STORMWATER MANAGEMENT PLAN

CRESTONE PEAK RESOURCES **Operating** LLC
LUSSING TRUST 4-64 19-20 NORTH PAD PROJECT

Location:
LOT 1 OF SECTION 19, TOWNSHIP 4 SOUTH, RANGE 64 WEST, 6TH P.M.
ARAPAHOE COUNTY, COLORADO

Prepared For:
Crestone Peak Resources **Operating** LLC
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I. INTRODUCTION

This Stormwater Management Plan (SWMP) is being prepared for the Crestone Peak Resources Operating LLC's (Crestone) Lussing Trust 4-64 19-20 North Pad project. The project consists of the development of infrastructure to support the drilling and production of 7 oil and gas wells located in Arapahoe County.

The purpose of this report is to develop a site specific SWMP using Stormwater Best Management Practices (BMPs) to control stormwater runoff in a manner that minimizes erosion, transport of sediment offsite, and site degradation. This SWMP shall comply with the Colorado Energy & Carbon Management Commission (ECMC) Rule 1002.f and Rule 304.c.(15) and will accompany Form 2A.

This report will discuss the SWMP impacts that will occur during the different development phases (Pre-Production and Production) of the project and detail the various stormwater BMPs that will be used to minimize erosion, transport of sediment offsite, and site degradation. This SWMP is intended to be a living document which should be updated routinely as site conditions change.

II. GENERAL SITE & PROJECT DESCRIPTION

A. SITE LOCATION AND EXISTING CONDITIONS

The Lussing Trust 4-64 19-20 North Pad is located on a 657-acre parcel of land owned by Watkins Road Association in Lot 1 of Section 19, Township 4 South, Range 64 West, 6th P.M. The Site is located approximately 0.4 miles north and 0.1 mile east of the intersection between Watkins Rd and Jewell Ave. The parcel is zoned agricultural and the existing land-use is grazing/dry farm land agricultural. A vicinity map and location photos have been included with this plan in Appendix A.

Generally, the site slopes approximately 1% to 2% from the southwest to the northeast. The nearest water feature is an unnamed drainage approximately 0.18 miles to the east. The unnamed drainage is tributary to Coyote Run which is approximately 0.23 miles to the northeast from the site. The site is located within floodplain X. A hydrology map has been included with this plan in Appendix B.

According to the NRCS Web Soil Survey, the site's soils consist of approximately 13.3% Buick loam, 3 to 5 percent slopes and 86.7% Fondis silt loam, 1 to 3 percent slopes. The Buick loam and Fondis silt loam consists of soils having a slow infiltration rate and a low runoff potential (hydraulic soil group C), with a K soil erosion factor of 0.38. The K soil erosion factor is an index ranging from 0.02 to 0.69, which quantifies the relative susceptibility of the soil to sheet and rill erosion. The following table is a summary of K soil erosion factors with typical soil descriptions.

Table 1 – Summary of K Soil Erosion Factors with Typical Soil Descriptions

K Factor	Types of Soil	Susceptibility to Erosion
0.02 to 0.25	Sands, Clays, Sandy Clays	Low
0.25 to 0.40	Loams, Sandy Loams, Sandy Silts	Moderate
0.40 to 0.64	Silts	High

An NRCS Web Soil Survey Report for this site is included with this plan in Appendix C.

B. PROPOSED DEVELOPMENT

Proposed development will consist of constructing a new well pad and a new access road. The well pad will have two construction phases, a Pre-Production Phase and a Production Phase. The Pre-Production Phase well pad will have a larger disturbance area to facilitate drilling and completions operations. The Production Phase well pad will have a smaller disturbance area to facilitate gathering and production operations. The smaller disturbance area is intended to minimize the needed surface disturbance. The Pre-Production and Production construction plans have been included with this plan in Appendix D. The following table is a summary of disturbance areas below:

Table 2 – Disturbance Areas

Project Area	Pre-Production Acres	Production Acres
Well Pad Working Pad Surface	5.57*	3.88*
Well Pad Cut/Fill Slopes, Ditches, & Berms	4.96*	3.16*
Total Well Pad Disturbance	11.63	7.04
Total Access Road	1.10	1.10
Total	12.73	8.14

**Note: Area is already included in the Total Well Pad Disturbance*

It is anticipated that heavy construction equipment will construct the road and working pad surfaces of this project. Construction of the road and both the Pre-Production and Production Working Pad Surfaces will consist of:

- Clearing and grubbing the vegetation
- Stripping and stockpiling the topsoil
- Grading the working pad area, stormwater diversion ditches, berms, and sediment control structures
- Installing stormwater detention structures
- Installing construction BMPs
- Installing stormwater BMPs

Topsoil piles and excess subsurface soil piles (if any) will be separated and protected from erosion, offsite sediment transport, and degradation.

Further site development will consist of:

- Mobilization of Pre-Production equipment
- Developing wells
- Installing Production equipment

Site development can vary depending on the site-specific conditions.

C. SITE SPECIFIC CONSTRUCTION REQUIREMENT

Prior to commencement of any disturbance, perimeter BMPs will be installed to protect downstream lands from sediment pollution. Once the working area is secure, the access road and well pad will be stripped of topsoil to a depth consistent with Topsoil Management Plan. Topsoil will be separated and stockpiled. Then the site will be graded, redistributing material across the site between cut and fill areas to reach final pad subgrade elevation. During this process, fill areas will be properly compacted to ensure the working pad surface integrity and stabilization. Water will be used to assist with compaction as well as minimize dust migration as described in

the Dust Mitigation Plan. All excess material, if any, will be separated and stockpiled. The contractor will place a capping material (roadbase) on the pad surface and road to a compacted depth as showing on the construction plans to stabilize the road and location. All, stockpiles, cut/fill slopes, ditches, and berms will be stabilized with drill seed and mulch or similar equivalents and have stormwater BMPs installed.

D. DISTURBANCE REDUCTION & RECLAMATION

1. Disturbance Reduction and Interim Reclamation

Once all drilling and completion activities are complete, the working pad surface size will be reduced to minimize the site disturbance during the Production Phase. Enough working pad surface must remain to ensure a safe working environment for continued oil and gas gathering and production operations. All areas needed for ongoing operations will be stabilized for the long-term life of the production pad. All areas not needed will be reclaimed as described below, and in accordance with the Interim Reclamation Plan.

2. Reclamation

Developed areas to be reclaimed will be stripped of topsoil, cross-ripped to 18" or bedrock (compaction alleviation), and graded to pre-development conditions. Surface treatment will consist of reapplying the topsoil and seeding and mulching. Reclaimed areas will be restored to as nearly as practicable to the site's pre-developed condition. The reclaimed areas will be monitored until final stabilization is achieved. All reclamation shall be completed within three (3) months on crop land and twelve (12) months on non-crop land.

Operator will seed with the Loamy Plains Seed Mix or a similar seed mix specified by the surface owner. Seeding will be applied at the optimum seeding methodology using the Habitat Seeding Calculator. The seed mix and application rates are in Appendix E.

Successful reclamation of the well site and access road will be considered completed when:

a. All construction activities are complete
b. All working pad surface areas are stabilized from compaction and erosion for the remainder of the project
c. All seeded and mulched areas have achieved a desirable vegetation density when:
    i. On Crop Land: reclamation has been performed as per Rules 1003 & 1004 and observation by the Director over two (2) growing seasons has indicated no significant unrestored subsidence
    ii. On Non-Crop Land: reclamation has been performed as per Rules 1003 & 1004 and disturbed areas have been either built on, compacted, paced, or otherwise stabilized in such a way as to minimize erosion to the extent practicable, or a uniform vegetative cover has been established that reflects the pre-development or reference area forbs, shrubs, and grasses with a total plant cover of at least eighty percent (80%) of pre-development or reference area levels, excluding noxious weeks, as determined by the Director through visual appraisal.
d. Disturbances resulting from flow line installations shall be deemed adequately reclaimed when the disturbed area is reasonably capable of supporting the pre-development land use.
e. A final reclamation inspection has been completed by the Director, or a representative appointed by the Director, there are no outstanding compliance issues relating to commission rules, regulations, orders, permit conditions or the act, and the Director has notified the operator that final reclamation has been approved. A Sundry Notice Form 4 will be submitted by the operator when final stabilization has been achieved when. The sundry notice will describe the final reclamation procedures and mitigation measures and any changes in the landowner's designated final land use (if applicable).

E. ABANDONMENT

Once the operator has made the decision to no longer operate production and gathering operations on a well, it will be plugged and abandoned (P&A). All equipment associated with the well's oil and gas gathering and producing will be removed from the location. If the well pad and access road is no longer needed, it will be recontoured and reclaimed to its pre-developed conditions and/or in accordance with the surface owner's wishes.

III. SWMP REQUIREMENTS

Crestone has a field-wide master SWMP that covers their construction activities within this area. Also, construction activities within this area are covered under and governed by the CDPS General Permit for Discharges Associated with Construction Activity (Permit No. COR401104).

Stormwater BMPs will be employed in accordance with good engineering, hydrologic, and pollution control practices in order to prevent pollution in stormwater discharges associated with the development of the Lussing Trust 4-64 19-20 North Pad project. All personnel, including applicable contractors, shall comply with the contents of this SWMP plan.

All information and conditions represented this SWMP are estimated and intended as a preliminary plan. As stated previously, this SWMP is intended to be a living document which should be updated routinely as site conditions change. Actual placement of BMP's may deviate based on actual conditions encountered at the site.

A. QUALIFIED STORMWATER MANAGEMENT PLAN MANAGER

The qualified SWMP Manager (QSM) has the authority to dedicate the financial and human resources needed to install & implement SWMP control measures, conduct inspections, keep records, report incidents, and make repairs and/or changes in design. The following person has been assigned as the QSM.

Lisa David
650 Southgate Drive Windsor, CO 80550 Office: (303)-294-7893

B. STATE SWMP REQUIREMENTS

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

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

1. Site Inspections Frequency

Permittees must conduct site inspections at least once every 7 calendar days for sites that discharge to a water body designated as an Outstanding Water by the Water Quality Control Commission. Otherwise, permittees must conduct site inspections in accordance with the following minimum frequencies:

a. At least one inspection every 7 calendar days; or
b. At least one inspection every 14 calendar days, if post-storm event inspections are conducted within 24 hours after the end of any precipitation or snowmelt event that causes surface erosion. Post-storm inspections may be used to fulfill the 14-day routine inspection requirement.
c. When site conditions make the schedule required in this section impractical, the permittee may petition the division to grant an alternate inspection schedule. The alternative inspection schedule may not be implemented prior to written approval by the division and incorporation into the SWMP.

2. Reduced Inspection Frequency

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

a. Post-Storm Inspections at Temporarily Idle Sites
   For permittees choosing to combine 14-day inspections and post-storm-event-inspections, if no construction activities will occur following a storm event, post-storm event inspections must be conducted prior to re-commencing construction activities, but no later than 72 hours following the storm event. The delay of any post-storm event inspection must be documented in the inspection record. Routine inspections must still be conducted at least every 14 calendar days.
b. Inspections at Completed Sites/Areas
   When the site, or portions of a site, are awaiting establishment of a vegetative ground cover and final stabilization, the permittee must conduct a thorough inspection of the stormwater management system at least once every 30 days. Post-storm event inspections are not required under this schedule. This reduced inspection schedule is allowed if all of the following criteria are met:
   - All construction activities resulting in ground disturbance are complete;
   - All activities required for final stabilization, in accordance with the SWMP, have been completed, with the exception of the application of seed that has not occurred due to seasonal conditions or the necessity for additional seed application to augment previous efforts; and
   - The SWMP has been amended to locate those areas to be inspected in accordance with the reduced schedule allowed for in this paragraph.

3. Inspections Exclusion

Inspections are not required for sites that meet the following conditions:

a. Construction activities are temporarily halted
b. Snow cover exists over the entire site for an extended period of time and there is no snowmelt (only applies to the routine 7-day, 14-day and monthly inspections, as well as the post-storm-event inspections)

When the permittee has an inspection exclusion, the following information must be documented in accordance with permit requirements:

a. Dates when construction activities began & ended
b. Dates when snow cover existed and date when snow melt began

C. LOCAL SWMP REQUIREMENTS

Crestone has an executed Field wide Report Stormwater Management Plan for Well Pads and Access Road with the City of Aurora. "Pursuant to Sections 138-440 and 138-442 of the Aurora Municipal Code, the Permittee shall location, install, and maintain all Best Management Practices, including, but not limited to, erosion controls, sediment controls, drainage controls, and water quality BMPs as indicated in the approved Stormwater Management Plan (SWMP). The following notes are a requirement and shall be included in the SWMP narrative developed for this project and submitted for the approval by the City. BMP installations shall be installed per the COA Standard Detail in effect at the time of installation or per approved SWMP design drawing, COA approved variance, or a COA approved design drawing plan amendment."

COA Stormwater Management Standard Notes:

1. A City of Aurora Stormwater Quality Discharge Permit for Construction Activities must be issued by the City and executed by a COA Erosion Control staff prior to any earthwork activities. An on-site inspection will be conducted to verify the correct installation and adequacy of initial BLMPs for the site. No earthwork, including clearing and grubbing, or demolition activates are to begin until the project site has passed an inspection and the City of Aurora Stormwater Quality Discharge Permit for Constructions Activates has been executed. The Permittee is required to present the project's CDPHE-WQCH Stormwater Discharge Associated with Construction Activities Permit to the Inspector during the initial inspection. The Permittee shall designate a Stormwater Management Plan (SWMP) Administrator on the application for the City of Aurora Stormwater Quality Discharge Permit for Construction Activities. The SWMP Administrator will act as the project representative for any concerns or issues regarding environmental controls and stormwater management.
2. The requirements shall be the obligation of the Permittee, until such time as the Permit is properly closed, or otherwise allowed by the City to be voided, modified, transferred, re-assigned or replace.
3. This SWMP Narrative, the SWMP 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 City when requested.
4. Any discrepancy between the SWMP and any other approved Stormwater Management Plan for this site shall require compliance with the more restrictive, valid, approved plan.
5. Streets shall be constructed with Rough Cut Street Control measures, surface roughened or otherwise temporarily stabilized with rough cut street controls within seven (7) days of completion of grading in the appropriate phase. If paving is to occur within fourteen (14) days after final grading, rough cut street controls shall be waived.
6. Inspections and maintenance of erosion and sediment control Best Management Practices (BMPs) are the continuous obligation of the Permittee. BMPSs shall be inspected at a minimum every seven (7) days and within 24-hours after the end of a precipitation event that produced run-off, and following snowmelt events. If a site is temporarily idle and no construction activities will occur during the 48 hours following a storm event, the post- precipitation event (including snowmelt) inspection shall be conducted prior to commencing construction actives on the site, but no later than 72 hours following the storm event. All necessary maintenance and repairs shall be initiated and completed on an on-going basis, as features are required to operate continuously. Inspection may need to be conducted at a greater frequency than noted above, to ensure features and systems are operating adequately. Erosion and sediment control BMPSs shall be maintained and functional for the entire duration of the project.
7. Ingress and egress vehicle access points onto disturbed areas shall be stabilized with Vehicle Tracking Control Pads (VTC) and shall be constructed with angular rock, 3" to 6" in size and to a depth of at least

9-inches. The use of recycled asphalt or concrete is not permitted. The VTC shall be installed over a liner of non-woven geotextile with a weight of at least 10oz/yd^2 and a grab tensile strength of at least 250 pounds. No dirt or other materials shall be placed on paved surfaces or curb flowlines to act as curb ramps. Only metal ramps or rock wattles may be used in the curb flowline.

8. Fugitive dust emissions resulting from grading activities and/or wind shall be controlled using reasonably available control technology as defined by the Colorado Department of Public Health and Environment.
9. All potential pollution sources on-site shall be identified and control measures installed and practiced to minimize the likelihood of a release. Spill prevention controls shall be developed for the site with BMPs in place to respond to any spills, leaks or other releases.
10. Hydraulic mulching as a means to cover and protect seeding is not a n acceptable means of applying mulch in the City of Aurora unless a previous installed irrigation system is used to aid in germination and growth and were approved through variance. Hydraulic seeding is not permitted.
11. For all porous landscape detention facilities, in order to prevent clogging of filter medium, installation of the filtration system must be delayed until after the site is fully landscaped.
12. If stockpiles are located within 100 feet of a drainageway or a public storm sewer system, additional sediment controls such as temporary diversion dikes, silt fence, or sediment basin shall be required.

D. SWMP Inspection Scope

When conducting a SWMP site inspection:

1. Visually verify whether all implemented control measures are in effective operational condition and are working as designed in their specifications to minimize pollutant discharges.
2. Determine if there are new potential sources of pollutants.
3. Assess the adequacy of control measures at the site to identify areas requiring new or modified control measures to minimize pollutant discharges.
4. Identify all areas of non–compliance with the permit requirements and, if necessary, implement corrective action(s).

The following areas, if applicable, must be inspected for evidence of, or the potential for, pollutants leaving the construction site boundaries, entering the stormwater drainage system or discharging to state waters:

1. All disturbed areas
2. Ditches, berms, and any areas with stormwater mitigation
3. Site perimeter
4. Spill containment areas
5. Topsoil & material stockpiles
6. All locations where stormwater has the potential to discharge offsite
7. Locations where vehicles enter/exit the working pad surface

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

1. Facility Name
2. Inspector's name, title, and company
3. Date of inspection
4. Weather conditions at the time of inspection
5. Phase of construction at the time of inspection
6. Estimated acreage of disturbance at the time of inspection

7. Location(s) and identification of discharges of sediment or other pollutants from the site
8. Location(s) and identification of control measures needing maintenance
9. Location(s) and identification of inadequate control measures
10. Location(s) and identification of additional control measures needed that were not in place at the time of inspection
11. Location of discharges of sediment or other pollutants from the site
12. Description of inspection frequency and any deviations from the minimum inspection schedule.

This would include documentation of division approval for an alternate inspection schedule. Location and description of corrective action(s) that have been taken, or where a report does not identify any incidents requiring corrective action, the report shall contain a statement.

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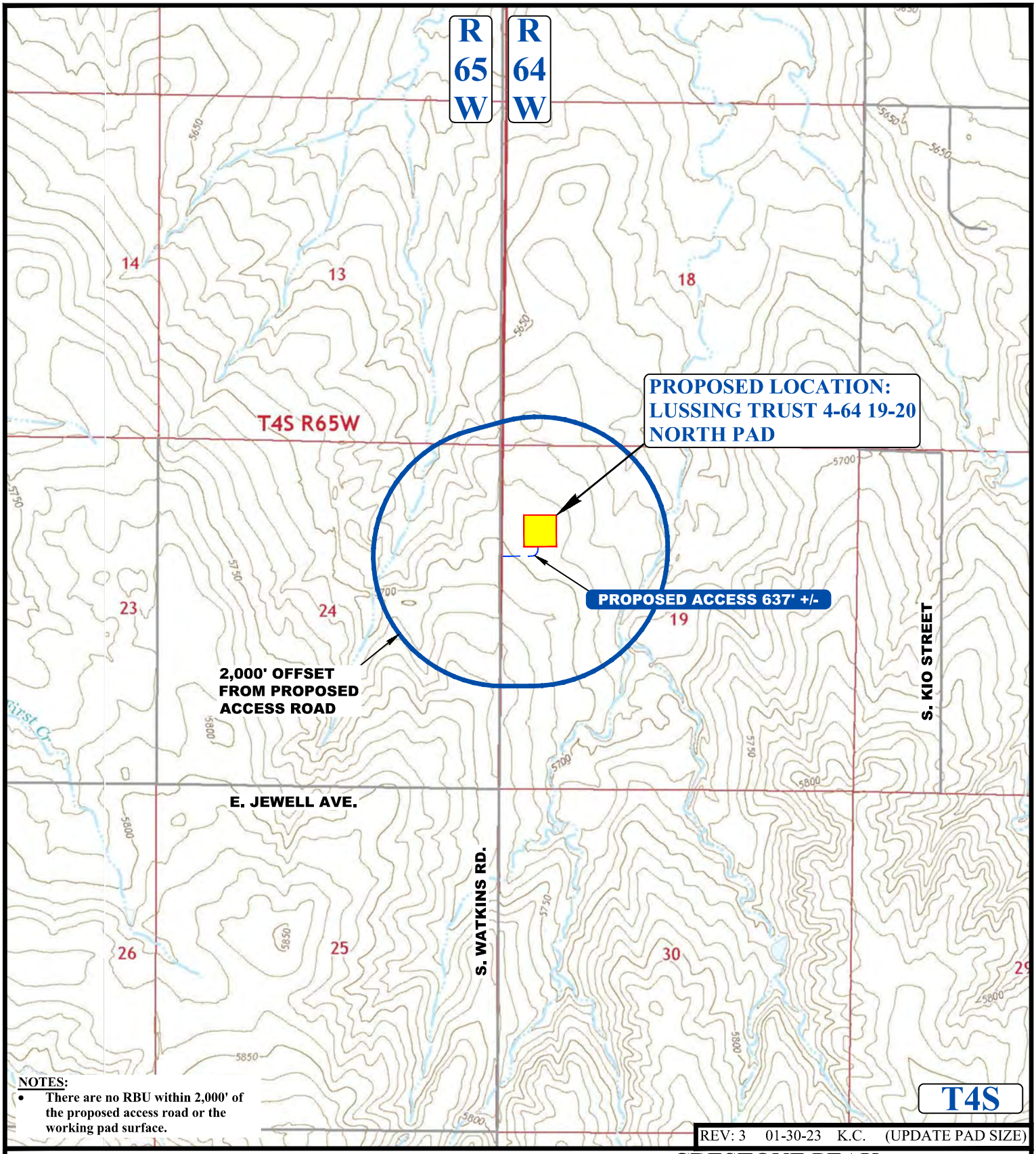
IV. APPENDIX

APPENDIX A – VICINITY MAP & LOCATION PHOTOS



NOTES:

- There are no RBU within 2,000' of the proposed access road or the working pad surface.

REV: 3 01-30-23 K.C. (UPDATE PAD SIZE)

LEGEND:

- WORKING PAD SURFACE
- EXISTING ROAD
- PROPOSED ACCESS ROAD

N

CRESTONE PEAK RESOURCES OPERATING, LLC

LUSSING TRUST 4-64 19-20 NORTH PAD
LOT 1, SECTION 19, T4S, R64W, 6th P.M.
ARAPAHOE COUNTY, COLORADO

SURVEYED BY	N.W.	12-03-21	SCALE
DRAWN BY	C.IVIE	01-11-21	1 : 24,000

ACCESS ROAD MAP

UINTAH ENGINEERING & LAND SURVEYING

UELS, LLC
Corporate Office * 85 South 200 East
Vernal, UT 84078 * (435) 789-1017

PHOTO: VIEW OF PROPOSED LOCATION **CAMERA ANGLE: NORTHERLY**

PHOTO: VIEW OF PROPOSED LOCATION **CAMERA ANGLE: EASTERLY**

REV: 1	02-21-23	K.C.	(UPDATE TITLE BLOCK)

CRESTONE PEAK RESOURCES OPERATING, LLC

LUSSING TRUST 4-64 19-20 NORTH PAD
LOT 1, SECTION 19, T4S, R64W, 6th P.M.
ARAPAHOE COUNTY, COLORADO

TAKEN BY	O.R.	04-20-21	
DRAWN BY	C.IVIE	04-22-21	
LOCATION PHOTOS			PHOTO 1

UINTAH ENGINEERING & LAND SURVEYING

UELS, LLC
Corporate Office * 85 South 200 East
Vernal, UT 84078 * (435) 789-1017

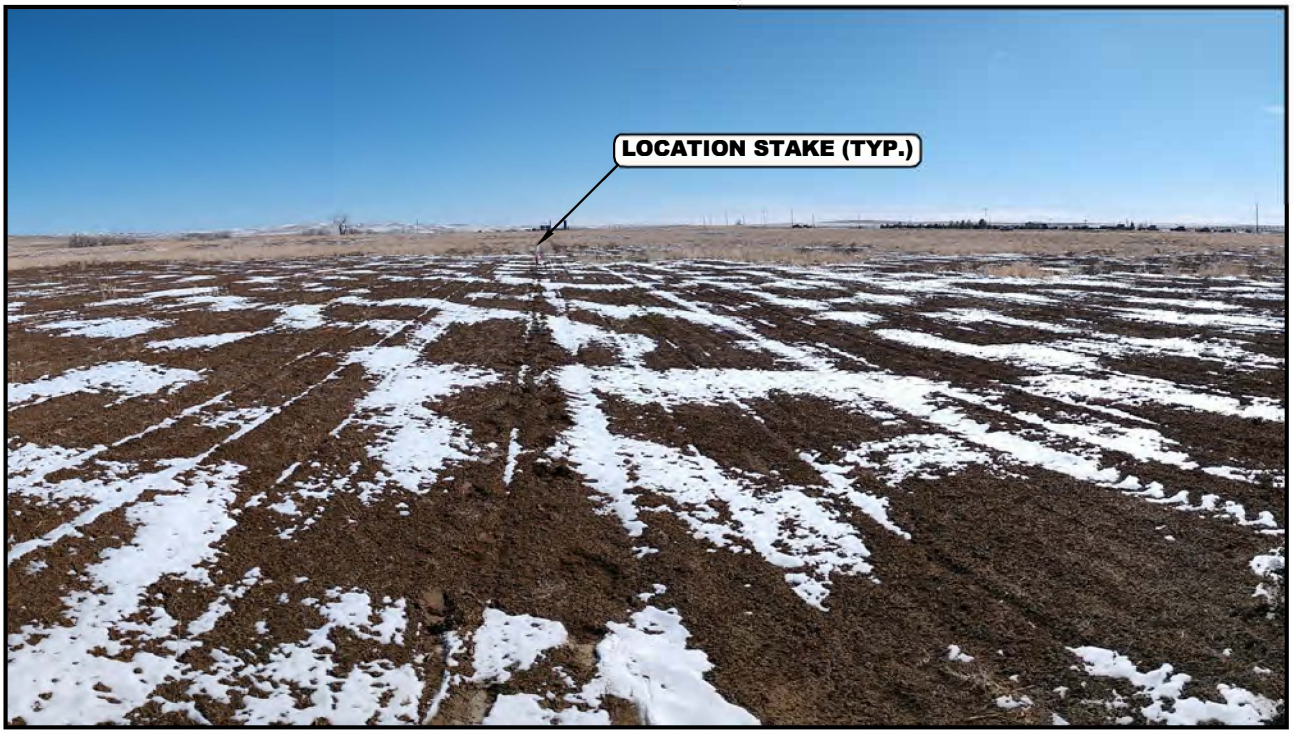


PHOTO: VIEW OF PROPOSED LOCATION **CAMERA ANGLE: SOUTHERLY**

PHOTO: VIEW OF PROPOSED LOCATION **CAMERA ANGLE: WESTERLY**

REV: 1 02-21-23 K.C. (UPDATE TITLE BLOCK)

CRESTONE PEAK RESOURCES OPERATING, LLC

LUSSING TRUST 4-64 19-20 NORTH PAD
LOT 1, SECTION 19, T4S, R64W, 6th P.M.
ARAPAHOE COUNTY, COLORADO

TAKEN BY	O.R.	04-20-21	
DRAWN BY	C.IVIE	04-22-21	
LOCATION PHOTOS			PHOTO 2

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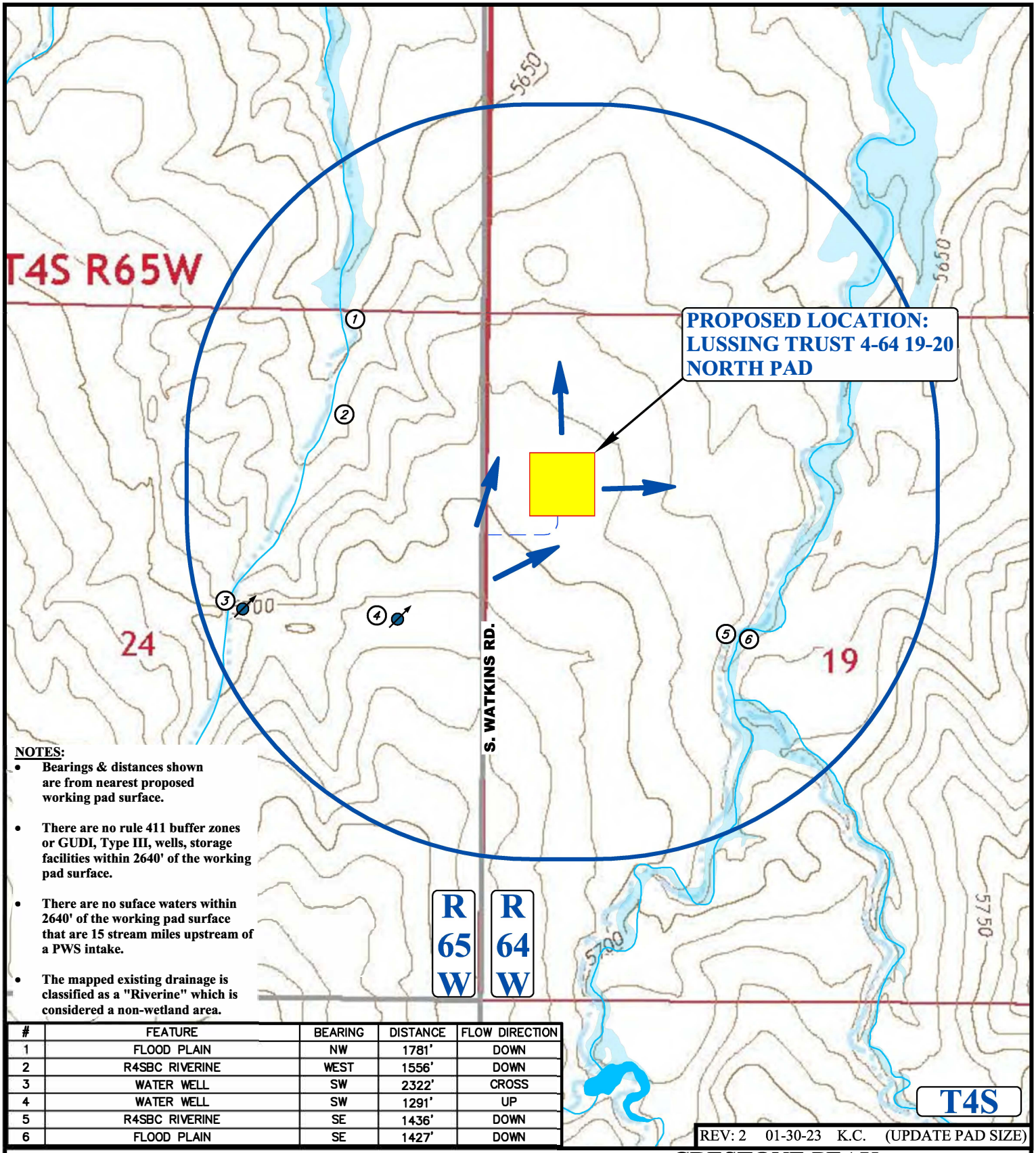
APPENDIX B – HYDROLOGY MAP



NOTES:

- Bearings & distances shown are from nearest proposed working pad surface.
- There are no rule 411 buffer zones or GUDI, Type III, wells, storage facilities within 2640' of the working pad surface.
- There are no suface waters within 2640' of the working pad surface that are 15 stream miles upstream of a PWS intake.
- The mapped existing drainage is classified as a "Riverine" which is considered a non-wetland area.

#	FEATURE	BEARING	DISTANCE	FLOW DIRECTION
1	FLOOD PLAIN	NW	1781'	DOWN
2	R4SBC RIVERINE	WEST	1556'	DOWN
3	WATER WELL	SW	2322'	CROSS
4	WATER WELL	SW	1291'	UP
5	R4SBC RIVERINE	SE	1436'	DOWN
6	FLOOD PLAIN	SE	1427'	DOWN

REV: 2 01-30-23 K.C. (UPDATE PAD SIZE)

LEGEND:

WORKING PAD SURFACE
2640' OFFSET FROM WORKING PAD SURFACE
EXISTING DRAINAGE
WATER FLOW DIRECTION
WATER WELL
FLOOD PLAINS

N

CRESTONE PEAK RESOURCES OPERATING, LLC

LUSSING TRUST 4-64 19-20 NORTH PAD
LOT 1, SECTION 19, T4S, R64W, 6th P.M.
ARAPAHOE COUNTY, COLORADO

SURVEYED BY	N.W.	12-03-21	SCALE
DRAWN BY	C.IVIE	01-11-21	1 : 12,000

HYDROLOGY MAP

UINTAH ENGINEERING & LAND SURVEYING
UELS, LLC
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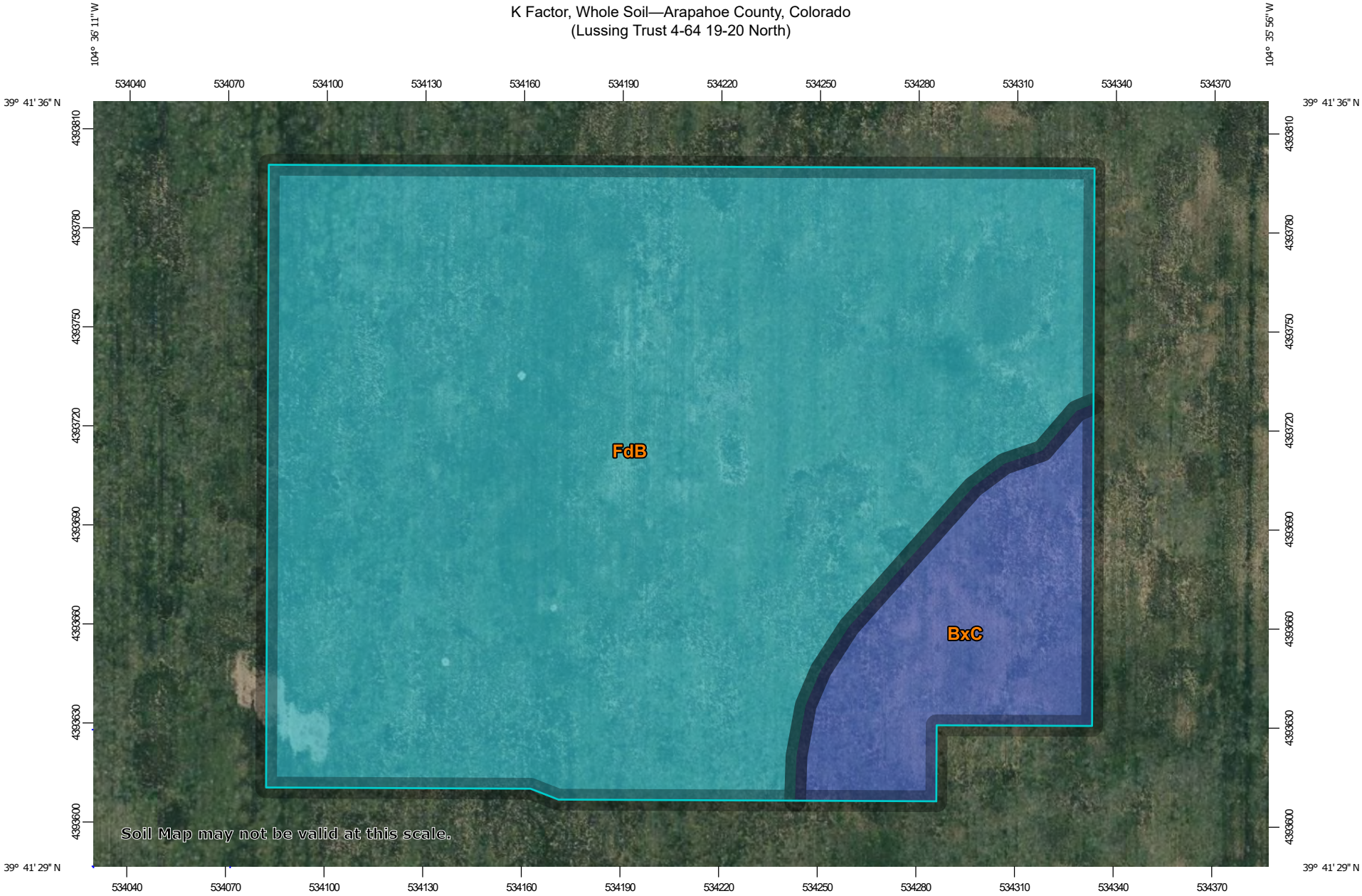
Vernal, UT 84078 * (435) 789-1017

APPENDIX C – NRCS WEB SOIL SURVEY REPORT

K Factor, Whole Soil—Arapahoe County, Colorado
(Lussing Trust 4-64 19-20 North)



Map Scale: 1:1,630 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 20 40 80 120

Feet
0 50 100 200 300

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

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils

Soil Rating Polygons
- .02
- .05
- .10
- .15
- .17
- .20
- .24
- .28
- .32
- .37
- .43
- .49
- .55
- .64
- Not rated or not available

Soil Rating Lines
- .02
- .05
- .10
- .15
- .17
- .20
- .24
- .28
- .32
- .37
- .43
- .49
- .55
- .64
- Not rated or not available

Soil Rating Points
- .02
- .05
- .10
- .15
- .17
- .20
- .24
- .28
- .32
- .37
- .43
- .49
- .55
- .64
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

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

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

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

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

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

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

Soil Survey Area: Arapahoe County, Colorado
Survey Area Data: Version 18, Sep 1, 2022

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

Date(s) aerial images were photographed: Jun 9, 2021—Jun 12, 2021

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

K Factor, Whole Soil

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
BxC	Buick loam, 3 to 5 percent slopes	.49	1.54	13.3%
FdB	Fondis silt loam, 1 to 3 percent slopes	.37	10.09	86.7%
Totals for Area of Interest			**11.63**	**100.0%**

Description

Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) and the Revised Universal Soil Loss Equation (RUSLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter and on soil structure and saturated hydraulic conductivity (Ksat). Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

"Erosion factor Kw (whole soil)" indicates the erodibility of the whole soil. The estimates are modified by the presence of rock fragments.

Factor K does not apply to organic horizons and is not reported for those layers.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Layer Options (Horizon Aggregation Method): Surface Layer (Not applicable)

APPENDIX D – PRE-PRODUCTION & PRODUCTION CONSTRUCTION PLANS

N

60' 30' 0' 60'

COLORADO LICENSED
PAUL A. HAWKINS
42405
PROFESSIONAL ENGINEER
09-06-23

24"H Berm
4:1 Side Slopes

LOC

24"H Berm
4:1 Side Slopes

SCL
L – 1,605'
Install Prior to Grading

OIL & GAS
LOCATION

Proposed
Wildlife
Fence

HP

BM

SM
AREA: 32,380 SY
SEEDING TYPE: TEMPORARY

SCL
L – 635'

C

Type M Rip-Rap
6'W x 6'L x 2'D

RRA

Existing Buried
Telephone Line

Existing
Fence

C F–3.5'
FG EL–96.1'
EG EL–92.6'

2 F–2.8'
FG EL–95.5'
EG EL–92.7'

3 F–2.0'
FG EL–94.9'
EG EL–92.9'

F–1.8'
FG EL–94.3'
EG EL–92.5' 4

DRILL PAD
5.567 AC.

FINISHED PAD GRADE
PAD SUBGRADE EL - VARIES (0.5% SLOPE)
GRAVEL EL - VARIES (0.5% SLOPE)
(PAD SURFACE - 6" LAYER GRAVEL)

PAD DITCH–2:
L – 910 FT
DEPTH – 24" MIN.
4:1 SIDE SLOPES,
SLOPE: MIN. 0.25%
(TEMPORARY)

DD

N00°00'11"E

182.5'

Approx.
Toe of
Fill Slope

Fill
Cut

0.5%

Cut/Fill
Transition Line

TOPSOIL STOCKPILE
4:1 SIDE SLOPES
140'W x 350'L x 10'H
(11,750 CY)

24"H Berm
4:1 Side Slopes

B

302.5'

WORKING PAD
SURFACE

C–1.7'
FG EL–94.2'
EG EL–95.9'

Well (Typ.)

LUSSING TRUST 4–64 19–20 1AH

GRIMM MOTOCROSS 4–65 24–23 1AH

LUSSING TRUST 4–64 19–20 1BH

LUSSING TRUST 4–64 19–20 2AH

LUSSING TRUST 4–64 19–20 2BH

GRIMM MOTOCROSS 4–65 24–23 3BH

20'

PRODUCTION
EQUIPMENT
AREA

C–1.0'
FG EL–95.0'
B EG EL–96.0'

150'

175'

175'

1 C–1.7'
FG EL–94.5'
EG EL–96.2'

GRIMM MOTOCROSS 4–65 24–23 4BH

C–1.9'
FG EL–93.8'
EG EL–95.7'

5 C–0.1'
FG EL–93.2'
EG EL–93.3'

Berm – 4:1 Slopes ;
Crest El. – 5692.6'

SCL

SB

15'W Emergency
Spillway

OUTFALL
Basin Overflow

8" Outlet Pipe

OP

DD

PAD DITCH–1:
L – 1060 FT
DEPTH – 24" MIN.
4:1 SIDE SLOPES,
SLOPE: MIN. 0.25%
(TEMPORARY)

Section 24

Section 19

Section Line

S. WATKINS RD.

DD

Offsite Ditch–2
L – 475', Depth – 24" Min.,
2' Flat Bottom, 4:1 Side Slopes,
Slope: 0.5% Min. (Temporary)

A

4:1

CULVERT 2
24" X 55' CMP, 0.4% SLOPE
W/ FES AND INLET SAFETY GRATE
12" MIN. COVER, STA. 6+16

C–3.5'
FG EL–94.4'
A EG EL–97.9'

150'

C–2.9'
FG EL–93.8'
EG EL–96.7' 8

65'

IPC

OP

110'

C–1.9'
FG EL–93.2'
7 EG EL–95.1'

F–0.4'
FG EL–92.6'
EG EL–92.2' 6

Cut
Fill

BM

HP

IPC

OP

RRA

Approx.
Top of
Cut Slope

Type M Rip-Rap
18'W x 6'L x 2'D

Type M Rip-Rap
6'W x 6'L x 2'D

Type M Rip-Rap
6'W x 6'L x 2'D

Berm – 4:1 Slopes
Crest El. – 5692.6'

D

CULVERT 1
24" X 55' CMP, 0.5% SLOPE
W/ FES AND INLET SAFETY GRATE
12" MIN. COVER, STA. 5+76

30' Wide Proposed
Access Road

(2) 15'W x
5–1/2'H Gates
with Approved
Knox Box

DD

Offsite Ditch–1
L – 615', Depth – 24" Min.,
2' Flat Bottom, 4:1 Side Slopes,
Slope: 0.5% Min. (Temporary)

SEDIMENT BASIN 1 –
STANDARD BASIN – DEPTH 4'
TRIB. AREA: 7.0 AC
VOL. REQ'D: 25,342 CF
VOL. PROVIDED: 28,628 CF
BTM WIDTH (W) 60' X 120'
BTM EL: 5688.6'
LOWEST ORIFICE EL: 5689.9'
SPILLWAY CREST EL: 5691.6'
SPILLWAY CREST LENGTH (CL): 15'
EMBANKMENT CREST EL: 5692.6'
8" RISER PIPE
WITH HOLE DIAMETER (HD): 25/32"

LEGEND

HP	HIGH POINT ELEVATION
6	WELL PAD CORNER STAKE
F–0.7' / EL–17.0'	DESIGN "C" CUT OR "F" FILL AT CORNER STAKE / EXISTING GROUND ELEV. AT CORNER STAKE (TRUNCATED LESS 5,600 FEET)
DD	DIVERSION DITCH
ECB	EROSION CONTROL BLANKET
IP	INLET PROTECTION
IPC	RRB FOR CULVERT PROTECTION
RS	ROCK SOCKS/WATTLES
RRA / OP	OUTLET PROTECTION
SB	SEDIMENT BASIN
SCL	SEDIMENT CONTROL LOG
SM	SEEDING AND MULCHING
BM	BERM
SF	SILT FENCE
CF	CONSTRUCTION FENCE
	PROPOSED WILDLIFE FENCE
OHP	EXISTING OVERHEAD POWER
BP	EXISTING BURIED POWER
	EXISTING FENCE
T	EXISTING BURIED TELEPHONE LINE
	EXISTING BURIED PIPELINE
-0000-	EXISTING MAJOR CONTOUR
-0000-	EXISTING MINOR CONTOUR
-0000-	PROPOSED MAJOR CONTOUR
-0000-	PROPOSED MINOR CONTOUR
	WORKING PAD SURFACE
	OIL & GAS LOCATION

APPROXIMATE SURFACE DISTURBANCE AREAS	
	ACRES
WORKING PAD SURFACE DISTURBANCE	±5.57
CONSTRUCTION DISTURBANCE	±6.06
TOTAL OIL & GAS LOCATION	±11.63

NOTES:

- Rounded corners shown at 35' radius.
- Construct diversion ditches as needed.
- Contours shown at 1' intervals.
- Cut/Fill slopes 4:1 (Typ.).
- Overall working pad surface = 500' x 485'

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Vernal, UT 84078 * (435) 789-1017

REV: 2 09-06-23 P.M. (TWO DE CIMALDISTURBANCE)

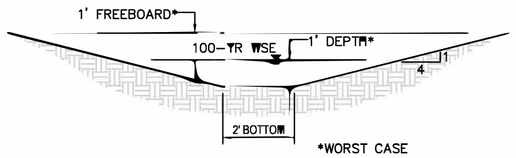
CRESTONE PEAK RESOURCES OPERATING, LLC

LUSSING TRUST 4-64 19-20 NORTH PAD
LOT 1, SECTION 19, T4S, R64W, 6th P.M.
ARAPAHOE COUNTY, COLORADO

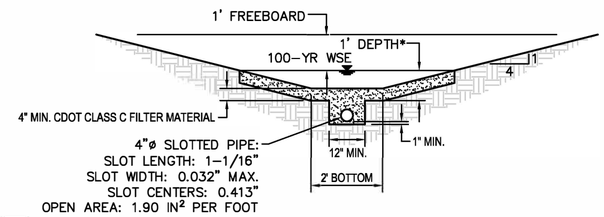
SURVEYED BY	NATE WELCH	12-03-21	SCALE
DRAWN BY	C.IVIE	01-11-22	1" = 60'

CONSTRUCTION LAYOUT - PLAN VIEW

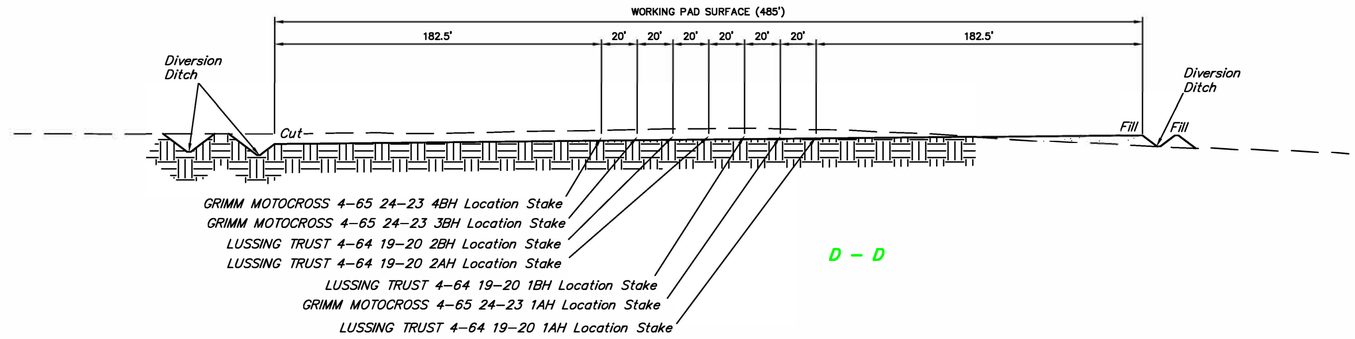
1" = 40'
X-Section Scale
1" = 100'



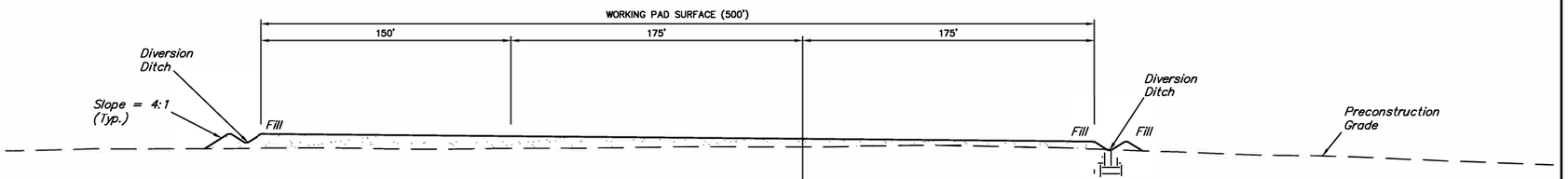
TYPICAL TEMPORARY DITCH (0.25% TO 2% GRADE)



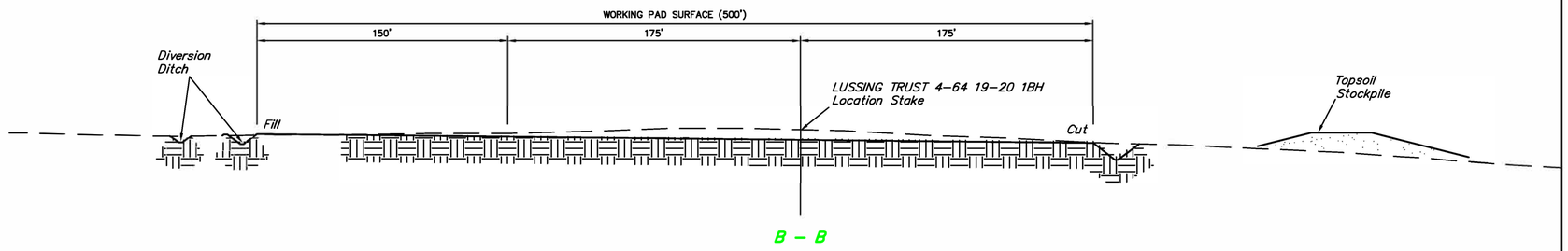
TYPICAL DITCH WITH UNDERDRAIN (0.25% TO 2% GRADE)



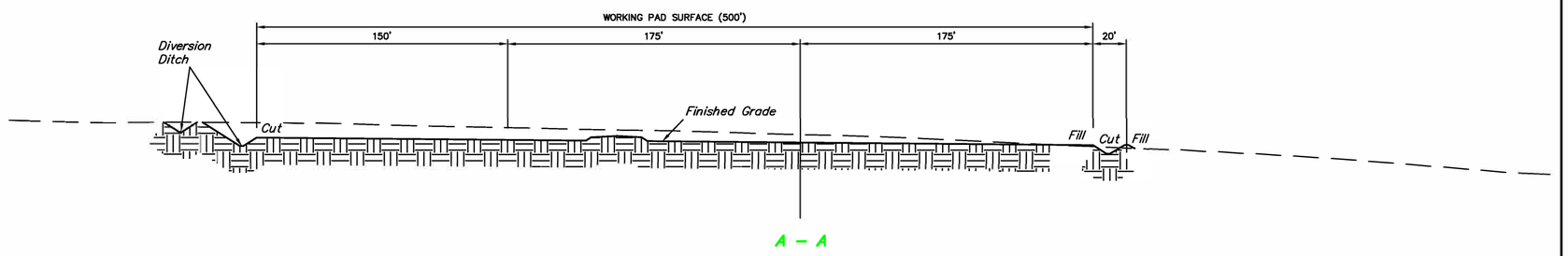
D - D



C - C



B - B



A - A

APPROXIMATE EARTHWORK QUANTITIES	
(12") TOPSOIL STRIPPING	11,750 Cu. Yds.
WELL PAD CUT	5,770 Cu. Yds.
SEDIMENT BASIN CUT	470 Cu. Yds.
ACCESS ROAD CUT	70 Cu. Yds.
OFF-SITE DITCH CUT	1,010 Cu. Yds.
TOTAL CUT	**19,070 Cu. Yds.**
WELL PAD FILL	10,380 Cu. Yds.
SEDIMENT BASIN FILL	630 Cu. Yds.
ACCESS ROAD FILL	800 Cu. Yds.
OFF-SITE DITCH FILL	0 Cu. Yds.
TOTAL FILL	**11,810 Cu. Yds.**
EXCESS MATERIAL	7,260 Cu. Yds.
TOPSOIL	11,750 Cu. Yds.
GRAVEL BASE ON PAD (6")	4,490 Cu. Yds.
DEFICIT UNBALANCE	**0 Cu. Yds.**

APPROXIMATE SURFACE DISTURBANCE AREAS		
	DISTANCE	ACRES
WELL SITE CONSTRUCTION DISTURBANCE	NA	±11.63
ACCESS ROAD CONSTRUCTION DISTURBANCE	±624'	±1.10
TOTAL SURFACE USE AREA		**±12.73**

APPROXIMATE SURFACE DISTURBANCE AREAS	
	ACRES
WORKING PAD SURFACE DISTURBANCE	±5.57
CONSTRUCTION DISTURBANCE	±6.06
TOTAL OIL & GAS LOCATION	**±11.63**

NOTES:
- Fill quantity includes 10% for compaction.
- Calculations based on 12" of topsoil stripping.
- Cut/Fill slopes 4:1 (Typ.).
- Elevations shown are to Finished Grade.

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Vernal, UT 84078 * (435) 789-1017

COLORADO LICENSED
PAUL A. HAWKINS
42408
PROFESSIONAL ENGINEER
09-06-23

REV: 2 09-06-23 P.M. (TWO DECIMAL DISTURBANCE)

CRESTONE PEAK RESOURCES OPERATING, LLC

LUSSING TRUST 4-64 19-20 NORTH PAD
LOT 1, SECTION 19, T4S, R64W, 6th P.M.
ARAPAHOE COUNTY, COLORADO

SURVEYED BY	NATE WELCH	12-03-21	SCALE
DRAWN BY	C.IVIE	01-11-22	AS SHOWN

CONSTRUCTION LAYOUT - CROSS SECTIONS

N

60' 30' 0' 60'

COLORADO LICENSED
PAUL A. HAWS
42400
PROFESSIONAL ENGINEER
09-06-23

Pad Ditch-2
L = 705', Depth = 24" Min.,
2' Flat Bottom, 4:1 Side Slopes,
Slope: 0.25% Min. (Permanent)

Diversion Ditch (Remove)

OIL & GAS LOCATION

AREA: 22,570 SY
SEEDING TYPE: PERMANENT

Topsoil To Be Used On Reclaim Area

Remove 4'H Wildlife Fence

Tie to Ex. 4'H Wildlife Fence

Remove 4'H Wildlife Fence

Tie to Ex. 4'H Wildlife Fence

Existing Buried Telephone Line

Existing Fence

WORKING PAD SURFACE

4'H Wildlife Fence

Berm = 4:1 Slopes
Crest El. = 5693.7'

Limits of Permanent Disturbance

L = 856'

Type M Rip-Rap
6'W x 6'L x 2'D

(2) Gas Lift Compressor
Fuel Gas Scrubber

Sales Gas Scrubber

PRODUCTION PAD SURFACE

0.5%

24"H Berm
4:1 Side Slopes

Pipe Racks (5)

Cut/Fill Transition Line

302.5'

Gas Lift Skid

LUSSING TRUST 4-64 19-20 1AH
GRIMM MOTOCROSS 4-65 24-23 1AH
LUSSING TRUST 4-64 19-20 1BH
LUSSING TRUST 4-64 19-20 2AH
LUSSING TRUST 4-64 19-20 2BH
GRIMM MOTOCROSS 4-65 24-23 3BH
GRIMM MOTOCROSS 4-65 24-23 4BH

100'
20'

TOPSOIL STOCKPILE
4:1 SIDE SLOPES
140'W x 245'L x 10'H
(7,880 CY)

Sales Gas Meter
Gas Buyback Meter

Separators (4)

Separators (3)

Combustor (2)

Maintenance Vessel

Bulk Treater (2)

Combustor Knockout (2)

VRU (4)

VRU (4)

150150A

175'

VRU Scrubber (2)

VRT

Electrical Rack

Limits of Permanent Disturbance

Berm = 4:1 Slopes
Crest El. = 5692.8'

PAD DITCH-1:
L = 900 FT
DEPTH = 24" MIN.
4:1 SIDE SLOPES,
SLOPE: MIN. 0.25%
(PERMANENT)

O2 Destruction Skid

Tank Vent Blowers (2)

Instrument Air Skid

Recycle Pump

LACT

3rd Party Oil Pump Skid

PRODUCTION EQUIPMENT AREA

8'H Privacy Fence

Water Tanks (2)

Oil Tanks (4)

Communications Tower

PRODUCTION PAD
3.878 AC.

FINISHED PAD GRADE
PAD SUBGRADE EL - VARIES (0.5% SLOPE)
GRAVEL EL - VARIES (0.5% SLOPE)
(PAD SURFACE - 6" LAYER GRAVEL)

182.5'

150'

65'

110'

CULVERT 2
24" X 55' CMP,
12" MIN. COVER
(Const. At Drill Phase)

Outlet Structure

Sediment Basin (Remove)

8'H Privacy Fence

Concrete Forebay w/ 9'x9' Square Area w/ 1.5'Hx6"D Vertical Concrete Berm and 8" Drain Pipe

OUTFALL
Basin Overflow

20'W Emergency Spillway

Offsite Ditch-2
L = 475', Depth = 24" Min.,
2' Flat Bottom, 4:1 Side Slopes,
Slope: 0.5% Min. (Permanent)

Limits of Permanent Disturbance

Type M Rip-Rap
6'W x 6'L x 2'D

EDB Outlet Ditch
L = 160', Depth = 24" Min.,
2' Flat Bottom, 4:1 Side Slopes,
Slope: 0.5% Min. (Permanent)

Type M Rip-Rap
18'W x 6'L x 2'D

Type M Rip-Rap
6'W x 6'L x 2'D

Type M Rip-Rap
18'W x 6'L x 2'D

Trickle Channel @ 0.4% Slope
2'Wx6"D

Outlet Culvert
18" x 47' RCP
W/ FES,
0.5% Min Slope,
12" Min. Cover

Ex. 4'H Wildlife Fence

CULVERT 1
24" X 55' CMP,
12" MIN. COVER
(Const. At Drill Phase)

30' Wide Proposed Access Road

(2) 15'W x 5-1/2'H Gates with Approved Knox Box

Berm = 4:1 Slopes
Crest El. = 5692.8'

Offsite Ditch-1
L = 615', Depth = 24" Min.,
2' Flat Bottom, 4:1 Side Slopes,
Slope: 0.5% Min. (Permanent)

PRIVATE EXTENDED DETENTION BASIN =
TRIBUTARY AREA: 5.06 AC
TOTAL DET. VOL. REQ'D (100-YR): 0.369 AC-FT
WQCV: 0.072 AC-FT
EURV: 0.171 AC-FT
10-YR DET. VOLUME: 0.218 AC-FT
100-YR DET. VOLUME: 0.369 AC-FT
BASIN BTM DIMS (W X L): 50' X 100'
TOP OF MICROPOOL EL: 5687.5'
WQCV WSEL: 5688.7'
EURV WSEL: 5689.5'
100-YR WSEL: 5690.7'
SPILLWAY CREST EL: 5691.5'
TOP OF EMBANKMENT EL: 5692.8'
10-YR RELEASE RATE: 1.52 CFS
100-YR RELEASE RATE: 5.06 CFS
MAX. DEPTH: 5.3'

Section 24
Section 19
Section Line
S. WATKINS RD.

LEGEND

HP	HIGH POINT ELEVATION
DD	DIVERSION DITCH
ECB	EROSION CONTROL BLANKET
IP	INLET PROTECTION
IPC	RRB FOR CULVERT PROTECTION
RS	ROCK SOCKS/WATTLES
RRA / OP	OUTLET PROTECTION
EDB	EXTENDED DETENTION BASIN
SCL	SEDIMENT CONTROL LOG
SM	SEEDING AND MULCHING
BM	BERM
SF	SILT FENCE
TP	T-POST & ROPE FENCE
CF	CONSTRUCTION FENCE
	PROPOSED WILDLIFE FENCE
OHP	EXISTING OVERHEAD POWER
BP	EXISTING BURIED POWER
	EXISTING FENCE
T	EXISTING BURIED TELEPHONE LINE
	EXISTING BURIED PIPELINE
0000'	EXISTING MAJOR CONTOUR
0000'	EXISTING MINOR CONTOUR
0000'	PROPOSED MAJOR CONTOUR
0000'	PROPOSED MINOR CONTOUR
	WORKING PAD SURFACE
	OIL & GAS LOCATION
	PRODUCTION PAD SURFACE
	LIMITS OF PERMANENT DISTURBANCE

LEGEND:
Reclaimed Area

WORKING PAD SURFACE DISTURBANCE = 5.57 ACRES
PRODUCTION PAD SURFACE = 3.88 ACRES
APPROXIMATE UN-RECLAIMED DISTURBANCE = 7.04 ACRES
APPROXIMATE RECLAIMED DISTURBANCE = 4.59 ACRES
TOTAL OIL & GAS LOCATION = 11.63 ACRES

SIZE OF DISTURBED AREA AFTER INTERIM RECLAMATION IN ACRES (ECMC 2A REPORTABLE): 7.04 ACRES

REV: 5 09-06-23 P.M. (TWO DECIMAL DISTURBANCE)

NOTES:
- Contours shown at 1' intervals.
- Cut/Fill slopes 4:1

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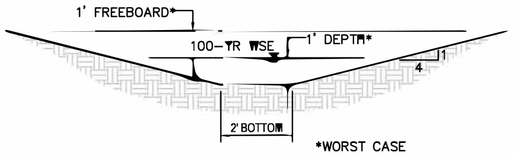
CRESTONE PEAK RESOURCES OPERATING, LLC

LUSSING TRUST 4-64 19-20 NORTH PAD
LOT 1, SECTION 19, T4S, R64W, 6th P.M.
ARAPAHOE COUNTY, COLORADO

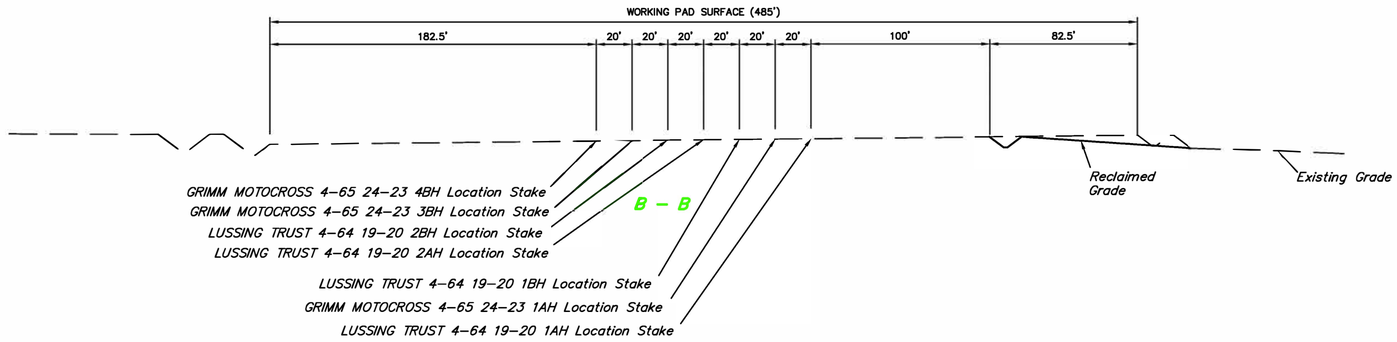
SURVEYED BY	NATE WELCH	12-03-21	SCALE
DRAWN BY	C.IVIE	01-11-22	1" = 60'

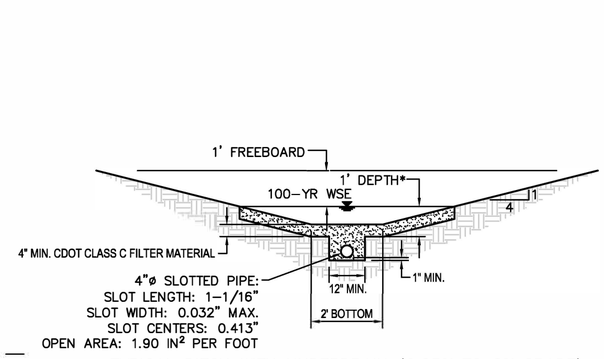
FACILITY LAYOUT

1" = 40'
X-Section Scale
1" = 100'

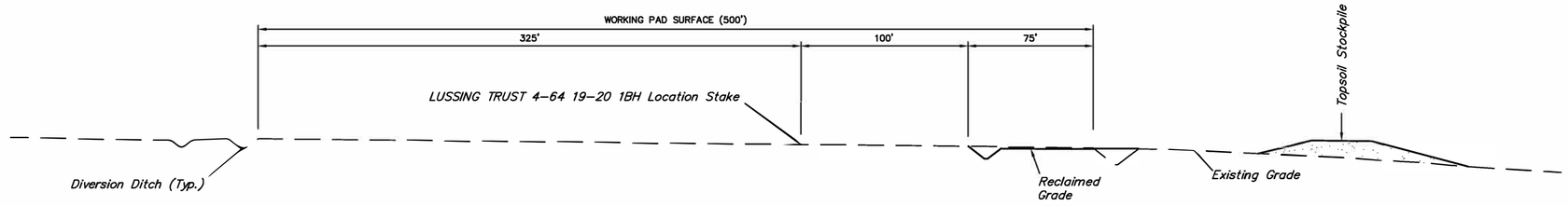


TYPICAL TEMPORARY DITCH (0.25% TO 2% GRADE)





TYPICAL DITCH WITH UNDERDRAIN (0.25% TO 2% GRADE)



WORKING PAD SURFACE DISTURBANCE = 5.57 ACRES
PRODUCTION PAD SURFACE = 3.88 ACRES
APPROXIMATE UN-RECLAIMED DISTURBANCE = 7.04 ACRES
APPROXIMATE RECLAIMED DISTURBANCE = 4.59 ACRES
TOTAL OIL & GAS LOCATION = 11.63 ACRES

APPROXIMATE EARTHWORK QUANTITIES	
(12") TOPSOIL STRIPPING	0 Cu. Yds.
PAD RECLAMATION	3,770 Cu. Yds.
TOTAL CUT	**3,770 Cu. Yds.**
PAD RECLAIM - FILL	**3,770 Cu. Yds.**
EXCESS MATERIAL	0 Cu. Yds.
TOPSOIL ON RECLAIMED PAD (12")	3,870 Cu. Yds.

NOTES:
- Fill quantity includes 10% for compaction.
- Calculations based on 12" of topsoil stripping.
- Cut/Fill slopes 4:1 (Typ.).

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REV: 1 09-06-23 P.M. (TWO DECIMAL DISTURBANCE)

CRESTONE PEAK RESOURCES OPERATING, LLC

LUSSING TRUST 4-64 19-20 NORTH PAD
LOT 1, SECTION 19, T4S, R64W, 6th P.M.
ARAPAHOE COUNTY, COLORADO

SURVEYED BY	NATE WELCH	12-03-21	SCALE
DRAWN BY	K.C.	02-21-23	AS SHOWN

INTERIM RECLAMATION - CROSS SECTIONS

COLORADO LICENSED
PAUL A. HAWKS
42408
PROFESSIONAL ENGINEER
09-06-23

APPENDIX E – SEED MIX

Loamy Plains Seed Mix					
Common Name	**Scientific Name**	**Variety**	**% of Seeds/square foot**	**Live seeds/square foot**	**Lbs. PLS/Acre**
Buffalograss	*Bouteloua dactyloides*	Cody or Bison	7%	4.03	3.1
Blue Grama	*Bouteloua gracilis*	Bad River or Birdseye	19%	11.25	0.59
Blue Grama	*Bouteloua gracilis*	Alma	4%	2.25	0.12
Russian Wildrye	*Psathyrostachys juncea*	Bozoisky Select	12%	6.83	1.7
Green Needlegrass	*Nasella viridula*	Lodorm	11%	6.3	1.52
Slender Wheatgrass	*Elymus trachycaulus*	San Luis or Revenue	16%	9.15	2.5
Western Wheatgrass	*Pascopyrum smithii*	Arriba	19%	11.25	4.46
Sand Dropseed	*Sporobolus cryptandrus*	Colorado origin if possible	12%	6.75	0.05
Total (Drill Rate)			**100%**	**57.81**	**14.04**

APPENDIX F – CDPS STORMWATER GENERAL PERMIT CERTIFICATION

COLORADO
Department of Public Health & Environment

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

Certification Number: COR401104

This Certification to Discharge specifically authorizes:

Owner Crestone Peak Resources
Operator Crestone Peak Resources
to discharge stormwater from the facility identified as

COP Field Permit Arapahoe County West of Watkins

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

Box Elder Creek, Coal Creek, South Platte River

Facility Activity :	Oil and Gas Exploration and Well Pad Development
Disturbed Acres:	315.17 acres
Facility Located at:	County Line Rd and Watkins Rd Watkins CO 80137 Arapahoe County Latitude 39.6714 Longitude -104.499444
Specific Information (if applicable):	

Certification is issued and effective: 1/29/2021
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, Section Manager
Permits Section
Water Quality Control Division

APPENDIX G – SITE-SPECIFIC SWMP BEST MANAGEMENT PRACTICES (BMPS)

The following are the site-specific SWMP BMPs. Included with each BMP is its description, applicability, limitations, and location:

1. Berm
   Berms will be placed along the sediment basin, northwest, north and northeast pad edges along the top of pad fill sections. Berms and ditches will divert surface water to the on-pad detention pond. Berms will be 24" high with 4:1 slope. During the production phase there will be a concrete forebay with 9' x 9' square area with 1.5'H x 6"D vertical concrete berm and 8" drain pipe at the entrance of the private extended detention basin.

2. Ditch
   This site will consist of two (2) off-site ditches, two (2) pad ditches, one (1) EDB outlet ditch, and an emergency spill way. All consist of 24" depth minimum and 4:1 slope. Off-site ditches and outlet ditch have a minimum slope of 0.50% and pad ditches have a minimum slope of 0.25%. Off-site ditch -1 will be constructed on the south side, diverting off-site water to the east into an RRA. Off-site ditch -2 will be constructed on the west side, diverting off-site water to the north into an RRA. Pad ditch -1 will be constructed on the west and south side, diverting water to the south and east into sediment basin 1. Pad ditch -2 will be constructed on the north and east side, diverting water east and south into sediment basin 1. The EDB will be constructed during the production phase with a 2' flat bottom on the southeast side of the site, draining water southeast off-site to an RRA. During production phase Pad ditch -2 will be reclaimed and moved closer to the production pad, staying on the north side of the pad.

3. Culvert
   This site will be constructed with two (2) culverts under the access road and an IPC for culvert protection. The culverts will be constructed on the south side of the pad at the access road entrance, both consisting of 24" x 55' CMP. Culvert 1 with a 0.5% slope with FES and inlet safety grate 12" minimum cover, STA. 6+42. Culvert 2 with a 0.4% slope with FES and inlet safety grate 12" minimum cover, STA. 6+03. There will also be an outlet culvert for the production phase on the southeast side of the pad, next to the detention basin with dimensions of 18" x 47' RCP with RES with a 0.5% slope and 12" minimum cover.

4. Sediment Basin (SB)
   This site will have a sediment basin constructed along the southeast side of the pad with a bottom width of 60' x 120', depth of 4', bottom elevation 5689, 8' riser pipe with a hole diameter of 25/32", spillway length 15'. Sediment basin will be reclaimed and replaced with a private detention basin.

5. Detention Pond
   This site will have a private extended detention pond construction during the production phase with a trickle channel. The detention pond will be constructed on the southeast side of the pad with bottom dimensions 50' x 100', depth of 5.3', emergency spillway 20'. The trickle channel dimensions 2'W x 6"D and will have a 0.4% slope.

6. Reinforced Rock Aprons (RRA)
   This site will have six (6) RRA located at the outlet of each sediment trap one on the northwest side, two on the south side, two on the southeast side of the site. During production phase there will be one

constructed on the southeast side of the site, next to the outlet culvert.

7. Sediment Control Log (SCL)
   The sediment control log will run off-site along the north and east side of the perimeter during pre-production phase. It will also run along the north, east and south sides of the topsoil stock pile.

8. Seeding and Mulching (SM)
   Seeding and mulching will be done to the north and east of the pad, and on the pad cut and fill slopes along the perimeter of the pad.

9. Outlet Protection (OP)
   There will be two (2) OP at the end of the culverts at the access road entrance of the pad, both constructed on the south side and one on the southeast side of the pad by the rip-rap.