



## STORMWATER MANAGEMENT PLAN

**SHELTON CPR-25 PAD**  
SECTION 25, T4N, R65W  
Weld County, Colorado

**ORIGINAL PREPARATION DATE:**  
March 08, 2022

**PREPARED FOR:**  
Crestone Peak Resources  
555 17th Street, Suite 3700  
Denver, CO 80202

**PREPARED BY:**  
Lamp Rynearson  
4715 Innovation Drive, Suite 100  
Fort Collins, CO 80525

## 1- Introduction

### Contact Information/Responsible Parties

**Owner(s):**

Crestone Peak Resources  
555 17th Street, Suite 3700 Denver, CO, 80202  
Office #: 720-354-4596  
Cell #: 720-354-4596

**Site Supervisor(s):**

Crestone Peak Resources  
Scott R. Park  
555 17th Street, Suite 3700  
Denver, CO 80202  
Office #: 720-225-6696  
Cell #: 970-415-0778      Email Address: spark@civiresources.com

**SPPECP Administrator(s):**

Crestone Peak Resources  
Scott R. Park  
555 17th Street, Suite 3700  
Denver, CO 80202  
Office #: 720-225-6696  
Cell #: 970-415-0778      Email Address: spark@civiresources.com

**This SPPECP was Prepared by:**

Lamp Rynearson  
Michael Palizzi  
4715 Innovation Drive, Ste. 100  
Fort Collins, CO 80525  
Office #: 970-226-0342      Fax #: 970-226-0879  
Email Address: Michael.palizzi@lamprynearson.com

**Emergency 24-Hour Contact:**

Crestone Peak Resources

Scott R. Park

Office #: 720-225-6696

Cell #: 970-415-0778

State CDPS Stormwater Construction Permit #: COR-03M-013

Site Introduction

The project includes construction of a well pad and installation of infrastructure typical to oil and gas exploration and production. The property is currently undeveloped and is currently used for rangeland. All land use surrounding the project area is currently rangeland. Overall, the east half of the site is draining from the southwest to the northeast, at slopes ranging from approximately 3% to 9%, and the west half of the site is draining from northeast to the southwest, at slopes ranging from approximately 3% to 9%.

Stormwater management will be broken into phases; The Pre-Construction Phase, the Construction Phase, The Interim Reclamation Phase and the Final Reclamation Phase. Best Management Practices (BMPs) will be implemented to control stormwater runoff in a manner that minimizes any potential erosion and sediment transport offsite. BMPs will be utilized to stabilize the site after each construction phase. BMPs will be utilized and maintained until the facility is abandoned and final reclamation is achieved pursuant to Rule 1004.

Area of construction is approximately 10.97 AC and total disturbance of the project is 10.97 AC

Proposed Site Design

The proposed site will consist of a proposed oil and gas pad that will have a sloped working pad that will convey water to graded channels that run along the outside of the working pad and convey water to the detention pond. The detention pond will release at rates designated by the Weld County Criteria. Released drainage from the pond will continue downstream as done historically. An access road will be built coming from Weld County Road 40 (south of proposed pad) that will allow machinery and trucks to access the site during development.

Topsoil from the proposed site will be stockpiled on-site. The Stockpile will be constructed with no greater than 3:1 side slopes and with a height of nine feet max. The topsoil stockpiles will be seeded immediately after placement with a quick-germination grass seed mix and shall be employed so that the topsoil is protected from erosion. Additionally, a continuous berm will be placed around any down slope sides of the topsoil stockpile to prevent runoff and erosion. Placement of topsoil stockpiles will incorporate stormwater/runoff BMPs that are utilized on-site.

### Project/Site Information

Project/Site Name: SHELTON CPR-25 PAD

Project Street/Location: NE ¼ SE ¼ , Sec 25, T4N, R65W

City: Weld County

State: CO

ZIP Code:

Subdivision:

## 2- Supplemental Site Information

### Nature and Sequence of Construction Activity

Describe the project scope of work:

The project includes construction of a well pad and installation of linear infrastructure typical to oil and gas exploration and production.

Estimated Project Start Date: 10/01/2022

Estimated Project Completion Date: 05/2023

Estimated Project Final Stabilization: 05/2053

Describe the major phases of Construction:

Pre-construction Phase includes: surveying, locate and mark utilities, mark construction disturbance allowance and access, stormwater control measure identification.

Construction Phase includes: access road installation, stormwater control measure installation, top soil stripping, stockpiling and land grading, drilling, well completions, production equipment construction, sales/transfer lines installation.

Interim Reclamation Phase includes: backfilling and grading, topsoil replacement, re-seeding, monitoring.

Final Reclamation Phase includes: P&A wells, regrading to historic conditions, topsoil replacement, re-seeding, monitoring.

Soils, Slopes, Vegetation, and Current Drainage Patterns

According to the NRCS website, the site consists of predominantly Type A soils. The Type A soils are classified as Valent Sand (3-9% slopes).

The property is currently undeveloped and consists of moderately dense weeds and grasses. In general, the site has no major drainage facilities. The east and southeast corner of the proposed pad will be in a cut utilizing 4:1 slopes from existing grade to the proposed pad grade. The westerly portion of the proposed pad will be in a fill area utilizing 4:1 slopes from the proposed pad grade to existing grade. Following interim grading (post-development) the site will continue to utilize 4:1 slopes in the cut and fill areas. The pad working grade will be at approximately 0.5%, draining to the northeast.

The existing drainage on the site sheet flows northeasterly and westerly, discharging downstream as done historically. All offsite flows that make their way onto the proposed site will be diverted with earthen diversion berms around the site and north to the historic flow path along WCR 49. Post-development, runoff from the project site flows to the proposed detention pond in the northeasterly portion of the production and drilling pad.

## Receiving Waters

The site will discharge through the pond berm via an 18" RCP outlet pipe located on the northeast side of pond where it will continue downstream as done historically. The flows continue north offsite along Weld County Road 49 towards the Gilmore Ditch and ultimately discharging into the South Platte River.



## Site Specific BMPs

### Construction Phase:

#### 1. Temporary Seeding

Use temporary seeding to stabilize 4.15 acres of disturbed areas that will be inactive for an extended time. For longer periods of inactivity of up to one year, temporary seeding and mulching can provide effective erosion control. Effective seeding includes preparing a seedbed, selecting an appropriate seed mixture, using proper planting techniques, and protecting the seeded area with mulch, geotextiles, or other appropriate measures. The USDCM Volume 2 Revegetation Chapter contains suggested annual grains and native seed mixes to use for temporary seeding. Drill seeding is the preferred seeding method.

Hydroseeding is not recommended except in areas where steep slopes prevent use of drill seeding equipment, and even in these instances it is preferable to hand seed and mulch. Prior to seeding, ensure that areas to be revegetated have soil conditions capable of supporting vegetation. Overlot grading can result in loss of topsoil and compaction, resulting in poor quality subsoils at the ground surface that have low nutrient value, little organic matter content, few soil microorganisms, rooting restrictions, and conditions less conducive to infiltration of precipitation. As a result, it is typically necessary to provide stockpiled topsoil, compost, or other soil amendments and rototill them into the soil to a depth of 6 inches or more.

#### 2. Silt Fence

Install 1896' of silt fence along the northeast, north, and west side of the Shelton CPR-25 Pad Site. Silt fence is a woven geotextile fabric attached to wooden posts and trenched into the ground. It is designed as a sediment barrier to intercept sheet flow runoff from disturbed areas. A silt fence can be used where runoff is conveyed from a disturbed area as sheet flow.

Silt fence should be installed along the contour of slopes so that it intercepts sheet flow. The maximum recommended tributary drainage area per 100 lineal feet of silt fence, installed along the contour, is approximately 0.25 acres with a disturbed slope length of up to 150 feet and a tributary slope gradient no steeper than 3:1. Longer and steeper slopes require additional measures. This recommendation only applies to silt fence installed along the contour. Inspection of silt fence includes observing the material for tears or holes and checking for slumping fence and undercut areas bypassing flows. Repair of silt fence typically involves replacing the damaged section with a new section. Sediment accumulated behind silt fence should be removed, as needed to maintain BMP effectiveness, typically before it reaches a depth of 6 inches. Silt fence may be removed when the upstream area has reached final stabilization.

### **3. Concrete Washout Area**

Concrete washout areas must be designated on all sites that will generate concrete wash water or liquid concrete waste from onsite concrete mixing or concrete delivery. See Drilling & Production, Erosion & Sediment Control Plan (Sheet 1) for CWA location. Concrete waste management involves designating and properly managing a specific area of the construction site as a concrete washout area. A concrete washout area can be created using one of several approaches designed to receive wash water from washing of tools and concrete mixer chutes, liquid concrete waste from dump trucks, mobile batch mixers, or pump trucks. Three basic approaches are available: excavation of a pit in the ground, use of an above ground storage area, or use of prefabricated haulaway concrete washout containers. Surface discharges of concrete washout water from construction sites are prohibited.

### **4. Detention Pond**

Detention pond will be constructed along the northeast side of the Shelton CPR-25 Pad Site. A detention pond is a pond built on a construction site to capture eroded or disturbed soil transported in storm runoff prior to discharge from the site. Detention ponds are designed to capture site runoff and slowly release it to allow time for settling of sediment prior to discharge.

Maintenance activities include the following:

- Dredge sediment from the basin, as needed to maintain BMP effectiveness, typically when the design storage volume is no more than one-third filled with sediment.
- Inspect the detention pond embankments for stability and seepage.

- Inspect the inlet and outlet of the basin, repair damage, and remove debris. Remove, clean and replace the gravel around the outlet on a regular basis to remove the accumulated sediment within it and keep the outlet functioning.
- Be aware that removal of a detention pond may require dewatering and associated permit requirements.
- Do not remove a detention pond until the upstream area has been stabilized with vegetation.

## **5. Riprap**

Install riprap at detention pond spillway. Riprap will be used to slow water down to decrease erosion. See Drilling & Production, Erosion & Sediment Control Plan (Sheet 1) for Riprap location.

### **Interim Reclamation Phase:**

#### **1. Permanent Seeding and Mulching**

Use permanent seeding and mulching to stabilize 5.59 acres of disturbed areas that will be inactive for an extended time. Permanent seeding should be used to stabilize areas at final grade that will not be otherwise stabilized. Effective seeding includes preparing a seedbed, selecting an appropriate seed mixture, using proper planting techniques, and protecting the seeded area with mulch, geotextiles, or other appropriate measures. When the soil surface is disturbed and will remain inactive for an extended period (typically determined by local government requirements), proactive stabilization measures. Permanent seeding should be used on finished areas that have not been otherwise stabilized. Drill seeding is the preferred seeding method. Hydroseeding is not recommended except in areas where steep slopes prevent use of drill seeding equipment, and even in these instances it is preferable to hand seed and mulch. Some jurisdictions do not allow hydroseeding or hydromulching. Prior to seeding, ensure that areas to be revegetated have soil conditions capable of supporting vegetation. Overlot grading can result in loss of topsoil and compaction, resulting in poor quality subsoils at the ground surface that have low nutrient value, little organic matter content, few soil microorganisms, rooting restrictions, and conditions less conducive to infiltration of precipitation. As a result, it is typically necessary to provide stockpiled topsoil, compost, or other soil amendments and rototill them into the soil to a depth of 6 inches or more.

## 2. Detention Pond

Detention pond will be constructed along the northeast side of the Shelton CPR-25 Pad Site. A detention pond is a pond built on a construction site to capture eroded or disturbed soil transported in storm runoff prior to discharge from the site. Detention ponds are designed to capture site runoff and slowly release it to allow time for settling of sediment prior to discharge.

Maintenance activities include the following:

- Dredge sediment from the basin, as needed to maintain BMP effectiveness, typically when the design storage volume is no more than one-third filled with sediment.
- Inspect the detention pond embankments for stability and seepage.
- Inspect the inlet and outlet of the basin, repair damage, and remove debris. Remove, clean and replace the gravel around the outlet on a regular basis to remove the accumulated sediment within it and keep the outlet functioning.
- Be aware that removal of a detention pond may require dewatering and associated permit requirements.
- Do not remove a detention pond until the upstream area has been stabilized with vegetation.

## 3. Riprap

Install riprap at sediment basin spillway. Riprap will be used to slow water down to decrease erosion. See Interim Reclaimed, Erosion & Sediment Control Plan (Sheet 2) for Riprap location.

## SUMMARY OF ROUTINE MAINTENANCE ACTIVITIES

Mowing:

1. Minimum frequency - Twice annually or depending on aesthetics.
2. Look for – Excessive grass height/aesthetics.
3. Maintenance action – 4" to 6" native

Trash/Debris removal:

1. Minimum frequency - Prior to mowing operations & a minimum of twice annually.
2. Look for – Trash & debris.
3. Maintenance action – Remove and properly dispose of trash & debris

**Weed control:**

1. Minimum frequency - As needed based on inspections.
2. Look for – Noxious weeds; Unwanted vegetation
3. Maintenance action – Treat w/ herbicide or hand pull; Consult w/ City Weed Specialist

**Vegetation maintenance:**

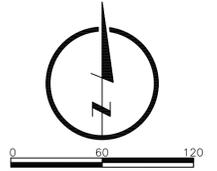
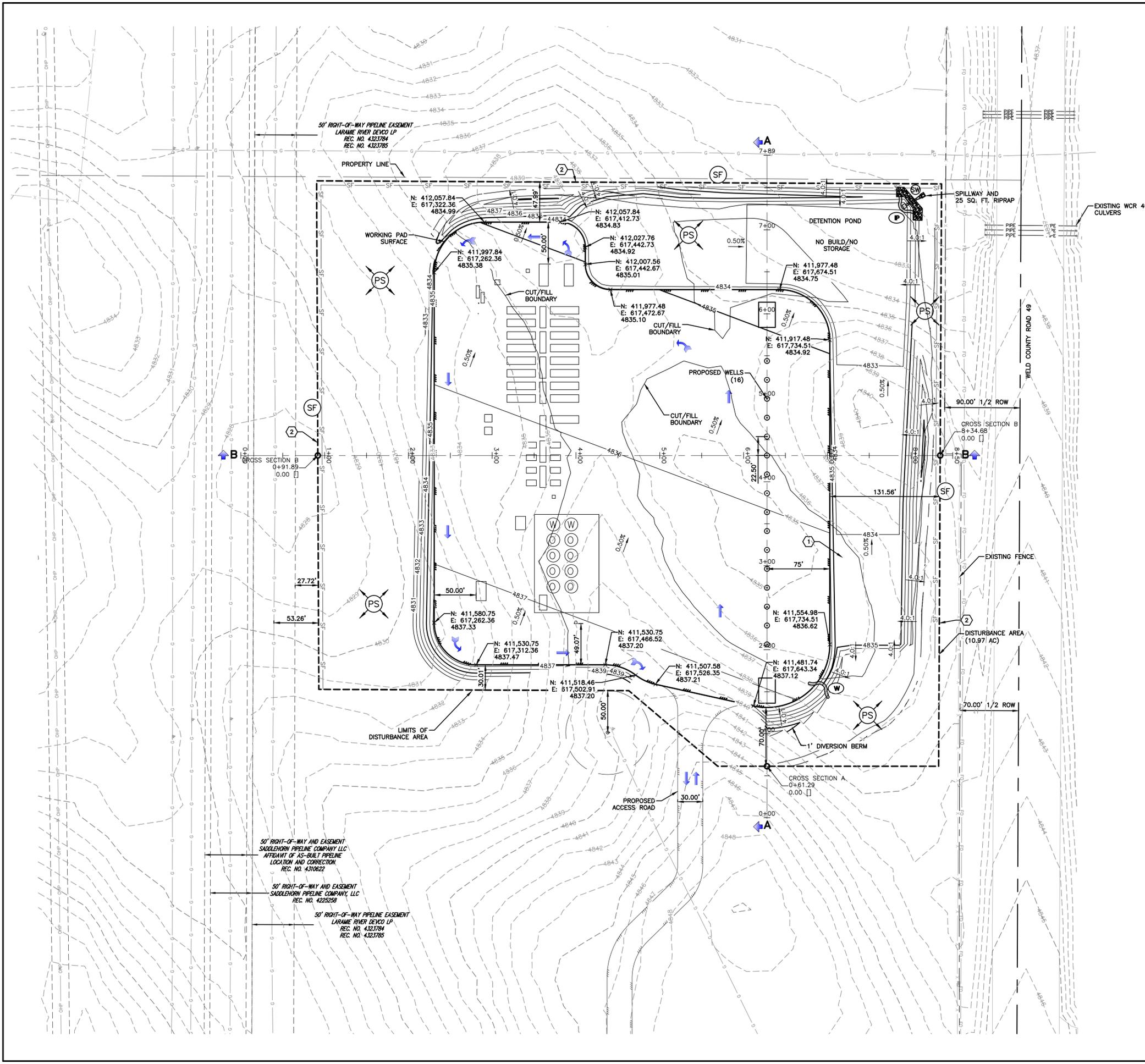
1. Minimum frequency - As needed based on inspections.
2. Look for – Overgrown plants; Unhealthy plants
3. Maintenance action – Prune plants back to acceptable size for facility' Fertilize, maintain plant life.

**Mosquito treatment:**

1. Minimum frequency - As needed.
2. Look for – Standing water/mosquito habitat
3. Maintenance action – Treat w/ EPA approved chemicals



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**LEGEND**

- EXISTING ROAD
- EDGE OF GRAVEL
- EXISTING FENCE LINE
- LIMITS OF DISTURBANCE
- EXISTING CONTOUR LINE
- PROPOSED CONTOUR LINE
- TRAFFIC FLOW
- TOPSOIL STOCKPILE
- CONCRETE WASHOUT AREA
- SILT FENCE
- SPILLWAY RIPRAP
- WATTLE
- INLET PROTECTION
- TEMPORARY SEEDING
- PERMANENT SEEDING

**NOTES:**

1. MAINTAIN EXISTING GRADES NOT WITHIN RECLAIMED AREA LIMITS UNLESS OTHERWISE NOTED.
2. DAYLIGHT FROM LIMITS OF PAD TO LIMITS OF DISTURBANCE.

**KEY NOTES**

- ① POND ACCESS
- ② LIMITS OF DISTURBANCE DURING CONSTRUCTION OR OGOA

ACREAGE BREAKDOWN	
ACREAGE	DESCRIPTION
10.97 AC	DISTURBED AREA DURING CONSTRUCTION
5.32 AC	LOCATION AFTER INTERIM RECLAMATION
5.65 AC	AREA TO BE RECLAIMED

WELLS			
①	SHELTON 25W-25-01	⑨	SHELTON 25W-25-09
②	SHELTON 25W-25-02	⑩	SHELTON 25W-25-10
③	SHELTON 25W-25-03	⑪	SHELTON 25W-25-11
④	SHELTON 25W-25-04	⑫	SHELTON 25W-25-12
⑤	SHELTON 25W-25-05	⑬	SHELTON 25W-25-13
⑥	SHELTON 25W-25-06	⑭	SHELTON 25W-25-14
⑦	SHELTON 25W-25-07	⑮	SHELTON 25W-25-15
⑧	SHELTON 25W-25-08	⑯	SHELTON 25W-25-16

**LAMP RYNEARSON**  
 LAMPRYNEARSON.COM  
 OMAHA, NEBRASKA  
 14710 W. DODGE RD., STE. 100 (402)496.2498  
 FORT COLLINS, COLORADO  
 4715 INNOVATION DR., STE. 100 (970)226.0342  
 KANSAS CITY, MISSOURI  
 9001 STATE LINE RD., STE. 200 (816)381.0440



PRELIMINARY

NOT FOR CONSTRUCTION  
MAP

INTERIM RECLAIMED  
EROSION & SEDIMENT  
CONTROL PLAN

SHELTON CPR-25 PAD  
WELD COUNTY, COLORADO

**811**  
 Know what's below.  
 Call before you dig.

REVISIONS

NO.	DATE	DESCRIPTION

DESIGNER / DRAFTER  
 JUP/JHF  
 DATE  
 03/11/2022  
 PROJECT NUMBER  
 0221036  
 BOOK AND PAGE

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- Appendix 4 – Copy of Demolition Permit and State Asbestos Permit (Section 1.9)
- Appendix 5 – Erosion and Sediment Control BMP Details (Section 1.10)
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- Appendix 10 – Subcontractor Certifications/Agreements (optional) (Section 9.1)
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**General Instructions:**

To fill out the Erosion and Sediment Control Template, select (double right click) the blue text and enter the applicable information.

When a blue box  is present, check the applicable selection.

In general, if a section is not applicable to the project, select the blue text and enter not applicable “N/A”.

In section 1.8 always answer “**Yes**” or “**No**”; no items shall be left blank!

Note that Appendix 13 – Subcontractor Certifications/Agreement is optional to the permittee.

## SECTION 1: SITE EVALUATION, ASSESSMENT, AND PLANNING

### 1.1 *Project/Site Information*

**Instructions:**

- In this section, include basic site information identifying general project information, permit numbers and include a project vicinity map in Appendix 1 – Project Vicinity Map.

Project/Site Name: [SHELTON CPR-25 PAD](#)

Project Street/Location: [NE ¼ SE ¼ , Sec 25, T4N, R65W](#)

City: [Weld County](#)

State: [CO](#) ZIP Code:

Subdivision:

County SWQ Permit Number:

***\*Attach color project vicinity map in Appendix 1 – Project Vicinity Map.***

## 1.2 Contact Information/Responsible Parties

**Instructions:**

- List the owners(s) operator(s), project managers, stormwater contact(s), and person or organization that prepared the ESC Plan. Indicate respective responsibilities, where appropriate. To do this, select the blue text by double right clicking then type in the applicable information.
- Place a copy of the State CDPS Stormwater Construction Permit Certification Page in Appendix 2 – State CDPS Stormwater Construction Permit Certification Page.

**Owner(s):**

Crestone Peak Resources  
555 17th Street, Suite 3700 Denver, CO, 80202  
Office #: 720-354-4596  
Cell #: 720-354-4596

**Site Supervisor(s):**

Crestone Peak Resources  
Scott R. Park  
555 17th Street, Suite 3700  
Denver, CO, 80202  
Office #: 720-225-6696  
Cell #: 970-415-0778                      Email Address: [spark@civiresources.com](mailto:spark@civiresources.com)

**ESC Plan Administrator(s):**

Crestone Peak Resources  
Scott R. Park  
555 17th Street, Suite 3700  
Denver, CO, 80202  
Office #: 720-225-6696  
Cell #: 970-415-0778                      Email Address: [spark@civiresources.com](mailto:spark@civiresources.com)

**This ESC Plan was Prepared by:**

Lamp Rynearson  
Michael Palizzi  
4715 Innovation Drive, Ste. 100  
Fort Collins, CO 80525  
Office #: 970-226-0342                      Fax #: 970-226-0879  
Email Address: [Michael.palizzi@lamprynearson.com](mailto:Michael.palizzi@lamprynearson.com)

Appendix A-1 of the Stormwater Regulation Guide

**Emergency 24-Hour Contact:**

Crestone Peak Resources

Scott R. Park

Office #: 720-225-6696

Cell #: 970-415-0778

State CDPS Stormwater Construction Permit #: COR-03M-013

***\*Attach a copy of the State CDPS Stormwater Construction Permit Certification Page in Appendix 2 – State CDPS Stormwater Construction Permit Certification.***

### 1.3 Nature and Sequence of Construction Activity

**Instructions:**

- Describe the scope of the construction activity at the project site.
- Identify the purpose of the construction activity and include estimated dates construction will begin and commence.
- Describe the sequence for major construction activities at each phase of the construction project.

Describe the project scope of work:

The project includes construction of a well pad and installation of linear infrastructure typical to oil and gas exploration and production.

What is the function of the construction activity (select check box)?

- Residential     Commercial     Industrial     Road Construction     Linear Utility  
 Other (please specify): Oil and gas development

Estimated Project Start Date: 10/01/2022

Estimated Project Completion Date: 05/2023

Estimated Project Final Stabilization: 05/2053

Describe the major phases of Construction:

Pre-construction Phase including: surveying, locate and mark utilities, mark construction disturbance allowance and access, stormwater control measure identification.

Construction Phase including: access road installation, stormwater control measure installation, top soil striping, stockpiling and land grading, drilling, well completions, production equipment construction, sales/transfer lines installation.

Interim Reclamation Phase including: backfilling and grading, topsoil replacement, re-seeding, monitoring.

## 1.4 Soils, Slopes, Vegetation, and Current Drainage Patterns

### Instructions:

- Describe the existing soil conditions at the construction site including soil type(s), drainage patterns, and other topographic features that might affect erosion and sediment control.
- Describe the pre-disturbance vegetation and include color pre-disturbance photos in Appendix 3 – Pre-Disturbance Photos.
- Note any soil or groundwater contamination evident from existing site features and known past usage of the site.

### Soil type(s):

Valent sand, 3 to 9 percent runoff, hydrologic soil group A (low runoff potential)

Slope(s) - describe current slope and its ratio i.e. 3:1, and note any changes to any of the slopes due to grading or fill activities:

The property is currently undeveloped and consists of moderately dense weeds and grasses. Overall, the east half of the site is draining from southwest to the northeast, at slopes ranging from approximately 3% to 9%, and the west half of the site is draining from northeast to the southwest, at slopes ranging from approximately 3% to 9%. sloped at 1.0% to 3.0% from the west and north. In general, the site has no major drainage facilities. The east and southeast corner of the proposed pad will be in a cut utilizing 4:1 slopes from existing grade to the proposed pad grade. The westerly portion of the proposed pad will be in a fill area utilizing 4:1 slopes from the proposed pad grade to existing grade. Following interim grading (post-development) the site will continue to utilize 4:1 slopes in the cut and fill areas. The pad working grade will be at approximately 0.5%, draining to the northeast.,

Drainage Pattern(s) - describe current drainage patterns and note any changes due to the proposed grading or fill activities:

The existing drainage on the site sheet flows northeasterly and westerly, discharging downstream as done historically. There are no offsite flows that make their way onto the proposed development. Post-development, runoff from the project site flows to the proposed detention pond, and discharge through the pond berm via 18" RCP outlet pipe in the northeasterly portion of the pond.

Vegetation - describe pre-disturbance vegetation and estimate of percent vegetative cover:

The property is currently undeveloped and consists of moderately dense weeds and grasses but is historically rangeland. NA - rangeland. When vegetation is used to achieve final stabilization, a uniform vegetative cover will be established with an individual plant density of at least 70 percent the surrounding landscape. Areas developed as stabilized unpaved surfaces, as shown in the interim grading plan, will not be revegetated.

***\*Attach color pre-disturbance photo in Appendix 3 – Pre-Disturbance Photos.***

## 1.5 Construction Site Estimates

**Instructions:**

- Estimate the area to be disturbed by excavation, grading, or other construction activities, including dedicated off-site borrow and fill areas, equipment and material storage areas, and staging areas.
- Calculate the percentage of impervious surface area before construction.

The following are estimates of the construction site.

Total project area:	10.97+/- acres
Construction site area to be disturbed:	10.97+/- acres
Area of site that is impervious:	0%

## 1.6 Receiving Waters

**Instructions:**

- List the waterbody(s) that would receive stormwater from your site, including streams, rivers, lakes and wetlands. Describe each as clearly as possible, such as: *Gilmore Ditch, a tributary to the South Platte River*, and so on.
- List the jurisdictional storm sewer system or drainage system that stormwater from your site discharges to, such as *Storm sewer system at inlets, culverts and pipes – Weld County MS4*.

Description and name of receiving waters:

The site will discharge through the pond berm via an 18" RCP outlet pipe located on the northeast side of pond where it will continue downstream as done historically. The flows continue north offsite along Weld County Road 49 towards the Gilmore Ditch and ultimately discharging into the South Platte River.

Description and owner's name of storm sewer system:

N/A

Other:

## **1.7 Protected Site Features and Sensitive Areas**

**Instructions:**

- Describe unique site features including streams, stream buffers, wetlands, specimen trees, natural vegetation, steep slopes, or highly erodible soils that are to be preserved. Describe the measures that will be used to protect these features. Include unique features and sensitive areas on your ESC Plan site drawings.
- Identify and describe any historic structures and the methods to be used for demolition or protection.
- Describe any known soil or groundwater contamination; note that additional permitting will be required from the State Water Quality Control Division.

Historic Site Contamination (describe any known site contamination i.e. soil, ground water). Refer to <http://www.cdphe.state.co.us/hm/HMSiteCover.htm> and access the Hazardous Materials and Waste Management Division Site Locator Mapping Application:

All sensitive areas are shown on the site-specific drawings, as well as the stormwater control measures to protect / preserve these areas.

## 1.8 Potential Sources of Pollution

**Instructions:**

- Below is a comprehensive source list of potential sediment and pollutants associated with construction, which may reasonably be expected to affect the quality of stormwater discharges from the construction site. Add rows if additional potential sources of pollution are not included.
- Identify and list all potential sources of pollution, other than sediment, which may reasonably be expected to affect the quality of stormwater discharges from the construction site.
- Below, identify if a potential pollutant source that is applicable to the construction site by selecting the blue **Yes/No** then type “**yes**” or “**no**” in the applicable information.

Potential Pollution Source	Potential on This Site?	Control Measures	BMP Implementation
All Disturbed and Stored Soils - grading - spoils - stockpiles	Yes	<ol style="list-style-type: none"> <li>1.Sediment and Erosion Control Measures (IP1, IP2, SF, SSA, TRM, RECP, TOP, SCL, SBB, RS, SB, ST)</li> <li>2.Preservation of Existing Vegetation (PV, VB, CF, CP)</li> <li>3.Materials Management</li> <li>4.Solid Waste Management (SP, GH)</li> <li>5.Stackpile Management (SP)</li> <li>6.Vehicle Tracking Controls (VTC)</li> </ol>	<ol style="list-style-type: none"> <li>1.Install BMPs prior to major construction.</li> <li>2.Delineate protected areas prior to major construction.</li> <li>3.Material management effective once material arrives on site.</li> <li>4.Place trash receptacles on site prior to major construction.</li> <li>5.Implement spill response procedures as needed.</li> <li>6.Implement stockpile management controls as needed.</li> <li>7.Delineate vehicle travel areas prior to major construction, adjust as needed.</li> </ol>
Vehicle Tracking of Sediments - all permitted area vehicle traffic	Yes	<ol style="list-style-type: none"> <li>1.Sediment and Erosion Control Measures (IP1, IP2, SF, SSA, TRM, RECP, TOP, SCL, SBB, RS, SB, ST)</li> <li>2.Vehicle Traffic Controls</li> <li>3.Vehicle Tracking Controls (VTC)</li> <li>4.Street Sweeping (SS)</li> </ol>	<ol style="list-style-type: none"> <li>1.Install BMPs prior to major construction.</li> <li>2.Delineate vehicle travel areas prior to major construction, adjust as needed.</li> <li>3.Install VTC BMP prior to construction.</li> <li>4.Implement street sweeping in conjunction with start of major construction and as needed.</li> </ol>
Management of Contaminated Soils - fluid spills	Yes	<ol style="list-style-type: none"> <li>1.Hazardous Materials Management (GH, CT)</li> <li>2.Spill Response and Notification (GH)</li> <li>3.Stackpile Management (SP)</li> </ol>	<ol style="list-style-type: none"> <li>1.Implement hazardous materials management as needed.</li> <li>2.Implement spill response procedures as needed.</li> <li>3.Implement stockpile management controls as needed.</li> </ol>

\* See the Stormwater Regulation Guide for acronyms used to identify BMP details.

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Potential Pollution Source	Potential on This Site?	Control Measures	BMP Implementation
Loading and Unloading Activities - construction materials	Yes	1. Material Management (GH) 2. Vehicle Traffic Controls (VTC)	1. Materials management effective once materials arrive on site and effective throughout the project. 2. Delineate vehicle travel areas prior to major construction, adjust as needed.
Outdoor storage activities - building materials - fertilizers - chemicals	Yes	1. Material Storage Procedures (GH)	1. Designate materials storage areas prior to the delivery of materials. 2. Materials left outdoors must be covered if they can become a pollutant when mixed with water. 3. Secondary containment must be used for hazardous materials.
Vehicle equipment maintenance and fueling - gas - diesel - oil - lubricants - hydraulic fluids	Yes	1. Spill prevention controls (GH) 2. Designated Fuel Storage Area (GH) 3. Spill Response and Notification (GH)	1. Implement spill prevention controls as needed. 2. Designate fuel storage area as needed. 3. Implement spill response and notification procedures as needed.
Dust Control - Wind Transport - Saw Cutting Activities	Yes	1. Dust Control (DC) 2. Temporary Soil Stabilization (SF, SD, GB, SSA, TRM, RECP, TOP) 3. Street Sweeping (SS) 4. Preservation of Existing (PV, VB, CF) Vegetation (VB, CF)	1. Implement dust control in conjunction with soil disturbing activities and as needed. 2. Implement temporary soil stabilization measures as soon as practical. 3. Implement street sweeping at the start of major construction and maintain as needed. 4. Delineate protected areas prior to major construction.
Routine maintenance activities - fertilizers - pesticides - detergents - fuels - solvents - oils, etc.	Yes	1. Material Storage (GH) 2. Hazardous Waste Management (GH, CT) 3. Erosion and Sediment Controls (IP1, IP2, SF, SSA, TRM, RECP, TOP, SCL, SBB, RS, SB, ST)	1. Designate materials storage areas prior to their arrival on site. 2. Practice hazardous waste management procedures during the storage of such materials. 3. Install sediment and erosion control BMPs prior to conducting landscape activities.

\* See the Stormwater Regulation Guide for acronyms used to identify BMP details.

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Potential Pollution Source	Potential on This Site?	Control Measures	BMP Implementation
On-site waste management practices	Yes	<ol style="list-style-type: none"> <li>1. Waste Management (GH)</li> <li>2. Liquid Waste Management (GH)</li> <li>3. Hazardous Waste Management (GH, CT)</li> </ol>	<ol style="list-style-type: none"> <li>1. Place trash receptacles on site prior to major construction.</li> <li>2. Place designated watertight receptacles or washout area(s) prior to proceeding with an activity that is known to produce liquid waste.</li> <li>3. Implement hazardous waste management procedures as needed.</li> </ol>
Concrete truck/equipment washing	Yes	<ol style="list-style-type: none"> <li>1. Concrete Washout area (CWA)</li> </ol>	<ol style="list-style-type: none"> <li>1. Install designated concrete washout(s) prior to commencement of concrete activities.</li> </ol>
Dedicated asphalt and concrete batch plants	No	<ol style="list-style-type: none"> <li>1. Secondary Containment</li> <li>2. Concrete Washout Area (CWA)</li> <li>3. Solid Waste Management (GH)</li> <li>4. Materials Management (GH)</li> </ol>	<ol style="list-style-type: none"> <li>1. Install secondary containment BMPs prior to using dedicated batch plants.</li> <li>2. Dedicated washout area must be established before construction begins.</li> <li>3. Trash receptacles on site prior to major construction activities.</li> <li>4. Material management effective once material arrives on site.</li> </ol>
Non-industrial waste sources – worker trash and portable toilets	Yes	<ol style="list-style-type: none"> <li>1. Sanitary Waste (GH)</li> <li>2. Solid Waste Management (GH)</li> </ol>	<ol style="list-style-type: none"> <li>1. Place temporary sanitary facilities on site as needed and protect from off-site discharge.</li> <li>2. Trash receptacles on site prior to major construction activities.</li> </ol>
Waste from geo-technical testing, potholing, saw cutting, and utility borings for locates	No	<ol style="list-style-type: none"> <li>1. Dust Control (DC)</li> <li>2. Material Storage (GH)</li> <li>3. Solid Waste Management (GH)</li> </ol>	<ol style="list-style-type: none"> <li>1. Implement dust control in conjunction with soil disturbing activities and as needed.</li> <li>2. Designate materials storage areas prior to their arrival on site.</li> <li>3. Trash receptacles on site prior to major construction activities.</li> </ol>
Fly Ash - concrete - flow fill	No	<ol style="list-style-type: none"> <li>1. Concrete Washout area (CWA)</li> <li>2. Hazardous Waste Management (GH)</li> </ol>	<ol style="list-style-type: none"> <li>1. Install designated concrete washout(s) prior to commencement of concrete activities.</li> <li>2. Implement hazardous waste management procedures as needed.</li> </ol>

\* See the Stormwater Regulation Guide for acronyms used to identify BMP details.

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Potential Pollution Source	Potential on This Site?	Control Measures	BMP Implementation
Demolition of infrastructure, i.e. - concrete curb - asphalt road - steel/rebar	No	1. Dust Control (DC) 2. Solid Waste Management (GH)	1. Implement dust control in conjunction with soil disturbing activities and as needed. 2. Trash receptacles on site prior to major construction activities.
Drywall Mud and Paint	No	1. Liquid Waste Management (GH)	1. Place designated watertight receptacles or washout area(s) prior to proceeding with an activity that is known to produce liquid waste.
Electric Generator, i.e. pump	Yes	1. Secondary Containment 2. Spill Response and Notification (GH) 3. Hazardous Waste Management (GH, CT)	1. Install secondary containment BMPs prior to using generators. 2. Implement hazardous waste management procedures as needed.
Other areas or procedures where potential spills can occur	No	1. Hazardous Waste Management (GH) 2. Spill Response and Notification (GH)	1. Implement hazardous waste management as needed. 2. Implement spill response and notification procedures as necessary.
Flushing New Waterlines	No	1. Sediment and Erosion Control Measures 2. Low Risk Guidance for Potable Water**	1. Install sediment and erosion control measures prior to discharge. 2. Follow BMPs required by this low risk guidance.
Dewatering and Pondered Water Management	Yes	1. Pumping out inundated area to areas that are utilizing BMPs	N/A
Utility Excavations, Hydro-Vac Operations	No		

\* See the Stormwater Regulation Guide for acronyms used to identify BMP details.

**Potential hazardous material/chemical pollutants, to stormwater runoff:**

Potential On This Site	Material/ Chemical	Physical Description	Stormwater Pollutants	Location
Yes	Fertilizer	Liquid or solid grains	Nitrogen, phosphorous	Newly seeded areas
No	Cleaning solvents	Colorless, blue, or yellow-green liquid	Perchloroethylene, methylene chloride, trichloroethylene, petroleum distillates	Staging areas
No	Asphalt	Black solid	Oil, petroleum distillates	Streets
Yes	Concrete and Grout	White solid/grey liquid	Limestone, sand, pH, chromium	Curb and gutter, sidewalk, building construction
No	Curing compounds	Creamy white liquid	Naphtha	Curb and gutter, sidewalk, driveways, concrete slabs
Yes	Hydraulic oil/ fluids	Brown, oily petroleum hydrocarbon	Mineral oil	Leaks or broken hoses from equipment
Yes	Gasoline	Colorless, pale brown or pink petroleum hydrocarbon	Benzene, ethyl benzene, toluene, xylene, MTBE	Secondary containment/staging area
Yes	Antifreeze/ coolant	Clear green/yellow liquid	Ethylene glycol, propylene glycol, heavy metals (copper, lead, zinc)	Leaks or broken hoses from equipment or vehicles
Yes	Sanitary toilets	Various colored liquid	Bacteria, parasites, and viruses	Staging areas

Insert any additional hazardous material/chemical pollutants that are not listed above here. [Sediment, slurry, fuel, lubricants, grease, oils, debris, litter, trash, oil and gas exploration and production fluids, well completion fluids, produced water, produced crude oil / condensate, paint, primers, stains, glue, fire retardant, acid wash, graffiti prevention liquid, processed water, chemical additives, and ground water and ponded water containing various other pollutants.](#)

*\*\*If "Flushing New Waterlines" is applicable to this construction project, the following information is applicable to this project.*

### **LOW RISK DISCHARGE GUIDANCE: DISCHARGES OF POTABLE WATER**

**Revised August 2009**

This discharge guidance has been developed in accordance with WQP-27, Low Risk Discharges. The Division has previously had coverage for some discharges of potable water under the Treated Water Distribution Permit (COG380000), however, this permit is only available to entities that produce, store and distribute potable water supplies. The Division does not intend to renew the Treated Water Distribution Permit as all authorized discharges under this permit are potable water related. Other discharges of potable water have been covered under the Minimum Industrial Discharge Permit (COG600000); however, this permit is in process of being dismantled as it has evolved into covering numerous facility and discharge types.

When the provisions of this guidance are met, the Division will not actively pursue permitting or enforcement for the discharge of potable water, unless on a case-by-case basis the Division finds that a discharge has resulted in an adverse impact to the quality of any state waters receiving the discharge.

Discharges of potable water are a type of industrial activity with short term infrequent discharges that with proper management are not expected to contain pollutants in concentrations that are toxic or in concentrations that would cause or contribute to a violation of a water quality standard. The typical pollutant of concern is total residual chlorine, however, depending on how the discharge occurs, total suspended solids and oil and grease may become pollutants of concern. These pollutants can be handled using dechlorination techniques, filters, oil booms, and other best management practices (BMPs).

There are a large number of discharges of potable water, some of which are covered under the previously mentioned General Permits. Numerous discharges occur without permit coverage. These types of discharges may occur at all times of the year, and require a resource intensive effort to permit, without resulting in a clear general benefit to environmental quality.

The following conditions must be followed by anyone discharging potable water:

The discharge of cleaning materials or chemicals, including dyes, is strictly prohibited, and shall be sent to the sanitary sewer, with permission of the local wastewater treatment facility, or otherwise collected and disposed of.

The potable water shall **not** be used in any additional process. Processes include, but are not limited to, any type of washing, heat exchange, manufacturing, and hydrostatic testing of pipelines not associated with treated water distribution systems.

The discharge shall be from a potable water distribution system, tank or storage that has been maintained for potable water distribution use. Discharges from a distribution system, tank or storage that is used for conveyance or storage of materials other than potable water is not authorized under this policy.

The discharge shall not cause erosion of a land surface.

The discharge shall not contain solid materials in concentrations that can settle to form bottom deposits detrimental to the beneficial uses of the state waters or form floating debris, scum, or other surface materials sufficient to harm existing beneficial uses.

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All discharges must comply with the lawful requirements of federal agencies, municipalities, counties, drainage districts, ditch owners, and other local agencies regarding any discharges to storm drain systems, conveyances, ditches or other water courses under their jurisdiction.

The guidance included in this document in no way reduces the existing authority of the owner of a storm sewer, ditch owner, or other local agency, from prohibiting or placing additional conditions on the discharge.

If the discharge is directly to a State surface water (any stream, creek, Gulch, whether dry or flowing), it must not contain any residual chlorine. The operator is responsible for determining what is necessary for removing chlorine from the discharge. If the discharge is to a ditch, chlorine content may be limited by the owner of the ditch. However, if the ditch returns flow to classified state waters, it must not contain any residual chlorine at the point where it discharges to the classified state water.

BMPs shall be implemented as necessary to meet the conditions above, by anyone discharging potable water. These BMPs have been developed by the Division to help ensure that the discharge will not negatively affect water quality.

For discharge to the ground, the water shall not cause any toxicity to vegetation. When discharging, allow the water to drain slowly so that it soaks into the ground as much as possible.

If discharge is to the sanitary sewer, contact the local wastewater treatment facility prior to discharge. System owners may grant blanket authorization to discharge to their systems. This must be done to ensure that the facility is able to accept the discharge. Not all facilities are able to accept such discharges. Note that additional restrictions or local guidelines may apply.

Removal of any residual chlorine must be done for any direct discharge to state surface waters or for any discharge to a storm sewer or conveyance where the chlorine will not dissipate prior to reaching state surface water. Dechlorination, if necessary, may be achieved by allowing water to stand uncovered until no chlorine is detected, or by dechlorination using a portable dechlorinator. Pay particular attention when handling super-chlorinated waters. A longer time is needed to dissipate chlorine from super-chlorinated waters.

The discharge shall be conducted to minimize the potential to pick up additional suspended solids. When possible, a best management practice, or combination of practices, for filtering or settling suspended solids and other debris, or a combination of practices, shall be used to remove suspended solids or other debris. Examples of suspended solid removal practices include, but are not limited to check dams, filter bags, and inlet protection. These devices shall be used and maintained in accordance with the manufacturers specifications.

The discharge shall be conducted to minimize the potential that it will not pick up any oil and grease. When possible, an absorbent oil pad, boom or similar device shall be used to eliminate oil from the discharge.

### Contact Information:

Questions regarding this action shall be forwarded to Nicole Rolfe at: [nicole.rolfe@state.co.us](mailto:nicole.rolfe@state.co.us)

## 1.9 Demolition

**Instructions:**

- Before demolition of a structure begins, a copy of the asbestos certification from the State certifying the structure is free of asbestos and other pollutants must be obtained. Attach a copy of the County Demolition Permit including the state issued asbestos abatement permit in Appendix 4 – Copy of Demolition Permit and State Asbestos Permit Certification.

Are there any structures to be demolished as part of construction related to this site?

Yes       No

If yes, describe or refer to documentation that determines the likelihood of an impact for erosion and the steps taken to address that impact. Place a copy of the state asbestos certification in Appendix 4, as applicable.

## SECTION 2: EROSION AND SEDIMENT CONTROL BMPs

### Instructions:

- Multiple structural and non-structural BMPs are used during each phase of construction to minimize erosion and the transport of sediment. Included is the *Expected Level of BMP Information* for structural and non-structural BMPs that are expected to minimize sediment transport and erosion control.
- Describe the BMPs that will be implemented to control pollutants in stormwater discharges. For each major activity identified below, complete the following:
  - ✓ Clearly select and describe appropriate control measures.
  - ✓ Describe the maintenance and inspection procedures that will be used for that specific BMP.
  - ✓ Include protocols, thresholds, and schedules for cleaning, repairing or replacing damaged or failing BMPs.
- If a construction project uses a BMP that is not included below, add BMPs in the place provided after each listed BMP and ensure that the *Expected Level of BMP Information* is included.
- Below are the listed BMP descriptions *Expected Level of BMP Information* items that address the following:
  - ✓ What BMPs will be installed?
  - ✓ When will the BMPs be implemented and removed?
  - ✓ Where will the BMPs be implemented?
  - ✓ How will the BMPs be maintained?
- Place all BMP details and associated procedures in Appendix 5 – Erosion and Sediment Control BMP Details.
- Categorize and describe each BMP under one of the following 8 activities:
  - 2.1 *Minimize Disturbed Area and Protect Natural Features and Soil*
  - 2.2 *Control Stormwater Flowing onto and through the Project*
  - 2.3 *Stabilize Soils and Protect Slopes*
  - 2.4 *Protect Storm Drain Inlets*
  - 2.5 *Establish Perimeter Controls and Sediment Barriers*
  - 2.6 *Retain Sediment On-Site and Control Dewatering Practices*
  - 2.7 *Establish Stabilized Construction Exits*
  - 2.8 *Any Additional BMPs*

Below are standard structural and non-structural practices that are often used for erosion and sediment control throughout a construction project. BMPs include but are not limited to the following list. Following each BMP is a placeholder for additional site specific comments or information the designer may want to include. If a BMP is not included, space has been provided at the end of each BMP table. Any additional BMPs shall include all four “Expected Level of BMP Information” (i.e. What, When, Where, How). All BMPs shall be installed as a phased operation when construction progresses.

***Expected Level of BMP Information = What, When, Where and How***

## 2.1 Minimize Disturbed Area and Protect Natural Features and Soil

<p><b>Instructions:</b></p> <ul style="list-style-type: none"> <li>- Describe the areas that will be disturbed with each phase of construction and the methods (e.g., signs, construction fence) that you will use to protect those areas that shall not be disturbed. Describe natural features identified earlier and how each will be protected during construction activity. Include these areas and associated BMPs on your site map(s) also. (Information can be found in the Stormwater Regulation Guide Detail SM-2 Protection of Existing Vegetation.)</li> <li>- Below, identify BMPs that are applicable to the construction site by selecting the blue <b>Yes/No</b> then type “<b>yes</b>” or “<b>no</b>” <u>AND</u> identify the phase of construction the BMP is associated with, i.e. Phase1, 2, 3 or N/A.</li> </ul>
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<b>Permitted Limits of Disturbance</b>		Used: Yes	Phase(s): 1, 2, and 3
<input type="checkbox"/> <b>Permanent</b>		<input checked="" type="checkbox"/> <b>Temporary</b>	
<b>What – BMP Description</b>	Used to designate the area of land that will be disturbed by construction activities.		
<b>When – Installation</b>	The permitted limits of disturbance shall be designated prior to land disturbing activities. If, at any time during construction, land is disturbed outside of the permitted area, the CDPS Stormwater Construction Permit and ESC Plan must be amended.		
<b>Where – Location</b>	The permitted limits of disturbance shall be identified on the ESC Plan.		
<b>How – BMP Maintenance and Inspection</b>	Typically, the permitted limits of disturbance are delineated by silt fence or construction fence. The Permittee shall continuously inspect and maintain the permitted limits of disturbance in an effort to not disturb land outside of the limits.		

<b>Protection of Existing Vegetation (PV) SM-2</b>		Used: No	Phase(s): 1, 2, 3, N/A
<input type="checkbox"/> <b>Permanent</b>		<input type="checkbox"/> <b>Temporary</b>	
<b>What – BMP Description</b>	A construction fence shall be installed around native areas that requires protection. It may also be necessary to install perimeter controls to prevent sediment loading to sensitive areas.		
<b>When – Installation</b>	BMPs installed for protection of existing vegetation shall be installed prior to land disturbing activities or as part of the phasing of the construction project.		

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<p><b><i>Where – Location</i></b></p>	<p>Protection of existing vegetation BMPs shall be installed at locations identified on the ESC Plan. These locations will be any area that has been designated as a preservation area.</p>
<p><b><i>How – BMP Maintenance and Inspection</i></b></p>	<p>Protection of existing vegetation BMPs shall be installed per the protection of existing vegetation detail (Appendix 5 – Erosion and Sediment Control BMP Details and Procedural Plans).</p> <p>Clearly mark the area on the site plan to be preserved. No stockpiles, equipment, trailers or parking shall be allowed within the area. Repair or replace damaged or displaced protective barriers around the vegetated area. The Permittee shall continuously inspect and maintain all areas that are designated to be protected. If damage to the vegetation occurs in a protected area, reseed the area with the same or similar species.</p> <p>Construction equipment must not enter a wetland area, except as permitted by the U.S. Army Corps of Engineers (USACE). In advertent placement of fill in a wetland is a 404 permit violation and will require notification of the USACE.</p>

## 2.2 Control Stormwater Flowing onto and through the Project

**Instructions:**

- Describe structural practices (e.g., swales, diversions, berms, ditches, storage basins) used to divert flows from exposed soils, retain or detain flows, or otherwise limit runoff and the discharge of pollutants from exposed areas of the site. . (Information can be found in the Stormwater Regulation Guide Details EC-7 Temporary Slope Drains, EC-10 Earth Dikes and Drainage Swales & SC-8 Sediment Trap.)
- Below, identify BMPs that are applicable to the construction site by selecting the blue **Yes/No** then type “**yes**” or “**no**” AND identify the phase of construction the BMP is associated with, i.e. Phase 1, 2, 3 or N/A.

<b>Temporary Slope Drains (TSD) BMP Detail EC-7</b>		Used: <b>No</b>	Phase(s):
<input type="checkbox"/> <b>Permanent</b>		<input type="checkbox"/> <b>Temporary</b>	
<b>What – BMP Description</b>	A pipe or culvert used to convey water down a slope where there is high potential for erosion. A collection system at the top of the slope directs runoff to the conveyance. The pipe outlet must be equipped with outlet protection.		
<b>When - Installation</b>	Temporary slope drains shall be installed prior to up gradient land disturbing activities and are to remain in place until no longer needed, but shall be removed prior to the end of construction.		
<b>Where – Location</b>	Temporary slope drains shall be installed at the locations identified on the ESC Plan. They are for use on long, steep slopes where there is a high potential for flow concentration.		
<b>How – BMP Maintenance and Inspection</b>	<p>Temporary slope drains shall be installed and maintained per the temporary slope drain detail EC-7 (Appendix 5 - Erosion and Sediment Control BMP Details).</p> <p>The Permittee shall continuously inspect and maintain all temporary slope drains throughout construction. Inspect the entrance for sediment accumulation and remove, as needed. Inspect the downstream outlet for signs of erosion and stabilize, as needed. Remove accumulated sediment at the entrance and outfall, and inspect pipe anchors to ensure they are secure.</p>		

<b>Earth Dikes/Drainage Swales (ED/DS) BMP Detail EC-10</b> Used: <b>Yes</b> Phase(s): <b>1, 2, 3</b>	
<input type="checkbox"/> <b>Permanent</b>	<input checked="" type="checkbox"/> <b>Temporary</b>
<b>What – BMP Description</b>	Temporary storm conveyance channels used to divert runoff around slopes or to convey runoff to additional sediment control BMPs prior to discharge from the site.
<b>When – Installation/Removal</b>	Earth dikes and drainage swales will be installed immediately upon completion of channel grading and will remain in place until the end of construction.
<b>Where – Location</b>	Earth dikes and drainage swales shall be installed at the locations identified on the ESC Plan. They are typically installed around steep slopes or as a temporary conveyance feature leading to a sediment basin or trap.
<b>How – BMP Maintenance and Inspection</b>	<p>Earth dikes and drainage swales shall be installed per the earth dikes and drainage swales detail EC-10 (Appendix 5 – Erosion and Sediment Control BMP Details and Procedural Plans).</p> <p>The Permittee shall continuously inspect and maintain all earth dikes and drainage swales for stability, compaction and signs of erosion and repair. Inspect side slopes for erosion and damage to erosion control fabric. Stabilize slopes and repair fabric as necessary. Accumulated sediment shall be removed when the sediment has accumulated to one-half of the depth of the earth dike or drainage swales.</p>

<b>Sediment Trap (ST) BMP Detail SC-8</b> Used: <b>Yes</b> Phase(s): <b>1, 2</b>	
<input type="checkbox"/> <b>Permanent</b>	<input checked="" type="checkbox"/> <b>Temporary</b>
<b>What – BMP Description</b>	An excavated or bermed area designed to capture drainage, allowing settling of sediment from a disturbed area less than one acre.
<b>When – Installation/Removal</b>	A sediment trap shall be installed prior to land disturbing activities; the sediment trap shall not be removed until the upstream area is sufficiently stabilized.
<b>Where – Location</b>	Sediment traps shall be installed at the locations identified on the ESC Plan. It shall be installed across a low area or drainage swale.
<b>How – BMP Maintenance and Inspection</b>	Sediment trap shall be installed per the sediment trap detail SC-8 (Appendix 5 – Erosion and Sediment Control BMP Details). The Permittee shall continuously inspect and maintain the sediment trap embankments for stability and seepage.

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	Inspect the sediment trap embankments for stability and seepage, and the outlet for debris and damage. Repair damage to the outlet, and remove all obstructions. Accumulated sediment shall be removed when it reaches ½ the height of the outflow embankment.
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**Temporary Diversion Channel (TDC) SM-8**      Used: **No**      Phase(s):

<input type="checkbox"/> <b>Permanent</b> <input type="checkbox"/> <b>Temporary</b>	
<b>What – BMP Description</b>	Diverts water from a stream to allow for construction activities to take place underneath or in the stream.
<b>When – Installation/Removal</b>	All BMPs associated with a temporary diversion channel shall be installed prior to the start of any construction activities within a stream; removed when the work at the down gradient or natural channel is no longer required, the diversion channel shall be backfilled and stabilized.
<b>Where – Location</b>	Temporary diversion channels shall be installed at the location identified on the ESC Plan.  Temporary diversion channel BMPs can be used in the following locations: construction of detention ponds, dams, in-stream grade control structures, utility installations or any activity that requires work in a waterway.
<b>How – BMP Maintenance and Inspection</b>	Temporary diversion channel shall be installed per the temporary diversion channel detail SM-8 (Appendix 5 - Erosion and Sediment Control BMP Details).  The Permittee shall frequently and continuously inspect and maintain all temporary diversion channel BMPs throughout construction. Flow barriers shall be inspected at the start and end of each workday. The diversion channel shall be inspected for signs of erosion and the lining repaired or replaced if necessary.

**Dewatering Operations (DW) SM-9**      Used: **Yes**      Phase(s): **1, 2**

<input type="checkbox"/> <b>Permanent</b> <input checked="" type="checkbox"/> <b>Temporary</b>	
<b>What – BMP Description</b>	Pumping water from an inundated area to a BMP, then downstream to a receiving waterway, sediment basin or well-vegetated area. When pumping water outside of the permitted boundary a separate State Dewatering Permit is required.

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<b>When – Installation/Removal</b>	Dewatering operations are used when an area of the construction site that is inundated with water which needs to be dewatered as a result of a large storm event, groundwater or existing ponding conditions; and be removed once the work in the down gradient area or natural channel is no longer required.
<b>Where – Location</b>	Dewatering BMPs shall be installed at the locations identified on the ESC Plan. Dewatering operations may occur in any area of the construction site where accumulated water needs to be removed.
<b>How – BMP Maintenance and Inspection</b>	<p>Dewatering operations shall be conducted per dewatering operations detail SM-9 (Appendix 5 – Erosion and Sediment Control BMP Details).</p> <p>All dewatering discharges must be treated to remove sediment (and other pollutants as needed) before discharging from the construction site. The Permittee shall continuously inspect and maintain all dewatering operations throughout construction.</p>

**Temporary Stream Crossing (TSC) SM-10**      Used: **No**      Phase(s):

**Permanent**       **Temporary**

<b>What – BMP Description</b>	A temporary crossing where an actively flowing watercourse must be crossed. Three methods are available: culvert crossing, stream ford and temporary bridge. A permit is required for placement of fill in a waterway under Section 404 of the Clean Water Act. Contact the local office of the U.S. Army Corps of Engineers regarding the requirements for obtaining a 404 permit.
<b>When – Installation/Removal</b>	A temporary stream crossing shall be installed only when it is necessary to cross a stream; and removed when the crossing is no longer needed for construction.
<b>Where – Location</b>	Temporary stream crossings shall be installed at the locations identified on the ESC Plan.
<b>How – BMP Maintenance and Inspection</b>	<p>Temporary stream crossings shall be installed per the temporary stream crossing detail SM-10 (Appendix 5 - Erosion and Sediment Control BMP Details).</p> <p>The Permittee shall continuously inspect and maintain the temporary stream crossing throughout construction. Specifically, inspect for bank erosion and in-stream degradation.</p>

### 2.3 Stabilize Soils and Protect Slopes

**Instructions:**

- Stabilize Soils - Describe controls (e.g., interim temporary mulching, seeding with native vegetation, hydro-seeding and soil binders) to stabilize exposed soils where construction activities have temporarily or permanently ceased. Also describe measures to control dust generation. (Information can be found in the Stormwater Regulation Guide Details EC-1 through EC-14 Erosion Control BMPs minus EC-5 & EC-9.)
  
- Protect Slopes - Describe controls (e.g., erosion control blankets, soil binders) including design specifications and details that will be implemented to protect all slopes from eroding. (Information can be found in the Stormwater Regulation Guide Details EC-1 through EC-14 Erosion Control BMPs minus EC-5 & EC-9.)
  
- Below, identify BMPs that are applicable to the construction site by selecting the blue **Yes/No** then type **“yes”** or **“no”** AND identify the phase of construction the BMP is associated with, i.e. Phase 1, 2, 3 or N/A.

<b>Surface Roughening (SR) BMP Detail EC-1</b>		Used: <b>Yes</b>	Phase(s): <b>1, 2, 3</b>
<input type="checkbox"/> <b>Permanent</b>		<input checked="" type="checkbox"/> <b>Temporary</b>	
<b>What – BMP Description</b>	Tracking, scarifying, imprinting or tilling a disturbed area to provide temporary stabilization. Variations in the soil are created to help minimize wind and water erosion.		
<b>When – Installation</b>	Surface roughening shall be performed either after final grading or to temporarily stabilize an area during active construction.		
<b>Where – Location</b>	Surface roughening shall be used in the locations identified on the ESC Plan. It can be used on mild and steep slopes.		
<b>How – BMP Maintenance and Inspection</b>	<p>Surface roughening shall be installed per the surface roughening detail EC-1 (Appendix 5 – Erosion and Sediment Control BMP Details).</p> <p>Surface roughening shall always be perpendicular to the slope. The Permittee shall continuously inspect and maintain all surfaces that are roughened throughout construction. Surface roughening shall be inspected for erosion as it is only a temporary control.</p> <p>Vehicles and equipment shall not be driven over areas that have been surface roughening. Additional activities may be needed to maintain the roughening on the soil surface.</p>		

<b>Temporary and Permanent Seeding (P) EC-2</b>		Used: <b>Yes</b>	Phase(s): <b>2, 3, 5</b>
<input checked="" type="checkbox"/> <b>Permanent</b>	<input checked="" type="checkbox"/> <b>Temporary</b>		
<b>What – BMP Description</b>	<p><u>Amendment and Seed Specifications Must be Provided by ESC Plan Designer.</u></p> <p>Seed is applied to disturbed areas in an effort to establish vegetation. Temporary seeding is used to stabilize disturbed areas that will be inactive for an extended period.</p> <p>Permanent seeding is used to stabilize areas at final grade that will not be otherwise stabilized. Effective seeding includes preparation of a seedbed, selection of an appropriate seed mixture, proper planting techniques, and protection of the seeded area with mulch, geotextile, or other appropriate measures.</p> <p>Mulching helps to protect the bare soil and must be secured by crimping, tackifiers, netting or other measures.</p>		
<b>When – Installation</b>	Temporary and permanent seeding shall be performed on temporary inactive surfaces and following the completion of final grading.		
<b>Where – Location</b>	Temporary and permanent seeding shall be completed in the locations identified on the ESC Plan. They are used to stabilize areas at final grade that will not otherwise be stabilized.		
<b>How – BMP Maintenance and Inspection</b>	Permanent seeding and secured mulching shall be installed per the temporary and permanent seeding specifications and detail. The Permittee shall continuously inspect and maintain all temporary and permanent seeding and secured mulch throughout construction. Prepare the seedbed, select an appropriate seed mixture, use proper planting techniques and protect the seeded area with secured mulch.		

<b>Soil Binders (SB) EC-3</b>		Used: <b>No</b>	Phase(s):
<input type="checkbox"/> <b>Permanent</b>	<input type="checkbox"/> <b>Temporary</b>		
<b>What – BMP Description</b>	A broad range of treatments that can be applied to exposed soils for temporary stabilization to reduce wind and water erosion.		
<b>When – Installation</b>	Use soil binders for short term temporary stabilization. Soil binders can break down fast due to natural weathering.		
<b>Where – Location</b>	Soil binders can be used on mild and steep slopes including stockpiles. They are often used in areas where work has		

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	temporarily stopped, but is expected to resume before revegetation can be established.
<b>How – BMP Maintenance and Inspection</b>	Soil binders shall be used per the soil binder detail/specifications. The Permittee shall continuously inspect and maintain all areas where soil binders have been applied throughout construction. Soil binders can fail after heavy rainfall events and may require reapplication. In particular, soil binders will generally experience spot failures during heavy rainfall events.

**Mulching (MU) EC-4** Used: **Yes** Phase(s): **3**

<input checked="" type="checkbox"/> <b>Permanent</b>	<input checked="" type="checkbox"/> <b>Temporary</b>
<b>What – BMP Description</b>	Mulching consists of evenly applying straw, hay, shredded wood mulch, bark or compost to disturbed soils and securing the mulch by crimping, tackifiers or netting.
<b>When – Installation</b>	Mulching is used in conjunction with seeding to help protect the seed bed and stabilize the soil. Mulch can also be used as a temporary cover on low to mild slopes to help temporarily stabilize disturbed area where there are growing season constraints. After mulching, the bare ground surface shall not be exposed. Reapply mulch, as needed, to cover bare areas.
<b>Where – Location</b>	Temporary and permanent mulching shall be completed in the locations identified on the ESC Plan.
<b>How – BMP Maintenance and Inspection</b>	Mulching shall be installed per the mulching detail EC-4 (Appendix 5 – Erosion and Sediment Control BMP Details). After mulching, the bare ground surface shall not be more than 10% exposed. Reapply mulch, as needed, to cover bare areas.

**Rolled Erosion Control Product (RECP) EC-6** Used: **Yes** Phase(s): **1, 2, 3, N/A**

<input checked="" type="checkbox"/> <b>Permanent</b>	<input type="checkbox"/> <b>Temporary</b>
<b>What – BMP Description</b>	A variety of temporary or permanently installed manufactured products designed to control erosion and enhance vegetation establishment and survivability, especially on slopes and in channels. There are four categories of products; mulch control netting, open weave textile, erosion control blanket and turf reinforcement mat.



<b>Temporary Outlet Protection (TOP) EC-8</b>		Used: <b>Yes</b>	Phase(s): <b>1, 2</b>
<input type="checkbox"/> <b>Permanent</b>		<input checked="" type="checkbox"/> <b>Temporary</b>	
<b>What – BMP Description</b>	Riprap rock placed at the outlet to help reduce erosion immediately downstream of a pipe, culvert, slope drain rundown or other conveyance with concentrated flow. Temporary outlet protection is intended to be used for less than two years.		
<b>When – Installation/Removal</b>	Temporary outlet protection shall be installed immediately upon the completion of grading; temporary outlet protection shall be removed once the pipe is no longer draining and upstream area or once the downstream area has been sufficiently stabilized.		
<b>Where – Location</b>	Temporary outlet protection shall be installed at the locations identified on the ESC Plan. It shall be installed where a conveyance discharges onto a disturbed area where there is a potential for accelerated erosion due to concentrated flow.		
<b>How – BMP Maintenance and Inspection</b>	Temporary outlet protection shall be installed per the temporary outlet protection detail with topside protection <sup>1</sup> EC-8 (Appendix 5 - Erosion and Sediment Control BMP Details). The Permittee shall continuously inspect and maintain all temporary outlet protection as the rocks may be damaged or displaced. Accumulated sediment shall be removed before the outlet protection becomes buried and ineffective.		
<small><sup>1</sup> 8/5/11 LR Comment</small>			

<b>Earth Dikes/Drainage Swales (ED/DS) BMP Detail EC-10</b>		Used: <b>Yes</b>	Phase(s): <b>1, 2, 3, N/A</b>
<input type="checkbox"/> <b>Permanent</b>		<input checked="" type="checkbox"/> <b>Temporary</b>	
<b>What – BMP Description</b>	Temporary storm conveyance channels are used to divert runoff around slopes or to convey runoff to additional sediment control BMPs prior to discharge from the site.		
<b>When – Installation/Removal</b>	Earth dikes and drainage swales will be installed immediately upon completion of channel grading and will remain in place until the end of construction.		
<b>Where – Location</b>	Earth dikes and drainage swales shall be installed at the locations identified on the ESC Plan. They are typically installed around steep slopes or as a temporary conveyance feature leading to a sediment basin or trap.		
<b>How – BMP Maintenance and Inspection</b>	Earth dikes and drainage swales shall be installed per the earth dikes and drainage swales detail EC-10 (Appendix 5 - Erosion and Sediment Control BMP Details).		

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	The Permittee shall continuously inspect and maintain all earth dikes and drainage swales for stability, compaction and signs of erosion and repair. Inspect side slopes for erosion and damage to erosion control fabric. Stabilize slopes and repair fabric as necessary. Accumulated sediment shall be removed when the sediment has accumulated to one-half of the depth of the earth dike or drainage swales.
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<b>Terracing (TER) EC-11</b>	Used: <b>No</b>	Phase(s):
<input type="checkbox"/> <b>Permanent</b>	<input type="checkbox"/> <b>Temporary</b>	

<b>What – BMP Description</b>	Grading steep slopes into a series of relatively flat sections separated at intervals by steep slope segments. They shorten the uninterrupted flow lengths on steep slopes, reducing the development of rills and gullies.
<b>When – Installation/Removal</b>	Terracing shall be completed during grading activities; when slope is at final grade vegetation shall be established as soon as possible.
<b>Where – Location</b>	Terracing shall be installed at the locations identified on the ESC Plan. It is usually used to control erosion on slopes that are steeper than 4:1.
<b>How – BMP Maintenance and Inspection</b>	Terracing shall be installed per the terracing detail EC-11 (Appendix 5 - Erosion and Sediment Control BMP Details). Terracing shall be used in combination with other stabilization measures that provide cover for exposed soils. The Permittee shall continuously inspect and maintain all terracing throughout construction. Remove accumulated sediment and repair rill erosion as necessary.

<b>Check Dams (CD) EC-12</b>		Used: <b>No</b>	Phase(s):
<input type="checkbox"/> <b>Permanent</b>		<input type="checkbox"/> <b>Temporary</b>	
<b>What – BMP Description</b>	Temporary grade control structures are used in drainage channels to reduce the velocity of runoff and concentrated flows. They can be constructed from rock, gravel bags, sand bags or proprietary devices.		
<b>When – Installation/Removal</b>	Check dams shall be installed prior to earth disturbing activities or immediately upon completion of channel grading. Temporary check dams shall be removed and stabilized. Permanent check dams shall be cleaned and remain in place.		
<b>Where – Location</b>	Check dams shall be installed at the locations identified on the ESC Plan. Typically they are placed in drainage channels, swales or on mild to moderately steep slopes.		
<b>How – BMP Maintenance and Inspection</b>	Check dams shall be installed per the check dam detail EC-12 (Appendix 5 - Erosion and Sediment Control BMP Details). They shall be placed at regularly spaced intervals along the drainage swale or ditch. The height of the dams shall allow for pooling of the runoff. The Permittee shall continuously inspect and maintain check dams as rocks can be displaced and gravel bags or sandbags can be torn. Accumulated sediment shall be removed before it reaches one-half the height of the check dam.		

<b>Streambank Stabilization (SS) EC-13</b>		Used: <b>No</b>	Phase(s):
<input type="checkbox"/> <b>Permanent</b>		<input type="checkbox"/> <b>Temporary</b>	
<b>What – BMP Description</b>	A combination of erosion and sediment control BMPs are used to protect streams, banks, and in-stream habitat from accelerated erosion. Some of the BMPs that may be used include protection of existing vegetation, check dams, temporary and permanent seeding and rolled erosion control products.		
<b>When – Installation/Removal</b>	BMPs used for streambank stabilization shall be installed prior to earth disturbing activities to protect existing vegetation or to preserve an exposed streambank to mitigate erosion rates from the disturbed area; for BMPs that are not to remain in place as a part of final stabilization, such as silt fence and other temporary measures, BMPs shall be removed when all land disturbing activities have ceased and area have been permanently stabilized.		

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<b>Where – Location</b>	BMPs used for stream bank stabilization shall be installed at the locations identified on the ESC Plan. They shall be installed along the banks of streams or waterways.
<b>How – BMP Maintenance and Inspection</b>	See individual details and notes for the various BMPs used in streambank stabilization EC-13 (Appendix 5 - Erosion and Sediment Control BMP Details). The Permittee shall continuously inspect and maintain BMPs used in streambank stabilization.

**Wind Erosion/Dust Control (DC) EC-14**                      Used: **Yes**                      Phase(s): **1,2,3**

**Permanent**                       **Temporary**

<b>What – BMP Description</b>	Wind erosion and dust control BMPs help sediment from disturbed soils and soil stockpiles from entering the air as a result of land disturbing construction activities. A variety of practices that focus on either graded disturbed areas or construction roadways may be used.
<b>When – Installation</b>	During conditions which result in the formation of dust from either construction activities or from naturally occurring winds. Do not overwater.
<b>Where – Location</b>	Dust abatement shall be completed throughout the project area where any material exists that has the potential to become airborne.
<b>How – BMP Maintenance and Inspection</b>	<p>Wind erosion/dust control measures shall be performed per the wind erosion/dust control detail EC-14 (Appendix 5 - Erosion and Sediment Control BMP Details). The Permittee may apply water or magnesium chloride, seed and mulch or use spray-on soil binders on disturbed areas.</p> <p>Water and magnesium chloride shall be applied such that concentrated flows do not form.</p>

## 2.4 Protect Storm Drain Inlets

**Instructions:**

- Describe controls (e.g., inserts, rock-filled bags, or block and gravel) including design specifications and details that will be implemented to protect all inlets receiving stormwater from the project during the entire project. (Information can be found in the Stormwater Regulation Guide Details SC-5 Rock Sock and SC-6 Inlet Protection.)
- Below, identify BMPs that are applicable to the construction site by selecting the blue Yes/No then type “yes” or “no” AND identify the phase of construction the BMP is associated with, i.e. Phase1, 2, 3 or N/A.

<b>Rock Sock (RS) SC-5</b>		Used: <b>No</b>	Phase(s): <b>1, 2, 3, N/A</b>
<input type="checkbox"/> <b>Permanent</b>		<input type="checkbox"/> <b>Temporary</b>	
<b>What – BMP Description</b>	An elongated cylindrical filter constructed of gravel wrapped by wire mesh or woven geotextile. Also called curb socks when placed at angles in the curb line.		
<b>When – Installation/Removal</b>	Rock socks shall be installed prior to land disturbing activities; once upstream stabilization is complete, rock socks and accumulated sediment shall be removed and properly disposed.		
<b>Where – Location</b>	Rock socks shall be installed at the locations identified on the ECS Plan. They are typically used for perimeter control of a disturbed area, part of inlet protection.		
<b>How – BMP Maintenance and Inspection</b>	Rock socks shall be installed per the rock sock detail SC-5 (Appendix 5 - Erosion and Sediment Control BMP Details). The Permittee shall continuously inspect and maintain all rock socks as they are susceptible to displacement and breakage due to vehicle traffic. Accumulated sediment shall be removed by sweeping, as needed, to maintain functionality.		

<b>Inlet Protection (IP) SC-6</b>		Used: <b>No</b>	Phase(s):
<input type="checkbox"/> <b>Permanent</b>		<input type="checkbox"/> <b>Temporary</b>	
<b>What – BMP Description</b>	A permeable barrier that is installed around an inlet to filter runoff and remove sediment before it enters the storm drain inlet. Inlet protection can be constructed of the following: rocks socks, sediment control logs, silt fence, blocks and rock socks, or other materials.		
<b>When – Installation/Removal</b>	Inlet protection for existing inlets shall be installed prior to land disturbing activities upslope from the inlet. Inlet protection for proposed inlets shall be installed immediately after the inlet is		

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	<p>completed and backfilled; inlet protection and any associated sediment must be removed and properly disposed of when the drainage area for the inlet is stabilized.</p>
<p><b><i>Where – Location</i></b></p>	<p>Inlet protection shall be installed at the locations identified on the ESC Plan. Inlet protection shall not be a stand-alone BMP. It shall be used in conjunction with other up gradient BMPs.</p>
<p><b><i>How – BMP Maintenance and Inspection</i></b></p>	<p>Inlet protection shall be installed per the inlet protection detail SC-6 (Appendix 5 - Erosion and Sediment Control BMP Details). Inlet protection shall enable the inlet to function without completely blocking the flow. The Permittee shall continuously inspect and maintain all inlet protection BMPs throughout construction as it is the final BMP before runoff enters the storm drain.</p> <p>Accumulated sediment shall be removed when it has reached one-half the height of the inlet protection or loses functionality, whichever comes first.</p> <p>Inlet protection shall not be used as standalone BMP and shall be part of redundant BMPs.<sup>1</sup></p> <p><sup>1</sup>(8/5/11 LR Comment)</p>

## 2.5 Establish Perimeter Controls and Sediment Barriers

**Instructions:**

- Describe structural practices (e.g., silt fences or fiber rolls) including design specifications and details to filter and trap sediment before it leaves the construction site. (Information can be found in the Stormwater Regulation Guide Details SM-3 Construction Fence, SM-4 Vehicle Tracking Control and SC-9 Vegetated Buffer.)
- Below, identify BMPs that are applicable to the construction site by selecting the blue Yes/No then type “yes” or “no” AND identify the phase of construction the BMP is associated with, i.e. Phase1, 2, 3 or N/A.

<b>Construction Fence (CF) BMP Detail SM-3</b>		Used: <b>No</b>	Phase(s):
<input type="checkbox"/> <b>Permanent</b>		<input type="checkbox"/> <b>Temporary</b>	
<b>What – BMP Description</b>	Restricts site access to designated entrances and exits, delineates construction site boundaries, and keeps construction out of sensitive locations such as natural areas to be preserved as open space, wetlands and riparian areas.		
<b>When – Installation/Removal</b>	Construction fence shall be installed prior to earth disturbing activities; and removed once construction is complete.		
<b>Where – Location</b>	Along the site perimeter or any area within the site where access shall be restricted.		
<b>How – BMP Maintenance and Inspection</b>	Construction fencing shall be installed, maintained and removed per the construction fence detail SM-3 (Appendix 5 – Erosion and Sediment Control BMP Details). The Permittee shall continuously inspect fences for damages and slumping. The fence shall be tight and any areas with slumping or fallen posts shall be reinstalled and/or replace the fencing.		

<b>Vehicle Tracking Control (VTC) SM-4</b>		Used: <b>Yes</b>	Phase(s): <b>1, 2, 3</b>
<input type="checkbox"/> <b>Permanent</b>		<input checked="" type="checkbox"/> <b>Temporary</b>	
<b>What – BMP Description</b>	A stabilized site access point that helps remove sediment from vehicle tires and reduces tracking of the sediment onto paved surfaces.		
<b>When – Installation/Removal</b>	Vehicle tracking control shall be installed prior to any land disturbing activities; and removed when there is no longer the potential for vehicle tracking to occur.		

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<b>Where – Location</b>	Vehicle tracking control shall be installed at the location identified on the ESC Plan. Locate your vehicle tracking control where frequent vehicle traffic will exit the construction site onto a paved roadway.
<b>How – BMP Maintenance and Inspection</b>	<p>Vehicle tracking control shall be installed per the vehicle tracking control detail SM-4 (Appendix 5 - Erosion and Sediment Control BMP Details).</p> <p>All vehicle tracking control BMPs must have non-woven geotextile fabric between soil and rock. Recycled concrete aggregate is not allowed.</p> <p>The Permittee shall continuously inspect and maintain all vehicles tracking control BMPs throughout construction. If the area becomes clogged with sediment, remove and dispose of excess sediment or replace material with a fresh layer of aggregate. Any sediment that is tracked onto adjacent roadways shall be cleaned with brooms, shovels (no water washing), or mechanically cleaned with a pick-up broom.</p>

<b>Vegetated Buffer (VB) SC-9</b>	Used: <b>No</b>	Phase(s):
<input type="checkbox"/> <b>Permanent</b>	<input type="checkbox"/> <b>Temporary</b>	

<b>What – BMP Description</b>	Preserved natural vegetation used to protect waterways and wetlands. A vegetated buffer may be required as a type of setback from a natural waterway. It shall be used in conjunction with other perimeter BMPs.
<b>When – Installation</b>	Vegetated buffers shall be pre-existing of land disturbing activities.
<b>Where – Location</b>	Vegetated buffers shall be installed at the locations identified on the ESC Plan. Vegetated buffers shall be use for separating land disturbing activities with additional BMPs.
<b>How – BMP Maintenance and Inspection</b>	<p>Vegetated buffer shall be installed per the vegetated buffer detail SC-9 (Appendix 5 - Erosion and Sediment Control BMP Details). The Permittee shall continuously inspect and maintain the vegetated buffer for signs of erosion.</p> <p>Inlet protection shall not be used as standalone BMP and shall be part of redundant BMPs.<sup>1</sup></p> <p><sup>1</sup>(8/5/11 LR Comment)</p>

## 2.6 Retain Sediment On-Site

**Instructions:**

- Describe sediment control practices (e.g., sediment trap or sediment basin), including design specifications and details (volume, dimensions, outlet structure) that will be implemented at the construction site to retain sediments on-site. (Information can be found in the Stormwater Regulation Guide Details SC-1 through SC-3 Straw Bale Barrier and SC-7 Sediment Basin and SC-8 Sediment Trap.)
- Below, identify BMPs that are applicable to the construction site by selecting the blue **Yes/No** then type “**yes**” or “**no**” **AND** identify the phase of construction the BMP is associated with, i.e. Phase1, 2, 3 or N/A.

<b>Silt Fence (SF) SC-1</b>		Used: <b>Yes</b>	Phase(s): <b>1, 2</b>
<input type="checkbox"/> <b>Permanent</b>		<input checked="" type="checkbox"/> <b>Temporary</b>	
<b>What – BMP Description</b>	A woven geotextile fabric attached to wooden posts and trenched into the ground. It is used to intercept sheet flow runoff from disturbed areas.		
<b>When – Installation/Removal</b>	Silt fence shall be installed prior to all land disturbing activities. Silt fence shall be removed when the upstream area is stabilized.		
<b>Where – Location</b>	Silt fence shall be installed at the locations identified on the ESC Plan. It is typically installed along the contour of slopes, which is down slope of a disturbed area to accept sheet flow, and placed along the perimeter of a construction site.  <b><i>Silt fence is not designed to receive concentrated flow or to be used a filter fabric.</i></b>		
<b>How – BMP Maintenance and Inspection</b>	Silt fence shall be installed per the silt fence detail SC-1 (Appendix 5 - Erosion and Sediment Control BMP Details). The Permittee shall continuously inspect and maintain all silt fence throughout construction.  Any section of silt fence that has a tear, hole, slumping, undercutting or has been bypassed shall be replaced with a new section. Accumulated sediment shall be removed before it reaches a depth of 6 inches.		

<b>Sediment Control Log (SCL) SC-2</b>		Used: <b>No</b>	Phase(s):
<input type="checkbox"/> <b>Permanent</b>		<input type="checkbox"/> <b>Temporary</b>	
<b>What – BMP Description</b>	Aka “Straw Wattle” - a linear roll made of natural materials such as straw, coconut fiber or other fibrous material that is trenched		

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	into the ground and held with wooden stakes. It is used to intercept sheet flow runoff from disturbed areas.
<b>When - Installation/Removal</b>	Sediment control logs shall be installed during land disturbing activities and after formation of a stockpile; once the upstream area is stabilized, remove and properly dispose of the logs. If disturbed areas exist after removal, the area shall be covered with top soil, seeded and mulched.
<b>Where – Location</b>	<p>Sediment control logs shall be installed at the locations identified on the ECS Plan. They are typically used for stockpile control, inlet protection, and check dams in small drainage ditches, on disturbed slopes to shorten flow lengths and/or as part of multi-layered perimeter control along receiving water such as a stream, pond or wetland.</p> <p>Sediment control logs work well in combination with other layers of erosion and sediment controls.</p> <p>Stockpiles stored on impervious surfaces shall not be placed in a flowline and shall have weighted sediment control logs; stockpiles stored on pervious surfaces may be protected by pervious sediment control logs, silt fence or adequate vegetative cover as allowed.</p>
<b>How – BMP Maintenance and Inspection</b>	<p>Sediment control log shall be installed per the sediment control log detail SC-2 (Appendix 5 - Erosion and Sediment Control BMP Details). Sediment control logs shall be installed along (parallel) the slope contour to avoid concentrating flows.</p> <p>The Permittee shall continuously inspect and maintain all sediment control logs throughout construction as they will eventually degrade. Accumulated sediment shall be removed before the depth is one-half the height of the sediment control log.</p>

<b>Straw Bale Barrier (SBB) SC-3</b>		Used: <b>No</b>	Phase(s):
<input type="checkbox"/> <b>Permanent</b>		<input type="checkbox"/> <b>Temporary</b>	
<b>What – BMP Description</b>	A linear barrier of straw bales used to intercept and capture sheet flow and to trap sediment before runoff exits a disturbed area. It is typically used for perimeter control of a site or stockpile management, at the toe of a slope, along the edge of a drainage pathway, or as part of inlet protection.		
<b>When – Installation/Removal</b>	Straw bale barriers shall be installed prior to land disturbing activities and after formation of a stockpile; remove and properly		

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	dispose of the straw bale once the upstream area has been stabilized. Areas of disturbance beneath the ball shall be seeded and mulched when the bale is removed.
<b>Where – Location</b>	Straw bale barriers shall be installed at the locations identified on the ECS Plan.
<b>How – BMP Maintenance and Inspection</b>	Straw bale barrier shall be installed per the straw bale barrier detail SC-3 (Appendix 5 - Erosion and Sediment Control BMP Details). The Permittee shall continuously inspect and maintain all straw bale barriers as they may be bypassed or undercut by flows and will degrade and rot. Accumulated sediment shall be removed when the depth reaches one-quarter the height of the bale.

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**Sediment Basin (SB) SC-7** Used: **No**      Phase(s):

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**Permanent**                       **Temporary**

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<b>What – BMP Description</b>	A temporary basin built on a construction site to capture sediment transported in runoff prior to discharge from the site. A sediment basin is designed to capture runoff and slowly release it to allow time for settling of the sediment prior to discharge.
<b>When – Installation/Removal</b>	A sediment basin shall be installed prior to land disturbing activities; for a basin being converted to permanent detention basins. For basins to be converted to a detention facility, remove accumulated sediment and reconfigure the basin and outlet to meet the requirements of the final design for the detention facility.  For basins that are temporary and not to be used as a permanent detention facility, fill the excavated area with soil and stabilize accordingly.
<b>Where – Location</b>	Sediment basins shall be installed at the locations identified on the ESC Plan. Where feasible, the sediment basin shall be installed in the same location where a permanent post-construction detention pond will be located.
<b>How – BMP Maintenance and Inspection</b>	The sediment basin shall be installed per the sediment basin detail SC-7 (Appendix 5 - Erosion and Sediment Control BMP Details). The Permittee shall continuously inspect and maintain the sediment basin to ensure its effectiveness.  Accumulated sediment shall be dredged from the basin when it reaches no more than one-third of the design storage volume.

<b>Sediment Trap (ST) BMP Detail SC-8</b>		Used: <b>No</b>	Phase(s):
<input type="checkbox"/> <b>Permanent</b>		<input type="checkbox"/> <b>Temporary</b>	
<b>What – BMP Description</b>	An excavated or bermed area designed to capture drainage, allowing settling of sediment from a disturbed area less than one acre.		
<b>When – Installation/Removal</b>	A sediment trap shall be installed prior to land disturbing activities; the sediment trap shall not be removed until the upstream area is sufficiently stabilized.		
<b>Where – Location</b>	Sediment traps shall be installed at the locations identified on the ESC Plan. It shall be installed across a low area or drainage swale.		
<b>How – BMP Maintenance and Inspection</b>	<p>Sediment traps shall be installed per the sediment trap detail SC-8 (Appendix 5 - Erosion and Sediment Control BMP Details). The Permittee shall continuously inspect and maintain the sediment trap embankments for stability and seepage.</p> <p>Inspect the sediment trap embankments for stability and seepage, and the outlet for sediment, debris and damage. Repair damage to the outlet, and remove all obstructions. Accumulated sediment shall be removed when it reaches ½ the height of the outflow embankment.</p>		

## 2.7 Establish Stabilized Construction Exits

**Instructions:**

- Describe location(s) of vehicle entrance(s) and exit(s), procedures to remove accumulated sediment off-site (e.g., vehicle tracking), and stabilization practices (e.g., stone pads or wash racks or both) to minimize off-site vehicle tracking of sediments and discharges to stormwater. (Information can be found in the Stormwater Regulation Guide Detail SM-4 Vehicle Tracking Control and SM-6 Stabilized Staging Area.)
- Below, identify BMPs that are applicable to the construction site by selecting the blue **Yes/No** then type **“yes”** or **“no”** in the applicable information AND identify the phase of construction the BMP is associated with, i.e. Phase 1, 2, 3 or N/A.

<b>Vehicle Tracking Control (VTC) SM-4</b>		Used: <b>Yes</b>	Phase(s): <b>1, 2, 3, 4</b>
<input type="checkbox"/> <b>Permanent</b>		<input checked="" type="checkbox"/> <b>Temporary</b>	
<b>What – BMP Description</b>	A stabilized site access point that helps remove sediment from vehicle tires and reduces tracking of the sediment onto paved surfaces.		
<b>When – Installation/Removal</b>	Vehicle tracking control shall be installed prior to any land disturbing activities; and removed when there is no longer the potential for vehicle tracking to occur. This is typically after the site has been stabilized.		
<b>Where – Location</b>	Vehicle tracking control shall be installed at the location identified on the ESC Plan. Locate your vehicle tracking control where frequent vehicle traffic will exit the construction site onto a paved roadway.		
<b>How – BMP Maintenance and Inspection</b>	<p>Vehicle tracking control shall be installed per the vehicle tracking control detail SM-4 (Appendix 5 - Erosion and Sediment Control BMP Details).</p> <p>All vehicle tracking control BMPs must have non-woven geotextile fabric between soil and rock. Recycled concrete aggregate is not allowed.</p> <p>The Permittee shall continuously inspect and maintain all vehicles tracking control BMPs throughout construction. If the area becomes clogged with sediment, remove and dispose of excess sediment or replace material with a fresh layer of aggregate. Any sediment that is tracked onto adjacent roadways shall be cleaned with brooms, shovels (no water washing), or mechanically cleaned with a pick-up broom.</p>		

<b>Stabilized Construction Roadway (SCR) SM-5</b>		Used: <b>No</b>	Phase(s):
<input type="checkbox"/> <b>Permanent</b>		<input type="checkbox"/> <b>Temporary</b>	
<b>What – BMP Description</b>	A temporary method to control sediment runoff, vehicle tracking, and dust from roads during construction activities consisting of aggregate base course of 3-inch diameter granular material (no recycled concrete allowed).		
<b>When – Installation/Removal</b>	Use on high traffic construction roads to minimize dust and erosion, and use in place of rough cut street controls on roadways with frequent construction and vehicle traffic; gravel shall be removed once the road is ready to be paved. Prior to paving, the road should be inspected for grade changes and damage. Regrade and repair as necessary.		
<b>Where – Location</b>	Stabilized construction roadways shall be installed at the locations identified on the ESC Plan. Apply gravel to disturbed areas that are used as a route for vehicles.		
<b>How – BMP Maintenance and Inspection</b>	A stable surface cover of rigid gravel shall be maintained as well as repairing any perimeter controls. Inspect drainage ditches along the roadway for erosion and stabilize, as needed, through the use of check dams or rolled erosion control products.		

<b>Stabilized Staging Area (SSA) SM-6</b>		Used: <b>Yes</b>	Phase(s): <b>1</b>
<input type="checkbox"/> <b>Permanent</b>		<input checked="" type="checkbox"/> <b>Temporary</b>	
<b>What – BMP Description</b>	A stabilized staging area is a clearly designated area where construction equipment and vehicles, stockpiles, waste bins and other construction-related materials are stored. If the construction site is big, more than one staging area may be necessary.		
<b>When – Installation/Removal</b>	Stabilized staging areas shall be installed prior to any land disturbing activities.		
<b>Where – Location</b>	Stabilized staging areas shall be installed at the location identified on the ESC Plan.		
<b>How – BMP Maintenance and Inspection</b>	Stabilized staging areas shall be installed per the stabilized staging area detail SM-6 (Appendix 5 - Erosion and Sediment Control BMP Details). The Permittee shall continuously inspect and maintain all stabilized staging areas throughout construction.		

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	A stable surface cover of rigid gravel shall be maintained as well as repairing any perimeter controls and following good housekeeping practices.
<b>Street Sweeping and Vacuuming (SS) SM-7</b>	
Used: <b>No</b> Phase(s):	
<input type="checkbox"/> <b>Permanent</b> <input type="checkbox"/> <b>Temporary</b>	
<b>What – BMP Description</b>	Used where vehicles track sediment onto paved roadways to reduce the transport of it into storm drain systems or surface waterways.
<b>When – Applicable</b>	Street sweeping or vacuuming shall be conducted when there is noticeable sediment accumulation on roadways adjacent to the construction site. Street sweeping and vacuuming shall be completed prior to any precipitation events, at the end of the workday as needed, and at the end of construction.
<b>Where – Location</b>	Street sweeping and vacuuming shall be utilized throughout and adjacent to construction.
<b>How – BMP Maintenance and Inspection</b>	<p>Street sweeping and vacuuming shall be performed per the street sweeping and vacuuming detail SM-7 (Appendix 5 - Erosion and Sediment Control BMP Details).</p> <p>Use standard street sweeping and vacuuming equipment to adequately remove sediment from roadways adjacent to the construction site.</p>

## 2.8 Additional BMPs

**Instructions:**

- Describe additional BMPs that are not listed in Sections 2.1 – 2.7.
- Below, identify BMPs that are applicable to the construction site by selecting the blue Yes/No then type “yes” or “no” AND identify the phase of construction the BMP is associated with, i.e. Phase 1, 2, 3 or N/A.

<b>Concrete Washout Areas (CWA) MM-1</b>		Used: <b>Yes</b>	Phase(s): <b>1, 2</b>
<input type="checkbox"/> <b>Permanent</b>		<input checked="" type="checkbox"/> <b>Temporary</b>	
<b>What – BMP Description</b>	A specific area of the construction site must be designated and managed as a concrete washout area. Three basic options are available: excavation of a pit in the ground, use of an above ground storage area or use of prefabricated haul-away concrete washout containers.		
<b>When – Installation/Removal</b>	Concrete washout areas shall be installed prior to any concrete delivery to the construction site; upon termination of use of the washout, accumulated solid waste, including concrete waste and any contamination soils, must be removed from the site to a designated disposal location.		
<b>Where – Location</b>	Concrete washout areas shall be installed at the locations identified on the ESC Plan. Washout areas within 400 feet of any natural drainage pathway or waterbody or within 1,000 feet of any wells or drinking water sources must be lined.		
<b>How – BMP Maintenance and Inspection</b>	<p>Concrete washout areas shall be installed per the concrete washout area detail MM-1 (Appendix 5 - Erosion and Sediment Control BMP Details). The Permittee shall continuously inspect and maintain all concrete washout area BMPs throughout construction.</p> <p>Ensure adequate signage is in place identifying the location of the washout area. Remove concrete waste in the washout area when filled to about two-thirds of its capacity to maintain functionality.</p>		

<b>Stockpile Management (SP) MM-2</b>		Used: <b>Yes</b>	Phase(s): <b>1, 2</b>
<input type="checkbox"/> <b>Permanent</b>		<input checked="" type="checkbox"/> <b>Temporary</b>	
<b>What – BMP Description</b>	Includes measures to minimize erosion and sediment transport from stockpiles. Stockpile management shall be used when soils or other erodible materials are stored at a construction site.		

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<p><b>When – Installation/Removal</b></p>	<p>Stockpile locations shall be determined during construction; and when temporary removal of a BMP is necessary to access the stockpile, ensure BMPs area reinstalled in accordance with their respective design detail section.</p> <p>When the stockpile is no longer needed, properly dispose of excess materials and re-vegetate or otherwise stabilize the ground surface where the stockpile was located.</p>
<p><b>Where – Location</b></p>	<p>Stockpile locations shall be placed away from areas where concentrated stormwater flow is anticipated, major drainageways, gutters, and storm sewer inlets. Stockpile locations shall be noted on the ESC Plan.</p>
<p><b>How – BMP Maintenance and Inspection</b></p>	<p>Stockpile management shall be performed per the stockpile management detail MM-2 (Appendix 5 – Erosion and Sediment Control BMP Details). The Permittee shall continuously inspect and maintain all stockpiles throughout construction.</p> <p><i>Pervious Surface</i> - It is recommended that stockpiles are stored on a pervious surface and are protected from any sediment transport. BMPs that can be used on pervious surfaces include, but are not limited to sediment control logs, vegetated buffer and silt fence.</p> <p><i>Impervious Surface</i> - Stockpile locations are only allowed on impervious surfaces if no other practical alternative exists. Temporary sediment control shall be placed around the perimeter of the stockpile, such as but not limited to rock socks, straw bales and sand bags.</p>

**Paving and Grinding Operations (PGO) SM-12**      Used: **No**      Phase(s):

**Permanent**                       **Temporary**

<p><b>What – BMP Description</b></p>	<p>Runoff management practices shall be used during all paving and grinding operations. A variety of management practices can be used including, but not limited to: inlet protection, perimeter controls, store materials away from the storm sewer system, drainages and waterways and keep a spill kit onsite.</p>
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<p><b><i>When – Installation/Removal</i></b></p>	<p>Paving and grinding operations shall be scheduled when dry weather is forecasted; recycle asphalt and pavement material when feasible. Material that cannot be recycled must be disposed of in accordance with applicable regulations.</p>
<p><b><i>Where – Location</i></b></p>	<p>Use runoff management practices during all paving and grinding operations such as surfacing, resurfacing, and saw cuts.</p>
<p><b><i>How – BMP Maintenance and Inspection</i></b></p>	<p>The Permittee shall continuously inspect and maintain BMPs associated with paving and grinding operations throughout construction. Perform maintenance on associated BMPs in accordance with their applicable detail maintenance notes.</p>

## SECTION 3: CONSTRUCTION SITE PHASING AND SITE MAPS

### Instructions:

- **Phased BMP Implementation** – The ESC Plan Site Maps shall clearly delineate the construction sequencing between the separate phases of construction, and the BMP implementation and maintenance of both structural and non-structural BMPs with each phase of construction.
- The ESC Plan **must** identify the BMPs to be implemented during the following three project phases. ***Develop a separate phased detailed site maps (i.e. one page representing one phase; not combined) by delineating each BMP for each phase of construction AND provide BMP details with Installation and Maintenance Notes.***
- **Phases of Construction** – Using Section 1.3 Nature and Sequence of Construction Activity section, delineate which BMPs will be used for each of the following phases of construction:

#### Initial Construction

- **Phase I – Locations of all initial BMPs**

Examples of activities include: protect specified vegetation, construction staging/parking/storage, clearing, grubbing, tree and scrub removal, top soil stripping and stock piling temporary roads, and site access points.

#### Interim Construction

- **Phase II – Locations of all interim BMPs**

Examples of activities include: removal of existing pipe, earthwork (excavation/embankment), dewatering, construction of utilities & structures, rip rap, and placement of top soil.

#### Final Construction

- **Phase III – Locations of all final BMPs**

Examples of activities include: final topsoil placement, sod, seeding, mulching, permanent landscaping, pavement, sod, seed and mulching.

- Place the site map pages for each phase in Appendix 6 – Erosion and Sediment Control Plan – Site Map.

Note the location of each BMP on your site map(s). All BMP details (with installation, maintenance and removal notes) shall be placed in Appendix 5 – Erosion and Sediment Control BMP Details.

### 3.1 Phase BMP Construction Activity

**Instructions:**

- Using the information provided in Section 1.3 Nature and Sequence of Construction Activity, specifically the major phases of construction describe the construction phase.
- Describe the BMPs associated with each phase, and the temporary & permanent stabilization methods to be used for each phase.

▪ **Pre-Construction - Phase I**

- Describe construction phase: 10/01/22 to 11/01/22
- List BMPs associated with this phase: Berm, Earth Dikes and Drainage Swales, Silt Fence, Vehicle Tracking Controls
- Describe stabilization methods for this phase: N/A

▪ **Construction - Phase II**

- Describe construction phase: 10/15/22 to 04/30/23
- List BMPs associated with this phase: Berm, Diversion Ditch and Berm, Drainage Swales, Good Housekeeping, Mulching, Sediment Basin, Silt Fence, Surface Roughening, Temporary Seeding, Vehicle Tracking Controls, Land grading, tackifiers, Erosion Control Blankets.
- Describe stabilization methods for this phase: N/A

▪ **Interim Reclamation - Phase III**

- Describe construction phase: 5/01/22 to 07/01/2023
- List BMPs associated with this phase: Drainage Swales, Good Housekeeping, Mulching, Surface Roughening, Temporary and Permanent Seeding, Vehicle Tracking Controls
- Describe stabilization methods for this phase: Vegetation establishment and monitoring

▪ **Well Plugging & Abandonment - Phase IV**

- Describe construction phase: 5/18/50 to 5/01/51
- List BMPs associated with this phase: Secondary Containment, Surface Roughening, Vehicle Tracking Controls
- Describe stabilization methods for this phase: N/A

▪ **Final Reclamation - Phase V**

- Describe construction phase: 5/18/50 to 5/01/51
- List BMPs associated with this phase: Mulching, Surface Roughening, Temporary and Permanent Seeding
- Describe stabilization methods for this phase: Vegetation establishment and revegetation monitoring

### **3.2 General Notes**

**Instructions:**

Below are the required general notes applicable to this Erosion and Sediment Control Plan.

1. Owner/Contractor is responsible for obtaining a State of Colorado, Colorado Department of Public Health and Environment (CDPHE) General Permit for Stormwater Discharges Associated with Construction Activity COR-030000 prior to construction (CDPS Stormwater Construction Permit).
2. The Owner/Contractor shall provide Weld County with a copy of the CDPS Stormwater Construction Permit Inactivation Notice Application. There will be no fee charged to Weld County for the Inactivation Notice or if the Contractor neglects to file this Notice.
3. It is anticipated that the BMPs implemented at the site will have to be maintained and modified to adapt to changing conditions or to ensure that potential pollutants are being properly managed at the site. Responsive ESC Plan changes addressing BMP installation, maintenance and/or implementation or when BMPs are determined to be ineffective; shall be made prior to changes in site conditions. Prior to BMP modification, a notation shall be made in the ESC Plan that includes date and time of changes in the field, an identification of the BMPs removed or added, and the locations of those BMPs.
4. Construction Safety Barrier Fencing (orange construction fence) shall be used to protect wetlands and other sensitive areas, to prevent access, and to delineate the Limits of Construction. The Construction Safety Barrier Fencing shall be installed prior to any work or earth disturbing activities. It shall be specified in the ESC Plan and the locations shown on the site map.
5. The Owner/Contractor is responsible for implementing and maintaining erosion and sediment control measures at all times during construction. The ESC Plan shall be modified in compliance to the Weld County Stormwater Regulations.
6. Stormwater Inspections – always use the Stormwater construction Inspection Report form provided in Appendix 7 - Inspection Report Instructions and Form.
7. Minimum Stormwater Inspection Schedule - A thorough inspection of the Best Management Practices (BMPs) shall be performed every fourteen (14) calendar days and within twenty-four (24) hours after any precipitation or snowmelt event that causes surface erosion.
  - a. Post-Storm Event Stormwater Inspections at Temporarily Idle Sites – If no construction activities will occur following a storm event, post-storm event inspections shall be conducted prior to re-commencing construction activities, but no later than seventy

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two (72) hours following the storm event. The occurrence of any such delayed inspections must be documented in the inspection record. Routine inspections still must be conducted at least every fourteen (14) calendar days.

- b. Stormwater Inspections at Completed Sites/Areas – For sites or portions of sites that meeting the following criteria, the permittee shall make a thorough inspection of their construction site BMPs at least once every month, and post-storm event stormwater inspection are not required.
  - i. all construction activities that will result in surface ground disturbed are completed;
  - ii. all activities required for final stabilization, in accordance with the ESC Plan, have been completed;
  - iii. the ESC Plan has been amended to indicate those areas that will be inspected in accordance with the reduced schedule allowed.
8. Always use biodegradable erosion control blankets on slopes 3:1 or steeper and in swales, long channels and roadside ditches.
9. All soil imported to or exported from the site shall be properly covered to prevent the loss of material during transport. Haul routes must be permitted by the County. No material shall be transported to another site without first obtaining a Hauling Permit from Weld County Planning.
10. Sediment caused by accelerated soil erosion shall be removed from runoff water before it leaves the site of the earth disturbance.
11. Any construction areas, not graded to final grade, require temporary BMPs for site stabilization.
12. Construction debris shall be stockpiled within the designated staging area and properly disposed of.
13. Excavated material shall not be stockpiled within the roadway section unless it is temporary and has appropriate sediment control measures in place.
14. Permanent erosion and sediment control measures for all slopes, channels, ditches, or any disturbed land area shall be stabilized immediately after final grading.
15. All spills shall be cleaned up immediately after discovery, or contained until appropriate cleanup methods can be employed. Section 4.2 Spill Prevention, Containment and Control shall be followed along with proper disposal methods.

## SECTION 4: WASTE MANAGEMENT PLAN

### Instructions:

- The construction site wastes identified in Section 1.8 Potential Sources of Pollutants include the following categories of waste:
  - Solid Waste (e.g. sediment, gravel, compost, building materials, vehicle tracking, construction spoils, trash, etc.)
  - Liquid Waste (e.g. oil, gas, tar, hydraulic fluid, etc.)
  - Concrete and Paint Washout (e.g. truck chute and associated fixtures and equipment, paint, etc.)
  - Sanitary Waste (e.g. worker trash, portable toilets, waste piles and dumpsters, etc.)
  - Chemical Waste (e.g. fertilizers, pesticides, detergents, fuels, solvents, oils, etc.)
  - Contaminated Groundwater Management, if applicable
  - Permitted Construction Dewatering, if applicable
  
- Use the Stormwater Regulation Guide to write a waste management plan by describing structural and non-structural pollution prevention BMPs that will be implemented to control pollutants in stormwater from construction site waste from leaving the construction site permitted area.
  
- The following BMP categories shall be addressed to control construction site waste, as applicable. Use the Stormwater Regulation Guide for information on the following BMPs:
  - Covering Outdoor Storage and Handling Areas
  - Spill Prevention, Containment and Control
  - Good Housekeeping
  - Vehicle Maintenance, Fueling and Storage
  - Street Sweeping and Cleaning
  - Storm Sewer System Cleaning

## 4.1 Covering Outdoor Storage and Handling Areas

**Instructions:**

- Below, identify BMP procedures that are applicable to the construction site by selecting the blue **Yes/No** then type “**yes**” or “**no**”.
- The following procedures shall be implemented for covering outdoor storage and handling areas.

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**Covering Outdoor Storage and Handling Areas**      Used: **Yes**      Phase(s): 1, 2, 3

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**Permanent**

**Temporary Procedure**

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**Description**

When raw materials, byproducts, finished products, storage tanks, and other materials are stored or handled outdoors, stormwater runoff that comes in contact with the materials can become contaminated. Proactively covering storage and handling areas can be an effective source control for such areas. Coverings can be permanent or temporary and consist of tarp, plastic sheeting, roofing, enclosed structures, or other approaches that reduce exposure of materials to precipitation and wind.

**Appropriate Uses**

Covering is appropriate for areas where solids (e.g., gravel, compost, building materials) or liquids (e.g., oil, gas, tar) are stored, prepared, or transferred. Cover the follow areas that are applicable to this construction site:

- **Loading and Unloading:** Loading and unloading operations usually take place at outside storage or staging area on the construction site. Materials may be spilled during transfer between storage facilities and trucks during pumping of liquids, pneumatic transfer of dry chemicals, and mechanical transfer of bags, boxes, drums, or other containers by material handling equipment.
- **Aboveground Tanks/Liquid Storage:** Accidental releases of chemicals from above-ground liquid storage can contaminate stormwater with a variety of pollutants. Several common causes of accidental releases from above-ground storage include: external corrosion and structural failure, problems due to improper installation, spills and overfills due to operator error, failure of piping systems, and leads or spills during pumping of liquids or gases between trucks to a storage facility.
- **Outside Manufacturing:** Common outside manufacturing activities may include parts assembly, rock grinding or crushing, metals paining or coating, grinding or sanding, degreasing, concrete manufacturing, parts cleaning or operations that use hazardous materials. These activities can result in dry deposition of dust, metal and wood shavings and liquid discharges of dripping or leaking fluids from equipment or process and other residuals being washed away in storm runoff. In addition to the manufacturing process,

outside storage of materials and waste products may occur in conjunction with outside manufacturing.

- **Waste Management:** Wastes spilled, leached, or lost from outdoor waste management areas or outside manufacturing activities may accumulate in soils or on other surfaces and be carried away by storm runoff. There is also the potential for liquid wastes from surface impoundments to overflow to surface waters or soak the soil where they can be picked up by runoff. Possible stormwater contaminants include toxic compounds, oil and grease, oxygen-demanding organics, paints and solvents, heavy metals and high levels of suspended solids. Lack of coverage of waste receptacles can result in precipitation seeping through the material and collecting contaminants or the material being blown around the site and into the storm sewer system. Typical containment sources include waste piles, wastewater and solid waste treatment and disposal, land application sites, dumpsters, or unlabeled drums.
- **Outside Storage of Materials:** Raw materials, intermediate products, byproducts, process residuals, finished products, containers, and materials storage areas can be sources of pollutants such as metals, oils and grease, sediment and other contaminants. Pollutant transport can occur when solid materials wash off or dissolve into water, or when spills or leaks occur.

### Practice Procedures

- Where practical, conduct operations indoors. Where impractical, select an appropriate temporary or permanent covering to reduce exposure of materials to precipitation and runoff.
- The type of covering selected depends on a variety of factors such as the type and size of activity being conducted and materials involved. Types of cover range from relatively inexpensive tarps and plastic sheeting to overhead structures or fully enclosed buildings equipped with ventilation, lighting, etc.
- Covering practices should be combined with Good Housekeeping BMPs to be most effective.
- Measures such as tarps and plastic sheets typical require more frequent inspection and maintenance than construction facilitates.

\*During construction Weld County Inspects for Construction Site Waste.

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Place additional information here:

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## 4.2 Spill Prevention, Containment and Control

**Instructions:**

- Below, identify BMP procedures that are applicable to the construction site by selecting the blue Yes/No then type “yes” or “no”.
- The following procedures shall be implemented for spill prevention, containment and control.

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**Spill Prevention, Containment and Control**                      Used: **Yes**                      Phase(s): 1, 2, 3

---

**Permanent**

**Temporary Procedure**

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**Description**

Spills and leaks of solid and liquid materials processed, handled or stored outdoors can be significant source of stormwater pollutants. Spilled substances can reach receiving waters when runoff washes these materials from impervious surfaces or when spills directly enter the storm sewer system during dry weather conditions.

Effective spill control includes both spill prevent and spill response measures and depends on proper training for spill response measures and may also include structural spill containment. Structural spill containment measures typically include temporary or permanent curbs or berms that surround a potential spill site. Berms may be construction of concrete, earthen material, metal, synthetic liners, or other material that will safely contain the spill. Spill control devises may also include valves, slide gates, or other devices that can control and contain spilled material before it reaches the storm sewer system or receiving waters.

**Appropriate Uses**

Implement spill prevention, containment and control measures at construction sites in areas where materials may be spilled in quantities that can adversely impact receiving waters when discharged directly or through the storm sewer system.

**Practice Procedures – Spill Prevention Measures**

- Train employees on potential sources of pollution on-site and provide clear, common-sense spill prevention practices be strictly followed.
  - Identify equipment that is exposed to precipitation, pollutants that may be generated and possible sources of leaks or discharges.
  - Perform regular inspection and preventative maintenance of equipment to ensure proper operation and to check for leaks or evidence of discharge (stains). Provide clear procedures to ensure that needed repairs are completed and provide temporary leak containment until such repairs can be made.
-

- Drain or replace motor oil and other automotive fluids in a designated area away from storm sewer inlets. Collect spent fluids and recycle or dispose of properly. Never dispose of these fluids in the storm sewer or sanitary sewer.
- In fueling areas, clean up spills with dry methods (absorbents) and use damp cloths on gas pumps and damp mops on paved surfaces. Never use a hose to “wash down” a fuel spill.
- Where practical, reduce stormwater contact with equipment and materials by implementing covered storage, reduce stormwater run-on and follow good housekeeping practices.

### **Identification of Spill Areas**

Identify potential spill areas, potential spill volumes, material types, frequency of material used, and drainage paths from spill areas with relation to storm sewer inlets, adjacent water bodies, structural BMPs, and containment structures. Use this information to determine the types of spill prevention and control measures needed specific to the site conditions. Examples of potential spill locations include:

- Loading and unloading areas
- Outdoor storage areas
- Outdoor manufacturing or processing activities
- Waste disposal
- Areas that generate significant dust or particulates (that may be subsequently deposited on the ground)
- Areas prone to spills based on past experience at the site
- Locations where other routine maintenance activities occur such as equipment maintenance and cleaning, pesticide/fertilizer application, etc.

Additionally, areas where smaller leaks may occur such as parking should also have basic spill cleanup procedures.

### **Material Handling Procedures**

From a water quality perspective, the primary principle behind effective material handling practices is to minimize exposure to precipitation. This can be accomplished by storing the material indoors under weather-resistant covering, elevating the material off the ground by using pallets, and diverting stormwater around materials storage areas. Representative outdoor materials handling procedures include:

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- Keep bulk solid materials such as raw materials, sand, gravel, topsoil, compost, concrete, packing materials, metal products and other materials covered and protected from stormwater.
- When practical, store materials on impermeable surfaces.
- Store hazardous materials according to federal, state, and local hazardous materials requirements.
- Adopt procedures that reduce the chance of spills or leaks during filling or transfer of materials.
- Substitute less toxic or nontoxic materials for toxic materials.
- Store containers that are easily punctured or damaged away from high traffic areas.
- Add waste-capture containers such as collection pans for lubricating fluids.
- Store drums and containers with liquid materials on impermeable surfaces and provide secondary containment where appropriate. Drums stored outdoors should be located on pallets to minimize contact with runoff.

### **Spill Response Procedures and Equipment**

Spill response procedures should be tailored to site-specific conditions and industry-specific regulatory requirements. General spill response procedures include:

- Containment and cleanup of spills should begin promptly after the spill is observed.
- Sweep up small quantities of dry chemical or solids to reduce exposure to runoff. Shoveling may be used for larger quantities of materials.
- Absorbents should be readily accessible in fueling areas or other areas susceptible to spills.
- Wipe up small spills with a shop rag, store shop rags in appropriate containers, dispose of rags properly or use a professional industrial cleaning service.
- Contain medium-sized spills with absorbents (e.g., kitty litter, sawdust) and use inflatable berms or absorbent "snakes" as temporary booms for the spill. Store and dispose of absorbents properly. Wet/dry vacuums may also be used, but not for volatile fluids.
- Develop procedures and locations for containing and storing leaking containers.
- Install drip pans below minor equipment leaks and properly dispose of collected material until a repair can be made.
- For large spills, first contain the spill and plug storm sewer inlets where the liquid may migrate off-site, then clean up the spill.
- Excavation of spill areas to removed contaminated material may be required where large liquid spills occur on unpaved surfaces.

- An inventory of cleanup materials should be maintained onsite and strategically located based on the types and quantities of chemicals present.

### **Structural Spill Containment Measures**

Two general approaches are often used when implementing spill containment measures. The first approach is designed to contain the entire spill. The second approach uses curbing to route spilled material to a collection basin. Both containment berming and curbing should be sized to safely contain or convey to a collection basin a spill from the largest storage tank, tanker truck, or other containment device in the possible spill area. The spill containment area must have an impermeable surface (e.g., impermeable liner, asphalt or concrete) to prevent groundwater contamination. The containment system must be designed to enable collection and removal of spilled material through a pump or vacuum trucks, use of sorbent or gelling material, or other measures. Material removed from the spill area must be disposed of or recycled according to local, state, and federal standards.

If the capacity of the containment berming or the collection basin is exceeded, supplemental spill control measures should be available such as a portable containment device, sorbent materials, or gelling agents that eventually solidify the material. Water that collects within containment areas due to rainfall or snowmelt must be appropriately treated before release from the spill area.

### **Spill Plan Development**

Many industries are required by federal law to have a Spill Prevention, Control and countermeasures Plan (SPCC) that meets specific regulatory criteria when certain types and quantities of materials are used or processed at a site. These plans can be instrumental in developing a spill control plan for stormwater management purposes. Even if an SPCC plan is not legally required at a site, a spill control plan for stormwater management purposes may be necessary. Representative information appropriate for a spill control plan, building on concepts previously introduced in this Fact Sheet, includes:

- Site plan showing where materials are stored and handled, and where associated activities occur.
  - Notification procedures to be used in the event of an accident.
  - Instructions for clean-up procedures.
  - A designated person with spill response and clean-up authority.
  - Training of key personnel in plan and clean-up procedures.
  - Signs posted at critical locations providing a summary of SPCC plan information, phone numbers, contacts, equipment locations, etc.
-

## Appendix A-1 of the Stormwater Regulation Guide

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- Provisions requiring spills to be cleaned up, corrective actions taken, or countermeasures implemented immediately.
- Provisions for absorbents to be made available for use in fuel areas, and for containers to be available for used absorbents.
- Prohibition on washing absorbents into the storm sewer system or into the sanitary sewer system via floor drains.
- Provision for emergency spill containment and clean-up kits in accessible and convenient locations. Kits should contain the appropriate clean-up materials applicable to the materials stored at the site.

\*During construction Weld County Inspects for Construction Site Waste.

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Place additional information here:

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### 4.3 Good Housekeeping

**Instructions:**

- Below, identify BMP procedures that are applicable to the construction site by selecting the blue Yes/No then type “yes” or “no”.
- The following procedures shall be implemented for good housekeeping.

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<b>Good Housekeeping Practices</b>	Used: <b>Yes</b>	Phase(s): 1, 2, 3
<input type="checkbox"/> <b>Permanent</b>	<input checked="" type="checkbox"/> <b>Temporary</b>	

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**Description**

Good housekeeping practices are designed to maintain a clean and orderly work environment. The most effective first steps towards preventing pollution in stormwater from construction sites simply involve using common sense to improve the facility's basic housekeeping methods. Poor housekeeping practices result in increased waste and potential for stormwater contamination.

A clean and orderly work site reduces the possibility of accidental spills caused by mishandling of chemicals and equipment and should reduce safety hazards to personnel. A well-maintained material and chemical storage area will reduce the possibility of stormwater mixing with pollutants.

Some simple procedures a facility can use to promote good housekeeping include improved operation and maintenance of machinery and processes, material storage practices, material inventory controls, routine and regular clean-up schedules, maintaining well organized work areas, signage, and educational programs for employees and the general public about all of these practices.

**Practice Procedures**

Good housekeeping practices include these general areas:

- Operation and Maintenance
- Material Storage
- Material Inventory
- Training and Participation.

**Operation and Maintenance**

Consider implementing the following practices:

- Maintain dry and clean floors and ground surfaces by using brooms, shovels, vacuums or cleaning machines, rather than wet clean-up methods.
- Regularly collect and dispose of garbage and waste material.

- Routinely inspect equipment to ensure that it is functioning properly without leaking and conduct preventative maintenance and needed repairs.
- Train employees on proper clean up and spill response procedures.
- Designate separate areas of the site for auto parking, vehicle refueling and routine maintenance.
- Promptly clean up leaks, drips and other spills.
- Cover and maintain dumpsters and waste receptacles. Add additional dumpsters or increase frequency of waste collection if overflowing conditions reoccur.
- Where outdoor painting and sanding occur, implement these practices:
  - Conduct these activities in designated areas that provide adequate protection to prevent overspray and uncontrolled emissions. All operations should be conducted on paved surfaces to facilitate cleanup.
  - Use portable containment as necessary for outside operations.
  - Clean up and properly dispose of excess paint, paint chips, protective coatings, grit waste, etc.
- Maintain vegetation on facility grounds in a manner that minimizes erosion. Follow the Landscape Maintenance and Pesticide, Herbicide and Fertilizer Usage BMPs to ensure that minimum amounts of chemicals needed for healthy vegetation are applied in a manner that minimizes transport of these materials in runoff.

### **Material Storage Practices**

Proper storage techniques include the following:

- Provide adequate aisle space to facilitate material transfer and ease of access for inspection.
- Store containers, drums, and bags away from direct traffic routes to reduce container damage resulting in accidental spills.
- Stack containers according to manufacturer's instructions to avoid damaging the containers from improper weight distribution. Also store materials in accordance with directions in Material Safety Data Sheets (MSDSs).
- Store containers on pallets or similar devices to prevent corrosion of containers that results from containers coming in contact with moisture on the ground.
- Store toxic or hazardous liquids within curbed areas or secondary containers.

### **Material Inventory Practices**

An up-to-date materials inventory can keep material costs down by preventing overstocking, track how materials are stored and handled onsite, and identify which materials and activities pose the most risk to the environment. Assign responsibility of hazardous material inventory to individuals trained to handle such materials. A material inventory should include these steps:

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- Identify all chemical substances present at work site. Perform a walk-through of the site, review purchase orders, list all chemical substances used and obtain Material Safety Data Sheets (MSDS) for all chemicals.
- Label all containers. Labels should provide name and type of substance, stock number, expiration date, health hazards, handling suggestions, and first aid information. Much of, this information can be found on an MSDS.
- Clearly identify special handling, storage, use and disposal considerations for hazardous materials on the material inventory.
- Institute a shelf-life program to improve material tracking and inventory that can reduce the amount of materials that are overstocked and ensure proper disposal of expired materials. Careful tracking of materials ordered can result in more efficient materials use. Decisions on the amounts of hazardous materials that are stored on site should include an evaluation-of any emergency control systems that are in place. All storage areas for hazardous materials should be designed to contain spills.

**Training and Participation**

It is recommended that frequent and proper training in good housekeeping techniques reduces the likelihood that chemicals or equipment will be mishandled. To promote good housekeeping, consider implementing these practices:

- Discuss good housekeeping practices in training programs and meetings.
- Publicize pollution prevention concepts through posters or signs.
- Post bulletin boards with updated good housekeeping procedures, tips and reminders.

\*During construction Weld County Inspects for Construction Site Waste.

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Place additional information here:

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## 4.4 Vehicle Maintenance, Fueling and Storage

**Instructions:**

- Below, identify BMP procedures that are applicable to the construction site by selecting the blue **Yes/No** then type **“yes”** or **“no”**.
- The following procedures shall be implemented for vehicle maintenance, fueling and storage.

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**Vehicle Maintenance, Fueling and Storage**

Used: **Yes**

Phase(s): 1, 2, 3

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**Permanent**

**Temporary**

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**Description**

Areas where vehicles are fueled, maintained, and stored/parked can be pollutant "hot spots" that can result in hydrocarbons, trace metals, and other pollutants being transported in precipitation runoff. Proper fueling operations, storage of automotive fluids and effective spill cleanup procedures can help reduce contamination of stormwater runoff from vehicle maintenance and fueling facilities.

Fuel-related spills can occur due to inattention during fueling or "topping off" fuel tanks. Common activities at construction sites include vehicle fluid replacement and equipment replacement and repair. Some of the wastes generated maintaining automobiles include solvents (degreasers, paint thinners, etc.), antifreeze, brake fluid and brake pad dust, battery acid, motor oil, fuel, and lubricating grease.

**Appropriate Uses**

These BMP procedures are applicable to vehicle maintenance and fueling. Be aware that vehicle wash water is considered process wastewater that will not be discharged to the storm sewer system.

**Practice Procedures**

**Vehicle Maintenance**

The most effective way to minimize wastes generated by automotive maintenance activities is to prevent their production in the first place. Consider adopting these practices:

- Perform maintenance activities inside or under cover. When repairs cannot be performed indoors, be sure to use drip pans or absorbents.
  - Keep equipment clean and free of excessive oil and grease buildup.
  - Promptly cleanup spills using dry methods and properly dispose of waste. When water is required, use as little as possible to clean spills, leaks, and drips.
-

- Use a solvent collection service to collect spent solvent used for parts cleaning.
- When using liquids for cleaning, use a centralized station to ensure that solvents and residues stay in one area. Locate drip pans and draining boards to direct solvents back into a solvent sink or holding tank for reuse.
- Store used oil for recycling in labeled tanks. Locate used oil tanks and drums away from storm sewer, flowing streams, and preferably indoors.
- Use non-hazardous or less hazardous alternatives when practical. For example, replace chlorinated organic solvents with non-chlorinated ones like kerosene or mineral spirits.
- Properly recycle or dispose of grease, oil, antifreeze, brake fluid, cleaning solutions, hydraulic fluid, batteries, transmission fluid, worn parts, filters, and rags.
- Drain and crush oil filters before recycling or disposal.
- Drain all fluids and remove batteries from salvage vehicles and equipment.
- Closely monitor parked vehicles for leaks and place pans under any leaks to collect the fluids for proper disposal or recycling.
- Install berms or other measures to contain spills and prevent work surface runoff from entering storm sewer system.
- Develop and follow a spill prevention plan. This includes a variety of measures such as spill kits and knowing where storm sewers are located and how to protect them (e.g., drain mat, berm) when larger spills occur. (See the Spill Prevention, Containment and Control BMP Procedure for more information.)
- Conduct periodic employee training to reinforce proper disposal practices.
- Promptly transfer used fluids to recycling drums or hazardous waste containers.
- Store cracked batteries in leak-proof secondary containers.
- Inspect outdoor storage areas regularly for drips, spills and improperly stored materials (unlabeled containers, auto parts that might contain grease or fluids, etc.). This is particularly important for parking areas for vehicles awaiting repair.
- Structural stormwater BMPs in vehicle hotspot areas require routine cleanout of oil and grease, sometimes monthly or more frequently. During periods of heavy rainfall, cleanout is required more often to ensure that pollutants are not washed through the trap. Sediment removal is also required on a regular basis to keep the BMP working efficiently.

### **Vehicle Fueling**

- Designated fueling areas should be designed to prevent stormwater runoff and spills. For example, fuel-dispensing areas should be paved with concrete or an equivalent impervious surface, with an adequate slope to prevent ponding, and separated from the rest of the site by a grade break or berm that prevents run-on of precipitation.

- For facilities where equipment is being fueled with a mobile fuel truck, establish a designated fueling area. Place temporary "caps" over nearby catch basins or manhole covers so that if a spill occurs, it is prevented from entering the storm sewer system. A form of secondary containment should be used when transferring fuel from the tank truck to the fuel tank. Storm drains in the vicinity should also be covered. Install vapor recovery nozzles to help control drips, as well as reduce air pollution.
- Keep spill response information and spill cleanup materials onsite and readily available.
- Dry cleanup methods should be employed when cleaning up fuel spills. Such methods include sweeping to remove litter and debris and using rags and absorbents for leaks and spills.
- Water should not be used to wash these areas. During routine cleaning, use a damp cloth on the pumps and a damp mop on the pavement, rather than spraying with a hose. Fuel dispensing nozzles should be fitted with "hold-open latches" (automatic shutoff) except where prohibited by local fire departments. Signs can be posted at the fuel dispenser or island warning vehicle owners/operators against "topping off" vehicle fuel tanks.
- Written procedures that describe these BMPs should be provided to employees who will be using fueling systems.

\*During construction Weld County Inspects for Construction Site Waste.

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Place additional information here:

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## 4.5 Street Sweeping and Cleaning

**Instructions:**

- Below, identify BMPs that are applicable to the construction site by selecting the blue Yes/No then type “yes” or “no”.
- The following procedures shall be implemented for street sweeping and cleaning.

<b>Street Sweeping and Cleaning</b>	Used: <b>No</b>	Phase(s):
<input type="checkbox"/> <b>Permanent</b>	<input type="checkbox"/> <b>Temporary</b>	

**Description**

Street sweeping uses mechanical pavement cleaning practices to reduce sediment, litter and other debris washed into storm sewers by runoff. This can reduce pollutant loading to receiving waters and in some cases reduce clogging of storm sewers and prolong the life of infiltration oriented BMPs and reduce clogging of outlet structures in detention BMPs. Different designs are available with typical sweepers categorized as a broom and conveyor belt sweeper, wet or dry vacuum-assisted sweepers, and regenerative-air sweepers. The effectiveness of street sweeping is dependent upon particle loadings in the area being swept, street texture, moisture conditions, parked car management, equipment operating conditions and frequency of cleaning (Pitt et al. 2004).

**Appropriate Uses**

Street sweeping is an appropriate technique in urban areas where sediment and litter accumulation on streets is of concern for aesthetic, sanitary, water quality, and air quality reasons. From a pollutant loading perspective, street cleaning equipment can be most effective in areas where the surface to be cleaned is the major source of contaminants. In areas where construction activity is occurring, street sweeping shall occur as part of construction site erosion and sediment control plans.

**Practice Procedures**

1. Street sweeping shall be completed when there is sediment or tracking from the construction site exits present that has come from the construction site into the public right-of-way.
2. The frequency of street sweeping is dependent on presence of sediment or tracking that has occurred. If tracking is occurring, either a VTC shall be installed, the VTC needs maintenance or the VTC present is inadequate; all require that the Erosion and Sediment Control Plan be updated.

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3. All instances of off-site (outside permitted area) sediment or tracking from the construction site shall be swept immediately.
  4. Conduct street sweeping prior to precipitation events.
  5. Operate sweepers at manufacturer recommended optimal speed levels to increase effectiveness.
  6. Regularly inspect vehicles and equipment for leaks and repair promptly.
  7. Keep accurate logs of the number of curb-miles swept and the amount of waste collected.
  8. Dispose of street sweeping debris and dirt at a landfill.
  9. Do not store swept material along the side of the street or near a storm drain inlet.
- 

Place additional information here:

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## 4.6 Storm Sewer System Cleaning

**Instructions:**

- Describe structural and non-structural BMPs that are used to remove accumulated sediment, trash, and other pollutants of the storm sewer system including inlets, pipes and stormwater BMPs for the applicable construction site wastes identified in Section 1.8 Potential Sources of Pollution to maintain a clean and orderly construction site.
- Below, identify BMPs that are applicable to the construction site by selecting the blue Yes/No then type “yes” or “no”.

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<b>Storm Sewer System Cleaning</b>	Used: <b>No</b>	Phase(s):
<input type="checkbox"/> <b>Permanent</b>	<input type="checkbox"/> <b>Temporary</b>	

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**Description**

Periodic storm sewer system cleaning can help to remove accumulated sediment, trash, and other substances from various components of the storm sewer system including inlets, pipes and stormwater BMPs.

Routine cleaning reduces the amount of pollutants, trash, and debris both in the storm drain system and in receiving waters. Clogged drains and storm drain inlets can cause the drains to overflow, leading to increased erosion (Livingston et al. 1997). Cleaning increases dissolved oxygen, reduces levels of bacteria, and supports in-stream habitat. Areas with relatively flat grades or low flows should be given special attention because they rarely achieve high enough flows to flush themselves (Ferguson et al. 1997).

Water used in storm drain cleaning must be collected and properly disposed of, typically at a sanitary wastewater treatment facility. Simpler methods in localized areas can also include manual trash collection and shoveling sediment and debris from inlets and outlets.

Frequency and prioritization of storm sewer cleaning is affected by multiple factors such as the activity and intensity of construction and the proper installation and maintenance for construction BMPs.

**Appropriate Uses**

The contractor is responsible for properly cleaning out the storm sewer system. It is recommended that prior to construction, the contractor inspect existing storm sewer inlets to document if they are clean or need maintenance.

The storm sewer system shall be cleaned, at minimum, following completion of construction but prior to stabilization.

**Practice Guidelines**

To be most effective, the storm sewer system shall be inspected as part of the mandated 14 day stormwater quality inspections.

- **Technology:** A variety of methods of cleaning catch basins are available, including manual cleaning (shovel), vacuum cleaning and vacuum combination jet cleaning. Choose the approach that is most effective for site conditions.
  - **Staff training:** Operators should be properly trained in catch basin maintenance including waste collection and disposal methods.
  - **Material disposal:** Most catch basin waste is of acceptable quality for landfills. If it is suspected that catch basin waste contains hazardous material, it should be tested and disposed of accordingly.
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Place additional information here:

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## SECTION 5: STORMWATER INSPECTIONS

### 5.1 Inspections

**Instructions:**

- Identify the individual(s) responsible for conducting 14 day and stormwater quality inspections and describe their qualifications. It is recommended that the individual responsible for conducting stormwater quality inspection is Certified Inspector of Sediment and Erosion Control (CISEC) certification is preferred.
- Describe the frequency of inspections and procedures to inspect BMPs that will occur at your site.
- Identify procedures that will be taken to document the repairs and maintenance of BMPs that you undertake as a result of your inspections.
- For standard required stormwater quality inspections, use the Standard Stormwater Quality Inspection Form in Appendix 7 – Standard Stormwater Quality Inspection Form. Place completed stormwater quality inspections in Appendix 9 – Completed Stormwater Quality Inspections.

#### 1. Inspection Personnel:

Identify the person(s) who will be responsible for conducting inspections and describe their qualifications:

[Scott R. Park – Certified SWMP Administrator and has completed CETC 145 and 150 continuing education classes](#)

#### 2. Inspection Frequency:

Stormwater Quality Regulations Section 9-05-05-02

“...shall perform and document complete inspections, at minimum, once every fourteen (14) days during active construction in addition to post-precipitation events that may cause surface erosion.” And “The Permittee shall make a thorough inspection of their construction site at least once every month once all construction activities have been completed.”

Stormwater Inspections – always use the Stormwater construction Inspection Report form provided in Appendix 7 - Inspection Report Instructions and Form.

- a. Minimum Stormwater Inspection Schedule - A thorough inspection of the Best Management Practices (BMPs) shall be performed every fourteen (14) calendar days and within twenty-four (24) hours after any precipitation or snowmelt event that causes surface erosion.
- b. Post-Storm Event Stormwater Inspections at Temporarily Idle Sites – If no construction activities will occur following a storm event, post-storm event inspections shall be conducted prior to re-commencing construction activities, but no later than seventy two (72) hours following the storm event. The occurrence of any such delayed inspections must be documented in the inspection record.

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Routine inspections still must be conducted at least every fourteen (14) calendar days.

- c. Stormwater Inspections at Completed Sites/Areas – For sites or portions of sites that meeting the following criteria, the permittee shall make a thorough inspection of their construction site BMPs at least once every month, and post-storm event stormwater inspection are not required.
  - i. all construction activities that will result in surface ground disturbed are completed;
  - ii. all activities required for final stabilization, in accordance with the ESC Plan, have been completed;
  - iii. the ESC Plan has been amended to indicate those areas that will be inspected in accordance with the reduced schedule allowed.

### Minimum Stormwater Quality Inspection Schedule

The permittee will inspect at least once every 14 calendar days. Also, post-storm event inspections must be conducted within 24 hours after the end of any precipitation event that causes surface erosion.

### Stormwater Quality Inspections at Completed Sites

The permittee is allowed to make a thorough stormwater quality inspection of their project site at least once every month contingent upon:

- a. All construction activities that will result in surface ground disturbance are completed but final stabilization has not been achieved due to the vegetative cover that has not become established;
- b. All activities required for final stabilization, in accordance with the ESC Plan, have been completed;
- c. The ESC Plan has been amended to indicate those areas that will be inspected in accordance with the reduced inspection schedule.

### **3. Inspection Procedures:**

At minimum, inspect the construction site perimeter, all disturbed area, material and/or waste storage areas that are exposed to precipitation, discharge location, and locations where vehicles access the site shall be inspected for evidence of, or the potential for, pollutants leaving the Permitted boundaries, entering the storm sewer system, or discharging

## Appendix A-1 of the Stormwater Regulation Guide

to the County's MS4 Permitted Area. Refer to Section 5.5 Recommended inspection sequence.

### **4. Correcting Problems:**

Describe the general procedures for correcting problems when they are identified and the responsible staff that is responsible for making corrections.

Inspection forms will be completed by the designated contractor after each inspection frequency and included in the Project records. Inspectors shall be knowledgeable in erosion, sediment, and stormwater control principles as well as the installation, function, and maintenance of such practices. All non-functioning control measures shall be documented upon discovery in a corrective action maintenance log, then scheduled for completion, review, and / or repaired immediately (during the inspection). Each inspection report shall to be signed, and a copy of all inspection records will be maintained by Crestone Peak Resources, Inc.

Where earthwork and construction activities have been completed, but final stabilization is not achieved due to vegetative cover, the frequency of inspections may be reduced to once every 30 days. Inspections will continue until all reclaimed areas have achieved a plant cover of 70% of the pre-construction reference vegetation (i.e. final stabilization).

### **5. Inspection Form:**

Always use the inspection form provided under Appendix 7 – Standard Stormwater Inspection Form and place all completed inspections under Appendix 9 – Completed Stormwater Quality Inspections.

## 5.2 *Delegation of Authority*

**Instructions:**

- Delegation of Authority is optional.
- Identify the individual(s) or specifically describe the position where the construction site operator has delegated authority for the purposes of signing inspection reports, certifications, or other information.

**Duly Authorized Representative(s) or Position(s):**

Crestone Peak Resources

Scott R. Park

Site Supervisor

555 17th Street, Suite 3700

Denver, CO 80202

720-225-6696

spark@civiresources.com

*Optional - Attach a copy of the signed delegation of authority form in Appendix 8.*

### **5.3 Recommended Inspection Sequence**

**Instructions:**

- When conducting stormwater inspections of your construction site it is recommended that one always follows this recommended inspection sequence to ensure that all procedures and measures are being followed. Place all completed inspections in Appendix 9 – Completed Stormwater Quality Inspections.

#### **1. Plan your stormwater inspection**

- Always use the inspection form provided in Appendix 7 – Stormwater Quality Inspection Form.
- Obtain a copy of the site drawings with BMP locations marked.
- Plan to walk the entire site, including discharge points from the site and any off-site support activities.
- Follow a consistent pattern each time to ensure you inspect all areas.

#### **2. Inspection frequency**

- Site inspections must be conducted at least once every 14 calendar day.
- Post-storm inspections must be conducted within 24 hours after the end of any precipitation or snowmelt event that causes surface erosion.
- Stabilization inspections are inspections conducted at upon completion of construction, but final stabilization has not been achieved due to a vegetative cover that has not become established. Stabilization inspections are conducted at least once every month.

#### **3. Inspect discharge points and downstream, off-site areas**

- Inspect discharge locations to determine whether erosion and sediment control measures are effective.
- Inspect nearby downstream locations, if feasible.
- Walk down the street to inspect off-site areas for signs of discharges. This is important in areas with existing curbs and gutters.
- Inspect down slope existing catch basin inlets to ensure they are free of sediment and other pollutants and to ensure that they are adequately protected.

#### **4. Inspect perimeter controls and slopes**

- Inspect perimeter controls such as silt fences to determine if sediment shall be removed.
- Check the structural integrity of the BMP to determine if portions of the BMP need to be replaced.
- Inspect slopes and temporary stockpiles to determine if erosion controls are effective.

#### **5. Compare BMPs in the site plan with the construction site conditions.**

## Appendix A-1 of the Stormwater Regulation Guide

- Determine whether BMPs are in place as required by the site plan.
- Evaluate whether BMPs have been adequately installed and maintained.
- Look for areas where BMPs are needed but are missing and are not in the Erosion and Sediment Control Plan.

### **6. Inspect construction site entrances**

- Inspect the construction exits to determine if there is tracking of sediment from the site onto the street.
- Refresh or replace the rock in designated entrances and concrete washout areas.
- Look for evidence of additional construction exits being used that are not in the ESC Plan or are not stabilized.
- Sweep or vacuum the street if there is evidence of sediment accumulation.

### **7. Inspect sediment controls**

- Inspect any sediment basins for sediment accumulation.
- Remove sediment when it reduces the capacity of the basin by the specified amount for maintenance.

### **8. Inspect pollution prevention and good housekeeping practices**

- Inspect trash areas to ensure that waste is properly contained.
- Inspect material storage and staging areas to verify that potential pollutant sources are not exposed to stormwater runoff.
- Verify that concrete, paint, and stucco washouts are being used properly and are correctly sized for the volume of wash water.
- Inspect vehicle/equipment fueling and maintenance areas for signs of stormwater pollutant exposure.

### **9. Inspect for final stabilization**

- Inspect all temporary and permanent BMPs for correct application and installation with the BMP details.
- Remove sediment that is in the private storm sewer system pipes – do not jet pollutants into the County's storm sewer system.

## **5.4 Common Compliance Problems During Construction**

The following reasons are problems commonly found at construction sites.

Problem #1 – Not using phased grading or providing temporary or permanent soil stabilization

Problem #2 – No sediment controls on-site

Problem #3 – No sediment control for temporary stockpiles

Problem #4 – No inlet protection

Problem #5 – No BMPs or inadequate BMPs to minimize vehicle tracking onto the road

Problem #6 – Inadequate or improper solid waste or hazardous waste management

Problem #7 – Unpermitted dewatering and other pollutant discharge at the construction site

Problem #8 – Poorly managed washouts (concrete, paint, stucco)

Problem #9 – Inadequate BMP maintenance

Problem #10 – Inadequate documentation

## SECTION 6: RECORDKEEPING

### 6.1 *Recordkeeping*

**Instructions:**

- The following is a list of records you shall keep available at your construction site for County Stormwater Program Inspectors to review:
  - ✓ An updated ESC Plan showing all changes to site conditions and BMPs on site.
  - ✓ Inspection reports, these shall be placed in Appendix 9 – Completed Stormwater Quality Inspections.

*Records will be retained for a minimum period of at least 3 years after the permit is terminated.*

This ESC Plan narrative, the design drawings, and the Permittee's inspection and maintenance records are all components of required record keeping and shall be kept on site at all times and updated as required. These and any other pertinent records shall be provided to the county when requested.

## SECTION 7: FINAL STABILIZATION

### 7.1 Final Construction Site Stabilization

**Instructions:**

- The final stabilization of construction sites occurs when there is 70% uniform vegetated cover. The vegetation MUST be uniform so that there are no open patches of soil. Vegetated cover for final stabilization is not what the vegetation was just prior to construction; it is from a fully vegetated site.

*In accordance with Weld County Stormwater Quality Regulations 9-07-04:*

“Final Construction Site Stabilization means that all ground disturbing activities are complete, and all disturbed areas have either been built on, paved over or are awaiting uniform vegetative cover per County accepted plans.

Prior to closing out the Weld County Stormwater Quality Permit, all the items listed below must be completed in order for the construction site to be considered to have final stabilization.

1. The site has a uniform vegetative cover with a density of at least seventy percent (70%) compared to the original undisturbed site. Such cover is capable of adequately controlling soil erosion, as determined by the Stormwater Regulatory Compliance Unit.
2. Proper installation of all approved, permanent, post-construction stormwater quality BMPs.
3. Removal of all stockpiles of soil, construction material/debris, construction equipment, etc. from the construction site.
4. Streets, parking lots and other surrounding paved surfaces are clean and free of any sediment or debris.
5. Removal of sediment and debris within the County’s MS4 and surrounding property, caused by the construction activity; this includes all pollutants. The Permittee shall restore any damaged public infrastructure caused by the Permittee’s construction activities.
6. Provide documentation as required by Section 9-05-08 Permit Closeout and Section 9-05-09 Permit Closeout Notification.”

## **7.2 Stormwater Quality Permit Close-out**

*In accordance with Weld County Stormwater Quality Regulations 9-05-08:*

“In order to close out an Weld County Stormwater Quality permit, all of the following measures must be met:

- a. Notify the Stormwater Regulatory Compliance Unit as required in Section 9-05-09 Permit Closeout Notification.
- b. When a construction site is considered to be final stabilized, but prior to BMP removal; submit an electronic (.pdf) color copy of the ESC Plan final marked up copy to Weld County Public Works – SRC Unit with all revisions and markups that update the plan during construction for stabilization.
- c. Provide Construction Site Stabilization Certification and color photo documentation in compliance with Section 9-05-10-02 Construction Site Stabilization Certification.
- d. BMPs will be removed only after a Release of Financial Surety Request has been approved by the SRC Unit.”

## **7.3 Permit Closeout Notification**

*In accordance with Weld County Stormwater Quality Regulations 9-05-09:*

“Permittee must contact Weld County Public Works - SRC Unit to set up a Closeout Stormwater Quality Inspection. This notification shall be sent to the Public Works - SRC Unit via e-mail as indicated on the County SWQ Permit. The Public Works – SRC Unit must be contacted by the Permittee at least three (3) business days prior to scheduling the final inspection.

The purpose of the Closeout Inspection is to verify the site is adequately stabilized and/or covered with pavement or structures, per the County accepted plans.

If the Weld County Public Works - SRC Unit needs to conduct more than one Closeout Inspection, an inspection fee will be assessed for each additional closeout inspection, as approved by resolution, by the Board of County Commissioners.”

## **7.4 Removal of Temporary BMPs**

*In accordance with Weld County Stormwater Quality Regulations 9-05-09-01:*

Once the site has met the final stabilization conditions, as specified in Section 9-07-04 Final Construction Site Stabilization, the remaining temporary BMPs such as perimeter controls, inlet protection, silt fence, etc. shall be removed and disposed of properly.

## **7.5 Construction Site Stabilization Certification**

*In accordance with Weld County Stormwater Quality Regulations 09-05-10-02:*

## Appendix A-1 of the Stormwater Regulation Guide

“The responsible Weld County Stormwater Quality Permit holder (permittee) shall provide formal notarized certification in accordance with the stabilization certification page found in the supplemental stormwater guide.

The signed, sealed and notarized Stabilization Certification shall be submitted, in electronic form, to Weld County Public Works - SRC Unit along with documented proof in the form of electronic color photographs, depicting the stabilized site. The photographs must show the materials used for stabilization and that growth of the vegetation is adequate. It must be proved that the vegetation is 70% of pre-disturbance levels and no sediment will erode outside the permitted area. Refer to the supplemental stormwater guide for a copy of the Stabilization Certification Form.

Remove all temporary BMPs in compliance with Section 9-05-09-01 Removal of Temporary BMPs.”

## 7.6 Stabilization

**Instructions:**

Describe procedures for final stabilization. Following construction remember to update your site plans to indicate areas that have achieved final stabilization.

<b>Mulching and Seeding</b>		Used: <b>Yes</b>	Phase(s): <b>5</b>
<input checked="" type="checkbox"/> <b>Permanent</b>		<input checked="" type="checkbox"/> <b>Temporary</b>	
<b>What – BMP Description</b>	Stabilize disturbed soils and achieve 70% vegetation		
<b>When - Installation</b>	Final Reclamation Phase		
<b>Where - Location</b>	Mulching and seeding areas shall be installed at the locations identified on the ESC Plan.		
<b>How – BMP Maintenance and Inspection</b>	<p>Mulching shall be installed per the mulching detail EC-4 (Appendix 5 – Erosion and Sediment Control BMP Details). After mulching, the bare ground surface shall not be more than 10% exposed. Reapply mulch, as needed, to cover bare areas.</p> <p>Permanent seeding and secured mulching shall be installed per the temporary and permanent seeding specifications and detail. The Permittee shall continuously inspect and maintain all temporary and permanent seeding and secured mulch throughout construction. Prepare the seedbed, select an appropriate seed mixture, use proper planting techniques and protect the seeded area with secured mulch.</p>		

## SECTION 8: STORMWATER QUALITY PERMIT VIOLATIONS

### 8.1 Stormwater Quality Violations

*In accordance with Weld County Stormwater Quality Regulations:*

“Weld County complies with Colorado Revised Statute, Title 30 Government – County to enforce the Stormwater Quality Regulations specifically, 30-15-401.11, CRS et. seq. These regulations allow the County to enforce upon a Permittee or violator of these regulations to compel the abatement of any condition that caused or contributes to a violation of the Weld County Stormwater Quality Regulations.

**ALL VIOLATIONS ARE SUBJECT TO ENFORCMENT FROM THE TIME EVIDENCE IS DOCUMENTED OF VIOLATIONS.**

The following items are considered a violation of the Weld County Regulations or Weld County Ordinance No. 11 Concerning Illicit Discharges to the Waters of the State within Unincorporated Weld County.

- A. Conducting Permit Covered Activity without a County SWQ Permit.
- B. Failure to prepare an Erosion and Sediment Control Plan.
- C. Deficient Erosion and Sediment Control Plan.
- D. Failure to install, maintain or properly select Best Management Practices.
- E. Failure to perform required inspections of the permitted construction site.
- F. Failure to submit requested documentation.
- G. Failure to adequately respond to the SRC Unit’s findings as designated by a Compliance Inspection Notification.
- H. Failure to maintain the Erosion and Sediment Control Plan to reflect current site conditions.
- I. Pollution, contamination or degradation of stormwater quality caused by work outside of the Weld County Stormwater Quality Permit boundary.
- J. An illicit discharge into the County’s Municipal Separate Storm Sewer System.”

## SECTION 9: CERTIFICATION AND NOTIFICATION

### 9.1 Stormwater Quality Regulation Certification

**Instructions:**

The Permittee shall certify the ESC Plan by signing the ESC Plan Certification and Notification statement below. It is recommended that all subcontractors sign the Subcontractor Certifications/Agreements in Appendix 10 – Subcontractor Certifications/Agreements.

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 gathered and evaluated 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.

Name: \_\_\_\_\_ Title: \_\_\_\_\_

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

## ESC PLAN APPENDICES

Attach the following documentation to the ESC PLAN:

***Appendix 1 – Project Vicinity Map (Section 1.1)***

***Appendix 2 – State CDPS Stormwater Construction Permit Certification Page (Section 1.2)***

***Appendix 3 – Pre-disturbance Photos (Section 1.4)***

***Appendix 4 – Copy of Demolition Permit and State Asbestos Permit (Section 1.9)***

***Appendix 5 – Erosion and Sediment Control BMP Details (Section 1.10)***

***Appendix 6 – Erosion and Sediment Control Plan - Site Map (Section 2.10)***

***Appendix 7 – Standard Stormwater Quality Inspection Form (Section 5.1)***

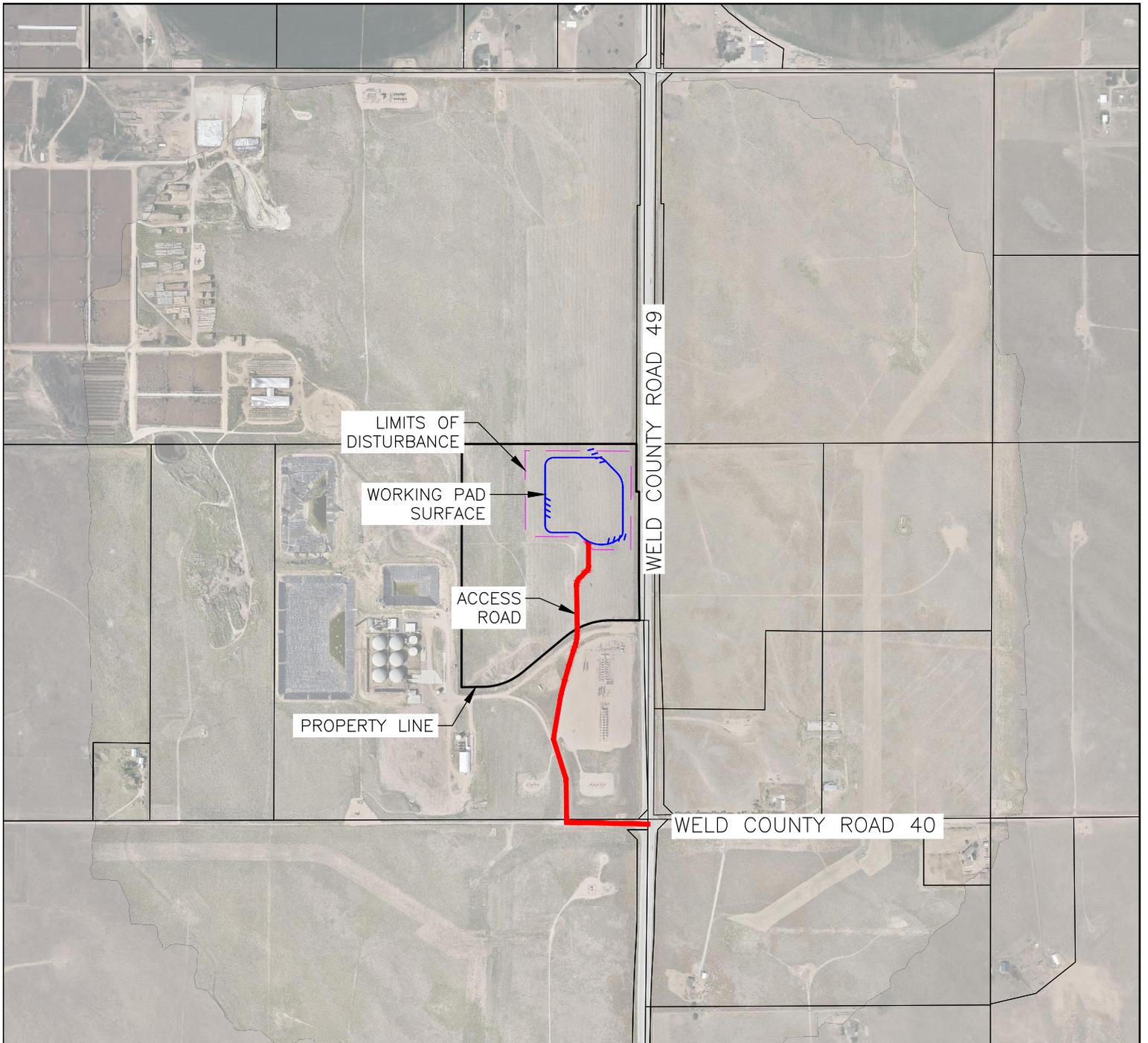
***Appendix 8 – Delegation of Authority (optional) (Section 5.2)***

***Appendix 9 – Completed Stormwater Quality Inspections (Sections 5.3 & 5.5)***

***Appendix 10 – Subcontractor Certifications/Agreements (optional) (Section 9.1)***

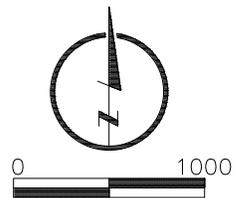
\*The format is "Appendices #- Name (Section Number)".

## Appendix 1 – Project Vicinity Map



**LEGEND**

-  LIMITS OF DISTURBANCE
-  AREA PROPERTY LINE
-  LIMITS OF DRILLING PAD
-  ACCESS ROAD



**LAMP  
RYNEARSON**  
LAMPRYNEARSON.COM

OMAHA, NEBRASKA  
14710 W. DODGE RD., STE. 100 (402)496.2498  
FORT COLLINS, COLORADO  
4715 INNOVATION DR., STE. 100 (970)226.0342  
KANSAS CITY, MISSOURI  
9001 STATE LINE RD., STE. 200 (816)381.0440

**DESIGNER / DRAFTER**  
JUP/JHF  
**REVIEWER**  
MAP  
**PROJECT NUMBER**  
0221036  
**DATE**  
MARCH 12, 2022  
**SURFACE LOCATION**  
NE1/4, SE1/4, SEC 6,T4N,R65W  
**BOOK AND PAGE**

**SHELTON CPR-25 PAD  
VICINITY MAP**



## Appendix 2 – State CDPS Stormwater Construction Permit Certification Page



**COLORADO**  
Department of Public  
Health & Environment

**CERTIFICATION TO DISCHARGE  
UNDER  
CDPS GENERAL PERMIT COR400000  
STORMWATER ASSOCIATED WITH CONSTRUCTION ACTIVITIES**

Certification Number: **COR401617**

**This Certification to Discharge specifically authorizes:**

**Owner Extraction Oil & Gas Inc  
Operator Extraction Oil & Gas Inc**

to discharge stormwater from the facility identified as

**DJ Basin Wattenberg Field**

**To the waters of the State of Colorado, including, but not limited to:**

**to Cache la Poudre River**

<b>Facility Activity :</b>	Oil and gas exploration and Well Pad development
<b>Disturbed Acres:</b>	1000 acres
<b>Facility Located at:</b>	CO 392 W and CO 257 map in file Windsor CO 80550 Weld County Latitude 40.473694 Longitude -104.899028
<b>Specific Information (if applicable):</b>	DJ Basin operating in Adams, Arapahoe, Boulder, Broomfield, Elbert, Larimer, Weld Counties

**Certification is issued 4/1/2019**

**Certification is effective 4/1/2019**

**Expiration date of general permit : 3/31/2024**

This certification under the permit requires that specific actions be performed at designated times. The certification holder is legally obligated to comply with all terms and conditions of the permit.

This certification was approved by:  
Meg Parish, Unit Manager  
Permits Section  
Water Quality Control Division



## Appendix 3 – Pre-Disturbance Photos



SOUTH



NORTH



WEST



EAST

DATE PHOTOS TAKEN: 1/04/2022

**LAMP  
RYNEARSON**

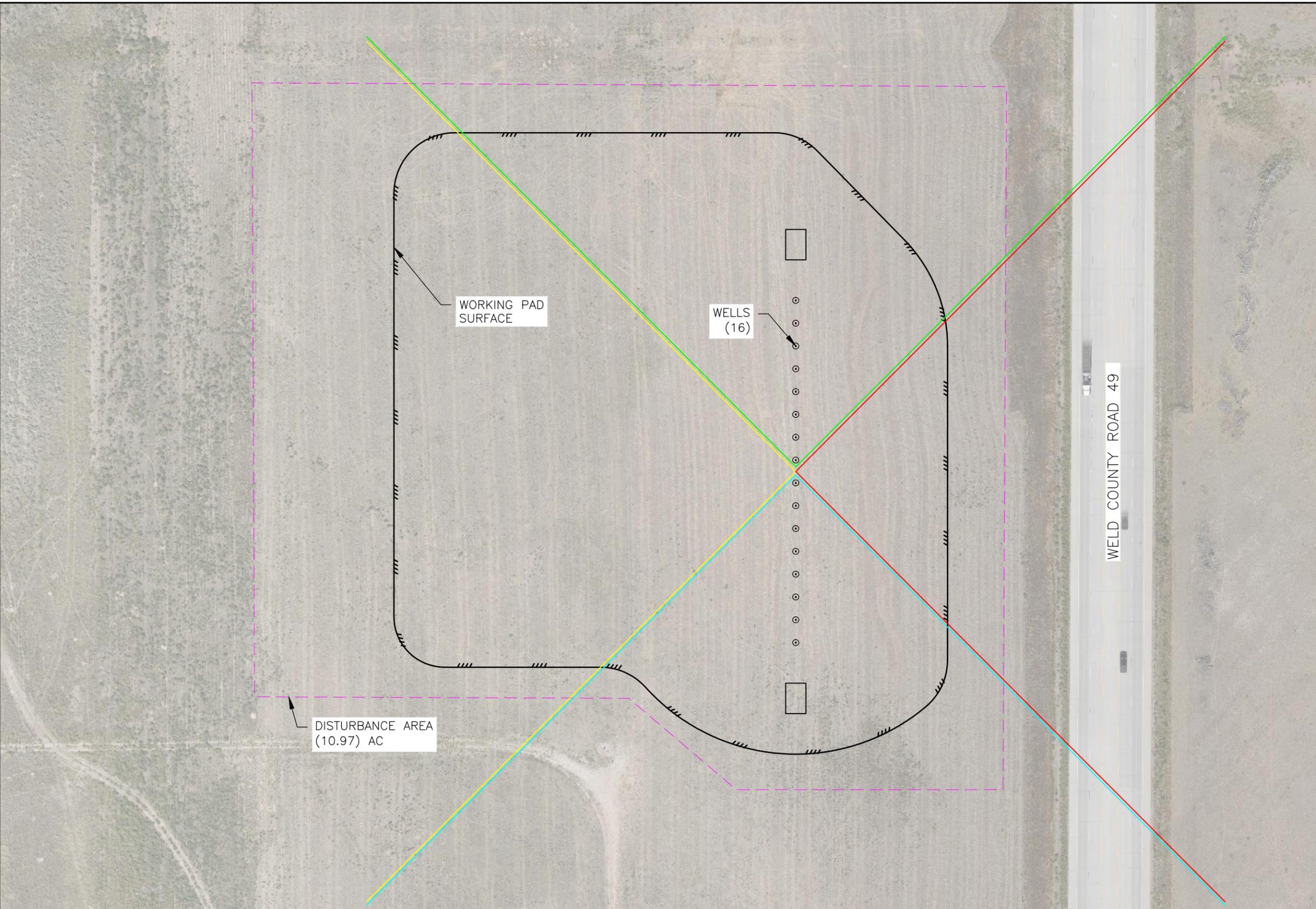
4715 INNOVATION DR., STE. 100  
FORT COLLINS, CO 80525  
970.226.0342  
LampRynearson.com



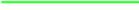
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REVIEWER  
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0221036  
DATE  
MARCH 12, 2022  
SURFACE LOCATION  
NE1/4, SE1/4, SEC 6, T4N, R65W  
BOOK AND PAGE  
1 OF 2

# SHELTON CPR-25 PAD LOCATION PHOTOS

C:\Engineering\0221036 X06 - Shelton\DRAWINGS\CONSTRUCTION DRAWINGS\OGDP\0221036 - LOCATION PHOTOS.dwg, 3/8/2022 1:51:32 PM, JAMIE POMPA, LAMP RYNEARSON



**LEGEND**

-  WORKING PAD SURFACE
-  FIELD OF VIEW (NORTH)
-  FIELD OF VIEW (EAST)
-  FIELD OF VIEW (SOUTH)
-  FIELD OF VIEW (WEST)
-  OIL & GAS WELL
-  DISTURBANCE AREA (10.97 AC)

**LAMP RYNEARSON**

4715 INNOVATION DR., STE. 100  
FORT COLLINS, CO 80525  
970.226.0342  
LampRynearson.com

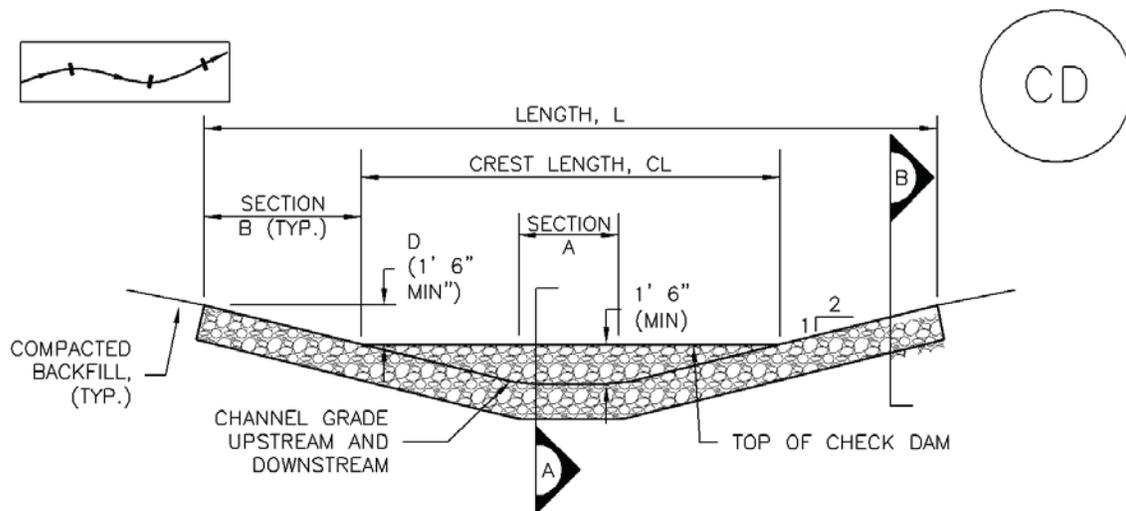


<b>DESIGNER / DRAFTER</b>	JUP/JHF
<b>REVIEWER</b>	MAP
<b>PROJECT NUMBER</b>	0221036
<b>DATE</b>	MARCH 12, 2022
<b>SURFACE LOCATION</b>	NE1/4, SE1/4, SEC 6,T4N,R65W
<b>BOOK AND PAGE</b>	2 OF 2

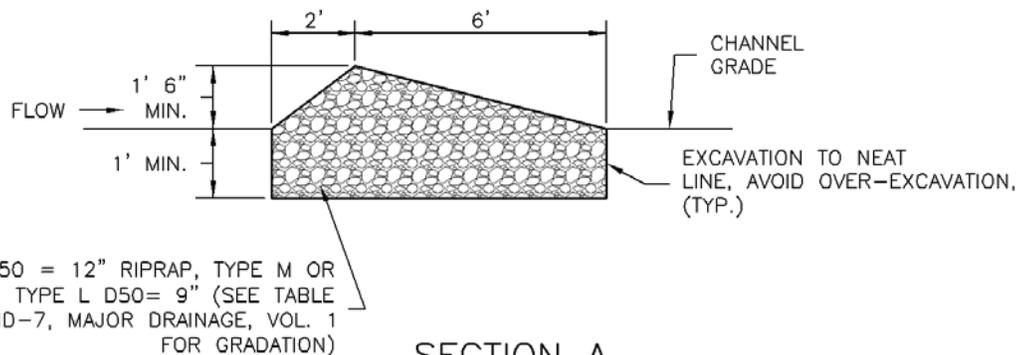
# SHELTON CPR-25 PAD FIELD OF VIEW

## Appendix 4 – Copy of Demolition Permit and State Asbestos Permit

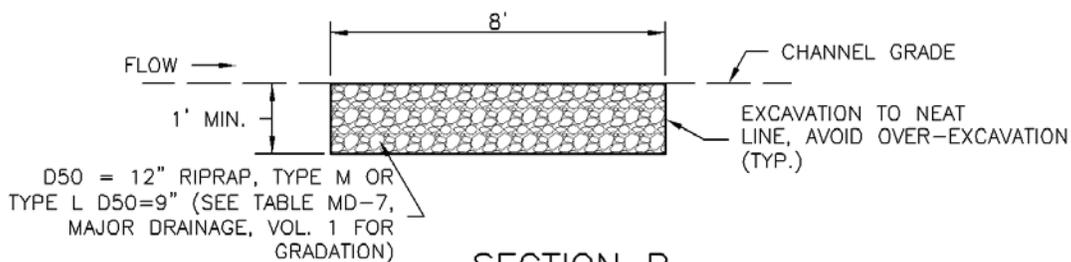
## Appendix 5 – Erosion and Sediment Control BMP Details



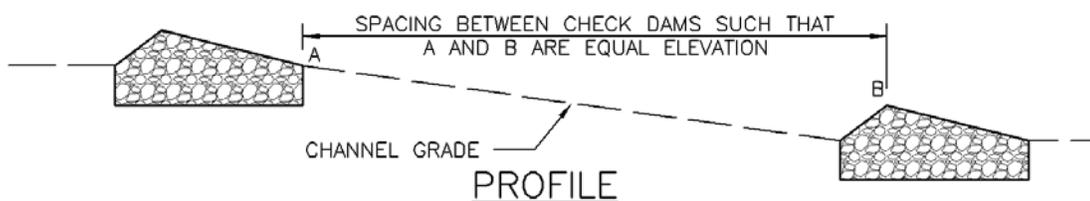
**CHECK DAM ELEVATION VIEW**



**SECTION A**



**SECTION B**



**CD-1. CHECK DAM**

CHECK DAM INSTALLATION NOTES

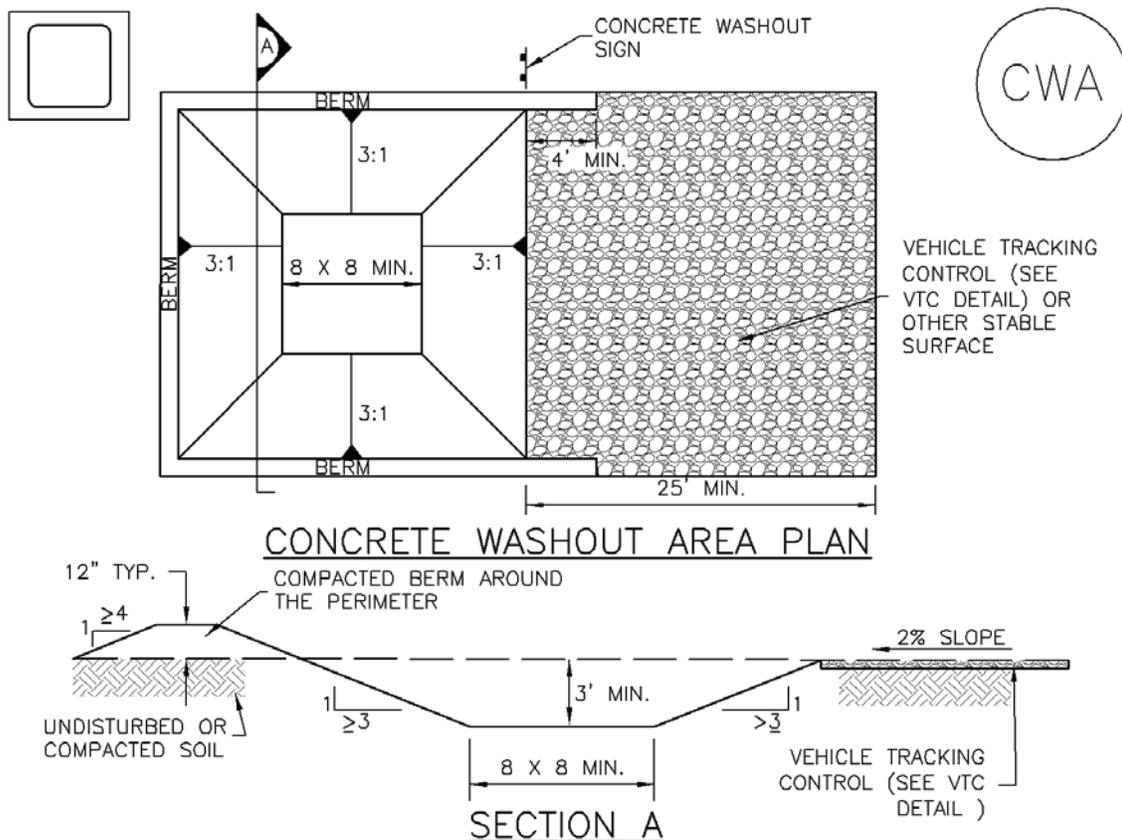
1. SEE PLAN VIEW FOR:
  - LOCATION OF CHECK DAMS.
  - CHECK DAM TYPE (CHECK DAM OR REINFORCED CHECK DAM).
  - LENGTH (L), CREST LENGTH (CL), AND DEPTH (D).
2. CHECK DAMS INDICATED ON INITIAL SWMP SHALL BE INSTALLED AFTER CONSTRUCTION FENCE, BUT PRIOR TO ANY UPSTREAM LAND DISTURBING ACTIVITIES.
3. RIPRAP UTILIZED FOR CHECK DAMS SHOULD BE OF APPROPRIATE SIZE FOR THE APPLICATION. TYPICAL TYPES OF RIPRAP USED FOR CHECK DAMS ARE TYPE M (D50 12") OR TYPE L (D50 9").
4. RIPRAP PAD SHALL BE TRENCHED INTO THE GROUND A MINIMUM OF 1'.
5. THE ENDS OF THE CHECK DAM SHALL BE A MINIMUM OF 1' 6" HIGHER THAN THE CENTER OF THE CHECK DAM.

CHECK DAM 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 CHECK DAMS SHALL BE REMOVED WHEN THE SEDIMENT DEPTH IS WITHIN  $\frac{1}{2}$  OF THE HEIGHT OF THE CREST.
5. CHECK DAMS ARE TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS STABILIZED AND APPROVED BY THE LOCAL JURISDICTION.
6. WHEN CHECK DAMS ARE REMOVED, EXCAVATIONS SHALL BE FILLED WITH SUITABLE COMPACTED BACKFILL. DISTURBED AREA SHALL BE SEEDED AND MULCHED AND COVERED WITH GEOTEXTILE 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.



## CWA-1. CONCRETE WASHOUT AREA

### CWA INSTALLATION NOTES

1. SEE PLAN VIEW FOR:  
-CWA INSTALLATION LOCATION.
2. DO NOT LOCATE AN UNLINED CWA WITHIN 400' OF ANY NATURAL DRAINAGE PATHWAY OR WATERBODY. DO NOT LOCATE WITHIN 1,000' OF ANY WELLS OR DRINKING WATER SOURCES. IF SITE CONSTRAINTS MAKE THIS INFEASIBLE, OR IF HIGHLY PERMEABLE SOILS EXIST ON SITE, THE CWA MUST BE INSTALLED WITH AN IMPERMEABLE LINER (16 MIL MIN. THICKNESS) OR SURFACE STORAGE ALTERNATIVES USING PREFABRICATED CONCRETE WASHOUT DEVICES OR A LINED ABOVE GROUND STORAGE ARE SHOULD BE USED.
3. THE CWA SHALL BE INSTALLED PRIOR TO CONCRETE PLACEMENT ON SITE.
4. CWA SHALL INCLUDE A FLAT SUBSURFACE PIT THAT IS AT LEAST 8' BY 8' SLOPES LEADING OUT OF THE SUBSURFACE PIT SHALL BE 3:1 OR FLATTER. THE PIT SHALL BE AT LEAST 3' DEEP.
5. BERM SURROUNDING SIDES AND BACK OF THE CWA SHALL HAVE MINIMUM HEIGHT OF 1'.
6. VEHICLE TRACKING PAD SHALL BE SLOPED 2% TOWARDS THE CWA.
7. SIGNS SHALL BE PLACED AT THE CONSTRUCTION ENTRANCE, AT THE CWA, AND ELSEWHERE AS NECESSARY TO CLEARLY INDICATE THE LOCATION OF THE CWA TO OPERATORS OF CONCRETE TRUCKS AND PUMP RIGS.
8. USE EXCAVATED MATERIAL FOR PERIMETER BERM CONSTRUCTION.

CWA 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. THE CWA SHALL BE REPAIRED, CLEANED, OR ENLARGED AS NECESSARY TO MAINTAIN CAPACITY FOR CONCRETE WASTE. CONCRETE MATERIALS, ACCUMULATED IN PIT, SHALL BE REMOVED ONCE THE MATERIALS HAVE REACHED A DEPTH OF 2'.

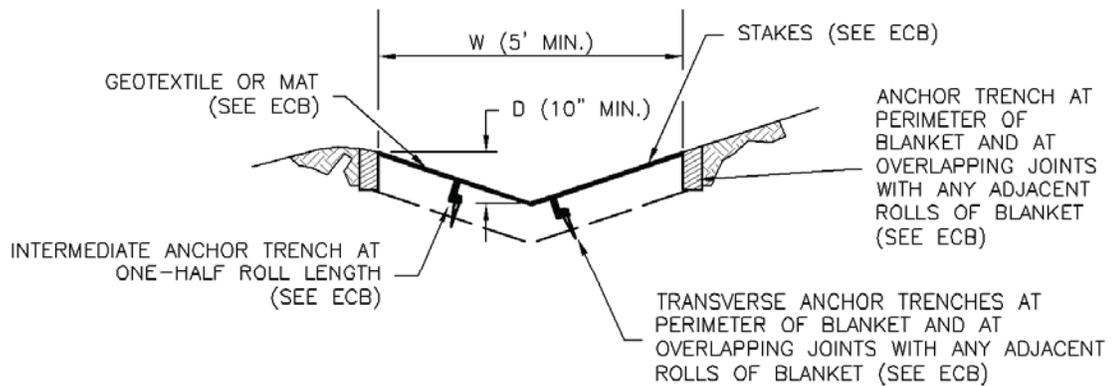
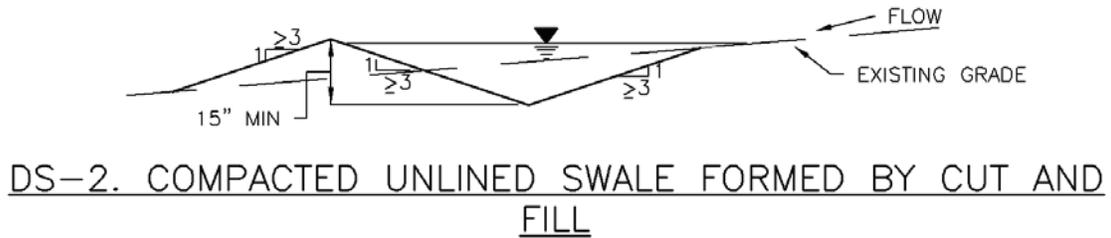
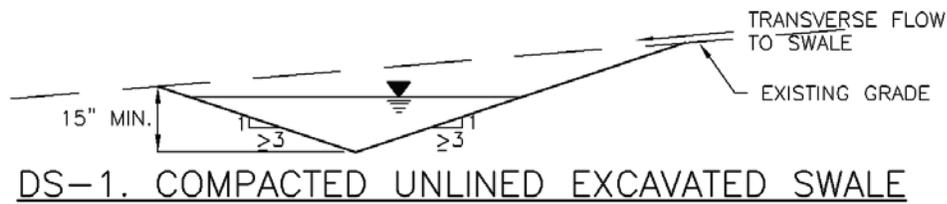
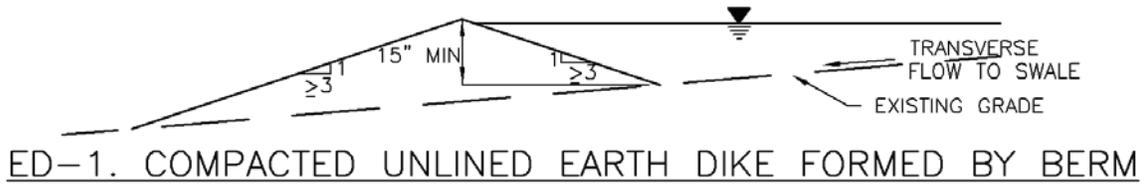
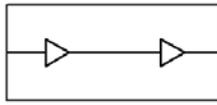
5. CONCRETE WASHOUT WATER, WASTED PIECES OF CONCRETE AND ALL OTHER DEBRIS IN THE SUBSURFACE PIT SHALL BE TRANSPORTED FROM THE JOB SITE IN A WATER-TIGHT CONTAINER AND DISPOSED OF PROPERLY.

6. THE CWA SHALL REMAIN IN PLACE UNTIL ALL CONCRETE FOR THE PROJECT IS PLACED.

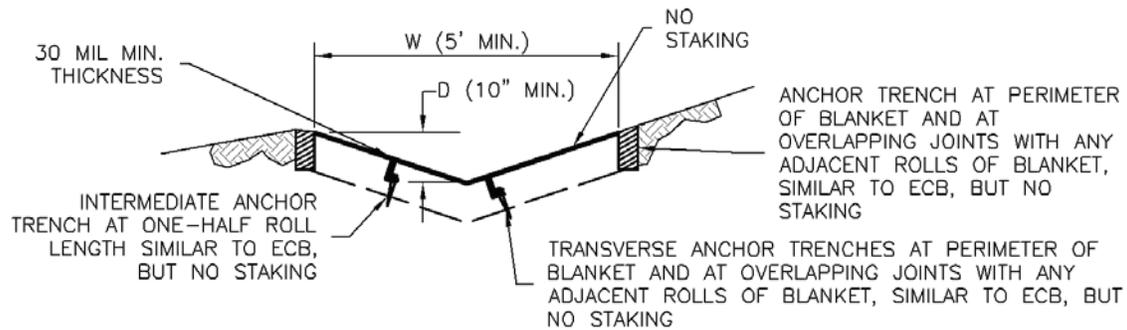
7. WHEN THE CWA IS REMOVED, COVER THE DISTURBED AREA WITH TOP SOIL, SEED AND MULCH OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE LOCAL JURISDICTION.

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

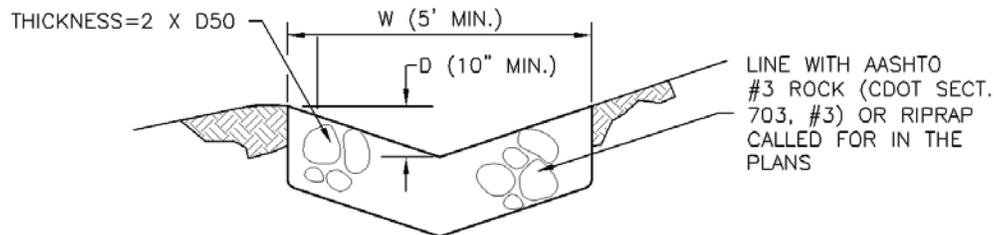
NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.



# EC-10 Earth Dikes and Drainage Swales (ED/DS)



DS-4. SYNTHETIC LINED SWALE



DS-5. RIPRAP LINED SWALE

## EARTH DIKE AND DRAINAGE SWALE INSTALLATION NOTES

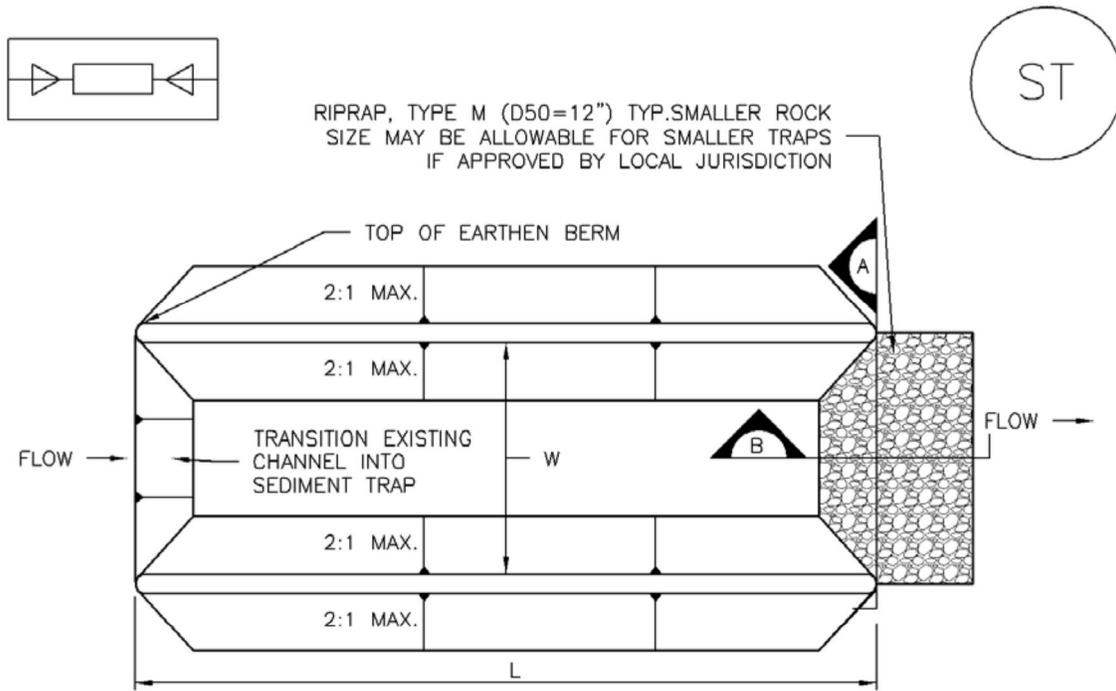
1. SEE SITE PLAN FOR:
  - LOCATION OF DIVERSION SWALE
  - TYPE OF SWALE (UNLINED, COMPACTED AND/OR LINED).
  - LENGTH OF EACH SWALE.
  - DEPTH, D, AND WIDTH, W DIMENSIONS.
  - FOR ECB/TRM LINED DITCH, SEE ECB DETAIL.
  - FOR RIPRAP LINED DITCH, SIZE OF RIPRAP, D50.
2. SEE DRAINAGE PLANS FOR DETAILS OF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

## EARTH DIKE AND DRAINAGE SWALE MAINTENANCE NOTES

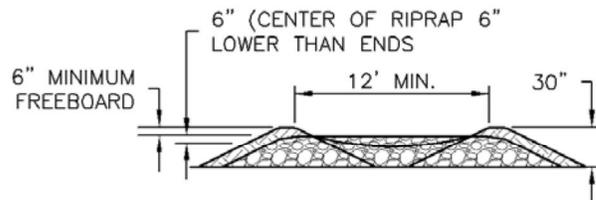
1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.
2. FREQUENT OBSERVATIONS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

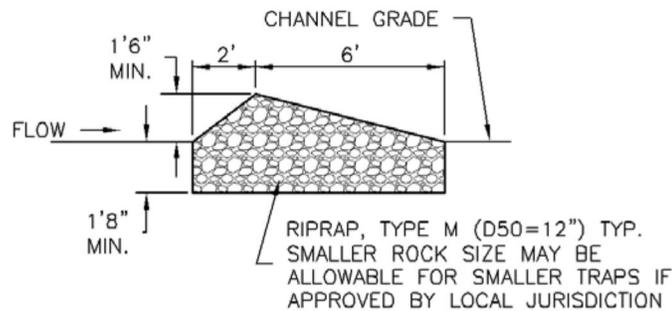
NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.



SEDIMENT TRAP PLAN



SECTION A



SECTION B

ST-1. SEDIMENT TRAP

## SEDIMENT TRAP INSTALLATION NOTES

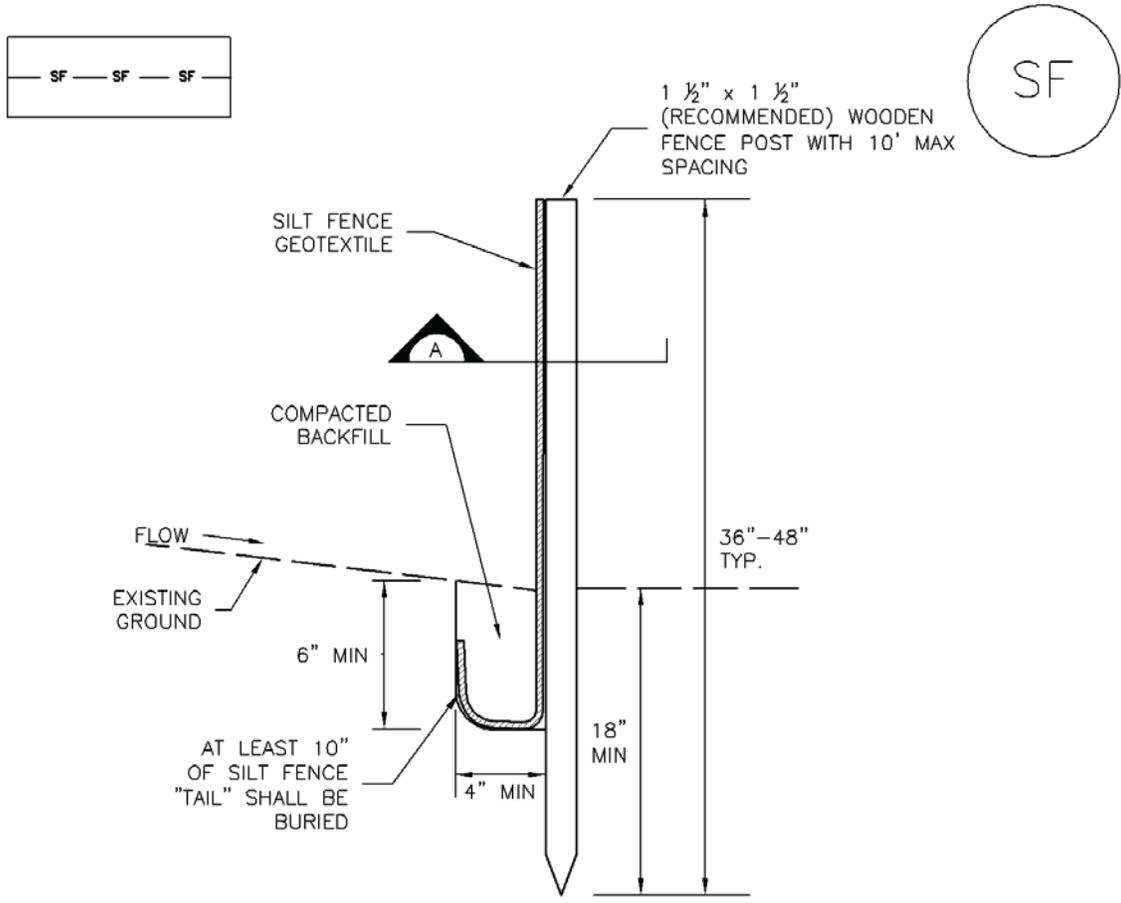
1. SEE PLAN VIEW FOR:  
-LOCATION, LENGTH AND WIDTH OF SEDIMENT TRAP.
- ~~2. ONLY USE FOR DRAINAGE AREAS LESS THAN 1 ACRE.~~
3. SEDIMENT TRAPS SHALL BE INSTALLED PRIOR TO ANY UPGRADIENT LAND-DISTURBING ACTIVITIES.
4. SEDIMENT TRAP BERM SHALL BE CONSTRUCTED FROM MATERIAL FROM EXCAVATION. THE BERM SHALL 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

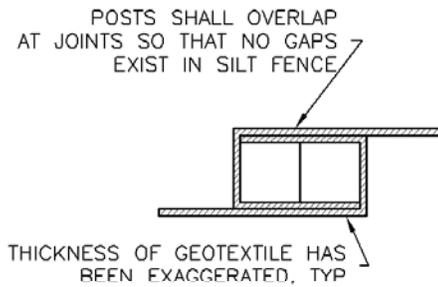
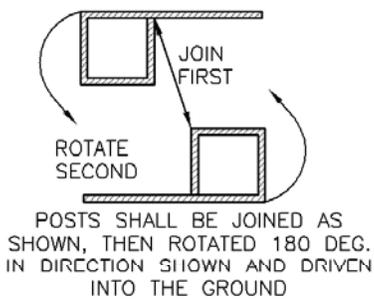
1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.
2. FREQUENT OBSERVATIONS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



SILT FENCE



SECTION A

SF-1. SILT FENCE

SILT FENCE INSTALLATION NOTES

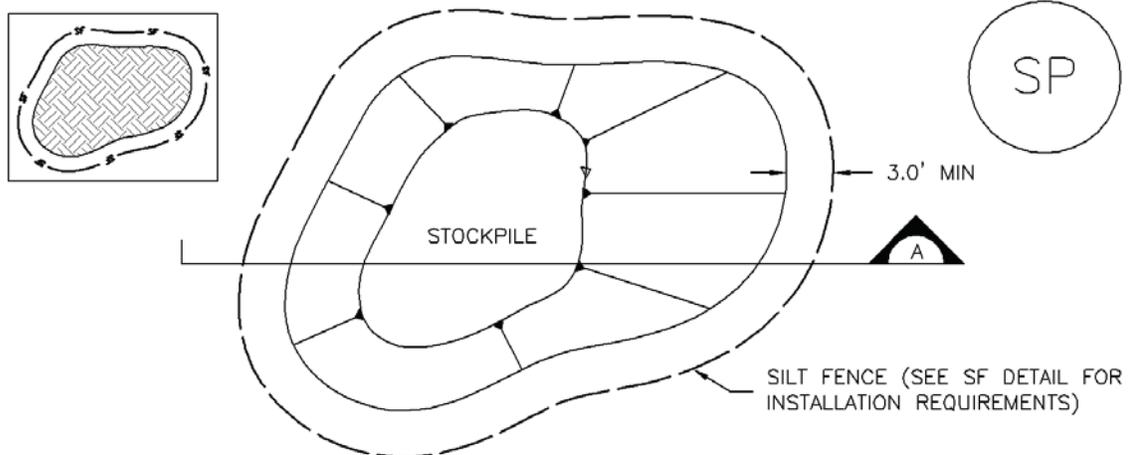
1. SILT FENCE MUST BE PLACED AWAY FROM THE TOE OF THE SLOPE TO ALLOW FOR WATER PONDING. SILT FENCE AT THE TOE OF A SLOPE SHOULD BE INSTALLED IN A FLAT LOCATION AT LEAST SEVERAL FEET (2-5 FT) FROM THE TOE OF THE SLOPE TO ALLOW ROOM FOR PONDING AND DEPOSITION.
2. A UNIFORM 6" X 4" ANCHOR TRENCH SHALL BE 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

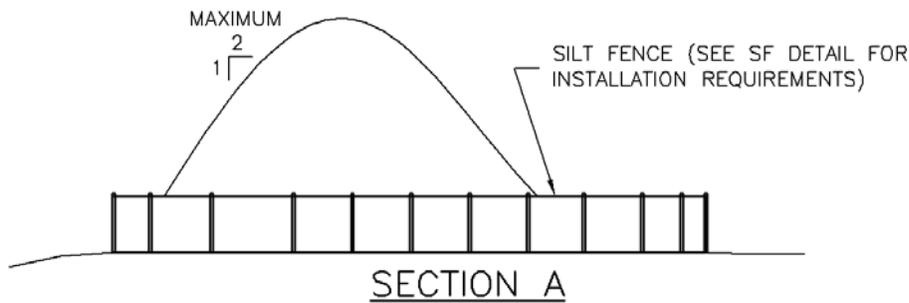
1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.
2. FREQUENT OBSERVATIONS 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 UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.



## STOCKPILE PROTECTION PLAN



## SP-1. STOCKPILE PROTECTION

### STOCKPILE PROTECTION INSTALLATION NOTES

1. SEE PLAN VIEW FOR:
  - LOCATION OF STOCKPILES.
  - TYPE OF STOCKPILE PROTECTION.
2. INSTALL PERIMETER CONTROLS IN ACCORDANCE WITH THEIR RESPECTIVE DESIGN DETAILS. SILT FENCE IS SHOWN IN THE STOCKPILE PROTECTION DETAILS; HOWEVER, OTHER TYPES OF PERIMETER CONTROLS INCLUDING SEDIMENT CONTROL LOGS OR ROCK SOCKS MAY BE SUITABLE IN SOME CIRCUMSTANCES. CONSIDERATIONS FOR DETERMINING THE APPROPRIATE TYPE OF PERIMETER CONTROL FOR A STOCKPILE INCLUDE WHETHER THE STOCKPILE IS LOCATED ON A PERVIOUS OR IMPERVIOUS SURFACE, THE RELATIVE HEIGHTS OF THE PERIMETER CONTROL AND STOCKPILE, THE ABILITY OF THE PERIMETER CONTROL TO CONTAIN THE STOCKPILE WITHOUT FAILING IN THE EVENT THAT MATERIAL FROM THE STOCKPILE SHIFTS OR SLUMPS AGAINST THE PERIMETER, AND OTHER FACTORS.
3. STABILIZE THE STOCKPILE SURFACE WITH SURFACE ROUGHENING, TEMPORARY SEEDING AND MULCHING, EROSION CONTROL BLANKETS, OR SOIL BINDERS. SOILS STOCKPILED FOR AN EXTENDED PERIOD (TYPICALLY FOR MORE THAN 60 DAYS) SHOULD BE SEEDING AND MULCHED WITH A TEMPORARY GRASS COVER ONCE THE STOCKPILE IS PLACED (TYPICALLY WITHIN 14 DAYS). USE OF MULCH ONLY OR A SOIL BINDER IS ACCEPTABLE IF THE STOCKPILE WILL BE IN PLACE FOR A MORE LIMITED TIME PERIOD (TYPICALLY 30-60 DAYS).
4. FOR TEMPORARY STOCKPILES ON THE INTERIOR PORTION OF A CONSTRUCTION SITE, WHERE OTHER DOWNGRADIENT CONTROLS, INCLUDING PERIMETER CONTROL, ARE IN PLACE, STOCKPILE PERIMETER CONTROLS MAY NOT BE REQUIRED.

STOCKPILE PROTECTION 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.

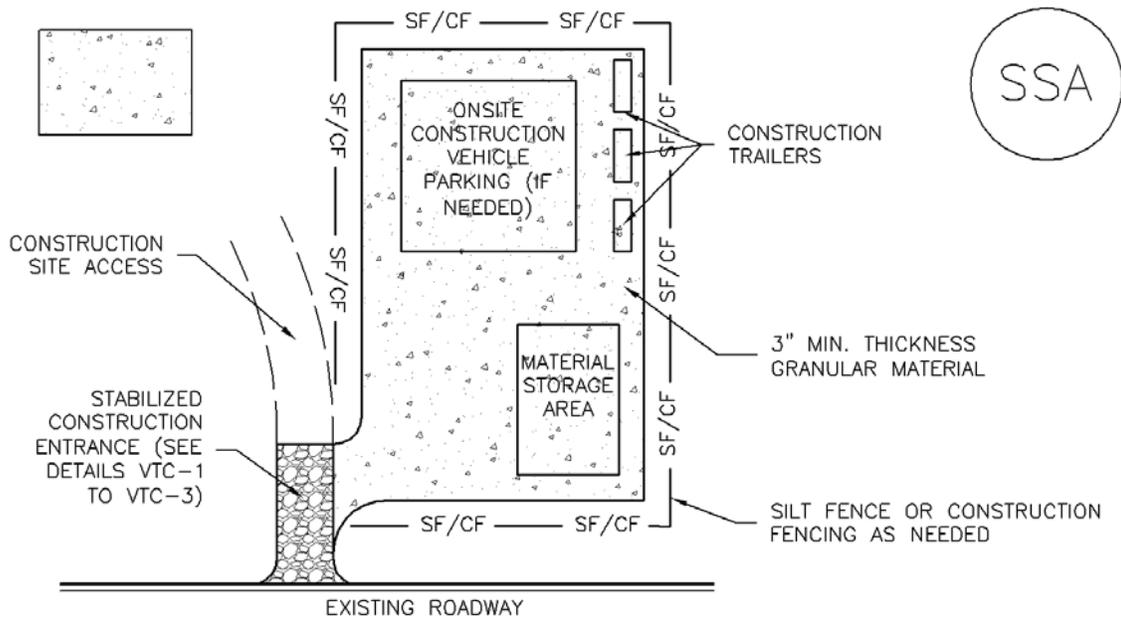
STOCKPILE PROTECTION MAINTENANCE NOTES

4. IF PERIMETER PROTECTION MUST BE MOVED TO ACCESS SOIL STOCKPILE, REPLACE PERIMETER CONTROLS BY THE END OF THE WORKDAY.

5. STOCKPILE PERIMETER CONTROLS CAN BE REMOVED ONCE ALL THE MATERIAL FROM THE STOCKPILE HAS BEEN USED.

(DETAILS ADAPTED FROM 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.



## 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.

STABILIZED STAGING AREA MAINTENANCE NOTES

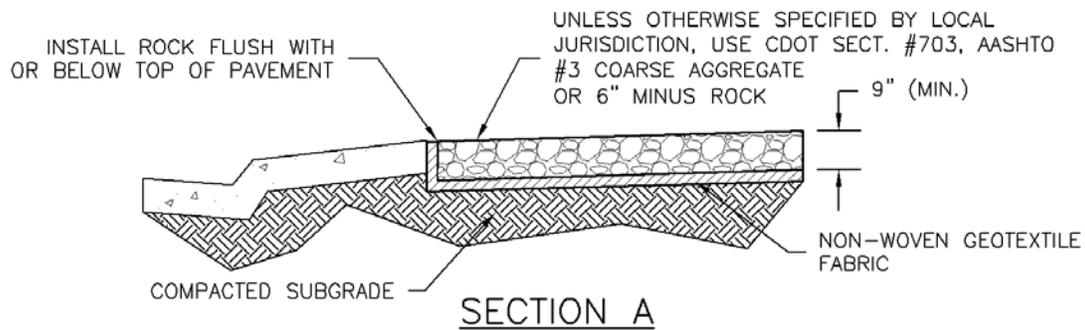
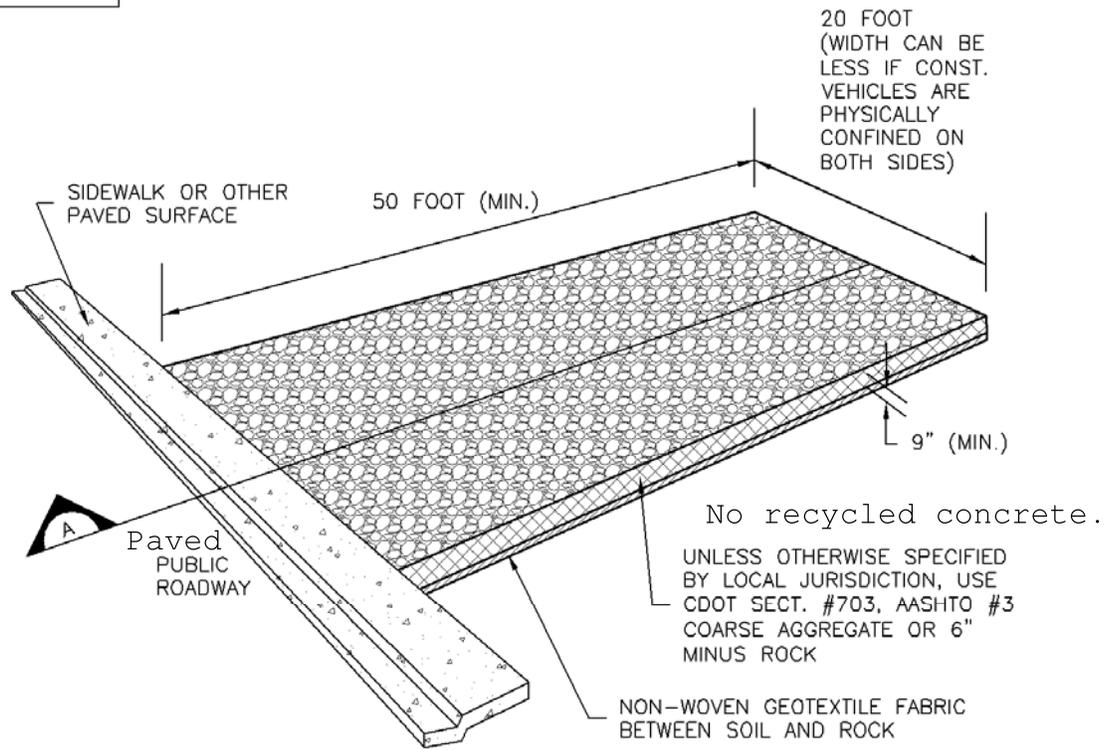
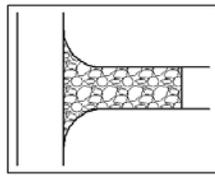
5. STABILIZED STAGING AREA SHALL BE ENLARGED IF NECESSARY TO CONTAIN PARKING, STORAGE, AND UNLOADING/LOADING OPERATIONS.

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)



## VTC-1. AGGREGATE VEHICLE TRACKING CONTROL

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. Recycled concrete is not allowed.

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)

## Description

Temporary seeding can be used to stabilize disturbed areas that will be inactive for an extended period. Permanent seeding should be used to stabilize areas at final grade that will not be otherwise stabilized. Effective seeding includes preparation of a seedbed, selection of an appropriate seed mixture, proper planting techniques, and protection of the seeded area with mulch, geotextiles, or other appropriate measures.



**Photograph TS/PS -1.** Equipment used to drill seed. Photo courtesy of Douglas County.

## Appropriate Uses

When the soil surface is disturbed and will remain inactive for an extended period (typically 30 days or longer), proactive stabilization measures should be implemented. If the inactive period is short-lived (on the order of two weeks), techniques such as surface roughening may be appropriate. For longer periods of inactivity, temporary seeding and mulching can provide effective erosion control. Permanent seeding should be used on finished areas that have not been otherwise stabilized.

Typically, local governments have their own seed mixes and timelines for seeding. Check jurisdictional requirements for seeding and temporary stabilization.

## Design and Installation

Effective seeding requires proper seedbed preparation, selection of an appropriate seed mixture, use of appropriate seeding equipment to ensure proper coverage and density, and protection with mulch or fabric until plants are established.

The USDCM Volume 2 *Revegetation* Chapter contains detailed seed mix, soil preparations, and seeding and mulching recommendations that may be referenced to supplement this Fact Sheet.

Drill seeding is the preferred seeding method. Hydroseeding is not recommended except in areas where steep slopes prevent use of drill seeding equipment, and even in these instances it is preferable to hand seed and mulch. Some jurisdictions do not allow hydroseeding or hydromulching.

## Seedbed Preparation

Prior to seeding, ensure that areas to be revegetated have soil conditions capable of supporting vegetation. Overlot grading can result in loss of topsoil, resulting in poor quality subsoils at the ground surface that have low nutrient value, little organic matter content, few soil microorganisms, rooting restrictions, and conditions less conducive to infiltration of precipitation. As a result, it is typically necessary to provide stockpiled topsoil, compost, or other

Temporary and Permanent Seeding	
Functions	
Erosion Control	Yes
Sediment Control	No
Site/Material Management	No

## **EC-2      Temporary and Permanent Seeding (TS/PS)**

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soil amendments and rototill them into the soil to a depth of 6 inches or more.

Topsoil should be salvaged during grading operations for use and spread on areas to be revegetated later. Topsoil should be viewed as an important resource to be utilized for vegetation establishment, due to its water-holding capacity, structure, texture, organic matter content, biological activity, and nutrient content. The rooting depth of most native grasses in the semi-arid Denver metropolitan area is 6 to 18 inches. At a minimum, the upper 6 inches of topsoil should be stripped, stockpiled, and ultimately respread across areas that will be revegetated.

Where topsoil is not available, subsoils should be amended to provide an appropriate plant-growth medium. Organic matter, such as well digested compost, can be added to improve soil characteristics conducive to plant growth. Other treatments can be used to adjust soil pH conditions when needed. Soil testing, which is typically inexpensive, should be completed to determine and optimize the types and amounts of amendments that are required.

If the disturbed ground surface is compacted, rip or rototill the surface prior to placing topsoil. If adding compost to the existing soil surface, rototilling is necessary. Surface roughening will assist in placement of a stable topsoil layer on steeper slopes, and allow infiltration and root penetration to greater depth.

Prior to seeding, the soil surface should be rough and the seedbed should be firm, but neither too loose nor compacted. The upper layer of soil should be in a condition suitable for seeding at the proper depth and conducive to plant growth. Seed-to-soil contact is the key to good germination.

### **Seed Mix for Temporary Vegetation**

To provide temporary vegetative cover on disturbed areas which will not be paved, built upon, or fully landscaped or worked for an extended period (typically 30 days or more), plant an annual grass appropriate for the time of planting and mulch the planted areas. Annual grasses suitable for the Denver metropolitan area are listed in Table TS/PS-1. These are to be considered only as general recommendations when specific design guidance for a particular site is not available. Local governments typically specify seed mixes appropriate for their jurisdiction.

### **Seed Mix for Permanent Revegetation**

To provide vegetative cover on disturbed areas that have reached final grade, a perennial grass mix should be established. Permanent seeding should be performed promptly (typically within 14 days) after reaching final grade. Each site will have different characteristics and a landscape professional or the local jurisdiction should be contacted to determine the most suitable seed mix for a specific site. In lieu of a specific recommendation, one of the perennial grass mixes appropriate for site conditions and growth season listed in Table TS/PS-2 can be used. The pure live seed (PLS) rates of application recommended in these tables are considered to be absolute minimum rates for seed applied using proper drill-seeding equipment.

If desired for wildlife habitat or landscape diversity, shrubs such as rubber rabbitbrush (*Chrysothamnus nauseosus*), fourwing saltbush (*Atriplex canescens*) and skunkbrush sumac (*Rhus trilobata*) could be added to the upland seedmixes at 0.25, 0.5 and 1 pound PLS/acre, respectively. In riparian zones, planting root stock of such species as American plum (*Prunus americana*), woods rose (*Rosa woodsii*), plains cottonwood (*Populus sargentii*), and willow (*Populus spp.*) may be considered. On non-topsoiled upland sites, a legume such as Ladak alfalfa at 1 pound PLS/acre can be included as a source of nitrogen for perennial grasses.

Seeding dates for the highest success probability of perennial species along the Front Range are generally in the spring from April through early May and in the fall after the first of September until the ground freezes. If the area is irrigated, seeding may occur in summer months, as well. See Table TS/PS-3 for appropriate seeding dates.

**Table TS/PS-1. Minimum Drill Seeding Rates for Various Temporary Annual Grasses**

Species <sup>a</sup> (Common name)	Growth Season <sup>b</sup>	Pounds of Pure Live Seed (PLS)/acre <sup>c</sup>	Planting Depth (inches)
1. Oats	Cool	35 - 50	1 - 2
2. Spring wheat	Cool	25 - 35	1 - 2
3. Spring barley	Cool	25 - 35	1 - 2
4. Annual ryegrass	Cool	10 - 15	½
5. Millet	Warm	3 - 15	½ - ¾
6. Sudangrass	Warm	5-10	½ - ¾
7. Sorghum	Warm	5-10	½ - ¾
8. Winter wheat	Cool	20-35	1 - 2
9. Winter barley	Cool	20-35	1 - 2
10. Winter rye	Cool	20-35	1 - 2
11. Triticale	Cool	25-40	1 - 2

<sup>a</sup> Successful seeding of annual grass resulting in adequate plant growth will usually produce enough dead-plant residue to provide protection from wind and water erosion for an additional year. This assumes that the cover is not disturbed or mowed closer than 8 inches.

Hydraulic seeding may be substituted for drilling only where slopes are steeper than 3:1 or where access limitations exist. When hydraulic seeding is used, hydraulic mulching should be applied as a separate operation, when practical, to prevent the seeds from being encapsulated in the mulch.

<sup>b</sup> See Table TS/PS-3 for seeding dates. Irrigation, if consistently applied, may extend the use of cool season species during the summer months.

<sup>c</sup> Seeding rates should be doubled if seed is broadcast, or increased by 50 percent if done using a Brillion Drill or by hydraulic seeding.

# EC-2 Temporary and Permanent Seeding (TS/PS)

Table TS/PS-2. Minimum Drill Seeding Rates for Perennial Grasses

Common <sup>a</sup> Name	Botanical Name	Growth Season <sup>b</sup>	Growth Form	Seeds/ Pound	Pounds of PLS/acre
<b>Alkali Soil Seed Mix</b>					
Alkali sacaton	<i>Sporobolus airoides</i>	Cool	Bunch	1,750,000	0.25
Basin wildrye	<i>Elymus cinereus</i>	Cool	Bunch	165,000	2.5
Sodar streambank wheatgrass	<i>Agropyron riparium 'Sodar'</i>	Cool	Sod	170,000	2.5
Jose tall wheatgrass	<i>Agropyron elongatum 'Jose'</i>	Cool	Bunch	79,000	7.0
Arriba western wheatgrass	<i>Agropyron smithii 'Arriba'</i>	Cool	Sod	110,000	5.5
<b>Total</b>					<b>17.75</b>
<b>Fertile Loamy Soil Seed Mix</b>					
Ephriam crested wheatgrass	<i>Agropyron cristatum 'Ephriam'</i>	Cool	Sod	175,000	2.0
Dural hard fescue	<i>Festuca ovina 'duriuscula'</i>	Cool	Bunch	565,000	1.0
Lincoln smooth brome	<i>Bromus inermis leys 'Lincoln'</i>	Cool	Sod	130,000	3.0
Sodar streambank wheatgrass	<i>Agropyron riparium 'Sodar'</i>	Cool	Sod	170,000	2.5
Arriba western wheatgrass	<i>Agropyron smithii 'Arriba'</i>	Cool	Sod	110,000	7.0
<b>Total</b>					<b>15.5</b>
<b>High Water Table Soil Seed Mix</b>					
Meadow foxtail	<i>Alopecurus pratensis</i>	Cool	Sod	900,000	0.5
Redtop	<i>Agrostis alba</i>	Warm	Open sod	5,000,000	0.25
Reed canarygrass	<i>Phalaris arundinacea</i>	Cool	Sod	68,000	0.5
Lincoln smooth brome	<i>Bromus inermis leys 'Lincoln'</i>	Cool	Sod	130,000	3.0
Pathfinder switchgrass	<i>Panicum virgatum 'Pathfinder'</i>	Warm	Sod	389,000	1.0
Alkar tall wheatgrass	<i>Agropyron elongatum 'Alkar'</i>	Cool	Bunch	79,000	5.5
<b>Total</b>					<b>10.75</b>
<b>Transition Turf Seed Mix<sup>c</sup></b>					
Ruebens Canadian bluegrass	<i>Poa compressa 'Ruebens'</i>	Cool	Sod	2,500,000	0.5
Dural hard fescue	<i>Festuca ovina 'duriuscula'</i>	Cool	Bunch	565,000	1.0
Citation perennial ryegrass	<i>Lolium perenne 'Citation'</i>	Cool	Sod	247,000	3.0
Lincoln smooth brome	<i>Bromus inermis leys 'Lincoln'</i>	Cool	Sod	130,000	3.0
<b>Total</b>					<b>7.5</b>

**Table TS/PS-2. Minimum Drill Seeding Rates for Perennial Grasses (cont.)**

Common Name	Botanical Name	Growth Season <sup>b</sup>	Growth Form	Seeds/Pound	Pounds of PLS/acre
<b>Sandy Soil Seed Mix</b>					
Blue grama	<i>Bouteloua gracilis</i>	Warm	Sod-forming bunchgrass	825,000	0.5
Camper little bluestem	<i>Schizachyrium scoparium</i> 'Camper'	Warm	Bunch	240,000	1.0
Prairie sandreed	<i>Calamovilfa longifolia</i>	Warm	Open sod	274,000	1.0
Sand dropseed	<i>Sporobolus cryptandrus</i>	Cool	Bunch	5,298,000	0.25
Vaughn sideoats grama	<i>Bouteloua curtipendula</i> 'Vaughn'	Warm	Sod	191,000	2.0
Arriba western wheatgrass	<i>Agropyron smithii</i> 'Arriba'	Cool	Sod	110,000	5.5
<b>Total</b>					<b>10.25</b>
<b>Heavy Clay, Rocky Foothill Seed Mix</b>					
Ephriam crested wheatgrass <sup>d</sup>	<i>Agropyron cristatum</i> 'Ephriam'	Cool	Sod	175,000	1.5
Oahe Intermediate wheatgrass	<i>Agropyron intermedium</i> 'Oahe'	Cool	Sod	115,000	5.5
Vaughn sideoats grama <sup>e</sup>	<i>Bouteloua curtipendula</i> 'Vaughn'	Warm	Sod	191,000	2.0
Lincoln smooth brome	<i>Bromus inermis</i> leys 'Lincoln'	Cool	Sod	130,000	3.0
Arriba western wheatgrass	<i>Agropyron smithii</i> 'Arriba'	Cool	Sod	110,000	5.5
<b>Total</b>					<b>17.5</b>
<p><sup>a</sup> All of the above seeding mixes and rates are based on drill seeding followed by crimped straw mulch. These rates should be doubled if seed is broadcast and should be increased by 50 percent if the seeding is done using a Brillion Drill or is applied through hydraulic seeding. Hydraulic seeding may be substituted for drilling only where slopes are steeper than 3:1. If hydraulic seeding is used, hydraulic mulching should be done as a separate operation.</p> <p><sup>b</sup> See Table TS/PS-3 for seeding dates.</p> <p><sup>c</sup> If site is to be irrigated, the transition turf seed rates should be doubled.</p> <p><sup>d</sup> Crested wheatgrass should not be used on slopes steeper than 6H to 1V.</p> <p><sup>e</sup> Can substitute 0.5 lbs PLS of blue grama for the 2.0 lbs PLS of Vaughn sideoats grama.</p>					

# EC-2 Temporary and Permanent Seeding (TS/PS)

Table TS/PS-3. Seeding Dates for Annual and Perennial Grasses

Seeding Dates	Annual Grasses (Numbers in table reference species in Table TS/PS-1)		Perennial Grasses	
	Warm	Cool	Warm	Cool
January 1–March 15			✓	✓
March 16–April 30	4	1,2,3	✓	✓
May 1–May 15	4		✓	
May 16–June 30	4,5,6,7			
July 1–July 15	5,6,7			
July 16–August 31				
September 1–September 30		8,9,10,11		
October 1–December 31			✓	✓

## Mulch

Cover seeded areas with mulch or an appropriate rolled erosion control product to promote establishment of vegetation. Anchor mulch by crimping, netting or use of a non-toxic tackifier. See the Mulching BMP Fact Sheet for additional guidance.

## Maintenance and Removal

Monitor and observe seeded areas to identify areas of poor growth or areas that fail to germinate. Reseed and mulch these areas, as needed.

An area that has been permanently seeded should have a good stand of vegetation within one growing season if irrigated and within three growing seasons without irrigation in Colorado. Reseed portions of the site that fail to germinate or remain bare after the first growing season.

Seeded areas may require irrigation, particularly during extended dry periods. Targeted weed control may also be necessary.

Protect seeded areas from construction equipment and vehicle access.

## Description

Mulching consists of evenly applying straw, hay, shredded wood mulch, rock, bark or compost to disturbed soils and securing the mulch by crimping, tackifiers, netting or other measures. Mulching helps reduce erosion by protecting bare soil from rainfall impact, increasing infiltration, and reducing runoff. Although often applied in conjunction with temporary or permanent seeding, it can also be used for temporary stabilization of areas that cannot be reseeded due to seasonal constraints.

Mulch can be applied either using standard mechanical dry application methods or using hydromulching equipment that hydraulically applies a slurry of water, wood fiber mulch, and often a tackifier.



**Photograph MU-1.** An area that was recently seeded, mulched, and crimped.

## Appropriate Uses

Use mulch in conjunction with seeding to help protect the seedbed and stabilize the soil. Mulch can also be used as a temporary cover on low to mild slopes to help temporarily stabilize disturbed areas where growing season constraints prevent effective reseeded. Disturbed areas should be properly mulched and tacked, or seeded, mulched and tacked promptly after final grade is reached (typically within no longer than 14 days) on portions of the site not otherwise permanently stabilized.

Standard dry mulching is encouraged in most jurisdictions; however, hydromulching may not be allowed in certain jurisdictions or may not be allowed near waterways.

Do not apply mulch during windy conditions.

## Design and Installation

Prior to mulching, surface-roughen areas by rolling with a crimping or punching type roller or by track walking. Track walking should only be used where other methods are impractical because track walking with heavy equipment typically compacts the soil.

A variety of mulches can be used effectively at construction sites. Consider the following:

<b>Mulch</b>	
<b>Functions</b>	
Erosion Control	Yes
Sediment Control	Moderate
Site/Material Management	No

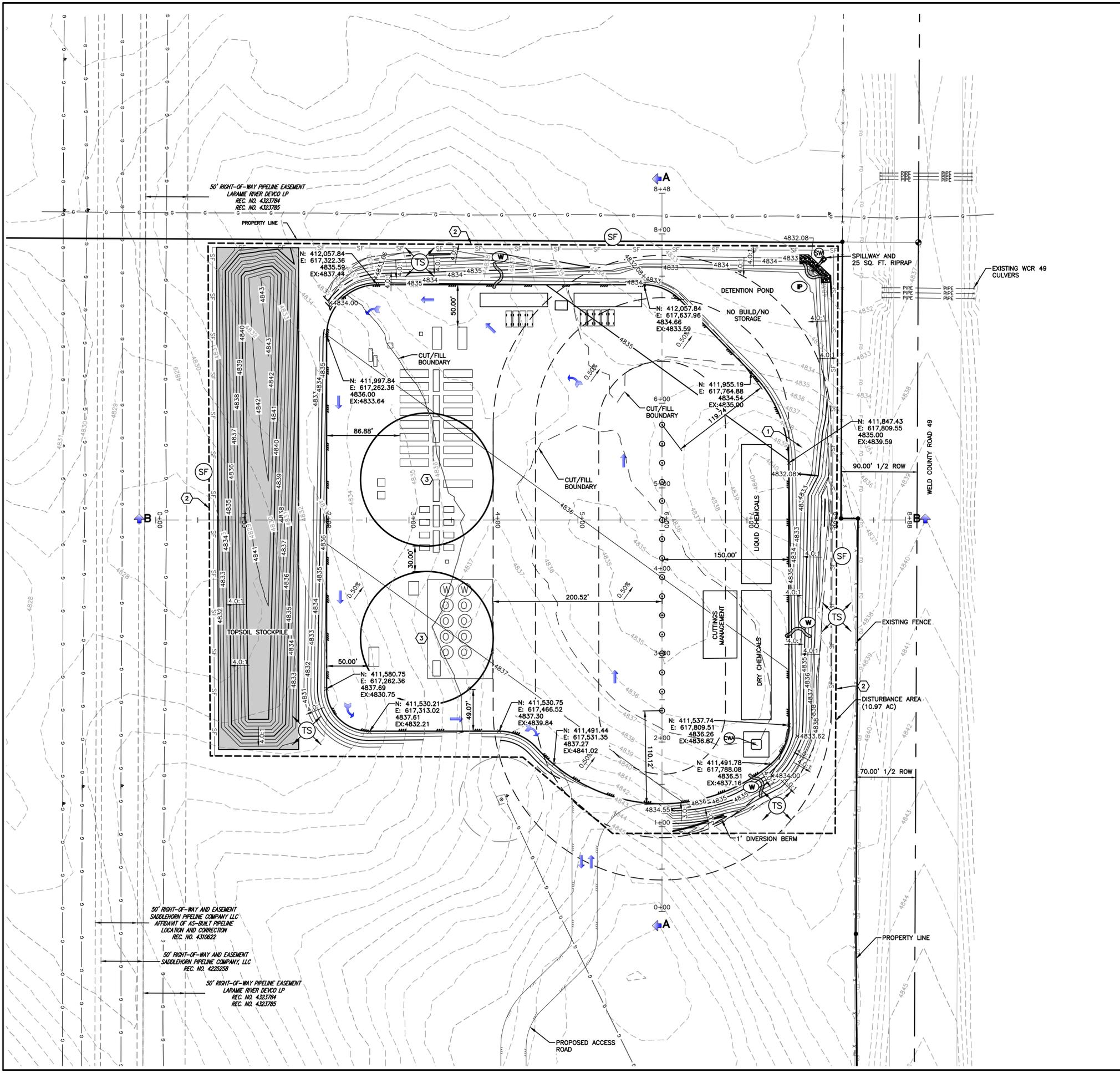
- Clean, weed-free and seed-free cereal grain straw should be applied evenly at a rate of 2 tons per acre and must be tacked or fastened by a method suitable for the condition of the site. Straw mulch must be anchored (and not merely placed) on the surface. This can be accomplished mechanically by crimping or with the aid of tackifiers or nets. Anchoring with a crimping implement is preferred, and is the recommended method for areas flatter than 3:1. Mechanical crimpers must be capable of tucking the long mulch fibers into the soil to a depth of 3 inches without cutting them. An agricultural disk, while not an ideal substitute, may work if the disk blades are dull or blunted and set vertically; however, the frame may have to be weighted to afford proper soil penetration.
- Grass hay may be used in place of straw; however, because hay is comprised of the entire plant including seed, mulching with hay may seed the site with non-native grass species which might in turn out-compete the native seed. Alternatively, native species of grass hay may be purchased, but can be difficult to find and are more expensive than straw. Purchasing and utilizing a certified weed-free straw is an easier and less costly mulching method. When using grass hay, follow the same guidelines as for straw (provided above).
- On small areas sheltered from the wind and heavy runoff, spraying a tackifier on the mulch is satisfactory for holding it in place. For steep slopes and special situations where greater control is needed, erosion control blankets anchored with stakes should be used instead of mulch.
- Hydraulic mulching consists of wood cellulose fibers mixed with water and a tackifying agent and should be applied at a rate of no less than 1,500 pounds per acre (1,425 lbs of fibers mixed with at least 75 lbs of tackifier) with a hydraulic mulcher. For steeper slopes, up to 2000 pounds per acre may be required for effective hydroseeding. Hydromulch typically requires up to 24 hours to dry; therefore, it should not be applied immediately prior to inclement weather. Application to roads, waterways and existing vegetation should be avoided.
- Erosion control mats, blankets, or nets are recommended to help stabilize steep slopes (generally 3:1 and steeper) and waterways. Depending on the product, these may be used alone or in conjunction with grass or straw mulch. Normally, use of these products will be restricted to relatively small areas. Biodegradable mats made of straw and jute, straw-coconut, coconut fiber, or excelsior can be used instead of mulch. (See the ECM/TRM BMP for more information.)
- Some tackifiers or binders may be used to anchor mulch. Check with the local jurisdiction for allowed tackifiers. Manufacturer's recommendations should be followed at all times. (See the Soil Binder BMP for more information on general types of tackifiers.)
- Rock can also be used as mulch. It provides protection of exposed soils to wind and water erosion and allows infiltration of precipitation. An aggregate base course can be spread on disturbed areas for temporary or permanent stabilization. The rock mulch layer should be thick enough to provide full coverage of exposed soil on the area it is applied.

## Maintenance and Removal

After mulching, the bare ground surface should not be more than 10 percent exposed. Reapply mulch, as needed, to cover bare areas.

## Appendix 6 – Erosion and Sediment Control Plan - Site Map

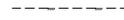
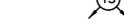
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0 60 120

**LEGEND**

-  EXISTING ROAD
-  EDGE OF GRAVEL
-  EXISTING FENCE LINE
-  LIMITS OF DISTURBANCE
-  SOUND WALL
-  EXISTING CONTOUR LINE
-  PROPOSED CONTOUR LINE
-  TRAFFIC FLOW
-  TOPSOIL STOCKPILE
-  CONCRETE WASHOUT AREA
-  SILT FENCE
-  SPILLWAY RIPRAP
-  WATTLE
-  INLET PROTECTION
-  TEMPORARY SEEDING
-  PERMANENT SEEDING

**EARTHWORK CALCULATIONS:**

SITE AREA	10.97 AC
-----------	----------

**ON-SITE RAW QUANTITIES:**

EXCAVATION	14,000 CY (CUT)
EMBANKMENT FILL	9,000 CY (FILL)

**CONSTRUCTION IMPORT:**

6" GRAVEL	9,100 CY
-----------	----------

**MATERIAL BREAK DOWN:**

TOP SOIL (REQUIRED STOCKPILE)	13,200 CY
-------------------------------	-----------

**TOTAL IMPORT/EXPORT:**

EXPORT	500 CY
--------	--------

- KEY NOTES**
- ① POND ACCESS
  - ② LIMITS OF DISTURBANCE DURING CONSTRUCTION OR OGOA
  - ③ MODULAR LARGE VOLUME STORAGE TANKS (MLVT) TANK PAD (TO BE BASE GRADED PER PLAN, CONTRACTOR TO FINAL GRADE AS NEEDED)

ACREAGE BREAKDOWN	
ACREAGE	DESCRIPTION
10.97 AC	OIL AND GAS AREA DURING CONSTRUCTION
6.78 AC	WORKING PAD SURFACE
0.61 AC	ACCESS ROAD DISTURBED AREA
<b>18.36 AC</b>	<b>TOTAL DISTURBANCE</b>

WELLS			
①	SHELTON 25W-25-01	⑨	SHELTON 25W-25-09
②	SHELTON 25W-25-02	⑩	SHELTON 25W-25-10
③	SHELTON 25W-25-03	⑪	SHELTON 25W-25-11
④	SHELTON 25W-25-04	⑫	SHELTON 25W-25-12
⑤	SHELTON 25W-25-05	⑬	SHELTON 25W-25-13
⑥	SHELTON 25W-25-06	⑭	SHELTON 25W-25-14
⑦	SHELTON 25W-25-07	⑮	SHELTON 25W-25-15
⑧	SHELTON 25W-25-08	⑯	SHELTON 25W-25-16

**LAMP RYNEARSON**

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OMAHA, NEBRASKA  
14710 W. DODGE RD., STE. 100 (402)498.2498

FORT COLLINS, COLORADO  
4715 INNOVATION DR., STE. 100 (970)226.0342

KANSAS CITY, MISSOURI  
9001 STATE LINE RD., STE. 200 (816)381.0440



**CRESTONE PEAK RESOURCES**

PRELIMINARY

NOT FOR CONSTRUCTION

MAP

**DRILLING & PRODUCTION  
EROSION & SEDIMENT  
CONTROL PLAN**

**SHELTON CPR-25 PAD  
WELD COUNTY, COLORADO**



ALL UTILITIES ARE SHOWN BASED ON THE INFORMATION AVAILABLE TO THE ENGINEER. THERE IS NO GUARANTEE ALL UTILITIES ARE SHOWN OR THAT THE LOCATION, DEPTH, AND SIZE OF EACH FACILITY IS CORRECT. THE CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL UTILITIES AND SERVICE LINES PRIOR TO CONSTRUCTION.

Know what's below.  
**Call before you dig.**

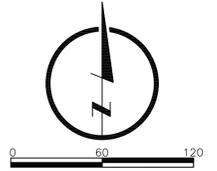
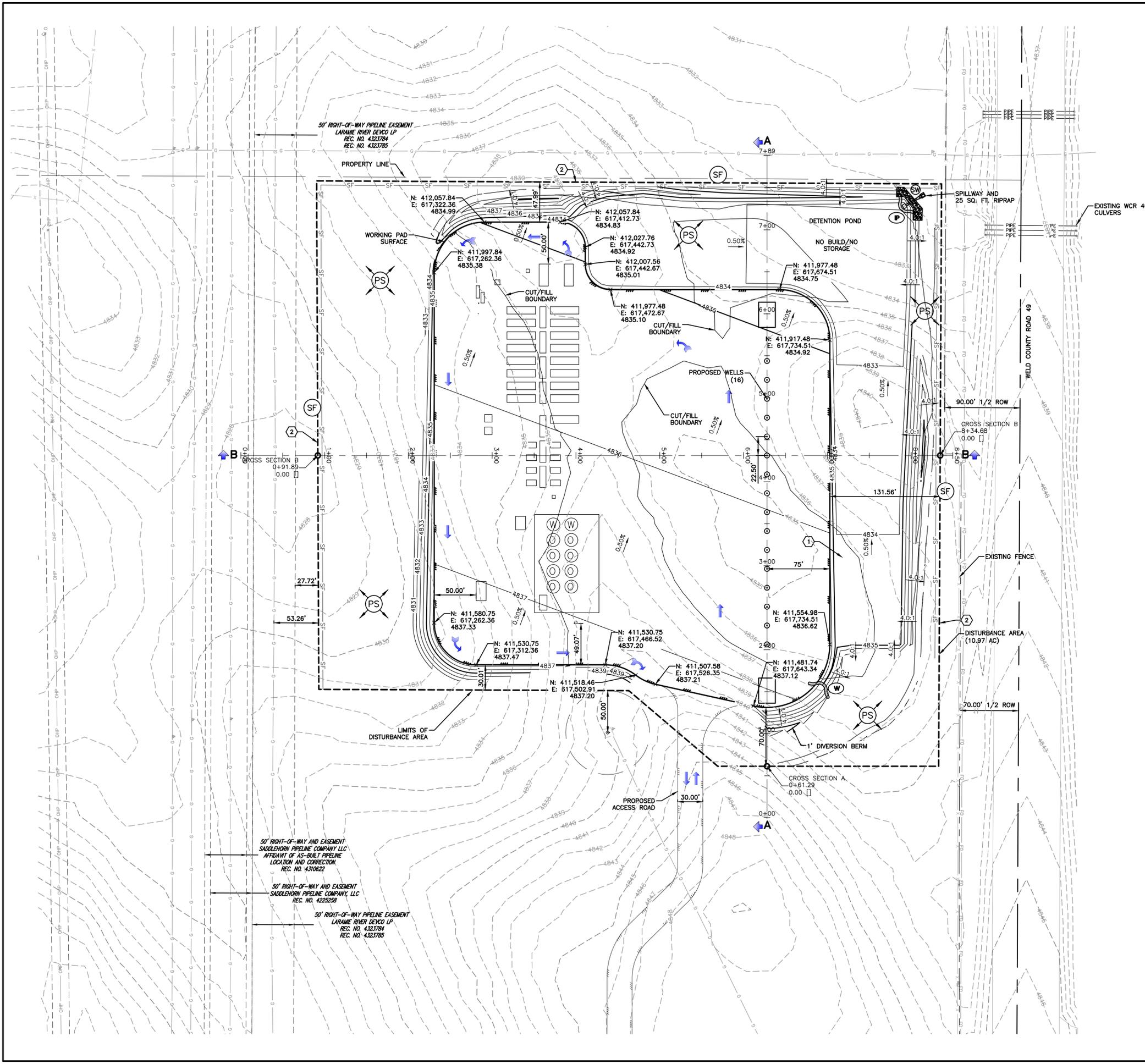
REVISIONS


DESIGNER / DRAFTER  
JUP/JHF  
DATE  
03/11/2022  
PROJECT NUMBER  
0221036  
BOOK AND PAGE

SHEET

1 OF 2

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**LEGEND**

- EXISTING ROAD
- EDGE OF GRAVEL
- EXISTING FENCE LINE
- LIMITS OF DISTURBANCE
- EXISTING CONTOUR LINE
- PROPOSED CONTOUR LINE
- TRAFFIC FLOW
- TOPSOIL STOCKPILE
- CONCRETE WASHOUT AREA
- SILT FENCE
- SPILLWAY RIPRAP
- WATTLE
- INLET PROTECTION
- TEMPORARY SEEDING
- PERMANENT SEEDING

**NOTES:**

1. MAINTAIN EXISTING GRADES NOT WITHIN RECLAIMED AREA LIMITS UNLESS OTHERWISE NOTED.
2. DAYLIGHT FROM LIMITS OF PAD TO LIMITS OF DISTURBANCE.

**KEY NOTES**

- ① POND ACCESS
- ② LIMITS OF DISTURBANCE DURING CONSTRUCTION OR OGOA

ACREAGE BREAKDOWN	
ACREAGE	DESCRIPTION
10.97 AC	DISTURBED AREA DURING CONSTRUCTION
5.32 AC	LOCATION AFTER INTERIM RECLAMATION
5.65 AC	AREA TO BE RECLAIMED

WELLS			
①	SHELTON 25W-25-01	⑨	SHELTON 25W-25-09
②	SHELTON 25W-25-02	⑩	SHELTON 25W-25-10
③	SHELTON 25W-25-03	⑪	SHELTON 25W-25-11
④	SHELTON 25W-25-04	⑫	SHELTON 25W-25-12
⑤	SHELTON 25W-25-05	⑬	SHELTON 25W-25-13
⑥	SHELTON 25W-25-06	⑭	SHELTON 25W-25-14
⑦	SHELTON 25W-25-07	⑮	SHELTON 25W-25-15
⑧	SHELTON 25W-25-08	⑯	SHELTON 25W-25-16

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KANSAS CITY, MISSOURI  
9001 STATE LINE RD., STE. 200 (816)361.0440

**CRESTONE PEAK RESOURCES**

PRELIMINARY

NOT FOR CONSTRUCTION

MAP

**INTERIM RECLAIMED EROSION & SEDIMENT CONTROL PLAN**

**SHELTON CPR-25 PAD WELD COUNTY, COLORADO**

ALL UTILITIES ARE SHOWN BASED ON THE INFORMATION AVAILABLE TO THE ENGINEER. THERE IS NO GUARANTEE ALL FACILITIES ARE SHOWN OR THAT THE LOCATION, DEPTH, AND SIZE OF EACH FACILITY IS CORRECT. THE CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL UTILITIES AND SERVICE LINES PRIOR TO CONSTRUCTION.

Know what's below.  
**Call before you dig.**

DESIGNER / DRAFTER  
JUP/JHF  
DATE  
03/11/2022  
PROJECT NUMBER  
0221036  
BOOK AND PAGE

SHEET

**2 OF 2**

Appendix B of the Stormwater Regulation Guide

Site Specific BMP Assessment							
BMP Description	Code	Practice		Maintenance		Corrective Action Needed/Notes	Date Action Complete
		Req	Used	Yes	No		
<b>Sediment Control BMPs</b>							
Silt Fence	SF						
Sediment Control Log	SCL						
Straw Bale Barrier	SBB						
Rock Sock	RS						
Inlet Protection	IP						
Sediment Basin	SB						
Sediment Trap	ST						
Vegetated Buffer	VB						
<b>Erosion Control BMPs</b>							
Surface Roughening	SR						
Temporary & Permanent Seeding	TS/ PS						
Soil Binders	SB						
Mulching	MU						
Rolled Erosion Control Product	RECP						
Temporary Slope Drain	TSD						
Temporary Outlet Protection	TOP						
Earth Dikes/Drainage Swales	ED/DS						
Terracing	TER						
Check Dams	CD						
Streambank Stabilization	SS						
Wind Erosion/Dust Control	DC						
<b>Materials Management</b>							
Concrete Washout Area	CWA						
Stockpile Management	SP						
Good Housekeeping	GH						
<b>Site Management Controls</b>							
Protection of Existing Vegetation	PV						
Construction Fence	CF						
Vehicle Tracking Control	VTC						
Stabilized Construction Roadway	SCR						
Stabilized Staging Area	SSA						
Dewatering Operations	DW						
Temporary Stream Crossing	TSC						
Paving and Grinding Operations	PGO						

**CERTIFICATION STATEMENT**

"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 gathered and evaluated 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."

**Signature:** \_\_\_\_\_ **Date:** \_\_\_\_\_

## Appendix 8 – Delegation of Authority Form

### Delegation of Authority

I, \_\_\_\_\_ (name), hereby designate the person or specifically described position below to be a duly authorized representative for the purpose of overseeing compliance with environmental requirements, including the Construction General Permit, at the \_\_\_\_\_ construction site. The designee is authorized to sign any reports, stormwater pollution prevention plans and all other documents required by the permit.

\_\_\_\_\_ (name of person or position)  
\_\_\_\_\_ (company)  
\_\_\_\_\_ (address)  
\_\_\_\_\_ (city, state, zip)  
\_\_\_\_\_ (phone)

By signing this authorization, I confirm that I meet the requirements to make such a designation as set forth in \_\_\_\_\_ (Reference State Permit), and that the designee above meets the definition of a “duly authorized representative” as set forth in \_\_\_\_\_ (Reference State Permit).

## Appendix 9 – Completed Stormwater Inspections

Insert completed 14-day, storm event and stabilization inspections here.

## Appendix 10 – Subcontractor Certifications/Agreements

### SUBCONTRACTOR CERTIFICATION STORMWATER POLLUTION PREVENTION PLAN

Project Number: \_\_\_\_\_

Project Title: \_\_\_\_\_

Operator(s): \_\_\_\_\_

As a subcontractor, you are required to comply with the Erosion and Sediment Control Plan (ESC Plan) for any work that you perform on-site. Any person or group who violates any condition of the ESC Plan may be subject to substantial penalties or loss of contract. You are encouraged to advise each of your employees working on this project of the requirements of the ESC Plan. A copy of the ESC Plan is available for your review at the office trailer.

Each subcontractor engaged in activities at the construction site that could impact stormwater must be identified and sign the following certification statement:

**I certify under the penalty of law that I have read and understand the terms and conditions of the ESC PLAN for the above designated project and agree to follow the BMPs and practices described in the ESC Plan.**

This certification is hereby signed in reference to the above named project:

Company: \_\_\_\_\_

Address: \_\_\_\_\_

Telephone Number: \_\_\_\_\_

Type of construction service to be provided: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Signature: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

## Appendix 11 – Spill Prevention Control & Countermeasure Plan

# Spill Prevention, Control, and Countermeasure Plan

Civitas Resources:

## La Salle Fire Protection District Tank Batteries, Colorado

Brantner 30-9, 30-16  
Jet Fuel Pad  
LaSalle Directional  
Shelton CPR-25 Pad  
Vetting Facility

Prepared for:



Civitas Resources  
370 17<sup>th</sup> St., Ste. 5300  
Denver, CO 80202



H2E, Inc.  
808 North Main Street  
Spearfish, SD 57783

Updated: February 16, 2022

### Emergency Contact Information:

Nathan Bennett  
Regulatory Supervisor  
C: 570-932-0776

Ivan Steinke  
Health and Safety Manager  
O: 970-534-6033  
C: 970-381-5114

24-Hr Hotline  
O: (720)-370-5540

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DIKE WATER DRAINAGE LOG..... 1

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APPENDIX D:	Emergency Spill Response Contacts and Procedures
APPENDIX E:	Spill Documentation/Reporting Form and Form 19 COGCC Spill/Release Report Form
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APPENDIX G:	SPCC Training Signoff Sheet
APPENDIX H:	Dike Water Drainage Log
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APPENDIX J:	La Salle Fire Protection District Driving Directions Map

## 1.0 PLAN CERTIFICATION

### 1.1 Certifying Engineer's Statement for Site Specific Plans [112.3(d)]:

Each site specific SPCC Plan (consisting of this document and one of the site-specific information attachments located in the Attachment Section) in this Multi-Facility SPCC plan is individually certified within each Attachment by a Registered Professional Engineer whom is familiar with the requirements of the Code of Federal Regulations, Title 40, Part 112 (40 CFR Part 112). Each site-specific plan has been prepared in accordance with good engineering practices including applicable industry standards, and in accordance with the requirements of 40 CFR Part 112; that procedures have been established for required inspections and testing; and that the Plan is adequate for the facility.

### 1.2 Management Approval Statement [112.7]:

This SPCC Plan is fully supported by the management of Civitas Resources (Civitas). Civitas is committed to the prevention of discharges of oil to navigable waters or the environment, and maintains the highest standards for spill prevention, control, and countermeasures through periodic review, updating, and implementation of this Plan. Civitas Resources will implement this Plan and amend it as needed due to expansions, modifications and improvements at the tank battery facility included in this Plan and will provide the manpower, equipment and materials required to expeditiously control and remove any quantity of oil discharged that may be harmful.



Date: March 8<sup>th</sup>, 2021

Mr. Nathan Bennett  
Regulatory Supervisor  
Civitas Resources

## 2.0 GENERAL

### 2.1 SPCC Plan Description [112.7(a)(1)]

The following multi-facility SPCC Plan has been developed as part of a comprehensive plan to minimize the potential for oil discharges at the Civitas, La Salle Fire Protection District tank battery facilities (tank battery facilities) located within Weld County, Colorado. The plan is designed to guide personnel in their oil spill prevention activities and satisfy applicable federal requirements outlined in 40 CFR, Part 112, and Colorado Oil and Gas Conservation Commission (COGCC), Rule 912 for facilities that have total aggregate aboveground oil storage capacity greater than 1,320 gallons.

### 2.2 SPCC Plan Location [112.3(e)]

The tank battery facilities normally have activity 2-24 hours per day and in accordance with 40 CFR 112.3(e), a complete copy of the SPCC Plan is maintained at the Civitas Denver office ("main office") located at 370 17<sup>th</sup> St., Ste. 5300, Denver, CO 80202 for use by oil handling personnel. The Civitas main office is located an average of approximately 48 miles from the tank battery locations. If the facility is normally attended at least four hours per day, a complete copy of the plan is maintained at the facility. The plan is also available for inspection by regulatory officials during regular business hours.

### 2.3 Amendment and Review Procedures [112.5]

The SPCC Plan will be amended as needed by Civitas whenever there is a change in the facility design, construction, operation, or maintenance that materially affects the potential to discharge oil into navigable waters or adjoining shorelines. Any technical amendment to the site specific SPCC Plan(s) will be effective only if certified by a Professional Engineer in accordance with 40 CFR, Part 112.3(d). In addition, Civitas will review and evaluate the current SPCC Plan at least once every five years. As a result of such review, the SPCC Plan will be updated and modified to include more effective prevention and control technology where applicable. All technical plan amendments will be certified by a Professional Engineer and fully implemented within six months of the date of the facility change. All administrative plan amendments will be made by the operator; however, administrative amendments do not require certification by a Professional Engineer. SPCC Plan reviews will be documented on a review log that will be maintained with the SPCC Plan. The following table outlines non-technical versus technical amendments and describes the management review process. The SPCC Plan Review Log form is provided in Appendix A.

#### **Non-Technical Amendments**

- Non-technical amendments are not required to be certified by a professional Engineer.
- Examples of non-technical amendments include, but are not limited to, phone numbers, name changes, or any non-technical text change or changes.

### **Technical Amendments**

- Technical amendments are certified by a Professional Engineer.
- Examples of technical amendments include, but are not limited to, commissioning or decommissioning containers; replacement, reconstruction, or movement of containers; reconstruction, replacement, or installation of piping systems; construction or demolition that may alter secondary containment structures; changes of product or service; or addition or deletion of standard operation or maintenance procedures related to discharge prevention measures. It is the responsibility of the operator to determine, and confirm with the regulatory authority as necessary, what constitutes a technical amendment. The preamble of the rule states that an amendment is required only “when there is a change that materially affects the facility’s potential to discharge oil” (67 FR 47091).
- An amendment made under this section will be prepared within six (6) months of the change and implemented as soon as possible but no later than six (6) months following preparation of the amendment.

### **2.4 Facility Not Yet Operational [112.7]**

All tank battery facilities described in the SPCC Plan are fully operational. Planned spill prevention improvements and procedures will be completed within six months of the date of the SPCC Plan.

### **2.5 Deviations from Requirements [112.7(a)(2)]**

The tank battery facilities do not include deviations from the SPCC requirements.

### **2.6 Facility Description [112.7(a)(3)]**

Each tank battery facility within the fire district is onshore with aboveground storage tanks (ASTs) used for storing oil and produced water. The facilities operate 24 hours per day, seven days a week. Additionally, some facilities may also have a “water pit” that will be used for produced water storage generated from cleaning out the piping runs and lines from various equipment. If a tank battery has a water pit it will be indicated on the applicable site conditions figure. The tank battery facilities include subsurface flowlines that transfer oil and produced water to the separators and ASTs, and aboveground product piping used for transferring oil and produced water from the ASTs to tanker trucks. Site specific tank battery facility descriptions, and maps depicting the facility locations and diagrams of the facility layouts, are included in the site-specific attachments.

### **2.7 Facility Storage [112.7(a)(3)(i)]**

Tables describing the oil storage containers, contents, and volume capacities at each facility are included in the site-specific attachments.

### **2.8 Discharge Prevention Measures [112.7(a)(3)(ii)]**

Civitas ensures that any releases due to spilling or overfilling do not occur. Transfer of oil into the AST system is conducted through underground flowline piping from the separator systems. All oil tanks are equipped with pressure relief valves and 16 ounce springs in the thief hatches to relieve any excessive pressure that may build-up inside the

tanks. Tanks are equipped with a high volume emergency shut down, and most multi-tank sites are liquid manifolded. The tanks have been sized to provide a minimum capacity of two days to prevent overfilling even if a pumper is delayed in making the daily inspection. Field operations personnel from Civitas or pumper/gauger contractors visit the facilities daily to record production rates and ensure the proper functioning of wellhead equipment, storage tanks, flowlines, and separation vessels. Daily inspections include performing equipment inspections and maintenance as needed.

All tanker truck drivers are required to comply with Department of Transportation (DOT) regulations in 49 CFR Part 177 regarding tank loading and unloading procedures. DOT requirements and tanker truck loading standard operating procedures are provided in Appendix C. The following procedures are implemented when a tanker truck is being loaded:

- Vehicle's parking brake is set.
- Outlet valves are closed.
- Grounding procedures are followed.
- Ungrounded objects are removed from tanker loading area.
- Driver assures that hose connections are secure and flow is started slowly.
- Transfer operator remains outside the vehicle, present and attentive.

After tanker truck loading is complete, the following procedures are followed:

- The driver checks the liquid level versus the compartment marker.
- The driver waits at least one minute before lowering any metal or conductive objects (gauge tapes, samplers, thermometers, etc.) into the compartment. This allows any static charge to dissipate.
- All loading valves are closed and hose connections are capped or plugged. Signs of spillage are noted and remedial action is taken, if necessary.
- All hatches are closed tightly and internal safety valves are closed.

### **2.9 Discharge Controls [112.7(a)(3)(iii)]**

Detailed discharge controls specific to each tank battery facility are described in the site specific attachments found at the end of this document.

### **2.10 Countermeasures: Discovery/Response/Cleanup [112.7(a)(3)(iv)]**

Civitas employees and contractors are aware of the need to immediately report all spills of oil products to Mr. Nathan Bennett, the primary contact. If the primary contact is not available, Mr. Ivan Steinke, the alternate contact, will be notified. In the event of a large spill requiring emergency response (i.e., spill spreads beyond the immediate spill area, enters surface water, requires special training or equipment, poses a danger of fire or explosion), emergency personnel from the LaSalle Fire Protection District (Fire District) are on hand by calling 911.

Spill response will be initiated as soon as possible to stop additional spillage and to implement containment measures. Civitas personnel and contractors maintain spill response supplies and oil absorbent materials readily available in their vehicles to respond to spills and begin immediate cleanup measures. Heavy equipment is available in the area provided by Elite Oilfield Services, H2 Enterprises, and M&M Excavation, including excavation equipment. Pumps and vacuum tanker trucks are available in the area from either LRP One, Energes, or Zito Trucking. Manual tools, such as shovels and rakes, for use in containment and cleanup of spills will also be employed, if needed. Discovery, response, and cleanup activities are described in more detail in the following sections.

### 2.11 Disposal [112.7(a)(3)(v)]

The final operation in spill response and cleanup is the disposal of impacted materials. Any plan for disposal used by Civitas must be coordinated through the appropriate regulatory agency. If the impacted material is related to a release of oil or produced water from a tank battery system the agency for oversight is the COGCC. If from a source not regulated by COGCC, such as a tanker truck in transit, the agency for oversight is the Colorado Department of Public Health and Environment (CDPHE), Solid Waste Division. Impacted material must be disposed at an appropriate facility permitted with the CDPHE, or other appropriate regulatory agency, to receive the type of waste being shipped and each shipment documented using proper manifest or bill-of-lading forms, if needed. Civitas will submit a follow-up written report to the appropriate agency within 60 days following a release, or in accordance with the requirements of the agency.

### 2.12 Notification Phone List [112.7(a)(3)(vi)]

A contact list and phone numbers for individuals, emergency response authorities, spill response/cleanup contractors and regulatory agencies to be notified in the event of leakage or spills is provided in Appendix D. Spills ultimately reaching navigable waters in harmful quantities as defined by 40 CFR Part 110.3 (that which violates applicable water quality standards or causes a sheen on the water surface) are required to be reported under 40 CFR Part 110.6. If a spill or release of exploration and production waste or produced fluids occurs and is greater than 1 BBL (42 gallons), it must be reported to the following regulatory agency within 24 hours:

Colorado Oil and Gas Conservation Commission  
Environmental Release/Incident Report Hotline  
Denver, Colorado  
**(1-877-518-5608)**

After hours or related to a container not regulated by COGCC contact:

Colorado Department of Public Health and Environment  
Denver, Colorado  
**(1-877-518-5608) (24-Hour)**

In the event of a large spill requiring emergency response (i.e. spill spreads beyond the immediate spill area, enters surface water, requires special training or equipment, poses a danger of fire or explosion), contact the following:

La Salle Fire Protection District  
La Salle, Colorado  
**911 (24-Hour)**  
**(970-284-6336) (Main Number)**

If the release reaches navigable water contact the following:

National Response Center  
Washington, DC  
**(1-800-424-8802) (24-Hour)**

### **2.13 Discharge Notification Form [112.7(a)(4)]**

An example form for spill documentation and reporting is provided in Appendix E. When contacting regulatory agencies, the following information should be provided:

- name and owner/operator of facility
- responsible company/person, including mailing address and telephone number
- name of person reporting the release
- date and time of release
- legal description of release location
- type and amount of substance released
- waterway affected, including amount reaching water
- cause of release
- action taken to control, contain, and remove release
- other pertinent information specific to the release

In accordance with 40 CFR Part 112.4(a), if the facility has a discharge to navigable water of more than 1,000 gallons of oil in a single event or discharges more than 42 gallons of oil in each of two discharges occurring within any twelve month period, Civitas will submit the following information to the EPA Regional Administrator within 60 days from the day of the discharge.

- Name of the facility
- Callers name
- Location of the facility
- Maximum storage or handling capacity of the facility and normal daily throughput
- Corrective action and countermeasures taken, description of equipment repairs and replacements
- Description of the facility, including maps, flow diagrams, and topographic maps, as necessary
- Description of the cause of the discharge, including a failure analysis of the system or subsystem that failed
- Additional preventative measures taken or contemplated to minimize the possibility of recurrence
- Any other information as the Regional Administrator may reasonably require pertinent to the Plan or discharge

#### **2.14 Discharge Procedures [112.7(a)(5)]**

After identifying and locating a spill, the necessity for and feasibility of effective containment can be assessed. Containment must be initiated as soon as possible to prevent undue spreading of released product. The first action should be the elimination of any additional spillage. This may be accomplished by shutting off a pump or valve, placing a cap or a plastic or epoxy patch over the leak, putting a temporary plug in a puncture or tear, or other appropriate action.

One 40 lb bag of Gator absorbent material is maintained within the Civitas or pumper/gauger subcontractor vehicles along with 3-4 bags at each location will be used to contain and clean up spilled product. If required, excavation equipment and/or manual tools, such as shovels and rakes, located in each truck, will be used to erect earthen berms along the leading edge of the spill to prevent spreading. Materials recovered during cleanup will be placed in appropriate containers or stockpiled using an impermeable liner and cover (such as polyethylene sheeting) to prevent cross-contamination with unexposed media prior to disposal.

If free-phase petroleum product is present or if the spill reaches surface water, the spill must be contained and removed. Mechanical methods of spill removal include suction hoses, excavation, the use of skimmers, and sorbent materials. The use of chemical or biological collecting agents is discouraged and can only be used with prior approval from both state and federal regulatory officials. Civitas instructs all personnel who operate the tank battery systems on deployment measures needed to contain and cleanup a potential spill.

#### **2.15 Discharge Prediction [112.7(b)]**

Since the initial installation of the tank battery storage tanks, there have been no reported spills of petroleum products at the tank battery facility which have qualified as "spill events" under the federal definition. Detailed descriptions of the storage containers, associated equipment, and where potential discharge predictions at each tank battery facility are summarized in the site-specific attachments.

#### **2.16 Secondary Containment for Loading/Unloading Areas Other Than Rack [112.7(c)]**

Initial secondary containment for tanker truck loading activities is provided in some instances by 29-gallon capacity spill containment vessels in which each loading connection is located. If a spill exceeds the capacity of the spill containment vessel or occurs outside a spill containment vessel, secondary containment is provided by the main secondary containment dike surrounding and ASTs, piping, and connections. If a spill were to occur in the loading area outside of the main secondary containment dike, spills will be addressed by employing active secondary containment measures. Active secondary containment measures include deploying oil absorbent pads or granular absorbent, and/or manually constructing earthen berms or digging cut-off trenches. The secondary containment systems provide adequate capacity to contain the largest predicted spills associated with tanker truck loading operations and are sufficient to contain oil before cleanup occurs.

### 2.17 Statement of Secondary Containment Practicability [112.7(d)]

A discussion of secondary containment practicability is included in Sections 9.2 and 10.4 of this plan. Secondary containment was deemed practicable for all bulk storage containers. All secondary containment structures are designed to contain oil from a discharge until cleanup can occur. Specific secondary containment measures and capacities for each facility are included in the site specific SPCC Plan(s).

## 3.0 INSPECTIONS, TESTS AND RECORDS

### 3.1 Inspections and Record-Keeping [(112.7(e)]

Inspections are an integral part of operations. This section outlines procedures for inspecting the facility equipment in accordance with SPCC requirements. The inspection program is comprised of daily, annual (at a minimum), and other frequency if required. Additional inspections are performed whenever an operation alert, malfunction, deck leak, or potential bottom leak is reported. Civitas is responsible for all inspection reporting and documentation procedures. Records of inspections performed as described in this section are signed by the appropriate supervisor or inspector and are maintained with the SPCC Plan at the main office for a minimum of three years. The inspection reports include descriptions of the inspection procedures, the date of inspection, and the inspector's signature.

The program established in this SPCC Plan for regular inspection of all oil storage tanks and related production and transfer equipment follows the guidelines of the American Petroleum Institute's (API) *Recommended Practice for Setting, Maintenance, Inspection, Operation, and Repair of Tanks in Production Service* (API RP 12R1, Fifth Edition, August 1997). Other acceptable inspection criteria include the Steel Tank Institute (STI) *Standard for the Inspection of Aboveground Storage Tanks* (SP001), September 2011, 5<sup>th</sup> edition.

- On a daily basis, each facility is inspected by field operations personnel. Otherwise these visual inspections are conducted weekly, at a minimum. The daily visual inspection includes a walkthrough of the tank battery and around the wells. Field operations personnel check the wellheads and production equipment for leaks and proper operation. All valves, fittings, gauges, and flowline piping at the wellheads and separators are checked. Diked secondary containment areas are inspected for the presence of oil and accumulated water, and tank system valves are inspected. The storage tanks are gauged daily and a production report is maintained. All malfunctions, improper operation of equipment, evidence of leakage, and stained or discolored soil are logged and communicated to the Civitas Production Manager and the Environmental Supervisor.

**Scope of Daily Inspection**

Facility Area	Inspection Items	Observations
ASTs (Oil and Produced water)	Leaks	<ul style="list-style-type: none"> <li>Tank liquid level gauged</li> <li>Drip marks, leaks from welded seams</li> </ul>

Facility Area	Inspection Items	Observations
		<ul style="list-style-type: none"> <li>• Base of tank, puddles containing oil</li> <li>• Corrosion, especially at the base (pitting, flaking)</li> <li>• Cracks in metal</li> <li>• Excessive soil or vegetation buildup against tank base</li> </ul>
ASTs (Oil and Produced water)	Foundation Problems	<ul style="list-style-type: none"> <li>• Cracks</li> <li>• Puddles contain oil or leaked material</li> <li>• Settling</li> <li>• Gaps in base</li> </ul>
ASTs (Oil and Produced water)	Flowlines Problem	<ul style="list-style-type: none"> <li>• Evidence of leaks, especially at connections and collars</li> <li>• Corrosion including pitting and flaking</li> <li>• Settling</li> <li>• Evidence of oil seepage from valves or seals</li> </ul>
Wellheads and Separators	Leak	<ul style="list-style-type: none"> <li>• Evidence of oil seepage from the wellhead, wellhead components, flowlines, valves, and gauges.</li> </ul>

- On an annual basis, visual inspections are performed and documented by a contractor who inspects the condition of the storage tanks, secondary containment systems, flowlines, piping, wellheads and all associated processing equipment. Storage tanks are inspected for signs of deterioration and leakage. The secondary containment areas are checked for proper drainage, general condition, evidence of oil, and signs of leakage. All aboveground valves and pipes are inspected, noting the general condition of items such as flange joints, expansion joints, valve glands and bodies, spill containment vessels, pipe supports, and pumping wellhead equipment. If needed, gaskets are replaced and threaded connections are tightened. The general scope of the annual inspections is summarized in the following table. An annual inspection and recording form is included in Appendix F.

#### Scope of Annual Inspections

Facility Area	Inspection Items	Observations
Tank Battery	Storage tanks	<ul style="list-style-type: none"> <li>• Leakage, gaskets, thief hatches</li> <li>• Tank liquid level checked</li> <li>• Tank welds in good condition</li> <li>• Vacuum vents present and operational</li> <li>• Overflow piping present and operational</li> <li>• Piping, valves, and bull plugs operational</li> <li>• Presence of corrosion and paint condition</li> </ul>

Facility Area	Inspection Items	Observations
		<ul style="list-style-type: none"> <li>• Pressure/ level safety devices present</li> <li>• Pressure relief valves</li> </ul>
Tank Battery	Secondary containment dike and tank battery area	<ul style="list-style-type: none"> <li>• Earthen berm heights are well maintained</li> <li>• Presence of stained or contaminated soil</li> <li>• Presence of excessive vegetation</li> <li>• Equipment protectors and signage</li> <li>• General housekeeping</li> </ul>
Tank Battery	Production equipment	<ul style="list-style-type: none"> <li>• Gauges in good condition with no leaks</li> <li>• Pressure safety devices in good condition and operational</li> <li>• Pressure relief valves in good condition and operational</li> </ul>
Truck Loading	Offloading piping/spill containment vessel/catchment berm	<ul style="list-style-type: none"> <li>• Valves closed and in good condition</li> <li>• Cap or bull plug at the end of the offloading pipe/connection</li> <li>• Presence of oil or standing water in spill containment vessel</li> <li>• Presence of oil or standing water in the secondary containment</li> <li>• Presence of oil in the surrounding area</li> </ul>
Wellheads	Tank battery area	<ul style="list-style-type: none"> <li>• Leakage from valves, gaskets, and gauges</li> <li>• Wellhead protectors and signage</li> <li>• General housekeeping</li> </ul>

- Periodic condition inspections of the bulk storage containers are performed by a qualified inspector, as defined by and according to the schedule and scope specified in API RP 12R1, or STI SP001. The schedule is determined based on the corrosion rate, with the first inspection performed no more than 15 years after the tank construction, or prior to a used tank installed at a new facility (API RP 12R1). Tables describing the schedules of periodic condition inspections of bulk storage containers, specific to each tank battery facility, are included in the site specific attachments found at the end of this document. The qualified inspector is responsible for providing Civitas with the periodic inspection reports, which are maintained on file with the SPCC Plan.

Provisions for inspecting, monitoring, and maintaining the integrity of flowlines are provided in Sections 10.4 and 10.5 of the SPCC Plan, which include a combination of daily and quarterly visual inspections, and periodic pressure testing or inspections through the use of alternative appropriate technology.

## 4.0 PERSONNEL TRAINING

### 4.1 Personnel Instruction [112.7(f)(1)]

Training is provided for personnel involved with handling oil products and in the operation and maintenance of the AST systems to prevent discharges and requires that contracted personnel are similarly trained. Operations and maintenance training includes review of applicable owner's manuals and reference guides related to the ASTs and associated equipment, and general facility operations. Moreover, specific training to instruct oil handling personnel in discharge procedure protocols, applicable pollution control laws, rules, and regulations, which includes a complete review of the SPCC Plan, is provided. Training is provided upon initial employment of each new hire and during periodic safety meetings. Annually, refresher training is provided and spill response deployment exercises are reviewed and/or conducted. Initial employee training, periodic safety meetings and annual refresher training activities are documented, with documentation records maintained on file at the Civitas main office.

Civitas ensures that all contract personnel responsible for operating and maintaining the oil storage tank systems and associated equipment (contract oil handling personnel) are familiar with the facility operations, tank contents, and safety procedures. All contract oil handling personnel who work at the tank battery facility are aware of the SPCC Plan, the plan location, requirements, and spill prevention, control, and reporting procedures prior to working at the tank battery facility.

### 4.2 Designated Individual for Spill Prevention [112.7(f)(2)]

The designated individual for spill prevention and reporting for Civitas is Mr. Nathan Bennett. In the absence of Mr. Bennett, the alternate designated individual is Mr. Ivan Steinke.

### 4.3 Spill Prevention Briefings [112.7(f)(3)]

Civitas schedules and conducts spill prevention briefings at least annually during regularly scheduled safety meetings for all personnel involved with oil handling operations to assure adequate understanding of the SPCC Plan. These briefings highlight and describe spill events or failures, malfunctioning components, recently developed precautionary measures, and a review of spill response deployment measures. Employees acknowledge attendance and understanding of these briefings with their signatures on an attendance form. An SPCC training attendance form is provided in Appendix G. Spill prevention briefing attendance forms are maintained on file in the main office.

## 5.0 SECURITY [112.7(g)]

### 5.1 Securing and Controlling Access

Each tank battery facility operates 24 hours per day, 7 days per week. Access is controlled by the facility entry and exit. Security is provided by the presence of operations personnel and, in some cases, contract night watch. Some of the sites that are near more populated areas are manned 24-hr/day.

### **5.2 Securing Master Flow/Drain Valves**

Civitas locks master flow/drain valves on applicable ASTs when not in use, or in standby mode for extended periods of time.

### **5.3 Preventing Unauthorized Access to Starter Controls**

Starter controls for the AST transfer pumps are located in a control panel which is locked. Switches are placed in the off position when not in use or in standby mode for extended periods of time. Access into the control panel is limited to authorized personnel trained in the operation of the AST systems.

### **5.4 Securing Loading/Unloading Connections**

Loading/unloading pipe connections are securely capped and valves locked when not in use.

### **5.5 Security Lighting**

Overhead lighting is present in a majority of the oil and production water storage/transfer areas and outlying areas that will assist in the discovery of discharges occurring during hours of darkness both by operating personnel and non-operating personnel and to deter acts of vandalism.

## **6.0 TANK TRUCK LOADING/UNLOADING**

### **6.1 Secondary Containment for Loading/Unloading Areas Including Racks [112.7(h)(1)]**

Not applicable, the tank battery facilities do not include loading/unloading racks.

### **6.2 Warning/Barrier Systems [112.7(h)(2)]**

Oil and produced water transfers are performed by individual tanker truck drivers who are responsible for all tasks associated with liquid transfer, reducing the potential for vehicle departure before complete disconnect. As a precaution, signs that state **“Warning Disconnect Oil/Production Water Line Before Departing”** are posted in the tanker truck loading areas at each facility that are visible to the tanker truck operators.

### **6.3 Bottom Drains of Vehicles Examined [112.7(h)(3)]**

Contract tanker truck operators are required to assure that prior to filling and departure of any tank truck, the lowermost drain and all outlets of such vehicles are closely examined for leakage and, if necessary, tightened, adjusted, or replaced to prevent liquid leakage while in transit.

## **7.0 OTHER GENERAL REQUIREMENTS**

### **7.1 Brittle Fracture/Other Failure Evaluation – Field Constructed Aboveground Containers [112.7(i)]**

Not applicable, the tank battery facilities do not include field-constructed ASTs.

## **7.2 Conformance with Stricter State Rules [112.7(i)]**

Stricter State discharge prevention and containment procedures are applicable to some of Civitas' facilities as discussed in the following sections.

### **7.2.1 COGCC Rule 200 Series [206(f)]**

Civitas will maintain and keep all records, reports, and underlying data required by COGCC Rules for a period of five years. Civitas will also maintain and keep chemical inventories and well records, as required, for five years after plugging and abandoning the applicable well or closure of an oil and gas location.

### **7.2.2 COGCC Rule 400 and 600 Series [421, 603]**

Civitas' Flood Response Plan demonstrates Civitas' compliance with all statewide floodplain requirements according to COGCC Rules 421 and 607.

### **7.2.3 COGCC Rule 600 Series [603, 604]**

The 2016 COGCC Rule 604 (Setback and Mitigation Measures) defines Buffer and Exception Zone, including Urban Mitigation Area and Non-Urban Mitigation Area Locations, Setback designations and requirements. Prior to construction, approval must have been granted from the Director through the Form 2 Application for Permit and the Form 2A Oil and Gas Assessment. Buffer Zone Setbacks are applicable to wells or production facilities proposed after August 1, 2013 but prior to January 15, 2021 that are located one thousand feet or less from a building unit. Exception Zone Setbacks are applicable to wells or production facilities proposed after August 1, 2013 but prior to January 15, 2021 that are located five hundred feet or less from a building unit. In both Designated Setback Areas, berms or other secondary containment devices need to be constructed around crude oil, condensate, and produced water storage tanks, sufficiently impervious to contain any spilled or released material, contain no potential ignition source and enclose an area sufficient to contain and provide secondary containment for one-hundred fifty percent (150%) of the largest single tank. The berms and containment devices must be inspected at regular intervals and maintained in good condition. For facilities located within an Exception Zone Setback, COGCC Rule 604(c)(3)(B) (2016) stated that the secondary containment must be constructed of steel rings, designed and installed to prevent leakage and resist degradation, with a synthetic or engineered liner, containing all primary containment vessels and flowlines, mechanically connected to the steel rings. Facilities that are located in the Exception Zone or Urban Mitigation Zone and are within five hundred feet and upgradient of a surface water body also need tertiary containment, such as an earthen berm around the production facility. Facilities located within an Urban Mitigation Area Exception Zone Setback may have no more than two crude oil or condensate storage tanks located within a single berm. If a facility falls within a Designated Setback Area, a demonstration of the facilities compliance with these COGCC regulations is included in Appendix A.

As of January 15, 2021, per the COGCC Rule 603 (Operational and Safety Requirements) and Rule 604 (Setbacks and Siting Requirements), secondary containment devices around any new and significantly modified, crude oil,

condensate, and produced water storage tanks will be impervious to any spilled or released material, sufficiently sized to provide secondary containment for one-hundred fifty percent (150%) of the largest single tank, constructed of steel, or other engineered material, (designed and installed to prevent leakage and resist degradation from erosion or routine operation) with a synthetic or engineered liner that is attached to the secondary containment (containing all primary containment vessels and flowlines and any equipment penetrating the liner has a sealed connection). No potential ignition sources, aside from fired vessels, will be installed inside the secondary containment area. Any electrical equipment installations inside the bermed area will comply with appropriate federal and state regulations as stated in GOGCC Rule 604.o.(6). Any facility (new or significantly modified after January 15, 2021) that is located within five hundred feet and upgradient of a surface water body or wetland also requires tertiary containment, such as an earthen berm around Production Facilities.

If an Civitas facility falls within an Exception Zone Setback, a demonstration of the facilities compliance with these COGCC regulations is included as an attachment to the site specific SPCC Plan, which are located at the end of this document.

#### **7.2.4 COGCC Rule 600 Series [609]**

Abbreviated Name will inspect Oil and Gas Locations and Tank and Process Vessels as required under COGCC Rule 609.

#### **7.2.5 COGCC Rule 900 Series [912]**

The COGCC Rule 912 contains requirements for reporting spills or releases of E&P Waste, natural gas or produced fluids. Civitas has reviewed these requirements and incorporated them into their spill reporting procedures and Discharge Contact List in Appendix D, as further discussed in Section 2.12 of this plan.

Abbreviated Name will maintain an Emergency Spill Response Plan and an Emergency Response Plan as required under COGCC Rule 304.c.(1), 304.c.(8), 411.a.(4)., 411.b.(5)., and 602.j.

The COGCC Rule 906(b)(1) contains requirements for reporting spills or releases of E&P Waste or produced fluids.

#### **7.3 Qualified Oil-Filled Operational Equipment [112.7(k)]**

Some facilities may utilize oil-filled operational equipment and could include hydraulic systems, lubricating systems (i.e., those for pumps, compressors and other rotating equipment, including pumpjack lubrication systems), gear boxes, machining coolant systems, heat transfer systems, transformers, circuit breakers, electrical switches, and other systems containing oil solely to enable the operation of the device. For oil-filled operational equipment that does not have secondary containment, an OSCP has been prepared and will be implemented in case of a spill (Appendix B).

#### **7.4 Emergency Blowdown Operations**

Emergency blowdown capture process vessels are present on some of Civitas' facilities. The process vessels are generally 300 or 400-barrel steel tanks that are only used during emergency blowdown operations. The owner, operator or a contractor is present on site during any planned maintenance or liquids unloading event. During unloading, gas passes through the process vessel as a means of control and some liquids may drop out. A maximum of 20-100 barrels of liquid could drop out into the process vessel but is then immediately transferred to a production tank via truck. This entire process is completed under the supervision of the owner, operator or contractor on site. The emergency blowdown capture process vessels are not designed to store any liquids long-term and therefore are not supplied with sized secondary containment. However, each process vessel is equipped with general secondary containment. Descriptions of the general secondary containment for each emergency blowdown capture process vessel is provided in the site-specific attachments.

### **8.0 FACILITY DRAINAGE**

#### **8.1 Oil Production Facility Drainage [112.9(b)(1)]**

When excess precipitation accumulates in diked secondary containment areas, the water is either allowed to evaporate, infiltrate into the soil, or is removed using a pump. The secondary containment dikes do not include drains. If excess rainwater is removed by a vacuum truck, it is transported to an appropriately permitted off-site disposal facility. Any accumulation of oil is promptly removed from diked secondary containment areas and either returned to storage or transported to an appropriately permitted off-site disposal facility. If rainwater is drained from a diked secondary containment area, to the adjacent ground surface, drainage is performed using a manually operated pump, but only after inspection for the absence of oil or visible sheen. If water is drained, each drainage is documented with the date, time, and visible condition of the water on a dike water drainage log, which is maintained on file with the SPCC plan. A Dike Water Drainage Log is provided in Appendix H.

#### **8.2 Field Drainage Systems [112.9(b)(2)]**

The tank battery facilities, including the secondary containment systems are visually inspected each day. Site drainage systems such as drainage ditches, road-side ditches, and intermittent creeks in the vicinity of the facility are inspected on a regular basis during routine facility rounds, and during formal SPCC inspections, for accumulations of oil, soil discoloration, or staining that would indicate the presence of oil from small leaks within the facility. Any accumulation of oil is promptly removed and transported for off-site disposal.

### **9.0 BULK STORAGE TANKS**

#### **9.1 Containers Compatible with Materials Stored [112.9(c)(1)]**

All ASTs used for storage of oil products at the Civitas facility are designed and shop manufactured for their intended use, with materials compatible with the oil products stored and conditions of storage, such as pressure and temperature.

All oil storage tanks are factory constructed of welded steel, and built in accordance with API-12F *Shop Welded Tanks for Storage of Production Liquids* specifications. All produced water storage tanks are either factory constructed of fiberglass material, and built in accordance with API-12P *Fiberglass Reinforced Plastic Tanks* specifications, or constructed of concrete.

### **9.2 Secondary Containment [112.9(c)(2)]**

Secondary containment for the oil ASTs, produced water ASTs, and separators are provided by earthen, steel or engineered diked secondary containment structures. The diked secondary containment sizes and quantity of tanks varies for each tank battery facility. Secondary containment berms have the capacity to hold the entire contents of the largest single container plus additional freeboard for precipitation. Freeboard capacity is capable of retaining an additional 10% of the volume of the largest single container, which is recommended by the American Petroleum Institute, or the predicted precipitation from a local 24-hour, 25-year storm event, as required by 40 CFR 112.9 (C)(2). Typically, vertical separators and heater treaters are elevated on a hollow collar at a height greater than the berm height, and therefore do not have a tank footprint. As an additional discharge prevention, Civitas provides sufficient freeboard for a 24 hour 100 year event for all crude oil storage tanks above 100 bbls. Descriptions of the secondary containment systems and volume calculations for each tank battery facility are provided in the site-specific attachments.

Some facilities also have additional general secondary containment in the form of cut slopes as well as earthen berms located on the fill portions of the facility. The cut slope and earthen berm combine to form a general containment system. The working surface gradient directs any fluid discharge to an area where it is effectively contained. Facilities with additional general secondary containment are shown on the diagrams in the site specific SPCC Plan(s).

Flow lines adjacent to the process equipment and storage tanks are located within the berms, and therefore have secondary containment. Short sections of above ground piping may exist where the lines surface near the wellheads. These flow lines and intra-facility gathering lines are not required to have secondary containment under 40 CFR 112.9(d)(3). More information on the flow lines and intra-facility gathering lines can be found in Section 10.4 of this plan.

### **9.3 Facility Inspection Program [112.9(c)(3)]**

The overall facility inspection program is presented in Section 3.1 of the SPCC Plan. Regular informal inspections are performed by facility operations personnel, pumpers, and gaugers who visually inspect facility wide conditions of each tank battery with observations documented on an inspection and recording form (Appendix F). Periodic condition inspections are also performed on facility bulk oil containers by qualified inspectors in accordance with the schedules presented in Section 3.1.

All malfunctions, improper operation of equipment, evidence of leakage, stained or discolored soil identified during periodic or regularly scheduled inspections are documented and reported to the Civitas Production Manager who schedules appropriate repairs and clean-up.

#### **9.4 Bulk Storage Containers Overflow Prevention [112.9(c)(4)]**

The Civitas tank battery facilities are designed with good engineering practices to prevent discharges that include the following:

- The capacities of the oil storage tank systems are adequate to assure that a tank will not overflow in the event that facility personnel are unable to perform a daily inspection to gauge or unload the tanks, or the pumper is delayed in stopping production.
- When applicable, the oil storage tanks are connected with overflow equalizing piping so that when the liquid level in a tank reaches 90 percent (%) capacity it will overflow to an adjacent tank.
- Adequate vacuum/pressure protection is provided for each oil storage tank to prevent container collapse during transfer of oil to and from the tanks.
- Double locking mechanisms and high level alarms on some of the truck load out systems trigger manual and automatic system overrides for emergency situations.

#### **9.5 Flow-through Process Vessels [112.9(c)(5)]**

Most flow-through process vessels that operate at the tank battery facilities, including separators, are located within diked secondary containment areas that are adequately sized to contain the contents of the single largest container within the containment system before cleanup occurs and include sufficient freeboard to contain precipitation. An OSCP is included in Appendix B to cover discharges from flow through process vessels where discharge outside of secondary containment is possible due to pressure or impracticability of secondary containment installation. Flow-through process vessels are visually inspected daily and on a quarterly basis for leaks, corrosion, and other conditions that could lead to a discharge. Adjustments are made as needed on a daily basis to ensure proper operation, and if evidence of leakage is discovered, immediate corrective measures will be taken to initiate repairs and remove any accumulations of oil.

#### **9.6 Produced Water Containers [112.9(c)(6)]**

The produced water tanks are inspected each day by facility personnel for the presence for free-phase oil. If excess oil is detected inside a produced water tank, it is removed using a vacuum truck and either transferred into the oil storage tanks or transported for off-site disposal at an appropriately permitted disposal facility. A detailed description of the facility specific produced water capacities and spill predictions are included in the site-specific attachments.

## 10.0 FACILITY TRANSFER OPERATIONS

### 10.1 General

General safety features which are applicable to maintaining the integrity of transfer operations include:

- Valves and pipelines are inspected daily and annually to assess the condition of the transfer equipment.
- If corrosion damage is found, additional examination and corrective action is taken as appropriate for the magnitude of the damage.

### 10.2 Transfer Operations [112.9(d)(1)]

All aboveground valves and piping associated with transfer operations are inspected daily by facility personnel and/or tanker truck drivers, and formal documented inspections are conducted quarterly, as described in Section 3.1 of this Plan. The inspection procedure includes observing the general condition of flange joints, valves, spill containment vessels, and pipe supports. Detailed descriptions of facility transfer procedures are included in Appendix C, and a quarterly inspection and recording form is provided in Appendix F.

### 10.3 Transfer Operations and Saltwater Disposal System [112.9(d)(2)]

The tank battery facilities do not operate saltwater disposal systems.

### 10.4 Flowlines without Secondary Containment [112.9(d)(3)]

Flowlines at the tank battery facility without secondary containment include buried lines between the wellheads and separators, between the separators and storage tanks. The buried flowlines are constructed of steel and coated with 12-15 mil fusion-bond epoxy powder, and wrapped to prevent corrosion.

To address flowlines without secondary containment the SPCC Plan includes:

- An Oil Spill Contingency Plan following the provision of 40 CFR Part 109 (Appendix B).
- A written commitment of manpower, equipment, and materials required to expeditiously control and remove any quantity of oil that may be harmful (Section 1.2 and Appendix B-Section 4.0).
- Established procedures for inspecting the flowlines to detect equipment failure and/or a discharge, with inspections documented (Section 3.1).

### 10.5 Flowline Maintenance Program [112.9(d)(4)]

Civitas ensures that flowlines installed at the tank battery facilities and associated valves and equipment are compatible with the type of production fluids, their potential corrosivity, volume, pressure, and facility specific conditions expected in the operational environment. Inspection of conditions associated with buried flowlines includes observing the ground surface above the lines for evidence of leaks on a routine basis. Visual inspections are conducted on a regular schedule, and if evidence of a leak or corrosion damage is found, additional examination and corrective action is taken as indicated by the magnitude of the damage. Flowline inspection records, leak tests, and part replacements are kept on file at the main Civitas office for at least three years, and integrity test results are kept on file for ten years.

Included in the flowline maintenance program is the pressure testing of flowlines as required by COGCC Rules 1101, 1102 and 1104. Before operating a segment of flowline it shall be tested to maximum anticipated operating pressure. In conducting tests, Civitas shall ensure that reasonable precautions are taken to protect its employees and the general public. The testing may be conducted using well head pressure sources and well bore fluids, including natural gas. Such pressure tests shall be repeated once each calendar year to maximum anticipated operating pressure, and operators shall maintain records of such testing for Commission inspection for at least three (3) years. Flowline segments operating at less than fifteen (15) psi are excepted from pressure testing requirements.

The following table summarizes the components of the flowline inspection and maintenance program.

Equipment Component	Measures and Activities
Flowline Configuration	<ul style="list-style-type: none"> <li>• Flowlines are identified on facility maps to facilitate access and inspection by facility personnel. Flowline maps and field tags indicate the location of shutdown devices and valves that may be used to isolate portions of the flowlines.</li> <li>• The flowlines and appurtenance (valves, flange joints, support) can be visually observed for signs of leakage, deterioration, or other damage.</li> </ul>
Flowline Inspection	<ul style="list-style-type: none"> <li>• General conditions of aboveground flowlines are observed daily by facility operations personnel and inspected for leaks and corrosion as part of the quarterly inspections performed by the contract inspector, as discussed in Section 3.1.</li> <li>• The buried portions of the flowlines are wrapped and visually observed for damage and coating condition whenever they are repaired, replaced, or otherwise exposed.</li> <li>• Annually, flowlines are pressure tested as outlined in COGCC rule 1104 to ensure flowlines support maximum anticipated operating pressure.</li> <li>• Every five years, flowlines are tested using ultrasonic techniques outlined in API RP 12R1 or other appropriate methods to determine the remaining wall thickness and mechanical integrity.</li> </ul>
Flowline Maintenance	<ul style="list-style-type: none"> <li>• Any leak in a flowline or associated appurtenance is promptly addressed by isolating the damaged portion and repairing or replacing the faulty piece of equipment.</li> <li>• Once the flowline has been repaired, a mechanical integrity test is conducted on the flowline.</li> </ul>

## 11.0 ON-SHORE OIL DRILLING AND WORKOVER FACILITY

### 11.1 Mobile Drilling or Workover Equipment [112.10(b)]

Mobile drilling and workover equipment are located on lease pads that are constructed to prevent oil discharges from escaping the lease pad work area. The lease pads are graded to direct surface runoff to catchment basins (fluid retention areas) or containment berms designed to retain oil within the designated areas of the lease pad.

### 11.2 Catchment Basins or Diversion Structures [112.10(c)]

Catchment basins or diversion structures are provided to intercept and contain discharges of fuel, oil, or oily drilling fluids during drilling and workover activities and prevent discharges from escaping the lease pad area.

### 11.3 Blowout Prevention [112.10(d)]

Drilling and workover contractors provide blowout prevention (BOP) devices and well control systems before drilling below any casing string or during workover operations. The BOP assembly and well control systems are capable of controlling any well-head pressure that may be encountered while on the well. Contractors inspect and test BOPs on a regular schedule to ensure proper operation.

## 12.0 SUBSTANTIAL HARM [112.20(e)]

40 CFR Part 112.20 (f)(1), lists criteria under which “a facility could, because of its location, reasonably be expected to cause substantial harm to the environment by discharging oil into or on the navigable waters or adjoining shorelines...” if it meets any of the listed criteria. The tank battery facilities do not meet the listed criteria, including: (1) do not transfer oil over water; and (2) have total oil storage capacities of less than one million gallons. Civitas’ facilities do not require a Facility Response Plan because of the design of the tanks, maintaining no history of spills to navigable waters, maintaining no proximity to drinking water intakes and the facility monitoring of the well-trained operational personnel. The required Certification of Applicability of the Substantial Harm Criteria checklist, Part 112.20, Appendix C, Attachment C-II, has been completed for each facility and are maintained with the site specific SPCC Plan(s) in Appendix I.

## **APPENDIX A SPCC REVIEW LOG**



**SPILL PREVENTION CONTROL AND COUNTERMEASURE PLAN  
 REVIEW LOG FOR TECHNICAL AMENDMENTS:  
 Civitas Resources  
 La Salle, Colorado Tank Batteries**

In accordance with 40 CFR Part 112.5(b), a review and evaluation of this Spill Prevention Control and Countermeasure (SPCC) Plan will be conducted at least every five years. As a result of such a review and evaluation, the SPCC Plan will be amended within six months of completing said review and evaluation to include more effective and proven prevention and control technologies if: 1) such technologies will significantly reduce the likelihood of a spill event from the facility, and 2) if such technologies have been field-proven at the time of review. Any amendment to the site specific SPCC Plan(s) shall be certified by a Professional Engineer, in accordance with 40 CFR Part 112.3(d), within six months after a change in the facility design, construction, operation, or maintenance occurs which materially affects the facility's potential for the discharge of oil into or upon the navigable waters or the United States or adjoining shorelines (40 CFR Part 112.5(a)). Amendments to the plan shall be completed and implemented within six months of the facility changes.

- I have completed review and evaluation of the SPCC Plan for the Civitas Resources, La Salle, Colorado Tank Battery facilities and (will / will not ) amend the plan as a result.

<u>03/06/2021</u>	<u>Michael Berdeaux</u>	<u><i>Michael Berdeaux</i></u>	<u>Environmental Scientist, EIT</u>
Date	Name	Signature	Title

Amendment (if applicable) All major sections amended. 5-year review of all current regulations and addition of 2021 new COGCC regulations.

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Certifying Engineer Statement (if applicable)

This plan amendment was prepared using sound engineering practices. I have examined the facility and find this plan conforms to the guidelines and provisions of 40 CFR Part 112.

<u>03/09/2021</u>	<u>Emily Martinez</u>	<u><i>Emily Martinez</i></u>
Date	Name	Signature

- I have completed review and evaluation of the SPCC Plan for the Civitas Resources, La Salle, Colorado Tank Battery facilities and ( will / will not ) amend the plan as a result.

_____	_____	_____	_____
Date	Name	Signature	Title

Amendment (if applicable) \_\_\_\_\_

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Certifying Engineer Statement (if applicable)

This site specific plan amendment was prepared using sound engineering practices. I have examined the facility and find this plan conforms to the guidelines and provisions of 40 Part CFR 112.

_____	_____	_____
Date	Name	Signature



## **APPENDIX B**

### **OIL SPILL CONTINGENCY PLAN**

**APPENDIX C**  
**TANKER TRUCK LOADING STANDARD OPERATING PROCEDURES**  
**AND DOT REQUIREMENTS**

## STANDARD OPERATING PROCEDURES FOR TANKER TRUCK LOADING OF OIL AND PRODUCED WATER FROM TANKS

### Loading tanker trucks

1. Pull truck into the correct location.
2. Inspect the location for obstacles, note unusual situations and report the issue to the dispatcher.
3. Wear appropriate personal protective equipment including fire retardant clothing, hardhat, safety glasses, and steel-toed footwear.
4. Plan an escape route, park facing the exit.
5. Observe the tank battery area for leaks, spills, releases, or damaged equipment.
6. Gauge the tank.
7. Attach ground cable or bonding clamp to trailer.
8. Connect the appropriate loading hose to the appropriate unloading tank valve to the trailer.
9. Break the seal on the tank valve and record the seal number of the field ticket.
10. Disengage clutch and place vacuum pump in load position.
11. Adjust throttle to proper engine RPM.
12. Open the valve on the truck first.
13. Open the valve on the tank next.
14. Ensure that the vacuum on the truck is operating properly.
15. When trailer is loaded to appropriate level, slow engine speed.
16. Close valve to storage tank.
17. Loosen loading hose to allow enough air to drain the loading hose dry.
18. Ensure that drips from the hose drain into the spill containment vessel at the oil tank loading area.
19. Disconnect loading hose completely, close load valve, plug and fasten securely.
20. Shut off the pump.
21. Gage the tank again.
22. Record the amount of fluid withdrawn from the tank and document results on the field ticket.
23. Disconnect ground cable.
24. Promptly clean up any spilled oil.
25. Inspect lowermost drains and valves of the vehicle for discharges/leaks and ensure that they are tightened, adjusted, or replaced as needed to prevent oil discharges while vehicle is in transit.

The following U.S. Department of Transportation (DOT) Loading and Unloading of Transport Vehicles document is included to provide for further information in regards to DOT loading and unloading requirements.

**DOT LOADING AND UNLOADING OF TRANSPORT VEHICLES****173.30 Loading and unloading of transport vehicles.**

A person who loads or unloads hazardous materials into or from a transport vehicle or vessel shall comply with the applicable loading and unloading requirements of parts 174, 175, 176, and 177 of this subchapter.

[Amdt. 173-94, 41 FR 16064, Apr. 15, 1976]

**174.67 Tank car unloading.**

- a) In unloading tank cars, the following rules must be observed (see subpart F of this part for gases):
- 1) Unloading operations must be performed only by reliable persons properly instructed in unloading hazardous materials and made responsible for careful compliance with this part.
  - 2) Brakes must be set and wheels blocked on all cars being unloaded.
  - 3) Caution signs must be placed on the track or cars to give necessary warning to persons approaching the cars from the open end of a siding and must be left up until after the cars are unloaded and disconnected from the discharge connection. The signs must be of metal or other comparable material, at least 30 cm (12 inches) high by 38 cm (15 inches) wide in size, and bear the words, "STOP – Tank Car Connected", or "STOP – Men at Work", the word "STOP" being in letters at least 10 cm (3.9 inches) high and the other words in letters at least 5 cm (2 inches) high. The letters must be white on a blue background.
  - 4) Before a manhole cover or outlet valve cap is removed from a tank car, the car must be relieved of all interior pressure by cooling the tank with water or venting the tank by raising the safety valve or opening the dome vent at short intervals. However, if venting to relieve pressure will cause a dangerous amount of vapor to collect outside the car, venting and unloading must be deferred until the pressure is reduced by allowing the car to stand overnight or otherwise cooling the contents. These precautions are not necessary when the car is equipped with a manhole cover which hinges inward or with an inner manhole cover which does not have to be removed to unload the car, and when pressure is relieved by piping vapor into a condenser or storage tank.
- b) After the pressure is released, the seal must be broken and the manhole cover removed as follows:
- 1) Screw type. The cover must be loosened by placing a bar between the manhole cover lug and knob. After two complete turns, so that vent openings are exposed, the operation must be stopped, and if there is any sound of escaping vapor, the cover must be screwed down tightly and the interior pressure relieved as prescribed in paragraph (a)(4) of this section, before again attempting to remove the cover.
  - 2) Hinged and bolted type. All nuts must be unscrewed one complete turn, after which same precautions as prescribed for screw type cover must be observed.
  - 3) Interior type. All dirt and cinders must be carefully removed from around the cover before the yoke is unscrewed.
- c) When the car is unloaded through a bottom outlet valve, the manhole cover must be adjusted as follows:
- 1) Screw type. The cover must be put in place, but not entirely screwed down, so that air may enter the tank through the vent holes in threaded flange of the cover.
  - 2) Hinged and bolted type. A non-metallic block must be placed under one edge of the cover.
  - 3) Interior type. The screw must be tightened up in the yoke so that the cover is brought up within one-half inch of the closed position.
- d) When unloading through the bottom outlet of a car equipped with an interior manhole type cover, and in each case where unloading is done through the manhole (unless a special cover with a safety vent opening and a tight connection for the discharge outlet is used), the manhole must be protected by asbestos or metal covers against the entrance of sparks or other sources of ignition of vapor, or by being covered and surrounded with wet burlap or similar cloth material. The burlap or other cloth must be kept damp by the replacement or the application of water as needed.
- e) Seals or other substances must not be thrown into the tank and the contents may not be spilled over the car or tank.
- f) The valve rod handle or control in the dome must be operated several times to see that outlet valve in the bottom of tank is on its seat before valve cap is removed.
- g) The valve cap, or the reducer when a large outlet is to be used, must be removed with a suitable wrench after the set screws are loosened and a pail must be placed in position to catch any liquid that may be in the outlet chamber. If the valve cap or reducer does not unscrew easily, it may be tapped lightly with a mallet or wooden block in an upward direction. If leakage shows upon starting the removal, the cap or reducer may not be entirely unscrewed. Sufficient threads must be left engaged and sufficient

time allowed to permit controlled escape of any accumulation of liquid in the outlet chamber. If the leakage stops or the rate of leakage diminishes materially, the cap or reducer may be entirely removed. If the initial rate of leakage continues, further efforts must be made to seat the outlet valve (see paragraph (f) of this section). If this fails, the cap or reducer must be screwed up tight and the tank must be unloaded through the dome. If upon removal of the outlet cap the outlet chamber is found to be blocked with frozen liquid or any other matter, the cap must be replaced immediately and a careful examination must be made to determine whether the outlet casing has been cracked. If the obstruction is not frozen liquid, the car must be unloaded through the dome. If the obstruction is frozen liquid and no crack has been found in the outlet casting, the car may, if circumstances require it, be unloaded from the bottom by removing the cap and attaching unloading connections immediately. Before opening the valve inside the tank car, steam must be applied to the outside of the outlet casting or wrap casting with burlap or other rags and hot water must be applied to melt the frozen liquid.

- h) Unloading connections must be securely attached to unloading pipes on the dome or to the bottom discharge outlets before any discharge valves are opened.
- i) Tank cars may not be allowed to stand with unloading connections attached after unloading is completed. Throughout the entire period of unloading, and while car is connected to unloading device, the car must be attended by the unloader.
- j) If necessary to discontinue unloading a tank car for any reason, all unloading connections must be disconnected. All valves must first be tightly closed, and the closures of all other openings securely applied.
- k) As soon as a tank car is completely unloaded, all valves must be made tight, the unloading connections must be removed and all other closures made tight, except that heater coil inlet and outlet pipes must be left open for drainage. The manhole cover must be reapplied by the use of a bar or wrench, the outlet valve reducer and outlet valve cap replaced by the use of a wrench having a handle at least 0.9 m (3.0 feet) long, and the outlet valve cap plug, end plug, and all other closures of openings and of their prospective housings must be closed by the use of a suitable tool.
- l) Railroad defect cards may not be removed.
- m) If oil or gasoline has been spilled on the ground around connections, it must be covered with fresh, dry sand or dirt.
- n) All tools and implements used in connection with unloading must be kept free of oil, dirt, and grit.

(49 U.S.C. 1803, 1804, 1808; 49 CFR 1.53, app. A to part 1)

[Amdt. 174-26, 41 FR 16092, Apr. 15, 1976 as amended by Amdt. 174-26A, 41 FR 40685, Sept. 20, 1976; Amdt. 174-43, 48 FR 27699, June 16, 1983; Amdt. 174-68, 55 FR 52978, Dec 21, 1990; 56 FR 66280, Dec. 20, 1991]

(174C/Rail: Handling and Loading Preface/174.67 Tank car unloading., Heading)  
thru  
(174C/Rail: Handling and Loading Preface/174.67 Tank car unloading., 23)

## **177B Highway: Loading and Unloading**

### **Subpart B – Loading and Unloading**

**Note: For prohibited loading and storage of hazardous materials, see 177.848**

#### **177.834 General requirements**

- a) Packages secured in a vehicle. Any tank, barrel, drum, cylinder, or other packaging, not permanently attached to a motor vehicle, which contains any Class 3 (flammable liquid), Class 2 (gases), Class 8 (corrosive), Division 6.1 (poisonous), or Class 7 (radioactive) material must be secured against movement within the vehicle on which it is being transported, under conditions normally incident to transportation.
- b) No hazardous materials on pole trailers. No hazardous materials may be loaded into or on or transported in or on any pole trailer.
- c) No smoking while loading or unloading. Smoking on or about any motor vehicle while loading or unloading any Class 1 (explosive), Class 3 (flammable liquid), Class 4 (flammable solid), Class 5 (oxidizing), or Division 2.1 (flammable gas) materials is forbidden.

- d) Keep fire away, loading and unloading. Extreme care shall be taken in the loading or unloading of any Class 1 (explosive), Class 3 (flammable liquid), Class 4 (flammable solid), Class 5 (oxidizing), or Division 2.1 (flammable gas) materials into or from any motor vehicle to keep fire away and to prevent persons in the vicinity from smoking lighting matches, or carrying any flame or lighted cigar, pipe, or cigarette.
- e) Handbrake set while loading and unloading. No hazardous material shall be loaded into or on, or unloaded from, any motor vehicle unless the handbrake be securely set and all other reasonable precautions be taken to prevent motion of the motor vehicle during such loading or unloading process.
- f) Use of tools, loading and unloading. No tools which are likely to damage the effectiveness of the closure of any package or other container, or likely adversely to affect such package or container, shall be used for the loading or unloading of any Class 1 (explosive) material or other dangerous article.
- g) Prevent relative motion between containers. Containers of Class 1 (explosive), Class 3 (flammable liquid), Class 4 (flammable solid), Class 5 (oxidizing), Class 8 (corrosive), Class 2 (gases) and Division 6.1 (poisonous) materials, must be so braced as to prevent motion thereof relative to the vehicle while in transit. Containers having valves or other fittings must be so loaded that there will be the minimum likelihood of damage thereto during transportation.
- h) Precautions concerning containers in transit; fueling road units. Reasonable care should be taken to prevent undue rise in temperature of containers and their contents during transit. There must be no tampering with such container or the contents thereof nor any discharge of the contents of any container between point of origin and point of billed destination. Discharge of contents of any container, other than a cargo tank, must not be made prior to removal from the motor vehicle. Nothing contained in this paragraph shall be so construed as to prohibit the fueling of machinery or vehicles used in road construction or maintenance.
- i) Attendance requirements.
  - 1) Loading. A cargo tank must be attended by a qualified person at all times when it is being loaded. The person who is responsible for loading the cargo tank is also responsible for ensuring that it is so attended.
  - 2) Unloading. A motor carrier who transports hazardous materials by a cargo tank must ensure that the cargo tank is attended by a qualified person at all times during unloading. However, the carrier's obligation to ensure attendance during unloading ceases when:
    - (i) The carrier's obligation for transporting the materials is fulfilled;
    - (ii) The cargo tank has been placed upon the consignee's premises; and
    - (iii) The motive power has been removed from the cargo tank and removed from the premises.
  - 3) A person "attends" the loading or unloading of a cargo tank if, throughout the process, he is awake, has an unobstructed view of the cargo tank, and is within 7.62 meters (25 feet) of the cargo tank.
  - 4) A person is "qualified" if he has been made aware of the nature of the hazardous material which is to be loaded or unloaded, he has been instructed on the procedures to be followed in emergencies, he is authorized to move the cargo tank, and he has the means to do so.
  - 5) A delivery hose, when attached to the cargo tank, is considered part of the vehicle.
- j) Prohibited loading combinations. In any single driven motor vehicle or in any single unit of a combination of motor vehicles, hazardous materials shall not be loaded together if prohibited by loading and storage chart, *177.848*. This section shall not be so construed as to forbid the carrying of materials essential to safe operation of motor vehicles. (See Motor Carrier Safety Regulations part 393 of this title.)
- k) [Reserved]
- l) Use of cargo heaters when transporting certain hazardous material. Transportation includes loading, carrying, and unloading.
  - 1) When transporting Class 1 (explosive) materials. A motor vehicle equipped with a cargo heater of any type may transport Class 1 (explosive) materials only if the cargo heater is rendered inoperable by: (i) Draining or removing the cargo heater fuel tank; and (ii) disconnecting the heater's power source.
  - 2) When transporting certain flammable material –
    - (i) Use of combustion cargo heaters. A motor vehicle equipped with a combustion cargo heater may be used to transport Class 3 (flammable liquid) or Division 2.1 (flammable gas) materials only if each of the following requirements are met:
      - A) It is a catalytic heater.
      - B) The heater's surface temperature cannot exceed 54 °C (130 °F) – either on a thermostatically controlled heater or on a heater without thermostatic control when the outside or ambient temperature is 16 °C (61 °F) or less.
      - C) The heater is not ignited in a loaded vehicle.
      - D) There is no flame, either on the catalyst or anywhere in the heater.

- E) The manufacturer has certified that the heater meets the requirements under paragraph (l)(2)(i) of this section by permanently marking the heater “MEETS DOT REQUIREMENTS FOR CATALYTIC HEATERS USED WITH FLAMMABLE LIQUID AND GAS.”
- F) The heater is also marked “DO NOT LOAD INTO OR USE IN CARGO COMPARTMENTS CONTAINING FLAMMABLE LIQUID OR GAS IF FLAME IS VISIBLE ON CATALYST OR IN HEATER.”
- G) Heater requirements under 393.77 of this title are complied with.
- (ii) Effective date for combustion heater requirements. The requirements under paragraph (l)(2)(i) of this section govern as follows:
  - A) Use of a heater manufactured after November 14, 1975, is governed by every requirement under (l)(2)(i) of this section;
  - B) Use of a heater manufactured before November 14, 1975, is governed only by the requirements under (l)(2)(i) (A), (C), (D), (F) and (G) of this section until October 1, 1976; and
  - C) Use of any heater after September 30, 1976, is governed by every requirement under paragraph (l)(2)(i) of this section.
- (iii) Restrictions on automatic cargo-space heating temperature control devices. Restrictions on these devices have two dimensions: Restrictions upon use and restrictions which apply when the device must not be used.
  - A) Use restrictions. An automatic cargo-space-heating temperature control device may be used when transporting Class 3 (flammable liquid) or Division 2.1 (flammable gas) materials only if each of the following requirements is met:
    - 1) Electrical apparatus in the cargo compartment is non-sparking or explosion proof.
    - 2) There is no combustion apparatus in the cargo compartment.
    - 3) There is no connection for return of air from the cargo compartment to the combustion apparatus.
    - 4) The heating system will not heat any part of the cargo to more than 54 °C (129 °F).
    - 5) Heater requirements under 393.77 of this title are complied with.
  - B) Protection against use. Class 3 (flammable liquid) or Division 2.1 (flammable gas) materials may be transported by a vehicle, which is equipped with an automatic cargo-space-heating temperature control device that does not meet each requirement of paragraph (l)(2)(iii)(A) of this section, only if the device is first rendered inoperable, as follows:
    - 1) Each cargo heater fuel tank, if other than LPG, must be emptied or removed.
    - 2) Each LPG fuel tank for automatic temperature control equipment must have its discharge valve closed and its fuel feed line disconnected.
- (m) Tanks constructed and maintained in compliance with Spec.106A or 110A (Secs. 179.300, 179.301 of this subchapter) that are authorized for the shipment of hazardous materials by highway in part 173 of this subchapter must be carried in accordance with the following requirements:
  - 1) Tanks must be securely chocked or clamped on vehicles to prevent any shifting.
  - 2) Equipment suitable for handling a tank must be provided at any point where a tank is to be loaded upon or removed from a vehicle.
  - 3) No more than two cargo carrying vehicles may be in the same combination of vehicles.
  - 4) Compliance with Secs. 174.200 and 171.204 of this subchapter for combination rail freight, highway shipments and for trailer-on-flat-car service is required.
- (n) Specification 56, 57, IM 101, and IM 102 portable tanks, when loaded, may not be stacked on each other nor placed under other freight during transportation by motor vehicle.

[29 FR 18795, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967]

**Editorial Note:** For Federal Register citations affecting 177.834, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

**177B Highway: Loading and Unloading****Subpart B – Loading and Unloading**

**Note:** For prohibited loading and storage of hazardous materials, see *177.848*

**177.837 Class 3 (flammable liquid) materials**

(See also 177.834 (a) to (j).)

- a) Engine stopped. Unless the engine of the motor vehicle is to be used for the operation of a pump, no Class 3 (flammable liquid) material shall be loaded into, or on, or unloaded from any motor vehicle while the engine is running.
- b) Bonding and grounding containers other than cargo tanks prior to and during transfer of lading. For containers which are not in metallic contact with each other, either metallic bonds or ground conductors shall be provided for the neutralization of possible static charges prior to and during transfers of Class 3 (flammable liquid) materials between such containers. Such bonding shall be made by first connecting an electric conductor to the container to be filled and subsequently connecting the conductor to the container from which the liquid is to come, and not in any other order. To provide against ignition of vapors by discharge of static electricity, the latter connection shall be made at a point well removed from the opening from which the Class 3 (flammable liquid) material is to be discharged.
- c) Bonding and grounding cargo tanks before and during transfer of lading.
  - 1) When a cargo tank is loaded through an open filling hole, one end of a bond wire shall be connected to the stationary system piping or integrally connected steel framing, and the other end to the shell of the cargo tank to provide a continuous electrical connection. (If bonding is to the framing, it is essential that piping and framing be electrically interconnected.) This connection must be made before any filling hole is opened, and must remain in place until after the last filling hole has been closed. Additional bond wires are not needed around All-Metal flexible or swivel joints, but are required for nonmetallic flexible connections in the stationary system piping. When a cargo tank is unloaded by a suction-piping system through an open filling hole of the cargo tank, electrical continuity shall be maintained from cargo tank to receiving tank.
  - 2) When a cargo tank is loaded or unloaded through a vapor-tight (not open hole) top or bottom connection, so that there is no release of vapor at a point where a spark could occur, bonding or grounding is not required. Contact of the closed connection must be made before flow starts and must not be broken until after the flow is completed.
  - 3) Bonding or grounding is not required when a cargo tank is unloaded through a nonvapor-tight connection into a stationary tank provided the metallic filling connection is maintained in contact with the filling hole.
  - d) Manholes and valves closed. A person shall not drive a cargo tanks and motor carrier shall not require or permit a person to drive a tank motor vehicle containing a Class 3 (flammable liquid) material (regardless of quantity) unless:
    - 1) All manhole closures on the cargo tank are closed and secured; and
    - 2) All valves and other closures in liquid discharge systems are closed and free of leaks.

[29 FR 18795, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967]

**Editorial Note:** For Federal Register citations affecting *177.837*, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

**APPENDIX D**  
**EMERGENCY SPILL RESPONSE CONTACTS**  
**AND PROCEDURES**

## **EMERGENCY SPILL RESPONSE CONTACTS**

In the event of leakage or spills, the following individuals and/or companies are to be contacted:

Primary On-Site Contact                      Mr. Nathan Bennett                      (570) 932-0776 cell phone  
Civitas Resources  
Denver, Colorado

Alternate On-Site Contact:                      Ivan Steinke                      (970) 534-6033 office  
Civitas Resources                      (970) 381-5114 cell phone  
Denver, Colorado

### Local Emergency Contacts Are:

- La Salle Fire Protection District – 911
- Apex Companies. - spill response/cleanup consultant/contractor – (303) 487-1020
- Tasman Geosciences, Inc. - spill response/cleanup consultant/contractor – (720) 409-8791
- AG Wassenaar, Inc. – spill response/cleanup consultant/contractor – (877) 696-0826
- Custom Environmental Services - large spill cleanup contractor – (800) 310-2445
- Laser Oilfield Serves - heavy equipment and excavation services – (970) 397-1976
- BWI - heavy equipment and excavation services – (970) 571-1809
- ATP – heavy equipment and excavation services – (970) 373-8640
- Energes – vacuum truck services – (970) 415-1512
- Brand X – vacuum & hydrovac truck services – (303) 514-0788
- Northern Plains – vacuum & hydrovac truck services (303) 654-8449
- M&M Excavation – heavy equipment – (970) 352-5220

If an oil or produced water release occurs and is greater than 42 gallons (1 BBL), it must be reported to the following regulatory agency within 24 hours:

- Colorado Oil and Gas Conservation Commission (COGCC),  
Environmental Release/Incident Report Hotline:                      1-(877) 518-5608  
Denver, Colorado

After hours or if from an oil container not regulated by COGCC contact:

- Colorado Department of Public Health and Environment:                      1-(877) 518-5608 (24-hour phone)  
Denver, Colorado

If the release reaches or threatens to reach navigable water, immediately contact:

- National Response Center: 1-(800) 424-8802 (24-hour phone)  
Washington, DC

If single discharge to navigable water of more than 1,000 gallons or two discharges more than 42 gallons within any twelve month period:

- EPA Region VIII Administrator: 1-(800) 424-8802 (24-hour phone)

## **SPILL RESPONSE PROCEDURES**

- After identifying and locating a spill, containment must be initiated as soon as possible to prevent undue spreading of released product. The first action should be the elimination of any additional spillage by shutting off a pump or valve, placing a cap or a plastic or epoxy patch over the leak, putting a temporary plug in a puncture or tear, righting an overturned container, or other appropriate action.
- Spill response materials maintained within field service vehicles will be used to contain and clean up spilled product. Place portable dike materials or erect berms with granular absorbent or earthen material along the leading edge of the spill to prevent spreading. Apply absorbent pads or granular absorbent to the spilled product for clean up.
- Using the Emergency Contact List for reference:
  1. Alert and notify on-site supervisory personnel.
  2. If the spill exceeds the capabilities of on-site facility personnel (ie: spill spreads beyond the immediate spill area, enters surface water, requires special training or equipment, poses a danger of fire or explosion), immediately contact the local fire authority by calling 911.
  3. If the spill enters surface water, contact the National Response Center at (800) 424-8802.
- Materials recovered during cleanup must be placed in appropriate containers (such as DOT rated drums) or stockpiled using an impermeable liner and cover (such as polyethylene sheeting) to prevent cross-contamination with unexposed media prior to disposal.

**APPENDIX E**  
**SPILL DOCUMENTATION/REPORTING FORM**  
**AND**  
**FORM 19 COGCC SPILL/RELEASE REPORT FORM**

<b>SPILL RESPONSE NOTIFICATION FORM</b>						
Fill out this form as completely as possible prior to calling regulatory agencies. Refer to the Emergency Contact List for guidance on regulatory agencies to notify and telephone numbers.						
RELEASE INFORMATION						
Notification Person Name:			Date:		Time:	
Agency Being Notified:				Phone Number:		
Facility Name:						
Address:			City:		State:	Zip Code:
Telephone Number:			Fax Number:			
Owner/Operator Name:						
Address:			City:		State:	Zip Code:
Primary Contact Name / Position:						
Work Phone:			Cell Phone:		Other (24-Hour):	
Location of Release:	Address:					
Section:		Township:		Range:		County:
Latitude: _____ Degrees _____ Minutes _____ Seconds			Longitude: _____ Degrees _____ Minutes _____ Seconds			
Date/Time of Release:			Date/Time of Discovery:			
Type of Oil Released:			Quantity Released:		Duration of Release:	
Describe Source and Cause of Release:						
Actions Taken to Stop, Contain, Remove and Mitigate Impacts of the Release:						
Impacted Media: (Check All That Apply)	Soil:	Water:	Air:	Stormwater Sewer:		Sanitary Sewer:
	Dike/Berm:		Oil-Water Separator:		Other:	
Did Oil Reach a Waterway: Yes/No		Quantity Released to Waterway:			Waterway Name:	
Number of Injuries:		Number of Deaths:		Was Evacuation Required: Yes / No		
Environmental Impacts:						
Was There Damage: Yes / No					Damage Cost: \$	
Notification Person:						
Work Phone:			Cell Phone		Other (24-Hour)	
Any additional information about the incident that was not recorded elsewhere:						
Local Agency Notified:						
State Agency Contacted:						
Federal Agency Notified:						
State/Local Agency On-Scene:						
Other:						

**APPENDIX F**  
**INSPECTION AND RECORDING FORM**

**APPENDIX G**  
**SPCC TRAINING SIGNOFF SHEET**



**APPENDIX H**  
**DIKE WATER DRAINAGE LOG**



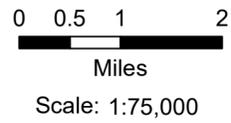
## APPENDIX I SITE SPECIFIC SPCC PLANS

- **Facility Diagrams;**
- **Table A-1, Table A-2;**
- **Site Vicinity Map(s);**
- **Facility Specific P.E. Certification Page(s);**
- **Facility Specific Certifications of Substantial Harm Determination**

**APPENDIX J**  
**LA SALLE FIRE PROTECTION DISTRICT DRIVING DIRECTIONS MAP**

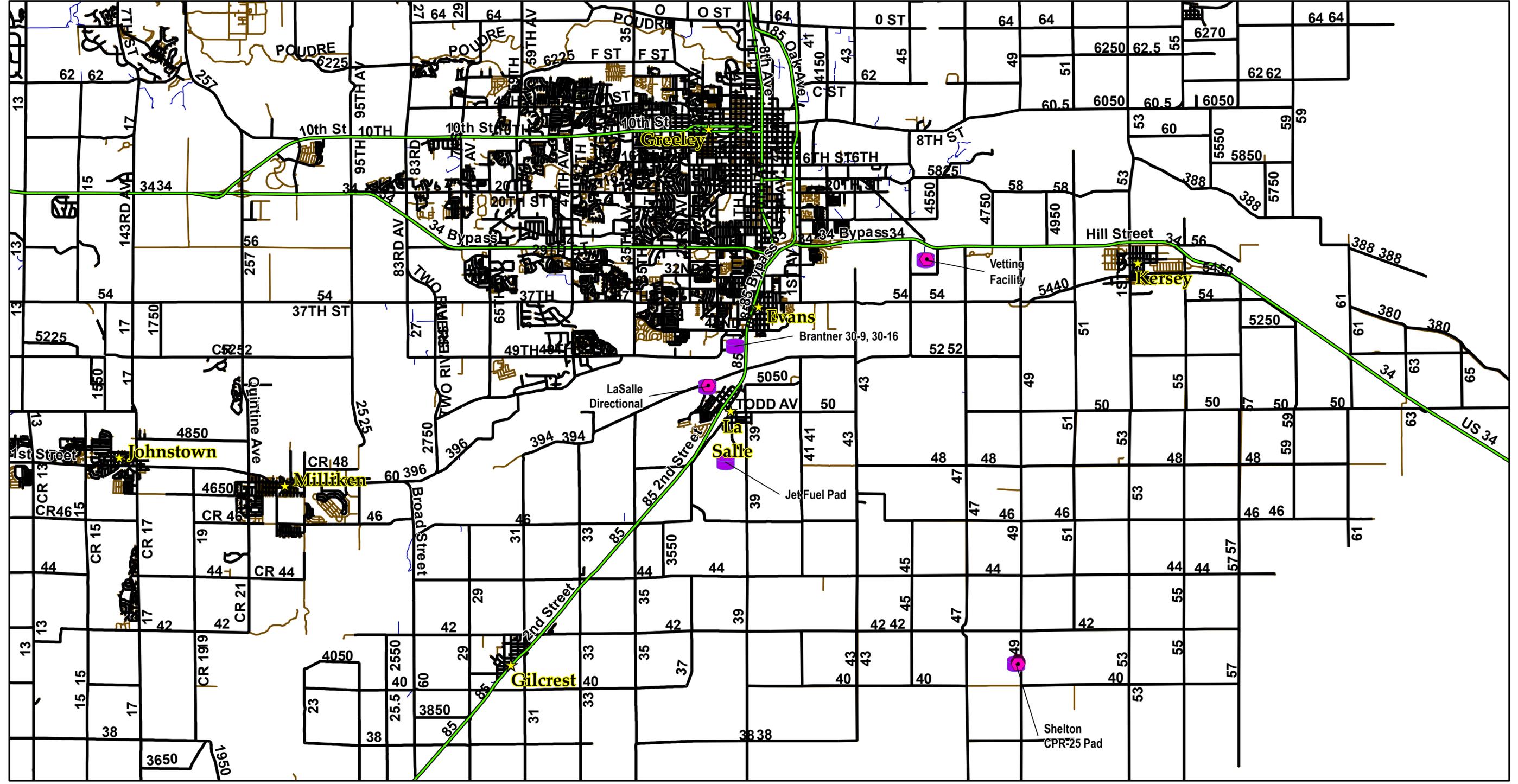
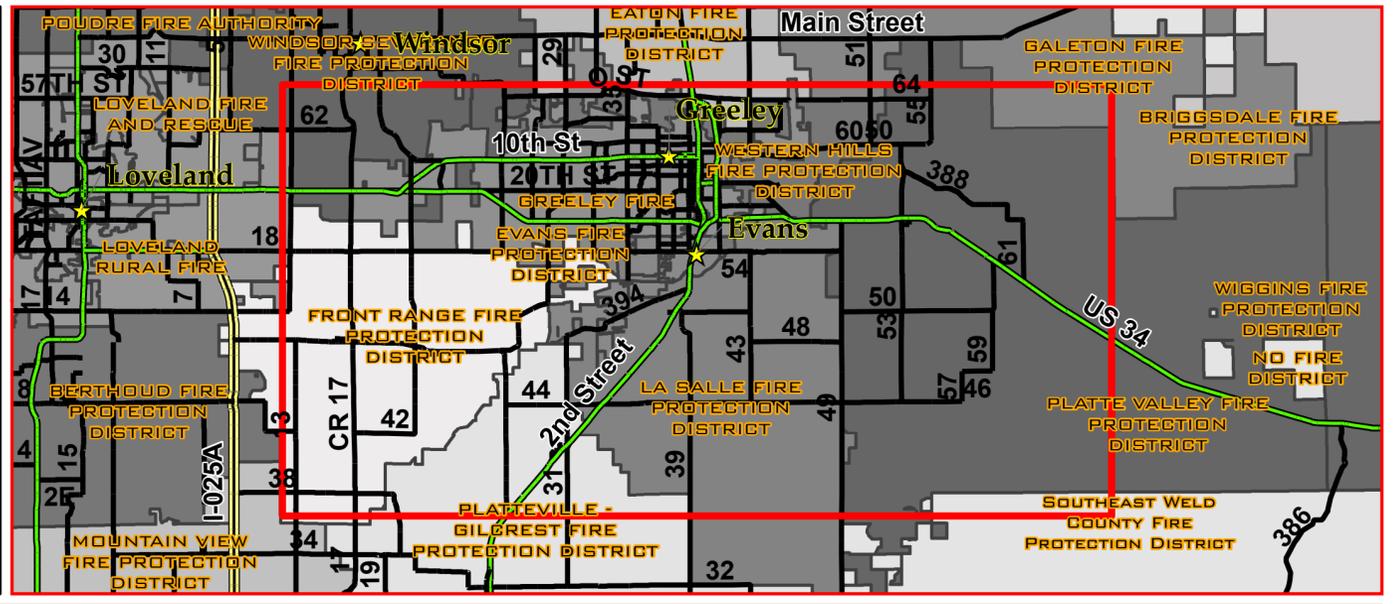


# SPCC Plan Area La Salle Fire Protection District

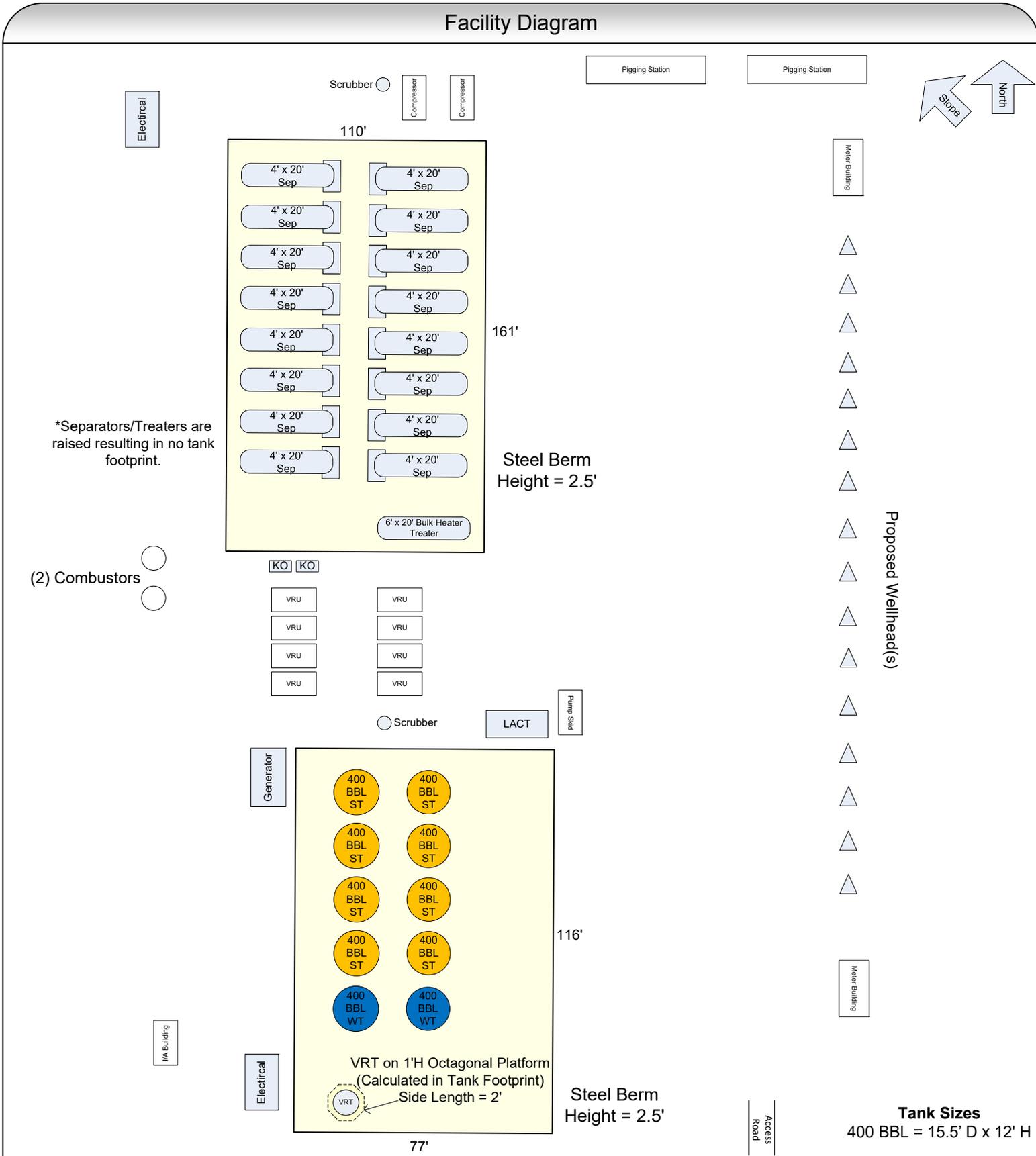


Prepared by:  
  
Date: 2/15/2022  
Editor: nwilson

- Tank Battery
- Well Head
- City
- Interstate
- Principal Arterial
- Collector
- County Roads
- Local Roads



# Facility Diagram



\*Separators/Treaters are raised resulting in no tank footprint.

Proposed Wellhead(s)

**Tank Sizes**  
400 BBL = 15.5' D x 12' H

## Civitas Resources

Shelton CPR-25 Pad  
NE ¼ SE ¼ Sec. 25 T4N R65W  
Lat: 40.28179722, Long: -104.60410556  
Weld County, Colorado

- = Crude Oil Tank
- = Valve
- = Surface Flowline
- - - = Underground Flowline
- = Prod. Water Container
- NSCT = Non SPCC Applicable Chemical Tank

\*This is a preliminary plan that will be finalized per EPA and state requirements after the PE or an agent of the PE visually inspects the constructed location.

PREPARED FOR:



PREPARED BY:



Diagram Not To Scale  
Flowline Locations Representative Only

**Table A-1  
Oil Storage Equipment & Secondary Containment**

Production Facility: Shelton CPR-25 Pad Oil Transport (Truck or Pipeline): Truck

**Tank Information**

Source	Tank Material	Capacity of Source (bbls)	Tank Contents	Secondary Containment
2 x 400 bbls Tank(s)	Steel	800	Produced Water	Tank Berm
8 x 400 bbls Tank(s)	Steel	3200	Crude Oil	Tank Berm
16 x 44.8 bbls Heater Treater/Separator w/Scrubber	Steel	716.8	Crude Oil/Prod. Water	Separator Berm
1 x 100.3 bbls Heater Treater/Separator w/Scrubber	Steel	100.3	Crude Oil/Prod. Water	Separator Berm

<b>100 Yr. Precip. Event<sup>4</sup></b> (in)
5

**Secondary Containment Calculations**

Berm Name	Berm Height (ft)	Berm Length (ft)	Berm Width (ft)	Berm Capacity (ft <sup>3</sup> )	Tank Diameter <sup>5</sup> (ft)	# of Tanks Displacing <sup>6</sup>
Tank Berm	2.5	77	116	22330	15.5	9
Separator Berm	2.5	110	161	44275		

Berm Name	Tank Footprint <sup>1</sup> (ft <sup>3</sup> )	Net Volume (gal.)	Precipitation Event <sup>3</sup> (bbls)	Net Volume <sup>2</sup> (bbls)	Largest Tank (bbls)	Containment Volume Ratio to Largest Tank (%)	Excess Capacity (bbls)
Tank Berm	4294	134919	663	2550	400	637	2150
Separator Berm	0	331199	1314	6571.4	100.3	6552	6471

Note<sup>1</sup> Tank Footprint for Circular Tanks or Pits = 3.1416 \* R<sup>2</sup> \* Height (Berm Height or Pit height if less than berm height)

Note<sup>1</sup> Tank Footprint for Elliptical Pits= 3.1416 \* (Major Axis Radius\*Minor Axis Radius) \* (Berm height or Pit height if less than berm height)

Note<sup>1</sup> Tank Footprint for Rectangular Pits=Length \* Width \* Height (Berm height or Pit height if less than berm height)

Note<sup>2</sup> Net Volume (bbls) = (Length (ft) \* Width (ft) \*Height (ft)) - Tank Footprint (ft<sup>3</sup>) (As applicable) \* (7.4805(gal/cu.ft) / 42 gal/bbl) - Precipitation Event (bbls)

Note<sup>3</sup> Precipitation Event (bbls) = (Length (ft) \* Width (ft) ) \* (Precip. Event (inch.) / 12 inch.) \*7.4805(gal/cu.ft) / 42 gal/bbl

Note<sup>4</sup> Precipitation is based on a 24 hour 100 year rain event.

Note<sup>5</sup> If multiple size tanks are within the same secondary containment, the diameter (excluding the largest tank) is used. For tanks of varying sizes, then type "mult." and input Tank Footprint manually.

Note<sup>6</sup> # of Tanks Displacing = (Total Number of Tanks - Largest Tank) (Tank total is reduced by 1 if multiple tanks in same secondary containment)

Note: Flow through process vessels (including separators/heater treaters) are not required to have sized secondary containment and therefore may not be included in the secondary containment calculation section.

**Table A-2  
Discharge Prediction and Direction of Flow**

Production Facility: Shelton CPR-25 Pad

Quantity	Size (bbl)	Equipment Type	Contents	Type of Failure	Maximum Volume (bbls)	Maximum Discharge Rate (bbls/min)	Direction of Flow	Secondary Containment Type	Secondary Containment Name
2	400	Tank(s)	Produced Water	Rupture due to lightning strike, seam failure, leak at manway, valves	400	400	Northwest	Steel Dike	Tank Berm
8	400	Tank(s)	Crude Oil	Rupture due to lightning strike, seam failure, leak at manway, valves	400	400	Northwest	Steel Dike	Tank Berm
16	44.8	Heater Treater/Separator w/Scrubber	Crude Oil/Prod. Water	Rupture due to lightning strike, seam failure, valves, 24 hour Overflow	Daily Production	Daily Production	Northwest	Steel Dike	Separator Berm
1	100.3	Heater Treater/Separator w/Scrubber	Crude Oil/Prod. Water	Rupture due to lightning strike, seam failure, valves, 24 hour Overflow	Daily Production	Daily Production	Northwest	Steel Dike	Separator Berm
NA	NA	Flow lines	Well Stream	Rupture/failure due to corrosion, 24 hour production	Daily Production	Daily Production	Northwest	OSCP*/Earthen Berm	NA
NA	NA	Valves/ Flanges	Well Stream	Pinhole leak or leak at connection	0.1	0.001	Northwest	OSCP*/Earthen Berm	NA
NA	NA	Truck Loading	Crude Oil/Prod. Water	Overtopping while loading, Truck failure, valve leak	250	250	Northwest	OSCP*	NA

\* OSCP - Oil Spill Contingency Plan

The nearest intermittent or perennial stream/water body is:

**1 Miles to the Northwest This water body is shown on the Site Vicinity Map and is known as Gilmore Ditch.**

**COGCC Rule 400 and 600 Series Compliance  
Site Specific Mitigation Measures**

Production Facility: Shelton CPR-25 Pad

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Facility is not New or Significantly Modified, does not fall within a Designated Setback Area or Floodplain Zone and has no additional requirements.

Facility is New or Significantly Modified.<sup>a</sup>

- Sufficiently impervious to contain any spilled or released material before cleanup occurs.
- No potential ignition sources inside secondary containment area.
- Berm constructed of steel, or other engineered material, designed and installed to prevent leakage and resist degradation from erosion or routine operation.
- Berm constructed with a synthetic or engineered liner that contains all primary containment vessels and flowlines, is attached to the secondary containment and any equipment penetrating the liner has a sealed connection.
- Berm provides containment for 150% of the largest single tank.  
150% of Largest Single Tank =  bbls  
Actual Tank Berm Net Volume =  bbls
- Tertiary containment installed at facilities located within 500 ft. and upgradient of a surface water body or wetland.

Facility falls under one or more Designated Setback Areas.<sup>b</sup> Check all that apply:

Facility is located within Floodplain Zone.<sup>f</sup>

Facility has additional requirements.<sup>g</sup> Check all that apply:

<sup>a</sup>Production Facility has new or significantly modified crude oil, condensate and produced water storage tanks after January 15, 2021 (Rule 603.o).

<sup>b</sup>Well or Production Facility proposed to be located within a designated setback location for which a Form 2 or 2A was submitted between August 1, 2013 and January 15, 2021 (2016, Rule 604).

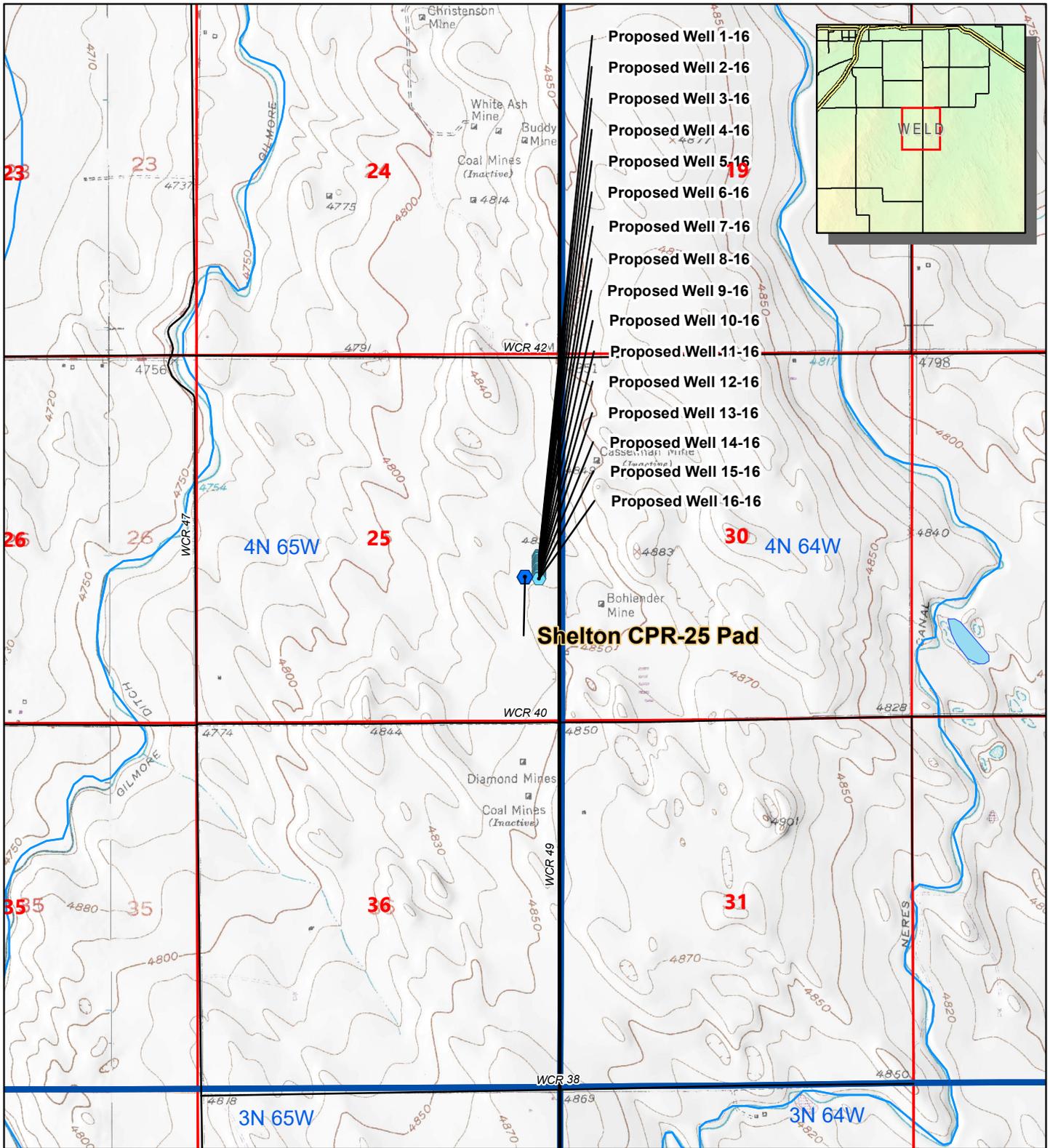
<sup>c</sup>Well or Production Facility located within 1,000 ft. of a Building Unit for which a Form 2 or 2A was submitted between August 1, 2013 and January 15, 2021 (2016, Rule 604.a.(2)).

<sup>d</sup>Well or Production Facility located within 500 ft. of a Building Unit for which a Form 2 or 2A was submitted between August 1, 2013 and January 15, 2021 (2016, Rule 604.a.(1)).

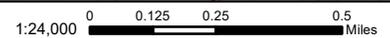
<sup>e</sup>Well or Production Facility located within 1,000 ft. of a Building Unit plus density criteria for which a Form 2 or 2A was submitted between August 1, 2013 and January 15, 2021 (2016, 100-Series Rules).

<sup>f</sup>Oil and Gas Location and Wells located within a Floodplain Zone (Rule 421 and 607).

<sup>g</sup>Additional SPCC-applicable requirements found within associated approved Form 2A.



Coordinate System: NAD 1983 UTM Zone 13N



<ul style="list-style-type: none"> <li> Tank Battery/Pad</li> <li> Associated Well(s)</li> <li> City</li> <li> Highways</li> <li> Major Roads</li> </ul>	<ul style="list-style-type: none"> <li> County</li> <li> Township</li> <li> Section</li> </ul>	<p><b>SPCC Facility Map</b> <b>Shelton CPR-25 Pad</b></p>	<p>Prepared by:  Edited By: nwilson</p>
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**Facility Specific**  
**Professional Engineer Certification - 40 CFR 112.3(d)**  
**Facility Name: Shelton CPR-25 Pad**

The undersigned Registered Professional Engineer is familiar with the requirements of Part 112 of Title 40 of the *Code of Federal Regulations* (40 CFR part 112) and all of its subsequent revisions and amendments and has visited and examined the facility, or has supervised examination of the facility by appropriately qualified personnel. The undersigned Registered Professional Engineer attests that this SPCC Plan has been prepared in accordance with good engineering practice, including consideration of applicable industry standards and that the requirements of 40 CFR part 112 including procedures for required inspections and testing have been established; and that this plan is adequate for the facility.

This certification in no way relieves the owner/operator of the facility of their duty to prepare and fully implement this SPCC Plan in accordance with the requirements of 40 CFR Part 112. The owner/operator of this facility is responsible to ensure secondary containment and other spill prevention, countermeasures and controls are implemented as described in this plan.

*Emily Martinez*

Signature

2/17/22

Date

Seal Below

Emily Martinez, P.E.  
Professional Engineer

PE. 56304  
Registration Number

CO  
Issuing State



