February 12, 2013

Blue Ocean Enterprises
416 West Oak Street
Fort Collins, CO 80525

RE: Stormwater Management Plan
Canyon Place

To Whom It May Concern:

Northern Engineering Services, Inc. is pleased to submit this Stormwater Management Plan for Canyon Place. This report outlines Best Management Practices (BMPs) to be implemented with the proposed construction in order to minimize potential pollutants in stormwater discharges.

We have prepared this report to accompany the Colorado Department of Public Health and Environment General Permit for Stormwater Discharge Associated with Construction Activities (aka, Stormwater Discharge Permit or SDP). The General Permit No. for this SDP is (to be filled-in by permittee) and the Certification No. for this SDP is (to be filled-in by permittee). The Permit Certification is Effective beginning (to be filled-in by permittee), and initial certification expires (to be filled-in by permittee). A copy of the issuance cover letter can be found in the Appendix D of this document (to be provided by permittee).

Please note: this Stormwater Management plan (including the Site Maps) is not a static document. It is a dynamic device that should be kept current and logged as construction takes place. As such, this version was prepared to facilitate initial plan approvals and permitting, but does not necessarily reflect the final version, or the transitions throughout the construction process. As the site develops and changes, the Contractor is expected and encouraged to make changes to what is contained herein so that the SWMP works as effectively and efficiently as possible. It shall be the responsibility of the SWMP Administrator and/or the permit holder (or applicant thereof) to ensure the plan is properly maintained and followed.

If you should have any questions or comments as you review this report, please feel free to contact us at your convenience.

Sincerely,

NORTHERN ENGINEERING SERVICES, INC.

Nicholas W. Haws, PE, LEED AP
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0</td>
<td>General Requirements</td>
<td>1</td>
</tr>
<tr>
<td>1.1</td>
<td>Objectives</td>
<td>1</td>
</tr>
<tr>
<td>1.2</td>
<td>SMWP Availability</td>
<td>1</td>
</tr>
<tr>
<td>1.3</td>
<td>Definitions</td>
<td>1</td>
</tr>
<tr>
<td>1.4</td>
<td>Additional Permitting</td>
<td>1</td>
</tr>
<tr>
<td>2.0</td>
<td>Narrative Site Description</td>
<td>2</td>
</tr>
<tr>
<td>2.1</td>
<td>Existing Site Description</td>
<td>2</td>
</tr>
<tr>
<td>2.2</td>
<td>Nature of Construction Activity</td>
<td>2</td>
</tr>
<tr>
<td>2.3</td>
<td>Sequence of Major Activities</td>
<td>2</td>
</tr>
<tr>
<td>2.4</td>
<td>Site Disturbance</td>
<td>2</td>
</tr>
<tr>
<td>2.5</td>
<td>Existing Data</td>
<td>2</td>
</tr>
<tr>
<td>2.6</td>
<td>Existing Vegetation</td>
<td>3</td>
</tr>
<tr>
<td>2.7</td>
<td>Potential Pollution Sources</td>
<td>3</td>
</tr>
<tr>
<td>2.8</td>
<td>Non-stormwater discharges</td>
<td>3</td>
</tr>
<tr>
<td>2.9</td>
<td>Receiving Waters</td>
<td>4</td>
</tr>
<tr>
<td>3.0</td>
<td>Stormwater Management Controls</td>
<td>4</td>
</tr>
<tr>
<td>3.1</td>
<td>SWMP Administrator</td>
<td>4</td>
</tr>
<tr>
<td>3.2</td>
<td>Best Management Practices (BMP's) for Stormwater Pollution Prevention</td>
<td>4</td>
</tr>
<tr>
<td>3.3</td>
<td>Structural Practices for Erosion and Sediment Control</td>
<td>5</td>
</tr>
<tr>
<td>3.4</td>
<td>Non-Structural Practices for Erosion and Sediment Control</td>
<td>7</td>
</tr>
<tr>
<td>3.5</td>
<td>Phased BMP Installation</td>
<td>9</td>
</tr>
<tr>
<td>3.6</td>
<td>Material Handling and Spill Prevention</td>
<td>10</td>
</tr>
<tr>
<td>3.7</td>
<td>Dedicated Concrete or Asphalt Batch Plant</td>
<td>11</td>
</tr>
<tr>
<td>3.8</td>
<td>Vehicle Tracking Control</td>
<td>11</td>
</tr>
<tr>
<td>3.9</td>
<td>Waste Management and Disposal</td>
<td>11</td>
</tr>
<tr>
<td>3.10</td>
<td>Groundwater and Stormwater Dewatering</td>
<td>11</td>
</tr>
<tr>
<td>4.0</td>
<td>Final Stabilization and Long-Term Stormwater Management</td>
<td>12</td>
</tr>
<tr>
<td>4.1</td>
<td>Final Stabilization</td>
<td>12</td>
</tr>
<tr>
<td>4.2</td>
<td>Long-Term Stormwater Management</td>
<td>12</td>
</tr>
<tr>
<td>5.0</td>
<td>Inspection, Maintenance and Record Keeping</td>
<td>12</td>
</tr>
<tr>
<td>5.1</td>
<td>BMP Inspection</td>
<td>12</td>
</tr>
<tr>
<td>5.2</td>
<td>BMP Maintenance</td>
<td>12</td>
</tr>
<tr>
<td>5.3</td>
<td>Record Keeping</td>
<td>13</td>
</tr>
<tr>
<td>6.0</td>
<td>Additional SWMP and BMP Resources</td>
<td>15</td>
</tr>
</tbody>
</table>

References

Stormwater Management Plan

This unofficial copy was downloaded on Jul-11-2019 from the City of Fort Collins Public Records Website: http://citydocs.fcgov.com
For additional information or an official copy, please contact City of Fort Collins Utilities 700 Wood Street Fort Collins, CO 80524 USA
LIST OF TABLES:
Table 1 – Preliminary Permit and Construction Schedule.............................................. 10

APPENDICES:
APPENDIX A  – Site Maps
APPENDIX B  – Erosion Control Details
APPENDIX C  – Landscape Plan
APPENDIX D  – Copies of Permits/Applications
APPENDIX E  – Inspection Logs
APPENDIX F  – Contractor Inserts (as needed)
APPENDIX G  – Contractor Inserts (as needed)
1.0 General Requirements

1.1 Objectives

The objective of a Stormwater Management Plan (SWMP) is to identify all potential sources of pollution likely to occur as a result of construction activity associated with the site construction, and to describe the practices that will be used to reduce the pollutants in stormwater discharges from the site. The SWMP must be completed and implemented at the time the project breaks ground, and revised as necessary as construction proceeds to accurately reflect the conditions and practices at the site.

This report summarizes the Stormwater Management Plan for the construction activity that will occur with Canyon Place in Fort Collins, CO. This plan has been prepared according to regulations of the Colorado Department of Public Health and Environment (CDPHE), Water Quality Control Division.

1.2 SMWP Availability

This report is intended to remain on the aforementioned construction site to allow for maintenance and inspection updates, and for review during inspection.

1.3 Definitions

**BMP** – Best Management Practice encompassing a wide range of erosion and sediment control practices, both structural and non-structural in nature, which are intended to reduce or eliminate any possible water quality impacts from stormwater leaving a construction site.

**Erosion Control BMPs** – Practices that PREVENT the erosion of soil, such as minimizing the amount of disturbed area through phasing, temporary stabilization, and preserving existing vegetation.

**Sediment Control BMP’s** – Practices to REMOVE sediment from runoff, such as sediment basins, silt fence, or inlet protection.

**Non-structural BMP’s** – The implementation of methods, practices, and procedures to minimize water quality impacts, such as the preservation of natural vegetation, preventive maintenance and spill response procedures.

**Structural BMP’s** – Physical devices that prevent or minimize water quality impacts, such as sediment basins, inlet protection, or silt fence.

1.4 Additional Permitting

As mentioned above, this Stormwater Management Plan is associated with the Colorado Department of Public Health and Environment Stormwater Permit that is issued by the Water Quality Control Division of the CDPHE. Additional Environmental permitting not described in this report may be required as a part of this project. An example is the Construction Dewatering Permit for groundwater. Another example is the Air Pollution Emission Notice (APEN). The CDPHE website contains links to both of these permits, as well as many other potential permits. The Contractor is responsible for ensuring the proper permits are acquired.
2.0 Narrative Site Description

2.1 Existing Site Description

The project site is located in Section 11, Township 7 North, Range 69 West of the 6th Principal Meridian, in the City of Fort Collins, Larimer County, Colorado. The existing site is fully developed with a vacant office building on the southeast corner (Lot 1 - 400 W. Magnolia Street), an office building on the southwest corner (Lot 1 - 318 Canyon Avenue), and a bank building on the east (Lot 2 - 319 S. Meldrum Street), and associated asphalt parking, drive aisles, and perimeter landscaping.

2.2 Nature of Construction Activity

The proposed redevelopment will start with demolition of the existing structure at 400 W. Magnolia Street. Existing sidewalks, parking, and drive aisles will be removed and replaced. The impetus of the project is the construction of a new mixed use building on Lot 1. New utility services will be installed to support the mixed use structure. Construction of these utilities will include a new PVC storm drain, a sanitary sewer manhole, service and grease interceptor, a domestic water service and a fire service.

2.3 Sequence of Major Activities

To complete the project, many basic categories of construction activity will take place. As previously mentioned, the first part of the project will consist of the necessary demolition and removals. Within this phase protection will need to be supplied to the existing storm line that will remain to ensure no sediment is routed through the existing system. Also perimeter protection will need to be established. With the surroundings, type of perimeter protection will vary due to the differing types of ground material. It will be the Contractor's responsibility to implement the appropriate measure to suit the installation and type of ground material. This will be followed by utility installation and foundation excavation. Vertical construction of the apartment building will commence after foundation and underground work is complete. New curb/gutter, paving, and sidewalks are expected to begin after the building is dried in and trades move inside. The final stages of site construction will be fine grading of the areas around the buildings, and the installation of landscaping throughout the project. The aforementioned sequencing is an initial best guess, and is subject to change at the Contractor's discretion.

2.4 Site Disturbance

The site disturbance will occur in a portion of Lot 1 and Lot 2 and is approximately 0.64 acres. Site disturbance is essentially limited to the removal and replacement of existing structures and pavements. There is no significant site grading or cuts/fills.

2.5 Existing Data

In order to complete the associated construction plans, a topographical survey of the site was completed. This survey consisted of field measurements made by Northern Engineering Services on June 11, 2012.

In addition to the field survey, the Natural Resources Conservation Service (NRCS) Soil Survey was used to determine existing soil types found on-site. According to the NRCS Soil Survey, the site consists entirely of Fort Collins loam. The Fort Collins loam is classified as Hydrologic Soil Group B.
2.6 Existing Vegetation

The existing site is over 95% covered with hard surfaces (rooftop, paving, etc.) and established landscaping, which allows minimum surface erosion. **It is highly recommended that pre-construction photos be taken to clearly document vegetative conditions prior to any disturbance activities.**

2.7 Potential Pollution Sources

As is typical with most construction sites, there are a number of potential pollution sources which could affect water quality. It is not possible for this report to identify all materials that will be used or stored on the construction site. It is the sole responsibility of the Contractor to identify and properly handle all materials that are potential pollution sources. The following are some common examples of potential pollution sources:

- Exposed and stored soils
- Management of contaminated soils
- Off-site tracking of soils and sediment
- Loading and unloading operations
- Outdoor storage of building materials, fertilizers, chemicals, etc.
- Vehicle and equipment maintenance and fueling
- Significant dust or particulate generating processes
- Routine maintenance activities involving fertilizers, pesticides, detergents, fuels, solvents, oils, etc.
- On-site waste disposal practices (waste piles, dumpsters, etc.)
- Concrete truck/equipment washing
- Non-industrial waste sources that may be significant, such as worker trash and portable toilets
- Uncovered trash bins
- Other areas or procedures where potential spills can occur
- Stockpiling of materials that can be transported to receiving waterway(s)

**Management of Contaminated Soils:** We are not aware of on-site contaminated soils. However, the contractor should conduct a thorough, pre-construction environmental site assessment. If contaminated soils are discovered, the contractor will identify appropriate practices and procedures for the specific contaminants discovered on-site.

**Loading and Unloading Operations:** During site demolition, material loading and unloading will occur on-site. As site development and building construction progresses, space constraints will limit the number of on-site locations for loading and unloading activities to the building from Canyon Avenue or Magnolia Street. The contractor will be responsible for the proper handling and management of pollution sources during loading and unloading operations.

**Dedicated Asphalt and Concrete Batch Plants:** Neither a dedicated asphalt or concrete batch plant will be constructed on-site.

2.8 Non-stormwater discharges

The Stormwater Construction Permit only covers discharges composed entirely of stormwater. Emergency firefighting water is the only authorized exception. Concrete Washout water can NOT be discharged to surface waters or to storm sewer systems without separate permit coverage. The discharge of Concrete Washout water to the ground, under specific conditions, may be allowed by the Stormwater Construction Permit when appropriate BMPs are implemented.
The discharge of pumped stormwater, ONLY, from excavations, ponds, depressions, etc. to surface waters, or to a municipal storm sewer system is allowed by the Stormwater Construction Permit, as long as the dewatering activity and associated BMPs are identified in the Stormwater Management Plan (SWMP) and are implemented in accordance with the SWMP.

Aside from the exceptions noted above, non-stormwater discharges must be addressed in a separate permit issued for that discharge. If groundwater is encountered, and dewatering is required, a Construction Dewatering Permit must be acquired from the Colorado Department of Public Health and Environment. A copy of the dewatering permit application and instructions has been included with Appendix D.

2.9 Receiving Waters

Stormwater runoff from this project is designed to drain in two major directions. The existing parking lot to the north and the northern half of the courtyard will discharge into Canyon Avenue. The runoff discharged into the Canyon Avenue is intercepted by a curb inlet and routed through the City's storm sewer system. The remaining courtyard area will drain south into a proposed trench drain. The proposed trench drain is also connected to the City's storm sewer system. This City storm sewer conveys stormwater to the north, through the "Old Town" area before discharging into the stormwater quality facility within the Udall Natural Area, which is located approximately 1.0 miles downstream from the project. Once flows reach the Udall Natural Area, they flow north approximately 200 feet to the Poudre River. This drainage pattern follows the historic drainage course.

3.0 Stormwater Management Controls

3.1 SWMP Administrator

A SWMP Administrator must be designated in conjunction with the Stormwater Permit. This person shall be responsible for developing, implementing, maintaining, and revising the SWMP. The SWMP Administrator will also be the contact for all SWMP-related issues and will be the person responsible for the accuracy, completeness, and implementation of the SWMP. The Administrator should be a person with authority to adequately manage and direct day-to-day stormwater quality management activities at the site.

The SWMP Administrator for this site is:

Name: ____________ (to be filled-in by permittee)

Company: ____________ (to be filled-in by permittee)

Phone: ____________ (to be filled-in by permittee)

E-mail: ____________ (to be filled-in by permittee)

3.2 Best Management Practices (BMP's) for Stormwater Pollution Prevention

Beginning from mobilization, and throughout the entire construction of the project, erosion control devices shall be installed to ensure minimal pollutant migration. These erosion control devices may be installed in phases, or not at all, depending on actual conditions encountered at the site. It is the responsibility of the Contractor to make the determination as to what practices should be employed and when. In the event that a review agency deems BMPs to be insufficient, it shall be the responsibility of the contractor to implement modifications as directed.

Best Management Practices (BMPs) are loosely defined as a method, activity, maintenance
procedure, or other management practice for reducing the amount of pollution entering a water body. The term originated from rules and regulations in Section 208 of the Clean Water Act.

Details for Structural and Non-Structural BMPs have been included in Appendix B. These details should be used for additional information on installation and maintenance of BMPs specified in this report. It is also intended to serve as a resource for additional BMPs that may be appropriate for the site that have not specifically been mentioned in the report.

3.3 Structural Practices for Erosion and Sediment Control

Structural BMPs are physical devices that are implemented to prevent erosion from happening or to limit erosion once it occurs. These devices can be temporary or permanent, and installation of individual components will vary depending on the stage of construction.

A table depicting construction sequence and BMP application/removal has been placed on the "Dynamic Site Plan" to help document the implementation of these BMPs. Refer to the Stormwater Management Plan Static Site Plan in the Appendix for the assumed location of all BMPs. Construction Details for Temporary BMPs are located in the Appendix for reference.

Again, the final determination for which BMP’s will be installed, where they will be located, and when they will be installed shall be made by the Contractor, along with all documentation throughout the construction process.

Silt Fencing (Phase I)

Silt fencing shall be provided to prevent migration of sediment off-site or into adjacent properties. All silt fencing shall be installed prior to any land disturbing activity (demolition, stockpiling, stripping, grading, etc.). Silt fencing is to be installed prior to site excavation or earthwork activities.

Inspections of the silt fence should identify tears or holes in the material, and should check for slumping fence or undercut areas that allow flows to bypass the fencing. Damaged sections of fencing should be repaired or replaced to ensure proper functioning. Sediment accumulated behind the silt fence should be removed to maintain BMP effectiveness, typically before it reaches a depth of 6 inches.

At a minimum, it is suggested that silt fencing shall be located along the northern, eastern and southern limits of disturbance. Silt fencing can be installed in conjunction with/adjacent to construction or security fencing. Sediment Control Logs may also be substituted in lieu of silt fencing, as appropriate. See below for a description of Sediment Control Logs.

Sediment Control Log – aka “Straw Wattles” (Phase I)

A Sediment Control Log is a linear roll made of natural materials, such as straw, coconut fiber, or other fibrous material trenched into the ground and held with a wooden stake. Sediment Control Logs can be used in many instances. Examples include perimeter control for stockpiles, as part of inlet protection designs, as check dams in small drainage ways, on disturbed slopes to shorten flow lengths, or in lieu of silt fencing (where appropriate).

Sediment Control Logs should be inspected for excess sediment accumulation. Sediment should be removed prior to reaching half the height of the log.

At a minimum, Sediment Control Logs should be used around soil stockpiles (including landscape material) and at all stormwater discharge locations other than inlets.
Vehicle Tracking Control Pads (Phase I)

Vehicle tracking control pads shall be provided to minimize tracking of mud and sediment onto paved surfaces and neighboring roadways. All vehicle tracking control pads shall be installed prior to any land disturbing activity (demolition – as necessary, stockpiling, stripping, grading, etc.). Location of vehicle tracking control pads will be located at any and all existing and future vehicle accesses being used during any of the construction phases. These locations will primarily be dictated by gates or openings in the temporary construction fencing that is expected to be installed. Vehicle tracking control pads are to be installed prior to demolition (as appropriate), site excavation or earthwork activities.

Vehicle tracking pads should be inspected for degradation and aggregate material should be replaced as needed. If the area becomes clogged with water, excess sediment should be removed. Aggregate material should remain rough, and at no point should aggregate be allowed to compact in a manner that causes the tracking pad to stop working as intended.

Suggested locations for a vehicle tracking pad is at the proposed access to the site from Canyon Avenue.

Inlet Protection (Phase I & II)

Inlet protection shall be provided for existing inlets to prevent sediment transport from adjacent earthwork disturbance. Installation of these filters shall occur before adjacent earth disturbing activities (Phase I implementation). Wattie type filters are to be implemented for new and existing inlets where asphalt does not exist. For these inlets, if pavement is constructed adjacent to the structure or if the area adjacent to the inlet is changed such that the wattie type filter is no longer effective, it shall be the responsibility of the Contractor to ensure that an appropriate method is used instead. For example, the wattie filter could be reused, or a gravel-block inlet filter may be installed. It will be left to the discretion of the Contractor as to whether replacement of any inlet filter is necessary.

Inlet protection should be inspected regularly for tears that can result in sediment entering an inlet. Inlet protection should also be inspected for sediment accumulation upstream of the inlet, and sediment should be removed when the less than half of the capacity is available, or per manufacturer specifications.

The existing inlets along Canyon Avenue, Magnolia Street and Meldrum Street will need protection. The Contractor shall also provide inlet protection for all proposed trench drains as they are installed (Phase II implementation).

Concrete Washout Area (Phase II)

A concrete washout should be provided on the site. The washout can be lined or unlined excavated pits in the ground, commercially manufactured prefabricated containers, or aboveground holding areas. The concrete washout must be located a minimum of 400 feet from any natural drainage way or body of water, and at least 1000 feet from any wells or drinking water sources. Washout areas should not be located in an area where shallow groundwater may be present. Contractor shall clearly show the desired location and access to the Concrete Washout Area on the Stormwater Management Plan - Dynamic Site Plan. Contractor shall place a Vehicle Tracking Pad if the selected location for the Concrete Washout Area is detached from pavement. Clear signage identifying the concrete washout should also be provided.
The Concrete Washout Area should be inspected regularly. Particular attention should be paid to signage to ensure that the area is clearly marked. Confirmation that the washout is being used should also be noted to ensure that other undesignated areas of the site are not being used incorrectly as a concrete washout.

An appropriate location for the concrete washout area is located to the northwest corner of the site. This location is a suggestion only, and can be relocated at the discretion of the Contractor.

Permanent/Established Vegetation (Phase IV)

Permanent or established vegetation and landscaping is considered a permanent form of sediment and erosion control for common open spaces, steep slopes and areas not exposed to prolonged scour velocities, or acute incipient motion bed shear stresses that will create soil erosion, rill formation and subsequent sediment transport. Areas where the previous conditions apply will contain sufficient permanent BMPs, such as riprap or cobble mulch. Permanent vegetation shall conform to the approved Landscape Plan prepared by Land Works. Permanent/Established vegetation and hardscape defines Phase IV of development.

3.4 Non-Structural Practices for Erosion and Sediment Control

Non-Structural BMPs are practices or activities that are implemented to prevent erosion from happening or to limit erosion once it occurs. These BMPs can be a practice resulting in physical change to the site, such as mulching or slope stabilization. They can also result in behavioral changes on the site, such as changes to construction phasing to minimize exposure to weather elements, or increased employee awareness gained through training.

Protection of Existing Vegetation (Phases I-IV)

Protection of existing vegetation on a construction site can be accomplished through installation of a construction fence around the area requiring protection. In cases where up-gradient areas are disturbed, it may also be necessary to install perimeter controls to minimize sediment loading to sensitive areas such as wetlands.

Trees that are to remain after construction is complete must be protected. Most tree roots grow within the top 12"-18" of soil, and soil compaction is a significant threat to tree health. As such, particular care should be taken to avoid activities within the drip-line of the tree. Direct equipment damage should also be prevented. The most effective way to ensure the health of trees is to establish a protection zone at the drip-line of the tree to prevent unintended activity in the area directly surrounding the tree.

Fencing should be inspected and repaired when needed. If damage occurs to a tree, an arborist should be consulted on how to care for the tree. If a tree is damage beyond repair, the City Forester should be consulted on remediation measures.

At a minimum, protection to all trees identified for retention on the plans by Land Works.

Stockpile Management (Phases I-III)

Stockpile management should be utilized to minimize erosion and sediment transport from soil stockpiles. In general, soil stockpiles should be located a minimum of 100 feet from any drainage way and 50 feet from any storm sewer inlets. Where practical, choose a stockpile location that will remain undisturbed for the longest period of time as the phases of construction progress. Sediment control BMPs should be placed around the perimeter of the stockpile, and a designated access point on the upstream side of the stockpile should be identified. BMPs such as surface roughening, temporary seeding, mulching, erosion control blankets, or soil binders should be used to stabilize the stockpile surface.

**Stormwater Management Plan**
As a part of stockpile management, regular inspections of the perimeter controls should be completed. If BMPs have been utilized to stabilize the surface of the stockpile, they should be inspected and repaired as needed.

While significant soil stockpiles are not expected with this project, it is possible that foundation excavation or the delivery landscaping material may generate temporary stockpiles. The location of any such stockpiles shall be the responsibility of the SWMP Administrator.

**Mulching (Phase I-III)**

Mulching helps reduce erosion by protecting bare soil from rainfall impact, increasing infiltration, and reducing runoff. Although often applied in conjunction with temporary or permanent seeding, it can also be used for temporary stabilization of areas that cannot be reseeded due to seasonal constraints. The most common type of mulch used is hay or grass that is crimped into the soil to keep it secure. However, crimping may not be practical on slopes steeper than three to one (3H:1V).

The Contractor shall mulch all planted areas within twenty-four (24) hours after planting. Only weed-free and seed-free straw mulch may be used. Straw mulch should be applied at two (2) tons per acre, and shall be adequately secured by crimping, tackifier, netting or blankets. Hydraulic mulching may also be used on steep slopes or where access is limited. In the case that hydraulic mulching is utilized, the Contractor shall use wood cellulose fibers mixed with water at two thousands to two thousand five hundred (2,000-2,500) pounds per acre and organic tackifier at one hundred to four hundred (100-400) pounds per acre.

The Contractor is responsible in applying wood chip mulch to all planted trees and shrubs as shown on the Landscape Plan prepared by Landworks Design.

**Wind Erosion/Dust Control (Phase I-IV)**

Wind Erosion and Dust Control BMP's help to keep soil particles from entering the air as a result of land disturbing construction activities. Examples include use of a water truck or irrigation/sprinkler system to wet the top layer of disturbed soil, seeding and mulching, soil binders, or wind fences.

If a water truck or irrigation/sprinkler system is utilized, monitoring to ensure that sufficient water is applied is crucial to ensuring soil particles don’t become airborne. Equally important is monitoring for overwatering, as too much water can lead to increased erosion.

**Street Sweeping (Phases I -IV)**

Street sweeping should be used to remove sediment that has been tracked onto adjacent roadways. Roadways should be inspected at least once a day, and sediment should be removed as needed. A check of the area inlet protection should be completed after sweeping to ensure nothing was displaced during sweeping operations. Street sweeping can reduce the sediment washed into the existing storm drain system. Street sweeping may be necessary on the existing hardscape areas which receive runoff from the disturbed areas.

**Saw Cutting Pollution Prevention (Phase I)**

The following protocol is recommended to prevent dust and slurry from asphalt and concrete saw cutting activities from migrating into the existing storm drain system.

- Slurry and cuttings shall be vacuumed during cutting and surfacing operations
- Slurry and cuttings shall not remain on permanent concrete or asphalt pavement overnight
- Slurry and cuttings shall not drain to any natural or constructed drainage conveyance
• Collected slurry and cuttings shall be disposed of in a manner that does not violate groundwater or surface water standards.

Good Housekeeping Practices (All phases)

Good housekeeping practices that will prevent pollution associated with solid, liquid, and hazardous construction-related materials and wastes should be implemented throughout the project. Examples of good housekeeping include providing an appropriate location for waste management containers, establishing proper building material staging areas, designating paint and concrete washout areas, establishing proper equipment/vehicle fueling and maintenance practices. Development of a spill prevention and response plan is another example of Good Housekeeping practices that should be used on the project. The following items are detailed examples of some of the good housekeeping practices that should be utilized throughout the project. It should be noted that a complete list of practices and detailed discussion regarding good housekeeping has been included with Appendix B, sheets GH-1 – GH-6.

Street Sweeping and Vacuuming – Street sweeping and vacuuming should be used to remove sediment that has been tracked onto adjacent roadways. Roadways should be inspected at least once a day, and sediment should be removed as needed. A check of inlet protection should be completed after sweeping to ensure nothing was displaced during sweeping operations.

Waste Management – Designate trash and bulk waste collection areas on-site. When possible, materials should be recycled. Hazardous material waste should be segregated from other solid waste. Waste collection areas should be located away from streets, gutters, watercourses, and storm drains. Dumpsters should be located near site entrances to minimize traffic on disturbed soils, and they should be placed on a level soil surface.

Establish Proper Building Material Handling and Staging areas – Clearly designate site areas for staging and storage of building materials. Provide appropriate BMPs to ensure that spills or leaks are contained.

Establish Proper Equipment/Vehicle Fueling and Maintenance Practices – If needed, create a clearly designated on-site fueling and maintenance area that is clean and dry. Provide appropriate BMPs to ensure that spills or leaks are contained.

3.5 Phased BMP Installation

It is important to recognize the four (4) major Development Phases as defined by the State of Colorado’s Stormwater Discharge Permit (SDP). These four development phases (referred to as Sequencing by the City of Fort Collins) have been distinguished to aid in the appropriate timing of installation/implementation of BMPs at different stages of the construction process. These phases are described as follows:

Phase I – Grading Stage; BMPs for initial installation of perimeter controls

Phase II – Infrastructure Stage; BMPs for utility, paving and curb installation

Phase III – Vertical Construction Stage; BMPs for individual building construction

Phase IV – Permanent BMPs and final site stabilization.
The following is a rough estimate of the anticipated construction sequence for site improvements. The schedule outlined below is subject to change as the project progresses and as determined by the General Contractor.

### Table 1 – Preliminary Permit and Construction Schedule

| TASK | BEGINNING DATE | ENDING DATE | "BMP-PHASE OF DEVELOPMENT"
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Development Construction Permit Issued by City of Fort Collins</td>
<td>March 2013</td>
<td>March 2013</td>
<td>I</td>
</tr>
<tr>
<td>Overlot Grading (Demolition)</td>
<td>March 2013</td>
<td>March 2013</td>
<td>I</td>
</tr>
<tr>
<td>Utility Installation</td>
<td>March 2013</td>
<td>April 2013</td>
<td>II</td>
</tr>
<tr>
<td>Building Construction</td>
<td>April 2013</td>
<td>November 2013</td>
<td>III</td>
</tr>
<tr>
<td>Final Stabilization</td>
<td>October 2013</td>
<td>November 2013</td>
<td>IV</td>
</tr>
</tbody>
</table>

Included in the back map pockets are five Site Plans: a “Static” Site Plan and four “Dynamic” Site Plans. The “Static” plan serves to display the overall management plan all at once. However, proper implementation of BMPs does not occur at once, and certain BMPs may move location in the construction process; therefore, the “Dynamic” Site Plans are intended for the Contractor to write in the BMP symbols to document the location and time the BMPs are installed and maintained throughout the entire construction process.

#### 3.6 Material Handling and Spill Prevention

Potential pollution sources, as discussed in earlier sections, are to be to be identified by the Contractor. Spill prevention procedures are to be determined and put in place prior to construction by the Contractor. A spill and flooding response procedure must also be determined and put in place prior to construction by the Contractor. Additionally, steps should be taken to reduce the potential for leaks and spills to come in contact with stormwater runoff, such as storing and handling toxic materials in covered areas or by storing chemicals within berms or other secondary containment devices.

A notification procedure must be put in place by the Contractor, by which workers would first notify the site construction superintendent, who would then notify the SWMP Administrator. Depending on the severity of the spill, the site construction superintendent and SWMP Administrator would possibly notify the Colorado Department of Public Health and Environment - Water Quality Control Division, downstream water users, or other appropriate agencies. The release of any chemical, oil, petroleum product, sewage, etc., which enter waters of the State of Colorado (which include surface water, ground water, and dry gullies or storm sewers leading to surface water) must be reported immediately to the Division’s emergency spill reporting line at (877) 518-5608. All spills that will require cleanup, even if the spill is minor and does not need to be reported to the state, should still be reported to the City of Fort Collins Utilities office at 970-221-6700.

While not expected with this project, it will be the responsibility of the Contractor to designate a fueling area and take the necessary precautions to ensure that no stormwater pollution occurs in the event that a fueling area is needed. Fueling areas shall be located a minimum 100 feet from all drainage courses. A 12-inch high compacted earthen ridge capable of retaining potential spills shall enclose fueling areas. Other secondary containment devices can be used instead of the earthen ridge. The area shall be covered with a non-porous lining to prevent soil contamination. Printed instructions for cleanup procedures shall be posted in the fueling area and appropriate fuel absorbents shall be available along with containers for used absorbents within the fueling area.
3.7 Dedicated Concrete or Asphalt Batch Plant

There are not any dedicated concrete or asphalt batch plants anticipated with this project. In the event that a plant is needed, the Contractor should be aware that additional permitting will be required. In particular, an Air Pollutant Emission Notice (APEN) will need to be obtained from the CDPHE.

3.8 Vehicle Tracking Control

In addition to the vehicle tracking pads discussed previously, additional measures can be taken to minimize and control sediment discharges from the site due to vehicle tracking. These measures can include fencing around the site to control access points. Regular street sweeping can also be used to minimize the transmission of sediment from the site due to vehicles leaving the site. The use of gravel parking areas and wash racks can also be implemented to ensure minimal vehicle tracking from the site.

3.9 Waste Management and Disposal

It will be the responsibility of the Contractor to designate a concrete truck chute washout area and to clearly identify that area. Detailed information about the design and maintenance of the Concrete Washout can be found under the Structural Practices section of this report. At no time should untreated wash water be allowed to discharge from the site or to enter a storm drain system or stream. Upon completion of construction activities the concrete washout material shall be removed and properly disposed of prior to the area being restored.

Any waste material that currently exists on the site or that is generated by construction will be disposed of in such a manner as to not cause pollutants in stormwater discharges. If waste is to be stored on-site, it shall be in an area located a minimum of 100 feet from all drainage courses. Whenever waste is not stored in a non-porous container, it shall be in an area enclosed by a 12-inch high compacted earthen ridge or some other approved secondary containment device. The area shall be covered with a non-porous lining to prevent soil contamination. Whenever precipitation is predicted, the waste shall be covered with a non-porous cover, anchored on all sides to prevent its removal by wind, in order to prevent precipitation from leaching out potential pollutants from the waste. On-site waste disposal practices, such as dumpsters, should be covered or otherwise contained as to prevent dispersion of waste materials from wind. It shall also be the responsibility of the Contractor to maintain a clean jobsite as to prevent dispersion of waste material and potential pollutants into adjacent properties or waterways.

The location of, and protective measures for, temporary restroom facilities shall be the responsibility of the SWMP Administrator.

3.10 Groundwater and Stormwater Dewatering

The BMPs selected for construction dewatering vary depending on the site-specific features, such as soils, topography, discharge quantities, and discharge location. Typically, dewatering involves pumping water from an inundated area to a BMP, prior to the water being released downstream into a receiving waterway, sediment basin, or well-vegetated area. Acceptable BMPs include discharging water into a sediment trap or basin, using a dewatering filter bag, or using a series of sediment logs. A settlement tank or an active treatment system can also be utilized. Another commonly used method to handle the pumped water is the "sprinkler method," which involves applying the water to vegetated areas through a perforated discharge hose. Dispersal from a water truck for dust control can also be used to disperse the pumped water.
4.0 Final Stabilization and Long-Term Stormwater Management

4.1 Final Stabilization

All disturbed areas will be seeded, crimped and mulched. As defined by the Colorado Department of Public Health and Environment in the General Permit Application for Stormwater Discharges, “Final stabilization is reached when all soil disturbing activities at the site have been completed, and uniform vegetative cover has been established with a density of at least 70 percent of pre-disturbance levels or equivalent permanent, physical erosion reduction methods have been employed.”

4.2 Long-Term Stormwater Management

The method of long-term stormwater management will take place at the Udall Natural Area water quality facility. All disturbed areas will receive permanent paving or will be vegetated per the Landscape Plan.

5.0 Inspection, Maintenance and Record Keeping

5.1 BMP Inspection

All temporary erosion control facilities shall be inspected at a minimum of once every two (2) weeks and after each significant storm event or snowmelt. Repairs or reconstruction of BMPs, as necessary, shall occur as soon as possible in order to ensure the continued performance of their intended function. It is the responsibility of the SWMP Administrator to conduct bi-weekly inspections, maintain BMPs if needed, to keep records of site conditions and inspections, and to update the SWMP as necessary.

The construction site perimeter, disturbed areas, all applicable/installed erosion and sediment control measures, and areas used for material storage that are exposed to precipitation shall be inspected for evidence of, or the potential for, pollutants entering the drainage system. Erosion and sediment control measures identified in the SWMP shall be observed to ensure that they are operating correctly. Particular attention should be paid to areas that have a significant potential for stormwater pollution, such as demolition areas, concrete washout locations, and vehicle entries to the site. The inspection must be documented to ensure compliance with the permit requirements.

5.2 BMP Maintenance

Any BMP’s not operating in accordance with the SWMP must be addressed as soon as possible, immediately in most cases, to prevent the discharge of pollutants. If modifications are necessary, such modifications shall be documented so that the SWMP accurately reflects on-site conditions. The SWMP needs to accurately represent field conditions at all times.

Uncontrolled releases of mud, muddy water, or measurable amounts of sediment found off-site will be recorded with a brief explanation of the measures taken to clean-up the sediment that has left the site, as well as the measures taken to prevent future releases. This record shall be made available to the appropriate public agencies (Colorado Department of Public Health and Environment, Water Quality Control Division; Environmental Protection Agency; City of Fort Collins; etc.) upon request.

Preventative maintenance of all temporary and permanent erosion control BMPs shall be provided in order to ensure the continued performance of their intended function. Temporary erosion control measures are to be removed after the site has been sufficiently stabilized as determined by the City of Fort Collins. Maintenance activities and actions to correct problems shall be noted and recorded.
during inspections.
Inspection and maintenance procedures specific to each BMP identified with this SWMP are discussed in Section 3. Details have also been included with Appendix B.

5.3 Record Keeping

Documentation of site inspections must be maintained. The following items are to be recorded and kept with the SWMP:
- Date of Inspection
- Name(s) and title(s) of personnel making the inspection
- Location(s) of sediment discharges or other pollutants from the site
- Location(s) of BMP’s that need to be maintained
- Location(s) of BMP’s that failed to operate as designed or proved inadequate
- Locations(s) where additional BMP’s are needed that were not in place at the time of inspection
- Deviations from the minimum inspection schedule
- Descriptions of corrective action taken to remedy deficiencies that have been identified
- The report shall contain a signed statement indicating the site is in compliance with the permit to the best of the signer’s knowledge and belief after corrective actions have been taken.

Provided within Appendix E of this SWMP is an Example Inspection Log to aid in the record keeping of BMP inspections and maintenance. Photographs, field notebooks, drawings and maps should be included by the SWMP Administrator when appropriate.

In addition to the Inspection Log, records should be kept documenting:
- BMP maintenance and operation
- Stormwater contamination
- Contacts with suppliers
- Notes on the need for and performance of preventive maintenance and other repairs
- Implementation of specific items in the SWMP
- Training events (given or attended)
- Events involving materials handling and storage
- Contacts with regulatory agencies and personnel
- Notes of employee activities, contact, notifications, etc.

Records of spills, leaks, or overflows that result in the discharge of pollutants must be documented and maintained. A record of other spills that are responded to, even if they do not result in a discharge of pollutants, should be made. Information that should be recorded for all occurrences includes the time and date, weather conditions, reasons for the spill, etc. Some spills may need to be reported to authorities immediately. Specifically, a release of any chemical, oil, petroleum product, sewage, etc., which may enter waters of the State of Colorado (which include surface water, ground water and dry gullies or storm sewers leading to surface water) must be reported to the CDPHE.

Additionally, the “Dynamic Site Plan” is intended to be a “living” document where the SWMP Administrator can hand write the location of BMPs as they are installed to appropriately reflect the current site conditions. Also on the “Dynamic Site Plan” is a “Table of Construction Sequence and BMP Application/Removal” that the SWMP Administrator can use to document when BMPs were installed or removed in conjunction with construction activities. These items have been included as an aid to the SWMP Administrator, and other methods of record keeping are at his or her discretion.

This Stormwater Management Plan (both the text and map) is not a static document. It is a dynamic device intended to be kept current and logged as construction takes place.
It shall be the responsibility of the SWMP Administrator and/or the permit holder (or applicant thereof) to ensure the plan is properly maintained and followed. Diligent administration is critical, including processing the Notice to Proceed and noting on the Stormwater Management Plan the dates that various construction activities occur and respective BMPs are installed and/or removed.
6.0 Additional SWMP and BMP Resources

Urban Drainage and Flood Control District

Colorado Department of Transportation
Erosion Control and Stormwater Quality Guide
BMP Field Academy

EPA Menu of BMP’s
Construction Site Storm Water Runoff Control

International Stormwater Best Management (BMP) Database
Rocky Mountain Education Center

Rocky Mountain Education Center
Red Rocks Community College, Lakewood

Keep It Clean Partnership
Boulder
References

1. Drainage Letter Report for Canyon Place, Northern Engineering Services, September 19, 2012 (NE Project No. 838-002)

