California Regional Water Quality Control Board
San Diego Region

Over 50 Years Serving San Diego, Orange, and Riverside Counties
Recipient of the 2004 Environmental Award for Outstanding Achievement from USEPA

9174 Sky Park Court, Suite 100, San Diego, California 92123-4340
(858) 467-2952 • Fax (858) 571-6972
http:// www.waterboards.ca.gov/sandiego

Linda S. Adams
Secretary for Environmental Protection

Arnold Schwarzenegger
Governor

February 02, 2009

In reply refer to: WP:07C-099: cloflen

Andrew Webster
Rancho California Water District
42135 Winchester Road
Temecula, CA 92590

CIWQS:	
Place	704712
Reg. Measure	333165
Cert. Mail	7008 0150 0003 7457 8391

Dear Mr. Webster:

SUBJECT: Action on Request for Clean Water Act Section 401 Water Quality Certification for the **Vail Lake Transmission Main and Pump Station** No. **07C-099**.

Enclosed find Clean Water Act Section 401 Water Quality Certification for the **Vail Lake Transmission Main and Pump Station** (Project). A description of the Project and project location can be found in the information sheet, location map, and site maps, which are included as Attachments 1 through 4.

Any petition for reconsideration of this Certification must be filed with the State Water Resources Control Board within 30 days of certification action (23 CCR § 3867). If no petition is received, it is expected that the Rancho California Water District has accepted and will comply with all the conditions of this Certification.

Failure to comply with all conditions of this Certification may subject you to enforcement actions by the California Regional Water Quality Control Board, San Diego Region (Regional Board), including administrative enforcement orders requiring you to cease and desist from violations, or to clean up waste and abate existing or threatened conditions of pollution or nuisance; administrative civil liability in amounts of up to $10,000 per day per violation; referral to the State Attorney General for injunctive relief; and, referral to the District Attorney for criminal prosecution.

The heading portion of this letter includes a Regional Board code number noted after "In reply refer to:" In order to assist us in the processing of your correspondence please include this code number in the heading or subject line portion of all correspondence and reports to the Regional Board pertaining to this matter.

If you have any questions regarding this notification, please contact Chad Loflen directly at 858-467-2727 or by email via cloflen@waterboards.ca.gov.

Respectfully,

JOHN H. ROBERTUS
Executive Officer

Enclosure:

- Clean Water Act Section 401 Water Quality Certification No. 07C-099 for the Vail Lake Transmission Main and Pump Station, with 5 attachments

cc: Refer to Attachment 2 of Certification 07C-099 for the Distribution List.

Linda S. Adams
Secretary for Environmental Protection

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Arnold Schwarzenegger
Governor

Action on Request for
Clean Water Act Section 401 Water Quality Certification
and General Discharge Requirements
for Discharge of Dredged and/or Fill Materials

PROJECT: Vail Lake Transmission Main and Pump Station
(File No. 07C-099)
WDID No. 9000001712

CIWQS
Reg. Meas. ID: 333165
Place ID: 704712

APPLICANT: Andrew Webster
Rancho California Water District
42135 Winchester Road
Temecula, CA 92590

ACTION:

☐ Order for Low Impact Certification	☐ Order for Denial of Certification
☑ Order for Technically-conditioned Certification	☐ Waiver of Waste Discharge Requirements
☑ Enrollment in SWRCB GWDR Order No. 2003-017 DWQ	☐ Enrollment in Isolated Waters Order No. 2004-004 DWQ

The project includes the extension of a raw water conveyance system from the Valle de Los Caballos recharge basins to Vail Lake. Approximately 14,000 feet of buried 48-inch transmission pipeline will be constructed through Pauba Canyon from the recharge basins to the downstream face of Vail Dam. The pump station will be constructed in the easterly portion of an existing recharge basin. The project also includes installation of a stream outlet assembly within Pauba Canyon to allow release of water into Temecula Creek, scour protection, a new flow meter on the 48-inch line immediately downstream of Vail Dam and replacement of an existing 24-inch flow meter on an existing outlet immediately downstream of Vail Dam.

STANDARD CONDITIONS:

The following three standard conditions apply to all certification actions, except as noted under Condition 3 for denials (Action 3).

1. This certification action is subject to modification or revocation upon administrative or judicial review, including review and amendment pursuant to section 13330 of the California Water Code and section 3867 of Title 23 of the California Code of Regulations (23 CCR).

2. This certification action is not intended and must not be construed to apply to any discharge from any activity involving a hydroelectric facility requiring a Federal Energy Regulatory Commission (FERC) license or an amendment to a FERC license unless the pertinent certification application was filed pursuant to 23 CCR subsection 3855(b) and the application specifically identified that a FERC license or amendment to a FERC license for a hydroelectric facility was being sought.

3. The validity of any non-denial certification action (Actions 1 and 2) must be conditioned upon total payment of the full fee required under 23 CCR section 3833, unless otherwise stated in writing by the certifying agency.

ADDITIONAL CONDITIONS:

In addition to the three standard conditions, the Rancho California Water District must satisfy the following:

A. GENERAL CONDITIONS:

1. Rancho California Water District must, at all times, fully comply with the engineering plans, specifications and technical reports submitted to the California Regional Water Quality Control Board, San Diego Region (Regional Board), to support this 401 Water Quality Certification and all subsequent submittals required as part of this certification and as described in Attachment 1. The conditions within this certification supersede conflicting provisions within such plans submitted in support of certification. Any modifications thereto, would require notification to the Regional Board and reevaluation for individual Waste Discharge Requirements and/or certification amendment.

2. During construction, Rancho California Water District must maintain a copy of this certification at the project site so as to be available at all times to site personnel and agencies.

3. Rancho California Water District must permit the Regional Board or its authorized representative at all times, upon presentation of credentials:

    a. Entry onto project premises, including all areas on which wetland fill or wetland mitigation is located or in which records are kept.
    b. Access to copy any records required to be kept under the terms and conditions of this certification.

c. Inspection of any treatment equipment, monitoring equipment, or monitoring method required by this certification.
d. Sampling of any discharge or surface water covered by this Order.

4. Rancho California Water District must notify the Regional Board within 24 hours of any unauthorized discharge, including hazardous or toxic materials, to waters of the U.S. and/or State; measures that were implemented to stop and contain the discharge; measures implemented to clean-up the discharge; the volume and type of materials discharged and recovered; and additional best management practice (BMPs) or other measures that will be implemented to prevent future discharges.

5. Rancho California Water District must, at all times, maintain appropriate types and sufficient quantities of materials onsite to contain any spill or inadvertent release of materials that may cause a condition of pollution or nuisance if the materials reach waters of the U.S. and/or State.

6. This Certification is not transferable to any person except after notice to the Executive Officer of the Regional Board. Rancho California Water District must notify the Regional Board of any change in ownership of the project area. Notification must include, but not be limited to, a statement that the property owner has provided the purchaser with a copy of the Section 401 Water Quality Certification and that the purchaser understands the permit requirements and must implement them; the seller and purchaser must sign and date the notification. The notification for transfer of mitigation responsibility shall include a signed statement from the new party demonstrating acceptance and understanding of the responsibility to meet the mitigation conditions and applicable requirements of the Certification. Notification must be provided within **10 days** of the sale of the property.

7. In the event of any violation or threatened violation of the conditions of this certification, the violation or threatened violation is subject to any remedies, penalties, process or sanctions as provided for under State law. For purposes of section 401(d) of the Clean Water Act, the applicability of any State law authorizing remedies, penalties, process or sanctions for the violation or threatened violation constitutes a limitation necessary to assure compliance with the water quality standards and other pertinent requirements incorporated into this certification.

8. In response to a suspected violation of any condition of this certification, the Regional Board may require the holder of any permit or license subject to this certification to furnish, under penalty of perjury, any technical or monitoring reports the Regional Board deems appropriate, provided that the burden, including costs, of the reports must bear a reasonable relationship to the need for the reports and the benefits to be obtained from the reports.

9. In response to any violation of the conditions of this certification, the Regional Board may add to or modify the conditions of this certification as appropriate to ensure compliance.

10. Rancho California Water District and successor owners must submit annual progress reports to the Regional Board prior to **August 1** of each year following the issuance of this certification. At minimum, the annual reports must include a summary of construction activities conducted since the last progress report, best management practices implementation and anuual training, and mitigation implementation. If no progress has been made on the project, the annual report must state this.

B. PROJECT CONDITIONS:

1. Rancho California Water District must comply with the requirements of State Water Resources Control Board Water Quality Order No. 2003-017-DWQ, *Statewide General Waste Discharge Requirements for Discharges of Dredged or Fill Material that have Received State Water Quality Certification*. These General Waste Discharge Requirement are accessible at: http://www.waterboards.ca.gov/cwa401/docs/generalorders/go_wdr401regulated_projects.pdf.

2. Prior to the start of the project, and annually thereafter, Rancho California Water District must educate all appropriate personnel on the requirements in this certification, pollution prevention measures, spill response, and BMP implementation and maintenance.

3. Rancho California Water District must notify the Regional Board in writing at least **5 days** prior to the actual commencement of dredge, fill, and discharge activities.

4. Rancho California Water District must comply with Order No. 2001-96, and any subsequent reissuance, *General Waste Discharge Requirements for Groundwater Extraction Waste Discharges from Construction, Remediation, and Permanent Groundwater Extraction Projects to Surface Waters within the San Diego Region Except for San Diego Bay* for any dewatering activities. These General Waste Discharge Requirements are accessible at: http://www.waterboards.ca.gov/sandiego/board_decisions/adopted_orders/2001/2001_0096.pdf.

5. All water discharges from the project, including, but not limited to, water releases during pipeline dewatering and releases from the stream outlet assembly into Temecula Creek must comply with applicable NPDES permits and regulations in effect at the time of the discharge.

6. Operation of the pump station, transmission pipeline and stream outlet assembly must not result in erosion or hydromodification impacts to Temecula Creek. Water releases during pipeline dewatering, releases from the stream outlet and releases from Vail Dam must be controlled to a low flow rate that will not cause downstream erosion. If stream erosion occurs as a result of these activities, the Regional Board must be notified within 10 days and measures must be taken to abate the effect of the erosion.

C. CONSTRUCTION CONDITIONS:

1. Rancho California Water District must comply with the requirements of State Water Resources Control Board Water Quality Order No. 99-08-DWQ, and any subsequent reissuance, the NPDES General Permit for Storm Water Discharges Associated with Construction Activity.

2. Rancho California Water District must implement the Construction Minimization Measures of Section 7.5.3 of the Western Riverside County Multiple Species Habitat Conservation Plan.

3. Construction must be scheduled so that work within the streambed will take place when no water is flowing in the creek (i.e. when no releases from Vail Lake are scheduled and no major rain events are predicted).

4. Temporary construction access roads, turnaround areas, equipment storage areas, fueling areas and staging areas must be located in upland sites and must be located to avoid Waters of the United States and/or the State and other sensitive habitat and riparian areas.

5. The upstream, downstream and lateral limits of project disturbance and associated staging areas must be clearly defined and marked in the field and reviewed by a qualified project biologist prior to the initiation of work. Construction employees must strictly limit their activities, vehicles, equipment, and construction materials to these designated areas. All construction markers, such as orange snow screen, must be removed upon completion of construction activities.

6. Rancho California Water District must install and maintain silt fencing, weed free straw wattles and any other appropriate Best Management Practices around all staging areas to prevent discharges of sediment, silt or debris to Waters of the United States and/or the State and sensitive habitat areas. Water containing mud, silt, or other pollutants from equipment washing or other activities, must not be discharged to waters of the United States and/or the State or placed in locations that may be subjected to storm flows.

7. Construction materials containing potential pollutants used in work areas within Waters of the United States and/or the State must be removed at the end of each work day or sooner if rain is predicted.

8. No equipment shall be operated in ponded or flowing areas. When work in a flowing stream is unavoidable, the entire stream flow shall be diverted around the work area. Diversion activities shall not result in the degradation of beneficial uses or exceedance of water quality objectives of the receiving waters. Flow diversions shall be done in a manner that shall prevent pollution and/or siltation and which shall provide flows to downstream reaches. Flows to downstream reaches shall be provided during all times that the natural flow would have supported aquatic life. Said flows shall be of sufficient quality and quantity, and of appropriate temperature to support fish and other aquatic life both above and below the diversion. Normal flows shall be restored to the affected stream immediately upon completion of work at that location

9. During excavation for pipeline installation, all topsoil must be stockpiled separately from other spoils to be used as topsoil during onsite mitigation and habitat restoration activities.

10. A qualified biologist must monitor construction activities for the duration of the project to ensure that all necessary measures are being employed to avoid discharge of pollutants to Waters of the United States and/or the State and to avoid incidental disturbance of habitat and species of concern outside the project footprint.

11. All non-biodegradable construction BMPs, such as silt fences, must be removed upon completion of construction activities or upon successful establishment of vegetation and re-stabilization of disturbed areas.

D. COMPENSATORY MITIGATION FOR LOSS OF WATERS OF THE U.S./STATE:

1. No permanent impacts are authorized by this Certification. Mitigation for temporary impacts to 1.138 acre/2,805 linear feet of Waters of the United States must be achieved as follows and as described in the final mitigation plan required by Condition D.2 of this certification:

    a. Restoring all areas temporarily disturbed by construction to pre-project conditions or better. Restoration will include re-contouring to pre-project conditions and revegetating the areas in-kind with native species.

    b. Creation of approximately 0.05 acre of riparian scrub habitat on Temecula Creek around the proposed stream outlet assembly, located approximately 1500 feet upstream of the recharge basins. Non-native grassland around the discharge point will be graded to

reduce the elevation closer to that of the creek invert to promote hydrologic connectivity and establishment of riparian species.

c. Removal of all exotic species within a 25-foot buffer surrounding the mitigation area for a total of 19.06 acres of exotics removal.

2. Within **30 days** of the issuance of this certification, Rancho California Water District must submit a final mitigation plan to the Regional Board for review and acceptance. The final mitigation plan must be based upon the *Draft Compensatory Mitigation Plan: Vail Lake Transmission Main and Pump Station, Riverside County, California* dated June 2008 by LSA Associates, Inc.

3. Rancho California Water District must restore all areas of temporary impacts to Waters of the United States/State and all other areas of temporary disturbance which could result in a discharge or a threatened discharge to Waters of the State. Restoration must include re-vegetation with native species. The Rancho California Water District must implement all necessary BMPs to control erosion and runoff from areas temporarily impacted by the project.

4. Rancho California Water District must notify the Regional Board in writing at least **5 days** prior to the actual commencement of mitigation installation, and completion of mitigation installation.

5. Mitigation Site Preparation: The Rancho California Water District must salvage leaf litter, coarse woody debris, and upper soil horizons from impacted jurisdictional water sites that are relatively free of invasive exotic species for use in on-site mitigation areas.

6. Rancho California Water District must also salvage large cuttings from appropriate tree species if they exist at the impact site and use them as pole plantings at the mitigation site.

7. Rancho California Water District must submit a report (including topography maps and planting locations) to the Regional Board within **90 days** of completion of mitigation site preparation and planting, describing as-built status of the mitigation project.

8. The construction of proposed mitigation must be initiated within **120 days** following completion of ground-disturbing activities and must be completed no later than **9 months** following the initial discharge of dredge or fill material into on-site waters. Delays in implementing and/or completing mitigation must be compensated for by additional mitigation of 0.1 acre of in-kind creation for each month of delay.

9. In addition to the performance standards specified in the mitigation plan, the progress of the mitigation areas will be evaluated using the California Rapid Assessment Method (CRAM). All CRAM assessments must be conducted by a qualified individual who has been trained in CRAM.

    a. Rancho California Water District must conduct a baseline CRAM assessment of the project area prior to initiation of project construction. The results of the assessment must be submitted in a report to the Regional Board with the first annual mitigation monitoring report.

    b. Rancho California Water District must conduct a second CRAM assessment during the mitigation monitoring period to evaluate the progress of the onsite restoration. The results of this CRAM assessment must be submitted to the Regional Board in the next mitigation monitoring report.

    c. Rancho California Water District must conduct a final CRAM assessment at the end of the 5th year of mitigation monitoring to determine the success of the restoration activities in returning the project area to pre-project conditions or better. The results of the final CRAM assessment must be submitted to the Regional Board in the 5^{th} year mitigation monitoring report. The report must compare the results of this CRAM assessment to the results of the initial baseline CRAM assessment. In order to be considered successful, the final CRAM scores must meet or exceed that of the baseline assessment.

10. Throughout the mitigation monitoring program mitigation areas must be maintained free of perennial exotic plant species including, but not limited to, eucalyptus, pampas grass, giant reed, tamarisk, sweet fennel, tree tobacco, castor bean, and pepper tree. Annual exotic plant species must not occupy more than 5 percent of the onsite or offsite mitigation areas. Whenever possible, removal of non-native and/or invasive species must be conducted by hand or hand-operated power tools rather than by chemical means.

11. Any maintenance activities that do not contribute to the success of the mitigation site and enhancement of beneficial uses and ecological functions and services are prohibited. Maintenance activities are limited to the removal of trash and debris, removal of exotic plant species, replacement of dead native plant species and remedial measures deemed necessary for the success of the restoration program.

12. If at any time during the implementation and establishment of the mitigation area(s), and prior to verification of meeting success criteria, a catastrophic natural event (e.g., fire, flood) occurs and impacts the mitigation area, the Rancho California Water District is responsible for repair and replanting of the damaged area(s).

13. Mitigation monitoring reports must be submitted annually until mitigation has been deemed successful by the Regional Board. Annual monitoring reports must be submitted prior to **January 1** of each year. Monitoring reports must include, but not be limited to, the following:

    a. Names, qualifications, and affiliations of the persons contributing to the report;
    b. Tables presenting the raw data collected in the field as well as analyses of the physical and biological data, including at a minimum;
        i. Topographic complexity characteristics at each mitigation site;
        ii. Upstream and downstream habitat and hydrologic connectivity;
        iii. Source of hydrology;
        iv. Width of native vegetation buffer around the entire mitigation site;
    c. Qualitative and quantitative comparisons of current mitigation conditions with pre-construction conditions and previous mitigation monitoring results;
    d. Results of the conditional assessment, if one was conducted during that year;
    e. Photodocumentation from established reference points;
    f. A Survey report documenting boundaries of mitigation area; and
    g. Other items specified in the final mitigation plan required by Condition D.2 of this certification.

14. Responsible Party Updates: The Rancho California Water District must provide the name and contact information of any third party accepting responsibility for implementing the mitigation requirements of this Certification. The notification must be submitted to the Regional Board within 30 days of the transfer of responsibility. The notification must include a signed statement from the new party demonstrating acceptance and understanding of the responsibility to meet the mitigation conditions and applicable requirements of the Certification.

15. For purposes of this certification, creation is defined as the creation of vegetated or unvegetated waters of the U.S./State where they have never been documented or known to occur (e.g., conversion of nonnative grassland to freshwater marsh). Restoration is defined as the creation of waters of the U.S./State where they previously occurred (e.g., removal of fill material to restore a drainage). Enhancement is defined as modifying existing waters of

the U.S./State to enhance functions and values (e.g., removal of exotic plant species from jurisdictional areas and replacing with native species).

E. STREAM PHOTO DOCUMENTATION PROCEDURE:

1. Rancho California Water District, and its successors, must conduct photo documentation of the project site, including all areas of permanent and temporary impact, prior to and after project construction. Photo documentation must be conducted in accordance with the State Water Resources Control Board Standard Operating Procedure 4.2.1.4: Stream Photo Documentation Procedure, included as Attachment Number 6. In addition, photo documentation must include Geographic Positioning System (GPS) coordinates for each of the photo points referenced. Rancho California Water District must submit this information in a photo documentation report to the Regional Board within **60 days** of completion of project construction. The report must include a compact disc that contains digital files of all the photos (jpeg file type or similar).

F. GEOGRAPHIC INFORMATION SYSTEM REPORTING:

1. Rancho California Water District must submit Geographic Information System (GIS) shape files of the impact area within **30 days** of project impacts and the mitigation area within **30 days** of mitigation installation. All impact and mitigation areas shapefiles must be polygons. Two GPS readings (points) must be taken on each line of the polygon and the polygon must have a minimum of 4 points. GIS metadata must also be submitted.

G. REPORTING:

1. All information requested in this Certification is pursuant to California Water Code (CWC) section 13267. Civil liability may be administratively imposed by the Regional Board for failure to furnish requested information pursuant to CWC section 13268.

2. All reports and information submitted to the Regional Board must be submitted in both hardcopy and electronic format.

3. All applications, reports, or information submitted to the Regional Board must be signed and certified as follows:

   "I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment."

4. Rancho California Water District must submit reports required under this certification, or other information required by the Regional Board, to:

   Executive Officer
   California Regional Water Quality Control Board
   San Diego Region
   Attn: 401 Certification; Project No. 07C-099
   9174 Sky Park Court, Suite 100
   San Diego, California 92123

5. Required Reports: The following list summarizes the reports, excluding spill notifications and emergency situations, required per the conditions of this Certification to be submitted to the Regional Board.

Report Topic	Certification Condition	Due Date(s)
Pre-Discharge Notification	B.5	5 days prior to discharge of fill
Final Mitigation Plan	D.2	Within 30 days of the issuance of this certification
Initiation and Completion of Mitigation	D.4	5 days prior to initiation and completion
Mitigation As-Builts	D.7	Within 90 days of completion of mitigation
Annual Mitigation Reports	D.13	Annually until mitigation deemed successful
Stream Photo Documentation	E.1	Within 60 days of completion of construction
GIS Shapefiles – Impact areas and mitigation areas	G.1	Within 30 days of project impacts and within 30 days of mitigation installation

PUBLIC NOTIFICATION OF PROJECT APPLICATION:

On October 9, 2007 receipt of the project application was posted on the Regional Board web site to serve as appropriate notification to the public.

REGIONAL WATER QUALITY CONTROL BOARD CONTACT PERSON:

Chad Loflen
California Regional Water Quality Control Board, San Diego Region
9174 Sky Park Court, Suite 100
San Diego, CA 92123
(858) 467-2727
cloflen@waterboards.ca.gov

WATER QUALITY CERTIFICATION:

I hereby certify that the proposed discharge from the Vail Lake Transmission Main and Pump Station (Project No. 07C-099) will comply with the applicable provisions of sections 301 ("Effluent Limitations"), 302 ("Water Quality Related Effluent Limitations"), 303 ("Water Quality Standards and Implementation Plans"), 306 ("National Standards of Performance"), and 307 ("Toxic and Pretreatment Effluent Standards") of the Clean Water Act. This discharge is also regulated under California Regional Water Quality Control Board, San Diego Region, Waiver of Waste Discharge Requirements (Waiver Policy) No. 17. Please note that this waiver is conditional and, should new information come to our attention that indicates a water quality problem, the Regional Board may issue waste discharge requirements at that time. This discharge is also regulated under State Water Board Order No. 2003-0017-DWQ, "General Waste Discharge Requirements for Dredged or Fill Discharges that have Received State Water Quality Certification," which requires compliance with all conditions of this Water Quality Certification.

Except insofar as may be modified by any preceding conditions, all certification actions are contingent on (a) the discharge being limited and all proposed mitigation being completed in strict compliance with the applicants' project description and/or on the attached Project Information Sheet, and (b) on compliance with all applicable requirements of the Regional Water Quality Control Board's Water Quality Control Plan (Basin Plan).

John H. Robertus

JOHN H. ROBERTUS
Executive Officer
Regional Water Quality Control Board

2/2/2009
Date

Attachments:

1. Project Information
2. E-mail Distribution List
3. Location Map
4. Site Maps
5. Mitigation Maps
6. Stream Photo Documentation Procedure

ATTACHMENT 1
PROJECT INFORMATION

Applicant:	Rancho California Water District Attention: Andrew Webster 42135 Winchester Road Temecula, CA 92590 Telephone: (951) 296-6900 Facsimile: (951) 296-6863 Email: WebsterA@RanchoWater.com
Applicant Representatives:	None
Project Name:	Vail Lake Transmission Main and Pump Station
Project Location:	The project is located in unincorporated southwest Riverside County, California, east of the City of Temecula. The project site runs from the Valle de los Caballos recharge basins on Pulgas Creek Road to the base of Vail Dam. APNs 927-280-013, 927-320-039, -040, -045, -080, and -081.
Type of Project:	Utility Line Activities
Need for Project:	The project will improve water supply reliability and reduce imported water costs by allowing raw water delivered by the Metropolitan Water District of Southern California to be stored in Vail Lake.
Project Description:	The project includes the extension of a raw water conveyance system from the Valle de Los Caballos recharge basins to Vail Lake. Approximately 14,000 feet of buried 48-inch transmission pipeline will be constructed through Pauba Canyon from the recharge basins to the downstream face of Vail Dam. The pump station will be constructed in the easterly portion of an existing recharge basin (outside of Waters of the United States). The project also includes installation of a stream outlet assembly within Pauba Canyon to allow release of water into Temecula Creek, scour protection, a new flow meter on the 48-inch line immediately downstream of Vail Dam and replacement of an existing 24-inch flow meter on an existing outlet immediately downstream of Vail Dam.
Federal Agency/Permit:	U.S. Army Corps of Engineers §404, NWP 12, Laurie Monarres
Other Required Regulatory Approvals:	California Department of Fish and Game Streambed Alteration Agreement, Jeff Brandt
California Environmental Quality Act (CEQA) Compliance:	Vail Lake Transmission Main and Pump Station Project Initial Study and Mitigated Negative Declaration, October 11, 2007, Rancho California Water District. SCH #2007081138.

Receiving Water:	Temecula Creek and Vail Lake. Santa Margarita Hydrologic Unit, Pechanga Hydrologic Area, Pauba Hydrologic Subarea (902.51)
Affected Waters of the United States:	Size of impact: The project will temporarily impact a total of 1.138 acre/2,805 linear feet of Waters of the United States consisting of 0.269 acre of wetland Waters of the United States and 0.869 acre of non-wetland Waters of the United States. The transmission pipeline will be buried approximately 11 feet below grade. The pipeline has been located to the extent possible in the footprint of the existing access road. Temporary impacts will occur in the six locations where the pipeline crosses Temecula Creek. After the pipeline is installed, the streambed will be restored to pre-project contours and revegetated with native species.
Dredge Volume:	None
Related Projects Implemented/to be Implemented by the Applicant(s):	None
Compensatory Mitigation:	Compensatory mitigation for the proposed temporary impacts will be provided by (Refer to Attachment 5 for map): ▪ Restoring all areas temporarily disturbed by construction to pre-project conditions or better. Restoration will include re-contouring to pre-project conditions and revegetating the area with native species. ▪ Creation of approximately 0.05 acre of riparian scrub habitat on Temecula Creek around the proposed stream outlet assembly, located approximately 1500 feet upstream of the recharge basins. Non-native grassland around the discharge point will be graded to reduce the elevation closer to that of the creek invert to promote hydrologic connectivity and establishment of riparian species. ▪ Removal of all exotic species within a 25-foot buffer surrounding the mitigation area for a total of 19.06 acres of exotics removal. No permanent impacts are authorized by this Certification. Mitigation Plan: *Draft Compensatory Mitigation Plan: Vail Lake Transmission Main and Pump Station, Riverside County, California* dated June 2008 by LSA Associates, Inc. and final plan required by Condition D.2.
Best Management Practices (BMPs):	During construction, Rancho California Water District will comply with the requirements of State Water Resources Control Board Water Quality Order No. 99-08-DWQ, the NPDES General Permit

	for Storm Water Discharges Associated with Construction Activity. In addition, Rancho California Water District will also implement the Construction Minimization Measures of Section 7.5.3 of the Western Riverside County Multiple Species Habitat Conservation Plan.
Public Notice:	October 9, 2007
Fees:	Total Fees: $ 14,525.00 Total Paid: $14,525.00 (check No 094148).
CIWQS:	Regulatory Measure ID: 333165 Place ID: 704712 Party ID: 274891

ATTACHMENT 2
E-MAIL DISTRIBUTION LIST

Laurie Monarres
United States Army Corps of Engineers
Regulatory Division
South Coast Branch, San Diego Section
6010 Hidden Valley Road, Suite 105
Carlsbad, California 9201
laurie.a.monarres@usace.army.mil

Bill Orme
State Water Resources Control Board, Division of Water Quality
401 Water Quality Certification and Wetlands Unit
P.O. Box 100
Sacramento, CA 95812-0100
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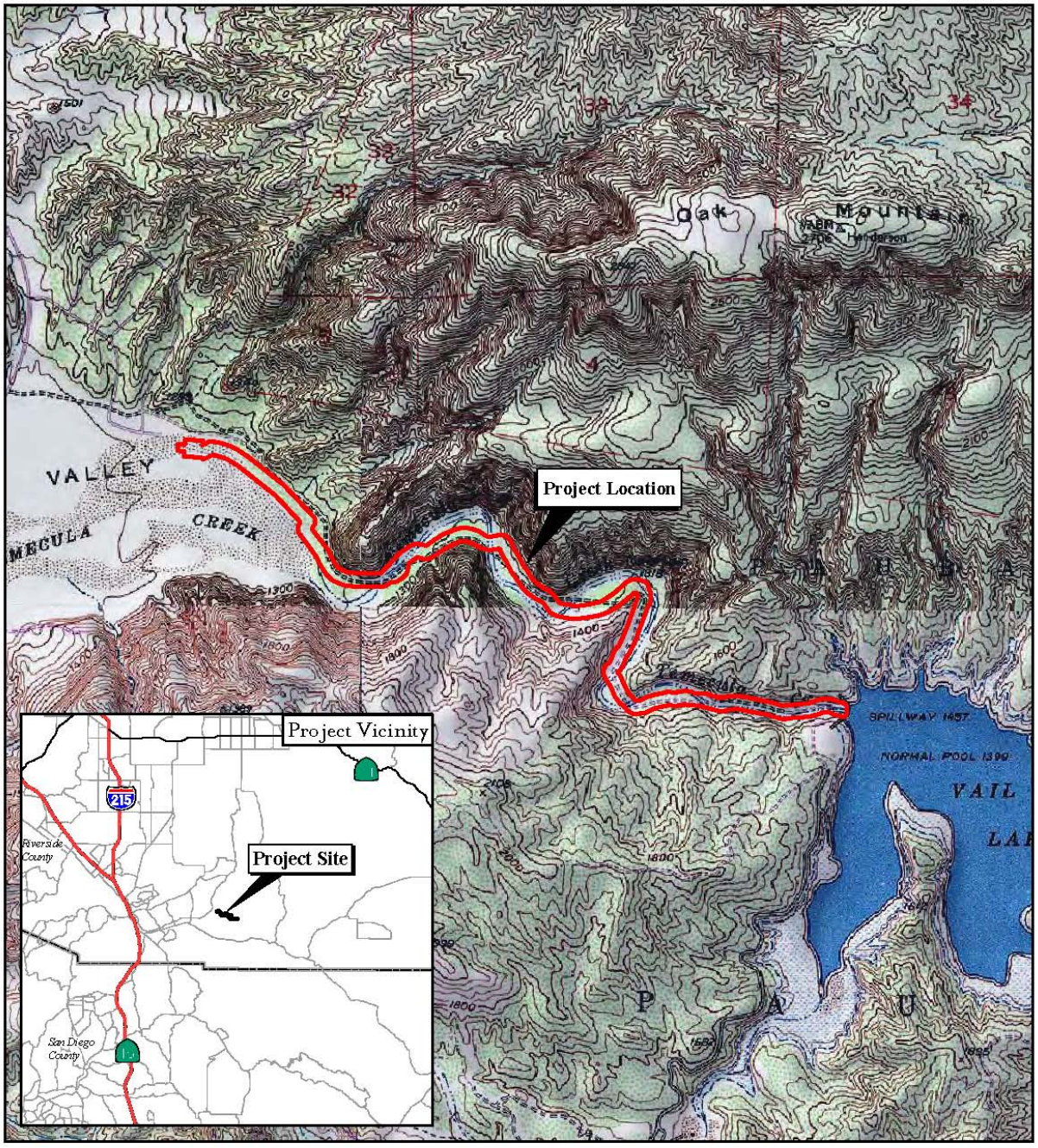
ATTACHMENT 3
LOCATION MAP



LSA

Legend
Project Survey Area

0 1,000 2,000 Feet

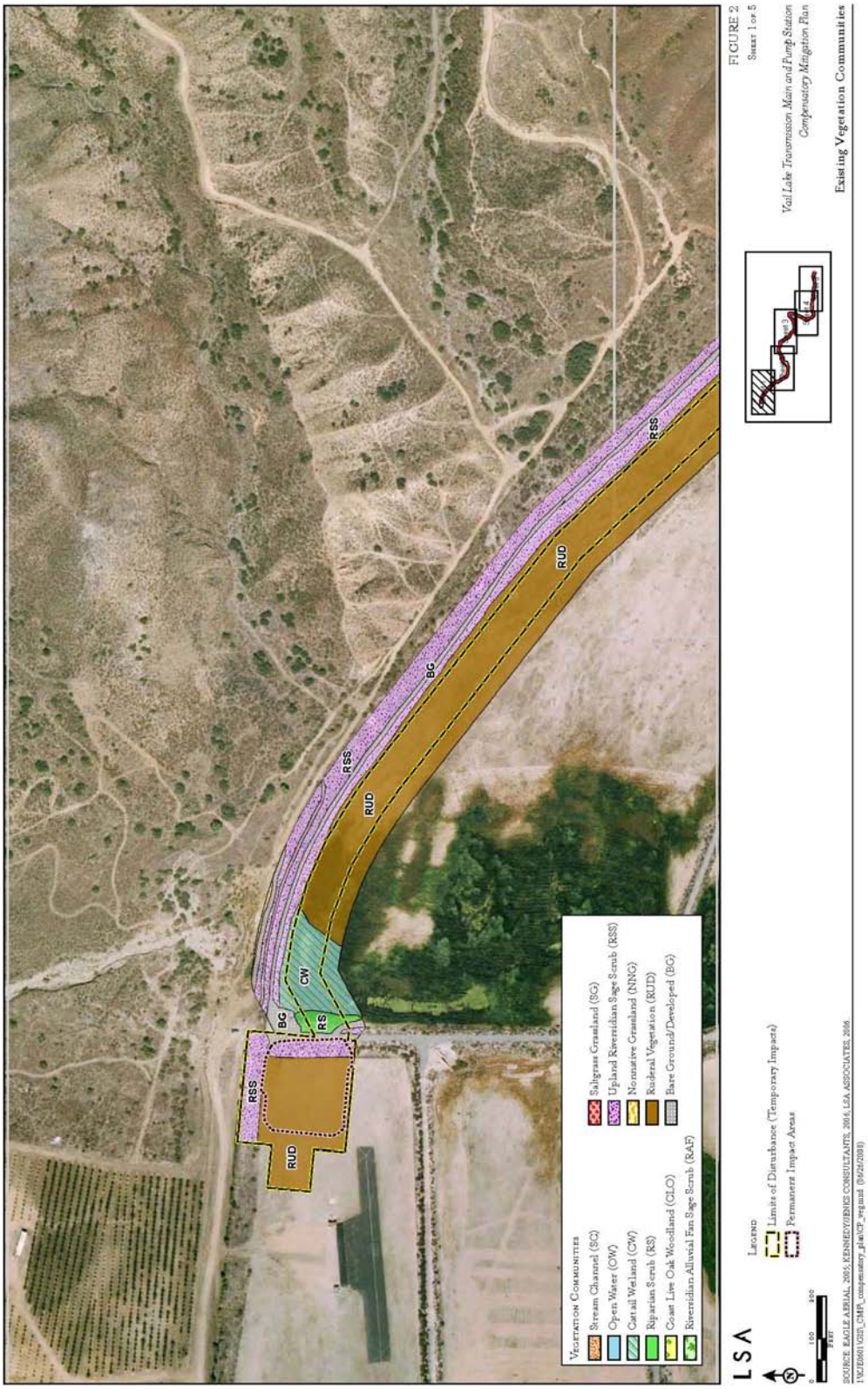
FIGURE 1

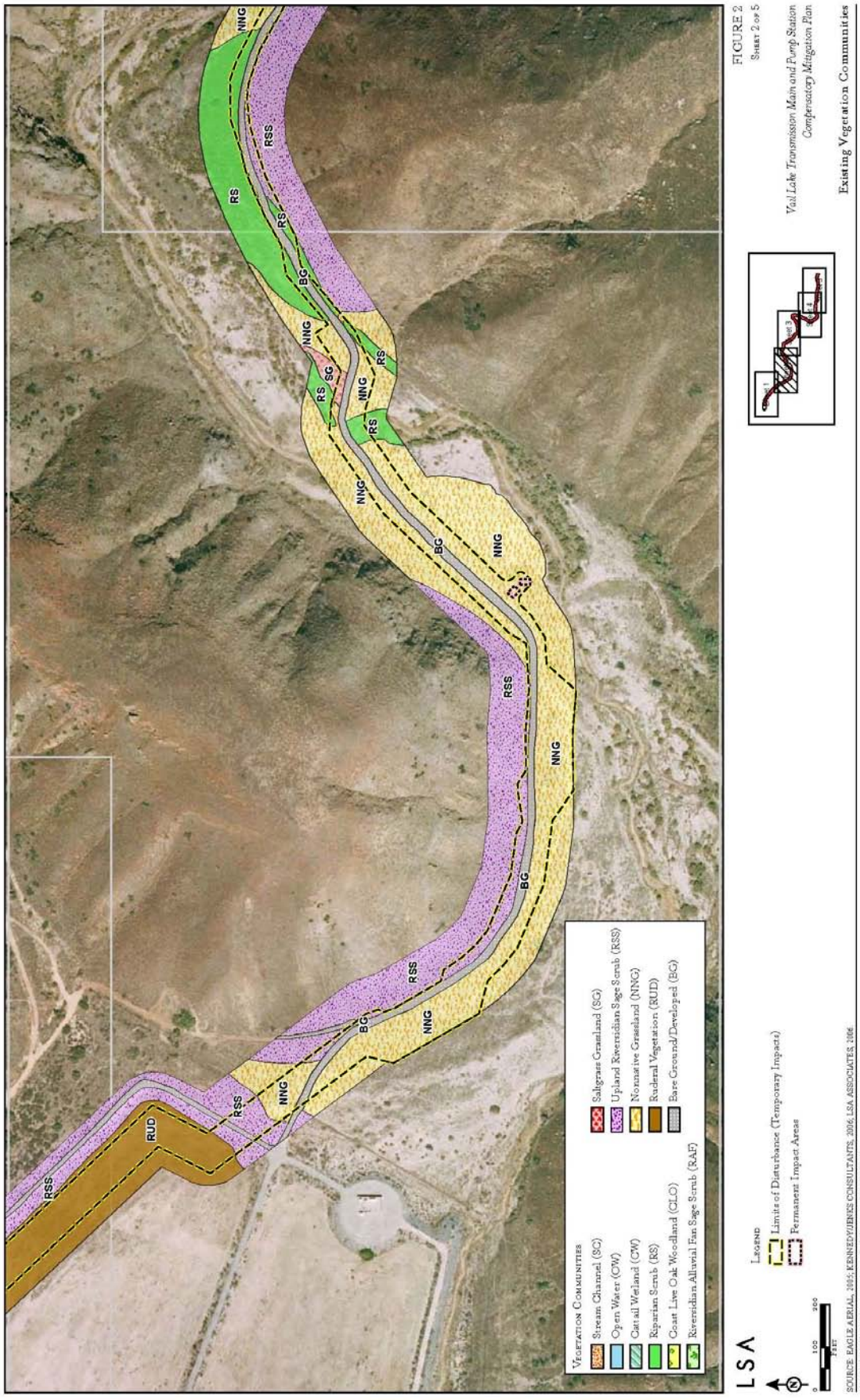
Vail Lake Transmission Main and Pump Station
Compensatory Mitigation Plan

Project Location

SOURCE: USGS 7.5' QUAD - BACHELOR MTN. ('73), PECHANGA ('88), SAGE ('54), VAIL LAKE ('88); CALIF.
I:\KJE0601\GIS_CMP_compensatory_plan\CP_Fig1_location.mxd (06/27/2007)

ATTACHMENT 4
SITE MAPS




RSS
RUD
RSS
NNG
BG
RSS
NNG
BG
RSS
NNG
BG
NNG
RS
RSS
RS
BG
NNG
RS
SG
NNG
RS
NNG
BG
NNG
RSS
BG
NNG
Vegetation Communities
Stream Channel (SC)
Open Water (OW)
Cattail Wetland (CW)
Riparian Scrub (RS)
Coast Live Oak Woodland (CLO)
Riversidian Alluvial Fan Sage Scrub (RAF)
Saltgrass Grassland (SG)
Upland Riversidian Sage Scrub (RSS)
Nonnative Grassland (NNG)
Ruderal Vegetation (RUD)
Bare Ground/Developed (BG)
LSA
Legend
Limits of Disturbance (Temporary Impacts)
Permanent Impact Areas
0
100
200
Feet
SOURCE: EAGLE AERIAL, 2005; KENNEDY/JENKS CONSULTANTS, 2006; LSA ASSOCIATES, 2006
I:\VLE0601\GIS\fig_CMP_compensatory_plan\CP_vegand (04/26/2006)
FIGURE 2
Sheet 2 of 5
Vail Lake Transmission Main and Pump Station
Compensatory Mitigation Plan
Existing Vegetation Communities

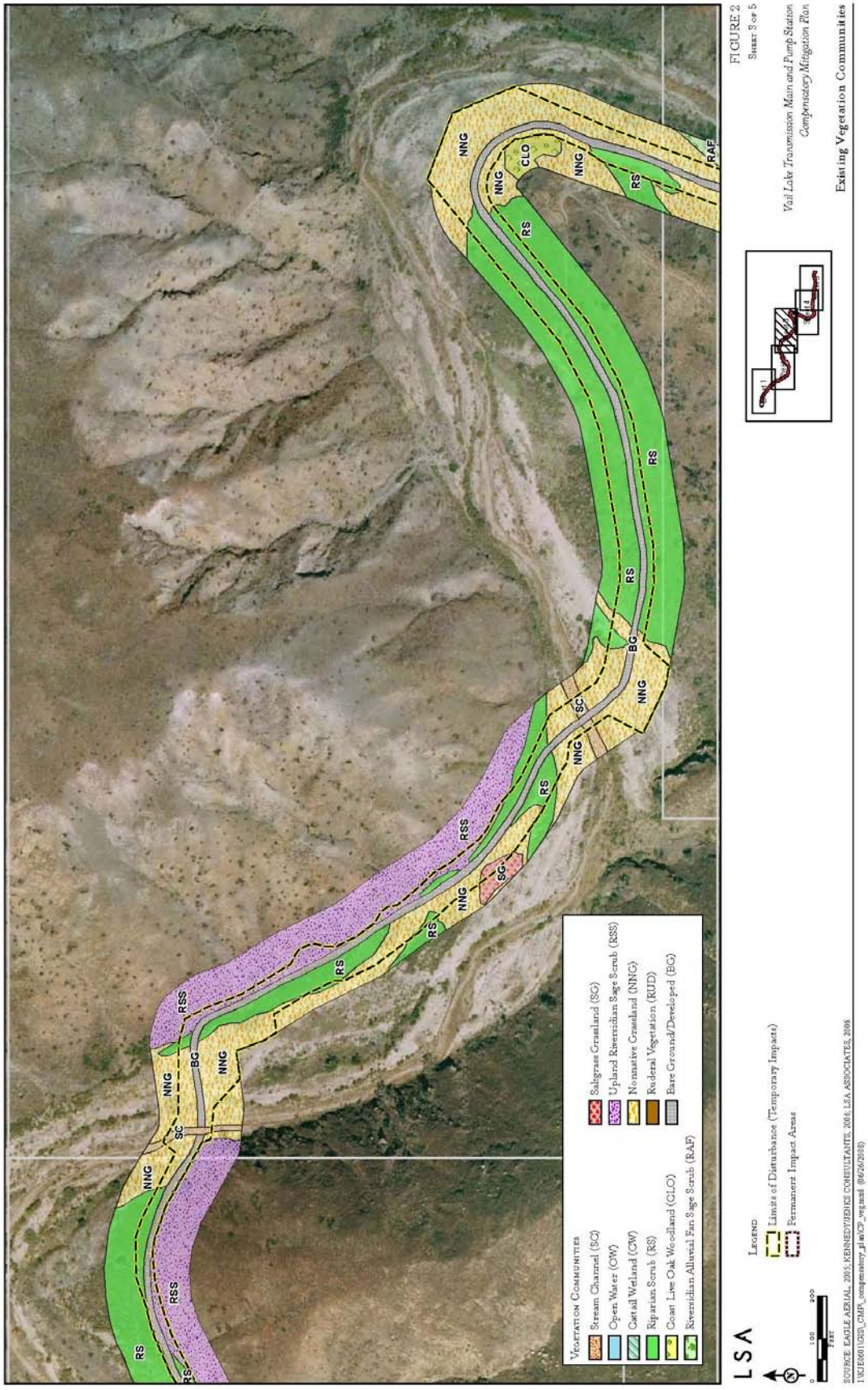


FIGURE 2
Sheet 3 of 5
Vail Lake Transmission Main and Pump Station
Compensatory Mitigation Plan
Existing Vegetation Communities
LSA
Legend
Limits of Disturbance (Temporary Impacts)
Permanent Impact Areas
Vegetation Communities
Stream Channel (SC)
Open Water (OW)
Cattail Wetland (CW)
Riparian Scrub (RS)
Coast Live Oak Woodland (CLO)
Riversidian Alluvial Fan Sage Scrub (RAF)
Saltgrass Grassland (SG)
Upland Riversidian Sage Scrub (RSS)
Nonnative Grassland (NNG)
Ruderal Vegetation (RUD)
Bare Ground/Developed (BG)
RS
RSS
NNG
SC
BG
SG
CLO
RAF
SOURCE: EAGLE AERIAL, 2005; KENNEDY/JENKS CONSULTANTS, 2006; LSA ASSOCIATES, 2006
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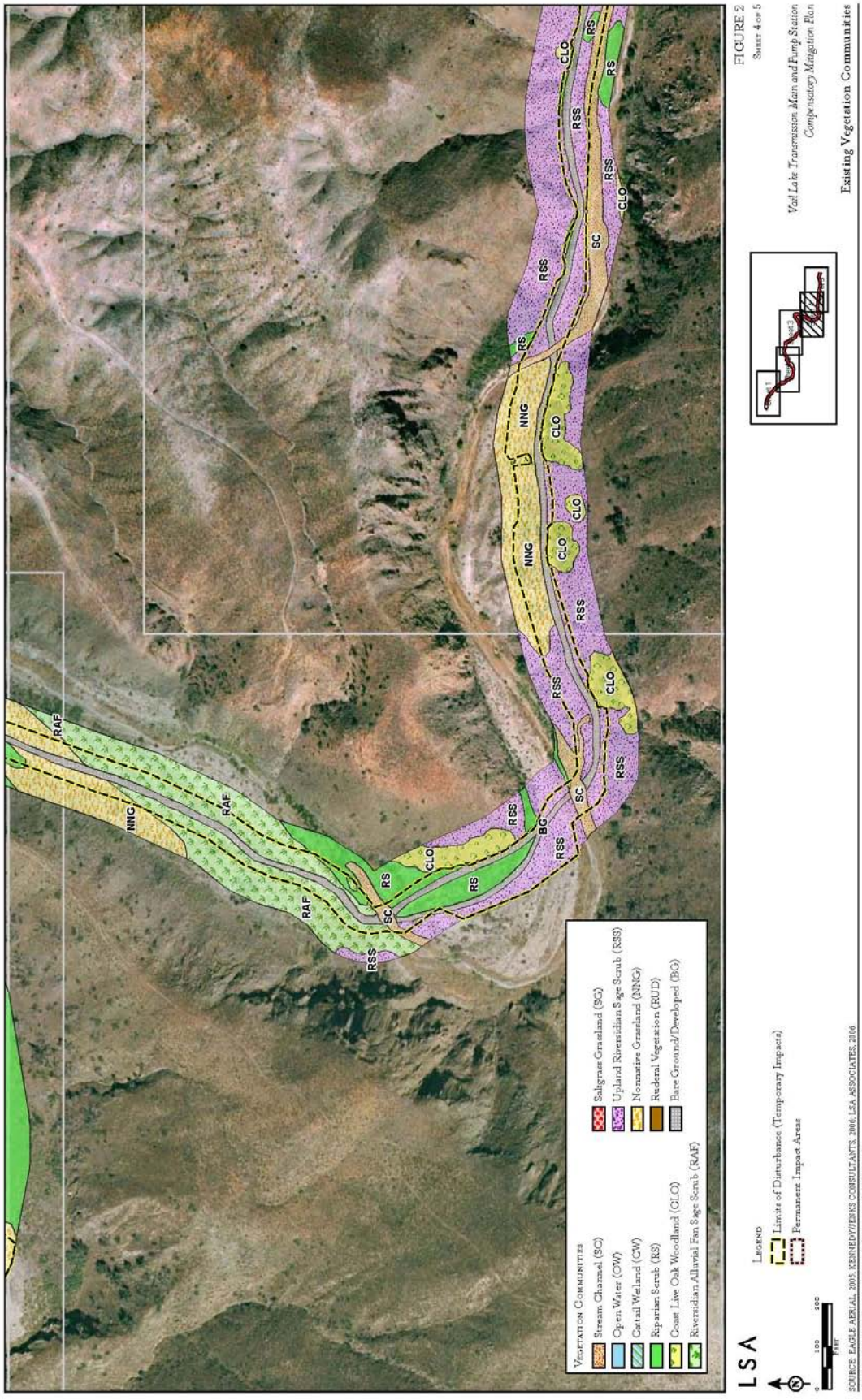
RAF
NNG
RAF
RAF
RSS
SC
RS
CLO
RS
RSS
BG
RSS
SC
RSS
CLO
RSS
NNG
CLO
CLO
NNG
RS
RSS
SC
RSS
CLO
RS
RS
Vegetation Communities
Stream Channel (SC)
Open Water (OW)
Cattail Wetland (CW)
Riparian Scrub (RS)
Coast Live Oak Woodland (CLO)
Riversidian Alluvial Fan Sage Scrub (RAF)
Sahgrass Grassland (SG)
Upland Riversidian Sage Scrub (RSS)
Nonnative Grassland (NNG)
Ruderal Vegetation (RUD)
Bare Ground/Developed (BG)
LSA
Legend
Limits of Disturbance (Temporary Impacts)
Permanent Impact Areas
0
100
200
FEET
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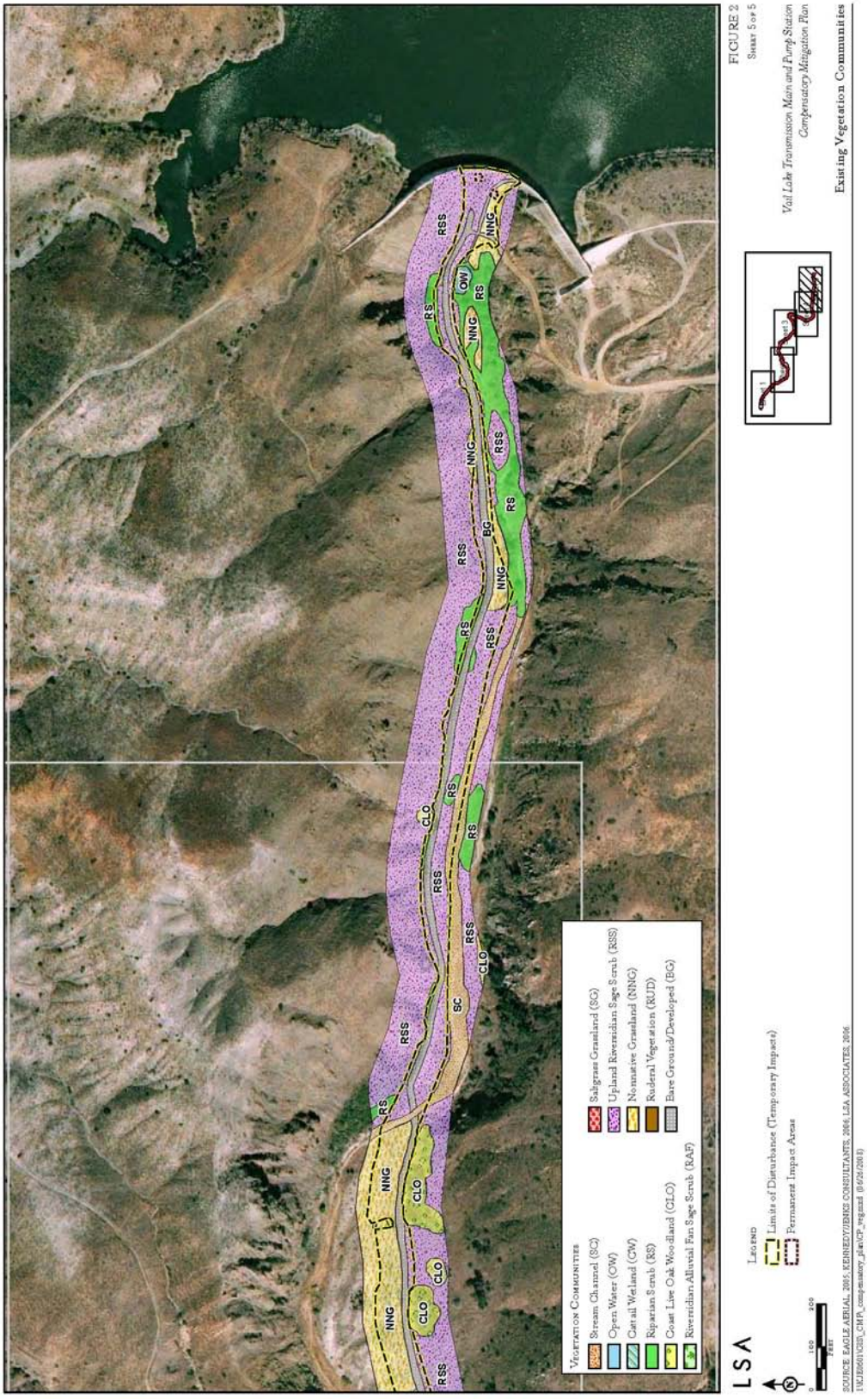
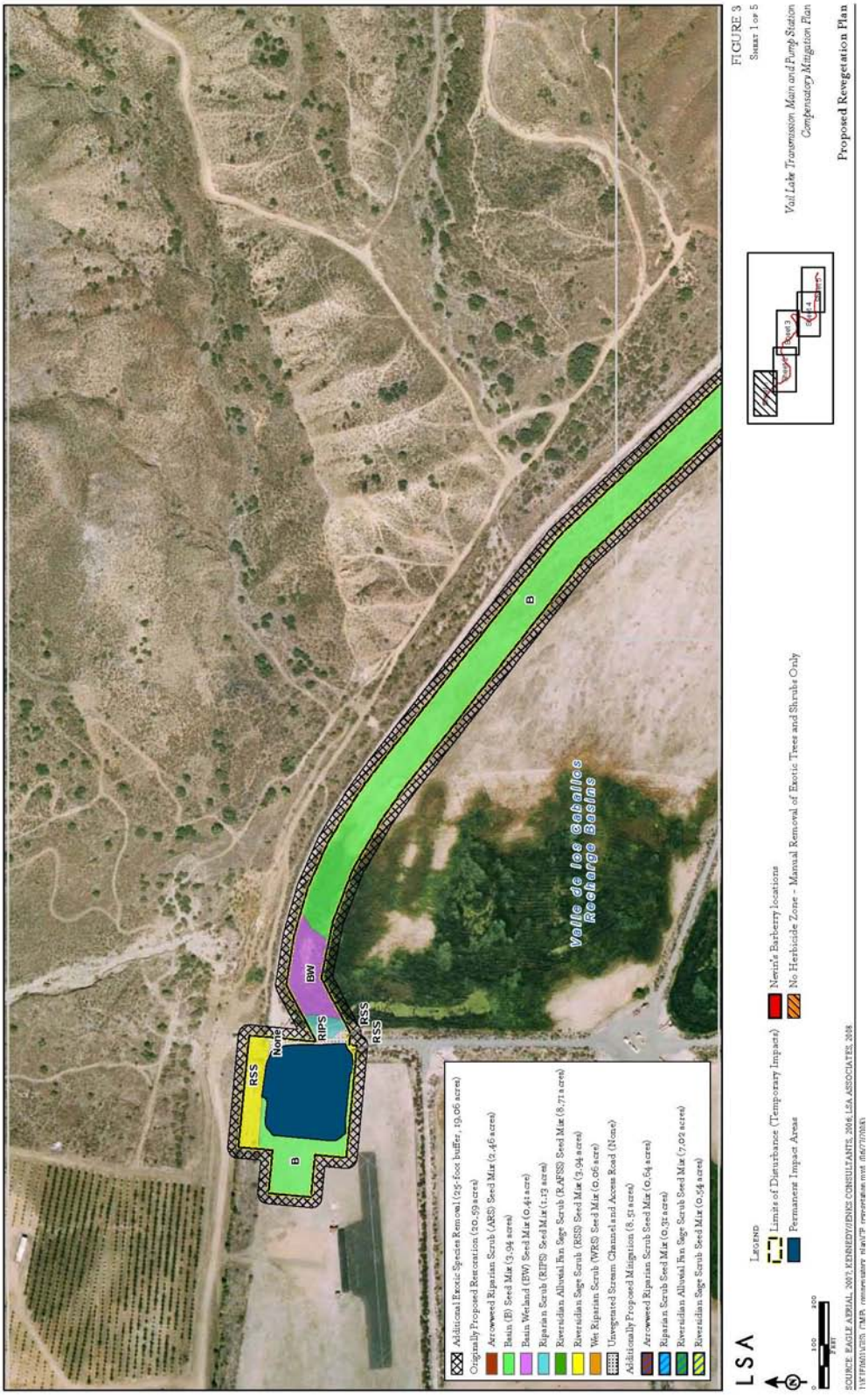
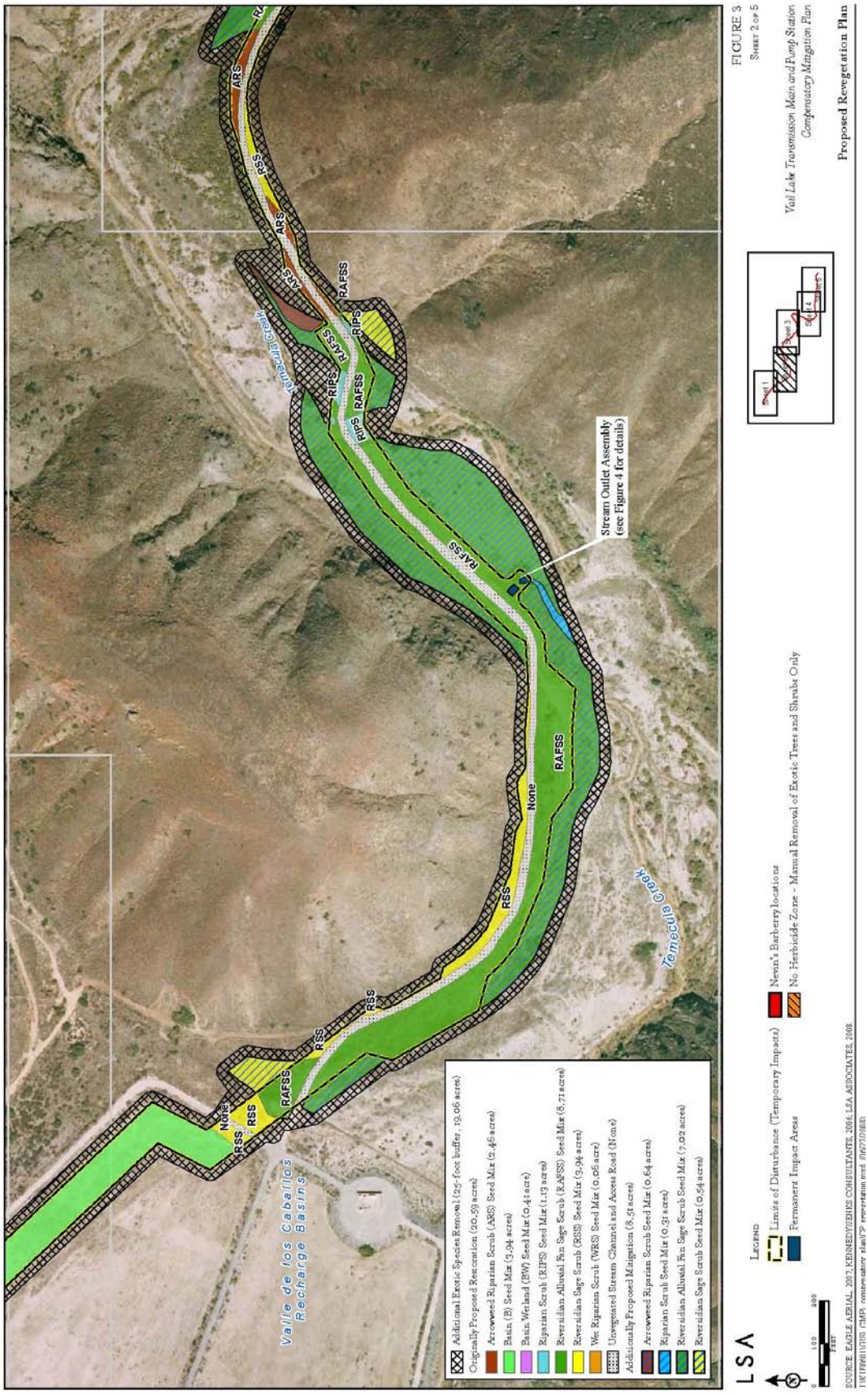
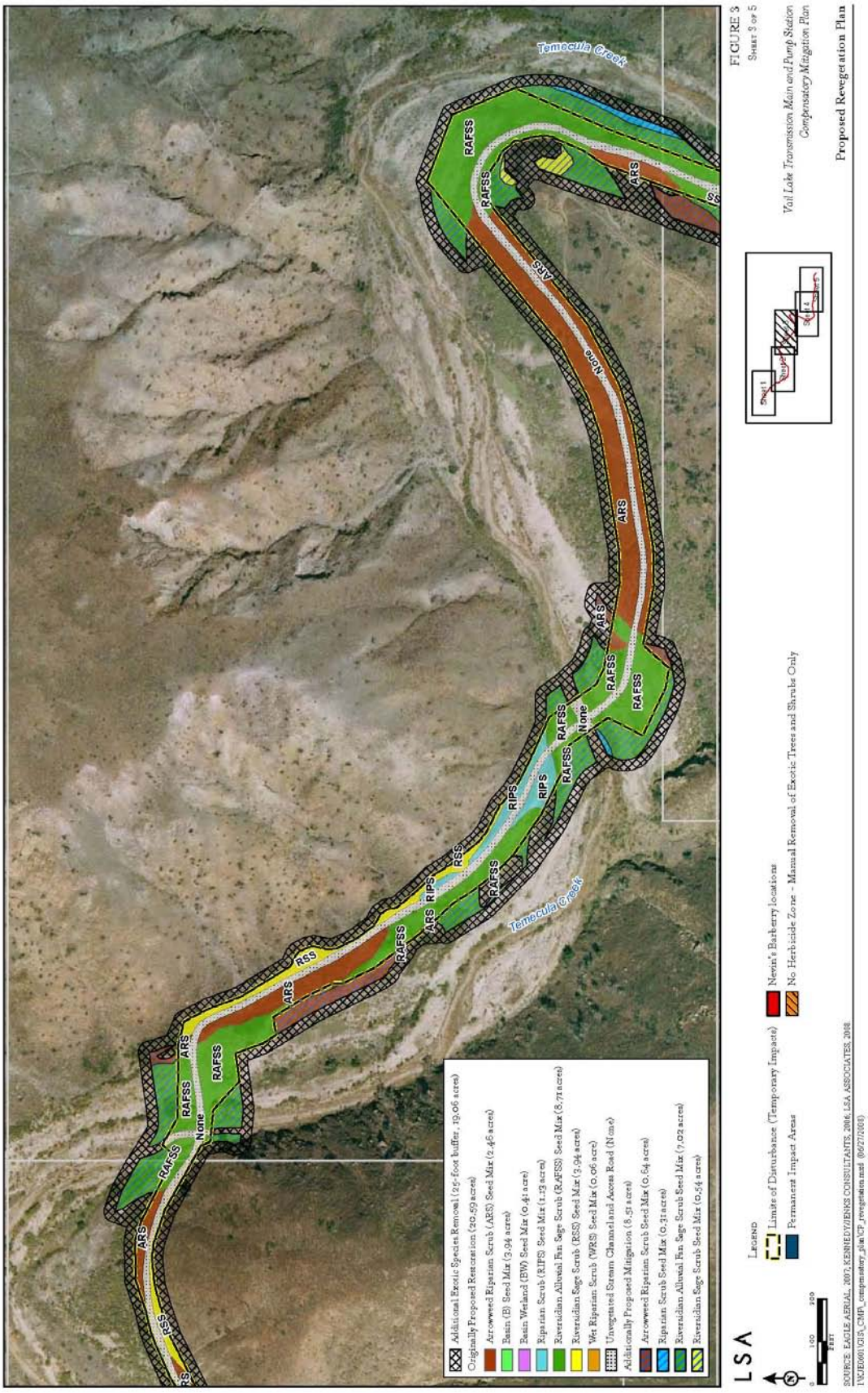
FIGURE 2
Sheet 4 of 5
Vail Lake Transmission Main and Pump Station
Compensatory Mitigation Plan
Existing Vegetation Communities

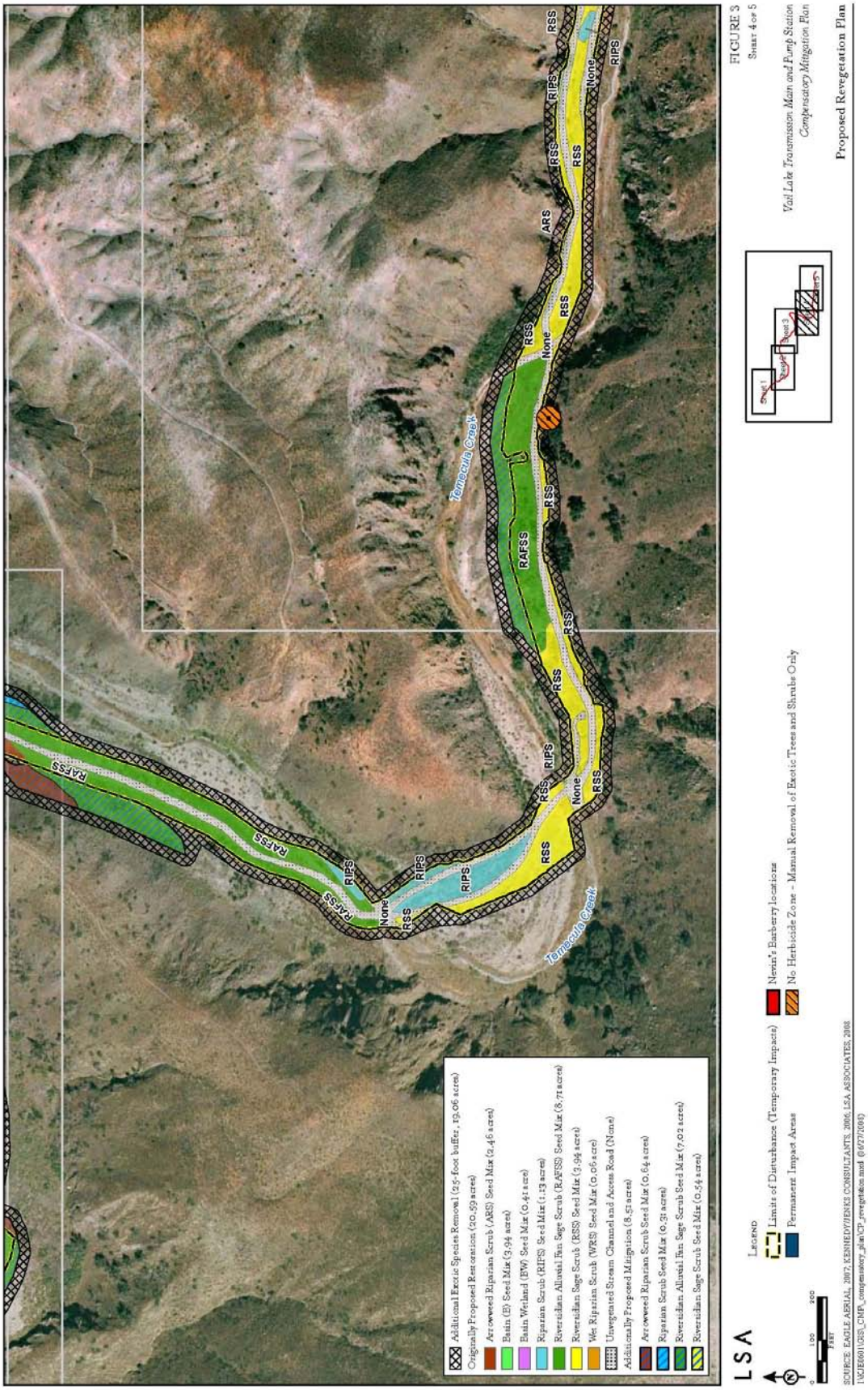

RSS
NNG
CLO
RS
SC
BG
OW
Vegetation Communities
Stream Channel (SC)
Open Water (OW)
Cattail Wetland (CW)
Riparian Scrub (RS)
Coast Live Oak Woodland (CLO)
Riversidian Alluvial Fan Sage Scrub (RAF)
Saltgrass Grassland (SG)
Upland Riversidian Sage Scrub (RSS)
Nonnative Grassland (NNG)
Ruderal Vegetation (RUD)
Bare Ground/Developed (BG)
LSA
Legend
Limits of Disturbance (Temporary Impacts)
Permanent Impact Areas
0
160
320
FEET
SOURCE: EAGLE AERIAL, 2005; KENNEDY/JENKS CONSULTANTS, 2006; LSA ASSOCIATES, 2006
I:\JEB501\GIS_CMP_compensatory_plan\CP_vegcmt (06/26/2006)
FIGURE 2
Sheet 5 of 5
Vail Lake Transmission Main and Pump Station
Compensatory Mitigation Plan
Existing Vegetation Communities

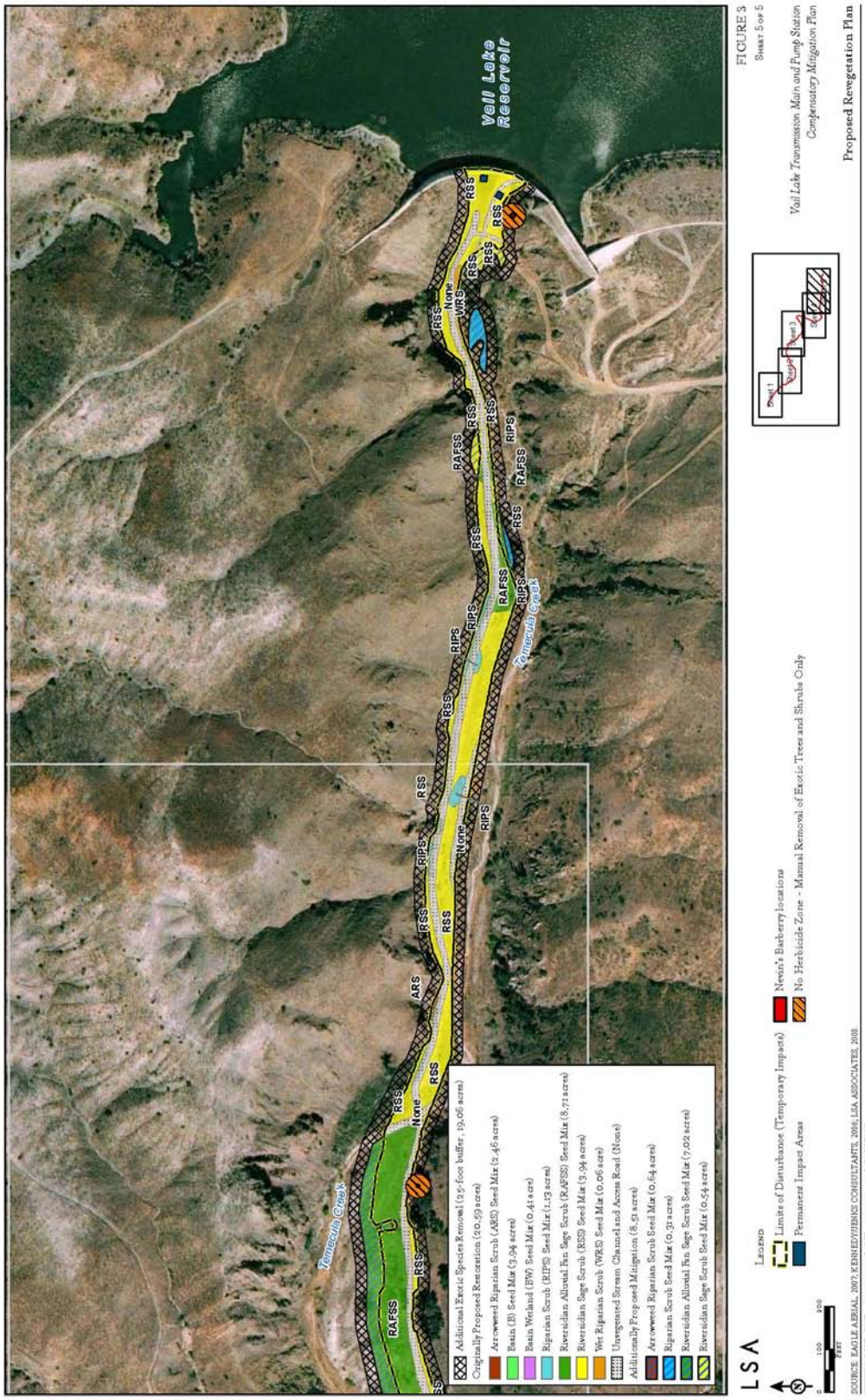
ATTACHMENT 5
MITIGATION MAPS




Valle de los Caballos Recharge Basins
Temecula Creek
Temecula Creek
Stream Outlet Assembly (see Figure 4 for details)
RAFSS
RSS
None
RIPS
ARS
Additional Exotic Species Removal (25-foot buffer, 19.06 acres)
Originally Proposed Revegetation (20.59 acres)
Arrowweed Riparian Scrub (ARS) Seed Mix (2.46 acres)
Basin (B) Seed Mix (3.94 acres)
Basin Wetland (BW) Seed Mix (0.41 acre)
Riparian Scrub (RIPS) Seed Mix (1.19 acre)
Riversidian Alluvial Fan Sage Scrub (RAFSS) Seed Mix (8.71 acres)
Riversidian Sage Scrub (RSS) Seed Mix (3.94 acres)
Wet Riparian Scrub (WRS) Seed Mix (0.06 acre)
Unvegetated Stream Channel and Access Road (None)
Additionally Proposed Mitigation (8.51 acres)
Arrowweed Riparian Scrub Seed Mix (0.64 acres)
Riparian Scrub Seed Mix (0.31 acres)
Riversidian Alluvial Fan Sage Scrub Seed Mix (7.02 acres)
Riversidian Sage Scrub Seed Mix (0.54 acres)
LSA
Legend
Limits of Disturbance (Temporary Impacts)
Permanent Impact Areas
Nevin's Barberry locations
No Herbicide Zone - Manual Removal of Exotic Trees and Shrubs Only
SOURCE: EAGLE AERIAL, 2007; KENNEDY/JENKINS CONSULTANTS, 2006; LSA ASSOCIATES, 2008
FIGURE 5
Sheet 2 of 5
Vail Lake Transmission Main and Pump Station
Compensatory Mitigation Plan
Proposed Revegetation Plan


Temecula Creek
Temecula Creek
RAFSS
ARS
RSS
RIPS
None
Additional Exotic Species Removal (25-foot buffer, 19.06 acres)
Originally Proposed Restoration (20.59 acres)
Arrowweed Riparian Scrub (ARS) Seed Mix (2.46 acres)
Basin (B) Seed Mix (3.94 acres)
Basin Wetland (BW) Seed Mix (0.41 acre)
Riparian Scrub (RIPS) Seed Mix (1.13 acres)
Riversidian Alluvial Fan Sage Scrub (RAFSS) Seed Mix (8.71 acres)
Riversidian Sage Scrub (RSS) Seed Mix (3.94 acres)
Wet Riparian Scrub (WRS) Seed Mix (0.06 acre)
Unvegetated Stream Channel and Access Road (None)
Additionally Proposed Mitigation (8.51 acres)
Arrowweed Riparian Scrub Seed Mix (0.64 acre)
Riparian Scrub Seed Mix (0.31 acre)
Riversidian Alluvial Fan Sage Scrub Seed Mix (7.02 acres)
Riversidian Sage Scrub Seed Mix (0.54 acre)
LSA
LEGEND
Limits of Disturbance (Temporary Impact)
Permanent Impact Areas
Newin's Barberry locations
No Herbicide Zone - Manual Removal of Exotic Trees and Shrubs Only
SOURCE: EAGLE AERIAL, 2007; KENNEDY/JENKS CONSULTANTS, 2006; LSA ASSOCIATES, 2008
I:\VEE0601\GIS_CMP_compensatory_plan\CP_revegetation.mxd (06/27/2008)
FIGURE 3
Sheet 3 of 5
Vail Lake Transmission Main and Pump Station
Compensatory Mitigation Plan
Proposed Revegetation Plan


Additional Exotic Species Removal (25-foot buffer, 19.06 acres)
Originally Proposed Restoration (20.59 acres)
Arrowweed Riparian Scrub (ARS) Seed Mix (2.46 acre)
Basin (B) Seed Mix (3.94 acre)
Basin Wetland (BW) Seed Mix (0.41 acre)
Riparian Scrub (RIPS) Seed Mix (1.13 acre)
Riversidian Alluvial Fan Sage Scrub (RAFSS) Seed Mix (8.71 acre)
Riversidian Sage Scrub (RSS) Seed Mix (3.94 acre)
Wet Riparian Scrub (WRS) Seed Mix (0.06 acre)
Unvegetated Stream Channel and Access Road (None)
Additionally Proposed Mitigation (8.51 acres)
Arrowweed Riparian Scrub Seed Mix (0.64 acre)
Riparian Scrub Seed Mix (0.31 acre)
Riversidian Alluvial Fan Sage Scrub Seed Mix (7.02 acre)
Riversidian Sage Scrub Seed Mix (0.54 acre)
LSA
LEGEND
Limit of Disturbance (Temporary Impacts)
Permanent Impact Areas
Nevin's Barberry locations
No Herbicide Zone - Manual Removal of Exotic Trees and Shrubs Only
SOURCE: EAGLE AERIAL 2007; KENNEDY/JENKS CONSULTANTS, 2006; LSA ASSOCIATES, 2008
I:\CJE0601\GIS_CMP_compensatory_plan\CP_revegetation.mxd (6/27/2008)
FIGURE 3
SHEET 4 OF 5
Vail Lake Transmission Main and Pump Station
Compensatory Mitigation Plan
Proposed Revegetation Plan
Temecula Creek
RAFSS
RIPS
RSS
None
ARS


Vail Lake Reservoir
Temecula Creek
Temecula Creek
RSS
RIPS
RAFSS
ARS
None
WRS
Additional Exotic Species Removal (25-foot buffer, 19.06 acres)
Originally Proposed Revegetation (20.59 acres)
Arrowweed Riparian Scrub (ARS) Seed Mix (2.46 acres)
Basin (B) Seed Mix (3.94 acres)
Basin Wetland (BW) Seed Mix (0.41 acre)
Riparian Scrub (RIPS) Seed Mix (1.13 acres)
Riversidian Alluvial Fan Sage Scrub (RAFSS) Seed Mix (8.71 acres)
Riversidian Sage Scrub (RSS) Seed Mix (3.94 acres)
Wet Riparian Scrub (WRS) Seed Mix (0.06 acre)
Unvegetated Stream Channel and Access Road (None)
Additionally Proposed Mitigation (8.51 acres)
Arrowweed Riparian Scrub Seed Mix (0.64 acres)
Riparian Scrub Seed Mix (0.31 acres)
Riversidian Alluvial Fan Sage Scrub Seed Mix (7.02 acres)
Riversidian Sage Scrub Seed Mix (0.54 acres)
LSA
Legend
Limits of Disturbance (Temporary Impacts)
Permanent Impact Areas
Nevin's Barberry locations
No Herbicide Zone - Manual Removal of Exotic Trees and Shrubs Only
Sheet 1
Sheet 2
Sheet 3
FIGURE 3
Sheet 5 of 5
Vail Lake Transmission Main and Pump Station
Compensatory Mitigation Plan
Proposed Revegetation Plan

ATTACHMENT 6
STREAM PHOTO DOCUMENTATION PROCEDURES

Standard Operating Procedure (SOP) 4.2.1.4

Stream Photo Documentation Procedure
(CARCD 2001, Written by TAC Visual Assessments work group)

Introduction:

Photographs provide a qualitative, and potentially semi-quantitative, record of conditions in a watershed or on a water body. Photographs can be used to document general conditions on a reach of a stream during a stream walk, pollution events or other impacts, assess resource conditions over time, or can be used to document temporal progress for restoration efforts or other projects designed to benefit water quality. Photographic technology is available to anyone and it does not require a large degree of training or expensive equipment. Photos can be used in reports, presentations, or uploaded onto a computer website or GIS program. This approach is useful in providing a visual portrait of water resources to those who may never have the opportunity to actually visit a monitoring site.

Equipment:

Use the same camera to the extent possible for each photo throughout the duration of the project. Either 35 mm color or digital color cameras are recommended, accompanied by a telephoto lens. If you must change cameras during the program, replace the original camera with a similar one comparable in terms of media (digital vs. 35 mm) and other characteristics. A complete equipment list is suggested as follows:

Required:
- Camera and backup camera
- Folder with copies of previous photos (do not carry original photos in the field)
- Topographic and/or road map
- Aerial photos if available
- Compass
- Timepiece
- Extra film or digital disk capacity (whichever is applicable)
- Extra batteries for camera (if applicable)
- Photo-log data sheets or, alternatively, a bound notebook dedicated to the project
- Yellow photo sign form and black marker, or, alternatively, a small black board and chalk

Optional:
- GPS unit
- Stadia rod (for scale on landscape shots)
- Ruler (for scale on close up views of streams and vegetation)
- Steel fence posts for dedicating fixed photo points in the absence of available fixed landmarks

How to Access Aerial Photographs:

Aerial Photos can be obtained from the following federal agencies:

USGS Earth Science Information Center
507 National Center
12201 Sunrise Valley Drive

Reston, VA 22092
800-USA-MAPS

USDA Consolidated Farm Service Agencies
Aerial Photography Field Office
222 West 2300 South
P.O. Box 30010
Salt Lake City, UT 84103-0010
801-524-5856

Cartographic and Architectural Branch
National Archives and Records Administration
8601 Adelphi Road
College park, MD 20740-6001
301-713-7040

Roles and Duties of Team:

The team should be comprised of a minimum of two people, and preferably three people for restoration or other water quality improvement projects, as follows:

1. Primary Photographer
2. Subject, target for centering the photo and providing scale
3. Person responsible for determining geographic position and holding the photo sign forms or blackboard.

One of these people is also responsible for taking field notes to describe and record photos and photo points.

Safety Concerns:

Persons involved in photo monitoring should **ALWAYS** put safety first. For safety reasons, always have at least two 2 volunteers for the survey. Make sure that the area(s) you are surveying either are accessible to the public or that you have obtained permission from the landowner prior to the survey.

Some safety concerns that may be encountered during the survey include, but are not limited to:

- Inclement weather
- Flood conditions, fast flowing water, or very cold water
- Poisonous plants (e.g.: poison oak)
- Dangerous insects and animals (e.g.: bees, rattlesnakes, range animals such as cattle, etc.)
- Harmful or hazardous trash (e.g.: broken glass, hypodermic needles, human feces)

We recommend that the volunteer coordinator or leader discuss the potential hazards with all volunteers prior to any fieldwork.

General Instructions:

From the inception of any photo documentation project until it is completed, always take each photo from the same position (photo point), and at the same bearing and vertical angle at that photo point. Photo point positions should be thoroughly documented, including photographs taken of the photo point. Refer to copies of previous photos when arriving at the photo point. Try to maintain a level (horizontal) camera view unless the terrain is sloped. (If the photo can not be horizontal due to the slope, then record the angle for that photo.) When photo points are first being selected, consider the type of project (meadow or stream restoration, vegetation

management for fire control, ambient or event monitoring as part of a stream walk, etc.) and refer to the guidance listed on *Suggestions for Photo Points by Type of Project*.

When taking photographs, try to include landscape features that are unlikely to change over several years (buildings, other structures, and landscape features such as peaks, rock outcrops, large trees, etc.) so that repeat photos will be easy to position. Lighting is, of course, a key ingredient so give consideration to the angle of light, cloud cover, background, shadows, and contrasts. Close view photographs taken from the north (i.e., facing south) will minimize shadows. Medium and long view photos are best shot with the sun at the photographer's back. Some artistic expression is encouraged as some photos may be used on websites and in slide shows (early morning and late evening shots may be useful for this purpose). Seasonal changes can be used to advantage as foliage, stream flow, cloud cover, and site access fluctuate. It is often important to include a ruler, stadia rod, person, farm animal, or automobile in photos to convey the scale of the image. Of particular concern is the angle from which the photo is taken. Oftentimes an overhead or elevated shot from a bridge, cliff, peak, tree, etc. will be instrumental in conveying the full dimensions of the project. Of most importance overall, however, is being aware of the goal(s) of the project and capturing images that clearly demonstrate progress towards achieving those goal(s). Again, reference to *Suggestions for Photo Points by Type of Project* may be helpful.

If possible, try to include a black board or yellow photo sign in the view, marked at a minimum with the location, subject, time and date of the photograph. A blank photo sign form is included in this document.

Recording Information:

Use a systematic method of recording information about each project, photo point, and photo. The following information should be entered on the photo-log forms (blank form included in this document) or in a dedicated notebook:

- Project or group name, and contract number (if applicable, e.g., for funded restoration projects)
- General location (stream, beach, city, etc.), and short narrative description of project's habitat type, goals, etc.
- Photographer and other team members
- Photo number
- Date
- Time (for each photograph)
- Photo point information, including:
    - Name or other unique identifier (abbreviated name and/or ID number)
    - Narrative description of location including proximity to and direction from notable landscape features like roads, fence lines, creeks, rock outcrops, large trees, buildings, previous photo points, etc. – sufficient for future photographers who have never visited the project to locate the photo point
    - Latitude, longitude, and altitude from map or GPS unit
- Magnetic compass bearing from the photo point to the subject
- Specific information about the subject of the photo
- Optional additional information: a true compass bearing (corrected for declination) from photo point to subject, time of sunrise and sunset (check newspaper or almanac), and cloud cover.

For ambient monitoring, the stream and shore walk form should be attached or referenced in the photo-log.

When monitoring the implementation of restoration, fuel reduction, or Best Management Practices (BMP) projects, include or attach to the photo-log a narrative description of observable progress in achieving the goals of the project. Provide supplementary information along with the photo, such as noticeable changes in habitat, wildlife, and water quality and quantity.

Archive all photos, along with the associated photo-log information, in a protected environment.

The Photo Point: Establishing Position of Photographer:

1. Have available a variety of methods for establishing position: maps, aerial photos, GPS, permanent markers and landmarks, etc. If the primary method fails (e.g., a GPS or lost marker post) then have an alternate method (map, aerial photo, copy of an original photograph of the photo-point, etc).

2. Select an existing structure or landmark (mailbox, telephone pole, benchmark, large rock, etc.), identify its latitude and longitude, and choose (and record for future use) the permanent position of the photographer relative to that landmark. Alternatively, choose the procedure described in *Monitoring California's Annual Rangeland Vegetation* (UC/DANR Leaflet 21486, Dec. 1990). This procedure involves placing a permanently marked steel fence post to establish the position of the photographer.

3. For restoration, fuel reduction, and BMP projects, photograph the photo-points and carry copies of those photographs on subsequent field visits.

Determining the Compass Bearing:

1. Select and record the permanent magnetic bearing of the photo center view. You can also record the true compass bearing (corrected for declination) but do not substitute this for the magnetic bearing. Include a prominent landmark in a set position within the view. If possible, have an assistant stand at a fixed distance from both the photographer and the center of the view, holding a stadia rod if available, within the view of the camera; preferably position the stadia rod on one established, consistent side of the view for each photo (right or left side).
2. Alternatively, use the procedure described in *Monitoring California's Annual Rangeland Vegetation* (UC/DANR Leaflet 21486, Dec. 1990). This procedure involves placing a permanently marked steel fence post to establish the position of the focal point (photo center).
3. When performing ambient or event photo monitoring, and when a compass is not available, then refer to a map and record the approximate bearing as north, south, east or west.

Suggestions for Photo Points by Type of Project:

Ambient or Event Monitoring, Including Photography Associated with Narrative Visual Assessments:

1. When first beginning an ambient monitoring program take representative long and/or medium view photos of stream reaches and segments of shoreline being monitored. Show the positions of these photos on a map, preferably on the stream/shore walk form. Subjects to be photographed include a representative view of the stream or shore condition at the beginning and ending positions of the segment being monitored, storm drain outfalls, confluence of tributaries, structures (e.g., bridges, dams, pipelines, etc.).

2. If possible, take a close view photograph of the substrate (streambed), algae, or submerged aquatic vegetation.

3. Time series: Photographs of these subjects at the same photo points should be repeated annually during the same season or month if possible.

4. Event monitoring refers to any unusual or sporadic conditions encountered during a stream or shore walk, such as trash dumps, turbidity events, oil spills, etc. Photograph and record information on your photo-log and on your Stream and Shore Walk Visual Assessment form. Report pollution events to the Regional Board. Report trash dumps to local authorities.

All Restoration and Fuel Reduction Projects – Time Series:

Take photos immediately before and after construction, planting, or vegetation removal. Long term monitoring should allow for at least annual photography for a minimum of three years after the project, and thereafter at 5 years and ten years.

Meadow Restoration:

1. Aerial view (satellite or airplane photography) if available.

2. In the absence of an aerial view, a landscape, long view showing an overlapping sequence of photos illustrating a long reach of stream and meadow (satellite photos, or hill close by, fly-over, etc.)

3. Long view up or down the longitudinal dimension of the creek showing riparian vegetation growth bounded on each side by grasses, sedges, or whatever that is lower in height

4. Long view of conversion of sage and other upland species back to meadow vegetation

5. Long view and medium view of streambed changes (straightened back to meandering, sediment back to gravel, etc.)

6. Medium and close views of structures, plantings, etc. intended to induce these changes

Stream Restoration/stabilization:

1. Aerial view (satellite or airplane photography) if available.

2. In the absence of an aerial view, a landscape, long-view showing all or representative sections of the project (bluff, bridge, etc.)

3. Long view up or down the stream (from stream level) showing changes in the stream bank, vegetation, etc.

4. Long view and medium view of streambed changes (thalweg, gravel, meanders, etc.)

5. Medium and close views of structures, plantings, etc. intended to induce these changes.

6. Optional: Use a tape set perpendicular across the stream channel at fixed points and include this tape in your photos described in 3 and 4 above. For specific procedures refer to Harrelson, Cheryl C., C.L. Rawlins, and John P. Potyondy, *Stream Channel Reference Sites: An Illustrated Guide to Field Techniques*, United States Department of Agriculture, Forest Service, Rocky Mountain Forest and Range Experiment Station, General Technical Report RM-245.

Vegetation Management for Fire Prevention ("fuel reduction"):

1. Aerial view (satellite or airplane photography) if available.

2. In the absence of an aerial view, a landscape, long view showing all or representative sections of the project (bluff, bridge, etc.)

3. Long view (wide angle if possible) showing the project area or areas. Preferably these long views should be from an elevated vantage point.

4. Medium view photos showing examples of vegetation changes, and plantings if included in the project. It is recommended that a person (preferably holding a stadia rod) be included in the view for scale

5. To the extent possible include medium and long view photos that include adjacent stream channels.

Stream Sediment Load or Erosion Monitoring:

1. Long views from bridge or other elevated position.

2. Medium views of bars and banks, with a person (preferably holding a stadia rod) in view for scale.

3. Close views of streambed with ruler or other common object in the view for scale.

4. Time series: Photograph during the dry season (low flow) once per year or after a significant flood event when streambed is visible. The flood events may be episodic in the south and seasonal in the north.

5. Optional: Use a tape set perpendicular across the stream channel at fixed points and include this tape in your photos described in 1 and 2 above. For specific procedures refer to Harrelson, Cheryl C., C.L. Rawlins, and John P. Potyondy, *Stream Channel Reference Sites: An Illustrated Guide to Field Techniques*, United States Department of Agriculture, Forest Service, Rocky Mountain Forest and Range Experiment Station, General Technical Report RM-245.

PHOTO- LOG FORM

Project:
Location:
Date:
Photographer:
Team members:

Photo #	Time	Photo Point ID	Photo Pt. Description & Location	Bearing to Subject	Subject Description

General Notes or Comments (weather, cloud cover, time of sunrise and sunset, other pertinent information):

PHOTO SIGN FORM: Print this form on yellow paper. Complete the following information for each photograph. Include in the photographic view so that it will be legible in the finished photo.

Location:

Subject Description:

Date:

Time: