

# LAKE TAHOE TMDL PROGRAM **2022 PERFORMANCE REPORT**

*10-Year Review: A Decade of Meaningful Progress*







# Overview

Lake Tahoe, nestled in the Sierra Nevada, is known around the world for its striking blue waters. The lake earned the namesake “Jewel of the Sierra” due to its remarkably clean waters, which allow sunlight to reach much greater depths than other bodies of water. A half-century ago, annual water clarity levels averaged over 97 feet. At the turn of the century, one-third of Lake Tahoe’s renowned water clarity was lost, threatening its important role as a world-class tourist destination, an unparalleled opportunity for sustainable outdoor recreation, and a vital source of clean drinking water.

To reverse the impact on water clarity at Lake Tahoe, state agencies from both California and Nevada – the Lahontan Regional Water Quality Control Board (Lahontan Water Board) and Nevada Division of Environmental Protection (NDEP) – worked together to develop a plan based on best-available science to:

- Better understand the causes of water clarity loss;
- Identify sources of pollutants entering the lake and determine how much they need to be reduced to restore historic water clarity levels; and
- Develop a workable, cost-effective strategy to do so.

The plan, known as the Lake Tahoe Total Maximum Daily Load (TMDL), was developed by both agencies and approved by the U.S. Environmental Protection Agency in 2011.

Since then, the Lake Tahoe TMDL Program has provided oversight of implementation efforts to reduce pollutant loads into the lake. The Lahontan Water Board and NDEP, working closely with implementing partners, release an annual performance report to track accomplishments, evaluate progress and effectiveness, and adaptively manage the program to incorporate the latest and best-available science and information.

The 2022 TMDL Performance Report highlights the program’s commitment to restoring Lake Tahoe’s water clarity. This year’s report includes findings and accomplishments for 2021, which also

marks the ten-year milestone for program implementation. In light of this milestone, this year’s TMDL Performance Report is more comprehensive than previous years’, encapsulating the past decade’s important and meaningful successes.

The report is organized by and assesses the last ten-years of progress for the two pollutant source types. The first, urban upland sources, includes runoff from roads and other development. The second, non-urban sources, includes stormwater runoff from forestlands, erosion from streams, and atmospheric pollution. Highlights follow each of these sections. The first provides examples of important projects and actions taken to reduce urban stormwater pollutant loads to the lake. Due to the increasing threat of wildfire impacts, the second highlight looks at restoration work completed for the Angora Fire and studies launched to investigate water quality impacts of the 2021 wildfires. Finally, the report looks ahead to ongoing and future science efforts to further understand recent clarity trends and emerging conditions that may be altering the lake.

For a closer look at the TMDL Program and data provided in this report, view the Lake Clarity Tracker at [clarity.laketahoeinfo.org](https://clarity.laketahoeinfo.org).

## **Summary of Lake Tahoe TMDL Key Findings**

Lake Tahoe’s water clarity decline is due to an increase in fine sediment particles (FSP) and free-floating algae. FSP scatter light, while algae absorb it. Both reduce the amount of light that penetrates through the water column, reducing clarity.

To restore Lake Tahoe’s historic water clarity, FSP loads need to be reduced by 65%. Nitrogen and phosphorus, which increase algae levels, also need to be reduced by 10% and 35%, respectively. This is expected to take 65 years.

To reach a water clarity goal of 78 feet by 2031, the program must achieve roughly half of these load reductions. This interim goal is referred to as the Clarity Challenge.

# Urban Upland Source Category

Runoff from roads and other urban land uses is the single largest source of fine sediment particle (FSP) pollution in Lake Tahoe, accounting for more than 70% of the lake's total FSP load. Research has found that addressing urban stormwater is the best way to control FSP pollution and achieve the program's load reduction goals.

The Lake Tahoe TMDL Program established the [Lake Clarity Crediting Program](#) to encourage its Urban Implementing Partners to reduce urban stormwater pollutant loads, demonstrate the ongoing effectiveness of pollutant controls, and assess progress toward load reduction milestones. Urban Implementers use a water quality model called the Pollutant Load Reduction Model (PLRM) to estimate the benefit of pollutant controls they implement. Controls are then registered within the [Lake Tahoe Info Stormwater Tools](#) accounting system.

Each year, lake clarity credits are awarded to Urban Implementers if pollutant controls are maintained in proper functioning condition. Credits help track overall progress in reducing FSP loads into the lake. One credit is equivalent to an FSP reduction of 200 lbs/year. In 2021, the credit target translated to a 21% FSP load reduction from 2004 baseline levels.

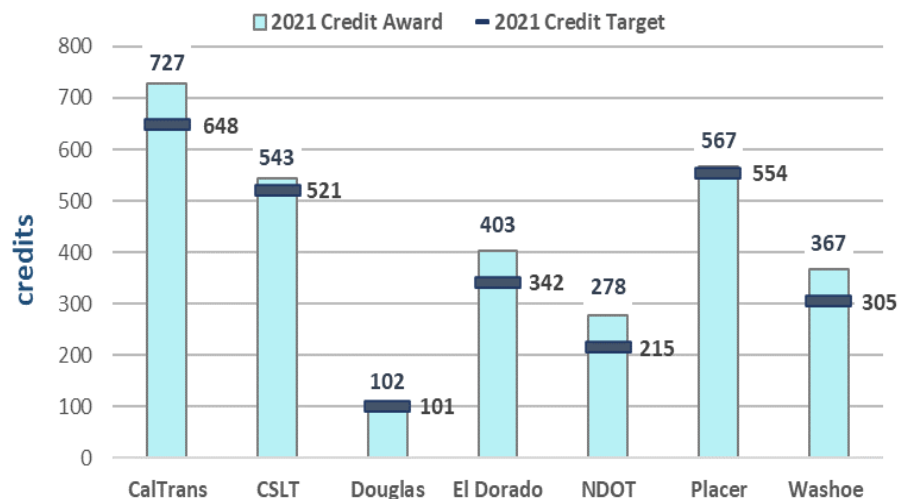
## TMDL URBAN IMPLEMENTING PARTNERS

California Department of Transportation (Caltrans)  
City of South Lake Tahoe (CSLT)  
Douglas County  
El Dorado County  
Nevada Department of Transportation (NDOT)  
Placer County  
Washoe County

## Accomplishments

For 2021, there were 45 active registrations in the Stormwater Tools system. Registrations include a variety of pollutant controls, including road operations, stormwater treatment Best Management Practices (BMPs), and parcel based BMPs. In total, 2,987 credits were awarded to Urban Implementers, all who exceeded their individual 2021 credit targets. Credits awarded equate to nearly 600,000 lbs/year of FSPs diverted from Lake Tahoe. This is a 23% reduction from 2004 baseline levels, helping the Lake Tahoe TMDL Program surpass its 2021 FSP reduction goal of 21%.

### 2021 CREDIT TARGETS AND AWARDS



The program's 2021 targets for nitrogen and phosphorous load reductions were 14% each. Pollutant controls reduced nitrogen loads by over 4,500 lbs/year and phosphorus loads by close to 1,700 lbs/year, a 13% and 18% reduction, respectively. While the program fell just short

of its nitrogen target, significant atmospheric reductions achieved for this constituent have likely offset this shortcoming (see Atmospheric Deposition section under Non-Urban Source Categories).

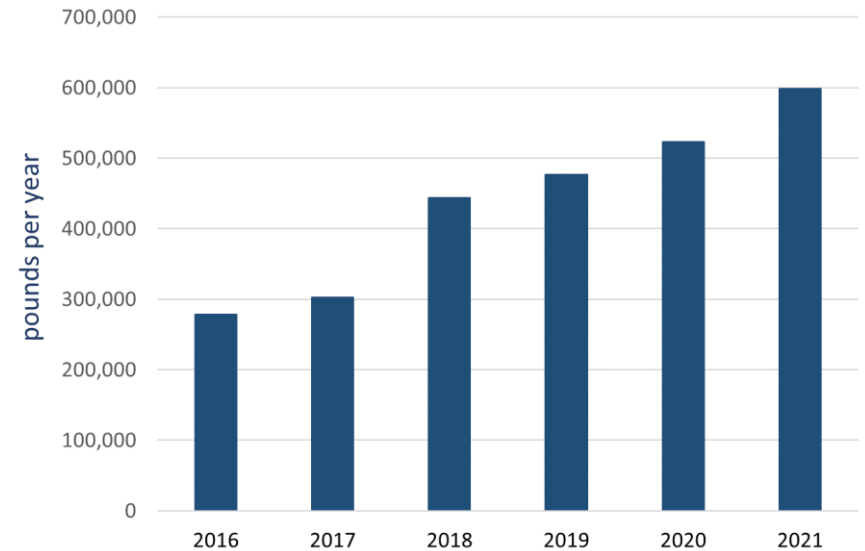
Other programmatic accomplishments through 2021 include:

- Coordinated efforts related to regulatory compliance, determined stormwater project funding priorities, and fulfilled Lake Tahoe Restoration Act reporting obligations through the Stormwater Quality Improvement Committee
- Regional Stormwater Monitoring Program implementation and annual report development
- Lake Clarity Crediting Program streamlining, tool enhancement, and updated user reference manuals
- NDEP and Nevada Urban Implementers executed new five-year interlocal agreements for the 2022-2026 term
- Lahontan Water Board worked with California Urban Implementers to update municipal stormwater permits.

Looking forward, Urban Implementers continue to plan and implement water quality improvements at Lake Tahoe to meet future load reduction targets. Planned projects and actions are specified in stormwater reports submitted annually to NDEP or the Lahontan Water Board.

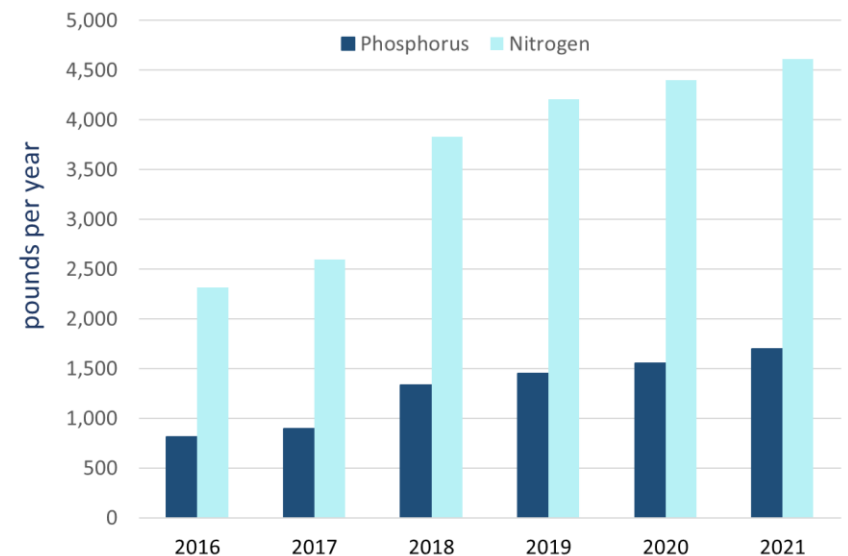
## Fine Sediment Particle Load Reductions

Urban Uplands Source Category



## Nutrient Load Reductions

Urban Uplands Source Category



# Urban Uplands – Ten-year Progress Highlights

## **Kings Beach Commercial Core (EIP Project #03.02.01.0002)**

In 2017, water quality improvements were made at Kings Beach as part of Placer County's "Complete Streets" project. Comprehensive erosion controls were put in place, and stormwater conveyance systems and treatment basins were built along a one-mile segment of roadway. The project reduces nearly 35,000 lbs/year of FSPs on average.

*Revamped Kings Beach commercial core*



*Infiltration gallery*

*Water quality treatment vault*



*Basin under construction*

*Completed basin*



## **Bijou Area Erosion Control Project - Phase 1 (EIP # 01.01.01.0019)**

This City of South Lake Tahoe project treats stormwater runoff from 47 acres of highly impervious roadways and commercial properties. The project installed a comprehensive regional treatment system to pump runoff to infiltration basins in the upper watershed and completely replaced the storm drain system bypass for the 1300-acre Bijou Creek watershed. Caltrans helped plan, fund, and implement the project, and thus receives a portion of the lake clarity credit awards. The project reduces FSP by an estimated 24,365 lbs/year.

## **Meyers Stream Environment Zone/ Erosion Control Project (EIP Project #01.01.01.0071)**

El Dorado County reconnected 3.5 acres of wetland and created some new wetlands in Meyers, California. The project also created over 40,000 cubic meters of stormwater storage in three wet basins and seven infiltration basins. The project reduces about 48,000 lbs/year of FSPs on average.



*Infiltration basin*

*Infiltration basin and vegetated swale*





### **Kahle Water Quality Basin Project (EIP Project #01.01.01.0150)**

Completed in 2018, this Douglas County project created a wet basin to capture and treat stormwater runoff in the lower Kingsbury area and improve stormwater conveyance capacity along Kahle Drive. The project also improved public access to nearby Rabe Meadow. The project reduces about 10,000 lbs/year of FSPs on average.

*Wet basin, post-construction*



*Wet basin, 2022*



*Regenerative air, high-efficiency vacuum sweeper*



Caltrans, NDOT, Washoe County, Placer County, and Douglas County/Kingsbury General Improvement District each earn credits by implementing advanced road operations on certain road networks within their jurisdictions. While practices and equipment vary between entities, strategies are generally similar and involve the targeted application of wintertime traction abrasives with low FSP content, increased sweeping frequency and intensity using specialized equipment to pick up both FSP and large particles before they are ground down into FSP. Regular inspections help to verify roads are kept at or better than the expected condition. Altogether, roadway operations implemented by these jurisdictions reduce FSP loads to the lake by over 255,000 lbs each year.

### **Central Incline Village Phase I (EIP Project #01.01.01.0150)**

This project installed source control and improved stormwater conveyance, capture, and treatment in priority areas identified in Washoe County's Stormwater Load Reduction Plan. The project is estimated to reduce FSP loads by almost 9000 lbs/year on average.

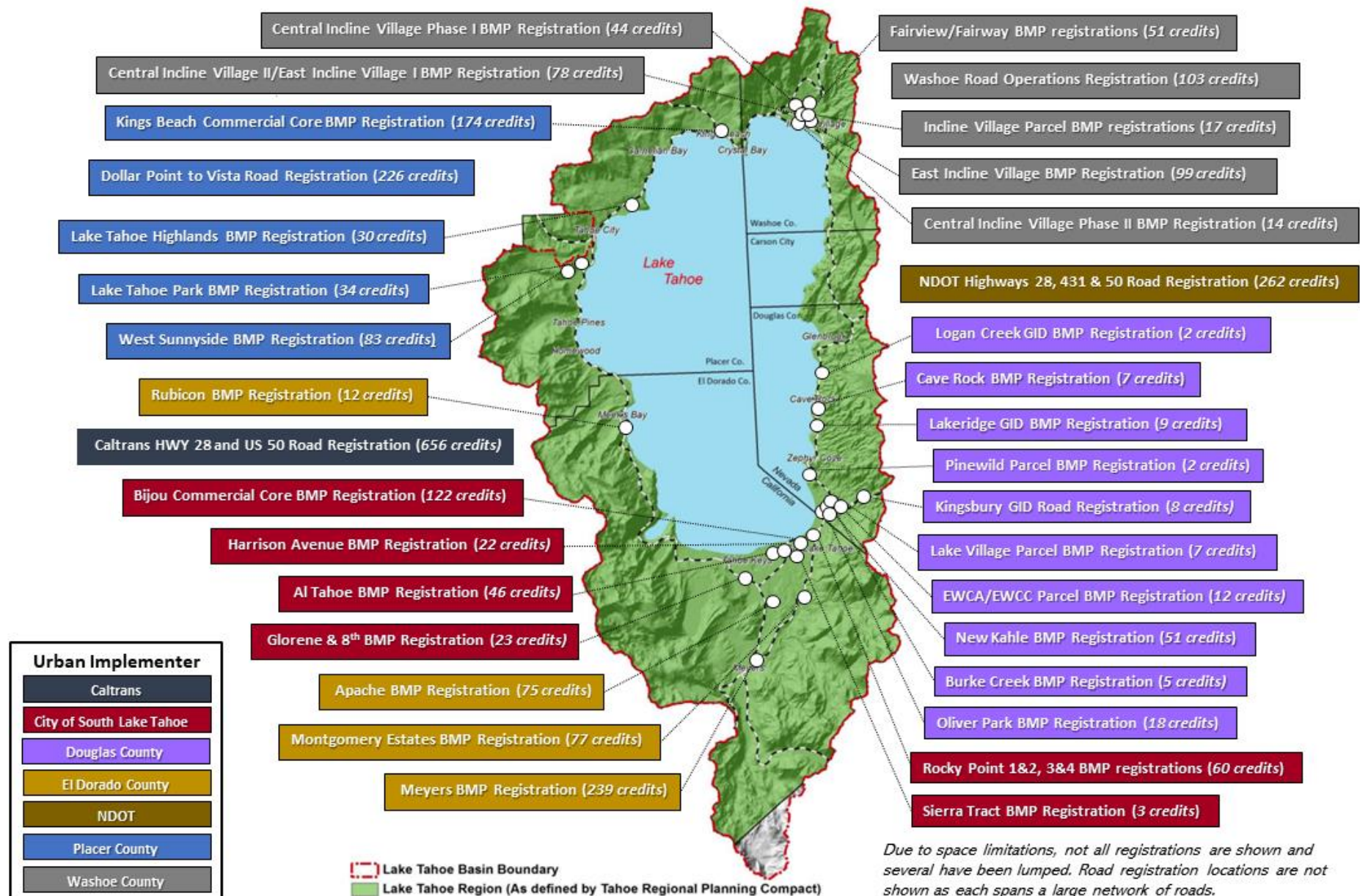
*Sub-surface infiltration gallery*



*Infiltration basin*



# Crediting Program Registrations - At a Glance





# Non-Urban Source Categories

Non-urban sources of pollution, which include the Forest Uplands, Stream Channel Erosion, and Atmospheric Deposition Source Categories, collectively contribute just 28% of the total FSP load into Lake Tahoe. However, these sources also account for 71% of the total nitrogen load and 43% of the total phosphorus load. Implementing water quality improvements in these Non-Urban Source Categories is integral to meeting the long-term goals of the Lake Tahoe TMDL Program.

TMDL research found that implementation of existing and planned programs, projects, and actions using best practices would be sufficient to achieve established load reduction targets for the Non-Urban Source Categories. These activities, implemented by local, state, and federal partners, are tracked using a set of performance measures (PMs). This

activity-based tracking system is useful for non-urban pollution sources, as quantifying load reduction totals is a complex and costly undertaking.

This section summarizes the accomplishments for each non-urban source category. Program partners have worked with Non-Urban Implementers over the past several years to refine PM descriptions, review results for accuracy and completeness, and make sure Non-Urban Source Category implementation is on track to meet the Clarity Challenge. The devastating 2021 wildfire season inspired a wildfire highlight that quantifies the disturbed area created from Caldor Fire suppression activities, describes efforts initiated to study smoke and fire impacts, and summarizes accomplishments of restoration work completed for the Angora Fire.

TMDL PERFORMANCE MEASURE	SOURCE CATEGORY	DESCRIPTION
<b>Forest Roads Decommissioned or Retrofitted</b>	Forest Uplands	Tracks the miles of permanent forest roads, paved or unpaved, that are decommissioned or on which stormwater best management practice (BMP) retrofits are implemented.
<b>Forest Roads Inspected and Maintained</b>	Forest Uplands	Tracks the miles of permanent forest roads, paved or unpaved, that are inspected and/or maintained to reduce stormwater pollution.
<b>Forest Roads Created</b>	Forest Uplands	Tracks the miles of permanent forest roads, paved or unpaved, that are created or added to a road owner's permanent road network.
<b>Disturbed Area Restored, Enhanced, or Created</b>	Forest Uplands	Tracks the total acres of disturbed area, not including roads or Stream Environment Zones (SEZ), in the Forested Uplands that are restored, enhanced or created.
<b>Forest Upland Facilities Retrofitted for Stormwater</b>	Forest Uplands	Tracks the number of public facilities (as parcels) in the Forested Uplands that are retrofitted with BMPs to reduce runoff volumes, fine sediment particles, and nutrients.
<b>Stream Channel Restored or Enhanced</b>	Stream Channel	Tracks linear feet of stream channel restoration and enhancement.
<b>Miles of Street Sweeping</b>	Atmospheric Deposition	Tracks the miles of city, county, and state roads that are swept to reduce stormwater pollution during each EIP reporting year as part of regular operations and maintenance procedures.
<b>Non-Compliant Wood Stoves Removed or Retrofitted</b>	Atmospheric Deposition	Tracks the number of polluting wood stoves that are removed or replaced to reduce emissions.
<b>Miles of Pedestrian and Bicycle Routes Improved or Constructed</b>	Atmospheric Deposition	Tracks the miles of bicycle paths, sidewalks, and other transit routes that have been constructed, improved, or designated.

## Forest Uplands

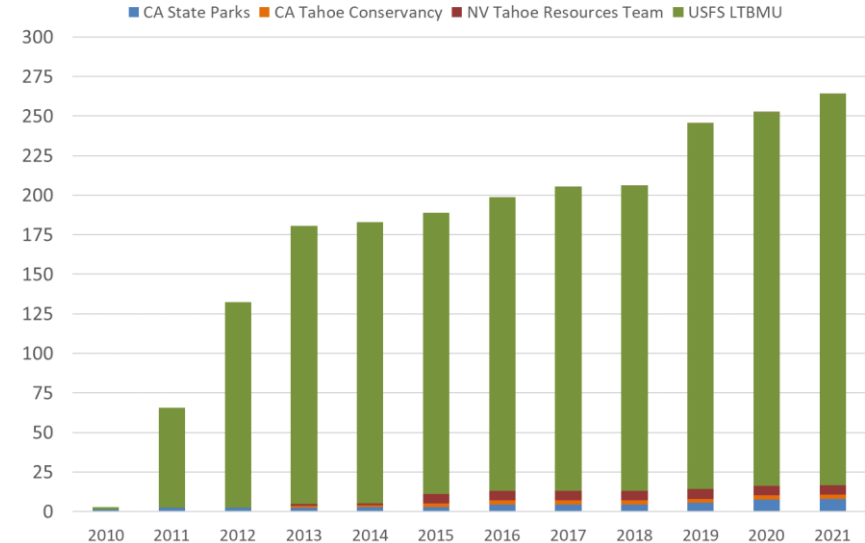
By far, most of the pollutant loading from forest uplands comes from stormwater runoff. The runoff carries particles and nutrients from forest roads, disturbed land, and public facilities such as buildings, parking lots, trailheads, and campgrounds. Without controls, these pollutants make it into surface waters that drain into Lake Tahoe.

Because forest roads generate more sediment per area than any other forestland source, three PMs track forest road-related activities. In 2021, 11.5 miles of roads were decommissioned or retrofitted, bringing the total reported to 265 miles. Forest partners also continue to regularly inspect their roadways, performing maintenance as needed. The U.S. Forest Service Lake Tahoe Basin Management Unit (LTBMU) reported 0.5 miles of paved road created for the Round Hill Pines Resort Retrofit (EIP Project #03.01.02.0047). This is the first and only result reported of a forest road created. Water quality should not be impacted due to the installation of BMPs to capture and treat stormwater runoff from this small section of roadway.

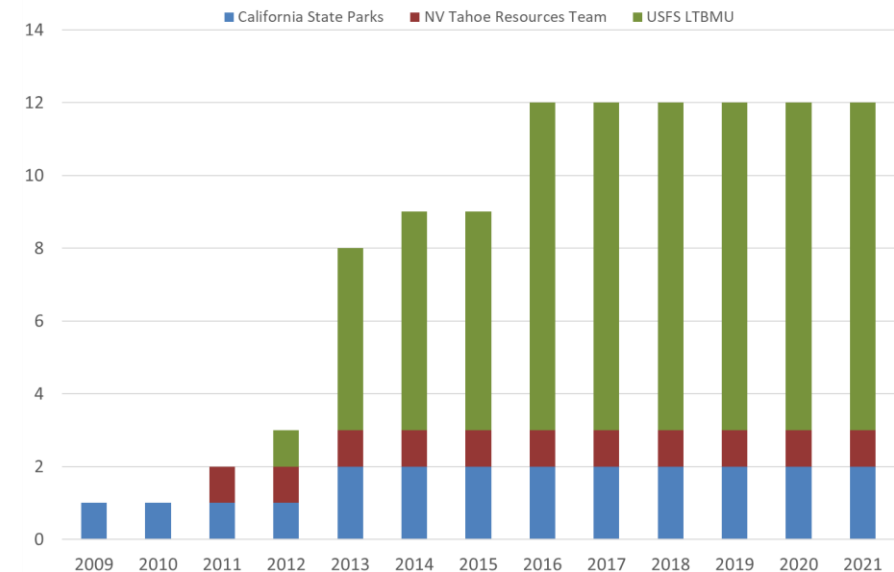
Disturbed areas are forestlands other than roads or stream environment zones with compacted soil, disturbed vegetation, or impaired infiltration. This includes areas such as ski runs or fuels reduction project staging areas and landings. Restoring and enhancing disturbed areas increases stormwater infiltration and reduces erosion, keeping pollutants out of Lake Tahoe. In 2021, the Nevada Tahoe Resource Team restored 0.5 acre and enhanced 0.5 acre of disturbed area each, bringing the total acreage that program partners have collectively restored or enhanced to over 15 acres across the Tahoe Basin.

Stormwater runoff from public facilities also has the potential to deliver pollutants to downstream waters. The program tracks the number of public facilities in the forest uplands that are retrofitted to reduce runoff. As of 2021, twelve facilities were upgraded with BMPs to reduce runoff and limit FSP and nutrient loading into the lake.

**Forest Roads Decommissioned or Retrofitted  
(cumulative, miles)**



**Forest Upland Facilities Retrofitted for Stormwater  
(cumulative, number of facilities)**



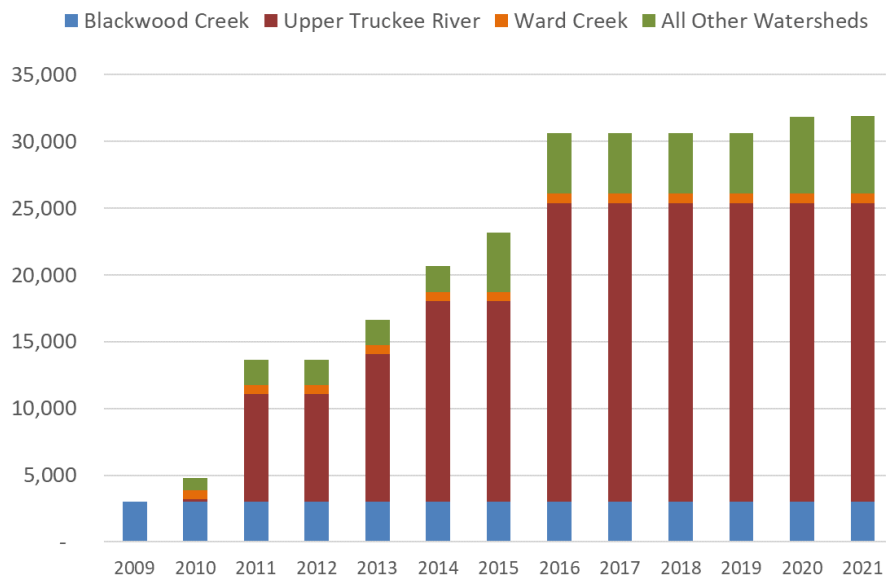


## Stream Channel Erosion

TMDL research found that projects aimed at restoring streams in the Lake Tahoe Basin are a cost-effective way to significantly reduce FSP loading into the lake. Pollution from the Upper Truckee River, Blackwood Creek, and Ward Creek make up nearly all of the FSP loading from stream channel erosion. The Lake Tahoe TMDL Program tracks restoration and enhancement activities for these stream channels, as well as other activities across the Lake Tahoe Watershed.

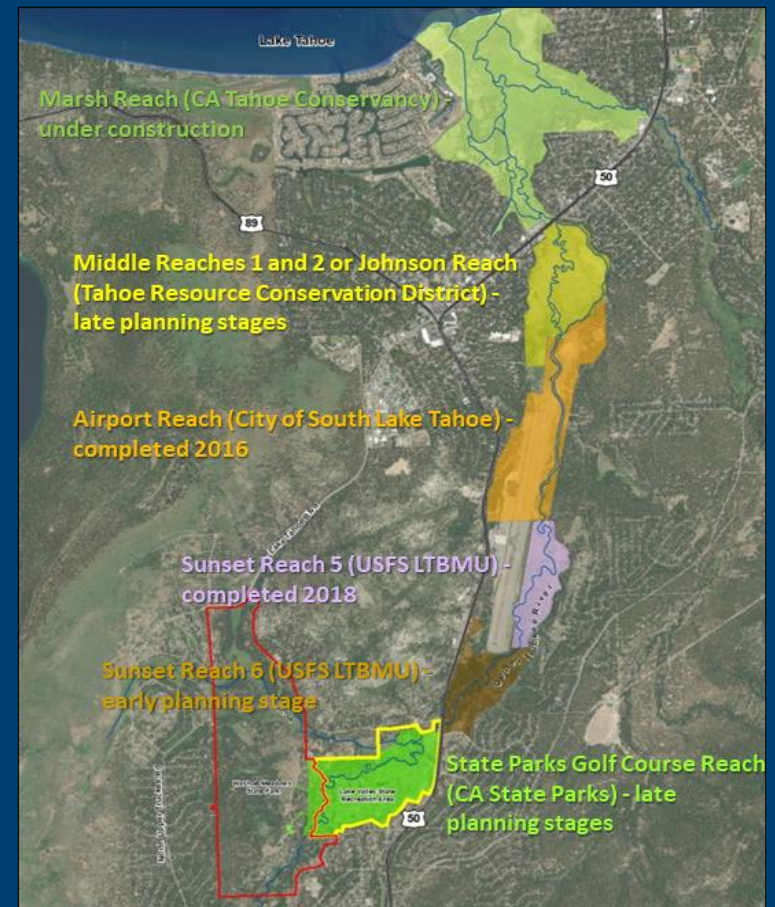
These activities continued through 2021, bringing the total amount of stream channels restored or enhanced to almost 32,000 linear feet. More than 80% of all activities took place in the Upper Truckee River, Blackwood Creek, or Ward Creek systems and over 90% of activities were focused on restoration versus enhancement. [Please note that previous TMDL Performance Reports incorrectly included results from several projects that did not involve actions to reduce stream channel erosion and the delivery of pollutant loads to the lake. This issue has been resolved for this and subsequent reports.]

### Stream Channel Restored or Enhanced by Lake Clarity Projects (cumulative, linear feet)



## Upper Truckee River Restoration

TMDL research found the Upper Truckee River yields 60% of the total FSP delivered from the stream channel erosion source category. Activities including irrigation diversion, road and railroad grading, and airport construction caused stream incision, lowering of the water table in the floodplain, and drying of historic wetland. Over the past decade, numerous partners have been collaboratively planning and restoring the system. The map below shows the six sections where restoration efforts are focused to reconnect the river to floodplain, raise the water table, improve riparian vegetation, stabilize bed and banks, and filter pollutants.



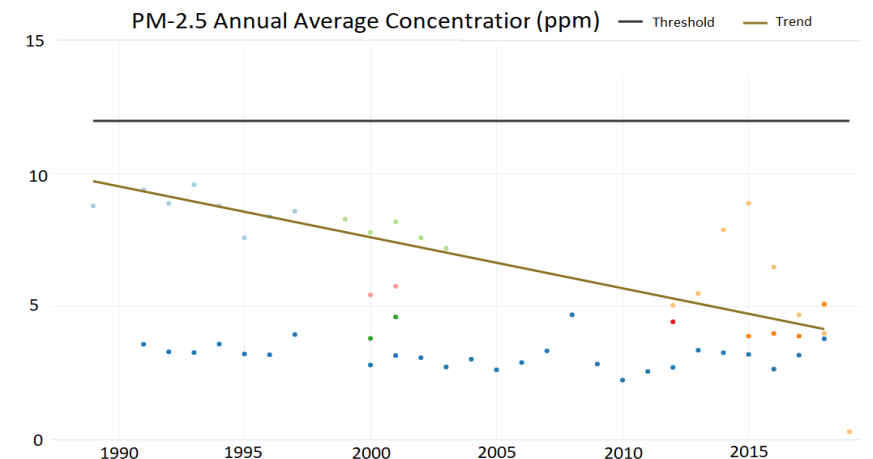
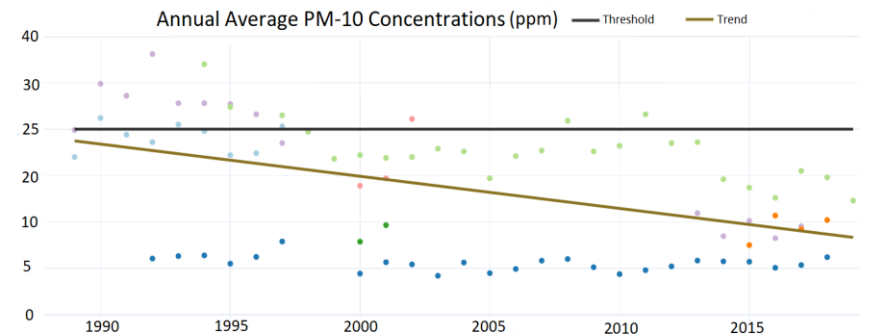
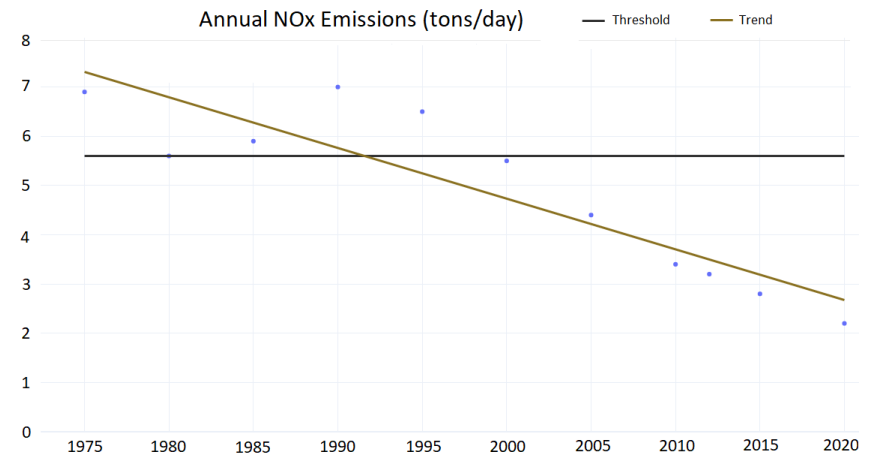
## Atmospheric Deposition

The strategy for reducing FSP and phosphorus from atmospheric deposition calls for actions and controls that reduce dust from roadways, parking lots, and construction sites. Urban Implementer's road operations typically involve targeted application of traction abrasives and removing particulates on roadways before they can be ground down into very fine particles that can then be entrained into the air. Results indicate that since 2017, nearly 10,000 miles of roads are swept on an annual basis, predominantly with high technological sweepers that are capable of collecting these very fine particulates.

Most atmospheric nitrogen comes from NO<sub>x</sub> emissions from on-road motorized vehicles, watercraft, and equipment; residential fuel combustion; solvent; and fuel evaporation. Regional programs such as reducing automobile use through transit and bike paths and cleaner-burning wood stoves aim to reduce NO<sub>x</sub>. In 2021, 1.5 miles of pedestrian and bicycle routes were constructed, bringing the total to 40.5 miles on top of almost 30 total miles improved. Thirteen non-compliant wood stoves were removed and retrofitted in 2021, bringing the reported total to 412. Additional transportation related accomplishments are contained within the [Tahoe Regional Planning Agency \(TRPA\)'s 2021 Annual Report](#).

### 2019 TRPA Threshold Evaluation

Reducing atmospheric pollutant loads relies on the implementation of the TRPA Regional Plan. Every four years, TRPA releases a Threshold Evaluation Report that assesses the effectiveness of these strategies and determines the environmental health of the region. The 2019 Threshold Evaluation found that NO<sub>x</sub> emissions from mobile sources in the Tahoe Basin have declined by 66% over the last 20 years. NO<sub>x</sub> emissions are likely to continue to decline due to stricter tailpipe emission standards. Significant long-term downward trends were also found for particulate matter less than 10 and 2.5 microns (PM-10, PM-2.5). These trends show the TRPA Regional Plan has and continues to make significant strides toward reaching TMDL load reduction targets.





# Wildfire Impacts and Restoration

2021 was marked by devastating wildfires that impacted the Tahoe Basin from early summer into fall. Most notably, the Tamarack Fire, the Dixie Fire, and the Caldor Fire impaired Lake Tahoe basin air quality for months, with large stretches of Unhealthy to Very Unhealthy levels and occasional record-breaking Hazardous levels. On August 30, the Caldor Fire advanced over Echo Summit, causing 24,000 residents to be evacuated. The fire burned more than 10,000 acres within the Upper Truckee River and Trout Creek watersheds in the Tahoe Basin and was not fully contained until late October. Fire suppression activities, or those activities undertaken to control the spread of a fire, associated with the Caldor Fire resulted in roughly 320 acres of disturbed area created in the Lake Tahoe basin. Efforts to mitigate the disturbed area created began immediately, and the TMDL Program is working with LTBMU to determine the acres that have been restored or enhanced.

Considering twelve of California's top twenty largest fires have occurred since 2017, wildfire remains a top threat to offset the important water quality improvements described in this report. Studies suggest smoke and ash settling on lake surfaces can stimulate algal growth through the addition of nutrients and reduced ultraviolet light. Post-fire water quality impacts can be considerable and last for years, with watersheds becoming more susceptible to runoff and erosion. How much water quality is impacted depends on several factors, including the extent and intensity of the wildfire and fire-suppression activities, post-fire mitigation efforts and precipitation, and watershed topography.

The Tahoe Science Advisory Council (Science Council) is leading several studies into what impact the 2021 wildfire season had on lake clarity and what is being done to minimize these and future fire impacts. A closer look at lessons learned from the 2007 Angora Fire can also provide insight into these topics.

## Wildfire Impacts Research and Monitoring

The extent and duration of the 2021 wildfires presented a unique opportunity to better understand the influence of smoke and ash on Lake Tahoe's water quality. The Lake Tahoe TMDL Program coordinated

with the Science Council and other partners to initiate a project for this purpose. This research is critical as our changing climate has caused wildfires to grow bigger, burn longer, and spark more often. The research will be summarized in science reports later this summer.

The Caldor Fire caused a relatively low percentage of high soil burn severity in the Tahoe Basin. The U.S. Forest Service Pacific Southwest Research Station is now leading a project to determine if recent investments in forest health and fuel reduction activities helped control the spread of the fire. The team will look at fire severity and tree mortality to evaluate the effectiveness of wildfire mitigation strategies, with the goal of using the findings to help guide future fuels management work in the Tahoe Basin. A formal report summarizing key findings is anticipated to be delivered by December 2022.

To better understand how the Caldor Fire affects pollutant loads into Lake Tahoe, the Lake Tahoe TMDL Program is coordinating with the U.S. Geological Survey to monitor water quality in the impacted watersheds. A final report will be published in 2023, and data from water quality samples will be analyzed to inform the 2023 annual clarity evaluation.

## Angora Fire Restoration & Monitoring

The 2007 Angora Fire burned 3,100 acres and destroyed over 250 homes in South Lake Tahoe, California. Thousands of trees were killed, impacting forest soils and riparian and wildlife habitat. Without mitigation, fuel loading was expected to rise considerably. Therefore, LTBMU planned three phases of rehabilitation:

- Phase 1: Rehabilitate areas impacted during fire suppression efforts
- Phase 2: Implement emergency treatments to address the immediate erosion risk created by the fire
- Phase 3: Collaborate with partner agencies and the local community to restore the burned area.

LTBMU developed a number of restoration strategies, including reducing fuel loads, replacing roads and trails, restoring impacted

### Angora Fire Restoration Key Accomplishments

- 672 acres total acres reforested, including 38 acres planted by community stewardship project
- 44 acres of aspen/meadow restoration
- 1,400 acres treated to reduce/thin fuels
- Established wildlife habitat management zones to protect native species
- 4,000 linear feet of stream channel restored/enhanced along Angora Creek and Seneca Pond
- Trails and roads relocated outside stream zones and upgraded with stormwater controls to minimize water quality impacts
- Established permanent monitoring plots to assess the effectiveness of restoration and mitigation efforts

vegetation, and abating noxious weeds. These projects began in the months after the Angora Fire broke out and continued through 2016. Post-fire water quality monitoring showed that nutrients and turbidity increased above pre-fire levels. Wet meadow areas downstream of the burned area, along with erosion control efforts and below average precipitation reduced impacts from the fire. Within five years, water quality had recovered to pre-fire levels.

### **Caldor Fire Restoration**

The Caldor Fire burned nearly 10,000 acres within the Tahoe basin. Less than 5% of the burn area was high severity where soils will be especially susceptible to erosion and high surface run-off during rainstorms if left unmitigated. The fire burned upstream of, and within, the Upper Truckee River and Trout Creek watersheds. Upper Truckee River and meadow restoration downstream are expected to moderate sediment and nutrient impacts to Lake Tahoe. LTBMU began work to repair areas disturbed by fire suppression efforts as soon as conditions allowed. This included installing natural features to reduce stormwater runoff, covering soil disturbance with brush to mimic natural conditions, and cleaning debris from stream crossings. LTBMU will treat approximately 1,500 acres in the Tahoe Basin, reducing fuels along roads and near homes. Long term restoration of the burn area will include many strategies developed to address the Angora Fire.



*Left: Harvester thinning trees in surviving forest to improve health and reduce fuels.*

*Right: Students planting trees during Angora Reforestation Stewardship project, April 2009*



*Left: Angora Creek after Angora Fire, prior to rehabilitation.*

*Right: Post-fire rehabilitation of Angora Creek.*





# Looking Forward

A panel of researchers from the Science Council meet annually to review Lake Tahoe water clarity and associated environmental data. The council then releases an annual briefing memorandum which summarizes the factors that drive water clarity changes.

Key takeaways from the 2021 clarity evaluation process included:

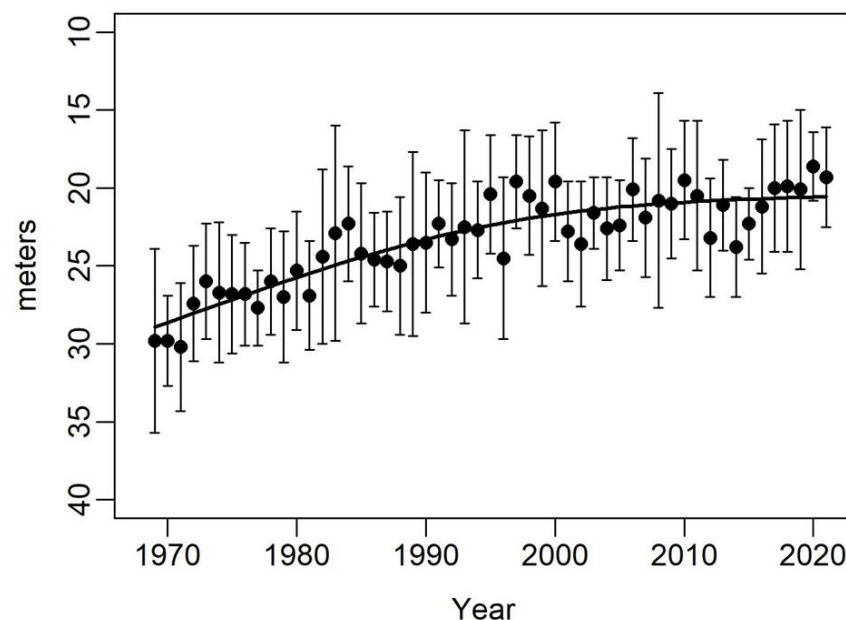
- Lake clarity has remained comparable for the past 20 years.
- Summer clarity (June - September) continues to decline at a significant rate. Meanwhile, winter clarity (December - March) has stayed mostly static.
- Fine particle concentrations and algal chlorophyll continue to have the greatest impact on water clarity, accounting for 68% of Secchi depth variation since 2008.

Water clarity measurements in 2021 included times when wildfire effects and smoke-borne particles were prevalent in the Tahoe Basin. While water clarity values were taken before runoff from the Caldor Fire burn scar began, research from these impacts will be included in scientific reports released later this year. Research on impacts from the wildfires is ongoing and will be summarized in science reports to be released later in 2022.

The ten-year milestone in load reductions has been met and Science Council findings support continuing efforts to control fine sediment and nutrient inputs to the lake. Thus, the Lake Tahoe TMDL Program remains committed to working with its partners to continue to implement effective pollution controls.

However, the lack of improvement in clarity levels over the last two decades is concerning. The Lake Tahoe TMDL Program remains committed to assisting the Science Council to develop future research priorities, including assessing fine particle loading, in-lake

**Annual Average (Water Year)**



particle characteristics and dynamics, and biological relationships. Findings and recommendations from this research will be incorporated into the TMDL Management System, the program's continuous improvement and adaptive management process, creating an effective way forward to efficiently restore Lake Tahoe's renowned water clarity.



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