

## **Section 2.1 (Lower) Truckee River Watershed (1 of 5 Focus Watersheds)**

### **2.1a Watershed Overview**

The Truckee River has been selected as a priority or 'focus' watershed because of the high resource value of its waters, the threats to water quality from current and potential human activities in the watershed, and the RWQCB staff's ongoing monitoring and planning programs which target this area. Other considerations include the existence of bistate, interagency cooperative efforts, which could facilitate watershed planning and implementation, and the interest of homeowners near Donner Lake in a voluntary monitoring effort.

The Truckee River watershed in California (Figure 2.1) encompasses approximately 273,920 acres in portions of Placer, Nevada, and Sierra Counties. The Truckee River, which emerges from the northwest periphery of Lake Tahoe, is considered a separate stream from the Upper Truckee River, which is Lake Tahoe's largest tributary. The Little Truckee River watershed, although mapped as a separate hydrologic unit, must be considered in hydrologic, sediment, and nutrient budgeting for the main river. Both of these watersheds have high resource values, including heavy summer and winter outdoor recreational use, and support of threatened/endangered species in both California and Nevada. Donner Memorial State Park is located in the watershed. The California Department of Fish and Game (DFG) manage part of the river as a wild trout stream. The DFG considers Martis Creek, a tributary to the Truckee River, to be a 'Significant Natural Area' (SNA) as the most typical habitat of the threatened Lahontan cutthroat trout. Vernal pool wetlands in Martis Valley provide habitat for the Plumas ivesia, a plant species under consideration for federal threatened/endangered species listing. Sagehen Creek, a tributary to the Truckee River, is a SNA for three species, including riparian habitat-dependent willow flycatcher. A segment of the Truckee River and several of its tributaries are under consideration for inclusion in the federal Wild and Scenic Rivers system. The Truckee River provides about 75 percent of the municipal water supply for the Reno-Sparks, Nevada area. The Sierra Pacific Power Company, Reno's downstream water purveyors, operated hydropower facilities on the river. Releases from Lake Tahoe and other reservoirs are managed to maintain fishery flows in the river and to provide critical water supplies for maintenance of the threatened Lahontan cutthroat trout and endangered cui-ui populations in Pyramid Lake, Nevada. The Truckee River watershed in California includes the communities of Tahoe City, Alpine Meadows, Squaw Valley, Truckee, Hirschdale, and Floriston. Much of the watershed is within the Tahoe and Toiyabe National Forests. Land use in the portion of the Truckee River watershed from the Lake Tahoe Dam to Alpine Meadows Road is under the jurisdiction of the Tahoe Regional Planning Agency (TRPA). The recently incorporated Town of Truckee (with a current population of about 11,300) and surrounding portions of the Martis Valley have the greatest potential for new growth in the northern part of the Lahontan Region.

### **2.1b Water Quality Problems and Issues**

The water quality of the Truckee River system has been impacted by a variety of sources. The watershed was extensively logged in the nineteenth century, and there was short-lived mining rush in the 1860s. Management of modern timber harvest practices in the watershed is an issue of increasing focus and concern for the Regional Board. Increasingly, more timber harvesting is occurring, due to increased lumber prices, decreased timber harvesting on public lands, and recent wildland fires. Approximately 67,040 total acres have been harvested on both private and federal lands since about 1989 (CH2Mhill 1996). Hydrologic modification, including alteration of wetlands and fisheries habitat, has occurred in connection with dam and reservoir construction, ski resort development, and sand and gravel mining. The river once supported a superior trout fishery, but as a result of flow and habitat modification, the fishery resource has been severely diminished (Snider/DFG 1995).

INSERT FIGURE 2.1-1 Truckee River Watershed map

Clean Water Act Section 304(l) and 303(d) lists/TMDLs -- The Truckee River is on the federal Clean Water Act Section 303(d) list for siltation. Several tributaries (including Squaw Creek, Martis Creek, Bronco Creek, Bear Creek, Gray Creek, Donner Lake, and Stampede Reservoir) are also on the Section 303(d) list for siltation, priority organics or pesticides. Limited monitoring shows radioactive elements in Sagehen Creek, presumably from natural weathering of Sierra Nevada granite. Localized high uranium in ground water has affected municipal supplies in the Lake Tahoe Basin, and additional monitoring may be desirable to determine whether a similar problem occurs in the Truckee River watershed. The Truckee River and Squaw Creek are one of the RWQCB's highest priority water bodies for the development of Total Maximum Daily Loads (TMDLs). The RWQCB's ongoing and proposed short-term activities in the watershed include the development and implementation of TMDLs for sediment. The activities also include coordination with the State of Nevada on the applicability of the Nevada TMDL for the Truckee River to the river reaches in California, and coordination on consistent standards for the river in both states.

Erosion -- Portions of the watershed are highly erosive. Turbidity increases after intense storms. Storm events have increased suspended sediment to the extent that Nevada water purveyors have been unable to filter municipal supplies, and water rationing has been necessary. Significant concerns about water system reliability were generated after one such turbidity event in July 1992 that lasted 20 days. During this event, Sierra Pacific Power Company's treatment plants were shut down for several days. Within two days, water storage was near depletion and the Nevada Health Department was notified that, without mandatory water use restrictions, partially disinfected water would enter the distribution system (Sierra Pacific Power Company 1994). Concern about erosion has increased due to extensive watershed damage by several catastrophic forest fires in 1994.

Point and Nonpoint Source Impacts -- Urban development, several highways, and a railroad are located adjacent to surface waters; hazardous substance spill and stormwater discharges are significant concerns. A Highway 267 bypass around the Town of Truckee is being proposed. Railroad traffic could increase by 50-70% due to the merger of the Southern Pacific and Union Pacific railroads. Significant vehicular traffic increases in and near Truckee are projected in relation to growth under the Town's new General Plan. Increases in railroad and highway traffic, and in the associated risks of spills, could affect the quality of stormwater discharges. The Eastern Regional Landfill, an unlined Class III landfill located close to the river, is now undergoing final closure. Elevated levels of sediment and heavy metals have recently been detected in a drainage emerging from the landfill. Other current or potential sources of pollutant loading to surface waters include past and present disposal of treated wastewater, septic systems, reservoir releases, construction activities, highway and railroad maintenance, livestock grazing, and golf courses.

Concerns about point and nonpoint source water quality impacts in the Truckee River watershed arose at the same time that comprehensive watershed planning began for Lake Tahoe. Consideration was once given to designation of a bi-state Clean Water Act Section 208 planning area for the watershed, as was done for Lake Tahoe under Tahoe Regional Planning Agency (TRPA). Nonpoint source problem inventories of the Truckee River watershed and recommendations for implementation were made in the 1980s by the Placer and Nevada County Resource Conservation Districts using Clean Water Section 208 grant funds. A Best Management Practices (BMPs) handbook was developed for the eastern portions of Placer and Nevada Counties, and revisions were made to local grading ordinances. However, due to lack of funds, little progress was made on organized implementation of the 208 Study's recommendations.

Threat of Nutrient Loading -- Although the Truckee River is not currently impaired by nutrient loading, nutrients are considered a significant threat. Due to concern about nutrient loading to the river from domestic wastewater, the RWQCB has prohibited, within a portion of the watershed, new septic system discharges (with limited exemptions), and discharges from formerly used secondary wastewater treatment plants. (Past wastewater discharges are probably still affecting the quality of springs entering the Truckee River from a former disposal area near Tahoe City, and the quality of the Squaw Valley drinking water aquifer.) Any new wastewater discharges in the RWQCB's prohibition area are required to provide the same level of nitrogen removal as the tertiary Tahoe-Truckee Sanitation Agency (TTSA) treatment plant. TTSA is a regional facility, which treats wastewater from five member agencies in the North Lake Tahoe and Truckee areas. It discharges treated effluent indirectly to the river through ground water leachfield

discharge and experimental sprayfield irrigation. Although TTSA provides advanced treatment, nutrient loading to the Truckee River and Martis Creek is still a concern, and increased nitrate loading has been documented downstream of the TTSA plant. The phosphorus absorption capability of TTSA's leachfield may soon be reached. Present disposal areas are proposed for expansion and to be supplemented by development of new land disposal areas. TTSA currently has unused treatment capacity, but the planned new growth in and near its service area will eventually make expansion of the plant or construction of other treatment facilities necessary. Some existing subdivisions, which are now permitted to use septic systems, may also eventually need to be sewered to protect ground water and reduce total nutrient loading to the river. The water quality impacts of increased wastewater discharges in the Truckee River watershed will need careful evaluation and mitigation. The RWQCB's ongoing and proposed monitoring and assessment activities for the watershed include formulation of a nutrient budget for the Truckee River.

Water Quality and Water Quantity Issues -- Water quality and water quantity are significantly interrelated in the Truckee River watershed. During the recent drought, portions of the river were dry for long periods, and dissolved constituent concentrations increased greatly in reaches with low flows. Reservoir releases for downstream uses were controversial because of their impacts on the reservoirs' own aquatic life and recreational uses. During normal to high water conditions, reservoir management is of concern in relation to shoreline erosion. New reservoirs have been conceptually proposed for two tributary watersheds near the California-Nevada state line.

Consumptive use of all surface and some ground waters of the Truckee River watershed is regulated by an interstate compact which has been approved by Congress as PL 101-618; flows are managed by a federal watermaster under a court decree. Revisions in operating criteria for the river/reservoir system are currently being proposed. The draft Truckee River Operating Agreement Joint Environmental Impact Statement/Environmental Impact Report (EIS/EIR) Study has identified instream flow for fisheries and water quality of the Truckee River as the key concerns for flow management. Regulated flows from Donner, Martis, and Prosser Creeks, the Little Truckee River (Stampede/Boca Reservoirs), and the dam at Lake Tahoe all influence base flows and the water quality of the main stem of the Truckee River. The Operating Agreement will propose flow amendments for the river that may affect the assimilative capacity of the river for wasteloads (e.g., discharges from the TTSA leachfield).

Donner Lake -- Donner Lake is historically and recreationally important. Municipal supplies are diverted from the lake for use at surrounding development, and the lake is also managed as a reservoir for municipal use in Nevada. Donner Lake's watershed is the most highly urbanized watershed of any lake in the Truckee River watershed. It is affected by forest management activities and stormwater from Interstate 80, the railroad, subdivisions and commercial development. Development of new private piers has increased; local concerns about the impacts of boating have led to recent adoption of restrictions on fueling. Sampling of fish tissue and sediment from Donner Lake under the SWRCB's TSMP shows elevated levels of PCBs, chlordane, silver, and zinc. The sources of these pollutants are unknown. Property owners around the lake have recently become concerned about the potential for eutrophication of the lake, and have funded monitoring by the University of Nevada. A 1998 study by the UCD Tahoe Research Group showed MTBE in the lake during the summer (the season of heavy boating use).

Squaw Creek -- Because of significant sediment loading into the Creek, a TMDL is planned for Squaw Creek. The RWQCB has received numerous complaints regarding siltation from new and existing construction.

Ground water -- There are a number of ground water-related issues in the Truckee River watershed. In certain areas, ground water contains naturally high levels of arsenic and other minerals. Ground water contamination is a concern because of the unsuitability of some soils in the region for septic systems. Toxic substances contamination of ground water has occurred near the railroad station in Truckee, and from a number of underground tank sites in the Truckee area. Ground water quantity is of concern because the interstate water compact places limits on total diversions for consumptive use from all sources in the Truckee River watershed, including some ground water. Local ground water supplies may not be adequate to serve all existing needs plus planned growth.

Stakeholder Participation/Public Participation -- Stakeholder and other public participation in RWQCB activities to protect and enhance water quality and beneficial uses in the Truckee River watershed are expected to occur in cooperation mainly with the Truckee River Watershed Council and the Truckee River Habitat Restoration Group.

#### Identification of Priority Problems

1. Water quality in the Truckee River is adversely affected by nonpoint source pollutants, particularly suspended sediment. Although silt-laden flows are routinely observed in the Truckee River, Squaw Creek (key tributary), and several other tributaries, in most cases, the source or sources of the pollutants are unknown and largely uncontrolled. Nonpoint sources are inadequately characterized as to their origin and relative contribution to cumulatively effecting water quality degradation.
2. Nonpoint source pollution is considered to be increasing in the Truckee River watershed. The basis for this assertion is increased pressure to harvest timber, increasing urbanization, and commercial development in the Town of Truckee, proposed highway reconstruction and railroad development, and increased recreation development.
3. Increases in nonpoint source pollutant loading of the Truckee River from all new sources, in combination with existing nonpoint source pollutant loading of the river, will result in additional water quality degradation and impairment of beneficial uses. The individual effects from existing nonpoint sources is cumulative.
4. Historical loss and/or modification of aquatic habitat associated with water development, urban development, and recreational development, combined with future potential losses will likely result in additional water quality degradation and impairment of beneficial uses.

#### **2.1c Goals and Objectives with Milestones**

**Goal 1. *Coordinate RWQCB activities with other stakeholders to refine WMI priorities and identify success criteria for WMI goals. Solicit assistance from other stakeholders to facilitate WMI implementation.***

##### Milestones:

- Enlist the Placer and Nevada County Resource Conservation Districts (RCDs) in stakeholder outreach and the development of a Truckee River Watershed Council.
- Informally present the Truckee River WMI chapter to the Truckee River Watershed Council (completed) update the chapter to reflect stakeholder values, and develop stakeholder buy in (ongoing).
- Develop a Truckee River Coordinated Resources Management Plan and Integrate the Regional Board's WMI chapter with the Truckee River Watershed Council (ongoing as Plan and Chapter evolve)
- Participate in the Truckee River Habitat Restoration Group (TRHRG) formation and provide ongoing technical assistance and support.
- Assist the TRHRG with the development of Truckee River Day (annually September and October).

**Goal 2. *Develop a comprehensive nonpoint source monitoring program to specifically identify source and categories of nonpoint source pollutants and impacted waters.***

### Milestones:

- Summarize existing water quality and land use data (completed June, 1996)
- Obtain 205(j) Grant funding with the Town of Truckee (completed January, 1998)
- Develop sediment discharge curves and estimate current suspended sediment loads for Truckee River and tributary sub-basins for TMDLs and watershed assessment (completed March 1998)
- Establish a volunteer monitoring network and funding mechanism for bioassessment and stream characterization and set up training for volunteer bioassessment monitoring (Commence May 1999)
- Focusing on Squaw Creek, develop linkages between instream water quality conditions, beneficial use protection/restoration, and target sediment reductions for TMDL development.
- Begin oversight and provide technical input for Truckee River 205(j) Non-Point Source Management Study; includes assisting the Town of Truckee With the Development of an RFP and contract administration (completed June 2000)

### ***Goal 3. Regulate new development to control additional nonpoint source pollutants.***

- Prepare written comments on all significant water quality related CEQA documents in the watershed. (ongoing)
- Issue WDRs for the proposed Squaw Intrawest development project.
- Issue/revise WDRs for the TTSA expansion. (planned for 2002)
- Review applications and issue as necessary WDRs, Clean Water Act Section 401 Water Quality Certification, Stormwater NPDES permits (NOIs for construction, industrial and municipal)

### ***Goal 4. Retrofit significant existing sources of nonpoint source pollutants with pollutant controls.***

- Set up an initial meeting with Caltrans, Placer County, Nevada County, and the Town of Truckee to address current road deicing practices and potential options for discharge reduction or capture.
- Identify and prioritize existing non-point source discharges through the Town of Truckee's 205(j) study ( completed June 2000).

### **2.1d Performance Standards**

Performance standards will be developed in coordination with watershed stakeholders and will be added to this WMI section in a subsequent revision.

### **2.1e Ongoing and Proposed Tasks (Fiscal Years 2002/2003 to 2007/2008)**

The following ongoing and proposed tasks have been identified to achieve the WMI goals of the Truckee River watershed. Tasks are listed below the goal they support, with the exception of Task Group 1 that supports all of the Truckee River WMI goals. Task numbers correspond to tasks identified in Table 2.1

### **Task Group 1 Administrative Oversight (supports all four goals)**

Task 2.1/1.1 **Establish and maintain a RWQCB staff watershed team**, and assign responsibilities for implementing the WMI.

Task 2.1/1.2 **Pursue grant funding** in coordination with other local, state, and federal entities to support unfunded WMI tasks. Grant funding sources typically include CWA Section 205(j) grants for planning/assessment purposes and CWA Section 319(h) grants for implementation of BMPs and other nonpoint source controls. The RWQCB staff anticipates networking with the Town of Truckee and other stakeholders to secure grant funding, to continue and complete a recent CWA Section 205(j) study, and to perform the tasks listed under Task Group 4 below.

Task 2.1/1.3 **Update and revise the WMI chapter** and goals periodically to reflect the needs of the watershed, stakeholder interests, and state budgetary concerns.

Task 2.1/1.4 **Develop performance objectives** in coordination with stakeholders to determine the effectiveness of the WMI. Tasks may be periodically modified to ensure accomplishment of the WMI goals.

Task 2.1/1.5 **Complete status reports** (e.g., Executive Officers report to the RWQCB) on watershed issues, activities and the progress of the WMI.

### **Task Group 2 Stakeholder involvement, public outreach, and education (supports Goal 1)**

Regulatory-based planning, often adversarial, has not yielded the long term results necessary to fully protect water quality and the beneficial uses of waters within the Truckee River watershed. Input and cooperation from all stakeholders, early in the development of the WMI, will promote interest-based problem solving and may facilitate voluntary cooperation in the protection of water resources.

Task 2.1/2.1 **Identify all stakeholders by tributary and river reach**, and make initial contact with stakeholders. Stakeholders in the watershed include land owners and managers, government agencies at all levels, citizen interest groups, civic organizations, and other interests. Stakeholders will be identified through local research at county planning departments, tax assessors offices, agency offices, libraries, past EIS/EIRs, and other sources. Initial contact with stakeholders may be established via mailings, telephone communications, and individual or group meetings (Napa County RCD, 1996)

Task 2.1/2.2 **Form stakeholder groups** Regional Board staff will assist with development and promotion of the Truckee River Watershed Council and the Truckee River Habitat Restoration Group (TRHRG)

Task 2.1/2.3 **Hold and attend stakeholder meetings** related to the 205j study and the TMDLs for Squaw Creek and the Truckee River.

Task 2.1/2.4 **Solicit outside assistance** In this group of tasks, stakeholder groups and group leaders will be formed once all of the stakeholders have been identified. RWQCB staff will likely serve as technical and administrative support for the stakeholder groups, solicit information and assistance from other stakeholders, and advise the stakeholder groups on regulatory/compliance issues (e.g., TMDLs, NPDES permits, WDRs). Staff will promote the WMI by attending various meetings, events, and conferences held by existing stakeholders groups.

Task 2.1/2.6 Continue **educational outreach** in the form of technical support will be provided to local schools to promote the 'Adopt A Watershed' Program. Additionally, staff will assist and answer questions from the public on issues and concerns related to water quality and the WMI.

### **Task Group 3 Water quality monitoring and analysis (supports Goal 2)**

Task 2.1/3.1 **Storm event and routine suspended sediment, nutrient and metals monitoring** was completed at approximately 22 stations along the Truckee River and its major tributaries. RWQCB staff

conducted monitoring at these sites approximately 12 to 16 times per year for suspended solids and turbidity, quarterly for nutrients, and bi-annually for metals, between 1994 and 1996. Such monitoring will be continued and possibly expanded as resources are available.

The sampling plan should be expanded both spatially and temporally to target nutrient sources, erosion sources, and to determine accurate load estimates for suspended sediments. The control of sediment will facilitate the control of other pollutants associated with sediment-bound particles, such as PCBs, metals, and phosphorus. Expansion of the monitoring program will also expedite the development of TMDLs (see Task Group 5).

The Donner Lake Property Owner's Association has been sponsoring monitoring by the University of Nevada at Reno (UNR) on the limnology of Donner Lake. The association is interested in obtaining grant funding for continuation and expansion of this lake monitoring in coordination with volunteer collection of stormwater samples from drainage's tributary to Donner Lake. RWQCB staff expect to continue working with the property owners and UNR staff to identify grant sources, to facilitate applications for grant funding, and to organize a volunteer monitoring program. RWQCB staff will assist stakeholders with surface water monitoring and protection efforts.

**Task 2.1/3.2 Coordinated USGS monitoring with the RWQCB's monitoring activities.** This task involved directing the USGS on the frequency and location of monitoring, obtaining funding for monitoring, and contract management required to continue or expand the monitoring.

The RWQCB selected the USGS to perform stage discharge measurements and suspended sediment sampling at selected sites because of USGS staff expertise in monitoring during high flow conditions (e.g., storm event, spring snow melt) and its proximity to the project area. Furthermore, the USGS already owns necessary equipment needed to perform these measurements. If resources are available, RWQCB staff anticipates expanding the USGS's role in future monitoring efforts.

**Task 2.1/3.3 Assist Sierra Pacific Power Company (SPPCo) and the Department of Water Resources with the design and installation of a remote electronic monitoring system** in California portion of the Truckee River watershed. This task involves providing technical consultation to SPPCo, obtaining land owner approvals, and fulfilling permitting requirements for the installation of scientific instruments at the Truckee River.

SPPCo (Reno's water purveyor downstream of California) has become increasingly concerned with turbidity events and its ability to provide customers with reliable water supplies. RWQCB staff contacted SPPCo in the Spring 1996 regarding a pilot scale remote electronic monitoring study being conducted jointly by the RWQCB and the California Department of Water Resources. SPPCo expressed strong interest in the study and acted on the RWQCB staff recommendation to purchase and install monitoring equipment. The RWQCB will work cooperatively and willingly with SPPCo on further development of a comprehensive electronic monitoring system.

The monitoring system will consist of the installation of multiple turbidity probes throughout the watershed in California and Nevada. The monitoring probes will be linked to SPPCo's existing data acquisition system via modems, and data will be recorded and provided to the RWQCB staff. The electronic monitoring system will serve as an early detection system for SPPCo and will provide the RWQCB with important data for watershed characterization and TMDL development.

**Task 2.1/3.4 As part of 205j study, compile water quality data** from all sources (new and existing) and enter the data into a watershed database. The database will be used for pollution source analyses, TMDL development, for long term trend analyses, and possibly to calibrate a predictive erosion model for the watershed. Current sources of data include RWQCB monitoring, discharge monitoring reports, USGS monitoring, STORET data sets, Nevada's Desert Research Institute data sets, and SPPCo monitoring. Presumably, other data sources will be revealed as additional stakeholders become involved with the WMI efforts. Task was completed in June 2000.



Task 2.1/3.5 **Compile climate data** to determine if river turbidity levels are increasing as watershed development increases. This will be accomplished by comparing Sierra Pacific Power Company's long term turbidity data with long term precipitation and flow data. Climate data may also be used as a variable in the development of a predictive erosion model (see task 2.1/4.6)

Task 2.1/3.6 **Develop a stakeholder monitoring network** for bioassessment in coordination with the Coordinated Resources Management Planning (Group). Bioassessment includes collection of physical data pertaining to stream and aquatic habitat conditions.

Task 2.1/3.7 **Assist with volunteer monitoring and training**

#### **Task Group 4 Land use analysis/watershed characterization (supports Goals 2 and 4)**

An analysis of land use and population trends is an important part of the WMI implementation in the Truckee River. This is also important to complete TMDLs for the Truckee River and its tributaries. An effective land use characterization describes the relationship between land use and water quality, and will show how future land use changes in the watershed may impact the beneficial use of water (Washington State Department of Ecology 1995). Land use analysis and watershed characterization will facilitate the achievement of the WMI goals by focusing efforts in the most disturbed, environmentally sensitive, or threatened geographic locations.

This task was previously attempted as part of a recently completed Section 205(j) study entitled 'Truckee River Loading Study'. The final Section 205(j) study report concluded that existing water quality and land use data for the Truckee River watershed are inadequate to characterize nonpoint sources of nutrient, metal, and suspended sediment contamination, or to show links between land uses and water quality. However, the study did make some general conclusions on water quality characteristics associated with land uses in the watershed, and subsequent water quality monitoring data has illustrated specific water quality concerns in individual sub-basins. Specific tasks are described below.

Task 2.1/4.1 **Compile existing land use data** from existing sources to identify areas of concern, and to develop the Problem Statement and Introduction for the Squaw Creek and Truckee River TMDLs.

Task 2.1/4.2 **Prioritize tributary sub-basins** based on existing land use data, existing water quality data, resource value, and significant nonpoint sources of pollution. Sub-basins that pose the greatest threat to water quality will become the focus geographic areas for visual surveys and GIS development.

Task 2.1/4.3 **Conduct a visual survey** of disturbances and land uses. This task involves field reconnaissance in priority sub-basins. Information can be coded in the field and delineated on maps or logged using a Global Position System (GPS). The SWRCB, and other stakeholder agencies, already own the GPS equipment needed to log and record the coordinates of disturbed areas. This data can be converted to a GIS layer that will identify areas with high densities of disturbance. The data will also be used in developing the Source Analysis for the Squaw Creek and Truckee River TMDLs.

Task 2.1/4.4 **Obtain current and historical aerial photographs** and satellite imagery for the entire watershed to augment the visual survey and determine extent of disturbance in individual sub-basins and along the main stem of the Truckee River. Aerial photographs can be digitized and converted to a GIS layer. Aerial imagery will identify undisturbed tributary sub-basins that can be used as reference sites. This information will also be used in developing the TMDLs for Squaw Creek and Truckee River TMDLs.

Task 2.1/4.5 **Coordinate/develop a Geographic Information System (GIS)** for the watershed. Comprehensive GIS coverage will facilitate nonpoint source targeting by overlaying land uses or disturbance with ambient environmental conditions (e.g., slopes, soil erosion hazards, proximity to watercourses) and ranking sub-basins according to the degree of impacts and/or environmental sensitivity. The USFS Tahoe National Forest and the USGS have already developed extensive GIS coverages for the watershed and have agreed to share their base maps and data layers. Data layers currently available include

30 year disturbance, soil erosion hazards, slope, evaluation, aspect, stream networks, hydrology and vegetative cover types.

**Task 2.1/4.6 Develop a predictive nonpoint source model** . In order to initiate effective watershed management, a calibrated watershed management model is necessary. This model would incorporate available GIS databases as well as data on land use, hydrology, and water quality with the cost-benefit perceptions of stakeholders. The goal of the model is to determine critical areas that produce the most nonpoint source pollution, and to design implementable solutions to those water quality problems. The model will yield predictive water quality changes caused by different land use practices. It will differentiate background from anthropogenic nonpoint source loading so that reasonable pollutant load reductions for specific areas can be established. Model development will likely be undertaken by multiple stakeholders and contractors, and funded through grants. This model will be used in the development of the Squaw Creek and Truckee River TMDLs.

**Task 2.1/4.7 Develop a list of priority problems** that targets potential restoration sites and identifies site specific locations for BMP implementation. This model will be used in the development of the Squaw Creek and Truckee River TMDLs.

**Task 2.1/4.8 Make recommendations for nonpoint source controls** for new and existing development. This model will be used in the development of the Squaw Creek and Truckee River TMDLs.

#### **Task Group 5 Establish Total Maximum Daily Loads (TMDLs) (supports Goals 3 and 4)**

TMDLs are assessment and management tools used to identify and implement the actions required to attain state water quality standards for impaired surface water bodies that are listed under Section 303(d) of the Clean Water Act. In California, RWQCBs have the authority and responsibility to develop and implement TMDLs for pollutants and stressors affecting listed waters ( the implementation activities of the RWQCB may be limited only to those actions under its authority). Adoption of TMDLs in California will generally require Basin Plan amendments. A phased approach to TMDL development is appropriate when existing data are inadequate to document pollutant loads or the load reductions necessary to attain water quality objectives.

**Task 2.1/5.1 Develop problem statement/TMDL introduction.** Review existing data (complaints, monitoring data, reports, violation reports). Draft problem statement. Meet with USEPA and SWRCB staff as necessary to discuss TMDL approach. Draft initial timeline and workplan/gantt chart. Conduct/participate in stakeholder meetings and other outreach efforts.

**Task 2.1/5.2 Develop numeric targets** . Conduct nutrient and sediment sampling. Conduct bioassessment sampling and develop biocriteria. Conduct physical habitat assessments and riparian assessments. Conduct streambed core sampling and particle size analysis. Review literature related to biocriteria, physical habitat parameters, Truckee River fisheries and Lahontan cutthroat recovery.

**Task 2.1/5.3 Prepare source analysis.** Review monitoring data and partition watershed based on impairment. Develop sediment source categories (e.g., roads, skid trails, ski runs, etc.) Review watershed maps, GIS and aerial photos. Conduct visual survey of watershed and map sediment source areas in suspect areas.

**Task 2.1/5.4 Develop allocations of responsibility** Identify stream segments not meeting numeric targets. Estimate sediment delivery reduction requirements for controllable sediment source categories. Review parcel maps that identify landowners where sediment sources exist.

**Task 2.1/5.5 Develop an Implementation Plan.** Prepare a landowner sediment inventory format. Provide assistance to landowners for sediment inventories. Assign BMPs or management practice for different categories of sediment sources. Pursue volunteer implementation. Pursue enforcement of Truckee River prohibitions.

Task 2.1/5.6 **Implement TMDLs.** Sediment TMDLs will be implemented to the extent possible through voluntary pollution prevention and remediation programs by public and private stakeholders (e.g., USFS, local governments, resource conservation districts, environmental groups, etc.) Some voluntary sediment control actions are already being implemented. TMDLs may also include specific direction for changes in the RWQCB's regulatory control measures.

#### **Task Group 6 Core regulatory and project review (supports Goals 3 and 4)**

Specific core regulatory and project review tasks are identified in Table 2.1.

Continuing regulation and enforcement activities include (but are not limited to) ongoing management of waste discharge permits and oversight of Tahoe Truckee Sanitation Agency and its member agencies, the Squaw Valley, Northstar, Resort at Squaw Creek, and Alpine Meadows ski resorts, the Eastern Regional Landfill, and road construction and maintenance activities by Caltrans and local governments. The RWQCB's oversight of underground tank regulation and remediation activities, and other ground water protection activities will continue. RWQCB staff also participate in occasional bistate, interagency meetings to discuss management of potentially large spills of hazardous and non-hazardous wastes that could affect the Truckee River. Ongoing cooperation with Placer, Nevada, and Sierra Counties in implementation of the RWQCB's septic system criteria through Memoranda of Understanding (MOUs) will be necessary, and it may be appropriate for new residential subdivisions, commercial, industrial and recreational development (including golf courses), and for development projects on National Forest land which are unrelated to forest management activities. The RWQCB continues to implement NPDES stormwater discharge programs and the Clean Water Act Section 401 Water Quality Certification Program. Other core regulatory activities include facilities inspections, updates and revisions of permits, response to complaints and unauthorized discharges, and enforcement actions as necessary. RWQCB staff are currently discussing limited revisions to exemption criteria for the 100-year flood plain prohibitions for the Truckee River and the Little Truckee River Hydrologic Units in relation to forest management activities.

An additional important component of the Lahontan RWQCB's regulatory strategy is the enforcement of waste discharge prohibitions contained in the Basin Plan. In addition to the septic system prohibitions noted above, the Basin Plan includes prohibitions on discharges of waste earthen materials and other deleterious materials, and on discharges or threatened discharges to the 100-year flood plain of the Truckee River and its tributaries, and exemption criteria which allow discharges under limited circumstances. Implementation of these prohibitions frequently intersects with RWQCB staff's CWA Section 401 Water Quality Certification responsibilities.

RWQCB regulation and enforcement for projects and activities in the upper portion of the Truckee River watershed, which is under the jurisdiction of the Tahoe Regional Planning Agency (TRPA), will be coordinated with TRPA under an existing MOU. This will include permitting for projects carried out under the recently adopted Tahoe City Community Plan (e.g., proposed wetlands stormwater treatment facility that would discharge directly to the Truckee River).

#### **Task Group 7 Timber Harvest Review (supports Goal 3)**

RWQCB staff review timber harvest plans and conduct pre-harvest inspections to recommend mitigation measures for the protection of water quality. Timber harvest plans in the Truckee River watershed include large-scale timber production as well as fuel load reduction, fire-break ('defensible space'), construction around homes or communities, and/or providing for improved 'forest health'. RWQCB staff also conduct post-harvest inspections (and take enforcement actions as necessary) to assure implementation of best management practices, and compliance with plans and regulations related to water quality. RWQCB staff also participate in the formulation of plans to 'rehabilitate' burned areas.

Pursuant to the statewide Management Agency Agreement (MAA) with the USFS, RWQCB staff continue to work with the USFS to assure implementation of BMPs and adherence to waste discharge prohibitions

in connection with forest management activities in the Truckee River and Little Truckee River Hydrologic Units.

**Task 2.1/7.1 Annual non-federal forest management tasks.** (required under MAA with the Board of Forestry). Complete the following tasks:

- a. Review approximately 40 timber harvest plants.
- b. Participate in approximately 20 pre-harvest inspections.
- c. Conduct approximately 20 post-harvest (compliance) inspections.
- d. Participate in conflict resolution as requested or needed.
- e. Conduct enforcement actions (e.g., issuance of Cleanup and Abatement Orders and Administrative Civil Liabilities) as needed
- f. Attend approximately five (5) meetings as necessary .

**Task 2.1/7.2 Annual Federal Forest Management** (required under MAA with the USFS)  
Complete the following tasks:

- a. Review and comment on approximately ten (10) timber harvest proposals.
- b. Participate in approximately four (4) pre-harvest inspections.
- c. Conduct approximately 12 post-harvest (compliance) inspections.
- d. Participate in conflict resolution and complaint investigation, as necessary.
- e. Attend approximately five (5) meetings as necessary.

Note on Tasks 2.1/7.1 and 2.1/7.2 -- The estimated numbers of timber harvests are based upon historical numbers and fluctuate based on timber (lumber) prices, as well as on fire management.

**Task 2.1/7.3 Evaluate the effectiveness of BMPs used on National Forest lands** in the Truckee River watershed and work with the USFS to require improved/additional BMPs if appropriate.

### **Task Group 8 Wetlands, riparian, and floodplain protection and restoration (supports Goal 2 )**

**Task 2.1/8.1 Identify potential restoration areas** (historic and riparian areas), and the potential funding sources for the restoration.

**Task 2.1/8.2 Identify current restoration projects** and develop a tracking system for the projects.

**Task 2.1/8.3 Coordinate with local governments and other state and federal agencies** on wetland/riparian protection, management, and permitting issues, with a goal of developing a coordinated permit process, particularly for 100-year floodplain prohibitions and exemptions.

**Task 2.1/8.4 Continue to review and to coordinate with CA Department of Water Resources on wetlands/riparian issues** related to the Truckee River Operating Agreement.

**Task 2.1/8.5 Develop watershed specific wetlands/riparian management plan.**

**Task 2.1/8.6 Plan and implement Trout Creek restoration.**

Northern Watershed Unit Tasks Planned for FY 02-03 to 06-07

EXPECTED TASKS	PY Estimate by Fiscal Year				
	FY 02- 03	FY 03- 04	FY 04- 05	FY 05- 06	FY 06- 07
<b>WATERSHED PROTECTION/SUPPORT TASKS</b>					
<b>Nonpoint source implementation</b>					
Field inspections/reports, meetings/meeting notes, formal written comments on silviculture and other forest management activities (including forestwide/regionwide planning efforts}	x	x	x	x	x
Field inspections/reports, meetings/meeting notes, formal written comments on grazing and other rangeland management activities (including regionwide planning efforts); implement <i>the California Rangeland Water Quality Management Plan</i> .	x	x	x	x	x
Participate in implementation of Clean Sierra Waters 319 NPS Control Project – Sierra Nevada Alliance					
<b>Nonpoint source outreach/education</b>					
Participate in Truckee River Days	x	x	x	x	x
Participate in Citizen Monitoring	x	x	x	x	x
Participate in Region 6 (Tahoe Truckee Adopt a Watershed Prop 13 project					
Participate in regular meetings including (but not limited to) Honey Lake CRMP, Truckee River CRMP, Truckee River Habitat Restoration Group; participate in one-time activities such as Earth Day, Science Fairs, etc.	x	x	x	x	x
<b>Nonpoint source contract management</b>					
Manage contract for Truckee River Day and Citizen Monitoring (\$129,815)	x	x	x		
Manage contract for Trout Creek Restoration (\$125,500)	x	x			
Manage contract for Truckee River Day and Associated Projects (\$33,010)	x				
<b>Timber Harvest (non-federal lands)</b>					
Review THPs and conduct PHIs	x	x	x	x	x
Monitor/regulate pesticide use associated with THPs	x	x	x	x	x
<b>Prop. 13 contract management</b>					
<b>205j WQ planning contract management</b>					
Manage contract for Middle Truckee River Coordinated Plan Development	x	x	x		
<b>Basin Planning</b>					
<b>Wetlands management and protection</b>					
Work with Truckee Donner Land Trust to develop mitigation opportunities	x	x	x	x	x
<b>Watershed management</b>					
Participate in the Truckee River Watershed Council watershed planning	x	x	x	x	x
Participate in the Surprise Valley Watershed Council watershed planning	x	x	x	x	x
<b>REGULATORY TASKS</b>					
<b>NPDES</b>					
6A180045901 Wineagle Geothermal (expires by 6/03)					

<b>EXPECTED TASKS</b>	<b>PY Estimate by Fiscal Year</b>				
	<b>FY 02- 03</b>	<b>FY 03- 04</b>	<b>FY 04- 05</b>	<b>FY 05- 06</b>	<b>FY 06- 07</b>
6A319807004 Squaw Valley PSD Golf Course Horizontal Well (expires by 6/03)					
6A1188410000 Amedee Geothermal Venture I (expires by 6/03)					
6A319901005 Tahoe Donner Golf Course Pump Test (expires by 6/03)					
6A189808002 Sierra Pacific Altura 345 KV intertie (expires by 6/03)					
6A319908005 Truckee Donner PUD Martis Well (expires by 6/03)					
6A181554001 Susanville CSD (expires by 6/03)					
6A189510002 Sierra Pacific Power Co Alturas Transmission Line (expires by 6/01)					
6A189501005 Tuscarora Gas Pipeline (expires by 6/02)					
6000U000049 PGE Statewide Utility (expires 8/15/01)					
<b>Stormwater</b>					
6A219S003976 Tahoe Donner Assoc. Ski Area (expires by 4/02)					
6A31S010668 Tahoe Boat Company (expires by 4/02)					
6A31S006085 Tahoe Truckee School Dist North Tahoe Transportation (expires by 6/02)					
6A18S010055 Jackson – Susanville Recycling Center (expires by 4/02)					
6A26S015658 Caltrans Rickey Canyon Material 250 (expires by 4/02)					
6A18S015231 Sierra Army Depot (expires by 4/02)					
<b>Non-15 (WDR)</b>					
6A180180909 City of Susanville Litchfield Geothermal (expires by 6/02)					
6A180030901 City of Susanville Geo energy (expires by 6/03)					
6A318511300 Pacific Squaw Creek Inc. Resort at Squaw Creek (expires by 4/03)					
6A310118070 Squaw Valley Ski Corp SV Ski Area (expires by 4/03)					
6A290011000 TTSA (expires by 5/97)					
6A188802004 Philips Susanville Towing (expires by 6/03)					
6A188070001 Eagle Lake Spalding Resort (expires by 6/03)					
6A188070001 City of Susanville Carrol Street (expires by 6/03)					
6A188711003 Schmitt Eagle Lake RV Park (expires by 5/03)					
6A318712004 Oleson Big Chief Lodge (expires by 5/03)					
6A290002225 Floriston Waste Treatment Facility (expires by 4/03)					
6A268706000 Stonewood at Tahoe (expires by 8/02)					
6A298706000 Nevada Co DOT (expires by 6/02)					
6A298707006 Hirshdale Auto Wrecker (expires by 2/02)					
6A188609000 Jackson Susanville Recycling Center (expires by 8/01)					
6A090069500 Sierra Pacific Underground Utilities (expires by 8/01)					
6A298513000 TSD Maintenance Projects (expires by 11/00)					
6A188070002 Reimers Susanville MHP (expires by 2/99)					
6A294525001 West River Industrial Park (expires by 10/98)					
6A180075201 Baldwin Contracting Doyle Plant (expires by 5/97)					
6A188025005 Pearson Eagle Lake Estates (expires by 7/99)					
<b>Water Quality Certification</b>					
As needed	x	x	x	x	x
<b>Enforcement</b>					
As needed	x	x	x	x	x
<b>Chapter 15</b>					
6A310041000 Placer Co Eastern Regional Landfill (expires by 6/03)					
6A298707006 Fort Bidwell SWDS (expires by 2/02)					

<b>EXPECTED TASKS</b>	<b>PY Estimate by Fiscal Year</b>				
	<b>FY 02- 03</b>	<b>FY 03- 04</b>	<b>FY 04- 05</b>	<b>FY 05- 06</b>	<b>FY 06- 07</b>
6A180010000 Herlong Solid WDS (expires by 3/01)					
6A257504401 Cedarville SWDS (expires by 6/99)					
<b>Dept of Defense</b>					
(tasks not planned by watershed unit)					
<b>Underground Storage Tanks</b>					
(tasks not planned by watershed unit)					
<b>Aboveground Storage Tanks</b>					
(tasks not planned by watershed unit)					
<b>Spills or complaints from unregulated sites</b>					
Respond as necessary	x	x	x	x	x

**CONTRACT NEEDS TO SUPPORT ABOVE EXPECTED TASKS:**

<b>Description</b>	<b>Amount Needed</b>	<b>Contract Term</b>

**WATERSHED UNIT: Northern**  
**Main Watershed(s): Truckee R., Honey Lk., Susan R., Surprise Valley**

<b>DESIRABLE TARGETED TASKS OR PROJECTS</b>	<b>PY Estimate by Fiscal Year</b>				
	<b>FY 02- 03</b>	<b>FY 03- 04</b>	<b>FY 04- 05</b>	<b>FY 05- 06</b>	<b>FY 06- 07</b>
<b>Implement BMPs/Improve Water Quality</b>					
Develop draft ski area reveg./erosion control guidelines	x				
Finalize guidelines		x	x		
<b>Habitat Restoration/Beneficial Use Enhancement</b>					
Participate with watershed groups to facilitate development and funding of restoration groups	x	x	x	x	x
<b>Assess Loadings and Impacts</b>					
<b>Research-oriented Studies</b>					
<b>Water Conservation and Management</b>					
<b>Monitoring</b>					
Analyze existing ground and surface water data associated with golf courses in Truckee HU.	x				
<b>Education and Outreach</b>					
Participate in watershed groups meetings and activities.	x	x	x	x	x
<b>Watershed Planning</b>					
Participate in Susan River Working Group to address invasive weed issues	x	x			
<b>Land Acquisition/Conservation</b>					

**CONTRACT NEEDS TO SUPPORT ABOVE DESIRABLE TARGETED TASKS:**

<b>Description</b>	<b>Amount Needed</b>	<b>Contract Term</b>
Draft ski area BMP guidelines	\$40,000	1-2 years
Finalize ski area BMP guidelines	\$60,000	1-2 years