

# More Information on the Lake Tahoe Storm Water Treatment Pilot Studies

**What:**

These pilot studies are designed to test and compare the effectiveness of various coagulants, sedimentation, and filter media for removing contaminants in storm water runoff from Caltrans facilities.

**Where:**

A specially built facility houses the pilot study equipment at the Caltrans South Lake Tahoe Maintenance Station in Meyers, California.

**When:**

The pilot studies began in 2001 and will continue through 2008.

**Objective:**

To develop and test treatment technology to meet the NPDES permit numeric surface discharge limits by 2008.

**More Info:**

Contact Kevin Murphy at 916/278-8105, [Kevin.Murphy@owp.csus.edu](mailto:Kevin.Murphy@owp.csus.edu) or Ranny Eckstrom at 916/653-1303, [Ranny.Eckstrom@dot.ca.gov](mailto:Ranny.Eckstrom@dot.ca.gov)

**NPDES Permit Surface Discharge Limits**

Constituent	Maximum concentrations allowed in surface water discharges
<b>Turbidity</b>	<b>20 NTU</b>
<b>Total Nitrogen</b>	<b>0.5 mg/L</b>
<b>Total Phosphorus</b>	<b>0.1 mg/L</b>
<b>Total Iron</b>	<b>0.5 mg/L</b>
<b>Oil and grease</b>	<b>2.0 mg/L</b>

NTU=nephelometric turbidity units  
mg/L=milligrams per liter

**Treatment Systems Being Tested**

Over twenty combinations of sedimentation, filtration, and coagulation are being tested. The small-scale pilot studies are evaluating storm water treatment using slow-rate passive filters with traditional and innovative filter mediums—both with and without chemical coagulants/flocculants and/or sedimentation. Testing also includes a simulated high-rate mechanized system, which involves coagulation, flocculation, sedimentation, filtration, and ion exchange units. The overall pilot project will aid in developing design and performance criteria for full-scale systems.





Caltrans South Lake Tahoe Maintenance Station in Myers, California.



Small-scale pilot units used for treating storm water.



Researchers collect samples from the pilot units at the Caltrans test facility.



Storm water is collected from various locations in the Lake Tahoe Basin.

Storm water for the small-scale pilot is collected from various facilities in the Lake Tahoe Basin and brought to the pilot facility for testing. The treatment runs are designed to simulate field conditions.

The data being collected from the small-scale pilot units include:

- pollutant loading rates,
- coagulant dosing,
- sedimentation tank retention time,
- hydraulic conductivity of filter media and changes over time, and
- efficiency of pollutant removal.

The storm water pollutants being targeted with the small-scale treatments include: particulate materials (measured as turbidity), phosphorus, various forms of nitrogen (organic, ammonia, and nitrate), iron, and oil/grease.



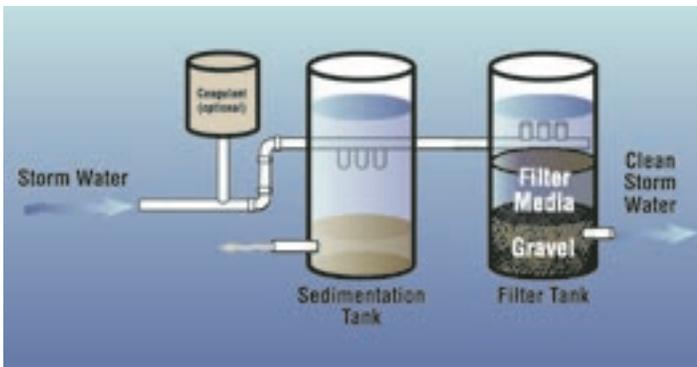
## Passive Systems

These treatment systems remove fine particles and include the following filter media:

- Fine sand
- Coarse sand
- Concrete sand
- Zeolite® (Clinoptilolite)
- Aluminum oxide sand
- Activated alumina
- Shale
- Limestone

Coagulants being tested include:

- Pass-C (Polyaluminum Chloride)
- PAM (Polyacrylamide)
- Chitosan



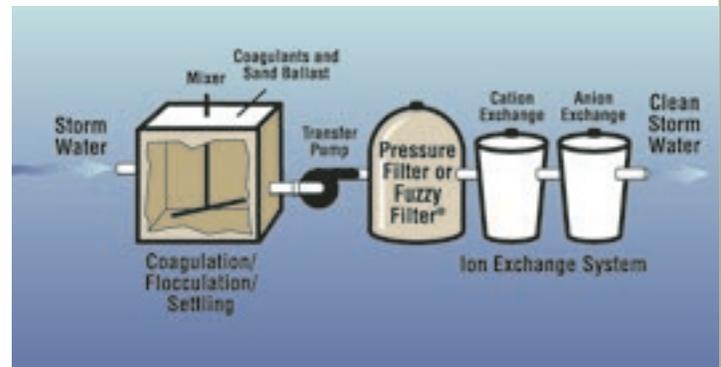
## About this Document

This information is provided in addition to that in Caltrans' *Lake Tahoe Storm Water Treatment Pilot Studies* brochure. The Lake Tahoe Storm Water Treatment Pilot Project is ongoing, and this information does not reflect final results. This document will be upgraded periodically as new information becomes available.

## Mechanized Systems

High-technology systems are being tested that involve more elaborate and mechanized treatment units than the passive systems. Mechanized treatment methods, such as ion exchange, remove pollutants that are dissolved in storm water. One of the goals is to make a small footprint system that can be used in roadside areas with limited space.

- Actiflo® – a coagulation/flocculation/sedimentation chamber using ballast sand in addition to coagulants
- Fuzzy Filter® – a compressible filter medium capable of high hydraulic loading rates. A proprietary filter being tested because of its low head requirement (small footprint) and large capacity to store solids.
- Pressure sand filter
- Ion exchange resins



Facility being used for pilot testing.

