

# APPENDIX C

## **Storm Water Management Program**

E. Coli TMDL Compliance Plan

## BACKGROUND

A Total Maximum Daily Load (TMDL) analysis was completed by the Utah Division of Water Quality (DWQ) to address *E. coli* exceedances throughout the Jordan River watershed. A TMDL analysis determines the amount of an identified pollutant that a waterbody can receive and still support its beneficial uses and meet state water quality standards. Once the location and magnitude of exceedances, as well as all potential sources, are identified, controls are implemented to reduce pollutant loading until the waterbody is brought back into compliance with water quality standards.

The Division of Drinking Water (DWQ) 2022 Integrated Report identified 14 assessment units (AUs) in the Jordan River watershed, including portions of the main stem and tributaries, for inclusion in Utah's 2022 303(d) list of impaired waters for not meeting drinking water (1C) and infrequent primary contact recreation (2B) designated beneficial uses due to exceedances of water quality standards for *E. coli* bacteria.

*E. coli* are the most abundant coliform bacteria present in human and animal intestines, numbering up to one billion organisms per gram of feces. Their presence can be attributed primarily to fecal origin, and their presence in water can be an indication of recent contamination. Some common sources of waterborne pathogens (*E. coli*) include failing septic (onsite wastewater) systems, leaking sewer lines, grazed pastures, confined feedlots, wildlife, and dog parks (Benham, 2006). Pathogenic bacteria are washed into surface waters during rainfall or snowmelt or are deposited directly in the water. These bacteria pose a threat to human health from incidental ingestion.

Data and source analysis using multiple lines of evidence indicate that stormwater discharges are a significant contributor to the water quality impairment addressed in the Jordan River *E. coli* TMDL. EPA guidance on NPDES-regulated stormwater discharges recommends implementation of a BMP-based approach within the MS4 individual and general permit requirements as a way to demonstrate compliance with a TMDL. The permit requirements must be clear, specific and measurable (e.g., schedule for BMP implementation, frequency of practice, etc.) and support the minimum control measures identified in the permits (EPA, 2014). The following section is a summary of MS4 permit requirements resulting from this *E. coli* TMDL.

## **1.0 PUBLIC EDUCATION & OUTREACH**

### **MS4 Permit Part 3.2.2.1 and 3.2.2.1.1:**

**Requirement:** Identify potential sources of *E. coli* in the MS4 and target specific audiences that may be contributing to the *E. coli* sources. Provide and document education and outreach given to the target audiences on the impacts to water quality associated with these types of discharges and BMPs that can be implemented to reduce the discharge of *E.coli*.

**Implementation:** Taylorsville will identify potential sources of *E. coli* and prepare a map identifying each source location. An Inventory of potential sources will be prepared in the spring of 2024 with the mapping of identified sourced completed by July 1, 2024.

### **MS4 Permit Part 3.2.2.1.1**

**Requirement:** The Permittee can meet the requirements of permit part 3.2.2.1. through contribution to a collaborative program (e.g., storm water coalition) that evaluates, identifies, and targets sources, as well as, provides outreach that addresses *E. coli*.

**Implementation:** Taylorsville, as a member of the Salt Lake County Storm Water Coalition (Coalition), will collaborative as a Coalition to develop and implement an public education and outreach program for targeted audiences. This will be a priority for the 2024 Coalition. Implementation is anticipated to be a staged effort throughout the 2024 and 2025 years.

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## 2.0 INVENTORY OF SOURCE OF E. COLI WITHIN THE MS4

### **Requirement: MS4 Permit Part 3.2.2.2:**

The Permittee must maintain a written or mapped inventory of areas in the MS4 that are potential sources of *E. coli* (i.e., areas with septic systems, dense waterfowl areas, dog parks, etc.).

**Implementation:** Taylorsville will identify potential sources of *E. coli* and prepare a map identifying each source location. An Inventory of potential sources will be prepared in the spring of 2024 with the mapping of identified sourced completed by July 1, 2024.

### **Requirement: MS4 Permit Part 3.2.2.2.1.:**

The Permittee must create a plan to **prioritize** *E.coli* reduction activities to address the areas and sources identified in the inventory. The plan must include BMPs the permittee will implement over the permit term (structural and non-structural).

**Implementation:** Taylorsville will work the Coalition to develop and implement BMPs to reduce activities that will reduce potential *E. coli* pollution at prioritized sites. These may include signs, removal of potential sources and other structural and non-structural measures. The prioritization plan will be prepared by January 1, 2025 with an on-going implementation program to implemented by July 1, 2024 and expanded into 2025 and 2026 as required based on complexity of the potential pollution source.

### **Requirement: MS4 Permit Part 3.2.2.2.2.:**

The Permittee must add the inventoried areas to the priority areas identified in permit part 4.2.3.3.1. and begin inspecting the additional priority areas annually at a minimum and documenting the inspections on an inspection form.

**Implementation:** The identified priority areas will be added to the schedule for high priority inspections. A form for *E. coli* inspections will be used to document these inspections. Inspections will begin as early as July 2024. A form for *E. coli* inspections will be prepared by January 1, 2025.

## 3.0 MS4 OWNED/OPERATED FACILITIES AND OPERATION

### **Requirement: MS4 Permit Part 3.2.2.3:**

The Permittee must evaluate their written inventory of potential “high priority” permittee owned and/or operated facilities (Permit Part 4.2.6.1.) and identify sites that have potential sources of *E. coli*.

Permittees must add to their inventory any Permittee owned or operated dog parks, parks with open water, sites with septic, or properties that are known potential sources of *E. coli*.

Sites that have been identified as potential sources of *E. coli* must have BMPs (structural or non-structural) that reduce the potential of the discharge of *E. coli*.

**Implementation:** Taylorsville, in association with the Coalition, will create BMPs for high priority sites owned and operated by the City and any other known sources of potential *E. coli* pollution. The goal is that the BMPs will be prepared by July 2025.

### **Requirement: MS4 Permit Part 3.2.2.4:**

Permittees must evaluate the potential *E. coli* generating activities below to determine whether existing SOPs should target reduction of *E. coli* discharge or if additional SOPs should be developed for the reduction of *E. coli* discharge from the MS4:

- Roads, highways, and parking lots: Surface cleaning and controlling litter
- Parks and open space: Lake and lagoon maintenance
- Parks and open space: Mowing/Trimming/Planting
- Storm water collection and conveyance system: Inspection and Cleaning of Stormwater Conveyance Structures, Controlling Illicit Connections and Discharges, Controlling Illegal Dumping
- Material storage areas: Solid Waste Collection, Controlling Litter, Controlling Illegal Dumping
- Storm water collection and conveyance system: Water line Maintenance, Sanitary Sewer Maintenance, Spill/Leak/Overflow Control, Response, and Containment.

**Implementation:** Taylorsville will evaluate other sites and activities to determine what additional SOPs need to be developed and implemented to reduce *E. coli* pollution. This includes reviewing existing SOPs for current public works operations to identify any necessary changes.

## **4.0 LID CONTROLS THAT TARGET *E. COLI***

**Requirement: MS4 Permit Part 3.2.2.5:**

Permittees must promote the use of Low Impact Development (LID) controls for which *E. coli* (listed as bacteria) has a medium or high pollutant removal effectiveness, as identified in the Guide to Low Impact Development within Utah, Appendix C on the Division's website.

**Implementation:** Taylorsville will promote LID controls which reduce the potential of *E. coli* pollution by October 1, 2024. The Taylorsville Municipal Code will be reviewed to determine if changes are necessary to comply with this requirement. Identified Code changes would be adopted by July 1, 2025.

## **5.0 INCORPORATION OF *E. COLI* CRITERION IN RETROFIT RANKING PLAN**

**Requirement: MS4 Permit Part 3.2.2.6:**

Permittees must add potential *E. coli* reduction as a criterion for ranking when evaluating sites contained within the Permittees retrofit plan.

**Implementation:** Taylorsville will review their redevelopment requirements for compliance with this requirement. The belief is that the current redevelopment requirements are in compliance. This topic will be discussed with the Coalition to obtain facilitate input from all members. The Coalition discussions will be held during the 2024 meetings.



## CONSTRUCTION SITE ORDINANCE ENFORCEMENT

### 1. Pre-Application Meeting

- 1.1. A pre-application meeting will be held with the Taylorsville Engineering Department to verify the possibility and extents of development and construction.
- 1.2. An electronic folder will be created for each construction project.
- 1.3. The Engineering Department will create an entry in GIS to track land disturbance sites.
- 1.4. The Engineering Department will review each construction site with the SWPPP Review Checklist.
- 1.5. The reviewed SWPPP and checklist will be sent back to the applicant for correction.
- 1.6. The City will keep records on file in their respective electronic folders for five years or until construction is completed, whichever is longer.

### 2. Approval Process

- 2.1. Each submittal will be reviewed by the Engineering Department using the SWPPP Review Checklist found in Appendix B.
- 2.2. The reviewed SWPPP and checklist will be sent back to the applicant for correction.
- 2.3. The City will keep records on file in their respective electronic folder for five years or until construction is completed, whichever is longer.
- 2.4. The City will encourage the use of LID BMP's and green infrastructure in the site design when the opportunity exists as part of the SWPPP review.

### 3. Conduct Pre-Construction Meeting

- 3.1. The Community Development, Public Works, and Engineering Departments will conduct a preconstruction meeting which will include a review of the site design, the planned operations at the construction site, planned BMPs during the construction phase, and the planned post-construction BMPs to manage runoff created after development.
- 3.2. The preconstruction meeting will address the following:
  - 3.2.1. Sensitive areas to be protected.
  - 3.2.2. Receiving waters
  - 3.2.3. Potential sources of pollution
  - 3.2.4. Endangered species and historic preservation
  - 3.2.5. Erosion and sediment controls BMPs
  - 3.2.6. Good housekeeping BMPs
  - 3.2.7. Post-construction BMPs
  - 3.2.8. Inspection schedule: Taylorsville City's SWPPP Inspector will inspect sites identified as priority construction at least biweekly (every 2 weeks).
  - 3.2.9. SWPPP and SWPPP amendment log
  - 3.2.10. Copy of NOI as submitted to the State
  - 3.2.11. Pre-construction checklist
  - 3.2.12. Construction Storm Water Inspection Form
  - 3.2.13. City enforcement procedures and ordinances

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- 3.3. Inform property owner of enforcement provisions. Taylorsville City or contracted personnel will be allowed access to permitted site for the purpose of ensuring compliance with the City storm water ordinances.
- 3.4. Construction sites with a land disturbance greater than or equal to one acre, including projects less than one acre that are part of a larger common plan of development or sale, are required to obtain a UPDES Storm Water Permit prior to local permit approval and issuance.
- 3.5. Require submission of NOI to the State with a copy to the City.
- 3.6. The Engineering Department will document the number of pre-application meetings held with engineers, construction contractors, and land developers regarding SWPPPs

## 4. Conduct Initial Inspection

Utilize Construction Storm Water Inspection Form. The City's Engineering Department SWPPP inspector is the person with authority to implement enforcement procedures. At the time of inspection, the inspector shall introduce himself/herself to the site superintendent and review the plans on site.

- 4.1. Items to "look for" in the initial meeting superintendent include:
  - 4.1.1 One map showing the BMP's that are going to be used with details
  - 4.1.2 One map showing the area of disturbance with contour lines.
  - 4.1.3 One map showing permanent post construction BMP's.
  - 4.1.4 State of Utah UPDES NOI is posted on site
  - 4.1.5 UPDES General Construction Permit.
  - 4.1.6 Copy of approved, stamped SWPPP /Erosion and Sediment Control Plans is maintained on site.
  - 4.1.7 Inspection logs and or logbooks
  - 4.1.8 Is project causing water quality standard violations.
  - 4.1.9 Does required Stormwater Pollution Prevention Plan (SWPPP) include appropriate erosion and sediment controls and, to some extent, post construction controls?
  - 4.1.10 Is owner/operator complying with the SWPPP?
  - 4.1.11 Are self-inspections being properly performed?
  - 4.1.12 Is the owner/operator responding appropriately to the self-inspector's reports?

## 5. Items required for Inspection

The following is a list of some of the most common health and safety gear that may be used: Safety Boots, Rain Coat, Digital Camera, GPS Unit, Site Folder (Permit, Plans, etc.) Pen, I.D. Badge, Job Site Inspection Report (UPDES) Form (checklist) Hard Hat, Safety Vest

### 5.1 Monitoring Equipment

The following is a list of some equipment that may be helpful to document facts and verify compliance: Digital Camera Measuring tape or wheel Hand level

- 5.1.1. During the site inspection, it is the Storm Water Project Manager /inspector responsibility to ensure that all structural site erosion controls (BMPs) have been installed according to the approved SWPPP plans.

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- 5.1.2. At a minimum, the inspector should observe all areas of active construction. Observing equipment or materials storage, recently stabilized areas, or stockpile areas is also appropriate to evaluate the effectiveness of management practices.
  - 5.1.3. Enforcement procedures will be initiated by the SWPPP inspector and may require assistance from the Code Enforcement Officer when all efforts to gain voluntary compliance have been exhausted.
  - 5.1.4. The Code Enforcement Officer may issue a citation based on the proposed City Ordinance number.
  - 5.1.5. The SWPPP inspector will open an electronic file for each SWPPP inspection. The file will include a copy of the SWPPP Construction Storm Water Inspection Form, pictures, maps and other pertinent information gathered.
  - 5.1.6. The SWPPP inspector will pre-fill the known fields of the SWPPP Construction Storm Water Inspection Form.
  - 5.1.7. The SWPPP inspector will review the SWPPP and identify all BMPs prior to inspecting the site.
  - 5.1.8. At the time of inspection, the SWPPP inspector will introduce him/herself to the site operator and review the SWPPP template and fill in the fields of the SWPPP compliance inspection form pertaining to record keeping.
  - 5.1.9. The SWPPP Inspector will conduct a field inspection and populate the fields of the SWPPP Construction Storm Water Inspection Form that have to do with erosion, sediment and good housekeeping controls. Site conditions will be documented with pictures and narrative descriptions of deficiencies.
  - 5.1.10. Collect information by observing and asking questions to obtain new information about management practices, construction techniques or a piece of equipment
  - 5.1.11. Evaluate evidence of poor BMP maintenance, installation or practices with pictures for inclusion in the site inspector's report.
  - 5.1.12. No solutions or products shall be recommended. It is the responsibility of the site operator/responsible person to implement a workable solution to a compliance problem.
  - 5.1.13. Review data gathered and finish the written comments and corrective actions as part of the inspection form.
- 5.2. Exit Interview
- Clearly communicate expectations and consequences. If it is clear from the inspection that the owner/operator must modify the SWPPP, or modify Best management practices within an assigned period (e.g. 24 hours, 48 hours, one week, two weeks), then that finding should be communicated at the time of the exit interview. The inspector should assign the period based on factors such as how long it would reasonably take to complete such modifications and the level of risk to water quality associated with failure to make such modifications. All modifications required to the construction SWPPP will be reported to the City of Taylorsville Engineering Department. All follow

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up actions will be documented and reported and all reports and follow up action taken will be kept on file at the Taylorsville City Engineering Department.

- 5.2.1. The inspector should make clear that UPDES reserves rights to future enforcement actions. If the inspector's supervisor or enforcement coordinator determines additional enforcement actions are necessary, the Inspector *should not* reassure the owner/operator that the current situation is acceptable.

## 6. Addressing Deficiencies

Taylorsville City's SWPPP Inspector will meet with the site operator to review SWPPP Construction Storm Water Inspection Form and time frame to have deficiencies repaired:

- a. Clearly communicate expectations and consequences.
- b. Give a reasonable time frame to correct the deficiencies identified depending on the level of risk to water quality.
- c. Advise that Taylorsville City reserves the right to future enforcement actions if determined necessary.
- d. The Taylorsville City's SWPPP inspector will, based on site inspection findings, take all necessary follow-up actions (i.e. re-inspection, enforcement) to ensure compliance in accordance with the proposed City Ordinance and SOPs.
- e. Enforcement actions will be tracked and documented on a spreadsheet and GIS mapping.
- f. Have the site operator sign the SWPPP Construction Storm Water Inspection Form.
- g. Provide a printed inspection report with pictures, maps. et. al. to the site operator.
- h. Record the SWPPP Construction Storm Water Inspection Form and report into the appropriate computer database.

## 7. Routine Inspection/Timing and Frequency of Inspections

- 7.1. Site inspections shall be conducted at minimum of bi-weekly or more if needed throughout the duration of the Land Disturbance Permit activity. Inspections shall be scheduled based on project phase (i.e.: during heavy grading activity more frequent inspections are required, once interior building activity has begun less frequent inspections are required). Wet-event inspections of construction sites shall be completed within 24-hours of appreciable rainfall event.
- 7.2. The inspector shall prepare a written report summarizing inspection results. The inspection report is then provided to the Permittee, or the Permittees duly authorized representative, and to the contractor responsible for implementing stormwater controls on-site in order to correct deficiencies noted in the inspection report. Finally, the

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inspection report must be added to the site log book that is required to be maintained on-site, and be available to regulatory oversight authorities for review.

- 7.3. All information associated with site inspections shall be documented and maintained by the Taylorsville City Engineering Department. Each (over one- acre) inspection shall be recorded using a UDPEs form. Items associated with the inspection shall be noted on the form, signed by the contractor on site and by the Stormwater project manager /inspector. Copies of the UPDES Form shall be left with the contractor or site attendant and the original report sheet remains with the Inspector and kept on file at the Taylorsville City Engineering Department. Additional copy will be mailed to the Department of Environmental Quality (DEQ). Photos of the site shall be taken during the inspection. If there is nobody on site, the UPDES Form should be sent by fax or email.(if no fax is available, then by mail) to the contractor/developer office. All site reports will be kept on file at the Taylorsville City Engineering Department.

## 8. Enforcement /Legal Action/Penalties

If the request to remedy a deficiency is not taken care of within the time frame allowed by the SWPPP inspector will initiate enforcement procedures that include the following actions:

- 8.1. Notice of Violation (NOV): The City Engineer may serve a NOV for any violation of ordinance or permit. An explanation of the violation and plan for satisfactory correction and prevention must be submitted within ten (10) days of the issue of the NOV.
- 8.2. Legal action: consists of the following escalating penalties.
  - 8.2.1 First day warning of violation, without actual discharges to the City Storm Drain System, is considered Level I Violation or infraction subject to a \$0 Fine.
  - 8.2.2 Red Tag.
  - 8.2.3 Second day of violation after warning, without actual discharges to the City Storm Drain System, is considered Level I Violation or infraction subject to a \$100 Fine.
  - 8.2.4 Third day of violation after warning, without actual discharges to the City Storm Drain System, is considered Level I Violation or infraction subject to a \$300 Fine.
  - 8.2.5 If the situation is not corrected after the third day it shall be elevated to a Level II Violation and follow the procedures listed below.
  - 8.2.6 First day with illegal discharges to the City Storm Drain System is Level I Violation or infraction subject to a \$500 Fine.
  - 8.2.7 Second day with illegal discharges to the City Storm Drain System is a Level II Violation or Class C misdemeanor and shall be punishable by a fine in a sum not to exceed seven hundred fifty dollars (\$750.00), or by imprisonment for a period not longer than ninety (90) days, or by both such fine and imprisonment.
  - 8.2.8 Each additional day is an additional Class C misdemeanor until 7 days.
  - 8.2.9. After 7 days it becomes a Level III Violation or Class B Misdemeanor and shall be punishable by a fine in a sum not to exceed one thousand dollars (\$1,000.00), or by imprisonment for a period not longer than six (6) Months, or by both such fine and imprisonment.
  - 8.2.9 Each additional day is an additional Class B misdemeanor.
  - 8.2.10 When a person is convicted of a violation, any license previously issued to him by the City may be revoked by the court or by the governing body.

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- 8.3 If, as the result of the violation of any provision of this chapter, the city or any other party suffers damages, fines, incurs investigative or clean-up costs, or is required to make repairs and/or replace any materials, the cost of investigations, fines, repair or replacement shall be borne by the party in violation, in addition to any criminal fines and/or penalties.
- 8.4 Repeat offenders (3 or more level I or greater violations within 24 months) or those with unpaid fines shall be ineligible to pull a permit for a period of one year of last offence and all fines are paid.
- 8.5 If there are three violations at any level within 24 months the next violation is automatically escalated by one level

## 8.1. Other remedies:

- 8.1.1. Violations and Civil penalties can be assessed in accordance with the City Storm Water Ordinance (Section 10)
- 8.1.2. Consent Orders, Compliance Orders and Cease and Desist Orders.

## **9. Procedures for Termination: Notification by operator of a permitted site to verify the final stabilization and removal of all temporary control measures:**

Once final site inspection is completed, site matches approved plans or as-built have been approved, the Land Disturbance Permit may be terminated by the owner and or the responsible personnel. The closure process involves a post construction inspection. Once the inspection passes, the Stormwater project manager/inspector will sign the N.O.T. portion of the UPDES form, giving a copy to the owner and or responsible personnel. It will be left up to them to mail their copy of the N.O.T. to the DEQ for SWPPP termination. Taylorsville City Engineering Department will maintain a data base of all N.O.T. reports filed. Newly constructed storm water infrastructure shall be added the Taylorsville City Engineering Department GIS map city data base.

- 9.1 The SWPPP Inspector will conduct a final inspection to confirm that the site is clean, has been stabilized, all temporary BMPs have been removed, and all structural BMPs have been installed according to the approved plans.
- 9.2 The SWPPP Inspector will require submission of N.O.T. to the Taylorsville City Engineering Department and State (as appropriate).
- 9.3 The SWPPP Inspector will require contract information for those in charge of Long Term Storm Water Management on the site.
- 9.4 Final approval or occupancy Permit not issued until final items are complete, N.O.T. is received and Maintenance Agreement is signed and recorded with the Taylorsville City Engineering Department.

## **10. Post Construction Inspection**

- 10.1. The Stormwater Project Manager/inspector shall conduct final inspection to confirm that the site, including the detention pond, is stable.
- 10.2. Final inspection should include landscape inspection, in which the inspector matches tree location and variety to the approved landscape/planting plan.

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- 10.3. Detention pond should be measured to insure compliance with the approved plans (ie: size, shape, design). Emergency spillway should be installed per approved plan.
- 10.4. Geotextile material should be properly installed in drainage swales or emergency spillway per manufacturer's specifications.
- 10.5. Stormwater infrastructure should be inspected to insure that pipes are the size specified by the approved plans, all pipes and structures should be sealed and clear of sediment deposition.
- 10.6. Verify that site conditions (especially structures) match approved plans; revisions required either as-built or revised plans. All revisions shall be approved by the Plan Reviewer staff. All post construction reports shall be maintained by the Taylorsville City Engineering Department.
- 10.7. Review Post Construction SWPPP at final inspection of Construction Project
  - 10.7.1. Require completed and approved SWPPP prior to finalizing project.
  - 10.7.2. Require signed and recorded maintenance agreement prior to finalizing project, if required.
  - 10.7.3. Verify updated contact person and information for long term monitoring.
  - 10.7.4. Provide contact information to the Taylorsville City Engineering Department's Registered Storm Water Inspectors with the inspection report that they will submit each year.
  - 10.7.5. Verify this information is documented and records are maintained with the Taylorsville City Engineering Department.
  - 10.7.6. Input information in long term inspection schedule. with the Taylorsville City Engineering Department's Registered Storm Water Inspectors.
- 10.8. Post Construction Storm Water Management Program containing all requirements of the City of Taylorsville Storm Water Management Program.
- 10.9. Signed and recorded maintenance agreement. A copy shall be kept on file at the Taylorsville City Engineering Department

## 11. Permit Renewal

Each Operator is responsible for keeping up with his/her sites permit status. The Land Disturbing Permit may be renewed (except for Fill type) when the permittee realizes that he/she is not be able to complete work (stabilize the site) by the completion date listed in the Land Disturbing Permit application. The renewal permit must be submitted to the Taylorsville City Engineering Department for approval.

- 11.1. Conduct yearly inspections and verification
  - 11.1.1. Within two months of annual report deadline, contact long term SWPPP holders reminding them of the requirement to inspect their facilities and submit an inspection report.
  - 11.1.2. Annually contact long term SWPP Plan holders to schedule a site inspection by Taylorsville City Engineering Department's Registered Storm Water Inspectors. (City to inspect every facility at least once every five years for those who have executed a maintenance agreement and at least once every year for those who have not.)
- 11.2. Document deficiencies and direct facility to correct those deficiencies.

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- 11.2.1. Deficiencies not resulting in illegal discharges to City storm drain shall be given a reasonable time to correct.
- 11.2.2. Deficiencies resulting in illegal discharges to City storm drain shall be considered a level one violation and legal action will be initiated according to the attached escalating penalties.
- 11.3. Conduct follow up inspection to assess and document corrective actions.
- 11.4. If actions are not initiated to correct deficiencies noted in yearly inspections, initiate legal actions.
- 11.5. Document all actions with Taylorsville City Engineering Department.

## **12. Review flood management control structures**

- 12.1 Does the site have a potential to discharge pollutants of concern as listed in Section 4.2.1.1 of the SWMP?
- 12.2 If so, then do the proposed controls adequately limit or remove the pollutants of concern?
- 12.3 If not then determine and require the best available controls to limit or remove the pollutants.
- 12.4 Do the controls have adequate access for City or other maintenance personnel and equipment?
- 12.5 If not then require adequate access in the design.
- 12.6 Do the hydraulic controls adequately mimic pre-development storm water flows?
- 12.7 If not, then require modified hydraulic controls to more closely mimic pre- development storm water flows. The proposed modifications are to be submitted to the Taylorsville City Engineering Department for approval.
- 12.8 Encouragement of LID and review of specific proposals
- 12.9 No Sumps Allowed in DWSP zones or High Ground Water Areas

## **STORM WATER POLLUTANT MANAGEMENT FOR “HIGH PRIORITY” CITY BUILDINGS AND FACILITIES**

### **1. Building and Landscape Maintenance**

- 1.1. Maintain the storm drain system (ditches, inlets, catch basins, culverts, drainage channels, or underground lines) on your property. Clean at least twice a year, late in the fall and in the spring. Inspect twice yearly clean As-needed
- 1.2. Do not pressure wash or hose off surfaces with soap or chemicals unless wastewater is collected. Do not let wastewater enter storm drains.
- 1.3. If only cleaning surfaces of ambient dust (with water only), the wastewater can be drained to nearby landscaped/vegetated areas or allowed to pool on-site and evaporate.
- 1.4. Maintain sprinkler systems as to not over-irrigate. Avoid watering at rates that exceed the infiltration rate of the soil.
- 1.5. Overflow drains from fountains or decorative ponds should be discharged to the sanitary sewer, drained to a vegetated area, or re-used for irrigation.
- 1.6. If paving or sealing a roof, sidewalk or parking lot, prevent the sealant from reaching the gutters or drains. Use absorbent booms or pigs to protect storm drains.

### **2 Heat Transfer Equipment and HVAC Equipment Cleaning**

- 2.1 Do not allow cooling towers to discharge, leak, or mist-out into roof drains (if those drains empty onto pavement, streets or storm drains). Cooling towers should discharge to the sanitary sewer, if permitted by your local wastewater facility.
- 2.2 Blow-down from utility boilers may not be discharged outside to pavement or to storm drains. Wastewater should be sent to the sanitary sewer.

### **3 Fire Suppression (Sprinkler) Systems**

- 3.1 If possible, discharge water suppression systems (sprinklers) to sanitary sewer. New sprinkler system testing water must be de-chlorinated or sent to sanitary sewer.
- 3.2 If water systems cannot be discharged to sanitary sewer, divert the wastewater to landscaped areas and minimize erosion.

### **4 Floor Drains and Elevator Shaft Pumps**

- 4.1 Ensure that elevator sump pumps, interior floor drains, and parking garage floor drains are plumbed to the sanitary sewer (not to storm drains).
- 4.2 If there are any hydraulic fluid leaks from elevators, assure proper cleanup.

### **5 Janitorial Practices**

- 5.1 Never dump mop water or cleaning wastewater outside, into parking lot or storm drains. Dispose of wastewater in mop sink or other sanitary sewer drain. (This also includes wastewater from automated floor or carpet cleaning equipment.)
- 5.2 Do not pour, transfer or dispose of any material outdoors or near a storm drain.
- 5.3 Store all chemicals indoors on an impervious floor.

### **6 Painting, Staining and Sandblasting**

- 6.1 Use a ground cloth or oversized tub for paint mixing and tool cleaning. Properly dispose of the wastes.
- 6.2 Enclose spray-painting operations with tarps or other means, as possible, to minimize wind drift and to contain overspray.

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- 6.3 Clean paintbrushes and tools used to apply water-based paints in sinks plumbed to a sanitary sewer or in portable containers that can be emptied into sanitary sewer drains. Never clean tools over a storm drain or outside.
- 6.4 Brushes and tools used for oil-based paints, finishes, thinners, solvents or other materials must be cleaned over a tub or container and the cleaning wastes disposed or recycled at an approved hazardous waste facility. Never clean tools over a storm drain or outside.
- 6.5 Promptly cleanup any spills of paints, cleaners or other maintenance chemicals or supplies. See *BMP: Spill Cleanup* for details.

## 7 Waste Management

- 7.1 All waste receptacles must be close-fitting lids or covers. This includes dumpsters and compactors.
- 7.2 Keep all container lids closed at all times unless adding or removing material.
- 7.3 If possible, Store waste receptacles (dumpsters) indoors, under a roof or roof overhang or inside a shed or covered structure.
- 7.4 Sweep up around outdoor waste containers regularly.
- 7.5 Do not hose-out dumpsters outdoors. Return dumpsters to the disposal company for cleaning at their facility. If dumpsters must be washed, do so in a wash bay or in an area where wastewater will drain to the sanitary sewer.
- 7.6 Maintain and follow spill prevention plans.

## 8 Parking Lot Maintenance

- 8.1 Sweep Parking lots a minimum of twice a year. Once in the spring and fall with additional as needed.
- 8.2 Always follow *Storm Water Pollutant Management for City Roads, Highways, and Parking Lots SOP*.

## 9 Contractors

- 9.1 Contracts should include stormwater pollution prevention language.
- 9.2 Ensure that contractors implement proper Best Management Practices (BMPs) to prevent stormwater pollution and know whom to contact in case of spill.

## 10 Employee Training

- 10.1 All applicable employees should be trained in general stormwater pollution prevention; including how to recognize and report illegal connections or discharges.
- 10.2 Train all employees on the proper handling and disposal of chemicals and implementation of spill prevention plans.

## 11 Record Keeping and Documentation

- 11.1 Keep a current inventory of all floor drains inside all permittee-owned or operated buildings.
- 11.2 Keep a current map of all storm drains located on the property of all permittee-owned or operated buildings and facilities.
- 11.3 Keep a current copy of spill prevention plans.
- 11.4 Keep a list of all employees trained in the facility's Stormwater Pollution Prevention Binder.
- 11.5 Keep copies of all contracts for building services or other maintenance.

# **Storm Water Management Program - STANDARD OPERATING PROCEDURES**

- 11.6 The Lead Storm Water Tech/Inspector is responsible for cleaning of storm drains, ditches or culverts.
- 11.7 Keep records of any routine cleaning of parking lots, storm drains or culverts.

## **STORM WATER POLLUTANT MANAGEMENT FOR CITY PARKS AND OPEN SPACE**

### **1. General**

- 1.1. Never dump any liquids or other materials outside. Dispose of all liquids and materials appropriately.
- 1.2. Ensure the storm drain system (ditches, inlets, catch basins, drainage channels, or underground lines) on the property is properly maintained.
- 1.3. Catch basins, inlets and culverts are scheduled to be cleaned once / year.) If additional cleaning or maintenance is needed notify: Public Works at:
- 1.4. Keep all outdoor work areas neat and tidy. Sweep around work areas after each shift and properly dispose of all wastes.
- 1.5. If possible, do not hose down outdoor work areas or trash/waste container storage areas. If these areas must be washed, ensure that wash water will enter the sanitary sewer or a landscaped area. Do not use soap.

### **2. Irrigation Systems**

- 2.1. Set sprinklers to water at rates less than the infiltration rate of the soil, to water evenly over the vegetated area, and to minimize the amount of water falling on impervious surfaces.
- 2.2. Automatic timers should be used on all irrigation equipment to minimize run-off and over irrigation. Monitor soil moisture content and adjust timer settings appropriately.
- 2.3. Always replace or repair broken or leaking sprinkler heads as soon as possible.
- 2.4. To report an irrigation problem or concern contact: Parks Department at:

### **3. Landscaping, Lawn & Vegetation Maintenance**

- 3.1. Whenever possible, mulch-mow grasses.
- 3.2. Sweep grass clippings and other vegetation debris from sidewalks or streets back on to grassy areas.
- 3.3. Dispose of lawn clippings, leaves, tree trimmings, or other landscape waste appropriately. Grass clippings are taken to Salt Lake County Landfill for disposal.
- 3.4. If possible, dispose of organic wastes by composting. If composting is not possible, dispose of organic wastes at an approved disposal facility. Organic waste is composted at Salt Lake County Landfill.
- 3.5. If possible, control soil erosion by seeding, sod, mats, mulching, terracing or other effective methods. Use mulch or other erosion control methods to prevent erosion of exposed soils and flowerbeds.
- 3.6. Do not apply bark or mulch on top of plastic sheeting unless the area is enclosed by a barrier-like lawn edging or it is far away from a storm drain inlet. Bark on plastic is easily washed off by heavy rainfall.
- 3.7. If possible, design new or re-landscaped areas using xeriscape and Low Impact Development (LID) techniques to the maximum extent possible. Use hardy plant materials appropriate to the climate.

### **4. Buildings and Structures**

- 4.1. Never discharge waste and/or wastewater from cleaning and repair of exterior surfaces into the Municipal Separate Storm Sewer System (MS4).

# Storm Water Management Program - STANDARD OPERATING PROCEDURES

- 4.2. Use inlet protection devices, such as rock wattles or drain covers, when constructing or repairing paved pathways or other structures to protect any storm drain inlets or ditches that are within 25 feet or are at the same or lower elevation than the work area.
- 4.3. If possible, use rub-on techniques for graffiti removal or re-paint over the affected areas. Capture any wastewater, debris, solvent wastes or solid wastes from graffiti removal with tarps or wet vacs.

## 5. Vehicle & Equipment Washing and Storage

- 5.1. Wash vehicles, equipment and mowers at: location which drain to the sanitary sewer or an approved holding tank.
- 5.2. Vehicles and mowers may also be washed at a commercial or other designated car washing facility.
- 5.3. If possible, perform all maintenance and repair work inside shop. (Only emergency repairs and maintenance activities that do not involve fluids may be performed outdoors.)
- 5.4. Do not store leaking vehicles or equipment outdoors. Contain the leak, repair immediately, or move indoors and repair.
- 5.5. Notify parks supervisor at Parks Office when leaving a leaking vehicle at Fleet Services or at your shop.

## 6. Painting and Staining

- 6.1. Do not clean tools over a storm drain.
- 6.2. Use a ground cloth or oversized tub for paint mixing and tool cleaning. Properly dispose of the wastes. Avoid performing activities near storm drains
- 6.3. Enclose spray-painting operations with tarps or other means to minimize wind drift and to contain overspray.
- 6.4. Clean paintbrushes and tools used to apply water-based paints in sinks plumbed to a sanitary sewer or in portable containers that can be emptied into sanitary sewer drains.
- 6.5. Clean brushes and tools used for oil-based paints, finishes, thinners, solvents or other materials over a tub or container and dispose of the cleaning wastes at an approved hazardous waste facility.
- 6.6. Immediately clean up any spills of paints, cleaners or other maintenance chemicals or supplies.
- 6.7. Store paints, stains and solvents inside, or under cover and with secondary containment (as per manufacturer's Recommendations).

## 7. Swimming Pool Maintenance

- 7.1. Do not discharge pool water to a street or storm drain when draining pools or hot tubs. Discharge water to vegetated landscape or the sanitary sewer.
- 7.2. Never clean pool filters in the parking lot or near a storm drain.
- 7.3. Do not hose down pool decks or sidewalks if the wash water will flow to pavement or the storm sewer system. Direct wash water to landscaped or grassy areas or to sanitary sewer.
- 7.4. Store all pool chemicals indoors and under cover.

# Storm Water Management Program - STANDARD OPERATING PROCEDURES

## 8. Waste Management

- 8.1. All waste receptacles must be close-fitting lids or covers. This includes dumpsters and compactors.
- 8.2. Keep all container lids closed at all times unless adding or removing material.
- 8.3. If possible, Store waste receptacles (dumpsters) indoors, under a roof or roof overhang or inside a shed or covered structure.
- 8.4. Sweep up around outdoor waste containers regularly.
- 8.5. Do not hose-out dumpsters outdoors. Return dumpsters to the disposal company for cleaning at their facility. If dumpsters must be washed, do so in a wash bay or in an area where wastewater will drain to the sanitary sewer.
- 8.6. Post signs informing the public about the proper disposal of pet waste.
- 8.7. Review yearly the adequacy of trash receptacles and adjust the amount and location accordingly.
- 8.8. Remove trash on a weekly basis or more often as required.

## 9. Contracts & Contractors

- 9.1. Contracts should include stormwater pollution prevention language.
- 9.2. Ensure that contractors implement proper Best Management Practices (BMPs) to prevent stormwater pollution.

## 10. Employee Training

- 10.1. All applicable employees should be trained in general stormwater pollution prevention; including how to recognize and report illegal connections or discharges.

## 11. Record Keeping and Documentation

- 11.1. Keep a list of all employees trained in the department's Stormwater Pollution Prevention Binder.
- 11.2. Records of all maintenance activities are kept at: Taylorsville City Facilities Building at 4545 S Redwood Road.

## **POLLUTION PREVENTION AND GOOD HOUSEKEEPING PROGRAM FOR MUNICIPAL OPERATIONS**

Taylorsville City’s Engineering Department will review inventory annually and update as necessary.

### **1. Inventory of City Owned Facilities**

#### Engineering Department

##### Buildings

- Taylorsville City Hall 2600 West Taylorsville Blvd
- Taylorsville Senior Citizen Center 4764 South Plymouth View Dr
- Taylorsville Bennion Heritage Center 1488 West 4800 South

##### Parks & Recreation

- Azure Meadows 6064 South 3885 West
- Millrace Park 1181 West 5400 South
- Freedom Shrine 631 West 4500 South
- N. River Trail (w/ SL Co.) 650 West 4500 South
- UP&L Corridor Trail (w/ Rocky Mt Power) 951 West 4800 South
- Bennion Park 5620 South 3200 West
- Autumn Meadows 5352 South 2200 West
- Vista Park Baseball Complex (w/ SL Co.) 2051 West 5000 South
- Taylorsville Park (w/ SL Co.) 4750 South Redwood Road
- Future Park 6074 South 3200 West
- Park at City Center 2600 West Taylorsville Blvd
- Taylorsville/Bennion Heritage Center 1488 West 4800 South
- Labrum Park 6041 South Jordan Canal Rd

##### Cemeteries

- Taylorsville City Cemetery 4567 South Redwood Rd

##### Golf Courses

- Fore Lakes Golf Course 1258 West 4700 South
- Meadowbrook 4197 South 1300 West

9.1 Care and maintenance of each facility assigned to a Division Department

9.2 Public buildings:

Libraries  
Police Stations  
Fire Stations  
Municipal Buildings

### **2. Drainage system**

Taylorsville City has established a contract with the Salt Lake County Public Works Department to provide to the City storm drainage inspection and storm drain maintenance services. Taylorsville City will require Salt Lake County to provide

# Storm Water Management Program - STANDARD OPERATING PROCEDURES

personnel training and education necessary to properly work on the City's storm drain system.

- 2.1. Storm Drainage System Maintenance  
City's Engineering Department in conjunction with Salt Lake County will:  
Create and maintain storm system maintenance map,  
Schedule inspections  
Document inspections  
Inspections will be conducted every thirty (30) days by Salt Lake County Public Works Department.
- 2.2. Catch Basins.
- 2.3. Storm Water Conveyance Pipes.
- 2.4. Ditches and Irrigation Canals.
- 2.5. Culverts.
- 2.6. Structural Storm Water Controls.
- 2.7. Structural Runoff Treatment.
- 2.8. Flow Control Facilities.
- 2.9. Structural Floatable Controls.
- 2.10. Flood Control Projects.
- 2.11. Detention Pond maintenance.
- 2.12. Detention/Retention Basins will be inspected annually.

### **3. Roadways, Highways and Parking Lots**

- 3.1 Street Sweeping and other BMPs designed to reduce road debris and other pollutants from entering the MS4 including maintenance schedules and disposal methods of waste removal
- 3.2 Pothole Repairs
- 3.3 Pavement Marking
- 3.4 Sealing and Repaving
- 3.5 Street Repair and Maintenance Sites
- 3.6 Plowing, sanding and application of deicing compounds, and maintenance of snow disposal areas
- 3.7 Snow removal, sanding or application of deicing compounds.
- 3.8 Right of Way (ROW) maintenance including mowing and herbicide application
- 3.9 Sweeping of parking lots and any other BMPs designed to reduce parking lot debris and other pollutants from entering the MS4
- 3.10 Road Crew Training
- 3.11 Municipal sponsored event clean-up (e.g. parades and street fairs)

### **4. Parks and Open Spaces**

- 4.1 Litter ordinance development
- 4.2 Pesticide, herbicide and fertilizer program
- 4.3 Golf Courses

### **5. General**

- 5.1 Never dump any liquids or other materials outside. Dispose of all liquids and materials appropriately.
- 5.2 Ensure the storm drain system (ditches, inlets, catch basins, drainage channels, or underground lines) on the property is properly maintained.

# Storm Water Management Program - STANDARD OPERATING PROCEDURES

- 5.3 Catch basins, inlets and culverts are scheduled to be cleaned once / year.) If additional cleaning or maintenance is needed notify: Public Works at 801-502-2286
- 5.4 Keep all outdoor work areas neat and tidy. Sweep around work areas after each shift and properly dispose of all wastes.
- 5.5 If possible, do not hose down outdoor work areas or trash/waste container storage areas. If these areas must be washed, ensure that wash water will enter the sanitary sewer or a landscaped area. Do not use soap.

## 6. Irrigation Systems

- 6.1 Set sprinklers to water at rates less than the infiltration rate of the soil, to water evenly over the vegetated area, and to minimize the amount of water falling on impervious surfaces.
- 6.2 Automatic timers should be used on all irrigation equipment to minimize run-off and over irrigation. Monitor soil moisture content and adjust timer settings appropriately.
- 6.3 Always replace or repair broken or leaking sprinkler heads as soon as possible.
- 6.4 To report an irrigation problem or concern contact: Parks Department at: 801-330-4579.

## 7. Landscaping, Lawn & Vegetation Maintenance

- 7.1 Whenever possible, mulch-mow grasses.
- 7.2 Sweep grass clippings and other vegetation debris from sidewalks or streets back on to grassy areas.
- 7.3 Dispose of lawn clippings, leaves, tree trimmings, or other landscape waste appropriately. Grass clippings are taken to Salt Lake County Landfill for disposal.
- 7.4 If possible, dispose of organic wastes by composting. If composting is not possible, dispose of organic wastes at an approved disposal facility. Organic waste is composted at Salt Lake County Landfill.
- 7.5 If possible, control soil erosion by seeding, sod, mats, mulching, terracing or other effective methods. Use mulch or other erosion control methods to prevent erosion of exposed soils and flowerbeds.
- 7.6 Do not apply bark or mulch on top of plastic sheeting unless the area is enclosed by a barrier-like lawn edging or it is far away from a storm drain inlet. Bark on plastic is easily washed off by heavy rainfall.
- 7.7 If possible, design new or re-landscaped areas using xeriscape and Low Impact Development (LID) techniques to the maximum extent possible. Use hardy plant materials appropriate to the climate.

## 8. Buildings and Structures

- 8.1 Never discharge waste and/or wastewater from cleaning and repair of exterior surfaces into the Municipal Separate Storm Sewer System (MS4).
- 8.2 Use inlet protection devices, such as rock wattles or drain covers, when constructing or repairing paved pathways or other structures to protect any storm drain inlets or ditches that are within 25 feet or are at the same or lower elevation than the work area.
- 8.3 If possible, use rub-on techniques for graffiti removal or re-paint over the affected areas. Capture any wastewater, debris, solvent wastes or solid wastes from graffiti removal with tarps or wet vacs.

## 9. Vehicle & Equipment Washing and Storage

# Storm Water Management Program - STANDARD OPERATING PROCEDURES

- 9.1 Wash vehicles, equipment and mowers at: location which drain to the sanitary sewer or an approved holding tank.
- 9.2 Vehicles and mowers may also be washed at a commercial or other designated car washing facility.
- 9.3 If possible, perform all maintenance and repair work inside shop. (Only emergency repairs and maintenance activities that do not involve fluids may be performed outdoors.)
- 9.4 Do not store leaking vehicles or equipment outdoors. Contain the leak, repair immediately, or move indoors and repair.
- 9.5 Notify parks supervisor at Parks Office when leaving a leaking vehicle at Fleet Services or at your shop.

## 10. Painting and Staining

- 10.1 Do not clean tools over a storm drain.
- 10.2 Use a ground cloth or oversized tub for paint mixing and tool cleaning. Properly dispose of the wastes. Avoid performing activities near storm drains
- 10.3 Enclose spray-painting operations with tarps or other means to minimize wind drift and to contain overspray.
- 10.4 Clean paintbrushes and tools used to apply water-based paints in sinks plumbed to a sanitary sewer or in portable containers that can be emptied into sanitary sewer drains.
- 10.5 Clean brushes and tools used for oil-based paints, finishes, thinners, solvents or other materials over a tub or container and dispose of the cleaning wastes at an approved hazardous waste facility.
- 10.6 Immediately clean up any spills of paints, cleaners or other maintenance chemicals or supplies.
- 10.7 Store paints, stains and solvents inside, or under cover and with secondary containment (as per manufacturer's Recommendations).

## 11. Swimming Pool Maintenance

- 11.1 Do not discharge pool water to a street or storm drain when draining pools or hot tubs. Discharge water to vegetated landscape or the sanitary sewer.
- 11.2 Never clean pool filters in the parking lot or near a storm drain.
- 11.3 Do not hose down pool decks or sidewalks if the wash water will flow to pavement or the storm sewer system. Direct wash water to landscaped or grassy areas or to sanitary sewer.
- 11.4 Store all pool chemicals indoors and under cover.

## 12. Waste Management

- 12.1 All waste receptacles must be close-fitting lids or covers. This includes dumpsters and compactors.
- 12.2 Keep all container lids closed at all times unless adding or removing material.
- 12.3 If possible, Store waste receptacles (dumpsters) indoors, under a roof or roof overhang or inside a shed or covered structure.
- 12.4 Sweep up around outdoor waste containers regularly.
- 12.5 Do not hose-out dumpsters outdoors. Return dumpsters to the disposal company for cleaning at their facility. If dumpsters must be washed, do so in a wash bay or in an area where wastewater will drain to the sanitary sewer.
- 12.6 Post signs informing the public about the proper disposal of pet waste.

# Storm Water Management Program - STANDARD OPERATING PROCEDURES

- 12.7 Review yearly the adequacy of trash receptacles and adjust the amount and location accordingly.
- 12.8 Remove trash on a weekly basis or more often as required.

## **13. Contracts & Contractors**

- 13.1 Contracts should include stormwater pollution prevention language.
- 13.2 Ensure that contractors implement proper Best Management Practices (BMPs) to prevent stormwater pollution.

## **14. Employee Training**

- 14.1 All applicable employees should be trained in general stormwater pollution prevention; including how to recognize and report illegal connections or discharges.

## **15. Record Keeping and Documentation**

- 15.1 Keep a list of all employees trained in the department's Stormwater Pollution Prevention Binder.
- 15.2 Records of all maintenance activities are kept at: Taylorsville City Building, Building Department.

## **STORM WATER POLLUTANT MANAGEMENT FOR CITY VEHICLES AND EQUIPMENT**

### **1. Vehicle and Equipment Maintenance**

- 1.1. Move leaking vehicles or equipment indoors or under cover.
- 1.2. Use drip pans for leaking vehicles that need to be stored outside.
- 1.3. Contain leaking fluids and tag the vehicle to alert drivers that vehicle is non-operational. Perform all maintenance activities involving fluids indoors only (except in emergency cases).
- 1.4. Dispose of wastewater from tire leak check appropriately (to sanitary sewer or interior drain).
- 1.5. Clean all parts indoors using the appropriate parts washer.
- 1.6. Wash vehicles in dedicated wash bays that drain to sanitary sewer.

### **2. Emergency Maintenance Operations**

- 2.1. Use drip pans underneath vehicles to catch leaks and drips.
- 2.2. Have spill kits on all response vehicles.
- 2.3. Move vehicle to an impervious surface if possible (for better spill clean up).
- 2.4. Notify your supervisor of spills.

### **3. Good Housekeeping and Waste Disposal**

- 3.1. Clean up all spills promptly.
- 3.2. Transfer fluids from drip pans to the appropriate waste containers immediately. Routinely check any equipment stored outside for leaks.
- 3.3. Maintain oil/water separators according to municipal ordinance. Keep lids on dumpsters closed when not in use.
- 3.4. Develop and maintain a maintenance schedule to check outdoor parking and storage areas for spills and or debris accumulation.
- 3.5. Inspect parking and fueling areas daily. Designate employee(s) to perform these inspections.

### **4. Contracts & Contractors**

- 4.1. Contracts should include stormwater pollution prevention language.
- 4.2. Ensure that contractors implement proper Best Management Practices (BMPs) to prevent stormwater pollution.

### **5. Employee Training**

- 5.1. All applicable employees should be trained in stormwater pollution prevention including how to recognize and report illegal connections or discharges.

### **6. Record Keeping and Documentation**

- 6.1 Keep a list of all employees trained in the facility's Stormwater Pollution Prevention binder or other location: Taylorsville City Building, Building Department

## **Storm Water Management Program - STANDARD OPERATING PROCEDURES**

- 6.2. Maintain a current copy of Spill Response Plan in SWPPP. Maintain a map of storm drain locations on the property. This is located at: Taylorsville City Building, Building Department
- 6.3. Keep a map, including location of storm drain inlets, in the facility's Stormwater Pollution Prevention Binder.
- 6.4. Keep copies of any correspondence with Salt Lake Valley Health Department and Utah State Division of Environmental Quality if the spill reaches "waters of the state".

## **STORM WATER POLLUTANT MANAGEMENT FOR PARKING LOT MAINTENANCE**

### **1. General Maintenance**

- 1.1. Designate personnel to conduct inspections of parking facilities and stormwater conveyance systems on a regular basis.
- 1.2. Clean leaves, trash, sand, and other debris from parking lots regularly or as needed to prevent debris from reaching any storm drain inlet or storm detention area.
- 1.3. Sweep parking lots with a street sweeper regularly or as needed.
- 1.4. The parking lots are inspected and evaluated for maintenance twice per year. Sweep after special events or construction projects.
- 1.5. Sweep parking lots in the spring and after leaf season in the fall.
- 1.6. Any automotive spills and/or drips must be cleaned up with dry clean-up methods (absorbents) and disposed of properly.
- 1.7. Inspect all dumpster or waste disposal areas regularly. Clean up any trash, spills or leaks and report leaking dumpsters to the disposal company.

### **2. Maintenance of Storm Drains, Culverts and Detention Areas**

- 2.1. Inspect storm structures, culverts, detention areas or structural BMPs regularly for debris accumulation. Clean out as needed.

### **3. Paving, Re-surfacing and Concrete Projects**

- 3.1. Re-seal or pave on dry days when no rain is expected or stop paving activities well before rainfall.
- 3.2. Pre-heat, transfer, or load hot asphalt far away from storm drain inlets.
- 3.3. Protect or block nearby, downstream, storm drain inlets from debris from maintenance work (asphalt cap, chip sealing, concrete breaking, or saw cutting). Leave inlet protection in place until the job is complete.
- 3.4. Clean up debris from around inlets and dispose of properly.
- 3.5. Designate a "Concrete Wash Out Area" on the job site - in a grassy or graveled area where pooled water can soak into the ground.
- 3.6. If no "Wash Out Area" is available, wash out into a container (pool, bucket or wheelbarrow) and dispose of material properly.

### **4. Painting and Striping**

- 4.1. Schedule painting, marking, and striping projects during dry weather only. Cease all activities when rain threatens.
- 4.2. Use thermoplastic markings in place of paint whenever possible.
- 4.3. Block nearby storm drain inlets (within 25 feet and down gradient of project). Promptly clean up any spills of paints, cleaners or other chemicals.

### **5. Salt, Sand or Deicer Application**

- 5.1. Hand-apply deicer or sidewalk salt. Use sparingly.
- 5.2. If truck-applying salt, sand or liquid deicer, use the lowest application rate that will be effective. Ensure that the equipment is calibrated to optimum levels according to manufacturer's instructions.

# Storm Water Management Program - STANDARD OPERATING PROCEDURES

## 6. Snow Plowing and Snow Storage

- 6.1. Do not plow, push, blow or store excess snow, deicer, or other debris into creeks, watercourses or storm drainage systems.
- 6.2. If possible, store excess snow in a pervious area where melt water can infiltrate into the ground and not into the storm drain system.
- 6.3. If snow storage is on a paved area, sweep up debris after snow melt.

## 7. Contracts and Contractors

- 7.1. Contracts should include Stormwater Pollution Prevention language.
- 7.2. Ensure that contractors implement proper Best Management Practices (BMPs) to prevent stormwater pollution.

## 8. Employee Training

- 8.1. All applicable employees should be trained in general stormwater pollution prevention; including how to recognize and report illegal connections or discharges.

## 9. Record Keeping and Documentation

- 9.1. Keep a log of maintenance records in at the *Taylorsville City Building, Building Department*.
- 9.2. Keep a log of all employees trained in facility's Stormwater Pollution Prevention Binder.

# Storm Water Management Program - STANDARD OPERATING

## PROCEDURES

### STORM WATER POLLUTANT MANAGEMENT FOR STREET AND ROAD MAINTENANCE AND REPAIR

#### 1. Storm Drain Protection

- 1.1. Locate and block storm drain inlets (within 25 feet and/or down gradient from) during maintenance work such as concrete curb and gutter work, resurfacing, paving, striping/markings, or saw cutting.
- 1.2. Place covers, rock wattles, sand bags, or filter fabric around inlets to protect them from entry of wastes, dusts, overspray or slurry.
- 1.3. Inspect site at the beginning of the day and end to ensure operations are not contributing sediment or other pollutants to the flow line or storm drain.
- 1.4. Clean right of ways (roadways) with brooms or street sweepers – as needed.

#### 2. Concrete Work

- 2.1. When saw cutting concrete, use the minimum amount of water. Let the waste slurry dry and then sweep it up before leaving the location. A wet vacuum may also be used to pick up the waste slurry immediately after cutting is complete. Do not allow slurry to reach storm drains.
- 2.2. Designate a “Concrete Wash Out Area” that is as far as possible from any surface waters, storm drain inlets or drainage ditches and is located in a low area where wash water will pool and soak into the ground.
- 2.3. Concrete trucks must washout in the wash out area or into a container such as a kiddie pool or wheelbarrow.
- 2.4. Maintain the wash out area, inspect it for clean out needs, and check for run-on and run-off.
- 2.5. The debris from the wash out area must be taken to a permanent disposal site when the washout is full and when the project is complete.

#### 3. Erosion Control and Storage of Materials

- 3.1. Cover and contain all liquid and solid materials to prevent run off.
- 3.2. Avoid storing piles of materials (soil, sand, gravel) in street, near storm drains or gutters. If dirt piles must be stored in the street, they must have berms or wattles surrounding them to prevent run-off. Rock wattles should be placed around all down gradient storm drains to prevent sediment from reaching the inlets
- 3.3. Excavated material should be placed on the uphill side of trenches to minimize sediment run-off.
- 3.4. Inspect and maintain all erosion or sediment control devices or equipment installed in erosion-prone areas in road construction projects as per the Stormwater Management Program (SWMP).
- 3.5. Ensure that projects over 1 acre have the proper Utah Stormwater Discharge Permits and refer to the Stormwater Management Program.

#### 4. Painting and Striping

- 4.1. Schedule painting, marking, and striping projects during dry weather only. Cease all activities when rain threatens.
- 4.2. Use thermoplastic markings in place of paint whenever feasible.

# Storm Water Management Program - STANDARD OPERATING

## PROCEDURES

- 4.3. Block nearby storm drain inlets (within 25 feet and/or down gradient of project). Promptly clean up any spills of paints, cleaners or other chemicals.

### **5. Re-surfacing or Paving**

- 5.1. Re-seal or pave only on dry days when no rain is expected. Cease all activities when rain threatens
- 5.2. If possible, transfer, store, pre-heat and load hot asphalt far away from storm drain inlets. Protect or block downstream storm drain inlets (within 25 feet) from debris from maintenance work (asphalt cap, chip sealing, concrete breaking, or saw cutting). Leave covers or berms in place until the job is complete

### **6. Bridge Repair Work**

- 6.1. When working on bridges, transport and store paint and materials in containers with secure lids.
- 6.2. Do not transfer, store or load paint on a bridge.
- 6.3. Capture waste, scraps, rust or paint from sanding or painting projects. It may be necessary to suspend nets or tarps below the bridge to catch falling debris. If sanding or sand blasting, use a vacuum bag attachment.

### **7. Contracts & Contractors**

- 7.1. Contracts should include stormwater pollution prevention language.
- 7.2. Ensure that contractors implement proper Best Management Practices (BMPs) to prevent stormwater pollution.

### **8. Employee Training**

- 8.1. All applicable employees should be trained in general stormwater pollution prevention: including how to recognize and report illegal connections or discharges.

### **9. Record Keeping and Documentation**

- 9.1. If the site is over an acre, obtain the proper Utah Discharge permit; prepare and use a Stormwater Pollution Prevention Plan (SWPP) and keep copies of all inspection logs.
- 9.2. Keep a list of all employees trained in Stormwater Pollution Prevention.
- 9.3. Keep copies of MSD Sheets of all products used.

## **STORM WATER POLLUTANT MANAGEMENT FOR CITY STORM WATER COLLECTION AND CONVEYANCE SYSTEM**

- 1. Stormwater System Inspection and Maintenance (need Schedule including priority areas)**
  - 1.1. Stormwater system should be inspected for structural integrity and evidence of illicit discharge and maintained according to an established schedule including inlets, lines, manholes, ditches, detention ponds and permanent BMP's.
  - 1.2. Report any areas needing attention and schedule repairs ASAP.
  - 1.3. Keep records of "hot spot" areas here or note where information is stored:
    - 1.3.1. Where are they located? *Taylorsville City Building, Building Department*
  - 1.4. Inspections should be used to help determine cleaning schedule for stormwater systems (ex. runs prone to fast sediment accumulation, confirmed contamination).
  - 1.5. Stormwater system should be cleaned according to an established schedule, including detention ponds and permanent BMPs. This schedule is located: *insert location here*
  - 1.6. Ensure water from jetting and flushing inlets and lines is not discharged into the storm system. Use a Vactor truck to vacuum up flush water downstream while jetting and flushing inlets and lines.
  
- 2. Reporting**
  - 2.1. Report any suspected illegal connections or dumping to Taylorsville City Engineering at 801-258-8270.
  
- 3. Decanting Wastewater from Vac Trucks and Sweepers**
  - 3.1. Always decant Vac trucks and sweepers into the sanitary sewer. Decant areas are located at the Salt Lake County Public Works Department washout pad.
  
- 4. Debris Storage Areas and Disposal**
  - 4.1. Dispose of debris at the designated, temporary, storage area.
  - 4.2. Always inspect and maintain the temporary storage area. Check area for run-on or run-off or debris scattering.
  - 4.3. Debris should be removed and taken to the permanent disposal site regularly.
  - 4.4. The permanent disposal site is at the Salt Lake County Landfill for uncontaminated wastes. Contaminated fill material should be disposed of in a location approved and licensed to accept the material.
  
- 5. Ditches and Detention Ponds**
  - 5.1. Inspect ditches for signs of erosion while mowing drainage ditches.
  - 5.2. Track ditches prone to erosion and set maintenance schedule accordingly.
  - 5.3. Do not apply pesticides or fertilizers in drainage ditches, on roadways or curbs.
  - 5.4. Do not disturb waterways, wetlands or sensitive wildlife habitat without permits from Army Corps of Engineers.
  
- 6. Contracts & Contractors**

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- 6.1. Contracts should include stormwater pollution prevention language.
- 6.2. Ensure that contractors implement proper Best Management Practices (BMPs) to prevent stormwater pollution.

## **7. Employee Training**

- 7.1. All applicable employees should be trained in stormwater pollution prevention; including how to recognize and report illegal connections or discharges.

## **8. Record Keeping and Documentation**

- 8.1. Keep a written Storm Drain System Inspection and Maintenance Schedule. This is recorded in: Salt Lake County Public Works Facility.
- 8.2. Keep a list of all employees trained in the facility's Stormwater Pollution Prevention binder Taylorsville City Building, Building Department.
- 8.3. The inventory of hot spot areas where contamination has been confirmed and require frequent inspections is recorded in Taylorsville City Building, Building Department
- 8.4. Records of any testing done on debris removed from catch basins is located Taylorsville City Building, Building Department.

## **STORM WATER POLLUTANT MANAGEMENT FOR PUBLIC RIGHT-OF-WAY**

### **SCOPE**

In order to protect our environment, Best Management Practices (BMP's) are developed and used to reduce the amount of pollutants and sediments from entering our storm water systems. This SOP includes BMP's that are applicable to work done within the public Right-of-Way. It is permissible and even expected to be changed or modified when good judgment dictates better ways to protect the environment or when safety issues arise. Any routine operational changes require that this SOP be updated accordingly.

### **REFERENCES**

- 1) **APWA Standard Plan 126, "Stabilized Roadway Entrance", 2012 Edition**
- 2) **Applicable Equipment & Process Public Works Operations SOP's**

### **PROCEDURES/BMP'S**

#### **General**

The primary goal of this SOP is to reduce or prevent the amount of pollutants, including sediment, entering storm water systems. Each employee must take ownership to adhere to this goal, be aware of each particular work environment that could jeopardize this goal, and be sufficiently resourceful to react when conditions change, such as a storm or other influential event. This SOP summarizes different types of work that are performed in the Public Right-of-Way and the Best Management Practices (BMP's) that can protect our environment. Important general information includes:

#### **1. General**

- 1.1. Refer to and follow the applicable process and equipment SOP's for any activity performed in conjunction with this SOP.
- 1.2. For contract work, contractors are to refer to and follow contract documents for any activity performed in conjunction with this SOP.
- 1.3. Store any wet or dry materials that could contribute to storm water degradation by keeping them under cover and away from drainage areas.
- 1.4. Ensure BMP's are in place and functioning correctly before leaving any job site.
- 1.5. Applicable BMP's are to be removed as part of the final cleanup of the job site.
- 1.6. Never wash vehicles or equipment over or next to storm drain inlets.

#### **2. Concrete Work**

- 2.1. New Concrete and Concrete Replacement
  - 2.1.1. Place booms, wattles, sandbags or other BMP's at storm drain inlets downstream from work locations when the potential for erosion from the project can drain into the storm water system.

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- 2.1.2. Remove as soon as possible, and if possible by the end of the day, any construction materials or spoils that could contribute to sediment or pollutants entering the local storm drain system.
- 2.1.3. Construction materials or spoils should be cleaned up enough that no more material could be pushed by a broom.
- 2.1.4. Dispose of any materials properly in a way that will have the least impact on the environment.
- 2.2. Concrete Trucks – Washouts
  - 2.2.1. Concrete trucks shall not washout into storm drain inlets nor at locations that will allow the washout to enter storm drain systems.
  - 2.2.2. Proper washout locations shall be provided by either the concrete supplier or as instructed by city personnel.

## 3. Excavation

- 3.1. Boring
  - 3.1.1. Prevent any liquids that may be used in boring from entering the storm water system.
  - 3.1.2. Ensure any material or spoils from boring operations do not enter into the storm drain system by one of the following methods:
    - 3.1.2.1. Capture boring fluids and then pump or place them into a sealable drum or,
    - 3.1.2.2. Pond boring fluids and clean them up using a vactor truck or shop vac or,
    - 3.1.2.3. Use other acceptable pre-approved method to prevent boring fluids from entering the storm drain system.
- 3.2. Trenching/Auguring
  - 3.2.1. Stock pile the excavated material as little as possible.
  - 3.2.2. Haul off site as needed and as soon as practical.
  - 3.2.3. Pumping of any groundwater that enters a trench shall be done in a way that minimizes or prevents any pumped liquids from entering the storm water system.
- 3.3. Inlet Protection
  - 3.3.1. Provide proper inlet protection as described in Section 2.1.1.

## 4. General Property Maintenance and Miscellaneous Work

- 4.1. Landscaping.
  - 4.1.1. Ensure any required certifications are up to date.
  - 4.1.2. Fertilizing
    - 4.1.2.1. Do not dispose of, directly spray or spread fertilizer into storm drain boxes or gutters.
    - 4.1.2.2. Clean up excessive or spilled fertilizer from storm drain boxes gutter and sidewalks.
    - 4.1.2.3. Follow manufacture’s recommendations for application rates, handling of product, and equipment usage and maintenance.
    - 4.1.2.4. Employ techniques to minimize off target application.

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- 4.1.2.5. Follow all federal and state regulations governing use, storage and disposal of fertilizers.
- 4.1.3. Grading
  - 4.1.3.1. Minimize grading as much as practical.
  - 4.1.3.2. Provide proper inlet protection per Section 1.1.1.
- 4.1.4. Sprinkler Repairs
  - 4.1.4.1. Protect storm water inlets as described in this SOP if needed.
- 4.1.5. Weeding (Including Weed Sprays)
  - 4.1.5.1. Do not dispose of or directly spray herbicides or other weed sprays into storm drain boxes or gutters unless specifically spraying to control weeds.
  - 4.1.5.2. Clean up excessive or spilled weed spray from storm drain boxes, sidewalks or gutters.
  - 4.1.5.3. Follow manufacturer's recommendations for application rates, handling of product, and equipment usage and maintenance.
  - 4.1.5.4. Employ techniques to minimize off-target application.
  - 4.1.5.5. Follow all federal and state regulations governing use, storage and disposal of herbicides.
- 4.2. Tree and Bush Trimming, Mowing
  - 4.2.1. Clean up after. Remove any debris from gutters and roadway prior to leaving site.
  - 4.2.2. Sweep or blow grass clippings to grass areas.
- 4.3. Miscellaneous Work
  - 4.3.1. Provide "sediment drops" for any major construction activities where mud and other sediments can be tracked off the site onto streets and roadways. See APWA Standard Plan 126, "Stabilized Roadway Entrance".

## 5. Pavement Washing

- 5.1. Needed to remove potential contaminants and for aesthetic purposes. It may be needed for:
  - 5.1.1. Mud and dirt
  - 5.1.2. Wet paint spills
  - 5.1.3. Spills
  - 5.1.4. Other incidents or events that can cause unacceptable material on public streets.
- 5.2. Pavement washing effluent (wastewater) including power washing and the use of detergents shall be restricted from entering the storm water system.
  - 5.2.1. Dam the affected storm drain inlets using a boom material, wattles, sandbags or other methods that seal themselves to the pavement and force liquids to be ponded.
  - 5.2.2. Pick up pavement washing wastewater with a shop vac, absorbent materials, vector truck or other methods at either the location of ponding or simultaneously with the washing operation.
  - 5.2.3. Dispose of all wastewater properly in an approved location.
  - 5.2.4. Document all work performed along with estimated quantities of material used and cleaned up.

## 6. Saw Cutting

- 6.1. Inspect site at beginning, during, and end of work to ensure cut slurry is being contained and not entering into storm drains or waterways.
- 6.2. Dam the affected storm drain inlets using a boom material, wattles, sandbags or other methods that seal themselves to the pavement and force liquids to be ponded.
- 6.3. Place sandbags as needed to create ponding in gutter within 25 feet from saw cutting as needed. Multiple sandbags may be required and in several areas. Sand bags shall be positioned and marked with a cone to provide warning to bicyclists, pedestrians, and motorists of their location. Sandbags will not be required on the uphill side of a noticeable grade.
- 6.4. Any ponded water/slurry shall be either:
  - 6.4.1. Allowed to evaporate and then picked up by shovel with the assistance of a broom if needed. Weather conditions need to be appropriate.
  - 6.4.2. Vacuumed into an appropriate container. At the end of the work day the contained water/slurry will be dumped in a designated area.
  - 6.4.3. Removed with a vactor truck and disposed up properly in a designated area.
- 6.5. Solids shall be removed, options may include but not limited to:
  - 6.5.1. Shovel and hand broom.
  - 6.5.2. Shop vacuum.
  - 6.5.3. Skid steer with bucket or sweeper attachment.
  - 6.5.4. Vactor truck or vactor trailer.
- 6.6. Clean roads with brooms or street sweepers as needed. Care shall be taken when using street sweepers to prevent spreading material.
- 6.7. Utilize the most efficient cutting procedures to minimize the creation of waste water or slurry.

## 7. Snow Removal

- 7.1. Salt distribution
  - 7.1.1. Distribute the minimal amount of salt that is needed.
  - 7.1.2. Pay attention to salt dispersal rates in comparison to recommended salting rates.
  - 7.1.3. Avoid excessive use of salt.
  - 7.1.4. Clean up any salt spills as soon as practical.
- 7.2. Brine
  - 7.2.1. Apply appropriate amounts of brine to roads.
  - 7.2.2. Inspect regularly to avoid potential leakage of brine tank and associated pumping/dispersing equipment.

## 8. Spills – Containment and Cleanup

- 8.1. Hazardous materials
  - 8.1.1. Immediately prevent any hazardous material spill from reaching the local storm drain by either the use of booms, sandbags, earthen dams or other physical means necessary.
  - 8.1.2. NEVER WASH HAZARDOUS MATERIALS INTO THE STORM DRAIN.
  - 8.1.3. If water and/or other detergents are used to clean the area, all contaminated liquids must be vacuumed or effectively picked up by other methods and disposed of properly as per local, state and federal requirements.

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- 8.1.4. Use dry cleanup methods as much as possible. This includes sorbent materials, booms and/or sand bags, brooms, shovels, and vacuum equipment as needed.
- 8.1.5. Document all spills and report to the applicable jurisdiction as required by law and the applicable Safety Data Sheet (SDS) for that material.
- 8.1.6. All documents are required to be submitted to the Safety Coordinator that oversees environmental issues.
- 8.2. Non-hazardous materials
  - 8.2.1. Non-hazardous material spills shall be cleaned up as soon as possible.
  - 8.2.2. Booms/waddles shall be used when applicable to reduce or prevent any spilled material from entering the storm water system.

## 9. Road Cuts

- 9.1. Utility Work
  - 9.1.1. Storm drain inlets shall be protected from debris or other pollutants during work which requires a road cut; or,
  - 9.1.2. Storm drain inlets shall be inspected after work which requires road cuts is performed and are cleaned as necessary.
  - 9.1.3. Roads are to be cleaned by sweeping or other approved method after work is completed.
- 9.2. Emergency Utility Work
  - 9.2.1. Storm drain inlets shall be protected from debris or other pollutants as soon as it is practical when work begins on an emergency event; or,
  - 9.2.2. Storm drain inlets shall be inspected after work which requires road cuts is performed and are cleaned as necessary.
  - 9.2.3. Roads are to be cleaned by sweeping or other approved method after work is completed.

## 10. Street Maintenance

- 10.1. Asphalt Overlays
  - 10.1.1. Storm drain inlets shall be protected from debris or other pollutants during operations if needed.
  - 10.1.2. Storm drain inlets shall be inspected after overlay operations are completed and cleaned as necessary.
  - 10.1.3. Sweep gutters to remove any loose aggregate if needed.
  - 10.1.4. Follow current Overlay SOP for proper performance of process procedures.
- 10.2. Milling
  - 10.2.1. Storm drain inlets shall be protected from debris or other pollutants during operations if needed.
  - 10.2.2. Storm drain inlets shall be inspected after milling operations are completed and cleaned as necessary.
  - 10.2.3. Provide street sweeping after milling machine and when necessary to pick up loose material.
  - 10.2.4. Follow current Milling SOP for proper performance of process procedures.
- 10.3. Chip Seal
  - 10.3.1. Storm drain inlets shall be protected from debris or other pollutants during operations if needed.

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- 10.3.2. Storm drain inlets shall be inspected after chip seal operations are completed and cleaned as necessary.
- 10.3.3. Loose chips are swept up and recycled as part of the process. Dispose of properly all debris/trash that is collected from sweeping operations.
- 10.3.4. Follow current Chip Seal SOP for proper performance of process procedures.
- 10.4. Slurry Seal
  - 10.4.1. Storm drain inlets shall be protected from debris or other pollutants during operations as needed.
  - 10.4.2. Storm drain inlets shall be inspected after slurry seal operations are completed and cleaned as necessary.
  - 10.4.3. Slurry seal product or any other product or pollutant is not allowed to enter the storm drain throughout the slurry seal process.
  - 10.4.4. Train slurry seal contractor on proper city storm water protection procedures.
- 10.5. Crack Seal
  - 10.5.1. Storm drain inlets shall be protected from debris or other pollutants during operations if needed.
  - 10.5.2. Storm drain inlets shall be inspected after crack seal operations are completed and cleaned as necessary.
  - 10.5.3. Follow current Crack Seal SOP for proper performance of process procedures.
- 10.6. Pavement Markings
  - 10.6.1 Use water based paints, thermoplastic or other approved material. Oil based paints are not to be used.
  - 10.6.2. Follow current Pavement Marking SOP for proper performance of process procedures.
  - 10.6.3 For spills, refer to Section 7.0 of this SOP.
  - 10.6.4. Ensure any cleanup byproducts are disposed of properly and not allowed to enter any storm drain system.
- 10.7. Street Sweeping
  - 10.7.1. Streets are to be swept by mechanical or pneumatic sweepers at least twice a year.
  - 10.7.2. Street sweepers are to be emptied only at approved locations determined by Salt Lake County.
  - 10.7.3. Street sweepers are to be cleaned out in a manner that does not allow debris to enter the storm drain.
  - 10.7.4. Follow current Street Sweeping and Truck Wash SOP's for proper performance of process procedures.
  - 10.7.5. After dewatering at the truck wash, haul all dump material to the landfill.
  - 10.7.6. Records are kept for a minimum of 3 years of street sweeping.

## 11. Transport of Materials

- 11.1. Utilize proper transport vehicles to haul debris, soils, gravel, asphalt and other materials and equipment.
- 11.2. If possible, dry out wet materials before transporting.
- 11.3. Conduct pre-trip inspection to ensure any loose material is removed, there are no leaking fluids, tailgates are secure, and no materials can spill or escape during transport.
- 11.4. Make sure not to overfill materials when loading trucks.
- 11.5. Cover all loads as per Utah state law.

## 12. Storm Drain Maintenance

- 12.1. Storm Drain Inlets
  - 12.1.1. Storm drain inlets are cleaned out with the use of a vactor truck or other approved method on an annual basis.
  - 12.1.2. Records are kept for a minimum of 5 years of inlet cleanouts.
- 12.2. Detention and Retention Basins
  - 12.2.1. Detention and retention basins are to be inspected on an annual basis.
  - 12.2.2. Detention and retention basins are cleaned and repaired as necessary when issues are noted on annual inspections.
  - 12.2.3. Schedule cleaning and repairs when dry weather is expected.
  - 12.2.4. Remove any sediment and trash from grates and outflow structures. Provide proper disposal of sediment, trash and/or debris.
  - 12.2.5. Clean basin by using backhoe, front end loader or other proper equipment to remove debris and sediment off the bottom of the basin and provide proper disposal.
  - 12.2.6. Record inspections, maintenance and repairs. Keep records for a minimum of 5 years.
- 12.3. Storm drain lines (pipes)
  - 12.3.1. Storm drain lines are to be cleaned out on a regular basis, normally at the same time as inlets are cleaned.
  - 12.3.2. Storm drain lines are also to be cleaned out on a case by case basis when the need arises due to flooding, problems with drainage or other special situations.
  - 12.3.3. Record inspections, maintenance and repairs. Keep records for a minimum of 5 years.

## 13. Reporting

- 13.1. Anytime wastewater or other pollutant materials enter a storm drain system, the incident will be reported to the Taylorsville City Engineer line at 801-258-8270. Describe the location of the incident, the amount and type of material involved, and the reason the incident occurred.

## STORM WATER POLLUTANT MANAGEMENT FOR SNOW PLOWING

### SCOPE

To provide guidelines and standards for requirements regarding snow plowing and operating snow plow trucks and related equipment.

### REFERENCE

- 1) Federal Motor Carrier Safety Regulations Handbook.

### SPECIAL CONSIDERATIONS

Snow plowing requires the truck operator to navigate roads that are general less than ideal for driving. Since driving conditions during snow events can change rapidly the driver will determine his/her safe speed and adjust speed based on current conditions, slow is better. Safety of the driver and public is the driver's highest priority, clearing roads is your secondary priority. Anytime you are outside the safety of the cab you are subject to slippery walking conditions, poor visibility, loader traffic and other motor vehicle traffic attempting to drive during poor road conditions. While plowing it is best to stay in the safety of the cab whenever possible.

Wear footwear with good traction characteristics and gloves with good grip. Wear safety glasses while filling tanks with salt brine, filling D.E.F. tanks, checking the unloading of salt at the sander or anytime you risk an injury to the eye. Stay clear of the sides and rear of the sander whenever possible due to the possibility of salt "chunks" falling from sander screen.

Never use your hands to clear a jamb at the rear of the sander and only use a long-handled tool such as a shovel. Be aware of sharp edges while checking your bits for wear and do not run your hand along the length of the blade. If you use a long-handled tool to clear salt "chunks" from the sander screen you shall wear your hardhat. Avoid climbing onto the sander.

Use 3-points of contact and face the vehicle while entering and exiting the cab. Be aware of the extreme height from the lower step to the ground and increased distance between steps in larger trucks. The process of checking the salt level in your truck bed is hazardous and should be avoided whenever possible. If you must step out of your truck to check the salt level in your bed you must have three points of contact at all times.

With the exception of most office personnel and those assigned to the electrical team employees shall participate in snow removal.

### PROCEDURES

#### 1. Training and Certifications Required

- 1.1. Valid Utah driver's license for vehicle class of vehicle you are operating.

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- 1.2. Current Department of Transportation (DOT) medical examination card as required for your class of license.
- 1.3. Plow driver must have a basic knowledge of the safe operation and loading of salt with the front-end loader (not required to be an operator).
- 1.4. Attend annual pre-snow plow training on the use of the salt spreader, plow controls, maintenance and other related issues.

## 2. Safety Equipment Required

- 2.1. Warm gloves with good grip.
- 2.2. Footwear with good traction characteristics.
- 2.3. Safety glasses.
- 2.4. Hi-visibility clothing, coats and/or vests etc.
- 2.5. Hardhat (if clearing salt chunks from sander screen or otherwise as needed).
- 2.6. Flashlight.

## 3. Before You Plow

- 3.1. Perform a daily pre-trip “walk-around” inspection paying particular attention to all driving and warning lights.
- 3.2. Inspect your plow, plow bits, salt spreader, and general condition of your equipment. Plow bits with one inch of wear or less remaining shall be returned to Fleet to prevent damage to the moldboard.
- 3.3. Ensure your windows and mirrors are clear of snow and ice. Free your wiper blades before you turn them on if they are frozen to the windshield. Ensure that your wipers and washer fluid spray nozzles work properly and you have plenty of washer fluid. If you have heavy build-up of snow/ice while you are plowing you may need to clear the blades on occasion.
- 3.4. Visually inspect the plow lift cables for stretch, corrosion or slipping cable clamps. Lubricate the cable pulley during off hours.
- 3.5. Visually inspect the pins and cotter keys in the plow for intactness and watch for cracks in the metal or welds.
- 3.6. Prior to the start of the snow plow season employees who do not operate loaders regularly need to re-familiarize themselves with the loader and equipment in their plow area.
- 3.7. Turn off answering machines and keep your phone available during anticipated snow events. Keep the Internal Service Manager and your plow supervisor aware of any phone number changes.
- 3.8. Make sure you are on the correct radio channel and always check with your plow supervisor if you are unsure.
- 3.9. If you are assigned a truck you are not accustomed to take the time to familiarize yourself with the controls and truck before you leave the yard.

## 4. Snow Plowing Etiquette

- 4.1. Be as courteous as is possible while still being able to accomplish your job.
- 4.2. Do not cover sidewalks with snow and do not push snow in front of driveways mailboxes or fire hydrants while clearing circles or similar areas.
- 4.3. As much as is feasible try not to roll excess amounts of snow into driveways.

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- 4.4. If a customer is angry with you and approaches your truck stay in the safety of your cab. Exiting the cab can be construed as an escalation. Be nice, do not argue with the customer and get back to plowing as soon as is feasible.
- 4.5. Assisting stuck road users may seem like the correct thing to do but it is best to keep plowing in such circumstances. The entire time you are helping others you are not plowing areas for other customers and increasing their chances of being stuck. You are also increasing your risk of injury from slips, falls, strains and sprains.
- 4.6. Customer cards are available through your supervisor that you can give a customer for concerns or if minor property damage occurs.

## 5. Snow Plowing

- 5.1. Use the truck radio wisely and keep lines of communication open but pertinent to plowing. Give routine updates to your plow supervisor on your location and progress.
- 5.2. Use extreme caution not to push snow, slush or ice onto pedestrians or onto cars or items such as fences. Slush and snow coming off the blade is very heavy and can easily injure people or cause property damage.
- 5.3. Always plow or salt with your overhead lights on or if you are parked on the side of the road.
- 5.4. At times it may be appropriate to lower your plow, but do not salt, roads that are not maintained by the City on your journey to and from your plow area.
- 5.5. Whenever possible plow with your windows rolled up to reduce the amount of noise entering the cab caused by the blade.
- 5.6. Seat belts shall be worn anytime your vehicle is in motion.
- 5.7. Any unsafe condition with equipment or the truck shall be immediately “Red Tagged” out of service and not used. Notify your plow supervisor and write up the repair with the Fleet Service Writers as soon as possible.
- 5.8. Use caution while entering or exiting the greasing and D.E.F. fueling island area. This area is narrow and the side wing and/or plow may hit the island or building.
- 5.9. Wear a class 2 reflective garment, vest or coat whenever you are outside your cab. A class 3 garment is preferred that offers additional reflectivity down the arms. Wearing of a brightly covered and/or reflective hat/beanie is also encouraged.
- 5.10. Clear your vehicle steps and hand holds of ice and snow prior to entering the cab.
- 5.11. Inspect your plow bits in a safe location away from vehicle and loader movement.
- 5.12. Do not linger in the salt yard as this creates congestion and safety hazards for you and other operators.
- 5.13. Promptly notify your plow supervisor of any concerns, breakdowns or if you are returning to Fleet for repair or bit replacement. Notify your plow supervisor when you are back in service.
- 5.14. Slow down to 5-10 mph prior to engaging 4-wheel drive or differential locks. Try to engage these systems just prior to you needing them.
- 5.15. Slow down when crossing waterways and speed bumps in your plow areas. If you hit either at high speeds violently it is best to stop and check your truck. Pay close attention to possible spring damage.
- 5.16. Turn off your PTO at speeds greater than 40 to 45 mph.
- 5.17. If you experience a “Hot Oil” alarm pull over and park your truck. If you experience a “Low Oil” alarm pull over, raise your plow, and shut off your truck. You are likely having a hydraulic oil problem, notify your supervisor.

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- 5.18. If you experience unusual alarms notify your supervisor at 801-330-4579 for assistance.
- 5.19. If you are using a lot of air from the air brake system it is likely that your brakes are out of adjustment or you have a leak. Notify your supervisor at 801-330-4579.
- 5.20. If you have an “ABS” indicator light on it means your Anti-lock Brake System is not working. Finish plowing being aware that you do not have anti-lock brakes. Write up for repair at the end of your shift.
- 5.21. It is best to remove tarp arms (when feasible) during plow season. Tarp arms on trucks with side plows must have the tarp arm removed.
- 5.22. Keep inside of cab clean and clear of clutter and remove any garbage at the end of your shift.
- 5.23. “Write up” equipment promptly for repairs and notify your supervisor if it is something that you cannot easily fix yourself. Fleet has an after hour drop box and forms near the Fleet Service Writers office if the Fleet shop is closed.
- 5.24. Avoid backing whenever possible. If you have to backup anticipate people pulling in behind you and start the backing process slowly to allow people to react and move out of the way. Never back up unless you are sure it is safe to do so.
- 5.25. Be careful not to back the sander into piles of snow or salt as it damages the mud flaps and sander.
- 5.26. Avoid U-turns whenever possible. Never make a U-turn unless it is safe to do so.
- 5.27. Use the brine system. Brine helps to activate the salt quicker and keeps snow and ice from bonding to the road. Turn off the brine pump when tank becomes empty and continue to spread salt until you can refill the tank.
- 5.28. Adjust the opening of the sander gate for each storm depending on current or expected conditions. Recommended gate opening is 3 to 3.5 inches.
- 5.29. Adjust your spinner speed so that salt is not cast out much wider than about one foot wider than the width of your truck.
- 5.30. Try not to hit tree limbs with mirrors, exhaust stack, tarp arms etc.
- 5.31. Push back snow whenever you can.
- 5.32. Use your “plow float” option to reduce wear on plow blades. Turn the plow float switch on and push the plow joystick forward to activate the system.
- 5.33. Side plows require extra attention to the extreme widths when it is down and extra height when it is stowed on the side of the truck. Use caution with plows and especially wings to prevent them from hitting gutters and other stationary items.
- 5.34. Do not plow circles that you cannot safely clear due to parked vehicles or other hazards and notify your plow supervisor of the location. Whenever possible, and safe to do so, back into the circle and plow and salt your way out until the problem can be resolved.
- 5.35. If there are cars parked on both sides of the road or in a manner that will not allow you to safely pass go to the next road and notify your snow plow supervisor. Do not try and squeeze through and wait until the vehicles are moved. Supervisors can contact UPD at 801-743-7000 for assistance in moving vehicles.
- 5.36. If you strike a manhole and suspect damage stop and check it to make sure it has not left a hazardous condition. Notify your plow supervisor of any open or hazardous manhole. Protect a hazardous manhole with your truck and overhead lights until your supervisor or local agency can respond or the problem is resolved. Ensure that no fluids are leaking from your truck into the manhole.

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- 5.37. Top off your fuel tank to full at the end of your shift. Keep diesel exhaust fluid (DEF), windshield washer fluid, and other needed fluids topped off as needed.. Trucks must be left in a “ready to go” condition at the end of your shift unless it is being repaired.
- 5.38. Report to your plow supervisor when you are done with your shift and before you go home. You may need to be reassigned.
- 5.39. At the end of each shift do a visual walk-around inspecting for damage or needed repairs and grease required grease points.
- 5.40. After you unload your salt and wash your truck make sure your sander gate has been set back to 3 to 3.5 inches open.

## 6. Sanders, Brine Systems, Connections and Related Items

- 6.1. Avoid using high pressure water around electrical and hydraulic connections or around fuel tank inlets and vents.
- 6.2. Take the time to keep your electrical and hydraulic connections clean and dry before making connections or before stowing the equipment. Do not use brake cleaner as a cleaning agent. Use a milder product such as WD-40 that will also displace moisture.
- 6.3. Use dielectric grease on electrical connections to keep water and corrosion out. Do not use excess amounts of grease since a little goes a long ways. Replace any caps.
- 6.4. Check your sander chain adjustment periodically. Proper adjustment is when the chain contacts the bottom rail 17 to 21 inches from the center of the rear sprocket. If the chain is out of adjustment write it up for repairs as soon as is possible.
- 6.5. Open the brine tank fill lids prior to filling to prevent over expanding and damage to the tanks.

## 7. Self-Loading Or Being Loaded With Salt

- 7.1. Always face the loader and use three points of contact while climbing onto and off the loader.
- 7.2. Never leave a raised bucket when the loader is unattended.
- 7.3. When loading at the salt pile turn off overhead flashing lights so they do not blind the loader operator.
- 7.4. Use slow movements as you approach your truck with the loader and never exceed your abilities.
- 7.5. Be very careful not to hit tarp arms or side of truck with loader.
- 7.6. Trucks that have been loaded with salt shall immediately leave the salt yard or place themselves in a position as to not interfere with loader or other truck movement.
- 7.7. Stay in the safety of the cab of your truck while being loaded with salt from the loader (*unless you are operating the loader*). Never walk behind or in the area of the front end loader while it is operation.
- 7.8. If you must approach the operator of a front end loader get their attention by raising both hands in the air. Approach only when the operator has acknowledged your intentions and he/she has stopped loader movement and lowered the bucket to the ground. The loader operator should raise their arms to indicate their hands are off the controls and they will not operate or move the loader. Never walk under or near the swing arc or path of the bucket or between the middle articulating point of the loader.
- 7.9. If you are self-loading salt attempt to crush large chunks of salt with loader bucket before loading salt into truck. Loader operators who are assigned to load salt shall crush salt chunks (if present) as much as is feasible before and in-between the loading of trucks.

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- 7.10. Avoid creating excessively high loads of salt in your truck.
- 7.11. Do not use the loader bucket to scrape salt “chunks” off the sander. The sander screens are easily bent and damaged.

## **8. Exhaust System Regeneration**

- 8.1. Pull down on your sun visor and you will find directions on the exhaust system regeneration process.
- 8.2. Turn your cruise control and retarder off during regeneration. PTO must be off.
- 8.3. Do not touch any controls while the truck is regenerating. Operating any control, including stepping on the fuel or brake pedal, will stop the regeneration process.
- 8.4. The exhaust becomes extremely hot. Do not park under or near trees, in the barn or other combustible areas during a parked regeneration.
- 8.5. After regeneration the hot exhaust light must turn off before you can drive (takes 5 -10 minutes to turn off).

## **9. Auto Accidents, Incidents, Injury, Property Damage Etc.**

- 9.1. Report all serious vehicle or injury accidents immediately to 911, dispatch and your supervisor. Emergent medical care shall never be delayed.
- 9.2. Take appropriate measures to render an accident scene you are involved in as safe as is feasible to prevent further injuries.
- 9.3. Report all personal injuries to your supervisor and seek medical attention as needed. Complete a first report of injury within 24 hours of incident or sooner. Notify a safety representative as soon as is possible.
- 9.4. Do not admit fault.
- 9.5. Accidents involving a City vehicle shall be immediately reported to “Dispatch” (801-743-7000). Notify your plow supervisor of all accidents or incidents.
- 9.6. If another vehicle is involved or serious property damage occurred the plow supervisor shall call Blake Schroeder (801-330-4579) and report the accident.
- 9.7. Take many pictures with your phone to include tire tracks, damage to truck or property, location etc. Take pictures from multiple distances and include weather conditions, terrain, road conditions etc.
- 9.8. If you damage private property, sod, mailboxes, etc. notify Dispatch and your plow supervisor immediately. Dispatch is available 24 hours a day at 801-743-7000. Complete an incident report as soon as is feasible or at least within 1 working day.
- 9.9. Employees shall remain at the scene until released by the accident investigator, police and snow plow supervisor.
- 9.10. Employees and supervisors must complete an accident report form and submit it to a designee as soon as possible or at least by the next working day.

## **10. Storm Water Protection Requirements**

- 10.1. Refer to the “Storm Water Protection – Public Right-of-Way” SOP for compliance information regarding protection of storm water systems.

## **STORM WATER POLLUTANT MANAGEMENT FOR SALT PILE LOCATIONS**

### **SCOPE**

To provide standards and guidelines for the effective operation and maintenance of salt pile locations to minimize, as much as possible, contaminants or pollutants from entering the storm water system.

### **PROCEDURES**

#### **1. Managing Salt Pile Areas**

- 1.1. General Area
  - 1.1.1. Keep area clean and free from debris and potential hazards.
  - 1.1.2. Good housekeeping is the responsibility of every employee.
  - 1.1.3. Periodically sweep salt loading areas to reduce the amount of salt exposed to runoff.
  - 1.1.4. Clean out trucks after snow removal duty only in approved areas.
- 1.2. Salt Piles
  - 1.2.1. Keep Salt piles and other aggregate piles, such as sand, together.
  - 1.2.2. Keep piles well groomed and in one place.
  - 1.2.3. If covered, ensure that the cover facility is well maintained and in good repair.
- 1.3. Drainage
  - 1.3.1. Ensure any drainage from uncovered salt piles stays within the secondary containment and does not leave the site.
  - 1.3.2. Remove by pumping with the vacor truck or other means any accumulation of storm water and contaminants, in a secondary containment pond and/or vault, on a regular basis within 72 hours of a storm event if possible or as soon as possible thereafter. Document such occurrences.
  - 1.3.3. Offsite drainage is to be kept clear and in good repair.
  - 1.3.4. Any storm water controls need to be kept in good repair.
  - 1.3.5. If applicable, protect any nearby water bodies where discharges could enter.
- 1.4. Cleaning Operations
  - 1.4.1. Any cleaning operations of equipment that could result in contaminants entering our storm water system shall be performed within an area that is contained by the secondary containment pond or in such a manner as to not enter into local storm drains.

#### **2. Spills/Leaks/Stained Soil**

- 2.1. Small spills/leaks/stained soil
  - 2.1.1. Clean up as soon as possible.
  - 2.1.2. Dispose of waste properly as per EPA/Utah DEQ requirements.
- 2.2. Larger spills

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- 2.2.1. Report any large spill (over a gallon if a liquid) to a supervisor. Supervisor is to then report to upper management to determine what additional reporting may need to be done.
- 2.2.2. Dispose of waste properly as per EPA/Utah DEQ requirements.
- 2.2.3. Dry salt spills shall be cleaned up and the material returned to the salt piles.
- 2.3. Spill Containment/Cleanup Kits
  - 2.3.1. Have a spill containment/cleanup kit at each site.
  - 2.3.2. Spill containment/cleanup kits should include a shovel, “pigs” or elephant trunks, absorbent material and plastic bags for disposal.

## 3. Inspections

- 3.1. Inspection of salt pile areas for concerns to including:
  - 3.1.1. Outside storm water entering into the secondary containment pond.
  - 3.1.2. If salt is covered, inspect cover for any signs of damage or required maintenance.
  - 3.1.3. Any stained soil from petroleum or other spills or leaks.
  - 3.1.4. Integrity of secondary containment pond.
  - 3.1.5. Functionality of storm drain system in the area.
  - 3.1.6. Proper storage practices for salt and other aggregate such as sand.
  - 3.1.7. Any other items that could contribute to safety concerns or storm water pollution or contamination concerns.
- 3.2. Inspect Salt Pile Areas prior to the beginning of the snow plow season and after the snow plow season ends (semi-annual inspections).
- 3.3. Perform random visual inspections of Salt Pile Areas as needed.
- 3.4. Record all inspections, pumping of storm water, etc. on a salt pile area housekeeping log for each area.
- 3.5. District Supervisors are responsible to maintain logs that include inspections, pumping dates, etc.

## 4. Training

- 4.1. Provide annual training for all applicable employees.
  - 4.1.1. Combine salt pile location good housekeeping training with annual snowplow refresher training given each Fall.
  - 4.1.2. Coordinate with Engineering/Flood Control as needed for annual training.
- 4.2. Provide specialized training on a case by case basis as needed.
- 4.3. Record and track all training.

## STORM WATER POLLUTANT MANAGEMENT FOR EXCAVATIONS AND TRENCHING

### SCOPE

The following procedures are to provide guidelines and standards for safety requirements during excavation and trenching operations.

### REFERENCES

- 1) Blue Stakes of Utah utility notifications center.
- 2) Common Ground Alliance.
- 3) Pipeline Association for Public Awareness.
- 4) CFR 1926.650, 1926.51, and 1926.652.
- 5) Storm Water Protection Requirements – Refer to “STORM WATER PROTECTION – PUBLIC RIGHT-OF-WAY” SOP.

### DEFINITION

An excavation is a manmade cut in an earth surface formed by earth removal. A trench is a narrow excavation where the depth is greater than its width and the width is not greater than 15 feet.

### SPECIAL CONCERNS

A number of stresses and deformations can occur in an open cut or trench causing the earth to fall on anyone inside leading to death from crushing and suffocation. An increase in moisture content in the soil leads to instability and reduces the soils cohesion (how it sticks together). As soil becomes less cohesive it becomes unstable.

Cave-ins pose the greatest risk to workers in excavations and trenches. Other potential hazards include falls, falling loads, hazardous atmospheres, mobile equipment, vehicle traffic and underground utilities. Hazards that cause the most injuries while working in an excavation are a lack of protective systems, failure to inspect trenches and protective systems, unsafe spoil-pile placement and unsafe access and egress from the excavation. Excavations and trenches require routine inspections to find and address these concerns.

It is extremely important, especially if someone must enter the excavation, to continuously evaluate not only the excavation but also the surrounding worksite area for hazards. Found hazards must be eliminated or reduced to a safe level whenever possible. Workers must be made aware of found hazards, the solutions that will address such hazards and what personal protective equipment shall be used.

Never enter a trench or excavation without first inspecting the entire site and ensuring that all safety measures have been put in place. If you are ever unsure, do not enter and seek help.

## EMERGENCY AND RESCUE CONSIDERATIONS

1. In the event of a cave-in or trench collapse onto personnel, call 911 immediately. Any assistance that you can give the victim, without endangering yourself, should be done immediately.
2. Avoid using heavy equipment in a rescue attempt of a trapped person without direction of emergency rescue personnel.
3. Never attempt to operate a pipeline valve in the event of a rupture, closing a pipeline valve can cause additional problems. A home gas meter valve can be shut off in an emergency if it is safe to do so and only during the early onset of a natural gas release.
4. In the event a utility is struck and fuel or energy is released, evacuate area, call 911 and deny entry into area.

## PROCEDURES

### 1. Training and or Certifications Required

- 1.1. Competent person training for excavations and trenching.
- 1.2. Confined spaces training.
- 1.3. Storm water protection and pollution prevention.
- 1.4. First aid and CPR.

### 2. Safety Equipment Required

- 2.1. Hard hat
- 2.2. Hearing protectors
- 2.3. High visibility clothing or vests
- 2.4. Gloves, overclothing (marshmallow suits) as needed
- 2.5. Temporary traffic control devices (as needed)
- 2.6. Safety glasses and face shields (as needed)
- 2.7. Shoring devices or trench boxes (as needed)
- 2.8. Stop blocks for edge of excavation (as needed)

### 3. General Requirements

- 3.1. Conduct a safety meeting daily with all involved personnel. At a minimum, the safety meeting shall include the following topics:
  - 3.1.1. Recognized hazards and methods to eliminate or reduce found hazards.
  - 3.1.2. PPE requirements
  - 3.1.3. Individual responsibilities
  - 3.1.4. Emergency procedures
  - 3.1.5. Temporary Traffic Control (TTC) concerns
- 3.2. Conduct a daily excavation site inspection and hazard assessment. Found hazards shall be mitigated or eliminated as much as if feasible. Inspection shall include:
  - 3.2.1. Current and projected weather conditions.
  - 3.2.2. Standing water concerns.
  - 3.2.3. Evidence of water boiling upward into the bottom of the cut.

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- 3.2.4. Evidence of tension cracks, sliding, toppling, heaving or bulging of the side walls of the excavation.
- 3.2.5. Exposed utilities.
- 3.3. A Competent Person (CP) shall be designated and available at all times during excavations anytime a trench or excavation is entered. The CP shall be capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees. The CP must have the authority to take prompt corrective measures to eliminate such found hazards and also have the authority to stop any unsafe acts or work. Any employee shall have the authority to stop unsafe work.
- 3.4. The CP shall inspect trenches at the start of each shift and as conditions change before any worker is allowed to enter such trenches. Inspect trenches following a rainstorm or other water intrusion.
- 3.5. Surface encumbrances such as trees, sidewalks, telephone poles, boulders etc. shall be identified and addressed to ensure safety.
- 3.6. Follow all applicable "Blue Stakes" procedures prior to digging. Efforts shall be made to determine underground utilities in the area. Underground installations shall be protected, supported, or removed as necessary to safeguard employees.
- 3.7. All persons on excavation sites are required to wear a hard hat, high visibility clothing or vest meeting class II requirements and safety glasses. Additional PPE requirements may be required based on hazard and job site daily inspections.
- 3.8. Keep employees, materials, tools or equipment that might fall or roll into an excavation at least 2 feet from the edge of the trench or excavation with depths up to 5 feet deep. For each additional 5 feet of depth add an additional 2 - 3 feet.
- 3.9. Stop blocks shall be placed at least two feet from the edge of the excavation if vehicles are expected to drive near the edge of an excavation. The stop blocks shall be placed in a manner that will prevent vehicles or equipment from backing or driving into the excavation.
- 3.10. Warning signs or warning barricades may be required to alert equipment operators of the edge of an excavation.
- 3.11. Heavy equipment shall be kept at least 10 feet from trench edges when persons are in such trenches.
- 3.12. Do not walk or work under suspended or raised loads and materials.
- 3.13. Trenches greater than 6 feet deep may require fall protection, fall arrest or physical barricades depending on worksite conditions.
- 3.14. Trenches greater than 4 feet deep shall be tested for atmospheric hazards such as low oxygen, hazardous fumes and toxic gases. Do not allow equipment or vehicles such as trucks to idle near a trench when persons are working in the trench. Such idling increases the risk of Carbon Monoxide (CO) poisoning.
- 3.15. If the excavation can be readily seen while walking and is less than 6 feet deep in depth no physical barricades may be required. In such cases the use of caution tape may be considered adequate warning for workers. If it cannot be readily seen, the excavation is greater than 6 feet in depth or other safety concerns arise, barricades or the use of a combination of barrier tape and/or barricades must be used. Protection and visible warning of excavations for motorists and pedestrians should always be considered and safety measures put in place.
- 3.16. Rebar ends or other protruding items shall be covered with wide faced rebar caps.

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- 3.17. Temporary spoil must be placed no closer than 2 feet from the surface edge of the excavation, measured from the base of the spoil to the cut. Spoil should be placed so that it channels water and other run-off water away from the excavation. Spoil should be placed so that it cannot run, slide, or fall back into the excavation.
- 3.18. Permanent spoil should be placed some distance from the excavation.

## 4. Soil Inspections

- 4.1. Before and during an excavation the Competent Person (CP) shall classify the type and stability of the soil involved in the excavation. It is important to note that when water is present in the excavation, it becomes a type C soil. The soil types are classified below:
  - 4.1.1. **Stable rock** - Solid mineral material that can be excavated with vertical sides and will remain intact while exposed. They walls must be free of fissures and cracks.
  - 4.1.2. **Type A soil** – Cohesive soils with an unconfined compressive strength of 1.5 tons per square foot (tsf) or greater. Examples may be clay, silty clay, sandy clay and clay loam.
  - 4.1.3. **Type B soil** – Cohesive soils with an unconfined compressive strength greater than 0.5 tsf but less than 1.5 tsf. Examples may be angular gravel, silt, silt loam, sandy loam.
  - 4.1.4. **Type C soil** – Soils with an unconfined compressive strength of 0.5 tsf or less. Examples may be gravel, sand and loamy sand, submerged soil, soil from which water is seeping, and submerged rock that is not stable. Previously disturbed soils shall be classified as type C.
- 4.2. Daily and routine inspections shall be done looking for hazardous conditions. If hazardous conditions are found, regardless of the depth, stop work until protective measures have been put in place and deemed adequate by the CP.

## 5. Protective Systems

- 5.1. Systems such as shoring, shielding, benching and sloping can be used to protect work sites from cave-ins in trenches and excavations. Shoring is the provision of a support system for trench faces used to prevent movement of the soils and consists of posts, wales, struts, and sheeting. Shielding involves the use of protective boxes that can be placed in the excavation to prevent earth from falling on workers inside it. Benching and sloping is the cutting back and or stepping of the walls in a way that eliminates or reduces the likelihood of a collapse.
- 5.2. For our type of work, sloping or benching of the walls or the use of a trench box is preferred. Shoring requires a higher degree of technical knowledge and is discouraged. If shoring is required, consult the vendor of the shoring equipment for technical knowledge and specialized training as needed for the type of shoring used.
- 5.3. A protective system in the form of shoring, shielding and benching (or a combination of) shall be in place in excavations 5 feet in depth or greater. Consideration for protective systems must be made in shallower depths if the employee is bending over, kneeling, lying on the deck, the soil conditions warrant it or there is evidence of a potential cave-in. A protective system may not be needed in stable rock if so determined by the CP.
- 5.4. Protective systems must meet the demands of the soil classifications and the loads that may be thrust upon a protective system.

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- 5.5. Trench boxes shall either have limited space from the side of the device to the soil or back filled. It is important that protective systems such as a shield box cannot slide sideways in the event of a collapse.
- 5.6. If trench boxes are used in conjunction with slopping or benching, the box shall extend at least 18 inches above the surrounding area.
- 5.7. Sloping and benching requires removal of earth from the edge of the excavation at an angle and in such a way that there is insufficient pressure on the soil at the edge to cause the top or edges to collapse.
- 5.8. Sloping or benching shall not be used in depths greater than 20 feet.
- 5.9. Trenches 20 feet deep or greater require that the protective system be designed by a registered professional engineer or be based on tabulated data prepared and/or approved by a registered professional engineer in accordance with 1926.652(b) and (c).
- 5.10. The maximum allowable slope for excavations is based on the soil type and the vertical to horizontal ratio of the slope for that type of soil.

## **6. Requirements for entering an excavation**

- 6.1. All procedures outlined in 3.0, 4.0 and 5.0 must first be met prior to continuing with these requirements outlined in 6.0.
- 6.2. At no time shall an employee enter an excavation or trench by themselves without someone being outside of the excavation or trench.
- 6.3. Do not work in excavations where water has accumulated or accumulating unless adequate precautions have been taken.
- 6.4. At no time shall an employee enter an excavation to remove rigging placed on shoring equipment. A remote tie line can be used to disconnect the connection point at the lifting eye of the hoisting equipment. Employees must always be protected by the shoring devices while setting such devices.
- 6.5. Employees entering an excavation shall be protected from a cave-in by a protective system designed according to OSHA standards. A protective system can be in the form of proper sloping and/or benching of the sides. Typically, protective system will be in the form of purpose-built shoring devices.
- 6.6. Excavations greater than 4 feet in depth shall have a means of egress in place. This can be in the form of a ladder, stairway or ramp. Ramps shall be in a manner that an employee can walk out standing straight up without assistance. Means of egress shall be within the confines of the protective system.
- 6.7. Ladders placed in an excavation shall be within 25 feet of every worker. Ladders shall be placed as close to a 75° angle as is possible with at least 3 feet of the ladder exposed at the top of the excavation. Metallic ladders should be avoided due to electrical hazards, fiberglass makes a good choice.
- 6.8. Surface crossing or walkways over trenches, if used, shall be designed and purpose built for such use. Guardrails shall be provided if the walkway is 6 feet or more above the bottom of the excavation. A guardrail system shall consist of a top rail that is 42 inches high, a middle rail that is 21 inches high and a toe board that is 4.0 inches high. At least 24 inches of the walkaway must be rest on both sides of the excavation.

## **7. Storm Water Protection Requirements**

- 7.1. Refer to the “Storm Water Protection – Public Right-of-Way” SOP for compliance information regarding protection of storm water systems.

## STORM WATER POLLUTANT MANAGEMENT FOR CRACK SEALER

### SCOPE

The following procedures are to provide guidelines and standards for safety requirements regarding safe operation of the Crack Sealer.

### REFERENCES

1. Cimline Metro Melter Applicator Operators Manual.
2. BearCat Mfg. 2013 Instruction Manual “BK” Series All-Diesel Kracker, Hot Rubberized Crack Sealing Machine Manual.
3. BearCat Mfg. 2015 “BK” Series All-Diesel Kracker Instruction Manual.
4. Maxwell Products NUVO Sealant Safety Data Sheet (SDS)
5. Maxwell Products NUVO Sealant application instructions.

### SPECIAL CONSIDERATIONS

1. Crack sealers use volatile materials at high temperatures and pressures and use highly combustible or explosive fuels. Only qualified persons should attempt to operate, service, or make adjustments to the crack seal equipment. Do not take shortcuts or assume that someone else has acted on your behalf. Follow the instructions found on the machine and in the operator’s manuals. If any rule or precaution is not clear to you, see your supervisor before operating a crack sealer.
2. Working with hot crack seal products has an inherent risk of burns. The heated crack sealing material can reach temperatures as high as 450°F. At these temperatures the crack seal material can cause serious or fatal burns and become explosive under certain conditions. Never allow lighted cigarettes or any burning material near open loading doors or vents. Do not attempt to light the burner with any type of open flame or igniter other than the burner automatic ignition system.
3. Never use gasoline in the burner. Extreme care must be used any time you are working with hot crack seal material such as loading the hopper or making wand connections. Wear safety glasses with a full face shield and protect all bare skin anytime there is a potential of an accidental splash or release of hot product. Safety glasses at a minimum are required while applying crack seal to the road surface. Clothing shall be of cotton, fire resistive fabrics or other non-melting fabric. Protect the top of your head with a hard hat or ball cap and the rear of the neck with a neck shade or shield. Wear non-melting gloves with a tight fitting wristlet so hot material cannot enter the glove. Footwear must be made of leather or other similar material that will provide some thermal protection from hot crack seal material. Footwear cannot have open mesh and it is highly recommended that the ankle is not exposed.

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4. No flammable products shall be used to clean or loosen any component while it is running and the burner is on, use nonflammable citrus-based solvents only. Care must be taken while refueling the crack sealer compressor engine and shall only be done with the engine shut off.
5. An additional risk of burns exists from contact with components of the hot “melter”, diesel engine, after burner and hot exhaust. Avoid contact with such hot surfaces.
6. Do not operate the burner when the machine is unattended, while the machine is in motion, when the machine is parked in a confined area or if the sealant tank contains water.
7. Always wear a face shield and have all bare skin protected while loading the hopper. All other personnel not involved in loading will stand back at least 10 feet. Always load hopper with loading door (on models so equipped), the door will act as a shield when product dumps into hopper. Do not load with both loading doors open, hot sealant may splash out of the open door. Always load melter from ground level and never stand on the machine. Care should always be taken when placing blocks of sealant into the melter to prevent splash of hot material. With melters that use an agitator, the agitator should be stopped when loading blocks of sealant into the agitator to avoid splashing hot sealant on the operator.
8. Before making hose or wand connections, performing maintenance or repairs on the wand, foot or hose, the hot material shall be “sucked” back out of the wand and hose. All personal protective equipment shall be worn.
9. Avoid skin contact with NUVO CS sealants as it may cause skin and eye irritation. If skin irritation occurs, seek medical advice. A current Safety Data Sheet (SDS) of the sealant product shall be read and understood by each employee at least annually. A copy of the sealant SDS and the machine maintenance manual shall be available in the tow vehicle or on the crack sealer.
10. A risk of falling exists while loading, and removing crack seal material from the rear of the tow vehicle. Climbing to gain access and exit the back of the truck shall be done only when 3 points of contact can be maintained.
11. There is a risk of rollover or backover while standing between the tow vehicle and the trailer. Never walk between the two while it is in motion. Do not unload or load material from the truck or stand between the truck and trailer until the driver is aware of your intentions and the truck is in park and the park brake is set.
12. Hazardous noise exists while the compressor is running and while using the air wand. It is best to create distance from the running compressor whenever possible. When you cannot create enough distance from the compressor and anytime you are operating the air wand, you must wear hearing protectors.

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13. Carbon Monoxide is a by-product of the running diesel engine, keep your distance and stand up-wind of the engine whenever possible.
14. Dust exists while blowing out cracks with air wand. Always use prevalent winds or breezes to blow the dust away from you whenever possible. N-95 dust masks shall be used to protect against airborne dusts while blowing out cracks if prevailing winds are not sufficient.
15. A hazard from flying projectiles exists while blowing out cracks. Avoid blowing towards pedestrians, workers or vehicles. Stop blowing and allow pedestrians or vehicles to pass safely as needed. All workers shall wear safety glasses regardless of where they are working while crack sealing.
16. Position yourself in a manner that uses prevalent breezes and winds to carry away fumes and vapors rising from the crack sealer melt pot. Sealers equipped with an after-burner must be in good working condition and running to properly burn off crack sealing vapors. Avoid breathing the sealant fumes whenever possible.
17. A risk of run-over and struck-by accidents from motorists, our own tow vehicle and the trailer exists. Most work falls under mobile and short term worksite temporary traffic control (TTC) guidelines. You must continually review the work conditions and hazards and adapt TTC to meet changing conditions. Work should be scheduled on higher traffic roads when traffic volume is at its lowest whenever possible. Always keep your warning lights clean as possible and keep your high visibility clothing in good and clean condition. The wearing of an orange hardhat or hi-visibility ball cap will increase visibility and should be considered.
18. Job rotation is important to reduce strain on the body while both blowing out cracks and while applying crack seal material. Job rotation also reduces exposure to noise, fumes and dusts. A rotation of no longer than ½ hour is recommended between any one task.

## **CRACK SEALING MATERIAL, NUVO CS**

NUVO CS causes skin and eye irritation, avoid skin contact.

NUVO CS is a hot applied polymer modified asphalt sealant. It is self-leveling, fast setting, quick melting and extremely flexible. It has a maximum safe heating temperature of 400°F with a recommended application temperature of 380°F.

The “PolySkin” packaging is made of the same polymers that is in the crack seal material and is designed to melt completely. Pallets should be kept wrapped until used and should not be left in the sun for long periods of time. If pallets are to be stored for a period of time greater than six months, it is recommended that they be covered with a tarp to prevent damage to packaging from UV exposure.

# Storm Water Management Program - STANDARD OPERATING PROCEDURES

If sealant has been overheated it will get stringy and begin to gel. If gelling occurs, the material should be removed from the melter and discarded.

Pavement temperature is ideal around 40°F. Application at lower temperatures may result in less adhesion due to the possible presence of excess moisture. Refer to the application instructions for applications in other weather or temperature conditions.

Product must not be disposed of together with household garbage. Crack sealing material shall be disposed and recycled with other asphalt materials.

## PROCEDURES

### 1. Training and or Certifications Required

- 1.1. Minimum 40 hours on the job training with lead operator/supervisor. Upon completion of task oriented training additional training may be required until lead operator/supervisor and new operator feel that he/she is adequately trained to perform daily duties safely.
- 1.2. Fire extinguisher training.
- 1.3. Annual first aid training.
- 1.4. Annual safety review and season pre-start training.

### 2. Safety Equipment Required

- 2.1. Operator's manual for crack sealer you are using.
- 2.2. Safety Data Sheets on crack seal material, propane, heat transfer oil, diesel fuel and other chemicals that may be used.
- 2.3. First Aid kit.
- 2.4. Burn treatment kit.
- 2.5. Hard hats.
- 2.6. Hat with neck shade/shield that provides full top of head and rear of neck protection is recommended.
- 2.7. Safety glasses and full face shield meeting ANSI Z87 standards.
- 2.8. N-95 dust masks.
- 2.9. Hearing protectors.
- 2.10. Safety vest or other hi-visibility clothing.
- 2.11. Long sleeved coveralls as needed.
- 2.12. Gloves with wristlets (no open gauntlets).
- 2.13. Leather (or other heavy non-melting material) boots or shoes that do not allow ankle skin to show. No mesh or other such material that will allow hot material to quickly soak through is allowed.
- 2.14. Long pants (no cuffs) and long sleeved shirt with sleeves rolled down and cuffs buttoned. Clothing made from flame resistive or other non-melting fabric such as cotton (no rayon/nylon). Coveralls are recommended.
- 2.15. Temporary traffic control equipment as needed.
- 2.16. Follow truck with arrow board as needed.
- 2.17. 2A10B:C fire extinguisher (10lb. minimum size).

### 3. Equipment Daily Inspection

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*Any found defect shall be repaired or corrected prior to machine use. Always lock/out and use a "red tag" on equipment that is out of service or otherwise dangerous to use.*

- 3.1. Inspect the product wand, hoses and related hardware to ensure;
  - 3.1.1. The hose fitting bolts are tight and the "gripper fingers" are engaged with the fitting end.
  - 3.1.2. There is no excessive wear of foot.
  - 3.1.3. The wand shut off valve is working properly.
  - 3.1.4. The handle hold is in good condition.
  - 3.1.5. The foot swivel is intact and in good condition.
  - 3.1.6. There are no kinks, cuts or twists in the hose.
  - 3.1.7. There are no cracks or excessive wear to hoses or fittings.
- 3.2. Inspect the air wand and air compressor to ensure;
  - 3.2.1. The hose fitting bolts are tight and the "gripper fingers" are engaged with the fitting end.
  - 3.2.2. The compressor oil, coolant and fuel levels are adequate.
  - 3.2.3. The hose is in good condition and all fittings and clamps are tight.
  - 3.2.4. The air wand nozzle is in good condition and not excessively worn.
  - 3.2.5. All shut off valves are working properly.
- 3.3. Inspect the crack seal hose and air hoses, clamps and connections regularly during use for wear or cuts and replace any damaged or worn hoses or fittings immediately.
- 3.4. Inspect the crack sealer:
  - 3.4.1. No visible leaks should exist on the machine or on the ground.
  - 3.4.2. Ensure tongue of trailer is free of cracked welds, missing or loose bolts. Make sure the safety chains and hooks are in place and in good condition. Connect chains in a criss-cross pattern and connect the safety breakaway chain/cable.
  - 3.4.3. Ensure tires and wheels are in good condition with tires inflated properly and lug nuts are tight.
  - 3.4.4. Connect the electrical connector for the running lights, brake lights, turn signals and electric brakes (if applicable) and make sure they work properly.
  - 3.4.5. Ensure fire extinguisher is in place, firmly secured and charged with a current inspection tag or label.
  - 3.4.6. Ensure safety data sheets and operation manuals are available.
  - 3.4.7. Ensure there is no physical damage that has not been addressed.
  - 3.4.8. Ensure fuel, coolant, hydraulic, engine oil and heating oil levels are adequate.
  - 3.4.9. Ensure propane tanks and related hoses are in good shape and securely mounted. There shall be no odor of propane present; a crack sealer shall never be operated with a propane or fuel leak.
  - 3.4.10. Ensure there are no missing or damaged warning decals and labels.
  - 3.4.11. Make sure the machine is in good overall working condition.

## 4. Fire Prevention

- 4.1. The key in preventing a fire from occurring in a crack sealer is to keep it in good working condition and to never operate a crack sealer outside its maximum operating temperature of 400°F. The sealer shall be shut down and the burner turned off immediately any time

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a propane leak, diesel fuel leak or heating oil leak is detected. The propane tank and fuel sources shall be turned off and use shall not continue until the source of the leak is detected and all repairs have been made.

- 4.2. While fueling the sealer or while fueling the tow vehicle, all burners shall be turned off.
- 4.3. In the event a fire does occur call 911 and keep others away. Avoid breathing the products of combustion (smoke and heat) as the smoke is highly toxic. Water shall not be used inside the “melter” by Taylorsville City personnel but water may be used by the Fire Department as per their protocols. A typical ABC fire extinguisher should be used on a small fire only and only if safe to do so from a distance of 8 to 10 feet. Attempting to combat a large fire in a crack sealer shall not be attempted by Taylorsville City personnel.
- 4.4. Disconnecting a burning trailer from the tow vehicle should be considered only if it is safe to do so and the trailer is chocked to prevent the trailer from moving under its own (such as on a grade). Do not park a running sealer near a building, vehicles, under trees, power lines or other such items that could be damaged in the event of a fire. Do not leave a running crack sealer unattended.

## 5. Repairs

- 5.1. Other than replacing hoses, hose connectors, or tightening fittings, all other repairs shall be completed by Fleet mechanics, the Manufacturer or Vendor. Anytime a sealer is out of service for repairs, has caused an accident or otherwise is unsafe to use, it shall be “Red Tagged” out of service and promptly written for repairs. Only use hoses approved for hot applied crack sealing. Tighten all bolts on couplers and connectors before using and only use repair parts that are approved by the manufacturer. The Equipment Manager is the only person who can authorize modifications.

## 6. Startup Procedures

The following procedures are only a general guideline; refer to the operator’s manual for specific detailed instructions on the type of machine you are using.

On a unit that has been sitting idle for a long period of time, slowly raise the oil temperature to 250°F and hold there for approximately 20 to 30 minutes to get rid of accumulated condensation that may be in the oil chamber.

- 6.1. Inspect machine.
- 6.2. Check engine oil level, heating oil level, hydraulic oil level and fuel level, fill as needed.
- 6.3. Preheat and start the main motor.
- 6.4. Set the temperature control (burner should ignite).
- 6.5. Make sure the tank outlet, sealing hose and air cleanout valves are closed.
- 6.6. Open the Thermal Regulation Gate for heating the cabinet.
- 6.7. Allow the temperature to reach approximately 250°F.
- 6.8. Regulate cabinet temperature as needed, never allow the cabinet temperature to exceed 320°F, partially open the cabinet door if necessary. Adjust the gate or close completely to keep the temperature below 320°F.
- 6.9. Start agitation.
- 6.10. Add material, typically 2-3 blocks if tank is low. Use all Personal Protective Equipment including eye glasses and face shield.
- 6.11. Light the “after burner” (if applicable), propane bottle should be set at 5 psi.

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- 6.12. Allow time for sufficient melting.
- 6.13. Start material pump.
- 6.14. Close Thermal Regulating Gate.
- 6.15. Attach sealing wand extension and adjust flow.
- 6.16. Begin sealing procedure.

## 7. Operating the Crack Sealer and Crack Sealing Process

- 7.1. Always refer to the machine operator manual for detailed operator instruction for model of crack sealer being used.
- 7.2. At the beginning of each work shift, the job supervisor shall conduct a meeting with all job site crew members. Safety issues, traffic control, changes in equipment or processes, and any special concerns shall be discussed. All concerns shall be addressed and control measures put in place to eliminate or mitigate such concerns before start of work. Always consider eliminating the hazard first, whenever possible, before using PPE.
- 7.3. Each crew member is responsible for all aspects of safety while working with or near the crack sealer.
- 7.4. Operator must be confident and familiar with all controls. Never exceed your limits or abilities.
- 7.5. Read and follow all warning decals and labels on equipment.
- 7.6. Never leave the machine unattended while it is running.
- 7.7. Make sure the machine is level while towing and operating; an out of level machine can result in an accident or spilled sealant.
- 7.8. Hot material shall be sucked back out of the wand and hose prior to making repairs or adjustments to the wand, hoses or hose fittings. Never point the sealant wand “foot” or air wand at a person.
- 7.9. Do not park a running sealer near a building, vehicles, under trees, power lines or other such items that could be damaged or burn in the event of a fire or from the heat generated by the sealer.
- 7.10. Sealers shall have all burners shut off prior to towing over the road. Burners are only allowed to be on while the trailer is being towed when actual crack sealing is taking place.
- 7.11. Always wear heat resistant gloves with wristlets and non-melting clothing that covers bare skin.
- 7.12. Wearing of a ball cap or hard hat is recommended to protect the top of the head in the event of an unexpected release of hot material. The wearing of a neck shade will also protect the back of the neck.
- 7.13. Wear safety glasses or goggles with a face shield to protect the eyes and face during maintenance, repairs, making wand connections or while loading the holding tank with sealant.
- 7.14. Turn off the agitation and only introduce blocks of crack seal in a manner that will prevent splashing of the sealant. Do not overfill the material tank, for best results, add only as much material as required for the job but never leave the heating coils exposed.
- 7.15. Always load “melter” from ground level, never while on the machine.
- 7.16. Hearing, eye and face protection shall be worn while the air compressor is running and while using the “air wand”. Position yourself so prevailing winds are at your back to direct any dust created away from your body. If visible dust is present, a disposable N-95 dust respirator shall be worn, replace respirator as needed and at least on a daily basis. No one shall share a respirator at any time.

# Storm Water Management Program - STANDARD OPERATING PROCEDURES

- 7.17. Stay aware of your surroundings during operations and stop air wand operations when pedestrians need to pass your job site. Always be aware of the potential for blowing debris in the direction of the public.
- 7.18. On roads that are heavily laden with dirt it is recommended to have a street sweeper to sweep the road first. Doing so will reduce the amount of debris and dust created while blowing out the cracks with compressed air.
- 7.19. Use measures to protect moving vehicles, bicyclists or pedestrians from driving or walking onto molten or uncured product.
- 7.20. Make sure the tow vehicle is stopped and make the driver aware of your intentions while unloading product from rear of tow vehicle. At no time shall personnel be between the tow vehicle and trailer or on the bed of the tow vehicle while it is in motion.
- 7.21. As with any mobile operation, feet must be kept clear of the path of the trailer wheels.
- 7.22. Hoses shall not be dragged on the ground and measures shall be taken to prevent hoses from being backed over or run over. A hose guard should be used whenever possible to protect areas where accidental dragging of the hose onto the ground may occur.
- 7.23. A sealant hose internal diameter of  $\frac{3}{4}$  inch is recommended to reduce weight of hose and to make it less difficult to clean the hose.
- 7.24. Propane “burners” or torches shall be used with discretion to heat hoses. Avoid excessive heat whenever possible to prevent burning outer layer of hose.
- 7.25. Make sure your Temporary Traffic Control (TTC) is adequate for the conditions and moves as the job moves. Contact your supervisor if unusual traffic patterns exist or you feel traffic control is inadequate.
- 7.26. No amount of fuel leaking is acceptable. If a leak develops shut down the sealer and “Red Tag it out of service until repairs can be completed. Repairs should be done by Fleet personnel, the manufacturer or by the product vendor.
- 7.27. To prevent clogs in the wand and hose, place the wand in the tank and allow product to circulate.
- 7.28. The on-site supervisor shall dictate the application rates and application temperatures to maintain a high quality finished road repair.
- 7.29. Always keep the application wand pointed away from all personnel.
- 7.30. Before the present shift ends, add sufficient sealant to the melting tank to the full working level.

## 8. Shutdown Procedures

The following procedures are only a guideline; refer to the operator’s manual for more detailed instruction.

- 8.1. Approximately 10-15 minutes before the end of the work period, turn the temperature control knob(s) “off”.
- 8.2. Operate the sealant pump in reverse and suck back sealant in wand and hose.
- 8.3. Follow the specific procedures as outlined in the operator’s manual.
- 8.4. Shut engine off.
- 8.5. Turn off propane bottle.
- 8.6. Lock the hose boom in tow position.
- 8.7. Secure the sealing wand, sealing hose and hose boom prior to towing.

## 9. Material Cleanout

# **Storm Water Management Program - STANDARD OPERATING PROCEDURES**

The following procedures are only a guideline; refer to the operator's manual for more detailed instruction.

- 9.1. The "reverse flow" method is the preferred method for cleaning product from wand and hose. Reverse the sealant pump and suck back sealant from the wand and hose back into the melting tank. The material loading doors and wand access port must be closed at all times while cleaning.
- 9.2. Crack sealant must not be disposed of together with household garbage. Crack sealant shall be disposed and recycled with other asphalt materials.
- 9.3. Make sure all flames are extinguished before starting the cleanup procedure. Never use flammable liquids or aerosols around the crack sealer. The NUVO sealant shall be cleaned from equipment with citrus-based solvents, do not use diesel fuel. Caution must be taken that the solvent does not contaminate the sealant.

## **10. Storm Water Protection Requirements**

- 10.1. Refer to the "Storm Water Protection – Public Right-of-Way" SOP for compliance information regarding the protection of storm water systems.

## **STORM WATER POLLUTANT MANAGEMENT FOR SWEEPER, AIR**

### **SCOPE**

To provide guidelines and standards for safety requirements regarding operation of the Air Sweeper.

### **SPECIAL CONSIDERATIONS**

High pressure fluids exist in multiple areas and operating systems of the sweeper. If searching for a leak, use a piece of cardboard and never your hand or arm. If you receive an injection injury, you must notify your supervisor and seek medical attention. The use of high pressure wands shall never be pointed at any body part. Be aware of flying debris being dislodged by the use of pressure wands.

Children are attracted and drawn to the operation of the sweeper due to its spinning brushes, unique sounds and slow speed. If children begin to congregate and follow sweeper it may be best to move operation to the next site, then return later after children have dispersed. Children must never be allowed closer than 10 feet to sweeper. If you cannot verify that it is safe to back up, you must exit the vehicle prior to backing to ensure area is clear.

### **REFERENCES**

- 1) Elgin Vehicle Operators Manual.

### **PROCEDURES**

#### **1. Training and or Certifications Required**

- 1.1. Minimum on the job training of 40 hours with lead operator/supervisor. Upon completion of task oriented training additional training may be required until lead operator/supervisor and new operator feels that he/she is adequately trained to perform daily duties safely.
- 1.2. Commercial class "B" driver's license.

#### **2. Safety Equipment Required**

- 2.1. Safety glasses.
- 2.2. Snug fitting gloves if desired. (Loose fitting gloves may get caught in machinery and impede with manipulation of cab controls.)
- 2.3. N-95 dust masks if visible dust is present in cab.
- 2.4. No loose fitting clothing, jewelry or any item that may become entangled in rotating components shall be worn.

#### **3. Start-up Checklist**

- 3.1. During start-up checks, the hopper must be raised. **THE HOPPER SAFETY SUPPORT MUST BE POSITIONED PRIOR TO WALKING UNDER RAISED HOPPER.**

# Storm Water Management Program - STANDARD OPERATING PROCEDURES

- 3.2. Check engine oil, hydraulic oil, radiator coolant, fuel, and battery fluid levels.
- 3.3. Mirror adjustment and mirror cleaning shall be checked prior to each use.
- 3.4. Check all directional and safety lights.
- 3.5. Check tires for damage and pressure.
- 3.6. Check spray water filter and fill water tank.
- 3.7. Inspect fan housing and impeller for wear weekly.
- 3.8. Check tension of the impeller power belt monthly.

## 4. Operating the Sweeper

- 4.1. Due to the complexity of the air sweeper, operators shall review the manufacturer's operators manual at least bi-annually.
- 4.2. The operator is responsible for all aspects of safety regarding operation of the sweeper.
- 4.3. Allow the sweeper to idle 3 to 5 minutes before operation to allow hydraulic and engine oil to come up to temperature.
- 4.4. While entering or exiting the cab, use the dash mounted grab handles and not the door handles. Follow the entrance and exit procedures posted in the cab.
- 4.5. Seat belts must be worn when vehicle is in motion.
- 4.6. All warning lights must be utilized and directional arrows directing traffic in the correct direction.
- 4.7. All safety guards must be in place and in their correct position.
- 4.8. Verify that the hopper is down and the hopper door is locked.
- 4.9. Side brooms must be extended prior to spinning the brooms to reduce wear and tear on machine.
- 4.10. "Setting a pattern" of the brooms while the vehicle is stationary shall be done prior to using machine. Pay close attention to the width of the main broom pattern that it is between 1 to 3 inches wide and even in width. Side brooms should have a crescent shape. Adjust downward pressure as needed to obtain appropriate patterns.
- 4.11. A broom that is set too flat will throw the debris back into the gutter, and too much down pressure will cause rapid wear. Always listen to the brooms and adjust to correct these conditions as they arise.
- 4.12. The control console and control functions must be fully understood by all operators. Warning lights, buzzers and gauges should not be ignored and always monitored.
- 4.13. The auxiliary engine should not be running while transporting over long distances. It may remain at idle (1000 rpm) during transport over short distances.
- 4.14. Water spray shall be used during operation to reduce wear on the impeller, fan housing, and other components. Water spray will also reduce airborne dust.
- 4.15. Recommended Sweeping Guidelines:
  - 4.15.1. Light sweeping at 1500 -1800 rpm and 5-7 mph.
  - 4.15.2. Medium sweeping at 1800-2200 rpm and 3-5 mph.
  - 4.15.3. Heavy sweeping at 2200-2500 rpm and 2-4 mph.
  - 4.15.4. Heavy concentrations of sand or dirt at 2 to 4 mph but smaller concentrations and lighter materials can be swept at higher speeds.

## 5. Shutting Down the Sweeper

- 5.1. Before shutdown, engine speed must be reduced to idle (1000 rpm) to prevent damage by excessive stopping torque. Idling should continue for about two minutes to allow lubricant and coolant to carry away heat away from components.
- 5.2. Turn off the ignition at the auxiliary engine key switch.

## 6. Cleaning and Routine Maintenance

- 6.1. The parking brake must be set prior to doing any work on the sweeper.
- 6.2. THE HOPPER DOOR SAFETY SUPPORT SHALL BE USED TO SECURE THE HOPPER DOOR BEFORE PLACING YOUR BODY BETWEEN THE HOPPER DOOR AND THE HOPPER.
- 6.3. Raising, opening, and dumping the hopper:
  - 6.3.1. Large amounts of spoilage may be released unexpectedly when hopper is being dumped. Stay clear of dump area and allow hopper time to dump load safely.
  - 6.3.2. Parking brake must be set before raising or tilting the hopper.
  - 6.3.3. Make sure the hopper door is open before the hopper is raised or tilted.
  - 6.3.4. Raise or tilt hopper only when the sweeper is parked on firm, level surfaces.
  - 6.3.5. Be sure the hopper is down before leaving the sweeper.
  - 6.3.6. Do not raise the hopper while under power lines, trees, bridges, etc. The minimum overhead clearance must be at least 14 feet.
  - 6.3.7. If debris sticks in the hopper, remove it by using the scraper stored on the hopper door.
  - 6.3.8. After dumping, the hopper should be washed down for maximum efficiency.
  - 6.3.9. Special attention must be given to the rear hopper door seal and gasket to ensure it is cleaned and inspected daily.
  - 6.3.10. While cleaning the hopper screen, stand clear of the screen swing path and support the loose end.
- 6.4. Clean the spray water filter by closing the manual shutoff valve, remove filter, open shutoff valve and flush filter screen. Once clean, close the valve, assemble filter, open shutoff valve.

## STORM WATER POLLUTANT MANAGEMENT FOR SWEEPER, MECHANICAL BROOM

### SCOPE

To provide guidelines and standards for safety requirements regarding operation of the Mechanical Broom Sweeper.

### SPECIAL CONSIDERATIONS

High pressure fluids exist in multiple areas and operating systems of the sweeper. If searching for a leak, use a piece of cardboard and never your hand or arm. If you receive an injection injury, you must notify your supervisor and seek medical attention. The use of high pressure wands shall never be pointed at any body part. Be aware of flying debris being dislodged by the use of pressure wands.

Children are attracted and drawn to the operation of the sweeper due to its spinning brushes, unique sounds and slow speed. If children begin to congregate and follow sweeper it may be best to move operation to the next site, then return later after children have dispersed. Children must never be allowed closer than 10 feet to sweeper. If you cannot verify that it is safe to back up, you must exit the vehicle prior to backing to ensure area is clear.

### REFERENCES

- 1) Elgin Vehicle Operators Manual.

### PROCEDURES

#### 1. Training and or Certifications Required

- 1.1. Minimum on the job training of 40 hours with lead operator/supervisor. Upon completion of task oriented training additional training may be required until lead operator/supervisor and new operator feels that he/she is adequately trained to perform daily duties safely.
- 1.2. Commercial class "B" driver's license.

#### 2. Safety Equipment Required

- 2.1. Safety glasses.
- 2.2. Snug fitting gloves if desired. (Loose fitting gloves may get caught in machinery and impede with manipulation of cab controls.)
- 2.3. N-95 dust masks if visible dust is present in cab.
- 2.4. No loose fitting clothing, jewelry or any item that may become entangled in rotating components shall be worn.

#### 3. Start-up Checklist

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- 3.1. During start-up checks, the hopper must be raised. THE HOPPER SAFETY SUPPORT MUST BE POSITIONED PRIOR TO GOING UNDER RAISED HOPPER.
- 3.2. Check engine oil, hydraulic oil, radiator coolant, fuel, and battery fluid levels.
- 3.3. Mirror adjustment and mirror cleaning shall be checked prior to each use.
- 3.4. Check all directional and safety lights.
- 3.5. Check tires for damage and pressure.
- 3.6. Check and clean spray water filter and fill water tank.
- 3.7. Flush auxiliary and main radiators until clear of dust and debris.
- 3.8. Clean auxiliary engine air filter tray daily before each shift.
- 3.9. Grease conveyor roller bearings and dirt shoe pivot.

## 4. Operating the Sweeper

- 4.1. Due to the complexity of the broom sweeper, operators shall review the manufacturer's operators manual at least bi-annually.
- 4.2. The operator is responsible for all aspects of safety regarding operation of the sweeper.
- 4.3. Allow the sweeper to idle 3 to 5 minutes before operation to allow hydraulic and engine oil to come up to temperature.
- 4.4. While entering or exiting the cab, use the dash mounted grab handles and not the door handles. Follow the entrance and exit procedures posted in the cab.
- 4.5. Never use gutter brooms as a step.
- 4.6. Seat belts must be worn when vehicle is in motion.
- 4.7. All warning lights must be utilized and directional arrows directing traffic in the correct direction.
- 4.8. All safety guards must be in place and in their correct position.
- 4.9. Verify that the hopper is down.
- 4.10. Log down sweeper hours prior to and at end of shift.
- 4.11. Shift axle into low gear for use on hills, If in low gear maintain speed below 35 mph.
- 4.12. Approach all "water ways" on an angle to prevent damage to broom bearings.
- 4.13. Oil pressure must be monitored; at 20 psi or less the engine will shut down.
- 4.14. Avoid aggressive and sharp turns to prevent bending of "drag skids".
- 4.15. Prior to backing, pause for 20 to 30 seconds to allow time for gutter and main brooms to lift up, and drag skids to raise.
- 4.16. "Setting a pattern" of the brooms while the vehicle is stationary shall be done prior to using machine. Pay close attention to the width of the main broom pattern that it is between 4 to 6 inches wide and even in width. Side brooms should have a crescent shape and approximately 4 inches wide at the top. Adjust downward pressure as needed to obtain appropriate patterns.
- 4.17. A broom that is set too flat will throw the debris back into the gutter, and too much down pressure will cause rapid wear. Always listen to the brooms and adjust to correct these conditions as they arise.
- 4.18. The control console and control functions must be fully understood by all operators. Warning lights, buzzers and gauges should not be ignored and always monitored.
- 4.19. The auxiliary engine should not be running while transporting over long distances, it may remain at idle (1000 rpm) during transport over short distances.
- 4.20. Water spray shall be used during operation to reduce wear on the brushes and to reduce dust.

# Storm Water Management Program - STANDARD OPERATING PROCEDURES

- 4.21. Before engaging sweeping components, bring the unit to a complete stop and idle the engine at 1000 rpm.
- 4.22. Recommended Sweeping Guidelines:
  - 4.22.1. Light sweeping at 2000 rpm and 8 mph.
  - 4.22.2. Medium sweeping at 2250 rpm and 5-8 mph.
  - 4.22.3. Heavy sweeping at 2500 rpm and 1-5 mph.

## 5. Shutting Down the Sweeper

- 5.1. Before shutdown, engine speed must be reduced to idle (1000 rpm) to prevent damage by excessive stopping torque. Idling should continue for about two minutes to allow lubricant and coolant to carry away heat away from components.
- 5.2. Turn off the ignition at the auxiliary engine key switch.

## 6. Cleaning and Routine Maintenance

- 6.1. The parking brake must be set prior to doing any work on the sweeper.
- 6.2. THE "HOPPER TILT SUPPORT BAR" SHALL BE USED TO SECURE THE HOPPER BEFORE PLACING YOUR BODY BETWEEN THE HOPPER AND ANY PART OF THE VEHICLE.
- 6.3. Raising and dumping the hopper:
  - 6.3.1. Large amounts of spoilage may be released unexpectedly when hopper is being dumped. Stay clear of dump area and allow hopper time to dump load safely.
  - 6.3.2. Check for adequate side and overhead clearance. Avoid all lines, bridges, trees and any other possible hazards.
  - 6.3.3. Parking brake must be set before raising or tilting the hopper.
  - 6.3.4. Raise or tilt hopper only when the sweeper is parked on firm, level surfaces.
  - 6.3.5. Be sure the hopper is down before leaving the sweeper.
  - 6.3.6. After dumping and end of shift, the hopper and sweeper should be washed down for maximum efficiency.

## **STORM WATER POLLUTANT MANAGEMENT FOR TRAFFIC LOOP INSTALLATION**

### **SCOPE**

To provide guidelines and standards for requirements regarding installation of traffic loops.

### **REFERENCES**

- 1) Utah APWA Workzone Traffic Control Guide.
- 2) ANSI/ISEA 107-2010 Class 2 Garment Guidelines.
- 3) Public Right Of Way Storm Water Protection SOP.

### **SPECIAL HAZARDS**

Loop cutting requires working in vehicle traffic lanes. Proper use of Temporary Traffic Control is paramount. High visibility in the form of class 2 vests or garments and use of high intensity warning lights on the loop trailer and tow vehicle is required. Whenever possible, work should be done with workers facing oncoming traffic. All employees shall constantly make themselves aware of their surroundings.

A “toolbox” meeting shall take place (and documented on daily report) prior to start of work. Topics shall include hazard identification and mitigation, working safely, traffic control, and proper use of PPE.

High volume/pressure air is used to “blow out” and prepare the saw cut for the loop wire. Care must be taken to control direction of material “blown out” from the cut. Use caution to prevent injury/damage to yourself, other workers, pedestrians, bicyclists, vehicles, or motorcycles.

The two-part epoxy used to imbed the loop wire creates heat when mixed. Use of eye protection and a face shield shall be worn when mixing and imbedding the loop wire. All exposed skin shall be protected with long sleeve shirts or coveralls while working with the loop epoxy. READ the SDS for the epoxy and silicone caulk prior to use.

Saw cutting and use of the air compressor creates harmful noise, hearing protectors must be used. Air compressor and wand project debris, use of safety glasses and face shield is required.

**POLLUTION PREVENTION BEST MANAGEMENT PRACTICE (BMP):** Storm water pollution prevention is required. BMP’s shall be used to prevent saw cooling water and slurry from entering a storm drain or waterway. Refer to Taylorsville City Public Right Of Way Storm Water SOP.

### **PROCEDURES**

#### **1. Training and/or Certification Requirements**

- 1.1. Training on use of the air compressor, concrete/asphalt saw and lift gate.

# Storm Water Management Program - STANDARD OPERATING PROCEDURES

- 1.2. Training on mixing and use of loop epoxy as per current product guidelines.
- 1.3. Training on placement, length, width, and depth of loop cuts.
- 1.4. Annual training on Storm Water Pollution Prevention.
- 1.5. Training on Temporary Traffic Control and work zone safety.
- 1.6. Flagger certification card.
- 1.7. Training on irrigation of eyes and face.

## 2. Safety Equipment Required

- 2.1. Current SDS for loop epoxy and activator (on vehicle).
- 2.2. Current SDS for silicon being used.
- 2.3. Eye wash kit with a minimum of 4 bottles of eye wash.
- 2.4. Eye and face protection in the form of safety glasses and face shields.
- 2.5. Hearing protectors.
- 2.6. Long sleeve shirt or coveralls (during mixing/pouring of epoxy).
- 2.7. Gloves compatible with loop epoxy.
- 2.8. Sturdy shoes or boots.
- 2.9. Flagger stop paddle.
- 2.10. Temporary traffic control devices as needed.
- 2.11. 4'x4' advanced warning signs with stands.
  - 2.11.1. Road Construction Ahead
  - 2.11.2. Be Prepared to Stop
  - 2.11.3. Right Lane Closed Ahead
  - 2.11.4. Man working figure
- 2.12. Class 2 high visibility shirts or vests meeting current ANSI/ISEA standards.
- 2.13. 28 inch minimum height traffic cones (At least 12).

## 3. Storm Water Pollution Prevention Equipment Required

- 3.1. Storm drain inlet protection devices (rock wattles, drain covers, or sand bags).
- 3.2. Square nose shovel, push broom.
- 3.3. Crack cleaning tool to remove large debris from loop cut.

## 4. Temporary Traffic Control

- 4.1. Temporary traffic control with use of advanced warning signs shall be used on any loop cutting job regardless of time on site. Mobile work site rules shall not be used anytime loops are actually being cut.
- 4.2. Vehicle hazard warning signals shall not be used in place of the high intensity strobe or rotating vehicle and/or trailer lights.
- 4.3. Loop trailer warning lights shall be configured to provide motorists with directional, or stationary indication, depending upon which lane of traffic the loop trailer is in. Familiarize yourself with the light controls before use, the front and rear of the light can be configured independently.
- 4.4. Minimum 4x4 early warning sign spacing:
  - 4.4.1. Traffic speeds up to 30mph; placed a minimum 100 feet apart.
  - 4.4.2. Traffic speeds, 30 to 40mph; placed a minimum 350 feet apart.
  - 4.4.3. Traffic speeds in excess of 40 mph; placed a minimum 500 feet apart.
- 4.5. Placement of two 4x4 early warning signs:
  - 4.5.1. First sign drivers read; ROAD CONSTRUCTION (WORK) AHEAD

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- 4.5.2. Second sign drivers read; RIGHT LANE CLOSED AHEAD or “man working figure” depending on lane working in.
- 4.6. Minimum 28 inch tall traffic cones shall be used for tapering traffic away from work vehicles and work area. Cones should be clean and bright especially when used for channelizing. Dullest cones should be used around the cut area.
- 4.7. Spacing of channelizing cones should not exceed a distance in feet equal to 1.0 times the speed limit in mph and direct traffic away from work zone.
- 4.8. Traffic shall never be led into oncoming traffic. If unusual circumstances exist, the supervisor must be notified and more extensive temporary traffic control may need to be implemented.

## 5. Storm Water Pollution Prevention Measures

- 5.1. Use sandbag/s to create ponding in gutter within 25 feet from saw cutting. Multiple sandbags may be required and in several areas. Sand bags shall be positioned and marked with a cone to provide warning to bicyclists, pedestrians, and motorists of their location. Sandbags will not be required on the uphill side of a noticeable grade.
- 5.2. Place rock wattles or sand bags, around storm drain inlets to protect them from entry of cutting water or slurry.
- 5.3. Inspect site at beginning, during, and end of work to ensure cut slurry is being contained.
- 5.4. Refer to the Taylorsville City Public Works storm water protection SOP for additional measures as may be required.

## 6. Cutting Roadway

- 6.1. As much as is feasible when the traffic light turns red for that lane, the second person shall stop the traffic with a “stop paddle” short of the work area while cutting or blowing out cut. This will help prevent debris from striking vehicles.
- 6.2. A cutting blade designed for use with asphalt or concrete will be selected dependent on material being cut. Cutting blade width selection shall match width of loop wire used.
- 6.3. Long cuts or harder materials may require an initial cut depth of 1.5 to 2 inches followed by a second cut to final depth required.
- 6.4. Cutting depth for loops shall be limited to 3 inches. As the cut nears the gutter, a taper in depth shall be made so the cut is 5 inches below the surface where it meets the gutter.
- 6.5. Water shall be used for blade cooling while cutting. Only enough water shall be used to cool the cutting blade. Excessive water use contributes to more clean up, not enough water will shorten the life of the blade.
- 6.6. Width, length, and number of loops cut shall be determined by the job supervisor.
- 6.7. Corners shall not be square, a 45° angle cut shall be used to radius each corner. Cuts shall be made, as much as is feasible, to prevent sharp corners that may cut into the loop wire. Care shall be taken to prevent a “free floating triangle” at the corners.

## 7. Cutting Through the Gutter and Sidewalk

- 7.1. As much as is feasible, follow existing concrete joints (seams) when making cuts. If it is impractical to follow a seam in the gutter, leave at least 5’ of uncut gutter to maintain stability of the gutter. Do not cut deeper into gutter than is necessary, excessively deep cuts may weaken the gutter and the gutter may shift at a later time and pinch the loop wire.

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- 7.2. Use ramp placed on top of gutter when using walk behind saw to cut through gutter.
- 7.3. If cutting through a concrete waterway or waterway transition, contact your supervisor, rebar may be present in the concrete.
- 7.4. Use silicone caulking to seal wire into gutter and sidewalk, do not use loop epoxy.

## 8. Preparing Cut, Laying In, and Setting of Loop Wire

- 8.1. Use a hooked clean out tool to remove large debris from cut.
- 8.2. Use compressed air with an attached wand and blow out the cut (also see 6.1). *Always use hearing protectors, eye and face protection.*
- 8.3. Make four wraps in the cut with the loop wire.
- 8.4. Twist the loop wire in the “home run” portion of the lay a minimum of 3 twists per foot.
- 8.5. Push down the wire into the cut using a wooden “paint stick” or similar device.
- 8.6. Mix epoxy as per manufacturers instruction and pour into cut, ensuring wire is fully covered and imbedded.

## 9. Mixing and Pouring of Loop Epoxy

- 9.1. Always read and follow manufacturer’s instructions prior to mixing.
- 9.2. Always wear eye protection, face shield, gloves, and protect all exposed skin while mixing and pouring epoxy.
- 9.3. Epoxy should not be activated until loop wire is in place.
- 9.4. Mix the epoxy and components together using a power drill and attached mixing paddle.

## 10. Miscellaneous/Other

- 10.1. Weight of saw shall never rest on cutting blade during storage/transporting. Remove saw blade or secure to trailer deck in a way that weight of saw is not on blade.