# EROSION AND STORMWATER QUALITY CONTROL PERMIT (ESQCP)
# EL PASO COUNTY
# APPLICATION AND PERMIT

PERMIT NUMBER _____

***APPLICANT INFORMATION***

| **Applicant Contact Information** | |
|---|---|
| Owner | Mortenson |
| Name (person of responsibility) | Charles Root |
| Company/Agency | Mortenson |
| Position of Applicant | Construction Manager |
| Address (physical address, not PO Box) | 700 Meadow Lane North #400 |
| City | Golden Valley |
| State | MN |
| Zip Code | 55422 |
| Mailing address, if different from above | |
| Telephone | (760) 457-5606 |
| FAX number | |
| Email Address | charlie.root@mortenson.com |
| Cellular Phone number | (760) 457-5606 |

***CONTRACTOR INFORMATION***

| **Contractor** | |
|---|---|
| Name (person of responsibility) | Charles Root |
| Company | Mortenson |
| Address (physical address, not PO Box) | 700 Meadow Lane North #400 |
| City | Golden Valley |
| State | MN |
| Zip Code | 55422 |
| Mailing address, if different from above | |
| Telephone | (760) 457-5606 |
| FAX number | |
| Email Address | charlie.root@mortenson.com |
| Cellular Phone number | |
| Erosion Control Supervisor (ECS)* | Charles Root - Mortenson |
| ECS Phone number* | (760) 457-5606 |
| ECS Cellular Phone number* | (760) 457-5606 |

*Required for all applicants. May be provided at later date pending securing a contract when applicable.

***PROJECT INFORMATION***

| **Project Specifications** | |
|---|---|
| Project Name | Grazing Yak Solar Project |
| Legal Description | See attached |
| Address (or nearest major cross streets) | 31275 Washington Road, Calhan CO 80808 |
| Acreage (total and disturbed) | Total: acres 377<br>Disturbed: acres 87 |
| Schedule | Start of Construction: June 1, 2019<br>Completion of Construction: December 1, 2019<br>Final Stabilization: |
| Project Purpose | See attached |
| Description of Project | See attached |
| Tax Schedule Number | 1200000390 |

FOR OFFICE USE ONLY

The following signature from the ECM Administrator signifies the approval of this ESQCP. All work shall be performed in accordance with the permit, the El Paso County Engineering Criteria Manual (ECM) Standards, City of Colorado Springs Drainage Criteria Manual, Volume 2 (DCM2) as adopted by El Paso County Addendum, approved plans, and any attached conditions. The approved plans are an enforceable part of the ESQCP. Construction activity, except for the installation of initial construction BMPs is not permitted until issuance of a Construction permit and Notice to Proceed.

Signature of ECM Administrator: _____ Date _____

## 1.1 REQUIRED SUBMISSIONS

In addition to this completed and signed application, the following items must be submitted to obtain an ESQCP:

- Permit fees
- Stormwater Management Plan (SWMP) meeting the requirements of DCM2 and ECM either as part of the plan set or as a separate document;
- Cost estimates of construction and maintenance of construction and permanent stormwater control measures (Cost estimates shall be provided on a unit cost basis for all stormwater BMPs);
- Financial surety in an amount agreeable to the ECM Administrator based on the cost estimates of the stormwater quality protection measures provided. The financial surety shall be provided in the form of a Letter of Credit, Surety with a Bonding Company, <u>or other forms acceptable to El Paso County</u>;
- Operation and Maintenance Plan for any proposed permanent BMPs; and
- Signed Private Detention Basin/Stormwater Quality Best Management Practice Maintenance Agreement and Easement, if any permanent Best Management Practices are to be located on site.

## 1.2 RESPONSIBILITY FOR DAMAGE

The County and its officers and employees, including but not limited to the ECM Administrator, shall not be answerable or accountable in any manner, for injury to or death of any person, including but not limited to a permit holder, persons employed by the permit holder, persons acting in behalf of the permit holder, or for damage to property resulting from any activities undertaken by a permit holder or under the direction of a permit holder. The permit holder shall be responsible for any liability imposed by law and for injuries to or death of any person, including but not limited to the permit holder, persons employed by the permit holder, persons acting in behalf of the permit holder, or damage to property arising out of work or other activity permitted and done by the permit holder under a permit, or arising out of the failure on the permit holder's part to perform the obligations under any permit in respect to maintenance or any other obligations, or resulting from defects or obstructions, or from any cause whatsoever during the progress of the work, or other activity, or at any subsequent time work or other activity is being performed under the obligations provided by and contemplated by the permit.

To the extent allowed by law, the permit holder shall indemnify, save, and hold harmless the County and its officers and employees, including but not limited to the BOCC and ECM Administrator, from all claims, suits or actions of every name, kind and description brought for or on account of injuries to or death of any person, including but not limited to the permit holder, persons employed by the permit holder, persons acting in behalf of the permit holder and the public, or damage to property resulting from the performance of work or other activity under the permit, or arising out of the failure on the permit holder's part to perform his obligations under any permit in respect to maintenance or any other obligations, or resulting from defects or obstructions, or from any cause whatsoever during the progress of the work, or other activity or at any subsequent time work or other activity is being performed under the obligations provided by and contemplated by the permit, except as otherwise provided by state law. The permit holder waives any and all rights to any type of expressed or implied indemnity against the County, its officers or employees.

## 1.3 APPLICATION CERTIFICATION

I, as the Applicant or the representative of the Applicant, hereby certify that this application is correct and complete as per the requirements presented in this application and the El Paso County Engineering Criteria Manual and Drainage Criteria Manual, Volume 2 and El Paso County Addendum.

I, as the Applicant or the representative of the Applicant, have read and will comply with all of the requirements of the specified Stormwater Management Plan and any other documents specifying stormwater best management practices to be used on the site including permit conditions that may be required by the ECM Administrator. I understand that the Best Management Practices are to be maintained on the site and revised as necessary to protect stormwater quality as the project progresses. I further understand that a Construction Permit must be obtained and all necessary stormwater quality control BMPs are to be installed in accordance with the SWMP and the El Paso County Engineering Criteria Manual and Drainage Criteria Manual, Volume 2 and El Paso County Addendum before land disturbance begins and that failure to comply will result in a Stop Work Order and may result in other penalties as allowed by law. I further understand and agree to indemnify, save, and hold harmless the County and its officers and employees, including but not limited to the BOCC and ECM Administrator, from all claims, suits or actions of every name, kind and description as outlined in Section 1.2 Responsibility for Damage.

Signature of Applicant or Representative

Date: 4/29/19

MATTHEW W BERRY

Print Name of Applicant or Representative

| | | |
|---|---|---|
| Permit Fee | $_____ | |
| Surcharge | $_____ | |
| Financial Surety | $ 355,546.20 | Type of Surety _____ |
| Total | $_____ | |

# Stormwater Management Plan (SWMP)

Westwood

STORMWATER POLLUTION PREVENTION PLAN

# Grazing Yak Solar Project

El Paso County, Colorado

April 2019

Prepared For:

NextEra Energy Resources, LLC
700 Universe Boulevard
Juno Beach, FL 33408

Mortenson Construction
1621 18th Street, Suite 400
Denver, CO 80202

# Stormwater Management Plan (SWMP) Narrative

## Grazing Yak Solar Project

Calhan, El Paso County, Colorado

Colorado Discharge Permit System (CDPS)
Permit Identification #: COR

Prepared for:

NextEra Energy Resources, LLC
700 Universe Boulevard
Juno Beach, FL 33408

Mortenson Construction
1621 18th Street, Suite 400
Denver, CO 80202

Prepared by:

Westwood Professional Services, Inc.
12701 Whitewater Drive, Suite 300
Minnetonka, MN 55343
(952) 937-5150

Project Number: 0021201.00

April 2019

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## ATTACHMENTS

Attachment A: CDPS General Permit
Attachment B: Permitting Documentation (NOI, Permit Card, Permit Letters, Pre-construction Photo Log)
Attachment C: Soil Maps
Attachment D: Vicinity Map, Pre and Post Drainage Maps, Impaired Water Maps
Attachment E: Site Plans, Grading and Erosion Control Plans, Details
Attachment F: Training Documentation
Attachment G: Inspection and Maintenance Forms and Spill Response and reporting Information

# 1.0 INTRODUCTION AND PURPOSE

This Stormwater Management Plan (SWMP) is prepared in accordance with the regulations as established by the Clean Water Act and guided by the State of Colorado. The Colorado Discharge Permit System's General Permit COR-400000 ("General Permit"; expiration: midnight March 31, 2024) provides the framework of requirements for compliance to discharge stormwater from a construction site.

This SWMP is for implementation by the Owner and Operator, as listed in Section 6.1 of this SWMP, at the Grazing Yak Solar Project, with the project location as defined in Section 4.0 of this SWMP. This report shall be on the site at all times during construction.

The following are outlined in this site specific SWMP:

- Identify all potential sources of pollution which may reasonably be expected to affect the quality of stormwater discharges associated with construction activity from the facility;
- Describe the practices to be used to reduce the pollutants in stormwater discharges associated with construction activity at the facility; and ensure the practices are selected and described in accordance with good engineering practices, including the installation, implementation and maintenance requirements; and
- Be properly prepared, and updated in accordance with Part I.C.3, to ensure compliance with the terms and conditions of the General Permit.

# 2.0 OWNER AND OPERATOR SWMP CERTIFICATION STATEMENT AND SIGNATURE

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

**Owner:**

| | | |
|---|---|---|
| _____ | Vice President | _____ |
| Signature | Title | Date |
| John Didonato | (561) 814-7287 | Grazing Yak Solar, LLC |
| Printed Name | Contact Number | Company |

**Operator:**

| | | |
|---|---|---|
| _____ | Vice President, General Manager | _____ |
| Signature | Title | Date |
| Trent Mostaert | (763) 287-3439 | Mortenson Construction |
| Printed Name | Contact Number | Company |

# 3.0 SWMP AMENDMENTS

This plan and the attachments must be amended as soon as practicable, but in no case more than 72 hours after field changes. **NOTE**: the permittee must ensure the site changes are reflected in the SWMP. The permittee is noncompliance with the General Permit until the SWMP revisions have been made. Notation must be made before the field fix to include additional requirements or modified requirements which take place during construction if one or more of the following occur:

- There is a change in design, construction, operation, maintenance, weather or seasonal conditions that significantly impacts the discharge of pollutants from the site to surface or groundwater;
- Inspections or investigations by the site owner, operator, Environmental Protection Agency, or Colorado Department of Public Health and Environment officials indicate this plan is not effective in eliminating or significantly minimizing the discharge of pollutants;
- This SWMP is not achieving the general objectives of minimizing pollutants in stormwater discharges or if this plan is not consistent with the General Permit;
- If the Colorado Department of Public Health and Environment (CDPHE) notifies the permittee that additional requirements are needed, requirements are not being met for Total Maximum Daily Load (TMDL) or other water quality standards, or that the SWMP did not incorporate the necessary requirements; and
- When Control Measures (CMs) are removed either because of ineffectiveness or are no longer useful the following items shall be documented; date, location, and time of the maintenance, removal, or design change which took place.

The following table should be completed as necessary during construction to document changes and amendments to this document. Place the Modification or Amendment (Amend) Number next to all application changes, redlines and information in the document to reference back to the changes summarized below. If an additional sheet is necessary attach the additional sheet to the SWMP.

**Table 1: Amendment Log**

| Modification or Amend # | Date | Reason, location and brief description of change or amendment (including the control measure removed or modified) |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

# 4.0 SITE DESCRIPTION

### 4.1 Site Location and Vicinity Map

The Grazing Yak Solar Project site is located in the El Paso County, Colorado. The nearest town, Calhan, is located 4 miles to the northwest. The nearest intersection is SEC Washington Road and McQueen Road. The site occupies the northwest and southwest quarters of Section 29, Township 12S, Range 61W. Refer to Appendix D of this SWMP for the full vicinity map.

**Table 2: Project Location**

| Section | Township | Range |
|---|---|---|
| 29 | 12S | 61W |
| **Latitude and Longitude Points (Decimal)** | | |
| Latitude | 38.9810 | |
| Longitude | -104.2529 | |

### 4.2 Nature of Construction Activity

Permanent access roads will be constructed around the perimeter of the site and through the arrays. Solar panels will be installed on driven piles directly into the ground. Inverter skids will be mounted on similar posts or spread footings with underground trenching to install conduit. A fence will be installed around the perimeter and a seed mix used to restore any exposed soils to vegetative cover. Grading of the site will include maintaining and stabilizing existing eroded swales and conveyances. Concurrently stabilization and installation of velocity dissipater devices shall be phased during grading to minimize exposed soils and sedimentation potential. The SWMP shall be amended to show locations and disturbance areas as necessary should locations change during construction.

**NOTE to Operator:** Mark all sensitive areas prior to start of earth disturbance activities. If any subsurface and/or surface drainage features are altered during construction restore to pre-construction conditions and drainage patterns. Coordinate the work with the Land Owner.

### 4.3 Project Activity Schedule

**Table 3: Project Schedule**

| Activity | Start Date | End Date |
|---|---|---|
| Overall Project | 05/01/2019 | 12/31/2019 |
| Mass Grading | 05/01/2019 | 05/31/2019 |
| Access Roads | 05/01/2019 | 05/31/2019 |
| PV Array | 06/01/2019 | 09/30/2019 |
| Laydown Area | 05/01/2019 | 12/31/2019 |

### 4.4 Project Phasing

The project will be phased as follows:

1. Identification of clearing and grading limits, sensitive areas, and wetlands prior to construction;

2. Installation of sediment and erosion controls as identified by project plans/approvals, including any necessary site-specific modifications as identified;
3. Performance of earthwork, drain tile adjustment, access road work, and initial stabilization of exposed soils;
4. Concurrently with earthwork activities the installation and construction of terraces and velocity dissipater BMPs shall be done to minimize exposed soils and erosion potential. Multiple applications of erosion control blanket may be necessary to maintain stabilized swales and conveyances.
5. Construction/installation of permanent stormwater treatment facilities and temporary stabilization of exposed soils;
6. Installation of the solar array and electrical components (concurrent with above);
7. Application of seed and temporary stabilization; and
8. Cleanup and permanent stabilization of the site.

### 4.5 Pre and Post Project Estimates

**Table 4: Project Area Estimates**

| Project Area | Disturbed Area | Disturbance Location | Existing Impervious Area | Post Construction Impervious Area |
|---|---|---|---|---|
| 317 Acres | 203.3 Acres* | See civil plans. | 0.0 Acres | 1.67 Acres |

*The above-listed disturbed area includes approximately 58 acres of disturbance consisting of grading, proposed access roads and haul routes, and staging areas that will require fully stabilized with permanent seeding (approximately 56.33 acres) or impervious surfaces (approximately 1.67 acres). This area includes approximately 1 mile of trenching and restoration only for the interconnection line.

As a conservative measure, an additional 145 acres of the proposed array area have also been included in the total area to account for minor trenching activities and potential vehicle/equipment tracking. Generally, disturbance in the array area will be minor, and existing vegetation will be maintained to the greatest degree possible. An estimated 20% of this area (approximately 29 acres) will require reseeding following completion of construction activities, though this value is subject to change based on actual disturbances. If more than 20% is disturbed, the contractor shall update this SWMP accordingly. Due to the temporary nature of disturbance in this area, soils will be stabilized as soon as possible, but not to exceed 14 days after worked is ceased. Total reseeding required is therefore estimated as 87 acres (58 acres + 29 acres).

### 4.6 Environmental Review Document

At the time of SWMP completion, there are no known environmental review documents that apply to this project.

### 4.7 Contaminated Soils

A Phase 1 Environmental Site Assessment (ESA) was conducted by Tetra Tech, Inc. with a report dated 11/26/2018. Based on the results of the Phase I ESA, no recognized environmental conditions (RECs) were identified in association with the site. As a result, there are no known contaminated soils at the site.

### 4.8 Site Soils and Erosion Potential

The soils present on-site include clay loam, loam, and complexes. These soils belong to Hydrologic Soil Groups (HSGs) A and B. Soils belonging to HSGs A and B have low and moderately low runoff potential when wet, respectively. Comprehensive soil maps can be found in Attachment C of this SWMP. Soils information summarized above and in the table below are from the USDA Natural Resources Conservation Service Web Soil Survey (accessed: 03/29/2019).

### Soil Erosivity

**Table 5: Soil K Factors and Erosivity Hazards**

| Soil Name / Type | K Factor | Erosivity Hazard | | | | Reason(s) for Erosivity Rating |
|---|---|---|---|---|---|---|
| | | Slight | Moderate | Severe | Very Severe | |
| Ascalon sandy loam, 1-3% | 0.24 | X | | | | Lack of Slope |
| Bresser sandy loam, 3-5% | 0.15 | X | | | | Lack of Slope |
| Truckton sandy loam, 3-9% | 0.28 | X | | | | Lack of Slope |
| Truckton-Bresser complex, eroded | 0.24 | X | | | | Lack of Slope |

### Soil Particle Size

**Table 6: Soil Particle Sizes**

| Soil Type | % Sand | % Silt | % Clay | % Site Area |
|---|---|---|---|---|
| Ascalon sandy loam, 1-3% | 66.6 | 23.4 | 10.0 | 7.9 |
| Bresser sandy loam, 3-5% | 66.8 | 19.2 | 14.0 | 29.7 |
| Truckton sandy loam, 3-9% | 68.0 | 24.0 | 8.0 | 56.2 |
| Truckton-Bresser complex, eroded | 66.8 | 19.2 | 14.0 | 6.2 |

## 4.9 Existing and Proposed Conditions

The slope and terrain of the site is generally flat, gently sloping to the east. The site currently has stormwater runoff flowing via overland flow to the east. The site area discharges to tributaries of Horse Creek, which is located approximately 0.5 miles to the northeast of the site.

### Non-Vegetative Cover

Prior to construction, there is no non-vegetative cover at the site.

### Vegetative Cover

Based on information obtained from the United States Department of Agriculture CropScape Database (https://nassgeodata.gmu.edu/CropScape/, accessed 04/01/2019), vegetative cover at the site primarily consists of grassy pasture land, with a small portion used for alfalfa production.

**Table 7: Vegetative Cover Estimates**

| Site Area | Vegetative Cover | Estimated Vegetative Coverage (%) | Method Used to Determine Cover % |
|---|---|---|---|
| Full site | Grass | 99.75 | USDA CropScape |
| Minor areas | Alfalfa | 0.25 | USDA CropScape |

### Land Use

Prior to construction, the site area was primarily used as terraced pastureland. The Phase I ESA prepared by Tetra Tech, Inc. and dated 11/26/2018 also noted the presence of overhead power lines near the northeastern corner of the site. Average annual rainfall at the site is 18 inches.

**Proposed Non-Vegetative Cover**

Following construction of the solar facility, non-vegetative cover will consists of gravel access roads and inverter pads.

**Proposed Vegetative Cover**

Following construction, vegetative cover in disturbed areas and beneath the solar array will be restored to its original conditions. Please refer to Section 7.3 for a description of temporary and permanent seeding options.

**Proposed Land Use**

Following construction, the site will be used as a solar power generation facility. Components of the facility will include the photovoltaic (PV) panel array, access roads,

## 4.10 Potential Prevention Management

Potential pollutant sources including construction and waste materials that are used or stored at the site are described below. Upon proper implementation of the CMs potential pollutant sources are not reasonably expected to affect the stormwater discharges from the site. Construction materials and chemicals used or stored on site should be kept in small quantities whenever possible. Materials shall only be stored in non-sensitive areas and not in close proximity to watercourses, wetlands or floodplains.

A spill prevention, control and countermeasure (SPCC) Plan will be needed if materials or tanks present on site contain more than, or have the ability to contain more than, 1,320 gallons of petroleum products. When not in use, petroleum products should be stored in sealed containers and out of contact with the elements to prevent direct contact with stormwater. Inadvertent spills should be cleaned up immediately upon discovery and the materials should be disposed of in accordance with local, state and federal requirements. Contractors should have spill kits available on site for rapid deployment to contain and cleanup spills.

**Table 8: Potential Pollutants List**

| Potential Pollutant | Location | Control Measure* |
|---|---|---|
| Antifreeze | Vehicle/Equipment | S.C./Drip pan |
| Diesel Fuel | Vehicle/Equipment/Fuel Tank | S.C./Drip pan |
| Gasoline | Vehicle/Equipment/Fuel Tank | S.C./Drip pan |
| Hydraulic Oils/Fluids | Vehicle/Equipment | S.C./Drip pan |
| Grease | Vehicle/Equipment | S.C./Drip pan |
| Sanitary Waste Restrooms | Portable | Service Provider To Secure Units From Tipping |
| Trash And Construction Debris | Various | Dumpster |
| Paints | Contractor | S.C. and secure/covered storage. |
| Glue/Adhesives/Curing Compounds | Contractor | S.C. and secure/covered storage. |
| Soil Amendments | Various | S.C. and secure/covered storage. |
| Landscaping Materials Fertilizer | Various | S.C. and secure/covered storage. |
| Concrete Mortar | Mobile Mixer | S.C./Washout Area and secure/covered storage |

| | | |
|---|---|---|
| Concrete | Trucks/Washout | Washout Area/S.C. |
| Bentonite | Directional Boring/Utility Contractor | S.C./Sump area |
| Sediment/ Dirt | Exposed soils/Disturbed Areas; tracking of soils, dust/wind erosion | Sediment, Erosion, Tracking, and Runoff Controls |

*S.C. refers to secure secondary containment unit or area.

### 4.11 Potential Non-Stormwater Pollutant Sources and CMs

Non-stormwater discharges shall be eliminated or reduced to the extent feasible, with the exception of those necessary for the completion of certain construction activities. A list of allowable non-stormwater discharges include the items below.

**Table 9: Non-Stormwater Discharges and Potential CMs**

| Type of Allowable Non-Stormwater Discharge | Likely to be Present at Site? |
|---|---|
| Discharges from emergency fire-fighting activities | ☐ YES ☒ NO |
| Uncontaminated spring water (of which do not originate from an area of land disturbance) | ☐ YES ☒ NO |
| Landscape irrigation return flow | ☐ YES ☒ NO |
| Concrete Washout Water (washing of tools, mixer chutes) | ☒ YES ☐ NO |

These authorized non-stormwater discharges should be conducted in accordance with the requirements of the General Permit, and every effort should be made to minimize non-stormwater runoff from these site activities. The operators are responsible to implement CMs and management for non-stormwater discharges.

### 4.12 Receiving Waters

The table below summarizes the immediate receiving waters from the site. Where necessary the receiving waters has been designated immediate (for the first surface water receiving drainage from the site) and ultimate (for the surface water receiving runoff from site after the immediate receiving waters). The receiving waters listed are located within a mile, and receive water from the site discharge location(s).

The entire site drains to the north towards the Headwaters of Horse Creek, which is located approximately 0.35 miles north of the site. Refer to Attachment D for drainage maps.

**Table 10: Receiving Waters**

| Name of Waterbody | Immediate (I) or Ultimate (U) | Type (wetland, lake, stream, ditch) | Outstanding Waterbody Designation? | Impaired? | MS4? |
|---|---|---|---|---|---|
| Headwaters Horse Creek | U | Stream | N | Y | N |

**Impaired Waters**

According to the Stream Impairment Map and 303(d) list, Colorado Department of Public Health & Environment website: https://www.colorado.gov/pacific/cdphe/impaired-waters (accessed 04/01/2018), Horse Creek is impaired for sulfate, uranium, selenium, arsenic, iron, and manganese. However, the site discharge location is 1.87 miles from the impaired waterbody. There is / is not an approved Total Maximum Daily Load (TMDL) and / or Waste Load Allocation (WLA) plan for this waterbody and impairment.

# 5.0 SITE MAP

The SWMP site maps showing the entire site can be found in Attachment D and E. The site maps will list or be updated via redlines to show these features as they are installed:

- Construction site boundaries;
- All areas of ground surface disturbance;
- Areas of cut and fill;
- Areas used for storage of building materials, equipment, soil or waste;
- Location of dedicated concrete batch plants;
- Areas of pre-existing vegetation which must be maintained within 50 feet of a receiving water
- Location of all structural CMs;
- Location of non-structural CMs; and
- Locations of springs, streams, wetlands and other surface waters.

# 6.0 STORMWATER MANAGEMENT CONTROLS

## 6.1 Owner and Operator Information

| Owner Information | Operator Information |
|---|---|
| NextEra Energy Resources, LLC | Mortenson Construction |
| P. Duane McCloud, P.E., Lead Engineer | Matthew Berry, Project Executive |
| 700 Universe Boulevard, Juno Beach, FL 33408 | 1621 18th Street, Suite 400, Denver, CO 80202 |
| 561-694-3577, duane.mccloud@nexteraenergy.com | 763-287-5843, matthew.berry@mortenson.com |

## 6.2 Permittee Responsibilities

- Development of a SWMP prior to commencement of any construction activity.
- Submittal of a complete and accurate NOI.
- Compliance with all terms and conditions of the General Permit.
- Keeping the SWMP up to date (partial, whole, contractor, builders, etc.)
- Submittal of the Notice of Termination (NOT) within thirty days of meeting requirement of final stabilization.
- Identify who has long term operation and maintenance responsibility of the permanent stormwater controls.
- Develop a chain of responsibility with the operators to ensure CDPS and SWMP compliance
- Identification of personnel to oversee the SWMP and conduct inspections as a Qualified Stormwater Manager. This qualified person shall sign inspection reports. .
- Identification of personnel to develop a SWMP.
- Identification of personnel to install and maintain Control Measures.
- Compliance with CGP sections and parts relating to applicable construction activity requirements. See the CGP in Attachment A of this document.
- Keeping the SWMP up to date with the Owner and Operator (partial, whole, contractor, builders, etc.)

## 6.3 Project Contacts and Chain of Responsibility

**Table 11: Project Contacts**

| Company | Name or Position | Responsibility | Contact Number |
|---|---|---|---|
| | | Qualified Stormwater Manager | |
| | | Site Development | |
| | | Dirt Work / Grading | |
| | | Access Roads | |
| | | PV Array | |

| | | | |
|---|---|---|---|
| | | Interconnect | |
| | | Laydown Area | |
| | | Routine SWMP Inspections | |
| Westwood Professional Services | Aaron Mlynek, CPESC | SWMP Development | 952-697-5710 |
| | | Restoration | |
| | | CM installation | |

# 7.0 CONTROL MEASURES FOR STORMWATER POLLUTION PREVENTION

### 7.1 Soil Management

After clearing and grubbing, the grading contractor will strip and stockpile topsoil material for reapplication on all future permanent pervious surface areas During development, grading and utility construction the subsoils will be compacted as necessary for construction using typical excavation techniques. During final grade, reapplication of topsoil will be done by a wide-pad dozer and other equipment to minimize compaction of the topsoil material.

### 7.2 Natural Buffers and No-disturbance Areas

Natural Buffers

An undisturbed fifty foot buffer zone will be preserved from the centerline of the drainageway running through the center of the site and the detention pond. The use of linear sediment controls will be installed upgradient to provide sediment control and delineate the fifty foot buffer. Refer to the site erosion and sediment control plans within the civil construction plans for the location of the buffer. The following activities are prohibited from taking place within the buffer area:

- Placement of stockpiles;
- Vegetation disturbance;
- Placement of construction material; and
- Storage of gas, oils, other potential pollutant material.

In areas where construction activity will encroach into the fifty foot buffer area (such as underground cable collection system and / or access roads) the use of sediment and erosion control CMs will be used to minimize impacts to surface waters. Phasing of the activity in the fifty foot buffer area should include work during forecast dry periods and application of temporary stabilization within time frames of the General Permit.

### 7.3 Erosion Prevention Practices

The following controls are anticipated to minimize soil loss from the construction site area. The controls should help to minimize soil from being transported from water and wind as well as aide in establishment of temporary and permanent vegetation. Prior to grading and during clearing and grubbing, the areas of vegetation preservation, buffers and other areas of no-disturbance should be flagged, staked or otherwise delineated.

Timing for disturbed areas and slopes

Temporary erosion prevention practices should be initiated immediately after construction activity disturbing soil in an area is temporarily or permanently ceased. The application of temporary erosion control management practices should be completed a fourteen day time frame.

**Table 12: Potential Nonstructural Erosion Controls and Phased CM Implementation**

| Potential CMs | Construction Phase or Activity | | | | | | Application Notes | |
|---|---|---|---|---|---|---|---|---|
| | Clearing / Grubbing | Grading and Excavation | Temporary Laydown / Batch Plant | Access Roads | PV Array | Restoration | | |
| Construction Phasing | X | X | X | X | X | X | Minimize soil disturbance, as feasible, per phase. Stake/flag areas that are to be left undisturbed. | |
| Buffer Strips | X | X | | | X | | See Section 7.2 for more info. | |
| Slope Roughing | X | X | | | X | | Use tracked equipment perpendicular to contour on steep slopes for temp/short term erosion control. | |
| Mulch | X | X | | | X | | Apply at two tons / acre. Disc anchor to soil. Material must be certified Weed Free. | |
| Erosion Control Blanket | X | X | | | X | | Biodegradable netting. Install per manufacturer's recommendations. Wood fiber blankets must be used, or other fiber blankets may be used if they are certified Weed Free. | |
| *Temporary Seed Mix | X | X | X | | X | | Application Rate = See below | Prepare soil prior to seeding. Drill Seed soil prior to mulch or blanket. |
| *Permanent Seed Mix | | | | | X | X | Application Rate = See below | |

Based on the disturbance estimates, approximately 100 acres will need to be stabilized with a permanent seed mixture. Please see below for sample seed mixes.

**Example Seed Mixes**

| Temporary | | | |
|---|---|---|---|
| Growth Season | Species (Common Name) | Pounds of Pure Live Seed (PLS)/acre | Planting Depth (in) |
| March 16 - May 15 | Oats | 35 - 50 | 1 - 2 |
| | Spring Wheat | 25 - 35 | 1 - 2 |
| | Spring Barley | 25 - 35 | 1 - 2 |
| | Annual Ryegrass | 10 - 15 | ½ |
| May 16 - July 15 | Millet | 3 - 15 | ½ - ¾ |
| | Sudangrass | 5 - 10 | ½ - ¾ |
| | Sorghum | 5 - 10 | ½ - ¾ |
| September 1 - September 30 | Winter Wheat | 20 - 35 | 1 - 2 |
| | Winter Barley | 20 - 35 | 1 - 2 |
| | Winter Rye | 20 - 35 | 1 - 2 |
| | Triticale | 25 - 40 | 1 - 2 |
| Permanent | | | |
| Growth Season | Species (Common Name) | Pounds of Pure Live Seed (PLS)/acre | |
| October 1 - May 15 | Blue grama | 0.5 | |

| | | |
|---|---|---|
| | Camper little bluestem | 1.0 |
| | Prairie sandreed | 1.0 |
| | Arriba western wheatgrass | 5.5 |
| October 1 – April 30 | Sand dropseed | 0.25 |
| | Vaughn sideoats grama | 2.0 |

*Seed mixes should be approved by the owner and land owners as necessary. Contractor shall update this document with seed mixes for temporary and permanent restoration.

### 7.4 Structural Sediment Control Practices

The following controls are anticipated to minimize sediment discharge, capture sediment in suspension and minimize sedimentation off site. Existing earthen berms present throughout the site will be maintained during construction as a sediment control practice.

**Table 13: Potential Sediment Controls and Phased CM Implementation**

| Potential CMs | Construction Phase or Activity | | | | | | Application Notes |
|---|---|---|---|---|---|---|---|
| | Clearing / Grubbing | Grading and Excavation | Temporary Laydown / Batch Plant | Access Roads | PV Array | Restoration | |
| Silt fence | X | X | X | X | X | X | Machine sliced install w/ wood posts at six foot spacing. Install perimeter silt fence prior to grading. |
| Fiber rolls | X | X | X | X | X | X | Install on contour, minimum of six inch roll, wood or straw fiber. Secure with two inch posts every two feet on center. |
| Topsoil Berms | X | X | | | X | | Side slopes of 3:1 with at least one foot height. Use temporary erosion control to stabilize berm. |
| Sediment Traps | X | X | | | X | | |

### 7.5 Run-on and Runoff Controls

The following controls are anticipated to minimize scour, transport water across or down steep slopes or critical areas, divert clean water, and / or provide temporary conveyances to maintain drainage.

**Table 14: Run-on and Runoff Controls**

| Potential CMs | Construction Phase or Activity | | | | | | Application Notes |
|---|---|---|---|---|---|---|---|
| | Clearing / Grubbing | Grading and Excavation | Temporary Laydown / Batch Plant | Access Roads | PV Array | Restoration | |
| Riprap Apron / Energy Dissipation | | X | | | | | See detail in plans. Install within twenty-four hours of connection to surface waters. |
| Culvert Protection | | | | X | | | See details in plan set. Install within twenty-four hours of installation of culverts. |
| Rock Check Dam | | | | X | | | See detail in plans. |

## 7.6 Temporary Sediment Basin Practices

Due to the estimated 200 acres of contiguous disturbance for PV construction, temporary sediment basins will be required to treat runoff prior to discharge from the site. Six sediment basins will be constructed at the site to meet the capacity requirements shown in Table 15. Please refer to the plan set in Attachment E for the location of each basin.

### Calculations

**Table 15: Temporary Sediment Basin Calculations**

| Basin # | Storm Frequency | Rainfall Amount | Runoff Area | Capacity Needed |
|---|---|---|---|---|
| C1-1 | 2 yr. / 24 hr. | 1.8” | 14.6 Acres | 1.2 ac-ft. |
| C1-2 | 2 yr. / 24 hr. | 1.8” | 7.0 Acres | 0.6 ac-ft. |
| C1-3 | 2 yr. / 24 hr. | 1.8” | 17.3 Acres | 1.4 ac-ft. |
| A3 | 2 yr. / 24 hr. | 1.8” | 137.2 Acres | 11.3 ac-ft. |
| A4 | 2 yr. / 24 hr. | 1.8” | 79.9 Acres | 6.6 ac-ft. |
| B2 | 2 yr. / 24 hr. | 1.8” | 5.6 Acres | 0.5 ac-ft. |

Due to the nature of short duration disturbance and the best management practice of leaving as much existing vegetation in place as possible, single basins are proposed for each drainage area regardless of acreage. This is typical for this type of construction to minimize land disturbance by concentrating sediment basins, whenever possible, into already disturbed areas. Adding multiple small basins will result in significantly greater land disturbance area and does not effectively contribute to the goal of minimizing discharge of sediment offsite. The goal of this approach is to limit disturbance to only those areas necessary for installation of electrical equipment and roads.

### 7.7 Tracking Controls

The following controls are anticipated to minimize or prevent sediment track - out from construction site exits to paved surfaces or to retrieve material tracked onto paved surfaces to minimize or prevent the material from being washed into surface waters or stormwater inlets.

**Table 16: Potential Tracking Controls and Phased CM Implementation**

| Potential CMs | Construction Phase or Activity | | | | | | Application Notes |
|---|---|---|---|---|---|---|---|
| | Clearing / Grubbing | Grading and Excavation | Temporary Laydown / Batch Plant | Access Roads | PV Array | Restoration | |
| Rock Pad | | | X | X | | | See detail in plans. Install at all site exits prior to grading. Maintain for duration of project. |
| Gravel or Aggregate Road Base | | | X | X | | | See detail and notes in plans. |
| Street Scraping | | | | X | | | Scrape large clumps/amounts of material with soft tracked or wheeled equipment prior to sweeping. |
| Street Sweeping | | | | X | | | Sweep paved surfaces within twenty-four hours of discovery. |

### 7.8 Storage, Handling, and Disposal of Construction Materials

Storage and Handling

- All products shall be kept in their original container, with original labels still attached, unless the container is not re-sealable.
- Hazardous materials shall be returned to the hazardous material storage area at the end of each day.
- An effort should be made to store only enough products to do the required job.
- The contractor shall provide tanks or barrels to collect liquid byproducts that pose a pollution hazard.
- The pollutants shall be removed from the site on a weekly basis and disposed of in accordance with federal, state and local regulations.
- All spills shall be cleaned up immediately after discovery, in accordance with the manufacture's recommended methods.
- Hazardous materials shall be properly stored to prevent vandalism or unauthorized access.
- Containment units shall be installed in accordance with federal, state, and local regulations.
- No hazardous material shall be stored within 200 feet of an identified critical area.
- If building materials, chemicals, or general refuse is being used, stored, disposed of, or otherwise managed inappropriately, the contractor shall correct such defects within twenty-four hours of detection or notification.

Disposal (Dumpsters)

- Locate dumpsters away from watercourses, streams, creeks and other surface waters or conveyances.
- Site inspector shall regularly observe for and report excess litter and solid waste and request pickup and retrieval of wastes.
- Wastes, litter, debris shall be deposited into dumpsters in a central location and / or in various satellite locations where work is active.

- Dumpsters should be supplied by and regularly maintained, emptied and removed by a waste management company.

### 7.9 Fueling and Maintenance of Equipment and Vehicles; Spill Response

- Routine maintenance of vehicles, if necessary, shall occur in staging areas only;
- Maintenance of equipment and vehicles should be avoided and done off site where feasible;
- If fueling is done by mobile tank and dispenser, the transfer of fuel should be done under close supervision and there should be drip pans and spill containment and cleanup materials readily available;
- If fueling is done via temporary tank, the tank should be stored away from surface waters and within secondary containment;
- Spill Kits with absorbent materials shall be available on site for use in cleaning up small spills;
- In the event of a spill or discharge of any hazardous materials be sure to reference the Spill Pollution Prevention Plan and if applicable contact the following agencies within twenty-four hours;
- Colorado Environmental Release and Incident Reporting Line (877) 518-5608;
- EPA Region 8 Emergency Response Spill Report Line (303) 293-1788;
- National Response Center at (800) 424-8802; and
- If the hazardous condition involves the release of an EPA regulated material or an oil as defined by the EPA, the release may also need to be reported to the National Response Center. Federal Reporting is required within 15 minutes of event occurrence or discovery. Contact the National Response Center at (800) 424-8802. The NRC is staffed twenty-four hours a day. For more information reference the following website: https://www.epa.gov/emergency-response/when-are-you-required-report-oil-spill-and-hazardous-substance-release.

### 7.10 Vehicle and Equipment Washing

If necessary, the contractor shall develop a designated wash area with basin containment to prevent the untreated water from discharging from the site to surface waters. CMs include: temporary basins; inspecting the vehicles and equipment for leaks prior to washing; and prohibiting washing activity until discovered leaks are repaired and maintenance is completed of the equipment or vehicle. The area shall be shown on the site plan. The water shall be contained and pumped from the site into a truck for proper disposal at a waste water facility. No engine degreasing shall be done on site.

### 7.11 Portable Sanitary Facilities

- Locate facilities away from watercourses, streams, creeks and other surface waters or conveyances;
- Facilities should be placed upgradient from perimeter sediment controls and not on paved or other impervious surfaces;
- Secure facilities to the soil with stakes or tether to other non-movable structure to prevent tipping from wind or other factors; and
- Schedule routine and regular cleanout and maintenance of facility from a reliable company.

### 7.12 Concrete Washout and Other Washout

**Mobile Concrete or Mortar Mixers**

The following CMs should be considered with the use of mortar or concrete mixers:

- Store bags of concrete and mortar in dry storage;
- Position mixers 100 feet from the nearest watercourse or conveyance;
- If mixers must be positioned closer than 100 feet from a conveyance a temporary berm shall be installed to prevent runoff from the mixer from flowing into the conveyance;
- Use tarpaulins or plastic sheeting as a liner to prevent concrete or mortar from contacting the soil;

- Use buckets to contain washout / rinse water when cleaning the mobile mixer; and
- Dump buckets of washout water in a designated concrete washout area.

**Concrete Washout**

The following CMs and considerations should be implemented for concrete washout areas:

- Washout water from the tools, equipment and the chutes of concrete trucks, mobile mixers or other containers with concrete material must be contained and not allowed to be discharged into waters of the state or drain onto adjacent properties;
- The washout area should be a defined area with signage notifying the contactors of the location and use;
- The washout area should be a sufficient size to contain the expected washout material. 10'x10'x3' area should suffice for most activities;
- Multiple washout areas may be needed. Locations of the washouts should be shown on the construction plans by the contractor;
- When noting the location of the concrete washout areas, include the date of install, date of last maintenance and date of removal;
- Washout areas should have a silt fence or other perimeter control; and
- No liner is required where the ground water is deeper than three feet from the bottom of the washout area AND the soil has sufficient buffering capacity to protect the groundwater. Otherwise, the use of thick poly sheeting should be used to prevent contamination of the soil and prevent infiltration of the washout material.

Once the material is hardened it can be disposed of in a dumpster. If the material is water or not hardened, the material should be vacuumed and hauled off site to be properly disposed of or recycled at a facility. Some sites will not need the separate washout area if a truck chute washout is available from the concrete supplier.

**Truck Chute Washout**

Truck washout facility: where available, all trucks with self-contained washout and water recycle systems must be used for every truck chute, tool and equipment rinse and washout. Two unlined pits will be used at all locations that are not within the minimum distance of waterways and will be dug at each foundation. They are to be approximately 5'x4'x3' and compacted.

### 7.13 Construction Dewatering

Construction Dewatering includes discharging accumulated water within construction excavations from snow melt or precipitation via pump, trench, temporary ditch or grade cuts. No ground water dewatering is allowed without additional permits.

Clean water should be discharged to a vegetated area, ditches or other conveyance via hose. Energy dissipation should be applied to the discharge location to minimize scour. Alternatively, uncontaminated water could be discharged to receiving waters as allowed by local permits and regulations or as long as positive drainage is provided, the water could be discharged into the surrounding areas and allowed to infiltrate or drain along existing drainage patterns provided that the water does not cause flooding, prolonged or damaging inundation, or vegetation damage.

<u>Dewatering Accumulated Water (via pump, trench, temporary ditch or grade cuts)</u>

Dewatering of turbid water (water that is visibly cloudy or brown in color) should be discharged via pump and hose or overland flow to a temporary sediment basin for pretreatment. The use of riprap apron (energy dissipation) should be used for the discharge location. If riprap is not used, an alternative form of energy dissipation should be used to prevent scour and re-suspension of soil at the discharge point of the hose. If discharge to a temporary sediment basin is not feasible, the use of dewatering dumpsters, dewatering bags or other prefabricated product should be used. The use of rock checks, erosion control blanket and sumps or traps may be considered for overland flow. After the use of CMs, the water could be discharged through

a vegetated buffer and energy dissipation. The discharge of water from the site should be visibly clear in appearance.

The discharge of accumulated water should not:

- Contain oil, grease, a sheen, odor, or concrete washout;
- Adversely impact adjacent properties with water or sediment;
- Adversely impact waters of the state;
- Cause erosion of slopes and channels;
- Cause nuisance conditions; and
- Contribute to inundation of wetlands which negatively impact the wetlands.

# 8.0 FINAL STABILIZATION AND LONG-TERM STORMWATER MANAGEMENT

## 8.1 Final Stabilization and Notice of Termination

Final stabilization practices for obtaining a vegetative cover should include, as appropriate: seed mix selection and application methods; soil preparation and amendments; soil stabilization practices (e.g., mulch, hydro mulch or rolled erosion control products); and appropriate sediment control CMs as needed until final stabilization is achieved. The permanent erosion control CMs may be a combination of vegetative and non-vegetative cover types. Additional requirements to achieving final stabilization include:

- All soil disturbing activity is completed;
- Permanent stormwater treatment system (if required) is constructed and accumulated sediment has been removed from construction activity;
- All temporary, synthetic CMs have been removed from the site;
- Work in agriculture fields will be restored to pre-construction conditions and in conformance with land owner as much as feasible; and
- The vegetative cover for the site is at a density, with a uniform perennial cover of 70% of pre-disturbance levels or equivalent permanent, physical erosion reduction methods have been employed.

When the final stabilization conditions above are met, the permittee may fill out the Notice of Termination in Attachment B or located on the CDPHE website: https://www.colorado.gov/pacific/cdphe/wq-construction-general-permits. A hard copy of the NOT must be mailed to the CDPHE Water Quality Control Division, 4300 Cherry Creek Drive South, Denver CO 80246.

## 8.2 Record Retention

**During Construction**

This report, amendments and attachments, inspections, and maintenance records should be kept on site during normal business hours. The records should be kept by the permittee listed on the permit application. The records should be in a mailbox, in a vehicle or in an on-site office trailer or model home unless another location, specified by the permittee, is approved by the Division.

**Post Construction / Notice of Termination (NOT)**

The site owner must retain all the following records for a period of at least three years after the submittal of the NOT.

- The final SWMP with all field notes/amendments;
- Other stormwater related permits in addition to the NPDES permit from PCA;
- Inspection and maintenance records;
- All permanent operation and maintenance agreements; and
- All required calculations for design of the temporary and permanent stormwater management systems

### 8.3 Long-Term Stormwater Management Practices

Based on the "Preliminary Hydrology Report for Grazing Yak Solar" prepared by Westwood Professional Services and dated 02/06/2019, during a 100-year 24-hour storm event, flood depths across the majority of the site will be less than 0.5 feet with velocities less than 1 foot/second.

A 1.54 acre-foot extended detention basin (EDB) has been designed near the primary outlet on the east side of the site (see plans in Attachment E). This has been designed per the hydrology design provided to extend the release of initial flows that are increased due to increased imperviousness created by the project. Once this volume is exceeded, additional culverts allow historic flows to be discharged at their pre-development rate. Access has been provided to this basin for maintenance. Maintenance shall be performed as specified in this stormwater plan.

# 9.0 INSPECTION AND MAINTENANCE

Construction activity and all support activities must be inspected (using the inspection form found in Attachment G or an alternative form) within the parameters of the schedule below. The inspector shall be a qualified stormwater manager who is trained and familiar with the requirements of this SWMP and the General Permit. Refer to contact table 6.3 for the qualified stormwater manager contact information.

Scope of inspections should include: include the site perimeter, all disturbed areas, material and/or storage areas that are exposed to precipitation, discharge locations, and locations where vehicles access the site. All installed CMs shall be evaluated to ensure that they are maintained and operating correctly. The minimum inspection report requirements are listed below:

- The inspection date;
- Name(s) and title(s) of personnel making the inspection;
- Weather conditions at the time of inspection;
- Phase of construction
- Estimated acres disturbed at time of inspection;
- Notation of the inspection frequency being implemented;
- Location(s) of discharges of sediment or other pollutants from the site;
- Location(s) of CMs that need to be maintained;
- Location(s) of CMs that failed to operate as designed or proved inadequate for a particular location;
- Location(s) where additional CMs are needed that were not in place at the time of inspection;
- Deviations from the minimum inspection schedule as provided in Part I.D.6.a; and
- Description of corrective action for items and measures taken to prevent future violations, including requisite changes to the SWMP, as necessary.
- Compliance statement and signature by the site Qualified Stormwater Manager

After adequate corrective action(s) has been taken, or where a report does not identify any incidents requiring corrective action, the report shall contain a signed statement indicating the site is in compliance with the General Permit to the best of the signer's knowledge and belief.

*All inspections should be documented within twenty-four hours after completing the field inspection and available in paper or electronic form on site.

**Rainfall amounts should be taken from an onsite rain gauge. If a rain gauge is not feasible, the rain fall data should be observed from the following website:

https://forecast.weather.gov/MapClick.php?textField1=39.04&textField2=-104.3#.XKN3hJhKhaQ

## 9.1 Inspection Schedule

**Table 17: Inspection Schedule**

| Site Status/Activity | Necessary Inspection Schedule | Notes and Information |
|---|---|---|
| Minimum Inspection Schedule | ☒ Once every fourteen calendar days and within twenty-four hours of a rainfall or snow melt event that causes surface erosion.<br>☐ Once every seven calendar days. | The first inspection shall be completed within 7 days of starting construction activity. A rain gauge should be used or rain data should be taken from the link listed above. |

| | | |
|---|---|---|
| Post-Storm Event Inspections at Temporarily Idle Sites | Conducted prior to re-commencing construction activities, but no later than 72 hours following the storm event. | The occurrence of any such delayed inspection must be documented in the inspection record. Routine inspections still must be conducted at least every fourteen calendar days. Post storm events for temporarily idle sites are not required for sites who have chosen to inspect every seven calendar days. |
| Inspections at Completed Sites/Areas | Once every month; post-storm event inspections are not required. | Only once all construction activities resulting in ground disturbance are completed and all activities required for final stabilization have been completed (with the exception of seed that has not occurred due to seasonal conditions) and the SWMP has been amended to indicate areas that will be inspected in accordance with the reduced schedule. |
| Winter Conditions Inspections Exclusion | Inspections are not required where construction activities are temporarily halted, snow cover exists over the entire site for an extended period, and melting conditions pose a risk of surface erosion do not exist. | This exception is only applicable during the period where melting conditions do not exist, and applies to the routine fourteen-day and monthly inspections, as well as the post-storm-event inspections. The following information must be documented in the inspection record for use of this exclusion: dates when snow cover occurred, date when construction activities ceased, and date melting conditions began. Inspections, as described above, are required at all other times.* |

*When site conditions make the schedule required in this section impractical, the permittee may petition the Division to grant an alternate inspection schedule.

### 9.2 Maintenance Schedule

Where site inspections identify the need for CM maintenance activities, CMs must be maintained in accordance with the SWMP and Part I.B.1.b of the General Permit. Repair, replacement, or installation of new CMs determined necessary during site inspections to address ineffective or inadequate CMs must be conducted in accordance with Part I.B.1.c of the General Permit. SWMP updates required as a result of deficiencies in the SWMP identified during site inspections shall be made in accordance with Part I.C.3 of the General Permit.

**Table 18: Maintenance Schedule**

| CM | Observed Condition for Maintenance | Maintenance Interval |
|---|---|---|
| All non-functional CMs | Sediment overtopping, under water, scoured ends, undermined, destroyed, non-functional as designed. etc | Maintenance or replacement should be completed immediately after discovery unless infeasible. |
| Perimeter Sediment Control (silt fence, fiber logs, berms, etc.) | ½ full of sediment, flattened to ½ height, driven over, undermined, scoured, moved for access etc. | Maintenance or replacement should be completed immediately after discovery unless infeasible. |
| Inlet protection CMs, conveyances, surface waters | Sediment deposition, sediment deltas and accumulation of sediment material. | Removal/cleanout of accumulated sediment and deltas to be removed by immediately after discovery unless infeasible. Stabilize as needed if soils are exposed during removal/cleanout. |
| Temp. sed. basins and traps; permanent sediment basins | Sediment deposition and accumulation to ½ of the storage volume. | Cleanout, remove accumulated sediment material immediately after discovery unless infeasible. |
| Site exit locations, rock exit pads, other anti-tracking practices | Accumulated sediment in rock or other anti-tracking CM, tracking of sediment from the site onto paved surfaces | Top dress rock, maintain rock exit or other anti-tracking controls, scrap paved surfaces, and sweep paved surfaces immediately after discovery unless infeasible. |
| Paved surfaces; adjacent streets | Tracked sediment and soil material from the site hauling or access | Sweep surface same working day after discovery unless infeasible. . Additional and/or more frequent sweeping may be needed to maintain public safety or prevent washing from forecast rains. |

**NOTE:** *If it is infeasible to install or repair control measures immediately after discovery of the deficiency the following information must be documented and kept on record: 1. Describe why it is infeasible to initiate the installation or repair immediately; and 2. Provide a schedule for installing or repairing the control measure and returning it to an effective operating condition as soon as possible.*

# Attachment A

## CDPS General Permit

STATE OF COLORADO

**COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT**
**Water Quality Control Division**

CDPS GENERAL PERMIT

STORMWATER DISCHARGES ASSOCIATED WITH

**CONSTRUCTION ACTIVITY**

AUTHORIZATION TO DISCHARGE UNDER THE

COLORADO DISCHARGE PERMIT SYSTEM (CDPS)

In compliance with the provisions of the Colorado Water Quality Control Act, (25-8-101 et seq., CRS, 1973 as amended) and the Federal Water Pollution Control Act, as amended (33 U.S.C. 1251 et seq.; the "Act"), this permit authorizes the discharge of stormwater associated with construction activities (and specific allowable non-stormwater discharges in accordance with Part I.A.1. of the permit) certified under this permit, from those locations specified throughout the State of Colorado to specified waters of the State.

Such discharges shall be in accordance with the conditions of this permit. This permit specifically authorizes the facility listed on the certification to discharge in accordance with permit requirements and conditions set forth in Parts I and II hereof. All discharges authorized herein shall be consistent with the terms and conditions of this permit.

This permit becomes effective on April 1, 2019, and shall expire at midnight March 31, 2024.

Issued and signed this 1st day of November 2018.

COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT

Ellen Howard Kutzer, Permits Section Manager
Water Quality Control Division

**Permit History**
**Originally signed and issued October 31, 2018; effective April 1, 2019.**

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Part I
Note: At the first mention of terminology that has a specific connotation for the purposes of this permit, the terminology is electronically linked to the definitions section of the permit in Part I.E.

## A. COVERAGE UNDER THIS PERMIT

1. Authorized Discharges

   This general permit authorizes permittee(s) to discharge the following to state waters: stormwater associated with construction activity and specified non-stormwater associated with construction activity. The following types of stormwater and non-stormwater discharges are authorized under this permit:

   a. Allowable Stormwater Discharges

      i. Stormwater discharges associated with construction activity.

      ii. Stormwater discharges associated with producing earthen materials, such as soils, sand, and gravel dedicated to providing material to a single contiguous site, or within ¼ mile of a construction site (i.e. borrow or fill areas)

      iii. Stormwater discharges associated with dedicated asphalt, concrete batch plants and masonry mixing stations (Coverage under this permit is not required if alternative coverage has been obtained.)

   b. Allowable Non-Stormwater Discharges

      The following non-stormwater discharges are allowable under this permit if the discharges are identified in the stormwater management plan in accordance with Part I.C. and if they have appropriate control measures in accordance with Part I.B.1.

      i. Discharges from uncontaminated springs that do not originate from an area of land disturbance.

      ii. Discharges to the ground of concrete washout water associated with the washing of concrete tools and concrete mixer chutes. Discharges of concrete washout water must not leave the site as surface runoff or reach receiving waters as defined by this permit.

      iii. Discharges of landscape irrigation return flow.

   c. Emergency Fire Fighting

      Discharges resulting from emergency firefighting activities are authorized by this permit.

2. Limitations on Coverage

   Discharges not authorized by this permit include, but are not limited to, the discharges and activities listed below. Permittees may seek individual or alternate general permit coverage for the discharges, as appropriate and available.

   a. Discharges of Non-Stormwater

Discharges of non-stormwater, except the authorized non-stormwater discharges listed in Part I.A.1.b., are not eligible for coverage under this permit.

b. Discharges Currently Covered by another Individual or General Permit

c. Discharges Currently Covered by a Water Quality Control Division (division) Low Risk Guidance Document

3. Permit Certification and Submittal Procedures

a. Duty to apply
The following activities shall apply for coverage under this permit:

i. Construction sites that will disturb one acre or more; or

ii. Construction sites that are part of a common plan of development or sale; or

iii. Stormwater discharges that are designated by the division as needing a stormwater permit because the discharge:

(a) Contributes to a violation of a water quality standard; or

(b) is a significant contributor of pollutants to state waters.

b. Application Requirements
To obtain authorization to discharge under this permit, applicants applying for coverage following the effective date of the renewal permit shall meet the following requirements:

i. Owners and operators submitting an application for permit coverage will be co-permittees subject to the same benefits, duties, and obligations under this permit.

ii. Signature requirements: Both the owner and operator (permittee) of the construction site, as defined in Part I.E., must agree to the terms and conditions of the permit and submit a completed application that includes the signature of both the owner and the operator. In cases where the duties of the owner and operator are managed by the owner, both application signatures may be completed by the owner. Both the owner and operator are responsible for ensuring compliance with all terms and conditions of the permit, including implementation of the stormwater management plan.

iii. Applicants must use the paper form provided by the division or the electronic form provided on the division's web-based application platform when applying for coverage under this permit.

iv. The applicant(s) must develop a stormwater management plan (SWMP) in accordance with the requirements of Part I.C. The applicant(s) must also certify that the SWMP is complete, or will be complete, prior to commencement of any construction activity.

v. The applicant(s) must submit a complete, accurate, and signed permit application electronically, by mail or hand delivery to the division at least 10 days prior to the commencement of construction activity except that construction activities that are in response to a public emergency related site shall apply for coverage no later than 14 days after the commencement of construction activities. The provisions of this part in no way remove a violation of the Colorado Water Quality Control Act if a point source discharge occurs prior to the issuance of a CDPS permit.

vi. The application must be signed in accordance with the requirements of Part IA. Applications submitted by mail or hand delivered should be directed to:

Colorado Department of Public Health and Environment
Water Quality Control Division
Permits Section, WQCD-PS-B2
4300 Cherry Creek Drive South
Denver, CO 80246

vii. The applicant(s) must receive written notification that the division granted permit coverage prior to conducting construction activities except for construction activities that are in response to a public emergency related site

c. Division Review of Permit Application

Within 10 days of receipt of the application, and following review of the application, the division may:

i. Issue a certification of coverage;

ii. request additional information necessary to evaluate the discharge;

iii. delay the authorization to discharge pending further review;

iv. notify the applicant that additional terms and conditions are necessary; or

v. deny the authorization to discharge under this general permit.

d. Alternative Permit Coverage

i. Division Required Alternate Permit Coverage:
The Division may require an applicant or permittee to apply for an individual permit or an alternative general permit if it determines the discharge does not fall under the scope of this general permit. In this case, the Division will notify the applicant or permittee that an individual permit application is required.

ii. Permittee Request for alternate permit coverage:
A permittee authorized to discharge stormwater under this permit may request to be excluded from coverage under this general permit by applying for an individual permit. In this case, the permittee must submit an individual application, with reasons supporting the request, to the Division at least 180 days prior to any discharge. When an individual permit is issued, the permittee's authorization to discharge under this permit is terminated on the effective date of the individual permit.

e. Submittal Signature Requirements

Documents required for submittal to the division in accordance with this permit, including applications for permit coverage and other documents as requested by the division, must include signatures by both the owner and the operator, except for instances where the duties of the owner and operator are managed by the owner.

Signatures on all documents submitted to the division as required by this permit must meet the Standard Signatory Requirements in Part II.K. of this permit in accordance with 40 C.F.R. 122.41(k).

i. Signature Certification
Any person(s) signing documents required for submittal to the Division must make the following certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

f. Compliance Document Signature Requirements
Documents which are required for compliance with the permit, but for which submittal to the division is not required unless specifically requested by the division, must be signed by the individual(s) designated as the Qualified Stormwater Manager, as defined in Part I.E.

i. Any person(s) signing inspection documents required for compliance with the permit must make the following statement:

"I verify that, to the best of my knowledge and belief, all corrective action and maintenance items identified during the inspection are complete, and the site is currently in compliance with the permit."

g. Field Wide Permit Coverage for Oil and Gas Construction
At the discretion of the division, a single permit certification may be issued to a single oil and gas permittee to cover construction activity related discharges from an oil and gas field at multiple locations that are not necessarily contiguous.

h. Permit Coverage without Application
Qualifying Local Program: When a small construction site is within the jurisdiction of a qualifying local program, the owner and operator of the construction activity are authorized to discharge stormwater associated with small construction activity under this general permit without the submittal of an application to the division. Sites covered by a qualifying local program are exempt from the following sections of this general permit:

Part I.A.3.a.; Part I.A.3.b.; Part I.A.3.c.; Part I.A.3.d.; Part I.A.3.g.; Part I.A.3.i.; Part I.A.3.j.; Part I.A.3.k.

Sites covered by a qualifying local program are subject to the following requirements:

i. Local Agency Authority: This permit does not pre-empt or supersede the authority of local agencies to prohibit, restrict, or control discharges of stormwater to storm drain systems or other water courses within their jurisdiction.

ii. Permit Coverage Termination: When a site under a Qualifying Local Program is finally stabilized, coverage under this permit is automatically terminated.

iii. Compliance with Qualifying Local Program: Qualifying Local Program requirements that are equivalent to the requirements of this permit are incorporated by reference. Permittees authorized to discharge under this permit, must comply with the equivalent requirements of the Qualifying Local Program that has jurisdiction over the site as a condition of this permit.

iv. Compliance with Remaining Permit Conditions. Requirements of this permit that are in addition to or more stringent than the requirements of the Qualifying Local Program apply in addition to the requirements of the Qualifying Local Program.

v. Written Authorization of Coverage: The division or local municipality may require any permittee within the jurisdiction of a Qualifying Local Program covered under this permit to apply for, and obtain written authorization of coverage under this permit. The permittee must be notified in writing that an application for written authorization of coverage is required.

i. Permittee Initiated Permit Actions

Permittee initiated permit actions, including but not limited to modifications, contact changes, transfers, reassignments, and terminations, shall be conducted following division guidance and using appropriate division-provided forms.

j. Sale of Residence to Homeowner

**Residential construction sites only**: The permittee may remove residential lots from permit coverage once the lot meets the following criteria:

i. the residential lot has been sold to the homeowner(s) for private residential use;

ii. a certificate of occupancy, or equivalent, is maintained on-site and is available during division inspections;

iii. the lot is less than one acre of disturbance;

iv. all construction activity conducted on the lot by the permittee is complete;

v. the permittee is not responsible for final stabilization of the lot; and

vi. the SWMP was modified to indicate the lot is no longer part of the construction activity.

If the residential lot meets the criteria listed above then activities occurring on the lot are no longer considered to be construction activities with a duty to apply and maintain permit coverage. Therefore, the permittee is not required to meet the final stabilization requirements and may terminate permit coverage for the lot.

k. Permit Expiration and Continuation of Permit Coverage

Authorization to discharge under this general permit shall expire at midnight on March 31, 2024. While Regulation 61.4 requires a permittee to submit an application for continuing permit coverage 180 days before the permit expires, the division is requiring that permittees desiring continued coverage under this general permit must reapply at least 90 days in advance of this permit expiration. The Division will determine if the permittee may continue to discharge stormwater under the terms of the general permit. An individual permit may be required for any facility not reauthorized to discharge under the reissued general permit.

If this permit is not reissued or replaced prior to the expiration date, it will be administratively continued and remain in force and effect. For permittees that have applied for continued permit coverage, discharges authorized under this permit prior to the expiration date will automatically remain covered by this permit until the earliest of:

i. An authorization to discharge under a reissued permit, or a replacement of this permit, following the timely and appropriate submittal of a complete application requesting authorization to discharge under the new permit and compliance with the requirements of the new permit; or

ii. The issuance and effect of a termination issued by the Division; or

iii. The issuance or denial of an individual permit for the facility's discharges; or

iv. A formal permit decision by the Division not to reissue this general permit, at which time the Division will identify a reasonable time period for covered dischargers to seek coverage under an alternative general permit or an individual permit. Coverage under this permit will cease when coverage under another permit is granted/authorized; or

v. The Division has informed the permittee that discharges previously authorized under this permit are no longer covered under this permit.

## B. EFFLUENT LIMITATIONS

1. Requirements for Control Measures Used to Meet Effluent Limitations

The permittee must implement control measures to minimize the discharge of pollutants from all potential pollutant sources at the site. Control measures must be installed prior to commencement of activities that may contribute pollutants to stormwater discharges. Control measures must be selected, designed, installed and maintained in accordance with good engineering, hydrologic and pollution control practices. Control measures implemented at the site must be designed to prevent pollution or degradation of state waters.

a. Stormwater Pollution Prevention

The permittee must implement structural and/or nonstructural control measures that effectively minimize erosion, sediment transport, and the release of other pollutants related to construction activity.

i. Control Measures for Erosion and Sediment Control

Control measures for erosion and sediment control may include, but are not limited to, wattles/sediment control logs, silt fences, earthen dikes, drainage swales, sediment traps, subsurface drains, pipe slope drains, inlet protection, outlet protection, gabions, sediment basins, temporary vegetation, permanent vegetation, mulching, geotextiles, sod stabilization, slope roughening, maintaining existing vegetation, protection of trees, and preservation of mature vegetation. Specific non-structural control measures must meet the requirements listed below.

Specific control measures must meet the requirements listed below.

(a) Vehicle tracking controls shall either be implemented to minimize vehicle tracking of sediment from disturbed areas, or the areas where vehicle tracking occurs shall meet subsection Part I.B.1.a.i(b);

(b) Stormwater runoff from all disturbed areas and soil storage areas for which permanent or temporary stabilization is not implemented, must flow to at least one control measure to minimize sediment in the discharge. This may be accomplished through filtering, settling, or straining. The control measure must be selected, designed, installed and adequately sized in accordance with good engineering, hydrologic and pollution control practices. The control measure(s) must contain or filter flows in order to prevent the bypass of flows without treatment and must be appropriate for stormwater runoff from disturbed areas and for the expected flow rate, duration, and flow conditions (i.e., sheet or concentrated flow);

(c) Outlets that withdraw water from or near the surface shall be installed when discharging from basins and impoundments, unless infeasible.

(d) Maintain pre-existing vegetation or equivalent control measures for areas within 50 horizontal feet of receiving waters as defined by this permit, unless infeasible.

(e) Soil compaction must be minimized for areas where infiltration control measures will occur or where final stabilization will be achieved through vegetative cover.

(f) Unless infeasible, topsoil shall be preserved for those areas of a site that will utilize vegetative final stabilization.

(g) Minimize the amount of soil exposed during construction activity, including the disturbance of steep slopes.

ii. Practices for Other Common Pollutants

(a) Bulk storage, 55 gallons or greater, for petroleum products and other liquid chemicals must have secondary containment, or equivalent protection, in order to contain spills and to prevent spilled material from entering state waters.

(b) Control measures designed for concrete washout waste must be implemented. This includes washout waste discharged to the ground as authorized under this permit and washout waste from concrete trucks and masonry operations contained on site. The permittee must ensure the washing activities do not contribute pollutants to stormwater runoff, or receiving waters in accordance Part I.A.1.b.ii. Discharges that may reach groundwater must flow through soil

that has buffering capacity prior to reaching groundwater, as necessary to meet the effluent limits in this permit, including Part I.B.3.a. The concrete washout location shall be not be located in an area where shallow groundwater may be present and would result in buffering capacity not being adequate, such as near natural drainages, springs, or wetlands. This permit authorizes discharges to the ground of concrete washout waste.

iii. Stabilization Requirements
The following requirements must be implemented for each site.

(a) Temporary stabilization must be implemented for earth disturbing activities on any portion of the site where ground disturbing construction activity has permanently ceased, or temporarily ceased for more than 14 calendar days. Temporary stabilization methods may include, but are not limited to, tarps, soil tackifier, and hydroseed. The permittee may exceed the 14-day schedule when either the function of the specific area of the site requires it to remain disturbed, or, physical characteristics of the terrain and climate prevent stabilization. The SWMP must document the constraints necessitating the alternative schedule, provide the alternate stabilization schedule, and identify all locations where the alternative schedule is applicable on the site map.

(b) Final stabilization must be implemented for all construction sites. Final stabilization is reached when all ground surface disturbing activities at the construction site are complete; and, for all areas of ground surface disturbing activities, either a uniform vegetative cover with an individual plant density of at least 70 percent of pre-disturbance levels is established, or equivalent permanent alternative stabilization methods are implemented. The division may approve alternative final stabilization criteria for specific operations.

(c) Final stabilization must be designed and installed as a permanent feature. Final stabilization measures for obtaining a vegetative cover or alternative stabilization methods include, but are not limited to, the following as appropriate:

(1) Seed mix selection and application methods;

(2) Soil preparation and amendments;

(3) Soil stabilization methods (e.g., crimped straw, hydro mulch or rolled erosion control products);

(4) Appropriate sediment control measures as needed until final stabilization is achieved;

(5) Permanent pavement, hardscape, xeriscape, stabilized driving surfaces;

(6) Other alternative stabilization practices as applicable;

(d) The permittee(s) must ensure all temporary control measures are removed from the construction site once final stabilization is achieved, except when the control measure specifications allow the control measure to be left in place (i.e., bio-degradable control measures).

b. Maintenance

The permittee must ensure that all control measures remain in effective operating condition and are protected from activities that would reduce their effectiveness. Control measures must be maintained in accordance with good engineering, hydrologic and pollution control practices. Observations leading to the required maintenance of control measures can be made during a site inspection, or during general observations of site conditions. The necessary repairs or modifications to a control measure requiring routine maintenance, as defined in Part I.E., must be conducted to maintain an effective operating condition. This section is not subject to the requirements in Part I.B.1.c. below.

c. Corrective Actions

The permittee must assess the adequacy of control measures at the site, and the need for changes to those control measures, to ensure continued effective performance. When an inadequate control measure, as defined in Part I.E., is identified (i.e., new or replacement control measures become necessary), the following corrective action requirements apply. The permittee is in noncompliance with the permit until the inadequate control measure is replaced or corrected and returned to effective operating condition in compliance with Part I.B.1. and the general requirements in Part I.B.3. If the inadequate control measure results in noncompliance that meets the conditions of Part II.L., the permittee must also meet the requirements of that section.

i. The permittee must take all necessary steps to minimize or prevent the discharge of pollutants, until a control measure is implemented and made operational and/or an inadequate control measure is replaced or corrected and returned to effective operating condition. If it is infeasible to install or repair of control measure immediately after discovering the deficiency, the following must be documented and kept on record in accordance with the recordkeeping requirements in Part II.

(a) Describe why it is infeasible to initiate the installation or repair immediately; and

(b) Provide a schedule for installing or repairing the control measure and returning it to an effective operating condition as soon as possible.

ii. If applicable, the permittee must remove and properly dispose of any unauthorized release or discharge (e.g., discharge of non-stormwater, spill, or leak not authorized by this permit.) The permittee must also clean up any contaminated surfaces to minimize discharges of the material in subsequent storm events.

2. Discharges to an Impaired Waterbody

a. Total Maximum Daily Load (TMDL)

If the permittee's discharge flows to or could reasonably be expected to flow to any water body for which a TMDL has been approved, and stormwater discharges

associated with construction activity were assigned a pollutant-specific Wasteload Allocation (WLA) under the TMDL, the division may:

**i.** ensure the WLA is implemented properly through alternative local requirements, such as by a municipal stormwater permit; or

**ii.** notify the permittee of the WLA and amend the permittee's certification to add specific effluent limits and other requirements, as appropriate. The permittee may be required to do the following:

(a) under the permittee's SWMP, implement specific control measures based on requirements of the WLA, and evaluate whether the requirements are met through implementation of existing stormwater control measures or if additional control measures are necessary. Document the calculations or other evidence demonstrating that the requirements are expected to be met; and

(b) if the evaluation shows that additional or modified control measures are necessary, describe the type and schedule for the control measure additions or modifications.

iii. Discharge monitoring may also be required. The permittee may maintain coverage under the general permit provided they comply with the applicable requirements outlined above. The division reserves the right to require individual or alternate general permit coverage.

3. General Requirements

a. Discharges authorized by this permit shall not cause, have the reasonable potential to cause, or measurably contribute to an exceedance of any applicable water quality standard, including narrative standards for water quality.

b. The division may require sampling and testing, on a case-by-case basis, in the event that there is reason to suspect that the SWMP is not adequately minimizing pollutants in stormwater or in order to measure the effectiveness of the control measures in removing pollutants in the effluent. Such monitoring may include Whole Effluent Toxicity testing.

c. The permittee must comply with the lawful requirements of federal agencies, municipalities, counties, drainage districts and other local agencies including applicable requirements in Municipal Stormwater Management Programs developed to comply with CDPS permits. The permittee must comply with local stormwater management requirements, policies and guidelines including those for erosion and sediment control.

d. All construction site wastes must be properly managed to prevent potential pollution of state waters. This permit does not authorize on-site waste disposal.

e. This permit does not relieve the permittee of the reporting requirements in 40 CFR 110, 40 CFR 117 or 40 CFR 302. Any discharge of hazardous material must be handled in accordance with the division's Noncompliance Notification Requirements (see Part II.L. of the permit).

## C. STORMWATER MANAGEMENT PLAN (SWMP) REQUIREMENTS

1. SWMP General Requirements

   a. A SWMP shall be developed for each construction site covered by this permit. The SWMP must be prepared in accordance with good engineering, hydrologic and pollution control practices.

      i. For public emergency related sites a SWMP shall be created no later than 14 days after the commencement of construction activities.

   b. The permittee must implement the provisions of the SWMP as written and updated, from commencement of construction activity until final stabilization is complete. The division may review the SWMP.

   c. A copy of the SWMP must be retained onsite or be onsite when construction activities are occurring at the site unless the permittee specifies another location and obtains approval from the division.

2. SWMP Content

   a. The SWMP, at a minimum, must include the following elements.

      i. Qualified Stormwater Manager. The SWMP must list individual(s) by title and name who are designated as the site's qualified stormwater manager(s) responsible for implementing the SWMP in its entirety. This role may be filled by more than one individual.

      ii. Spill Prevention and Response Plan. The SWMP must have a spill prevention and response plan. The plan may incorporate by reference any part of a Spill Prevention Control and Countermeasure (SPCC) plan under section 311 of the Clean Water Act (CWA) or a Spill Prevention Plan required by a separate CDPS permit. The relevant sections of any referenced plans must be available as part of the SWMP consistent with Part I.C.4.

      iii. Materials Handling. The SWMP must describe and locate all control measures implemented at the site to minimize impacts from handling significant materials that could contribute pollutants to runoff. These handling procedures can include control measures for pollutants and activities such as, exposed storage of building materials, paints and solvents, landscape materials, fertilizers or chemicals, sanitary waste material, trash and equipment maintenance or fueling procedures.

      iv. Potential Sources of Pollution. The SWMP must list all potential sources of pollution which may reasonably be expected to affect the quality of stormwater discharges associated with construction activity from the site. This shall include, but is not limited to, the following pollutant sources:

         (a) disturbed and stored soils;

         (b) vehicle tracking of sediments;

         (c) management of contaminated soils;

         (d) loading and unloading operations;

(e) outdoor storage activities (erodible building materials, fertilizers, chemicals, etc.);

(f) vehicle and equipment maintenance and fueling;

(g) significant dust or particulate generating processes (e.g., saw cutting material, including dust);

(h) routine maintenance activities involving fertilizers, pesticides, herbicides, detergents, fuels, solvents, oils, etc.;

(i) on-site waste management practices (waste piles, liquid wastes, dumpsters);

(j) concrete truck/equipment washing, including washing of the concrete truck chute and associated fixtures and equipment;

(k) dedicated asphalt, concrete batch plants and masonry mixing stations;

(l) non-industrial waste sources such as worker trash and portable toilets.

v. Implementation of Control Measures. The SWMP must include design specifications that contain information on the implementation of the control measure in accordance with good engineering hydrologic and pollution control practices; including as applicable drawings, dimensions, installation information, materials, implementation processes, control measure-specific inspection expectations, and maintenance requirements.

The SWMP must include a documented use agreement between the permittee and the owner or operator of any control measures located outside of the permitted area, that are utilized by the permittee's construction site for compliance with this permit, but not under the direct control of the permittee. The permittee is responsible for ensuring that all control measures located outside of their permitted area, that are being utilized by the permittee's construction site, are properly maintained and in compliance with all terms and conditions of the permit. The SWMP must include all information required of and relevant to any such control measures located outside the permitted area, including location, installation specifications, design specifications and maintenance requirements.

vi. Site Description. The SWMP must include a site description which includes, at a minimum, the following:

(a) the nature of the construction activity at the site;

(b) the proposed schedule for the sequence for major construction activities and the planned implementation of control measures for each phase. (e.g.: clearing, grading, utilities, vertical, etc.);

(c) estimates of the total acreage of the site, and the acreage expected to be disturbed by clearing, excavation, grading, or any other construction activities;

(d) a summary of any existing data used in the development of the construction site plans or SWMP that describe the soil or existing potential for soil erosion;

(e) a description of the percent of existing vegetative ground cover relative to the entire site and the method for determining the percentage;

(f) a description of any allowable non-stormwater discharges at the site, including those being discharged under a division low risk discharge guidance policy;

(g) a description of areas receiving discharge from the site. Including a description of the immediate source receiving the discharge. If the stormwater discharge is to a municipal separate storm sewer system, the name of the entity owning that system, the location of the storm sewer discharge, and the ultimate receiving water(s); and

(h) a description of all stream crossings located within the construction site boundary.

vii. Site Map. The SWMP must include a site map which includes, at a minimum, the following:

(a) construction site boundaries;

(b) flow arrows that depict stormwater flow directions on-site and runoff direction;

(c) all areas of ground disturbance including areas of borrow and fill;

(d) areas used for storage of soil;

(e) locations of all waste accumulation areas, including areas for liquid, concrete, masonry, and asphalt;

(f) locations of dedicated asphalt, concrete batch plants and masonry mixing stations;

(g) locations of all structural control measures;

(h) locations of all non-structural control measures;

(i) locations of springs, streams, wetlands and other state waters, including areas that require pre-existing vegetation be maintained within 50 feet of a receiving water, where determined feasible in accordance with Part I.B.1.a.i.(d).; and

(j) locations of all stream crossings located within the construction site boundary.

viii. Final Stabilization and Long Term Stormwater Management. The SWMP must describe the practices used to achieve final stabilization of all disturbed areas at the site and any planned practices to control pollutants in stormwater discharges that will occur after construction operations are completed. Including but not limited to, detention/retention ponds, rain gardens, stormwater vaults, etc.

ix. Inspection Reports. The SWMP must include documented inspection reports in accordance with Part ID.

3. SWMP Review and Revisions

Permittees must keep a record of SWMP changes made that includes the date and identification of the changes. The SWMP must be amended when the following occurs:

a. a change in design, construction, operation, or maintenance of the site requiring implementation of new or revised control measures;

b. the SWMP proves ineffective in controlling pollutants in stormwater runoff in compliance with the permit conditions;

c. control measures identified in the SWMP are no longer necessary and are removed; and

d. corrective actions are taken onsite that result in a change to the SWMP.

For SWMP revisions made prior to or following a change(s) onsite, including revisions to sections addressing site conditions and control measures, a notation must be included in the SWMP that identifies the date of the site change, the control measure removed, or modified, the location(s) of those control measures, and any changes to the control measure(s). The permittee must ensure the site changes are reflected in the SWMP. The permittee is noncompliant with the permit until the SWMP revisions have been made.

4. SWMP Availability

A copy of the SWMP must be provided upon request to the division, EPA, and any local agency with authority for approving sediment and erosion plans, grading plans or stormwater management plans within the time frame specified in the request. If the SWMP is required to be submitted to any of these entities, the submission must include a signed certification in accordance with Part I.A.3.e., certifying that the SWMP is complete and compliant with all terms and conditions of the permit.

All SWMPs required under this permit are considered reports that must be available to the public under Section 308(b) of the CWA and Section 61.5(4) of the CDPS regulations. The permittee must make plans available to members of the public upon request. However, the permittee may claim any portion of a SWMP as confidential in accordance with 40 CFR Part 2.

## D. SITE INSPECTIONS

Site inspections must be conducted in accordance with the following requirements. The required inspection schedules are a minimum frequency and do not affect the permittee's responsibility to implement control measures in effective operating condition as prescribed in the SWMP. Proper maintenance of control measures may require more frequent inspections. Site inspections shall start within 7 calendar days of the commencement of construction activities on site.

1. Person Responsible for Conducting Inspections

The person(s) inspecting the site may be on the permittee's staff or a third party hired to conduct stormwater inspections under the direction of the permittee(s). The permittee is responsible for ensuring that the inspector is a qualified stormwater manager.

2. Inspection Frequency

Permittees must conduct site inspections in accordance with one of the following minimum frequencies, unless the site meets the requirements of Part ID.3

a. At least one inspection every 7 calendar days. Or

b. At least one inspection every 14 calendar days, if post-storm event inspections are conducted within 24 hours after the end of any precipitation or snowmelt event that causes surface erosion. Post-storm inspections may be used to fulfill the 14-day routine inspection requirement.

c. When site conditions make the schedule required in this section impractical, the permittee may petition the Division to grant an alternate inspection schedule. The alternative inspection schedule may not be implemented prior to written approval by the division and incorporation into the SWMP.

3. Inspection Frequency for Discharges to Outstanding Waters

Permittees must conduct site inspections at least once every 7 calendar days for sites that discharge to a water body designated as an Outstanding Water by the Water Quality Control Commission.

4. Reduced Inspection Frequency

The permittee may perform site inspections at the following reduced frequencies when one of the following conditions exists:

a. Post-Storm Inspections at Temporarily Idle Sites
For permittees choosing to combine 14-day inspections and post-storm-event-inspections, if no construction activities will occur following a storm event, post-storm event inspections must be conducted prior to re-commencing construction activities, but no later than 72 hours following the storm event. The delay of any post-storm event inspection must be documented in the inspection record. Routine inspections must still be conducted at least every 14 calendar days.

b. Inspections at Completed Sites/Areas
When the site, or portions of a site are awaiting establishment of a vegetative ground cover and final stabilization, the permittee must conduct a thorough inspection of the stormwater management system at least once every 30 days. Post-storm event inspections are not required under this schedule. This reduced inspection schedule is allowed if all of the following criteria are met:

i. all construction activities resulting in ground disturbance are complete;

ii. all activities required for final stabilization, in accordance with the SWMP, have been completed, with the exception of the application of seed that has not occurred due to seasonal conditions or the necessity for additional seed application to augment previous efforts; and

iii. the SWMP has been amended to locate those areas to be inspected in accordance with the reduced schedule allowed for in this paragraph.

c. Winter Conditions Inspections Exclusion

Inspections are not required for sites that meet all of the following conditions: construction activities are temporarily halted, snow cover exists over the entire site for an extended period, and melting conditions posing a risk of surface erosion do not exist. This inspection exception is applicable only during the period where melting conditions do not exist, and applies to the routine 7-day, 14-day and monthly inspections, as well as the post-storm-event inspections. When this inspection exclusion is implemented, the following information must be documented in accordance with the requirements in Part II:

i. dates when snow cover existed;

ii. date when construction activities ceased; and

iii. date melting conditions began.

5. Inspection Scope

a. Areas to be Inspected
When conducting a site inspection the following areas, if applicable, must be inspected for evidence of, or the potential for, pollutants leaving the construction site boundaries, entering the stormwater drainage system, or discharging to state waters:

i. construction site perimeter;

ii. all disturbed areas;

iii. designated haul routes;

iv. material and waste storage areas exposed to precipitation;

v. locations where stormwater has the potential to discharge offsite; and

vi. locations where vehicles exit the site.

b. Inspection Requirements

i. Visually verify whether all implemented control measures are in effective operational condition and are working as designed in their specifications to minimize pollutant discharges.

ii. Determine if there are new potential sources of pollutants.

iii. Assess the adequacy of control measures at the site to identify areas requiring new or modified control measures to minimize pollutant discharges.

iv. Identify all areas of non–compliance with the permit requirements and, if necessary, implement corrective action in accordance with Part IB.1.c.

c. Inspection Reports
The permittee must keep a record of all inspections conducted for each permitted site. Inspection reports must identify any incidents of noncompliance with the terms and conditions of this permit. Inspection records must be retained in accordance with Part II.O. and signed in accordance with Part I.A.3.f. At a minimum, the inspection report must include:

i. the inspection date;

ii. name(s) and title(s) of personnel conducting the inspection;

iii. weather conditions at the time of inspection;

iv. phase of construction at the time of inspection;

v. estimated acreage of disturbance at the time of inspection

vi. location(s) of discharges of sediment or other pollutants from the site;

vii. location(s) of control measures needing maintenance;

viii. location(s) and identification of inadequate control measures;

ix. location(s) and identification of additional control measures are needed that were not in place at the time of inspection;

x. description of the minimum inspection frequency (either in accordance with Part I.D.2., I.D.3. or I.D.4.) utilized when conducting each inspection.

xi. deviations from the minimum inspection schedule as required in Part I.D.2.;

xii. after adequate corrective action(s) and maintenance have been taken, or where a report does not identify any incidents requiring corrective action or maintenance, the report shall contain a statement as required in Part I.A.3.f.

## E. DEFINITIONS

For the purposes of this permit:

(1) Bypass - the intentional diversion of waste streams from any portion of a treatment facility in accordance with 40 CFR 122.41(m)(1)(i) and Regulation 61.2(12).

(2) Common Plan of Development or Sale - A contiguous area where multiple separate and distinct construction activities may be taking place at different times on different schedules, but remain related. The Division has determined that "contiguous" means construction activities located in close proximity to each other (within ¼ mile). Construction activities are considered to be "related" if they share the same development plan, builder or contractor, equipment, storage areas, etc. "Common plan of development or sale" includes construction activities that are associated with the construction of field wide oil and gas permits for facilities that are related.

(3) Construction Activity - Ground surface disturbing and associated activities (land disturbance), which include, but are not limited to, clearing, grading, excavation, demolition, installation of new or improved haul roads and access roads, staging areas, stockpiling of fill materials, and borrow areas. Construction does not include routine maintenance to maintain the original line and grade, hydraulic capacity, or original purpose of the facility. Activities to conduct repairs that are not part of routine maintenance or for replacement are construction activities and are not routine maintenance. Repaving activities where underlying and/or surrounding soil is exposed as part of the repaving operation are considered construction activities. Construction activity is from initial ground breaking to final stabilization regardless of ownership of the construction activities.

(4) Control Measure - Any best management practice or other method used to prevent or reduce the discharge of pollutants to state waters. Control measures include, but are not limited to, best management practices. Control measures can include other methods such as the installation, operation, and maintenance of structural controls and treatment devices.

(5) Control Measure Requiring Routine Maintenance - Any control measure that is still operating in accordance with its design and the requirements of this permit, but requires maintenance to prevent a breach of the control measure. See also inadequate control measure.

(6) Dedicated Asphalt, Concrete Batch Plants and Masonry Mixing Stations – are batch plants or mixing stations located on, or within ¼ mile of, a construction site and that provide materials only to that specific construction site.

(7) Final Stabilization - The condition reached when all ground surface disturbing activities at the site have been completed, and for all areas of ground surface disturbing activities where a uniform vegetative cover has been established with an individual plant density of at least 70 percent of pre-disturbance levels, or equivalent permanent, physical erosion reduction methods have been employed.

(8) Good Engineering, Hydrologic and Pollution Control Practices: are methods, procedures, and practices that:
   a. Are based on basic scientific fact(s).
   b. Reflect best industry practices and standards.
   c. Are appropriate for the conditions and pollutant sources.
   d. Provide appropriate solutions to meet the associated permit requirements, including practice based effluent limits.

(9) Inadequate Control Measure - Any control measure that is not designed or implemented in accordance with the requirements of the permit and/or any control measure that is not implemented to operate in accordance with its design. See also Control Measure Requiring Routine Maintenance.

(10) Infeasible – Not technologically possible, or not economically practicable and achievable in light of best industry practices.

(11) Minimize - reduce or eliminate to the extent achievable using control measures that are technologically available and economically practicable and achievable in light of best industry practice.

(12) Municipality - A city, town, county, district, association, or other public body created by, or under, State law and having jurisdiction over disposal of sewage, industrial wastes, or other wastes, or a designated and approved management agency under section 208 of CWA (1987).

(13) Municipal Separate Storm Sewer System (MS4) - A conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains):

   a) owned or operated by a State, city, town, county, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, stormwater, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or a designated and approved management agency under section 208 of the CWA that discharges to state waters;

      i. designed or used for collecting or conveying stormwater;
      ii. are not a combined sewer; and
      iii. are not part of a Publicly Owned Treatment Works (POTW). See 5 CCR 1002-61.2(62).

(14) Municipal Stormwater Management Program - A stormwater program operated by a municipality, typically to meet the requirements of the municipalities MS4 discharge certification.

(15) Operator - The party that has operational control over day-to-day activities at a project site which are necessary to ensure compliance with the permit. This party is authorized to direct individuals at a site to carry out activities required by the permit.(e.g. the general contractor)

(16) Owner - The party that has overall control of the activities and that has funded the implementation of the construction plans and specifications. This is the party with ownership of, a long term lease of, or easements on the property on which the construction activity is occurring (e.g., the developer).

(17) Permittee(s) - The owner and operator named in the discharge certification issued under this permit for the construction site specified in the certification.

(18) Point Source - Any discernible, confined, and discrete conveyance, including, but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or vessel or other floating craft, from which pollutants are or may be discharged. Point source does not include irrigation return flow. See 5 CCR 102-61.2(75).

(19) Pollutant - Dredged spoil, dirt, slurry, solid waste, incinerator residue, sewage, sewage sludge, garbage, trash, chemical waste, biological nutrient, biological material, radioactive material, heat, wrecked or discarded equipment, rock, sand, or any industrial, municipal or agricultural waste. See 5 CCR 1002-61.2(76).

(20) Presentation of credentials – a government issued form of identification, if in person; or (ii) providing name, position and purpose of inspection if request to enter is made via telephone, email or other form of electronic communication. A Permittee's non-response to a request to enter upon presentation of credentials constitutes a denial to such request, and may result in violation of the Permit.

(21) Process Water - Any water which, during manufacturing or processing, comes into contact with or results from the production of any raw material, intermediate product, finished product, by product or waste product.

(22) Public Emergency Related Site - a project initiated in response to an unanticipated emergency (e.g., mud slides, earthquake, extreme flooding conditions, disruption in essential public services), for which the related work requires immediate authorization to avoid imminent endangerment to human health or the environment, or to reestablish essential public services.

(23) Qualified Stormwater Manager - An individual knowledgeable in the principles and practices of erosion and sediment control and pollution prevention, and with the skills to assess conditions at construction sites that could impact stormwater quality and to assess the effectiveness of stormwater controls implemented to meet the requirements of this permit.

(24) Qualifying Local Program - A municipal program for stormwater discharges associated with small construction activity that was formally approved by the division as a qualifying local program.

(25) Receiving Water - Any classified or unclassified surface water segment (including tributaries) in the State of Colorado into which stormwater associated with construction activities discharges. This definition includes all water courses, even if they are usually dry, such as borrow ditches, arroyos, and other unnamed waterways.

(26) Severe Property Damage - substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production. See 40 CFR 122.41(m)(1)(ii).

(27) Significant Materials - Include, but not limited to, raw materials; fuels; materials such as solvents, detergents, and plastic pellets; finished materials such as metallic products; raw materials used in food processing or production; hazardous substances designated under section 101(14) of CERCLA; any chemical the permittee is required to report under section 313 of Title III of the Superfund Amendments and Reauthorization Act (SARA); fertilizers; pesticides; and waste products such as ashes, slag and sludge that have the potential to be released with stormwater discharges.

(28) Small Construction Activity - The discharge of stormwater from construction activities that result in land disturbance of equal to, or greater than, one acre and less than five acres. Small construction activity also includes the disturbance of less than one acre of total land area that is part of a larger common plan of development or sale, if the larger common plan ultimately disturbs equal to, or greater than, one acre and less than five acres.

(29) Spill - An unintentional release of solid or liquid material which may pollute state waters.

(30) State Waters - means any and all surface and subsurface waters which are contained in or flow in or through this state, but does not include waters in sewage systems, waters in treatment works of disposal systems, waters in potable water distribution systems, and all water withdrawn for use until use and treatment have been completed.

(31) Steep Slopes: where a local government, or industry technical manual (e.g., stormwater BMP manual) has defined what is to be considered a “steep slope”, this permit’s definition automatically adopts that definition. Where no such definition exists, steep slopes are automatically defined as those that are 3:1 or greater.

(32) Stormwater - Precipitation runoff, snow melt runoff, and surface runoff and drainage. See 5 CCR 1002-61.2(103).

(33) Total Maximum Daily Loads (TMDLs) -The sum of the individual wasteload allocations (WLA) for point sources and load allocations (LA) for nonpoint sources and natural background. For the purposes of this permit, a TMDL is a calculation of the maximum amount of a pollutant that a waterbody can receive and still meet water quality standards, and an allocation of that amount to the pollutant's sources. A TMDL includes WLAs, LAs, and must include a margin of safety (MOS), and account for seasonal variations. See section 303(d) of the CWA and 40 C.F.R. 130.2 and 130.7.

(34) Upset - an exceptional incident in which there is unintentional and temporary noncompliance with permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventative maintenance, or careless or improper operation in accordance with 40 CFR 122.41(n) and Regulation 61.2(114).

## F. MONITORING

The division may require sampling and testing, on a case-by-case basis. If the division requires sampling and testing, the division will send a notification to the permittee. Reporting procedures for any monitoring data collected will be included in the notification.

If monitoring is required, the following applies:

1. the thirty (30) day average must be determined by the arithmetic mean of all samples collected during a thirty (30) consecutive-day period; and

2. a grab sample, for monitoring requirements, is a single “dip and take” sample.

## G. Oil and Gas Construction

Stormwater discharges associated with construction activities directly related to oil and gas exploration, production, processing, and treatment operations or transmission facilities are regulated under the Colorado Discharge Permit System Regulations (5 CCR 1002-61), and require coverage under this permit in accordance with that regulation. However, references in this permit to specific authority under the CWA do not apply to stormwater discharges associated with these oil and gas related construction activities, to the extent that the references are limited by the federal Energy Policy Act of 2005.

## Part II: Standard Permit Conditions

### A. DUTY TO COMPLY

The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Water Quality Control Act and is grounds for:

a. enforcement action;

b. permit termination, revocation and reissuance, or modification; or

c. denial of a permit renewal application.

### B. DUTY TO REAPPLY

If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and obtain authorization as required by Part I.A.3.k. of the permit.

### C. NEED TO HALT OR REDUCE ACTIVITY NOT A DEFENSE

It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

### D. DUTY TO MITIGATE

A permittee must take all reasonable steps to minimize or prevent any discharge in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

### E. PROPER OPERATION AND MAINTENANCE

A permittee must at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) that are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of backup or auxiliary facilities or similar systems which are installed by the permittee only when the operation is necessary to achieve compliance with the conditions of this permit. This requirement can be met by meeting the requirements for Part I.B., I.C., and I.D. above. See also 40 C.F.R. § 122.41(e).

### F. PERMIT ACTIONS

This permit may be modified, revoked and reissued, or terminated for cause. The permittee request for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any permit condition. Any request for modification, revocation, reissuance, or termination under this permit must comply with all terms and conditions of Regulation 61.8(8).

### G. PROPERTY RIGHTS

In accordance with 40 CFR 122.41(g) and 5 CCR 1002-61, 61.8(9):

1. The issuance of a permit does not convey any property or water rights in either real or personal property, or stream flows or any exclusive privilege.

2. The issuance of a permit does not authorize any injury to person or property or any invasion of personal rights, nor does it authorize the infringement of federal, state, or local laws or regulations.
3. Except for any toxic effluent standard or prohibition imposed under Section 307 of the Federal act or any standard for sewage sludge use or disposal under Section 405(d) of the Federal act, compliance with a permit during its term constitutes compliance, for purposes of enforcement, with Sections 301, 302, 306, 318, 403, and 405(a) and (b) of the Federal act. However, a permit may be modified, revoked and reissued, or terminated during its term for cause as set forth in Section 61.8(8) of the Colorado Discharge Permit System Regulations.

## H. DUTY TO PROVIDE INFORMATION

The permittee shall furnish to the division, within a reasonable time, any information which the division may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The permittee shall also furnish to the division, upon request, copies of records required to be kept by this permit in accordance with 40 CFR 122.41(h) and/or Regulation 61.8(3)(q).

## I. INSPECTION AND ENTRY

The permittee shall allow the division and the authorized representative, upon the presentation of credentials as required by law, to allow for inspections to be conducted in accordance with 40 CFR 122.41(i), Regulation 61.8(3), and Regulation 61.8(4):

1. to enter upon the permittee's premises where a regulated facility or activity is located or in which any records are required to be kept under the terms and conditions of this permit;
2. at reasonable times to have access to and copy any records required to be kept under the terms and conditions of this permit;
3. at reasonable times, inspect any monitoring equipment or monitoring method required in the permit; and
4. to enter upon the permittee's premises in a reasonable manner and at a reasonable time to inspect or investigate, any actual, suspected, or potential source of water pollution, or any violation of the Colorado Water Quality Control Act. The investigation may include: sampling of any discharges, stormwater or process water, taking of photographs, interviewing site staff on alleged violations and other matters related to the permit, and assessing any and all facilities or areas within the site that may affect discharges, the permit, or an alleged violation.

The permittee shall provide access to the division or other authorized representatives upon presentation of proper credentials. A permittee's non-response to a request to enter upon presentation of credentials constitutes a denial of such request, and may result in a violation of the permit.

## J. MONITORING AND RECORDS

1. Samples and measurements taken for the purpose of monitoring must be representative of the volume and nature of the monitored activity.

2. The permittee must retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least three years from the date the permit expires or the date the permittee's authorization is terminated. This period may be extended by request of the division at any time.

3. Records of monitoring information must include:
   a. The date, exact place, and time of sampling or measurements;
   b. The individual(s) who performed the sampling or measurements;
   c. The date(s) analyses were performed
   d. The individual(s) who performed the analyses;
   e. The analytical techniques or methods used; and
   f. The results of such analyses.

4. Monitoring must be conducted according to test procedures approved under 40 CFR Part 136, unless other test procedures have been specified in the permit.

## K. SIGNATORY REQUIREMENTS

1. Authorization to Sign:

   All documents required to be submitted to the division by the permit must be signed in accordance with the following criteria:

   a. For a corporation: By a responsible corporate officer. For the purpose of this subsection, a responsible corporate officer means:

      i. a president, secretary, treasurer, or vice president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision-making functions for the corporation, or

      ii. the manager of one or more manufacturing, production, or operating facilities, provided, the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

   b. For a partnership or sole proprietorship: By a general partner or the proprietor, respectively; or

   c. For a municipality, state, federal, or other public agency: By either a principal executive officer or ranking elected official. For purposes of this subsection, a principal executive officer of a federal agency includes

      i. (i) the chief executive officer of the agency, or

ii. (ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency. (e.g., Regional Administrator of EPA)

2. Electronic Signatures

For persons signing applications for coverage under this permit electronically, in addition to meeting other applicable requirements stated above, such signatures must meet the same signature, authentication, and identity-proofing standards set forth at 40 CFR § 3.2000(b) for electronic reports (including robust second-factor authentication). Compliance with this requirement can be achieved by submitting the application using the Colorado Environmental Online Service (CEOS) system.

3. Change in Authorization to Sign

If an authorization is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization must be submitted to the division, prior to the re-authorization, or together with any reports, information, or applications to be signed by an authorized representative.

## L. REPORTING REQUIREMENTS

1. Planned Changes

The permittee shall give advance notice to the division, in writing, of any planned physical alterations or additions to the permitted facility in accordance with 40 CFR 122.41(l) and Regulation 61.8(5)(a). Notice is required only when:

a. The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in 40 CFR 122.29(b); or

b. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations in the permit, nor to notification requirements under 40 CFR 122.41(a)(1).

2. Anticipated Non-Compliance

The permittee shall give advance notice to the division, in writing, of any planned changes in the permitted facility or activity that may result in noncompliance with permit requirements. The timing of notification requirements differs based on the type of non-compliance as described in subparagraphs 5, 6, 7, and 8 below.

3. Transfer of Ownership or Control

The permittee shall notify the division, in writing, ten (10) calendar days in advance of a proposed transfer of the permit. This permit is not transferable to any person except after notice is given to the division.

a. Where a facility wants to change the name of the permittee, the original permittee (the first owner or operators) must submit a Notice of Termination.

b. The new owner or operator must submit an application. See also signature requirements in Part II.K, above.

c. A permit may be automatically transferred to a new permittee if:

   i. The current permittee notifies the Division in writing 30 calendar days in advance of the proposed transfer date; and

   ii. The notice includes a written agreement between the existing and new permittee(s) containing a specific date for transfer of permit responsibility, coverage and liability between them; and

   iii. The division does not notify the existing permittee and the proposed new permittee of its intent to modify, or revoke and reissue the permit.

   iv. Fee requirements of the Colorado Discharge Permit System Regulations, Section 61.15, have been met.

4. Monitoring reports

   Monitoring results must be reported at the intervals specified in this permit per the requirements of 40 CFR 122.41(l)(4).

5. Compliance Schedules

   Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule in the permit, shall be submitted on the date listed in the compliance schedule section. The fourteen (14) calendar day provision in Regulation 61.8(4)(n)(i) has been incorporated into the due date.

6. Twenty-four hour reporting

   In addition to the reports required elsewhere in this permit, the permittee shall report the following circumstances orally within twenty-four (24) hours from the time the permittee becomes aware of the circumstances, and shall mail to the division a written report containing the information requested within five (5) working days after becoming aware of the following circumstances:

   a. Circumstances leading to any noncompliance which may endanger health or the environment regardless of the cause of the incident;

   b. Circumstances leading to any unanticipated bypass which exceeds any effluent limitations in the permit;

   c. Circumstances leading to any upset which causes an exceedance of any effluent limitation in the permit;

d. Daily maximum violations for any of the pollutants limited by Part I of this permit. This includes any toxic pollutant or hazardous substance or any pollutant specifically identified as the method to control any toxic pollutant or hazardous substance.

e. The division may waive the written report required under subparagraph 6 of this section if the oral report has been received within 24 hours.

7. Other non-compliance

A permittee must report all instances of noncompliance at the time monitoring reports are due. If no monitoring reports are required, these reports are due at least annually in accordance with Regulation 61.8(4)(p). The annual report must contain all instances of non-compliance required under either subparagraph 5 or subparagraph 6 of this subsection.

8. Other information

Where a permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application, or in any report to the Permitting Authority, it has a duty to promptly submit such facts or information.

## M. BYPASS

1. Bypass not exceeding limitations

The permittees may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of Part II.M.2 of this permit. See 40 CFR 122.41(m)(2).

2. Notice of bypass

a. Anticipated bypass. If the permittee knows in advance of the need for a bypass, the permittee must submit prior notice, if possible at least ten days before the date of the bypass. ee 40 CFR §122.41(m)(3)(i) and/or Regulation 61.9(5)(c).

b. Unanticipated bypass. The permittee must submit notice of an unanticipated bypass in accordance with Part II.L.6. See 40 CFR §122.41(m)(3)(ii) .

3. Prohibition of Bypass

Bypasses are prohibited and the division may take enforcement action against the permittee for bypass, unless:

i. the bypass is unavoidable to prevent loss of life, personal injury, or severe property damage;

ii. There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate backup equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and

iii. proper notices were submitted to the division.

## N. UPSET

1. Effect of an upset

An upset constitutes an affirmative defense to an action brought for noncompliance with permit effluent limitations if the requirements of Part II.N.2. of this permit are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review in accordance with Regulation 61.8(3)(j).

2. Conditions necessary for demonstration of an Upset

A permittee who wishes to establish the affirmative defense of upset shall demonstrate through properly signed contemporaneous operating logs, or other relevant evidence that

a. an upset occurred and the permittee can identify the specific cause(s) of the upset;

b. the permitted facility was at the time being properly operated and maintained; and

c. the permittee submitted proper notice of the upset as required in Part II.L.6.(24-hour notice); and

d. the permittee complied with any remedial measure necessary to minimize or prevent any discharge or sludge use or disposal in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment. In addition to the demonstration required above, a permittee who wishes to establish the affirmative defense of upset for a violation of effluent limitations based upon water quality standards shall also demonstrate through monitoring, modeling or other methods that the relevant standards were achieved in the receiving water.

3. Burden of Proof

In any enforcement proceeding, the permittee seeking to establish the occurrence of an upset has the burden of proof.

## O. RETENTION OF RECORDS

1. Post-Expiration or Termination Retention

Copies of documentation required by this permit, including records of all data used to complete the application for permit coverage to be covered by this permit, must be

retained for at least three years from the date that permit coverage expires or is terminated. This period may be extended by request of EPA at any time.

2. On-site Retention

   The permittee must retain an electronic version or hardcopy of the SWMP at the construction site from the date of the initiation of construction activities to the date of expiration or inactivation of permit coverage; unless another location, specified by the permittee, is approved by the division.

## P. REOPENER CLAUSE

1. Procedures for modification or revocation

   Permit modification or revocation of this permit or coverage under this permit will be conducted according to Regulation 61.8(8).

2. Water quality protection

   If there is evidence indicating that the stormwater discharges authorized by this permit cause, have the reasonable potential to cause or contribute to an excursion above any applicable water quality standard, the permittee may be required to obtain an individual permit, or the permit may be modified to include different limitations and/or requirements.

## Q. SEVERABILITY

The provisions of this permit are severable. If any provisions or the application of any provision of this permit to any circumstances, is held invalid, the application of such provision to other circumstances and the application of the remainder of this permit shall not be affected.

## R. NOTIFICATION REQUIREMENTS

1. Notification to Parties

   All notification requirements, excluding information submitted using the CEOS portal, shall be directed as follows:

   a. Oral Notifications, during normal business hours shall be to:
      Clean Water Compliance Section
      Water Quality Control Division
      Telephone: (303) 692-3500

   b. Written notification shall be to:
      Clean Water Compliance Section
      Water Quality Control Division
      Colorado Department of Public Health and Environment
      WQCD-WQP-B2
      4300 Cherry Creek Drive South
      Denver, CO 80246-1530

## S. RESPONSIBILITIES

1. Reduction, Loss, or Failure of Treatment Facility

   The permittee has the duty to halt or reduce any activity if necessary to maintain compliance with the effluent limitations of the permit. It shall not be a defense for a permittee in an enforcement action that it would be necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

## T. Oil and Hazardous Substance Liability

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject to under Section 311 (Oil and Hazardous Substance Liability) of the CWA.

## U. Emergency Powers

Nothing in this permit shall be construed to prevent or limit application of any emergency power of the division.

## V. Confidentiality

Any information relating to any secret process, method of manufacture or production, or sales or marketing data which has been declared confidential by the permittee, and which may be acquired, ascertained, or discovered, whether in any sampling investigation, emergency investigation, or otherwise, shall not be publicly disclosed by any member, officer, or employee of the Water Quality Control Commission or the division, but shall be kept confidential. Any person seeking to invoke the protection of of this section shall bear the burden of proving its applicability. This section shall never be interpreted as preventing full disclosure of effluent data.

## W. Fees

The permittee is required to submit payment of an annual fee as set forth in the 2016 amendments to the Water Quality Control Act. Section 25-8-502 (1.1) (b), and the Colorado Discharge Permit System Regulations 5 CCR 1002-61, Section 61.15 as amended. Failure to submit the required fee when due and payable is a violation of the permit and will result in enforcement action pursuant to Section 25-8-601 et. seq., C.R.S.1973 as amended.

## X. Duration of Permit

The duration of a permit shall be for a fixed term and shall not exceed five (5) years. If the permittee desires to continue to discharge, a permit renewal application shall be submitted at least ninety (90) calendar days before this permit expires. Filing of a timely and complete application shall cause the expired permit to continue in force to the effective date of the new permit. The permit's duration may be extended only through administrative extensions and not through interim modifications. If the permittee anticipates there will be no discharge after the expiration date of this permit, the division should be promptly notified so that it can terminate the permit in accordance with Part I.A.3.i.

## Y. Section 307 Toxics

If a toxic effluent standard or prohibition, including any applicable schedule of compliance specified, is established by regulation pursuant to Section 307 of the Federal Act for a toxic pollutant which is present in the permittee's discharge and such standard or prohibition is more stringent than any limitation upon such pollutant in the discharge permit, the division

shall institute proceedings to modify or revoke and reissue the permit to conform to the toxic effluent standard or prohibition

# Attachment B

## Permitting Documentation (NOI, Permit Card, Permit Letters, Pre-construction Photo Log)

# Attachment C

## Soil Maps

Soil Map—El Paso County Area, Colorado
(Grazing Yak Solar Project)

Map Scale: 1:9,290 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 100 200 400 600

Feet: 0 450 900 1800 2700

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 13N WGS84

## MAP LEGEND

**Area of Interest (AOI)**

Area of Interest (AOI)

**Soils**

Soil Map Unit Polygons

Soil Map Unit Lines

Soil Map Unit Points

**Special Point Features**

Blowout

Borrow Pit

Clay Spot

Closed Depression

Gravel Pit

Gravelly Spot

Landfill

Lava Flow

Marsh or swamp

Mine or Quarry

Miscellaneous Water

Perennial Water

Rock Outcrop

Saline Spot

Sandy Spot

Severely Eroded Spot

Sinkhole

Slide or Slip

Sodic Spot

Spoil Area

Stony Spot

Very Stony Spot

Wet Spot

Other

Special Line Features

**Water Features**

Streams and Canals

**Transportation**

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

**Background**

Aerial Photography

## MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: El Paso County Area, Colorado
Survey Area Data: Version 16, Sep 10, 2018

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 7, 2016—Aug 17, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

# Map Unit Legend

| Map Unit Symbol | Map Unit Name | Acres in AOI | Percent of AOI |
|---|---|---|---|
| 2 | Ascalon sandy loam, 1 to 3 percent slopes | 21.4 | 7.9% |
| 12 | Bresser sandy loam, cool, 3 to 5 percent slopes | 80.7 | 29.7% |
| 97 | Truckton sandy loam, 3 to 9 percent slopes | 152.9 | 56.2% |
| 100 | Truckton-Bresser complex, eroded | 16.9 | 6.2% |
| **Totals for Area of Interest** | | **271.9** | **100.0%** |

Erosion Hazard (Off-Road, Off-Trail)—El Paso County Area, Colorado
(Grazing Yak Solar Project)

Map Scale: 1:9,290 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 100 200 400 600

Feet: 0 450 900 1800 2700

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 13N WGS84

## MAP LEGEND

**Area of Interest (AOI)**

Area of Interest (AOI)

**Soils**

**Soil Rating Polygons**

Very severe

Severe

Moderate

Slight

Not rated or not available

**Soil Rating Lines**

Very severe

Severe

Moderate

Slight

Not rated or not available

**Soil Rating Points**

Very severe

Severe

Moderate

Slight

Not rated or not available

**Water Features**

Streams and Canals

**Transportation**

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

**Background**

Aerial Photography

## MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: El Paso County Area, Colorado
Survey Area Data: Version 16, Sep 10, 2018

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 7, 2016—Aug 17, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

# Erosion Hazard (Off-Road, Off-Trail)

| Map unit symbol | Map unit name | Rating | Component name (percent) | Rating reasons (numeric values) | Acres in AOI | Percent of AOI |
|---|---|---|---|---|---|---|
| 2 | Ascalon sandy loam, 1 to 3 percent slopes | Slight | Ascalon (85%) | | 21.4 | 7.9% |
| 12 | Bresser sandy loam, cool, 3 to 5 percent slopes | Slight | Bresser, cool (85%) | | 80.7 | 29.7% |
| | | | Truckton (10%) | | | |
| | | | Yoder (5%) | | | |
| 97 | Truckton sandy loam, 3 to 9 percent slopes | Slight | Truckton (85%) | | 152.9 | 56.2% |
| | | | Blakeland (8%) | | | |
| | | | Bresser (7%) | | | |
| 100 | Truckton-Bresser complex, eroded | Slight | Truckton, eroded (55%) | | 16.9 | 6.2% |
| | | | Bresser, eroded (30%) | | | |
| **Totals for Area of Interest** | | | | | **271.9** | **100.0%** |

| Rating | Acres in AOI | Percent of AOI |
|---|---|---|
| Slight | 271.9 | 100.0% |
| **Totals for Area of Interest** | **271.9** | **100.0%** |

## Description

The ratings in this interpretation indicate the hazard of soil loss from off-road and off-trail areas after disturbance activities that expose the soil surface. The ratings are based on slope and soil erosion factor K. The soil loss is caused by sheet or rill erosion in off-road or off-trail areas where 50 to 75 percent of the surface has been exposed by logging, grazing, mining, or other kinds of disturbance.

The ratings are both verbal and numerical. The hazard is described as "slight," "moderate," "severe," or "very severe." A rating of "slight" indicates that erosion is unlikely under ordinary climatic conditions; "moderate" indicates that some erosion is likely and that erosion-control measures may be needed; "severe" indicates that erosion is very likely and that erosion-control measures, including revegetation of bare areas, are advised; and "very severe" indicates that significant erosion is expected, loss of soil productivity and off-site damage are likely, and erosion-control measures are costly and generally impractical.

Numerical ratings indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the specified aspect of forestland management (1.00) and the point at which the soil feature is not a limitation (0.00).

The map unit components listed for each map unit in the accompanying Summary by Map Unit table in Web Soil Survey or the Aggregation Report in Soil Data Viewer are determined by the aggregation method chosen. An aggregated rating class is shown for each map unit. The components listed for each map unit are only those that have the same rating class as listed for the map unit. The percent composition of each component in a particular map unit is presented to help the user better understand the percentage of each map unit that has the rating presented.

Other components with different ratings may be present in each map unit. The ratings for all components, regardless of the map unit aggregated rating, can be viewed by generating the equivalent report from the Soil Reports tab in Web Soil Survey or from the Soil Data Mart site. Onsite investigation may be needed to validate these interpretations and to confirm the identity of the soil on a given site.

## Rating Options

*Aggregation Method:* Dominant Condition

*Component Percent Cutoff: None Specified*

*Tie-break Rule:* Higher

# RUSLE2 Related Attributes

This report summarizes those soil attributes used by the Revised Universal Soil Loss Equation Version 2 (RUSLE2) for the map units in the selected area. The report includes the map unit symbol, the component name, and the percent of the component in the map unit. Soil property data for each map unit component include the hydrologic soil group, erosion factors Kf for the surface horizon, erosion factor T, and the representative percentage of sand, silt, and clay in the mineral surface horizon. Missing surface data may indicate the presence of an organic surface layer. .

## Report—RUSLE2 Related Attributes

Soil properties and interpretations for erosion runoff calculations. The surface mineral horizon properties are displayed. Organic surface horizons are not displayed.

| RUSLE2 Related Attributes–El Paso County Area, Colorado | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Map symbol and soil name | Pct. of map unit | Slope length (ft) | Hydrologic group | Kf | T factor | Representative value | | |
| | | | | | | % Sand | % Silt | % Clay |
| 2—Ascalon sandy loam, 1 to 3 percent slopes | | | | | | | | |
| Ascalon | 85 | — | B | .24 | 5 | 66.6 | 23.4 | 10.0 |
| 12—Bresser sandy loam, cool, 3 to 5 percent slopes | | | | | | | | |
| Bresser, cool | 85 | 180 | B | .15 | 3 | 66.8 | 19.2 | 14.0 |
| 97—Truckton sandy loam, 3 to 9 percent slopes | | | | | | | | |
| Truckton | 85 | 161 | A | .28 | 5 | 68.0 | 24.0 | 8.0 |
| 100—Truckton-Bresser complex, eroded | | | | | | | | |
| Truckton, eroded | 55 | — | A | .24 | 5 | 66.8 | 19.2 | 14.0 |
| Bresser, eroded | 30 | — | C | .20 | 3 | 66.8 | 19.2 | 14.0 |

## Data Source Information

Soil Survey Area: El Paso County Area, Colorado
Survey Area Data: Version 16, Sep 10, 2018

# Attachment D

## Vicinity Map, Pre and Post Drainage Maps, Impaired Water Maps

© 2019 Westwood Professional Services, Inc.

Data Source(s): Westwood (2019); ESRI WMS World Streets Basemap Imagery (Accessed 2019).

## Legend

Project Boundary

County Boundary

Westwood

Toll Free (888) 937-5150 westwoodps.com

Westwood Professional Services, Inc.

N

0 1 Miles

# Grazing Yak

El Paso County, Colorado

Vicinity Map

April 01, 2019

Map Document: N:\0021201.00\GIS\SWPPP Exhibits\2019-04-01_GrazingYak_Ex1_SWPPP_VicinityMap.mxd MJHildreth 4/1/2019 7:23:50 AM

© 2019 Westwood Professional Services, Inc.

Data Source(s): Westwood (2019); ESRI WMS World Streets Basemap Imagery (Accessed 2019).

## Legend

Project Boundary

County Boundary

Westwood

Toll Free (888) 937-5150 westwoodps.com

Westwood Professional Services, Inc.

N

0 1,000 Feet

# Grazing Yak

El Paso County, Colorado

USGS Topographic Map

April 01, 2019

Map Document: N:\0021201.00\GIS\SWPPP Exhibits\2019-04-01_GrazingYak_Ex2_SWPPP_USGSTopoMap.mxd MJHildreth 4/1/2019 7:30:42 AM

© 2019 Westwood Professional Services, Inc.

| Discharge ID | Latitude | Longitude |
|---|---|---|
| 1 | 38.971019 | -104.256458 |
| 2 | 38.974296 | -104.253839 |
| 3 | 38.977746 | -104.248440 |

Data Source(s): Westwood (2019); ESRI WMS World Streets Basemap Imagery (Accessed 2019).

## Legend

- Project Boundary
- County Boundary
- HUC 12 Boundary
- NWI Wetlands
- Array Outline
- Inverter Pad
- NHD Flowline
- Access Road
- Discharge Location

N

0 1,000 Feet

Westwood
Toll Free (888) 937-5150 westwoodps.com
Westwood Professional Services, Inc.

# Grazing Yak

El Paso County, Colorado

Drainage Map

April 01, 2019

Map Document: N:\0021201.00\GIS\SWPPP Exhibits\2019-04-01_GrazingYak_Ex3_SWPPP_DrainageMap.mxd MJHildreth 4/1/2019 8:36:54 AM

# WATERS GeoViewer Map Image Layer

| | | |
|---|---|---|
| COARLA09a | 9a. Mainstems of Adobe, Buffalo, Cheyenne, Clay, Gageby, Horse, Two Butte, Wildhorse and Wolf Creeks from their sources to their confluences with the Arkansas River. Mainstems of Chacuacho Creek, San Francisco Creek, Trinchera Creek and Van Bremer Arroyo from their sources to their confluences with the Purgatoire River. Mainstem of Willow Creek from Highway 287 to the confluence with the Arkansas River. Mainstem of Big Sandy Creek from the source to the El Paso/Elbert county line. Mainstem of South Rush Creek from the source to the confluence with Rush Creek. Mainstem of Middle Rush Creek from the source to the confluence with North Rush Creek. North Rush Creek from the source to the confluence with South Rush Creek. Mainstem of Rush Creek to the Lincoln County Line. Mainstem of Antelope Creek from the source to the confluence with Rush Creek; the West May Valley drain from the Fort Lyon Canal to the confluence with the Arkansas River. | |
| Listed portion: [1] | **COARLA09a_A** | Mainstem (MS) of Buffalo, Cheyenne, Clay, Gageby, Two Butte, Wildhorse and Wolf Cks from sources to the Ark. R. MS of Chacuacho, San Francisco, Trinchera and Van Bremer Cks from sources to the Purgatoire R. MS of Willow Ck from HWY 287 to the confl. with the Ark. R. MS of Big Sandy Creek from source to the El Paso/Elbert cty line. MS of South Rush Ck from source to the confl. with Rush Ck. MS of Middle Rush Ck from source to the confl. with North Rush Ck. North Rush Ck from source to the confl. with South Rush Ck. MS of Rush Ck to the Lincoln cty Line. MS of Antelope Ck from source to the confluence with Rush Ck; the West May Valley drain from Fort Lyon Canal to the confl. with the Ark. R. |

| Affected Use | Analyte | Category / List [2] | Priority |
|---|---|---|---|
| Aquatic Life Use | Selenium (Dissolved) | 5. - 303(d) | L |
| Water Supply Use | Arsenic (Total) | 5. - 303(d) | H |
| Water Supply Use | Manganese (Dissolved) | 5. - 303(d) | L |

Listed portion: [1] **COARLA09a_B** Mainstem of Horse Creek

| Affected Use | Analyte | Category / List [2] | Priority |
|---|---|---|---|
| Water Supply Use | Sulfate | 3b. - M&E list | NA |
| Water Supply Use | Uranium (Total) | 3b. - M&E list | NA |
| Aquatic Life Use | Selenium (Dissolved) | 5. - 303(d) | L |
| Water Supply Use | Arsenic (Total) | 5. - 303(d) | H |
| Aquatic Life Use | Iron (Total) | 5. - 303(d) | H |
| Water Supply Use | Manganese (Dissolved) | 5. - 303(d) | NA |

April 2, 2019

1:36,112

**GrazingYak0021201EQUIP_Project_bdy**

- Override 1
- 303(d) Point
- 303(d) Line
- 303(d) Area
- 305(b) Point
- 305(b) Line
- 305(b) Area
- Streams
- Subwatersheds

0 0.45 0.9 1.8 mi

0 0.5 1 2 km

US EPA
Sources: Esri, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap and the GIS user community

Brad Cooper

Esri, NASA, NGA, USGS, FEMA | Esri, HERE, Garmin, INCREMENT P, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA | US EPA

# Attachment E

## Site Plans, Grading and Erosion Control Plans, Details, and Spill Response Information

# Grazing Yak

El Paso County, Colorado

# Grading & Erosion Control Plan - Issued For Permit

| PROJECT CONTACT INFORMATION | | | | |
|---|---|---|---|---|
| CONSULTANT | COMPANY | ADDRESS | NAME | PHONE NO. |
| APPLICANT (CONTRACTOR) | MORTENSON CONSTRUCTION | 1621 18TH ST SUITE 400 DENVER, CO 80202 | TRENT MOSTAERT | 763-287-3439 |
| CIVIL ENGINEER | WESTWOOD | 10170 CHURCH RANCH WAY SUITE 100 WESTMINSTER, CO 80021 | BRENDAN MILLER | 720-531-8355 |
| LAND OWNER | GRAZING YAK SOLAR, LLC | 700 UNIVERSE BLVD JUNO BEACH, FL 33408 | JOHN DIDONATO | 561-814-7287 |

| DATA SET INFORMATION | | | |
|---|---|---|---|
| BASE FILE | FILE NAME | PROVIDER | DATE |
| PV ARRAY | 0021201E-EQUIP.dwg | WESTWOOD | 3/21/2019 |
| TOPO | 0021201ECON.dwg | WESTWOOD | 3/18/2019 |

| Plan Sheet Index | | |
|---|---|---|
| Sheet Number | Sheet Title | Sheet Number |
| CVP01 | Cover Sheet | 1 |
| SPPOA | Overall Site Grading & Erosion Control Plan | 2 |
| SPP01 | Grading & Erosion Control - Sheet 1 | 3 |
| SPP02 | Grading & Erosion Control - Sheet 2 | 4 |
| SPP03 | Grading & Erosion Control - Sheet 3 | 5 |
| SPP04 | Grading & Erosion Control - Sheet 4 | 6 |
| SPP05 | Grading & Erosion Control - Sheet 5 | 7 |
| SPP06 | Grading & Erosion Control - Sheet 6 | 8 |
| SPP07 | Grading & Erosion Control - Sheet 7 | 9 |
| ND01 | Notes and Details - Sheet 1 | 10 |
| ND02 | Notes and Details - Sheet 2 | 11 |
| ND03 | Notes and Details - Sheet 3 | 12 |
| ND04 | Notes and Details - Sheet 4 | 13 |
| ND05 | Notes and Details - Sheet 5 | 14 |
| ND06 | Notes and Details - Sheet 6 | 15 |

## PROJECT DESCRIPTION

35 MW-AC SINGLE-AXIS TRACKER SOLAR PROJECT

PROJECT AREA: ±280 ACRES INCLUDING "LIMITS OF CONSTRUCTION"

## GENERAL NOTES:

1. ALL PHOTOVOLTAIC (PV), ELECTRICAL OR STRUCTURAL EQUIPMENT LOCATIONS SHOWN ON THESE PLANS ARE APPROXIMATE AND SOLELY CONCEPTUAL AT THIS TIME AND MAY BE SUBJECT TO CHANGE PENDING FINAL FACILITY DESIGN AND/OR UTILITY INTERCONNECTION REQUIREMENTS.
2. TREES ARE NOT OBSERVED WITHIN THE PV ARRAY AREAS. IF NECESSARY, TREES AND SHRUBS ARE TO BE REMOVED AS NECESSARY TO ALLOW FOR THE INSTALLATION OF THE ARRAYS AND TO ELIMINATE SHADING.
3. SHADED AREAS OUTSIDE THE LIMITS OF CONSTRUCTION SHALL NOT BE DISTURBED. CONSTRUCTION FENCE OR CONSTRUCTION MARKERS TO DELINEATE LIMITS OF CONSTRUCTION SHALL BE INSTALLED PRIOR TO ANY WORK ON SITE.
4. ANY AREAS DISTURBED WILL BE SEEDED WITH A MEADOW GRASS SEED MIX THAT WILL IMPROVE RUNOFF FROM THE EXISTING CONDITIONS, SLOWING DOWN THE RUNOFF AND ALLOWING FOR ADDITIONAL ONSITE INFILTRATION. SEE URBAN DRAINAGE VOLUME 3 FOR APPLICABLE SEED MIX AT TIME OF PLANTING.
5. PRIOR TO DEMOBILIZATION FROM THE SITE, THE CONTRACTOR SHALL REMOVE AND PROPERLY DISPOSE INSTALLED BMP'S, INCLUDING BUT NOT LIMITED TO STRAW WATTLES.
6. SITE BENCHMARK TO BE ESTABLISHED PRIOR TO CONSTRUCTION.

## LANDOWNERS ACKNOWLEDGEMENT:

I HEREBY CERTIFY THAT THE GRADING, EROSION, AND SEDIMENT CONTROL MEASURES SHALL BE CONSTRUCTED ACCORDING TO THE DESIGN PRESENTED IN THIS DOCUMENT. I UNDERSTAND THAT ADDITIONAL EROSION CONTROL, SEDIMENT CONTROL AND WATER QUALITY ENHANCING MEASURES MAY BE REQUIRED OF THE OWNER AND HIS OR HER AGENTS DUE TO UNFORESEEN POLLUTANT DISCHARGES OR IF THE SUBMITTED PLAN DOES NOT FUNCTION AS INTENDED. THE REQUIREMENTS OF THE PLAN SHALL BE THE OBLIGATION OF THE LAND OWNER AND/OR HIS SUCCESSORS OR HEIRS; UNTIL SUCH TIME AS THE PLAN IS PROPERLY COMPLETED, MODIFIED OR VOIDED.

OWNER OR AUTHORIZED AGENT _____

AUTHORIZED SIGNATURE DATE _____

## ENGINEER'S SIGNATURE:

I HEREBY ATTEST THAT THIS GRADING, EROSION, AND SEDIMENT CONTROL (GESC) DOCUMENT FOR GRAZING YAK SOLAR HAS BEEN PREPARED BY ME OR UNDER MY DIRECT SUPERVISION, AND TO THE BEST OF MY KNOWLEDGE AND ABILITY HAS BEEN PREPARED IN ACCORDANCE WITH THE LATEST VERSION OF THE EL PASO COUNTY GESC MANUAL. THE SIGNATURE AND STAMP AFFIXED HEREON CERTIFIES THAT THIS GESC DOCUMENT WAS PREPARED IN ACCORDANCE WITH THE REQUIRED REGULATIONS AND CRITERIA; HOWEVER, THE STAMP AND SIGNATURE DOES NOT CERTIFY OR GUARANTEE FUTURE PERFORMANCE OF THE EXECUTION OF THE PLAN BY THE CONTRACTOR. THE CONTRACTOR IS RESPONSIBLE FOR EXECUTING THE CONSTRUCTION WORK ACCORDING TO THE INFORMATION SET FORTH IN THE PLAN AND IN ACCORDANCE WITH ALL APPLICABLE REQUIREMENTS.

REGISTERED PROFESSIONAL ENGINEER BRENDAN D. MILLER, P.E.

STATE OF COLORADO NO. 44186
AFFIX SEAL W/DATE

COLORADO LICENSED
BRENDAN DEAN MILLER
44186
PROFESSIONAL ENGINEER
04/22/2019

## EL PASO COUNTY GRADING AND EROSION CONTROL PLAN NOTES

1. STORMWATER DISCHARGES FROM CONSTRUCTION SITES SHALL NOT CAUSE OR THREATEN TO CAUSE POLLUTION, CONTAMINATION, OR DEGRADATION OF STATE WATERS. ALL WORK AND EARTH DISTURBANCE SHALL BE DONE IN A MANNER THAT MINIMIZES POLLUTION OF ANY ON-SITE OR OFFSITE WATERS, INCLUDING WETLANDS.
2. NOTWITHSTANDING ANYTHING DEPICTED IN THESE PLANS IN WORDS OR GRAPHIC REPRESENTATION, ALL DESIGN AND CONSTRUCTION RELATED TO ROADS, STORM DRAINAGE AND EROSION CONTROL SHALL CONFORM TO THE STANDARDS AND REQUIREMENTS OF THE MOST RECENT VERSION OF THE RELEVANT ADOPTED EL PASO COUNTY STANDARDS, INCLUDING THE LAND DEVELOPMENT CODE, THE ENGINEERING CRITERIA MANUAL, THE DRAINAGE CRITERIA MANUAL, AND THE DRAINAGE CRITERIA MANUAL VOLUME 2. ANY DEVIATIONS TO REGULATIONS AND STANDARDS MUST BE REQUESTED, AND APPROVED, IN WRITING.
3. A SEPARATE STORMWATER MANAGEMENT PLAN (SMWP) FOR THIS PROJECT SHALL BE COMPLETED AND AN EROSION AND STORMWATER QUALITY CONTROL PERMIT (ESQCP) ISSUED PRIOR TO COMMENCING CONSTRUCTION. DURING CONSTRUCTION THE SWMP IS THE RESPONSIBILITY OF THE DESIGNATED QUALIFIED STORMWATER MANAGER OR CERTIFIED EROSION CONTROL INSPECTOR AND SHALL BE LOCATED ON SITE AT ALL TIMES DURING CONSTRUCTION AND SHALL BE KEPT UP TO DATE WITH WORK PROGRESS AND CHANGES IN THE FIELD.
4. ONCE THE ESQCP IS APPROVED AND A "NOTICE TO PROCEED" HAS BEEN ISSUED, THE CONTRACTOR MAY INSTALL THE INITIAL STAGE EROSION AND SEDIMENT CONTROL MEASURES AS INDICATED ON THE APPROVED GEC. A PRECONSTRUCTION MEETING BETWEEN THE CONTRACTOR, ENGINEER, AND EL PASO COUNTY WILL BE HELD PRIOR TO ANY CONSTRUCTION. IT IS THE RESPONSIBILITY OF THE APPLICANT TO COORDINATE THE MEETING TIME AND PLACE WITH COUNTY STAFF.
5. CONTROL MEASURES MUST BE INSTALLED PRIOR TO COMMENCEMENT OF ACTIVITIES THAT MAY CONTRIBUTE POLLUTANTS TO STORMWATER. TEMPORARY SEDIMENT AND EROSION CONTROL MEASURES FOR ALL SLOPES, CHANNELS, DITCHES, OR ANY DISTURBED LAND AREA SHALL BE COMPLETED IMMEDIATELY UPON COMPLETION OF THE DISTURBANCE.
6. ALL TEMPORARY SEDIMENT AND EROSION CONTROL MEASURES SHALL BE MAINTAINED AND REMAIN IN EFFECTIVE OPERATING CONDITION UNTIL PERMANENT SOIL EROSION CONTROL MEASURES ARE IMPLEMENTED AND FINAL STABILIZATION IS ESTABLISHED. ALL PERSONS ENGAGED IN LAND DISTURBANCE ACTIVITIES SHALL ASSESS THE ADEQUACY OF CONTROL MEASURES AT THE SITE AND IDENTIFY IF CHANGES TO THOSE CONTROL MEASURES IS NEEDED TO ENSURE THE CONTINUED EFFECTIVE PERFORMANCE OF THE CONTROL MEASURES. ALL CHANGES TO TEMPORARY SEDIMENT AND EROSION CONTROL MEASURES MUST BE INCORPORATED INTO THE STORMWATER MANAGEMENT PLAN PRIOR TO IMPLEMENTATION.
7. TEMPORARY STABILIZATION SHALL BE IMPLEMENTED ON DISTURBED AREAS AND STOCKPILES WHERE GROUND DISTURBING CONSTRUCTION ACTIVITY HAS PERMANENTLY CEASED OR TEMPORARILY CEASED FOR LONGER THAN 14 DAYS. AN AREA THAT IS GOING TO REMAIN IN AN INTERIM STATE FOR MORE THAN 60 DAYS SHALL ALSO BE STABILIZED.
8. 8. FINAL STABILIZATION MUST BE IMPLEMENTED AT ALL APPLICABLE CONSTRUCTION SITES. FINAL STABILIZATION IS ACHIEVED WHEN ALL GROUND DISTURBING ACTIVITIES ARE COMPLETE AND ALL DISTURBED AREAS EITHER HAVE A UNIFORM VEGETATIVE COVER WITH INDIVIDUAL PLAN DENSITY OF 70 PERCENT OF PRE-DISTURBANCE LEVELS ESTABLISHED OR EQUIVALENT PERMANENT ALTERNATIVE STABILIZATION METHOD IS IMPLEMENTED. ALL TEMPORARY SEDIMENT AND EROSION CONTROL MEASURES SHALL BE REMOVED UPON FINAL STABILIZATION AND BEFORE PERMIT CLOSURE.
9. ALL PERMANENT STORMWATER MANAGEMENT FACILITIES SHALL BE INSTALLED AS DEFINED IN THE APPROVED PLANS. ANY PROPOSED CHANGES THAT EFFECT THE HYDROLOGY OR HYDRAULICS OF A PERMANENT STORMWATER MANAGEMENT STRUCTURES MUST BE APPROVED BY THE ECM ADMINISTRATOR PRIOR TO IMPLEMENTATION.
10. ANY EARTH DISTURBANCE SHALL BE CONDUCTED IN SUCH A MANNER SO AS TO EFFECTIVELY MINIMIZE ACCELERATED SOIL EROSION AND RESULTING SEDIMENTATION. ALL DISTURBANCES SHALL BE DESIGNED, CONSTRUCTED, AND COMPLETED SO THAT THE EXPOSED AREA OF ANY DISTURBED LAND SHALL BE LIMITED TO THE SHORTEST PRACTICAL PERIOD OF TIME. PRE-EXISTING VEGETATION SHALL BE PROTECTED AND MAINTAINED WITHIN 50 HORIZONTAL FEET OF A WATERS OF THE STATE, UNLESS INFEASIBLE.
11. COMPACTION OF SOIL MUST BE PREVENTED IN AREAS DESIGNATED FOR INFILTRATION CONTROL MEASURES OR WHERE FINAL STABILIZATION WILL BE ACHIEVED BY VEGETATIVE COVER. AREAS DESIGNATED FOR INFILTRATION CONTROL SHALL ALSO BE PROTECTED FROM SEDIMENTATION DURING CONSTRUCTION UNTIL FINAL STABILIZATION IS ACHIEVED.
12. ANY TEMPORARY OR PERMANENT FACILITY DESIGNED AND CONSTRUCTED FOR THE CONVEYANCE OF STORMWATER AROUND, THROUGH, OR FROM THE EARTH DISTURBANCE AREA SHALL BE A STABILIZED CONVEYANCE DESIGNED TO MINIMIZE EROSION AND THE DISCHARGE OF SEDIMENT OFF SITE.
13. CONCRETE WASH WATER SHALL BE CONTAINED AND DISPOSED OF IN ACCORDANCE WITH THE SWMP. NO WASH WATER SHALL BE DISCHARGED TO OR ALLOWED TO RUNOFF TO STATE WATERS, INCLUDING ANY SURFACE OR SUBSURFACE STORM DRAINAGE SYSTEM OR FACILITIES. CONCRETE WASHOUT SHALL NOT BE LOCATED IN AN AREA WHERE SHALLOW GROUNDWATER MAY BE PRESENT, OR WITHIN 50 FEET OF A SURFACE WATER BODY.
14. DEWATERING OPERATIONS: UNCONTAMINATED GROUND WATER MAY BE DISCHARGED ON SITE, BUT MAY NOT LEAVE THE SITE IN THE FORM OF SURFACE RUNOFF.
15. EROSION CONTROL BLANKETING IS TO BE USED ON SLOPES STEEPER THAN 3:1.
16. 6. BUILDING, CONSTRUCTION, EXCAVATION, OR OTHER WASTE MATERIALS SHALL NOT BE TEMPORARILY PLACED OR STORED IN THE STREET, ALLEY, OR OTHER PUBLIC WAY, UNLESS IN ACCORDANCE WITH AN APPROVED TRAFFIC CONTROL PLAN. BMP'S MAY BE REQUIRED BY EL PASO COUNTY ENGINEERING IF DEEMED NECESSARY, BASED ON SPECIFIC CONDITIONS AND CIRCUMSTANCES.
17. VEHICLE TRACKING OF SOILS AND CONSTRUCTION DEBRIS OFF-SITE SHALL BE MINIMIZED. MATERIALS TRACKED OFFSITE SHALL BE CLEANED UP AND PROPERLY DISPOSED OF IMMEDIATELY.
18. CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL OF ALL WASTES FROM THE CONSTRUCTION SITE FOR DISPOSAL IN ACCORDANCE WITH LOCAL AND STATE REGULATORY REQUIREMENTS. NO CONSTRUCTION DEBRIS, TREE SLASH, BUILDING MATERIAL WASTES OR UNUSED BUILDING MATERIALS SHALL BE BURIED, DUMPED, OR DISCHARGED AT THE SITE.
19. THE OWNER, SITE DEVELOPER, CONTRACTOR, AND/OR THEIR AUTHORIZED AGENTS SHALL BE RESPONSIBLE FOR THE REMOVAL OF ALL CONSTRUCTION DEBRIS, DIRT, TRASH, ROCK, SEDIMENT, AND SAND THAT MAY ACCUMULATE IN THE STORM SEWER OR OTHER DRAINAGE CONVEYANCE SYSTEM AND STORMWATER APPURTENANCES AS A RESULT OF SITE DEVELOPMENT.
20. THE QUANTITY OF MATERIALS STORED ON THE PROJECT SITE SHALL BE LIMITED, AS MUCH AS PRACTICAL, TO THAT QUANTITY REQUIRED TO PERFORM THE WORK IN AN ORDERLY SEQUENCE. ALL MATERIALS STORED ON-SITE SHALL BE STORED IN A NEAT, ORDERLY MANNER, IN THEIR ORIGINAL CONTAINERS, WITH ORIGINAL MANUFACTURER'S LABELS.
21. NO CHEMICALS ARE TO BE USED BY THE CONTRACTOR, WHICH HAVE THE POTENTIAL TO BE RELEASED IN STORMWATER UNLESS PERMISSION FOR THE USE OF A SPECIFIC CHEMICAL IS GRANTED IN WRITING BY THE ECM ADMINISTRATOR. IN GRANTING THE USE OF SUCH CHEMICALS, SPECIAL CONDITIONS AND MONITORING MAY BE REQUIRED.
22. BULK STORAGE OF PETROLEUM PRODUCTS OR OTHER LIQUID CHEMICALS IN EXCESS OF 55 GALLONS SHALL HAVE ADEQUATE SECONDARY CONTAINMENT PROTECTION TO CONTAIN ALL SPILLS AND PREVENT ANY SPILLED MATERIAL FROM ENTERING STATE WATERS, INCLUDING ANY SURFACE OR SUBSURFACE STORM DRAINAGE SYSTEM OR FACILITIES.
23. NO PERSON SHALL CAUSE THE IMPEDIMENT OF STORMWATER FLOW IN THE FLOW LINE OF THE CURB AND GUTTER OR IN THE DITCH FLOW LINE.
24. INDIVIDUALS SHALL COMPLY WITH THE "COLORADO WATER QUALITY CONTROL ACT" (TITLE 25, ARTICLE 8, CRS), AND THE "CLEAN WATER ACT" (33 USC 1344), IN ADDITION TO THE REQUIREMENTS INCLUDED IN THE DCM VOLUME II AND THE ECM APPENDIX I. ALL APPROPRIATE PERMITS MUST BE OBTAINED BY THE CONTRACTOR PRIOR TO CONSTRUCTION (NPDES, FLOODPLAIN, 404, FUGITIVE DUST, ETC.). IN THE EVENT OF CONFLICTS BETWEEN THESE REQUIREMENTS AND LAWS, RULES, OR REGULATIONS OF OTHER FEDERAL, STATE, OR COUNTY AGENCIES, THE MORE RESTRICTIVE LAWS, RULES, OR REGULATIONS SHALL APPLY.
25. ALL CONSTRUCTION TRAFFIC MUST ENTER/EXIT THE SITE AT APPROVED CONSTRUCTION ACCESS POINTS.
26. PRIOR TO ACTUAL CONSTRUCTION THE PERMITEE SHALL VERIFY THE LOCATION OF EXISTING UTILITIES.
27. A WATER SOURCE SHALL BE AVAILABLE ON SITE DURING EARTHWORK OPERATIONS AND UTILIZED AS REQUIRED TO MINIMIZE DUST FROM EARTHWORK EQUIPMENT AND WIND.
28. THE SOILS REPORT FOR THIS SITE HAS BEEN PREPARED BY TERRACON CONSULTANTS DATED SEPTEMBER 2018 AND SHALL BE CONSIDERED A PART OF THESE PLANS.
29. AT LEAST TEN (10) DAYS PRIOR TO THE ANTICIPATED START OF CONSTRUCTION, FOR PROJECTS THAT WILL DISTURB 1 ACRE OR MORE, THE OWNER OR OPERATOR OF CONSTRUCTION ACTIVITY SHALL SUBMIT A PERMIT APPLICATION FOR STORMWATER DISCHARGE TO THE COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT, WATER QUALITY DIVISION. THE APPLICATION CONTAINS CERTIFICATION OF COMPLETION OF A STORMWATER MANAGEMENT PLAN (SWMP), OF WHICH THIS

## REGIONAL MAP

## VICINITY MAP

Westwood

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**Grazing Yak Solar**

El Paso County, Colorado

Cover Sheet

Not For Construction

DATE: 04/22/2019

SHEET: **CVP01**

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## LEGEND & ABBREVIATIONS

- PROJECT BOUNDARY LINE
- PROPOSED SOLAR TRACKER
- PROPOSED GRAVEL ACCESS RD.
- PROPOSED DIRT ACCESS RD.
- X — PROPOSED FENCE LINE
- PROPOSED PROTECTED CROSSING
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- FO — EX. FIBER OPTIC LINE
- EX. GRAVEL ROAD
- EDGE OF ASPHALT
- EX. ASPHALT PAVEMENT ROAD
- EX. BERM
- FLOW DIRECTION

| Existing Topo Flood Depths | | |
|---|---|---|
| 0.500' | 1.000' | |
| 1.000' | 1.500' | |
| 1.500' | 2.000' | |
| 2.000' | 2.500' | |
| 2.500' | 3.000' | |
| 3.000' | 5.000' | |

**VICINITY MAP**
Scale: 1" = 5000'


Westwood
Phone (720) 531-8350
10170 Church Ranch Way, Suite #100
Westminster, CO 80021
westwoodps.com
Westwood Professional Services, Inc.


COLORADO LICENSED
BRENDAN RYAN MILLER
44186
PROFESSIONAL ENGINEER
04/22/2019

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N

0' 300' 600' 900'

# Grazing Yak Solar

El Paso County, Colorado

Overall Site Grading & Erosion Control Plan

Not For Construction

DATE: 04/22/2019

SHEET: SPPOA

See Plan View 2 (This Sheet)

1 Plan View 1
1" = 300'

See Plan View 1 (This Sheet)

See Plan View 3 (This Sheet)

2 Plan View 2
1" = 300'

See Plan View 2 (This Sheet)

3 Plan View 3
1" = 300'

## LEGEND & ABBREVIATIONS

- EX. PROJECT BOUNDARY LINE
- INVERTER BLOCK BOUNDARY
- P-PUG-1 — PROPOSED UNDERGROUND CIRCUIT 1
- P-PUG-2 — PROPOSED UNDERGROUND CIRCUIT 2
- X — EX. FENCE LINE
- PROPOSED SOLAR TRACKER
- BOUNDARY SET BACK LINE 10M
- BOUNDARY SET BACK LINE 15M
- PROPOSED GRAVEL ACCESS RD. (2500 FT.)
- PROPOSED DIRT ACCESS RD. (13,425 FT.)
- PROPOSED CAB
- PROPOSED SECONDARY CAB
- PROPOSED LAYDOWN AREA
- SF — PROPOSED SILT FENCE LINE
- PROPOSED PROTECTED CROSSING
- PROPOSED VELOCITY DISSIPATER
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**VICINITY MAP**
Scale: 1" = 5000'

| Existing Topo Flood Depths | | |
|---|---|---|
| 0.500' | 1.000' | |
| 1.000' | 1.500' | |
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Westminster, CO 80021
westwoodps.com

Westwood Professional Services, Inc.


COLORADO LICENSED
BRENNAN RYAN MILLER
44186
PROFESSIONAL ENGINEER
04/22/2019

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# Grazing Yak Solar

El Paso County, Colorado

Sheet Index

Not For Construction

DATE: 04/22/2019

SHEET: SPINDX

SEE SHEET C.301

SEE SHEET C.302

## LEGEND & ABBREVIATIONS

- PROJECT BOUNDARY LINE
- PROPOSED SOLAR TRACKER
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- EX. BERM
- EX. WATERWAY
- FEMA FLOODPLAIN

## EROSION CONTROL LEGEND

- FLOW DIRECTION ARROW
- TEMPORARY CONSTRUCTION FENCE — CF
- SF — SILT FENCE — SF
- PROPOSED EARTHEN BERM — EB
- STABILIZED STAGING AREA — SSA
- VEHICLE TRACKING CONTROL — VTC
- SEEDING AND MULCHING (INCLUDE AS REQUIRED) — SM
- EROSION CONTROL BLANKET — ECB
- SEDIMENT TRAP — ST
- PROPOSED VELOCITY DISSIPATER
- XX / X.XX ac-ft. — TEMPORARY SEDIMENT BASINS (Contractor to determine grading limits to provide volume requirement stated in SWMP).

**KEYMAP**
**Scale: 1"=1500'**


Westwood

Phone (720) 531-8350
10170 Church Ranch Way, Suite #100
Westminster, CO 80021
westwoodps.com

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COLORADO LICENSED
BRENNAN RYAN MILLER
44186
PROFESSIONAL ENGINEER
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0' 80' 160' 240'

# Grazing Yak Solar

El Paso County, Colorado

Grading & Erosion Control - Sheet 1

Not For Construction

DATE: 04/22/2019

SHEET: SPP01

## LEGEND & ABBREVIATIONS

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## EROSION CONTROL LEGEND

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**KEYMAP**
**Scale: 1"=1500'**


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Phone (720) 531-8350
10170 Church Ranch Way, Suite #100
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BRENNAN RYAN MILLER
44186
PROFESSIONAL ENGINEER
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# Grazing Yak Solar

El Paso County, Colorado

Grading & Erosion Control - Sheet 2

Not For Construction

DATE: 04/22/2019

SHEET: SPP02

## LEGEND & ABBREVIATIONS

- PROJECT BOUNDARY LINE
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## EROSION CONTROL LEGEND

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- XX / X.XX ac-ft. — TEMPORARY SEDIMENT BASINS (Contractor to determine grading limits to provide volume requirement stated in SWMP).

**KEYMAP**
**Scale: 1"=1500'**


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44186
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# Grazing Yak Solar

El Paso County, Colorado

Grading & Erosion Control - Sheet 3

Not For Construction

DATE: 04/22/2019

SHEET: SPP03

## LEGEND & ABBREVIATIONS

- PROJECT BOUNDARY LINE
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**Scale: 1"=1500'**


**Westwood**

Phone (720) 531-8350
10170 Church Ranch Way, Suite #100
Westminster, CO 80021
westwoodps.com

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# Grazing Yak Solar

El Paso County, Colorado

Grading & Erosion Control - Sheet 4

Not For Construction

DATE: 04/22/2019

SHEET: SPP04

## LEGEND & ABBREVIATIONS

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Phone (720) 531-8350
10170 Church Ranch Way, Suite #100
Westminster, CO 80021
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BRENNAN RYAN MILLER
44186
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# Grazing Yak Solar

El Paso County, Colorado

Grading & Erosion Control - Sheet 5

Not For Construction

DATE: 04/22/2019

SHEET: SPP05

## LEGEND & ABBREVIATIONS

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# Grazing Yak Solar

El Paso County, Colorado

Grading & Erosion Control - Sheet 6

Not For Construction

DATE: 04/22/2019

SHEET: SPP06

## LEGEND & ABBREVIATIONS

- PROJECT BOUNDARY LINE
- PROPOSED SOLAR TRACKER
- PROPOSED GRAVEL ACCESS RD.
- PROPOSED DIRT ACCESS RD.
- PROPOSED FENCE LINE
- PROPOSED PROTECTED CROSSING
- GL — PROPOSED GRADING LIMITS
- 340 — PROPOSED INDEX CONTOUR LINE
- PROPOSED INTERVAL CONTOUR LINE
- GL — PROPOSED GRADING LIMITS BORDER
- × 0.2 — PROPOSED CUT VALUE
- × 0.3 — PROPOSED FILL VALUE
- 6775 — EX. INDEX CONTOUR LINE
- EX. INTERVAL CONTOUR LINE
- EX. EASEMENT LINE
- SECTION BOUNDARY LINE
- X — EX. FENCE LINE
- POH — EX. OVERHEAD POWERLINE
- PUG — EX. UNDERGROUND ELEC. LINE
- FO — EX. FIBER OPTIC LINE
- EX. GRAVEL ROAD
- EDGE OF ASPHALT
- EX. ASPHALT PAVEMENT ROAD
- EX. BERM
- EX. WATERWAY
- FEMA FLOODPLAIN

## EROSION CONTROL LEGEND

| | | |
|---|---|---|
| | FLOW DIRECTION ARROW | |
| | TEMPORARY CONSTRUCTION FENCE | CF |
| SF | SILT FENCE | SF |
| | PROPOSED EARTHEN BERM | EB |
| | STABILIZED STAGING AREA | SSA |
| | VEHICLE TRACKING CONTROL | VTC |
| | SEEDING AND MULCHING (INCLUDE AS REQUIRED) | SM |
| | EROSION CONTROL BLANKET | ECB |
| | SEDIMENT TRAP | ST |
| | PROPOSED VELOCITY DISSIPATER | |
| XX / X.XX ac-ft. | TEMPORARY SEDIMENT BASINS (Contractor to determine grading limits to provide volume requirement stated in SWMP). | |

**KEYMAP**
**Scale: 1"=1500'**


**Westwood**

Phone (720) 531-8350
10170 Church Ranch Way, Suite #100
Westminster, CO 80021
westwoodps.com

Westwood Professional Services, Inc.


COLORADO LICENSED
BRENNAN RYAN MILLER
44186
PROFESSIONAL ENGINEER
04/22/2019

PREPARED FOR:

Mortenson construction

NEXTera ENERGY

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0' 80' 160' 240'

# Grazing Yak Solar

El Paso County, Colorado

Grading & Erosion Control - Sheet 7

Not For Construction

DATE: 04/22/2019

SHEET: SPP07

## LEGEND & ABBREVIATIONS

- PROJECT BOUNDARY LINE
- PROPOSED SOLAR TRACKER
- PROPOSED GRAVEL ACCESS RD.
- PROPOSED DIRT ACCESS RD.
- PROPOSED FENCE LINE
- PROPOSED PROTECTED CROSSING
- GL — PROPOSED GRADING LIMITS
- 340 — PROPOSED INDEX CONTOUR LINE
- PROPOSED INTERVAL CONTOUR LINE
- GL — PROPOSED GRADING LIMITS BORDER
- × 0.2 — PROPOSED CUT VALUE
- × 0.3 — PROPOSED FILL VALUE
- 6775 — EX. INDEX CONTOUR LINE
- EX. INTERVAL CONTOUR LINE
- EX. EASEMENT LINE
- SECTION BOUNDARY LINE
- X — EX. FENCE LINE
- POH — EX. OVERHEAD POWERLINE
- PUG — EX. UNDERGROUND ELEC. LINE
- FO — EX. FIBER OPTIC LINE
- EX. GRAVEL ROAD
- EDGE OF ASPHALT
- EX. ASPHALT PAVEMENT ROAD
- EX. BERM
- EX. WATERWAY
- FEMA FLOODPLAIN

## EROSION CONTROL LEGEND

- FLOW DIRECTION ARROW
- TEMPORARY CONSTRUCTION FENCE — CF
- SF — SILT FENCE — SF
- PROPOSED EARTHEN BERM — EB
- STABILIZED STAGING AREA — SSA
- VEHICLE TRACKING CONTROL — VTC
- SEEDING AND MULCHING (INCLUDE AS REQUIRED) — SM
- EROSION CONTROL BLANKET — ECB
- SEDIMENT TRAP — ST
- PROPOSED VELOCITY DISSIPATER
- XX / X.XX ac-ft. — TEMPORARY SEDIMENT BASINS (Contractor to determine grading limits to provide volume requirement stated in SWMP).

**KEYMAP**
**Scale: 1"=1500'**


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Phone (720) 531-8350
10170 Church Ranch Way, Suite #100
Westminster, CO 80021
westwoodps.com

Westwood Professional Services, Inc.


COLORADO LICENSED
BRENNAN RYAN MILLER
44186
PROFESSIONAL ENGINEER
04/22/2019

PREPARED FOR:

Mortenson construction

NEXTera ENERGY

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| . | | |

0' 80' 160' 240'

# Grazing Yak Solar

El Paso County, Colorado

Route to Interconnect
Erosion Control Plan-
Sheet 8

Not For Construction

DATE: 04/22/2019

SHEET: SPP08

## Vehicle Tracking Control (VTC) SM-4

VTC-1. AGGREGATE VEHICLE TRACKING CONTROL



## Stabilized Staging Area (SSA) SM-6

SSA-1. STABILIZED STAGING AREA

STABILIZED STAGING AREA INSTALLATION NOTES

1. SEE PLAN VIEW FOR
   -LOCATION OF STAGING AREA(S).
   -CONTRACTOR MAY ADJUST LOCATION AND SIZE OF STAGING AREA WITH APPROVAL FROM THE LOCAL JURISDICTION.

2. STABILIZED STAGING AREA SHOULD BE APPROPRIATE FOR THE NEEDS OF THE SITE. OVERSIZING RESULTS IN A LARGER AREA TO STABILIZE FOLLOWING CONSTRUCTION.

3. STAGING AREA SHALL BE STABILIZED PRIOR TO OTHER OPERATIONS ON THE SITE.

4. THE STABILIZED STAGING AREA SHALL CONSIST OF A MINIMUM 3" THICK GRANULAR MATERIAL.

5. UNLESS OTHERWISE SPECIFIED BY LOCAL JURISDICTION, ROCK SHALL CONSIST OF DOT SECT. #703, AASHTO #3 COARSE AGGREGATE OR 6" (MINUS) ROCK.

6. ADDITIONAL PERIMETER BMPs MAY BE REQUIRED INCLUDING BUT NOT LIMITED TO SILT FENCE AND CONSTRUCTION FENCING.

STABILIZED STAGING AREA MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.

2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.

3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.

4. ROCK SHALL BE REAPPLIED OR REGRADED AS NECESSARY IF RUTTING OCCURS OR UNDERLYING SUBGRADE BECOMES EXPOSED.



## Surface Roughening (SR) EC-1

SR-1. SURFACE ROUGHENING
FOR STEEP SLOPES (3:1 OR STEEPER)

SR-2. SURFACE ROUGHENING
FOR LOW SLOPES (LESS THAN 3:1)



## SM-4 Vehicle Tracking Control (VTC)

STABILIZED CONSTRUCTION ENTRANCE/EXIT INSTALLATION NOTES

1. SEE PLAN VIEW FOR
   -LOCATION OF CONSTRUCTION ENTRANCE(S)/EXIT(S).
   -TYPE OF CONSTRUCTION ENTRANCE(S)/EXITS(S) (WITH/WITHOUT WHEEL WASH, CONSTRUCTION MAT OR TRM).

2. CONSTRUCTION MAT OR TRM STABILIZED CONSTRUCTION ENTRANCES ARE ONLY TO BE USED ON SHORT DURATION PROJECTS (TYPICALLY RANGING FROM A WEEK TO A MONTH) WHERE THERE WILL BE LIMITED VEHICULAR ACCESS.

3. A STABILIZED CONSTRUCTION ENTRANCE/EXIT SHALL BE LOCATED AT ALL ACCESS POINTS WHERE VEHICLES ACCESS THE CONSTRUCTION SITE FROM PAVED RIGHT-OF-WAYS.

4. STABILIZED CONSTRUCTION ENTRANCE/EXIT SHALL BE INSTALLED PRIOR TO ANY LAND DISTURBING ACTIVITIES.

5. A NON-WOVEN GEOTEXTILE FABRIC SHALL BE PLACED UNDER THE STABILIZED CONSTRUCTION ENTRANCE/EXIT PRIOR TO THE PLACEMENT OF ROCK.

6. UNLESS OTHERWISE SPECIFIED BY LOCAL JURISDICTION, ROCK SHALL CONSIST OF DOT SECT. #703, AASHTO #3 COARSE AGGREGATE OR 6" (MINUS) ROCK.

STABILIZED CONSTRUCTION ENTRANCE/EXIT MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.

2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.

3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.

4. ROCK SHALL BE REAPPLIED OR REGRADED AS NECESSARY TO THE STABILIZED ENTRANCE/EXIT TO MAINTAIN A CONSISTENT DEPTH.

5. SEDIMENT TRACKED ONTO PAVED ROADS IS TO BE REMOVED THROUGHOUT THE DAY AND AT THE END OF THE DAY BY SHOVELING OR SWEEPING. SEDIMENT MAY NOT BE WASHED DOWN STORM SEWER DRAINS.

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

(DETAILS ADAPTED FROM CITY OF BROOMFIELD, COLORADO, NOT AVAILABLE IN AUTOCAD)



## SM-6 Stabilized Staging Area (SSA)

STABILIZED STAGING AREA MAINTENANCE NOTES

5. STABILIZED STAGING AREA SHALL BE ENLARGED IF NECESSARY TO CONTAIN PARKING, STORAGE, AND UNLOADING/LOADING OPERATIONS.

6. THE STABILIZED STAGING AREA SHALL BE REMOVED AT THE END OF CONSTRUCTION. THE GRANULAR MATERIAL SHALL BE REMOVED OR, IF APPROVED BY THE LOCAL JURISDICTION, USED ON SITE, AND THE AREA COVERED WITH TOPSOIL, SEEDED AND MULCHED OR OTHERWISE STABILIZED IN A MANNER APPROVED BY LOCAL JURISDICTION.

NOTE: MANY MUNICIPALITIES PROHIBIT THE USE OF RECYCLED CONCRETE AS GRANULAR MATERIAL FOR STABILIZED STAGING AREAS DUE TO DIFFICULTIES WITH RE-ESTABLISHMENT OF VEGETATION IN AREAS WHERE RECYCLED CONCRETE WAS PLACED.

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

(DETAILS ADAPTED FROM DOUGLAS COUNTY, COLORADO, NOT AVAILABLE IN AUTOCAD)


Westwood
Phone (720) 531-8350 10170 Church Ranch Way, Suite #100
Westminster, CO 80021
westwoodps.com
Westwood Professional Services, Inc.


COLORADO LICENSED BRENDAN RYAN MILES 44186 PROFESSIONAL ENGINEER
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# Grazing Yak Solar

El Paso County, Colorado

Notes and Details - Sheet 1

Not For Construction

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## SM-3 Construction Fence (CF)

CF–1. PLASTIC MESH CONSTRUCTION FENCE

CONSTRUCTION FENCE INSTALLATION NOTES

1. SEE PLAN VIEW FOR:
   –LOCATION OF CONSTRUCTION FENCE.

2. CONSTRUCTION FENCE SHOWN SHALL BE INSTALLED PRIOR TO ANY LAND DISTURBING ACTIVITIES.

3. CONSTRUCTION FENCE SHALL BE COMPOSED OF ORANGE, CONTRACTOR–GRADE MATERIAL THAT IS AT LEAST 4' HIGH. METAL POSTS SHOULD HAVE A PLASTIC CAP FOR SAFETY.

4. STUDDED STEEL TEE POSTS SHALL BE UTILIZED TO SUPPORT THE CONSTRUCTION FENCE. MAXIMUM SPACING FOR STEEL TEE POSTS SHALL BE 10'.

5. CONSTRUCTION FENCE SHALL BE SECURELY FASTENED TO THE TOP, MIDDLE, AND BOTTOM OF EACH POST.



## Silt Fence (SF) SC-1

SILT FENCE

SECTION A

SF–1. SILT FENCE



## Stockpile Management (SP) MM-2

SP–2. MATERIALS STAGING IN ROADWAY

MATERIALS STAGING IN ROADWAYS INSTALLATION NOTES

1. SEE PLAN VIEW FOR
   –LOCATION OF MATERIAL STAGING AREA(S).
   –CONTRACTOR MAY ADJUST LOCATION AND SIZE OF STAGING AREA WITH APPROVAL FROM THE LOCAL JURISDICTION.

2. FEATURE MUST BE INSTALLED PRIOR TO EXCAVATION, EARTHWORK OR DELIVERY OF MATERIALS.

3. MATERIALS MUST BE STATIONED ON THE POLY LINER. ANY INCIDENTAL MATERIALS DEPOSITED ON PAVED SECTION OR ALONG CURB LINE MUST BE CLEANED UP PROMPTLY.

4. POLY LINER AND TARP COVER SHOULD BE OF SIGNIFICANT THICKNESS TO PREVENT DAMAGE OR LOSS OF INTEGRITY.

5. SAND BAGS MAY BE SUBSTITUTED TO ANCHOR THE COVER TARP OR PROVIDE BERMING UNDER THE BASE LINER.

6. FEATURE IS NOT INTENDED FOR USE WITH WET MATERIAL THAT WILL BE DRAINING AND/OR SPREADING OUT ON THE POLY LINER OR FOR DEMOLITION MATERIALS.

7. THIS FEATURE CAN BE USED FOR:
   –UTILITY REPAIRS.
   –WHEN OTHER STAGING LOCATIONS AND OPTIONS ARE LIMITED.
   –OTHER LIMITED APPLICATION AND SHORT DURATION STAGING.



## Construction Fence (CF) SM-3

CONSTRUCTION FENCE MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.

2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.

3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.

4. CONSTRUCTION FENCE SHALL BE REPAIRED OR REPLACED WHEN THERE ARE SIGNS OF DAMAGE SUCH AS RIPS OR SAGS. CONSTRUCTION FENCE IS TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS STABILIZED AND APPROVED BY THE LOCAL JURISDICTION.

5. WHEN CONSTRUCTION FENCES ARE REMOVED, ALL DISTURBED AREAS ASSOCIATED WITH THE INSTALLATION, MAINTENANCE, AND/OR REMOVAL OF THE FENCE SHALL BE COVERED WITH TOPSOIL, SEEDED AND MULCHED, OR OTHERWISE STABILIZED AS APPROVED BY LOCAL JURISDICTION.

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCO STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

(DETAIL ADAPTED FROM TOWN OF PARKER, COLORADO, NOT AVAILABLE IN AUTOCAD)



## SC-1 Silt Fence (SF)

SILT FENCE INSTALLATION NOTES

1. SILT FENCE MUST BE PLACED AWAY FROM THE TOE OF THE SLOPE TO ALLOW FOR WATER PONDING. SILT FENCE AT THE TOE OF A SLOPE SHOULD BE INSTALLED IN A FLAT LOCATION AT LEAST SEVERAL FEET (2–5 FT) FROM THE TOE OF THE SLOPE TO ALLOW ROOM FOR PONDING AND DEPOSITION.

2. A UNIFORM 6" X 4" ANCHOR TRENCH SHALL BE EXCAVATED USING TRENCHER OR SILT FENCE INSTALLATION DEVICE. NO ROAD GRADERS, BACKHOES, OR SIMILAR EQUIPMENT SHALL BE USED.

3. COMPACT ANCHOR TRENCH BY HAND WITH A "JUMPING JACK" OR BY WHEEL ROLLING. COMPACTION SHALL BE SUCH THAT SILT FENCE RESISTS BEING PULLED OUT OF ANCHOR TRENCH BY HAND.

4. SILT FENCE SHALL BE PULLED TIGHT AS IT IS ANCHORED TO THE STAKES. THERE SHOULD BE NO NOTICEABLE SAG BETWEEN STAKES AFTER IT HAS BEEN ANCHORED TO THE STAKES.

5. SILT FENCE FABRIC SHALL BE ANCHORED TO THE STAKES USING 1" HEAVY DUTY STAPLES OR NAILS WITH 1" HEADS. STAPLES AND NAILS SHOULD BE PLACED 3" ALONG THE FABRIC DOWN THE STAKE.

6. AT THE END OF A RUN OF SILT FENCE ALONG A CONTOUR, THE SILT FENCE SHOULD BE TURNED PERPENDICULAR TO THE CONTOUR TO CREATE A "J–HOOK." THE "J–HOOK" EXTENDING PERPENDICULAR TO THE CONTOUR SHOULD BE OF SUFFICIENT LENGTH TO KEEP RUNOFF FROM FLOWING AROUND THE END OF THE SILT FENCE (TYPICALLY 10' – 20').

7. SILT FENCE SHALL BE INSTALLED PRIOR TO ANY LAND DISTURBING ACTIVITIES.

SILT FENCE MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.

2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.

3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.

4. SEDIMENT ACCUMULATED UPSTREAM OF THE SILT FENCE SHALL BE REMOVED AS NEEDED TO MAINTAIN THE FUNCTIONALITY OF THE BMP, TYPICALLY WHEN DEPTH OF ACCUMULATED SEDIMENTS IS APPROXIMATELY 6".

5. REPAIR OR REPLACE SILT FENCE WHEN THERE ARE SIGNS OF WEAR, SUCH AS SAGGING, TEARING, OR COLLAPSE.

6. SILT FENCE IS TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS STABILIZED AND APPROVED BY THE LOCAL JURISDICTION, OR IS REPLACED BY AN EQUIVALENT PERIMETER SEDIMENT CONTROL BMP.

7. WHEN SILT FENCE IS REMOVED, ALL DISTURBED AREAS SHALL BE COVERED WITH TOPSOIL, SEEDED AND MULCHED OR OTHERWISE STABILIZED AS APPROVED BY LOCAL JURISDICTION.

(DETAIL ADAPTED FROM TOWN OF PARKER, COLORADO AND CITY OF AURORA, NOT AVAILABLE IN AUTOCAD)

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCO STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.



## MM-2 Stockpile Management (SM)

MATERIALS STAGING IN ROADWAY MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.

2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.

3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.

4. INSPECT PVC PIPE ALONG CURB LINE FOR CLOGGING AND DEBRIS. REMOVE OBSTRUCTIONS PROMPTLY.

5. CLEAN MATERIAL FROM PAVED SURFACES BY SWEEPING OR VACUUMING.

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCO STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

(DETAILS ADAPTED FROM AURORA, COLORADO)



Westwood
Phone (720) 531-8350 10170 Church Ranch Way, Suite #100
Westminster, CO 80021
westwoodps.com
Westwood Professional Services, Inc.

COLORADO LICENSED BRENDAN RYAN MILLER 44186 PROFESSIONAL ENGINEER
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# Grazing Yak Solar

El Paso County, Colorado

Notes and Details - Sheet 2

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DATE: 04/22/2019

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SEDIMENT TRAP PLAN

SECTION A

SECTION B

ST–1. SEDIMENT TRAP

SEDIMENT BASIN PLAN

*EXCEPT WHERE THE HOLES EXCEED 1" DIAMETER, THEN UP TO TWO COLUMNS OF SAME SIZED HOLES MAY BE USED




SECTION A

SEDIMENT BASIN MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.

2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.

3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.

4. SEDIMENT ACCUMULATED IN BASIN SHALL BE REMOVED AS NEEDED TO MAINTAIN BMP EFFECTIVENESS, TYPICALLY WHEN SEDIMENT DEPTH REACHES ONE FOOT (I.E., TWO FEET BELOW THE SPILLWAY CREST).

5. SEDIMENT BASINS ARE TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS STABILIZED AND GRASS COVER IS ACCEPTED BY THE LOCAL JURISDICTION.

6. WHEN SEDIMENT BASINS ARE REMOVED, ALL DISTURBED AREAS SHALL BE COVERED WITH TOPSOIL, SEEDED AND MULCHED OR OTHERWISE STABILIZED AS APPROVED BY LOCAL JURISDICTION.

(DETAILS ADAPTED FROM DOUGLAS COUNTY, COLORADO)

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.





SEDIMENT TRAP INSTALLATION NOTES

1. SEE PLAN VIEW FOR:
   –LOCATION, LENGTH AND WIDTH OF SEDIMENT TRAP.

2. ONLY USE FOR DRAINAGE AREAS LESS THAN 1 ACRE.

3. SEDIMENT TRAPS SHALL BE INSTALLED PRIOR TO ANY UPGRADIENT LAND–DISTURBING ACTIVITIES.

4. SEDIMENT TRAP BERM SHALL BE CONSTRUCTED FROM MATERIAL FROM EXCAVATION. THE BERM SHALL BE COMPACTED TO 95% OF THE MAXIMUM DENSITY IN ACCORDANCE WITH ASTM D698.

5. SEDIMENT TRAP OUTLET TO BE CONSTRUCTED OF RIPRAP, TYPE M (D50=12") TYP.SMALLER ROCK SIZE MAY BE ALLOWABLE FOR SMALLER TRAPS IF APPROVED BY LOCAL JURISDICTION.

6. THE TOP OF THE EARTHEN BERM SHALL BE A MINIMUM OF 6" HIGHER THAN THE TOP OF THE RIPRAP OUTLET STRUCTURE.

7. THE ENDS OF THE RIPRAP OUTLET STRUCTURE SHALL BE A MINIMUM OF 6" HIGHER THAN THE CENTER OF THE OUTLET STRUCTURE.

SEDIMENT TRAP MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.

2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.

3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.

4. REMOVE SEDIMENT ACCUMULATED IN TRAP AS NEEDED TO MAINTAIN THE FUNCTIONALITY OF THE BMP, TYPICALLY WHEN THE SEDIMENT DEPTH REACHES ½ THE HEIGHT OF THE RIPRAP OUTLET.

5. SEDIMENT TRAPS SHALL REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS STABILIZED AND APPROVED BY THE LOCAL JURISDICTION.

6. WHEN SEDIMENT TRAPS ARE REMOVED, THE DISTURBED AREA SHALL BE COVERED WITH TOPSOIL, SEEDED AND MULCHED OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE LOCAL JURISDICTION.

(DETAILS ADAPTED FROM DOUGLAS COUNTY, COLORADO, NOT AVAILABLE IN AUTOCAD)

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.





TABLE SB–1. SIZING INFORMATION FOR STANDARD SEDIMENT BASIN

| Upstream Drainage Area (rounded to nearest acre), (ac) | Basin Bottom Width (W), (ft) | Spillway Crest Length (CL), (ft) | Hole Diameter (HD), (in) |
|---|---|---|---|
| 1 | 12 ½ | 2 | 9/32 |
| 2 | 21 | 3 | 15/16 |
| 3 | 28 | 5 | ½ |
| 4 | 33 ½ | 6 | 5/16 |
| 5 | 38 ½ | 8 | 23/32 |
| 6 | 43 | 9 | 21/32 |
| 7 | 47 ¼ | 11 | 25/32 |
| 8 | 51 | 12 | 27/32 |
| 9 | 55 | 13 | ⅞ |
| 10 | 58 ¼ | 15 | 15/16 |
| 11 | 61 | 16 | 31/32 |
| 12 | 64 | 18 | 1 |
| 13 | 67 ½ | 19 | 1 1/16 |
| 14 | 70 ½ | 21 | 1 ⅛ |
| 15 | 73 ¼ | 22 | 1 3/16 |

SEDIMENT BASIN INSTALLATION NOTES

1. SEE PLAN VIEW FOR:
   –LOCATION OF SEDIMENT BASIN.
   –TYPE OF BASIN (STANDARD BASIN OR NONSTANDARD BASIN).
   –FOR STANDARD BASIN, BOTTOM WIDTH W, CREST LENGTH CL, AND HOLE DIAMETER, HD.
   –FOR NONSTANDARD BASIN, SEE CONSTRUCTION DRAWINGS FOR DESIGN OF BASIN INCLUDING RISER HEIGHT H, NUMBER OF COLUMNS N, HOLE DIAMETER HD AND PIPE DIAMETER D.

2. FOR STANDARD BASIN, BOTTOM DIMENSION MAY BE MODIFIED AS LONG AS BOTTOM AREA IS NOT REDUCED.

3. SEDIMENT BASINS SHALL BE INSTALLED PRIOR TO ANY OTHER LAND–DISTURBING ACTIVITY THAT RELIES ON ON BASINS AS AS A STORMWATER CONTROL.

4. EMBANKMENT MATERIAL SHALL CONSIST OF SOIL FREE OF DEBRIS, ORGANIC MATERIAL, AND ROCKS OR CONCRETE GREATER THAN 3 INCHES AND SHALL HAVE A MINIMUM OF 15 PERCENT BY WEIGHT PASSING THE NO. 200 SIEVE.

5. EMBANKMENT MATERIAL SHALL BE COMPACTED TO AT LEAST 95 PERCENT OF MAXIMUM DENSITY IN ACCORDANCE WITH ASTM D698.

6. PIPE SCH 40 OR GREATER SHALL BE USED.

7. THE DETAILS SHOWN ON THESE SHEETS PERTAIN TO STANDARD SEDIMENT BASIN(S) FOR DRAINAGE AREAS LESS THAN 15 ACRES. SEE CONSTRUCTION DRAWINGS FOR EMBANKMENT, STORAGE VOLUME, SPILLWAY, OUTLET, AND OUTLET PROTECTION DETAILS FOR ANY SEDIMENT BASIN(S) THAT HAVE BEEN INDIVIDUALLY DESIGNED FOR DRAINAGE AREAS LARGER THAN 15 ACRES.



Westwood
Phone (720) 531-8350 10170 Church Ranch Way, Suite #100
Westminster, CO 80021
westwoodps.com
Westwood Professional Services, Inc.

COLORADO LICENSED BRENDAN RYAN MILES 44186 PROFESSIONAL ENGINEER
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# Grazing Yak Solar

El Paso County, Colorado

Notes and Details - Sheet 3

Not For Construction

DATE: 04/22/2019

SHEET: ND03

ED–1. COMPACTED UNLINED EARTH DIKE FORMED BY BERM

DS–1. COMPACTED UNLINED EXCAVATED SWALE

DS–2. COMPACTED UNLINED SWALE FORMED BY CUT AND FILL

DS–3. ECB LINED SWALE (CUT AND FILL OR BERM)

DS–4. SYNTHETIC LINED SWALE

DS–5. RIPRAP LINED SWALE

EARTH DIKE AND DRAINAGE SWALE INSTALLATION NOTES

1. SEE SITE PLAN FOR:
   - LOCATION OF DIVERSION SWALE
   - TYPE OF SWALE (UNLINED, COMPACTED AND/OR LINED).
   - LENGTH OF EACH SWALE.
   - DEPTH, D, AND WIDTH, W DIMENSIONS.
   - FOR ECB/TRM LINED DITCH, SEE ECB DETAIL.
   - FOR RIPRAP LINED DITCH, SIZE OF RIPRAP, D50.

2. SEE DRAINAGE PLANS FOR DETAILS OF PERMANENT CONVEYANCE FACILITIES AND/OR DIVERSION SWALES EXCEEDING 2–YEAR FLOW RATE OR 10 CFS.

3. EARTH DIKES AND SWALES INDICATED ON SWMP PLAN SHALL BE INSTALLED PRIOR TO LAND–DISTURBING ACTIVITIES IN PROXIMITY.

4. EMBANKMENT IS TO BE COMPACTED TO 90% OF MAXIMUM DENSITY AND WITHIN 2% OF OPTIMUM MOISTURE CONTENT ACCORDING TO ASTM D698.

5. SWALES ARE TO DRAIN TO A SEDIMENT CONTROL BMP.

6. FOR LINED DITCHES, INSTALLATION OF ECB/TRM SHALL CONFORM TO THE REQUIREMENTS OF THE ECB DETAIL.

7. WHEN CONSTRUCTION TRAFFIC MUST CROSS A DIVERSION SWALE, INSTALL A TEMPORARY CULVERT WITH A MINIMUM DIAMETER OF 12 INCHES.

ECB–3. OUTSIDE OF DRAINAGEWAY

STAKING PATTERNS BY ECB TYPE

STAKING PATTERNS BY SLOPE OR CHANNEL TYPE





EARTH DIKE AND DRAINAGE SWALE MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.

2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.

3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.

4. SWALES SHALL REMAIN IN PLACE UNTIL THE END OF CONSTRUCTION; IF APPROVED BY LOCAL JURISDICTION, SWALES MAY BE LEFT IN PLACE.

5. WHEN A SWALE IS REMOVED, THE DISTURBED AREA SHALL BE COVERED WITH TOPSOIL, SEEDED AND MULCHED OR OTHERWISE STABILIZED IN A MANNER APPROVED BY LOCAL JURISDICTION.

(DETAIL ADAPTED FROM DOUGLAS COUNTY, COLORADO AND THE CITY OF COLORADO SPRINGS, COLORADO, NOT AVAILABLE IN AUTOCAD)

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.



EROSION CONTROL BLANKET INSTALLATION NOTES

1. SEE PLAN VIEW FOR:
   –LOCATION OF ECB.
   –TYPE OF ECB (STRAW, STRAW–COCONUT, COCONUT, OR EXCELSIOR).
   –AREA, A, IN SQUARE YARDS OF EACH TYPE OF ECB.

2. 100% NATURAL AND BIODEGRADABLE MATERIALS ARE PREFERRED FOR RECPs, ALTHOUGH SOME JURISDICTIONS MAY ALLOW OTHER MATERIALS IN SOME APPLICATIONS.

3. IN AREAS WHERE ECBs ARE SHOWN ON THE PLANS, THE PERMITTEE SHALL PLACE TOPSOIL AND PERFORM FINAL GRADING, SURFACE PREPARATION, AND SEEDING AND MULCHING. SUBGRADE SHALL BE SMOOTH AND MOIST PRIOR TO ECB INSTALLATION AND THE ECB SHALL BE IN FULL CONTACT WITH SUBGRADE. NO GAPS OR VOIDS SHALL EXIST UNDER THE BLANKET.

4. PERIMETER ANCHOR TRENCH SHALL BE USED ALONG THE OUTSIDE PERIMETER OF ALL BLANKET AREAS.

5. JOINT ANCHOR TRENCH SHALL BE USED TO JOIN ROLLS OF ECBs TOGETHER (LONGITUDINALLY AND TRANSVERSELY) FOR ALL ECBs EXCEPT STRAW WHICH MAY USE AN OVERLAPPING JOINT.

6. INTERMEDIATE ANCHOR TRENCH SHALL BE USED AT SPACING OF ONE–HALF ROLL LENGTH FOR COCONUT AND EXCELSIOR ECBs.

7. OVERLAPPING JOINT DETAIL SHALL BE USED TO JOIN ROLLS OF ECBs TOGETHER FOR ECBs ON SLOPES.

8. MATERIAL SPECIFICATIONS OF ECBs SHALL CONFORM TO TABLE ECB–1.

9. ANY AREAS OF SEEDING AND MULCHING DISTURBED IN THE PROCESS OF INSTALLING ECBS SHALL BE RESEEDED AND MULCHED.

10. DETAILS ON DESIGN PLANS FOR MAJOR DRAINAGEWAY STABILIZATION WILL GOVERN IF DIFFERENT FROM THOSE SHOWN HERE.

TABLE ECB–1. ECB MATERIAL SPECIFICATIONS

| TYPE | COCONUT CONTENT | STRAW CONTENT | EXCELSIOR CONTENT | RECOMMENDED NETTING** |
|---|---|---|---|---|
| STRAW* | – | 100% | – | DOUBLE/ NATURAL |
| STRAW–COCONUT | 30% MIN | 70% MAX | – | DOUBLE/ NATURAL |
| COCONUT | 100% | – | – | DOUBLE/ NATURAL |
| EXCELSIOR | – | – | 100% | DOUBLE/ NATURAL |

*STRAW ECBs MAY ONLY BE USED OUTSIDE OF STREAMS AND DRAINAGE CHANNEL.
**ALTERNATE NETTING MAY BE ACCEPTABLE IN SOME JURISDICTIONS



EROSION CONTROL BLANKET MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.

2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.

3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.

4. ECBs SHALL BE LEFT IN PLACE TO EVENTUALLY BIODEGRADE, UNLESS REQUESTED TO BE REMOVED BY THE LOCAL JURISDICTION.

5. ANY ECB PULLED OUT, TORN, OR OTHERWISE DAMAGED SHALL BE REPAIRED OR REINSTALLED. ANY SUBGRADE AREAS BELOW THE GEOTEXTILE THAT HAVE ERODED TO CREATED A VOID UNDER THE BLANKET, OR THAT REMAIN DEVOID OF GRASS SHALL BE REPAIRED, RESEEDED AND MULCHED AND THE ECB REINSTALLED.

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

(DETAILS ADAPTED FROM DOUGLAS COUNTY, COLORADO AND TOWN OF PARKER COLORADO, NOT AVAILABLE IN AUTOCAD)

Westwood
Phone (720) 531-8350 10170 Church Ranch Way, Suite #100
Westminster, CO 80021
westwoodps.com
Westwood Professional Services, Inc.

COLORADO LICENSED BRENDAN RYAN MILES 44186 PROFESSIONAL ENGINEER
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# Grazing Yak Solar

El Paso County, Colorado

Notes and Details - Sheet 4

Not For Construction

DATE: 04/22/2019

SHEET: ND04

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## SC-3 Straw Bale Barrier (SBB)

STRAW BALE

TRENCH FOR STRAW BALE

SECTION A

SBB–1. STRAW BALE



## Sediment Control Log (SCL) SC-2

TRENCHED SEDIMENT CONTROL LOG

SECTION A
TRENCHED SEDIMENT CONTROL LOG

LOG JOINTS

SCL–1. TRENCHED SEDIMENT CONTROL LOG



## Sediment Control Log (SCL) SC-2

SCL–3. SEDIMENT CONTROL LOGS TO CONTROL SLOPE LENGTH



## Straw Bale Barrier (SBB) SC-3

STRAW BALE INSTALLATION NOTES

1. SEE PLAN VIEW FOR:
   –LOCATION(S) OF STRAW BALES.

2. STRAW BALES SHALL CONSIST OF CERTIFIED WEED FREE STRAW OR HAY. LOCAL JURISDICTIONS MAY REQUIRE PROOF THAT BALES ARE WEED FREE.

3. STRAW BALES SHALL CONSIST OF APPROXIMATELY 5 CUBIC FEET OF STRAW OR HAY AND WEIGH NOT LESS THAN 35 POUNDS.

4. WHEN STRAW BALES ARE USED IN SERIES AS A BARRIER, THE END OF EACH BALE SHALL BE TIGHTLY ABUTTING ONE ANOTHER.

5. STRAW BALE DIMENSIONS SHALL BE APPROXIMATELY 36"X18"X18".

6. A UNIFORM ANCHOR TRENCH SHALL BE EXCAVATED TO A DEPTH OF 4". STRAW BALES SHALL BE PLACED SO THAT BINDING TWINE IS ENCOMPASSING THE VERTICAL SIDES OF THE BALE(S). ALL EXCAVATED SOIL SHALL BE PLACED ON THE UPHILL SIDE OF THE STRAW BALE(S) AND COMPACTED.

7. TWO (2) WOODEN STAKES SHALL BE USED TO HOLD EACH BALE IN PLACE. WOODEN STAKES SHALL BE 2"X2"X24". WOODEN STAKES SHALL BE DRIVEN 6" INTO THE GROUND.

STRAW BALE MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.

2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.

3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.

4. STRAW BALES SHALL BE REPLACED IF THEY BECOME HEAVILY SOILED, ROTTEN, OR DAMAGED BEYOND REPAIR.

5. SEDIMENT ACCUMULATED UPSTREAM OF STRAW BALE BARRIER SHALL BE REMOVED AS NEEDED TO MAINTAIN FUNCTIONALITY OF THE BMP, TYPICALLY WHEN DEPTH OF ACCUMULATED SEDIMENTS IS APPROXIMATELY ½ OF THE HEIGHT OF THE STRAW BALE BARRIER.

6. STRAW BALES ARE TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS STABILIZED AND APPROVED BY THE LOCAL JURISDICTION.

7. WHEN STRAW BALES ARE REMOVED, ALL DISTURBED AREAS SHALL BE COVERED WITH TOPSOIL, SEEDED AND MULCHED OR OTHERWISE STABILIZED AS APPROVED BY LOCAL JURISDICTION.

(DETAILS ADAPTED FROM TOWN OF PARKER, COLORADO, NOT AVAILABLE IN AUTOCAD)

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.



## SC-2 Sediment Control Log (SCL)

COMPOST SEDIMENT CONTROL LOG (WEIGHTED)

SECTION A
COMPOST SEDIMENT CONTROL LOG

LOG JOINTS

SCL–2. COMPOST SEDIMENT CONTROL LOG (WEIGHTED)



## SC-2 Sediment Control Log (SCL)

SEDIMENT CONTROL LOG INSTALLATION NOTES

1. SEE PLAN VIEW FOR LOCATION AND LENGTH OF SEDIMENT CONTROL LOGS.

2. SEDIMENT CONTROL LOGS THAT ACT AS A PERIMETER CONTROL SHALL BE INSTALLED PRIOR TO ANY UPGRADIENT LAND–DISTURBING ACTIVITIES.

3. SEDIMENT CONTROL LOGS SHALL CONSIST OF STRAW, COMPOST, EXCELSIOR OR COCONUT FIBER, AND SHALL BE FREE OF ANY NOXIOUS WEED SEEDS OR DEFECTS INCLUDING RIPS, HOLES AND OBVIOUS WEAR.

4. SEDIMENT CONTROL LOGS MAY BE USED AS SMALL CHECK DAMS IN DITCHES AND SWALES. HOWEVER, THEY SHOULD NOT BE USED IN PERENNIAL STREAMS.

5. IT IS RECOMMENDED THAT SEDIMENT CONTROL LOGS BE TRENCHED INTO THE GROUND TO A DEPTH OF APPROXIMATELY ⅓ OF THE DIAMETER OF THE LOG. IF TRENCHING TO THIS DEPTH IS NOT FEASIBLE AND/OR DESIRABLE (SHORT TERM INSTALLATION WITH DESIRE NOT TO DAMAGE LANDSCAPE) A LESSER TRENCHING DEPTH MAY BE ACCEPTABLE WITH MORE ROBUST STAKING. COMPOST LOGS THAT ARE 8 LB/FT DO NOT NEED TO BE TRENCHED.

6. THE UPHILL SIDE OF THE SEDIMENT CONTROL LOG SHALL BE BACKFILLED WITH SOIL OR FILTER MATERIAL THAT IS FREE OF ROCKS AND DEBRIS. THE SOIL SHALL BE TIGHTLY COMPACTED INTO THE SHAPE OF A RIGHT TRIANGLE USING A SHOVEL OR WEIGHTED LAWN ROLLER OR BLOWN IN PLACE.

7. FOLLOW MANUFACTURERS' GUIDANCE FOR STAKING. IF MANUFACTURERS' INSTRUCTIONS DO NOT SPECIFY SPACING, STAKES SHALL BE PLACED ON 4' CENTERS AND EMBEDDED A MINIMUM OF 6" INTO THE GROUND. 3" OF THE STAKE SHALL PROTRUDE FROM THE TOP OF THE LOG. STAKES THAT ARE BROKEN PRIOR TO INSTALLATION SHALL BE REPLACED. COMPOST LOGS SHOULD BE STAKED 10' ON CENTER.

SEDIMENT CONTROL LOG MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.

2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.

3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.

4. SEDIMENT ACCUMULATED UPSTREAM OF SEDIMENT CONTROL LOG SHALL BE REMOVED AS NEEDED TO MAINTAIN FUNCTIONALITY OF THE BMP, TYPICALLY WHEN DEPTH OF ACCUMULATED SEDIMENTS IS APPROXIMATELY ½ OF THE HEIGHT OF THE SEDIMENT CONTROL LOG.

5. SEDIMENT CONTROL LOG SHALL BE REMOVED AT THE END OF CONSTRUCTION.COMPOST FROM COMPOST LOGS MAY BE LEFT IN PLACE AS LONG AS BAGS ARE REMOVED AND THE AREA SEEDED. IF DISTURBED AREAS EXIST AFTER REMOVAL, THEY SHALL BE COVERED WITH TOP SOIL, SEEDED AND MULCHED OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE LOCAL JURISDICTION.

(DETAILS ADAPTED FROM TOWN OF PARKER, COLORADO, JEFFERSON COUNTY, COLORADO, DOUGLAS COUNTY, COLORADO, AND CITY OF AURORA, COLORADO, NOT AVAILABLE IN AUTOCAD)

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.



Westwood
Phone (720) 531-8350 10170 Church Ranch Way, Suite #100
Westminster, CO 80021
westwoodps.com
Westwood Professional Services, Inc.

COLORADO LICENSED
BRENDAN RYAN MILLER
44186
PROFESSIONAL ENGINEER
04/22/2019

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# Grazing Yak Solar

El Paso County, Colorado

Notes and Details - Sheet 5

Not For Construction

DATE: 04/22/2019

SHEET: ND05

TABLE CB-1. CLASS 1 COMPOST

| PARAMETERS | CHARACTERISTIC |
|---|---|
| MINIMUM STABILITY INDICATOR | STABLE TO VERY STABLE |
| SOLUBLE SALTS | MAXIMUM 5 mmhos/cm |
| PH | 6.0 – 8.0 |
| AG INDEX | > 10 |
| MATURITY INDICATOR EXPRESSED AS PERCENTAGE OF GERMINATION/VIGOR | 80+/80+ |
| MATURITY INDICATOR EXPRESSED AS AMMONIA N/ NITRATE N RATIO | < 4 |
| MATURITY INDEX AS CARBON TO NITROGEN RATIO | 20:1 |
| TESTED FOR CLOPYRALID | YES/NEGATIVE RESULT |
| MOISTURE CONTENT | 30–60% |
| ORGANIC MATTER CONTENT | 25–45% OF DRY WEIGHT |
| PARTICLE SIZE DISTRIBUTION | 3" (75mm) 100% PASSING |
| PRIMARY, SECONDARY NUTRIENTS; TRACE ELEMENTS | MUST BE REPORTED |
| TESTING AND TEST REPORT SUBMITTAL REQUIREMENTS | STA + CLOPYRALID |
| ORGANIC MATTER PER CUBIC YARD | MUST REPORT |
| CHEMICAL CONTAMINANTS | COMPLY WITH US EPA CLASS A STANDARD, 40 CFR 503.1 TABLES 1 & 3 LEVELS |
| MINIMUM MANUFACTURING/PRODUCTION REQUIREMENT | FULLY PERMITTED UNDER COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT, HAZARDOUS MATERIALS AND WASTE MANAGEMENT DIVISION |
| RISK FACTOR RELATING TO PLANT GERMINATION AND HEALTH | LOW |

CB–1. COMPOST BLANKET AND COMPOST FILTER BERM





COMPOST FILTER BERM AND COMPOST BLANKET INSTALLATION NOTES

1. SEE PLAN VIEW FOR
   –LOCATION OF COMPOST FILTER BERM(S).
   –LENGTH OF COMPOST FILTER BERM(S).

2. COMPOST BERMS AND BLANKETS MAY BE USED IN PLACE OF STRAW MULCH OR GEOTEXTILE FABRIC IN AREAS WHERE ACCESS TO LANDSCAPING IS DIFFICULT DUE TO LANDSCAPING OR OTHER OBJECTS OR IN AREAS WHERE A SMOOTH TURF GRASS FINISH IS DESIRED.

3. FILTER BERMS SHALL RUN PARALLEL TO THE CONTOUR.

4. FILTER BERMS SHALL BE A MINIMUM OF 1 FEET HIGH AND 2 FEET WIDE.

5. FILTER BERMS SHALL BE APPLIED BY PNEUMATIC BLOWER OR BY HAND.

6. FILTER BERMS SHALL ONLY BE UTILIZED IN AREAS WHERE SHEET FLOW CONDITIONS PREVAIL AND NOT IN AREAS OF CONCENTRATED FLOW.

7. COMPOST BLANKETS SHALL BE APPLIED AT A DEPTH OF 1 –3 INCHES (TYPICALLY 2 INCHES). FOR AREAS WITH EXISTING VEGETATION THAT ARE TO BE SUPPLEMENTED BY COMPOST, A THIN 0.5–INCH LAYER MAY BE USED.

8. SEEDING SHALL BE PERFORMED PRIOR TO THE APPLICATION OF COMPOST. ALTERNATIVELY, SEED MAY BE COMBINED WITH COMPOST AND BLOWN WITH THE PNEUMATIC BLOWER.

9. WHEN TURF GRASS FINISH IS NOT DESIRED, SURFACE ROUGHENING ON SLOPES SHALL TAKE PLACE PRIOR TO COMPOST APPLICATION.

10. COMPOST SHALL BE A CLASS 1 COMPOST AS DEFINED BY TABLE CB–1.

COMPOST FILTER BERM MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.

2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.

3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.

4. COMPOST BERMS AND BLANKETS SHALL BE REAPPLIED OR REGRADED AS NECESSARY IF RILLING IN THE COMPOST SURFACE OCCURS.

(DETAILS ADAPTED FROM ARAPAHOE COUNTY, COLORADO, NOT AVAILABLE IN AUTOCAD)

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.



Westwood
Phone (720) 531-8350 10170 Church Ranch Way, Suite #100
Westminster, CO 80021
westwoodps.com
Westwood Professional Services, Inc.

COLORADO LICENSED
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44186
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# Grazing Yak Solar

El Paso County, Colorado

Notes and Details - Sheet 6

Not For Construction

DATE: 04/22/2019

SHEET: ND06

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# Attachment F

## Training Documentation

# Stormwater Pollution Prevention Training Log

**Project Name:**

**Project Location:**

**Instructor's Name(s):**

**Instructor's Title(s):**

**Course Location:**

**Date of Course:**

**Course Length(hours):**

**Stormwater Training Topic:** ***(check as appropriate)***

- ❑ **Sediment and Erosion Controls**
- ❑ **Emergency Procedures**
- ❑ **Stabilization Controls**
- ❑ **Inspections/Corrective Actions**
- ❑ **Pollution Prevention Measures**
- ❑ **Stormwater Runoff Sampling**

**Specific Training Objective(s):**

_____

_____

_____

_____

**Attendee Roste**r: *(attach additional pages as necessary)*

| No. | Name of Attendee | Company |
|---|---|---|
| 1 | | |
| 2 | | |
| 3 | | |
| 4 | | |
| 5 | | |
| 6 | | |
| 7 | | |
| 8 | | |
| 9 | | |
| 10 | | |

# Attachment G

## Inspection and Maintenance Forms and Spill Response and Reporting Information

# CONSTRUCTION STORMWATER SITE INSPECTION REPORT

| | | | |
|---|---|---|---|
| Facility Name | | Permittee | |
| Date of Inspection | | Weather Conditions | |
| Permit Certification # | | Disturbed Acreage | |
| Phase of Construction | | Inspector Title | |
| Inspector Name | | | |

| | YES | NO |
|---|---|---|
| Is the above inspector a qualified stormwater manager?<br>(permittee is responsible for ensuring that the inspector is a qualified stormwater manager) | ☐ | ☐ |

| INSPECTION FREQUENCY | |
|---|---|
| Check the box that describes the minimum inspection frequency utilized when conducting each inspection | |
| At least one inspection every 7 calendar days | ☐ |
| At least one inspection every 14 calendar days, with post-storm event inspections conducted within 24 hours after the end of any precipitation or snowmelt event that causes surface erosions | ☐ |
| • This is this a post-storm event inspection. Event Date: _____ | ☐ |
| Reduced inspection frequency - Include site conditions that warrant reduced inspection frequency | ☐ |
| • Post-storm inspections at temporarily idle sites | ☐ |
| • Inspections at completed sites/area | ☐ |
| • Winter conditions exclusion | ☐ |
| Have there been any deviations from the minimum inspection schedule?<br>If yes, describe below. | YES ☐ NO ☐ |
| | |

| INSPECTION REQUIREMENTS* |
|---|
| i. Visually verify all implemented control measures are in effective operational condition and are working as designed in the specifications |
| ii. Determine if there are new potential sources of pollutants |
| iii. Assess the adequacy of control measures at the site to identify areas requiring new or modified control measures to minimize pollutant discharges |
| iv. Identify all areas of non-compliance with the permit requirements, and if necessary, implement corrective action |
| *Use the attached **Control Measures Requiring Routine Maintenance** and **Inadequate Control Measures Requiring Corrective Action** forms to document results of this assessment that trigger either maintenance or corrective actions |

| AREAS TO BE INSPECTED | | | |
|---|---|---|---|
| Is there evidence of, or the potential for, pollutants leaving the construction site boundaries, entering the stormwater drainage system or discharging to state waters at the following locations? | | | |
| | NO | YES | If "YES" describe discharge or potential for discharge below. Document related maintenance, inadequate control measures and corrective actions **Inadequate Control Measures Requiring Corrective Action** form |
| Construction site perimeter | ☐ | ☐ | |
| All disturbed areas | ☐ | ☐ | |
| Designated haul routes | ☐ | ☐ | |
| Material and waste storage areas exposed to precipitation | ☐ | ☐ | |
| Locations where stormwater has the potential to discharge offsite | ☐ | ☐ | |
| Locations where vehicles exit the site | ☐ | ☐ | |
| Other: _____ | ☐ | ☐ | |

**CONTROL MEASURES REQUIRING ROUTINE MAINTENANCE**

Definition: Any control measure that is still operating in accordance with its design and the requirements of the permit, but requires maintenance to prevent a breach of the control measure. These items are not subject to the corrective action requirements as specified in Part I.B.1.c of the permit.

| Are there control measures requiring maintenance? | NO | YES | |
|---|---|---|---|
| | ☐ | ☐ | If "YES" document below |

| Date Observed | Location | Control Measure | Maintenance Required | Date Completed |
|---|---|---|---|---|
| | | | | |
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**INADEQUATE CONTROL MEASURES REQUIRING CORRECTIVE ACTION**

Definition: Any control measure that is not designed or implemented in accordance with the requirements of the permit and/or any control measure that is not implemented to operate in accordance with its design. This includes control measures that have not been implemented for pollutant sources. If it is infeasible to install or repair the control measure immediately after discovering the deficiency the reason must be documented and a schedule included to return the control measure to effective operating condition as possible.

| Are there inadequate control measures requiring corrective action? | NO | YES | |
|---|---|---|---|
| | ☐ | ☐ | If "YES" document below |

| Are there additional control measures needed that were not in place at the time of inspection? | NO | YES | |
|---|---|---|---|
| | ☐ | ☐ | If "YES" document below |

| Date Discovered | Location | Description of Inadequate Control Measure | Description of Corrective Action | Was deficiency corrected when discovered? YES/NO<br>if "NO" provide reason and schedule to correct | Date Corrected |
|---|---|---|---|---|---|
| | | | | | |
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## REPORTING REQUIREMENTS

The permittee shall report the following circumstances orally within twenty-four (24) hours from the time the permittee becomes aware of the circumstances, and shall mail to the division a written report containing the information requested within five (5) working days after becoming aware of the following circumstances. The division may waive the written report required if the oral report has been received within 24 hours.

**All Noncompliance Requiring 24-Hour Notification per Part II.L.6 of the Permit**

**a. Endangerment to Health or the Environment**

Circumstances leading to any noncompliance which may endanger health or the environment regardless of the cause of the incident (See Part II.L.6.a of the Permit)

*This category would primarily result from the discharge of pollutants in violation of the permit*

**b. Numeric Effluent Limit Violations**

- Circumstances leading to any unanticipated bypass which exceeds any effluent limitations (See Part II.L.6.b of the Permit)
- Circumstances leading to any upset which causes an exceedance of any effluent limitation (See Part II.L.6.c of the Permit)
- Daily maximum violations (See Part II.L.6.d of the Permit)

*Numeric effluent limits are very uncommon in certifications under the COR400000 general permit. This category of noncompliance only applies if numeric effluent limits are included in a permit certification.*

| Has there been an incident of noncompliance requiring 24-hour notification? | NO | YES | |
|---|---|---|---|
| | ☐ | ☐ | If "YES" document below |

| Date and Time of Incident | Location | Description of Noncompliance | Description of Corrective Action | Date and Time of 24 Hour Oral Notification | Date of 5 Day Written Notification * |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |

*Attach copy of 5 day written notification to report. Indicate if written notification was waived, including the name of the division personnel who granted waiver.

After adequate corrective action(s) and maintenance have been taken, or where a report does not identify any incidents requiring corrective action or maintenance, the individual(s) designated as the Qualified Stormwater Manager, shall sign and certify the below statement:

"I verify that, to the best of my knowledge and belief, all corrective action and maintenance items identified during the inspection are complete, and the site is currently in compliance with the permit."

| | |
|---|---|
| Name of Qualified Stormwater Manager | Title of Qualified Stormwater Manager |
| Signature of Qualified Stormwater Manager | Date |

Notes/Comments

COLORADO
Water Quality Control Division
Department of Public Health & Environment

# Five day reporting form

Incident / spill / sanitary sewer overflow release

***Use this form to report incidents impacting waters of the state***

The Water Quality Control Division distinguishes between reporting requirements for incidents that occur at entities operating under a Colorado Discharge Permit System (CDPS) permit and those resulting from non-permitted activities.

**Permitted activities -** Reporting and management of non-compliance incidents and spills that occur as a result of permitted activities should be performed in accordance with the specific requirements in the notifications section of your permit. You may use this form to submit the information requested in the permit.

**Non-permitted activities** - In the case of an activity where a permit does not address reporting of, or response to, a given spill please submit a written summary of the event, your response, and clean up efforts to the division within five working days of the date of the event. This form is provided for your convenience. If you have any questions please contact the division's field services staff person assigned to your spill case.

Prior to the five working day deadline you may request an extension to submit the report if needed for sampling analysis or other reasons. To request an extension please send an email to the division's field services staff person assigned to your spill case or to the spill administrator. The field services contact list is available at: www.colorado.gov/cdphe/wq-inspection-services-contact-us.

Please send the completed form or report with signature to the division's field services spill administrator:

Michelle Thiebaud
222 S. Sixth Street, 232
Grand Junction, CO 81501

Telephone: 970-248-7150
Fax: 970-248-7198
Email: michelle.thiebaud@state.co.us

| **1. Incident background information** | | | | | |
|---|---|---|---|---|---|
| Incident/spill number (division provided) | | Date of event | | County | |
| Type of incident / spill / SSO (check one) | | | | | |
| ☐ Sanitary sewer overflow | | ☐ Potable water/reuse water/ reclaimed water | | ☐ Biosolids | |
| ☐ Wastewater treatment plant bypass or upset (authorized outfall point) | | ☐ Petroleum product | | ☐ Oil or gas field production spill | |
| ☐ Wastewater treatment plant spill or overflow (other than outfall) | | ☐ Chemical | | ☐ Other | |
| Estimated volume released | | | | | |
| Size and depth of area affected | | | | | |
| **Contact information** | | | | | |
| Potentially responsible party contact name | | | | | |
| Potentially responsible party company/agency name | | | | | |
| CDPHE Permit number and facility name (if applicable) | | | | | |
| Email address | | | | Phone | |
| **2. Incident information: Please provide the following information.** | | | | | |
| A. Describe incident including source, cause, and location (e.g. address, latitude/longitude). | | | | | |
| | | | | | |
| B. Material released, e.g. untreated wastewater, specific chemical or product, biosolids. Please attach the OSHA Material Safety Data Sheets for any and all chemicals or products in spill or release. | | | | | |
| | | | | | |

| | |
|---|---|
| C. | Actual or estimated duration of the event and time spill was fully controlled/stopped. If release is still occurring, the date and time the release is expected to be stopped. |
| | |
| D. | Describe measures taken or planned to contain, reduce, and clean up spill or release. |
| | |
| E. | Describe steps taken or planned to prevent reoccurrence. |
| | |

**3. Incident impact to state waters (As defined in § 25-8-103(19), C.R.S.).**
Examples of state waters include: stormwater conveyances (when they discharge to surface water), perennial streams, intermittent or ephemeral gulches, ditches, ponds, lakes, reservoirs, irrigation canals, wetlands and groundwater.

| | |
|---|---|
| A. | Did flow or materials reach surface water of the state? If so, identify the water body or bodies and describe the path of flow. What quantity of material reached the surface waters and what was the resulting impact? |
| | |
| B. | Did flow or materials reach groundwater of the state? If so, identify the water body or bodies and describe the path of flow. If yes, what quantity of material reached the ground or groundwater and what was the resulting impact? |
| | |
| C. | Did the incident include any of the following? If so, please include additional details below. |

| | | |
|---|---|---|
| ☐ Chemical release | ☐ Fish kill | ☐ Sheen on water |
| | | |

| | |
|---|---|
| D. | Were any water quality samples or other samples taken? If so, please describe sampling process, sampling location(s) in relationship to the incident, i.e. up/down stream and attach results. |
| | |

**4. Incident impact to areas or water users**

| | |
|---|---|
| A. | Describe the potential impact of the incident/spill/SSO to public use areas or downstream water users. This includes parks and swim beaches or public water system sources and irrigation diversions. |
| | |
| B. | Were the impacted area users and downstream water users notified and describe the method of notification, e.g. signs posted, via phone. |
| | |
| C. | List any downstream users who were notified. |
| | |

I hereby certify that the information presented above is accurate and complete.

| Signature | Name and title | Company, organization | Date |
|---|---|---|---|
| | | | |

**Colorado Water Quality Control Division**

| | |
|---|---|
| **Policy No:** | WQE-10 |
| **Initiated By:** | Dave Akers |
| **Approved By:** | |
| **Effective Date:** | 3/1/08 |
| **Revision No.:** | |
| **Revision Date:** | |

**WATER QUALITY CONTROL DIVISION**

## Guidance for Reporting Spills under the Colorado Water Quality Control Act and Colorado Discharge Permits

### I. Purpose

To provide guidance on applicable Colorado reporting requirements pursuant to § 25-8-601(2), C.R.S., that pertains to spills or discharges that may cause pollution of State waters. This guidance does not relieve an entity of any other statutory or regulatory requirements applicable to a spill. Facilities possessing a Colorado Discharge Permit System (CDPS) permit should follow applicable permit terms and conditions regarding spill reporting and response. This guidance is not intended to supersede or modify such permit terms and conditions or the applicable statute and regulations. This guidance does not limit the existing rights or responsibilities of persons with respect to spill reporting. For example, persons retain the right and responsibility to determine in the first instance whether a particular spill is covered by an existing permit or may cause pollution to State waters (i.e., surface or ground waters).

### II. Statutory Requirement Addressed

Colorado Water Quality Control Act - Spill Reporting Requirements - § 25-8-601(2), C.R.S.

> "Any person engaged in any operation or activity which results in a spill or discharge of oil or other substance which may cause pollution of the waters of the state contrary to the provisions of this article as soon as he has knowledge thereof, shall notify the division of such discharge."

State waters means any and all surface and subsurface waters which are contained in or flow in or through this state, but does not include waters in sewage systems, waters in treatment works of disposal systems, waters in potable water distribution systems, and all water withdrawn for use until use and treatment have been completed (§ 25-8-103 (19), C.R.S.).

Examples of State waters include, but are not limited to, perennial streams, intermittent or ephemeral gulches and arroyos, ponds, lakes, reservoirs, irrigation canals or ditches, wetlands, stormwater conveyances (when they discharge to a surface water), and groundwater.

### III. Policy/Applicability

The Division distinguishes between reporting requirements for spills that occur with respect to activities that result in a discharge that is authorized under a CDPS permit and those that are not. For non-permitted activities, or in the case of an activity where a permit does not address reporting of or response to a given spill, the Division recommends that the responsible person(s) take the following actions:

1. Immediately report spills that may result in a non-permitted discharge of pollutants to State waters to the Environmental Release and Incident Reporting Line at 1-877-518-5608;
2. Include the following information, if available, when notifying the Division of a spill:
   a. The name of the responsible person and, if not reported by that person, the name of the person reporting the spill and the name of the responsible person if known;
   b. An estimate of the date and time that the spill began or the actual date and time, if known;

c. The location of the spill, its source (e.g., manhole, tanker truck), and identification of the type of material spilled (e.g., untreated wastewater, biosolids, specific chemical);

d. The estimated volume of the spill and, if known, the actual date and time the spill was fully controlled/stopped.

e. Whether the spill is ongoing and, if it is, the rate of flow and an estimate of the time that the spill will be fully controlled, if known;

f. Measures that are being or have been taken to contain, reduce, and/or clean up the spill;

g. A list of any potentially affected area and any known downstream water uses (e.g., public water supplies, irrigation diversions, public use areas such as parks or swim beaches) that will be or have been notified; and

h. A phone number and e-mail to contact a representative of the responsible person that is in charge of the response. Where a non-responsible person is reporting the spill, they are encouraged, but not required, to provide contact information.

Reporting and management of spills that occur with respect to activities resulting in a discharge authorized under a permit should be performed in accordance with the specific requirements of that permit. If the permit does not provide specific reporting or management response requirements for a given spill that may pollute State waters, the Division recommends that the responsible person report the spill in accordance with the procedures listed above.

This guidance only addresses reporting requirements under the Division's authority. The person or entity engaged in any operation or activity that results in a spill is responsible for any other applicable reporting requirements associated with the spill to other regulatory agencies.

Section 25-8-601(2), C.R.S. only addresses spill reporting to the Division. Section 25-8-202(7), C.R.S. provides certain water quality responsibilities to other state "implementing agencies." The Division's position is that, where a spill to the ground that may impact ground water only is fully and timely reported to an implementing agency having jurisdiction over that spill, the intent of section 601(2) has been fulfilled, and the spill need not also be reported to the Division. The Division suggests that the responsible person confirm with the implementing agency that a spill falls under the jurisdiction of the implementing agency at the time it is reported in order to avoid possible legal liability should it fall under the Division's jurisdiction.

## IV. Division Examples of Non-Reportable Spills

The Division has identified the following examples of types of spills that are considered "non-reportable" under § 25-8-601(2), C.R.S. Documentation of such spills, including the information listed in section III.2.a – III.2.f above, should be maintained by the responsible person for Division review for a period of three years.

1. A spill to a generally impervious surface or structure (e.g., paved street/parking lot, storm sewer, warehouse floor, manhole, vault, concrete basement), or onto soils, that is fully contained in/on the impervious surface/structure or soils, or that is managed in a manner so that it will not reach State waters at the time of the spill or in the future. Such spills that are cleaned up within 24 hours will be considered by the Division to have no potential to reach State waters. However, even if such spills are not cleaned up within 24 hours, the responsible person may be able to "fully contain" or otherwise manage a spill such that it will not reach State waters. Where there is a sump pump present in a basement to which a spill occurred, the responsible person must establish that the pump did not discharge to State waters during the time between the start of the spill and the completion of clean-up in accordance with best management practices.

2. A spill or discharge that is managed consistent with best management practices that are established in accordance with a CDPS discharge permit or any Water Quality Control Commission-adopted control regulation related to spill management or reporting.

3. A spill of potable water from a public water system that does not reach surface waters.

# Environmental Spill Reporting

*24—Hour Emergency and Incident Reporting Line*
*Office of Emergency Preparedness & Response*

1-877-518-5608

*Updated: June, 2018*

# Reporting chemical spills and releases in Colorado

## General

For all hazardous substance incidents, local emergency response agencies must be notified.

## Releases from fixed facilities

The Superfund Amendments and Reauthorization Act (SARA) Title III, requires reporting releases from fixed facilities

Refer to the SARA Title III List of Lists, available from the Environmental Protection Agency (EPA), for the reportable quantity.

The party that owns the spilled material must immediately notify the following agencies or organizations:

- National Response Center (NRC) 1-800-424-8802;
- Colorado Emergency Planning Committee (CEPC), represented by the Colorado Department of Public Health and Environment (CDPHE) 1-877-518-5608; and
- Local Emergency Planning Committee (LEPC) 1-720-852-6600.

In addition to telephone notification, the responsible party must also send written notification describing the release and associated emergency response to both the CEPC (in this case, CDPHE) and the LEPC.

## Releases from RCRA facilities

Emergency releases from facilities permitted under the Resource Conservation and Recovery Act (RCRA) are reportable according to the permit requirements.

The permit often requires reporting to CDPHE, even if the amount of the release is less than a reportable quantity under SARA Title III (6 CCR 1007-3 Part 264).

Permitted facilities and generators and transporters of hazardous waste are required to have and implement a contingency plan that describes the actions facility personnel must take in response to fires, explosions or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, surface or ground water at the facility (6 CCR 1007-3 Sections 261, 262, 263, 264 and 265).

Whenever there is an imminent or actual emergency situation, appropriate state or local agencies, with designated response roles as described in the contingency plan, must be notified immediately.

The National Response Center or government official designated as the regional on-scene coordinator must be notified immediately if it is determined that the facility has had a release, fire or explosion that could threaten human health or the environment outside the facility.

CDPHE and local authorities must be notified when the facility is back in compliance and ready to resume operations. In addition, the facility must send a written report to CDPHE within 15 days of any incident that requires implementation of the contingency plan. The contingency plan should include current contact information for notification and submittal of written reports.

Permitted facilities, generators and transporters that store hazardous waste must notify CDPHE within 24 hours of any release to the environment that is greater than one (1) pound and must submit a written report to CDPHE within 30 days of the release (6 CCR 1007-3).

## Transportation accidents

Transportation accidents that require reporting:

- Result in a spill or release of a hazardous substance in excess of the reportable quantity (40 CFR Part 302.6)
- Cause injury or death or cause estimated property damage exceeding $50,000.
- Cause an evacuation of the general public lasting one or more hours.

Those that close or shut down one or more major transportation arteries or facilities or result in fire, breakage, spillage, or suspected contamination from radioactive or infectious substances must immediately be reported to the National Response Center.

Refer to the EPA SARA Title III List of Lists for those substances that have reportable quantities.

In addition to the NRC being notified, the local emergency number (9-1-1) must be called and CDPHE should be notified.

Written notification of any transportation accident involving a release of hazardous materials must be provided to the U.S. Department of Transportation within 30 days (49 CFR Part 171.16)

Since hazardous waste is a subset of hazardous materials, transporters who have discharged hazardous waste must notify the NRC and provide a written report to the US Department of Transportation as noted in the above reporting requirements.

The transporter must give immediate notice to the nearest Colorado State Patrol office (8 CCR 1507-8 HMP 5) and the nearest law enforcement agency if the accident or spill involved a vehicle (42-20-113(3) CRS).

Notification and a written report detailing the ultimate disposition of the discharge of hazardous waste must also be provided to CDPHE (6 CCR 1007-2 Section 263.30). This may be a duplicate copy of the US Department of Transportation report

In the event of a spill or discharge of hazardous waste at a transfer facility, the transporter must notify CDPHE within 24 hours if the spill exceeds 55 gallons or if there is a fire or explosion.

Within 15 days of a reportable incident, the transporter must submit a written report of the incident to CDPHE, including the final disposition of the material (6 CCR 1007-2 Section 263.40).

Releases of hazardous waste at a transfer facility may also require notification to the National Response Center and a written report to the U.S. Department of Transportation.

## Releases to water

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 CDPHE immediately (25-8-601 CRS).

Written notification to CDPHE must follow within five (5) days (5 CCR 1002-61, Section 61.8(5)(d)).

Any accidental discharge to the sanitary sewer system must be reported immediately to the local sewer authority and the affected wastewater treatment plant.

Releases of petroleum products and certain hazardous substances listed under the Federal Clean Water Act (40 CFR Part 116) must be reported to the National Response Center as well as to CDPHE (1-877-518-5608) as required under the Clean Water Act and the Oil Pollution Act.

## Releases to air

Any unpredictable failure of air pollution control or process equipment that results in the violation of emission

control regulations should be reported CDPHE by 10 a.m. of the following working day, followed by a written notice explaining the cause of the occurrence and describing action that has been or is being taken to correct the condition causing the violation and to prevent such excess emissions in the future (5 CCR 1001-2 Common Provisions Regulations Section II.E).

If emergency conditions cause excess emissions at a permitted facility, the owner/operator must provide notice to CDPHE no later than noon of the next working day following the emergency, and follow by written notice within one month of the time when emission limitations were exceeded due to the emergency (5 CCR 1001-5, Regulation 3 Part C, Section VII.C.4).

## Releases from oil and gas wells

All spills or releases of exploration and production wastes or produced fluids which meet the reporting thresholds of the Colorado Oil and Gas Conservation Commission (COGCC) Rule 906 shall be reported verbally to the COGCC within 24 hours of discovery and on the COGCC Spill/Release Report Form 19 within 72 hours of discovery.

Spills or releases are reportable to the COGCC in the following circumstances:

1) the spill or release impacts or threatens to impact any waters of the state, (which include surface water, ground water and dry gullies or storm sewers leading to surface water), a residence or occupied structure, livestock or a public byway;
2) a spill or release in which 1 barrel or more is released outside of berms or other secondary containment; or
3) any spill or release of 5 barrels or more.

COGCC also requires reportable spills or releases be reported to the surface owner and local government. Whether or not they are reportable, spills or releases of any size must be stopped, cleaned up, and investigated as soon as practicable.

If the spill or release impacts or threatens to impact waters of the state, it must also be reported immediately to CDPHE (25-8-601 CRS).

## Releases from storage tanks

Petroleum releases of 25 gallons or more (or any size that causes a sheen on nearby surface waters) from regulated aboveground and underground fuel storage tanks must be reported to the Division of Oil and Public Safety (303-318-8547) within 24 hours. If the report is made after business hours, please leave a message on the technical assistance line for the Division of Oil and Public Safety, and contact the 24 hour CDPHE Emergency and Incident Reporting Line. This includes spills from fuel dispensers.

Spills or releases of hazardous substances from regulated storage tanks in excess of the reportable quantity (40 CFR Part 302.6) must be reported to the National Response Center and the local fire authority immediately, and to the Division of Oil and Public Safety within 24 hours. (8-20.5-208 CRS and 7 CCR 1101-14 Article 4).

Owners/operators of regulated storage tanks must contain and immediately clean up a spill or overfill of less than 25 gallons of petroleum and a spill or overfill of a hazardous substance that is less than the reportable quantity.

If cleanup cannot be accomplished within 24 hours, the Division of Oil and Public Safety must be notified immediately (7 CCR 1101-14 Article 4-4).

CDPHE should also be notified in the case of hazardous substance releases as cleanup activities may be covered by state solid or hazardous waste requirements (6 CCR 1007-2, 6 CCR 1007-3).

Any release that has or may impact waters of the state (which include surface water, ground water and dry

gullies or storm sewers leading to surface water), no matter how small, must be reported immediately to CDPHE (25-8-601 CRS).

## Releases from pipelines

Releases of five or more gallons of hazardous liquids or carbon dioxide from a pipeline that result in explosion or fire, cause injury or death or cause estimated property damage (including cost of clean-up and recovery, value of lost product and property damage) exceeding $50,000 must be reported immediately to the US Department of Transportation Office of Pipeline Safety (49 CFR Part 195 Subpart B) and the National Response Center.

Releases of five or more gallons of hazardous liquids or carbon dioxide from interstate pipelines that do not involve explosion or fire, injury or death or property damage exceeding $50,000 should be reported to the US Department of Transportation Office of Pipeline Safety within 30 days after the incident.

Releases of natural gas from intrastate pipelines that cause injury or death, property damage in excess of $50,000 (including the cost of lost product), closure of a public road, or evacuation of 50 or more people must be reported immediately to the Colorado Public Utilities Commission, Pipeline Safety Group (4 CCR 723-11-2).

Releases of natural gas or liquefied natural gas (LNG) from interstate pipelines that cause injury or death, property damage in excess of $50,000 (including the cost of lost product), or results in an emergency shutdown of the facility must be reported immediately to the National Response Center and the US Dept of Transportation Office of Pipeline Safety.

Releases of oil, petroleum products or other hazardous liquids from interstate and intrastate pipelines that have or 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 CDPHE immediately (25-8-601 CRS). CDPHE should also be notified of releases to soil, as cleanup activities may be covered by state solid or hazardous waste requirements (6 CCR 1007-2, 6 CCR 1007-3).

## Radiological accidents, incidents, and events

CDPHE must be notified of any condition that has caused or threatens to cause an event, which meets or exceeds the criteria specified in (6 CCR 1007-1) RH 4.51 and RH 4.52 of the State of Colorado *Rules and Regulations Pertaining to Radiation Control*. Reportable events include lost radioactive materials, lost radiation producing machines, over-exposures to persons, contamination events and fires or explosions involving radioactive materials.

Depending upon the severity of the event, notification may be required immediately, within 24 hours, or within 30 days. In most cases, a written follow-up report is also required.

If you are unsure of the proper notification requirement, please contact CDPHE immediately. Telephone event notifications can be made to the CDPHE Radiation Program at any time by calling 1-303-877-9757.

## Notification Numbers

Colorado Department of Public Health and Environment toll-free 24-hour environmental emergency and incident reporting line: (877) 518-5608 (24-hour)

National Response Center
(800) 424-8802 (24-hour)

State Oil Inspector (Colorado Division of Oil & Public Safety-Above & Underground Storage Tank Regulators)
(303) 318-8547

# Cost Estimates

# 2015 Financial Assurance

# Estimate Form (with pre-plat construction)

| Project Information | |
|---|---|
| Grazing Yak 19145002 | 4/16/2019 |
| Project Name | Date |

| Section 1 - Grading and Erosion Control BMPs | Quantity | Units | | Price | | | % Complete | Remaining | |
|---|---|---|---|---|---|---|---|---|---|
| Earthwork* | 39,000.00 | CY | @ | $ $5 | = | $ 195,000.00 | | $ 195,000.00 | * |
| Permanent Seeding* (inc. noxious weed mgmnt.) | 43.00 | AC | @ | $ $582 | = | $ 25,026.00 | | $ 25,026.00 | * |
| Mulching* | | AC | @ | $ $507 | = | $ | | $ - | * |
| Permanent Erosion Control Blanket* | 2,700.00 | SY | @ | $ $6 | = | $ 16,200.00 | | $ 16,200.00 | * |
| Temporary Erosion Control Blanket | | SY | @ | $ $3 | | $ | | $ - | |
| Vehicle Tracking Control | 2.00 | EA | @ | $ $1,625 | = | $ 3,250.00 | | $ 3,250.00 | |
| Safety Fence | | LF | @ | $ $3 | = | $ | | $ - | |
| Silt Fence | 4,000.00 | LF | @ | $ $4 | = | $ 16,000.00 | | $ 16,000.00 | |
| Temporary Seeding | 20.00 | AC | @ | $ $485 | = | $ 9,700.00 | | $ 9,700.00 | |
| Temporary Mulch | | AC | @ | $ $507 | = | $ | | $ - | |
| Erosion Bales | | EA | @ | $ $21 | = | $ | | $ - | |
| Erosion Logs | | LF | @ | $ $6 | = | $ | | $ - | |
| Rock Ditch Checks | | EA | @ | $ | = | $ | | $ - | |
| Inlet Protection | | EA | @ | $ $153 | = | $ | | $ - | |
| Sediment Basin | 5.00 | EA | @ | $ $1,625 | = | $ 8,125.00 | | $ 8,125.00 | |
| Concrete Washout Basin | | EA | @ | $ $776 | = | $ | | $ - | |
| | | | @ | $ | = | $ | | $ - | |
| * Subject to defect warranty financial assurance. DO NOT ENTER MORE THAN 80% COMPLETE. A minimum of 20% to be retained up to final acceptance process. | | | | **Section 1 Subtotal** | = | $ 273,301.00 | | $ 273,301.00 | |

| Section 2 - Public Improvements** | Quantity | Units | | Price | | | % Complete | Remaining | |
|---|---|---|---|---|---|---|---|---|---|
| **- Roadway Improvements** | | | | | | | | | |
| Construction Traffic Control | | LS | @ | $ | = | $ | | $ - | * |
| Aggregate Base Course | | Tons | @ | $ $18 | = | $ | | $ - | * |
| Asphalt Pavement | | Tons | @ | $ $65 | = | $ | | $ - | * |
| Raised Median, Paved | | SF | @ | $ $7 | = | $ | | $ - | * |
| Electrical Conduit, Size = | | LF | @ | $ $14 | = | $ | | $ - | * |
| Traffic Signal, complete intersection | | EA | @ | $ $250,000 | = | $ | | $ - | * |
| Regulatory Sign | | EA | @ | $ $100 | = | $ | | $ - | * |
| Advisory Sign | | EA | @ | $ $100 | = | $ | | $ - | * |
| Guide/Street Name Sign | | EA | @ | $ | | $ | | $ - | * |
| Epoxy Pavement Marking | | SF | @ | $ $12 | = | $ | | $ - | * |
| Thermoplastic Pavement Marking | | SF | @ | $ $22 | = | $ | | $ - | * |
| Barricade - Type 3 | | EA | @ | $ $115 | = | $ | | $ - | * |
| Delineator (Type I) | | EA | @ | $ $21 | = | $ | | $ - | * |
| Curb and Gutter, Type C (Ramp) | | LF | @ | $ $21 | = | $ | | $ - | * |
| Curb and Gutter, Type A (6" Vertical) | | LF | @ | $ $16 | = | $ | | $ - | * |
| Curb and Gutter, Type B (Median) | | LF | @ | $ $13 | = | $ | | $ - | * |
| Concrete Sidewalk, 4" | | SY | @ | $38 | | $ | | $ - | * |
| Concrete Sidewalk, 5" | | SY | @ | $48 | | $ | | $ - | * |
| Concrete Sidewalk, 6" | | SY | @ | $57 | | $ | | $ - | * |
| Pedestrian Ramp | | SY | @ | $ $108 | = | $ | | $ - | * |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Cross Pan | | | SY | @ | $ | $53 | = | $ | | $ - * |
| Curb Chase | | | EA | @ | $ | $1,300 | = | $ | | $ - * |
| Guardrail Type 3 (W-Beam) | | | LF | @ | $ | $18 | = | $ | | $ - * |
| Guardrail Type 7 (Concrete) | | | LF | @ | $ | $67 | = | $ | | $ - * |
| Guardrail End Anchorage | | | EA | @ | $ | $1,978 | = | $ | | $ - * |
| Guardrail Impact Attenuator | | | EA | @ | $ | $3,564 | = | $ | | $ - * |
| Sound Barrier Fence | | | LF | @ | $ | $100 | = | $ | | $ - * |
| | | | | | | | | | | |
| **- Storm Drain Improvements** | | | | | | | | | | |
| Concrete Box Culvert (M Standard), Size ( W x H ) | | | LF | @ | $ | | = | $ | | $ - * |
| Reinforced Concrete Pipe (RCP) | Size | | LF | @ | $ | | = | $ | | $ - * |
| 18" Reinforced Concrete Pipe | | | LF | @ | $ | $69 | = | $ | | $ - * |
| 24" Reinforced Concrete Pipe | | | LF | @ | $ | $84 | = | $ | | $ - * |
| 30" Reinforced Concrete Pipe | | | LF | @ | $ | $94 | = | $ | | $ - * |
| 36" Reinforced Concrete Pipe | | | LF | @ | $ | $124 | = | $ | | $ - * |
| 42" Reinforced Concrete Pipe | | | LF | @ | $ | $134 | = | $ | | $ - * |
| 48" Reinforced Concrete Pipe | | | LF | @ | $ | $178 | = | $ | | $ - * |
| 54" Reinforced Concrete Pipe | | | LF | @ | $ | $182 | = | $ | | $ - * |
| 60" Reinforced Concrete Pipe | | | LF | @ | $ | $216 | = | $ | | $ - * |
| 66" Reinforced Concrete Pipe | | | LF | @ | $ | $263 | = | $ | | $ - * |
| 72" Reinforced Concrete Pipe | | | LF | @ | $ | $283 | = | $ | | $ - * |
| Corrugated Steel Pipe (CSP) | Size | | LF | @ | $ | | = | $ | | $ - * |
| 18" Corrugated Steel Pipe | | | LF | @ | $ | $66 | = | $ | | $ - * |
| 24" Corrugated Steel Pipe | | | LF | @ | $ | $96 | = | $ | | $ - * |
| 30" Corrugated Steel Pipe | | | LF | @ | $ | $101 | = | $ | | $ - * |
| 36" Corrugated Steel Pipe | | | LF | @ | $ | $136 | = | $ | | $ - * |
| 42" Corrugated Steel Pipe | | | LF | @ | $ | $147 | = | $ | | $ - * |
| 48" Corrugated Steel Pipe | | | LF | @ | $ | $169 | = | $ | | $ - * |
| 54" Corrugated Steel Pipe | | | LF | @ | $ | $193 | = | $ | | $ - * |
| 60" Corrugated Steel Pipe | | | LF | @ | $ | $227 | = | $ | | $ - * |
| 66" Corrugated Steel Pipe | | | LF | @ | $ | $278 | = | $ | | $ - * |
| 72" Corrugated Steel Pipe | | | LF | @ | $ | $330 | = | $ | | $ - * |
| 78" Corrugated Steel Pipe | | | LF | @ | $ | $381 | = | $ | | $ - * |
| 84" Corrugated Steel Pipe | | | LF | @ | $ | $432 | = | $ | | $ - * |
| Flared End Section (FES) RCP | ┼ | | EA | @ | $ | | = | $ | | $ - * |
| Flared End Section (FES) CSP | ┼ | | EA | @ | $ | | = | $ | | $ - * |
| End Treatment- Headwall | | | EA | @ | $ | | = | $ | | $ - * |
| End Treatment- Wingwall | | | EA | @ | $ | | = | $ | | $ - * |
| End Treatment - Cutoff Wall | | | EA | @ | $ | | = | $ | | $ - * |
| Curb Inlet (Type R) L=5', Depth < 5 feet | | | EA | @ | $ | $3,791 | = | $ | | $ - * |
| Curb Inlet (Type R) L=5', 5'-10' Depth | | | EA | @ | $ | $5,044 | | $ | | $ - * |
| Curb Inlet (Type R) L =5' , 10'-15' Depth | | | EA | @ | $ | $6,027 | = | $ | | $ - * |
| Curb Inlet (Type R) L =10', Depth < 5 feet | | | EA | @ | $ | $5,528 | = | $ | | $ - * |
| Curb Inlet (Type R) L =10' , 5'-10' Depth | | | EA | @ | $ | $6,694 | = | $ | | $ - * |
| Curb Inlet (Type R) L =10' , 10'-15' Depth | | | EA | @ | $ | $7,500 | = | $ | | $ - * |
| Curb Inlet (Type R) L =15' , Depth < 5 feet | | | EA | @ | $ | $7,923 | = | $ | | $ - * |
| Curb Inlet (Type R) L =15' , 5'-10' Depth | | | EA | @ | $ | $8,000 | = | $ | | $ - * |
| Curb Inlet (Type R) L =15' , 10'-15' Depth | | | EA | @ | $ | $8,800 | = | $ | | $ - * |
| Curb Inlet (Type R) L =20' , Depth < 5 feet | | | EA | @ | $ | $8,000 | = | $ | | $ - * |
| Curb Inlet (Type R) L =20' , 5'-10' Depth | | | EA | @ | $ | $8,830 | = | $ | | $ - * |
| Curb Inlet (Type R) L =_____', __' - __' Depth | | | EA | @ | $ | | = | $ | | $ - * |
| Curb Inlet (Type R) L =_____', __' - __' Depth | | | EA | @ | $ | | = | $ | | $ - * |
| Grated Inlet (Type C), < 5' deep | | | EA | @ | $ | $3,270 | = | $ | | $ - * |
| Grated Inlet (Type D), < 5' deep | | | EA | @ | $ | $3,908 | = | $ | | $ - * |
| Storm Sewer Manhole, Box Base, Depth < 15 feet | | | EA | @ | $ | $8,592 | = | $ | | $ - * |
| Storm Sewer Manhole, Slab Base, Depth < 15 feet | | | EA | @ | $ | $4,575 | = | $ | | $ - * |
| Geotextile (Erosion Control) | | | SY | @ | $ | $5 | = | $ | | $ - * |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Rip Rap, d50 Size from 6" to 24" | | CY | @ | $ $98 | = | $ | | $ - | * |
| Rip Rap, Grouted | | CY | @ | $ $215 | = | $ | | $ - | * |
| Drainage Channel Construction, Size ( W x H ) | | LF | @ | $ | = | $ | | $ - | * |
| Channel Lining, Concrete | | CY | @ | $ $450 | = | $ | | $ - | * |
| Channel Lining, Rip Rap | | CY | @ | $ $98 | = | $ | | $ - | * |
| Channel Lining, Grass | | AC | @ | $ $1,287 | = | $ | | $ - | * |
| Channel Lining, Other Stabilization | | SY | @ | $ $3 | = | $ | | $ - | * |
| Detention Outlet Structure | | EA | @ | $ | = | $ | | $ - | * |
| Detention Emergency Spillway | | EA | @ | $ | = | $ | | $ - | * |
| Permanent Water Quality Facility (Describe) | | EA | @ | $ | = | $ | | $ - | * |
| | | | | | | | | | |
| * Subject to defect warranty financial assurance. DO NOT ENTER MORE THAN 80% COMPLETE. A minimum of 20% to be retained up to final acceptance process. ┼ For flared end sections, multiply pipe LF cost by 6 | | | | **Section 2 Subtotal** | = | $ | | | ** |

| Section 3 - Common Development Improvements (Private or District)*** | Quantity | Units | | Price | | | % Complete | Remaining |
|---|---|---|---|---|---|---|---|---|
| **- Roadway Improvements** | | | | | | | | |
| (Include any applicable items from above Public Improvements list, that are to be private and NOT maintained by El Paso County) | | | @ | $ | = | $ | | $ - |
| | | | @ | $ | = | $ | | $ - |
| | | | @ | $ | = | $ | | $ - |
| Concrete Sidewalk, 4" thick | | SY | @ | $ $38 | = | $ | | $ - |
| | | | @ | $ | = | $ | | $ - |
| | | | @ | $ | = | $ | | $ - |
| | | | | | | | | |
| **- Storm Drain Improvements** | | | | | | | | |
| Permanent Detention Structure | 1.00 | | @ | $ 30,000 | = | $ 30,000.00 | | $ 30,000.00 |
| | | | @ | $ | = | $ | | $ - |
| | | | @ | $ | = | $ | | $ - |
| | | | @ | $ | = | $ | | $ - |
| | | | @ | $ | = | $ | | $ - |
| | | | @ | $ | = | $ | | $ - |
| | | | | | | | | |
| **- Water System Improvements** | | | | | | | | |
| Water Main Pipe (PVC), Size 8" | | LF | @ | $ $94 | = | $ | | $ - |
| Water Main Pipe (Ductile Iron), Size 8" | | LF | @ | $ $137 | = | $ | | $ - |
| Gate Valves, 8" | | EA | @ | $ $1,852 | = | $ | | $ - |
| Fire Hydrant Assembly w/ all valves | | EA | @ | $ $6,430 | = | $ | | $ - |
| Water Service Line Installation, including tap and valves | | EA | @ | $ 1,253 | = | $ | | $ - |
| Fire Cistern Installation, complete | | EA | @ | $ | = | $ | | $ - |
| | | | | | | | | |
| **- Sanitary Sewer Improvements** | | | | | | | | |
| Sewer Main Pipe (PVC), Size 8" | | LF | @ | $ $94 | = | $ | | $ - |
| Sanitary Sewer Manhole, Depth < 15 feet | | EA | @ | $ $4,575 | = | $ | | $ - |
| Sanitary Service Line Installation, complete | | EA | @ | $ 1,516 | = | $ | | $ - |
| Sanitary Sewer Lift Station, complete | | EA | @ | $ | = | $ | | $ - |
| | | | | | | | | |
| **- Landscaping (If Applicable)** | | | | | | | | |
| (List landscaping line items and cost - usually only in case of subdivision specific condition of approval, or PUD) | | EA | @ | $ | = | $ | | $ - |
| | | EA | @ | $ | = | $ | | |
| | | EA | @ | $ | = | $ | | $ - |
| | | EA | @ | $ | = | $ | | $ - |
| | | EA | @ | $ | = | $ | | $ - |
| | | | | | | | | |
| ***items in this section are not subject to defect warranty financial assurance | | | | | | | | |
| | | | | **Section 3 Subtotal** | = | $ 30,000.00 | | 30,000.00 |

| Financial Assurance Totals | | |
|---|---|---|
| As-built drawings - **(FILL IN IF THERE ARE ANY PUBLICLY-MAINTAINED IMPROVEMENTS)** | $ | $5,000 |
| ( Inc. survey to verify detention pond volumes.) | **Total Construction Financial Assurance** | $308,301.00 |
| | (Sum of all section subtotals) | |
| | | |
| | **Total Remaining Construction Financial Assurance** | 308,301.00 |
| | (Sum of all section totals less credit for items complete) | |
| | | |
| | **Total Defect Warranty Financial Assurance** | $47,245.20 |
| (20% of all items identified as public improvements(*). To be collateralized at time of preliminary acceptance) | | |

Approvals

I hereby certify that this is an accurate and complete estimate of costs for the work as shown on the approved Construction Drawings associated with the Project.

Brendan D. Miller, P.E. 4/16/2019

Engineer Date

(P.E. Seal)

Approved by Owner / Applicant Date

Approved by El Paso Couny Engineer / ECM Administrator Date

**Financial Surety**

**To be provided following Site Development Plan Approval**

# BMP Operations and Maintenance Plan:

# Including the Attached Detention Maintenance Agreement

# Stormwater Management Facility
# Operation and Maintenance (O&M) Manual

**for:**

***Grazing Yak Solar Project***

**Located at:**

***31275 Washington Road, Calhan, CO 80808***

**Prepared for:**

**Grazing Yak Solar LLC**
**700 Universe Boulevard**
**Juno Beach, Florida 33408**
***Contact: Chris Fluharty***
**(719) 347-7681**

**Prepared by:**

**CORE Consultants, Inc.**
**1950 W. Littleton Blvd., Suite 109**
**Littleton, CO 80120**
**(303) 703-4444**

**Stormwater Management Facility**
**Operation and Maintenance (O&M) Manual**

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**Stormwater Management Facility**
**Operation and Maintenance (O&M) Manual**

## I. Compliance with Stormwater Facility Maintenance Requirements

All property owners are responsible for ensuring that stormwater facilities installed on their property are properly maintained and that they function as designed. In some cases, this maintenance responsibility may be assigned to others through special agreements. The maintenance responsibility for a stormwater facility may be designated on the subdivision plat, the site development plan, and/or within a maintenance agreement for the property. Property owners should be aware of their responsibilities regarding stormwater facility maintenance. Maintenance agreement(s) associated with this property are provided in Appendix A.

## II. Inspection & Maintenance – Annual Reporting

Requirements for the inspection and maintenance of stormwater facilities, as well as reporting requirements, are included in this Stormwater Management Facility Operation and Maintenance (O&M) Manual.

Copies of the Inspection and Maintenance forms for each of the stormwater facilities are located in Appendix D and E. A standard annual reporting form is provided in Appendix F.

## III. Preventative Measures to Reduce Maintenance Costs

The most effective way to maintain your water quality facility is to prevent the pollutants from entering the facility in the first place. Common pollutants include sediment, trash & debris, chemicals, dog wastes, runoff from stored materials, illicit discharges into the storm drainage system and many others. A thoughtful maintenance program will include measures to address these potential contaminants and will save money and time in the long run. Key points to consider in your maintenance program include:

- Educate property owners/residents to be aware of how their actions affect water quality, and how they can help reduce maintenance costs.
- Keep properties, streets and gutters, and parking lots free of trash, debris, and lawn clippings.
- Ensure the proper disposal of hazardous wastes and chemicals.
- Plan lawn care to minimize the use of chemicals and pesticides.
- Sweep paved surfaces and put the sweepings back on the lawn.
- Be aware of automobiles leaking fluids. Use absorbents such as cat litter to soak up drippings – dispose of properly.
- Re-vegetate disturbed and bare areas to maintain vegetative stabilization.
- Clean out the upstream components of the storm drainage system, including inlets, storm sewers and outfalls.
- Do not store materials outdoors (including landscaping materials) unless properly protected from runoff.

## IV. Access

The stormwater management facility located on site has a designated access location. Refer to the Stormwater Facilities Map located in Appendix G for access location.

## V. Safety

Keep safety considerations at the forefront of inspection procedures at all times. Likely hazards should be anticipated and avoided. Never enter a confined space (outlet structure, manhole, etc) without proper training or equipment. A confined space should never be entered without at least one additional person present.

If a toxic or flammable substance is discovered, leave the immediate area and contact the local Sheriff at 911.

Potentially dangerous (e.g., fuel, chemicals, hazardous materials) substances found in the areas must be referred to the local Sheriff's Office immediately for response by the Hazardous Materials Unit. The emergency contact number is 911.

Vertical drops may be encountered in areas located within and around the facility. Avoid walking on top of retaining walls or other structures that have a significant vertical drop. If a vertical drop is identified within the pond that is greater than 48" in height, make the appropriate note/comment on the maintenance inspection form.

**If any hazard is found within the facility area that poses an immediate threat to public safety, contact the local Sheriff's Office immediately.**

## VI. Field Inspection Equipment

It is imperative that the appropriate equipment is taken to the field with the inspector(s). This is to ensure the safety of the inspector and allow the inspections to be performed as efficiently as possible. Below is a list of the equipment that may be necessary to perform the inspections of all Stormwater Management Facilities:

- Protective clothing and boots.
- Safety equipment (vest, hard hat, confined space entry equipment).
- Communication equipment.
- Operation and Maintenance Manual for the site including stormwater management facility location maps.
- Clipboard.
- Stormwater Facility Maintenance Inspection Forms (See Appendix D).
- Manhole Lid Remover
- Shovel.

Some of the items identified above need not be carried by the inspector (manhole lid remover, shovel, and confined space entry equipment). However, this equipment should be available in the vehicle driven to the site.

## VII. Inspecting Stormwater Management Facilities

The quality of stormwater entering the waters of the state relies heavily on the proper operation and maintenance of permanent best management practices. Stormwater management facilities must be periodically inspected to ensure that they function as designed. The inspection will determine the appropriate maintenance that is required for the facility.

A. Inspection Procedures

All stormwater management facilities are required to be inspected by a qualified individual at a minimum of once per year. Inspections should follow the inspection guidance found in the SOP for the specific type of facility. (Appendix C of this manual).

B. Inspection Report

The person(s) conducting the inspection activities shall complete the appropriate inspection report for the specific facility. Inspection reports are located in Appendix D.

The following information explains how to fill out the Inspection Forms:

## General Information

This section identifies the facility location, person conducting the inspection, the date and time the facility was inspected, and approximate days since the last rainfall. Property classification is identified as single-family residential, multi-family residential, commercial, or other.

The reason for the inspection is also identified on the form depending on the nature of the inspection. All facilities should be inspected on an annual basis at a minimum. In addition, all facilities should be inspected after a significant precipitation event to ensure the facility is draining appropriately and to identify any damage that occurred as a result of the increased runoff.

## Inspection Scoring

For each inspection item, a score must be given to identify the urgency of required maintenance. The scoring is as follows:

0 = No deficiencies identified.

1 = Monitor – Although maintenance may not be required at this time, a potential problem exists that will most likely need to be addressed in the future. This can include items like minor erosion, concrete cracks/spalling, or minor sediment accumulation. This item should be revisited at the next inspection.

2 = Routine Maintenance Required – Some inspection items can be addressed through the routine maintenance program (See SOP in appendix A). This can include items like vegetation management or debris/trash removal.

3 = Immediate Repair Necessary – This item needs immediate attention because failure is imminent or has already occurred. This could include items such as structural failure of a feature (outlet works, forebay, etc), significant erosion, or significant sediment accumulation. This score should be given to an item that can significantly affect the function of the facility.

N/A This is checked by an item that may not exist in a facility. Not all facilities have all of the features identified on the form (forebay, micro-pool, etc.).

## Inspection Summary/Additional Comments

Additional explanations to inspection items, and observations about the facility not covered by the form, are recorded in this section.

Overall Facility Rating

An overall rating must be given for each facility inspected. The overall facility rating should correspond with the highest score (0, 1, 2, 3) given to any feature on the inspection form.

C. Verification of Inspection and Form Submittal

The Stormwater Management Facility Inspection Form provides a record of inspection of the facility. Inspection Forms for each facility type are provided in Appendix D. The verification and the inspection form(s) shall be reviewed and submitted by the property owner or property manager.

Refer to Section II of this Manual regarding the annual reporting of inspections.

## VIII. Maintaining Stormwater Management Facilities

Stormwater management facilities must be properly maintained to ensure that they operate correctly and provide the water quality treatment for which they were designed. Routine maintenance performed on a frequently scheduled basis, can help avoid more costly rehabilitative maintenance that results when facilities are not adequately maintained.

A. Maintenance Categories

Stormwater management facility maintenance programs are separated into three broad categories of work. These categories are based largely on the Urban Drainage and Flood Control District's Maintenance Program for regional drainage facilities. The categories are separated based upon the magnitude and type of the maintenance activities performed. A description of each category follows:

Routine Work

The majority of this work consists of scheduled mowings and trash and debris pickups for stormwater management facilities during the growing season. This includes items such as the removal of debris/material that may be clogging the outlet structure well screens and trash racks. It also includes activities such as weed control, mosquito treatment, and algae treatment. These activities normally will be performed numerous times during the year.

Restoration Work

This work consists of a variety of isolated or small-scale maintenance and work needed to address operational problems. Most of this work can be completed by a small crew, with minor tools, and small equipment.

Rehabilitation Work

This work consists of large-scale maintenance and major improvements needed to address failures within the stormwater management facilities. This work requires consultation with El Paso County Department of Public Works and may require an engineering design with construction plans to be prepared for review and approval. This work may also require more specialized maintenance equipment, surveying, construction permits or assistance through private contractors and consultants. These items require prior correspondence with El Paso County Department of Public Works and require that completed maintenance forms be submitted to El Paso County Department of Public Works for each maintenance activity.

B. Maintenance Personnel

Maintenance personnel must be qualified to properly maintain stormwater management facilities. Inadequately trained personnel can cause additional problems resulting in additional maintenance costs.

C. Maintenance Forms

The Stormwater Management Facility Maintenance Form provides a record of maintenance activities. Maintenance Forms for each facility type are provided in Appendix E. Maintenance Forms shall be completed by the contractor completing the required maintenance items. The form shall then be reviewed by the property owner or an authorized agent of the property owner and submitted on an annual basis to the El Paso County Department of Public Works.

Refer to Section II of this Manual regarding the annual reporting of inspections and maintenance activities performed.

**Appendix A** - Maintenance Agreement(s)

El Paso County Case No. _____

# STORMWATER FACILITY MAINTENANCE AGREEMENT

This Stormwater Maintenance Agreement is entered into this day of , 2019, by and between the Board of County Commissioners of El Paso County, a political subdivision of the State of Colorado (the "County"), and Grazing Yak Solar, LLC (the "Owner"), and collectively referred to as the "Parties."

## RECITALS

WHEREAS, the above-named property owner is the owner of a certain parcel of land being the west half of section 29, Township 12 South, Range 61 West of the 6th Principal Meridian, and the North 820 feet of the West 2,450 feet of the West half of said section 29, County of El Paso, State of Colorado, a/k/a 31275 Washington Road, Calhan, Colorado 80808, (hereinafter referred to as the "Property"); and

WHEREAS, a Phase III Drainage Report and Plan ("Plan") for the Property have been approved by the County; and

WHEREAS, said Plan provides for stormwater management facilities including such facilities intended to reduce, detain, convey, and manage stormwater runoff and also water quality facilities (collectively referred to as "Facilities"); and

WHEREAS, the Facilities shown on the Plan shall be constructed and adequately maintained by the Owner; and

WHEREAS, the County requires that the Owner submit an Operation and Maintenance Manual ("O&M Manual") as specified by El Paso County; and

NOW, THEREFORE, in consideration of mutual benefits and other good and valuable consideration, the receipt and sufficiency or which are hereby acknowledged, the Parties agree as follows:

## AGREEMENT

1. The Owner shall maintain the Facilities as described in the Plan to ensure that such Facilities are and will remain in proper working condition in accordance with the El Paso County Engineering Criteria Manual and other applicable legal requirements. Maintenance shall include, but not be limited to, routine landscaping, sediment removal, repair, reconstruction, or replacement of the Facilities as necessary to meet the requirements of this Agreement.

2. The maintenance of the Facilities shall be performed in accordance with the approved O&M Manual for the Facilities.

3. The Owner shall cause inspections of the Facilities to be conducted as follows:

   a) The Owner agrees to cause inspection of the Facilities, at the Owner's expense, by a person experienced in the inspection of stormwater facilities. Inspections shall occur at least once every calendar year.

b) An inspection report for the Facilities shall be submitted in writing to County, or its designated representative, for each calendar year by no later than May 31st of the following year. The inspection report shall be in accordance with the requirements set forth in the O&M Manual.

c) The Owner agrees to perform promptly all needed maintenance and repairs and report such activities to the County, or its designated representative, pursuant to the O&M Manual.

4. The Owner, hereby, grants, bargains and conveys to the County, officers, agents, and employees an easement over the Property for access from public rights-of-way, abutting private roadways, and/or private driveways, to the Facilities for the purpose of inspecting, operating, installing, constructing, reconstructing, maintaining, repairing or replacing the Facilities to the extent that Owner fails to do so and as necessary to ensure their proper working condition as provided in paragraphs one and two above.

5. In the event the Owner fails to inspect, report, or properly maintain the Facilities within thirty (30) days after written notice by the County of such deficiencies to the owner, the County, or its designated representative, may enter upon the Property and take whatever steps it deems necessary to maintain or repair the Facilities and bill the owner for such expense. However, if the Owner's failure to properly maintain the Facilities could cause damage to property, loss of life or a violation of a NPDES MS4 Permit, the County, or its designated representative, may take immediate action, without notice to the Owner, to maintain or repair the Facilities. It is expressly understood and agreed that the County, or its designated representative, is under no obligation to maintain or repair the Facilities, and in no event shall this Agreement be considered to impose any such obligation on the County.

6. The Owner agrees that it will not at any time dedicate the Facilities to the public, to public use or to the County without the County's written consent, nor will it subdivide or convey the Property without a covenant providing that a proportionate share of the cost of maintenance and other costs associated with other of the obligations and duties contained herein runs with each subdivided part of the original tract or parcel of land.

7. In an event of emergency involving Facilities, the County, its officers, agents, and employees may enter immediately upon the Property and take whatever reasonable steps it deems necessary to meet the emergency. The County shall notify the Owner of such emergency and entry as soon as possible but in no event later than twenty-four (24) hours after such entry. Alternatively, the County may notify the Owner by phone to take whatever reasonable action is necessary within a specified period of time. Should the Owner fail to respond, or should the Owner inform the County that it intends to not respond within the specified period of time, the County, its officers, agents, and employees may enter immediately upon emergency.

8. The County shall not pay any compensation at any time for its use of the Property in any way necessary for the inspections and maintenance of the Facilities, including access to the Facilities.

9. In the event the County, pursuant to this Agreement, performs work or expends any funds reasonably necessary for the maintenance or repair of the Facilities, including labor, equipment, supplies and materials, the Owner agrees to reimburse the County, or its designated representative, within thirty (30) days after the County gives the Owner written notice of such expense. If the Owner or its successors or assigns fails to make timely payment as required herein, interest on such payment shall accrue at the rate of 1½ % per month until paid in full.

10. Any amount owed to County and not paid within thirty (30) days of the date of notification shall be the joint and several obligation of any owner of record of the Property or any portion thereof served by the Facilities and any successors in interest to such owner on the date such maintenance or repair was performed.

11. The Owner, its successors, and assigns shall indemnify and hold harmless County, its officers, agents, and employees for any and all damages, accidents, casualties, occurrences or claims which might arise or be asserted against the County arising out of or resulting from the construction, presence, existence maintenance or use of the Facilities.

12. The Owner shall notify the County when the Owner transfers its interest in the Property or any portion thereof. The Owner shall provide the County with a copy of any such deed.

13. The responsibilities and obligations of the Owner shall constitute a covenant running with the land, and shall be binding upon all present and subsequent owners, their administrators, executors, assigns, heirs, and any other successors in interest so long as they own an interest in the Property of any portion thereof served by the Facilities.

14. The Owner acknowledges that any approved Final Development Plan, Administrative Site Plan, Location and Extent, Use by Special Review, Engineering Case, or other case process determined by El Paso County to be a final plan, shall include the following language: "The property owner, its successors, and assigns shall be responsible for maintenance of the Facilities pursuant to the Operations and Maintenance (O&M) Manual and all permanent Best Management Practices (BMP'S). Requirements include, but are not limited to, performing the specified BMP's contained in the O&M Manual recorded on _____ in the El Paso County Clerk and Recorder's Office at reception number _____ _____, and maintaining the Facilities shown on the approved Phase III Drainage Report and the approved Construction Plans." If the Facilities are not properly maintained, the County may provide necessary maintenance and assess the maintenance cost to the owner of the property. Failure to abide by the above note shall constitute a Zoning Violation, as defined in the El Paso County Land Development Code.

15. This Agreement shall be recorded in the El Paso County Clerk and Recorder's Office.

16. In the event either of the Parties hereto files a law suit to enforce the terms of this Agreement, the prevailing party shall be entitled to its reasonable costs and attorney fees.

[Remainder of page intentionally left blank]

IN WITNESS WHEREOF, the County and Owner have executed this Agreement on the date set forth above.

For the Board of County Commissioners:

_____
By: Scot Cuthbertson.
Executive Director, Department of Public Works

OWNER:

By:

Name:

Title:

STATE OF FLORIDA )
)SS.
COUNTY OF PALM BEACH )

The foregoing instrument was acknowledged before me this _____ day of _____, 20___, by , as _____ of _____.

My commission expires _____. Witness my hand and official seal.

_____
Signature

_____
Name of Notary

_____
Address of Notary

(SEAL)

**EXHIBIT A: GRAZING YAK, LLC SOLAR ARRAY LEGAL DESCRIPTION**

## PARCEL CONTAINING THE SOLAR ARRAY:

TAX ASSESSOR SCHEDULE NO. 1200000040
A PARCEL OF LAND BEING THE WEST HALF OF SECTION 29, TOWNSHIP 12 SOUTH, RANGE 61 WEST OF THE 6TH PRINCIPAL MERIDIAN, EL PASO COUNTY, COLORADO, LESS AND EXCEPT ANY EXISTING RIGHTS OF WAY AND ALSO EXCLUDING THE FOLLOWING PARCEL OF LAND:

THE NORTH 820 FEET OF THE WEST 2450 FEET OF THE WEST HALF OF SAID SECTION 29.

CONTAINING 271.850 ACRES, MORE OR LESS

## LEGEND & ABBREVIATIONS

- EX. PROJECT BOUNDARY LINE
- INVERTER BLOCK BOUNDARY
- P-PUG-1 — PROPOSED UNDERGROUND CIRCUIT 1
- P-PUG-2 — PROPOSED UNDERGROUND CIRCUIT 2
- X — EX. FENCE LINE
- PROPOSED SOLAR TRACKER
- BOUNDARY SET BACK LINE 10M
- BOUNDARY SET BACK LINE 15M
- PROPOSED PERMANENT ACCESS ROAD
- PROPOSED CAB
- PROPOSED SECONDARY CAB
- PROPOSED LAYDOWN AREA
- PROPOSED PROTECTED CROSSING
- GL — PROPOSED GRADING LIMITS
- 340 — PROPOSED INDEX CONTOUR LINE
- PROPOSED INTERVAL CONTOUR LINE
- 340 — EX. INDEX CONTOUR LINE
- EX. INTERVAL CONTOUR LINE
- EX. SECTION LINE
- EX. EASEMENT LINE
- X — EX. FENCE LINE
- POH — EX. OVERHEAD POWERLINE
- FO — EX. FIBER OPTIC LINE
- OIL — EX. OIL LINE
- EX. GRAVEL ROAD
- EX. ASHPALT PAVEMENT ROAD
- 395W MODULES
- 400W MODULES

**VICINITY MAP**
Scale: 1" = 5000'

**Westwood**

Phone (720) 531-8350 10170 Church Ranch Way, Suite #100
Westminster, CO 80021
westwoodps.com

Westwood Professional Services, Inc.


COLORADO LICENSED
BRENDAN RYAN MILLER
44186
PROFESSIONAL ENGINEER
04/22/2019

PREPARED FOR:

Mortenson construction

NEXTera ENERGY

REVISIONS:

| # | DATE | COMMENT |
|---|---|---|
| A | 02/27/19 | Issued for Review (30%) |
| B | 03/28/19 | Issued for Review (60%) |
| C | 04/22/19 | Permit Submittal Revisions |
| . | | |
| . | | |

# Grazing Yak Solar

El Paso County, Colorado

Preliminary Module Grouping

Not For Construction

DATE: 04/22/2019

SHEET: EX.102

1 Permanent Setention Basin - Plan View

1" = 50'

| Pipe Table | | | | | |
|---|---|---|---|---|---|
| Pipe Name | Size | Length | Slope | Inv Up | Inv Down |
| CMP-A | 12" | 50' | 2.01% | 6735.00' | 6734.00' |
| CMP-B | 18" | 40' | 3.13% | 6737.25' | 6736.00' |
| CMP-C | 18" | 40' | 3.12% | 6737.25' | 6736.00' |

3 2 - 18" CMP - Main Access Rd.

1" = 50'

4 Section View of 12" CMP - Main Access Rd. & Basin

1" = 50'

2 Proposed Main access Rd at Permanent Detention Basin - Profile

1" = 50'

Westwood

Phone (720) 531-8350 10170 Church Ranch Way, Suite #100
Westminster, CO 80021
westwoodps.com

Westwood Professional Services, Inc.


COLORADO LICENSED
PEGGY RAE MILLER
44186
PROFESSIONAL ENGINEER
04/22/2019

PREPARED FOR:

Mortenson construction

NEXTera ENERGY

REVISIONS:

| # | DATE | COMMENT |
|---|---|---|
| A | 04/22/19 | Permit Submittal Revisions |

0' 300' 600' 900'

# Grazing Yak Solar

El Paso County, Colorado

Detention Basin
Drainage Plan

Not For Construction

DATE: 04/22/2019

SHEET: DR.01

**Appendix B -** Description of Stormwater Management Facilities

**Appendix B**

**General Location and Description of Stormwater Management Facilities.**

## A. General Site Description

Grazing Yak Solar Project (Project) is located approximately five (5) miles southeast of the town of Calhan on land situated east and south of the intersection of McQueen Road and Washington Road. The site is within Sections 20, 29, and 30, Township 12 South, Range 61 West of the Sixth Principal Meridian. The Project will generate up to 35-megawatts (MW) of energy and will consist of solar panels, underground collection lines, DC to AC inverters, medium voltage transformers, circuit breakers and disconnect switches, upgrades within the existing Golden West Wind Energy Project ("Golden West") substation, two temporary laydown areas for use during construction, and the use of the existing Golden West Operations & Maintenance (O&M) building. The solar arrays will be located on a 272-acre parcel (1200000390) owned in fee simple by the Applicant. The collection lines will transport energy from the inverters and will converge at the northeast corner of the solar array area and run approximately one-mile north along a 300-foot wide collection line corridor to interconnect to the existing Golden West substation, owned and operated by the Applicant.

## B. General Stormwater Management Description

The solar facility will be constructed as to not significantly alter existing drainage patterns. Stormwater runoff within the solar array currently drains to an unnamed drainage to Horse Creek which is a tributary to the Arkansas River.

The Project will require gravel access paths to a small portion of the site, which will increase runoff. The Project will employ runoff reductions practices such as allowing sheet flow across grass buffers and minimize the increased imperviousness to 2% total for the site post construction. Natural flow patterns will convey stormwater runoff to the Extended Detention Basin (EDB). The EDB The EDB mitigates the increase of runoff generated by the access roads and small electrical equipment pads throughout the site. Runoff generated by the access roads will flow into the EDB through a combination of sheet flow from the south and flows entering from the adjacent channelized bypass to the north. The EDB will have an approximate volume of 1.54 acre-feet and release below historic runoff rates.

## C. Stormwater Facilities Site Plan

Inspection or maintenance personnel may utilize the Stormwater facilities Map located in Appendix G for locating the stormwater facilities within this development.

## D. On-Site Stormwater Maintenance Facilities

### Storage Facilities (Detention)

Detention for the Grazing Yak Solar project is provided in the on-site extended detention basin, located within the east-central portion of the Project, in line with the unnamed drainage to Horse Creek.

**Appendix C** - Standard Operation Procedures (SOP) for each facility type

# Standard Operation Procedures
for
# Inspection and Maintenance

# Extended Detention Basins
# (EDBs)

November 2007

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## EDB-1 BACKGROUND

Extended Detention Basins (EDBs) are one of the most common types of Stormwater Management Facilities utilized within the Front Range of Colorado. An EDB is a sedimentation basin designed to “extend” the runoff detention time, but to drain completely dry sometime after stormwater runoff ends. The EDB’s drain time for the water quality portion of the facility is typically 40 hours. The basins are considered to be “dry” because the majority of the basin is designed not to have a significant permanent pool of water remaining between runoff events.

EDBs are an adaptation of a detention basin used for flood control, with the primary difference is the addition of forebays, micropools and a slow release outlet design. Forebays are shallow concrete “pans” located at the inflow point to the basin and are provided to facilitate sediment removal within a contained area prior to releasing into the pond. These forebays collect and briefly hold stormwater runoff resulting in a process called sedimentation, dropping sediment out of the stormwater. The stormwater is then routed from the forebay into the concrete trickle channel and upper basin, the large grassy portion of the basin. The EDB uses a much smaller outlet that extends the emptying time of the more frequently occurring runoff events to facilitate pollutant removal. An EDB should have a small micropool just upstream of the outlet. This micropool is designed to hold a small amount of water to keep sediment and floatables from blocking the outlet orifices.

## EDB-2 INSPECTING EXTENDED DETENTION BASINS (EDBs)

### EDB-2.1 Access and Easements

Inspection or maintenance personnel may utilize the stormwater facility map located in Appendix G containing the location(s) of the access points and maintenance easements of the EDB(s) within this development.

### EDB-2.2 Stormwater Management Facilities Locations

Inspection or maintenance personnel may utilize the stormwater facility map located in Appendix G containing the location(s) of the EDB(s) within this development.

### EDB-2.3 Extended Detention Basin (EDB) Features

EDBs have a number of features that are designed to serve a particular function. Many times the proper function of one feature depends on another. For example, if a forebay is not properly maintained, it could negatively affect the performance of a feature downstream (trickle channel, micropool, etc.). Therefore, it is critical that each feature of the EDB is properly inspected and maintained to ensure that the overall facility functions as it was intended. Below is a list and description of the most common features within an EDB and the corresponding maintenance inspection items that can be anticipated:

Table EDB-1
**Typical Inspection & Maintenance Requirements Matrix**

| EDB Features | Sediment Removal | Mowing/ Weed control | Trash & Debris Removal | Erosion | Overgrown Vegetation Removal | Standing Water (mosquito/ algae control) | Structure Repair |
|---|---|---|---|---|---|---|---|
| **Inflow Points (outfalls)** | X | | X | | | | X |
| **Forebay** | X | | X | | | | X |
| **Low-flow channel** | X | | X | X | X | | X |
| **Bottom Stage** | X | X | X | X | X | X | |
| **Micropool** | X | | X | | X | X | X |
| **Outlet Works** | X | | X | | | | X |
| **Emergency Spillway** | | | X | X | X | | X |
| **Upper Stage** | | | X | X | | | |
| **Embankment** | | X | | X | X | | |

EDB-2.3.1 Inflow Points

Inflow Points or Outfalls into EDBs are the point source of the stormwater discharge into the facility. An inflow point is commonly a storm sewer pipe with a flared end section that discharges into the EDB. In some instances, an inflow point could be a drainage channel or ditch that flows into the facility.

An energy dissipater (riprap or hard armor protection) is typically immediately downstream of the discharge point into the EDB to protect from erosion. In some cases, the storm sewer outfall can have a toe-wall or cut-off wall immediately below the structure to prevent undercutting of the outfall from erosion.

*The typical maintenance items that are found with inflow points are as follows:*

*a. Riprap Displaced* – Many times, because the repeated impact/force of water, the riprap can shift and settle. If any portion of the riprap apron appears to have settled, soil is present between the riprap, or the riprap has shifted, maintenance may be required to ensure future erosion is prevented.

*b. Erosion Present/Outfall Undercut* – In some situations, the energy dissipater may not have been sized, constructed, or maintained appropriately and erosion has occurred. Any erosion within the vicinity of

the inflow point will require maintenance to prevent damage to the structure(s) and sediment transport within the facility.

*c. Sediment Accumulation* – Because of the turbulence in the water created by the energy dissipater, sediment often deposits immediately downstream of the inflow point. To prevent a loss in hydraulic performance of the upstream infrastructure, sediment that accumulates in this area must be removed in a timely manner.

*d. Structural Damage* – Structural damage can occur at anytime during the life of the facility. Typically, for an inflow, the structural damage occurs to the pipe flared end section (concrete or steel). Structural damage can lead to additional operating problems with the facility, including loss of hydraulic performance.

*e. Woody Growth/Weeds Present* – Undesirable vegetation can grow in and around the inflow area to an EDB that can significantly affect the performance of the drainage facilities discharging into the facility. This type of vegetation includes trees (typically cottonwoods) and dense areas of shrubs (willows). If woody vegetation is not routinely mowed/removed, the growth can cause debris/sediment to accumulate, resulting in blockage of the discharge. Also, tree roots can cause damage to the structural components of the inflow. Routine maintenance is essential for trees (removing a small tree/sapling is much cheaper and “quieter” than a mature tree). In addition, noxious weeds growing in the facility can result in the loss of desirable native vegetation and impact adjacent open spaces/land.

EDB-2.3.2 <u>Forebay</u>

A forebay is a solid surface (pad), typically constructed of concrete, immediately downstream of the inflow point. The forebay is designed to capture larger particles and trash to prevent them from entering the main portion of the EDB. The solid surface is designed to facilitate mechanical sediment removal (skid steer). The forebay typically includes a small diameter discharge pipe or v-notch weir on the downstream end and designed to drain the forebay in a specified period of time to promote sedimentation. The forebays vary in size and depth depending on the design and site constraints.

*The typical maintenance items that are found with forebays are as follows:*

*a. Sediment/Debris Accumulation* – Because this feature of the EDB is designed to provide the initial sedimentation, debris and sediment frequently accumulate in this area. If the sediment and debris is not removed from the forebay on a regular basis, it can significantly affect the function of other features within the EDB. Routine sediment removal from the forebay can

**significantly** reduce the need for dredging of the main portion of the EDB using specialized equipment (long reach excavators). Routine removal of sediment from the forebay can **substantially** decrease the long-term sediment removal costs of an EDB.

*b. Concrete Cracking/Failing* – The forebay is primarily constructed of concrete, which cracks, spalls, and settles. Damage to the forebay can result in deceased performance and impact maintenance efforts.

*c. Drain Pipe/Weir Clogged* – Many times the drainpipe or weir can be clogged with debris, and prevent the forebay from draining properly. If standing water is present in the forebay (and there is not a base flow), the forebay is most likely not draining properly. This can result in a decrease in performance and create potential nuisances with stagnant water (mosquitoes).

*d. Weir/Drain Pipe Damaged* – Routine maintenance activities, vandalism, or age may cause the weir or drain pipe in the forebay to become damaged. Weirs are typically constructed of concrete, which cracks and spalls. The drainpipe is typically smaller in diameter and constructed with plastic, which can fracture.

EDB-2.3.3 Trickle Channel (Low-Flow)

The trickle channel conveys stormwater from the forebay to the micro-pool of the EDB. The trickle channel is typically made of concrete. However, grass lined (riprap sides protected) is also common and can provide for an additional means of water quality within the EDB. The trickle channel is typically 6-9 inches in depth and can vary in width.

*The typical maintenance items that are found with trickle channels are as follows:*

*a. Sediment/Debris Accumulation* – Trickle channels are typically designed with a relatively flat slope that can promote sedimentation and the collection of debris. Also, if a trickle channel is grass lined it can accumulate sediment and debris at a much quicker rate. Routine removal of accumulated sediment and debris is essential in preventing flows from circumventing the trickle channel and affecting the dry storage portion of the pond.

*b. Concrete/Riprap Damage* – Concrete can crack, spall, and settle and must be repaired to ensure proper function of the trickle channel. Riprap can also shift over time and must be replaced/repaired as necessary.

*c. Woody Growth/Weeds Present* – Because of the constant moisture in the area surrounding the trickle channel, woody growth (cottonwoods/willows)

can become a problem. Trees and dense shrub type vegetation can affect the capacity of the trickle channel and can allow flows to circumvent the feature.

*d. Erosion Outside of Channel* – In larger precipitation events, the trickle channel capacity will likely be exceeded. This can result in erosion immediately adjacent to the trickle channel and must be repaired to prevent further damage to the structural components of the EDB.

EDB-2.3.4 Bottom Stage

The bottom stage is at least 1.0 to 2.0 feet deeper than the upper stage and is located in front of the outlet works structure. The bottom stage is designed to store the smaller runoff events, assists in keeping the majority of the basin bottom dry resulting in easier maintenance operations, and enhances the facilities pollutant removal capabilities. This area of the EDB may develop wetland vegetation.

*The typical maintenance items that are found with the bottom stage are as follows:*

*a. Sediment/Debris Accumulation* – The micro-pool can frequently accumulate sediment and debris. This material must be removed to maintain pond volume and proper function of the outlet structure.

*b. Woody Growth/Weeds Present* - Because of the constant moisture in the soil surrounding the micro-pool, woody growth (cottonwoods/willows) can create operational problems for the EDB. If woody vegetation is not routinely mowed/removed, the growth can cause debris/sediment to accumulate outside of the micro-pool, which can cause problems with other EDB features. Also, tree roots can cause damage to the structural components of the outlet works. Routine management is essential for trees (removing a small tree/sapling is much cheaper and “quieter” than a mature tree).

*c. Bank Erosion* – The micro-pool is usually a couple feet deeper than the other areas of the ponds. Erosion can be caused by water dropping into the micro-pool if adequate protection/armor is not present. Erosion in this area must be mitigated to prevent sediment transport and other EDB feature damage.

*d. Mosquitoes/Algae Treatment** – Nuisance created by stagnant water can result from improper maintenance/treatment of the micro-pool. Mosquito larvae can be laid by adult mosquitoes within the permanent pool. Also, aquatic vegetation that grows in shallow pools of water can decompose causing foul odors. Chemical/mechanical treatment of the micro-pool may

be necessary to reduce these impacts to adjacent homeowners. (*El Paso County uses a bacterial larvacide for mosquito control, Vectobac-G, or approved equal)

*e. Petroleum/Chemical Sheen* – Many indicators of illicit discharges into the storm sewer systems will be present in the micro-pool area of the EDB. These indicators can include sheens, odors, discolored soil, and dead vegetation. If it is suspected that an illicit discharge has occurred, contact the supervisor immediately. Proper removal/mitigation of contaminated soils and water in the EDB is necessary to minimize any environmental impacts downstream.

EDB-2.3.5 Micro-pool

The micro-pool is a concrete or grouted boulder walled structure directly in front of the outlet works. At a minimum, the micropool is 2.5 feet deep and is designed to hold water. The micro-pool is critical in the proper function of the EDB; it allows suspended sediment to be deposited at the bottom of the micro-pool and prevents these sediments from being deposited in front of the outlet works causing clogging of the outlet structure, which results in marshy areas within the top and bottom stages.

*The typical maintenance items that are found with micro-pools are as follows:*

*a. Sediment/Debris Accumulation* – The micro-pool can frequently accumulate sediment and debris. This material must be removed to maintain pond volume and proper function of the outlet structure.

*b. Woody Growth/Weeds Present* - Because of the constant moisture in the soil surrounding the micro-pool, woody growth (cottonwoods/willows) can create operational problems for the EDB. If woody vegetation is not routinely mowed/removed, the growth can cause debris/sediment to accumulate outside of the micro-pool, which can cause problems with other EDB features. Also, tree roots can cause damage to the structural components of the outlet works. Routine management is essential for trees (removing a small tree/sapling is much cheaper and “quieter” than a mature tree).

*c. Mosquitoes/Algae Treatment** – Nuisance created by stagnant water can result from improper maintenance/treatment of the micro-pool. Mosquito larvae can be laid by adult mosquitoes within the permanent pool. Also, aquatic vegetation that grows in shallow pools of water can decompose causing foul odors. Chemical/mechanical treatment* of the micro-pool may be necessary to reduce these impacts to adjacent homeowners. (*El Paso

County uses a bacterial larvacide for mosquito control, Vectobac-G, or approved equal)

*d. Petroleum/Chemical Sheen* – Many indicators of illicit discharges into the storm sewer systems will be present in the micro-pool area of the EDB. These indicators can include sheens, odors, discolored soil, and dead vegetation. If it is suspected that an illicit discharge has occurred, contact the supervisor immediately. Proper removal/mitigation of contaminated soils and water in the EDB is necessary to minimize any environmental impacts downstream.

EDB-2.3.6 Outlet Works

The outlet works is the feature that drains the EDB in specified quantities and periods of time. The outlet works is typically constructed of reinforced concrete into the embankment of the EDB. The concrete structure typically has steel orifice plates anchored/embedded into it to control stormwater release rates. The larger openings (flood control) on the outlet structure typically have trash racks over them to prevent clogging. The water quality orifice plate (smaller diameter holes) will typically have a well screen covering it to prevent smaller materials from clogging it. The outlet structure is the single most important feature in the EDB operation. Proper inspection and maintenance of the outlet works is essential in ensuring the long-term operation of the EDB.

*The typical maintenance items that are found with the outlet works are as follows:*

*a. Trash Rack/Well Screen Clogged* – Floatable material that enters the EDB will most likely make its way to the outlet structure. This material is trapped against the trash racks and well screens on the outlet structure (which is why they are there). This material must be removed on a routine basis to ensure the outlet structure drains in the specified design period.

*b. Structural Damage* - The outlet structure is primarily constructed of concrete, which can crack, spall, and settle. The steel trash racks and well screens are also susceptible to damage.

*c. Orifice Plate Missing/Not Secure* – Many times residents, property owners, or maintenance personnel will remove or loosen orifice plates if they believe the pond is not draining properly. Any modification to the orifice plate(s) will significantly affect the designed discharge rates for water quality and/or flood control. Modification of the orifice plates is not allowed without approval from EL PASO COUNTY.

*d. Manhole Access* – Access to the outlet structure is necessary to properly inspect and maintain the facility. If access is difficult or not available to inspect the structure, chances are it will be difficult to maintain as well.

*e. Woody Growth/Weeds Present* - Because of the constant moisture in the soil surrounding the outlet works, woody growth (cottonwoods/willows) can create operational problems for the EDB. If woody vegetation is not routinely mowed/removed, the growth can cause debris/sediment to accumulate around the outlet works, which can cause problems with other EDB features. Also, tree roots can cause damage to the structural components of the outlet works. Routine management is essential for trees (removing a small tree/sapling is much cheaper and "quieter" than a mature tree).

EDB-2.3.7 Emergency Spillway

An emergency spillway is typical of all EDBs and designed to serve as the overflow in the event the volume of the pond is exceeded. The emergency spillway is typically armored with riprap (or other hard armor) and is sometimes buried with soil. The emergency spillway is typically a weir (notch) in the pond embankment. Proper function of the emergency spillway is essential to ensure flooding does not affect adjacent properties.

*The typical maintenance items that are found with emergency spillways are as follows:*

*a. Riprap Displaced* – As mentioned before, the emergency spillway is typically armored with riprap to provide erosion protection. Over the life of an EDB, the riprap may shift or dislodge due to flow.

*b. Erosion Present* – Although the spillway is typically armored, stormwater flowing through the spillway can cause erosion damage. Erosion must be repaired to ensure the integrity of the basin embankment, and proper function of the spillway.

*c. Woody Growth/Weeds Present* – Management of woody vegetation is essential in the proper long-term function of the spillway. Larger trees or dense shrubs can capture larger debris entering the EDB and reduce the capacity of the spillway.

*d. Obstruction Debris* – The spillway must be cleared of any obstruction (man made or natural) to ensure the proper design capacity.

EDB-2.3.8 Upper Stage (Dry Storage)

The upper stage of the EDB provides the majority of the water quality flood detention volume. This area of the EDB is higher than the micro-pool and typically stays dry, except during storm events. The upper stage is the largest feature/area of the basin. Sometimes, the upper stage can be utilized for park space and other uses in larger EDBs. With proper maintenance of the micro-pool and forebay(s), the upper stage should not experience much sedimentation; however, bottom elevations should be monitored to ensure adequate volume.

*The typical maintenance items that are found with upper stages are as follows:*

*a. Vegetation Sparse* – The upper basin is the most visible part of the EDB, and therefore aesthetics is important. Adequate and properly maintained vegetation can greatly increase the overall appearance and acceptance of the EDB by the public. In addition, vegetation can reduce the potential for erosion and subsequent sediment transport to the other areas of the pond.

*b. Woody Growth/Undesirable Vegetation* – Although some trees and woody vegetation may be acceptable in the upper basin, some thinning of cottonwoods and willows may be necessary. Remember, the basin will have to be dredged to ensure volume, and large trees and shrubs will be difficult to protect during that operation.

*c. Standing Water/Boggy Areas* – Standing water or boggy areas in the upper stage is typically a sign that some other feature in the pond is not functioning properly. Routine maintenance (mowing, trash removal, etc) can be extremely difficult for the upper stage if the ground is saturated. If this inspection item is checked, make sure you have identified the root cause of the problem.

*d. Sediment Accumulation* – Although other features within the EDB are designed to capture sediment, the upper storage area will collect sediment over time. Excessive amounts of sedimentation will result in a loss of storage volume. It may be more difficult to determine if this area has accumulated sediment without conducting a field survey.

Below is a list of indicators:

1. Ground adjacent to the trickle channel appears to be several inches higher than concrete/riprap
2. Standing water or boggy areas in upper stage
3. Uneven grades or mounds
4. Micro-pool or Forebay has excessive amounts of sediment

*e. Erosion (banks and bottom)* – The bottom grades of the dry storage are typically flat enough that erosion should not occur. However, inadequate vegetative cover may result in erosion of the upper stage. Erosion that occurs in the upper stage can result in increased dredging/maintenance of the micro-pool.

*f. Trash/Debris* – Trash and debris can accumulate in the upper area after large events, or from illegal dumping. Over time, this material can accumulate and clog the EDB outlet works.

*g. Maintenance Access* – Most EDBs typically have a gravel/concrete maintenance access path to either the upper stage or forebay. This access path should be inspected to ensure the surface is still drivable. Some of the smaller EDBs may not have maintenance access paths; however, the inspector should verify that access is available from adjacent properties.

EDB-2.3.9 Miscellaneous

There are a variety of inspection/maintenance issues that may not be attributed to a single feature within the EDB. This category on the inspection form is for maintenance items that are commonly found in the EDB, but may not be attributed to an individual feature.

*a. Encroachment in Easement Area* – Private lots/property can sometimes be located very close to the EDBs, even though they are required to be located in tracts with drainage easements. Property owners may place landscaping, trash, fencing, or other items within the easement area that may affect maintenance or the operation of the facility.

*b. Graffiti/Vandalism* – Damage to the EDB infrastructure can be caused by vandals. If criminal mischief is evident, the inspector should forward this information to the local Sheriff's Office.

*c. Public Hazards* – Public hazards include items such as vertical drops of greater than 4-feet, containers of unknown/suspicious substances, exposed metal/jagged concrete on structures. **If any hazard is found within the facility area that poses an immediate threat to public safety, contact the local Sheriff at 911 immediately!**

*d. Burrowing Animals/Pests* – Prairie dogs and other burrowing rodents may cause damage to the EDB features and negatively affect the vegetation within the EDB.

*e. Other* – Any miscellaneous inspection/maintenance items not contained on the form should be entered here.

### EDB-2.4 Inspection Forms

EDB Inspection forms are located in Appendix D. Inspection forms shall be completed by the person(s) conducting the inspection activities. Each form shall be reviewed and submitted by the property owner or property manager to El Paso County per the requirements of the Operations and Maintenance Manual. These inspection forms shall be kept indefinitely and made available to El Paso County upon request.

## EDB-3 MAINTAINING EXTENDED DETENTION BASINS (EDBS)

### EDB-3.1 Maintenance Personnel

Maintenance personnel must be qualified to properly maintain EDBs. Inadequately trained personnel can cause additional problems resulting in additional maintenance costs.

### EDB-3.2 Equipment

It is imperative that the appropriate equipment and tools are taken to the field with the operations crew. The types of equipment/tools will vary depending on the task at hand. Below is a list of tools, equipment, and material(s) that may be necessary to perform maintenance on an EDB:

1.) Loppers/Tree Trimming Tools
2.) Mowing Tractors
3.) Trimmers (extra string)
4.) Shovels
5.) Rakes
6.) All Surface Vehicle (ASVs)
7.) Skid Steer
8.) Back Hoe
9.) Track Hoe/Long Reach Excavator
10.) Dump Truck
11.) Jet-Vac Machine
12.) Engineers Level (laser)
13.) Riprap (Minimum - Type M)
14.) Filter Fabric
15.) Erosion Control Blanket(s)
16.) Seed Mix (Native - Foothills)

17.) Illicit Discharge Cleanup Kits

18.) Trash Bags

19.) Tools (wrenches, screw drivers, hammers, etc)

20.) Chain Saw

21.) Confined Space Entry Equipment

22.) Approved Stormwater Facility Operation and Maintenance Manual

Some of the items identified above may not be needed for every maintenance operation. However, this equipment should be available to the maintenance operations crews should the need arise.

### EDB-3.3 Safety

Vertical drops may be encountered in areas located within and around the facility. Avoid walking on top of retaining walls or other structures that have a significant vertical drop. If a vertical drop is identified within the EDB that is greater than 48” in height, make the appropriate note/comment on the maintenance inspection form.

### EDB-3.4 Maintenance Forms

The EDB Maintenance Form provides a record of each maintenance operation performed by maintenance contractors. The EBD Maintenance Form shall be filled out in the field after the completion of the maintenance operation. Each form shall be reviewed and submitted by the property owner or property manager to the El Paso County per the requirements of the Operations and Maintenance Manual. The EDB Maintenance form is located in Appendix E.

### EDB-3.5 Maintenance Categories and Activities

A typical EDB Maintenance Program will consist of three broad categories of work. Within each category of work, a variety of maintenance activities can be performed on an EDB. A maintenance activity can be specific to each feature within the EDB, or general to the overall facility. This section of the SOP explains each of the categories and briefly describes the typical maintenance activities for an EDB.

A variety of maintenance activities are typical of EDBs. The maintenance activities range in magnitude from routine trash pickup to the reconstruction of drainage infrastructure. Below is a description of each maintenance activity, the objectives, and frequency of actions:

## EDB-3.6 Routine Maintenance Activities

The majority of this work consists of regularly scheduled mowing and trash and debris pickups for stormwater management facilities during the growing season. This includes items such as the removal of debris/material that may be clogging the outlet structure well screens and trash racks. It also includes activities such as includes weed control, mosquito treatment*, and algae treatment. These activities normally will be performed numerous times during the year. These items can be completed without any prior correspondence with El Paso County; however, completed inspection and maintenance forms shall be submitted to El Paso County for each inspection and maintenance activity.

The Maintenance Activities are summarized below, and further described in the following sections.

**TABLE – EDB-2**
**Summary of Routine Maintenance Activities**

| MAINTENANCE ACTIVITY | MINIMUM FREQUENCY | LOOK FOR: | MAINTENANCE ACTION |
|---|---|---|---|
| | | | |
| Mowing | Twice annually | Excessive grass height/aesthetics | Mow grass to a height of 4” to 6” |
| Trash/Debris Removal | Twice annually | Trash & debris in EDB | Remove and dispose of trash and debris |
| Outlet Works Cleaning | As needed - after significant rain events – twice annually min. | Clogged outlet structure; ponding water | Remove and dispose of debris/trash/sediment to allow outlet to function properly |
| Weed control | Minimum twice annually | Noxious weeds; Unwanted vegetation | Treat w/ herbicide or hand pull; Consult the local weed specialist |
| Mosquito Treatment* | As needed | Standing water/mosquito habitat | Treat w/ EPA approved chemicals * |
| Algae Treatment | As needed | Standing water/ Algal growth/green color | Treat w/ EPA approved chemicals |

(*El Paso County uses a bacterial larvacide for mosquito control, Vectobac-G, or approved equal)

EDB-3.6.1 Mowing

Occasional mowing is necessary to limit unwanted vegetation and to improve the overall appearance of the EDB. Native vegetation should be mowed to a height of 4-to-6 inches tall. Grass clippings should be collected and disposed of properly.

*Frequency* – Routine - Minimum of twice annually or depending on aesthetics.

EDB-3.6.2 Trash/Debris Removal

Trash and debris must be removed from the entire EDB area to minimize outlet clogging and to improve aesthetics. This activity must be performed prior to mowing operations.

*Frequency* – Routine – Prior to mowing operations and minimum of twice annually.

EDB-3.6.3 Outlet Works Cleaning

Debris and other materials can clog the outlet work's well screen, orifice plate(s) and trash rack. This activity must be performed anytime other maintenance activities are conducted to ensure proper operation.

*Frequency* - Routine – After significant rainfall event or concurrently with other maintenance activities.

EDB-3.6.4 Weed Control

Noxious weeds and other unwanted vegetation must be treated as needed throughout the EDB. This activity can be performed either through mechanical means (mowing/pulling) or with herbicide. Consultation with the local Weed Inspector is highly recommended prior to the use of herbicide.

*Frequency* – Routine – As needed based on inspections.

EDB-3.6.5 Mosquito/Algae Treatment

Treatment of permanent pools is necessary to control mosquitoes and undesirable aquatic vegetation that can create nuisances. Only EPA approved chemicals/materials can be used in areas that are warranted.* (*El Paso County uses a bacterial larvacide for mosquito control, Vectobac-G, or approved equal)

*Frequency* – As needed.

## EDB- 3.7 Minor Maintenance Activities

This work consists of a variety of isolated or small-scale maintenance or operational problems. Most of this work can be completed by a small crew, tools, and small equipment. These items require prior correspondence with El Paso County and require completed inspection and maintenance forms to be submitted to El Paso County for each inspection and maintenance activity.

**Table – EDB-3**
**Summary of Minor Maintenance Activities**

| MAINTENANCE ACTIVITY | MINIMUM FREQUENCY | LOOK FOR: | MAINTENANCE ACTION |
|---|---|---|---|
| | | | |
| **Sediment Removal** | As needed; typically every 1 –2 years | Sediment build-up; decrease in pond volume | Remove and dispose of sediment |
| **Erosion Repair** | As needed, based upon inspection | Rills/gullies forming on side slopes, trickle channel, other areas | Repair eroded areas Revegetate; address source of erosion |
| **Vegetation Removal/Tree Thinning** | As needed, based upon inspection | Large trees/wood vegetation in lower chamber of pond | Remove vegetation; restore grade and surface |
| **Drain Cleaning/Jet Vac** | As needed, based upon inspection | Sediment build-up /non draining system | Clean drains; Jet Vac if needed |

### EDB-3.7.1 Sediment Removal

Sediment removal is necessary to maintain the original design volume of the EDB and to ensure proper function of the infrastructure. Regular sediment removal (minor) from the forebay, inflow(s), and trickle channel can significantly reduce the frequency of major sediment removal activities (dredging) in the upper and lower stages. The minor sediment removal activities can typically be addressed with shovels and smaller equipment. Major sediment removal activities will require larger and more specialized equipment. The major sediment activities will also require surveying with an engineer's level, and consultation with El Paso County Engineering Staff to ensure design volumes/grades are achieved.

Stormwater sediments removed from EDBs do not meet the criteria of "hazardous waste". However, these sediments are contaminated with a wide array of organic and inorganic pollutants and handling must be done with care. Sediments from permanent pools must be carefully removed to minimize turbidity, further sedimentation, or other adverse water quality impacts. Sediments should be transported by motor vehicle only after they

are dewatered. All sediments must be taken to a landfill for proper disposal. Prompt and thorough cleanup is important should a spill occur during transportation.

*Frequency* – Nonroutine – As necessary based upon inspections. Sediment removal in the forebay and trickle channel may be necessary as frequently as every 1-2 years.

EDB-3.7.2 Erosion Repair

The repair of eroded areas is necessary to ensure the proper function of the EDB, minimize sediment transport, and to reduce potential impacts to other features. Erosion can vary in magnitude from minor repairs to trickle channels, energy dissipaters, and rilling to major gullies in the embankments and spillways. The repair of eroded areas may require the use of excavators, earthmoving equipment, riprap, concrete, erosion control blankets, and turf reinforcement mats. Major erosion repair to the pond embankments, spillways, and adjacent to structures will require consultation with El Paso County engineering staff.

*Frequency* – Nonroutine – As necessary based upon inspections.

EDB-3.7.3 Vegetation Removal/Tree Thinning

Dense stands of woody vegetation (willows, shrubs, etc) or trees can create maintenance problems for the infrastructure within an EDB. Tree roots can damage structures and invade pipes/channels thereby blocking flows. Also, trees growing in the upper and lower stages of the EDB will most likely have to be removed when sediment/dredging operations occur. A small tree is easier to remove than a large tree, therefore, regular removal/thinning is imperative. All trees and woody vegetation that is growing in the bottom of the EDB or near structures (inflows, trickle channels, outlet works, emergency spillways, etc) should be removed. Any trees or woody vegetation in the EDB should be limited to the upper portions of the pond banks.

*Frequency* – Nonroutine – As necessary based upon inspections.

EDB-3.7.4 Clearing Drains/Jet-Vac

An EDB contains many structures, openings, and pipes that can be frequently clogged with debris. These blockages can result in a decrease of hydraulic capacity and create standing water in areas outside of the micro-pool. Many times the blockage to this infrastructure can be difficult to access and/or clean. Specialized equipment (jet-vac machines) may be necessary to clear debris from these difficult areas.

*Frequency* – Nonroutine – As necessary based upon inspections.

## EDB-3.8 Major Maintenance Activities

This work consists of larger maintenance/operational problems and failures within the stormwater management facilities. All of this work requires consultation with El Paso County to ensure the proper maintenance is performed. This work requires that the engineering staff review the original design and construction drawings to access the situation and assign the necessary maintenance. **A public improvements permit shall be required for all major maintenance activities.** This work may also require more specialized maintenance equipment, design/details, surveying, or assistance through private contractors and consultants.

**Table – EDB-4**
**Summary of Major Maintenance Activities**

| MAINTENANCE ACTIVITY | MINIMUM FREQUENCY | LOOK FOR: | MAINTENANCE ACTION |
|---|---|---|---|
| | | | |
| Major Sediment Removal | As needed – based upon scheduled inspections | Large quantities of sediment; reduced pond capacity | Remove and dispose of sediment. Repair vegetation as needed |
| Major Erosion Repair | As needed – based upon scheduled inspections | Severe erosion including gullies, excessive soil displacement, areas of settlement, holes | Repair erosion – find cause of problem and address to avoid future erosion |
| Structural Repair | As needed – based upon scheduled inspections | Deterioration and/or damage to structural components – broken concrete, damaged pipes, outlet works | Structural repair to restore the structure to its original design |

### EDB-3.8.1 Major Sediment Removal

Major sediment removal consists of removal of large quantities of sediment or removal of sediment from vegetated areas. Care shall be given when removing large quantities of sediment and sediment deposited in vegetated areas. Large quantities of sediment need to be carefully removed, transported and disposed of. Vegetated areas need special care to ensure design volumes and grades are preserved.

*Frequency* – Nonroutine – Repair as needed based upon inspections.

EDB-3.8.2 Major Erosion Repair

Major erosion repair consist of filling and revegetating areas of severe erosion. Determining the cause of the erosion as well as correcting the condition that caused the erosion should also be part of the erosion repair. Care should be given to ensure design grades and volumes are preserved.

*Frequency* – Nonroutine – Repair as needed based upon inspections.

EDB-3.8.3 Structural Repair

An EDB includes a variety of structures that can deteriorate or be damaged during the course of routine maintenance. These structures are constructed of steel and concrete that can degrade or be damaged and may need to be repaired or re-constructed from time to time. These structures include items like outlet works, trickle channels, forebays, inflows and other features. In-house operations staff can perform some of the minor structural repairs. Major repairs to structures may require input from a structural engineer and specialized contractors. Consultation with El Paso County Engineering Staff should take place prior to all structural repairs.

*Frequency* – Nonroutine – Repair as needed based upon inspections.

**Appendix D -** Inspection Form(s)

# EXTENDED DETENTION BASIN (EDB)
# INSPECTION FORM

Date:_____

Subdivision/Business Name:_____ Inspector:_____

Subdivision/Business Address:_____

Weather: _____

Date of Last Rainfall:_____ Amount:_____Inches

**Property Classification:** Residential Multi Family Commercial Other:_____
(Circle One)

**Reason for Inspection:** Routine Complaint After Significant Rainfall Event
(Circle One)

**INSPECTION SCORING** - For each facility inspection item, insert one of the following scores:

0 = No deficiencies identified
1 = Monitor (potential for future problem)
2 = Routine maintenance required
3 =Immediate repair necessary
N/A = Not applicable

## FEATURES

**1.) Inflow Points**

____Riprap Displaced
____Erosion Present/Outfall Undercut
____Sediment Accumulation
____Structural Damage (pipe, end-section, etc.)
____Woody Growth/Weeds Present

**2.) Forebay**

____Sediment/Debris Accumulation
____Concrete Cracking/Failing
____Drain Pipe/Wier Clogged (not draining)
____Wier/Drain Pipe Damage

**3.) Trickle Channel (Low-flow)**

____Sediment/Debris Accumulation
____Concrete/Riprap Damage
____Woody Growth/Weeds Present
____Erosion Outside Channel

**4.) Bottom Stage (Micro-Pool)**

____Sediment/Debris Accumulation
____Woody Growth/Weeds Present
____Bank Erosion
____Mosquitoes/Algae Treatment
____Petroleum/Chemical Sheen

**5.) Outlet Works**

____Trash Rack/Well Screen Clogged
____Structural Damage (concrete,steel,subgrade)
____Orifice Plate(s) Missing/Not Secure
____Manhole Access (cover, steps, etc.)
____Woody Growth/Weeds Present

**6.) Emergency Spillway**

____Riprap Displaced
____Erosion Present
____Woody Growth/Weeds Present
____Obstruction/Debris

**7.) Upper Stage (Dry Storage)**

____Vegetation Sparse
____Woody Growth/Undesirable Vegetation
____Standing Water/Boggy Areas
____Sediment Accumulation
____Erosion (banks and bottom)
____Trash/Debris
____Maintenance Access

**8.) Miscellaneous**

____Encroachment in Easement Area
____Graffiti/Vandalism
____Public Hazards
____Burrowing Animals/Pests
____Other

Inspection Summary / Additional Comments:_____

**OVERALL FACILITY RATING (Circle One)**

0 = No Deficiencies Identified
1 = Monitor (potential for future problem exists)
2 = Routine Maintenance Required
3 = Immediate Repair Necessary

This inspection form shall be kept indefinitely and made available to Arapahoe County upon request.

**Appendix E -** Maintenance Form(s)

# EXTENDED DETENTION BASIN (EDB)
# MAINTENANCE FORM

Subdivision/Business Name: Grazing Yak Solar Project Completion Date:_____

Subdivision/Business Address: 31275 Washington Road, Calhan, CO 80808 Contact Name:_____

**Maintenance Category:** Routine Restoration Rehabilitation
(Circle All That Apply)

## MAINTENANCE ACTIVITIES PERFORMED

### ROUTINE WORK

____ MOWING
____ TRASH/DEBRIS REMOVAL
____ OUTLET WORKS CLEANING (TRASH RACK/WELL SCREEN)
____ WEED CONTROL (HERBICIDE APPLICATION)
____ MOSQUITO TREATMENT
____ ALGAE TREATMENT

### RESTORATION WORK

____ SEDIMENT REMOVAL
- ____ FOREBAY
- ____ TRICKLE CHANNEL
- ____ INFLOW

____ EROSION REPAIR
- ____ INFLOW POINT
- ____ TRICKLE CHANNEL

____ VEGETATION REMOVAL/TREE THINNING
- ____ INFLOW(S)
- ____ TRICKLE CHANNEL
- ____ UPPER STAGE
- ____ BOTTOM STAGE

____ REVEGETATION
____ JET-VAC/CLEARING DRAINS
- ____ FOREBAY
- ____ OUTLET WORKS
- ____ INFLOWS

### REHABILITATION WORK

____ SEDIMENT REMOVAL (DREDGING)
- ____ BOTTOM STAGE
- ____ UPPER STAGE

____ EROSION REPAIR
- ____ OUTLET WORKS
- ____ UPPER STAGE
- ____ BOTTOM STAGE
- ____ SPILLWAY

____ STRUCTURAL REPAIR
- ____ INFLOW
- ____ OUTLET WORKS
- ____ FOREBAY
- ____ TRICKLE CHANNEL

OTHER_____
_____
_____

ESTIMATED TOTAL MANHOURS: _____

EQUIPMENT/MATERIAL USED: _____

COMMENTS/ADDITIONAL INFO:

This Maintenance Activity Form shall be kept indefinitely and made available to Arapahoe County upon request.

**Appendix F -** Annual Inspection and Maintenance Submittal form

Annual Inspection and Maintenance Reporting Form
for
Stormwater Facilities

*(This form to be submitted to El Paso County prior to May 31 of each year)*

**Date:** _____

**To:** **El Paso County Department of Public Works**
**3275 Akers Drive**
**Colorado Springs, CO 80922**

**Re:** **Certification of Inspection and Maintenance; Submittal of forms**

Property/Subdivision Name: _____

Property Address: _____

Contact Name: _____

I cerify that the required stormwater facility inspections and required maintenance have been completed in accordance with the Stormwater Facilities Maintenance Agreement and the Operations and Maintenance Manual associated with the above referenced property.

The required Stormwater Facility Inspection and Maintenance forms are hereby provided.

| | |
|---|---|
| _____ | _____ |
| Name of Party Responsible for Inspection & Maintenance | Property Owner |
| _____ | _____ |
| Authorized Signature | Signature |

**Appendix G -** Stormwater Facilities Map; Facility plan and detail sheets

## LEGEND & ABBREVIATIONS

- EX. PROJECT BOUNDARY LINE
- INVERTER BLOCK BOUNDARY
- P-PUG-1 — PROPOSED UNDERGROUND CIRCUIT 1
- P-PUG-2 — PROPOSED UNDERGROUND CIRCUIT 2
- X — EX. FENCE LINE
- PROPOSED SOLAR TRACKER
- BOUNDARY SET BACK LINE 10M
- BOUNDARY SET BACK LINE 15M
- PROPOSED PERMANENT ACCESS ROAD
- PROPOSED CAB
- PROPOSED SECONDARY CAB
- PROPOSED LAYDOWN AREA
- PROPOSED PROTECTED CROSSING
- GL — PROPOSED GRADING LIMITS
- 340 — PROPOSED INDEX CONTOUR LINE
- PROPOSED INTERVAL CONTOUR LINE
- 340 — EX. INDEX CONTOUR LINE
- EX. INTERVAL CONTOUR LINE
- EX. SECTION LINE
- EX. EASEMENT LINE
- X — EX. FENCE LINE
- POH — EX. OVERHEAD POWERLINE
- FO — EX. FIBER OPTIC LINE
- OIL — EX. OIL LINE
- EX. GRAVEL ROAD
- EX. ASHPALT PAVEMENT ROAD
- 395W MODULES
- 400W MODULES

**VICINITY MAP**
Scale: 1" = 5000'

**Westwood**

Phone (720) 531-8350 10170 Church Ranch Way, Suite #100
Westminster, CO 80021
westwoodps.com

Westwood Professional Services, Inc.


COLORADO LICENSED
BRENDAN RYAN MILLER
44186
PROFESSIONAL ENGINEER
04/22/2019

PREPARED FOR:

Mortenson construction

NEXTera ENERGY

REVISIONS:

| # | DATE | COMMENT |
|---|---|---|
| A | 02/27/19 | Issued for Review (30%) |
| B | 03/28/19 | Issued for Review (60%) |
| C | 04/22/19 | Permit Submittal Revisions |
| . | | |
| . | | |

# Grazing Yak Solar

El Paso County, Colorado

Preliminary Module Grouping

Not For Construction

DATE: 04/22/2019

SHEET: EX.102

1 Permanent Setention Basin - Plan View

1" = 50'

| Pipe Table | | | | | |
|---|---|---|---|---|---|
| Pipe Name | Size | Length | Slope | Inv Up | Inv Down |
| CMP-A | 12" | 50' | 2.01% | 6735.00' | 6734.00' |
| CMP-B | 18" | 40' | 3.13% | 6737.25' | 6736.00' |
| CMP-C | 18" | 40' | 3.12% | 6737.25' | 6736.00' |

3 2 - 18" CMP - Main Access Rd.

1" = 50'

4 Section View of 12" CMP - Main Access Rd. & Basin

1" = 50'

2 Proposed Main access Rd at Permanent Detention Basin - Profile

1" = 50'

Westwood

Phone (720) 531-8350 10170 Church Ranch Way, Suite #100
Westminster, CO 80021
westwoodps.com

Westwood Professional Services, Inc.


COLORADO LICENSED
PEGGY RAE MILLER
44186
PROFESSIONAL ENGINEER
04/22/2019

PREPARED FOR:

Mortenson construction

NEXTera ENERGY

REVISIONS:

| # | DATE | COMMENT |
|---|---|---|
| A | 04/22/19 | Permit Submittal Revisions |

0' 300' 600' 900'

# Grazing Yak Solar

El Paso County, Colorado

Detention Basin
Drainage Plan

Not For Construction

DATE: 04/22/2019

SHEET: DR.01