



SIERRA TRACT EROSION CONTROL PROJECT, PHASE 3/4 WORKPLAN

Introduction

The proposed project is located within the existing developed Sierra Tract neighborhood in the City of South Lake Tahoe (See Figures 1-1 and 1-2), adjacent to the Upper Truckee River. The proposed low impact development (LID) treatment system was designed to treat runoff and remove pollution (primarily fine sediment) from developed roadways, commercial, and residential land uses that discharge directly into the Upper Truckee River and eventually Lake Tahoe (See Figure 1-2). All proposed LID treatment systems would be built within the existing City right-of-way, or on City property or public lands. The project is the combined 3rd and 4th phases of the Sierra Tract Erosion Control project; Phases 1 and 2 were previously completed with other funding sources. The proposed LID approach includes source control measures (stabilizing erodible road shoulders); dispersed pre-treatment and infiltration systems (sediment traps, drywells, and perforated drain pipes in infiltration trenches) close to the source of runoff; and treatment in bioretention basins, constructed wetlands, and infiltration galleries prior to discharge directly into the Upper Truckee River. The proposed Phase 3/4 LID project elements have been previously evaluated, designed and permitted (including CEQA and NEPA review) with other funding sources. As the construction design plans, permitting and land acquisition are nearly complete, this application is focused on the funding for implementation of the previously planned LID retrofits. The proposed LID retrofits will complement the planned Sierra Boulevard Complete Streets rehabilitation project, which will provide enhanced pedestrian, cyclist and streetscape improvements along Sierra Boulevard through a portion of the project area. The proposed project is not contingent on funding or completion of the Sierra Boulevard Complete Street rehabilitation project.

GOALS AND OBJECTIVES

The goal of the Sierra Tract Erosion Control Project, Phase 3/4 (Project) is to reduce pollutant loading in urban stormwater discharges into the Upper Truckee River and Lake Tahoe, as required by the Municipal Separate Storm Sewer permit (MS4), Order No. R6T-2011-101A1, NPDES Permit No. CAG166001 (MS4 Permit) and Lake Tahoe Total Maximum Daily Load (TMDL) incorporated therein. The TMDL and MS4 Permit identify elevated levels of very fine sediment (particles less than 16 microns) and increased algal growth as the primary causes of reduced transparency and impacts to beneficial uses in Lake Tahoe. The Project is designed to meet the TMDL and MS4 Permit reduction requirements for very fine sediment particles (FSP) and nutrients in stormwater discharges from City of South Lake Tahoe (City) streets and urban upland areas through the implementation of low impact development (LID) retrofits of roadways and drainage systems in the 85 acre Project area. The Project location was selected to treat runoff from an urban area identified as a high priority subwatershed in the Lake Tahoe TMDL implementation process, and to provide increased public awareness of how LID approaches can improve water quality in Lake Tahoe and the Upper Truckee River. The proposed LID treatment train systems include source control measures (to reduce road shoulder erosion); dispersed infiltration systems (dry wells, roadside infiltration storage [perforated drain pipes in infiltration trenches] and infiltration galleries) close to the source of the runoff; and treatment in bioretention basins and constructed wetlands prior to discharge directly into the Upper Truckee River. By infiltrating runoff from urban areas and reducing peak runoff rates from impervious urban surfaces, the Project will also reduce hydromodification impacts (stream bank undercutting and erosion) to the Upper Truckee River and Upper Truckee Marsh. The LID retrofit Project includes the 3rd and 4th phases of a plan to treat runoff from the majority of the Sierra Tract neighborhood; Phases 1a, 1b, and 2 are complete, and the proposed Phase 3/4 LID retrofit project is not contingent on any other funding or phasing.

PURPOSE AND NEED

The 2010 303(d) list of water quality impairments notes the segment of the Upper Truckee River receiving runoff from the Project area is impaired from Phosphorus and Iron, and Lake Tahoe is impaired due to

Sediment/siltation, Nitrogen and Phosphorus (see Figure 1-2). The Lake Tahoe TMDL and MS4 Permit identify FSP and nutrients that support algal growth (Nitrogen and Phosphorus) as the primary pollutants of concern for receiving waters, and specifically identify roadway and urban upland areas as the leading sources of FSP (contributing 72% of the annual FSP load to Lake Tahoe, see Attachment 6-2). The Lake Tahoe TMDL and MS4 Permit load reduction targets for FSP, Total Phosphorus and Total Nitrogen have been established to attain the Lake Tahoe transparency standard over a 65-year implementation period.

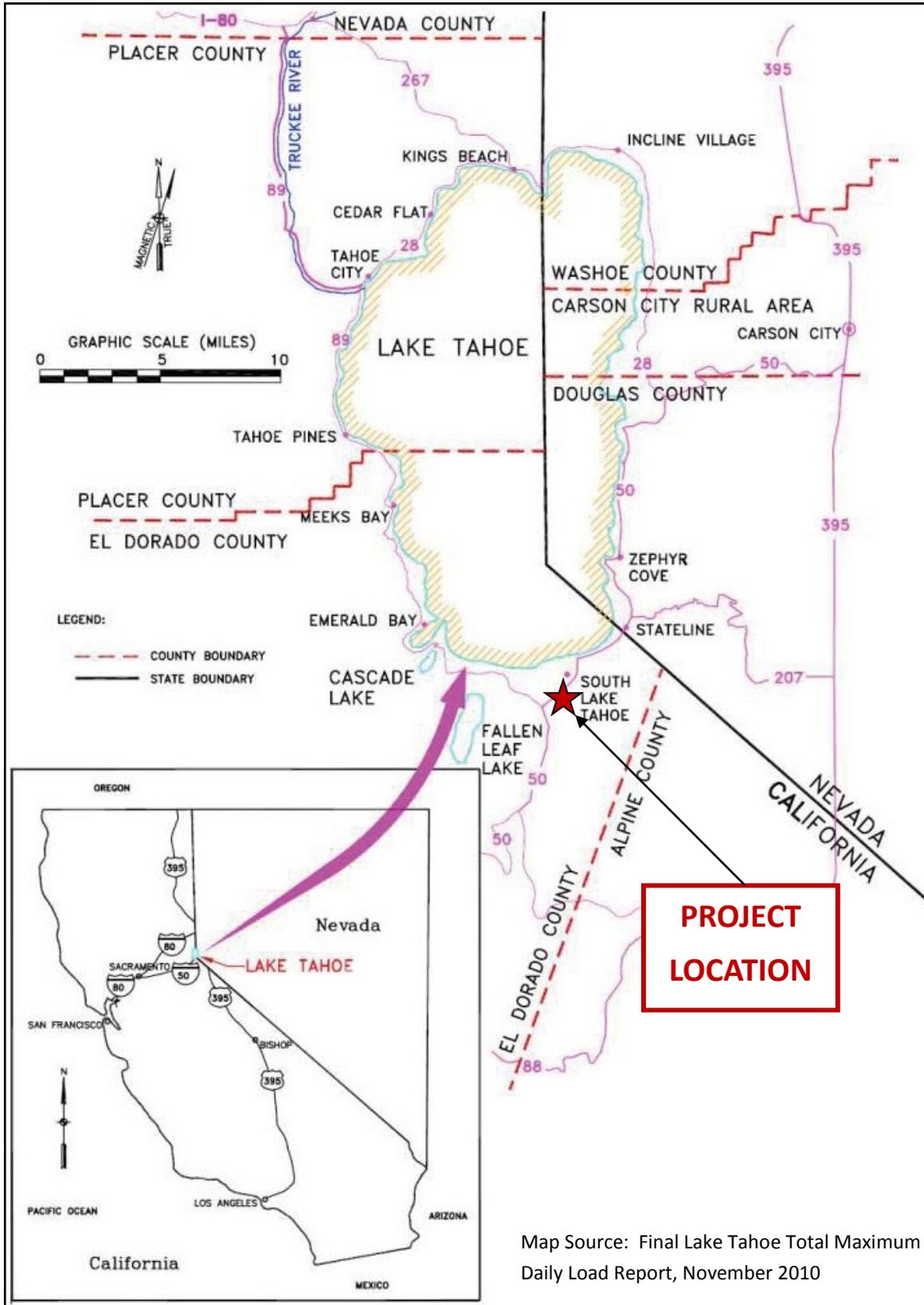
The proposed LID project will treat runoff from 85 acres of commercial, residential and roadway land uses prior to discharging directly to the Upper Truckee River (see Figures 1-2 and 1-4). According to the Pollutant Load Reduction Model (PLRM; pollutant modeling software developed through the TMDL) for the Project, the Project is expected to treat a combined volume of approximately 34.4 acre-feet per year (11,200,000 gallons), and infiltrate approximately 7 acre-feet per year (2,280,960 gallons), as shown in the PLRM outputs included in Attachment 6-6. As noted in Attachment 6-3, the PLRM is the standard load reduction estimation tool developed for the TMDL and incorporated into the City's MS4 Permit. The MS4 Permit requires the City to utilize the PLRM to determine load reduction estimates during the design phase to prioritize water quality improvement projects in accordance with the adopted Pollutant Load Reduction Plan (PLRP). The runoff from the 85 acres of roadway, commercial and residential land uses is known to have high turbidity and sediment concentrations based on TMDL monitoring and modelled Characteristic Runoff Concentrations (CRC) and visual observations (see Figures 1-7 and 1-8). As noted in the TMDL development tools, unprotected road shoulders within the Project area allow for excessive vehicle tracking of sediment onto roadways, which is a major source of roadway runoff pollutants.

The project supports sustained, long term water quality improvement through the reduction of peak runoff flows, FSP, Total Nitrogen (TN) and Total Phosphorus (TP). As noted above, the PLRM (TMDL pollutant modeling software) indicates a reduction in FSP pollutant loads of approximately 5,506 lbs per year, TP reduction of 18.2 lbs per year, and a TN reduction of 62 lbs per year (see Attachment 6-6) for the proposed LID retrofit project. The Lake Clarity Crediting Program (LCCP) developed in association with the TMDL, will be utilized to document load reductions and provide long term performance monitoring through the TMDL BMP Rapid Assessment Method (BMP RAM), which is required for the LCCP load reduction accounting system administered by the Lahontan Regional Water Quality Control Board (Lahontan RWQCB). Constructed improvements will be maintained to maximize the water quality treatment benefit by the City's Street Maintenance Division pursuant to the requirements of the TMDL/LCCP process. Additionally, the Permit requires ongoing annual inspections and maintenance of all City storm drain and treatment systems, ensuring long term functionality for the duration of the 20 year funding cycle.

REGIONAL MAP

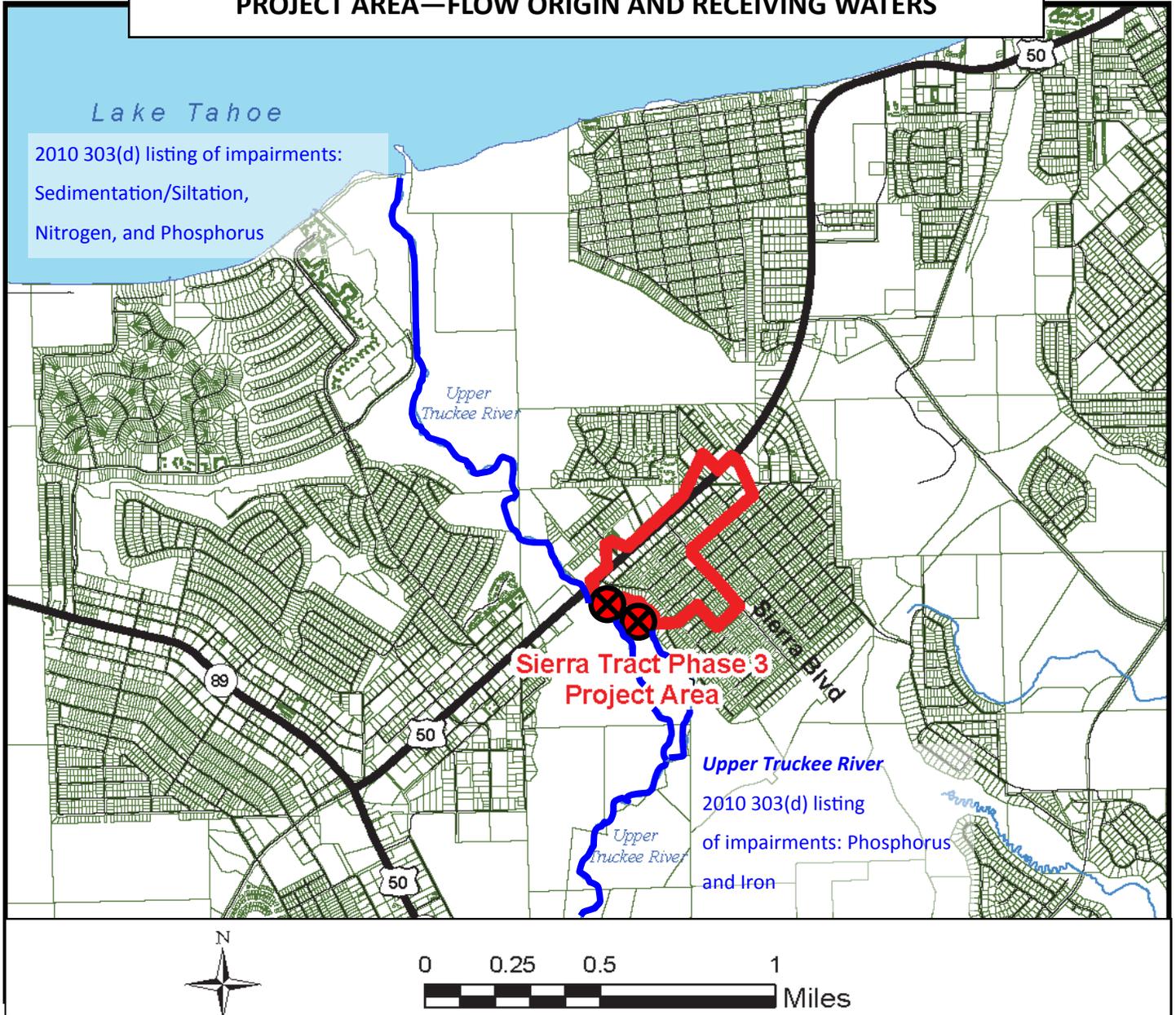
The Sierra Tract neighborhood is within the City of South Lake Tahoe (see Figure 1-1), located near the center of the City (see Figures 1-2 and 1-3), and has direct hydrological connections to the Upper Truckee River through the existing drainage system and outfalls. The Upper Truckee River drains directly in Lake Tahoe, which is on the 303(d) list of impaired water bodies for Sedimentation/siltation, Nitrogen and Phosphorus. The majority of the 85-acre Phase 3/4 Project area is located primarily southeast of Lake Tahoe Boulevard (Highway 50), and is adjacent to the Upper Truckee River. Land uses within the Project drainage area include residential, commercial, Primary and Secondary roadways (see Figure 1-4).

FIGURE 1-1
REGIONAL LOCATION MAP



Map Source: Final Lake Tahoe Total Maximum Daily Load Report, November 2010

**FIGURE 1-2
 PROJECT AREA—FLOW ORIGIN AND RECEIVING WATERS**



- Existing Project Storm Drain Outfalls - Project Runoff Capture Area

2010 California 303(d) List of Water Quality Limited Segments*

REGION	REGION NAME	WATER BODY NAME	WATER BODY TYPE	POLLUTANT	POLLUTANT CATEGORY	POTENTIAL SOURCES	SOURCE CATEGORY
6	Regional Board 6 - Lahontan Region	Tahoe, Lake	Lake & Reservoir	Nitrogen	Nutrients	Streambank Modification/ Destabilization	Hydromodification
6	Regional Board 6 - Lahontan Region	Tahoe, Lake	Lake & Reservoir	Phosphorus	Nutrients	Urban Runoff/Storm Sewers	Urban Runoff
6	Regional Board 6 - Lahontan Region	Tahoe, Lake	Lake & Reservoir	Sedimentation/ Siltation	Sediment	Highway/Road/Bridge Runoff	Other Runoff
6	Regional Board 6 - Lahontan Region	Truckee River, Upper (below Christmas Valley)	River & Stream	Iron	Metals/ Metalloids	Natural Sources	Natural Sources
6	Regional Board 6 - Lahontan Region	Truckee River, Upper (below Christmas Valley)	River & Stream	Phosphorus	Nutrients	Nonpoint Source	Unspecified Nonpoint Source

PROJECT MAP

As shown in Figures 1-3, 1-4 and 1-5, the Project stormwater capture area totals 85 acres, collecting runoff from directly connected land uses identified as a high priority catchments (subdrainages) for BMP retrofit implementation. Based on existing development, topography and site drainage, the project is divided into the following LID systems (Attachments 6-7a thru 6-7d):

- Chris Avenue Constructed Wetland (23 acres of area to be treated)
- Lodi Avenue Bioretention and Infiltration Gallery (8.5 acres of area to be treated)
- River Infiltration Gallery (4 acres of area to be treated)
- William Street Constructed Wetland (50 acres of area to be treated)

All 85 acres of stormwater capture area are directly connected to the Upper Truckee River via two outfalls (see Figure 1-2). The proposed LID treatment train system includes source control measures (to stabilize road shoulder erosion); dispersed infiltration systems (sediment traps, drywells, and perforated drain pipes in infiltration trenches) close to the source of the runoff; and final treatment in bioretention basins, constructed wetlands and infiltration galleries prior to discharge directly into the Upper Truckee River. As required by the MS4 Permit requirements, the project focuses on erosion and sediment control. Because the City of South Lake Tahoe is not a typical urbanized community (the existing development in the Project area lacks curbs, sidewalks and defined conveyances), LID projects must include source control for unprotected road shoulders and simple conveyance infrastructure to guide runoff to treatment systems (see Attachment 6-5).

LID System		LID BMPs				
Name	Drainage Area (acres)	Sediment Traps/Dry Wells	Perf Pipe/Infiltration Trench (Linear Feet)	Stabilized Road Shoulders (Linear Feet)	Infiltration Galleries	Wetland/Bioretention Basins
Chris Constructed Wetland	22.9	17	662 LF	9,440 LF.	N/A	10,800 Cubic Ft.
Lodi Bioretention/Infiltration Gallery	8.57	12	876 LF	4,408 LF	3,200 Cubic Ft.	N/A
River Infiltration Gallery	4.05	7	394 LF	3,340 LF	8,100 Cubic Ft.	N/A
William Constructed Wetland	50.86	0	0	225 LF	N/A	2,500 Cubic Ft.

The proposed LID improvements will be constructed within City right-of-way (ROW), on City owned parcels, on California Tahoe Conservancy (CTC) property, on U.S. Forest Service (USFS) property, and within recorded easement areas on private property. This project is being designed in close coordination with a Caltrans Water Quality Improvement Project (Caltrans project 3C380) located adjacent to the Sierra Tract Phase 3/4 Project area, and sharing common existing stormwater conveyance facilities along Lake Tahoe Boulevard (Highway 50).

IMPAIRED WATER

Lake Tahoe is an Outstanding National Resource Water (ONRW), as declared by the U.S. Environmental Protection Agency. Lake Tahoe is world renowned for its amazing blue color and clarity. The loss of lake clarity creates a combination of environmental and economic problems throughout the Lake Tahoe Basin. The Basin Plan has identified beneficial uses for recreation (REC-1, REC-2), wildlife habitat (WILD), cold freshwater habitat (COLD), biological habitats of special significance (BIOL), migration of aquatic organisms (MIGR), spawning, reproduction and development (SPWN), municipal and domestic water supply (MUN),

groundwater recharge (GWR), Navigation (NAV) and commercial and sport fishing (COMM). As noted above, the Project area discharges runoff directly into the Upper Truckee River, which is included on the 2010 303(d) list for Iron and Phosphorus impairments. The 2010 303(d) list for Lake Tahoe includes Sediment/siltation, Nitrogen, and Phosphorus impairments. The 2010 303(d) list of impaired waterways identifies sources of these pollutants to be urban runoff, roadway runoff, streambank destabilization (hydromodification) and other nonpoint sources (see Figure 1-2). Stormwater runoff from the Project area discharges directly into the Upper Truckee River, the largest tributary to Lake Tahoe. The proposed LID retrofit Project has been designed to reverse the loss of Lake Tahoe clarity by reducing FSP, TN and TP, as required by the Lake Tahoe TMDL and the MS4 Permit.

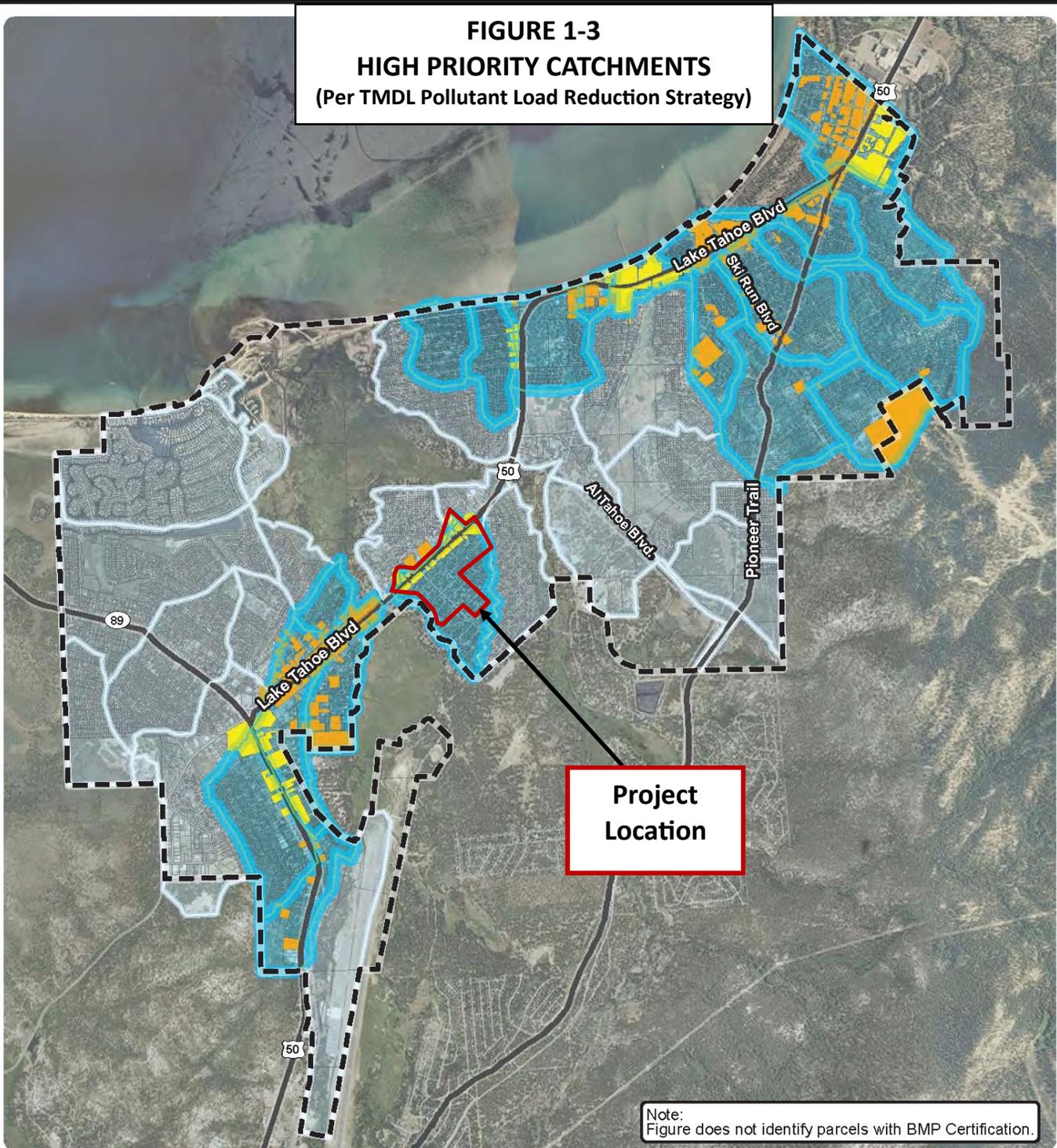
WATERSHED DESCRIPTION

As noted above, the Project drainage area is within the Upper Truckee River watershed within the Lake Tahoe Basin, both of which are included on the 2010 303(d) list of impaired waterbodies. The MS4 Permit requires that the City prepare a Pollutant Load Reduction Plan (PLRP) to estimate baseline pollutant loading from existing developed areas and prioritize stormwater management activities to cost-effectively reduce pollutant loads. As shown in Figure 1-3, the Project drainage area is in a directly connected urban planning catchment (UPC) which discharges untreated runoff directly into the Upper Truckee River. Existing TMDL studies have determined that the Commercial, Industrial, Communications and Utilities (CICU) land uses within the Project drainage area along Highway 50 are the highest priority for BMP retrofits, and were identified as high priority areas to be addressed by water quality improvement projects (WQIPs). As such, the proposed Project was prioritized through the City Council adopted Capital Improvement Program and been planned, designed, evaluated, and reviewed for CEQA and NEPA compliance through a multi-agency Technical Advisory Committee (TAC) process prior to the availability of the Prop. 84 Stormwater Implementation Grant funding. Given the high priority nature of the Project based on existing TMDL studies and the previous planning, design and environmental permitting work completed in previous years, this application for Prop. 84 implementation funding is focused primarily on project implementation and public education.

PROJECT TIMING AND PHASING

In the summer of 2005, the City began implementing a series of water quality improvement projects within the Sierra Tract neighborhood, known as the Sierra Tract Erosion Control Project (ECP) Phases 1a, 1b, 2, and 3/4. The implementation of Phases 1a, 1b, and 2 are all completed with support from other funding sources through the multi-agency Technical Advisory Committee (TAC); Phase 3/4 is the final high-priority project combining phases 3 and 4. Project plans are currently at a 90% level of design; completion of the proposed Project is not contingent on any other work, as all other phases have been previously constructed. Construction is scheduled for 2015, pending available implementation funding. As noted in Task 2, the LID retrofit project design, alternatives analysis, environmental review, permitting, and land access agreements have been funded and completed well before the match expense eligibility cutoff date for the Prop. 84 Stormwater Implementation Grant Round 2 (August 20, 2013). The proposed LID retrofits will complement the planned Sierra Boulevard Complete Streets rehabilitation project, which will provide enhanced pedestrian, cyclist and streetscape improvements along Sierra Boulevard. As noted above, the proposed LID retrofit project (Sierra Tract Erosion Control Project, Phase 3/4) is not contingent on funding or completion of the Sierra Boulevard Complete Street rehabilitation project.

**FIGURE 1-3
 HIGH PRIORITY CATCHMENTS
 (Per TMDL Pollutant Load Reduction Strategy)**



Data Sources: ArcGIS Online Basemaps, 2012.

Legend

- City Limits
- Directly Connected UPCs
- Indirectly Connected UPCs

- CICU in Directly Connected UPCs**
- Highest Priority Parcels for BMP Retrofit
 - Highest Priority Parcels Likely Addressed with WQIP
 - Primary Roads
 - Parcel Boundaries

**City of South Lake Tahoe
 Pollutant Load Reduction Strategy**

Targeted CICU BMP Implementation

Scale - 1:48,000 1 inch = 4,000 feet
 0 2,000 4,000 8,000
 Feet



CA State Plane, Zone II	NAD 83	horiz. units: feet
northwest hydraulic consultants	project no. 500019	September 2012

Figure 1-4
Land Use Map



**Department of
 Public Works
 Engineering**



- Existing Project Storm Drain Outfalls

Sierra Tract Erosion Control Project
 Phases 3 & 4
 Land Use

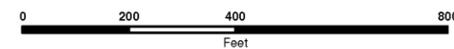
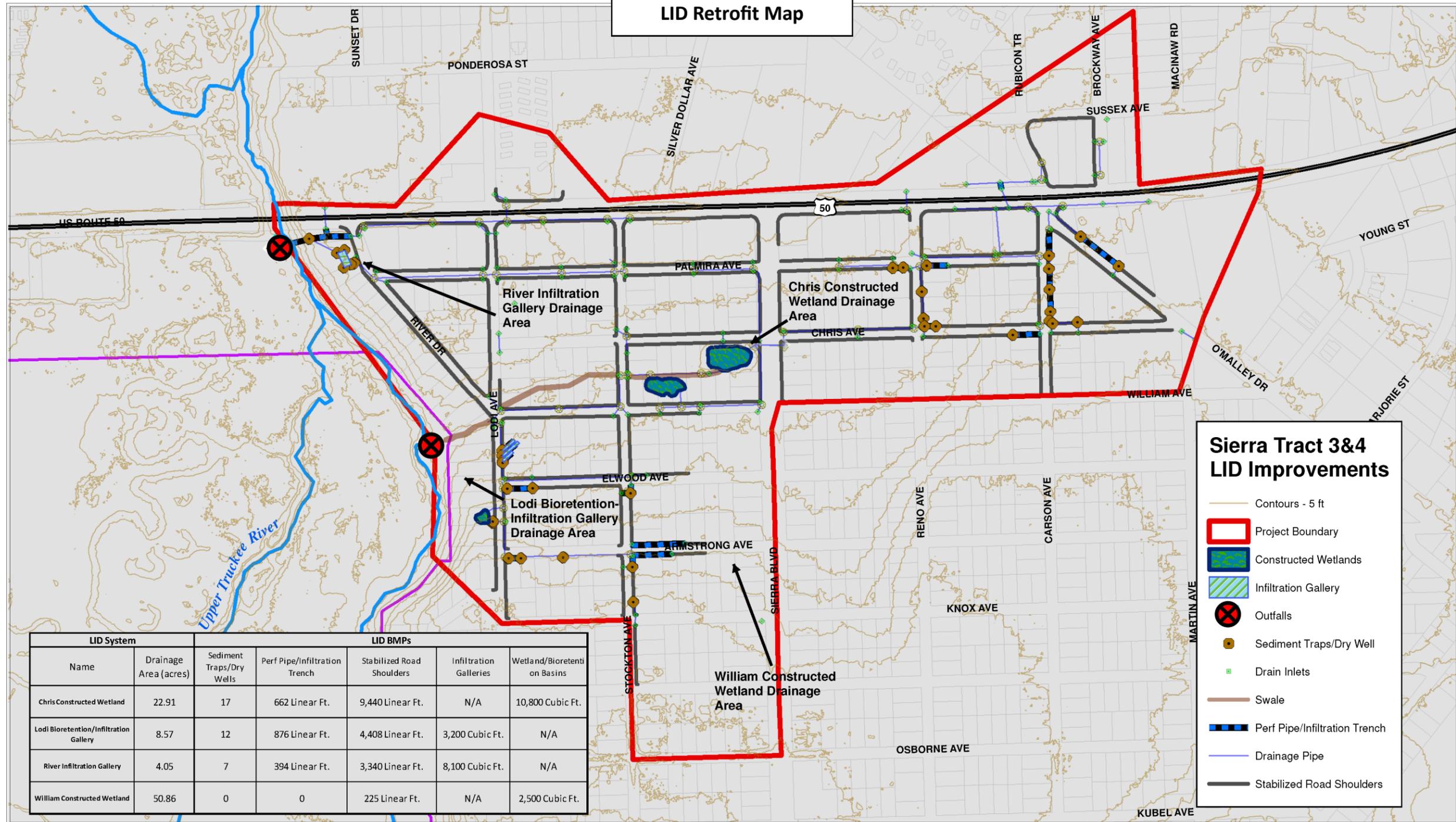
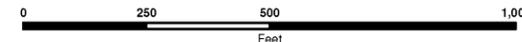


Figure 1-5
LID Retrofit Map



City of South Lake Tahoe
Sierra Tract Erosion Control Project
Phases 3 & 4, Proposed LID Improvements



**FIGURE 1-7
PROJECT SITE PHOTOS**



River Dr. Outfall to Upper Truckee River
(Coordinated with Caltrans Project 3C380)



Source of Fine Sediment Particles
Unsecured road shoulder within Project Drainage Area

Below: River Dr. Infiltration Gallery site (in coordination with Caltrans Project 3C380)



**FIGURE 1-8
PROJECT SITE PHOTOS**



Project drainage area outfall to Upper Truckee River



Existing condition of corroding corrugated metal pipe (CMP) storm drain to be replaced with new LID perforated pipe and infiltration trench.

Unimproved and unprotected road shoulders subject to parking compaction and sediment tracking



Unimproved road shoulder documented by TMDL to generate sediment pollutant loading



**FIGURE 1-9
 PUBLIC EDUCATION SIGN EXAMPLES**



Potential interpretive signage location: Public trail at River Avenue Infiltration Gallery site

Examples of Interpretive Signage
 (Public Education Component)



KEEPING TAHOE BLUE

best management practices

Lake Tahoe is Losing Clarity
 Lake Tahoe has lost over 30 feet of its famed clarity since 1968. Microscopic soil particles less than 20 microns in diameter—one-third the thickness of a human hair—affect the lake's clarity, as do nutrients such as nitrogen and phosphorus that cause algae to grow.

Finding Solutions
 Buildings, structures and paved surfaces have replaced many of the wetlands, soils and plants that once helped to keep the lake clear. With the loss of these natural filters, polluted urban runoff now flows right into the lake. Using Best Management Practices (BMPs) mimics the functions of the undisturbed, natural landscape for better water quality.

Water Quality Best Management Practices (BMPs)
 All Lake Tahoe home property owners must complete BMPs on their property.
 Do not let stormwater or snowmelt run off your property, capture and infiltrate it.
 Maintain and clean BMPs regularly so they will continue to work effectively.
 Do not let mud or pavement runoff erode soil. Protect it with rock, mulch or turf.
 Hold off soil in place with vegetation and mulch or, if steep, with retaining walls.
 Do not use loosely placed or flammable mulch such as wood chips near structures.
 Sweep instead of using a hose or leaf blower.
 Clean your car at the carwash instead of allowing soapy water to run into stormdrains.
 Never dump anything you would not drink down the stormdrain!

As residents, we have a special responsibility to protect Lake Tahoe and to do our part to keep it blue.

Researchers are seeking the best way to keep Lake Tahoe clear.
 Researchers use the **best plot system** to explore and evaluate the processes that affect stream water quality. Here, we are testing different types of soil and plants to discover how they can filter runoff from parking lots, roads, and highways and prevent it from entering the lake. Ultimately, this information is used to plan and construct better BMPs to improve the clarity of Lake Tahoe.





1. Stormwater is captured in an infiltration chamber under the parking area.
2. Excess stormwater is stored in an underground storage chamber until storage, mixing and distribution.
3. Stormwater then enters and passes to move the stormwater to individual and for treatment requirements.
4. Automatic sump pumps collect and surface water on roof tops can capture runoff from the infiltration chamber.
5. Treated stormwater enters the plot system into the wetland below.

LIVING IN HARMONY

people and the Tahoe Basin

A Loss of Vital Wetlands
 Because of human choices and actions, the Lake Tahoe Basin has lost 75 percent of its marshes and 50 percent of its meadows. Before World War II, only a few vacation homes dotted the lakeshore. Today about 66,000 people live here, and 3 million visit each year.

Look for Ways to Reduce Your Impact.
 Many buildings, roads and parking lots now cover former wetlands and meadows. These create hard surfaces that interfere with natural drainage patterns. We now understand the need to restore wetlands in order to protect the lake. As you explore these gardens and test plots, look for ways you can reduce your impact on your own environment.

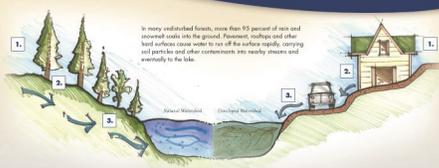
Our choices and actions can help improve Tahoe's environment.

High quality water flows from natural, undisturbed land

1. The ground absorbs rain and snowmelt.
2. Plants keep soil from eroding.
3. Soil and plants help filter harmful particles out of stormwater runoff before the water flows into the lake.

Polluted water can rapidly run off developed surfaces

1. Buildings and paved surfaces keep the ground from absorbing rain and snowmelt.
2. Soil erodes when land is cleared or disturbed.
3. Stormwater runoff can carry sediment and nutrients into urban street drains and ditches which eventually flow into the lake.



In many undisturbed forests, more than 95 percent of rain and snowmelt soaks into the ground. Forested wetlands and other hard surfaces cause water to run off the surface rapidly, carrying soil particles and other contaminants into nearby streams and eventually to the lake.



Very little development existed
 The historic fish hatchery is shown on the north of the lake shoreline. The highway follows what is now the former road and forested areas. Most areas remain natural wetlands.



Vegetation is removed
 The construction of the new Highway 20 at ground level, construction conditions and a drought factor result in early loss of wetland areas. Storm water flows where excavation and grading removed vegetation.



Modern developments
 The campground, ballfield and park areas are clearly visible. The large meadow that lined following stream receiving Meadow restoration will bring some back into the former wetland cover area built during 2002 required on flood and grounds.

Proposed Work Tasks

WORK TASKS

In order to address Technical Reviewer comments on the Concept Proposal, Task 2 “Project Design and Permitting” was updated in the Workplan, Budget and Schedule to reflect the considerable effort completed prior to the submission of this implementation grant proposal. Task 2 includes items completed for the design, alternatives analysis, environmental review, permitting, and land access agreements that have been secured well before the match expense eligibility cutoff date for Round 2 (August 20, 2013). The City of South Lake Tahoe has significant experience successfully implementing water quality improvement projects through design, permitting, and construction and monitoring, along with grant invoice tracking, reporting and administration.

Task 1: Project Administration and Reporting - The first administrative milestone is an executed grant agreement approved by the City Council and signed by the Council’s designee. Project reporting involves preparation and timely submittal of deliverables including the required quarterly progress reports, quarterly invoices, annual progress reports, final project summary, Natural Resources Projects Inventory (NRPI) Survey form and Final Project Report (due January 2017) and Final Invoice (due May 2017). The City has successfully executed standard grant agreements, submitted quarterly progress reports, quarterly invoicing, and final project reports for over 15 completed grant-funded water quality improvement projects in the past decade, including the Proposition 84 Stormwater Implementation Grant (Prop. 84) Round 1 Bijou Area Erosion Control Project (currently underway). In example, the City Public Works Department is currently managing 36 million dollars in grant funding. The City will ensure all work financed in any part by Prop. 84 adheres to a labor compliance program pursuant to California Labor Code (CLC) 1771.5(b), and this item has been identified as an ongoing task in the Schedule (Attachment 3) throughout the construction contract process.

Task 2: Project Design and Permitting – Previously completed planning, alternatives analysis, design, completed CEQA/NEPA reviews, easement acquisition, and project design plans prepared to a 90% complete level greatly help to make this project feasible within the proposed budget and schedule. The considerable multi-agency design, planning and permitting work previously completed ensures feasibility of successfully implementing the Project. The final design plans and specifications will be submitted to the Prop. 84 grant funding agency as a major milestone deliverable. The Task 2 portion of the budget has been updated to reflect a small amount of staff time required to finalize the design plans and specifications in consultation with a multi-agency Technical Advisory Committee (TAC) - including staff from the U.S. Forest Service, California Tahoe Conservancy (CTC), and the Tahoe Regional Planning Agency (TRPA).

The CEQA Initial Study, Mitigated Negative Declaration, and Notice of Determination were completed and filed with the County Clerk Recorder and Governor’s Office of Planning and Research (State Clearinghouse # 2013062009). A copy of the CEQA Initial Study, Mitigated Negative Declaration, comments and responses, Mitigation Monitoring and Reporting Plan, Notice of Determination, State Clearinghouse filing number, and Resolution approving the MND and CEQA findings is included as Attachment 4 and will be resubmitted as a milestone deliverable to the grant funding agency prior to construction activities. The U.S. Forest Service NEPA document and Special Use Permits (SUPs) were submitted in April 2013, with an expected approval date of May 30, 2014. The U.S. Forest Service has been a Technical Advisory Committee partner since the early stages of the project design and has included a letter of support with commitment to complete the NEPA and SUPs (see Attachment 9) within the grant Guidelines timeframe.

The Tahoe Regional Planning Agency (TRPA) Initial Environmental Checklist and Environmental Improvement Project (EIP) Project Permit are complete and will be submitted to the TRPA along with all TRPA Tree Removal Permits prior to initiating construction. A Caltrans encroachment permit will be required to tie the River Avenue infiltration gallery overflow pipe into the existing Caltrans outfall adjacent to Highway 50. Caltrans is concurrently designing a treatment system upstream of this outfall, and is aware of the Project plans.

The City has extensive experience permitting and building multi-agency projects requiring CEQA/NEPA review and documentation, U.S. Forest Service Special Use Permits, Caltrans encroachment permits, environmental monitoring and mitigation, Lake Tahoe Construction General Permit Compliance, SWPPP implementation and TRPA permits. All required environmental permits and regulatory requirements will be obtained and achieved prior to initiation of construction activities, as the City has completed multiple successful previous EIP Water Quality Improvement Projects.

Task 3: Construction/Implementation – Pre-project photo documentation will be completed prior to construction. The competitive construction contract bidding process includes bid packet preparation (plans, specifications and estimates), bid advertisement, bid meetings, submittal reviews, bid documentation, and award of the construction contract in accordance with public contracting law and standard competitive public contract bidding practices. Bid documentation and contract award information will be provided as a major milestone deliverable to the grant funding agency upon completion of the construction bid documentation and award milestone. Prior to the start of construction, pre-construction/pre-grading meetings will be held and the City will retain the services of a Resident Engineer/Construction Manager to provide complete construction management, construction oversight, inspection and materials testing for the duration of the construction activities. Due to limited in-house staffing, construction management services are typically contracted to a qualified consultant, with previous successes for similar grant funded projects.

The pre-construction meeting will be attended by the regulatory agencies and utility companies associated with the Project, including the TRPA, Lahontan Regional Water Quality Control Board, California Department of Fish and Wildlife, U.S. Forest Service, CTC, South Tahoe Public Utility District (STPUD), Liberty Energy, AT&T, Charter Communications and Caltrans. Prior to the start of construction and after the construction contractor has installed all the necessary BMPs and temporary erosion control measures, the City Engineering Department will coordinate and attend the required TRPA Pre-Grade meeting for the project.

Construction is scheduled to be completed by winter of 2015, well ahead of the September 2016 deadline for construction completion. Due to the environmental regulatory requirements of construction within the Lake Tahoe Basin construction (earthmoving/earth disturbing operations) are only allowed to occur between May 1 and October 15. As-built drawings will be provided as a deliverable upon completion of construction. Replanting will occur at the end of the construction process, with ongoing work in the following year to ensure the new plants survive the first dry season (2016) after installation.

Task 4: Performance Monitoring – The Project Assessment and Evaluation Plan (PAEP) for the Project has been developed and submitted as a part of this application (Attachment 5). During the course of the Project, the City will review the PAEP and assure that the City, contractor and all consultants working on the Project are following the requirements and guidelines of the PAEP.

The Project performance monitoring will leverage existing pollutant load estimation tools and monitoring efforts developed for the Lake Tahoe Total Maximum Daily Load (TMDL) program. The Pollutant Load Reduction Model (PLRM) provides a quantitative estimate of the water quality benefit associated with various urban land management practices. The PLRM outputs include average annual estimates of the TMDL pollutants of concern – fine sediment particles (FSP), TN and TP. The City will use the PLRM to estimate the anticipated benefit of the proposed Project.

The Regional Storm Water Monitoring Program (RSWMP) was developed by a consortium of Lake Tahoe Basin regulatory, funding, and implementing agencies as a holistic approach to track water quality improvements, calibrate and validate the PLRM outputs, and gather data to inform the Characteristic Effluent Concentrations (CECs) developed for different BMP treatment and source control practices as part of the Lake Tahoe TMDL. The City is an active partner in a sub-program of RSMWP known as the Implementers'

Monitoring Program (IMP). The IMP provides storm water monitoring data, funded by the City and local government partners, to assess the efficacy of Water Quality Improvement Projects (WQIPs) within Tahoe Basin. Such projects often include numerous stormwater treatment components distributed throughout an urban catchment (treatment trains), including curb and gutter conveyances, sediment traps, a variety of treatment vaults and infiltration mechanisms, street sweeping and source control measures such as slope and road shoulder stabilizations. The RSWMP IMP is comprehensive monitoring approach to validate the assumed BMP effectiveness and pollutant concentration reductions for the established BMPs and the overall load reduction estimates provided by PLRM.

The holistic and comprehensive RSWMP approach to water quality monitoring was developed with strong consensus by the Storm Water Quality Improvement Committee with input, guidance and approval from the U.S. EPA and the Lahontan RWQCB. Robert Larsen, Senior Environmental Scientist at the Lahontan RWQCB encouraged the City to leverage these existing tools and regional monitoring programs to cost effectively evaluate project performance, instead of including duplicative monitoring activities and costs in this proposal. The use of PLRM pollutant estimation tool and RSWMP monitoring protocol methodologies to evaluate catchment level pollutant load reductions and BMP effectiveness is consistent with the requirements of the TMDL pollutant load reduction progress monitoring included in the MS4 Permit (Section IV, pages 23 - 26). Effectiveness of the BMP treatment train and catchment wide system of LID drainage retrofits will be demonstrated utilizing data from the RSWMP IMP.

Task 5: Public Education and Outreach – Although several public meetings have already occurred during the planning and design phase of the Project, additional outreach meetings will be scheduled that will provide opportunities for residents, property owners and interested citizens to gain more understanding of the Project. Construction updates and project information regarding LID approaches to stormwater treatment will be added to the City's website and Facebook® page.

The Project has been updated to include the design and installation of interpretive signage at prominent public footpath locations next to the proposed LID improvements. The signage will be designed to provide public information regarding LID approaches to stormwater treatment and the water quality benefits of the Project for the Upper Truckee River and Lake Tahoe (Figure 1-9). The River Avenue Infiltration Gallery (located at the intersection of River Drive and Highway 50) has a prominent footpath through the highly visible site that would provide an excellent location for interpretive and educational signage. The Chris Avenue Constructed Wetland provides another high visibility location for interpretive signage, especially as the adjacent Sierra Boulevard Complete Streets enhancement project creates an improved pedestrian and cyclist thoroughfare next to the project site. A multi-agency ribbon cutting ceremony is planned once the vegetation has had time to become established and the interpretive signs have been installed.

PROCEDURES

As noted above in Task 2, the multi-agency LID retrofit Project design, alternatives analysis, environmental review (CEQA and NEPA), permitting, and land access agreements have been completed or are in a draft format pending final approval. The planning, permitting and design phase of the Project is near completion due to the collaborative work of the multi-agency Technical Advisory Committee (TAC) process involving staff from the U.S. Forest Service, CTC and TRPA (see Attachment 9). CEQA was completed for the Project in August 2013 (see Attachment 4) and the U.S. Forest Service has committed to completing the NEPA and Special Use Permits by May 30, 2014 (see Attachment 9). The Caltrans Encroachment Permit and TRPA Tree Removal Permit, EIP permit, and Initial Environmental checklist are standard documents the City Public Works Department has regularly obtained for at least 15 successfully completed previous water quality improvement projects over the past decade. The City will continue to work with the TAC members to ensure successful completion of the Project.

As noted above in Task 3, a pre-construction meeting will be hosted for regulatory agencies and utility companies associated with the project (TRPA, Lahontan RWQCB, California Department of Fish and Wildlife, U.S. Forest Service, CTC, STPUD, Liberty Energy, AT&T, Charter Communications and Caltrans) to ensure any remaining construction issues are identified early in the process. Prior to the start of construction and after the construction contractor has installed all the necessary BMPs and temporary erosion control measures, the City Public Works Department will coordinate and attend the required TRPA Pre-Grade meeting for the project.

Construction, monitoring, and public education will be conducted by the City. A multi-agency ribbon cutting ceremony is planned once the BMPs are complete and the interpretive signs have been installed.

IMPLEMENTATION

The project utilizes LID strategies to restore pre-development hydrology, including source controls, hydrologic controls, and using natural filtration (biofiltration) and infiltration. The LID BMPs have been systematically designed in a treatment train process, and were selected from established BMPs with documented effectiveness for the Tahoe Basin high alpine environment (Lake Tahoe TMDL Report [Attachment 6-1] and TRPA BMP Handbook, 2012 [Attachment 6-5]). Source control measures include stabilizing and protecting bare roadside shoulders by loosening compacted soils, restoring vegetation, and restricting shoulder vehicle parking. Hydrologic controls include dispersed infiltration systems (drywells and perforated conveyance pipes in infiltration trenches) as close to the source as possible. Biofiltration elements include sediment traps for pre-treatment, constructed wetlands (wet basins), bioretention basins and infiltration galleries. The proposed LID treatment systems are based on the technical documents developed for the implementation of the TMDL, and as required by the MS4 permit.

Figure 1-3 is from the City's Pollutant Load Reduction Strategy, developed to guide the City's load reduction planning process by identifying feasible and cost effective actions to meet load reduction targets incorporated in the MS4 Permit, which identifies the Project area as a directly-connected catchment containing high priority parcels for BMP retrofits. Attachment 6-1 includes the specific implementation actions and LID BMPs included in this Project, which have been identified by the TMDL as effective BMPs. Attachment 6-6 includes the projected pollutant reductions for the project from PLRM, which is the preferred model of the Lake Tahoe TMDL.

EXISTING DATA AND STUDIES

The Lake Tahoe TMDL (Nov. 2010) and Lake Tahoe TMDL Technical Report (June 2010) identified the urban uplands as the primary source of FSP and Phosphorus (see Attachment 6-1 and 6-2). Within urban upland areas, the TMDL Technical Report identified Primary Roads, Secondary Roads and Commercial, Industrial, Communications and Utilities (CICU) and residential urban land uses as having the highest urban event mean concentrations (EMCs) of Total Suspended Solids (TSS), TN and TP (see Attachment 6-4, Table 4-23). The Lake Clarity Crediting Program Handbook establishes the framework that connects on-the-ground improvements to the goals of restoring Lake Tahoe's famed clarity, and establishes the PLRM as the standard load reduction estimation tool to integrate load reductions from source controls and treatment BMPs (Attachment 6-3). The multi-agency TAC design process included completion of a geotechnical report to verify soil infiltration rates and depths to groundwater in order to guide the design of the proposed infiltration systems. Based on the TAC alternatives selection and refinement process, the final Project was designed to provide the largest load reductions, as modeled by the PLRM (see Attachment 6-6).

STANDARDS, OPERATIONS AND MAINTENANCE (O&M), CLOSE OUT

All construction implementation will occur in accordance with CalTrans construction specifications and City of South Lake Tahoe Public Improvement and Engineering Standards (PIES). The purpose of the PIES is to set minimum design, construction, and improvement standards for public improvements and public

infrastructure under the jurisdiction of the City of South Lake Tahoe. Construction activities will conform with all applicable Occupational Safety and Health Administration (OSHA) standards.

The Lake Clarity Crediting Program (LCCP) developed in association with the TMDL is the accounting system administered by the Lahontan RWQCB to determine the City's TMDL load reduction compliance and requires long term maintenance of all BMPS in order to register and sustain the required Lake Clarity Credits. The proposed LID retrofits maintenance requirements will be assessed by the TMDL BMP Rapid Assessment Method (BMP RAM), and any required maintenance activities will be completed by the City's Street Maintenance Division pursuant to the requirements of the TMDL/LCCP process. Additionally, the Permit requires ongoing annual inspections and maintenance of all City storm drain and treatment systems (funded by the General Fund), ensuring long term functionality of the Project for the duration of the 20 year funding cycle. Given the LCCP requirements to maintain BMP functionality through the BMP RAM evaluation and maintenance scheduling process, there are no plans to close the Project or allow the Project to result in water quality degradation.

INTEGRATED ELEMENTS

As the planning, design and environmental permitting for this LID retrofit Project has previously been completed with other funding sources, the requested stormwater implementation funds will focus on implementation of the Project, including administration, construction/implementation, performance monitoring and public education and outreach.

DELIVERABLES

As detailed in the in the Workplan above and as noted in the Project Schedule (Attachment 3), the following deliverables and reporting items correspond with the following tasks:

Task 1: Project Administration and Reporting - The first administrative milestone is an executed grant agreement approved by the City Council and signed by the Council's designee. Project reporting involves preparation and timely submittal of deliverables including the required quarterly progress reports, quarterly invoices, annual progress reports, final project summary, Natural Resources Projects Inventory (NRPI) Survey form and Final Project Report (due January 2017) and Final Invoice (due May 2017). The City will ensure all work financed in any part by Prop. 84 adheres to a labor compliance program pursuant to California Labor Code (CLC) 1771.5(b), and this item has been identified as an ongoing task in the Schedule (Attachment 3) throughout the construction contract process.

Task 2: Project Design and Permitting - Planning and design grant funding sources from the U.S. Forest Service and CTC have been utilized to refine project alternatives, complete CEQA/NEPA reviews, secure easements, and prepare project design plans to a 90% complete level. These separate funds are currently being used to finalize the 90% design plans into the final bid package (100% design plans, specifications, and estimate). The final design plans and specifications will be submitted to the Prop. 84 grant funding agency as a major milestone deliverable.

The CEQA Initial Study, Mitigated Negative Declaration, and Notice of Determination were completed and filed with the County Clerk Recorder and Governor's Office of Planning and Research (State Clearinghouse # 2013062009). A copy of the CEQA Initial Study, Mitigated Negative Declaration, comments and responses, Mitigation Monitoring and Reporting Plan, Notice of Determination, State Clearinghouse filing number, and Resolution approving the MND and CEQA findings is included as Attachment 4 and will be resubmitted as a milestone deliverable to the grant funding agency prior to construction activities.

Task 3: Construction/Implementation – Pre-project photo documentation will be completed prior to construction. The competitive construction contract bidding process includes bid packet preparation (plans, specifications and estimates), bid advertisement, bid meetings, submittal reviews, bid documentation, and

award of the construction contract in accordance with public contracting law and standard competitive public contract bidding practices. Bid documentation and contract award information will be provided as a major milestone deliverable to the grant funding agency upon completion of the construction bid documentation and award milestone.

The pre-construction meeting will be attended by the regulatory agencies and utility companies associated with the project, including the TRPA, Lahontan Regional Water Quality Control Board, California Department of Fish and Wildlife, U.S. Forest Service, CTC, South Tahoe Public Utility District (STPUD), Liberty Energy, AT&T, Charter Communications and Caltrans. Prior to the start of construction and after the construction contractor has installed all the necessary BMPs and temporary erosion control measures, the City Public Works Department will coordinate and attend the required TRPA Pre-Grade meeting for the project. Construction is scheduled to be completed by winter of 2015, well ahead of the September 2016 deadline for construction completion.

Task 4: Performance Monitoring – The Project Assessment and Evaluation Plan PAEP for the project has been developed and submitted as a part of this application. During the course of the project, the City will review the PAEP and assure that the City, contractor and all consultants working on the project are following the requirements and guidelines of the PAEP. Effectiveness of the BMP treatment train and catchment wide system of LID drainage retrofits will be demonstrated utilizing data from the RSWMP IMP.

Task 5: Public Education and Outreach – Although several public meetings have already occurred during the planning and design phase of the project, additional outreach meetings will be scheduled that will provide opportunities for residents, property owners and interested citizens to gain more understanding of the project. Interpretive sign plans and installation photos will be provided to the grant agency, along with an invitation to the ribbon cutting ceremony.

PERMITTING AND ENVIRONMENTAL REVIEW

As noted in the Project Schedule (Attachment 3), the CEQA Initial Study, Mitigated Negative Declaration, and Notice of Determination were completed and filed with the County Clerk Recorder and Governor's Office of Planning and Research (State Clearinghouse # 2013062009), see Attachment 4. The U.S. Forest Service NEPA document and Special Use Permits were submitted in April 2013, with an expected approval date of May 30, 2014. The U.S. Forest Service has been a Technical Advisory Committee partner since the early stages of the project design and has included a letter of support (see Attachment 9) with a commitment to completing the NEPA and Special Use Permitting prior to grant award.

The TRPA Initial Environmental Checklist and Environmental Improvement Project (EIP) Permit are complete and will be submitted to the TRPA along with all TRPA Tree Removal Permits prior to construction. A Caltrans encroachment permit will be required to connect the River Avenue infiltration gallery overflow pipe into the existing Caltrans outfall adjacent to Highway 50. Caltrans is concurrently designing a treatment system upstream of this outfall, and is aware of the project plans. These are standard construction permits for the Tahoe basin and the City has a successful record of obtaining and complying with these requirements in a timely manner.

The following table lists the pending permits required for project implementation, all of which are obtainable within the existing budget and schedule.

Project permit list

Permit	Status
CEQA Mitigated Negative Declaration	Completed August 2013
NEPA	Submitted for U.S. Forest Service review April 2013
TRPA Initial Environmental Checklist	Draft permit complete, ready for TRPA submittal pending implementation funding
Environmental Improvement Project (EIP) permit	Draft permit complete, ready for TRPA submittal pending implementation funding
TRPA Tree Removal Permit	Draft permit complete, ready for TRPA submittal pending implementation funding
U.S. Forest Service Special Use Permit	Submitted April 2013, pending U.S. Forest Service approval
Caltrans Encroachment Permit	Standard permit, to be obtained by construction contractor
SWPPP Compliance, Lake Tahoe General Construction Permit	Draft SWPPP completed, to be submitted upon implementation funding and construction contract award
CEQA Mitigation: Willow Flycatcher pre-construction surveys	To be conducted prior to ground disturbing activities

The City has extensive experience permitting and building multi-agency projects requiring CEQA/NEPA review and documentation, U.S. Forest Service Special Use Permits, Caltrans encroachment permits, environmental monitoring and mitigation (Willow Flycatcher protocol level surveys), Lake Tahoe Construction General Permit Compliance, SWPPP implementation and TRPA permits. All required environmental permits and regulatory requirements will be secured prior to initiation of construction activities, as the City has done on multiple successfully completed EIP Water Quality Improvement Project (WQIP) projects. All land required for the project is currently publicly owned, with easement and use agreements in place or pending final approval for parcels owned by the U.S. Forest Service and California Tahoe Conservancy.

PLANS AND SPECIFICATIONS

Construction design plans have been developed to the 90% level. Final Construction Plans are in the process of being prepared, and will be ready for compiling the bid package upon execution of the grant agreement.

DATA MANAGEMENT

The project proposes to leverage existing comprehensive regional monitoring efforts (Regional Stormwater Monitoring [RSWMP]) to determine BMP and LID drainage system retrofit effectiveness and verification of modeled Characteristic Runoff Concentrations (CRC) and Characteristic Effluent Concentrations (CEC) concentrations. The holistic and comprehensive RSWMP approach to water quality monitoring was developed with strong consensus by the Storm Water Quality Improvement Committee with input, guidance and approval from the U.S. EPA and the Lahontan RWQCB. Robert Larsen, Senior Environmental Scientist at the Lahontan RWQCB encouraged the City to leverage these existing tools and regional monitoring programs to cost effectively evaluate project performance, instead of including duplicative monitoring activities and costs in this proposal.

All performance monitoring sample collection, handling and custody procedures, analytical method requirements, quality control and data management from the RSWMP will be conducted in accordance with the Tahoe RSWMP Quality Assurance Project Plan (QAPP). As noted in the RSWMP IMP, all electronic data results will be in a format compatible with the Surface Water Ambient Monitoring Program (SWAMP) database and entered into the California Environmental Data Exchange Network (CEDEN).

EDUCATION AND OUTREACH

Although several public meetings have already occurred during the planning and design phase of the project, additional outreach meetings will be scheduled that will provide opportunities for residents, property owners

and interested citizens to gain more understanding of the project. Construction updates and project information regarding LID approaches to stormwater treatment will be added to the City's website and Facebook® page.

The project has been updated to include the design and installation of interpretive signage at prominent public footpath locations next to the proposed LID improvements (see Figure 1-9). The signage will be designed to provide public information regarding LID approaches to stormwater treatment and the water quality benefits of the project for the Upper Truckee River and Lake Tahoe. The River Avenue Infiltration Gallery (located at the intersection of River Drive and Highway 50) has a prominent footpath through the highly visible site that would provide an excellent location for interpretive and educational signage. The Chris Avenue Constructed Wetland provides another high visibility location for interpretive signage, especially as the adjacent Sierra Boulevard Complete Streets enhancement project creates an improved pedestrian and cyclist thoroughfare next to the project site. A multi-agency ribbon cutting ceremony is planned once the vegetation has had time to become established and the interpretive signs have been installed.