

# Catchbasin, Catch Basin Manhole, and Manhole Maintenance and Repair

## RESOURCE NEEDS

**DEFINITIONS:**

Catch basins are subsurface concrete basins that receive water through a metal or slotted grate. These basins can also be round concrete chambers, manholes, which contain flow control and water quality devices. The catch basin's primary function is to convey flow while filtering debris and sediment to prevent these items from transferring and clogging the piped collection system downstream.

**PERMIT REFERENCES:**

CBERRRSA performs annual inspection and cleaning of catch basins and inlet control measures to meet permits requirements (3.4.4).

**ACTIVITY DESCRIPTION:**

Inspecting, cleaning, repairing, or replacing catch basins and manholes to ensure adequate drainage of street and the rights-of-way.

Materials:

1. Cement and aggregate
2. Rebar
3. Cast iron lids and concrete rings
4. Vactor truck
5. Warning signs and temporary barricades
6. Clean water

Work Method:

1. Locate nearby underground utilities.
2. Place signs and safety devices prior to commencement of work.
3. Inspect drainage structures and record maintenance needs.
4. Use vactor truck to remove sediment and other debris from manholes or catch basins.
5. When warranted, jet rod or flush storm lines, using precautionary measure to minimize downstream release of plumes.
6. Perform repair work needed.
7. Backfill and replace pavement as required.

**INSPECTION PROCEDURES:**

Surface features of catch basins, catch basin manholes, and manholes are inspected as part of the street maintenance foreman's activity. The maintenance foreman, crew, and general public monitor catch basins and other storm water facilities throughout the year for problems. Areas with a known history of problems are monitored more frequently.

**MAINTENANCE PROCEDURES:**

Drainage structures are considered operational if they are not creating a significant drainage problem. When catch basins, catch basin manholes, and manholes are cleaned approximately 90%-95% of the dirt and debris is removed.

**INSPECTION CRITERIA:**

Action is taken when a drainage structure is either dirty or damaged enough to cause significant damage to either the roadway or private property. This emergency type work is prioritized at the time with other routine drainage work being done, when resources are available.

**MAINTENANCE CRITERIA:**

Drainage crews are sent to known problem areas first. After these areas have been addressed, an attempt is made to clean an entire route at once and to systematically work through the entire system as equipment and resources are available.

# Catchbasin, Catch Basin Manhole, and Manhole Maintenance and Repair

## **INSPECTION SCHEDULE:**

The foreman, crew, and general public monitor drainage structures year-round for problems, with most inspections occurring during the summer. The problems become most apparent during the spring when the ice and snow melt, or during rainstorms. In most cases, maintenance workers responding to problems are able to discern whether the drainage structure needs cleaning or repairs.

## **MAINTENANCE SCHEDULE:**

This is mainly a summer activity with the exception of some emergency manhole repairs are performed during the winter months. Drainage structures causing significant damage to either the road or private property are taken care of ASAP. Structures that have been problematic either during the winter or the spring thaw are scheduled for cleaning and repair.

## **POLLUTION PREVENTION/GOOD HOUSEKEEPING PROCEDURES**

Check all vehicles used for inspection and maintenance for operational condition, leaks, and deficiencies prior to leaving the yard.

Check fittings associated with the vector truck prior to starting operation of the vector truck to remove accumulated sediment material.

Pick up litter and debris around the site as seen during routine inspection. Take any litter collected back to the storage yard and dispose in solid waste containers.

## **WASTE REMOVAL:**

Remove dirt and water that has accumulated in catch basins and manholes with a vacuum truck.

## **WASTE TREATMENT & DISPOSAL:**

Decant materials removed during cleaning at the Hiland Storage facility and take solids to the sanitary landfill for disposal.

# Flow Control Structures (Dams or Weirs)

## RESOURCE NEEDS

**DEFINITIONS:**

Manholes allow surface access to underground utilities for inspection and maintenance operations. Manholes can also be used to make flow connections within the system. Pipes within the storm water system are used to convey surface flow to receiving bodies of water. Weirs installed within manholes are generally used as a means for flow control.

**ACTIVITY DESCRIPTION:**

Inspecting, cleaning, repairing, or replacing damaged or unserviceable flow control structures to ensure adequate drainage of streets and the right-of-way.

Materials

1. Replacement parts as needed

Work Method:

1. Determine the location of the problem and locate nearby underground utilities.
2. Place signs and safety devices prior to commencement of work.
3. Remove debris that has accumulated on the upstream side of the flow control structure.
4. Adjust flow control structure and verify that it is functioning properly.

|  |   |
|--|---|
| <p><b>INSPECTION PROCEDURES:</b><br/>Flow control structures will be inspected for debris buildup (on upstream side) and short circuiting of flow around or over the structure.</p>  | <p><b>MAINTENANCE PROCEDURES:</b><br/>A cleaning crew of 1 or 2 laborers is used to manually remove any debris that has accumulated on the upstream side of the structural controls. Heavy equipment may be needed if a significant amount of sediment needs to be removed.</p>   |
| <p><b>INSPECTION CRITERIA:</b><br/>Action is taken when flow control structures fail to control drainage and or flooding and have the potential to cause significant damage to either the roadway or private property. This emergency type work is prioritized at the time with other routine drainage work being done when resources are available.</p> | <p><b>MAINTENANCE CRITERIA:</b><br/>Flow control structures are considered operational if they are fully adjustable and do not create significant drainage problems.</p>  |
| <p><b>INSPECTION SCHEDULE:</b><br/>These structures are inspected during or after major flooding events to ensure that they are functioning properly.</p>  | <p><b>MAINTENANCE SCHEDULE:</b><br/>Flow control structures causing significant damage to either the road or private property are taken care of ASAP. Structures that have been problematic either during the winter or the spring thaw are scheduled for repair during the summer months. Drainage crews are sent to known problem areas first. After the problem areas have been cleaned and/or repaired, an attempt is made to clean an entire route at once and to systematically work through the entire system, as equipment and resources are available.</p> |

# ***Flow Control Structures (Dams or Weirs)***

## **POLLUTION PREVENTION/GOOD HOUSEKEEPING PROCEDURES**

Provide training and frequent reminders on how to operate the equipment.

Check all vehicles used for inspection and maintenance for operational condition, leaks, and deficiencies prior to leaving the yard.

Check fittings associated with the vector truck prior to starting operation of the vector truck to remove accumulated sediment material.

Pick up litter and debris around the site as seen during routine inspection. Take any litter collected back to the storage yard and dispose in solid waste containers.

Take precaution to prevent mud and dust tracking on the roadways. Clean any tracked sediment or dust from work activities.

### **Waste Removal:**

Remove sediment, vegetative matter, and rubbish on the upstream side of the flow control structures either manually or with heavy equipment as required.

### **Waste Treatment and Disposal:**

Use sediment removed during cleaning and maintenance activities as fill or take to the designated fill site for disposal. Recycle or take brush to the designated fill site. Take trash to the sanitary landfill.

# General Facility Housekeeping

|                       |
|-----------------------|
| <b>RESOURCE NEEDS</b> |
|-----------------------|

|  |
|--|
| <p><b>ACTIVITY DESCRIPTION:</b><br/>Protect storm water by maintaining a clean and organized facility.</p> <p>Materials:</p> <ol style="list-style-type: none"> <li>1. Dumpsters at each location</li> <li>2. Fenced in facility to eliminate any errant flying garbage.</li> </ol> <p>Work Method:</p> <ol style="list-style-type: none"> <li>1. Keep open area clean and orderly.</li> <li>2. Pick up litter and remove any unused scrap/junk materials.</li> <li>3. Conduct employee training to re-enforce proper housekeeping.</li> </ol> |
|--|

|   |  |
|---|--|
| <p><b>INSPECTION PROCEDURES:</b><br/>Facilities are inspected as part of the maintenance foreman's activity for proper storage of materials and debris accumulations. Sites are surveyed at a minimum of weekly.</p>  | <p><b>MAINTENANCE PROCEDURES:</b><br/>Disposal of small debris will be deposited in the dumpster. Larger material will be stockpiled until a full load is accumulated and then taken to the sanitary landfill for proper disposal.</p> |
| <p><b>INSPECTION CRITERIA:</b><br/>Action is taken when visible or significant loose amount of debris and trash or storage of materials and general construction supplies are in disarray.</p>  | <p><b>MAINTENANCE CRITERIA:</b><br/>Containment receptacles are in place and monitored, materials stored in proper locations, and construction debris disposed of promptly.</p>  |
| <p><b>INSPECTION SCHEDULE:</b><br/>The foreman and crew maintain facilities year-round to prevent problems from occurring with inspections and summer work. The problems are most apparent during the spring when the snow and ice melts and accumulated debris is visible. In most cases maintenance workers are a normal part of standard daily housekeeping maintenance.</p> | <p><b>MAINTENANCE SCHEDULE:</b><br/>During the summer months a daily routine needs to be established and a weekly routine for the winter months</p>  |

|  |
|--|
| <b>POLLUTION PREVENTION/GOOD HOUSEKEEPING PROCEDURES</b> |
|--|

|  |
|--|
| <p><b>Waste Treatment and Disposal:</b><br/>All materials will be taken to the sanitary landfill and disposed of in a proper manner.</p> |
|--|

# Drainage Ditch Maintenance

## RESOURCE NEEDS

**ACTIVITY DESCRIPTION:**

Cleaning and shaping ditches to restore proper cross-section and flow line, and to ensure proper drainage of the roadway and adjacent roadway.

**Materials:**

1. None

**Work Method:**

1. Locate underground utilities before starting work.
2. Place signs, traffic warning devices and necessary
3. Cut the ditch to the correct grade and cross-section; load waste material into dump trucks.
4. Haul the waste to disposal area.
5. Clean up work area. Sweep roadway and/or shoulder as necessary.
6. Hydro seed banks for erosion control.
7. Remove signs and safety devices.

**INSPECTION PROCEDURES:**

Drainage ditches are inspected as part of the maintenance foreman's activity. Drainage ditches are inspected for proper cross-section, flow line, and debris accumulations. Ditches that need cleaning but are not creating any immediate problems are noted and will scheduled for cleaning when resources are available.

**MAINTENANCE PROCEDURES:**

Drainage crews are sent to known problem areas first. Once these problematic areas have been addressed, an attempt is made to clean an entire route at once and to systematically work through the entire system, as equipment and resources are available.

**INSPECTION CRITERIA:**

Action is taken when drainage ditches become clogged enough to cause flooding or significant damage to either the roadway or private property. This emergency type work is prioritized at the time in conjunction with other routine drainage work.

**MAINTENANCE CRITERIA:**

Drainage ditches are considered operational if they are not creating a significant drainage problem. Drainage ditches are considered clean when approximately 95% of the brush and sediment is removed.

**INSPECTION SCHEDULE:**

The foreman, crew, and general public monitor drainage structures year-round for problems with most inspections and work occurring during the summer. The problems are most apparent during the spring when the ice and snow are melting or during rainstorms. Personnel are periodically contacted and made aware of problem areas by the general public. In most events maintenance workers responding to problems are able to discern whether the drainage structure needs repairs.

**MAINTENANCE SCHEDULE:**

Drainage structures causing significant damage to either the road or private property are taken care of ASAP. Structures that have been problematic either during the winter or the spring are scheduled for cleaning and repair on an as needed basis during the summer months.

# Drainage Ditch Maintenance

## POLLUTION PREVENTION/GOOD HOUSEKEEPING PROCEDURES

Provide training and frequent reminders on how to operate the equipment.

Check all vehicles used for inspection and maintenance for operational condition, leaks, and deficiencies prior to leaving the yard.

Check fittings associated with the vactor truck prior to starting operation of the vactor truck to remove accumulated sediment material.

Pick up litter and debris around the site as seen during routine inspection. Take any litter collected back to the storage yard, and dispose in solid waste containers.

Where practical, prevent disturbance of vegetation in the ditch.

If any work associated with this SOP results in ground disturbance (digging, grading, asphalt removal, etc.), including follow-up repairs that are needed at the structure, the following are implemented:

- Prevent disturbance of or introduction of polluted runoff to receiving waterbodies. Precautions include flow diversion and installation of temporary sediment and erosion control best management practices (such as waddles, matting, or silt fence) as specified in the municipal Storm Water Treatment Plan Review Guidance Manual (SWTPRGM) Appendix A.
- If more than 500 square feet are disturbed, the project may require a Stormwater Pollution Prevention Plan (SWPPP). Follow the requirements set forth in the SWTPRGM Appendix B.
- Stabilize exposed ground, soil, or dirt. Roadways may be stabilized by asphalt or chip seal. Other surfaces, including ditch sideslopes, are reseeded to reestablish vegetation or covered with aggregate (rock or gravel) with no fines.

Take precaution to prevent mud and dust tracking on the roadways. Clean any tracked sediment or dust from work activities.

### **Waste Removal:**

Dirt and vegetative matter from drainage ditches are removed.

### **Waste Treatment and Disposal:**

Organic material (dirt, weeds, brush, etc.) removed during ditch repair is biodegradable and will be hauled away for proper disposal at the designated fill site. Garbage that is generated from drainage ditches is recycled or disposed of at regional landfills.

# Oil and Grit Separators

## RESOURCE NEEDS

**DEFINITIONS:**

Oil and grit separators (OGS) are structural Best Management Practice designed to remove hydrocarbons and sediment from runoff. Runoff passes through these compartments to separate grit, oil and sediment before continuing in the downstream conveyance system.

**ACTIVITY DESCRIPTION:**

Inspecting and cleaning oil/grit separators to remove accumulations of debris, sediment, and oil to ensure proper flow and to prevent pollutants from leaving the separator unit.

**Materials:**

1. Vactor truck
2. Pickup Truck
3. Signs and Temporary Barricades

**Work Method:**

1. Clean and inspect all oil/grit separators.
2. At each site, place signs and safety devices as necessary.
3. Clean up as necessary using a vactor truck.
4. Remove signs and safety devices.
5. Dispose of waste material (e.g., water, sediment, and oil) removed from oil/grit separator (according to the Waste Management Practices below.)

|  |  |
|--|--|
| <p><b>INSPECTION PROCEDURES:</b><br/>The maintenance foreman and crew inspect the OGS units for oil and sediment accumulations. Areas with a known history of oil and sediment accumulation are monitored more closely.</p>  | <p><b>MAINTENANCE PROCEDURES:</b><br/>A cleaning crew and a vacuum truck are used to remove the water, oil, and sediment out of the OGS unit.</p>  |
| <p><b>INSPECTION CRITERIA:</b><br/>Action is taken when a drainage structure is either dirty or damaged enough to cause significant damage to either the roadway or private property. This emergency type work is prioritized at the time with other routine drainage work being done, when resources are available.</p> | <p><b>MAINTENANCE CRITERIA:</b><br/>OGS units are considered operational if they are not creating a significant drainage problem. When OGS units, approximately 90%-95% of the dirt and debris is removed.</p>   |
| <p><b>INSPECTION SCHEDULE:</b><br/>OGS units are inspected and cleaned on an annual basis.</p>   | <p><b>MAINTENANCE SCHEDULE:</b><br/>OGS units are cleaned and inspected annually and reported through the MOA Watershed Management Section. OGS units causing significant damage to either the road or private property are taken care of ASAP. Structures that are damaged and have been problematic either during the winter or the spring thaw are scheduled for repair during the summer months.</p> |

# Oil and Grit Separators

## POLLUTION PREVENTION/GOOD HOUSEKEEPING PROCEDURES

Provide training and frequent reminders on how to operate the equipment.

Check all vehicles used for inspection and maintenance for operational condition, leaks, and deficiencies prior to leaving the yard.

Check fittings associated with the vactor truck prior to starting operation of the vactor truck to remove accumulated sediment material.

Pick up litter and debris around the site as seen during routine inspection. Take any litter collected back to the storage yard, and dispose in solid waste containers.

Take precaution to prevent mud and dust tracking on the roadways. Clean any tracked sediment or dust from work activities.

### **Waste Removal:**

Dirt, water, and oil from oil/grit separators is removed with a vactor truck.

### **Waste Treatment and Disposal:**

Decant water from OGS cleaning activities at the Hiland Storage Facility. Take sediment to the sanitary landfill for disposal.

# Concrete/Asphalt Saw Cutting

## RESOURCE NEEDS

### ACTIVITY DESCRIPTION:

Saw cutting concrete and/or asphalt on the streets, intersections, curbs, gutters, sidewalks, and bike paths to remove damaged or failing structures to maintain a neat appearance and prevent accidental discharge of fluids in the storm sewer system.

### Materials:

1. Pickup truck
2. Signs
3. Water
4. Cutting Saw

### Work Method:

1. Determine the location of the problem and locate nearby underground utilities.
2. Place sign and safety devices prior to commencement of work.
3. Clean debris away from drainage areas.
4. Install fabric to eliminate any cutting fluid from entering drainage system.
5. Cut and remove pavement or concrete.
6. Replace pavement or concrete and backfill material as required.
7. Remove any BMP's that are in place.

|   |   |
|---|---|
| <p><b>INSPECTION PROCEDURES:</b><br/>Asphalt and concrete is inspected by the street maintenance foreman. Concrete that requires maintenance but is not creating any immediate hazards is noted and put on a future maintenance schedule. Areas with a known history of problems are monitored more frequently.</p> | <p><b>MAINTENANCE PROCEDURES:</b><br/>Maintenance crews are sent to repair high safety risk areas first. After these areas have been addressed, an attempt is made to repair sections encompassing an entire route, as equipment and resources are available.</p>   |
| <p><b>INSPECTION CRITERIA:</b><br/>Action is taken when a surface is damaged to the point of a safety hazard. This emergency type work is prioritized at the time with other routine drainage work being done, when resources are available.</p>  | <p><b>MAINTENANCE CRITERIA:</b><br/>BMP's are utilized to prevent the infiltration of cutting fluid and debris into the storm system. Fluids and debris are collected and disposed of. Surfaces are considered operational if they are not creating a significant drainage problem and are not a walking or a driving hazard.</p> |
| <p><b>INSPECTION SCHEDULE:</b><br/>The foreman, crew, and general public monitor surfaces year-round for problems, with the majority of inspections and repairs occurring in the summer.</p>  | <p><b>MAINTENANCE SCHEDULE:</b><br/>Surfaces that are of significant damage to either the road or private property are taken care of ASAP. Surfaces are historically repaired during the summer months.</p>   |

# Concrete/Asphalt Saw Cutting

## POLLUTION PREVENTION/GOOD HOUSEKEEPING PROCEDURES

Provide training and frequent reminders on how to operate the equipment.

Check all vehicles used for inspection and maintenance for operational condition, leaks, and deficiencies prior to leaving the yard.

Pick up litter and debris around the site as seen during routine inspection. Take any litter collected back to the storage yard and dispose in solid waste containers.

If any work associated with this SOP results in ground disturbance (digging, grading, asphalt removal, etc.), including follow-up repairs that are needed at the structure, the following are implemented:

- Prevent disturbance of or introduction of polluted runoff to receiving waterbodies. Precautions include flow diversion and installation of temporary sediment and erosion control best management practices (such as waddles, matting, or silt fence) as specified in the municipal Storm Water Treatment Plan Review Guidance Manual (SWTPRGM) Appendix A.
- If more than 500 square feet are disturbed, the project may require a Stormwater Pollution Prevention Plan (SWPPP). Follow the requirements set forth in the SWTPRGM Appendix B.
- Stabilize exposed ground, soil, or dirt. Roadways may be stabilized by asphalt or chip seal. Other surfaces, including ditch sideslopes, are reseeded to reestablish vegetation or covered with aggregate (rock or gravel) with no fines.

Take precaution to prevent mud and dust tracking on the roadways. Clean any tracked sediment or dust from work activities.

### **Waste Treatment and Disposal:**

Dispose of waste materials that have been collected before they enter the storm system in the designated fill site.

# Mowing and Brushing

## RESOURCE NEEDS

### ACTIVITY DESCRIPTION:

Protect storm water by using proper mowing and brushing techniques. Proper techniques will reduce organic matter and other pollutants from entering the storm drain systems and water bodies.

#### Materials:

1. Mower, brusher
2. Sweeper

#### Work Method:

1. Manage leaves, mowing, and clippings so that runoff does not enter the storm drain system or water bodies.
2. Sweep up lawn and brush clipping instead of flushing with water.
3. Mow and brush less frequently.

### INSPECTION PROCEDURES:

Vegetated facilities are inspected as part of the street maintenance foreman's activities.

### MAINTENANCE PROCEDURES:

Mowing and brushing on an as needed basis. Substantial grass growth and brush growth that hinders storm system and driver visibility problems require maintenance attention.

### INSPECTION CRITERIA:

Action is taken when vegetated areas become overgrown enough to cause significant damage to either the roadway or sight distance problems. This emergency type work is prioritized at the time with other routine drainage work being done, when resources are available.

### MAINTENANCE CRITERIA:

Ensure that all safety factors are met for driver visibility and aesthetically visible grassy areas are met without impact to the storm drain system.

### INSPECTION SCHEDULE:

The foreman, crew, and general public monitor drainage structures year-round for problems, with inspections occurring during the summer. Vegetated facilities that need maintenance but are not creating any immediate problems are noted and cleaned on an as necessary schedule. In most cases, maintenance crews responding are able to discern whether the problem needs cleaning or scheduled mowing or brushing.

### MAINTENANCE SCHEDULE:

Vegetated areas located along roadways are generally scheduled for mowing and brushing once a year after vegetation has grown to a suitable length and resources are available. However, situation may arise that require tending to vegetation more than once during the summer months.

# ***Mowing and Brushing***

## **POLLUTION PREVENTION/GOOD HOUSEKEEPING PROCEDURES**

Provide training and frequent reminders on how to operate the equipment.

Check all vehicles used for inspection and maintenance for operational condition, leaks, and deficiencies prior to leaving the yard.

Mulch clippings from mowing activities in place.

Do not mow within 10-feet of entry points to the storm water conveyance system or water body.

Pick up litter and debris around the site prior to starting mowing activities. Take any litter collected back to the storage yard, and dispose in solid waste containers.

Sweep up and remove any excess clippings from mowing or brushing activities, instead of flushing with water.

### **Waste Treatment and Disposal:**

Take accumulated grass or brushing that needs to be removed to the designated fill site or use as bedding for other organizations.

# Culvert and Storm Drain Maintenance and Repair

## RESOURCE NEEDS

**ACTIVITY DESCRIPTION:**

Inspecting, cleaning, repairing, or replacing damaged or unserviceable culverts and/or storm drains to ensure adequate drainage of streets and the rights-of-way.

Materials:

1. Pipe and bands
2. Base rock
3. Backfill
4. Water plug(s)
5. Backhoe
6. Vactor
7. Signs and temporary barricades
8. Water

Work Method: Work methods will vary depending on the condition of the structure and the nature of the repair.

1. Determine the location of the problem and locate nearby underground utilities.
2. Place signs and safety devices prior to commencement of work.
3. Clean branches and other debris prior to commencement of work.
4. Clean branches and other debris away from culvert ends. If necessary, use a shovel to remove sloughing soil from ends.
5. Cut and remove pavement and excavate down to the storm drain (if required)
6. When warranted, jet rod or flush to clean storm lines as needed, using precautionary measures to minimize downstream plumes.
7. Install inflatable sewer plugs to stop the flow (if required) and perform repair work as needed.
8. Backfill and replace pavement as required.

**INSPECTION PROCEDURES:**

Portions of storm drains and culverts are inspected as part of the street maintenance foreman's activity. Storm drains and culverts that need cleaning but are not creating any immediate problems are added to a cleaning schedule. All major storm drain outfalls are inspected once during the summer months and documented. The inlets and outfalls of culverts are inspected for accumulations of dirt, grasses, weeds, brush, rocks, and other debris that may cause blockage. Areas with a known history of problems are monitored more frequently.

**INSPECTION CRITERIA:**

Action is taken when a drainage structure is either dirty or damaged enough to cause significant damage to either the roadway or private property. This emergency type work is prioritized at the time with other routine drainage work being done, when resources are available.

**MAINTENANCE PROCEDURES:**

Drainage crews are sent to known problem areas first. After the problematic areas have been addressed, an attempt is made to clean an entire route at once and to systematically work through the entire system as equipment and resources are available.

**MAINTENANCE CRITERIA:**

Drainage structures are considered operational if they are not creating a significant drainage problem. Culverts and storm drains are considered clean when approximately 75% of the dirt and debris is removed.

# Culvert and Storm Drain Maintenance and Repair

**INSPECTION SCHEDULE:**

The foreman, crew, and general public monitor drainage structures year-round for problems, with most inspections occurring during the summer. The problems become most apparent during the spring when the ice and snow are melting, or during rainstorms. Personnel are periodically contacted and made aware of problem areas by the general public. Maintenance workers responding to problems are able to discern whether the drainage structure needs cleaning or repairs.

**MAINTENANCE SCHEDULE:**

Drainage structures causing significant damage to either the road or private property are taken care of ASAP. Structures that have been problematic either during the winter or the spring thaw are scheduled for cleaning and repair (if needed) during the summer months.

**POLLUTION PREVENTION/GOOD HOUSEKEEPING PROCEDURES**

Provide training and frequent reminders on how to operate the equipment.

Check all vehicles used for inspection and maintenance for operational condition, leaks, and deficiencies prior to leaving the yard.

Check fittings associated with the vactor truck prior to starting operation of the vactor truck to remove accumulated sediment material.

Pick up litter and debris around the site as seen during routine inspection. Take any litter collected back to the storage yard and dispose in solid waste containers.

Place a bladder downstream of any pipe jetting activities to ensure that sediment plumes are not released into the receiving waters.

Take precaution to prevent mud and dust tracking on the roadways. Clean any tracked sediment or dust from work activities.

**Waste Removal:**

Dirt and water that have accumulated in culverts and storm drains are removed with a vactor truck.

**Waste Treatment and Disposal:**

Decant water from cleaning activities at the Hiland Storage Facility. Take sediment to the sanitary landfill for disposal.

# Road Rehabilitation

## RESOURCE NEEDS

**ACTIVITY DESCRIPTION:**

Road rehabilitation subject to but, not limited to; concrete and/or asphalt repairs in the street, intersections, curbs, gutters, sidewalks, and bike paths. Removing damaged or failing infrastructures to maintain a safe and neat appearance and preventing accidental discharge of fluids in the storm sewer system.

**Materials:**

1. Pickup Truck
2. Dozers
3. Loaders
4. Compactors
5. Graders
6. Pavers
7. Rollers
8. Hand tools
9. Signs
10. Water
11. Type IIA, D-1, geotextile, emulsion, asphalt, concrete, foam board, topsoil

**Work Method:**

1. Determine the location of the problem and locate nearby underground utilities.
2. Place signs and safety devices prior to commencement of work.
3. Clean debris away from drainage area.
4. Install fabric and BMPs to preclude any construction fluids from entering drainage system.
5. Cut and remove pavement or concrete.
6. Excavate any unstable materials.
7. Backfill with acceptable materials.
8. Replace pavement or concrete and backfill material as required.
9. Remove any BMPs that are in place.

|  |   |
|--|---|
| <p><b>INSPECTION PROCEDURES:</b><br/>Road infrastructure a constantly inspected by the street maintenance foreman. Road repairs that are required but are not creating any immediate hazards are noted and added into the future maintenance schedule.</p> | <p><b>MAINTENANCE PROCEDURES:</b><br/>Maintenance crews are sent to repair high safety risk areas first, after these areas have been addressed an attempt is made to repair sections encompassing an entire route.</p>  |
| <p><b>INSPECTION CRITERIA:</b><br/>Action is taken when a surface is damaged to the point of a safety hazard. This emergency type work is prioritized at the time with other routine road maintenance work being done.</p>                                 | <p><b>MAINTENANCE CRITERIA:</b><br/>BMP's are utilized to prevent the infiltration of any road construction debris from entering the storm system. Fluids and debris are collected and disposed of with the proper techniques. Road surfaces are considered operational when they are not creating a significant drainage problem or a walking or a driving hazard.</p> |
| <p><b>INSPECTION SCHEDULE:</b><br/>The foreman, crew, and general public monitor surfaces year-round for problems to road surfaces and potential infrastructure failures. The majority of inspections and repairs occurring in the summer.</p>             | <p><b>MAINTENANCE SCHEDULE:</b><br/>Road and structures that are significantly damaged to either the road or private property are taken care of ASAP. Most surfaces are historically repaired during the summer months.</p>   |

## POLLUTION PREVENTION/GOOD HOUSEKEEPING PROCEDURES

Provide training and frequent reminders on how to operate the equipment.

Check all vehicles used for inspection and maintenance for operational condition, leaks, and deficiencies prior to leaving the yard.

Use only the amount of repair material needed to fix the road.

Compact repair material to prevent tracking on the roadway surface.

Pick up litter and debris around the site prior to starting repair activities. Take any litter collected back to the storage yard and dispose in solid waste containers.

Take precaution to prevent mud and dust tracking on the roadways. Clean any tracked sediment or dust from work activities.

If any work associated with this SOP results in ground disturbance (digging, grading, asphalt removal, etc.), including follow-up repairs that are needed at the structure, the following are implemented:

- Prevent disturbance of or introduction of polluted runoff to receiving waterbodies. Precautions include flow diversion and installation of temporary sediment and erosion control best management practices (such as waddles, matting, or silt fence) as specified in the municipal Storm Water Treatment Plan Review Guidance Manual (SWTPRGM) Appendix A.
- If more than 500 square feet are disturbed, the project may require a Stormwater Pollution Prevention Plan (SWPPP). Follow the requirements set forth in the SWTPRGM Appendix B.
- Stabilize exposed ground, soil, or dirt. Roadways may be stabilized by asphalt or chip seal. Other surfaces, including ditch sideslopes, are reseeded to reestablish vegetation or covered with aggregate (rock or gravel) with no fines.

### **Waste Treatment and Disposal:**

Collect all waste materials before they enter the storm system and dispose of in the designated fill site. Use any unusable materials generated by the construction site not suitable for road construction in other areas that are not located in the road prism. Take any materials not suitable for use in any aspect of the repair to the sanitary landfill and dispose.

# Vegetated Facilities Maintenance

## RESOURCE NEEDS

**DEFINITIONS:**

Vegetated facilities include vegetated swales and engineered wetlands. Vegetated swales are gently sloping depressions planted with vegetation that allow stormwater runoff to be treated before entering the flow conveyance system. Vegetated facilities slow the runoff flow, allowing the water to be filtered and, in some cases, infiltrated into the ground.

**ACTIVITY DESCRIPTION:**

Periodic maintenance of engineered wetlands and vegetated facilities is necessary to ensure that the hydraulic and pollutant removal capacities of these facilities are sustained.

Materials:

1. Mower
2. Sweeper
3. Clippers
4. Saws

Work Method:

1. Place signs and safety devices.
2. Inspect vegetative facilities for evidence of erosion and/or sedimentation, damaged vegetations, mowing or brush cutting needs, or accumulation of rubbish.
3. Install BMP's to manage leaves, mowing, and clippings so that runoff does not carry vegetation into the storm drain system or water bodies.
4. Perform maintenance and landscaping work as necessary.
5. Remove signs and safety devices.

|  |  |
|--|--|
| <p><b>INSPECTION PROCEDURES:</b><br/>Vegetated facilities are inspected as part of the street maintenance foreman's activities.</p>  | <p><b>MAINTENANCE PROCEDURES:</b><br/>Mowing and brushing is done on an as needed basis and erosion control is maintained with hydro seed materials.</p>   |
| <p><b>INSPECTION CRITERIA:</b><br/>Action is taken when vegetated areas become eroded enough to cause significant damage to either the roadway or private property. This emergency type work is prioritized at the time with other routine drainage work being done, when resources are available.</p>   | <p><b>MAINTENANCE CRITERIA:</b><br/>Action is taken when vegetated areas become eroded or when sloughing occurs enough to cause significant damage. This emergency type work is prioritized at the time with other routine drainage work being done, when resources are available.</p> |
| <p><b>INSPECTION SCHEDULE:</b><br/>The foreman, crew, and general public monitor drainage structures year-round for problems, with inspections occurring during the summer. Vegetated facilities that need maintenance are cleaned on a specific schedule. In most cases, maintenance personnel responding to flooding problems are able to discern whether the problem needs cleaning or repairs.</p> | <p><b>MAINTENANCE SCHEDULE:</b><br/>Vegetated facilities located along major roadways are scheduled for mowing and brush removal once a year after vegetation has grown to a suitable length and as equipment and resources are available.</p>   |

# Vegetated Facilities Maintenance

## POLLUTION PREVENTION/GOOD HOUSEKEEPING PROCEDURES

Provide training and frequent reminders on how to operate the equipment.

Check all vehicles used for inspection and maintenance for operational condition, leaks, and deficiencies prior to leaving the yard.

Pick up litter and debris around the site as seen during routine inspection. Take any litter collected back to the storage yard and dispose in solid waste containers.

Where practical or during inspection, prevent disturbance of vegetation.

If any work associated with this SOP results in ground disturbance (digging, grading, asphalt removal, etc.), including follow-up repairs that are needed at the structure, the following are implemented:

- Prevent disturbance of or introduction of polluted runoff to receiving waterbodies. Precautions include flow diversion and installation of temporary sediment and erosion control best management practices (such as waddles, matting, or silt fence) as specified in the municipal Storm Water Treatment Plan Review Guidance Manual (SWTPRGM) Appendix A.
- If more than 500 square feet are disturbed, the project may require a Stormwater Pollution Prevention Plan (SWPPP). Follow the requirements set forth in the SWTPRGM Appendix B.
- Stabilize exposed ground, soil, or dirt. Roadways may be stabilized by asphalt or chip seal. Other surfaces, including ditch sideslopes, are reseeded to reestablish vegetation or covered with aggregate (rock or gravel) with no fines.

Take precaution to prevent mud and dust tracking on the roadways. Clean any tracked sediment or dust from work activities.

### **Waste Removal:**

Remove dirt and vegetative material manually or with heavy equipment. Obtain required permits prior to any work in designated wetlands.

### **Waste Treatment and Disposal:**

Use sediment and vegetative matter that are removed while performing work in engineered wetlands as fill when suitable. Take litter and brush to the sanitary landfill.

# Vehicle and Equipment Fueling

|                       |
|-----------------------|
| <b>RESOURCE NEEDS</b> |
|-----------------------|

|  |
|--|
| <p><b>ACTIVITY DESCRIPTION:</b></p> <p>Prevent storm water contamination originating from vehicle and equipment fueling.</p> <p>Materials:</p> <ol style="list-style-type: none"> <li>1. Absorbent spill clean up kits.</li> <li>2. Ground cables, where applicable</li> </ol> <p>Work Method:</p> <ol style="list-style-type: none"> <li>1. Fuel carefully to prevent drips, maintain a clean distribution vehicle.</li> <li>2. Fuel in designated areas, away from storm system and water bodies.</li> <li>3. Immediately clean up spills and properly dispose of contaminated soil and clean up materials.</li> </ol> |
|--|

|   |  |
|---|--|
| <p><b>INSPECTION PROCEDURES:</b></p> <p>Visual inspection upon fueling activities, looking for leaks in the distribution system and on the vehicle.</p>   | <p><b>MAINTENANCE PROCEDURES:</b></p> <p>Regular inspection during equipment refueling for contamination structural failure. Attempt to fuel in areas with impervious surfaces, protect drains from fueling areas by berms and dikes and use absorbent pads to collect any leaks or minor spills when fueling.</p> |
| <p><b>INSPECTION CRITERIA:</b></p> <p>Action is taken when obvious fuel leakage is noted. Spill and leakage will be kept at a minimum with protective measures in place, fueling on site.</p>   | <p><b>MAINTENANCE CRITERIA:</b></p> <p>Fueling is necessary and must be done with the utmost care and patience. Spills and leakage will be kept at a minimum with protective measures in place when fueling on site.</p>   |
| <p><b>INSPECTION SCHEDULE:</b></p> <p>Inspections are performed on an as needed basis or while other street maintenance activities are being performed. The foreman and crews monitor for problem areas daily or when fueling is present.</p> | <p><b>MAINTENANCE SCHEDULE:</b></p> <p>Inspections are performed daily, on an as needed basis and while other street maintenance activities are being performed.</p>   |

|  |
|--|
| <b>POLLUTION PREVENTION/GOOD HOUSEKEEPING PROCEDURES</b> |
|--|

|   |
|---|
| <p>Provide training and frequent reminders on how to operate the equipment.</p>   |
| <p>Check all vehicles used for inspection and maintenance for operational condition, leaks, and deficiencies prior to leaving the yard.</p>   |
| <p><b>Waste Treatment and Disposal:</b></p> <p>All absorbent materials will be taken to the proper location for disposal. All contaminated soils will be removed to a contracted location for soil remediation.</p> |

# Snow Disposal Site Maintenance

## RESOURCE NEEDS

**DEFINITIONS:**

Snow disposal refers removal and disposal of accumulated snow at Municipal owned snow storage facilities.

**PERMIT REFERENCE:**

CBERRRSA has written this standard operating procedure to meet the requirement for section (3.4.4)

**ACTIVITY DESCRIPTION:**

All activities associated with the maintenance of snow disposal sites; including stacking snow with a dozer or loader, grounds maintenance, and the collection and disposal of litter.

Materials:

1. Water (as needed for ice road surface)

Work Method:

1. Stack the snow in such a manner to maximize the storage capacity and minimize run-off problems of the snow site. (The method of stacking snow with loaders or pushing off with a dozer is specific to the snow site. Loaders are used to stack lifts of snow, which are covered with ice roads on the top to create additional storage areas. Dozers are typically used to push snow off an area that cannot be built up in lifts.)
2. Pick up litter and other debris in the spring.
3. Grade the snow site as necessary during the summer months to ensure proper drainage and vehicular access.

**INSPECTION PROCEDURES:**

Drainage patterns, storm water facilities, and the overall cleanliness of the site are assessed when inspections of snow disposal sites are conducted.

**MAINTENANCE PROCEDURES:**

After litter and debris is collected and removed, the site can be re-graded as necessary with a dozer or grader to provide correct drainage.

**INSPECTION CRITERIA:**

Action is taken when drainage patterns have been altered enough during the winter to cause significant damage to either the roadway or private property.

**MAINTENANCE CRITERIA:**

Snow disposal sites are considered operational if vehicular access points, drainage patterns, and storm water facilities are meeting design standards.

**INSPECTION SCHEDULE:**

Snow disposal sites are generally inspected in the summer months after the majority of the snow has melted. Snow Disposal sites are also inspected periodically throughout the winter months as they are being used.

**MAINTENANCE SCHEDULE:**

Maintenance work at snow disposal sites are generally performed during the summer months. These sites are also monitored during the spring melt to assure that the drainage is functioning properly.

## POLLUTION PREVENTION/GOOD HOUSEKEEPING PROCEDURES

Provide training and frequent reminders on how to operate the equipment.

Check all vehicles used for inspection and maintenance for operational condition, leaks, and deficiencies prior to leaving the yard.

Pick up litter and debris around the site as seen during routine inspection. Take any litter collected back to the storage yard and dispose in solid waste containers. Where practical or during inspection, prevent disturbance of vegetation.

**Waste Removal:**

Collect any loose litter or debris in and around the snow disposal site.

**Waste Treatment and Disposal:**

Take litter and debris collected to the sanitary landfill for disposal

# Vehicle and Equipment Fueling

| <b>RESOURCE NEEDS</b>   |   |
|---|---|
| <p><b>ACTIVITY DESCRIPTION:</b><br/>Prevent storm weather contamination originating from vehicle and equipment fueling.</p> <p>Materials:</p> <ol style="list-style-type: none"> <li>1. Absorbent spill clean up kits.</li> <li>2. Ground cables, where applicable.</li> </ol> <p>Work Method:</p> <ol style="list-style-type: none"> <li>1. Fuel carefully to minimize drips, maintain a clean distribution vehicle.</li> <li>2. Fuel in designated area, away from storm bodies and water bodies.</li> <li>3. Immediately cleanup spills and properly dispose of contaminated soil and clean up materials.</li> </ol> |   |
| <p><b>INSPECTION PROCEDURES:</b><br/>Visual inspection upon fueling activities, looking for leaks in the distribution system and on the vehicle.</p>  | <p><b>MAINTENANCE PROCEDURES:</b><br/>Regular inspection during equipment refueling for contamination structural failure. Attempt to fuel in areas with impervious surfaces, protect drains from fueling areas by berms and dikes and use absorbent pads to collect any leaks or minor spills when fueling.</p> |
| <p><b>INSPECTION CRITERIA:</b><br/>Action is taken when obvious fuel leakage is noted. Spill and leakage will be kept at a minimum with protective measures in place, fueling on site.</p>  | <p><b>MAINTENANCE CRITERIA:</b><br/>Fueling is necessary and must be done with the utmost care and patience. Spills and leakage will be kept at a minimum with protective measures in place when fueling on site.</p>   |
| <p><b>INSPECTION SCHEDULE:</b><br/>Inspections are performed on an as needed basis or while other street maintenance activities are being performed. The foreman and crews monitor for problem areas daily or when fueling is present.</p>  | <p><b>MAINTENANCE SCHEDULE:</b><br/>Inspections are performed daily, on an as needed basis and while other street maintenance activities are being performed.</p>   |
| <b>POLLUTION PREVENTION/GOOD HOUSEKEEPING PROCEDURES</b>  |   |
| <p>Provide training and frequent reminders on how to operate the equipment.</p>   |   |
| <p><b>Waste Treatment and Disposal:</b><br/>All absorbent materials will be taken to the proper location for disposal. All contaminated soils will be removed to a contracted location for soil remediation.</p>  |   |

# Vehicle and Equipment Storage

## RESOURCE NEEDS

**ACTIVITY DESCRIPTION:**

Protect storm water from dirt and sediment that accumulates in the storage areas in addition to petroleum products that may drip or leak from vehicle and equipment in storage.

Materials:

1. Drip pans.
2. Absorbent pads.

Work Method:

1. Use drip pans and absorbent pads to capture potential leaks.
2. Clean spills using absorbent materials of various types.
3. Maintain vehicles to repair and prevent future leaks.

**INSPECTION PROCEDURES:**

Visually inspect the areas under and behind the vehicle, take appropriate action.

**MAINTENANCE PROCEDURES:**

Visually inspect all areas of the equipment and vehicles to identify issues require attention.

**INSPECTION CRITERIA:**

Identify the areas and the potential vehicle or equipment that is contributing to the stains and spills and eliminate any visible petroleum products on the ground through proper procedures.

**MAINTENANCE CRITERIA:**

Action will be taken when suspected deviations are noted. Inspections and corrective actions are required to prevent any spills and specific repairs are necessary of any leaking vehicles on site.

**INSPECTION SCHEDULE:**

Inspections are performed daily and on an as needed basis or while equipment is in storage and other street maintenance activities are being performed. The foreman and crew will monitor the equipment for potential problem daily.

**MAINTENANCE SCHEDULE:**

Operators walk around and inspect the equipment and vehicles daily.

## POLLUTION PREVENTION/GOOD HOUSEKEEPING PROCEDURES

Provide training and frequent reminders on how to operate the equipment.

**Waste Treatment and Disposal:**

All pads and absorbent materials will be taken to the proper location using the proper contractual vendor for either remediation or disposal. All contaminated soils will be removed to a contracted location for soil remediation.

# Anticing Chemical Application

## RESOURCE NEEDS

**PERMIT REFERENCE:**

CBERRRSA has written this standard operating procedure to meet the requirement for section (3.4.4).

**ACTIVITY DESCRIPTION:**

Road deicing and anti-icing practices are used to prevent ice build-up on roads and streets prior to snow accumulation and are separate from aggregate application used once roads have some snow or ice accumulation. The applications of deicing and anti-icing agents are applied by a deicer truck that sweeps in the front and sprays the deicing and anti-icing agents from the back, prior to freezing temperatures.

**Materials:**

1. Magnesium Chloride (26%)
2. Tanker truck (contractor supplied)

**Work Method:**

1. Load truck with anti-icing chemical.
2. Apply chemical in designated areas as needed.
3. Reapply chemical if necessary.
4. Complete proper documentation of work (i.e. quantity of chemical used and locations where applied).

**INSPECTION PROCEDURES:**

The Maintenance foreman conducts the bulk of the inspection work and is supported by calls and reports from the Anchorage Police Department (APD), Alaska State Troopers (AST), Anchorage Fire Department (AFD), and the general public.

**MAINTENANCE PROCEDURES:**

The liquid magnesium chloride is applied to major intersections and other road sections of concern in anticipation of freezing precipitation. The intent is to prevent the strong bond between snow/ice from forming to the pavement surface. An application might also occur during the Fall or Spring to treat the roads in an effort to alleviate air quality problems.

**INSPECTION CRITERIA:**

Focus inspections on the Central Business District (CBD) and high traffic areas, with priority given to hills, curves, bridges, major intersections, school zones, railroad crossings, and shaded spots.

**MAINTENANCE CRITERIA:**

Apply anti-icing chemicals (as needed) when equipment and resources are available to prevent snow/ice from bonding to the pavement.

**INSPECTION SCHEDULE:**

Road conditions are continually assessed, while other winter road maintenance activities are taking place.

**MAINTENANCE SCHEDULE:**

This activity is scheduled to be done before it snows or during the early stages of a snowfall event. Some material is applied to roadways during the summer months for use during street sweeping and dust control.

## POLLUTION PREVENTION/GOOD HOUSEKEEPING PROCEDURES

Check all vehicles used for inspection and maintenance for operational condition, leaks, and deficiencies prior to leaving the yard.

# Thawing of Drainage Structures and Stream Crossings

## RESOURCE NEEDS

### ACTIVITY DESCRIPTION:

Thawing drainage structures, storm drains, and ditches to provide for the proper passage of water and to prevent flooding. (This includes the pumping of areas that have flooded due to ice buildup.)

### Materials:

1. Truck mounted boiler unit
2. Signs
3. Water

### Work Method:

1. Place signs and safety devices prior to the commencement of work.
2. Thaw using stream and appropriate equipment.
3. Clean up site and remove signs and safety devices.

### INSPECTION PROCEDURES:

The maintenance foreman, crew, and general public monitor culverts, storm drains, and other storm water facilities throughout the winter for problems. The inlets and outlets of culverts are inspected for accumulations of ice that may cause blockage. Areas with a known history of freezing problems are monitored more frequently.

### MAINTENANCE PROCEDURES:

A thawing crew and a boiler unit are utilized to thaw the ice in catch basins, manholes, culverts, and storm pipes.

### INSPECTION CRITERIA:

Action is taken when a drainage structure contains enough ice to cause flooding of either the roadway or private property. This emergency type work is prioritized at the time with other cold weather work being done, when resources are available.

### MAINTENANCE CRITERIA:

Culverts and storm drains are considered operational if they are free of ice and are not creating a significant drainage problem.

### INSPECTION SCHEDULE:

Drainage structures and stream crossings are inspected as part of the street maintenance foreman's activity. Flooding becomes most apparent during the spring when the ice and snow are melting, or during rainstorms. In most cases, maintenance workers responding to flooding problems are able to discern whether the problem is due to ice blockage or if the structure is in need of cleaning or repairs.

### MAINTENANCE SCHEDULE:

Thawing of drainage structures or stream crossings is normally performed during spring breakup, but may be necessary earlier in the winter if freeze-thaw cycles clog drainage structures with ice. Frozen drainage structures that flood and cause significant damage to either the road or private property are thawed to restore proper drainage flow.

## POLLUTION PREVENTION/GOOD HOUSEKEEPING PROCEDURES

Provide training and frequent reminders on how to operate the equipment.

Check all vehicles used for inspection and maintenance for operational condition, leaks, and deficiencies prior to leaving the yard.

Pick up litter and debris around the site as seen during routine inspection. Take any litter collected back to the storage yard and dispose in solid waste containers.

### Waste removal:

Remove debris after drainage structure has been thawed. Dispose of in landfill.

### Waste Treatment and Disposal:

Disposal rubbish that is collected at the regional landfill.

# Aggregate Application (Sanding)

| <b>RESOURCE NEEDS</b>   |  |
|---|--|
| <p><b>PERMIT REFERENCE:</b><br/>CBERRRSA has written this standard operating procedure to meet the requirement for section (3.4.4).</p> <p><b>ACTIVITY DESCRIPTION:</b><br/>Placing aggregate on the streets to provide better traction and for safer driving conditions.</p> <p>Materials:</p> <ol style="list-style-type: none"> <li>1. Aggregate</li> <li>2. Magnesium Chloride (26%)</li> </ol> <p>Work Method:</p> <ol style="list-style-type: none"> <li>1. Confirm areas to receive aggregate rather than chemical deicer.</li> <li>2. Apply aggregate to allow safe passage of traffic, specific areas include, intersections and hills.</li> <li>3. Complete documentation as required, including areas sanded and approximate quantity of sand used.</li> </ol> |  |
| <p><b>INSPECTION PROCEDURES:</b><br/>Maintenance foreman conducts the bulk of the inspection work and is supported by calls and reports from the Anchorage Police Department (APD), Alaska State Troopers (AST), and the general public.</p>  | <p><b>MAINTENANCE PROCEDURES:</b><br/>Sanding starts at the summit of steep grades, continues through curves, and begins in advance of major intersections in accordance with prevailing speeds. Liquid magnesium chloride is used to pre-wet the sand in an attempt to “seat” the sand particles into accumulated snow or ice so that it stays in place.</p>  |
| <p><b>INSPECTION CRITERIA:</b><br/>Focus inspections on primary roads, followed by lower priority roads and high traffic areas that are icy.</p>  | <p><b>MAINTENANCE CRITERIA:</b><br/>Abrasives are applied to increase the traction on the traveled way. Sanding only makes a moderate improvement in increasing friction, so the surface will still be somewhat slippery even after sanding is completed. Abrasives are applied to increase the traction on the traveled way. Sanding only makes a moderate improvement in increasing friction, so the surface will still be somewhat slippery even after sanding is completed.</p>  |
| <p><b>INSPECTION SCHEDULE:</b><br/>Aggregate application is primarily a winter activity. Road conditions are continually assessed while other winter road maintenance activities are in process.</p>  | <p><b>MAINTENANCE SCHEDULE:</b><br/>Sanding operations on primary roads (major roads) begin after plowing and/or when ice or compact snow conditions are evident. Sanding operations on secondary roads begin when ice or compact snow conditions are evident and the priority one sections of the roadway has been covered. Sanding operations on priority three roads normally begin when ice or compact snow conditions are evident and priority one and two sections of roadway have been attended. Area wide slick conditions may call for sanding on all roads, as resources are available. However, priority is given to hills, curves, bridges, major intersections, school zones, railroad crossings, and shaded spots.</p> |

# ***Aggregate Application (Sanding)***

|  |
|--|
| <b>POLLUTION PREVENTION/GOOD HOUSEKEEPING PROCEDURES</b>   |
| Check all vehicles used for inspection and maintenance for operational condition, leaks, and deficiencies prior to leaving the yard.   |
| <b>Waste Treatment and Disposal:</b><br>Sand is removed from roads and sidewalks at the end of winter and used as fill. Some sand is swept off to the road shoulder of the road. |

# Street Sweeping

## RESOURCE NEEDS

**PERMIT REFERENCES:**

CBERRRSA performs street sweeping practices to meet permit requirements (3.4.4). This work is executed in accordance with the Municipality of Anchorage Street Sweeping Management Plan (MOA SSMP).

**ACTIVITY DESCRIPTION:**

Sweeping and cleaning streets, intersections, curbs, gutters, sidewalks, and bike paths to remove debris, sand, leaves, and dirt to maintain a neat appearance and prevent the accumulation of debris in the storm sewer system.

**Materials:**

1. Vacuum and Mechanical Sweepers
2. Water
3. Magnesium chloride for early season sweeping to prevent water from freezing.

**Work Method:**

1. Wet the area using a flusher truck.
2. Sweep sidewalks into the curb (sweep on shoulder in areas without curb and gutter).
3. Sweep using as many passes as necessary to visually clean the street.
4. Dump debris at the nearest staging area for testing of materials and disposal.

|   |   |
|---|---|
| <p><b>INSPECTION PROCEDURES:</b><br/>Inspect streets, curbs, and gutters for the accumulation of sand, dirt, and mud associated with street sanding activities or construction.</p>   | <p><b>MAINTENANCE PROCEDURES:</b><br/>A street cleaning crew and a flusher truck are used to remove gross accumulations of sand, dirt, or mud that has accumulated on the surfaces of streets, curbs, and gutters.</p>  |
| <p><b>INSPECTION CRITERIA:</b><br/>Action is taken when accumulations of sand, dirt, mud and/or leaves are unsightly or have the potential to clog nearby storm sewer systems.</p>  | <p><b>MAINTENANCE CRITERIA:</b><br/>Street cleaning activities are considered successful if most sand, dirt, mud, and leaves have been removed from streets, curbs, and gutters and a neat, VISUALLY CLEAN appearance is obtained.</p>  |
| <p><b>INSPECTION SCHEDULE:</b><br/>Inspections are performed on an as needed basis or while other street maintenance activities are being performed. The foreman, crew, and general public monitor streets for problem areas.</p> | <p><b>MAINTENANCE SCHEDULE:</b><br/>Streets are swept by sweepers twice a year as specified in the Municipality of Anchorage Street Sweeping Management Plan: Additional street sweeping is performed on an as needed basis throughout the summer months, along designated routes and the Central Business District. Gravel spills, tract-out, and other debris are cleaned up as soon as possible, as equipment and resources are available.</p> |

# Street Sweeping

## POLLUTION PREVENTION/GOOD HOUSEKEEPING PROCEDURES

Pertinent BMP's for pollution prevention and good housekeeping procedures associated with street sweeping are outlined in the MOA SSMP. Provide training and frequent reminders on how to operate the equipment.

Check all vehicles used for inspection and maintenance for operational condition, leaks, and deficiencies prior to leaving the yard.

Pick up litter and debris around the site as seen during routine inspection. Take any litter collected back to the storage yard and dispose in solid waste containers.

### **Waste Removal:**

Remove sand, dirt and mud from streets, curbs, and gutters using a street sweeper in conjunction with a flusher truck.

### **Waste Treatment and Disposal:**

Dispose of sediment removed during street cleaning activities as fill or transport to the sanitary landfill for disposal.

# Spill Cleanup

## RESOURCE NEEDS

**ACTIVITY DESCRIPTION:**

Protect storm water by educating employees on proper clean up procedures, state reporting requirements and preventative actions.

Materials:

1. Spill response kit
2. Absorbent pads
3. Containment booms
4. Containment materials storage/transportation receptacle

Work Method:

1. Stop the source of the spill, contain if possible- safely
2. Report the spill to the proper agencies.
3. Dispose of the spill related materials.

**INSPECTION PROCEDURES:**

Ensure that spill response equipment is being used in the proper manner and contaminated materials are disposed of properly.

**MAINTENANCE PROCEDURES:**

Stop source, containment if possible, contact proper authorities, and dispose of materials safely and efficiently.

**INSPECTION CRITERIA:**

All materials are contained and collected for proper disposal, with all required agencies contacted.

**MAINTENANCE CRITERIA:**

Containment of spills before they reach any body of water. Proper disposal of contaminated materials

**INSPECTION SCHEDULE:**

Daily when operations are on going. Weekly ensuring the necessary spill response equipment is on hand.

**MAINTENANCE SCHEDULE:**

Maintenance when operations are underway.

## POLLUTION PREVENTION/GOOD HOUSEKEEPING PROCEDURES

Street maintenance personnel responsible for the inspection and maintenance of contaminated materials receive annual hazardous materials training.

Handle contaminated materials in accordance with the Agency's hazardous materials operating policy.

**Waste Treatment and Disposal:**

Contaminated materials may be taken to a contractual source for remediation or disposal.

# Stream Crossings Maintenance

## RESOURCE NEEDS

|   |
|---|
| <p><b>ACTIVITY DESCRIPTION:</b><br/>Inspecting, cleaning, repairing, or replacing damaged or unserviceable storm water control structures that cross a stream.</p> <p>Materials:</p> <ol style="list-style-type: none"> <li>1. Replacement parts (as needed)</li> </ol> <p>Work Method:</p> <ol style="list-style-type: none"> <li>1. Determine the location of the problem and locate nearby underground utilities</li> <li>2. Place signs and safety devices prior to commencement of work.</li> <li>3. Remove debris that has accumulated on the upstream side of the stream crossing.</li> <li>4. Repair the storm water control structure while minimizing adverse impacts to the stream.</li> </ol> |
|---|

|  |   |
|--|---|
| <p><b>INSPECTION PROCEDURES:</b><br/>Inspect stream crossings for debris buildups, drainage problems, and structural integrity.</p>  | <p><b>MAINTENANCE PROCEDURES:</b><br/>A cleaning crew is used to manually remove any debris that has accumulated around the stream crossing. A vacuum truck and/or backhoe may be needed if a significant amount of sediment needs to be removed.</p> |
| <p><b>INSPECTION CRITERIA:</b><br/>Action is taken when a stream crossing appears to be failing or if drainage problems associated with the structure are significant enough to cause damage to either the roadway or private property. This emergency type work is prioritized at the time with other routine drainage work being done when resources are available.</p>  | <p><b>MAINTENANCE CRITERIA:</b><br/>Stream crossings are considered operational if they function properly and do not create significant drainage problems.</p>  |
| <p><b>INSPECTION SCHEDULE:</b><br/>This is mostly a summer activity. Major stream crossings are inspected during or after major flooding events to ensure these structures remain intact. Drainage structures are inspected as part of the street maintenance foreman's inspection activity. Maintenance operators also do cursory inspections of these and other storm water facilities during their travels.</p> | <p><b>MAINTENANCE SCHEDULE:</b><br/>Maintenance activities are performed after inspections indicate that this work is necessary.</p>  |

## POLLUTION PREVENTION/GOOD HOUSEKEEPING PROCEDURES

|  |
|--|
| <p>When litter is collected in bags, store the bags within the ROW away from drainage conveyance areas. Provide pickup for these bags in a timely manner to ensure that litter is disposed of properly in solid waste containers.<br/>Where practical or during inspection, prevent disturbance of vegetation.<br/>If repairs are made to the side slopes that expose soil material, re-seed to re-establish vegetations. Temporary best management practices such as waddles, matting, or silt fence may be needed to protect any nearby receiving body water.<br/>Take precaution to prevent mud and dust tracking on the roadways. Clean any tracked sediment or dust from work activities.</p> |
| <p><b>WASTE REMOVAL:</b><br/>Dirt and vegetative matter in the vicinity of stream crossing is removed manually or with heavy equipment, after the appropriate Alaska Fish and Game and/or Corps of Engineers permits have been obtained.</p>   |
| <p><b>WASTE TREATMENT &amp; DISPOSAL:</b><br/>Sediment removed during maintenance activities may be used as fill. Rubbish that is collected is either recycled or disposed of at a sanitary landfill.</p>  |

# Sedimentation Basin Maintenance

## RESOURCE NEEDS

**ACTIVITY DESCRIPTION:**

Inspecting and cleaning sedimentation basins to remove accumulations of debris and sediment so that design flows are maintained and particulate matter is removed from storm water runoff.

**Materials:**

1. Vactor truck
2. Pickup truck
3. Dozer, loaders, and End Dumps
4. Signs and temporary barricades

**Work Method:**

1. At each sedimentation basin, place signs and safety devices as necessary prior to the commencement of work.
2. Measure the depth of sediment within the basin and estimate the volume of materials that needs to be removed.
3. Remove debris and sediment from the sedimentation basin.
4. Transport material removed from the sedimentation basin to a disposal site.

**INSPECTION PROCEDURES:**

Inlet and outlet structures of the sedimentation basin are inspected to verify they are functioning properly. The depth of sediment within the basin is measured to determine if cleaning is required, fifty percent (50%) of sump warrants basin cleaning.

**MAINTENANCE PROCEDURES:**

A cleaning crew and a vacuum truck are used to clean the sedimentation basin and remove the accumulated sediment.

**INSPECTION CRITERIA:**

Action is taken when a drainage structure is at 50% sump capacity or damaged enough to cause significant damage to either the roadway or private property.

**MAINTENANCE CRITERIA:**

Sedimentation basins are considered operational if they are not creating a significant drainage problem and are effectively removing particulate matter from storm water. When sedimentation basins are clean approximately 90% - 95% of the dirt and debris is removed.

**INSPECTION SCHEDULE:**

Primarily in the summer months sedimentation basins are inspected periodically and as required cleaned when problems are identified.

**MAINTENANCE SCHEDULE:**

Drainage structures causing significant damage to either the road or private property are taken care of ASAP. Structures that have been problematic are scheduled for cleaning and repair during the summer months.

## POLLUTION PREVENTION/GOOD HOUSEKEEPING PROCEDURES

Provide training and frequent reminders on how to operate the equipment.

Check all vehicles used for inspection and maintenance for operational condition, leaks, and deficiencies prior to leaving the yard.

Pick up litter and debris around the site as seen during routine inspection. Take any litter collected back to the storage yard and dispose in solid waste containers.

**Waste Removal:**

Remove sediment and debris from sedimentation basin.

**Waste Treatment and Disposal:**

Dispose of sediment removed during cleaning activities at the designated fill site for disposal.

# Deicing Material Storage

## RESOURCE NEEDS

**PERMIT REFERENCE:**

CBERRRSA has written this standard operating procedure to meet the requirement for section (3.4.4).

**ACTIVITY DESCRIPTION:**

To protect water by proper storing deicing materials. Deicing materials used during winter can be transported by runoff into the storm drain system and eventually into water bodies if not stored properly.

Materials:

1. Storage building (preferred)
2. Polypropylene tanks for chemical deicer (Magnesium Chloride)
3. Impervious flooring
4. Tarps

Work Method:

1. Store inside if available on an impervious floor.
2. Cover sand piles with tarps.
3. Use diversion berms to minimize storm water runoff, or containment systems.

**INSPECTION PROCEDURES:**

Ensure that the protective covers are in place and secured down to prevent wind removal. Containment berms and diversion berms are in good condition.

**MAINTENANCE PROCEDURES:**

Ensure that the tarps are secure and barriers are in place. Allow water/melt to drain in to a buffered area, place any deicing materials at least 100 yards away from any streams or flood plains, contain storm water runoff using buffers to diffuse runoff and clean track out after storm events.

**INSPECTION CRITERIA:**

Action is taken immediately when any of the protective barriers are either moved or damaged enough to cause significant leaking.

**MAINTENANCE CRITERIA:**

Zero exposure to elements that could cause chemicals to migrate into the storm system or water bodies.

**INSPECTION SCHEDULE:**

Weekly, or after a significant storm event. The foreman or working crews monitor containment system year-round for problems. In most cases, maintenance workers utilizing the facilities are able to discern whether there are any problems and make necessary repairs.

**MAINTENANCE SCHEDULE:**

Weekly inspection of site and materials.

## POLLUTION PREVENTION/GOOD HOUSEKEEPING PROCEDURES

Provide training and frequent reminders on how to operate the equipment.

Pick up trash or debris. Take any litter collected back to the storage yard and dispose in solid waste containers.

**Waste Treatment and Disposal:**

Dispose of trash or debris at the sanitary landfill.

# Deicing Chemical Application

## RESOURCE NEEDS

**PERMIT REFERENCE:**

CBERRRSA has written this standard operating procedure to meet the requirement for section (3.4.4).

**ACTIVITY DESCRIPTION:**

Applying chemical deicer to streets.

Materials:

1. Magnesium Chloride (26%)
2. Tanker truck

Work Method:

1. Load truck with deicing chemical.
2. Apply chemical in designated areas as needed.
3. Reapply chemical if necessary.
4. Complete proper documentation of work (i.e. quantity of chemical used and locations where applied).

**INSPECTION PROCEDURES:**

Maintenance foreman conducts the bulk of the inspection work and is supported by calls and reports from the Anchorage Police Department (APD), Alaska State Troopers (AST), and the general public.

**MAINTENANCE PROCEDURES:**

Liquid magnesium chloride at a concentration of 26% in water is applied to major intersections or other sections of road when conditions warrant the need to melt accumulated snow or ice.

**INSPECTION CRITERIA:**

Focus inspections on those areas that are causing the greatest threat to public safety first and then high traffic areas, with priority given to hills, curves, bridges, major intersections, school zones, railroad crossings, and shaded spots.

**MAINTENANCE CRITERIA:**

Apply deicing chemicals as needed when equipment and resources are available to melt accumulated snow or ice.

**INSPECTION SCHEDULE:**

The application of chemical deicer is primarily a winter activity. Road conditions are to be continually being assessed while other winter road maintenance activities are taking place.

**MAINTENANCE SCHEDULE:**

The application of chemical deicer is primarily a winter activity. Deicing chemicals are applied to road surfaces when equipment and resources are available and conditions warrant the need to melt.

## POLLUTION PREVENTION/GOOD HOUSEKEEPING PROCEDURES

Provide training and frequent reminders on how to operate the equipment.

Check all vehicles used for inspection and maintenance for operational condition, leaks, and deficiencies prior to leaving the yard.

# Winter Maintenance of Bridges and Overpasses

## Winter Maintenance of Bridges and Overpasses

### DESCRIPTION:

The general procedure for winter sanding and plowing is to not cast snow over any bridges or overpasses. When casting does occur, operators are instructed to drive as slowly as traffic and weather conditions allow to minimize the amount of snow and sand that is cast off. The CBERRRSA will conduct a yearly safety and operation meeting to reiterate the proper snow plowing procedures for bridges and overpasses to the operators.

### RESOURCE NEEDS

#### MATERIALS:

1. Plow Truck / Grader / or Sander Unit
2. Sand
3. Magnesium Chloride

#### WORK METHOD:

Accepted sanding and plowing practices on low speed roadways includes:

1. Drive a reasonable and safe speed.
2. When approaching bridges and overpasses operators are to slow down.
3. If there is room on the deck, operators may store snow on the bridge/overpass. After the snow event is done, snow will be collected from these areas and placed in a acceptable area.
4. On bridges where the bridge rails are more open, operators are to slow down and manipulate the blade so the snow is pushed straight or carried across the bridge or overpass. When operators are clear of the bridge or overpass, the blade should then be re-set at an angle to cast off snow to the shoulder. Bridge length may prohibit or reduce the effectiveness of this practice in large snow events.
5. Use the minimum amount of sand needed to keep the roadway safe and passable for road users and minimize traffic incidents.
6. During nighttime operations, when other vehicles may not be present on the roadway, operators are to perform operations at slower speeds as described in the above

# ***Winter Maintenance of Bridges and Overpasses***

## **MAINTENANCE PRACTICES**

**MAINTENANCE SCHEDULE:** The procedure of plowing the bridges and overpasses is primarily a winter activity. Road conditions are to be continually being assessed while other winter road maintenance activities are taking place.

**MAINTENANCE PROCEDURES:** Maintenance foreman does the bulk of the inspection work and is supported by calls and reports from the Anchorage Police Department (APD), Alaska State Troopers (AST), and the general public.

**MAINTENANCE CRITERIA:** Conduct procedures before there is an accumulation of snow or pack snow and ice present on the bridge or overpass, during an actual plowing event and after a plow event..

## **WASTE MANAGEMENT PRACTICES**

**WASTE TREATMENT & DISPOSAL:** Snow removal and disposition should be handled in such a way to prevent adverse affects of sanding issues on the watershed below.