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Governor

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DEPARTMENT OF TRANSPORTATION  
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KRISTINA SWALLOW, P.E., Director

In Reply Refer to

April 26, 2022

JASON KUCHNICKI  
NDEP  
BUREAU OF WATER QUALITY PLANNING  
901 S. STEWART ST. SUITE 4001  
CARSON CITY, NV 89701

Interlocal Agreement #NM711-16-019  
Lake Tahoe TMDL— WY2021 Annual Report

Dear Mr. Kuchnicki,

The Nevada Department of Transportation (NDOT) is submitting the 2021 Lake Tahoe TMDL Annual Stormwater Report per the requirements of the Interlocal Agreement (between NDOT and NDEP) dated November 22, 2016. Contents describe NDOT's compliance activities performed during WY2021 (October 1, 2020 through September 30, 2021).

As always, we appreciate your continued assistance. If you have any questions regarding this information, please contact Erin Honjas at (775) 888-7593 or [ehonjas@dot.nv.gov](mailto:ehonjas@dot.nv.gov) or Chris Holman at (775) 888-7798 or [cholman@dot.nv.gov](mailto:cholman@dot.nv.gov).

Sincerely,

A handwritten signature in blue ink that reads "Chris Holman".

Chris Holman, P.E.  
Principal Hydraulic Engineer



**NEVADA DEPARTMENT OF TRANSPORTATION**  
**LAKE TAHOE TMDL**

**ANNUAL REPORT FOR WATER YEAR 2021**  
**OCTOBER 1, 2020 through SEPTEMBER 30, 2021**

Nevada Department of Transportation  
Hydraulics Division  
1263 South Stewart Street  
Carson City, NV 89712

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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 2016, 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 2021 (October 1, 2020 through September 30, 2021) in an effort to meet the credit targets and milestones established in the ILA and shown in Table 1.

Table 1. NDOT credit milestones established in the 2016 NDOT-NDEP ILA\*

Water Year	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
FSP Load Reduction	<b>10%</b>	12%	15%	17%	19%	<b>21%</b>	23%	25%	28%	31%	<b>34%</b>
Credit Target / Milestone	<b>79</b>	123	154	174	195	<b>215</b>	236	256	287	318	<b>349</b>

\*Adjusted targets and milestones for WY2022-WY2026 are found in Table 4.

## 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) 2021, 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 WY2021, which exceeds the WY2021 milestone of 215 credits and allots NDOT a substantial number of credits toward the WY2022 milestone.

### 2.1 Credit Declaration and Award

2021 WY credits declared and awarded stem primarily from two registrations, one road and one BMP. NDOT began a new, expanded roadway registration for WY2021 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 WY2021 credit milestone. The annual credit milestone, credits expected, and credits declared and awarded are summarized in *Table 2*.

Table 2. NDOT credits expected, declared and awarded

Water Year	Annual Credit Milestone	Lake Clarity Credits Expected	Lake Clarity Credits Declared	Lake Clarity Credits Awarded
Oct 2019 – Sept 2020	215	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 2021 Milestone

Prior to and during the first five-year milestone, NDOT has 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 WY2021 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 2.5 for SR 28. These road segments were kept at or above the average expected condition for WY2021 with average scores of 2.3 for SR 431, 3.1 for US 50 and 3.0 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 WY2021, 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	2.3	74
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	3.0	107
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	3.1	81

### 2.2.2 BMP Implementation Summary

In cooperation with Douglas County, BMP RAM was performed on the shared New Kahle Wet Basin on September 13, 2021. The basin was assessed as a wet basin and passed with a 3.4 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

A new Interlocal Agreement (ILA) to Implement the Lake Tahoe Total Maximum Daily Load (TMDL) Water Years 2022-2026, between the Nevada Department of Transportation (NDOT) and the Nevada Division of Environmental Protection (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 4*.

*Table 4. NDOT credit milestones established in the 2022 NDOT-NDEP ILA*

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

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 34 credits and 14 credits above the WY2022 and WY2023 credit targets respectively. 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 WY2022, 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 WY2022 target, WY2023 target, as well as the rolling five-year target (milestone) (WY2026).

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

Water Year	2022	2023	2026
Credit Target/Milestone	244	264	345
Projected Credits Available for Registration	358	410	410

## 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 2021 expenditures as well as the 2022 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 WY2022.

*Table 7: NDOT Budget and Expenditures for WY2021 and WY2022 respectively.*

Program Area and/or Project Description	Funding Source	2021 NDOT Expenditures	2022-2024 Annual Budgeted Amount
Program Support and Implementation <sup>(1)</sup>	State Gas Tax/NDEP	\$94,800	\$200,000
Stormwater Operations and Maintenance <sup>(2)</sup>	State Gas Tax	\$1,089,300	\$500,000
Road Operations and Maintenance <sup>(3)</sup>	State Gas Tax	\$1,207,200	\$1,300,000 <sup>(4)</sup>
Lake Tahoe TMDL Maintenance Contract <sup>(5)</sup>	State Gas Tax	\$0	\$100,000
Total:		\$2,391,300	\$2,100,000
Capital Improvement Projects		WY2020	WY2021
SR 28 Marlette Creek WQ and EC	State Gas Tax	\$339,000	\$2,000,000
Total:		\$2,730,300	

(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 WY2021 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 has invested a considerable amount of time and resources on developing an alternative to Road RAM during WY2016 and WY2017. NDOT contracted with NTCD and 2ND Nature to develop procedures that are more efficient and safer for personnel to perform on primary roadways. These procedures were submitted to NDEP for approval during WY2017. The Highway RAM was approved as an alternative highway condition assessment tool in February 2018. NDOT anticipates there may still be some challenges with the actual implementation of Highway RAM. This may result in delays or overlapping data collection for NDOT and NDEP as familiarization with the new procedures occur. Highway RAM results continue to be analyzed to determine how the LCCP process will be impacted as Highway RAM is utilized in-place of Road RAM.
- 3) 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	205,006	202,243	203,596
TP	564	560	564
TN	1704	1690	1699