



NEVADA DEPARTMENT OF TRANSPORTATION

LAKE TAHOE TMDL

**ANNUAL REPORT FOR WATER YEAR 2022
OCTOBER 1, 2021 through SEPTEMBER 30, 2022**

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LIST OF ACRONYMS

| | |
|----------|--|
| BAT | Best Available Technology |
| BMP | Best Management Practices |
| BMP RAM | Best Management Practices Rapid Assessment Methodology |
| EC | Erosion Control |
| FSP | Fine Sediment Particles |
| GIS | Geographic Information System |
| GID | General Improvement District |
| ILA | Interlocal Agreement |
| LCCP | Lake Clarity Crediting Program |
| MP | Mile Post |
| NDEP | Nevada Division of Environmental Protection |
| PLRM | Pollutant Load Reduction Model |
| RAM | Rapid Assessment Methodology |
| Road RAM | Road Rapid Assessment Methodology |
| SR | State Route |
| SNPLMA | Southern Nevada Public Lands Management Act |
| TMDL | Total Maximum Daily Load |
| TN | Total Nitrogen |
| TP | Total Phosphorous |
| TSS | Total Suspended Solids |
| UPC | Urban Planning Catchment |
| WQ | Water Quality |
| WQIP | Water Quality Improvement Project |
| WY | Water Year (October 1 – September 30) |
| US | United States Route |
| ZCGID | Zephyr Cove General Improvement District |

1.0 BACKGROUND

The purpose of this report is to comply with Section 4 of the Interlocal Agreement (ILA) to Implement the Lake Tahoe Total Maximum Daily Load (TMDL), dated November 2021, between the Nevada Department of Transportation (NDOT) and the Nevada Division of Environmental Protection (NDEP). This report summarizes NDOT’s load reduction activities undertaken during water year 2022 (October 1, 2021 through September 30, 2022) in an effort to meet the credit targets and milestones established in the ILA.

A new Interlocal Agreement (ILA) to Implement the Lake Tahoe Total Maximum Daily Load (TMDL) Water Years 2022-2026, between the NDOT and NDEP was finalized in November of 2021. Credit milestones and intermediate targets within this new agreement were revised from the previous agreement based on baseline credit discrepancies. The new credit milestones and intermediate targets are shown in *Table 1*.

Table 1. NDOT credit milestones established in the 2021 NDOT-NDEP ILA

| Water Year | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 |
|--------------------------|------------|------|------|------|------|------------|------|------|------|------|------------|
| FSP Load Reduction | 21% | 24% | 26% | 29% | 31% | 34% | 34% | 35% | 36% | 37% | 38% |
| Credit Target/ Milestone | 215 | 244 | 264 | 295 | 315 | 345 | 345 | 356 | 366 | 376 | 386 |

2.0 ACCOMPLISHMENTS SUMMARY

NDOT is continuously striving to meet the agreed upon obligations and commitments outlined in the Lake Tahoe TMDL ILA through Road Operations, Capital Improvement Projects, BMP Installation and overall maintenance of stormwater facilities throughout the basin. For Water Year (WY) 2022, time was dedicated to road operations and maintenance, including Road RAM for registered road segments, continued maintenance of existing BMPs, training of staff, and the design and construction of new Water Quality Improvement Projects (WQIP). NDOT was awarded 278 credits for WY2022, which exceeds the WY2022 target of 244 credits and allots NDOT a substantial number of credits toward the WY2023 target.

2.1 Credit Declaration and Award

2022 WY credits declared and awarded stem primarily from two registrations, one road and one BMP. NDOT continued a roadway registration for WY2022 which included SR 28 from MP 5.12 to 11.0 in Washoe County, SR 431 from MP 0.0 to 3.0 in Washoe County and US 50 from MP 5.05-9.06 in Douglas County. NDOT performed another full year of road operations and maintenance, including the collection of Road RAM scores. This road registration resulted in 262 credits awarded to NDOT. The New Kahle Wet Basin registration, shared with Douglas County, resulted in 16 credits awarded for NDOT. Achieving the expected condition for the road and BMP registrations resulted in exceeding the WY2022 credit target. The annual credit target, credits expected, and credits declared and awarded are summarized in *Table 2*.

Table 2. NDOT credits expected, declared and awarded

| Water Year | Annual Credit Target | Lake Clarity Credits Expected | Lake Clarity Credits Declared | Lake Clarity Credits Awarded |
|----------------------|----------------------|-------------------------------|-------------------------------|------------------------------|
| Oct 2021 – Sept 2022 | 244 | 278 | 278 | 278 |

Two registered water quality projects, Pittman Terrace Water Quality and Erosion Control Project and Zephyr Cove Water Quality Improvement Project (ZC WQIP), eight and 30 potential credits respectively, were not declared during WY2021 due to the additional expenses related to maintenance, performing BMP RAM and the associated reporting. It is anticipated that these BMP registrations will be declared in future water years.

2.2 Progress Towards 2022 Milestone

Prior to and during the first five-year milestone, NDOT completed numerous WQIPs along Nevada State Routes 28, 431, 207, 760 and US 50 in the basin and has begun the process of registering these BMP projects. However, during WY2022 NDOT’s primary focus was on road operations and maintenance, including collecting Road RAM scores, for SR 28, US 50 and SR 431. The declared road segments are outlined in *Table 3*.

NDOT continued to verify roadway condition by conducting Road RAM. The expected condition score for SR 431 was 2.0, 2.2 for US 50 and 2.8 for SR 28. These road segments were kept at or above the average expected condition for WY2021 with average scores of 2.2 for SR 431, 3.0 for US 50 and 2.9 for SR 28. NDOT will continue to assess the maintenance needs, responsibility and costs associated with catchments that are declared.

In cooperation with Douglas County, NDOT was awarded credits for the shared New Kahle Wet Basin. Sixteen credits were awarded to NDOT.

2.2.1 Road Operations Implementation Summary

NDOT has continued to implement an overall Road Operations Plan throughout the basin. This includes training of staff, increase BAT equipment available for maintenance staff, and an overall approach to reduce abrasives application and minimize their residence time on roadways. The Road Operations Plan for the three reaches of roadway were registered beginning in WY2021. Full credits were awarded due to the Road Operations being performed and in place on the registered road network.

In WY2022, NDOT continued the process of identifying future road segments for registration in order to meet future credit milestones. Considerations for registration take into account many factors beyond credit allocation, including safety and feasibility to conduct Road RAM.

Table 3. Declared catchments showing expected vs. actual condition scores

| Urban Planning Catchment (UPC) | Catchment Description | Pollutant Controls | Expected Condition Score | Score for WY2019 | Lake Clarity Credits (PLRM v2.1) |
|--------------------------------|--|---|--------------------------|------------------|----------------------------------|
| 431_WA_0.0-3.0 | State Route 431 Road Operations | Improved road operations through advanced abrasive application & sweeping | 2.0 | 2.2 | 73 |
| 28_WA_5.12-11.0 | State Route 28 Crystal Bay to Mt. Rose Road Operations | Improved road operations through advanced abrasive application & sweeping | 2.8 | 2.9 | 129 |
| 50_DO_5.05-9.06 | US Route 50 Skyland GID to Glenbrook Road Operations | Improved road operations through advanced abrasive application & sweeping | 2.2 | 3.0 | 60 |

2.2.2 BMP Implementation Summary

In cooperation with Douglas County, BMP RAM was performed on the shared New Kahle Wet Basin on September 28, 2022. The basin was assessed as a wet basin and passed with a 5.0 RAM score. Sixteen credits were awarded to NDOT.

NDOT has completed numerous WQIP's throughout the Tahoe Basin since 2004. NDOT continued design of water quality and erosion control projects that will accompany pavement repair on SR 431 and SR 28 from Crystal Bay to East Lakeshore Blvd. in Incline Village as well as stand-alone water quality projects on SR 28 at Marlette Creek and US 50 near the Skyland General Improvement District (GID).

3.0 STORMWATER LOAD REDUCTION PLAN

3.1 Progress Toward Future Milestones

NDOT has completed numerous WQIPs along Nevada State Routes 28, 431, 207, 760 and US-50 in the basin that can be used for BMP registrations. There is a continued effort to implement WQIPs throughout NDOT’s roadway network to reduce fine sediment runoff from reaching Lake Tahoe. The 262 credits awarded from registering SR 28, US 50 and SR 431 and 16 credits from the Kahle Wet Basin puts NDOT 14 credits above the WY2023 credit target and 17 credits less than the WY2024 credit targets. NDOT previously completed registrations for Pittman Terrace Water Quality and Erosion Control Project and Zephyr Cove WQIP. The addition of these credits provides NDOT with 316 potential credits which is sufficient to meet credit targets through WY2025, however, it is anticipated that NDOT will meet future credit goals with additional roadway registrations. NDOT also has several self-funded and collaborative multi-agency projects that have been previously constructed or are currently being designed and progressing towards implementation. These projects are summarized in *Table 5*.

Table 5: Capital Improvement Projects Available or Anticipated to be Available for Registration to Achieve Future Milestones

| Project Description | Project Implementation Year | Expected BMP Lake Clarity Credits |
|---|---------------------------------|-----------------------------------|
| US 50 WQ and EC Project (Cave Rock to Glenbrook) | 2006/2016 | 10 |
| SR 207 WQ and EC Project | 2015 | 27 |
| Burke Creek Stream Restoration and Erosion Control | 2016 | 2 |
| US 50 WQ and EC Project (Glenbrook Canyon) | 2006/2016 | 3 |
| US 50 Zephyr Cove WQ and EC Project | 2017 | 30 |
| SR 28 Bike Path, WQ and EC Project | 2018 | * |
| US 50 Pittman Terrace WQ and EC Project | 2018 | 8 |
| SR 28 WQ and EC Project @ Marlette Creek | 2022 | * |
| SR 28 (Crystal Bay to east Lakeshore Blvd.) WQ and EC Project in Conjunction with Pavement Rehabilitation | 2022 | 33 |
| SR 431 WQ and EC Project in Conjunction with Pavement Rehabilitation | 2022 | 19 |
| US 50 WQ and EC Project @ Skyland GID | 2022 | * |
| US 50 WQ and EC Project in Conjunction with Pavement Rehabilitation | 2024 | * |
| | Total Potential Credits: | 132 |

*Lake Clarity Credit estimates to be provided upon completion of construction when as-built drawings are available.

NDOT will register and declare the required number of projects from *Table 5* or register additional sections of roadways as necessary to meet and/or exceed future milestones. It is NDOT’s goal to determine the credit potential for all completed and future LCCP related projects. During WY2023, NDOT will continue to research and plan long term credit registrations of roadways and BMPs to meet future credit targets and milestones. The number of credits that are estimated to be available from roadway registrations and BMP project registrations for future water years are shown in *Table 6*. As shown in *Table 6*, the addition of credits generated from further registration of BMP projects would be sufficient to meet the WY2023 target, WY2024 target, as well as the rolling five-year target (milestone) (WY2026).

Table 6. NDOT estimated credits for BMP and roadway registrations.

| Water Year | 2023 | 2024 | 2026 |
|--|------|------|------|
| Credit Target/Milestone | 264 | 295 | 345 |
| Projected Credits Available for Registration | 358 | 410 | 410 |

While it is anticipated that NDOT will be able to meet short term credit targets and milestones, long term success is dependent on available maintenance personnel and functioning equipment. NDOT has begun an evaluation of the long-term viability of the existing maintenance equipment fleet. This evaluation will address any shortcomings and will inform leadership of future maintenance equipment needs.

4.0 FISCAL ANALYSIS

4.1 Budget

NDOT's primary source of funds will continue to be the state gas tax to cover program and administrative costs, road operations & maintenance, and monitoring associated with the Lake Tahoe TMDL. Budgeted amounts are based on average expenditures during previous water years. At this time, budgeted amounts are sufficient, and the Department is confident in continuing to meet the load reduction targets and milestone in the current NDOT/NDEP ILA. *Table 7* summarizes NDOT's 2022 expenditures as well as the 2023 budget areas of interest. NDOT plans to implement a Lake Tahoe TMDL Maintenance Contract in order to supplement NDOT maintenance staff and equipment needs. This contract would supplement traditional maintenance efforts with additional stormwater related maintenance. These additional efforts would be targeted towards reduction of fine sediment and include more thorough cleaning of BMPs, curb and gutter and sidewalks. This contract was previously planned to commence in WY2018; however, it will now be initiated in WY2023.

Table 7: NDOT Budget and Expenditures for WY2022 and WY2023 respectively.

| Program Area and/or Project Description | Funding Source | 2022 NDOT Expenditures | 2023-2025 Annual Budgeted Amount |
|--|--------------------|------------------------|----------------------------------|
| Program Support and Implementation ⁽¹⁾ | State Gas Tax/NDEP | \$380,600 | \$200,000 |
| Stormwater Operations and Maintenance ⁽²⁾ | State Gas Tax | \$1,099,000 | \$500,000 |
| Road Operations and Maintenance ⁽³⁾ | State Gas Tax | \$685,600 | \$1,300,000 ⁽⁴⁾ |
| Lake Tahoe TMDL Maintenance Contract ⁽⁵⁾ | State Gas Tax | \$0 | \$100,000 |
| Total: | | \$2, 165,200 | \$2,100,000 |
| Capital Improvement Projects | | WY2022 | WY2023 |
| SR 28 Marlette Creek WQ and EC | State Gas Tax | \$465,600 | \$1,500,000 |
| Total: | | \$2,630,800 | |

(1) – Includes planning, coordination, monitoring and reporting.

(2) – This includes BMP maintenance and the overall sweeping program.

(3) – This includes pothole repairs, shoulder repair, sand and salt operations and is a total of personnel, material and equipment costs.

(4) – Costs vary greatly depending on winter precipitation types/amounts and overall winter severity. Fortunately, the Department has sufficient budget and reserves to cover the fluctuations.

(5) – A new service provider contract is budgeted for and will be pursued to address difficulties experienced with currently available maintenance resources and executed maintenance contracts.

4.2 Finance Plan

NDOT will continue to pursue outside funding options available for the implementation of future water quality improvements. To date, the Nevada state gas tax has been sufficient to cover the overall costs associated with implementing the program. NDOT will continue the agreement with the Tahoe Resource Conservation District (TRCD) and other jurisdictions in the Basin to monitor water quality improvements. As with previous water years, for WY2022 and future water years, 100% of the monitoring costs for each jurisdiction will be the jurisdictions responsibility.

5.0 BARRIERS

The major challenges NDOT faces in implementing the Lake Tahoe TMDL are:

- 1) Funding is not anticipated to become a major barrier for NDOT in the near future. However, with the current political environment, and leadership changes within NDOT, funding will always be considered as a potential barrier.
- 2) NDOT's declarations remain heavily weighted towards Road Operations which in turn is heavily dependent on maintenance. The inherent barriers resulting are as follows:
 - a. Weather with seasonal and annual variability
 - b. Maintenance priorities and overall workload
 - c. Maintenance crew staffing, recruiting and retention difficulties and crew inexperience
 - d. Equipment availability, functionality and reliability. Coordination with the Equipment and Maintenance Divisions will continue to occur to address any equipment related issues and shortcomings. Equipment reliability and availability for SR 431 continues to be a challenge. The relatively short lifespan of sweepers paired with steeper terrain, which precludes the use of many sweepers, has led to frequent shortage of available sweepers.

6.0 BASELINE DISCREPANCIES

The baseline load estimate developed in the 2016 Baseline Report could potentially be refined with each credit registration. Baseline load estimates were refined during the registration process for Pittman Terrace WQIP, ZC WQIP and Kahle Basin WQIP as well as the WY2021-2022 Road Registration. Table 8 summarizes these discrepancies.

Table 8. Baseline Load Discrepancies

| Registration Name | 2016 Jurisdictional Baseline Report Estimated FSP load (lb/yr) | Registration Baseline Refined FSP load (lb/yr) | Baseline Difference (lb/yr) |
|---|--|--|-----------------------------|
| Pittman Terrace BMP | 4,352 | 4,322 | -30 |
| Zephyr Cove Water Quality Improvement Project | 9,271 | 6,646 | -2,625 |
| New Kahle Wet Basin | 5355 | 5956 | 601 |
| WY2021-2022 Road Registration | 112,587 | 113,197 | 607 |

Table 9 provides revised jurisdictional baseline loads for FSP, Total Nitrogen (TN) and Total Phosphorous (TP) based on the 2016 Jurisdictional Baseline Report with updates for WY2020 and WY2021 Stormwater Tools registrations. The annual report will maintain a running tally of all baseline discrepancies for registrations. This will be used to update future annual credit targets and five-year credit milestones.

Table 9. Jurisdictional Baseline Load

| Pollutants of Concern | 2016 Jurisdictional Baseline Report Estimated Load (lb/yr) | WY2020 Refined Baseline Load (lb/yr) | WY2021 Refined Baseline Load (lb/yr) |
|-----------------------|--|--------------------------------------|--------------------------------------|
| FSP ¹ | 205,006 | 202,243 | 203,596 |
| TP | 564 | 560 | 564 |
| TN | 1704 | 1690 | 1699 |