# NEVADA DEPARTMENT OF TRANSPORTATION


# STORMWATER MANAGEMENT PROGRAM

## MS4 PERMIT NV0023329
## ANNUAL REPORT FOR FISCAL YEAR 2018
## JULY 1, 2017 – JUNE 30, 2018

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

## CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. [40CFR§122.22(d)]

Date: 9-24-18

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Chief, Stormwater Division

## Contents

## Introduction

In response to the Nevada Department of Transportation's (NDOT's) request for a single National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer Systems (MS4) Permit for stormwater discharges from NDOT properties, facilities, and activities, the Nevada Division of Environmental Protection (NDEP) issued NDOT a statewide NPDES MS4 Permit (NV0023329) on February 23, 2004, which was subsequently reissued on July 7, 2010[1] (Permit). NDOT has developed a Stormwater Management Plan (Plan) which serves as a "blueprint" for how its Stormwater Management Program (SWMP) will be implemented. The SWMP is comprised of several sub-programs (i.e. plan elements) addressing stormwater pollution control as it relates to the planning, design, construction, and maintenance of NDOT's highway infrastructure statewide with the goal of minimizing stormwater pollutant discharges to the maximum extent practicable and satisfying Clean Water Act requirements.

Per section ***IV.C.1.*** of the Permit, *"NDOT shall continue to submit Annual Reports to NDEP by October 1 of each year of the permit term. Each Annual Report shall cover the period beginning July 1st of the previous year through June 30th of the current year."* Consequently, the objective of this Annual Report is to report on SWMP activities conducted during State fiscal year (FY) 2018 (Reporting Period) as they pertain to the requirements of the Permit. The general format of this Annual Report coincides with ***Parts II-IV*** of the Permit.

The Plan's implementation schedule covers activities from FY 2013 through FY 2017. An updated Plan was released in December of 2017 reflecting programmatic changes resulting from NDOT's Consent Decree. With the expectation of NDEP issuing NDOT a new MS4 permit in FY 2018 immediately following the release of the updated Plan, changes to the Plan's implementation schedule and measurable goals/benchmarks were not included with the updates. Therefore, this Annual Report only provides an assessment of measurable goals that are considered ongoing. As with previous Annual Reports, a general evaluation of SWMP elements is provided.

[1] NDOT was issued a new MS4 Permit on August 10th, 2018 (FY 2019). Subsequent Annual Reports will summarize SWMP activities implemented under this new permit.

## Part II. Discharges to Water Quality Impaired Waters

### *II.A. Impaired Waters Listing on 303(d) List*

### *II.B. Total Maximum Daily Load*

Initial evaluations to determine whether stormwater discharges from NDOT's MS4 area contribute directly or indirectly to the listing of a waterway on the State's current 303(d) list are complete. The 303(d) list presented in the 2014 Water Quality Integrated Report (IR) released in October of 2015 is still considered the State's current impaired waters list. Table 4.1 in NDOT's SWMP summarizes the results of NDOT's 303(d) list evaluations.

Initial evaluations to determine whether stormwater from NDOT's MS4 areas discharge to a waterbody for which an EPA approved total maximum daily load (TMDL) has been developed are also complete. Currently there are 15 waterbodies with EPA approved TMDLs in the State; no new TMDLs were approved during the Reporting Period. Table 4.2 in NDOT's Plan summarizes the results of NDOT's TMDL evaluations.

The Stormwater Division did not modify the process for evaluating stormwater discharges into 303(d) listed or TMDL listed waterways, nor were there any changes to previously assessed waterways during the Reporting Period.

Evaluations for determining whether additional or enhanced BMPs to treat stormwater discharge from NDOT's MS4 into 303(d) listed waterways are performed on a project-by-project basis. During the Reporting Period, the Stormwater Division's Design Section performed a Stormwater Project Design Requirements analysis for 110 projects and determined that 10 of these required treatment control BMPs (Table H1 in Appendix H), several of which have the potential to discharge stormwater runoff (directly or indirectly) into a 303(d) or TMDL listed waterway.

### *II.C. Discharges to Lake Tahoe and Tributaries to Lake Tahoe*

The development of a TMDL addressing nutrient and fine sediment particle loading into Lake Tahoe from stormwater runoff was completed and subsequently approved by the EPA in August, 2011. The Permit requires that NDOT enter into a Memorandum of Agreement (MOA) with NDEP to implement strategies to control stormwater runoff and improve the clarity and water quality of Lake Tahoe within 1 year of NDEP's approval of the TMDL.

Washoe and Douglas Counties, NDOT, and NDEP concluded that an MOA would not be an adequate means to uphold the goals and objectives of the TMDL, and therefore it was agreed upon by all parties that an interlocal agreement (ILA) would be more appropriate. Consequently, NDOT entered the ILA with NDEP in August of 2013, with an updated ILA signed November of 2016 to implement the Lake Tahoe TMDL. The current ILA is set to expire in August of 2021.

The ILA states what roles, commitments, and actions are expected of NDOT to help restore and protect Lake Tahoe's clarity. The overarching goal of the TMDL is to return Lake Tahoe to its historic annual average depth of clarity of 97.4 ft. (i.e. Numeric Target). A key commitment is the preparation of a Stormwater Load Reduction Plan (SLRP) that identifies actions that NDOT will undertake to meet the 5-year fine sediment particle milestone set forth by the Clarity Challenge[2]. The SLRP includes a baseline pollutant load analysis, existing pollutant load analysis, future load reduction analysis, budget, finance plan, and barriers/constraints to implementing pollutant controls. NDOT, with the assistance of the Nevada Tahoe Conservation District (NTCD), completed the SLRP, which identifies a 5-year and 15-year plan to achieve TMDL pollutant reductions in the Lake Tahoe Basin. The plan identifies capital improvements, equipment, personnel, and maintenance practices that are needed to achieve the proposed pollutant reductions. A copy of the current SLRP is available upon request. Any updates to the SLRP are reflected in NDOT's Lake Tahoe TMDL Annual Report.

In compliance with section IV.4 of the ILA, NDOT submitted its Lake Tahoe TMDL Annual Report to NDEP on March 15, 2018, summarizing NDOT's pollutant load reduction activities during water year 2017 (October 1, 2016 through September 30, 2017). NDEP accepted the Annual Report in May of 2018 (Appendix A).

NDOT continued participating in a Stormwater Tools Improvement Project to update and improve the tools and methods used to evaluate pollutant load reduction in the Lake Tahoe Basin. Other participants included Washoe and Douglas Counties, CalTrans, City of South Lake Tahoe, and El Dorado and Placer Counties.

NDOT continued to implement a Road Operations Plan specifically for the Lake Tahoe Basin to reduce concentrations of fine sediment particles in stormwater runoff. This includes staff training,

[2] The "Clarity Challenge" represents the goal to reverse the historic declining clarity trend. It is anticipated that achieving the 15-year pollutant load reduction milestone in 2026 will result in an annual average clarity of 78 ft. as measured over the period from 2026 to 2031.

increased use of best available technology, an effort to reduce abrasive application on roadways through more direct application, and a consistent effort to sweep abrasives immediately following application. The Road Operations Plan is in effect through water year 2021.

NDOT continues to design and construct projects in support of the Lake Tahoe Environmental Improvement Program (a public-private partnership with the focus of achieving environmental goals for the Lake Tahoe Basin). A summary of project related activities during the Reporting Period is provided below.

- NDOT completed construction of Contract 3627, a water quality improvement project along US-50 from the Lake Tahoe Nevada State Park (Cave Rock) to Spooner Summit.

- NDOT commenced construction of a water quality improvement project along SR-28 from Lake Shore Blvd. to the Carson City county line. Improvements are associated with the overarching SR-28 Shared Use Path project. Construction is anticipated to be completed in spring of 2019.

- A water quality project at Zephyr Cove (adjacent to US-50) was completed in July of 2017. NTCD was the project lead, with NDOT and other agencies having served as project participants. NDOT provided design assistance and contributed financially to the project.

Water quality monitoring activities conducted within the Lake Tahoe Basin are summarized in ***IV.A. Stormwater Monitoring*** of this Annual Report.

## Part III. Stormwater Management Program

### *III.A. SWMP Revision*

NDOT released an updated version of its 2013 Plan in December of 2017. In addition to various formatting changes, updates focused on programmatic changes in response to Consent Decree requirements.

NDOT's current Plan is available for viewing on NDOT's Stormwater Program website at https://www.nevadadot.com/doing-business/about-ndot/ndot-divisions/stormwater/resources-documents.

### *III.B. Legal Authority*

There were no changes to the Nevada Revised Statutes (NRS) during the Reporting Period that affected NDOT's Legal Authority.

Revisions to *Section 637 – Temporary Pollution Control* of NDOT's *Standard Specifications for Road and Bridge Construction, 2014*, were adopted during the Reporting Period. In addition to general language clarification, changes pertained to SWPPP development, rain gauge installation, and construction site stormwater inspections.

Revisions to Temporary Occupancy Permit Terms and Conditions as they pertain to construction site stormwater management were also adopted during the Reporting Period. In addition to general language clarification, changes pertained to water quality permitting, SWPPP development, permanent BMP/final stabilization, and site administration.

### *III.C. MS4 Maps and Outfalls*

Initial efforts to inventory and subsequently map NDOT's stormwater facilities statewide were completed during FY 2016. Efforts entailed identifying stormwater hydraulic facilities and permanent BMP facilities (i.e. stormwater detention basins, manufactured stormwater treatment devices, etc.) within NDOT's right-of-way utilizing field survey, as-built contracts, right-of-way permits, and aerial imagery. Information is housed within a GIS database and displayed on the NDOT Stormwater Asset Map available for viewing online on NDOT's Stormwater Program website at the following web address:

https://ndot.maps.arcgis.com/apps/webappviewer/index.html?id=6e8d31884af744788d2b9025546d144f

NDOT has inventoried approximately 64,500 hydraulic facilities (drop inlets, corrugated metal pipes, reinforced concrete boxes, etc.) statewide, of which an estimated 494 are considered a "Major"[3] outfall[4].

[3] Major outfall is defined at 40CFR§122.26.
[4] Assessments to determine whether an outfall meets the criteria of 40CFR§122.26 are ongoing. It is expected that this number will continue to be refined over time.

Future mapping and inventory efforts will focus on maintaining and updating the information as needed.

### *III.D. Discharges to Clear Creek Watershed*

NDOT developed a Clear Creek Stormwater Management Program (CCSWMP) as part of its statewide SWMP (Section 5.0 of the Plan). Programmatic changes captured in NDOT's revised Plan are applicable to the CCSWMP as well. A description of NDOT's Clear Creek SWMP is included with NDOT's statewide Plan, which is available for viewing on NDOT's Stormwater Program website at https://www.nevadadot.com/doing-business/about-ndot/ndot-divisions/stormwater/resources-documents.

The following summarizes CCSWMP related activities during the Reporting Period.

Discharges to Water Quality Impaired Waters/Total Maximum Daily Load

NDOT completed evaluations to determine if stormwater discharges from NDOT's MS4 areas contribute directly or indirectly to the listing of a waterway on the State's current 303(d) list, and whether stormwater from NDOT's MS4 areas discharge to a waterbody for which an NDEP approved total TMDL has been developed (refer to ***Part II. Discharges to Water Quality Impaired Waters*** of this Annual Report). The Clear Creek watershed does not contain any impaired waterways listed in the 2014 IR, nor contain any waterways with an NDEP approved TMDL.

Legal Authority

NDOT's Legal Authority is applicable to the CCSWMP as well. Refer to ***III.B. Legal Authority*** of this Annual Report.

Discharges from New Development and Redevelopment

NDOT's Hydraulics Division continued designing and funding small scale erosion control improvement projects at select drainage and outfall locations within the Clear Creek Watershed to reduce the impacts of stormwater discharge into Clear Creek from NDOT's roadways. NDOT works directly with the Carson River Conservation District to fund and implement these projects.

Erosion control improvements typically include culvert work, constructing riprap channel lining and aprons, constructing slope stabilization, re-grading, sediment removal, applying wood chipped material to disturbed areas, and making general improvements to stormwater conveyances. A summary of the small-scale projects that were constructed along US-50 (by drainage number[5] and milepost) during the Reporting Period is provided below[6].

- Drainage 0 (DO 13.3): Cross culvert was slip lined.
- Drainage 2 (DO 13.4): Cross culvert was slip lined.
- Drainage 7 (DO 13.6): Cross culvert was slip lined.
- Drainage 11 (DO 13.8): Cross culvert was slip lined.
- Drainage 33 (CC 0.4): Cross culvert was slip lined.
- Drainage 39 (CC 1.0): Cross culvert was slip lined and a manhole was installed.
- Drainage 43 (CC 1.2): Cross culvert was slip lined and a manhole was installed.
- Drainages 63 (CC 2.2): Culvert was abandoned due to erosion issues at the outlet.
- Drainage 65 (CC 2.3): Culvert was slip lined and manholes have been installed near the inlet and outlet to help facilitate future maintenance needs. A riprap channel from the roadway to the inlet of the pipe was installed. Riprap was also installed around the culvert inlet and at the outlet.
- Drainage 67 (CC 2.4): Culvert was abandoned due to erosion at the outlet.
- Drainage 69 (CC 2.5): Culvert was abandoned due to erosion at the outlet.
- CC 1.1 – CC 1.2: The slope behind the guardrail was repaired and stabilized with rock. A berm and small rock swale were installed at the top of the slope to mitigate future erosion along the slope.
- CC 1.8: Slope was repaired and stabilized with rock.
- CC 2.2 – CC 2.3: Slope was repaired and stabilized with rock.

[5] As referenced from NDOT's "Clear Creek Erosion Assessment Final Report, January 29, 2003."
[6] Temporary pollution control measures as specified in NDOT's Construction Site Best Management Practices (BMPs) Manual were implemented as appropriate for all projects.

Water Quality Monitoring

NDOT and the United States Geological Survey (USGS) entered into a new joint funding agreement to continue Clear Creek water quality monitoring efforts into 2021. The objectives of this new agreement are to:

- Continue evaluating trends and loads of suspended and total sediment from the Clear Creek watershed in context to documented physical land use changes over time.
- Estimate cumulative effectiveness of recent erosion mitigation work on reducing sediment concentrations and loads in the Clear Creek watershed.
- Evaluate salinity patterns and trends in Clear Creek in context to NDOT snow and ice management on US-50.

The joint study will also include data derived from the Stochastic Empirical Loading and Dilution Model (SELDM). This model was developed by the USGS in cooperation with the Federal Highway Administration to help develop planning-level estimates of event mean concentrations, flows, and loads in stormwater from a site of interest and from an upstream basin.

NDOT (in partnership with the Desert Research Institute (DRI)) now operates two continuous real-time water quality monitoring stations in Clear Creek (Upper and Lower Clear Creek), with the Lower Clear Creek site co-located with the USGS Gaging Station #10310500. NDOT also installed a continuous real-time monitoring site to collect meteorological data for the Clear Creek watershed. This site is co-located with NDOT's Road Weather Information System (RWIS) Station D2015 on US-50. It was determined that the weather data monitored at the RWIS station provided a better representation of the weather in the Clear Creek watershed than the weather data monitored at the Lower Clear Creek USGS gage. The water quality and meteorological parameters being monitored are available for public viewing via the following data management website: https://ndot-stormwater.dri.edu/.

The USGS published a monitoring report[7] in May of 2018 summarizing results from data collection efforts during the 2013-2016 water years. In general, total annual sediment loads within Clear Creek have steadily declined since 2004; however, results were not statistically significant. Results suggest that stream discharge may have a greater impact on total sediment load rather

[7] Huntington, J.M., Riddle, D.J., and Paul, A.P., 2018. Discharge, sediment, and water chemistry in Clear Creek, western Nevada, water years 2013-16. Scientific Investigations Report 2018-5050, 55 p.

than sediment mitigation efforts within the watershed. Results of water chemistry data demonstrate minor seasonal variation with regards to sodium and chloride (which may be attributed to seasonal road salt use), and that highway runoff is not a significant contributor of polynuclear aromatic hydrocarbons (PAHs). A copy of the report is available for download from the USGS website at https://pubs.er.usgs.gov/publication/sir20185050.

NDOT's Stormwater Division continued to monitor the Clear Creek Detention Basin at the US-50/Golf Club Drive Interchange. Unmanned aerial vehicles (UAVs), i.e. drones, were used to collect imaging and 3D terrain modeling to assess basin condition, e.g. erosion and sediment/debris accumulation. In addition to UAV monitoring, 10 conventional, i.e. visual, inspections were performed to assess basin condition as well.

NDOT assisted NDEP with conducting bioassessments of the stream reach where the Upper Clear Creek monitoring site is located to provide insight on ecological integrity and water quality.

Illicit Discharge Detection and Elimination

No illicit discharge incidences within the Clear Creek Watershed were reported to NDOT's Stormwater Division during the Reporting Period.

Public Outreach and Education

- Social Media

  NDOT continued to utilize social media platforms for stormwater related outreach. Notably, YouTube continued to be utilized as a means for broadcasting stormwater related videos developed by NDOT. A dedicated Stormwater News playlist has been created in the Nevada DOT YouTube channel. NDOT continues to post one video addressing stormwater management within the Clear Creek watershed. At the time of reporting, the video has received a total of 535 views, a modest increase from 475 views during FY 2017 and 331 views during FY 2016.

- Stormwater Program Website

  Although NDOT does not maintain a separate website dedicated solely to stormwater management activities within the Clear Creek watershed, many of the updates to the Stormwater Program's website are applicable to the CCSWMP.

Inventory of Maintenance and Industrial Facilities

The Spooner East Yard (US-50 milepost DO 13.20) is currently the only NDOT Maintenance facility located within the Clear Creek watershed. NDOT does not own or maintain any industrial facilities within the Clear Creek watershed.

Pollution Prevention/Good Housekeeping

The Spooner East Yard is included in NDOT's Facility Pollution Prevention Plan (FPPP) under the category of Minor Maintenance Stations and Yards. Table 1 provides a summary of FPPP compliance activities performed over the previous three reporting periods. Table 2 summarizes the number of non-compliance issues noted during the annual stormwater inspection performed by Stormwater Division staff, as well as subsequent corrective actions to remedy the non-compliance issues.

Table 1. FPPP Administrator compliance summary over the previous three reporting periods at the Spooner East Yard.

| **Spooner East Yard** | | | |
|---|---|---|---|
| | FY 2016 | FY 2017 | FY 2018 |
| Task | Compliance % | Compliance % | Compliance % |
| Stormwater Inspections (FPPP Administrator) | 100 | 100 | 100 |
| Stormwater Inspections (Stormwater Division) | 100 | 100 | 100 |
| Drop Inlet Inspections[8] | N/A | N/A | N/A |
| Sweeping | 100 | 0 | 0 |

Table 2. FPPP non-compliance issues observed at the Spooner East Yard during annual stormwater inspections and whether appropriate corrective action was taken.

| **Spooner East Yard** | | |
|---|---|---|
| Reporting Period | Non-Compliance Issues | Corrective Actions |
| FY 2016 | ----- | ----- |
| FY 2017 | 1 | 1 |
| FY 2018 | ----- | ----- |

[8] This Maintenance facility does not have drop inlets.

## *III.E. Discharges into Sanitary Sewer Systems*

During the Reporting Period, NDOT received written authorization from the City of Fallon to discharge vactor truck decant water into their sanitary sewer system for disposal. The waste water in question is a product of servicing stormwater facilities, e.g. drop inlets, treatment vaults, etc.

Copies of existing discharge authorizations are included in NDOT's Plan. Copies of new discharge authorizations are included with Plan updates.

## *III.F. Stormwater Education Program*

Public Education and Outreach

NDOT continues to implement its stormwater public outreach campaign under the "Love NV Waters" brand. The focus of the campaign is to educate, bring awareness, and encourage behavioral change to the public and NDOT staff regarding stormwater pollution prevention and protecting the quality of Nevada's waterways. The campaign uses several communication avenues to disseminate information, notably social media, the World Wide Web, and personal interaction.

- Social Media

  Efforts with stormwater outreach continue with the @loveNVwaters social media pages on Facebook, Twitter, and Instagram (Tables 3 and 4). In addition, NDOT continues to have numerous stormwater related videos posted on the *nevadadot* YouTube channel *Stormwater Updates* playlist with 14 new videos posted during the Reporting Period. At the time of reporting, NDOT has 40 videos posted with a total of 760 views.

Table 3. Analytics of NDOTs *@loveNVwaters* Facebook page.

| Description | Average | Total |
|---|---|---|
| Daily Total Video Views | 20 | 4737 |
| Daily Logged-In Page Views | 4 | 660 |
| Daily Total Reach | 107 | 37,444 |
| Daily Total Impressions | 193 | 67,600 |

Table 4. Stormwater outreach-related social media platforms and associated analytics during the Reporting Period.

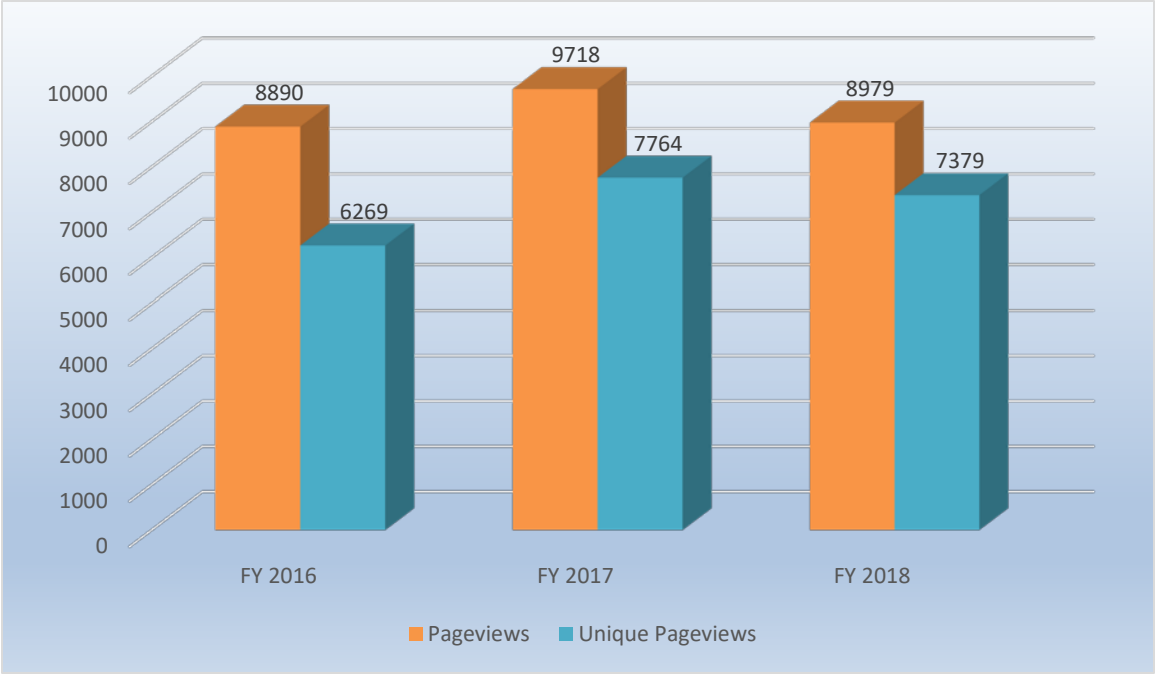
| Platform | Analytics |
|---|---|
| Twitter | 101,693 Reaches |
| Instagram | 6,402 Reaches<br>297 Followers |

- Stormwater Program Website

NDOT's Stormwater Program website is a dynamic avenue for conveying stormwater related outreach and information to both employees and the public. The website received 8,979 pageviews and 7,379 unique pageviews[9] during the Reporting Period (Figure 1). The Stormwater Program (i.e. the main page), Resources/Documents, Mapping, Training, and Helpful Information webpages received the most viewing activity. The Stormwater Program website can be accessed at the following web address: https://www.nevadadot.com/doing-business/about-ndot/ndot-divisions/stormwater.

[9]A "Pageview" is recorded every time a webpage is viewed, i.e. every time a webpage is opened in the web browser. A "Unique Pageview" is recorded every time a webpage is viewed in an individual session as a single event, i.e. whether the webpage was viewed once or multiple times during an individual session, the number is recorded as just one viewing.

Figure 1. Analytics of NDOT's Stormwater Program website for the previous three reporting periods.




In addition to the Stormwater Program website, NDOT's Stormwater Division SharePoint site continues to serve as a clearing house for stormwater related information that can be readily accessed by internal employees.

- Education and Outreach Events

  NDOT participated in numerous community outreach events as a means for disseminating stormwater related information to the public, local stakeholders, and industry partners. Highlights of these efforts are described below with a complete listing of events provided in Table B1 in Appendix B.

  - Fritsch Elementary School STEM Science Night: This event offered elementary school students aspiring to be professionals in science, technology, engineering arts, and math an opportunity to meet and converse with industry professionals. Stormwater Division staff disseminated stormwater outreach materials, discussed stormwater pollution and control efforts, discussed stormwater related career paths, and demonstrated ways the public can improve the quality of stormwater runoff.

- Truckee River Snapshot Day: This volunteer-based event takes a "water quality picture" of one moment in time of the Truckee River and its major tributaries. NDOT Stormwater Division personnel participated in the 18th annual event serving as team leaders for Sage Ridge School 4th grade students (and their teachers) at the Thomas Creek sampling site. NDOT assisted students with conducting visual assessments of the sampling site (riverine and surrounding upland areas), and collecting field data and water quality grab samples. NDOT discussed the potential impacts of urbanized and highway stormwater runoff to receiving waterways, and measures to reduce/mitigate those impacts.

- Lamoille Canyon Environmental Education: Partnering with the City of Elko, NDOT's Stormwater Division participated in this environmental education event targeting 5th grade students from elementary schools within the Elko and Spring Creek areas. Outreach focused on the potential impacts of stormwater runoff to receiving waterways (specifically the Humboldt River and its tributaries) and measures to reduce/mitigate those impacts. Students interacted with a watershed display and were given a variety of stormwater outreach materials to take home and share with family members. As part of this event, a coloring contest was incorporated using artwork developed by NDOT. There were 50 entries with awards given out for the categories of Colorful, Creative, Expressive, and Originality.

- Elko Take Pride-Clean Up Green Up: NDOT partnered with the City of Elko to assist with this community-wide garbage cleanup effort. NDOT Stormwater Division Staff provided stormwater outreach and interacted with community members with a watershed display.

- Keep Truckee Meadows Beautiful Annual Truckee River Cleanup Day: An annual event focusing on trash cleanup, invasive weed removal, and storm drain stenciling within the Truckee River watershed. Partnering with the Truckee Meadows Storm Water Permit Coordinating Committee and Keep Truckee Meadows Beautiful,[10] NDOT's Stormwater Division provided logistical, leadership, and man-power

[10]Nevada non-profit group supported by individual and community donations providing an alternative to litter and illegal dumping through community education and cleanup/beautification projects in the Truckee Meadows.

assistance as volunteers were divided into separate groups to perform storm drain stenciling in the southern Truckee Meadows region. As part of this effort, 171 storm drains were stenciled in various regions of the Truckee Meadows with the message “Dump No Waste-Drains to River.” As stenciling was being performed, door hangers with stormwater educational material were distributed to nearby residences, and trash was cleaned up around storm drain inlets.

In addition to the various outreach events and social media outlets, NDOT continued to use the inter-Department newsletter (*Safe and Connected*) as an internal avenue for disseminating stormwater related information by publishing 2 news articles during the Reporting Period.

NDOT’s Stormwater Division participated in numerous stormwater industry related meetings and events as an avenue for information sharing and enhancement, and for the opportunity to create new or strengthening existing business relationships where stormwater and water quality is a focal point. Partners for these efforts include the following:

- University of Nevada Reno
- Associated General Contractors of America/Nevada Contractors Association
- American Association of State Highway and Transportation Officials
- Environmental Protection Agency
- Transportation Board
- Las Vegas Valley NPDES Stormwater Discharge Permit Stormwater Quality Management Committee
- Truckee Meadows Storm Water Permit Coordinating Committee
- City of Elko

NDOT partnered with Washoe County Regional Parks and Open Space by providing dog waste bags for distribution to visitors at Bower’s Mansion, Davis Creek, and Hidden Valley Parks.

NDOT and the City of Reno are in the process of entering into a new interlocal agreement to continue the long-standing partnership with implementing MS4 Permit related activities. Additionally, NDOT entered into a cooperative agreement with the University of Nevada, Reno in support of the Nevada Water Innovation Campus, which is a collaborative effort by the University of Nevada, Reno, Washoe County, City of Reno, City of Sparks, Truckee Meadows Water Authority, Western Regional Water Commission/Northern Nevada Water Planning Commission,

and NDOT to develop innovative strategies and methods to address water needs, challenges, and opportunities.

Adopt-a-Highway and Sponsor-a-Highway Programs

NDOT continued to participate in the Adopt-a-Highway (AAH) and Sponsor-a-Highway (SAH) litter removal programs to assist with trash cleanup efforts along State maintained roadways (Table 5). The AAH program allows non-political organizations, volunteer groups, and individuals to participate in maintaining and enhancing Nevada's highways through community service at no cost to the group. The SAH program focuses on trash cleanup efforts along urban freeway corridors in the Las Vegas and Reno areas. Firms and organizations seeking recognition for community service for litter cleanup efforts through this program may do so through pre-qualified contractors approved by NDOT.

Table 5. Results of the Adopt-a-Highway and Sponsor-a-Highway litter removal programs for each District during the Reporting Period.

| Program | District | Participants | Roadway Miles Serviced | Bags of Litter |
|---|---|---|---|---|
| Adopt-A-Highway | 1 | 10 | 10 | 10 |
| | 2 | ----- | ----- | ----- |
| | 3 | 38 | 135 | 35 |
| | | | | |
| Sponsor-A-Highway | 1 | 20 | 456 | 7,730 |
| | 2 | 4 | 47 | 292 |
| | 3 | ----- | ----- | ----- |

Employee Stormwater Training Program

NDOT discontinued its 8-hour Stormwater General Awareness training course during the Reporting Period and focused training efforts on more discipline specific training.

NDOT continued to train select Construction Crew personnel through the Water Pollution Control Manager training course facilitated by the Associated General Contractors/Nevada Contractors Association (AGC)-Las Vegas chapter (Figures 2 thru 3 and Table 6). This stormwater training class is a 2-day, 16-hour training course focusing on construction site stormwater compliance on NDOT construction sites. In addition, NDOT introduced a 1-day, 8-hour refresher version of this

course during the Reporting Period as an option for those individuals who require training and previously completed the 2-day course. Subject matter in both courses includes an overview of State and federal stormwater regulations, NDOT's contract specifications pertaining to water pollution control, BMP implementation, NDOT's Construction Site Best Management Practices (BMPs) Manual, and BMP inspection, installation, and maintenance. This course is a requirement for NDOT Resident Engineers, Asst. Resident Engineers, and Construction Crew stormwater inspectors. At the end of the Reporting Period, 85% of those NDOT employees required to complete the Water Pollution Control Manager training course were current with their training requirements.

Figure 2. The number of NDOT and non-NDOT personnel who completed an AGC facilitated Water Pollution Control Manager training course over the previous three reporting periods.

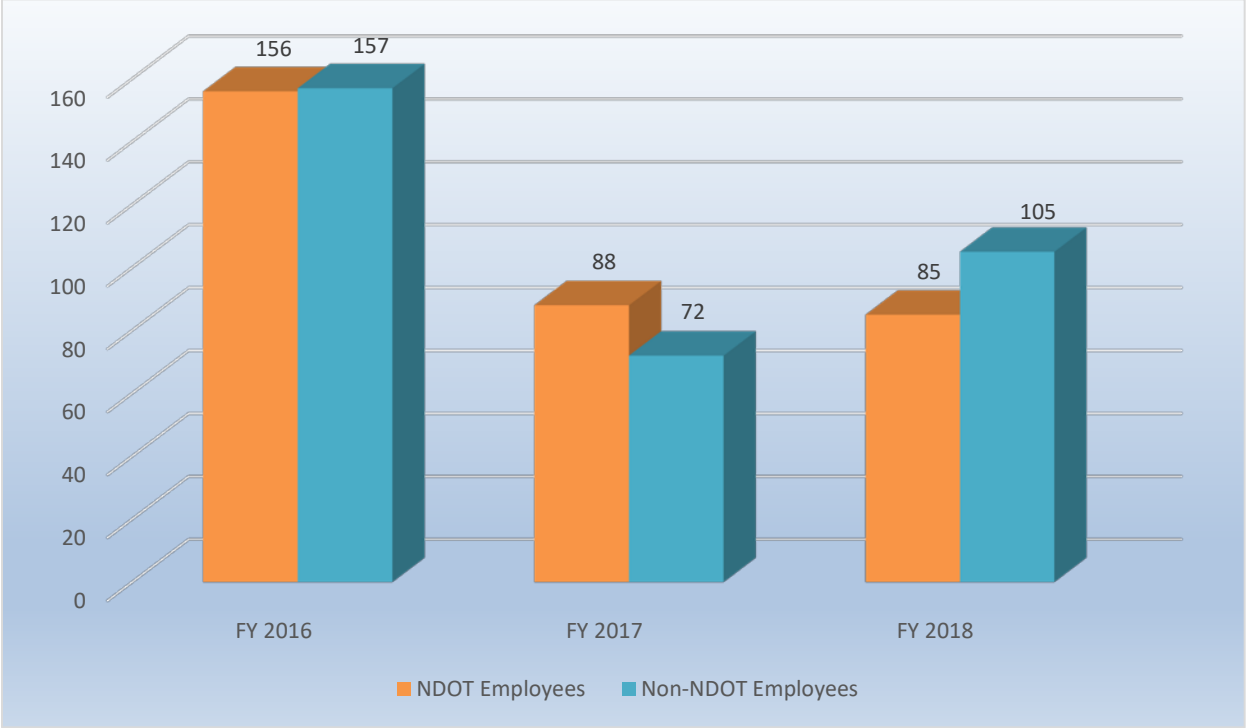


Figure 3. Percentage of NDOT employees in each District current with their Water Pollution Control Manager training requirements at the end of the Reporting Period.

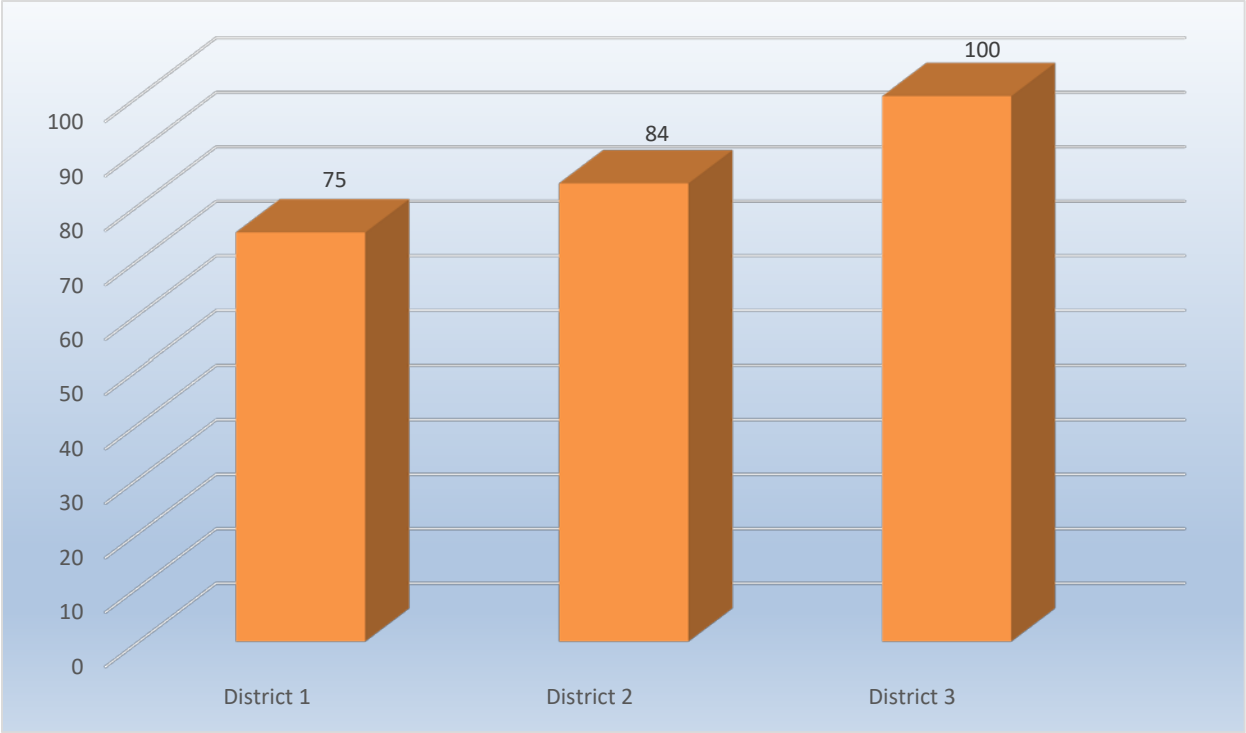
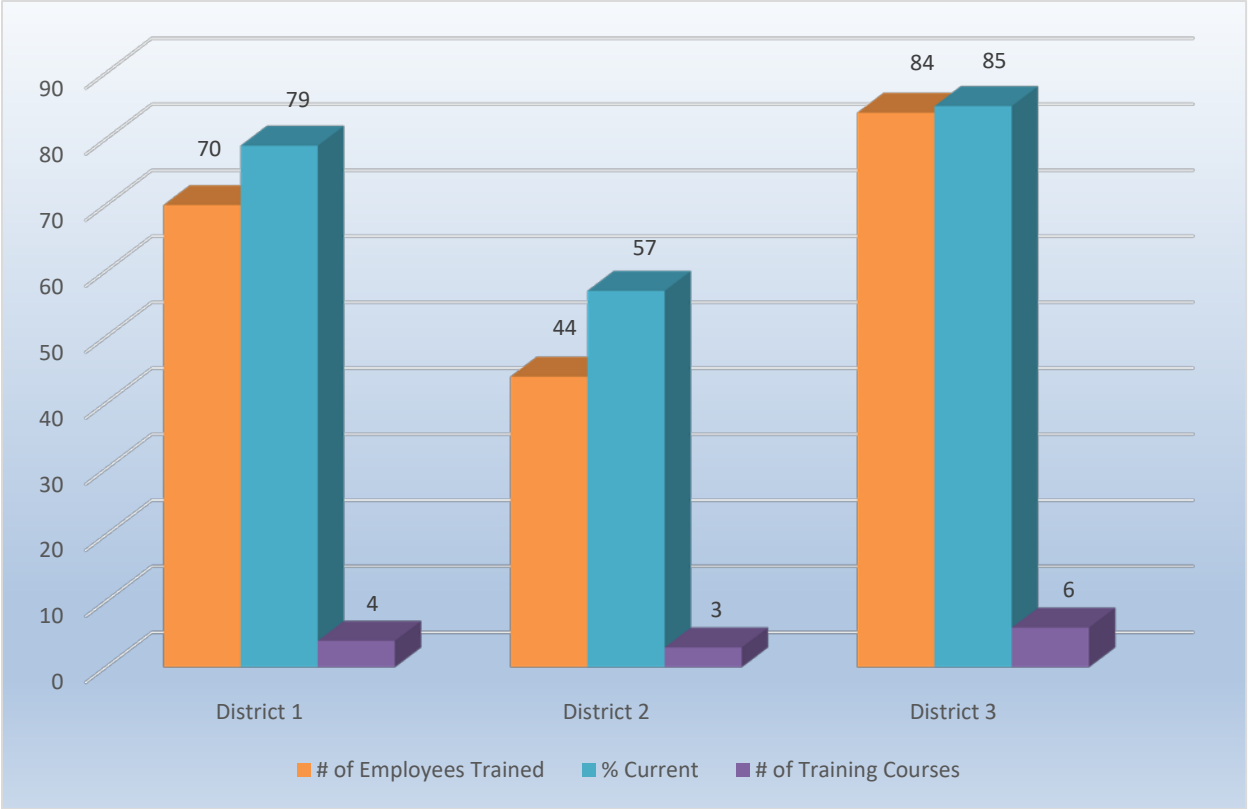



Table 6. The number of Water Pollution Control Manager stormwater training courses offered in each District over the previous three reporting periods.

| | District 1 | District 2 | District 3 | NDOT Total |
|---|---|---|---|---|
| FY 2016 | 6 | 3 | 3 | 12 |
| FY 2017 | 4 | 6 | 1 | 11 |
| FY 2018 | 5 | 3 | 2 | 10 |

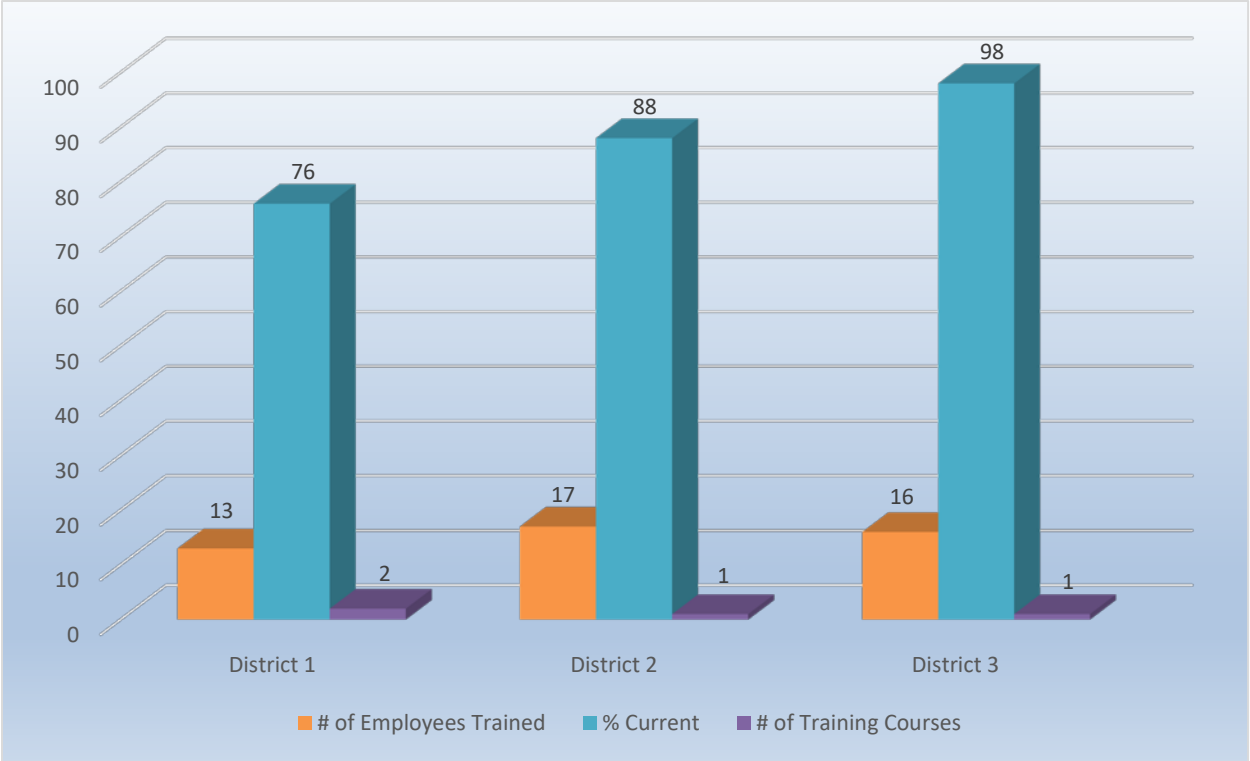
NDOT released its Stormwater Management for Maintenance training course during the Reporting Period (Figure 4). This 4-hour course is tailored towards NDOT's maintenance and equipment repair activities. Subject matter includes an overview of stormwater regulations, BMP implementation, NDOT's Maintenance Facility Stormwater Best Management Practices (BMPs) Manual, and illicit discharge detection and elimination. The course is a requirement for all Maintenance Crew and select Equipment (i.e. equipment mechanics) personnel. At the end of the Reporting Period, 74% of those NDOT employees required to complete the training course were current with their training requirements.

Figure 4. The number of NDOT personnel who completed the Stormwater Management for Maintenance training course, the % of employees current with their training requirements, and the number of training courses offered in each District during the Reporting Period.




NDOT released its Introduction to Construction Site Stormwater Management training course (Figure 5). This 4-hour course provides a broad overview of construction site stormwater management discussing topics such as stormwater regulations, BMP implementation, stormwater inspections, and illicit discharge detection and elimination. This course is currently required for all Construction Crew field staff that do not perform BMP inspections, District Stormwater Field Support staff, Stormwater Division Compliance & Enforcement staff, and District Permit Inspectors. The course is also intended to serve as a precursor to the Water Pollution Control Manager training course. At the end of the Reporting Period 87% of those NDOT employees required to complete the training course were current with their training requirements.

Figure 5. The number of NDOT personnel who completed the Introduction to Construction Site Stormwater Management training course, the % of employees current with their training requirements, and the number of training offered during the Reporting Period.




Design Section staff within NDOT's Stormwater Division completed numerous stormwater trainings covering various stormwater topics (including low impact design and water quality monitoring). All staff exceeded their specified 3-hour annual training requirements by averaging 69 training hours per person during the Reporting Period.

After undergoing a "soft release" in FY 2017, NDOT's online Introduction to Stormwater training course was officially released during the Reporting Period. This course provides a basic overview of stormwater including what stormwater runoff is, implications of stormwater pollution, illicit discharge detection and elimination, and common stormwater BMPs. NDOT staff who are not required to complete a discipline specific stormwater training module are the target audience. During the Reporting Period 256 employees completed the training. A total of 313 employees have now competed this training course to date.

Construction Contractor Stormwater Training Program

NDOT's construction contractors, i.e. the designated Water Pollution Control Manager, are required to complete the 2-day 16-hour or the 1-day 8-hour Water Pollution Control Manager stormwater training course (depending on training needs). During the Reporting Period, 10 training courses were offered statewide (Table 6) with 105 non-NDOT personnel[11] completing the course (Figure 2). Contractor requirements for completing the Water Pollution Control Manager training course went into effect for contracts advertised after June 1, 2015.

NDOT continued formal partnering efforts with its contractors to maintain cooperative communication and mutually resolve conflicts that arise after a contract has been awarded, including construction site stormwater pollution control compliance.

NDOT's Stormwater Division continued pre-construction communication efforts with NDOT's contractors and Resident Engineers, addressing stormwater related concerns and water quality related requirements prior to the start of construction.

Various Stormwater Training

Summarized below are highlights of the supplemental stormwater training events that NDOT's Stormwater Division staff[12] attended during the Reporting Period:

- StormCon 2017 – Bellevue, WA (7 participants): One of the nation's largest stormwater conferences providing classes and technical sessions for a variety of stormwater topics.

- MS4 Compliance & Enforcement Certified Inspector Training – Carson City, NV (22 participants): A 2-day workshop designed to credential staff to perform MS4 permit compliance and enforcement responsibilities.

- National Highway Institute's Practical Conflict Management for Environmental Issues – Carson City, NV (20 participants): The purpose of this course is to help transportation and

[11] Registration to attend either the 8-hour or the 16-hour Water Pollution Control Manager training course is open to contractors and the public for a registration fee; consequently, contractor and non-contractor personnel are included with the total number of non-NDOT attendees.
[12] The number of participants may include staff from other NDOT divisions and outside agencies.

environmental agencies, Tribes, and stakeholders bridge their different agency mandates and diverse interests regarding important environmental issues.

- Tri-State Seminar – Las Vegas, NV (16 participants): One of the fastest growing regional conferences focusing on water quality and water resource issues in the western United States. This popular conference now offers two full days of stormwater related sessions along with a 1-day stormwater certification workshop.

- International Erosion Control Association (IECA) Annual Conference – Long Beach, CA (6 participants): The premier educational event for the stormwater industry. IECA combines intense full and half day training courses with topic-focused training sessions and the largest expo of its kind.

### *III.G. Construction Site BMP Program*

Construction Site Stormwater Inspection Form

No revisions were made to the Weekly Site Discharge Inspection Checklist during the Reporting Period.

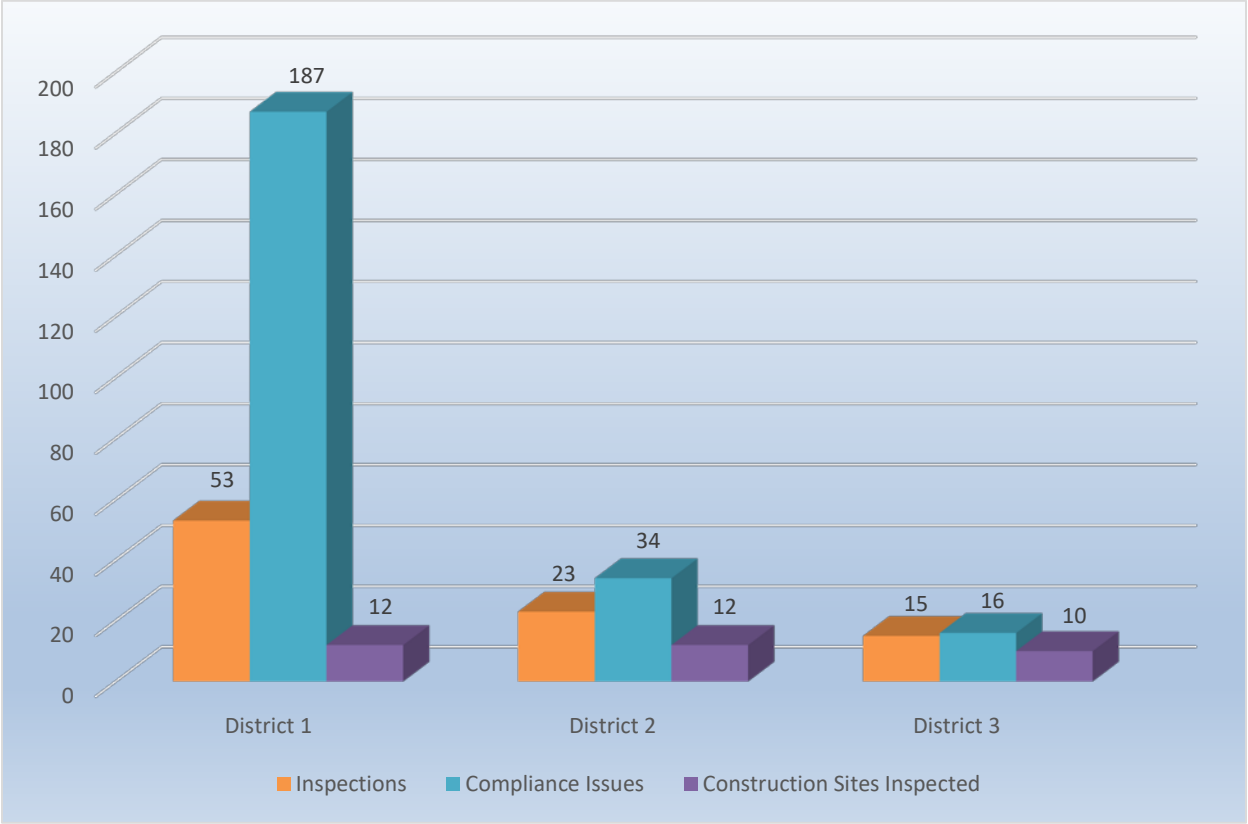
Construction Site Stormwater Inspections

Contractors continued to perform inspections at the frequency specified in the contract documents, with NDOT's Construction Crew inspectors performing oversight inspections to ensure compliance with the stormwater Construction General Permit (CGP) and NDOT's contract specifications. Over 1,065 oversight inspections were performed by NDOT's Construction Crews statewide.

The Stormwater Division's Compliance and Enforcement Section performed 91 quality assurance (QA) stormwater inspections at select construction sites during the Reporting Period (Figure 6) in accordance with NDOT's *Stormwater Inspection Prioritization Plan for Construction and Encroachment Construction Projects*. QA inspections are performed to identify inconsistencies with performing construction site stormwater inspections and identifying potential non-compliance issues, and to assess conformance with internal policies and procedures. The results of these inspections will help provide insight on where to focus future training efforts. For all three districts, the predominant issues identified during the QA inspections involved BMP implementation in the

field. Ratios of compliance issues/inspection were 3.5, 1.5, and 1.1 for Districts 1, 2 and 3, respectively, with a statewide ratio of 2.6.

Figure 6. Summary of QA construction site stormwater inspections performed at select construction sites during the Reporting Period.




Inspection documentation is housed with the appropriate Resident Engineer and/or NDOT's Headquarters.

Stormwater Pollution Prevention Plan (SWPPP) Template for Construction Activities

Minor revisions were made to the SWPPP template to help improve functionality.

Construction Site Best Management Practices (BMPs) Manual

Revisions to NDOT's *Construction Site Best Management Practices (BMPs) Manual* were completed with a revised document released in December of 2017. The document underwent significant formatting and content modification, taking into consideration feedback from the

contracting community. The manual is now more “guidance” oriented rather than “prescription” driven, providing contractors with enhanced flexibility with BMP implementation.

Stormwater Guidance Manual for Construction Projects

The Stormwater Division’s Compliance and Enforcement Section continued to work on a draft version of the document and anticipates a final document will be released following the issuance of a new MS4 permit in FY 2019.

Stormwater Working Group

The Stormwater Working Group consists of representatives from NDOT’s Stormwater Division, the Associated General Contractors of America (AGC), and the contracting community. NDOT and the AGC recognize the need for a cooperative relationship to ensure that construction site stormwater management is a successful endeavor for NDOT and NDOT’s contractors. The working group serves as a platform to discuss issues, inconsistencies, and successes on NDOT’s construction sites, as well as identify opportunities for growth and improvement from a programmatic standpoint.

The Working Group met twice during the Reporting Period.

AGC Environmental Committee

This committee was established during the Reporting Period with the purpose of bringing together local, State, and federal agencies and industry representatives to review environmental related matters that impact the construction industry and the community.

The Committee met one time during the Reporting Period.

Contract Specifications

NDOT’s Stormwater and Construction Divisions made minor revisions to *Section 637 – Temporary Pollution Control* of NDOT’s *Standard Specifications for Road and Bridge Construction, 2014*. Refer to ***Section III.B. Legal Authority*** for details.

Encroachment Permit Terms and Conditions

NDOT's Stormwater and Right-of-Way Divisions made minor revision to the standard *Terms and Conditions* of Temporary Occupancy Permits. Refer to **Section III.B. Legal Authority** for details.

## *III.H. NDOT Contractors Performing Construction Activities*

Construction Contracts Awarded

NDOT awarded 45 construction contracts during the Reporting Period, of which 24 obtained coverage under the CGP (Table 7).

Table 7. Construction contracts awarded during FY 2018 and their corresponding CGP-CSW number. [13]

| Contract No. | CSW No. | Contract No. | CSW No. |
|---|---|---|---|
| 3675 | N/A | 3706 | N/A |
| 3677 | N/A | 3707 | 44378 |
| 3678 | N/A | 3708 | N/A |
| 3681 | 43907 | 3709 | N/A |
| 3682 | N/A | 3710 | Pending |
| 3683 | 44107 | 3711 | 44587 |
| 3684 | N/A | 3712 | 44519 |
| 3685 | N/A | 3713 | 44584 |
| 3686 | N/A | 3714 | N/A |
| 3687 | N/A | 3715 | N/A |
| 3688 | N/A | 3717 | N/A |
| 3689 | N/A | 3718 | N/A |
| 3690 | 43955 | 3719 | N/A |
| 3691 | 44204 | 3720 | N/A |
| 3692 | 44065 | 3721 | N/A |
| 3694 | 44119 | 3704-READV | 44827 |
| 3695 | 43730 | 800-18 | N/A |
| 3696 | 44215 | 801-18 | N/A |

[13] Contracts that did not warrant CGP coverage are designated with a "N/A" for their respective CSW No.

Table 7 (cont'd).

| | | | |
|---|---|---|---|
| 3698 | N/A | 802-18 | N/A |
| 3699 | 44289 & 44308 | 803-18 | N/A |
| 3701 | 44165 & 44308 | 804-18 | N/A |
| 3703 | N/A | 805-18 | N/A |
| 3705 | 44290 & 44308 | ----- | ----- |

As a standard of practice all NDOT construction contracts (regardless of CGP coverage) are required to implement temporary pollution control measures as specified in NDOT's *Construction Site Best Management Practices (BMPs) Manual* (as appropriate).

NDOT's Stormwater Division is not aware of any Notice of Violation issued by NDEP or the EPA on any NDOT construction project during the Reporting Period.

Construction Contracts Closed Out

NDOT closed out 18 construction contracts during the Reporting Period, of which 6 obtained CGP coverage. Of those 6 permits, 5 permits were closed out, i.e. "Terminated", upon project completion, with 1 permit transferred over to NDOT until post-construction disturbance areas meet CGP final stabilization requirements (Table 9). Table 9 summarizes contracts with CGP coverage terminated during the Reporting Period[14], but the construction contract was closed out during a previous reporting period.

Table 8. NDOT contracts closed out during FY 2018, their corresponding CGP site (CSW) number, and associated closeout status.[15]

| Contract No. | CSW No. | CGP Status |
|---|---|---|
| 3578 | N/A | N/A |
| 3590 | N/A | N/A |
| 3595 | 41354 | Terminated |
| 3609 | 41703 | Open (Transferred to NDOT) |
| 3616-READV | 42306 | Terminated |
| 3618 | 41707 | Terminated |
| 3622 | N/A | N/A |
| 3637 | N/A | N/A |
| 3643 | 42430 | Terminated |

[14] Permits were transferred to NDOT until CGP final stabilization requirements were met.
[15] Contracts that did not warrant CGP coverage are designated with a "N/A" for their respective CSW No. and CGP Status.

Table 8 (cont'd).

| | | |
|---|---|---|
| 3648 | N/A | N/A |
| 3663 | N/A | N/A |
| 3665 | N/A | N/A |
| 3672 | 43358 | Terminated |
| 3676 | N/A | N/A |
| 3677 | N/A | N/A |
| 3682 | N/A | N/A |
| 3688 | N/A | N/A |
| 3689 | N/A | N/A |

Table 9. Construction contracts completed during a previous fiscal year with CGP coverage terminated during the Reporting Period.

| Contract No. | CSW No. |
|---|---|
| 3290 | 6027 |
| 3550 | 39269 |
| 3557 | 39496 |

Active Construction Contracts Map

NDOT's Stormwater Division created a real-time, online GIS based map that displays all active 4-digit construction contracts. The map is available for viewing from NDOT's Stormwater Program website at the following web address[16]: https://ndot.maps.arcgis.com/apps/webappviewer/index.html?id=a0007d43f61e40f68ec938cee71a7996.

### *III.I. Discharges from New Development and Redevelopment*

NDOT closed out 5 construction contracts during the Reporting Period that incorporated permanent BMPs and stormwater improvements into the design (Table 10).

The Stormwater Division routinely reviews project plans and assists with the design of permanent BMPs for NDOT's construction projects. As part of the plan review process, the need for water quality permit procurement and post-construction permanent erosion control measures are assessed and documented. Low Impact Development (LID) measures and other post-construction BMPs are recommended as appropriate. Information is conveyed to the appropriate project designer for inclusion into the design and/or specifications (as appropriate).

[16] An ArcGIS Online account may be required for map viewing.

The Stormwater Division continues to review encroachment permits to assess stormwater related impacts within NDOT's right-of-way. Impacts to NDOT's right-of-way are assessed and the need for stormwater mitigation measures and coverage under various water quality permits (as appropriate) for each project is subsequently documented. Information is then conveyed to the appropriate District Permits personnel for inclusion in the permit documentation.

Table 10. Construction contracts closed out during the Reporting Period that incorporated permanent BMPs.

| Contract | Project Limits[17] | Permanent BMPs Installed[18] |
|---|---|---|
| 3590 | US-95 (CH 28.00 to 58.00) | General Stormwater Improvements, Riprap Slope Stabilization, & Channel Armor |
| 3595 | US-395 (DO 29.29 to 29.52) | General Stormwater Improvements, Bridge Scour Mitigation, & Riprap Slope Stabilization |
| 3609 | I-80 (EL 68.98 to 74.86) | General Stormwater Improvements, Slope Stabilization, Riprap Downdrains, & Channel Armor |
| 3637 | SR-667 (WA 23.86, 24.06, 25.01, & 25.20) | General Stormwater Improvements, Channel Armor, & Riprap Downdrains |
| 3616-READV | US-95 (ES 19.22 to 19.29) Goldfield Visitor Center | General Stormwater Improvements, & Revegetation |

Revisions to NDOT's *Planning and Design Guide* were completed during the Reporting Period. Updated content included planning procedures incorporating permanent (i.e. post-construction) BMPs (including LID measures) into new development and redevelopment projects, guidance for

[17] Route number followed by mile posting (letters indicate county abbreviations).
[18] Permanent BMPs located at one or multiple locations within the project limits. Riprap utilized as drainage protection, slope protection, erosion control, etc. Miscellaneous stormwater facility improvements can include curb and gutter, island paving, trench drains, drop inlet modifications, embankment protectors, paved ditches, ditch grading, ac swales and dikes, etc. Retaining walls can include MSE walls, soil nail and/or cantilever walls. Landscaping can include containerized plantings, native plant transplanting, decorative rock, mulching, water harvesting, etc. Revegetation can include hydroseeding, drill seeding, etc.

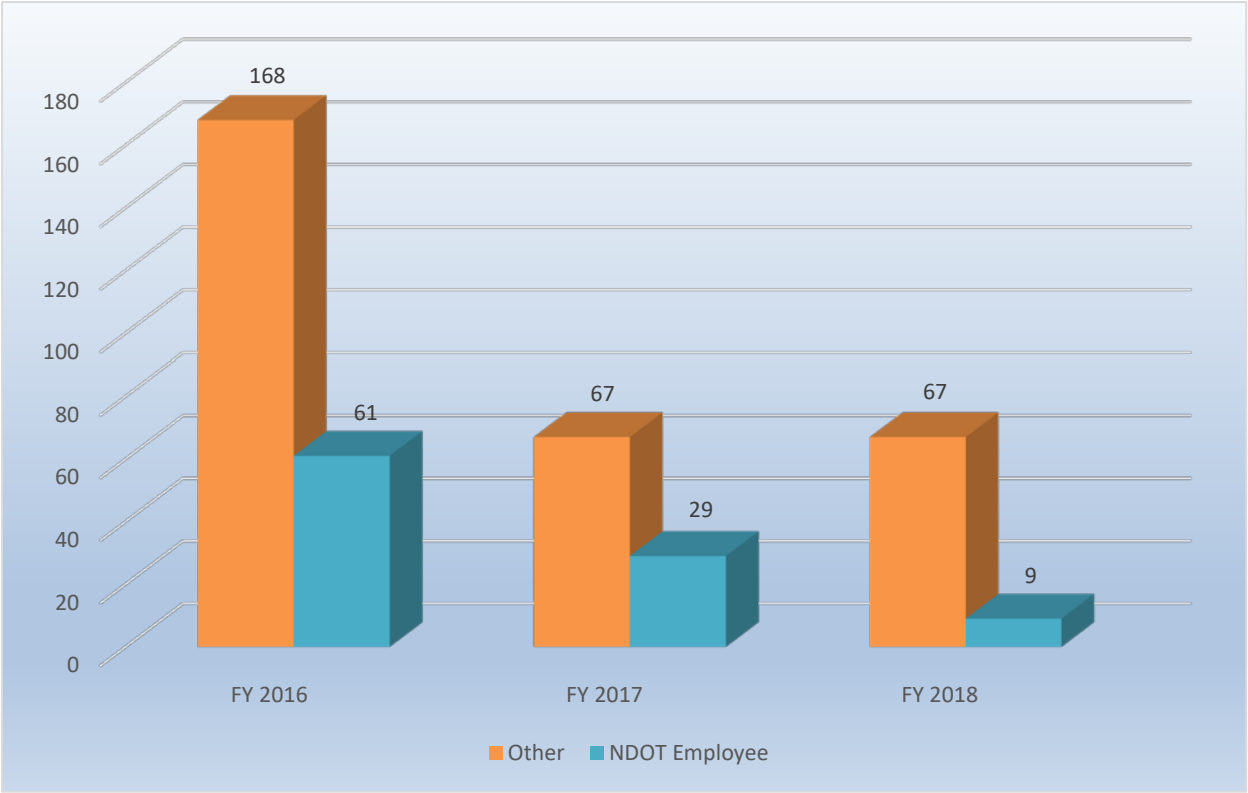
permanent BMP selection, and developing operation and maintenance plans for permanent BMPs. The revised document was released in September of 2017.

### *III.J. Illicit Discharge Detection and Elimination System*

IDDE Program

A total of 76 potential illicit discharge incidents were reported to NDOT's Stormwater Division during the Reporting Period. The Stormwater Division was notified of these incidents through several avenues, notably NDEP Spill Reports, NDOT employees, and the public. Figure 7 compares the number of illicit discharge incidents reported by NDOT employees versus those reported through other avenues. Spill reports generated by NDEP continue to be the primary avenue of reporting potential illicit discharges to NDOT. Incidents reported via NDOT's online website form continue to be low. All reports are reviewed and investigated (as appropriate) by the Stormwater Division's Compliance and Enforcement Section to determine if the reported incidents affect, or has the potential to affect, NDOT's right-of-way. Reports that do not affect NDOT's right-of-way are forwarded to the appropriate local, state, or federal entity.

Figure 7. The number of potential illicit discharge incidents reported to the Stormwater Division during the previous three reporting periods.[19]




Of the 76 reported incidents, Stormwater Division staff opened and investigated 52 case files to confirm or negate an illicit discharge event (Table 11).[20] The remaining 24 incidents were determined not to affect, or have the potential to affect, NDOT's right-of-way and consequently, case files were not opened. Figure 8 displays the total confirmed illicit discharges over the previous three reporting periods.

All investigations are tracked in the IDDE Database housed and maintained within the Stormwater Division. Incident case files are classified as "active" during the investigation and, if necessary, through mitigation and enforcement procedures. Incident case files are considered "closed" if the illicit discharge in question has ceased and all follow-up activities (e.g. cleanup, enforcement

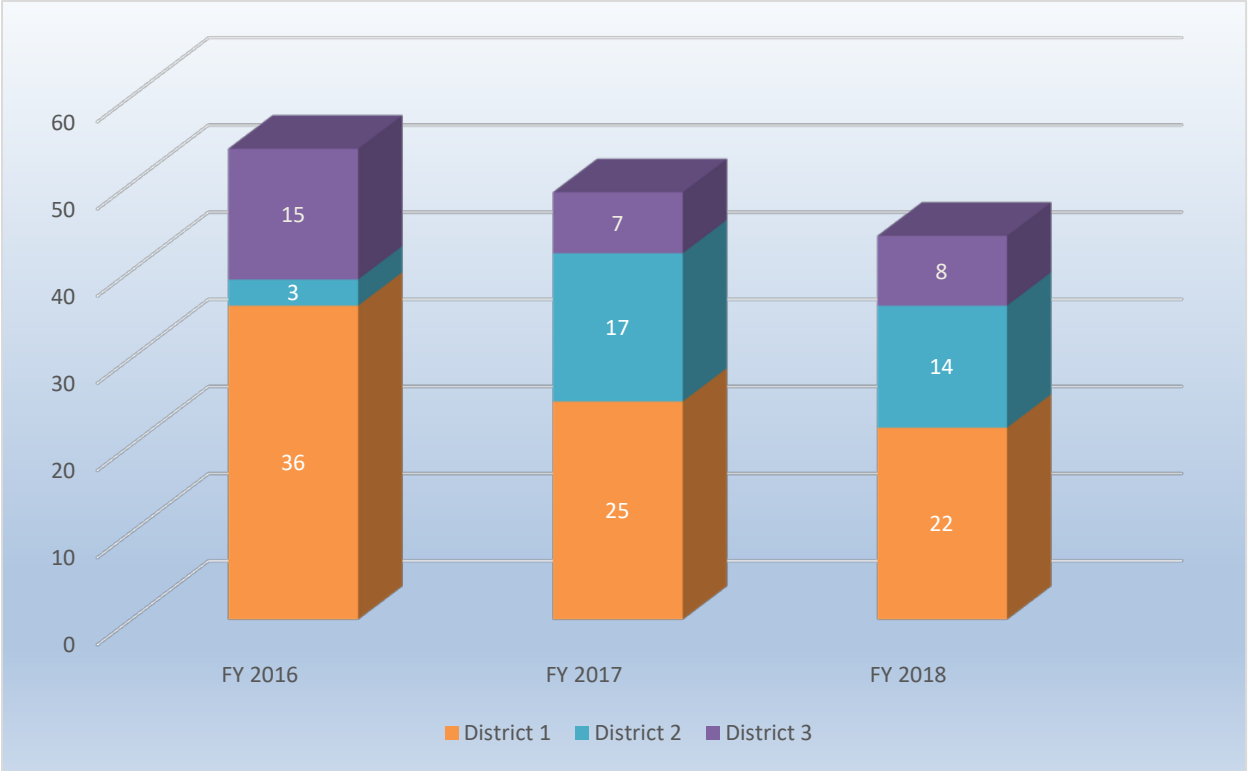
[19] The group "Other" refers to other agency personnel, the public, etc.
[20] Status at the time information for the Annual Report was being compiled.

action, etc.) have been adequately addressed per the Stormwater Division's illicit discharge protocol.

Table 11. Illicit discharge investigation summary broken down by District.

| | District 1 | | District 2 | | District 3 | | Total Statewide | |
|---|---|---|---|---|---|---|---|---|
| Total Incidents Investigated | 26 | | 14 | | 12 | | 52 | |
| Incidents Confirmed Illicit | 22 | | 14 | | 8 | | 44 | |
| Confirmed Illicit Status | 3 Active | 19 Closed | 9 Active | 5 Closed | 3 Active | 5 Closed | 15 Active | 29 Closed |

Figure 8. Confirmed illicit discharges over the previous three reporting periods broken down by District.




Major Outfall IDDE Inspections and Investigations

District Stormwater Division staff perform routine outfall monitoring inspections within their respective Districts per the *Dry Weather Outfall Inspection Plan*. Major Outfalls are designated as either "High Priority" or "Low Priority" outfalls. Criteria is based on factors such as previous dry weather visual inspection data; location of the outfall based on proximity to an industrial area; discharge to an impaired or unique water; or has otherwise been identified as having an increased

likelihood that illicit discharges could be present. Inspection data is gathered using the ArcGIS Collector App and subsequently housed in the Stormwater Asset Management Database maintained by the Stormwater Division.

NDOT conducted 4,500 outfall inspections during the Reporting Period. Of these inspections, 8 were conducted at "High Priority" Major Outfalls during dry weather conditions, with 3 of them noting a potential illicit discharge. Unfortunately, due to miscommunication it is unknown if those potential incidents were properly investigated.

NDOT's Spill Response

NDOT's on-call hazardous materials response service provider responded to 16 incidents during the Reporting Period. This compares with 12 incidences responded to in FY 2017 and 16 incidences responded to in FY 2016.[21]

Sanitary Sewer Exfiltration

Observing evidence of sanitary sewer exfiltration continues to be a component of NDOT's day-to-day activities, notably during construction and maintenance activities and routine outfall inspections. There were no sanitary sewer exfiltration related incidents reported to the Stormwater Division during the Reporting Period.

## *III.K. Industrial Facility Monitoring and Control*

NDOT does not own or operate industrial facilities as described in ***III.K.1*** of the Permit. However, NDOT continued implementing the Industrial Facility Monitoring and Control Program by performing 121 assessments of non-NDOT industrial facilities that potentially discharge stormwater runoff directly onto NDOT's right-of-way (Table 11). NDOT focused efforts on facilities that are covered under the Industrial or Mining Stormwater General Permits issued by NDEP. Should it be determined that a facility potentially discharges stormwater runoff directly onto NDOT's right-of-way, a field inspection is performed by Stormwater Division Compliance and Enforcement Section personnel to gauge the potential for pollutant and illicit discharges. Inspection findings dictate whether the facility in question is a candidate for potential future

[21] The FY 2016 Annual Report reported 14 incidents in FY 2016. Those numbers were updated during the FY 2017 reporting period.

monitoring, i.e. re-assessments. Inspection documentation is maintained within the Stormwater Division.

The Stormwater Division made minor revisions to the inspection form used to document industrial facility stormwater inspections.

Table 11. Summary of industrial facility assessments performed during the Reporting Period.

| | District 1 | District 2 | District 3 | Total |
|---|---|---|---|---|
| Re-Assessed | 29 | 27 | 10 | 66 |
| New Assessment | 19 | 0 | 25 | 44 |
| SARA 313 Sites | 2 | 5 | 4 | 11 |
| Total | 50 | 32 | 39 | 121 |

### *III.L. Stormwater Discharges from NDOT Maintenance Facilities*

NDOT has developed and subsequently issued an FPPP for its designated Major and Minor maintenance facilities statewide (FPPP compliance is summarized in subsequent sections of this Annual Report). The FPPP is the basis for implementing BMPs that will prevent and/or reduce stormwater pollutant discharges from NDOT's maintenance facilities. NDOT's *Maintenance Facility Best Management Practices (BMPs) Manual* is referenced in the FPPP as the primary guidance for general housekeeping BMP implementation. A copy of the manual can be accessed from NDOT's Stormwater Program website at the following web address: https://www.nevadadot.com/doing-business/about-ndot/ndot-divisions/stormwater/resources-documents.

All Major and Minor Maintenance facilities underwent a comprehensive, annual stormwater inspection performed by the Stormwater Division's Compliance and Enforcement Section (refer to ***III.M. Comprehensive Maintenance Facility Inspection*** below).

NDOT's Stormwater Division is unaware of any spills to the storm sewer system or illicit discharges at any NDOT Maintenance facility during the Reporting Period.

Although there were no Maintenance facility improvements constructed during the Reporting Period, NDOT continued designing water quality improvements for the Ely, Wells, and Las Vegas-North Maintenance stations.

### *III.M. Comprehensive Maintenance Facility Inspection*

Comprehensive annual stormwater inspections were performed by NDOT's Stormwater Division at all (267)[22] designated Major and Minor Maintenance facilities (Table C1 in Appendix C). Following the inspections, formal inter-Departmental memos were submitted to the designated FPPP administrators documenting stormwater related concerns and subsequent recommendations for corrective action to maintain FPPP compliance. All inspection reports were signed and certified in accordance with ***V.G. Signatory Requirements*** of the Permit. Inspection documentation is maintained within the Stormwater Division and available upon request.

### *III.N. Scope of Inspections*

Comprehensive annual stormwater inspections performed at designated Major and Minor Maintenance facilities focused on all areas that could be a potential source of pollutants in stormwater runoff.

Stormwater Division personnel noted a total of 82 FPPP non-compliance issues[23] statewide during their annual inspections, with 77 of those having documentation supporting appropriate remedial action (Figure 9). A summary of the ratios of the number of FPPP compliance issues per inspection for the three Districts over the previous three reporting periods is presented below in Table 12 (the lower the ratio, the lower the number of compliance issues noted per inspection). As with previous reporting periods, the top three non-compliance issues observed District-wide involved containment and/or cleanup of minor equipment leaks, sediment control BMP maintenance/implementation, and various general housekeeping measures.

[22] The total number may change annually due to the addition and subtraction of active Maintenance facilities.

[23] These do not include *recommendations* for BMP enhancement.

Figure 9. Summary of comprehensive annual stormwater inspections conducted at NDOT's Major and Minor Maintenance Facilities statewide over the previous three reporting periods.

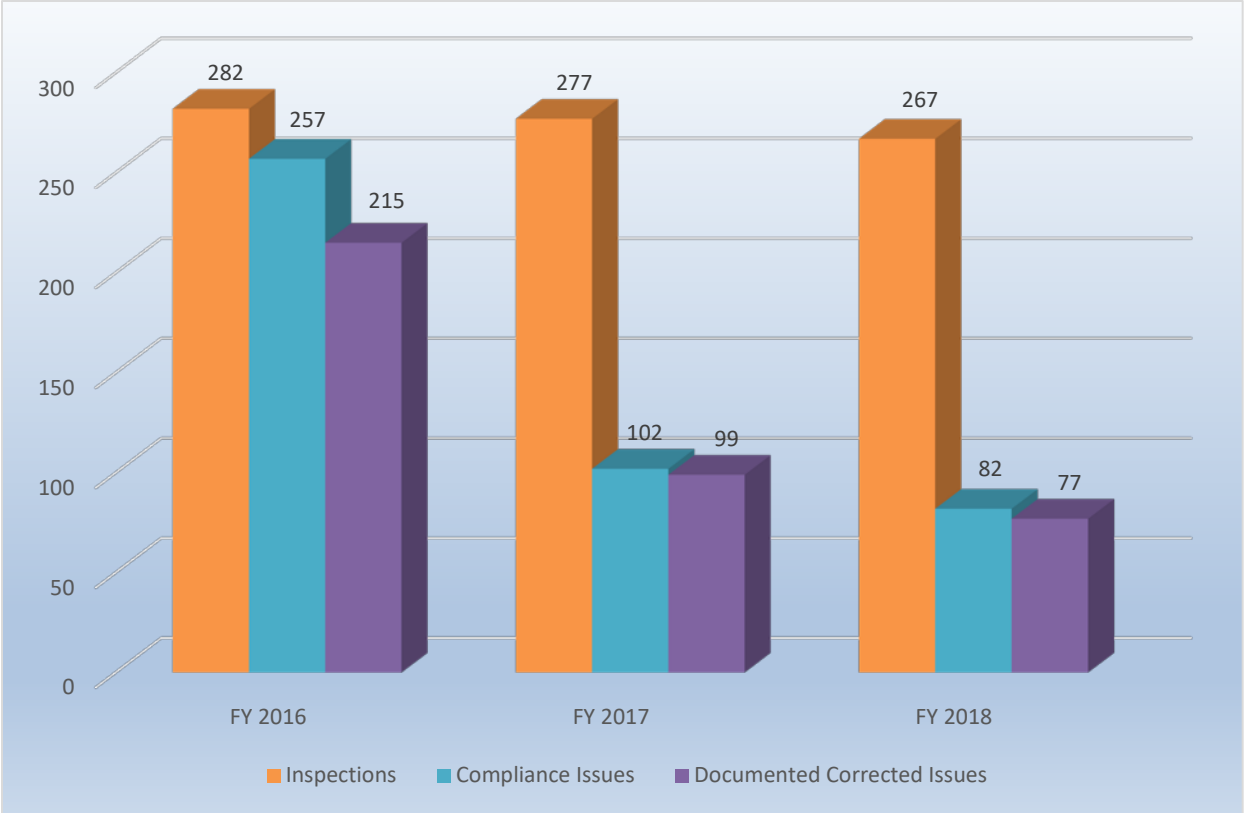



Table 12. Ratio of FPPP non-compliance issues to stormwater inspections conducted for all each District over the previous three reporting periods.

| | District 1 | District 2 | District 3 | Average |
|---|---|---|---|---|
| FY 2016 | 0.39 | 2.1 | 0.73 | 1.1 |
| FY 2017 | 0.37 | 0.45 | 0.31 | 0.38 |
| FY 2018 | 0.38 | 0.41 | 0.16 | 0.32 |

## *III.O. Public Street Maintenance Program in Urbanized Areas*

NDOT continues to implement its Public Street Maintenance Program. Stormwater related maintenance activities are tracked via NDOT's Maintenance Management System (MMS), a software tracking program maintained by NDOT's Maintenance and Asset Management Division. Summaries of Maintenance activities performed statewide and in select MS4 areas are provided in Tables D1 thru D8 in Appendix D. Information regarding a Maintenance activity performed along a specific roadway segment is available upon request.

NDOT applies abrasives, anti-icing, and de-icing agents on highways across the state where near-freezing or freezing winter temperatures occur to maintain a level of safety for the traveling public. NDOT continues to refine application rates of abrasive, anti-icing, and de-icing agents for maximum efficiency to minimize adverse impacts to receiving waterways without compromising public safety. To assist with this endeavor, NDOT Maintenance personnel continue to utilize RWIS to assist with determining optimal application rates. Two new RWIS stations became operational during the Reporting Period, bringing the total number to 97 sites statewide to assist Maintenance personnel with snow and ice control operations.

NDOT continues to participate in the Sponsor-A-Highway and Adopt-A-Highway programs to assist with litter and debris cleanup efforts along NDOT's highways (refer to ***Section III.F. Stormwater Education Program*** of this Annual Report).

NDOT continued to perform street sweeping activities in urbanized areas, often exceeding Permit requirements of two times per year[24]. Summaries of sweeping activities performed during the previous three reporting periods are provided in Tables D1 thru D7 in Appendix D and Figures 10 thru 12 below.

[24] NDOT is required to adhere to local air quality requirements in some urbanized areas such as Washoe and Clark Counties; consequently, sweeping activities are conducted at higher frequencies in these areas.

Figure 10. Summary of salt/sand application and material removed from pickup broom sweeping statewide.

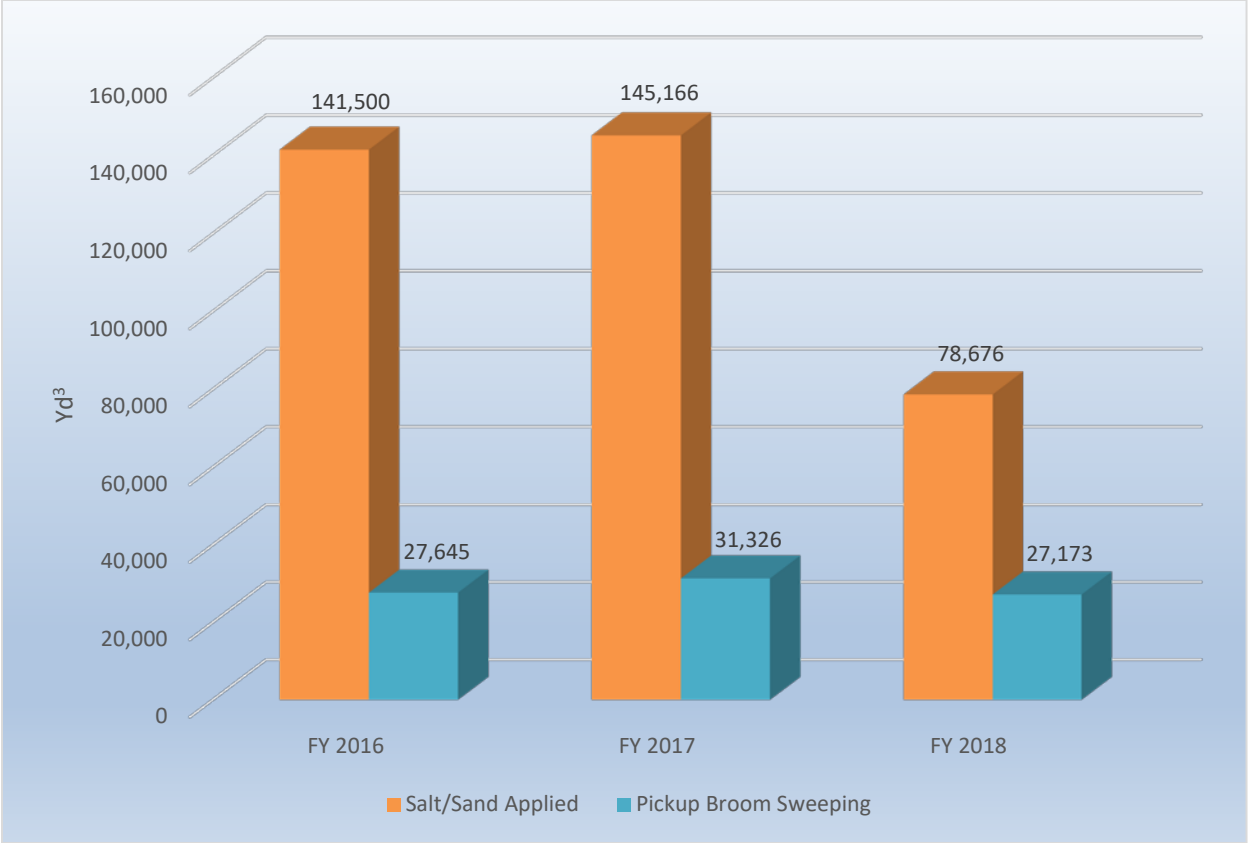


Figure 11. Percentage of salt/sand applied remaining after pickup broom sweeping in the various MS4 areas over the previous three reporting periods.

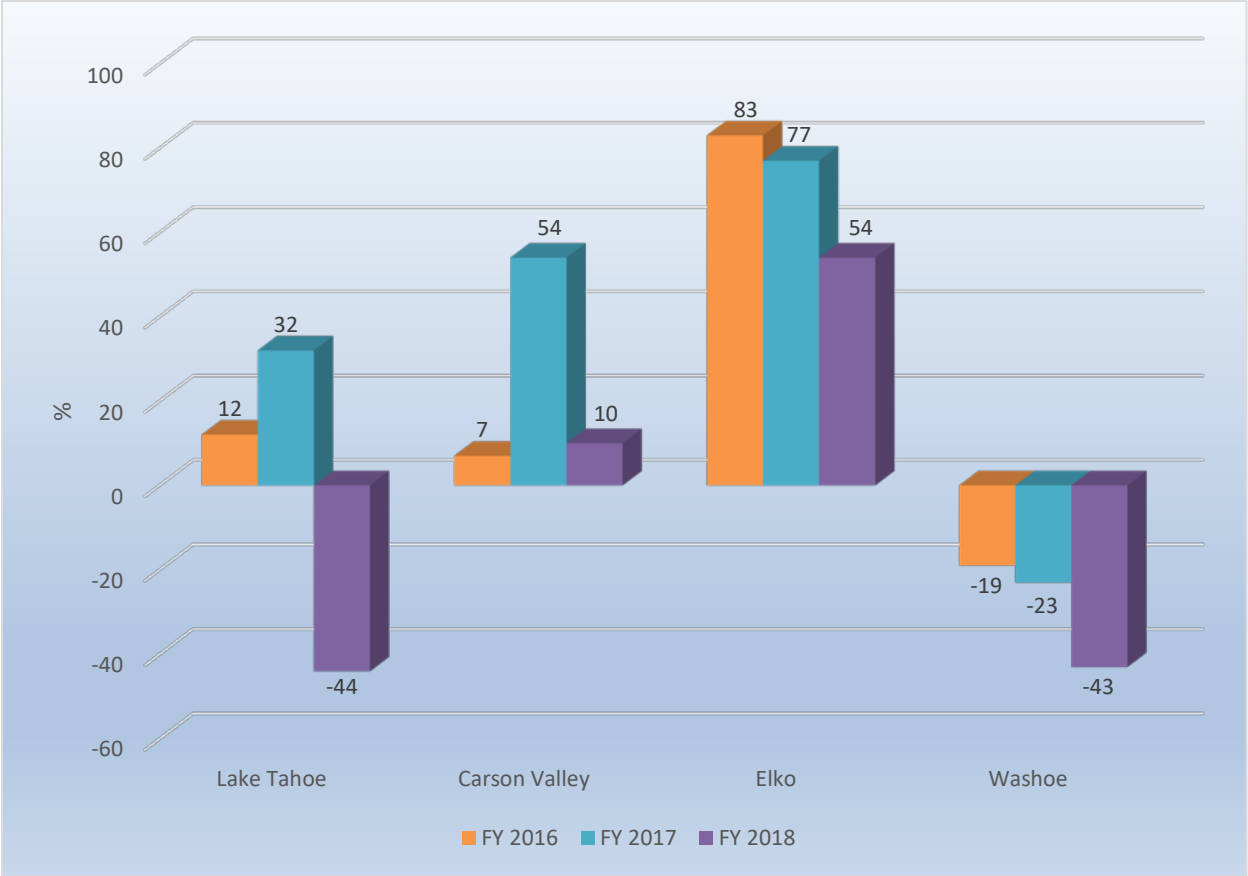
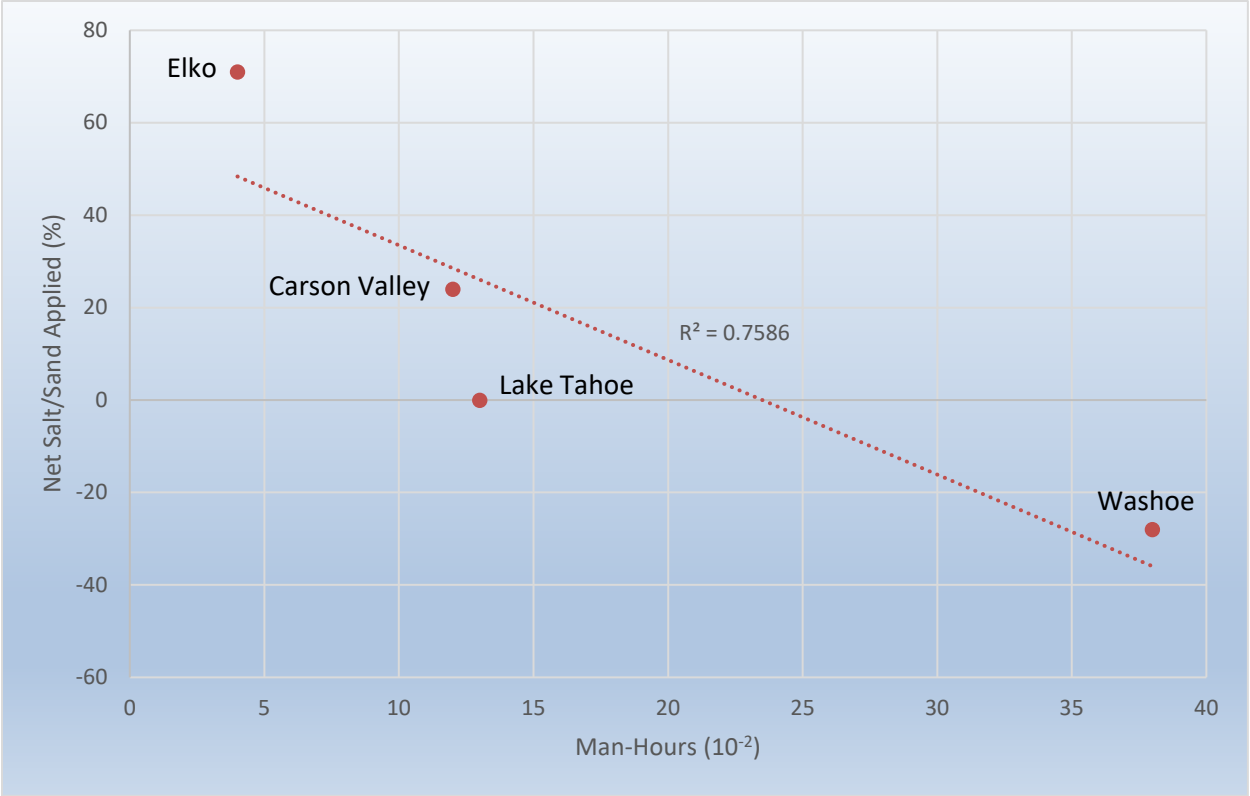


Figure 12. Relationship between *average pickup broom man-hours* and *average net salt/sand applied*[25] in the various MS4 areas over the previous three reporting periods.




## *III.P. Measures to Control Discharges from Roadways*

Highway Maintenance Activities

NDOT continues to implement its statewide Public Street Maintenance Program in an ongoing effort to reduce stormwater pollutants from the right-of-way. The larger urbanized regions of the state, as well as the Lake Tahoe Basin and Clear Creek Watershed areas, continue to be priority areas for NDOT to focus maintenance activities. Summaries of Maintenance activities are provided in Tables D1 thru D9 in Appendix D. Information regarding a Maintenance activity performed along a specific roadway segment is available upon request.

NDOT's Stormwater Division continued to evaluate projects (i.e. slope assessments) during the design phase to determine if areas within the project limits, specifically slopes that are 3:1 or

[25] Net Sand/Salt Applied refers to the difference between salt/sand applied and the amount of material removed from pickup broom sweeping expressed in a % of sand/salt applied.

greater, are experiencing significant erosion control issues. Parameters that are typically evaluated include severity of erosion, the extent of sediment migration, and whether the inclusion of additional post-construction stabilization measures (i.e. above and beyond current design measures) are warranted. Recommendations for mitigation measures for erosion control are submitted to NDOT's Design Division for consideration (as appropriate).

During the Reporting Period, 104 slope assessments were conducted statewide (Table 13). Areas deemed problematic will undergo further evaluation to gage erosion severity and to determine appropriate mitigation measures.

Table 13. Slope assessments performed in each District during the Reporting Period.

| | **Slopes Assessed** | **Areas Requiring Further Assessment** |
|---|---|---|
| District 1 | 4 | 4 |
| District 2 | 33 | 2 |
| District 3 | 67 | 1 |
| Total | 104 | 7 |

Construction began for Contract 3701 (located along I-80 near Carlin) to treat multiple eroded 2:1 slopes with topsoil filled riprap and hydroseed. Construction also began for Contract 3711 (located along I-80 from the CA/NV state line to Keystone Ave. in Reno) to stabilize multiple slopes 2:1 or steeper with topsoil filled riprap with hydroseed and rock mulch.

NDOT Maintenance Crews continue to perform slope stabilization improvements as needed throughout their respective service areas. Tables D1 thru D6 in Appendix D summarizes the volume of soil material utilized for these efforts under the MMS task "Repair Fill and Cut Slopes."

Snow and Ice Control

Information pertaining to material source and chemistry of abrasives, anti-icing, and de-icing agents continue to be maintained by NDOT's Maintenance and Asset Management Division. During the Reporting Period, NDOT's Maintenance and Asset Management Division completed revisions to NDOT's *Maintenance Manual*, an internal guidance document providing Maintenance personnel statewide with information relevant to maintenance tasks and responsibilities. Included

with the revisions is the inclusion of testing requirements for anti-icing and de-icing agents as required by the Permit.

Information pertaining to the volume of abrasive and de-icing agents applied on NDOT's roadways is summarized in Tables D1 thru D6 in Appendix D. NDOT continues to "fine tune" application rates to meet the needs of the traveling public, while striving to reduce potential impacts to receiving waterways. Information pertaining to the type and volume of anti/de-icing materials applied along a specific roadway segment is available upon request.

Storm Sewer System and Highway Maintenance

Tables D1 thru D9 in Appendix D summarize hydraulic facility maintenance efforts within specific MS4 areas, Major and Minor Maintenance facilities, and statewide. Information pertaining to the maintenance of hydraulic facilities along a specific roadway segment is available upon request. Information tracking capabilities of NDOT's MMS is limited and currently not configured to collect material volume data associated with the servicing of specific storm sewer facilities, e.g. drop inlets. NDOT has commenced development of a new enterprise asset management system which will have the capabilities of tracking volume data.

## *III.Q. Storm Sewer System and Highway Maintenance*

Inventory Post-Construction Stormwater Pollution Control BMPs

The inventory and mapping of post-construction stormwater pollution control BMPs is a component of the hydraulic facility inventory and mapping efforts (***III.C. MS4 Maps and Outfalls***). NDOT is focusing efforts on post-construction BMPs such as stormwater retention/detention basins, constructed wetland areas/water quality basins, and manufactured stormwater treatment devices. NDOT has completed inventory efforts and will focus efforts on maintaining and updating the data as appropriate.

Inspect Storm Sewer System and Develop Maintenance Schedules and Priorities; Perform Repair, Maintenance, and Cleaning

NDOT's inspection and subsequent maintenance of its storm sewer system is performed by Maintenance Crews within their respective District. The three NDOT Districts develop schedules for their respective service areas with maintenance activities occurring as needed. Schedules

reside within the appropriate District office with all Maintenance activities summarized in the MMS. Tables D1 thru D6, D8, and D9 in Appendix D provide summaries of maintenance related tasks involving the cleaning of stormwater facilities. District personnel inspected 12,026 pipes (e.g. culverts) and 2,412 drop inlets statewide for servicing needs during the Reporting Period.

NDOT's *Stormwater Operations and Maintenance Plan* was released in August of 2017. This document provides Maintenance personnel with guidance for performing routine maintenance on storm sewer system facilities. The Stormwater Division assists the Districts with establishing priority areas for conducting inspections and performing cleanout.

Roadside Management Program

NDOT Maintenance personnel continued to use guidance from NDOT's *Construction Site Best Management Practices (BMPs) Manual* and AASHTO's *Maintenance Stormwater Field Guide* to minimize potential stormwater pollution when performing maintenance activities.

Maintenance personnel are required to complete NDOT's Stormwater Management for Maintenance training course, which provides education regarding stormwater pollution control when performing routine maintenance activities (please refer to section ***III.F. Stormwater Education Program*** of this Annual Report).

## *III.R. Herbicide, Pesticide and Fertilizer Program*

Implement Pesticide and Fertilizer Application Procedures

NDOT continued to implement its Vegetative Control Program (refer to various sections of this Annual Report) to prevent and/or reduce the discharge of pollutants in stormwater runoff from the MS4 Permit area while maintaining a level of safety for the traveling public, e.g. line of site and reducing wildfire potential. Methods implemented include chemical treatment (e.g. herbicide application) and physical treatment (e.g. mowing). NDOT continues to use site-appropriate vegetation, i.e. native and/or climate adapted, to assist with post-construction revegetation efforts statewide.

NDOT continued herbicide application activities along roadway areas to control invasive and state listed noxious weed species (Tables E1 and E2 in Appendix E). NDOT Maintenance personnel continued to be compliant with Nevada Department of Agriculture pest control applicator

requirements with certification records maintained at the appropriate District offices. Contractor herbicide applicators are also required by State law to have the appropriate certification. Certification signifies that the applicators are knowledgeable in appropriate herbicide use and application practices. In addition to the application of herbicides for statewide weed control efforts, NDOT applies small amounts of pesticides at Maintenance facilities for onsite pest control, e.g. insect, rodent, and weed control.

NDOT's use of fertilizers in the right-of-way is minimal and limited to assisting with post-construction revegetation establishment (contract specific) and with maintaining landscaped areas. NDOT closed out 3 construction contracts during the Reporting Period that incorporated various soil amendments to assist with post-construction vegetation establishment (Table 14). Soil amendments are typically organic based products including liquid humus. Straight fertilizer was not used on any of the construction projects.

Tables D1 thru D6 in Appendix D summarize fertilizer application by Maintenance Crews during the Reporting Period. Most of the total liquid fertilizer applied statewide (78%) was limited to landscaped areas along the I-80 corridor within the Washoe MS4 area. The only MS4 area to receive pellet fertilizer was the Washoe MS4 area with the quantities constituting 2.5% of the total applied statewide.

Current stormwater training curriculum as well as NDOT's revised *Maintenance Manual* and AASHTO's *Maintenance Stormwater Field Guide* provide BMP guidance to Maintenance Crews for the proper application and storage of pesticides and fertilizers.

Table 14. Summary of construction contracts closed out during the Reporting Period that incorporated fertilizers and/or soil amendments to assist revegetation efforts.

| Contract | Treatment |
|---|---|
| 3595 | Soil Amendments |
| 3609 | Soil Amendments |
| 3618 | Soil Amendments |

## *III.S. NDOT Maintenance Yards Management Program*

NDOT's Major and Minor Maintenance facilities continue to be covered under a Facility Pollution Prevention Plan (FPPP). The FPPP provides guidance pertaining to BMP implementation to

maintain Permit compliance, as well as specific responsibilities to be performed by (or under the direction of) FPPP Administrators and Stormwater Division staff. Hard copies of the current FPPP have been distributed to each Maintenance station. In addition, a copy of the document is available for viewing internally on NDOT's Stormwater Division SharePoint site and externally on NDOT's Stormwater Program website at https://www.nevadadot.com/doing-business/about-ndot/ndot-divisions/stormwater/resources-documents.

Tables 15 and 16 provide a summary of FPPP compliance activities performed during the Reporting Period. NDOT was 100% compliant with conducting stormwater inspections at all designated Major and Minor facilities. Only 20% of the designated Major Maintenance facilities met their recommended FPPP sweeping frequency requirements. However, sweeping did occur at least one time at all Major facilities during the Reporting Period.

Table 15. FPPP compliance summary for Major and Minor Maintenance facilities for the previous three reporting periods.

| **District 1** | | | |
|---|---|---|---|
| | FY 2016 | FY 2017 | FY 2018 |
| Task | Compliance % | Compliance % | Compliance % |
| Stormwater Inspections (FPPP Administrator) | 100 | 100 | 101 |
| Stormwater Inspections (Stormwater Division) | 100 | 100 | 100 |
| Drop Inlet Inspections | 100 | 100 | 100 |
| **District 2** | | | |
| | FY 2016 | FY 2017 | FY 2018 |
| Task | Compliance % | Compliance % | Compliance % |
| Stormwater Inspections (FPPP Administrator) | 100 | 100 | 121 |
| Stormwater Inspections (Stormwater Division) | 100 | 100 | 100 |
| Drop Inlet Inspections | 100 | 100 | 100 |
| **District 3** | | | |
| | FY 2016 | FY 2017 | FY 2018 |
| Task | Compliance % | Compliance % | Compliance % |
| Stormwater Inspections (FPPP Administrator) | 100 | 100 | 110 |
| Stormwater Inspections (Stormwater Division) | 100 | 100 | 100 |
| Drop Inlet Inspections | 100 | 100 | 100 |

Table 16. Summary of sweeping efforts performed at FPPP designated Major and Minor Maintenance facilities during the Reporting Period.

| | Major Facilities | Minor Facilities | All Facilities |
|---|---|---|---|
| Total Material Recovered ($Yd^3$) | 222.5 | 500.5 | 723 |
| Average Material Recovered per Sweeping Event ($Yd^3$) | 3.4 | 4.2 | 3.9 |
| Average Material Recovered ($Yd^3$/Man-Hour) | 1.4 | 0.8 | 0.9 |

All Maintenance facility drop inlets were inspected as part of the annual stormwater inspections performed by the Stormwater Division's Compliance and Enforcement Section. The cleanout of hydraulic facilities, including drop inlets, is performed as needed. Table D9 in Appendix D summarizes hydraulic facility cleanout and other stormwater related maintenance activities performed at designated Major and Minor facilities.

### *III.U. Annual Review and Updating the SWMP*

NDOT performed updates to its Plan during the Reporting Period. Updates focused on programmatic changes resulting from the requirements of NDOT's Consent Decree as well as general formatting changes. The revised Plan was subsequently released in December of 2017.

### *III.V. Updating NDOT's Manuals*

Updates to NDOT's *Maintenance Facilities Best Management Practices (BMPs) Manual*, *Field Guide for Illicit Discharge Detection and Elimination,* and *Illicit Discharge Field Investigation Procedures Manual* did not occur during the Reporting Period.

Updates to NDOT's *Planning and Design Guide* and *Construction Site Best Management Practices (BMPs) Manual* were completed during the Reporting Period. The updated documents were released in September and December of 2017, respectively.

## *III.W. Characterization Data*

The Stormwater Division initiated efforts to enhance the stormwater quality monitoring program, providing a greater emphasis on stormwater runoff characterization.

A summary of NDOT's water quality monitoring efforts during the Reporting Period is provided in the following section.

## *IV.A. Stormwater Monitoring*

Below is a summary of NDOT's stormwater quality monitoring activities conducted during the Reporting Period. Laboratory analysis and reports are not included with this Annual Report; however, they are available upon request. Monitoring efforts within the Clear Creek watershed is summarized in section ***III.D. Discharges to Clear Creek Watershed*** of this Annual Report.

Stormwater Monitoring Plan

NDOT submitted its annual Stormwater Monitoring Plan for FY 2018 to NDEP on September 28th, 2017. A copy of the monitoring plan is provided in Appendix F.

Receiving Water Characterization Monitoring

- Las Vegas Wash: NDOT installed a monitoring station on the Las Vegas Wash upstream of Sloan Channel in May of 2017, which is co-located with a wet weather monitoring station operated by the Clark County Regional Flood Control District, upstream of waste water discharges. Water is continuously monitored for water temperature, specific conductance, and turbidity along with weather and flow data. There were only 3 sampling events (i.e. flow events above 650 cfs). Data is highly variable; however, preliminary results suggest some correlation between discharge, turbidity, and specific conductance, with turbidity and specific conductance being highest during the "first flush" period of a runoff event.

- Truckee River: NDOT is partnering with NDEP to conduct annual bioassessments of the Truckee River near White Fir St. bridge in Reno. Bioassessments are conducted to evaluate ecological integrity of a waterway and typically entail monitoring the biological condition, water quality, and physical habitat. Bioassessments were not conducted in FY 2018 due to unsafe water conditions.

Unmanned Aerial Vehicles Monitoring

- Post-Construction BMP Assessment Using Unmanned Aerial Vehicles: NDOT inspected 5 stormwater basins using unmanned aerial vehicles (UAVs). The UAVs collected imaging and 3D terrain modeling data to demonstrate basin condition and provide the ability to determine the level of erosion and amount of sediment and debris accumulation over time. UAV data was successful with determining the degree of basin erosion and the volume of material deposited along the basin bottom in 4 of the 5 basins. Data collection for the I-580 Basin at Brown's Creek is incomplete.

  Additionally, conventional inspections documenting the condition of each basin were conducted by Stormwater Division staff to complement the UAV inspections, including assessments of each basin's inlet and outlet structures.

Truckee Meadows Storm Water Permit Coordinating Committee Monitoring

- Ambient and Storm Event Monitoring: NDOT partnered with the Truckee Meadows Storm Water Permit Coordinating Committee (Committee) to characterize stormwater quality from 4 urban stormwater outfalls that discharge to the Truckee River. In addition, 9 monitoring sites on 6 tributaries to the Truckee River were monitored to characterize stormwater quality, and 3 near-continuous streamflow gauges were maintained on 3 Truckee River tributaries. Additionally, non-storm baseflow samples were collected from Steamboat Creek and North Truckee Drain over a 24-hour period. Water Year 2017 was the wettest year on record for the Truckee Meadows region. However, due to the timing of most storm events coupled with high stream flow conditions, only two storm events were sampled. A final monitoring report was released in March of 2018. Results indicate elevated concentrations of various water quality constituents (notably total nitrogen) in select tributaries and urban outfalls discharging to the Truckee River. These findings are consistent with the previous report published in December of 2016.

  Ambient and storm event monitoring occurred at several Truckee River tributaries during Water Year 2018. A final report is scheduled to be released in FY 2019.

- Watershed Assessment Program: NDOT partnered with the Committee to perform assessments of select major tributaries (14 reaches) to the Truckee River to evaluate impacts from development, and track trends in stream condition and overall stream health.

Stormwater runoff from NDOT's roadway system directly discharges into several of the tributaries assessed. In addition, 13 points of interest from the 2015 and 2016 watershed assessments were revisited during the Reporting Period to note changes since their previous assessment. Most reaches assessed were (generally) determined to be in "healthy" condition with few exceptions. In the more developed reaches, however, assessment results indicate channel incision, disconnected floodplains, and bank erosion. The conditions of these reaches are consistent with impacts typically observed within urbanized watersheds, e.g. higher peak flows, greater flow volumes, and more frequent high-flow events. Additional contributions to stream degradation were attributed to wildfire, construction site runoff, extreme runoff events during Water Year 2017, and drought. A final report was published in February of 2018.

Lake Tahoe Basin Monitoring

- Lake Tahoe Implementers Monitoring Program (IMP): This program was developed jointly by California and Nevada TMDL implementing jurisdictions to collectively fulfill California NPDES requirements or Nevada Interlocal Agreement commitments. The IMP represents a historic first step toward implementing a comprehensive Regional Stormwater Monitoring Program (RSWMP) for the Lake Tahoe Basin. As part of the IMP, NDOT (with assistance from the Desert Research Institute (DRI) and the Tahoe Resource Conservation District (TRCD)) spearheaded a side-by-side study of filter vault performance on SR-431. There are 4 monitoring locations at this site: the inflow and outflow of two manufactured stormwater treatment devices (Contech Media Filtration System (MFS) and Jellyfish). TRCD performs stormwater monitoring at this site as well as 6[26] other monitoring sites within the Lake Tahoe Basin for the TMDL implementing jurisdictions.

  The TRCD released a report on March 15, 2018, summarizing stormwater quality monitoring efforts at the 7 monitoring sites. Results suggest that the treatment devices can be effective with removing sediment and nutrients, and that regular maintenance of the treatment devices is necessary for optimum pollutant removal. Additionally, treatment effectiveness is maintenance dependent and improves with increased maintenance frequency.

- Road Operations and Maintenance Practices Effectiveness Testing Project: Initiated by Lake Tahoe stormwater jurisdictions (NDOT, Cal Trans, Kingsbury General Improvement District,

[26] The SR-431 monitoring site is the only one that receives stormwater runoff from NDOT's roadways.

City of South Lake Tahoe, as well as Placer, Washoe, and Eldorado Counties) in FY 2013, the objective of the study is to provide cost-effectiveness information and operational guidance to the jurisdictions to efficiently and effectively operate their respective stormwater management programs within the Lake Tahoe Basin. A report was released previously in FY 2016. Currently, this project will be implemented through FY 2019.

- Lake Tahoe Highway Road Rapid Assessment Methodology (Road RAM): NDOT continued its contract with the Nevada Tahoe Conservation District (NTCD) to conduct Road RAM on state routes within the Lake Tahoe basin. Road Ram is a rapid inspection protocol to assess pollutant potential on roadways. Scores for SR-28 and SR-431 ranged from 2.3 to 3.5, which is within the range of Fair to Acceptable conditions.

- SR-431 Continuous Real-Time Monitoring: This monitoring site is located along SR-431 in Washoe County above Incline Village, which is also the same location as the site being monitored by NDOT with assistance from the TRCD as part of the Lake Tahoe IMP (described previously). NDOT is monitoring the following meteorological parameters: air temperature, precipitation, and relative humidity. This separate monitoring effort is complementary to the TRCD's efforts.

- Lakeshore Blvd. Monitoring: This site is adjacent to Lakeshore Blvd. in Incline Village, Washoe County, with the TRCD aiding with monitoring efforts. This site provides stormwater characterization from a roadside ditch that discharges into nearby Third Creek (a tributary to Lake Tahoe). In addition to meteorological parameters being monitored, e.g. air temperature, precipitation, and relative humidity, the following hydrologic and water quality parameters are being monitored as well: stormwater discharge, water temperature, and turbidity. Preliminary results indicated a possible inverse relationship between discharge and water temperature.

<u>Maintenance Facility Monitoring</u>

- Las Vegas North Maintenance Facility: Stormwater sampling equipment was installed within a drop inlet to monitor the quality of stormwater runoff generated from the facility. Water quality parameters being monitored include total phosphorus, total dissolved solids, and total petroleum hydrocarbons. Objectives of this study are to characterize first flush pollutant loads, assess the need for additional BMPs, and assess the need for future monitoring. Two runoff events were sampled during the Reporting Period with varied results.

- Las Vegas South Maintenance Facility: Stormwater sampling equipment was installed within a valley gutter to monitor the quality of stormwater runoff generated from the facility. Water quality parameters being monitored include total phosphorus, total dissolved solids, and total petroleum hydrocarbons. Objectives of this study are to characterize first flush pollutant loads, assess the need for additional BMPs, and assess the need for future monitoring. Two runoff events were sampled during the Reporting Period with varied results.

- Reno Maintenance Facility: The monitoring of two stormwater treatment devices (sand/oil interceptor and a Contech CDS Treatment Vault) to assess treatment effectiveness was scheduled to occur. However, it was determined that monitoring of the sand/oil interceptor was not possible due to a lack of access. Consequently, the objectives of the monitoring effort were revised to characterize wet weather stormwater runoff conditions, and to test the effectiveness of the existing Contech CDS Treatment Vault. Various stormwater quality parameters will be monitored, including turbidity, total petroleum hydrocarbons, total phosphorus, and total nitrogen. Monitoring is anticipated to begin in FY 2019 contingent upon funding approval.

Highway Runoff Characterization Monitoring

- Two sites were selected to monitor highway stormwater runoff (i.e. pollutant characterization) before and after construction: SR-612 (Nellis Blvd.) in the Las Vegas Valley, and SR-659 (McCarran Blvd.) in Reno. Monitoring was never initiated, and the decision was made to abandon monitoring efforts at both locations.

## *IV.B. Record Keeping*

NDOT retains all records per section ***IV.B.1*** of the Permit. Copies of records are available upon request.

## *IV.C. Annual Reports*

Annual Report Submittal

NDOT submitted its FY 2017 Annual Report to NDEP September 29th, 2017. The Annual Report, as well as reports from the previous two reporting periods, are currently posted on NDOT's

Stormwater Program website at https://www.nevadadot.com/doing-business/about-ndot/ndot-divisions/stormwater/resources-documents.

SWMP Programmatic BMP Measurable Goal Accomplishment

Construction Site Inspections:

1. *Regularly inspect all construction sites within the MS4 Permit area.*

   Status: NDOT performs construction site stormwater inspections at all NDOT construction sites. NDOT's contractors are tasked with performing routine construction site stormwater inspections per NDOT's contract specifications. NDOT's Construction Crew stormwater inspectors perform oversight inspections as a quality control measure while the Stormwater Division's Compliance and Enforcement Section staff perform quality assurance inspections. Copies of inspection forms completed by NDOT personnel are housed with the Construction and Stormwater Divisions.

Construction Site SWPPPs:

1. *Verify Stormwater Construction General Permit coverage and SWPPP development and implementation (as appropriate).*

   Status: Contract specifications require NDOT's contractors to submit a SWPPP for review using NDOT's *Stormwater Pollution Prevention Plan (SWPPP) Template for Construction Activities*. NDOT's Resident Engineer and Stormwater Division review the SWPPP for completeness using NDOT's *Stormwater Pollution Prevention Plan (SWPPP) Checklist*.

   NDOT's Resident Engineer verifies project stormwater documentation, e.g. stormwater permits, are in order as part of completing NDOT's *Project Stormwater Checklist* prior to the initiation of earth disturbing activities.

2. *Upon project completion, ensure the Notice of Termination (NOT) and Notice of Change*[27] *(NOC) is filed (as appropriate).*

[27] When NDEP's new Stormwater General Permit NVR100000 went into effect January 5, 2015, the Notice of Change form was eliminated.

Status: NDOT works closely with construction contractors to ensure the proper documentation to close out (i.e. Terminate) the CGP or transfer complete CGP responsibility, i.e. NDOT becomes both the "Owner" and "Operator", is submitted to NDEP or EPA (as appropriate) upon project completion.

Nevada Contractors Guide for Construction Site BMPs:

1. *Provide access to the current version of the document on NDOT's website.*

   Status: A current version of this document is available on NDOT's Stormwater Program website at the following web address: https://www.nevadadot.com/doing-business/about-ndot/ndot-divisions/stormwater/resources-documents

2. *Assist with future document revisions as necessary.*

   Status: NDOT was not invited to participate in any revisions to the document during the Reporting Period.

Plan Review Process:

1. *Review project plans to ensure that stormwater runoff from new and re-development projects is adequately addressed and treated to the MEP.*

   Status: The Stormwater Division's Design Section reviews project designs to ensure post-construction stormwater runoff is adequately addressed for new and re-development projects within NDOT's right-of-way.

Legal Authority and Enforcement:

1. *Exercise current legal authority to enforce the provisions of NDOT's MS4 permit.*

   Status: NDOT has been provided legal authority to regulate discharges entering the right-of-way (refer to *NRS 408 – Highways, Roads, and Transportation Facilities*). NDOT has exercised its legal authority to the extent possible while continuing to refine enforcement response procedures. The Stormwater Division's Compliance and Enforcement Section

continues to develop and refine standards, policies, and procedures in support of this program.

2. *Provide written notice to NDEP of any proposal to modify the regulation or ordinances for stormwater discharges into the MS4.*

   Status: NDOT did not formally propose changes to regulations or ordinances for stormwater discharges into the MS4.

Departmental Stormwater Coordination:

1. *Continue to facilitate, develop, and promote inner Department and inter-agency relationships.*

   Status: The Stormwater Division routinely collaborates with other NDOT Divisions (notably the Construction, Design, and Maintenance and Asset Management Divisions) to assist with implementing the SWMP. NDOT continued fostering working relationships with various outside agencies and stakeholder groups.

Annual Review of the SWMP:

1. *Assess the overall effectiveness of the Department's SWMP by conducting an annual evaluation of the individual and collective programs.*

   Status: Refer to appropriate sub-sections under section ***IV.C. Annual Reports*** of this Annual Report.

2. *Prepare an Annual Report summarizing SWMP related activities for the previous state fiscal year for submittal to NDEP by October 1st annually.*

   Status: NDOT submitted the FY 2017 Annual Report to NDEP on September 29th, 2017.

3. *Incorporate and implement NDEP approved changes to the SWMP.*

   Status: NDOT revised its SWMP and subsequently published a revised Plan in December of 2017. A copy of the revised Plan was submitted to NDEP and EPA. NDOT did not receive comments from either agency.

Impaired Waters:

1. *Initiate a process to identify BMPs for implementation as appropriate.*

   Status: During a project's design phase, the potential water quality impacts of NDOT's stormwater discharge into 303(d) listed waterways is evaluated by the Stormwater Division's Design Section. BMPs are incorporated into the design as appropriate. For additional information regarding the evaluation process please refer to NDOT's *Planning and Design Guide*.

TMDL Listed Waters:

1. *Identify locations where NDOT owned roadways and rights-of-way intersect or parallel waterbodies that have NDEP approved TMDLs.*

   Status: Utilizing GIS capabilities, NDOT has identified locations where its roadway system intersects or parallels TMDL listed waterbodies.

2. *Determine if the TMDL constituents are commonly found in stormwater discharge from NDOT's MS4.*

   Status: NDOT has identified primary constituents of concern that could potentially be associated with stormwater runoff from its MS4 areas in concentrations that could have potential negative impacts to receiving waterbodies. This information was then used to identify TMDL listed waterbodies with impairments for those same constituents of concern. A summary of these evaluations is included in the Plan.

3. *Initiate a process to identify BMPs for implementation as appropriate.*

   Status: During a project's design phase, the potential water quality impacts of NDOT's stormwater discharge into TMDL listed waterways is evaluated. BMPs are included in the design as appropriate. For information on the evaluation process please refer to NDOT's *Planning and Design Guide*.

Mapping and Inventory of Structural BMPs and Major Outfalls:

1. *Continue stormwater mapping and infrastructure inventory efforts.*

Status: Hydraulic facility mapping and inventory efforts are complete. Storm sewer infrastructure, including select permanent post-construction BMPs, are digitally mapped using a GIS platform. Moving forward, NDOT will focus efforts on maintaining and updating the hydraulic facility inventory data as necessary.

Discharges into Sanitary Sewer Systems:

1. *Contact District personnel annually to identify instances of stormwater disposal into the sanitary sewer system.*

   Status: The Stormwater Division continues to work closely with District personnel to identify instances of stormwater disposal into the sanitary sewer system.

2. *In the event a new connection is found, immediately solicit an approval letter from the appropriate wastewater utility.*

   Status: NDOT received written authorization from the City of Fallon for stormwater disposal during the Reporting Period. A copy of this authorization is included in NDOT's Plan.

Industrial Facility Monitoring and Control Program:

1. *Perform annual review of NDOT owned facilities and determine if any are considered industrial facilities based on Permit criteria for industrial categories.*

   Status: NDOT's facilities remain classified as non-industrial.

2. *Should an NDOT facility be classified as industrial, develop an Industrial Facility Monitoring and Control Program.*

   Status: NDOT does not own or operate industrial facilities per section ***III.K.1*** of the Permit; consequently, an Industrial Facility Monitoring and Control Program has not been developed for NDOT's facilities.

Low Impact Development (LID) Techniques:

1. *Begin developing a preliminary list of potential LID techniques suitable for use along NDOT's highway environments.*

Status: Several LID techniques are potentially viable for use on NDOT projects, most notably revegetation, constructing drainage basins, grading to lengthen stormwater flow paths and reducing concentrated flows, preserving naturally vegetated areas, water harvesting, etc. NDOT's *Planning and Design Guide* provides guidance for LID selection and design.

2. *From the list, identify the most viable LID techniques for use on highway projects in Nevada.*

   Status: Currently, the most viable LID techniques for NDOT to utilize on highway projects are vegetation preservation, revegetation, slope flattening, and the construction of drainage basins. The Stormwater Division's Design Section will continue to evaluate and research LID strategies to determine appropriateness for treating stormwater runoff from NDOT's MS4 Permit areas.

3. *Incorporate the viable LID practices into future projects as appropriate.*

   Status: The inclusion of LID practices into a project is evaluated during the project's design phase. The Stormwater Division's Design Section assists with evaluating and designing LID practices for NDOT projects.

Public Outreach and Education Events:

1. *Participate in at least one public stormwater related outreach and education event annually.*

   Status: NDOT participated in numerous stormwater related public outreach and education events statewide.

2. *Assess the need to further develop or build upon public outreach and education efforts.*

   Status: NDOT will continually evaluate opportunities to further expand public outreach and educations efforts.

Public Litter Removal Programs:

1. *Continue the Adopt-A-Highway and Sponsor-A-Highway programs.*

Status: NDOT continued participation in both programs.

Partnerships and Affiliations:

1. *Continue partnering efforts and affiliations.*

   Status: NDOT continued partnering efforts and affiliations with several entities to assist with SWMP implementation (refer to various sections of this Annual Report).

2. *Seek opportunities for new partnerships and affiliations.*

   Status: NDOT developed a new working relationship with Washoe County Regional Parks and Open Space, and expanded it working relationships with the AGC and NDEP.

Demonstration Projects:

1. *Continue evaluating new technologies and practices for improving stormwater runoff quality.*

   Status: NDOT continued implementing its stormwater monitoring program, which provides opportunities to evaluate new technologies and practices that could potentially improve the quality of stormwater runoff (notably the use of UAV technology). Additionally, the Stormwater Division's Design Section continued evaluating vendor submittals of stormwater treatment products.

2. *Explore options to disseminate information and/or knowledge gained to the public from stormwater related projects.*

   Status: NDOT continues to explore options and ideas for effectively disseminating stormwater related information, including relevant knowledge gained from evaluating stormwater technologies and practices.

3. *Begin disseminating this information.*

   Status: NDOT utilizes various avenues to disseminate stormwater related information, notably its Stormwater Program website, social media platforms, and attendance at public outreach and education events. As information pertaining to new technologies and practices for improving the quality of stormwater runoff become available, NDOT will

disseminate the information as appropriate. As an example, the data management system for NDOT's continuous real-time monitoring project is available for public viewing on NDOT's Stormwater Program website, and UAV footage is presented on YouTube.

Stormwater Management Program Website:

1. *Maintain and provide current information on NDOT's SWMP webpage.*

   Status: NDOT's Stormwater Management Program website is updated regularly.

2. *Provide webpage links to relevant NDOT SWMP documents.*

   Status: NDOT's Stormwater Program webpage currently provides links to relevant NDOT SWMP documents, notably manuals and other guidance documents.

3. *Evaluate the need for webpage improvements annually.*

   Status: NDOT's Stormwater Program webpage was evaluated routinely during the Reporting Period and underwent changes as appropriate.

Stormwater Monitoring Plan:

1. *Submit a stormwater monitoring plan to NDEP by October 1st annually.*

   Status: NDOT submitted the FY 2018 Stormwater Monitoring Plan to NDEP on September 28th, 2017.

2. *Evaluate the data collected to assist with stormwater related decision making.*

   Status: This is an ongoing process. NDOT will continue to evaluate the results of water quality monitoring efforts and utilize the information to assist with the decision making process as it relates to mitigating stormwater pollutant discharges from its roadway system. The Stormwater Division's Design Section is tasked with evaluating data collected from stormwater quality monitoring efforts, and subsequently utilizing the information to assist with the decision-making process for designing appropriate stormwater treatment measures.

3. *Conduct a yearly assessment of the adequacy of the stormwater monitoring program.*

   Status: NDOT's stormwater monitoring efforts continue to expand with monitoring sites located in multiple watersheds. The Stormwater Division's Design Section will continue to seek opportunities to expand its monitoring efforts to characterize highway stormwater runoff.

Record Keeping:

1. *Implement the record keeping plan.*

   Status: Records associated with implementing all SWMP elements are retained within the appropriate NDOT Division.

Vegetative Control Program:

1. *Conduct internal project review meetings to facilitate ongoing collaboration between appropriate Divisions and Sections.*

   Status: NDOT's Stormwater Division works closely with the Design Division, Maintenance and Asset Management Division, and the three Districts to ensure water quality needs are addressed during project development.

2. *Assess current vegetation control practices; provide recommendations for improvement as necessary.*

   Status: This is an ongoing process. The Stormwater Division works with the three Districts to ensure that vegetation control practices meet District needs, while considering water quality factors.

Illicit Discharge Reporting Website:

1. *Maintain web-based IDDE reporting telephone numbers on an annual basis.*

   Status: NDOT maintains a webpage on the Stormwater Program website specifically for illicit discharge reporting. The webpage provides NDEP's spill reporting hotline telephone number as well. The webpage can be accessed via the following weblink:

https://www.nevadadot.com/doing-business/about-ndot/ndot-divisions/stormwater/report-an-illicit-discharge

2. *Assess the need for additional IDDE reporting telephone numbers on an annual basis.*

   Status: The current avenues for reporting illicit discharges to NDOT are adequate.

Illicit Discharge Reporting and Response Database:

1. *Update the Database to record and track illicit discharges reported in the MS4 Permit areas.*

   Status: All reported illicit discharge incidents that impact NDOT's right-of-way are recorded and tracked in the IDDE Database maintained by the Stormwater Division's Compliance and Enforcement Section.

2. *Maintain the database annually.*

   Status: The IDDE Database is maintained on a regular basis throughout the year.

Special Investigations:

1. *Conduct special investigations as needed to evaluate and resolve potential water quality related issues that may or may not be directly related to illicit discharges in the MS4 Permit area.*

   Status: Special investigations are conducted by the Stormwater Division as needed.

Spill Control and Prevention:

1. *Assess the need for program refinements on an annual basis.*

   Status: Program refinements were not deemed necessary. The topic of spill control and prevention will continue to be incorporated into stormwater training curriculum as appropriate.

IDDE Response, Corrective Action and Response:

1. *Respond to all reported discharges and spills with the MS4 Permit area.*

Status: With the exception of 3 potential incidents (described previously in ***III.J. Illicit Discharge Detection and Elimination System*** of this Annual Report), all illicit discharge and spill incidents reported to the Stormwater Division were responded to.

2. *Follow-up on reported events to ensure the situation is remedied.*

   Status: Except for 3 potential incidents (described previously in ***III.J. Illicit Discharge Detection and Elimination System*** of this Annual Report), appropriate follow-up was performed on all illicit discharge and spill incidents reported to the Stormwater Division.

Sanitary Sewer Exfiltration:

1. *Continue training and inspections for sanitary sewer exfiltration.*

   Status: The topic of sanitary sewer exfiltration will continue to be incorporated into stormwater training curriculum as appropriate. Inspections continue to be performed by field personnel as part of their day-to-day operations. Should any incidences of sanitary sewer exfiltration be observed by field staff, the Stormwater Division's Compliance and Enforcement Section is contacted to initiate the proper response and follow-up action.

2. *Continue to identify sanitary sewers during the plan review process.*

   Status: Sanitary sewers, as well as all utilities, are identified during the plan development process and displayed on plan sheet details as appropriate.

Hazardous Materials Management:

1. *Continue the implementation of the Department's existing Hazardous Waste Management Program.*

   Status: NDOT continued implementing all aspects of this program. The Hazardous Materials Section within NDOT's Environmental Services Division initiated efforts to update existing Transportation Policy 1-7-1 Hazardous Waste, which is the departmental policy for the management of hazardous waste at NDOT facilities. A final policy is anticipated to be released in FY 2019.

2. *Identify any deficiencies in the existing program with respect to the requirements outlined in the Permit.*

   Status: Deficiencies within the existing program were not identified during the Reporting Period.

3. *Develop BMPs as needed to address any deficiencies in the program.*

   Status: Deficiencies were not identified during the Reporting Period, consequently, no new BMPs were developed. NDOT will continue to assess the program and address deficiencies as appropriate.

Snow and Ice Control Program:

1. *Continue implementing the Department's current Snow and Ice Control Program.*

   Status: NDOT continued to implement its Snow and Ice Control Program. This program will continue to evolve and undergo refinement to maximize effectiveness for attaining a standard for public safety, while minimizing potential impacts to receiving waterbodies.

2. *Collect and analyze composite samples of sand and salt as specified in the Permit.*

   Status: Analysis of anti/de-icing agents utilized for winter maintenance operations will continue as new products are procured.

3. *Identify any deficiencies in the existing program with respect to the requirements outlined in the Permit.*

   Status: Deficiencies in the existing program were not identified during the Reporting Period.

4. *Develop BMPs as needed to address any deficiencies in the program.*

   Status: Deficiencies in the existing program were not identified during the Reporting Period; consequently, new BMPs were not developed.

Street Sweeping Program:

1. *Continue implementing the Department's Street Sweeping Program.*

Status: NDOT continued implementing its street sweeping program as it is widely considered to be one of the more effective means of removing potential stormwater pollutants.

2. *Continue sweeping urban streets at least twice a year (once in the spring and once in the fall).*

   Status: Sweeping is conducted at least twice annually in the urbanized areas.

3. *Continue sweeping sanded streets as soon as practicable after application, but no later than 4 days after the last snowfall.*

   Status: NDOT continues to meet this requirement.

Outfall Screening and Investigations:

1. *Continue inspecting major outfalls within the MS4 Permit area.*

   Status: NDOT continued inspecting major outfalls within the MS4 Permit area. The policy for conducting these inspections will be reviewed and revised as necessary during FY 2019.

2. *Identify, track, and prioritize the stabilization and repairs to road segments where slopes are 3:1 or greater.*

   Status: The Stormwater Division's Design Section, as well as the Districts, continued to identify slopes 3:1 or greater in need of repair. The stabilization/repair of these slopes are included with future construction and district contracts as appropriate. Additionally, District Maintenance Crews will perform slope stabilization/repair in select areas as part of their routine maintenance activities.

3. *Develop schedules and a tracking system for the inspection and screening of major outfalls.*

   Schedules and a tracking system have been developed. The Stormwater Division's Compliance and Enforcement Section and Information Technology Section will review the current schedules and tracking system and make changes as appropriate.

4. *Report any evidence of illicit discharges.*

   Potential illicit discharges observed during routine outfall monitoring were reported to the Stormwater Division's Compliance and Enforcement Section.

Inspection and Maintenance of Structural BMPs:

1. *Continue inspecting and maintaining post-construction BMPs, storm sewer facilities, and highway slopes as part of NDOT's routine activities.*

   Status: NDOT Maintenance personnel continued maintaining post-construction BMPs, storm sewer facilities, and highway slopes per their respective maintenance schedules. Records are documented in NDOT's MMS.

2. *Develop an inventory listing of post-construction BMPs.*

   Status: The mapping and inventory of permanent BMPs occurred simultaneously with the mapping and inventory of the stormwater hydraulic facilities; consequently, both efforts were completed during FY 2016. Permanent BMPs were digitally mapped utilizing a GIS platform with asset related information housed within a GIS database. Moving forward, NDOT's Stormwater Division will focus efforts on maintaining the permanent BMP inventory information as needed.

Maintenance Facility FPPPs:

1. *Develop FPPPs, or incorporate into existing Minor Facility FPPPs (as appropriate), for new Department Maintenance facilities within 6 months of being designated a Major or Minor facility.*

   Status: The Stormwater Division did not perform any updates to the statewide FPPP during the Reporting Period.

Maintenance Facility Inspections:

1. *Perform annual inspections at designated Major and Minor facilities. Modify or add BMPs as necessary within 30 calendar days of the inspection.*

Status: Annual stormwater inspections were conducted at all NDOT Major and Minor facilities by the Stormwater Division's Compliance and Enforcement Section. Site specific recommendations for corrective action were made, including recommendations for proper BMP implementation. FPPP Administrators responded to 94% of the recommendations with documented corrective action.

2. *Perform routine inspections at designated Major and Minor facilities according to frequencies specified in the FPPPs. Modify or add BMPs as necessary within 30 calendar days of the inspection.*

   Status: FPPP administrators and/or their staff are tasked with performing routine visual inspections at their respective Maintenance facilities as part of their ongoing pollution prevention/control efforts. Administrators are also tasked with performing documented self-inspections as specified in the FPPP. FPPP Administrators modify or add BMPs at their respective Maintenance facilities as necessary.

3. *Maintain BMPs listed in the FPPP in effective operating condition. Perform maintenance on the ineffective BMPs within 7 calendar days of discovery and before the next anticipated storm event.*

   Status: This is an ongoing effort for all FPPP Administrators. Additionally, as part of annual stormwater inspections conducted at Major and Minor Maintenance facilities, recommendations to replace ineffective BMPs are made by Stormwater Division staff to FPPP administrators as necessary.

4. *Review Maintenance facility inspection forms annually and revise as necessary.*

   Status: Stormwater inspection forms for both Major and Minor Maintenance facilities were reviewed during the Reporting Period; changes were deemed unnecessary.

Maintenance Facility BMP Manual:

1. *Develop and implement a protocol for conducting annual reviews and incorporating subsequent changes (as needed).*

   Status: The Stormwater Division's Compliance and Enforcement Section reviewed the document during the Reporting Period and determined changes were not required.

Maintenance Facility Updates:

1. *Request an updated list of Maintenance facilities from the Asset Management and Maintenance Division, including information pertaining to facility operational changes, on an annual basis.*

   Status: Notification regarding changes to Maintenance facilities, i.e. operational status, is communicated directly to Stormwater Division personnel annually.

2. *Apply the appropriate modifications to FPPP designations.*

   Status: Changes to the operations status of Maintenance facilities, i.e. changes to Major and Minor facility designations, are included with annual FPPP updates as appropriate.

3. *Modify, create, or annul Minor and Major FPPPs as appropriate.*

   Status: FPPPs are updated as appropriate on an annual basis.

Stormwater Certification Training-Internal:

1. *Continue implementing NDOT's Stormwater Certification Training Program.*

   Status: Numerous stormwater training courses were offered to NDOT employees statewide: 10 Water Pollution Control Manager Training courses; 13 Stormwater for Maintenance Training courses; and 4 Introduction to Construction Stormwater Management training courses. Additionally, the Introduction to Stormwater training course is available for any employee to take at any time.

2. *Ensure stormwater education is current and relevant.*

   Status: Course material is reviewed annually for all Stormwater training courses and updated accordingly.

Contractor Stormwater Education and Training-External:

1. *Continue with contractor partnering efforts with regards to construction site stormwater management.*

Status: Formal partnering efforts are a contractual requirement per *Section 105.05 Partnering* in NDOT's *Standard Specifications for Road and Bridge Construction, 2014.*

The AGC and NDOT are committee members for the Advisory Committee on Transportational Storm Water Management, whose responsibility is to monitor the status and efficacy of NDOT's stormwater program.

The AGC and NDOT continue to work together through The Stormwater Working Group, which serves as a platform to discuss stormwater related issues, inconsistencies, and successes on NDOT's construction sites. Additionally, NDOT is a member of the newly formed AGC Environmental Committee, which can serve as a platform for the discussion of larger-scale stormwater matters, e.g. regulatory focused.

2. *Continue support of third party contractor stormwater education and training sessions as a means of meeting the Department's contractor stormwater education requirements.*

   Status: NDOT is supportive of any stormwater training completed by its construction contractors; however, those trainings continue to be supplemental to the contractor required Water Pollution Control Manager Training course.

NDOT Herbicide Applicator Training:

1. *Ensure NDOT staff and service providers are properly certified for herbicide applications.*

   Status: NDOT herbicide applicators (Maintenance personnel and contractors) obtain the necessary certification(s) issued by the Nevada Department of Agriculture.

2. *Continue to track and monitor the certification status of NDOT applicators.*

   Status: Records are maintained at the District level.

<u>SWMP Assessment</u>

A simple ranking system of *Excellent, Good, Fair, or Poor* is used to assess each Plan element with regards to implementation. For example, an *Excellent* rating indicates the program element is being implemented as designed with little to no limitation. A *Poor* rating indicates significant

problems with implementing the program element as designed and appropriate action is needed to ensure Permit compliance

1. Legal Authority:

   NDOT rates this program as *Good* with continued refinement.

   With the legal framework in place, NDOT continues to focus on developing and refining internal policies and procedures as needed for the control, response, and elimination of unauthorized discharges within the right-of-way. The Stormwater Division's Compliance and Enforcement Section will continue to evaluate the need for a Formal Enforcement Response Plan.

   The Compliance and Enforcement Section will continue to review NDOT's *Terms and Conditions Relating to Right-of-Way Occupancy Permits* and the *Standard Specifications for Road and Bridge Construction* to determine if changes are needed to ensure consistency with SWMP implementation.

2. MS4 Maps and Outfalls:

   NDOT rates this program as *Good* with continued refinement.

   The statewide inventory and mapping of NDOT owned stormwater hydraulic and permanent BMP facilities is complete. The stormwater assets are mapped on a GIS platform with associated information housed in a GIS database. Future efforts will focus on maintaining and updating the information as needed and migrating the data into NDOT's forthcoming Enterprise Asset Management System (still in the development phase). It is anticipated that the new asset-based GIS system will greatly increase efficiencies with field staffing, equipment sharing, and asset management. Beta versions of the Stormwater and Maintenance modules of the new asset management system are scheduled for release in FY 2019.

   Discrepancies found in the data have prompted the Stormwater Division's Information Technology Section to evaluate current procedures for managing the data.

Mobile applications, which serve as a business solution to help meet the needs of personnel requiring access to hydraulic facility mapping information in the field, continue to be refined to maximize efficiency and enhance functionality.

3. Stormwater Monitoring Program:

   NDOT views this program as *Excellent* with components targeted for enhancement.

   Monitoring efforts performed during the Reporting Period continued to provide insight into urbanized and highway stormwater runoff characterization, the effectiveness of manufactured stormwater treatment devices with stormwater pollutant reduction, and the potential impacts of stormwater discharge on the proper functioning condition of receiving waterways.

   The Stormwater Division's Design Section has expanded and enhanced stormwater monitoring efforts with the use of UAVs and continuous real-time monitoring to improve data collection efforts. The UAV monitoring has brought an efficient and insightful perspective to water quality basin management.

   NDOT will continue to explore opportunities to expand highway runoff characterization monitoring efforts.

   Refer to bullet 15 below for discussion of monitoring efforts in the Clear Creek watershed.

4. Construction Site Best Management Practices (BMPs) Program:

   NDOT views this program as *Good* with opportunities for improvement.

   Overall there has been a steady improvement statewide with the way construction projects are administered and constructed, with more attention given to construction site stormwater management.

   NDOT's Compliance and Enforcement Section continued to review and revise contract specifications (as appropriate) as part of the ongoing effort to ensure contractor requirements regarding construction site stormwater management are consistent with NDOT's current policies and procedures.

NDOT's construction field crews continued to perform oversight inspections to ensure contractor compliance with CGP permit requirements and NDOT's policies. In accordance with NDOT's *Stormwater Inspection Prioritization Plan for Construction and Encroachment Projects*, the Stormwater Division's Compliance and Enforcement Section began performing QA inspections of select construction sites to assess both contractor compliance and NDOT's construction field crew's implementation and understanding of internal policy and procedure for construction site stormwater management. The most common issues identified during the QA inspections involved BMP implementation in the field. The ratio of discrepancies/inspection were relatively low with an average of 2.6 statewide. District 1 exhibited the highest ratio with 3.5; however, one construction project in District 1 accounted for nearly 25% of the total discrepancies identified. Coincidentally, the project is currently NDOT's largest construction endeavor. NDOT will continue implementing its statewide stormwater training program in hopes of improving upon these ratios.

The *Stormwater Inspection Prioritization Plan for Construction and Encroachment Projects* will undergo evaluation for proposed changes during FY 2019.

The Stormwater Division's Compliance and Enforcement Section is unaware of any notice of violation issued by NDEP or EPA for construction site stormwater non-compliance at any NDOT construction site during the Reporting Period.

The *Stormwater Guidance Manual for Construction Projects* remains in draft form. It was decided that releasing a final document pending the issuance of a new MS4 Permit would be premature. It is anticipated that NDOT will be in receipt of a new MS4 permit in FY 2019. Consequently, the *Stormwater Guidance Manual for Construction Projects* will be revised to account for new permit language as appropriate. This document will provide guidance to District Construction Crew and Stormwater Division staff for implementing policies and procedures associated with construction site stormwater management on NDOT's construction sites. The revised document is anticipated to be released in FY 2019.

Revisions to NDOT's *Construction Site Best Management Practices (BMPs) Manual* were completed during the Reporting Period. The revised document was released in December of 2017. Early feedback from the contracting community indicates that the revised manual is easier to use and provides enhanced flexibility for construction site BMP implementation.

5. New Development and Redevelopment Planning Program:

   NDOT views this program as *Good* with continued refinement.

   The Stormwater Division's Design Section continued performing slope assessments within the right-of-way (with a focus on slopes 3:1 or greater) to identify areas experiencing significant erosion, with the intent of addressing the problem areas as part of a project's design. Records of these assessments are housed within the Stormwater Division.

   The Design Section also continued to review construction projects for the need to incorporate permanent stormwater control measures, with consideration for such factors as receiving water connectivity and whether receiving waters are impaired. Site specific treatment control measures are then incorporated into the design (as appropriate) to reduce specific (i.e. target) pollutants in stormwater runoff discharging from NDOT's right-of-way. Project sites include NDOT's roadways and Maintenance facilities.

   Updates to NDOT's *Planning and Design Guide* were completed with a revised document subsequently published during the Reporting Period. This document provides guidance to stormwater designers for the selection of post-construction BMPs (including LID measures). Revisions were necessary to ensure consistency with current processes for the selection of permanent stormwater control measures.

6. Industrial Facility Monitoring and Control Program:

   NDOT views this program as *Excellent* with refinement as needed.

   Non-NDOT industrial sites continued to be assessed statewide for any signs of potential illicit discharges into NDOT's right-of-way.

7. Illicit Discharge Detection and Elimination Program:

   NDOT views this program as *Good* with continued refinement.

   NDOT continues to respond to reports of potential illicit discharges within the right-of-way. Incident related information is housed within the IDDE Report Database and reviewed annually by the Stormwater Division's Compliance and Enforcement Section to determine geographical areas of concern, i.e. illicit discharge "hot spots." No trends or "hot spots" were

identified during the Reporting Period. Due to internal miscommunication, 3 potential incidents reported may not have undergone the proper follow-up investigation. Changes with internal procedure will address this issue moving forward.

A formalized procedure for conducting routine outfall screening was completed with the development of the *Dry Weather Outfall Inspection Plan* during the previous Reporting Period. NDOT will review the document to ensure routine outfall monitoring is being conducted as intended, and potential illicit discharges are properly investigated.

The topic of IDDE continues to be incorporated into all stormwater training modules.

The primary avenue for the reporting of potential illicit discharge incidents continues to be via Spill Reports distributed by NDEP. Illicit discharge reporting through other means, including NDOT's Stormwater Program website, continues to be low. NDOT will explore other technology-based options to encourage public reporting of potential illicit discharges.

The number of potential illicit discharge incidents (67) reported to the Stormwater Division was the same as the previous reporting period; however, the number of confirmed illicit discharges within NDOT's right-of-way decreased for the third year in a row. The number and percentage of potential illicit discharge incidents reported by NDOT employees decreased dramatically when compared with the previous two reporting periods. The decrease in confirmed illicit discharge incidents may be attributed to heightened community awareness.

8. Stormwater Education Program:[28]

NDOT views this program as *Excellent* with refinement as needed.

NDOT's Stormwater Education Program is considered one of the more robust components of NDOT's SWMP. With several different training modules provided and a variety of public outreach avenues, NDOT can provide a wide-range of stormwater education and outreach to employees, contractors, and the public.

Stormwater training continues to be a successful endeavor. Nearly 450 employees and contractors underwent formal stormwater training during the Reporting Period, with NDOT and the AGC facilitating 27 stormwater classes statewide. Additionally, the Stormwater

[28] Compliance percentages were calculated near the end of the Reporting Period.

Division's Design Section went above and beyond their stormwater training requirements by completing an average of over 60 hours of training for each employee over the course of the Reporting Period.

It is estimated that 85% of NDOT employees required to complete the Water Pollution Control Manager training course are current with their training requirements, which is consistent with the previous reporting period. District 3 exhibited the highest compliance percentage amongst the three Districts by achieving 100% compliance.

It is estimated that 74% of the employees required to complete the Stormwater Management for Maintenance training course are current with their training requirements. FY 2018 marked the inaugural year for this training. Data suggests that training compliance percentages are directly correlated with the number of trainings offered. This makes sense given the dispersed nature of NDOT's Maintenance and Equipment personnel, and the limited "windows of opportunity" for personnel to complete the training. District 3 exhibited the highest compliance percentage amongst the three Districts with 85%.

It was recognized that a significant portion of the training content in the current Stormwater Management for Maintenance training course is not directly applicable to Equipment personnel, resulting in an inefficient use of their time. Consequently, NDOT's Stormwater Division will explore the need for developing a stormwater training module specially tailored to Equipment personnel in FY 2019.

It is estimated that 87% of the employees required to complete the Introduction to Construction Site Stormwater Management training course are current with their training requirements. The training module was released during the latter half of the Reporting Period; consequently, time was the limiting factor for achieving a higher compliance percentage.

The online Introduction to Stormwater Training was completed by 256 NDOT employees during the Reporting Period, a sizeable increase from 57 during FY 2017[29]. The online Introduction to Stormwater Training will be evaluated during FY 2019 to identify content needing revision.

[29] Training course underwent a "soft" release in FY 2017.

NDOT continues to evaluate supplemental stormwater training opportunities for inclusion into NDOT's stormwater training program. NDOT's Stormwater Division is evaluating a vendor proposal to provide a three-day stormwater training course held statewide with instruction focusing on MS4 stormwater management programs. Should the training proposal be accepted and approved, courses are scheduled to commence in FY 2019.

Public outreach and education efforts continue to be a strong component of NDOT's SWMP. NDOT's Stormwater Program website is a functional and informative online resource for employees and the public interested in stormwater management. Website viewing has remained consistent over the previous three reporting periods, averaging 9,196 pageviews and 7,137 unique pageviews annually, despite the slight decrease in viewing from the 2017 reporting period (a decrease of 8% and 5% in pageviews and unique pageviews, respectively). These mark the first decreases in viewing over the previous four reporting periods.

NDOT continues to use social media as an avenue for disseminating stormwater related messaging and information, utilizing outlets such as Facebook and Twitter. Recognized as a popular means for social networking, NDOT will continue to utilize social media to create and share stormwater related information to virtual communities and networks. There was a noticeable decline with NDOT's social media metrics when compared to the previous reporting period. This was primarily attributed to vendor changes with the metric analysis data, and a period of social media inactivity during the Reporting Period due from Stormwater Division staffing changes. NDOT will continue to develop stormwater videos for posting on NDOT's website and social media platforms.

NDOT will continue to participate in stormwater related community outreach events, which serve as ideal opportunities to communicate and interact face-to-face with community and industry members. NDOT's Stormwater Division has expanded outreach efforts to rural areas and involving local District personnel. This approach will hopefully instill more of a "local feel" with outreach efforts and achieve more community buy-in with stormwater pollution prevention efforts. Efforts began in District III with District personnel participating at local high school events.

NDOT anticipates the release of a stormwater themed coloring book in FY 2019 for distribution to school children during future outreach events.

There was a sharp decline in the number of Adopt-a-Highway participants during the Reporting Period, notably in District 1. Reasons for the decline are unknown; however, NDOT is working on developing strategies that will target more participation.

9. Maintenance Facilities Stormwater Discharge Control Program:

   NDOT deems this program as *Good*.

   During annual Maintenance facility stormwater inspections, inspectors noted 82 compliance issues. This equates to a 68% and 20% improvement compared to FY 2016 and FY 2017, respectively. Post-inspection follow-up documentation submitted by FPPP Administrators demonstrated that 94% of the compliance issues noted underwent appropriate remedial action, which is comparable to 97% in FY 2017, but significantly greater than 83.7% in FY 2016. The ratio of non-compliance issues to number of inspections decreased in Districts 2 and 3 for the third consecutive year with District 1 remaining relatively consistent. District-wide, the average ratio was the lowest in three years at 0.32 with District 3 demonstrating the lowest ratio of the Districts with an 0.16. The steady improvement, at least in part, can be attributed to stormwater training efforts. Additionally, it has been observed that there is stronger communication between Maintenance personnel and Stormwater Division Compliance and Enforcement staff, resulting in a more collaborative approach to averting potential stormwater pollution problems before they occur.

   As with previous reporting periods, the primary compliance issues noted during the annual stormwater inspections District-wide involved general housekeeping measures (notably containment and/or cleanup of minor equipment leaks) and implementation of sediment control BMPs.

   All Major Maintenance facilities (10) performed facility sweeping; however only 20% met the recommended FPPP annual frequency requirement, a decrease from 50% the previous reporting period. For the Minor A facilities (34) that did perform sweeping, 62% met the recommended FPPP annual frequency requirement. Sweeping efforts conducted at the Major facilities resulted in an average of 3.4 $yd^3$ of material recovered per sweeping event, with an average of 4.2 $yd^3$ of material recovered per sweeping event at Minor facilities. Sweeping efforts at Major Maintenance facilities resulted in an average recovery of 1.4 $yd^3$/man-hour vs. 0.8 $yd^3$/man-hour at Minor Maintenance facilities. A grand total of 639 $yds^3$ of material was

recovered from sweeping efforts at all Major and Minor Maintenance facilities, with an average of 3.9 $yd^3$ recovered per sweeping event at an average recovery of 0.9 $yd^3$/man-hour. Resource availability may be the most limiting factor with Maintenance facilities meeting FPPP sweeping frequencies. Additionally, communication with the Districts revealed that Maintenance personnel are making errors when inputting information into MMS, consequently Maintenance facility sweeping efforts are not being accurately captured.

Minor Maintenance facilities were scheduled to undergo further analysis in FY 2018 to determine which ones would receive the greatest benefit for sweeping, taking into such considerations as receiving waterways and the area of impervious surface. NDOT's Stormwater Division will work with the Districts to pinpoint those facilities during FY 2019 as part of FPPP updates.

FPPP Administrators and Compliance and Enforcement Section staff were 100% compliant with meeting documented FPPP inspection requirements. In fact, FPPP Administrators in all three Districts performed documented self-inspections at some frequency greater than what was prescribed in the FPPP.

NDOT's state-wide FPPP, which covers all designated Major and Minor Maintenance facilities, continues to serve as the foundation for stormwater compliance at NDOT's Maintenance facilities. The Compliance and Enforcement Section will review the FPPP and make revisions as necessary.

10. Public Street Maintenance Program:

    NDOT deems this program as *Good*.

    The total amount of material recovered from pickup broom sweeping statewide has remained relatively constant over the previous three reporting periods despite the significant decrease in salt/sand applied in FY 2018, which could suggest that District Maintenance Crews are maximizing efforts.

    There is a definitive inverse relationship between pickup broom sweeping man-hours and net salt/sand applied. Given the consistency with sweeping efficiency (i.e. $yd^3$/man-hour), resource availability and equipment efficiency are probably the two biggest factors limiting sweeping efforts.

There has been a steady decline in the total number of drop inlets serviced along with a steady increase in culvert cleaning over the previous three reporting periods. Nearly half of the drop inlets and a quarter of the culverts cleaned statewide over the previous three reporting periods are located within the specific MS4 areas.

NDOT has commenced with the development of a new maintenance asset tracking system (i.e. Enterprise Asset Management System). It is anticipated that this new system will greatly enhance the tracking of tasks associated with NDOT assets, notably storm sewer infrastructure. The software supporting the system will exhibit a higher level of flexibility, allowing users to create or modify asset attributes more readily than the current MMS, thus creating new avenues for Stormwater Management Program evaluation. The Enterprise Asset Management System won't be fully operational for another few years, however it is anticipated that the Maintenance modules will undergo beta testing during FY 2019. Until then, Maintenance activities will continue to be tracked via the MMS.

11. Herbicide, Pesticide, and Fertilizer Application Program:

    NDOT views this program as *Excellent* with refinement as needed.

    Herbicide applicators are required to obtain training and subsequent certification from the Nevada Department of Agriculture. Currently, there are no certification requirements for fertilizer applicators. BMPs associated with pesticide and fertilizer management are discussed in NDOT's current stormwater training curriculum.

12. Discharges to Sanitary Sewers:

    NDOT views this program as *Excellent* with refinement as needed.

    NDOT continues to meet Permit requirements pertaining to stormwater discharges into sanitary sewer systems as one new authorization to discharge (City of Fallon) was obtained during the Reporting Period.

13. Lake Tahoe TMDL:

    NDOT views this program as *Excellent* with refinement as needed.

NDOT's Lake Tahoe TMDL Annual Report for Water Year 2017 was submitted and subsequently accepted by NDEP. As indicated in the report, NDOT met (and at times exceeded) its TMDL requirements. Meeting the goals and objectives associated with the Lake Tahoe TMDL Program continues to be attainable.

The Lahontan Regional Water Quality Board and NDEP issued the *Lake Tahoe TMDL 2018 Strategy & Current Themes*. Aside from providing 5-year milestone objectives and actions for 2018, themes are provided to help guide program managers with implementation strategies. These include continual focus on urban load reductions; emphasizing the importance of stormwater treatment controls for quick-melt precipitation events; and the influence of climate change on achieving future clarity goals. Programmatic themes will be considered as NDOT moves forward with Lake Tahoe TMDL Program implementation.

The *Lake Tahoe TMDL Program 2017 Findings & Program Recommendations Memo* was released in February of 2018. The memo acknowledges Highway RAM (a modified version of Road RAM developed by NDOT) as an approved alternative road condition inspection method for state highways. Highway RAM provides results consistent with established Road RAM protocols while increasing field inspector safety and reducing road closures.

The University of California Davis issued *Tahoe: State of the Lake Report 2018*. This publication (the latest of a series of publications released annually) summarizes data collected in 2017 as part of ongoing, decades-long measurement programs while presenting current research on emerging issues. The report states that Lake Tahoe's average annual clarity in 2017 was at its lowest (59.7 ft.) since regular measurements began in 1968. This was primary attributed to extreme climatic conditions, i.e. the end of a five-year drought immediately followed by a winter exhibiting record high precipitation. The report suggests that monitoring and predictive capabilities need review and possible modification to account for extreme climatic and hydrologic events. It was further suggested that the information collected during extreme climatic conditions will provide valuable information for assisting Lake Tahoe jurisdictions with planning efforts for future water quality improvement projects.

14. Discharges to Water Quality Impaired Waters:

NDOT views this program as *Excellent* with refinement as needed.

The Stormwater Division's Design Section continued assessing stormwater quality impacts to 303(d) and TMDL listed waterways. Moving forward, NDOT's Stormwater Division will focus its evaluation efforts on those waterbodies listed in the 2014 IR. The combination of in-depth evaluations and field assessments will assist NDOT with identifying locations to focus future stormwater quality monitoring efforts.

Expanded stormwater quality monitoring continues to be a primary focus for determining whether stormwater discharges from NDOT's MS4 areas contribute directly or indirectly to the listing of a waterway on the state's current 303(d) list, and whether stormwater from NDOT's MS4 directly discharges to a waterbody for which an NDEP approved TMDL has been developed.

15. Clear Creek Master Stormwater Management Program:

NDOT views this program as *Excellent* with refinement as needed.

Except for watershed-specific programs, e.g. the Lake Tahoe TMDL, all elements of NDOT's statewide Stormwater Management Program are applicable to the Clear Creek watershed.

NDOT's Hydraulics Division continued developing and implementing small-scale erosion control projects in support of the Clear Creek Erosion Control Program. Design of the second phase[30] of the large watershed-scale Clear Creek Storm Drain Project is nearing completion, which focuses erosion control efforts and stormwater drainage improvements along two stretches of US-50 (DO 13.00-DO 14.58, and CC 0.00-CC 7.60). Construction is scheduled for FY 2019.

NDOT continued with water quality monitoring efforts to help evaluate the effectiveness of the small-scale erosion control projects on the water quality of Clear Creek. Data from the Upper Clear Creek monitoring site is currently not available for online viewing; however, NDOT's Stormwater Division is in the process of upgrading the site with the necessary telemetry equipment and anticipates information being available for online viewing in FY 2019. NDOT's Stormwater Division is evaluating additional monitoring sites within the watershed. These sites will focus on characterizing stormwater runoff from US-50 with regards to several water

[30] Phase 1 (Contract 3586) was completed in FY 2016.

quality parameters including nitrogen, phosphorus, turbidity, and total dissolved solids. Monitoring at these sites is scheduled to begin in FY 2019.

NDOT's Stormwater Division has expanded its partnership with NDEP by assisting with annual bioassessments of Clear Creek.

NDOT's Stormwater Division was not informed of any illicit discharge incidents occurring within the Clear Creek watershed.

SWMP Administration

NDOT entered into a Consent Decree (CD) with the United States of America (on behalf of the Environmental Protection Agency (EPA)) and the State of Nevada-Department of Conservation and Natural Resources (NDEP) on September 14th, 2016, for allegedly discharging pollutants in stormwater in violation of the terms of the Permit. The CD requires NDOT to develop and implement specific aspects of its SWMP within specified timeframes. NDOT is required to submit quarterly reports to EPA and NDEP documenting progress with meeting those CD requirements. All CD tasks and requirements to date have been completed on time. Consequently, NDOT initiated the process with the EPA to terminate, i.e. close out, the CD.

NDOT continued filling vacant positions within the Stormwater Division. Most sections within the Stormwater Division were well staffed throughout the Reporting Period. Vacant positions will continue to be filled as quickly as possible.

FY 2016 SWMP Expenditures

NDOT was allocated approximately $6.4 million for Stormwater Management Program administration during the Reporting Period. However, NDOT spent an estimated $42,100,000[31] on stormwater related tasks, activities, and projects in support of Stormwater Management Program implementation during the Reporting Period (Table G1 in Appendix G), which is a significant increase to the estimated expenditure of $33,800,000 for FY 2017. Please note there

[31] Total expenditure number is an estimate based on the best available information and may not account for missing invoices, stale claims, unknown invoice adjustments, etc.

may be other stormwater related expenditures that are captured under various project costs that cannot be readily extrapolated.

NDOT's Stormwater Division has been allocated approximately $5.6 million for Stormwater Management Program administration and implementation for FY 2019. This figure, however, does not consider funds dedicated to various maintenance activities, water quality projects, and other elements of the stormwater program that are funded through different budget accounts.

### *IV.D. Annual Fee*

NDOT remitted a MS4 permit annual fee of $957.00 to NDEP.

### *IV.E. Continued Permit Coverage*

NDOT's Permit expired July 6, 2015; consequently, NDOT submitted a formal, written request to NDEP for continued permit coverage within the 180-day time frame prior to permit expiration. A copy of the letter was provided in the FY 2015 Annual Report.

NDEP will issue NDOT a new MS4 permit in FY 2019. Until issuance, coverage under the expired permit remains administratively continued.

### *IV.F. Changes by NDEP*

NDOT's updated Plan was submitted to EPA and NDEP in accordance with Consent Decree requirements. Comments were not received from either agency.

### *IV.G. Responsibility for Stormwater Management Program Implementation*

NDOT's *State Maintained Highways of Nevada, Descriptions and Maps* is published by NDOT's Planning Division on an annual basis. This document is a single source reference for the current State System, i.e. a list of State maintained Interstate, United States, and State Routes. Modifications to the State System are overseen by the NDOT's Roadway Systems Division.

# Appendices

# APPENDIX A

# Lake Tahoe TMDL Annual Report (Water Year 2017)

# NEVADA DEPARTMENT OF TRANSPORTATION

# LAKE TAHOE TMDL

## ANNUAL REPORT FOR WATER YEAR 2017
## OCTOBER 1, 2016 through SEPTEMBER 30, 2017

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

Submitted:
March 15, 2018

Finalized:
May 9, 2018

# Contents

# LIST OF ACRONYMS

| | |
|---|---|
| BAT | Best Available Technology |
| BMP | Best Management Practices |
| BMP RAM | Best Management Practices Rapid Assessment Methodology |
| FSP | Fine Sediment Particles |
| GIS | Geographic Information System |
| ILA | Interlocal Agreement |
| LCCP | Lake Clarity Crediting Program |
| NDEP | Nevada Division of Environmental Protection |
| PLRM | Pollutant Load Reduction Model |
| RAM | Rapid Assessment Methodology |
| Road RAM | Road Rapid Assessment Methodology |
| SNPLMA | Southern Nevada Public Lands Management Act |
| TMDL | Total Maximum Daily Load |
| TSS | Total Suspended Solids |
| UPC | Urban Planning Catchment |
| WQIP | Water Quality Improvement Project |
| WY | Water Year (October 1 – September 30) |
| 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 2017 (October 1, 2016 through September 30, 2017) in an effort to meet the credit target milestones established in the ILA.

# 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 WY2017 considerable time was dedicated to registering three roadway segments for Road Operations, continued maintenance of existing BMPs, training of staff, and the design and construction of new Water Quality Improvement Projects (WQIP). NDOT was awarded 181 credits for WY2017 which exceeds the 2017 milestone and allots NDOT a substantial amount of credits toward the WY2021 milestone.

## 2.1 Credit Declaration and Award

WY2017 is the first year toward the second Lake Tahoe TMDL five-year pollutant load reduction milestone of 215 credits (21% reduction in FSP) as outlined in the current ILA. In WY2017, NDOT and NDEP continued to work through issues identified with the initial registration submittal. NDOT registered SR 28 from MP 5.12 to 11.0 and SR 431 from MP 0.0 to 3.0 in Washoe County. NDOT performed a full year of Road Operations and Maintenance, including the collection of ROAD RAM scores during WY2016/WY2017, and was able to declare these road segments during WY2017. The final road registration package was submitted on July 14, 2017 and approved several days later. The annual credit target, credits expected, and credits declared are summarized in *Table 1*.

*Table 1. NDOT credits expected, declared and awarded*

| Water Year | Annual Credit Target | Lake Clarity Credits Expected | Lake Clarity Credits Declared | Lake Clarity Credits Awarded |
|---|---|---|---|---|
| Oct 2016 – Sept 2017 | 123 | 181 | 181 | 181 |

## 2.2 Progress Towards 2017 Milestones

Progress toward the WY2017 crediting goal has included implementing the NDOT Road Operations Plan and considering several BMPs for registration throughout NDOT's road network in the Lake Tahoe Basin (basin). NDOT has completed numerous WQIPs along Nevada State Routes 28, 431, 207, 760 and US 50 in the basin prior to and during the first five-year milestone. However, none of these projects have been registered due to a focus on the initial registration of the Road Operations and Maintenance for SR 28 and SR 431 as outlined in *Table 2*.

NDOT continued to verify roadway condition by conducting Road RAM despite not having an active registration at the beginning of WY2017. These scores were used to support the declaration of SR 28 WA

MP 5.12 to 11.0 and SR 431 WA MP 0.0 to 3.0. The expected condition score for SR 431 was 2.0 and 2.5 for SR 28. All three road segments were kept at or above the expected condition for WY2017 with average scores of 2.6 for SR 28 and 2.0 for SR 431. NDOT will continue to assess the maintenance needs, responsibility and costs associated with catchments that are proposed for registration.

### 2.2.1 Road Operations Implementation Summary

NDOT has implemented 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 on roadways. NDOT worked with NDEP to finalize the registration of SR 431 from WA MP 0.0 to 3.0 and SR 28 from WA MP 5.12 to 11.0 as summarized in *Table 2*. The Road Operations Plan for these three specific reaches of roadway was prepared for NDEP and approved in July 2017. Full credits were awarded due to the Road Operations being performed and in place throughout the basin.

*Table 2. Revised Draft Catchment Registration Schedule showing approximate 12% FSP load reduction by the WY2017 milestone.*

| Urban Planning Catchment (UPC) | Catchment Description | Pollutant Controls | Water Year Implemented | Projected FSP Load Reduction (lbs) | Lake Clarity Credits (PLRM v2.1) | Declaration |
|---|---|---|---|---|---|---|
| 431_WA_0.0-3.0 | State Route 431 Road Operations | Improved road operations through advanced abrasive application & sweeping | WY2017 | 14,702 | 74 | WY2017 |
| 28_WA_8.15-11.0 | State Route 28 Crystal Bay to Mt. Rose Road Operations | Improved road operations through advanced abrasive application & sweeping | WY2017 | 11,173 | 56 | WY2017 |
| 28_WA_5.12-8.15 | State Route 28 Lakeshore Blvd. to Mt. Rose Road Operations | Improved road operations through advanced abrasive application & sweeping | WY2017 | 10,379 | 51 | WY2017 |
| **TOTAL FSP LOAD REDUCTION** | | | | **36,254** | **181** | |

### 2.2.2 BMP Implementation Summary

NDOT has completed numerous WQIP's throughout the Tahoe Basin since 2004. During WY2017 NDOT completed the design and construction of ZCGID WQIP and the Burke Creek stream restoration and erosion control project. The design and funds have been secured for the Pittman Terrace water quality and erosion control project and the SR 28 water quality and erosion control project. To date no BMPs have been registered due to the focus on the successful registration of SR 28 and SR 431 Road Operation and Maintenance which fulfills credit targets through WY2019.

# 3.0 STORMWATER LOAD REDUCTION PLAN

## 3.1 Description and Timeline of Controls to be Implemented

The WY2018 target of 154 credits, per the 2016 ILA agreement, has been met. The declaration of the road segments on SR 28 and SR 431 awarded NDOT 181 credits. The amount awarded is not only sufficient for the WY2018 target but will also meet the WY2019 credit milestone of 174.

## 3.2 Progress Toward WY2021 Milestones

NDOT is considering registrations for selected treatment BMPs on US50 at Zephyr Cove and between mileposts 5.12 and 11.0 on SR 28 and mileposts 0.0 and 3.0 on SR 431 in Washoe County. *Table 3* summarizes the expected credits for the ZCGID WQIP and locations where additional BMPs will be selected for registration to help meet future milestones.

NDOT plans to determine benchmark and threshold values for the selected BMP's located along SR 28 and SR 431 in WY2018. These BMP RAM scores will be used as an initial assessment of each facilities threshold condition. Subsequent BMP RAMs will initially be performed annually to verify functionality of treatment and for maintenance inspection.

*Table 3. NDOT credits expected, declared and awarded for BMP registration.*

| Catchment ID | Primary Water Quality Improvement Actions | Registration Year | Lake Clarity Credits | | |
|---|---|---|---|---|---|
| | | | Expected | Declared | Awarded |
| 50_DO_3.6-4.2 | Basin | WY2018 | TBD | | |
| 28_WA_5.0-11.0 | Basins, Curb & Gutter, Media Filtration | WY2018 | TBD | | |
| 431_WA_0.0-3.0 | Basins, Curb & Gutter, Media Filtration | WY2018 | TBD | | |

As stated previously 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. While NDOT has not completed any BMP registrations to date, there is a continued effort to implement WQIPs throughout NDOT's roadway network to reduce fine sediment runoff from reaching Lake Tahoe. The 181 credits awarded from registering SR 28 and SR 431 puts NDOT 34 credits short of the WY2021 credit milestone. For WY2018, NDOT plans to register the ZCGID WQIP and selected BMPs for SR28 and SR431. 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 4*. NDOT will register and declare the required number of projects from *Table 4* or register additional sections of roadways as necessary to meet and/or exceed the 2021 milestone with a 21% FSP load reduction and 215 credits as well as the WY2022 target of 236 credits. NDOT is currently in the process of determining the credit potential for the projects in *Table 4* and will include this information in next year's report.

*Table 4: Capital Improvement Projects Available or Anticipated to be available for Registration to Achieve Future Milestones*

| Project Description | Project Implementation Year |
|---|---|
| US 50 WQ and EC Project (Cave Rock to Glenbrook) | 2006 |
| SR 207 WQ and EC Project | 2015 |
| Burke Creek Stream Restoration and Erosion Control | 2016 |
| US 50 WQ and EC Project (Glenbrook Canyon) | 2016 |
| SR 28 Bike Path, WQ and EC Project | 2018 |
| US 50 Pittman Terrace WQ and EC Project | 2018 |
| Lower Kahle Basin Water Quality Project | 2018 |
| SR 28 WQ and EC Project @ Marlette Creek | 2019 |
| SR 28 WQ and EC Project in Conjunction with Pavement Rehabilitation | 2019 |

# 4.0 FISCAL ANALYSIS

## 4.1 Budget

NDOTs 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. At this time, budgeted amounts are sufficient, and the Department is confident in continuing to meet the load reduction milestone in the current NDOT/NDEP ILA. *Table 5* summarizes NDOT's 2017 expenditures as well as the 2018 budget areas of interest.

*Table 5: NDOT Budget and Expenditures for WY2017 and WY2018 respectively.*

| Program Area and/or Project Description | Funding Source | 2017 NDOT Expenditures | 2018-2022 Annual Budgeted Amount |
|---|---|---|---|
| Program Support and Implementation (1) | State Gas Tax | $190,000 | $200,000 |
| Stormwater Operations and Maintenance (2) | State Gas Tax | $400,000 | $500,000 |
| Road Operations and Maintenance (3) | State Gas Tax | $900,000 | $1,300,000(4) |
| Lake Tahoe TMDL Maintenance Contract (5) | State Gas Tax | $0 | $100,000 |
| | Total: | $1,490,000 | $2,100,000 |
| Capital Improvement Projects for WY2017 and WY2018 | | | |
| US 50 Zephyr Cove Water Quality Improvement Project | State Gas Tax, USFS, NDLS, NDEP | $387,000 | $0 |
| SR 28 Bike Path Project, WQ and EC Phase | State Gas Tax, USFS | $5,700,000 | $4,800,000 |
| Pitman WQ and EC Project | State Gas Tax, NDLS, NDEP | $11,000 | $241,000 |
| Lower Kahle Basin Water Quality Project | State Gas Tax, USFS, Douglas County | $0 | $250,000 |
| | Total: | $6,098,000 | $5,291,000 |

(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. Southern Nevada Public Land Management Act (SNPLMA) funding covered half the monitoring expenses through WY2017. For WY2018 and future water years, 100% of the monitoring costs for each jurisdiction will be the jurisdictions responsibility.

# 5.0 BARRIERS

The major barriers NDOT feels are contributing to the challenges for being successful with the Lake Clarity Crediting Program:

1) The LCCP process to receive credits has been an iterative and collaborative process between NDOT and NDEP. These changes have been mostly driven by the need to better represent actual conditions for NDOT (and other jurisdictions) catchments and right of ways. The updates and changes to the modeling and reporting tools has contributed to the delays associated with NDOT's initial registration of Road Operations. These changes have improved the overall confidence in the tools for both the jurisdictions and the regulators. This in turn has allowed for a better representation of fine sediment load reduction in the basin. It is understood both by NDOT and NDEP that the delays in registration have been justifiable due to the ongoing improvement to the overall program process. It is anticipated that this will not be a barrier in the future.

2) Funding is not anticipated to become a major barrier for NDOT in the near future. However, with the current political environment, a new Governor forthcoming and leadership changes within NDOT anticipated during the same period, funding will always be considered as a potential barrier.

3) 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 personal 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 will 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.

4) At this time, NDOT's registrations are entirely dependent on 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 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.

# 6.0 Baseline Discrepancies

The baseline load estimate developed in the 2016 Baseline Report could potentially be refined with each credit registration. The Road Operations registration of SR 28 and SR 431 was completed in June of 2017 with no changes between the estimated baseline load and the refined baseline load. However, if changes do occur in the future, the annual report will maintain a running tally of all baseline discrepancies for registered credits. This will be used to update future annual credit targets and five-year credit milestones.

# APPENDIX B

# Public Outreach Event Summary

Table B1. Summary of stormwater public education and outreach events.

| Date (month/year) | Event/Group Name | Location | Target Audience |
|---|---|---|---|
| Sep-17 | Truckee River Cleanup Day | Reno | Public |
| Oct-17 | Sierra Lutheran High School Environmental Science | Carson City | High School Children |
| Nov-17 | Fritsch Elementary School STEM Night | Carson City | Elementary School Children |
| Mar-18 | SQMC Contractor Training | Las Vegas | Industry |
| Mar-18 | Migratory Bird Day | Las Vegas | Public |
| Apr-18 | APWA Conference | Laughlin | Industry |
| Apr-18 | NWEA Conference | Sparks | Industry |
| Apr-18 | GREENFest | Las Vegas | Public |
| Apr-18 | Take Pride Day | Elko | Public |
| Apr-18 | Kids on Big Rigs | Sparks | Public |
| May-18 | NV State Chapter P.E.O Sisterhood | Reno | Public |
| May-18 | KTMB One Truckee River Month | Reno | Public |
| May-18 | Reno River Festival | Reno | Public |
| May-18 | Kids to Parks Day | Carson City | Public |
| May-18 | Lamoille Canyon 5th Grade Environmental Education | Spring Creek | Elementary School Childeren and Teachers |
| May-18 | Truckee River Snapshot Day | Reno | Elementary School Children and Teachers |
| Aug-18 | WASHTO SCOM Conference | Stateline | State DOT Personnel |
| Various in FY | Farmer's Market | Minden | Public |

# APPENDIX C

## Major and Minor Maintenance Facility Listing

Table C1. List of Major and Minor Maintenance facilities that underwent an annual stormwater inspection.

| Major Facility | Designation | District | Address/Route | County | Milepost | Latitude | Longitude |
|---|---|---|---|---|---|---|---|
| Las Vegas-North Station | Major | 1 | 123 E. Washington Ave., Las Vegas, NV 89101 | Clark | ----- | 36°10' 53.772" | -115°8' 11.602" |
| Las Vegas-South Station | Major | 1 | 6610 Ullom Dr., Las Vegas, NV 89188 | Clark | ----- | 36°4' 10.532" | -115°12' 10.924" |
| Tonopah Station | Major | 1 | US-6 | Nye | 1.8 | 38°3' 44.161" | -117°13' 25.026" |
| Carson City Station | Major | 2 | 1250 Oregon St., Carson City, NV 89712 | Carson City | ----- | 39°9' 17.786" | -119°45' 44.207" |
| Fallon Station | Major | 2 | 888 Harrigan Rd., Fallon, NV 89406 | Churchill | ----- | 39°27' 59.168" | -118°45' 47.714" |
| Reno Sparks Station | Major | 2 | 310 Galletti Wy., Sparks, NV 89431 | Washoe | ----- | 39°31' 58.260" | -119°46' 57.728" |
| Sparks Station | Major | 2 | 310 Galletti Wy., Sparks, NV 89431 | Washoe | ----- | 39°31' 58.260" | -119°46' 57.728" |
| Elko Station | Major | 3 | 1951 Idaho St., Elko, NV 89801 | Elko | ----- | 40°50' 46.557" | -115°45' 1.012" |
| Ely Station | Major | 3 | 1401 E. Aultman, Ely, NV 89301 | White Pine | ----- | 39°15' 30.213" | -114°51' 42.514" |
| Wells Station | Major | 3 | SR-223 | Elko | 74.9 | 41°6' 6.752" | -114°54' 20.461" |
| Winnemucca Station | Major | 3 | 725 W. 4th St., Winnemucca, NV 89445 | Humboldt | ----- | 40°58' 1.425" | -117°44' 25.533" |
| | | | | | | | |
| Alamo Station | Minor A | 1 | US-93 | Lincoln | 39.0 | 37° 22' 11.210" | -115° 9' 33.533" |
| Beatty Station | Minor A | 1 | US-95 | Nye | 59.9 | 36° 54' 36.833" | -116 °45' 23.175" |
| Big Smokey Station | Minor A | 1 | SR-376 | Nye | 53.4 | 38° 47' 0.240" | -117° 10' 26.286" |
| Blue Jay Station | Minor A | 1 | US-6 | Nye | 65.8 | 38° 22' 20.339" | -116° 13' 29.472" |
| Flamingo Yard | Minor A | 1 | I-515 | Clark | 12.8 | 36° 6' 49.520" | -115° 4' 57.589" |
| Glendale Station | Minor A | 1 | SR-169 | Clark | 24.2 | 36° 40' 23.003" | -114° 31' 23.452" |
| Goldfield Station | Minor A | 1 | US-95 | Esmeralda | 19.5 | 37° 42' 18.329" | -117° 14' 32.179" |
| Mina Station | Minor A | 1 | US-95 | Mineral | 15.7 | 38° 23 '8.738" | -118° 6' 23.865" |
| Montgomery Pass Station | Minor A | 1 | US-6 | Mineral | 8.4 | 37° 58' 37.645" | -118° 19' 11.181" |
| Mountain Springs Station | Minor A | 1 | SR-160 | Clark | 21.3 | 36° 1' 22.498" | -115° 30' 24.493" |
| Mt. Charleston Station | Minor A | 1 | SR-157 | Clark | 5.1 | 36° 16' 19.160" | -115° 34' 29.222" |
| Old Indian Springs Station | Minor A | 1 | US-95 | Clark | 123.3 | 36° 34' 14.438" | -115° 40' 15.093" |
| Panaca Station | Minor A | 1 | SR-319 | Lincoln | 52.0 | 37° 47' 26.229" | -114° 22' 33.906" |
| Searchlight Station | Minor A | 1 | SR-164 | Clark | 18.6 | 35° 27' 57.160" | -114° 55' 18.401" |
| Boomtown Yard | Minor A | 2 | I-80 | Washoe | 4.0 | 39° 30' 49.191" | -119° 58' 45.234" |
| Carson City 5th St. Yard | Minor A | 2 | None | Carson City | N/A | 39° 44' 25.085" | -119° 44' 25.085" |
| Clear Acre Yard | Minor A | 2 | I-580 | Washoe | 27.2 | 39° 33' 11.835" | -119° 47' 20.928" |
| Cold Springs Station | Minor A | 2 | ARCH-01 | Churchill | 0.0 | 39 °24' 42.061" | -117° 50' 22.108" |
| Comanche Yard | Minor A | 2 | SR-429 | Washoe | 7.4 | 39° 18' 49.638" | -119° 49'29.609" |
| Dayton/Lafond Yard | Minor A | 2 | US-50 | Lyon | 12.0 | 39° 18' 467" | -119° 30' 48.843" |
| Fairview Yard | Minor A | 2 | US-50 | Carson City | 10.7 | 39° 9' 3.326" | -119° 44' 35.620" |
| Fernley Station | Minor A | 2 | SR-427 | Lyon | 1.0 | 39° 36' 31.393" | -119° 15' 53.655" |
| Galena Creek Station | Minor A | 2 | SR-431 | Washoe | 17.3 | 39° 21' 14.211" | -119° 51' 21.130" |
| Gardnerville Station | Minor A | 2 | US-395 | Douglas | 18.8 | 38° 54' 37.760" | -119° 41' 31.014" |
| Hawthorne Station | Minor A | 2 | US-95 | Mineral | 49.4 | 38° 31' 45.680" | -118° 36' 59.754" |
| Incline Village Station | Minor A | 2 | SR-431 | Washoe | 0.1 | 39° 15' 9.225" | -119° 58' 16.026" |
| Log Cabin Yard | Minor A | 2 | SR-339 | Lyon | 11.2 | 38° 10' 56.283" | -119° 10' 56.286" |
| Logging Road Lane Yard | Minor A | 2 | Logging Road Lane | Douglas | N/A | 38° 58' 38.497" | -119° 54' 16.033" |
| Lovelock North (KOA) Yard | Minor A | 2 | SR-396 | Pershing | 1.6 | 40° 11' 22.582" | -118° 28' 0.979" |
| Lovelock South-Yard | Minor A | 2 | FRPE01 | Pershing | 16.5 | 40° 9' 52.729" | -118° 29' 6.343" |
| Lovelock Station | Minor A | 2 | 690 Grinnel Ave., Lovelock, 89419 | Pershing | N/A | 40° 10' 37.574" | -118° 28' 48.002" |
| Mt. Rose Station | Minor A | 2 | SR-431 | Washoe | 13.0 | 39° 20' 23.152" | -119° 52' 33.774" |
| Silver Springs Station | Minor A | 2 | US-50 | Lyon | 28.3 | 39° 24' 43.440" | -119° 14' 43.520" |
| Smart Yard | Minor A | 2 | US-95 | Churchill | 23.7 | 39° 26' 5.578" | -118° 46' 55.602" |
| Spooner East Yard | Minor A | 2 | US-50 | Douglas | 13.2 | 39° 6' 20.670" | -119° 53' 27.429" |

Table C1 (cont'd)

| Major Facility | Designation | District | Address/Route | County | Milepost | Latitude | Longitude |
|---|---|---|---|---|---|---|---|
| Spooner Station | Minor A | 2 | US-50 | Douglas | 12.0 | 39° 5' 45.108" | -119° 54' 37.694" |
| Stead Yard | Minor A | 2 | US-395 | Washoe | 34.8 | 39° 37' 13.427" | -119° 53' 12.950" |
| SR-431 WA 23.9 Yard | Minor A | 2 | SR-431 | WA | 23.9 | 39° 23' 49.478" | -119° 45' 31.917" |
| Trento Yard | Minor A | 2 | US-50 | Churchill | 12.9 | 39° 30' 19.504" | -118° 54' 39.196" |
| Virginia City Station | Minor A | 2 | SR-341 | Storey | 2.5 | 39° 17' 55.609" | -119° 39' 19.272" |
| Wellington Station | Minor A | 2 | SR-829 | Lyon | 3.0 | 38° 45' 3.459" | -119° 22' 9.058" |
| Yerington Station | Minor A | 2 | SR-208 | Lyon | 29.0 | 38° 59' 32.356" | -119° 9' 45.978" |
| Austin Station | Minor A | 3 | US-50 | Lander | 24.1 | 39° 30' 11.162" | -117° 5' 0.037" |
| Battle Mountain Station | Minor A | 3 | SR-304 | Lander | 6.6 | 40° 38' 13.660" | -116° 56' 3.459" |
| Contact Station | Minor A | 3 | US-93 | Elko | 125.5 | 41° 46' 9.149" | -114° 45' 8.599" |
| Currie Station | Minor A | 3 | US-93 | Elko | 11.8 | 40°15' 59.550" | -114° 44' 44.450" |
| East of Wells Yard | Minor A | 3 | I-80 | Elko | 76.7 | 41° 6' 6.752" | -114° 54' 20.461" |
| Ely Bone Yard | Minor A | 3 | US-6 | White Pine | 40.7 | 39° 13' 30.866" | -114° 51' 41.762" |
| Emigrant Pass Station | Minor A | 3 | I-80 | Eureka | 16.8 | 40° 39' 0.192" | -116° 18' 9.969" |
| Eureka Station | Minor A | 3 | US-50 | Eureka | 36.8 | 39° 31' 4.613" | -115° 57' 45.964" |
| I-80 LA 4.0 Yard | Minor A | 3 | I-80 | Lander | 4.0 | 40° 39' 47.464" | -116° 57' 46.034" |
| Independence Valley Station | Minor A | 3 | SR-226 | Elko | 19.6 | 41° 18' 6.655" | -116° 6' 53.597" |
| Lund Station | Minor A | 3 | SR-318 | White Pine | 11.8 | 38° 52' 14.455" | -115° 0' 32.262" |
| North Fork Station | Minor A | 3 | SR-225 | Elko | 77.9 | 41° 29' 0.504" | -115° 48' 55.124" |
| Old Baker Station | Minor A | 3 | US-6 | White Pine | 91.5 | 39° 5' 12.749" | -114° 14' 15.569" |
| Old Currant Station | Minor A | 3 | US-6 | Nye | 127.1 | 38° 49' 3.337" | -115° 20' 51.957" |
| Old Pequop Station | Minor A | 3 | FREL43 | Elko | 97.6 | 41° 3' 42.135" | -114° 31' 54.275" |
| Orovada Station | Minor A | 3 | US-95 | Humboldt | 43.5 | 41° 34' 6.469" | -117° 47' 4.137" |
| Quinn River Station | Minor A | 3 | SR-140 | Humboldt | 51.8 | 41° 45' 58.879" | -118° 33' 7.376" |
| Ruby Valley Station | Minor A | 3 | SR-229 | Elko | 35.5 | 40° 37' 50.928" | -115° 15' 59.722" |
| Salvage Yard | Minor A | 3 | FRHU15 | Humboldt | 6.3 | 40° 55' 39.710" | -117° 47' 58.214" |
| Susie Creek Yard | Minor A | 3 | I-80 | Elko | 4.2 | 40° 43' 41.875" | -116° 4' 54.823" |
| Wendover Station | Minor A | 3 | FREL459 | Elko | 0.5 | 40° 44' 35.594" | -114° 3' 53.394" |
| | | | | | | | |
| Material Pit LN02-07 | Minor B | 1 | US-93 | Lincoln | 48.2 | 37° 29' 48.31" | -115° 12' 22.55" |
| Material Pit LN03-03 | Minor B | 1 | US-93 | Lincoln | 52.0 | 37° 32' 21.99" | -115° 12' 14.01" |
| Material Pit CC023306 | Minor B | 1 | SR-318 | Lincoln | 4.0 | 37° 35' 14.599" | -115° 14' 4.146" |
| Material Pit CC022680 | Minor B | 1 | SR-322 | Lincoln | 13.0 | 37° 57' 41.19" | -114° 14' 41.24" |
| Material Pit NEV057851 | Minor B | 1 | US-93 | Lincoln | 171.0 | 38° 39' 1.44" | -114° 38' 10.92" |
| Material Pit NEV064619 | Minor B | 1 | US-93 | Lincoln | 6.0 | 36° 56' 21.15" | -114° 58' 16.09" |
| Material Pit NEV043432 | Minor B | 1 | SR-375 | Lincoln | 35.0 | 37° 24' 48.84" | -115° 24' 0" |
| Material Pit NEV048515 | Minor B | 1 | SR-266 | Esmeralda | 7.8 | 37° 27' 18.16" | -117° 42' 45.82" |
| Material Pit LN01-02 | Minor B | 1 | US-93 | Lincoln | 19.2 | 37° 7' 44.66" | -115° 0' 6.17" |
| Material Pit LN03-01 | Minor B | 1 | US-93 | Lincoln | 77.1 | 37° 37' 17.34" | -114° 46' 38.35" |
| Material Pit LN05-02 | Minor B | 1 | US-93 | Lincoln | 99.8 | 37° 41' 5.76" | -114° 28' 19.96" |
| Material Pit LN05-01 | Minor B | 1 | US-93 | Lincoln | 108.4 | 37° 47' 40.95" | -114° 24' 45.4" |
| Material Pit LN07-03 | Minor B | 1 | US-93 | Lincoln | 124.4 | 37° 59' 42.34" | -114° 30' 32.88" |
| Material Pit LN07-02 | Minor B | 1 | US-93 | Lincoln | 130.6 | 38° 4' 22.85" | -114° 34' 6.68" |
| Material Pit LN08-01 | Minor B | 1 | US-93 | Lincoln | 148.2 | 38° 19' 8.23" | -114° 36' 25.65" |
| Material Pit LN08-03 | Minor B | 1 | US-93 | Lincoln | 158.2 | 38° 28' 0.48" | -114° 38' 44.55" |
| Material Pit LN08-02 | Minor B | 1 | US-93 | Lincoln | 163.2 | 38° 32' 20.67" | -114° 39' 4.47" |
| Material Pit LN09-01 | Minor B | 1 | US-93 | Lincoln | 36.7 | 37° 20' 21.51" | -114° 31' 57.95" |

Table C1 (cont'd)

| Major Facility | Designation | District | Address/Route | County | Milepost | Latitude | Longitude |
|---|---|---|---|---|---|---|---|
| Material Pit LN10-02 | Minor B | 1 | SR-319 | Lincoln | 9.3 | 37° 47' 1.38" | -114° 14' 6.62" |
| Material Pit LN12-01 | Minor B | 1 | SR-375 | Lincoln | 22.0 | 37° 37' 52.45" | -115° 42' 47.31" |
| Material Pit LN12-03 | Minor B | 1 | SR-375 | Lincoln | 35.0 | 37° 31' 46.84" | -115° 35' 32.93" |
| Material Pit LN24-02 | Minor B | 1 | SR-317 | Lincoln | 48.8 | 37° 29' 41.27" | -114° 35' 0.31" |
| Material Storage Area | Minor B | 1 | SR-317 | Lincoln | 47.6 | 37° 28' 48.72" | -114° 34' 27.04" |
| Material Pit CL09-01 | Minor B | 1 | US-95 | Clark | 18.0 | 35° 26' 4.271" | -114° 54' 13.766" |
| Material Pit CL09-03 | Minor B | 1 | US-95 | Clark | 15.8 | 35° 24' 5.437" | -114° 53' 55.390" |
| Material Pit CL09-04 | Minor B | 1 | US-95 | Clark | 1.0 | 35° 11' 18.55" | -114° 51' 8.51" |
| Material Pit CL11-06 | Minor B | 1 | US-95 | Clark | 52.0 | 35° 55' 22.292" | -114° 55' 48.705" |
| Material Pit CL10-04 | Minor B | 1 | US-95 | Clark | 44.0 | 35° 47' 34.8" | -114° 56' 41.19" |
| Material Pit CL18-02 | Minor B | 1 | US-95 | Clark | 98.8 | 36° 23' 55.383" | -115° 23' 15.660" |
| Material Pit CL18-03 | Minor B | 1 | US-95 | Clark | 117.8 | 36° 34' 34.35" | -115° 38' 39.84" |
| Material Pit CL19-01 | Minor B | 1 | US-95 | Clark | 123.4 | 36° 34' 33.64" | -115° 44' 24.14" |
| Material Pit CL25-01 | Minor B | 1 | SR-168 | Clark | 11.0 | 36° 44' 26.849" | -114° 44' 29.652" |
| Material Pit NEV064469 | Minor B | 1 | US-93 | Clark | 82.0 | 36° 47' 8.36" | -114° 56' 39.36" |
| Material Pit CL81-01 | Minor B | 1 | IR-15 | Clark | 5.2 | 35° 40' 52.92" | -115° 22' 35.1" |
| Material Pit CL86-05/CL86-01 | Minor B | 1 | IR-15 | Clark | 81.8 | 36° 33' 44.6" | -114° 41' 0.27" |
| Material Pit CL86-02 | Minor B | 1 | IR-15 | Clark | 84.3 | 36° 35' 23.38" | -114° 38' 47.02" |
| Material Pit CL88-03 | Minor B | 1 | IR-15 | Clark | 115.0 | 36° 45' 56.53" | -114° 11' 29.51" |
| Material Pit CL32-02 | Minor B | 1 | SR-164 | Clark | 15.4 | 35° 28' 30.037" | -114° 57' 55.637" |
| Material Pit CL09-01 | Minor B | 1 | US-95 | Clark | 18.0 | 35° 26' 4.271" | -114° 54' 13.766" |
| Material Pit CL47-03 | Minor B | 1 | SR-160 | Clark | 26.9 | 36° 0' 17.633" | -115° 36' 11.970" |
| Material Pit CL47-04 | Minor B | 1 | SR-160 | Clark | 37.8 | 36° 4' 28.617" | -115° 46' 25.037" |
| Material Pit CL69-01 | Minor B | 1 | SR-159 | Clark | 1.3 | 36° 2' 38.533" | -115° 22' 30.133" |
| Material Pit ES01-01 | Minor B | 1 | US-6 | Esmeralda | 3.3 | 38° 0' 10.449" | -118° 9' 42.288" |
| Material Pit ES03-08 | Minor B | 1 | US-95 | Esmeralda | 9.0 | 37° 34' 12.28" | -117° 12' 4.1" |
| Material Pit ES08-04 | Minor B | 1 | SR-266 | Esmeralda | 2.6 | 37° 27' 17.07" | -117° 47' 46.2" |
| Material Pit ES04-01 | Minor B | 1 | US-95 | Esmeralda | 24.5 | 37° 47 '6.823" | -117° 13' 53.496" |
| Material Pit LA07-02 | Minor B | 1 | SR-376 | Lander | 2.6 | 39° 12' 6.388" | -117° 3' 8.122" |
| Material Pit MI01-04 | Minor B | 1 | US-95 | Mineral | 15.5 | 38° 22' 48.770" | -118° 6' 27.142" |
| Material Pit MI06-02 | Minor B | 1 | US-6 | Mineral | 6.2 | 37° 57' 48.752" | -118° 21' 9.436" |
| Material Pit MI01-06 | Minor B | 1 | US-95 | Mineral | 17.4 | 38° 24' 36.91" | -118° 7' 17.05" |
| Material Pit NY02-01/NY02-07 | Minor B | 1 | US-6 | Nye | 5.0 | 38° 4' 7.65" | -117° 10' 54.84" |
| Material Pit NY02-2/NY02-05 | Minor B | 1 | US-6 | Nye | 12.5 | 38° 4' 40.5" | -117° 1' 48.28" |
| Material Pit NY02-03 | Minor B | 1 | US-6 | Nye | 36.7 | 38° 8' 20.427" | -116° 36' 47.092" |
| Material Pit NY02-04 | Minor B | 1 | US-6 | Nye | 8.7 | 38 °4' 26.926" | -117° 6' 4.719" |
| Material Pit NY03-04 | Minor B | 1 | US-6 | Nye | 52.0 | 38° 12' 6.955" | -116° 21' 37.314" |
| Material Pit NY03-05 | Minor B | 1 | US-6 | Nye | 64.4 | 38° 21' 11.675" | -116° 14' 36.128" |
| Material Pit NY07-04 | Minor B | 1 | SR-160 | Nye | 36.3 | 36° 33' 18.605" | -116° 7' 22.984" |
| Material Pit NY07-06 | Minor B | 1 | US-95 | Nye | 24.5 | 36° 37' 13.85" | -116° 17' 36.62" |
| Material Pit NY08-06 | Minor B | 1 | US-95 | Nye | 58.4 | 36°53'29.962" | -116°44'47.871" |
| Material Pit NY09-03 | Minor B | 1 | US-95 | Nye | 87.5 | 37° 12' 38.15" | -116° 57' 49.94" |
| Material Pit NY13-03 | Minor B | 1 | SR-376 | Nye | 61.5 | 38° 53' 51.759" | -117° 11' 59.194 |
| Material Pit NY13-05 | Minor B | 1 | SR-376 | Nye | 44.9 | 38° 41' 13.452" | -117° 9' 43.007" |
| Material Pit NY30-02 | Minor B | 1 | SR-267 | Nye | 4.3 | 37° 12' 44.73" | -117° 7' 54.12" |
| Material Pit NY31-01 | Minor B | 1 | SR-361 | Nye | 5.5 | 38° 49' 48.05" | -117° 57' 10.98" |
| Material Pit NY32-02 | Minor B | 1 | SR-361 | Nye | 21.5 | 39° 1' 34.604" | -118° 1' 18.487" |

Table C1 (cont'd)

| Major Facility | Designation | District | Address/Route | County | Milepost | Latitude | Longitude |
|---|---|---|---|---|---|---|---|
| Material Pit NY32-03 | Minor B | 1 | SR-361 | Nye | 12.8 | 38° 55' 13.512" | -117° 56' 23.055" |
| Material Storage Area | Minor B | 1 | SR-361 | Nye | 10.9 | 38° 53' 45.62" | -117° 55' 26.2" |
| Materials Storage Area | Minor B | 1 | US-6 | Nye | 25.3 | 38° 7' 30.49" | -116° 48' 59.91" |
| Material Storage Area | Minor B | 1 | SR-157 | Clark | 12.0 | 36° 16' 47.856" | -115° 27' 20.704" |
| Material Stockpile | Minor B | 1 | SR-266 | Esmeralda | 40.0 | 37° 30' 3.215" | -117° 11' 9.655" |
| Material Pit ES05-02 | Minor B | 1 | US-95 | Esmeralda | 85.9 | 38° 2' 26.59" | -117° 53' 34.04" |
| Material Stockpile ES01-03 | Minor B | 1 | US-6 | Esmeralda | 11.0 | 38° 0' 56.325" | -118° 1' 43.393" |
| Material Storage Area | Minor B | 1 | US-6 | Esmeralda | 14.2 | 38° 1' 6.912" | -117° 58' 10.706" |
| Material Storage Area | Minor B | 1 | US-6 | Esmeralda | 15.2 | 38° 1' 10.503" | -117° 57' 0.982" |
| Material Stockpile | Minor B | 1 | US-6 | Esmeralda | 19.0 | 38° 1' 38.876" | -117° 52' 57.056" |
| Asphalt Mixing Pad | Minor B | 1 | US-6 | Esmeralda | 55.7 | 38° 5' 10.8" | -117° 17' 7.23" |
| Material Stockpile LA07-01 | Minor B | 1 | SR-376 | Lander | 17.3 | 39° 24' 4.981" | -116° 56' 39.171" |
| Material Storage Area | Minor B | 1 | SR-317 | Lincoln | 43.7 | 37° 25' 44.54" | -114° 37' 31.84" |
| Material Stockpile | Minor B | 1 | SR-318 | Lincoln | 43.7 | 38° 4' 40.829" | -114° 58' 51.6" |
| Material Stockpile | Minor B | 1 | SR-319 | Lincoln | 53.0 | 37° 47' 16.226" | -114° 21' 3.45" |
| Material Stockpile LN06-01 | Minor B | 1 | US-93 | Lincoln | 111.7 | 37° 50' 42.382" | -114° 24' 47.85" |
| Material Stockpile | Minor B | 1 | SR-361 | Mineral | 20.2 | 38° 44' 37.858" | -118° 2' 28.868" |
| Material Stockpile | Minor B | 1 | US-6 | Mineral | 12.0 | 38° 0' 24.109" | -118° 16' 21.025" |
| Material Stockpile NY30-01 | Minor B | 1 | SR-267 | Nye | 9.9 | 37° 16' 44.157" | -117° 5' 3.754" |
| Material Stockpile NY10-04 | Minor B | 1 | US-95 | Nye | 100.5 | 37° 21' 21.36" | -117° 6' 46.534" |
| Material Stockpile | Minor B | 1 | SR-267 | Nye | 12.0 | 37° 17' 54.173" | -117° 3' 16.23" |
| Material Stockpile NY13-07 | Minor B | 1 | SR-376 | Nye | 53.5 | 38° 46' 57.926" | -117° 10' 41.291" |
| Material Stockpile NY14-01 | Minor B | 1 | SR-376 | Nye | 68.5 | 38° 59' 54.81" | -117° 11' 32.398" |
| Material Stockpile | Minor B | 1 | SR-377 | Nye | 0.3 | 38° 34' 10.539" | -117° 10' 27.439" |
| Material Stockpile | Minor B | 1 | US-6 | Nye | 46.5 | 38° 10' 4.304" | -116° 26' 13.69" |
| Material Pit LY13-01 | Minor B | 2 | SR-824 | Lyon | 3.6 | 38° 50' 11.442" | -119° 20' 59.712" |
| Material Pit LY14-05 | Minor B | 2 | SR-208 | Lyon | 0.8 | 38° 46' 5.514" | -119° 23' 54.437" |
| Material Pit LY21-01 | Minor B | 2 | US-95A | Lyon | 27.8 | 39° 11' 30.411" | -119° 13' 3.743" |
| Material Pit LY23-01 | Minor B | 2 | Mull Lane | Lyon | N/A | 39° 35' 19.840" | -119°14' 31.180" |
| Material Pit Mason | Minor B | 2 | SR 339 | Lyon | 8.1 | 38° 56' 50.620" | -119° 11' 52.640" |
| Material Pit MI02-03 | Minor B | 2 | US-95 | Mineral | 29.2 | 38° 31' 37.55" | -118° 15' 45.222" |
| Material Pit MI02-04 | Minor B | 2 | US-96 | Mineral | 33.0 | 38° 31' 41.990" | -118° 15' 23.010" |
| Material Pit Plumber | Minor B | 2 | SR -208 | Lyon | 18.0 | 38° 50' 13.120" | -119° 08' 28.340" |
| Materila Pit WA 71-01 | Minor B | 2 | Short Lane | N/A | N/A | 39° 28' 3.830" | -119° 43' 27.870" |
| Material Pit WA37-03 | Minor B | 2 | SR-447 | WA | 44.0 | 40° 13' 10.731" | -119° 22' 33.939" |
| Material Stockpile | Minor B | 2 | US-50 | Churchill | 60.5 | 39° 17' 15.734" | -118° 9' 43.294" |
| Material Stockpile | Minor B | 2 | US-95 | Churchill | 58.9 | 39° 56' 26.344" | -118° 44' 54.378" |
| Material Stockpile | Minor B | 2 | US-395 | Douglas | 8.8 | 38° 48' 13.146" | -119° 36' 24.349" |
| Materila Storage Dayton | Minor B | 2 | SR-341 | Lyon | 0.6 | 39° 13' 41.780" | -119° 38' 44.840" |
| Kingsbury Yard | Minor B | 2 | SR-207 | Douglas | 9.2 | 38° 57' 13.500" | -119° 50' 56.700" |
| Material Stockpile | Minor B | 2 | SR-208 | Lyon | 0.8 | 38° 45' 58.519" | -119° 23' 38.571" |
| Material Stockpile | Minor B | 2 | SR-208 | Lyon | 10.0 | 38° 48' 11.443" | -119° 16' 11.499" |
| Material Stockpile | Minor B | 2 | SR-338 | Lyon | 9.5 | 38° 30' 56.603 | -119° 12' 48.928" |
| Material Stockpile | Minor B | 2 | US-50 | Lyon | 29.5 | 39° 24' 53.651" | -119° 13' 34.243" |
| Material Stockpile | Minor B | 2 | SR-359 | Mineral | 3.8 | 38° 10' 51.930" | -118° 44'14.340" |
| Material Stockpile | Minor B | 2 | SR-359 | Mineral | 7.0 | 38° 12' 0.522" | -118° 41' 9.199" |
| Material Stockpile | Minor B | 2 | SR-359 | Mineral | 13.1 | 38° 15' 33.730" | -118° 36' 35.850" |

Table C1 (cont'd)

| Major Facility | Designation | District | Address/Route | County | Milepost | Latitude | Longitude |
|---|---|---|---|---|---|---|---|
| Material Stockpile | Minor B | 2 | SR-359 | Mineral | 20.4 | 38° 21' 44.480" | -118° 34' 38.360" |
| Material Stockpile | Minor B | 2 | SR-359 | Mineral | 26.0 | 38° 25' 50.220" | -118° 37'13.970" |
| Material Stockpile | Minor B | 2 | SR-359 | Mineral | 32.5 | 38° 30' 30.094" | -118° 37' 49.958" |
| Material Stockpile Tracy Clark | Minor B | 2 | FRWA15 | Washoe | 0.15 | 39° 34' 1.360" | -119° 30' 6.830" |
| Material Stockpile Nightingale | Minor B | 2 | I-80 | Churchill | 4.1 | 39° 47' 28.400" | -119° 01' 10.500" |
| Material Stockpile | Minor B | 2 | US-95A | Mineral | 83.2 | 38° 56' 27.215" | -118° 48' 39.894" |
| Material Stockpile | Minor B | 2 | I-80 | Pershing | 31.1 | 40° 20' 3.601" | -118° 19' 16.497" |
| Material Stockpile | Minor B | 2 | I-80 | Pershing | 49.9 | 40° 35' 54.496" | -118° 15' 5.046" |
| Material Stockpile | Minor B | 2 | SR-341 | Storey | 9.2 | 39° 22' 13.816" | -119° 40' 1.704" |
| Material Stockpile | Minor B | 2 | SR-445 | Washoe | 22.1 | 39° 50' 12.03" | -119° 39' 30.105 |
| Material Stockpile | Minor B | 2 | SR-447 | Washoe | 8.0 | 39° 43' 35.168" | -119° 19' 59.138 |
| Material Stockpile | Minor B | 2 | Fir St., Gerlach | Washoe | N/A | 40° 38' 58.476" | -119° 21' 34.764" |
| Material Pit EL14-02 | Minor B | 3 | US-93 | Elko | 68.4 | 41° 1' 23.843" | -114° 57' 10.265" |
| Material Pit CC020120 | Minor B | 3 | US-93 | White Pine | 2.0 | 38° 42' 18.948" | -114° 37' 22.788 |
| Material Pit CC025129 | Minor B | 3 | US-93 | White Pine | 59.0 | 39° 18' 57.344" | -114° 49' 18.344" |
| Material Pit EL09-01 | Minor B | 3 | US-93A | Elko | 15.6 | 40° 15' 14.872" | -114° 19' 35.216" |
| Material Pit EL10-01 | Minor B | 3 | US-93A | Elko | 34.0 | 40° 28' 56.592" | -114° 8' 24.529" |
| Material Pit EL13-05 | Minor B | 3 | US-93 | Elko | 6.0 | 40° 11' 51.705 | -114° 41' 7.799" |
| Material Pit EL16-03 | Minor B | 3 | US-93 | Elko | 116.6 | 41° 39' 35.50" | -114° 49' 53.83" |
| Material Pit EL35-01 | Minor B | 3 | SR-233 | Elko | 18.5 | 41° 12' 41.029" | -114° 14' 14.126" |
| Material Pit EL-36-02 | Minor B | 3 | SR-233 | Elko | 25.6 | 41° 17' 33.304" | -114° 9' 38.47" |
| Material Pit EL37-01 | Minor B | 3 | SR-229 | Elko | 43.3 | 40° 38' 43.04" | -115° 8' 18.623" |
| Material Pit EL81-01 | Minor B | 3 | I-80 | Elko | 4.1 | 40° 44' 52.943" | -116° 4' 46.404" |
| Material Pit EL83-01 | Minor B | 3 | I-80 | Elko | 59.0 | 41° 4' 9.052" | -115° 17' 11.903" |
| Material Pit EL87-01 | Minor B | 3 | I-80 | Elko | 103.0 | 41° 1' 16.94" | -114° 29' 19.497" |
| Material Pit EU02-06 | Minor B | 3 | US-50 | Eureka | 31.6 | 39° 33' 48.053" | -116° 1' 43.5" |
| Material Pit EU02-09 | Minor B | 3 | US-50 | Eureka | 26.2 | 39° 34' 33.089" | -116° 6' 30.495" |
| Material Pit HU06-03 | Minor B | 3 | US-95 | Humboldt | 46.1 | 41° 36' 28.247" | -117° 47' 16.829" |
| Material Pit HU28-01 | Minor B | 3 | SR-140 | Humboldt | 100.6 | 41° 54' 28.378" | -119° 12' 27.782" |
| Material Pit LA06-02 | Minor B | 3 | US-50 | Lander | 54.2 | 39° 28' 25.052" | -116° 38' 2.815" |
| Material Pit LA08-04 | Minor B | 3 | SR-305 | Lander | 45.5 | 39° 41' 52.023" | -117° 10' 5.964" |
| Material Pit LA10-11 | Minor B | 3 | SR-305 | Lander | 109.2 | 40° 32' 34.775" | -117° 3' 0.261" |
| Material Pit LA14-01 | Minor B | 3 | SR-722 | Lander | 39.0 | 39° 27' 27.569" | -117° 8' 17.307" |
| Material Pit LA19-03 | Minor B | 3 | US-50 | Lander | 1.9 | 39° 31' 24.221" | -117° 28' 10.321" |
| Material Pit NEV004750 | Minor B | 3 | SR-893 | White Pine | 29.0 | 39° 26' 53.355" | -114° 30' 32.449" |
| Material Pit NY20-01 | Minor B | 3 | SR-379 | Nye | 5.4 | 38° 48' 1.493" | -115° 32' 28.483" |
| Material Pit NY33-20 | Minor B | 3 | SR-318 | Nye | 12.0 | 38° 19' 50.372" | -115° 3' 8.935" |
| Material Pit WP01-06 | Minor B | 3 | US-50 | White Pine | 44.5 | 39° 25' 52.273" | -115° 10' 49.884" |
| Material Pit WP05-01 | Minor B | 3 | US-93 | White Pine | 71.0 | 39° 29' 16.909" | -114° 45' 46.46" |
| Material Pit WP05-04 | Minor B | 3 | US-93 | White Pine | 85.5 | 39° 41' 24.641" | -114° 45' 54.857" |
| Material Pit WP06-02 | Minor B | 3 | US-93 | White Pine | 108.0 | 40° 0' 33.244" | -114° 39' 30.765" |
| Material Pit WP06-03 | Minor B | 3 | US-93 | White Pine | 108.0 | 40° 0' 47.39" | -114° 39' 39.346" |
| Material Pit WP08-03 | Minor B | 3 | US-6 | White Pine | 3.8 | 38° 52' 11.813" | -115° 13' 2.315" |
| Material Pit WP21-02 | Minor B | 3 | SR-487 | White Pine | 9.0 | 39° 2' 47.796" | -114° 9' 3.291" |
| Material Pit WP24-02 | Minor B | 3 | SR-318 | White Pine | 7.9 | 38° 48' 55.485 | -115° 0' 44.588" |
| Material Pit WP29-01 | Minor B | 3 | SR-892 | White Pine | 4.0 | 39° 25' 51.226" | -115° 48' 37.306" |
| Material Pit WP33-01 | Minor B | 3 | SR-893 | White Pine | 3.0 | 39° 4' 33.303" | -114° 31' 58.512" |

Table C1 (cont'd)

| Major Facility | Designation | District | Address/Route | County | Milepost | Latitude | Longitude |
|---|---|---|---|---|---|---|---|
| Material Stockpile | Minor B | 3 | None | Elko | N/A | 40° 43' 43.803" | -116° 4' 55.155" |
| Material Stockpile | Minor B | 3 | FREL28 | Elko | 3.8 | 41° 5' 47.357" | -115° 7' 34.747" |
| Material Stockpile | Minor B | 3 | I-80 | Elko | 42.8 | 40° 57' 22.993" | -115° 28' 58.73" |
| Material Stockpile | Minor B | 3 | I-80 | Elko | 87.3 | 41° 5' 29.529" | -114° 42' 36.754" |
| Material Stockpile | Minor B | 3 | I-80 | Elko | 112.0 | 40° 55' 33.541" | -114° 19' 38.302" |
| Material Stockpile | Minor B | 3 | SR-225 | Elko | 56.5 | 41° 11' 3.348" | -115° 49' 24.96" |
| Material Stockpile | Minor B | 3 | SR-225 | Elko | 78.5 | 41° 29' 30.527" | -115° 49' 25.651" |
| Material Stockpile | Minor B | 3 | SR-225 | Elko | 109.1 | 41° 48' 57.274" | -115° 57' 8.05" |
| Material Stockpile | Minor B | 3 | SR-230 | Elko | 0.6 | 41° 3' 54.948" | -115° 17' 12.506" |
| Material Stockpile | Minor B | 3 | SR-226 | Elko | 19.4 | 41° 18' 1.763" | -116° 6' 55.779" |
| Material Stockpile | Minor B | 3 | SR-227 | Elko | 7.4 | 40° 46' 39.097" | -115° 40' 41.752" |
| Material Stockpile | Minor B | 3 | SR-228 | Elko | 5.9 | 40° 30' 9.163" | -115° 39' 45.354" |
| Material Stockpile | Minor B | 3 | SR-233 | Elko | 20.6 | 41° 14' 12.077" | -114° 13' 18.986" |
| Material Stockpile | Minor B | 3 | SR-535 | Elko | 21.7 | 40° 48' 32.564" | -115° 49' 34.076" |
| Material Stockpile | Minor B | 3 | SR-535 | Elko | 22.0 | 40° 48' 34.974" | -115° 49' 18.791" |
| Material Stockpile | Minor B | 3 | US-93 | Elko | 49.5 | 40° 45' 31.872" | -115° 2' 9.793" |
| Material Stockpile | Minor B | 3 | US-93 | Elko | 96.5 | 41° 23' 11.499" | -114° 46' 19.833" |
| Material Stockpile | Minor B | 3 | US-93A | Elko | 15.6 | 40° 17' 14.595" | -114° 21' 48.566" |
| Material Stockpile | Minor B | 3 | US-93A | Elko | 30.2 | 40° 25' 38.715" | -114° 10' 43.812" |
| Material Stockpile | Minor B | 3 | FREL28 | Elko | 4.3 | 41° 5' 53.834" | -115° 6' 57.609" |
| Material Stockpile | Minor B | 3 | FREU02 | Eureka | 2.1 | 40° 41' 50.854" | -116° 33' 17.871" |
| Material Stockpile | Minor B | 3 | SR-278 | Eureka | 35.3 | 40° 0' 59.444" | -116° 11' 33.351" |
| Material Stockpile | Minor B | 3 | SR-278 | Eureka | 61.2 | 40° 22' 16.865" | -116° 6' 45.561" |
| Material Stockpile | Minor B | 3 | SR-306 | Eureka | 2.9 | 40° 26' 16.681" | -116° 34' 16.002" |
| Material Stockpile | Minor B | 3 | US-95 | Humboldt | 22.4 | 41°17'22.639" | -117° 41' 29.949" |
| Material Stockpile | Minor B | 3 | I-80 | Humboldt | 23.7 | 41° 0' 54.033" | -117° 34' 22.82" |
| Material Stockpile | Minor B | 3 | I-80 | Humboldt | 36.0 | 40° 55' 18.579" | -117° 23' 37.018" |
| Material Stockpile | Minor B | 3 | I-80 | Humboldt | 53.1 | 40° 47' 20.288" | -117° 7' 41.362" |
| Material Stockpile | Minor B | 3 | SR-140 | Humboldt | 14.5 | 41° 24' 52.561" | -118° 3' 33.068" |
| Material Stockpile | Minor B | 3 | SR-140 | Humboldt | 88.2 | 41° 53' 59.414" | -118° 59' 24.863" |
| Material Stockpile | Minor B | 3 | SR-140 | Humboldt | 109.9 | 41° 59' 26.775" | -119° 19' 8.988" |
| Material Stockpile | Minor B | 3 | US-95 | Humboldt | 2.5 | 41° 0' 586" | -117° 43' 56.882" |
| Material Stockpile | Minor B | 3 | US-95 | Humboldt | 71.1 | 41° 57' 38.232" | -117° 42' 36.967" |
| Material Stockpile | Minor B | 3 | US-50 | Lander | 0.3 | 39° 32' 26.939" | -117° 28' 45.146" |
| Material Stockpile | Minor B | 3 | I-80 | Lander | 19.2 | 40° 39' 43.406" | -116° 44' 7.536" |
| Material Stockpile | Minor B | 3 | SR-305 | Lander | 72.8 | 40° 2' 46.485" | -117° 11' 3.043" |
| Material Stockpile | Minor B | 3 | SR-306 | Lander | 10.1 | 40° 22' 18.926" | -116° 36' 44.473" |
| Material Stockpile | Minor B | 3 | US-50 | Lander | 17.5 | 39° 29' 33.783" | -117° 11' 2.313" |
| Material Stockpile | Minor B | 3 | SR-318 | Nye | 20.9 | 38° 27' 8.561" | -115° 0' 43.958" |
| Material Stockpile | Minor B | 3 | I-80 | Pershing | 69.7 | 40° 47' 25.378" | -117° 59' 36.315 |
| Material Stockpile | Minor B | 3 | US-50 | White Pine | 4.0 | 39° 22' 28.40" | -115° 50' 17.295" |
| Material Stockpile | Minor B | 3 | US-50 | White Pine | 34.4 | 39° 21' 20.518" | -115° 20' 11.478" |
| Material Stockpile | Minor B | 3 | US-6 | White Pine | 40.4 | 39° 13' 42.214" | -114° 51' 32.52" |
| Material Stockpile | Minor B | 3 | US-6 | White Pine | 65.0 | 39° 1' 28.235" | -114° 34' 48.053" |
| Material Stockpile | Minor B | 3 | US-93 | White Pine | 92.5 | 39° 47' 46.566" | -114° 44' 30.25" |
| Material Stockpile | Minor B | 3 | US-93 | White Pine | 112.8 | 40° 3' 54.662" | -114° 36' 53.948" |

# APPENDIX D

# Stormwater Maintenance Task Summaries

Table D1. Carson Valley MS4 area Maintenance task summary.

| *Task* | *Unit of Measurement* | *Accomplishment* |
|---|---|---|
| Clean Culvert Openings | Each | 59 |
| Clean Culverts | Linear Ft. | 1,520 |
| Clean Cuts & Ditches | $Yd^3$ | 1,560 |
| Repair Fill and Cut Slopes[1] | $Yd^3$ | 6,750 |
| Clean Drop Inlets | Each | 406 |
| Clean Retention/Detention Basins | $Yd^3$ | ----- |
| Clean Slotted Drains | Linear Ft. | 63 |
| Repair, Replace, Extend or Install Culverts | Linear Ft. | 28 |
| Install, Repair, Replace Pollution Prevention Devices | Man-Hours | ----- |
| Remove Debris[2] | $Yd^3$ | 406 |
| Pick-up Trash Bags[2] | $Yd^3$ | ----- |
| Empty Litter Barrels | Each | ----- |
| Pickup Broom Sweeping | $Yd^3$ | 626 |
| Sweep/Clean Debris from Structures | Man-Hours | ----- |
| Remove Storm Debris | $Yd^3$ | 2 |
| Clean Sand/Oil Separators | $Yd^3$ | ----- |
| Snow and Ice Removal | Man-Hours | 2,286 |
| Salt | $Yd^3$ | 24 |
| Salt/Sand | $Yd^3$ | 695 |
| Brine | Gal. | 41,532 |
| Liquid-Chemical Anti-Icing Agent (MgCl) | Gal. | ----- |
| Dry-Chemical Anti-Icing Agent[3] | $Yd^3$ | ----- |
| Treated Lane Miles (Brine)[4] | Gal. | 12,702 |
| Treated Lane Miles (MgCl)[4] | Gal. | ----- |
| Fertilizer-Liquid | Gal. | ----- |
| Fertilizer-Pellets | Lbs. | ----- |

[1]Material that is removed and then utilized onsite (i.e. recycled) or removed and hauled offsite.

[2]Trash collected as part of the Adopt-A-Highway program may be incorporated within this task.

[3]Products used could be Ice Slicer RS, Sierra Blend, Broken Arrow Salt, etc.

[4]Applied as pre-treatment

Table D2. Elko MS4 area Maintenance task summary.

| *Task* | *Unit of Measurement* | *Accomplishment* |
|---|---|---|
| Clean Culvert Openings | Each | 16 |
| Clean Culverts | Linear Ft. | 50 |
| Clean Cuts & Ditches | $Yd^3$ | ----- |
| Repair Fill and Cut Slopes[1] | $Yd^3$ | 40 |
| Clean Drop Inlets | Each | 25 |
| Clean Retention/Detention Basins | $Yd^3$ | ----- |
| Clean Slotted Drains | Linear Ft. | ----- |
| Repair, Replace, Extend or Install Culverts | Linear Ft. | ----- |
| Install, Repair, Replace Pollution Prevention Devices | Man-Hours | ----- |
| Remove Debris[2] | $Yd^3$ | 124 |
| Pick-up Trash Bags[2] | $Yd^3$ | 6 |
| Empty Litter Barrels | Each | ----- |
| Pickup Broom Sweeping | $Yd^3$ | 533 |
| Sweep/Clean Debris from Structures | Man-Hours | ----- |
| Remove Storm Debris | $Yd^3$ | 1 |
| Clean Sand/Oil Separators | $Yd^3$ | ----- |
| Snow and Ice Removal | Man-Hours | 898 |
| Salt | $Yd^3$ | ----- |
| Salt/Sand | $Yd^3$ | 1,159 |
| Brine | Gal. | ----- |
| Liquid-Chemical Anti-Icing Agent (MgCl) | Gal. | 1,380 |
| Dry-Chemical Anti-Icing Agent[3] | $Yd^3$ | ----- |
| Treated Lane Miles (Brine)[4] | Gal. | 43 |
| Treated Lane Miles (MgCl)[4] | Gal. | ----- |
| Fertilizer-Liquid | Gal. | ----- |
| Fertilizer-Pellets | Lbs. | ----- |

[1]Material that is removed and then utilized onsite (i.e. recycled) or removed and hauled offsite.

[2]Trash collected as part of the Adopt-A-Highway program may be incorporated within this task.

[3]Products used could be Ice Slicer RS, Sierra Blend, Broken Arrow Salt, etc.

[4]Applied as pre-treatment

Table D3. Las Vegas Valley MS4 area Maintenance task summary.

| *Task* | *Unit of Measurement* | *Accomplishment* |
|---|---|---|
| Clean Culvert Openings | Each | 7 |
| Clean Culverts | Linear Ft. | 19,180 |
| Clean Cuts & Ditches | $Yd^3$ | 7 |
| Repair Fill and Cut Slopes[1] | $Yd^3$ | 61 |
| Clean Drop Inlets | Each | 498 |
| Clean Retention/Detention Basins | $Yd^3$ | ----- |
| Clean Slotted Drains | Linear Ft. | 216 |
| Repair, Replace, Extend or Install Culverts | Linear Ft. | ----- |
| Install, Repair, Replace Pollution Prevention Devices | Man-Hours | ----- |
| Remove Debris[2] | $Yd^3$ | 4,787 |
| Pick-up Trash Bags[2] | $Yd^3$ | ----- |
| Empty Litter Barrels | Each | 67 |
| Pickup Broom Sweeping | $Yd^3$ | 3,120 |
| Sweep/Clean Debris from Structures | Man-Hours | 544 |
| Remove Storm Debris | $Yd^3$ | 584 |
| Clean Sand/Oil Separators | $Yd^3$ | ----- |
| Snow and Ice Removal | Man-Hours | ----- |
| Salt | $Yd^3$ | ----- |
| Salt/Sand | $Yd^3$ | ----- |
| Brine | Gal. | ----- |
| Liquid-Chemical Anti-Icing Agent (MgCl) | Gal. | ----- |
| Dry-Chemical Anti-Icing Agent[3] | $Yd^3$ | ----- |
| Treated Lane Miles (Brine)[4] | Gal. | ----- |
| Treated Lane Miles (MgCl)[4] | Gal. | ----- |
| Fertilizer-Liquid | Gal. | ----- |
| Fertilizer-Pellets | Lbs. | ----- |

[1]Material that is removed and then utilized onsite (i.e. recycled) or removed and hauled offsite.

[2]Trash collected as part of the Adopt-A-Highway program are incorporated within this task.

[3]Products used could be Ice Slicer RS, Sierra Blend, Broken Arrow Salt, etc.

[4]Applied as pre-treatment

Table D4. Washoe MS4 area Maintenance task summary.

| *Task* | *Unit of Measurement* | *Accomplishment* |
|---|---|---|
| Clean Culvert Openings | Each | 93 |
| Clean Culverts | Linear Ft. | 3,376 |
| Clean Cuts & Ditches | $Yd^3$ | 562 |
| Repair Fill and Cut Slopes[1] | $Yd^3$ | 1,091 |
| Clean Drop Inlets | Each | 1,862 |
| Clean Retention/Detention Basins | $Yd^3$ | 40 |
| Clean Slotted Drains | Linear Ft. | 4,003 |
| Repair, Replace, Extend or Install Culverts | Linear Ft. | 620 |
| Install, Repair, Replace Pollution Prevention Devices | Man-Hours | 48 |
| Remove Debris[2] | $Yd^3$ | 2,123 |
| Pick-up Trash Bags[2] | $Yd^3$ | 144 |
| Empty Litter Barrels | Each | 2 |
| Pickup Broom Sweeping | $Yd^3$ | 5,426 |
| Sweep/Clean Debris from Structures | Man-Hours | 14 |
| Remove Storm Debris | $Yd^3$ | 18 |
| Clean Sand/Oil Separators | $Yd^3$ | ----- |
| Snow and Ice Removal | Man-Hours | 4,323 |
| Salt | $Yd^3$ | 41 |
| Salt/Sand | $Yd^3$ | 3,787 |
| Brine | Gal. | 71,532 |
| Liquid-Chemical Anti-Icing Agent (MgCl) | Gal. | ----- |
| Dry-Chemical Anti-Icing Agent[3] | $Yd^3$ | ----- |
| Treated Lane Miles (Brine)[5] | Gal. | 67,891 |
| Treated Lane Miles (MgCl)[5] | Gal. | ----- |
| Fertilizer-Liquid | Gal. | 3,129 |
| Fertilizer-Pellets | Lbs. | 25 |

[1]Material that is removed and then utilized onsite (i.e. recycled) or removed and hauled offsite.

[2]Trash collected as part of the Adopt-A-Highway program are incorporated within this task.

[3]Products used could be Ice Slicer RS, Sierra Blend, Broken Arrow Salt, etc.

[4]Applied on the bridge structures along I-580 (WA ~ 9.5 to 14.5)

[5]Applied as pre-treatment

Table D5. Lake Tahoe MS4 area Maintenance task summary.

| *Task* | *Unit of Measurement* | *Accomplishment* |
|---|---|---|
| Clean Culvert Openings | Each | 152 |
| Clean Culverts | Linear Ft. | 99 |
| Clean Cuts & Ditches | $Yd^3$ | ----- |
| Repair Fill and Cut Slopes[1] | $Yd^3$ | 995 |
| Clean Drop Inlets | Each | 1,203 |
| Clean Retention/Detention Basins | $Yd^3$ | ----- |
| Clean Slotted Drains | Linear Ft. | 198 |
| Repair, Replace, Extend or Install Culverts | Linear Ft. | 2 |
| Install, Repair, Replace Pollution Prevention Devices | Man-Hours | ----- |
| Remove Debris[2] | $Yd^3$ | 189 |
| Pick-up Trash Bags[2] | $Yd^3$ | ----- |
| Empty Litter Barrels | Each | ----- |
| Pickup Broom Sweeping | $Yd^3$ | 859 |
| Sweep/Clean Debris from Structures | Man-Hours | ----- |
| Remove Storm Debris | $Yd^3$ | 20 |
| Clean Sand/Oil Separators | $Yd^3$ | 10 |
| Snow and Ice Removal | Man-Hours | 6,566 |
| Salt | $Yd^3$ | 172 |
| Salt/Sand | $Yd^3$ | 596 |
| Brine | Gal. | 74,737 |
| Liquid-Chemical Anti-Icing Agent (MgCl) | Gal. | ----- |
| Dry-Chemical Anti-Icing Agent[3] | $Yd^3$ | ----- |
| Treated Lane Miles (Brine)[4] | Gal. | 17,485 |
| Treated Lane Miles (MgCl)[4] | Gal. | ----- |
| Fertilizer-Liquid | Gal. | ----- |
| Fertilizer-Pellets | Lbs. | ----- |

[1]Material that is removed and then utilized onsite (i.e. recycled) or removed and hauled offsite.

[2]Trash collected as part of the Adopt-A-Highway program may be incorporated within this task.

[3]Products used could be Ice Slicer RS, Sierra Blend, Broken Arrow Salt, etc.

[4]Applied as pre-treatment

Table D6. Statewide MS4 area Maintenance task summary.

| *Task* | *Unit of Measurement* | *Accomplishment* |
|---|---|---|
| Clean Culvert Openings | Each | 1,395 |
| Clean Culverts | Linear Ft. | 87,411 |
| Clean Cuts & Ditches | $Yd^3$ | 18,593 |
| Repair Fill and Cut Slopes[1] | $Yd^3$ | 147,997 |
| Clean Drop Inlets | Each | 6,749 |
| Clean Retention/Detention Basins | $Yd^3$ | 766 |
| Clean Slotted Drains | Linear Ft. | 5,523 |
| Repair, Replace, Extend or Install Culverts | Linear Ft. | 2,478 |
| Install, Repair, Replace Pollution Prevention Devices | Man-Hours | 441 |
| Remove Debris[2] | $Yd^3$ | 44,466 |
| Pick-up Trash Bags[2] | $Yd^3$ | 955 |
| Empty Litter Barrels | Each | 8,094 |
| Pickup Broom Sweeping | $Yd^3$ | 27,173 |
| Sweep/Clean Debris from Structures | Man-Hours | 1,999 |
| Remove Storm Debris | $Yd^3$ | 29,349 |
| Clean Sand/Oil Separators | $Yd^3$ | 158 |
| Snow and Ice Removal | Man-Hours | 70,722 |
| Salt | $Yd^3$ | 837 |
| Salt/Sand | $Yd^3$ | 78,676 |
| Brine | Gal. | 363,422 |
| Liquid-Chemical Anti-Icing Agent (MgCl) | Gal. | 3,900 |
| Dry-Chemical Anti-Icing Agent[3] | $Yd^3$ | 912 |
| Bridge Treatment ($KCH_3COO$)[4] | Gal. | 5,727 |
| Treated Lane Miles (Brine)[5] | Gal. | 374,417 |
| Treated Lane Miles (MgCl)[5] | Gal. | 9,441 |
| Fertilizer-Liquid | Gal. | 3,996 |
| Fertilizer-Pellets | Lbs. | 981 |

[1]Material that is removed and then utilized onsite (i.e. recycled) or removed and hauled offsite.

[2]Trash collected as part of the Adopt-A-Highway program are incorporated within this task.

[3]Products used could be Ice Slicer RS, Sierra Blend, Broken Arrow Salt, etc.

[4]Applied on four bridge structures along I-580 (WA ~ 9.5 to 14.5).

[5]Applied as pre-treatment

Table D7. Quantities of material recovered from sweeping efforts and sand-salt quantities applied during the previous 3 reporting period for specific MS4 areas and statewide[1]

| FY | Task | Unit of Measurement | Lake Tahoe | Carson Valley | Elko | Las Vegas Valley | Washoe | Statewide |
|---|---|---|---|---|---|---|---|---|
| 2016 | Pickup Broom Sweeping | $Yd^3$ | 1,186 | 751 | 399 | 6,176 | 4,784 | 27,645 |
| | Pickup Broom Sweeping | Man-Hours | 1,681 | 1,476 | 344 | 11,121 | 3,212 | 36,501 |
| | Pickup Broom Sweeping | $Yd^3$:Man-Hours | 0.7 | 0.5 | 1.2 | 0.6 | 1.5 | 0.8 |
| | Salt/Sand Applied | $Yd^3$ | 1,354 | 811 | 2,383 | ----- | 4,022 | 141,500 |
| | Net Salt/Sand Applied | % | 12 | 7 | 83 | ----- | -19 | N/A |
| | | | | | | | | |
| 2017 | Pickup Broom Sweeping | $Yd^3$ | 710 | 630 | 662 | 5,502 | 6,313 | 31,326 |
| | Pickup Broom Sweeping | Man-Hours | 1,071 | 1,119 | 487 | 11,403 | 3,962 | 37,784 |
| | Pickup Broom Sweeping | $Yd^3$:Man-Hours | 0.7 | 0.6 | 1.4 | 0.5 | 1.6 | 0.8 |
| | Salt/Sand Applied | $Yd^3$ | 1,044 | 1,369 | 2,873 | ----- | 5,150 | 145,166 |
| | Net Salt/Sand Applied | % | 32 | 54 | 77 | ----- | -23 | N/A |
| | | | | | | | | |
| 2018 | Pickup Broom Sweeping | $Yd^3$ | 859 | 626 | 533 | 3,120 | 5,426 | 27,173 |
| | Pickup Broom Sweeping | Man-Hours | 1,236 | 1,091 | 495 | 7,390 | 4,163 | 40,490 |
| | Pickup Broom Sweeping | $Yd^3$:Man-Hours | 0.7 | 0.6 | 1.1 | 0.4 | 1.3 | 0.7 |
| | Salt/Sand Applied | $Yd^3$ | 596 | 695 | 1,159 | ----- | 3,787 | 78,676 |
| | Net Salt/Sand Applied | % | -44 | 10 | 54 | ----- | -43 | N/A |

[1]% Net Sand/Salt Applied refers to the % of sand/salt remaining following Pickup Broom Sweeping. This metric is not applicable to statewide numbers.

Table D8. Hydraulic facility maintenance summary during the previous three reporting periods for specific MS4 areas and statewide.

| FY | Task | Unit of Measurement | Lake Tahoe | Carson Valley | Elko | Las Vegas Valley | Washoe | Statewide |
|---|---|---|---|---|---|---|---|---|
| 2016 | Clean Culvert Openings | Each | 15 | 65 | ----- | 144 | 65 | 1,654 |
| | Clean Culverts | Linear Ft. | ----- | 455 | 945 | 4,011 | 7,472 | 41,001 |
| | Clean Drop Inlets | Each | 761 | 426 | 24 | 1,343 | 1,532 | 9,365 |
| | Clean Retention/Detention Basins | $Yd^3$ | ----- | ----- | ----- | ----- | 54 | 1,167 |
| | Clean Slotted Drains | Linear Ft. | ----- | 5 | 40 | 61 | 1,755 | 2,098 |
| | Clean Sand/Oil Separators | $Yd^3$ | 59 | ----- | ----- | ----- | 59 | 139 |
| 2017 | Clean Culvert Openings | Each | 11 | 50 | 4 | 10 | 149 | 1,589 |
| | Clean Culverts | Linear Ft. | 40 | ----- | 3,766 | 7,584 | 4,887 | 68,961 |
| | Clean Drop Inlets | Each | 743 | 511 | 21 | 1,049 | 2,313 | 8,653 |
| | Clean Retention/Detention Basins | $Yd^3$ | 10 | ----- | ----- | ----- | 56 | 247 |
| | Clean Slotted Drains | Linear Ft. | ----- | 1,169 | ----- | 150 | 90 | 4,486 |
| | Clean Sand/Oil Separators | $Yd^3$ | 2 | ----- | ----- | ----- | ----- | 128 |
| 2018 | Clean Culvert Openings | Each | 152 | 59 | 16 | 7 | 93 | 1,395 |
| | Clean Culverts | Linear Ft. | 99 | 1,520 | 50 | 19,180 | 3,376 | 87,411 |
| | Clean Drop Inlets | Each | 1,203 | 406 | 25 | 498 | 1,862 | 6,749 |
| | Clean Retention/Detention Basins | $Yd^3$ | ----- | ----- | ----- | ----- | 40 | 766 |
| | Clean Slotted Drains | Linear Ft. | 198 | 63 | ----- | 216 | 4,003 | 5,523 |
| | Clean Sand/Oil Separators | $Yd^3$ | 10 | ----- | ----- | ----- | ----- | 158 |

Table D9. Summary of stormwater maintenance activities performed at FPPP designated Major and Minor Maintenance facilities during the Reporting Period.[1]

| Task | Unit of Measurement | Accomplishment | Number of Major Maintenance Facilities | Number of Minor Maintenance Facilities |
|---|---|---|---|---|
| Clean Sand/Oil Separators | $Yd^3$ | 139 | 4 | 5 |
| Clean Sediment or Retention Basins | $Yd^3$ | 113 | 2 | 1 |
| Repair/Replace/Extend or Install Culverts | Linear Ft. | 19.5 | ----- | 1 |
| Clean Culverts | Linear Ft. | 990 | 2 | ----- |
| Clean Drop Inlets | Each | 12 | 2 | 2 |
| Install/Repair/Replace Pollution Prevention Devices | Man-Hours | 190 | ----- | 3 |
| Clean Cut Slopes and Ditches to Culvert Wingwalls | $Yd^3$ | 9 | ----- | 1 |
| Repair Fill and Cut Slopes | $Yd^3$ | 429[2] | ----- | 2[2] |

[1]Does not include maintenance activities performed under District contracts.

[2]Includes 100 $yd^3$ from a non-FPPP designated facility.

# APPENDIX E

# Herbicide Application Summaries

Table E1. Maintenance Crew herbicide application summary.

| Statewide[1] | | | |
|---|---|---|---|
| *Product* | *Category* | *Unit of Measurement* | *Accomplishment* |
| MSO Helena | Adjuvant | Gal. | 4 |
| Spreader-Activator | Adjuvant | Gal. | 34 |
| Insist 90 Surfactant | Adjuvant | Gal. | 256 |
| Round Up Custom | Herbicide | Gal. | 15 |
| Pendulum | Herbicide | Gal. | 142 |
| Tordon K | Herbicide | Gal. | 216 |
| Surflan AS | Herbicide | Gal. | 324 |
| Weedone LV4 | Herbicide | Gal. | 338 |
| Portfolio Blend | Herbicide | Gal. | 434 |
| Round Up Blend | Herbicide | Gal. | 670 |
| Round Up Pro | Herbicide | Gal. | 4,904 |
| Snapshot 2.5 TG | Herbicide | Lbs. | 2 |
| Gallary 75 DF | Herbicide | Lbs. | 313 |
| Specticle | Herbicide | Oz. | 12 |
| Tordon 22K | Herbicide | Oz. | 682 |
| Alligare SMF 75 | Herbicide | Oz. | 9,039 |
| Alligare 2,4-D | Herbicide | Oz. | 48,624 |
| RRSI IVM Marking Dye | Indicator Dye | Gal. | 10 |
| Dye-Helena Spray | Indicator Dye | Oz. | 274 |
| **Carson Valley MS4[2]** | | | |
| *Product* | *Category* | *Unit of Measurement* | *Accomplishment* |
| Insist 90 Surfactant | Adjuvant | Gal. | 3 |
| Round Up Blend | Herbicide | Gal. | 28 |
| Portfolio Blend | Herbicide | Gal. | 53 |
| Round Up Pro Concentrate | Herbicide | Gal. | 85 |
| Tordon 22K | Herbicide | Oz. | 362 |
| Alligare 2,4-D Amine | Herbicide | Oz. | 2,739 |
| **Elko MS4[3]** | | | |
| *Product* | *Category* | *Unit of Measurement* | *Accomplishment* |
| Insist 90 Surfactant | Adjuvant | Gal. | < 1 |
| Round Up Custom | Herbicide | Gal. | < 1 |
| RRSI IVM Marking Dye | Indicator Dye | Gal. | < 1 |
| **Lake Tahoe MS4[4]** | | | |
| *Product* | *Category* | *Unit of Measurement* | *Accomplishment* |
| Round Up Pro | Herbicide | Gal. | 2 |
| **Las Vegas Valley MS4[5]** | | | |
| *Product* | *Category* | *Unit of Measurement* | *Accomplishment* |
| Round Up Blend | Herbicide | Gal. | 20 |
| Pendulum | Herbicide | Gal. | 24 |
| Round Up Pro | Herbicide | Gal. | 730 |
| Dye-Helena Spray | Indicator Dye | Oz. | 1 |
| **Washoe MS4[6]** | | | |
| *Product* | *Category* | *Unit of Measurement* | *Accomplishment* |
| Insist 90 Surfactant | Adjuvant | Gal. | 112 |
| Surf Ac-910 | Adjuvant | Oz. | 2 |
| Tordon K | Herbicide | Gal. | 105 |
| Surflan AS | Herbicide | Gal. | 228 |
| Round Up Pro | Herbicide | Gal. | 865 |
| Gallary 75 DF | Herbicide | Lbs. | 198 |
| Alligare SMF 75 | Herbicide | Oz. | 4,090 |
| Alligare 2,4-D Amine | Herbicide | Oz. | 20,044 |

[1]Applied along 3,691 shoulder miles
[2]Applied along 103 shoulder miles
[3]Applied along 3 shoulder miles
[4]Applied along 2 shoulder miles
[5]Applied along 201 shoulder miles
[6]Applied along 474 shoulder mile

Table E2. Summary of herbicide application performed under county contract and by contractor.

| **Tri County Weed Control[1]** | | | |
|---|---|---|---|
| *Product* | *Category* | *Unit of Measurement* | *Accomplishment* |
| MSO w/Leci-Tech | Adjuvant | Pt. | 238 |
| Syl-Tac | Adjuvant | Pt. | 249 |
| Super Spread MSO | Adjuvant | Pt. | 283 |
| Milestone | Herbicide | Oz. | 18 |
| Telar | Herbicide | Oz. | 46 |
| Escort XP | Herbicide | Oz. | 340 |
| Esplanade | Herbicide | Oz. | 349 |
| Polaris | Herbicide | Oz. | 824 |
| Tordon 22K | Herbicide | Oz. | 868 |
| Plateau | Herbicide | Oz. | 1,219 |
| Rainier | Herbicide | Pt. | 205 |
| Weedar 64 | Herbicide | Pt. | 772 |
| Detonate | Herbicide | Pt. | < 1 |
| Dye | Indicator Dye | Pt. | 57 |
| **Douglas County Weed Control[2]** | | | |
| *Product* | *Category* | *Unit of Measurement* | *Accomplishment* |
| Syl-Tac | Adjuvant | Gal. | 2 |
| Activator 90 | Adjuvant | Gal. | 6 |
| In-Place | Adjuvant | Gal. | 9 |
| Attach | Adjuvant | Gal. | 33 |
| MSO w/Leci-Tech | Adjuvant | Gal. | < 1 |
| 2,4-D | Herbicide | Gal. | 2 |
| Pendulum Aquacap | Herbicide | Gal. | 3 |
| Esplanade | Herbicide | Gal. | 4 |
| Rainier | Herbicide | Gal. | 4 |
| Garlon 4E | Herbicide | Gal. | 7 |
| Tordon 22K | Herbicide | Gal. | 7 |
| Kleenup | Herbicide | Gal. | 9 |
| Weedar 64 | Herbicide | Gal. | 22 |
| Cleantraxx | Herbicide | Gal. | 33 |
| Clean Amine | Herbicide | Gal. | < 1 |
| Escort XP | Herbicide | Gal. | < 1 |
| Polaris | Herbicide | Gal. | < 1 |
| Opensite | Herbicide | Lbs. | 4 |
| Perspective | Herbicide | Lbs. | 11 |
| Sureguard | Herbicide | Lbs. | 12 |
| Telar | Herbicide | Lbs. | 15 |
| Lock Down | Herbicide | Lbs. | 63 |
| Turf Trax | Indicator Dye | Qt. | 41 |
| **Contractor[3]** | | | |
| *Product* | *Category* | *Unit of Measurement* | *Accomplishment* |
| Nu-Film | Adjuvant | Oz. | 4,817 |
| Tordon 101 | Herbicide | Oz. | 84 |
| Aqua Neat | Herbicide | Oz. | 179 |
| Sulfomet Extra | Herbicide | Oz. | 622 |
| Control | Herbicide | Oz. | 3,290 |
| Oust | Herbicide | Oz. | 5,376 |
| Bulls-Eye | Herbicide | Oz. | 5,747 |
| Razor Pro | Herbicide | Oz. | 71,463 |
| Tordon K | Herbicide | Oz. | 71,642 |
| Turf Trax | Indicator Dye | Oz. | 13,520 |

[1]Lincoln, Nye, White Pine, and 7 Clark County right-of-ways

[2]State routes within Douglas County, and the Washoe and Carson wetland mitigation areas

[3]Various state routes in all three Districts

# APPENDIX F

# Stormwater Monitoring Plan

# Stormwater Monitoring Plan
# FY 2018


## Nevada Department of Transportation
## Stormwater Management Program

**Municipal Separate Storm Sewer Systems Permit NV0023329**

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## INTRODUCTION

This document is intended to provide a monitoring plan as required by the Nevada Department of Transportation (NDOT) Municipal Separate Storm Sewer Systems (MS4) Permit NV0023329, Part IV.A. The following summarizes stormwater monitoring activities that NDOT is planning to conduct during FY 2018.

Operators of MS4s are required to develop and implement a comprehensive Stormwater Management Program (SWMP) that incorporates pollution prevention measures, treatment or removal techniques, monitoring, use of legal authority, and other appropriate means to control the quality of stormwater and authorized non-stormwater discharged from the MS4 into Waters of the US (WOTUS) to the maximum extent practicable (MEP).

Development of a stormwater monitoring plan is an important component of the SWMP. Monitoring data will be utilized (as appropriate) to assist with evaluating decisions regarding SWMP compliance, the appropriateness of identified best management practices (BMPs), and progress towards achieving identified SWMP programmatic BMP tasks and measurable goals.

## MONITORING PROGRAM OBJECTIVES

The primary objective of NDOT's SWMP is to prevent or reduce (to the MEP) stormwater pollutant discharges from NDOT's MS4 Permit area into receiving WOTUS. Information provided from NDOT's monitoring program should improve the ability of the Stormwater Division to make sound management decisions. The purpose of the NDOT stormwater monitoring program is to identify pollution problem areas, determine which problem(s) are the most significant, and evaluate the effectiveness of pollutant reduction Best Management Practices (BMPs). Monitoring results will be used to develop control strategies and prepare plans and budget estimates for addressing those problems.

The level of monitoring effort should reflect the potential water quality impact to the receiving water, with more monitoring allocated to situations where the potential impact (in terms of both probability and magnitude) is higher and less monitoring to situations with lower potential impact or where monitoring is not likely to provide useful information.

The monitoring program objectives include improving NDOT's ability to:

- Identify pollutants typically discharged from NDOT roads and facilities.
- Identify sources of stormwater pollutants.

- Estimate the pollutant loading and the water quality impacts associated with discharges from the NDOT MS4.
- Assess the effectiveness and adequacy of control measures implemented throughout the state.
- Identify and prioritize those portions of the MS4 that have a higher potential to contribute to a surface water impairment.

# STORMWATER MONITORING PLAN

## Stormwater Monitoring Program Development

### NDOT Prioritization Schemes

NDOT Stormwater Division has developed prioritization schemes for NDOT assets, such as roads and maintenance facilities, based on their potential impact on water quality. The prioritization schemes will be used in combination with GIS to systematically and consistently prioritize monitoring site locations. NDOT Stormwater Division will continue to use this approach to select future monitoring sites. Based on the monitoring data, NDOT will assess the chemical, physical, and biological impacts to receiving waters resulting from stormwater discharges from NDOT's roads and facilities.

### NDOT Stormwater Monitoring Quality Assurance Program Plan

NDOT Stormwater Division is working to further refine its Quality Assurance Program Plan (QAPrP) for stormwater monitoring. The QAPrP will describe the quality assurance and quality control (QA/QC) procedures for field activities and laboratory analyses associated with stormwater monitoring conducted by NDOT Stormwater Division. The primary goal of this QAPrP is to assure the quality and integrity of monitoring efforts, the representativeness of the results, the precision and accuracy of the analyses, the completeness of the data, and the delivery of defensible products and decisions. Standard Operating Procedures have been finalized for field activities such as Automated Water Quality Sampling Stations, Continuous Water Quality Monitoring Stations, Collecting Illicit Discharge Field Measurements and Grab Samples, Installing Monitoring Wells and Obtaining Pressure Transducer Field Data, Stormwater Sample Collection with Nalgene 1100 Samplers, and Collecting Stormwater Field Measurements and Grab Samples.

## Receiving Water Characterization Monitoring

### Clear Creek Annual Monitoring Program

Clear Creek is a small stream that drains the eastern Sierra Nevada near Lake Tahoe, flows roughly parallel to US-50 and discharges to the Carson River near Carson City, Nevada. The headwaters of Clear Creek are forested and undeveloped above US-50. The

headwaters are fed by snowmelt and springs in a relatively undisturbed area of the Humboldt-Toiyabe National Forest.

In a jointly funded agreement, NDOT partnered with the United States Geological Survey (USGS), Water Resources Discipline (WRD) to monitor Clear Creek from 2004 through June 2017. The monitoring objective was to examine the sediment transport characteristics and efficacies of erosion control efforts within the watershed on sediment loading and general water quality in Clear Creek. NDOT has implemented many erosion control projects throughout the Clear Creek watershed in an effort to reduce the impacts of stormwater discharge from NDOT's right-of-way into Clear Creek.

A new agreement is currently being negotiated to continue data collection from FY 2018 to FY 2020. The scope of the new agreement is not yet known, but will serve to continue past efforts while focusing more on the efficacies of NDOT's erosion control efforts within the watershed. It is anticipated that the new agreement will be finalized in final quarter of 2017.

Clear Creek is not currently listed on Nevada's 2014 303(d) List of Impaired Waters. In the past, the upstream reach (NV08-CR-17-A_00 – From its origin to gaging station number 103105, located in the NE 1/4 of the NE 1/4 of section 1, T. 14 N., R. 19 E., M.D.B. & M., except for the length of the creek within the exterior borders of the Washoe Indian Reservation) has been listed for pH and zinc. In addition, the downstream reach (From to gaging station number 103105, located in the NE 1/4 of the NE 1/4 of section 1, T. 14 N., R. 19 E., M.D.B. & M. to the Carson River, except for the length of the creek within the exterior borders of the Washoe Indian Reservation) has been listed in the past for dissolved oxygen, *Escherichia coli*, fecal coliform, iron, water temperature, and zinc. The USGS, WRD has conducted water quality monitoring efforts at three locations within the Clear Creek watershed upstream of US-395. Site 1 is an un-gaged location within the headwater area of the upper drainage basin upstream of US-50 which is representative of undeveloped, reference conditions. Site 2 is located at a USGS streamflow gage and represents the mid-drainage basin area which includes some low-density residential areas. Site 2 has been monitored to evaluate any changes in water-chemistry characteristics downstream of continued development. Streamflow data from the USGS gaging station at this site was used to compute daily streamflow. Site 3 represents the lower drainage basin area, which includes more urbanization. Construction of large commercial buildings and parking lots adjacent to and near Clear Creek's lower reaches also may be affecting stream water quality and sediment yield.

***Lower Clear Creek Continuous Real-Time Monitoring***

NDOT Stormwater Division installed a continuous real-time water quality monitoring station co-located with Site 2 of the USGS study in May 2017. The coordinates for this

station are 39.1134861°, -119.7981°. This reach of Clear Creek (NV08-CR-17-A_00 – from its origin to gaging station number 103105, located in the NE 1/4 of the NE 1/4 of section 1, T. 14 N., R. 19 E., M.D.B. & M., except for the length of the creek within the exterior borders of the Washoe Indian Reservation) is not currently listed on Nevada's 2014 303(d) List of Impaired Waters. However, NV08-CR-17-A_00 has been listed in the past for pH and zinc.

The following continuous data is collected at this location:

- precipitation
- wind speed and direction
- air temperature
- humidity
- discharge
- gage height
- water temperature
- specific conductance
- pH
- turbidity

Meteorological data is collected at the Spooner/Carson Road Weather Information System (RWIS) station approximately 2.5 miles from this Clear Creek monitoring station. The Spooner/Carson RWIS station better represents weather in the Clear Creek watershed than this Clear Creek monitoring station.

Discharge and gage height data is collected at USGS gaging station 10310500 located adjacent to the Clear Creek monitoring station.

Data from the Clear Creek continuous real-time monitoring site can be viewed with the NDOT Stormwater Data Management System: https://ndot-stormwater.dri.edu/.

***Upper Clear Creek Continuous Monitoring***

NDOT Stormwater Division will install a continuous monitoring station on upper Clear Creek in FY18. This station will be located on USFS land downstream of US-50 and upstream of the Clear Creek Tahoe golf course and surrounding development. The coordinates for this station are 39.111978°, -119.866574°. There is minimal development in the Clear Creek watershed upstream of this monitoring station except for US-50 and the Spooner East Maintenance Yard. NDOT is scheduled to begin erosion mitigation work from the Golf Course Drive interchange to Spooner Summit in 2018. This work will include the construction of multiple storm drains, drop inlets, trench drains, slope flattening, grading, concrete curb and gutters, and drainage channel work. Therefore, this

monitoring station will collect baseline data prior to the implementation of the erosion mitigation project. The following continuous data is collected at this location:

- precipitation
- wind speed and direction
- air temperature
- humidity
- water temperature
- specific conductance
- turbidity

Meteorological data is collected at the Spooner/Carson Road Weather Information System (RWIS) station approximately 1.2 miles from this Clear Creek monitoring station. The Spooner/Carson RWIS station better represents weather in the Clear Creek watershed than this Clear Creek monitoring station.

NDOT Stormwater Division may outfit this continuous monitoring with telemetry and transmit the data to the NDOT Stormwater Data Management System.

In addition, NDOT is partnering with NDEP to conduct annual bioassessments of Clear Creek near the upper Clear Creek continuous monitoring station for the foreseeable future. The first bioassessment was conducted on July 12, 2017. This bioassessment data will represent baseline conditions prior to the implementation of erosion mitigation work from the Golf Course Drive interchange to Spooner Summit in 2018. The plan is to bioassess this site again during the 2018 index period which is generally mid-May through mid-September.

**Las Vegas Wash**

The Las Vegas Valley is the Large MS4 in southern Nevada. After consulting with local stakeholders, NDOT installed a monitoring station on the Las Vegas Wash at LW11.5 in May 2017. The coordinates for this station are 36.139759°, -115.043169°. This monitoring station is co-located with the Clark County Regional Flood Control District's upstream wet weather monitoring station. The Clark County Regional Flood Control District collects water quality samples at this location during stormwater runoff events using a Teledyne ISCO 6712 full-size portable sampler. This monitoring station provides information on an area with Nevada's largest urban population. LW11.5 is located upstream of the waste water discharges. Therefore, LW11.5 only has three flow inputs: urban runoff, shallow groundwater, and storm flows. This reach of the Las Vegas Wash (NV13CL-45_00 – Las Vegas Wash above Treatment Plants) was initially placed on Nevada's 303(d) List of Impaired Waters for Total Dissolved Solids (TDS), boron, and selenium during the 2008-2010 reporting cycle.

The following continuous data is collected at this location:

- precipitation
- air temperature
- humidity
- discharge
- gage height
- water temperature
- specific conductance
- turbidity

Discharge, gage height, and precipitation data is collected at USGS gaging station 094196783 located approximately 0.2 miles upstream of the Las Vegas Wash monitoring station.

Data from the Las Vegas Wash continuous real-time monitoring station can be viewed with the NDOT Stormwater Data Management System: https://ndot-stormwater.dri.edu/.

**Truckee River**

NDOT is partnering with NDEP to conduct annual bioassessments of the Truckee River near the White Fir Street bridge in Reno for the foreseeable future. The first bioassessment was scheduled to be conducted during the week of July 10, 2017; however, flow in the Truckee River was too high to safely conduct a bioassessment. This bioassessment would have represented baseline conditions prior to the installation of stormwater BMPs along I-80 from the California/Nevada state line to Keystone Avenue. The plan is to bioassess this site during the 2018 index period which is generally mid-May through mid-September.

## Best Management Practices (BMP) Assessment

The monitoring of site specific BMPs will provide NDOT with an opportunity to assess the effectiveness of stormwater pollutant reduction measures for different elements of NDOT's operations, including post-construction, regular roadway use, and maintenance activities. It is anticipated that monitoring results will be used to help support operational and maintenance based decisions made by NDOT and to improve and revise the SWMP as needed.

**Post-Construction BMP Assessment Using Unmanned Aerial Vehicles**

NDOT will continue to conduct annual inspections of five stormwater basins using Unmanned Aerial Vehicles (UAVs). NDOT will record the condition of inlet and outlet structures, side slopes, and the basin floor to determine the level of erosion, sediment build up, or amount of debris in the basin. NDOT will 1) collect imaging and 3-D terrain modeling data to demonstrate the condition of the basin and 2) submit a report to EPA and NDEP, no later than August 31, 2018, evaluating the usefulness of UAVs in conducting inspections of post-construction BMPs.

1. I-580/US 395A Detention Basin in Washoe Valley. NDOT Basin ID# BAS9. 39.3077, -119.8249. The basin has an area of 10,111 square meters and receives stormwater runoff from I-580 and US 395A. This basin was selected to monitor sediment deposition and slope stability. Slopes on the eastern side of the basin were observed as exhibiting erosion due to sheet flow and perhaps wind caused wave action when the basin is at capacity.

2. I-580 Detention Basin at Browns Creek. NDOT Basin ID# BAS7. 39.3419, -119.7988. The basin has an area of 1,455 square meters and receives stormwater runoff from I-580. This basin was selected to monitor sediment deposition and slope stability.

3. I-580/SR 431 Detention Basin. NDOT Basin ID# BAS14. 39.3960, -119.7566. The basin has an area of 6,669 square meters and receives stormwater runoff from I-580 and SR 431. This basin was selected to monitor sediment deposition and slope stability.

4. Clear Creek Upper Detention Basin near US 50/Golf Course Drive Interchange. NDOT Basin ID# BAS1. 39.1171, -119.8463. The basin has an area of 1,468 square meters and receives stormwater runoff from US 50. This basin was selected to monitor sediment deposition and slope stability and add to the monitoring program in the Clear Creek watershed.

5. Tudor Lane Detention Basin on Kingsbury Grade. NDOT Basin ID# BDO39-1-1. 38.9701, -119.9149. The basin has an area of 174 square meters and receives stormwater runoff from approximately 2,153 square meters of impervious area (SR 207) and also receives input from outside NDOT's right-of-way. The basin was selected to monitor sediment deposition and slope stability.

To enhance the UAV monitoring project, NDOT has installed monitoring wells instrumented with pressure transducers in the five stormwater basins to determine the

volume of water captured by the basins and how long it takes for the basins to empty.[1] NDOT Stormwater Division is also monitoring representative meteorological stations to collect precipitation and barometric pressure data. NDOT Stormwater Division added a tipping bucket precipitation gauge to the Browns Creek Road Weather Information System (RWIS) station as part of this study. NDOT Stormwater Division also installed a meteorological station that is co-located with the Spooner/Carson RWIS station. Comparing precipitation volumes to runoff volumes will help NDOT understand the hydrology of the detention basins. Precipitation data is needed to characterize conditions during the course of the monitoring study, help interpret data results, and to make informed decisions about how sediment deposition is related to precipitation totals.

These monitoring efforts will be useful in the development of maintenance intervals for these stormwater basins as well as helping NDOT to understand the amount of sediment in stormwater runoff.

**Lake Tahoe Stormwater Media Filtration Device Monitoring**

See the Lake Tahoe Basin section for more information on this project.

**Reno Yard Treatment Vault Monitoring**

Two treatment vaults at the Reno-Sparks Maintenance Facility will be monitored to better quantify runoff pollutant concentrations and pollutant loading from the maintenance yard as well as BMP effectiveness. The inflow and outflow from the northern Sand Oil Separator (NDOT ID TWANDOTYARD-0-1) and the Contech CDS Treatment Vault (NDOT ID TWANDOTYARD-0-4) will be monitored. Monitoring results will inform the selection and design of future stormwater BMPs. Characterization of the constituents transported in stormwater from this maintenance facility may be used by NDOT in the development of stormwater management plans for similar maintenance yard facilities throughout the State to improve stormwater quality.

This maintenance yard is considered a Major Facility and is located at 310 Galletti Way, Sparks, NV. The surrounding land use is industrial and commercial.

The catchment area of the Sand Oil Separator is 2.3 acres. This catchment area is representative of expected loading from the following pollutant sources: maintenance vehicle parking lots, passenger vehicle parking lots, equipment storage areas, fueling

[1] In addition, NDOT Stormwater Division installed barometric pressure loggers at the I-580/SR 431 Detention Basin in South Reno and the Clear Creek Upper Detention Basin near US 50/Golf Course Drive Interchange. It is necessary to compensate for atmospheric pressure fluctuations in order to obtain the most accurate water level change data. One barometric pressure logger can be used to compensate all pressure transducers in a 20 mile radius and/or with every 1,000 feet change in elevation. Therefore, these two barometric pressure loggers sufficiently cover all five pressure transducer locations.

areas, waste storage areas, and maintenance yard buildings. The total impervious surface of the catchment is 100 percent.

The catchment area of the Contech CDS Vault is 5.96 acres. This catchment area is representative of expected loading from the following pollutant sources: maintenance vehicle parking lots, equipment storage areas, waste storage areas, and maintenance yard buildings. The total impervious surface of the catchment is 100 percent.

The Truckee River from Idlewild to East McCarran Blvd (NV06-TR-03_00) is the reach of the receiving water. The Truckee River from Idlewild to East McCarran Blvd is on the current 303(d)d List of Impaired Waters for Temperature.

The objective of this monitoring project is to characterize wet weather stormwater runoff conditions from the Reno-Sparks Maintenance Facility and test the effectiveness of the existing Sand Oil Separator and Contech CDS Vault.

Data from this monitoring effort will be used to:

- Provide an estimate of annual cumulative pollutant loading from the Reno-Sparks Maintenance Facility,
- Estimate event mean concentrations and pollutants in discharges to the Sand Oil Separator and Contech CDS Vault respectively,
- Determine effectiveness of the Sand Oil Separator and Contech CDS Vault in removing stormwater pollutants,
- Assess whether stormwater runoff from the Reno-Sparks Maintenance Facility requires additional treatment.

Monitoring will consist of laboratory analysis of stormwater samples. In the field, automated samples will be supplemented with grab samples when feasible.

Stormwater samples will be analyzed for total dissolved solids (TDS), total suspended solids (TSS), turbidity, conductivity, total phosphorus (Total-P), ortho-phosphate (Ortho-P), and total nitrogen (Total-N) at a local, State of Nevada certified laboratory. Total Petroleum Hydrocarbons (TPH) will be collected and analyzed via grab samples only.

Sampling events will be based on established criteria for storm events. NDOT has developed a sampling and analysis plan (SAP) for this project, where details for sampling methods and sample event criteria are outlined.

## Truckee Meadows Storm Water Permit Coordinating Committee Monitoring

### Ambient and Storm Event Monitoring

NDOT will continue to partner with the Truckee Meadows Storm Water Permit Coordinating Committee (TMSWPCC) and utilize the services of Balance Hydrologics, Inc. (Balance) to implement the ambient and storm event monitoring described in the 2015 Stormwater Sampling and Analysis Plan (SAP) for the Truckee Meadows Watershed. Due to the co-mingling of stormwater runoff between NDOT and the municipalities comprising the TMSWPCC, NDOT has a vested interest in discerning the quality of stormwater runoff that discharges to waterbodies (Truckee River and tributaries) in this area. Since 2003, storm event water quality samples have been collected as part of the Truckee Meadows Regional Storm Water Quality Management Program.

The program maintains two different sampling activities: 1) semi-annual scheduled ambient or baseflow sampling of tributaries, and 2) unscheduled storm event sampling of tributaries and urban outfalls. Ambient and storm event monitoring consists of both field and laboratory measurements. In the field, water temperature, dissolved oxygen (DO), pH, specific conductance (SC), turbidity, and flow rate are measured or recorded. Water samples are analyzed for total dissolved solids (TDS), total suspended solids (TSS), total phosphorus (Total-P), ortho-phosphate (Ortho-P), and total nitrogen (Total-N) at a local, State of Nevada certified laboratory. *Escherichia coli* and nitrate ($NO_3$) are collected and analyzed at select stations. To better quantify constituent loading under this program, two tributaries and four urban outfall monitoring stations have been instrumented with automated samplers. Automated samplers are paired with an existing streamflow gaging station or operated with area-velocity modules to facilitate quantification of streamflow/discharge and constituent loading over the course of the storm. Ambient and storm event monitoring will occur on the following sites located on tributaries of the Truckee River:

- Chalk Creek at Chalk Bluff
- Lower Alum Creek at Truckee River
- North Truckee Drain at Orr Ditch
- North Truckee Drain at Big Fish (Automated)
- Lower Thomas Creek at South Meadows Parkway
- Lower Whites Creek at Old Virginia Highway
- Steamboat Creek at Rhodes Road
- Steamboat Creek at the Narrows
- Steamboat Creek at Clean Water Way (Automated)
- Boyton Slough

- Yori Drain (Automated)

Balance will collect samples representing ambient or baseflow conditions at designated tributary sampling stations twice annually: once in the summer and once in the winter. Ambient samples collected at North Truckee Drain at Big Fish Drive, Steamboat Creek at Clean Water Way, and Yori Drain will include automated, hourly sampling and will be composited into 4, 6-hour periods to better characterize baseflow loading to the Truckee River from these three major tributaries. Balance differentiates between winter and summer baseflow due to the influence of irrigation returns during the summer season.

In addition, storm event monitoring will occur at the following urban outfalls:

- Arlington (Automated/Telemetry)
- Fisherman's Park II (Automated)
- Oxbow Nature Park (Automated)
- Mary Wahl Ditch (Automated)

Balance will produce the Truckee Meadows Storm Water Monitoring 2017 Annual Report. The draft report will be submitted in November 2017 and the final report will be submitted in December 2017.

The partnership in this monitoring effort and results from this study will allow NDOT to continue to meet stormwater quality monitoring requirements and provide information on water quality as it is co-mingled amongst multiple jurisdictions as we all attempt to achieve similar stormwater goals.

**Watershed Assessment Program**

NDOT will continue to partner with the Truckee Meadows Storm Water Permit Coordinating Committee (TMSWPCC) and utilize the services of CDM Smith Engineering (CDM) to analyze tributaries to the Truckee River in a Watershed Assessment Program. Due to the co-mingling of stormwater runoff between NDOT and the municipalities comprising the TMSWPCC, NDOT has a vested interest in discerning the impacts of stormwater runoff to tributary watersheds in this area. Detailed Truckee River tributary assessments were first performed in 2002 to support development of a Watershed Management and Protection Plan, which was prepared jointly by the Washoe County Department of Water Resources, the University of Nevada Cooperative Extension, and the Washoe-Storey Conservation District. The initial watershed assessments provided a broad range of valuable information, and it was determined that they should be performed annually to evaluate impacts from development and track trends in stream condition and overall stream health. Subsequently, tributary assessments were performed annually from 2005 to 2012 under direction of the TMSWPCC, but did not occur during 2013 or 2014 due to budgetary constraints. Tributary assessments were

again performed in 2015 and 2016. The results from the 13 creek reaches assessed in 2016 provide a snapshot of overall stream health within the Truckee Meadows watershed. Results are generally typical of stream channels impacted by urbanized watersheds with channel incision, disconnected floodplains, bank erosion, and invasive/noxious weeds observed throughout the project area. These conditions are partially attributed to hydromodification throughout the watershed resulting in higher peak flows, greater flow volumes, and more frequent high-flow events. Stream degradation may also be attributed, or exacerbated by, natural causes such as wildfires, drought, and climate change. Results of the 2016 study can be found in the Watershed Assessment for Tributaries to the Truckee River – 2016 Final Report.

The Watershed Assessment Program will continue in fiscal year 2018 and 14 reaches will be assessed:

- Lower Sunrise Creek
- Lower Dog Creek
- Lower and Middle Somersett Creek
- Lower, Middle and Upper Mogul Creek
- Middle Alum Creek
- Lower Roberts Creek
- Upper Galena Creek
- Lower, Middle, and Upper Steamboat Creek
- Lower Browns Creek

In addition, 13 Points of Interest (POIs) from the 2015 and 2016 watershed assessments will be visited in fiscal year 2018 for a brief evaluation of changes since their last assessment:

- Middle Chalk Creek – 1 POI
- Upper Peavine Creek – 4 POIs
- Middle North Evans Creek – 2 POIs
- Lower Alum Creek – 1 POI
- Middle South Evans Creek – 2 POIs
- Middle Thomas Creek – 1 POI
- Lower Galena Creek – 1 POI
- Middle Galena Creek – 1 POI

POIs are locations that were rated as having severe erosion or deposition problems, and are limited to reaches that were designated as Functional-at-Risk. Additional evaluations of these locations will provide information on impacts of the record precipitation that occurred during the winter of 2016-17. Recommendations for corrective actions will be

provided for POIs, as appropriate, with a goal of restoring Proper Functioning Condition within the reach.

Tributary assessments include field data collection including:

- Photographs
- Observations at points of interest
- Proper Functioning Condition Assessment
- Determination of stream "health" trends
- Invasive species identification, location, and extent
- Mapping storm drain outfalls
- Documentation of problem areas
    - Headcuts larger than 1 foot
    - Active bank erosion
    - Damage to riparian areas
    - Scour at culvert outfalls
    - Sediment deposition

All photos, observation point descriptions, and locations of specific problems areas are provided in a GIS database. Additionally, the fiscal year 2018 watershed assessment will include a single Google KMZ file which includes the same GIS data described above, as well as geo-tagged assessment photographs.

The ongoing Watershed Assessment Program will assist local jurisdiction planners and NDOT design engineers in determining the best use for limited resources. This study is planned for a six month duration and will begin in the fall of 2017, with a final report expected February 2018.

## Lake Tahoe Basin Monitoring

### Lake Tahoe Stormwater Media Filtration Device Monitoring

On August 16, 2011, the United States Environmental Protection Agency approved the Nevada Division of Environmental Protection's Lake Tahoe Total Maximum Daily Load (TMDL). The ultimate goal of this TMDL is to improve deep-water clarity in Lake Tahoe. This TMDL identifies three pollutants that are responsible for the deep-water clarity impairment of Lake Tahoe:

- Fine sediment particles (particles less than 16 micrometers in diameter);
- Nitrogen; and
- Phosphorus

The TMDL Implementation Plan identifies NDOT as a responsible party that will be required to implement controls to reduce the amount of pollutants in stormwater discharge that affect deep-water clarity in Lake Tahoe. The Lake Tahoe TMDL identifies fine sediment particles as the most dominant pollutant contributing to the impairment of Lake Tahoe's deep-water clarity, accounting for roughly two thirds of the lake's impairment.

Removing fine sediment particles from stormwater runoff is particularly difficult using standard BMPs, such as detention basins. Thus, during the summer of 2012, NDOT installed one Contech Media Filtration System (MFS) and one Contech Jellyfish in order to reduce fine sediment particles in stormwater runoff from SR-431. In addition, these media filtration stormwater treatment vaults were installed in a side-by-side configuration to receive equivalent highway stormwater runoff in order to evaluate the fine sediment particle removal performance efficiency and the cost-effectiveness of each media filtration stormwater treatment vault.

NDOT, with the assistance of the Desert Research Institute (DRI) and the Tahoe Resource Conservation District (TRCD) began monitoring efforts to evaluate the effectiveness of these media filtration stormwater treatment vaults in October 2012. The site is a part of the Lake Tahoe Implementers Monitoring Program described in the Lake Tahoe Implementers Monitoring Program section. The monitoring efforts at this site are expected to continue indefinitely. This monitoring has demonstrated that both types of treatment vaults result in consistent, though variable, removal of total suspended solids (TSS), fine sediment particles, total phosphorus, and to some extent total nitrogen.

The continued monitoring will help NDOT assess the effectiveness of the media filtration stormwater treatment vaults and will support NDOT in efforts to meet the goals of the Lake Tahoe TMDL. In addition, this monitoring will provide NDOT with useful information to determine the appropriate deployment of these devices in the future as well as associated operations and maintenance requirements. See the SR-431 section for more information on this project.

### Lake Tahoe Implementers Monitoring Program

NDOT Stormwater Division will continue to participate in the Lake Tahoe Implementers Monitoring Program. This program is a partnership between Nevada Department of Transportation; California Department of Transportation; El Dorado County, CA; Placer County, CA; Washoe County, NV; Douglas County, NV; City of South Lake Tahoe, CA; Nevada Tahoe Conservation District; and Tahoe Resource Conservation District.
This monitoring program was developed jointly by the California and Nevada implementing jurisdictions in an attempt to collectively fulfill California National Pollutant Discharge Elimination System (NPDES) Permit requirements or Nevada

Interlocal Agreement commitments. However, this monitoring plan also represents a historic first step toward implementing a comprehensive Regional Stormwater Monitoring Program (RSWMP) envisioned for the Tahoe Basin. All data will be collected in a manner consistent with RSWMP monitoring protocols so it can easily be analyzed to align with the goals and objectives presented in the multi-agency driven RSWMP Data Quality Objective Plan, Quality Assurance Project Plan, and Sample Analysis Plan. The data collected under this monitoring plan will be evaluated by the Tahoe Resource Conservation District (TRCD) and presented to the Lahontan Regional Water Quality Control Board (Water Board) and the Nevada Division of Environmental Protection (NDEP) as part of meeting annual compliance reporting needs. This data will then be further analyzed under the purview of RSWMP such that recommendations can be provided to guide future stormwater program efforts.

RSWMP documents also identify the four "types" of monitoring needed to fill scientific data gaps; implementation, effectiveness, status and trend, and model support monitoring. The work performed under this monitoring plan will contribute to data collection that will help fulfill all of these monitoring needs. The California NPDES Permits and Nevada Interlocal Agreements qualify as implementation monitoring, whereas BMP evaluations would fall under effectiveness monitoring. Long-term consistent data sets generated through permit and agreement compliance will also be useful in refining model predictions and identifying status and trends in the watershed. This monitoring effort will utilize and build upon a significant body of work performed by the California and Nevada stormwater jurisdictions, Desert Research Institute, University of California, Davis Tahoe Environmental Research Center, and Northwest Hydrologic Consultants (NHC). In addition, data collected for this work will assist in serving larger programmatic and regulatory needs and will benefit the Lake Tahoe TMDL's Adaptive Management System, the Status and Trend Monitoring and Evaluation Program at the Tahoe Regional Planning Agency (environmental indicator tracking), and even California's Surface Water Ambient Monitoring Program which reports on surface water quality around the state.

Five catchment outfall sites and four BMP effectiveness projects covering two different treatment approaches have been selected for monitoring in five locations: SR431, Incline Village, Tahoma, Rubicon, and Pasadena. Some of these locations will be used as both outfall and BMP sites. All sites were chosen because of their direct hydrologic connectivity to Lake Tahoe. Catchment outfall sites were selected based on a diversity of land uses, a range of catchment sizes, and a reasonably equitable distribution of sites among the participating jurisdictions. BMP effectiveness projects were selected because of their potential efficacy in treating stormwater runoff characteristic of the Lake Tahoe basin, the broad interest in and lack of conclusive data regarding the efficiency of the selected BMPs in reducing runoff volumes and pollutant loads, especially fine sediment

particles, and the importance of determining the maintenance required to retain effectiveness.

**Lake Tahoe Highway Road Rapid Assessment Methodology**

NDOT will continue its contract with the Nevada Tahoe Conservation District (NTCD) to conduct Road RAM on its roadways in the Lake Tahoe basin. At least four Road RAM inspections will occur during FY 2018 (see Table 1). Road RAM results are averaged throughout the year for each road class to determine the average road condition score. Road RAM results are entered into the Lake Tahoe Info Stormwater Tools database.

*Table 1: FY 2018 Road RAM Schedule*

| Observation Period When Road RAM Inspection Occurs | Number of Road RAM Inspections | % of Annual Road Condition Score Calculation |
|---|---|---|
| Fall/Winter (Oct – Jan) | 1 | 20% |
| Spring (Feb – May) | 2 | 60% |
| Summer (Jun – Sep) | 1 | 20% |

## Continuous Real Time Monitoring

This project consists of upgrades to water quality monitoring devices to provide continuous monitoring and transmit the data to a central location to be uploaded to a publicly available platform. Real-time data from continuous monitoring can be used to improve the understanding of temporal variances in hydrology and water quality and can lead to more effective resource management, including improving the design and selection of stormwater BMPs. The purpose of this project is to 1) collect continuous water quality data and make it available to the public in real-time, 2) evaluate the benefits of making this data available in real-time through an online interface, and 3) provide and evaluate the effectiveness of real-time notifications to appropriate personnel when certain monitoring data and/or equipment operational thresholds are exceeded. NDOT will evaluate the usefulness of posting the data on a publicly available website by measuring how often the webpage is visited as well as through formation of a Project Evaluation Group (PEG). NDOT will evaluate how PEG members use the data and, through the PEG, explore whether other types of data would be useful. The kickoff meeting for the PEG was held on June 5, 2017. Follow-up PEG meetings are scheduled for October 2, 2017 and February 5, 2018.

The sites were selected based on where the data will be most useful such as areas with sensitive or impaired waters and/or a large urban population. The sites are subject to

change based on field conditions and other factors that may be discovered as the project progresses. Additional sites may be added if resources allow.

**SR-431**

The SR-431 monitoring site is located on State Route 431 (SR-431) in Washoe County above Incline Village. This continuous real-time monitoring station is at the same location as the site being monitored by NDOT with the assistance of the Tahoe Resource Conservation District (TRCD) (see the Lake Tahoe Stormwater Media Filtration Device Monitoring section for more information on water quality monitoring efforts at this site). This site is also part of the Lake Tahoe Implementers Monitoring Program. The coordinates for the equipment box for this station are 39.274201, -119.946407. The catchment outfall discharges directly into a perennial stream called Deer Creek which connects with Third Creek and discharges into Lake Tahoe, giving this site the distinction of being connected to the lake despite being 2.5 miles from it. Third Creek, East and West Forks and Third Creek (NV06-TB-12_00 – The East Fork from State Highway 431 to the West Fork (Rosewood Creek), the West Fork (Rosewood Creek) from its origin to the East Fork, and Third Creek from the confluence of the East and West Forks to Lake Tahoe) is listed on Nevada's 2014 303(d) List of Impaired Waters for pH and Total Phosphorus. NV06-TB-12_00 has also been listed in the past for dissolved oxygen and zinc. Lake Tahoe (NV06-TB-08_00 – The entire lake (Nevada Portion only)) has an approved TMDL for: Clarity, Dissolved Oxygen, Total Soluble Inorganic Nitrogen, Plankton Count, and Soluble Phosphorus.

Monitoring performed at the SR-431 site can be used for evaluating and comparing the effectiveness of two adjacent stormwater treatment vaults containing different cartridge filters, a Contech MFS vault and a Contech Jellyfish vault. There are four monitoring stations at SR-431; the inflow and outflow to the Contech MFS vault, and the inflow and outflow to the Contech Jellyfish vault. Though located in a rural area with moderate highway traffic density, the SR-431 site isolates runoff from the highway and will also provide characterization of pollutants that specifically can be found in highway runoff for the area.

Data from the SR-431 real-time monitoring site can be viewed with the NDOT Stormwater Data Management System: https://ndot-stormwater.dri.edu/.

**Lakeshore**

The Lakeshore monitoring site is located in Incline Village adjacent to Lakeshore Boulevard near Third Creek. This site was installed prior to the commencement of water year 2017. This site provides outfall characterization for an urban watershed that drains to Third Creek, a tributary of Lake Tahoe. This reach of Third Creek is on Nevada's 2014 303(d) List for pH and total phosphorus. This reach has also been listed in the past for

dissolved oxygen and zinc. Lake Tahoe is an impaired water with TMDLs for: clarity, dissolved oxygen, plankton count, soluble phosphorus, and total soluble inorganic nitrogen.

The 97.8 acre catchment drains a relatively steep area of Incline Village with dominant urban land-uses consisting of higher density development including multi-family residential and commercial properties and a relatively large proportion of primary roads. Approximately forty-one percent of the catchment area is impervious and there is a lack of any intervening natural dispersion and infiltration areas. The monitoring station is located in the ditch that runs parallel to Lakeshore Boulevard shortly before it discharges into Third Creek. Improvements to the ditch are set to begin in 2017 and may include small basins to slow the flow rate and encourage infiltration and a rock-lining. Monitoring at the station began in October 2016.

The following continuous data is collected at this location:

- precipitation
- air temperature
- humidity
- flow rate
- water temperature
- turbidity

Meteorological data is collected on the Sierra Nevada College campus approximately 0.4 miles from the Incline Village monitoring station and is representative of the overall catchment. The meteorological station is installed on the roof of the Tahoe Center for Environmental Sciences building.

Data from the Lakeshore real-time monitoring site can be viewed with the NDOT Stormwater Data Management System: https://ndot-stormwater.dri.edu/.

**Las Vegas Wash above Sloan Channel (LW11.5)**

See the Las Vegas Wash section for more information on this project.

**Clear Creek at USGS Gaging Station #10310500**

See the Lower Clear Creek Continuous Real-Time Monitoring section for more information on this project.

## Maintenance Facility Monitoring

### Las Vegas – North Station

A stormwater monitoring site has been selected at the Las Vegas – North Station to better quantify runoff pollutant concentrations from maintenance yards. Monitoring results will inform the selection and design of stormwater BMPs. Characterization of the constituents transported in stormwater from this maintenance facility may be used by NDOT in the development of stormwater management plans for similar maintenance yard facilities throughout the State to improve stormwater quality.

The objective of this monitoring project is to:

- Characterize first flush pollutant loads from the sampled catchment of the North Las Vegas yard,
- Assess whether additional monitoring is necessary,
- Assess whether the Las Vegas – North Station requires additional best management practices.

The monitoring site is a drop inlet (DIF 138746) located in the northeast corner of the yard near the vehicle maintenance shop. Passive stormwater samplers will be hung from the inlet grate cover in a location that will most efficiently capture the incoming stormwater runoff. If necessary, a conveyance will be fabricated to direct stormwater runoff into the samplers.

The catchment area of this drop inlet is approximately 11.4 acres, and is representative of pollutant sources and expected loading from the yard. The drop inlet discharges directly to the Las Vegas Valley MS4 through PIN 260826. After flowing through 2.64 miles of reinforced concrete pipe, the runoff from the Las Vegas – North Station is discharged directly to the Las Vegas Wash above Treatment Plants (NV13-CL-45_00). The Las Vegas Wash above Treatment Plants is on the current 303(d)d List of Impaired Waters for Boron, Selenium, and Total Dissolved Solids.

Passive sampling will be implemented for collection of stormwater samples. Passive sampling is an effective method for characterizing the first flush of stormwater runoff. The first flush runoff typically contains the highest pollutant loads of a storm event.

Nalgene 1100 Storm Water Samplers will be deployed to obtain passive samples. The Nalgene Samplers are a one-time use sampler that utilizes an HDPE or Amber Glass bottle with a self-sealing lid. An HDPE and an Amber Glass bottle sampler will be installed at the same site to capture each storm event.

Sampling events will be based on established criteria for storm events. NDOT has developed a sampling and analysis plan (SAP) for this project, where details for sampling methods and sample event criteria are outlined.

Water samples collected via passive sampling will be analyzed for total dissolved solids (TDS), total suspended solids (TSS), total phosphorus (Total-P), ortho-phosphate (Ortho-P), turbidity, conductivity, total nitrogen (Total-N), and total petroleum hydrocarbons (TPH) at a local, State of Nevada certified laboratory.

**Las Vegas – South Station**

A stormwater monitoring site has been selected at the Las Vegas – South Station to better quantify runoff pollutant concentrations from maintenance yards. Monitoring results will inform the selection and design of stormwater BMPs. Characterization of the constituents transported in stormwater from this maintenance facility may be used by NDOT in the development of stormwater management plans for similar maintenance yard facilities throughout the State to improve stormwater quality.

The objectives of this monitoring project are to:

- Characterize first flush pollutant loads generated from the sampled catchment of the South Las Vegas Yard,
- Assess whether additional monitoring is necessary,
- Assess whether the South Las Vegas Yard requires additional best management practices.

The monitoring site is in a valley gutter located in the southeast corner of the yard near the wash pad. A flume will need to be installed in the valley gutter to direct flow to the samplers. A sheet metal flume painted with rubberized paint (Plasti Dip, Plasti Kote or equivalent) and supported by a wooden 2x4 frame will be fabricated on site to capture and convey stormwater runoff into the samplers while minimizing modifications to the existing valley gutter. The catchment area of the gutter is 3.25 acres. Runoff from this site eventually discharges to the Flamingo Wash. The Flamingo Wash (NV13-CL-39_00) is on the current 303(d)d List of Impaired Waters for Boron and Selenium.

Passive sampling will be implemented for collection of stormwater samples. Passive sampling is an effective method for characterizing the first flush of stormwater runoff. The first flush runoff typically contains the highest pollutant loads of a storm event.

Nalgene 1100 Storm Water Samplers will be deployed to obtain passive samples. The Nalgene Samplers are a one-time use sampler that utilizes an HDPE or Amber Glass bottle with a self-sealing lid. An HDPE and an Amber Glass bottle sampler will be installed at the same site to capture each storm event.

Sampling events will be based on established criteria for storm events. NDOT has developed a sampling and analysis plan (SAP) for this project, where details for sampling methods and sample event criteria are outlined.

Water samples collected via passive sampling will be analyzed for total dissolved solids (TDS), total suspended solids (TSS), total phosphorus (Total-P), ortho-phosphate (Ortho-P), turbidity, conductivity, total nitrogen (Total-N), and total petroleum hydrocarbons (TPH) at a local, State of Nevada certified laboratory.

#### Reno Yard

See the Reno Yard Treatment Vault Monitoring section for more information on this project.

## Runoff Characterization Monitoring

The following sites have been selected for the development of sampling analysis plans (SAP). These plans will outline stormwater sampling efforts for each project for the purpose of characterizing pollutants in roadway stormwater runoff. Sample collection methods may include grab sampling, passive sampling, continuous monitoring, or autosampler deployment.

#### State Route 612 (Nellis Boulevard)

District I
FID_FiveYearPlan = 5297
PIN = 74072
Project Name = SR 612, Nellis Blvd., fm. SR593 Tropicana Ave. to SR 604, Las Vegas Blvd.
MP CL 37.880 to 47.307
Project Scope = 3.75" Mill, 3" PBS with OG. ADA Ramps and Utilities
Description = Coldmill, Plantmix Bituminous Surface with Open Grade and ADA Ramps
Receiving Water = Las Vegas Wash above Treatment Plants
Construction Project Start = 2019

This monitoring project will characterize baseline conditions prior to the repaving of State Route 612 in 2019. Monitoring will continue after State Rouse 612 is repaved to compare the differences in stormwater quality before and after this construction project. These efforts will help NDOT to understand the effect that pavement condition and

pavement type have on stormwater quality. In addition, this monitoring will help assess whether this section of State Route 612 requires additional best management practices.

**State Route 659 (McCarran Boulevard)**
PIN = 74043
FID_FiveYearPlan = 5349
Project Name = SR 659, McCarran Blvd., fm. I 580 to SR 647, 4th St. MP WA 22.873 TO 22.98 and 0.000 to 6.272
Project Scope = Mill and Overlay 3.75" with ADA Improvements
Receiving Water = Alum Creek
Construction Project Start = 2019

This monitoring project will characterize baseline conditions prior to repaving of State Route 659 in 2019. Monitoring will continue after State Rouse 659 is repaved to compare the differences in stormwater quality before and after this construction project. These efforts will help NDOT to understand the effect that pavement condition and pavement type have on stormwater quality. In addition, this monitoring will help assess whether this section of State Route 659 requires additional best management practices.

## Discharges to Water Quality Impaired Waters – Connectivity Field Assessments

NDOT will continue evaluations to determine if stormwater discharges from NDOT's MS4 contribute directly or indirectly to the listing of a waterbody on the State's current 303(d) list, and whether stormwater from NDOT's MS4 discharges to a waterbody for which a Nevada approved total maximum daily load (TMDL) has been developed. In-depth desktop evaluation was limited to waterbodies that were determined to receive stormwater discharge from NDOT's MS4. NDOT's in-depth desktop evaluations considered factors such as surrounding land use, location of water quality monitoring sites used for 303(d) assessment, size of the waterbody, and connectivity between NDOT's MS4 and the receiving water. Initial assessments utilizing GIS have been completed. In many instances, the in-depth desktop evaluation was unable to definitively determine the connectivity between NDOT's MS4 and the receiving water. As such, a subset of the assessed waterbodies has been identified as requiring additional in-the-field evaluations in order to accurately determine connectivity of the NDOT MS4 and the waterbodies in question. NDOT Stormwater GIS has developed an application (Hydro Connectivity) for use in Collector for ArcGIS. This application will be utilized in the field on an iPad or other hand-held devices. These field assessments will ultimately help NDOT determine additional sites to focus on for stormwater quality monitoring efforts. Field assessments will begin in FY 2018.

The combination of the in-depth evaluations and future field assessments will help NDOT to decide where to focus stormwater quality monitoring efforts. During FY 2017, NDOT selected sites for future stormwater quality monitoring and started the development of Sampling and Analysis Plans. Expanded stormwater quality monitoring will be the next step in determining if stormwater discharges from NDOT's MS4 contribute directly or indirectly to the listing of a waterway on the state's current 303(d) list, and whether stormwater from NDOT's MS4 discharges to a waterbody for which an NDEP approved TMDL has been developed.

# APPENDIX G

## Stormwater Management Program Expenditures

Table G1. Summary of stormwater management program expenditures during the Reporting Period.

| Category | $ | Notes |
|---|---|---|
| Construction Inspection-Federal Projects | 8,808 | |
| Construction Inspection-State Projects | 14,478 | |
| Design-Federal Projects | 15,316 | |
| Design-State Projects | 257,882 | |
| Illicit Discharge Detection & Elimination | 41,481 | |
| Training and Education | 197,027 | |
| Maintenance Facilities | 135,750 | May include contractor work |
| Public Outreach | 55,295 | |
| Mapping/Database Development | 223,020 | |
| Industrial Facility Monitoring & Inspection | 13,462 | |
| Field Monitoring | 668,230 | Includes $24,333 for monitoring in the Clear Creek watershed |
| Administration | 1,700,824 | Includes $957 MS4 Permit Annual Fee |
| Travel | 131,931 | |
| Maintenance Facility Inspections | 31,507 | |
| Misc. Fees and Fines | 0 | |
| Permanent Erosion Control | 21,095,519 | Construction contracts |
| Temporary Pollution Control | 877,142 | Construction contracts |
| Dust Control | 1,403,183 | Construction contracts |
| Water Quality Projects-Clear Creek Watershed | 657,804 | Small projects via agreement |
| Water Quality Projects-Non Clear Creek Watershed | 426,684 | Small projects via agreement |
| Weed/Pest Control | 1,085,930 | |
| Maintenance Activities | 4,939,270 | |
| Equipment Purchases and Leases | 8,033,034 | |
| Total | 42,013,574 | |

# APPENDIX H

# Stormwater Treatment Control Summary

Table H1. Projects reviewed by the Stormwater Division's Design Section during the Reporting Period with treatment control BMPs incorporated into the design.

| Project No. | Project Status | Contract No. | BMP | No. of BMPs | Target Pollutant Removal Efficiency[1,2] | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | TSS | TN | TP | Oil & Grease |
| EA 60765 | Active | 3739 | Drop Inlets with Sump Removal | 5 | 25% | ----- | ----- | ----- |
| | | | Treatment Vault | 2 | 80% | ----- | ----- | ----- |
| EA 73475 | Design | ----- | Infiltration Basin | 4 | 80% | 65% | 75% | ----- |
| EA 73812 | Design | ----- | Infiltration Basin | 2 | 80% | 65% | 75% | ----- |
| EA 73920 | Active | 3711 | Deep Sump Drop Inlets | 64 | 25% | ----- | ----- | ----- |
| | | | Drop Inlets with 4' Sump Removal | 23 | 25% | ----- | ----- | ----- |
| | | | Infiltration Basin | 2 | 80% | 65% | 75% | ----- |
| | | | Treatment Vault | 3 | 80% | ----- | ----- | ----- |
| EA 73943 | Active | 3696 | Infiltration Basin | 1 | 80% | 65% | 75% | ----- |
| EA 73972 | Design | ----- | Sand/Oil Interceptor | 1 | 60% | ----- | ----- | 50% |
| | | | Treatment Vault | 1 | 80% | ----- | ----- | ----- |
| EA 73973 | Design | ----- | Treatment Vault | 2 | 80% | ----- | ----- | ----- |
| EA 74006 | Design | ----- | Treatment Vault | 3 | 80% | ----- | ----- | ----- |
| EA 74154 | Design | ----- | Deep Sump Drop Inlets | 7 | 25% | ----- | ----- | ----- |
| | | | Infiltration Basin | 4 | 80% | 65% | 75% | ----- |
| | | | Treatment Vault | 2 | 80% | ----- | ----- | ----- |
| EA 74207 | Design | ----- | Infiltration Basin | TBD | 80% | 65% | 75% | ----- |

[1]Estimated pollutant removal efficiencies based on industry standards

[2]TSS = total suspended solids; TN = total nitrogen; TP = total phosphorus