

STORM WATER POLLUTION PREVENTION PLAN

Permit Number: NER110500

Palisades
Lots 1 thru 423 Inclusive & Outlots "A" thru "J"

S.I.D. 260
Sarpy County, Nebraska

Prepared By:

E&A Consulting Group, Inc.
330 North 117th Street
Omaha, Nebraska 68154

Originally Graded: Summer and Fall 2004

Revised 02/29/2008

SITE CONTACT INFORMATION

SITE OWNER/DEVELOPER	PHONE/MOBILE/FAX	ADDRESS	E-MAIL
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REVISION SCHEDULE

This storm water pollution prevention plan (SWPPP) should be revised and updated to address changes in site conditions, new or revised government regulations, and the addition, modification or removal of on-site storm water pollution controls.

All revisions to the SWPPP must be documented on the SWPPP Revision Documentation Form, which should include the information shown below. The authorized facility representative who approves the SWPPP should be the individual at or near the top of the facility's management organization, such as the president, vice president, construction manager, site supervisor, or environmental manager. The signature of this representative attests that the SWPPP revision information is true and accurate.

Notification of SWPPP modifications shall be given to the appropriate individuals in the form provided in Appendix D.

SWPPP Revision Documentation Form

Number	Date	Description
1	02/29/2008	Revised as required for new NPDES Permit submittal.
2		
3		
4		
5		

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1.0 INTRODUCTION

1.1 Background

In 1972, Congress passed the Federal Water Pollution Control Act (FWPCA), also known as the Clean Water Act (CWA), to restore and maintain the quality of the nation's waterways. The ultimate goal was to make sure those rivers and streams were fishable, swimmable, and drinkable. In 1987, the Water Quality Act (WQA) added provisions to the CWA that allowed the EPA to govern storm water discharges from construction sites. The EPA has designated that authority to certain states, including Nebraska, for implementation.

This storm water Pollution Prevention Plan (SWPPP) was developed consistent with the requirements of Nebraska's National Pollutant Discharge Elimination System (NPDES) General Permit for storm water discharges for Construction Sites (NER 100000).

Development, implementation, and maintenance of the SWPPP will provide E&A Consulting Group, Inc. (project engineer), Boyer-Young Development Company (owner/developer), Sudbeck Grading (grading contractor), L.G. Roloff Construction Co. (general contractor – sanitary sewer), Andrus Enterprises, Inc. (general contractor - storm and paving improvements) and MBC Construction Co. (general contractor – West Paving 2006 and commercial sanitary, paving and storm sewer) with a framework for reducing soil erosion and minimizing pollutants in storm water during construction of the Palisades site. The SWPPP will:

- Define the characteristics of the site and the type of construction which will be occurring;
- Describe the site plan for the facility to be constructed;

- Describe the practices that will be implemented to control erosion and the release of pollutants in storm water;
- Create an implementation and inspection schedule to ensure that the practices described in this SWPPP are in fact implemented and to evaluate the plan's effectiveness in reducing erosion, sediment, and pollutant levels in storm water discharged from the site;
- Describe the final stabilization/termination design to minimize erosion and prevent storm water impacts after construction is complete.

1.2 **SWPPP Content**

This SWPPP includes the following:

- Identification of the SWPPP coordinator with a description of this person's duties;
- Identification of the storm water pollution prevention team that will assist in implementation of the SWPPP during construction;
- Description of the existing site conditions including existing land use for the site (i.e., wooded areas, open grassed areas, pavement, buildings, etc.), soil types at the site, as well as the location of surface waters which are located on or next to the site (wetlands, streams, rivers, lakes, ponds, etc.);
- Identification of the body of waters(s) which will receive runoff from the construction site, including the ultimate body of water that receives the storm water;
- Identification of drainage areas and potential storm water contaminants;

- Description of storm water management controls and various Best Management Practices (BMPs) necessary to reduce erosion, sediment and pollutants in storm water discharge;
- Description of the facility monitoring plan and how controls will be coordinated with construction activities;
- Description of the implementation schedule and provisions for amendment of the plan.

2.0 SWPPP MANAGEMENT TEAM AND DUTIES

The construction site SWPPP coordinator for the site is Mr. Zach Jilek (402-895-4700) with E&A Consulting Group, Inc. (erosion specialist). Mr. Jilek's duties include the following:

- Implement the SWPPP plan with the aid of the SWPPP team;
- Oversee maintenance practices identified as BMPs in the SWPPP;
- Implement and oversee employee training;
- Conduct or provide for inspection and monitoring activities;
- Identify other potential pollutant sources and make sure they are added to the plan;
- Identify any deficiencies in or necessary modifications to the SWPPP and make sure they are corrected;
- Ensure that any changes in construction plans are addressed in the SWPPP.

To aid in the implementation of the SWPPP plan, the members of the SWPPP team are, Mr. Mark Westergard, P.E., Mr. Nick Boyer and Mr. Randy Pierce, P.E. Mr. Westergard is the project manger, Mr. Boyer is the Construction managers and Mr. Pierce is the construction engineer.

3.0 FACILITY DESCRIPTION

3.1 Site Location and Description

The proposed construction site is located in Section 21, Township 14 North, Range 11 east, of the 6th P.M., northwest of 168th Street and Cornhusker Road in Sarpy County, Nebraska. Figure 1 is an area map showing the location of the site. The project is bounded on the north by vacant land with a single family residence in the east corner; to the south by Cornhusker Road; to the west by a single family residential subdivision to the south and vacant farm land to the north; and to the east by 168th Street. The original property consisted of vacant farmland with evidence of past structures in the southeast corner.

3.2 Construction Activities and Sequencing

At this time, all internal improvements are completed. Many of all lots have been built upon and the project will be awaiting basin removal and completion of ground cover.

3.3 Existing Site and Receiving Waters

Three grass waterways exist on the site. One through the center of the project flows to directly to the north, another, in the west ½ of the project flows northwest to the west property line and has wetlands associated with it. These two waterways connect into the same unnamed tributary of the South Papillion Creek. The third water cuts across the southeast corner of the site, flowing to the northeast to the east property line. This drains to another unnamed tributary of the South Papillion Creek.

3.4 Site Plan

Figure 2 is a reduced grading plan showing the property boundaries, individual lots, street R.O.W., storm sewer inlet locations, grading limits with areas of cut and fill.

Figure 2 also shows the locations of drainage areas and the constructed storm water collection systems that will drain into the previously mentioned waterways and tributaries.

Table 1
Characteristics of Storm Water Drainage

Drainage Area ¹	Total Basin Size (acres)	Developed Runoff Coefficients ² (C-Value)	Land Usage/Cover Type (%)	Storm Water Flow Description During Construction Activities	Drainage Discharge Point
Area 1 West ½ of Project	74.0	Medium	84% Proposed Residential Subdivision with ¼ acre lots. 16% onsite open space	During Construction, storm water was diverted into a temporary sediment basin prior to discharge the NW.	Grassed Swale
Area 2 North Central Area of Project	18.6	Medium	91% Proposed Residential Subdivisions with ¼ acre lots. 9% onsite open space	During Construction, storm water is diverted into a temporary sediment basin prior to discharge to the NW.	Grassed Swale
Area 3 East Central Area of Project	19.2	Medium	17.1% Proposed Residential Subdivisions with ¼ acre lots. 41.5% open space / park 41.4% Elementary School Site	During and after construction, storm water is directed into a permanent sediment and detention basin prior to discharging across 168 th Street to the adjacent subdivision.	Turf grass swale
Area 5 Southeast corner of Project	30.1	Medium	69.4% Proposed Residential Subdivisions with ¼ acre lots. 30.6% Commercial Development	Flows are fed through a drainage way running to the northeast into a permanent sediment and detention basin prior to being discharged to 168 th Street.	Road-side ditch and storm sewer system.

5. See Figure 2 for drainage areas

6. Runoff Coefficient: Based on 10-year/24-hour storm see appendix A

High: Rational Method C = 0.70 – 0.95

Medium: Rational Method C = 0.30 – 0.70

4.0 IDENTIFICATION OF POTENTIAL STORM WATER CONTAMINANTS

The purpose of this section is to identify pollutants that could impact storm water during construction of the site.

4.1 Significant Material Inventory

Pollutants that result from clearing, grading, excavation, and building materials and have potential to be present in storm water runoff are listed in Table 2. This table includes information regarding material type, chemical and physical description, and specific regulated storm water pollutants associated with each material.

4.2 Potential Areas for Storm Water Contamination

The following potential source areas of storm water contamination were identified and evaluated:

- Cleared and graded areas;
- Construction site entrance;
- Home building sites; and
- All undisturbed areas.

Table 3 presents site specific information regarding storm water pollution potential from each of these areas.

4.2.1 Potential Areas for Non-Storm Water Contamination

The following are potential areas of receiving water contamination that are not precipitated by a storm event:

- Petroleum spills from refueling operations
- Hydraulic fluids/oils from construction equipment maintenance
- Construction debris/waste
- Street washing
- Hydrant flushing

4.3 A Summary of Available Storm Water Sampling Data

No storm water sampling data is available for this site.

Table 2
Potential construction site storm water pollutants

Material Name	Chemical/Physical Description ⁽¹⁾	Storm Water Pollutants ⁽¹⁾
Pesticides (insecticides, fungicides, herbicides, rodenticides)	Various colored to colorless liquid, powder, pellets, or granular	Chlorinated hydrocarbons, organophosphates, carbamates, arsenic
Fertilizer	Liquid or solid granules	Nitrogen, phosphorous
Asphalts	Black solid	Oil, petroleum distillates
Concrete	White solid	Limestone, sand
Curing compounds	Creamy white liquid	Polyethylene
Paints	Various colored liquid	Metal oxides, Stoddard solvent, talc, calcium carbonate, arsenic
Glue, adhesive	White or yellow	Polymers, epoxies
Wastewater from construction equipment washing	Water	Soil, oil & grease, solids
Hydraulic oil/fluids	Brown oily petroleum hydrocarbon	Mineral oil
Gasoline	Colorless, pale brown or pink liquid petroleum hydrocarbon	Benzene, ethyl benzene, toluene, xylenes, MTBE
Diesel Fuel	Clear, blue-green to yellow liquid	Petroleum distillate, oil & grease, naphthalene, xylenes
Antifreeze/coolants	Clear green/yellow liquid	Ethylene glycol, propylene glycol, heavy metals (copper, lead, zinc)
House construction debris	Wood, insulations, shingles, vinyl, cardboard, paper	Debris, garbage
Erosion	Solid particulates	Soil, sedimentation

(1) Data obtained from MSDS when available

Table 3
Locations of Potential Sources of Storm Water Contamination

Drainage Area ⁽¹⁾	Potential Storm Water Contamination Point	Potential Pollutants	Potential Problems
Area 1	Cleared and graded areas	Soil Erosion, concrete, antifreeze, hydraulic oil, gasoline, diesel fuel, curing compounds, construction debris	Erosion of soil accidental spill of fuels during refueling of construction equipment or leaking of fuels/hydraulic oil from construction equipment, and construction debris has the potential of discharging into the South Papillion Creek.
Area 2	Cleared and graded areas	Soil Erosion, concrete, antifreeze, hydraulic oil, gasoline, diesel fuel, curing compounds, construction debris	Erosion of soil accidental spill of fuels during refueling of construction equipment or leaking of fuels/hydraulic oil from construction equipment, and construction debris has the potential of discharging into the South Papillion Creek.
Area 3	Cleared and graded areas	Soil Erosion, concrete, antifreeze, hydraulic oil, gasoline, diesel fuel, curing compounds, construction debris	Erosion of soil accidental spill of fuels during refueling of construction equipment or leaking of fuels/hydraulic oil from construction equipment, and construction debris has the potential of discharging into the South Papillion Creek.
Area 4	Cleared and graded areas	Soil Erosion, concrete, antifreeze, hydraulic oil, gasoline, diesel fuel, curing compounds, construction debris	Erosion of soil accidental spill of fuels during refueling of construction equipment or leaking of fuels/hydraulic oil from construction equipment, and construction debris has the potential of discharging into the South Papillion Creek.

1. See Figure 2 for drainage area

5.0 STORM WATER MANAGEMENT CONTROLS

The purpose of this section is to identify the types of temporary and permanent erosion and sediment controls that will be used during the construction activities. The controls will provide soil stabilization for disturbed areas and structural controls to divert runoff and remove sediment. This section will also address control of other potential storm water pollutant sources such as construction materials (paints, concrete dust, solvents, and garbage/debris), waste disposal, control of vehicle traffic, and sanitary waste disposal.

5.1 Temporary and Permanent Erosion Control Practices

A list of best management procedures (BMPs) has been developed and the location of these BMPs is shown in Figure 3. A number of BMPs included in this plan have been developed to serve as post construction storm water controls. A list of typical erosion controls measures that have been considered are listed in Appendix C.

5.2 Site Wide Storm Water Contamination Control Measures

To prevent soil from washing into tributaries and waterways which leads to the South Papillion Creek, the following BMPS will be implemented:

- During construction, stabilized rock construction entrances will be used to access the site.
- Silt Fence will be placed along the exterior perimeter and areas to remain undisturbed. The silt fence will be furnished and placed prior to clearing and grading activities and will be properly maintained until their scheduled removal. Silt fence will also be installed per plan and at the discretion of the SWPPP Manager.
- Sedimentation basins and silt traps will be constructed at various locations through out the project (see Table 4 for basin characteristics) before commencing with grading activities if in cut areas, if in fill areas basins will be

constructed as fill is constructed. The sedimentation basins have been designed under the supervision of a professional engineer to handle a 10-year/24-hour storm. The sedimentation basins will remain in place until the site has been determined to be stabilized with permanent structures and or vegetation to an acceptable level (75% of drainage basin). The sedimentation basins will be maintained to allow for removal of the majority of the suspended solids. The distance between influent points to the sedimentation basins and the location of the effluent will be maximized (e.g. the length to width ratio of the basins will be a minimum of 2:1).

- Drainage swale(s) will be utilized to facilitate drainage from cleared and graded areas to be directed to the sedimentation basins.
- Various end treatments will be used to protect storm sewer outlet locations from erosion. This will include the use of rip rap stilling basins and erosion control matting.
- Temporary seeding will occur within fourteen days after clearing and grading operations, or once construction activities have ceased for more than 14 days, provided completion between 4/14 and 10/15. The following temporary seeding will occur:

Alfalfa	18lbs/Acre
Wheat cover crop	2Bu/Acre
Fertilizer (20-10-10)	50lbs/Acre
- Final stabilization will consist of the following:
 - Residential area – homes complete with sodded lawn
 - Parks/green space – mature vegetation with permanent grass, turf or appropriate ground cover.

Table 4
Sedimentation Basin Characteristics

Basin No.	Drainage area (acres)	Storage Required (CY)	Storage Provided (CY)	Depth (Ft.)	Outlet Riser Pipe Diameter (Inches)	Outlet Pipe Diameter (Inches)	Q_{peak} (cfs)	$Q_{pipe\ outlet}$ (cfs)	$Q_{spillway}$ (cfs)
Basin No. 1	18.5	1,240	1,316	5'	48" CMP	30" CMP	86	72	14
Basin No. 2	19.0	1,273	1,563	10'	36" CMP	30" CMP	88	53	33
Basin No. 3	29.0	1,943	2,640	6'	42" CMP	36" CMP	135	65	70
Basin No. 4	68.5	4,515	4,624	8'	42" CMP	36" CMP	320	120	200

5.3 Practices to Minimize Non-Storm Water Contamination

All waste material will be collected in dumpsters at each construction site and emptied when full by a solid waste management company. All trash and construction debris from the site shall be deposited in the dumpster. No construction materials will be buried on-site. All personnel will be instructed regarding the correct procedure for waste disposal. Good housekeeping and spill control practices will be followed during construction to minimize storm water contamination from petroleum products, fertilizer, paints, and concrete.

- Fueling and refueling operations occur on site at a centralized location, the fueling site shall be stabilized and bermed. To prevent or minimize contamination from these operations.
- Equipment that requires maintenance on the construction site shall have said work preformed in a location that has been stabilized to reduce or prevent contamination from hydraulic fluids or oils.
- Construction debris/waste shall be stored in a proper disposal container and disposed of by proper waste management disposal company at a licensed disposal facility.
- Required street washing shall be completed after all inlets have been properly protected to ensure that sediment does not enter storm sewer system. Build up of sediment in the streets shall be removed and replaced on site from which it eroded.
- Hydrant flushing shall be conducted in such a manner that the water from said procedure is directed to the street, in which all inlets have been protected. Water from flushing procedure is not allowed to flow freely upon erodible surfaces (soils).

5.4 Coordination of BMPs with Construction Activities

Structural BMPs will be coordinated with construction activities so the BMP is in place before construction begins or as required during construction. The following BMPs will be coordinated with construction activities:

- The temporary perimeter controls (silt fencing and stabilized construction entrances) will be installed prior to clearing and grading operations beginning.
- Sedimentation basins and outlet risers will be constructed before clearing and grading operations begin with the exceptions of basins being built in fill areas, in which case the basin will be built with the fill.
- Once construction activities cease permanently or are delayed for more than 14 days due to a planned or unplanned work stoppage in an area, that area will be stabilized with seeding.
- The temporary perimeter controls (silt fencing) will not be removed until all construction activities at the site are complete and soils have been stabilized.

5.5 Contractors Responsibilities for Erosion and Sediment Control During Construction Activities

5.5.1 **General Responsibilities (all contractors)**

Contractors are responsible for the maintenance and upkeep of all erosion and sediment control measures in place throughout the duration of their construction activities. These responsibilities include the following:

Material storage - will be on site in the specified area. Off - site storage of materials for daily construction activities is not acceptable.

Good Housekeeping – this encompasses the use of the controlled access points, clean-up of general construction waste/debris, proper disposal of general construction waste/debris, and maintenance of all existing control measures on construction site.

Proper Fuel and Chemical Storage – all fuels and chemicals shall be stored in proper containers and facilities. These containers and facilities shall have proper stabilization and containment (berming) to ensure that accidental spills do not reach runoff or drainage waters.

Accidental Spill Clean-up and Disposal – remediation of all spills shall be timely and in accordance with the chemical or fuel’s material safety data sheet (MSDS). Disposal of all contaminated material shall be at properly licensed disposal facilities.

Solid Waste Disposal – all solid waste shall be disposed of by a proper waste management disposal company at a licensed disposal facility on a regular schedule.

Sanitary Waste Disposal – all sanitary waste shall be collected in portable units and maintained by a licensed sanitary waste management contractor on a regular schedule.

5.5.2 Grading Contractor’s Responsibilities

Grading contractor shall be responsible for initial implementation of erosion and sediment control devices for perimeter control prior to beginning site disturbing work. This contractor shall also maintain all implemented controls on a regularly scheduled basis or as directed by the SWPPP management team.

5.5.3 General Contractor’s Responsibilities

General contractor and subcontractors shall not remove or disturb erosion and sediment control devices that have been constructed on the site without approval to do so by the SWPPP management team. The general contractor shall also maintain all erosion and sediment control devices that have been implemented. The general contractor shall ensure that as site is being developed that all runoff is properly diverted to an erosion and sediment control device. As the storm sewer system and pavement is being constructed all inlets shall be protected to ensure that sediment does not enter storm sewer system. The contractor shall also restore all areas disturbed by their construction activities to conditions prior to being disturbed as soon as possible (i.e., grade, vegetation, ect.).

5.5.4 Utilities Contractor's Responsibilities (Water, Gas, Power, and Phone)

Utilities contractors shall maintain the site to the conditions prior to their activities. This shall include maintaining or replacing the existing grade and state of vegetation of the site. They shall also ensure that the streets remain free of sedimentation.

5.5.5 Home Builder's Responsibilities

Home building contractors shall ensure that all erosion and sediment control measures located on or adjacent to their lot shall remain in place and are in proper working order. They are also responsible to ensure that the street in the vicinity of their construction activities shall remain free of sediment and trash during home construction. Streets adjacent to builder's site that have mud tracked out from the site or sedimentation from the site shall be cleaned. The streets shall be regularly monitored for sediment build-up for safety purposes for traffic and pedestrians, and if needed for these purposes cleaned on a daily basis at the end of the work day.

5.6 Certification of Compliance with Federal, State and Local Regulations

This SWPPP reflects City of Omaha requirements for storm water management and erosion and sediment control, as established by the City of Omaha Municipal Code

Section 43-261 et seq. To ensure compliance, this plan was prepared in accordance with the City of Omaha Soil Erosion and Sediment Control Manual as prepared in cooperation with the City of Omaha Public Works and Planning Departments, Papio-Missouri Natural Resources District, Soils Conservation Service and HDR Engineering. This SWPPP also complies with the requirements of the Nebraska NPDES General Permit for Storm Water Discharges from Construction Sites (NER 100000). There are no other applicable State or Federal requirements for sediment and erosion site plans (or permits), or storm water management site plans (or permits).

6.0 MAINTENANCE/INSPECTION PROCEDURES

6.1 Inspections

Visual inspections of the site will occur consistent with guidelines per construction activities, or within 24 hours after a 1/2" rainfall event. This inspection schedule will be in place during clearing and grading activities, capital improvement construction (sanitary sewer, storm sewer, and pavement construction), and utilities installation. Upon completion of utility installation inspections will occur on a bi-weekly basis until temporary stabilization is established. During the home construction phase inspections will occur once a month. All inspections will be conducted by the SWPPP coordinator or his designated storm water team member. The inspection will verify that the structural BMPs described in Section 5 of this SWPPP are in place and functioning properly to minimize erosion. The inspection will also verify that the procedures used to prevent storm water contamination from construction materials and petroleum products are effective. The following inspection and maintenance practices will be used to maintain erosion and sediment controls:

- Built up sediment will be removed from silt fencing when it has reached one third the height of the fence for all perimeter fencing installed on the site. Full perimeter silt fence installations must be cleaned out, removed and replaced with new silt fence, or have a new run of silt fence installed below the full fence to create a new perimeter line of fencing. Old fencing may be left in place to act as a terrace, slowing and creating sheet flow as the water reaches the new perimeter fencing. Intermediate silt fencing will be maintained as follows:
 - Silt fence maintenance for intermediate runs of silt fence installed on or along a hill, helping to protect perimeter silt fencing will be maintained and monitored with a method that is most conducive to the growth of vegetation above the perimeter fence. This concept is based on the assumption that the ultimate goal of the erosion control measures is to minimize the amount of sediment leaving the site. Perimeter fencing must

be maintained and cleaned to prevent undermining and overtopping. More important than functioning perimeter fencing is establishing a heavy growth of vegetation and this should be the priority. To this end, maintenance of silt fence that sits along a hill slope will be modified from that of perimeter silt fencing to give seeded vegetation the best chance of succeeding in keeping the soil from eroding. Cleaning out silt fence and removing small ruts is a very disruptive process that results in additional amounts of disturbed areas with no vegetation on them. These large areas with no growth are now subject increased erosion and the filling of more silt fence. This creates a cycle in which the ability to establish vegetation on a hillside is very difficult. The solution is to install repetitive rows of silt fence along the hillside and allow them to become full if the levels of rain and sediment loading are enough. As long as the perimeter fence is not being compromised, this method improves the ability of vegetation to become established. The silt fencing helps to slow and de-channelize the water that might wash out the seed. As the fencing fills, it further slows the water by acting like a terrace. This allows for a good stand of grass to hold the hill slope below the fence with the end result of better protecting the perimeter silt fence and preventing sediment from leaving the site. Over time, the silt fence and entrapped sediment can be removed and the area disturbed seeded and matted as needed with a reduced impact on the existing seed. The existing vegetation is also now rooted well enough and thick enough to not be washed out due to these newly disturbed areas.

- Silt fences will be inspected for depth of sediment, for tears, to see the fabric is securely attached to the fence posts, and to see that the fence posts are firmly planted in the ground.
- Sediment basins will be inspected for depth of sediment and built up sediment will be removed when it reaches the elevation design for removal.

- Temporary and permanent seeding will be inspected for bare spots, washouts, and healthy growth. Reseeding or mulching shall be required if healthy growth is not observed.
- The stabilized construction entrance will be inspected for sediment tracked on the road, for clean crushed rock, and to make sure that the drainage paths (temporary CMP crossing pipe, and drainage swales) are clean and flowing properly. This inspection will also ensure that the construction entrances/exits are being used exclusively by site traffic.
- Corrective actions shall be initiated and completed as soon as possible to address any maintenance needs or deficiencies noted during inspections.
- Maintenance and repair of silt fences and bale barriers shall be completed within 3 days after and deficiencies are discovered.

The maintenance inspection report will be completed after each inspection in the form set forth in Appendix B. A copy of the report form completed by the SWPPP coordinator will be maintained on site during the entire construction project. Following construction, the completed forms will be retained at E & A Consulting Group Inc. for a minimum of 1-year. If construction activities or design modifications are made to the site plan which could impact storm water runoff, this SWPPP will be amended appropriately. The amended SWPPP will have a description of the new measure or practices to be used to control sedimentation, erosion, and potential pollutants.

FIGURE 1

FIGURE 2

FIGURE 3

APPENDIX A

TYPICAL “C” VALUES

Description of Area	Runoff Coefficients range
Business:	
Downtown Areas	0.70 – 0.95
Neighborhood Areas	0.50 – 0.70
Residential:	
Single – Family areas	0.30 – 0.57
Multi-units, detached	0.40 – 0.60
Multi-units, attached	0.60 – 0.75
Residential (suburban)	0.25 – 0.40
Apartment dwelling areas	0.50 – 0.70
Industrial	
Light industrial areas	0.50 – 0.80
Heavy industrial areas	0.60 – 0.90
Parks, cemeteries	0.10 – 0.25
Playgrounds	0.20 – 0.30
Railroad yard areas	0.20 – 0.40
Unimproved areas	0.10 – 0.30
Streets	
Asphalt	0.70 – 0.95
Concrete	0.80 – 0.95
Brick	0.70 – 0.85
Drives and walks	0.75 – 0.85
Roofs	0.75 – 0.95
Lawns – course texture soil (greater than 85% sand)	
Slope: Flat, 2%	0.05 – 0.10
Average, 2 – 7%	0.10 – 0.15
Steep, < 7%	0.15 – 0.20
Lawns – fine textured soil (greater than 40% clay)	
Slope: Flat, 2%	0.13 – 0.17
Average, 2 – 7%	0.18 – 0.22
Steep, < 7%	0.25 – 0.35

APPENDIX B

INSPECTION CHECK LIST

Inspection Notes:
1) Note status of Grading, Sanitary, Storm, Paving, Seeding, Utilities, & Overall Development.
2) Note any ground disturbance- Due to home or commercial construction, and items list above.
3) Note all aspects of erosion control on site, as detailed as possible.
4) Label Grading/Erosion Control Plan and update drawing as needed.
5) Review previous inspection reports to ensure previous problems/deficiencies have been corrected. Note date of correction on inspection report.
EROSION CONTROL INSPECTION CHECKLIST
1) Silt Fence-
a) Check depth of sediment build up (Clean perimeter fencing after 1/3 Full)
b) Check the base of the fence for gaps (Re-trench & Backfill if necessary)
c) Check fence posts for proper support.
d) Check fence for ripped, damaged or deteriorated material (Re-place)
2) Stabilized Construction Entrance-
a) Check to make sure rocks are not clogged with mud (If so wash or add rock)
b) Check for track off (If occurs have streets cleaned)
3) Sediment Basins-
a) Check Sediment volume (Clean after basin is 4/5 full)
b) Check riser pipe (Clean as necessary)
c) Check Outlet pipe (Clean as necessary)
d) Check for 1' red cleanout line paint on riser (Mark if not on riser pipe)
3a) Sediment Traps
a) Check Sediment volume (Clean after basin is 4/5 full)
4) Temporary Diversions / Berms / Swales-
a) Check overall condition- make sure directed properly
5) Inlet Protection-
a) Check for sediment build up (Replace fence or socks as necessary)
b) Install inlet filters in all inlets not draining to basin.
c) Also clean streets if necessary.
6) Erosion Control Matting / Sodding / Seeding / Vegetation
a) Check matting for signs of erosion and problems
b) Check for sign of growth from seeding/ Etc.
7) Channels and Ditches
a) check for signs of erosion and problems

APPENDIX B

INSPECTION REPORT FORM

E&A- 2002168.01			
Inspector: Zach Jilek		Stage	
Project Name:	XXXXXXXXX (OPW xxxxxx)		1
For Week Ending:	xx/xx/20xx		
Grading:	00%		
Sanitary Sewer:	0%		
Storm Sewer:	0%		
Paving:	0%		
Seeding:	0%		
Utilities:	0%		
Overall Development:	0%		
RAIN FALL AMOUNTS	Amount in tenths	Date inspected	
Sunday:			
Monday			
Tuesday			
Wednesday			
Thursday			
Friday			
Saturday			
Complaints:	None		
Construction Sequencing:			
Which portion(s) (i.e. drainage basins) of the site have had a temporary or permanent cessation of grading, earthwork, or ground disturbance in the last 14 days?			
Which portion(s) (i.e. drainage basins) of the site do not have grading, earthwork, or ground disturbance scheduled in the next 14 days? :			
What temporary or permanent stabilization measures listed in this section are being implemented?			
Comments:			

APPENDIX B

Unique Name	Type	Location	Projected Install Date	Status	Problem
Current Condition:					
Current Condition:					
Current Condition:					
Current Condition:					
Current Condition:					
Current Condition:					
Current Condition:					
Current Condition:					
Current Condition:					
Current Condition:					
Current Condition:					
Current Condition:					
Current Condition:					

APPENDIX C

Typical Erosion and Sedimentation Control Measures

Control Measure Name	Description	Use
Mulch	The placement of materials such as hay, straw, wood chips, or gravel on the soil surface.	Protection of disturbed soils to hold in place and make less likely to be carried off-site by storm runoff or wind. Used in conjunction with seeding both temporary and permanent.
Permanent Seeding/Sod	Seeding includes grasses, trees, and shrubs used to stabilize the soil	Final stabilization of disturbed soil
Temporary Seeding	The planting of fast – growing grasses	Protection of disturbed soils to hold in place and make less likely to be carried off-site by storm runoff or wind.
Straw Bale	Straw bales staked in place	Installed in drainage swales or ditches to divert storm runoff and retain sedimentation on the upstream side of the bale diversion.
Silt Fence	Temporary measure consisting of posts with filter fabric stretched between posts.	Installed along down slope or side slope perimeter of disturbed area. Also used along project perimeter to protect adjacent properties.
Earth dikes	Mountable mound of Stabilized soil which is constructed to divert runoff.	To divert uncontaminated or contaminated runoff to sediment basins/traps. To protect area inlets or perimeter ditches and pavement
Drainage Swales	Depression or ditch to divert storm runoff flow	To direct storm runoff to sedimentation basin or drainage system
Brush Barriers	Grasses, shrubs, and trees	To filter runoff prior to entering drainage channel, creek, or stream (receiving waters).
Sediment Basins (Temporary)	A settling pond with a controlled water release structure, e.g., a riser and outlet pipe, which slows the release of runoff.	Detains sediment laden runoff from large drainage basins long enough for the sediment to settle out. To be removed once construction activities are complete and drainage basin is stabilized.
Sediment Basins (Permanent)	A settling pond with a controlled water release structure, e.g., a riser and outlet pipe, which slows the release of runoff	Detains sediment laden runoff from large drainage basins long enough for the sediment to settle out. To remain after construction activities are complete and drainage basin is stabilized.

APPENDIX C

Sediment Traps	A settling pond with a spillway outlet.	The trap retains runoff from small drainage basin long enough for sediment to settle out.
Storm Drain/Inlet Protection (filters)	Temporary filter system/device	The filter system or device protects inlets/drains from sediment entering storm sewer system
Gabionsrevet mattresses	Wire baskets filled with rock riprap	Inlet or outlet protection. Slows runoff velocities to protect drainage way banks and bed.
Stabilized Construction Entrances	Stabilized rock riprap and filter fabric access point to construction site.	Location for all vehicular traffic to enter and exit construction site. To be used to control off-site tracking and dust created from vehicular traffic.
Geo-textile filter fabrics	Synthetic or natural materials which are water-permeable but trap water-borne sediment	To protect disturbed soils from runoff and wind erosion. Used as silt fence, filter fabric for stabilization purposes, and slope protection.
Vegetative Strip	Grass lined or brush lined ditches or depressions that transport runoff.	To filter runoff prior to entering drainage channel, creek, or stream (receiving waters).
Erosion Control Blankets	Rolled three dimensional synthetic or natural materials.	For protection of disturbed soils and steep slopes and channels from runoff and wind erosion. To be used in conjunction with seeding.
Rock Riprap	Crushed stone, rock, or gravel	To protect soils from runoff or wind erosion
Terracing	Earth embankment, channel, or combination ridge and channel constructed across a slope.	To be used in steep slopes or erodible soils with sparse vegetation to increase runoff flow pattern and reduce velocities.
Materials and Equipment Storage	A storage area will be available on site for materials and equipment. This site will be stabilized.	Storage area will be used as a location on site that for temporary storage of equipment no in use in day to day activities. This site will also be used for the storage of surplus materials not being used in daily activities.

APPENDIX C

Typical Storm Water Management Controls

- Storm water detention structures (including wet ponds)
- Storm water retention structures (pond that holds runoff in a reservoir without release except by means of evaporation, infiltration, or emergency bypass)
- Open vegetated swales
- Natural depressions
- Infiltration measures

APPENDIX D

SWPPP MODIFICATION NOTIFICATION FORM

Project Name:	Revision date:
Reason for Revision:	Revision Number:
Erosion and Sediment Control Measure Change:	
Erosion and Sedimentation Control Measure Implementation/Deletion Procedure:	

SWPPP Management Team member to implement change:

Name

Signature

Date