



Lake Tahoe is a natural wonder that must be preserved for future generations. Restoring the famous water clarity of the lake is a local and national priority. Tahoe public agencies have launched a collaborative planning process called PATHWAY 2007 in an effort to chart a vision for the Tahoe environment for the next 20 years.

The agencies participating in the PATHWAY 2007 process are:

- Lahontan Regional Water Quality Control Board (Lahontan)
- Nevada Division of Environmental Protection (NDEP)
- Tahoe Regional Planning Agency (TRPA)
- USDA Forest Service (USFS)

Through PATHWAY 2007, these agencies are working together to align environmental goals and develop integrated regional plans. The elements of PATHWAY 2007 are as follows:

- Developing the Lake Tahoe Total Maximum Daily Loads (TMDL)
  - Lahontan and NDEP are the lead agencies for this effort
- Updating TRPA's Environmental Thresholds and 20-Year Regional Plan
- Updating the USFS Land and Resource Management Plan

The timing of these efforts presented an opportunity for the agencies to work together. Although one or two agencies lead the projects, all of the participating agencies play a role in the PATHWAY 2007 process. Each of the PATHWAY 2007 efforts is being undertaken using an adaptive management framework. Adaptive management is a concept that allows for learning and adjustment to occur while management and restoration actions are ongoing. It is a dynamic approach that allows for the continual incorporation of new data and research into the planning process. An adaptive management approach consists of several key steps:

- Step 1. Identify the problem
- Step 2. Develop a plan to address the problem, using the best available information
- Step 3. Implement the plan
- Step 4. Assess and evaluate the effectiveness of the plan
- Step 5. Adjust the plan based on the evaluation
- Repeat Steps 3-5 until problem has been adequately addressed.

The adaptive management approach values experimentation, evaluation, and modification. That is, one can try an approach, monitor outcomes for some time, use the monitoring data to evaluate the efficacy of the approach, and make changes as needed. It relies upon collaboration among disciplines including natural resource management, economics, and sociology, as well as collaboration among the many entities involved in the problem identification, planning, implementation, and evaluation processes.



The Tahoe Integrated Information Management System (TIIMS) at <http://www.tiims.org> is the perfect tool to support an adaptive management approach because it provides tools for information acquisition, management and use. TIIMS allows for the seamless sharing of data and information among the PATHWAY 2007 partner agencies. It provides:

- Workspace portals to allow agencies to work interactively online
- Access to data and databases that can continually be updated to have the most recent data, and
- Tools to analyze the data.

Below are introductions to the TMDL, TRPA's Environmental Thresholds and Regional Plan and the USDA Forest Service's Land and Resource Management Plan.

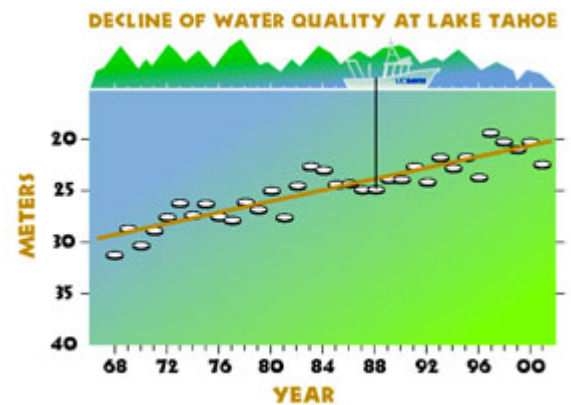
### Development of the Lake Tahoe Total Maximum Daily Loads

Lake Tahoe is world renowned for its striking blue color and amazing clarity. In fact, the US Environmental Protection Agency (USEPA) has granted Tahoe the status of Outstanding National Resource Water (ONRW). This designation affords the highest level of protection, strictly forbidding degradation of water quality. However, since 1968, there has been a decline of Lake Tahoe's clarity at an alarming rate of nearly one foot per year (measured by lowering a dinner plate sized disk, known as a Secchi disk, into the lake until it is no longer visible).

Many factors have interacted to degrade the Lake Tahoe Basin's environmental quality. These factors include increasing resident and tourist populations, habitat destruction, air pollution, soil erosion, roads and road maintenance, and loss of natural landscapes capable of detaining and infiltrating rainfall runoff. In short, pollution has hurt the lake.

In 2001, Lahontan and NDEP initiated the development of a TMDL for Lake Tahoe to address the loss in clarity. A requirement of the Clean Water Act (CWA), the TMDL program serves as a framework to scientifically understand and control the sources of pollutants that impair a water body. Technically, a TMDL represents the water's ability to accept pollutants without exceeding state water quality standards established to protect environmental and social values. However, a TMDL is also a water quality restoration plan, because the process does not end with a characterization of the water body's response to pollutant loads. The allowable loading is allocated to existing and expected future pollutant sources, followed by a calculation of the load reduction necessary and development of an implementation plan to restore the water body to its desired condition.

Developing a TMDL is a complex process that requires enormous amounts of data that are collected, interpreted, and analyzed to properly determine pollutant load allocations. Lahontan and NDEP are working closely with environmental professionals from participating agencies, consulting firms, and universities to develop a TMDL by winter 2007 that is based on the best available scientific knowledge. Public outreach and education and stakeholder input are important components of the TMDL process. The Lake Tahoe Nutrient and Sediment TMDL Newsletter is put out quarterly by the two agencies for this purpose. Additionally, TIIMS will be the vehicle to



Using a Secchi disk to measure transparency, UC Davis researchers have documented Lake Tahoe's water clarity.

further facilitate these components. For more detailed information about the development of the Lake Tahoe TMDL, visit Lahontan's TMDL webpage at: <http://www.swrcb.ca.gov/rwqcb2/tmdlmain.htm>

### ***Updating TRPA's Thresholds and Regional Plan***

Updating TRPA's Thresholds and Regional Plan are two separate, yet related, efforts. The Tahoe Regional Planning Compact requires TRPA to both attain and maintain nine environmental threshold carrying capacities (thresholds) to protect the environmental integrity of Lake Tahoe. In 1982, nine categories of thresholds were adopted, they are:

- Water quality
- Air quality
- Soil conservation
- Wildlife habitat
- Fish habitat
- Vegetation
- Noise
- Recreation
- Scenic resources

Each threshold category contains a number of specific indicators and standards that are used to track, evaluate, and report the status of each threshold over time. Beginning in 1991, the nine thresholds are evaluated every 5 years through assessment of the 36 threshold indicators. In 2001, TRPA concluded that many elements of the 20-year-old thresholds required extensive study for either recalibration or significant amendment and, therefore, TRPA would conduct a thorough study and update of all the thresholds by 2004. This effort is underway. For more information about the status of the Threshold Update, contact Gordon Barrett, Division Chief, Long Range Planning, TRPA, at [gbarrett@trpa.org](mailto:gbarrett@trpa.org).

The thresholds are the foundation of the Regional Plan and the results of the Threshold Update will lay the groundwork for the adoption of the next 20-year Regional Plan in 2007. The Regional Plan, initially approved in 1987, is an extensive document that establishes the framework for development and environmental restoration in the Lake Tahoe Basin. It includes many sections including Code of Ordinances, Transportation and Air Quality Plan, Goals and Policies, Water Quality Management Plan, Plan Area Statements, and the Scenic Quality Improvement Plan. The Plan also addresses monitoring and capital improvements. The original Regional Plan had a 20-year timeframe, calling for a review and update by the year 2007. TIIMS will provide a means to coordinate and integrate the efforts of the involved agencies in what is called the PATHWAY 2007 process.

### ***Updating the USDA Forest Service Land and Resource Management Plan***

The Lake Tahoe Basin Management Unit of the USFS is updating and revising the Land and Resource Management Plan (Forest Plan) for the Lake Tahoe Basin. The process is underway and will be completed in 2007. The scope and information needs of the Forest Plan are wide and will address an array of topics, including the following:

- Establish desired land and resource conditions
- Establish management standards
- Designate suitable uses (zoning)
- Establish monitoring direction
- Provide a framework for management and site-specific project planning
- Assure forest management is consistent with environmental laws (e.g., Endangered Species Act, Clean Air Act, Clean Water Act, state and regional water standards).

The Forest Plan is being developed using a new model for Forest Plans, which relies upon the adaptive management approach and includes three components:

- *Vision*. The vision reflects the uniqueness of the Basin and builds on its core strengths.
- *Strategies*. The strategy is how the vision will be implemented over a 3- to 5-year period. Its focus is on goals and outcomes. The strategy can be easily updated and changed to better meet the Basin's vision.

- *Design Criteria.* The design criteria define the standards and regulations for the Basin.

The USFS is working closely with TRPA and the other partner agencies in the development of the Forest Plan. The initial focus of the Forest Plan will be thresholds with additional topics, such as wilderness, being addressed at a later date as determined through the visioning process. For more information about the updating of the Forest Plan, contact Irene Davidson, USFS, at [idaavidson@fs.fed.us](mailto:idaavidson@fs.fed.us)

### **References**

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