



Water Year 2022 Annual Stormwater Report

Douglas County

Prepared for:

Nevada Division of Environmental Protection
Bureau of Water Quality Planning

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Submitted:

March 15, 2023

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List of Acronyms

BMP	Best Management Practices
BMP RAM	Best Management Practices Rapid Assessment Methodology
CAP	Credit Accounting Platform
CICU	Commercial, Institutional, Communications, Utilities
ECP	Erosion Control Project
EIP	Environmental Improvement Program
FSP	Fine Sediment Particles
ILA	Interlocal Agreement
LCCP	Lake Clarity Crediting Program
MFR	Multi-family Residential
NDEP	Nevada Division of Environmental Protection
NDOT	Nevada Department of Transportation
O&M	Operations and Maintenance
PLRM	Pollutant Load Reduction Model
RAM	Rapid Assessment Methodology
Road RAM	Road Rapid Assessment Methodology
RSWMP	Regional Stormwater Monitoring Program
SFR	Single-family Residential
SLRP	Stormwater Load Reduction Plan
SNPLMA	Southern Nevada Public Lands Management Act
SWQIC	Storm Water Quality Improvement Tool
TMDL	Total Maximum Daily Load
TN	Total Nitrogen
TP	Total Phosphorus
TRPA	Tahoe Regional Planning Agency
WQIP	Water Quality Improvement Project
WY	Water Year (October 1 – September 30)

1.0 BACKGROUND

The purpose of this report is to comply with Section IV of the 2022-2026 Interlocal Agreement to Implement the Lake Tahoe Total Maximum Daily Load (ILA), executed on October 7, 2021. This report summarizes Douglas County's load reduction and maintenance activities undertaken in Water Year 2022 (WY2022) to meet the 2022 credit milestone of 101 credits established in the ILA. Douglas County met and exceeded the WY2022 credit milestone (needed 101 credits, obtained 118 credits) in WY2022. A total of 16 credits were distributed to NDOT in WY2022 as explained below, leaving Douglas County with 102 credits for WY2022. Douglas County entered into an updated ILA October 1, 2021 that is valid until September 30, 2026 for water years 2022-2026.

2.0 ACCOMPLISHMENTS SUMMARY

In order to enhance the consistency of efforts made basin-wide, Douglas County continues to actively participate in the Stormwater Quality Improvement Committee (SWQIC), which identifies Environmental Improvement Program (EIP) funding priorities; Implementer Stormwater Monitoring (IMP) group, which is a part of the Regional Stormwater Monitoring Plan (RSWMP); and the Parcel BMP Working Group.

In order to meet the 2022 milestone of 101 credits, Douglas County had registered the load reduction activities listed in Table 1 (below). Construction of the lower Kahle wet basin was completed in October 2018. Sixteen (16) of the 51 credits were distributed to Nevada Department of Transportation (NDOT) in WY2022 according to an agreement that was reached between Douglas County and NDOT. This leaves Douglas County with 102 credits to declare in WY2022. Douglas County will be able to continue to perform maintenance within registered catchments to meet the 2023 target of 101 credits. The Kingsbury General Improvement District (KGID) Road Registration will be expanded for additional credit in WY2023.

Table 1: Summary of Credit Registration Accomplishments at the end of WY2022

Catchment ID	Registration Name	Pollutant Controls	Year Implemented	Estimated FSP Load Reduction	Credits
PW01	Pinewild Condominiums	Parcel BMPs	2004-2016	452	2
EWCH/BCC	KGID Road Registration	Road Operations	2014	1,574	8
CR02	Cave Rock WQIP	Bed Filter	2015	1,341	7
EWCC	Edgewood Creek Parcel BMPs	Parcel BMPs	2004-2016	767	4
LC01	Logan Creek GID WQIP	Treatment vaults, infiltration basins	2007	478	2
LR01	Lakeridge GID WQIP	Dry basins, treatment vaults	2006	1,813	9
OP01	Oliver Park WQIP	Wet basin, treatment vaults	2006	3,623	18
LV01	Lake Village	Parcel BMPs, Infiltration Basin	2006	1,130	6
EWCA	EWCA BMPs	Parcel BMPs	2004-2018	1,253	6
BRC	Burke Creek WQIP	Parcel BMPs	2017	914	5
DCA, 20701, 20702, 5007, 5008b	New Kahle Wet Basin	Wet basin	2018	10,151	35*
Total				23,496	102**

*The total amount of credits this registration is eligible for is 51, therefore 16 credits were distributed to NDOT in WY 2022.

**The total was reduced to 102 credits, as 16 credits were distributed to NDOT for their catchments 20701, 20702, 5007, 5008b for the New Kahle Wet Basin registration.

With these successful registrations, Douglas County has at least one of each BMP type. In order to maintain the credits awarded and declared in WY2022, Road RAM and BMP RAM were conducted on registered catchments to show that they were continuing to function. Additionally, maintenance was performed on the Lakeridge Dry Basin, as well as the Oliver Park Wet Basin, and the New Kahle Wet Basin.

2.1 Credit Declaration and Award

Credits are declared by January 15 and awarded by February 15 through the Lake Tahoe Info Stormwater Tools online. Credits are eligible to be declared through Treatment BMP RAM inspection results, Parcel BMP inspection results, and Road RAM inspection results. For Water Year 2022, 102 credits were declared. The New Kahle Wet Basin has 51 credits associated with the registration, however in WY2022, 16 of those credits were distributed to NDOT, as some of their facilities drain to the wet basin.

Table 2: Jurisdiction-wide credits, declared

Water Year	2021 Annual Credit Target	2021 Five Year Milestone	Credits Expected	Credits Declared	Credits Awarded
WY 2022	101	101	105	102	102

The following registrations were declared in WY2022 for road operations, water quality improvement projects, and parcel BMP implementation.

Table 3: Credit declared due to road operations and BMP implementation

Catchment ID	Primary Water Quality Improvement Actions	Declaration Date	Lake Clarity Credits Expected	Lake Clarity Credits Declared
EWCH/BCC	Road Operations and Maintenance	1/15/2021	8	8
PW01	Parcel BMPs	1/15/2021	2	2
CR02	Cave Rock WQIP	1/15/2021	7	7
EWCC	Parcel BMPs	1/15/2021	4	4
LC01	Logan Creek WQIP	1/15/2021	2	2
LR01	Lakeridge WQIP	1/15/2021	9	9
OP01	Oliver Park WQIP	1/15/2021	18	18
LV01	Lake Village	1/15/2021	7	6
EWCA	Parcel BMPs	1/15/2021	8	6
BRC	Parcel BMPs	1/15/2021	5	5
DCA	New Kahle Basin WQIP	1/15/2021	35	35
Total			105	102

2.2 BMP RAM Inspection Results

All BMP Assessments were entered into the Lake Tahoe Info (LT Info) Stormwater Tools. Table 4 below outlines the BMP RAM inspection results to demonstrate the systems are functioning and have been maintained. Maintenance was performed on the Lakeridge Dry Basin, the Oliver Park Wet Basin, and the New Kahle Wet Basin. Please note, RAM scores are only determined for BMPs that are considered ‘essential’ and ‘key’ water quality improvements. Essential is defined as the potential to receive 10+ credits, and key is defined as the potential to receive 3-9 credits. Specific inspection results for each BMP are documented in the online Stormwater Tools Assessments page. Please note that although the Lake Village registration generates 7

credits, the infiltration basin associated with the registration produces 1 credit, therefore the infiltration basin does not require BMP RAM.

Table 4: Summary Table of BMP RAM WY2022 Inspections conducted September 28, 2022.

Catchment Name	BMP Name	Threshold	Observation	Benchmark	Annual Score
CR02 Cave Rock WQIP	DCBF0001 Bed Filter	60% decline (0.2 in/hr.)	0.555 in/hr	0.5 in/hr.	5.0
LR01 Lakeridge GID WQIP	DCDB0005 Dry Basin	20% decline (0.08 in/hr), vegetation cover 20%, Material accumulation 30% decline (0.45 ft.)	1.158 in/hr vegetation cover (wetland/riparian) 0% material accumulation Depth 0 ft	0.1 in/hr., vegetation cover 0%, material accumulation 0 ft. depth	5.0
OP01 Oliver Park WQIP	DCWB0001 Wet Basin	vegetation cover min 45%, max 75% Material accumulation (Depth 0.5 ft.)	vegetation cover 60% material accumulation Depth 0 ft	vegetation cover 60% Material accumulation Depth 1 ft.	5.0
New Kahle Wet Basin	New Kahle Wet Basin	vegetation cover min 45%, max 75% Material accumulation (Depth 1.5 ft)	Material accumulation 0 ft Vegetative cover 60%	Material accumulation 0 ft Vegetative cover 60%	5.0

The Cave Rock WQIP is functioning at a high level currently. Some preliminary maintenance was conducted by the Cave Rock GID in the summer of 2019. Douglas County staff coordinated with the Cave Rock GID to conduct the maintenance of the culvert inlet and outlets of the basin during WY2020.

The Lakeridge WQIP is functioning at an optimal level currently. Douglas County staff coordinated with the Lakeridge GID to conduct maintenance during WY2022. Maintenance was conducted in September 2022 and vegetative cover and sediment was removed from the basin and near the inlet. Maintenance access was an issue with these BMPs to perform maintenance, however Douglas County staff overcame those obstacles.

The Oliver Park WQIP assessment was conducted based on the updated benchmark and threshold for the percentage of vegetative cover to align with the TRPA BMP Handbook. An extensive vegetation removal maintenance project occurred in WY2018. Another vegetation removal maintenance project occurred in September 2022. That project brought the wet basin back to functioning condition. A repair was also made to the low flow drain at the outlet of the basin, so the basin is functioning optimally now.

2.3 Parcel BMP Inspection Results

The five parcel BMP registrations are Pinewild (PW01), the lower north side of Kingsbury neighborhood (EWCC), the lower south side of Kingsbury neighborhood (EWCA), Lake Village (LV01), and the most recent registration Burke Creek (BRC). Three of the registrations met the expected thresholds and were declared with full credit (PW01, EWCC, and BRC). EWCA had lower CICU BMP percentages than expected (expected 65.9%, 53.1% actual). PLRM was re-run with the actual percentages and six credits were declared and awarded, instead of eight. LV01 had lower than anticipated MFR (expected 85.1%, actual 51.9%) and higher than anticipated SFR (expected 83.3%, actual 97.1%). PLRM was re-run with the actual percentages and six credits were declared and awarded, instead of seven. Douglas County coordinates with TRPA annually to evaluate BMP Maintenance within registered catchments to update certificates as needed. Douglas County will work with TRPA to bring these properties back into compliance and achieve the expected condition percentage. If that is not achieved, Douglas County will update the registrations to reflect the actual percentages achieved. All of the BMP Certification Percentages are available on LT Info.

2.4 Road RAM Assessments

Road RAM assessments are conducted during three time periods throughout the water year: one fall assessment October through January, if the fall one can't be accomplished, one summer assessment may be conducted (June through September), and three spring assessments February through May. In WY2022, assessments were conducted on 1/20/2022, 2/11/2022, and 5/24/2022 (Spring assessments) and 7/22/2022 (summer assessment, as a fall assessment was not conducted).

This road network was registered at a score of 3.0. The WY2022 annual average score was 3.1. Douglas County declared credits for the EWCH/BCC Kingsbury GID road registration for WY2022, and was awarded eight credits.

3.0 STORMWATER LOAD REDUCTION PLAN

The Interlocal Agreement between NDEP and Douglas County outlines the annual targets and 5-year milestones necessary to meet TMDL specified load reductions. The credit targets are to achieve 101 credits in WY2022 (five-year milestone). As registrations are approved by NDEP, monitoring will occur annually and maintenance will be performed (as funding allows) when thresholds are reached as outlined in each registration memo.

3.1 Progress toward 2022 Milestone Target

In order to meet and exceed the 2022 milestone target of 101 credits, Douglas County maintained the existing registrations from WY2021, with the exception of the two parcel BMP registrations that didn't have expected BMP percentages (EWCA and LV01). In order to continue to work towards the next interim target to achieve the 2024 target of 135 credits, Douglas County will continue to coordinate with KGID on road operations.

3.2 Progress toward 2026 Five Year Milestone

Douglas County registered the number of load reduction activities necessary to meet the cumulative target of 101 credits for the 2022 milestone. The County intends to continue on its current course, as identified in this report, to meet the 2023 interim target. When possible, the County will register more activities than necessary to ensure five year milestones are met. Actions listed in Section 3.1 contribute toward meeting the 2023 interim milestone. An increase in credits doesn't occur until 2024, when the County has an interim credit target of 136, although the County intends to implement projects that will allow them to register additional catchments prior to that date.

Additional road segments will be registered to works towards meeting the 2024 interim target of 136 credits, and as segments are added, additional Road RAM data will be collected in those respective areas. Douglas County intends to expand the KGID Road Registration to catchments with 70% connectivity and above within the KGID district boundary. This registration will be expanded all at once, rather than phased in.

Water year milestones are outlined in Table 7 below, taken from the Interlocal Agreement 2016-2021 and 2022-2026 between Douglas County and NDEP. While Douglas County plans to complete additional registrations, no changes are proposed at this time to the existing annual credit targets and five year milestone schedule contained in the ILA.

Table 5: Progress toward 2026 Milestone per Interlocal Agreement

Water Year	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
FSP Load Reduction	10%	10%	10%	17%	17%	21%	21%	21%	27.5%	27.5%	34%
Credit Milestone Target*	41	41	41	82	82	101	101	101	135	135	167

**Credit Targets/Milestones for 2016-2018 are based on a Jurisdiction Baseline Load estimate conducted in 2013, while Credit Targets/Milestones for years 2019-2026 are based on revised Jurisdiction Baseline Load estimates produced in 2016.*

4.0 FISCAL ANALYSIS

In 2018, the Douglas County Board of County Commissioners dedicated \$1.1 million annually for Stormwater maintenance and flood management county-wide. The following table is an estimate of the costs to administer the County's Tahoe stormwater program. The budget contains estimated total and annual expenditures necessary to operate and maintain implemented and registered pollutant controls, as well as to design, construct, operate, register, inspect and maintain pollutant controls contained in the five year SLRP. The table also identifies anticipated or targeted funding sources and/or finance mechanisms to cover the costs associated with the budget estimates.

4.1 Budget (total and annual expenditures to implement, operate, and maintain)

Table 6: Douglas County TMDL Implementation Budget

Stormwater Program Category	Annual Budget for FY2023	Funding Sources for FY18-FY23
Program Management: Crediting Program Implementation. Includes inspections (Road RAM, BMP RAM)	\$30,000	Douglas County General Fund for Stormwater Program Manager staff time
Nevada Tahoe Conservation District general project planning and engineering services	\$40,000	General Fund – Stormwater Management Program
Infrastructure Maintenance: Road Operations (Sanding/Deicing, Sweeping)	Kingsbury General Improvement District ¹	Kingsbury General Improvement District
Infrastructure Maintenance: Treatment BMPs	\$120,000	General Fund – Stormwater Management Program
Stormwater Monitoring (RSWMP, IMP)	\$46,000	General Fund – Stormwater Management Program
Capital	--	State & federal WQ Grants, TRPA WQ Mitigation Funds
Total	\$236,000	
Projected need to meet TMDL Program Requirements through FY2023		

4.2 Finance Plan (anticipated and targeted funding sources)

The funding for the Stormwater Maintenance Division has been provided out of the Douglas County General Fund and could be modified if General Fund revenues decrease or other priorities are identified. Douglas County began dedicating General Fund revenue to fund the Stormwater Program Manager position in 2015 and will continue to do so into the foreseeable future.

¹ KGID is not able to break costs associated with road operations on the registered road segment at this time. As additional catchments are registered within KGID’s road operations jurisdiction, costs may be easier to determine.

Douglas County is continuing to pursue the implementation of a County-wide Stormwater Utility, which would provide funding for infrastructure maintenance as well as grant funding match for capital projects. It is unknown whether this issue will be voted on by the Douglas County Board of County Commissioners. It is also unknown at this time if it could pass and become a viable funding source. No issues are anticipated with the current funding for activities related to the TMDL through FY26.

Douglas County also utilizes the TRPA Water Quality Mitigation funds as match for capital projects (such as Burke Creek and the New Kahle Wet Basin) and infrastructure maintenance. Douglas County is always searching for grant funding opportunities, such as the Lake Tahoe Restoration Act (potentially available within the next few years), USFS SNPLMA funding, Nevada Division of State Lands funding, and NDEP's 319(h) program.

5.0 BARRIERS

There are three potential barriers for being successful with the Lake Clarity Program as it is designed today.

1. Although Douglas County identified an ongoing funding source for maintenance of registered water quality improvement projects and monitoring, it is not set up as an equitable funding mechanism amongst all County residents. Douglas County will continue to investigate the viability of operations and maintenance funding through a stormwater utility.
2. The timing of Road RAM inspections is a potential barrier to Douglas County meeting annual and five year milestones. It is unknown if the change to the timing of Road RAM inspections will negatively impact the annual score. It was shown in Water Year 2022 that the score of 3.0 or higher can be achieved, although there was below normal precipitation that year. It may prove difficult to rely on road operations as a method to meet milestones if scheduling or weather impacts the ability to conduct assessments at certain times of the year and prohibits Douglas County from declaring credits for a particular water year. Timing of the Road RAM inspections has not impacted Douglas County's ability to achieve credits for the road registration in that last four years.
3. The Lake Tahoe TMDL program continues to operate under adaptive management principles. It is unknown what changes may occur to the program in the future. Any significant future changes to tools or policies could impact the County's ability to attain targets or milestones. Changes to tools and policies have the potential to require the County to invest additional resources in response to these changes.

6.0 BASELINE DISCREPENCIES

The baseline load estimate developed in the 2016 Baseline Report is refined with each credit registration. During the registration process, refinements will be made to the PLRM baseline inputs to better reflect baseline conditions. These changes affect Douglas County's total

baseline load. Table 7 below tracks changes in baseline load for all approved registrations to date.

Table: 7 Baseline Discrepancies for FSP

Catchment Name	2016 Baseline Report Estimated FSP load (lbs/yr)	Registration Baseline Refined FSP load (lbs/yr)	Baseline Difference (lbs/yr)
PW01	635	460	-175
EWCH/BCC	9600	9170	-430
CR02	1661	1598	-63
EWCC	5542	6221	+679
LC01	497	799	+302
LR02	1790	2099	+309
*OP01	3641	4146.4	+505.4
LV01	2601	2601	0
EWCA	2411	2557	+146
**DCA	3865	3893	+28
***BRC	0	1335	+1335
Total	28,378	30,354	+2636.4

In prior reports, the difference between the estimated baseline load and the refined baseline load was 1,976 lbs/year. Currently, the difference is 2,636.4 lbs/year.

*The Oliver Park (OP01) registration was revised due to the New Kahle Wet Basin project and the reconfiguration of storm drains in the area. The registration baseline was 4,849 lbs/year of FSP in 2018. When the registration was re-done in 2019, the baseline was reduced to 4,146.4 lbs of FSP/year. Therefore, the registration baseline was reduced from the 2018 baseline estimate by 702.6 lbs of FSP/year. TP and TN also were reduced.

**The DCA registration was approved for WY2018, and the DCA portion of the registration (there are NDOT catchments included in the current registration) baseline was 28 lbs higher than the 2016 baseline report. TP and TN also were higher.

***The Burke Creek (BRC) registration was approved in WY2019 and this catchment did not exist in the 2016 baseline report, so the registration baseline has been noted as the baseline difference, as was the same for TP and TN.

The updated difference between the estimated baseline load and the refined baseline load is 2,636.4. While this represents a 9% difference between the initial baseline load estimates for the 2016 milestone, it represents only about 2.7% of the 2016 revised jurisdictional baseline load of 96,052 lbs/year. The baseline and revised baseline FSP, totals were used for the update of the ILA for FY22 through FY26. $96,052 + 2636 = 98,688$.

Table: 8 Baseline Discrepancies for TP

Catchment Name	2016 Baseline Report Estimated TP load (lbs/yr)	Registration Baseline Refined TP load (lbs/yr)	Baseline Difference (lbs/yr)
PW01	4	3	-1
EWCH/BCC	53	3.5	-49.5
CR02	7	4	-3
EWCC	25	2.8	-22.2
LC01	2	3	+1
LR02	3	7	+4
OP01	15	12.8	+2.2
LV01	11	5.6	-5.4
EWCA	14	5.6	-8.4
DCA	16	30	+14
BRC	0	3	+3
Total	150	80.3	-65.3

The updated difference between the estimated baseline load and the refined baseline load for TP is -65.3 lbs/year. While this represents a 5% difference between the initial baseline load estimates for the 2016 milestone, it represents about 17% of the 2016 revised jurisdictional baseline load of 475 lbs/year. The baseline and revised baseline TP, totals were used for the update of the ILA for FY22 through FY26. $475 - 65 = 410$.

Table: 9 Baseline Discrepancies for TN

Catchment Name	2016 Baseline Report Estimated TN load (lbs/yr)	Registration Baseline Refined TN load (lbs/yr)	Baseline Difference (lbs/yr)
PW01	17	14	-3
EWCH/BCC	188	7	-181
CR02	39	13	-26
EWCC	100	12.6	-87.4
LC01	9	10	+1
LR02	9	23	+14
OP01	53	41.6	-11.4
LV01	48	27.2	-20.8
EWCA	48	18.9	-29.1
DCA	63	81	+18
BRC	0	12	+12
Total	574	260.3	-313.7

The updated difference between the estimated baseline load and the refined baseline load for TP is -313.7 lbs/year. While this represents a 5% difference between the initial baseline load estimates for the 2016 milestone, it represents about 14% of the 2016 revised jurisdictional baseline load of 1,900 lbs/year. The baseline and revised baseline TN, totals were used for the update of the ILA for FY22 through FY26. $1,900 - 314 = 1,586$.