



The Dow Chemical Company

Michigan Operations

Midland Resolution Area

Soil Erosion and Sediment Control Plan

May 2012

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1.0 GENERAL SITE INFORMATION

1.1 Site Description

The project area is called the Midland Resolution Area. The Midland Resolution Area covers a total of approximately 1,700 acres within the City of Midland, Michigan. Approximately 425 acres of the Midland Resolution Area is residential land use. Properties with industrial or commercial land use within the Midland Resolution Area cover approximately 1,275 acres. The aerial extent of the Midland Resolution Area is shown on **Figures 1-1 and 1-2**. **Figures 1-3 and 1-4** provide an overview of the two predominantly residential areas within the Midland Resolution Area, and **Figure 1-5** provides an overview of the area with predominantly industrial/commercial land use. An outlier area was identified in a residential area southwest of the intersection of Washington St. and Ashman St. This location was identified during the 2006 blinded sample transect sampling activities. This location falls to the north of the main part of the Midland Resolution Area and is depicted on **Figure 1-6**. The final boundary for the Midland Resolution Area will be adjusted, as necessary, based on soils data generated during implementation of the work.

The remedial objective and presumptive remedy for the Midland Resolution Area will differ by land use type. Residential and residential-like properties will be tested per the approved Work Plan. The remedy as described below will be implemented for properties that are above 250 parts per trillion (ppt) toxicity equivalency quotient (TEQ). The majority of non-residential properties will not require additional evaluation under this work plan because they are below the non-residential dioxins and furans TEQ (990 ppt). A non-residential property will be addressed as a residential property if it determined to be used as a residence or in a residential-like manner.

Remedy implementation will include utility identification, erosion control, soil removal and management, backfill and site restoration and vegetation replacement. Where feasible, soils will be removed by hand digging and/or mechanical excavation to a minimum depth of 12 inches. The excavated soils will be placed into trucks for transport to the Dow Michigan Operation plant site for re-use or to an appropriate disposal facility. After loading, the trucks will be tarped for transport. Restoration of disturbed areas will include backfilling and replacing vegetation. New topsoil and backfill will be imported by the contracting firm from a borrow location that is outside the area possibly impacted by releases from the Dow Michigan Operations Facility, transported to the site and placed by mechanical equipment and hand tools. The final four to six inches of surface backfill materials will be topsoil. Excavated areas will be re-vegetated with sod or seed, as appropriate for the area. Previously landscaped areas will be replanted with similar plants (flower gardens, etc.) and all structures (swing sets, etc.) displaced during the removal process will be replaced, consistent with the property-specific plan developed with the property owner. Maintenance activities, including post construction watering, will be completed by Dow to allow the new vegetation to become established.

Implementation of the presumptive remedy will begin in areas that are the closest to Dow Michigan Operations and then progress outwards in bands across the Midland Resolution Area in subsequent years. The Midland Resolution Area will be subdivided into large property

groupings, based on the number of properties that may be reasonably addressed based on current knowledge of the area within one construction season (April-October). The intent is for the full corrective action – from sampling and analysis to implementation of the remedy – for the property grouping to be addressed within one construction season. Changes to the schedule through the Adaptive Management Process may be made during the project; if improvements or efficiencies can be made; or if other factors make it appropriate to do so. **Figure 1-7** depicts the proposed property groupings designated by current block designation for implementation (A, B, C, etc.).

Table 1 (below) presents details for each property grouping, including the total number of properties, number of residential properties, and acreage.

Table 1: Annual Property Groupings

Property Group	Year Addressed	Total Number of Parcels	Residential Parcels	Total Area (acres)	Residential Acres
A	2012	113	106	38.6	Housing = 28.3 Parks & Rec = 3.75
B	2013	336	299	78.5	Housing = 59.6 Parks & Rec = 6.9 Public/semi-public = 0.8
C	2014	302	268	80.5	Housing = 57 Parks & Rec = 3.2 Public/semi-public = 8.6
D	2015	347	330	100.5	Housing = 80.7 Parks & Rec = 10.8
E	2016	184	178	58.2	Housing = 42.3 Parks & Rec = 0.9 Public/semi-public = 14.8
F	2017	121	115	89.4	Housing = 34.9 Parks & Rec = 3.7 Public/semi-public = 50.1

A Work Plan for this project has been prepared to meet the requirements of the Michigan Department of Environmental Quality (DEQ) Hazardous Waste Management Facility Operating License MID 000 724 724, in compliance with Part 111, Hazardous Waste Management, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended, for the implementation of corrective action in Midland Area Soils. This SE/SC Plan has been prepared to prevent discharge of contaminated sediments into the City of Midland municipal storm sewer system. The storm sewer system discharges into the Tittabawassee River.

1.2 Project Contact

Name:	Steve Lucas
Title:	Michigan Operations Remediation Leader
Telephone:	989-638-6012
Mailing Address:	1790 Building Midland, MI 48667

1.3 Certified Storm Water Operators

Personnel identified at the facility that will have supervision over the inspection and management of soil erosion and storm water controls and who are certified by the Michigan Department of Environmental Quality (MDEQ), as required by Section 3110 of the Michigan Act are:

<u>Name</u>	<u>Certification Number</u>	<u>Work Phone</u>
Gary Waugh (primary)	TBD	989-737-3374
Jim Sprague (alternate)	C-12020	989-636-8469

1.4 Permit Information

A NPDES storm water discharge permit has not been issued by the MDEQ for this project at this time.

1.5 Construction Activity Description

The Midland Resolution Area is located north and east of Dow Michigan Operations property. Surficial soils in the project area are known or suspected to be impacted with dioxins and furans. Dioxins and furans are by-products of incineration, uncontrolled burning and certain industrial processes, such as the manufacture of chlorinated organics. These by-products have been generated at Dow Michigan Operations since the late 1800s, and have been distributed beyond the manufacturing facility boundaries by airborne deposition and fugitive dust emissions.

Dioxins and furans adhere to particles that can then be deposited on soil. After deposition on soils, particle-bound hazardous substances have the potential to be redistributed through surface water runoff and construction and grading activities (secondary transfer mechanisms). In the case of surface water runoff, the particle-bound substances may be mixed with solids that

accumulate in ditches and drainage basins. In the case of construction and grading, particle-bound substances in surface soil may be transferred to and mixed with subsurface soil.

2.0 SOIL EROSION and CONTROL TEAM

The soil erosion and control team is responsible for developing, implementing, maintaining, and revising this SE/SC Plan. The members of the team and their primary responsibilities (i.e. implementing, maintaining, record keeping, submitting reports, conducting inspections, employee training, conducting the annual compliance evaluation, testing for non-storm water discharges, signing the required certifications) are as follows:

Name & Title	Responsibility
Gary Waugh, Project Superintendent	Annual review SE/SC Plan signing certifications, recordkeeping, submitting reports, implementation, conducting weekly inspections and annual compliance evaluation, implementing corrective actions
Servinski Sod Service Personnel	Day-to-day operations, installation and maintenance of structural controls, implementing non-structural controls, inspection of structural and SE/SC control measures

3.0 SITE MAPS

The aerial extent of the Midland Resolution Area is shown on **Figures 1-1, 1-2 and 1-6**. Site-specific site maps will be created for individual work areas, as appropriate.

4.0 SIGNIFICANT MATERIALS

Significant materials are any material which could degrade or impair water quality, including but not limited to:

- Disturbed Soils
- Fuels
- Detergents
- Hydraulic oil, brake fluids and antifreeze required to operate heavy equipment.
- Fertilizers
- Pesticides
- Debris

4.1 Inventory of Exposed Significant Materials

The primary potential pollutant sources associated with construction activities will be disturbed soils, and sediment-laden surface water runoff. After deposition on soils, particle-bound hazardous substances such as dioxins and furans have the potential to be redistributed through surface water runoff and construction and grading activities (secondary transfer mechanisms). In the case of surface water runoff, the particle-bound substances may be mixed with solids that accumulate in ditches and drainage basins. In the case of construction and grading, particle-bound substances in surface soil may be transferred to and mixed with subsurface soil.

Other potential pollutant sources may include fugitive dust, solid waste, sanitary waste and materials/chemicals required to maintain construction equipment such as fuels, lubricants, oils, coolants and other vehicle-related materials.

Other significant materials potentially used onsite by Servinski Sod Services may include fertilizers and pesticides. These materials will not be stored on-site.

4.2 Description of Construction Activities & Significant Material Storage Areas

Construction activities and storage of significant materials are not currently conducted by Dow or Dow’s contractors at properties located within the Midland Resolution Area. Site-specific activities and material storage will be assessed on an individual basis.

The following table outlines possible pollutants and their corresponding construction activity as it relates to the general construction locations.

Table 2: Construction Activity and Significant Materials

Construction Activity	Storm Water Pollutants		Location
	Primary	Secondary	
Clearing, Grading, Excavating and Unstabilized Areas	Soil ¹	Dust, Trash, Debris and Solids	Remediated Properties
Solid Waste (Trash and Debris)		Trash, Debris, Solids and Other Toxic Chemicals	Staging Area (To Be Determined, TBD)
Sanitary Waste		Nutrients, pH (Acids & Bases), Bacteria & Viruses and Other Toxic Chemicals	Staging Area (TBD)
Vehicle/Equipment Fueling and Maintenance		Oil, Grease and Other Toxic Chemicals	Staging Area (TBD if needed)
Vehicle/Equipment Use and Storage		Oil, Grease and Other Toxic Chemicals	Staging Area (TBD if needed)
Landscaping Operations	Soil ¹	Dust, Trash, Debris and Solids, Fertilizer, Pesticide	Remediated Properties

¹Soil may be impacted with dioxins and furans.

4.3 List of Significant Spills

No reportable spills and leaks of polluting materials in quantities reportable under the Part 5 Rules (Rules 324.2001 through 324.2009) are known to have occurred at areas that are exposed to precipitation or that otherwise discharged to a point source for this project area.

4.4 Summary of Sampling Data

There is currently no monitoring program in place or storm water sampling data available. Extensive soil sampling has been performed within the Midland Resolution Area to determine the extent of dioxin and furan contamination in soils. Sampling has been performed during multiple phases from 1984 through 2010 and is included in various reports. These sampling events are summarized in the Interim Response Activity Plan Designed to Meet Criteria dated March 2012.

5.0 NON-STRUCTURAL CONTROLS

Non-structural controls are practices that are relatively simple, fairly inexpensive, and applicable to a wide variety of industries or activities. Non-structural controls are intended to reduce the amount of pollution getting into the surface waters of the state and are generally implemented to address the problem at the source. They do not require any structural changes to the project area. These are typically everyday types of activities undertaken by employees/contractors on the project.

The following sections describe the non-structural controls included to prevent significant materials from coming into contact with or entering storm water runoff.

5.1 Preventative Maintenance Program

Preventive maintenance (PM) involves the regular inspection, testing and cleaning of equipment, storm water management structures and control devices. PM inspections must be recorded and corrective actions taken shall be maintained on file for three years. A Preventative Maintenance Inspection Form is presented in **Appendix A**.

Routine vehicle safety checks are conducted once per month (see *Vehicle Inspection Form* in **Appendix A**). All defective equipment found during the inspections will promptly be repaired or replaced. All major repairs and maintenance of vehicles are conducted in non-storm water areas. Any equipment or vehicle washing will be done off of the construction site at an appropriate facility.

Table 4: Preventative Maintenance Program

Description of Area or Equipment	Task	Frequency
Large Construction Equipment	Inspection for leaking fluids, debris, mechanical operation	Weekly
Vehicle Inspections	Proper functioning of vehicle	Monthly
Street Sweeper	Inspection for leaking fluids, debris, mechanical operation	Weekly

5.2 Site Inspections

Regular inspections are used to document compliance with this SE/SC Plan and Storm Water Regulations. Inspections must be performed and completed by a certified construction storm water operator who are familiar and knowledgeable with NPDES storm water discharge general permits, familiar with the construction site, and have a working knowledge of this site-specific SE/SC Plan.

Qualified personnel shall inspect the following areas at least once every seven (7) days or within 24 hours of a storm event that results in discharge from the site: project staging areas, construction areas that receive hydroseeding until grass is established, catch basin Flexstorm filter inserts, and any site-specific structural control measures. Qualified personnel shall inspect construction sites at least once daily from beginning of excavation until the site has had sod placed or hydroseeding completed.

Standard construction practices regarding monitoring predicted weather and rain fall events will be implemented during the project. Planned tasks including activities involving soil disturbance will be modified as necessary, if heavy rain fall is predicted for a specific day. Excavation work will be suspended during rain events if track out cannot be appropriately managed in the field. Inspections may be conducted once per month if the following conditions are met:

- The final sod has been placed;
- The site has unlikely runoff because of winter conditions (e.g. site is covered with snow, ice or ground is frozen);

Adequate inspections of the erosion control, materials management, and spill prevention BMPs will be completed as specified. These Inspection Records shall be maintained for a minimum of three (3) years from the permit expiration date or the termination of the permit. Documentation of these inspections must be kept with the final SE/SC Plan and at a minimum; inspections shall provide the following information:

- Inspection date;
- Inspector's name, title and qualifications;
- Weather information since last inspection (including beginning time, duration, time since and the amount of rainfall (in inches) of the last storm event;
- Location(s) of discharges of site sediment and/or other pollutants;

- Location(s) and identification of BMPs requiring maintenance, failed to operate as designed, or proved to be inadequate;
- Location(s) where additional BMPs are needed;
- Corrective actions required (including SE/SC Plan changes and the implementation date);
- Identification of all non-storm water pollution sources and associated pollution prevention devices; and
- Identification of areas where material are stored and evidence or potential for pollutant discharge from these areas.

Inspectors shall document the evidence of potential pollutants entering the drainage system as well as observations of any sediment and erosion control measures identified in this SE/SC Plan. Discharge points where accessible should be observed and a nearby downstream location should be observed if discharge points are not accessible.

Based upon the results of the inspections, the SE/SC Plan must be modified to better control pollutants in the runoff. Following the inspection, revisions to the SE/SC Plan must be completed within seven (7) calendar days. If BMPs are modified and/or added, an implementation schedule must be described in the SE/SC Plan and wherever possible, those changes shall be implemented prior to the next storm event if at all possible.

In addition to inspections, follow-up maintenance activities must occur and be adequately documented. Follow-up maintenance includes repairing BMPS that have been damaged because of everyday construction activities, runoff and/or wind erosion. Maintenance may require the replacement and/or addition of BMPs in areas where high erosion and/or sedimentation has occurred.

A *Site Inspection Form* is included in **Appendix A**. Completed and signed inspections forms should be maintained with the SE/SC Plan in Appendix A.

5.3 Housekeeping Procedures

Good housekeeping practices are designed to maintain a clean and orderly work environment. Often the most effective first step in preventing critical materials from mixing with storm water is by improving facility housekeeping practices. Good housekeeping practices are core job expectations.

Good housekeeping measures shall be employed during material hauling in order to keep the streets clear of debris and soil. Paved public roads near construction sites will be routinely evaluated for soil and/or mud tracked out by vehicles and equipment. At a minimum, track out will be evaluated on a daily basis and cleaned up by the end of the work day. Where tracking has occurred, soil tracked onto streets will be removed by either shoveling and/or street sweeping; these soils will not be allowed to wash into adjacent ditches, catch basins, and/or water bodies. If soil escapes, accumulations must be removed in a timely manner and prior to the next storm event if at all possible. This will include cleaning any escaped soil that has been trapped in catch basins.

5.4 Material Handling & Spill Prevention / Clean-Up Procedures

Solid Waste Management. In order to minimize exposure of materials that may be entrained in storm water and to reduce the occurrence of spills, site construction waste materials must be managed. Materials management is accomplished via good storage practices, prevention and response practices and other controls. More specifically, the construction site must prevent litter, construction debris and construction chemicals from becoming pollutant sources. The discharge of water from solid waste to Waters of the United States will be prevented through the implementation of BMPs. Solid waste management shall be implemented to minimize storm water contact with construction and waste materials and the resulting discharge. Solid waste will be managed via project specific roll-off containers within a specified staging area for offsite disposal.

Material Delivery, Storage, and Use. A general material storage area shall be designated on or near the project area and construction related items that are stored in the open will be elevated on pallets as a means to minimize contact with run-on/runoff and soils. Plastic covers (geotextiles, erosion control blankets/mats, plastic, etc.) may be used if necessary for dust control and prior to rainfall.

Stockpile Management. Stockpile Management practices and procedures are designed in order to reduce or eliminate air and storm water pollution from stockpiles of soil and concrete rubble. Stockpiles (if necessary) will be managed as follows:

- Stockpiles shall be located a minimum of 50 feet away from concentrated or anticipated flows;
- Dust control suppression shall be achieved utilizing portable water applied as necessary, tackifier or covers during periods of high winds.
- Excavated soil from a specific construction site will typically be removed by the next day. Should temporary staging beyond the next day of excavated soils at a specific remedy site be required the stockpile will be covered by spraying the stockpile with tackifier or with an impermeable liner or other appropriate control method. If an unforeseen circumstance that would require a stockpile to be staged longer than 1 week, the appropriate MDEQ and COM personnel will be notified.

Sanitary and Septic Wastes. The contractor(s) shall implement Sanitary and Septic Waste Management BMPs that will include portable toilets, which will be located and maintained at a designated area for the duration of the project, if necessary. Maintenance will be provided on a regular basis and wastes will be disposed of off-site. Portable toilets shall be located away from concentrated flow paths and away from traffic.

Concrete Truck Washout. The contractor(s) supplying the concrete truck will complete washout away from the site in an appropriate area within their concrete supply facility. Washout of trucks on City of Midland public streets or vegetated/exposed soil areas at a specific property will not be permitted during the project.

Vehicle Fueling and Maintenance. Various types of vehicles and equipment will be used on-site throughout the life of the project. To the extent practicable, all self-propelled vehicles will be fueled off-site or by a mobile fueling vehicle. On-site vehicle fueling, if necessary, will not occur within 100 feet of any water bodies and 10 feet within a catch basin. Drip pans may be used for all mobile fueling and spill kits shall be maintained in the fueling area. Fueling will not occur during heavy rain events. It is not anticipated that maintenance and cleaning of vehicles and equipment will occur on-site.

Spill Prevention and Control. Spill Prevention and Control BMPs shall be implemented to contain and clean up spills and prevent material discharges to the storm water system. When spills occur, the cleanup should occur immediately by a trained staff member.

Minor Spills. Minor spills are those that are likely to be controlled by on-site personnel. Upon discovery of a minor spill, the following actions should occur:

- Contain the spill;
- If the spill occurs on paved or impermeable surfaces, clean up using dry methods;
- If the spill occurs in dirt areas, immediately contain the spill by constructing an earthen dike. Dig up and properly dispose of contaminated soil;
- If the spill occurs during a rainfall event, cover the affected area to avoid runoff; and
- Record all steps taken to report and contain the spill.

Major Spills. On-site personnel shall not make any attempts to control major spills until the appropriate and qualified emergency response staff has arrived on-site. If the spilled material is hazardous, immediately contact the Fire Department for a Hazardous Material Response Team. For spills of a hazardous substance or oil in an amount equal to or in excess of reportable quantities established under either 40 CFR Part 110, 40 CFR Part 117 or 40 CFR Part 302, the owner or owner's representative will address the reporting requirements.

Spill cleanup materials must be maintained at each active construction site. The spill kits should include: absorbents (pads, booms, kitty litter, etc.), tools to cleanup (shovel, broom, etc.), PPE (gloves, boots, masks, etc.), and other materials such as warning tape and labels. Each spill kit should be labeled with the words "SPILL KIT" and the necessary emergency telephone number(s) of persons to be contacted in case of a spill or leak that is beyond the training and equipment available on or near the spill kit.

Release reporting documentation is provided in **Appendix B**. Should any spills occur, copies of the documentation pertaining to the spill should be maintained with this SE/SC Plan in Appendix B.

5.5 Soil Erosion & Sedimentation Control Measures

Due to proposed activities in the project area, soil will be exposed to storm water. Therefore, soil erosion and sedimentation control measures must be implemented to prevent discharge of soil into storm water runoff.

Soil erosion and sedimentation controls (SE/SC) are non-structural and structural control measures that are intended to enhance the selected soil stabilization and erosion control measures. Sedimentation controls are designed to capture and settle out soil particles that have been detached and transported by the force of water. The project will be structured to minimize exposed soils by scheduling of activities, use of sod, and Flexstorm inlet filters in catch basins located within 100 feet of remedy sites and any staging areas in the street. Silt fence will be utilized on sites larger than 1 acre where hydroseeding is conducted to reestablish vegetation, rather than sod.

Erosion controls or soil stabilization consists of source control measures that are designed to prevent soil particles from detaching and becoming suspended in runoff waters. The goal of the stabilization BMPs is to protect the soil surface by covering and/or binding the soil particles. On a case-by-case basis, sufficient quantities of sediment and erosion control materials, such as Flexstorm filters and silt fence, will be maintained on-site throughout the duration of the project. This action allows for the implementation of temporary sediment controls in the event of predicted rain and for the rapid response to failures or emergencies.

Dewatering of storm water will typically be avoided and will not be discharged into the City of Midland storm water system, others water of the state or neighboring properties.

Table 5 provides a list and description of non-structural soil erosion and sedimentation control measures that may be implemented during this project. Structural SE/SC measures are described in Table 7 of Section 6.0.

Table 5: Non-Structural Soil Erosion and Sedimentation Control Measures

Control Measure	Description
Minimize Disturbed Area	Limited areas will be disturbed at any one time.
Phase Construction Activity	This project will be conducted in a manner to limit the amount and duration of areas with exposed soil.
Fugitive Dust Control	Water of acceptable quality will be applied to disturbed soil areas in an effort to control dust or during dry conditions. The water will be applied using mobile water trucks or hoses as necessary and shall be applied at rates that will minimize the production of runoff. During windy conditions (forecast/actual winds of 25 miles per hour or greater), dust control measures will be implemented and applied to any disturbed soil areas. Additionally, stockpile management using water will be applied as needed to prevent wind dispersal of soil particulates.
Street Sweeping/Cleaning	Street sweeping involves the use of specialized equipment to remove litter, loosed gravel, soil, vehicle debris and pollutants, dust and construction debris from road surfaces. Street sweeping will be conducted at the end of the day if track out is observed on public streets unless circumstances prevent it. Paved public roads near construction will be routinely evaluated for sediments and/or mud tracked on by vehicles and equipment. Soil tracked onto streets will be removed by either shoveling and/or street sweeping; this soil will not be allowed to wash into adjacent ditches and/or water bodies. If sediment escapes, accumulations must be removed in a timely manner and prior to the next storm event if at all possible including catch

Control Measure	Description
	basins.
Track-Out Control	Track-out of soil will be managed by removing all visible soil from vehicles and equipment prior to exiting the work site. Soil removal will be performed with brooms, brushes, shovels, etc., but no water will be used. All soil removed during this process will be placed in trucks and sent to Michigan Operations for reuse or properly disposed of.
Soil Management	Soil management is managing soil to provide the best growing conditions for turf and other vegetation. Soil management may include adding various soil amendments (lime, fertilizer, topsoil, etc.) to the existing soil.
Sodding	Sodding is transplanting vegetative sections of plant materials to promptly stabilize areas that are subject to erosion. A sodded area provides a filtering method for preventing soil particles and associated attached chemicals from leaving the site. Sod provides immediate protection against soil erosion caused by wind and water, helps minimize runoff, and allows for groundwater recharge. Sodding is the preferred method to be utilized at the majority of the project on properties less than one acre in size. Sod will be placed within 5 days of the final topsoil grading unless circumstances such as weather prevent this activity from being scheduled. In this event, MDEQ and the COM will be notified of a revised schedule.
Seeding and Hydroseeding	Seeding is the establishment of a temporary or permanent vegetative cover by planting seeds. Hydroseeding is a mechanical method of applying seed, fertilizer and mulch to land. Hydroseeding typically consists of applying a mixture of wood fiber, seed, fertilizer, and stabilizing emulsion with hydro-mulch equipment and will be placed within 5 days of final topsoil grading unless circumstances such as weather prevent this activity from being scheduled. In this event, MDEQ and the COM will be notified of a revised schedule. Hydroseeding temporarily protects exposed soils from erosion by wind and water. Hydroseeding will be typically used on project areas over one acre in size.
Grading Practices	Grading is reshaping the ground surface to planned grades. Proper grading practices help improve surface drainage and reduce the amount of soil that erodes from a site. Consistent with City of Midland ordinances grade elevation changes will not be implemented without appropriate approval of the City of Midland.
Mulching	Mulching is applying coarse plant residue or chips to cover the soil surface. The primary purpose is to provide initial erosion control while a seeding or shrub planting is established. Mulch will conserve moisture and modify the surface soil temperature and reduce fluctuation of both. Mulch will prevent soil surface crusting and aid in weed control. Mulch is also used alone for temporary stabilization in non-growing months.

Control Measure	Description
Spoil Piles Management	Spoil piles are excavated materials consisting of topsoil or subsoils that have been removed and are temporarily being stored during construction activities. Spoil piles must be properly placed and managed to reduce soil erosion or runoff of sediment. Excavated soils will typically not be staged on site beyond the next day.
Transportation	The excavated soils will be placed into trucks for transport to the Michigan Operation plant site for re-use or to an appropriate disposal facility. After loading, the trucks will be tarped for transport. After unloading the truck bed will be checked to ensure it contains only limited amount of contaminated soil.
Backfill and Topsoil Selection	New topsoil and backfill will be imported by the contracting firm from a borrow location transported to the site and placed by mechanical equipment and hand tools. The final four to six inches of surface backfill materials will be topsoil. Deeper replacement soils may be clean fill soil.

5.5.1 Soil Erosion Site-Specific Work Plan

Areas undergoing the remedy will have the upper 12-inches of soil removed. Due to structures at the property that will remain in place and act as barriers to run-off, it is anticipated that no storm water will discharge off site. The final exposed subgrade will be backfilled with clean screened fill and topsoil after verification that the property specific soil removal plan has been achieved. Typically backfill and topsoil will occur within 3 days after the soil removal grades have been verified unless circumstances in the field such as weather prevent this soil moving activity. In the event of this occurrence, MDEQ and the COM will be notified of this schedule revision. Backfill and topsoil placement will be placed on the property in a manner to control potential discharge. Sod placement or revegetation will be completed within 5 days after final topsoil grades are established unless circumstances such as weather prevent this from occurring. The MDEQ and COM will be notified of this scheduling revision after final topsoil grade and typically should be accomplished within a week.

The appropriate MDEQ and City of Midland personnel will be notified with a weekly communication regarding the planned construction schedule, construction status and completed or stabilized remedy sites.

5.6 Employee Training Program

Spill response and material management training will be provided during employee orientation and annually to all project personnel. General storm water awareness for the project will be addressed in this training. These programs are supplemented with training and continuous emphasis on good housekeeping practices as it pertains to storm water pollution prevention.

Training of project personnel must be documented; documentation must be maintained with this SE/SC Plan in **Appendix C**.

5.7 List of Significant Materials Still Present

Sediment is not anticipated to be present in discharge from the site following implementation of all structural and non-structural SE/SC measures.

Table 6: Significant Materials Still Present

Significant Material	Planned Control Measure	Impacted Outfall
Soils (may be impacted with dioxin, furan)	BMPs as described above,	Municipal Storm Sewer, discharging to the Tittabawassee River.

6.0 STRUCTURAL CONTROLS

Structural control measures will be necessary to control any pollutants that are present in storm water discharges after implementation of non-structural controls. Structural controls are physical features that control and prevent storm water pollution. They can range from preventive measures to collection structures to treatment systems. Structural controls will typically require construction of a physical feature or barrier. The controls will typically be installed prior to the commencement of soil disturbance and removed after the earthmoving activities are complete and vegetation is established. All temporary measures will be removed within 5 days of approval of from MDEQ or City of Midland personnel.

Table 7 provides a list and description of structural control measures that may be implemented during this project.

Table 7: Structural Control Measures

Structural Control Measure (BMP)	Description
Drip Pans	Drip pans will be placed underneath all containers or transfer of hazardous materials or petroleum products. The drip pan will contain any leaks, drips or small spills that could occur and prevent discharge into the environment.
Catch Basin Flexstorm Filter Inserts <i>SE/SC Measure</i>	These are temporary barriers designed to retain sediment before discharge into the City of Midland storm water system. The BMP retains sediment by filtering storm water. These BMPs will be strategically placed within 100 feet down gradient of construction activities and placed prior to commencement of earthmoving activities. These locations are primarily near the construction activity. These structures should be maintained following each inspection or more frequently if necessary. The filters will be removed from the catch basin after sod has been established and after inspection or approval from the appropriate regulatory personnel.

Structural Control Measure (BMP)	Description
Geosynthetic Liner <i>SE/SC Measure</i>	The geosynthetic will be placed on the soil within internal areas of the property where truck traffic is anticipated. The geosynthetic liners will be used to avoid contact between the truck tires and exposed soils, further managing fugitive dust and track-out of sediment. The geosynthetic will be removed after the soil removal is completed.
Construction Barriers, Site Security Fencing	Construction barriers are fences, signs and other means used on a construction site to: confine equipment and personnel to the immediate construction area, protect trees and their root zones from abrasion and soil compaction, prevent unnecessary access to structural BMPs, protect sensitive areas, and restrict access of unauthorized persons and vehicles.
Rolled Erosion Control Products (RECPs) <i>SE/SC Measure</i>	RECPs consist of prefabricated blankets or netting which are formed from both natural and synthetic materials. RECPs fall into one of two categories: erosion control blankets (ECBs) and turf reinforcement mats (TRMs). ECBs are temporary degradable RECPs composed of processed natural or polymer fibers mechanically, structurally or chemically bound together to form a continuous matrix to provide erosion control and facilitate vegetation establishment. TRMs are RECPs composed of non-degradable synthetic fibers, filaments, nets, wire mesh and/or other elements, processed into a permanent, three-dimensional matrix. TRMs are typically used in hydraulic applications, such as high flow ditches and channels, steep slopes, stream banks, and shorelines.
Silt Fencing <i>SE/SC Measure</i>	Silt fencing is a linear fence installed at the edge of the area of earth disturbance and placed prior to commencement of earthmoving activities. It is generally constructed of porous geotextile fabric attached to wooded stakes. The purpose of silt fence is to protect downstream surface waters and properties by removed suspended solids from runoff prior to leaving the site. Silt fencing will typically be used on sites that will not be sodded and revegetation will be accomplished by hydroseeding. The silt fencing will be removed after the site vegetation has been established and approval has been received from the appropriate regulatory personnel.

7.0 NON-STORM WATER DISCHARGES

Storm water shall be defined to include all of the following non-storm water discharges provided pollution prevention controls for the non-storm water component are identified in the SE/SC Plan:

- 1) Irrigation drainage
- 2) Lawn watering

Table 8 below specifies non-storm water discharges that occur at the facility and may discharge into the municipal storm sewer system. The municipal storm sewer discharges into the Tittabawassee River.

Table 8: Non-Storm Water Discharges

Potential Non-Storm Water Discharge:	Pollution Prevention Controls:
Lawn Watering	Structural and non-structural BMPs as described above.
Irrigation Drainage	Structural and non-structural BMPs as described above.

8.0 ANNUAL REVIEW

This SE/SC Plan shall be reviewed annually, and a written summary of the review must be completed and maintained with this plan. The SE/SC Plan shall be amended as needed to ensure continued compliance with the terms and conditions of the permit (if one is issued for this project). The annual review does not need to be submitted to the MDEQ. The Annual Review Form is provided in **Appendix C**.

Revision Author/Reviewer	Summary of Review/Revision	Date of Review/Revision
Scott Madill	Preparation of new SE/SC Plan. Prepared to meet general permit requirements, but no permit issued at this time.	May 2012

9.0 CERTIFIED STORM WATER OPERATOR UPDATE

If a discharge permit is issued for this project, the permit requires that if the Certified Storm Water Operator is changed or an additional Certified Storm Water Operator is added, the permittee shall provide the name and certification number of the new Certified Storm Water Operator to the MDEQ.

10.0 RECORD KEEPING

Records of all SE/SC-related inspection and maintenance activities must be maintained with the SE/SC Plan. Records shall also be kept describing incidents such as spills or other discharges that can affect the quality of storm water runoff. All such records shall be retained for three years. Completed and signed inspection forms should be maintained with this SE/SC Plan in **Appendix A**.

11.0 SE/SC CERTIFICATION

I certify under penalty of law that the storm water drainage system in this SE/SC Plan has been tested or evaluated for the presence of non-storm water discharges either by me, or under my direction and supervision. I certify under penalty of law that this SE/SC Plan has been developed in accordance with a General Permit and with good engineering practices. To the best of my knowledge and belief, the information submitted is true, accurate, and complete. At the time this plan was completed no unauthorized discharges were present. I am aware that there are significant penalties for submitting false information, including the possibility of fine or imprisonment for knowing violations.

Permittee or Authorized Representative
Printed Name & Title:
Signature & Date:

Certified Storm Water Operator
Printed Name & Certification Number:
Signature & Date:

FIGURES
