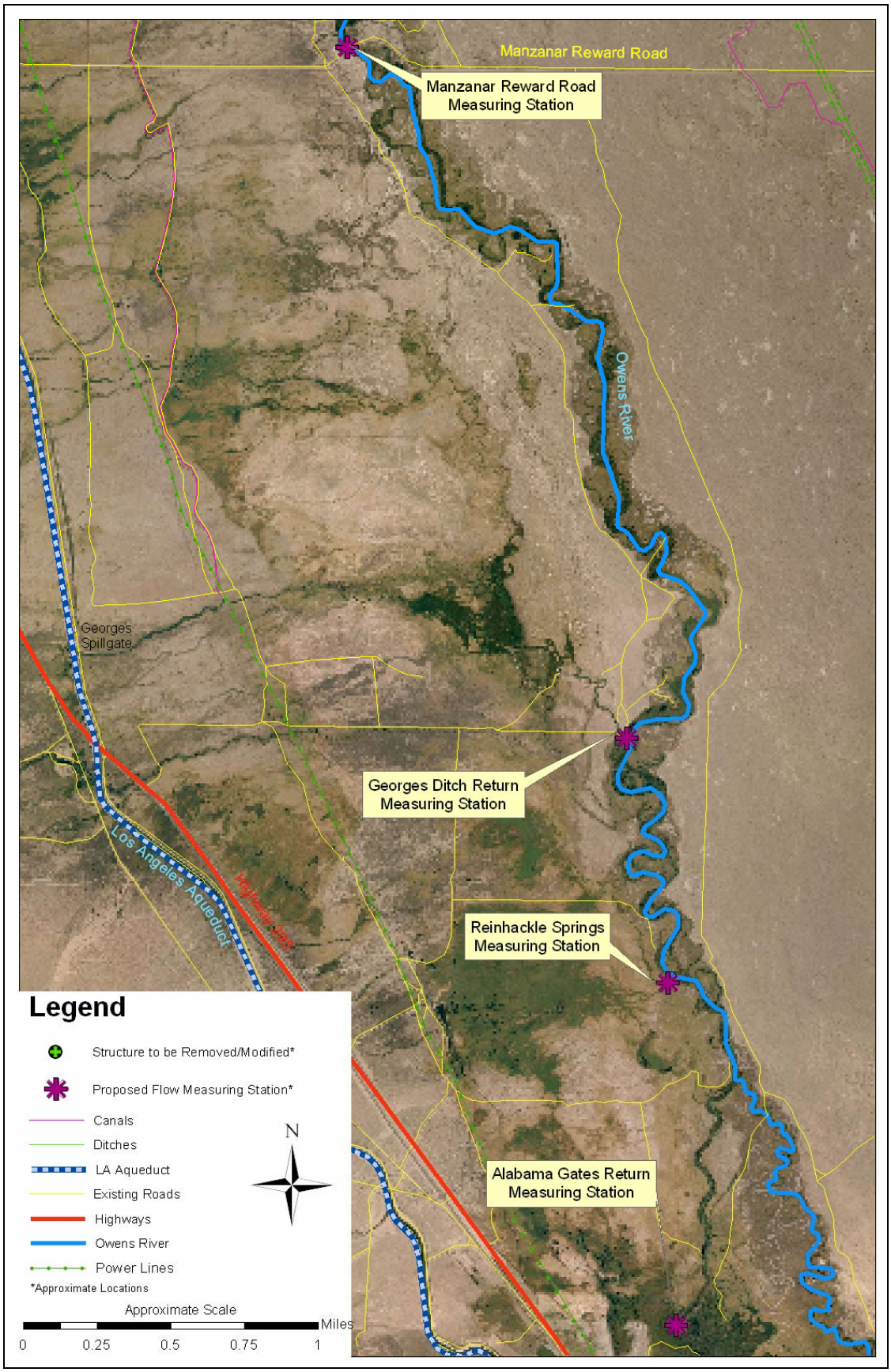


FIGURE 3 – STREAM GAGING STATIONS (PAGE 4 OF 5)

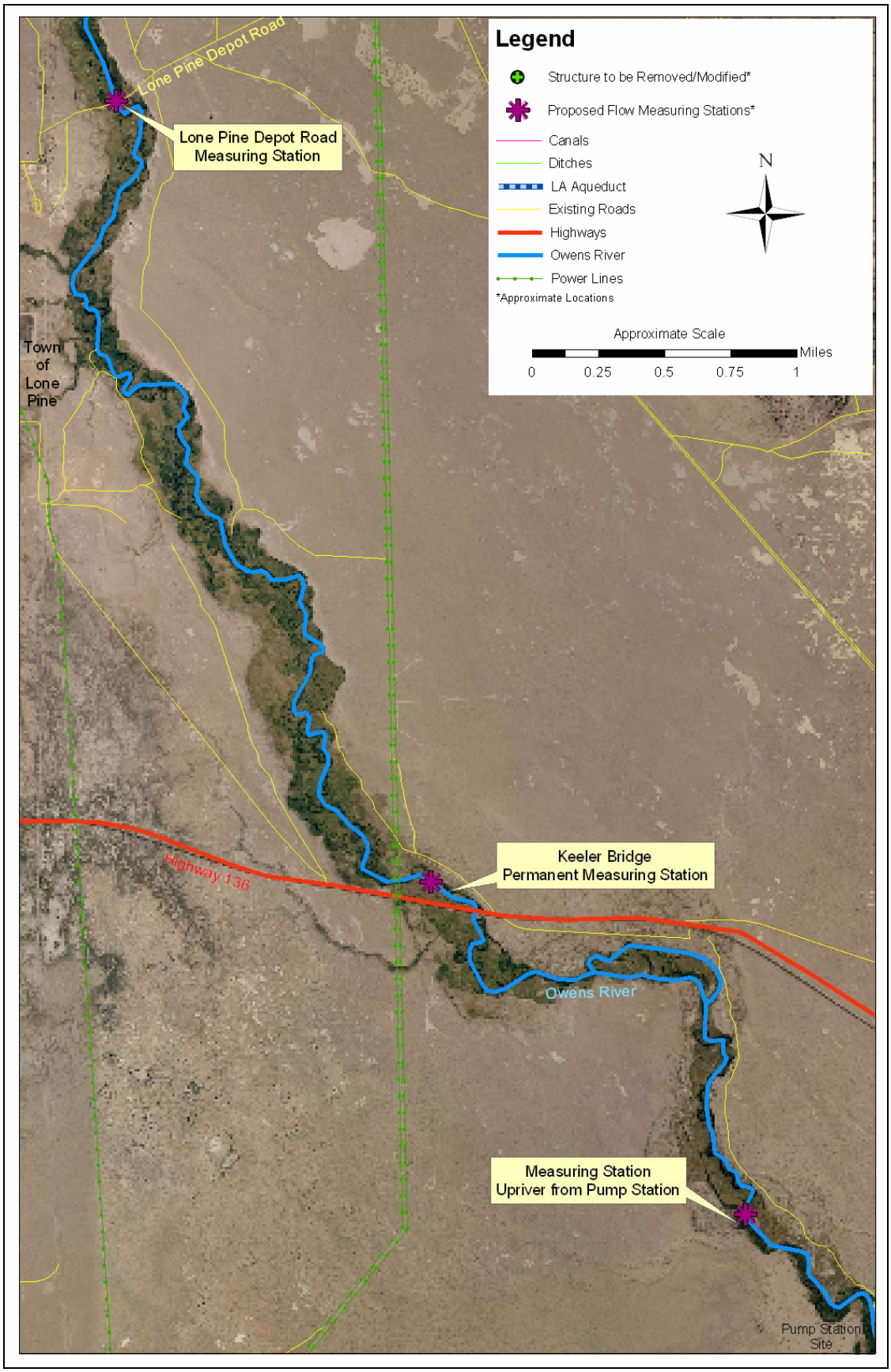


FIGURE 3 – STREAM GAGING STATIONS (PAGE 5 OF 5)

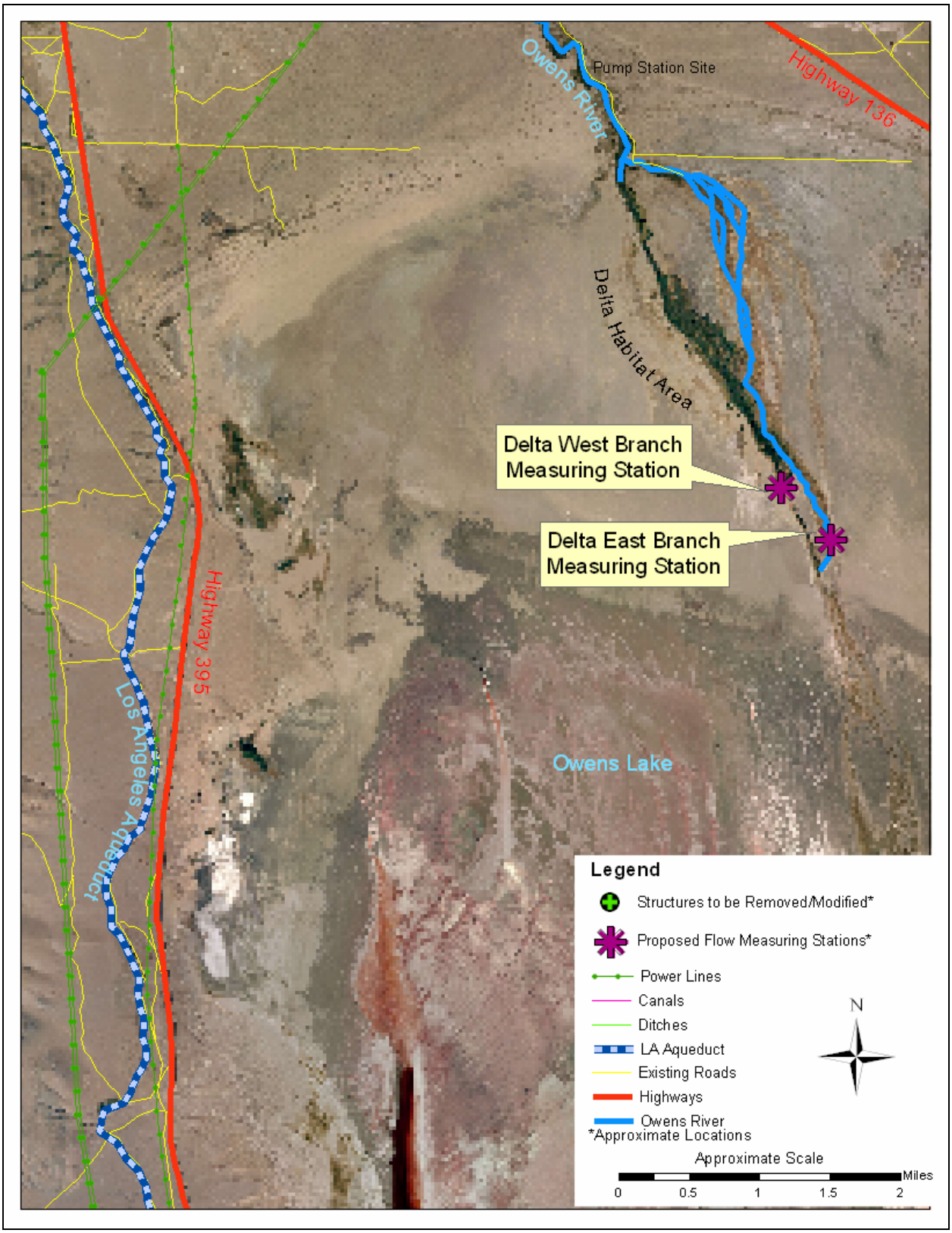


Figure 4 – Initial Channel Clearing

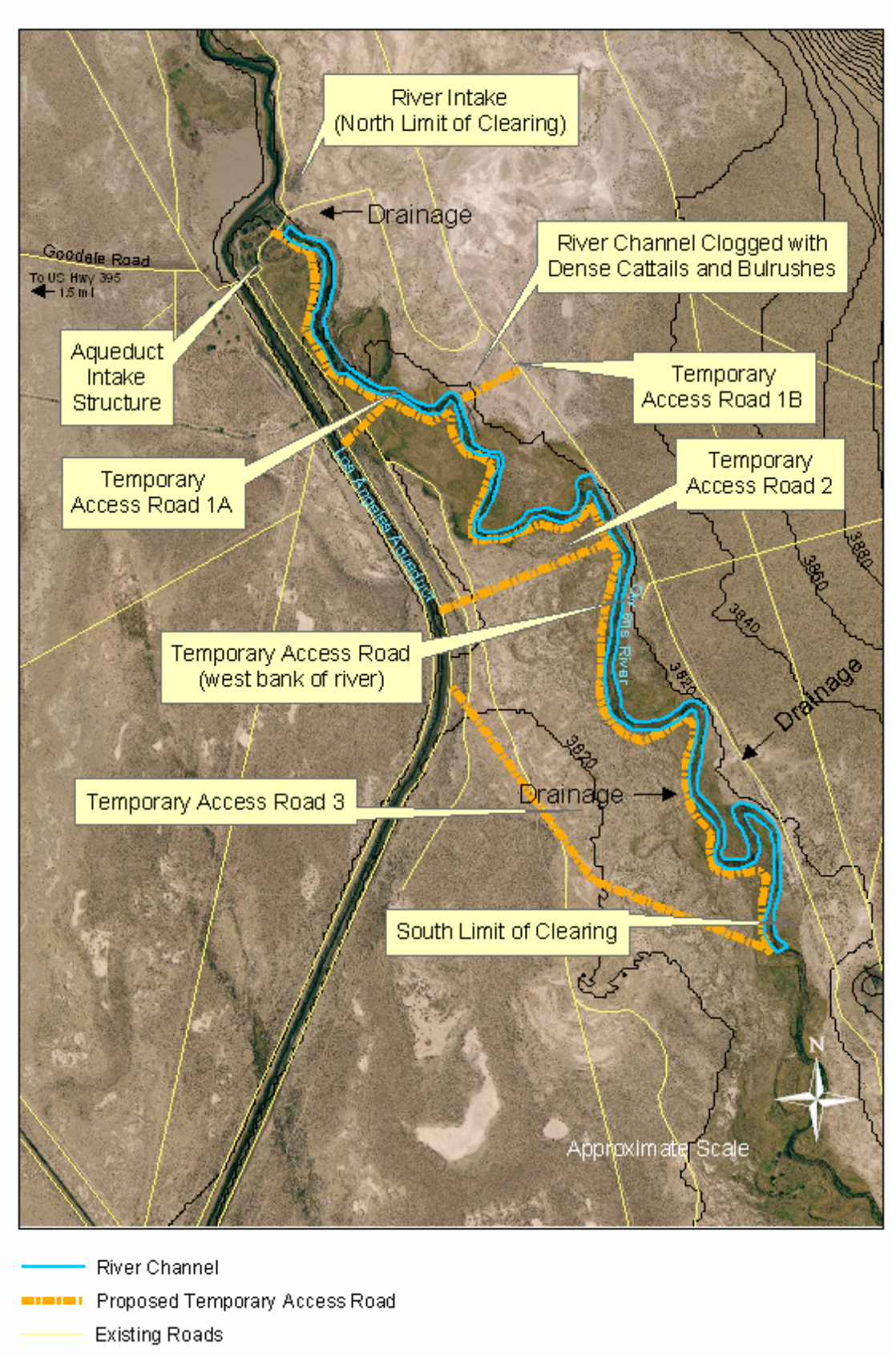


Figure 4.1 – Initial Channel Clearing Dewatering

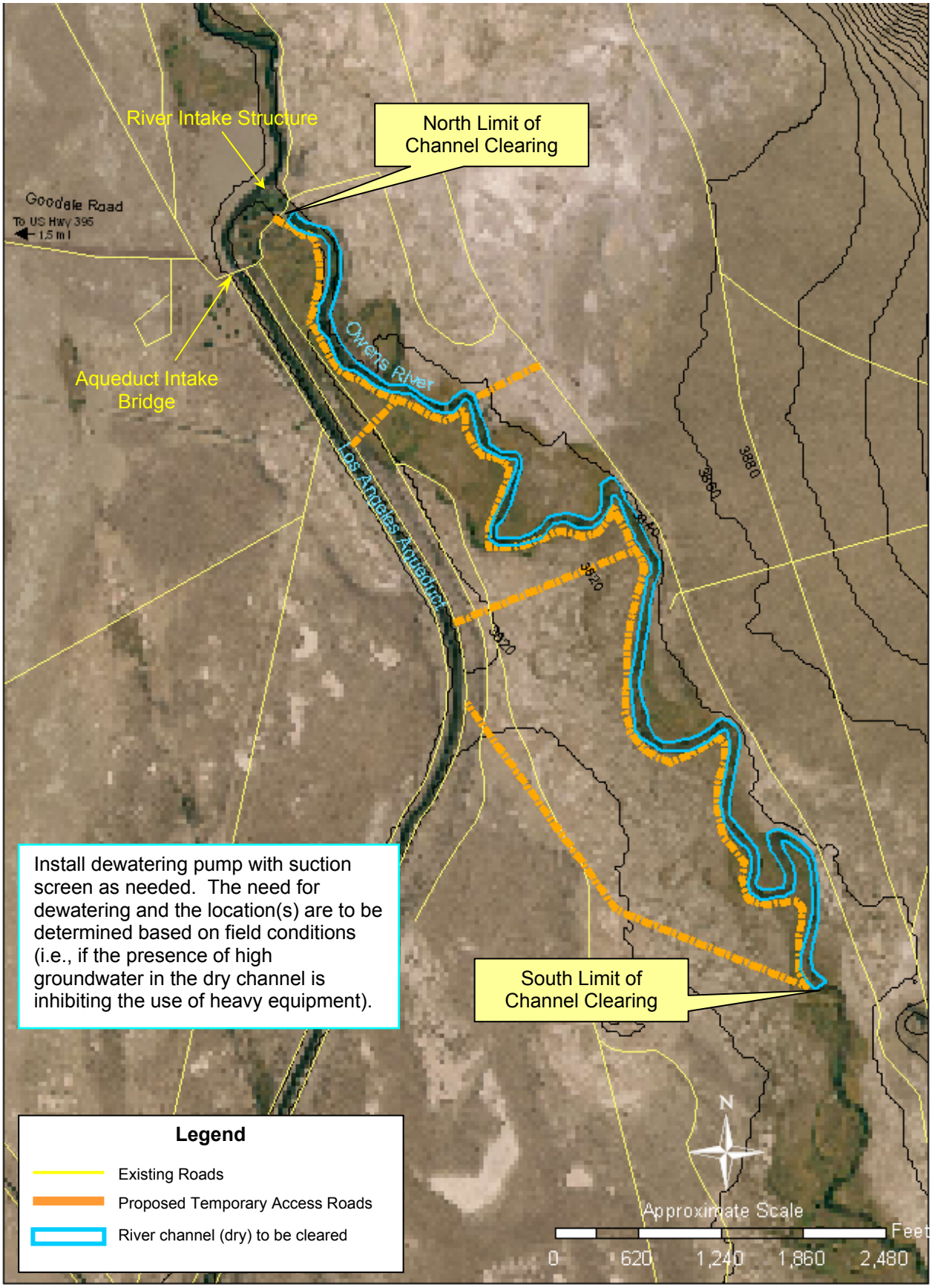
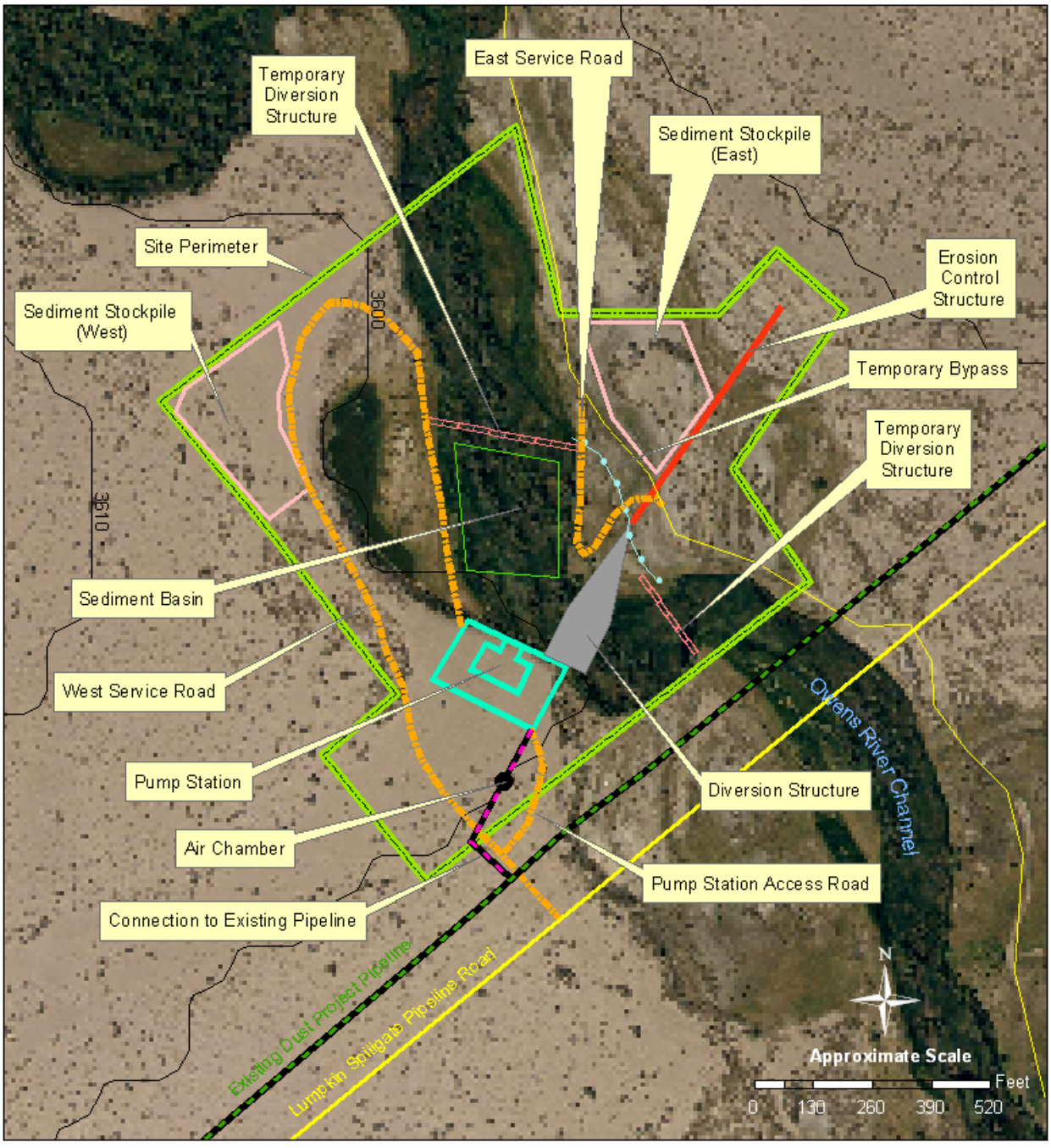


FIGURE 5 – PUMP STATION



Legend

- Diversion Structure
- Pump Station
- Sediment Basin
- Sediment Stockpile
- Site Perimeter
- Temporary Diversion Structure
- Erosion Control Structure
- Existing Road
- Pipe
- Service Road
- Temporary Bypass

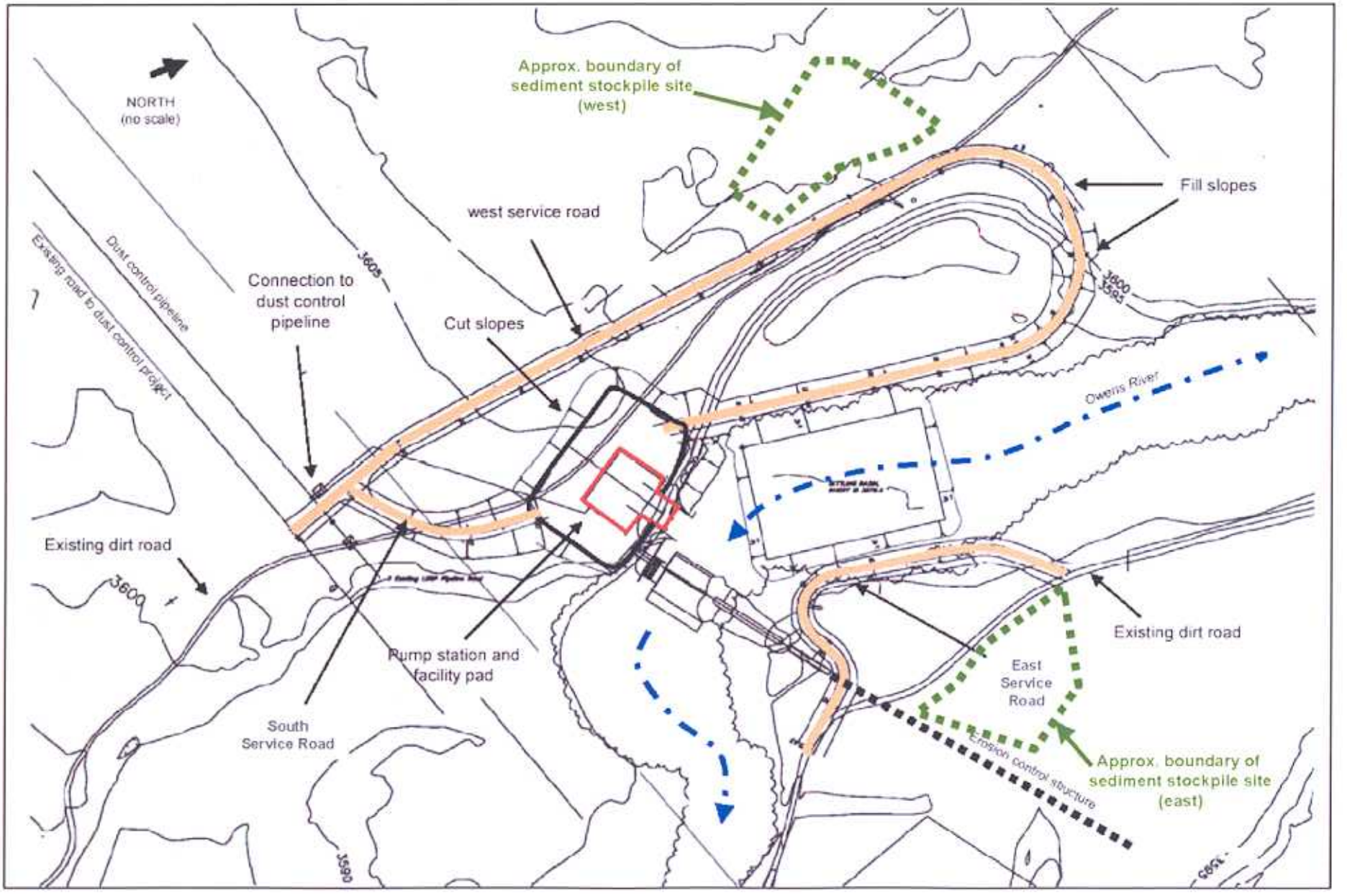


Figure 5.1. Service Roads at the Pump Station

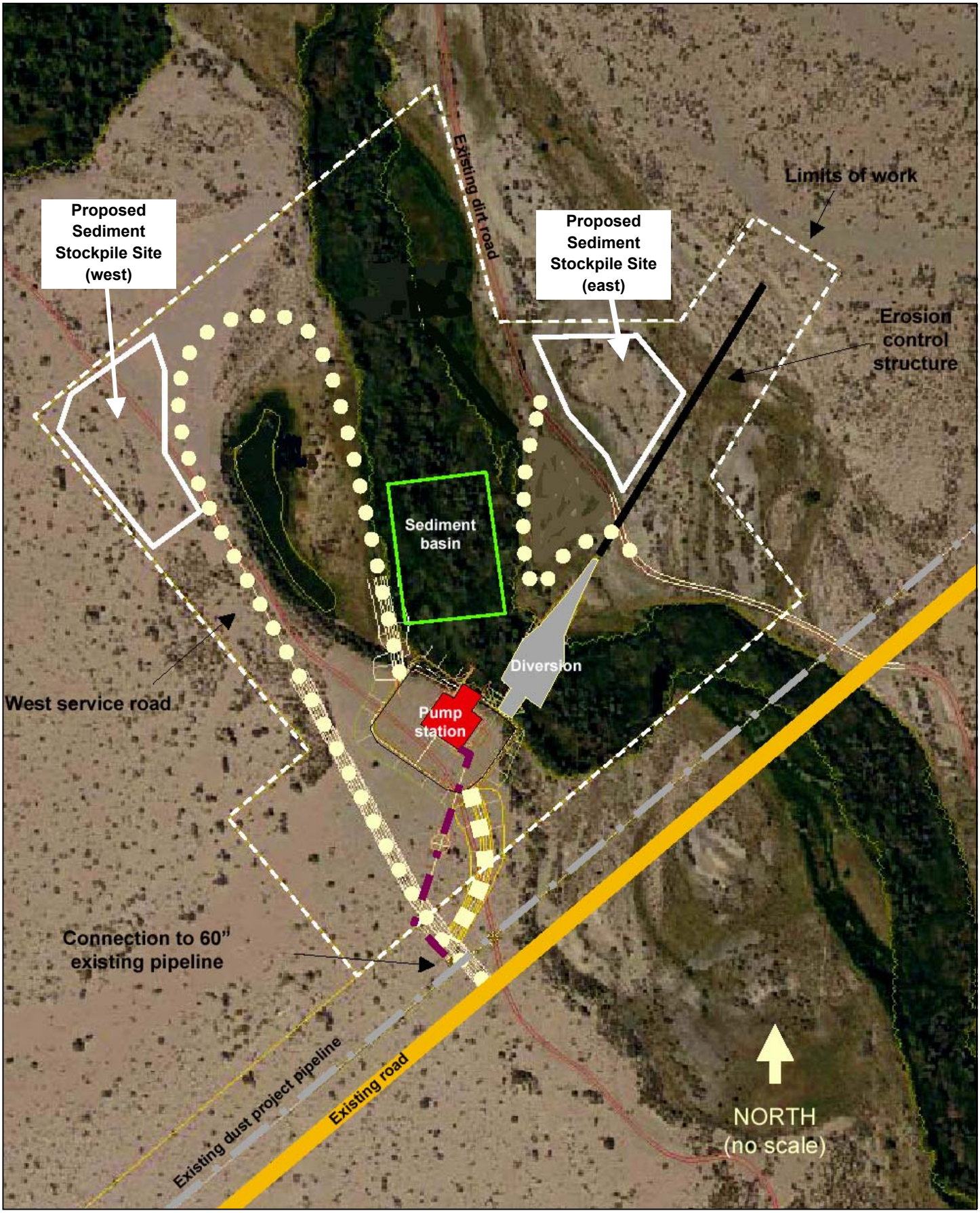
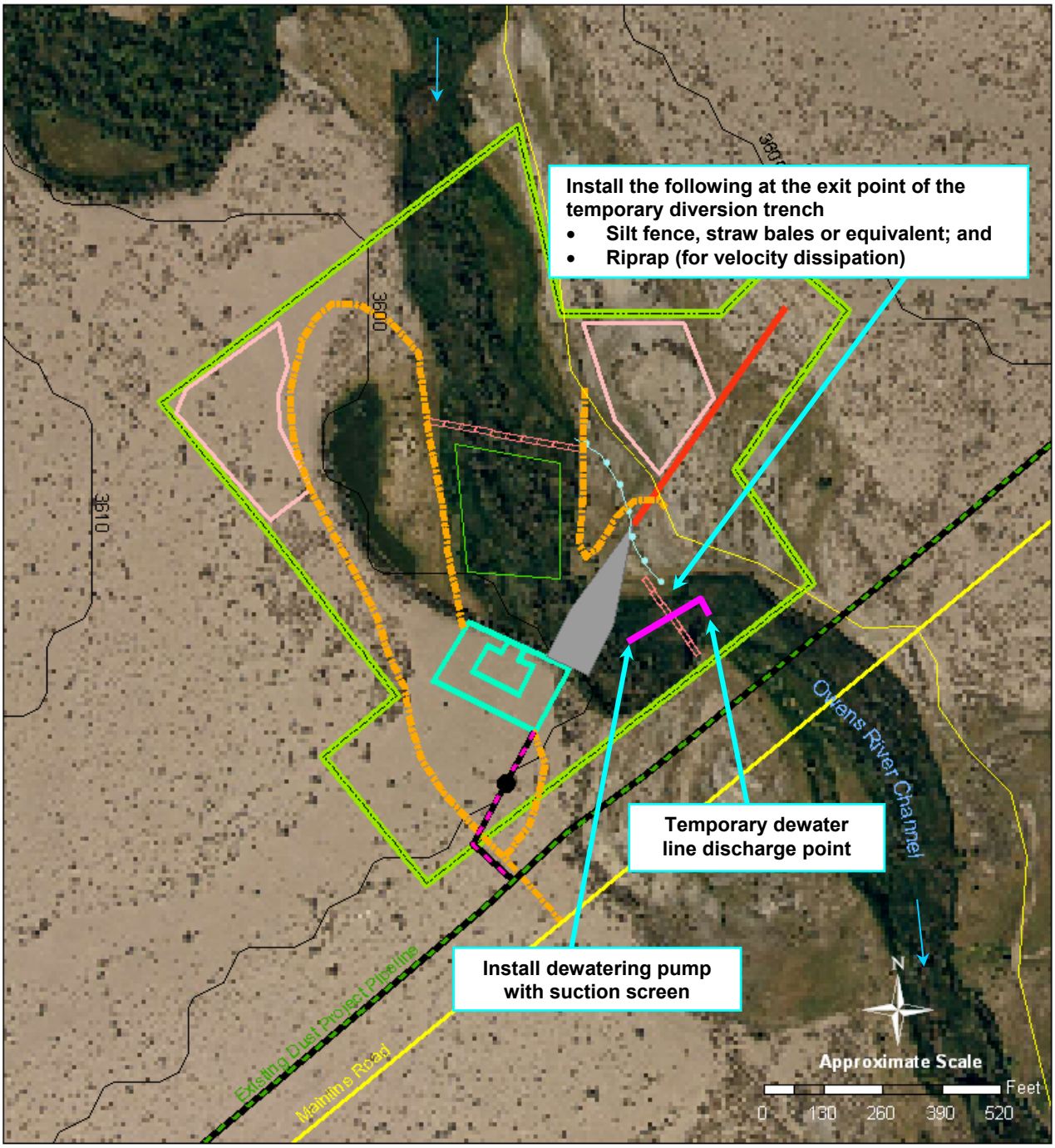


Figure 5-2. Limits of Disturbance at the Pump Station Site

Figure 5.3 – Pump Station



Legend

- Diversion Structure
- Pump Station
- Sediment Basin
- Sediment Stockpile
- Site Perimeter
- Temporary Coffer Dam
- Erosion Control Structure
- Existing Road
- Pipe
- Service Road
- Temporary Bypass
- Dewater Discharge Line

FIGURE 6 – BLACKROCK MODIFICATIONS

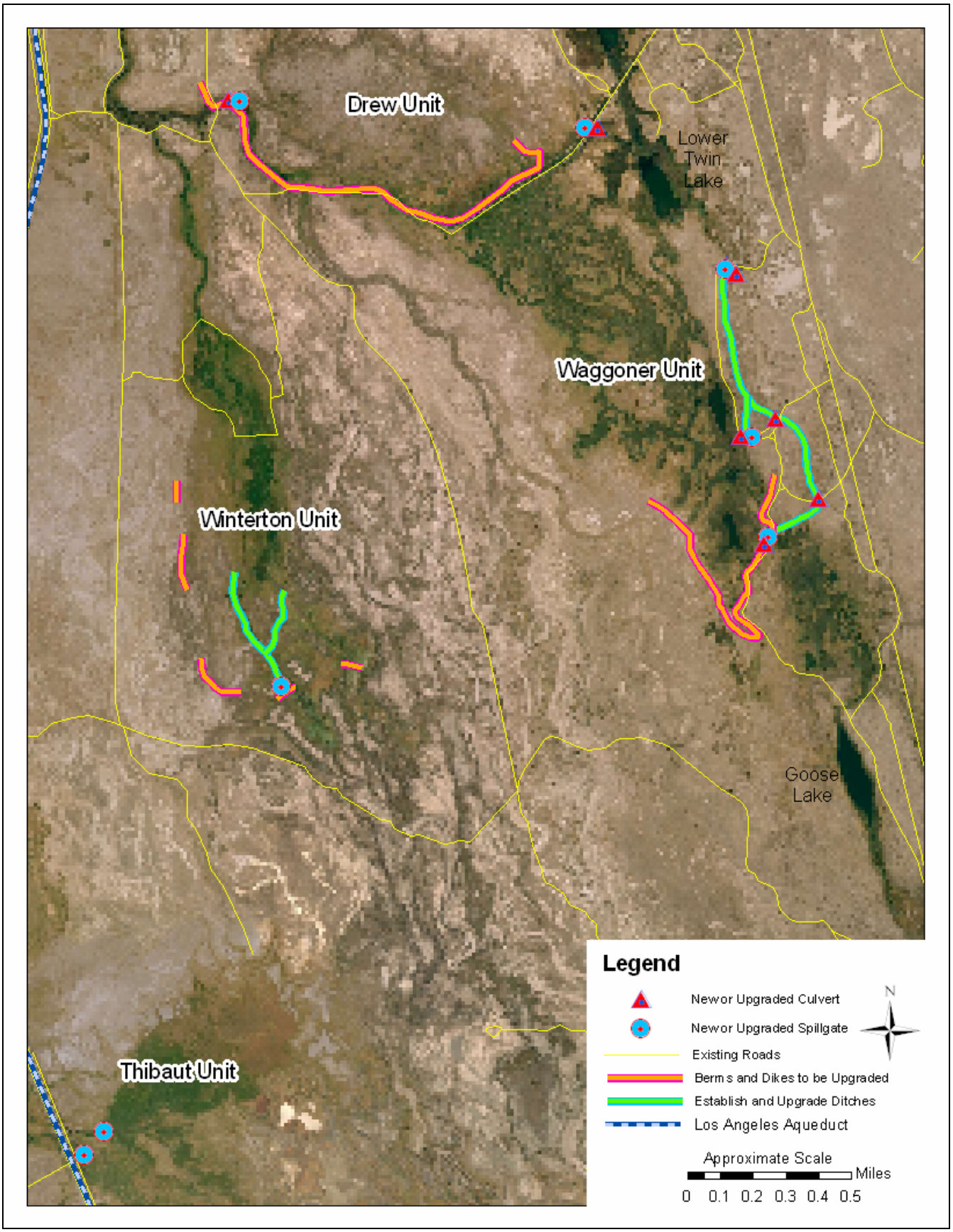


FIGURE 7 – FENCE INSTALLATION

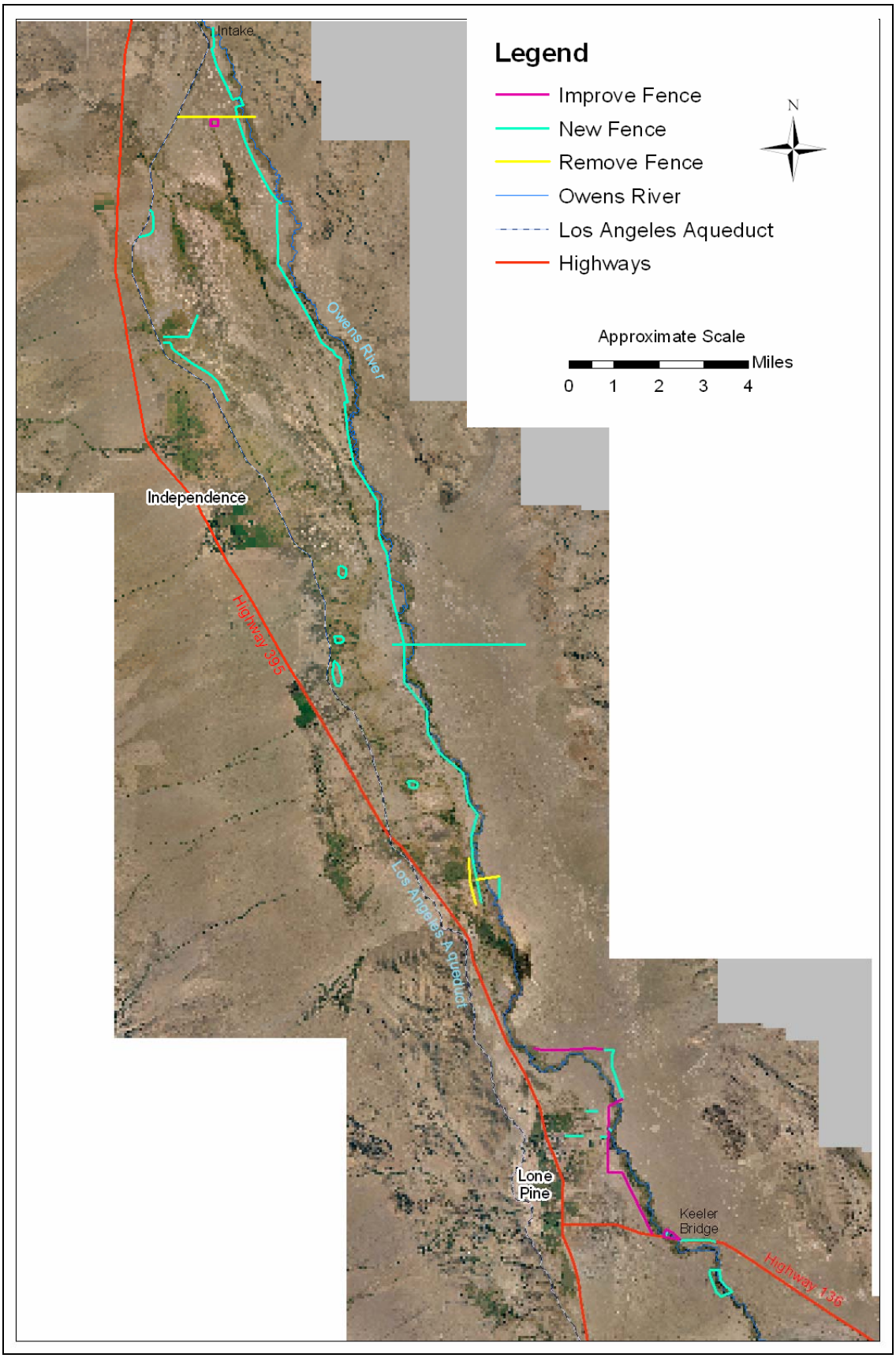


FIGURE 8 – POWER LINE

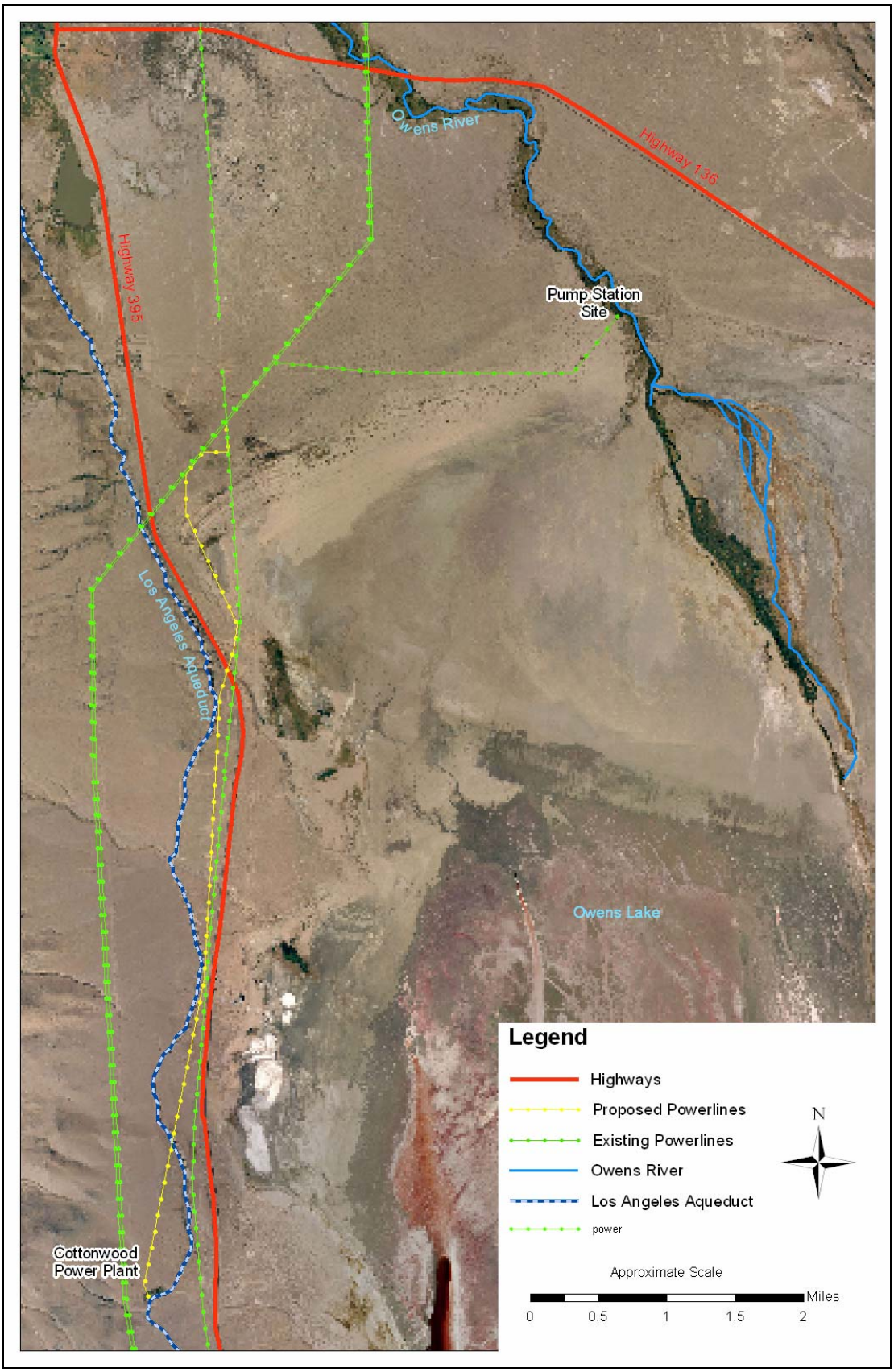
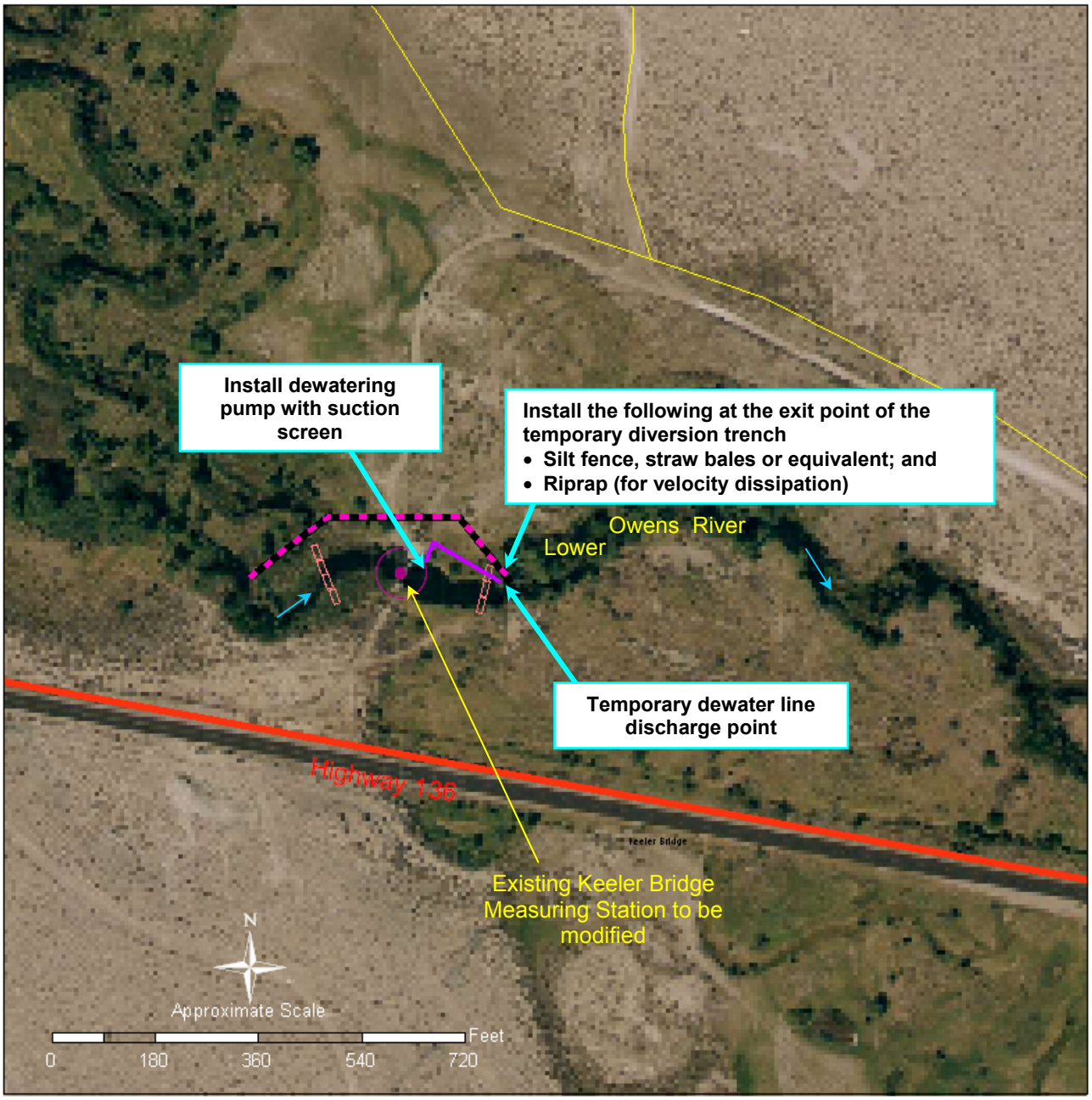


Figure 9 – Keeler Bridge Measuring Station



Legend

- Flow Measuring Station
- Dewater Discharge Line
- Diversion Trench
- Temporary Coffer Dam
- Existing Roads
- Highways