

# DRAINAGE LETTER

## STOCKPILES AT ASPEN RIDGE COLA UNPLATTED TRACT OF LAND IN THE NW QUARTER SECTION OF SECTION 9, TOWNSHIP 15S, RANGE 65W EL PASO COUNTY, COLORADO

July 2023

**Prepared for:**

**El Paso County Colorado  
Planning and Development**  
2880 International Circle, Suite 110  
Colorado Springs, CO 80910

**COLA**

555 Middle Creek Parkway, Suite 380  
Colorado Springs, CO 80921

Prepared by:



# Matrix

2435 Research Parkway, Suite 300  
Colorado Springs, CO 80920  
(719) 575-0100  
fax (719) 572-0208

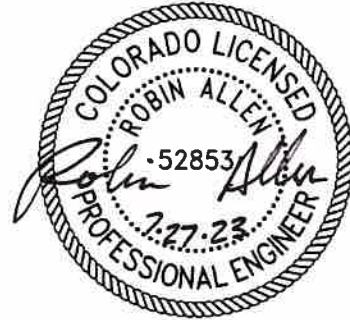
Matrix Project No. 20.886.028

PCD File No. CDR2312

**Engineer's Statement:**

The attached drainage plan and report for the Stockpiles at Aspen Ridge was prepared by me (or under my direct supervision) and are correct to the best of my knowledge and belief. Said drainage letter and plan has been prepared in accordance with the El Paso County Drainage Criteria and the City of Colorado Springs Drainage Criteria Manual and is in conformity with the master plan of the drainage basin. I understand that El Paso County does not and will not assume liability for drainage facilities designed by others. I accept responsibility for any liability caused by any negligent acts, errors or omissions on my part in preparing this report.

\_\_\_\_\_  
Robin Allen  
Registered Professional Engineer  
State of Colorado #52853



**Developer's Statement:**

I, the developer, have read and will comply with all of the requirements specified in this drainage report and plan.

**COLA**

Business Name  
By: Tim Buschar  
Title: Director of Entitlement  
Address: 555 Middle Creek Parkway, Suite 380  
Colorado Springs, CO 80921

\_\_\_\_\_  
*Tim Buschar*  
Tim Buschar


\_\_\_\_\_  
*7/27/23*  
Date

**El Paso County**

Filed in accordance with the requirements of the Drainage Criteria Manual, Volumes 1 and 2, El Paso County Engineering Criteria Manual and Land Development Code as amended.

\_\_\_\_\_  
Joshua Palmer, P.E.  
County Engineer/ECM Administrator

Conditions:

<p><b>Approved</b></p> <p><b>By: Gilbert LaForce, P.E.</b> <b>Engineering Manager</b></p> <p><b>Date: 08/14/2023 1:51:43 PM</b></p> <p>El Paso County Department of Public Works</p>	
--	---

## **Introduction**

The purpose of this Drainage Letter is prepared in accordance with El Paso County criteria, which follows the City of Colorado Springs DCM, and satisfies the requirements for the proposed site revisions. The proposed site development entails moving dirt from 2 parcels East of Powers Blvd (5509200002 and 55093001134) to a piece of land west of Powers Blvd. The material will be stockpiled on parcel 5500000333 in the north ½ section of the northeast ¼ section of Section 9, Township 15S Range 65W in El Paso County, Colorado.

Currently, the site is covered in natural vegetation. The proposed site will move material from one parcel to another. The new stockpiles will be seeded and mulched, adding 0 square feet of impervious surface area to the site. The total area of the project is 117.7 acres, with 28.5 acres of soil disturbance planned. The existing 73.2 acres of the destination site is currently a vegetated, permeable surface. Adding nearby soil and reseeding the top layers will not decrease its permeability significantly, nor add any impervious surface area. The project is not part of a larger common plan.

## **Location**

The proposed project area is situated near of the intersection of Powers Boulevard and Bradley Rd. in Fountain, Colorado, and consists of 3 undeveloped sites. As part of the Trails at Aspen Ridge Development, parcels to the east of Powers Blvd have excess dirt on parcels 5509200002 and 5509301134. Material from parcels on the east side of Powers Blvd will be relocated to the proposed site on the West side of Powers Blvd. (5500000333). The final destination for material placement is located at Latitude: 38.7597 and Longitude: -104.6862 and is bounded to the north and east by Hwy 24 (Powers Rd). Bluestem Prairie Open Space (City of Colorado Springs owned Park) borders the site on the West and the South.

The site is not located within a streamside overlay or a floodplain.

## **Drainage Characteristics**

The existing land cover within the proposed site development area is native soil and vegetation comprised of weeds/grasses and small bushes in fair condition. The lot coverage by existing structures and paving is 0 percent. Runoff currently drains from the North to the south at an 8% grade. The proposed stockpile grading will match the existing site slope to 8% or less, in the same direction with side slopes of 3:1. Overall change to the runoff from the site is expected to be negligible as no additional flow is anticipated, given that no impervious surface area will be added to the site. Downstream infrastructure will not be impacted by the site development.

Current flow conditions on the 73.2-acre site experience sheet flow, shallow concentrated flow and some channel flows across the property. After moving dirt to the site, and establishing the stockpile rainfall on the stockpiles will sheet flow off of the stockpiles to adjacent swales which will convey the now concentrated flows into sediment basins proposed to capture sediment from the stockpiles while they are being stabilized. It is anticipated that the sediment basins will remove any sediment collected and slowly discharge stormwater to a riprap pad, to become sheet flow again.

The peak flows within each swale will be a maximum of 2.4 CFS for the 5-year event, and 4.0 cfs for the 100-year event (for the largest stockpile). Swales will have erosion control mats installed along the flow line of the swale to allow revegetation to occur more easily and prevent scour in the channels during the revegetation process.

Sediment Basins will be installed at the downstream ends of the swales to capture any sediment that runs off during the revegetation process. Basins and riprap pads were sized based on the City of Colorado Springs Standard Detail TSB.

Culverts will be installed downstream of the sediment basins to allow nuisance stormwater from the sediment basins to pass under the temporary haul road while the stockpiles are built. After the site is stabilized, the haul road will be reseeded, and the culverts removed.

**Hydraulics**

Per the DCM chapter discussion open channel flows, a channel is considered stable for erosive soils if the 100-year event is below 5 ft/s. The tables below demonstrate compliance of the proposed swales with this criterion.

**Table 1. Basin Hydrology**

	<b>Total Basin Area (acres)</b>	<b>Maximum Contributing Area (acres)</b>	<b>Tc (mins)</b>	<b>C value</b>	<b>100-year Q Flow (cfs)</b>
Stockpile 1	11.7	3.4	15	.08	1.6
Stockpile 2	12.2	4.9	15	.08	2.3

**Table 2. Channel Characteristics**

	<b>Channel Width (Ft)</b>	<b>Channel Depth (Ft)</b>	<b>Channel Capacity (cfs)</b>	<b>100-year Water Depth (Ft)</b>	<b>Average Channel Slope</b>	<b>100-year Velocity (Ft/sec)</b>
Stockpile 1	9	1.5	32	0.45	1.75%	2.3
Stockpile 2	9	1.5	58	0.45	5.7%	3.8

**Water Quality**

Permanent water quality measures are not required, due to the land not being developed. Stockpiles will be reseeded with native vegetation and will not increase any impervious area of the site. New sediment basins will actually reduce the peak flows of stormwater being released compared to the existing condition, and delay the peak flows downstream. Riprap pads at the outflow of the sediment basins will return the flows to a sheet flow condition. This falls within allowable exclusions listed in the MS4 permit (and Erosion Control Manual) for this jurisdiction.

**Floodplain Statement**

The proposed site is neither in nor adjacent to the regulatory 100-year floodplain. The parcels are located within FIRM #08041C0764G and FIRM #08041C0768G.

**Drainage Basin Fees**

The site is unplatted and will remain so during this development, therefore Drainage Basin Fees for Big Johnson Drainage Basin will not be applied.







**Conclusion**

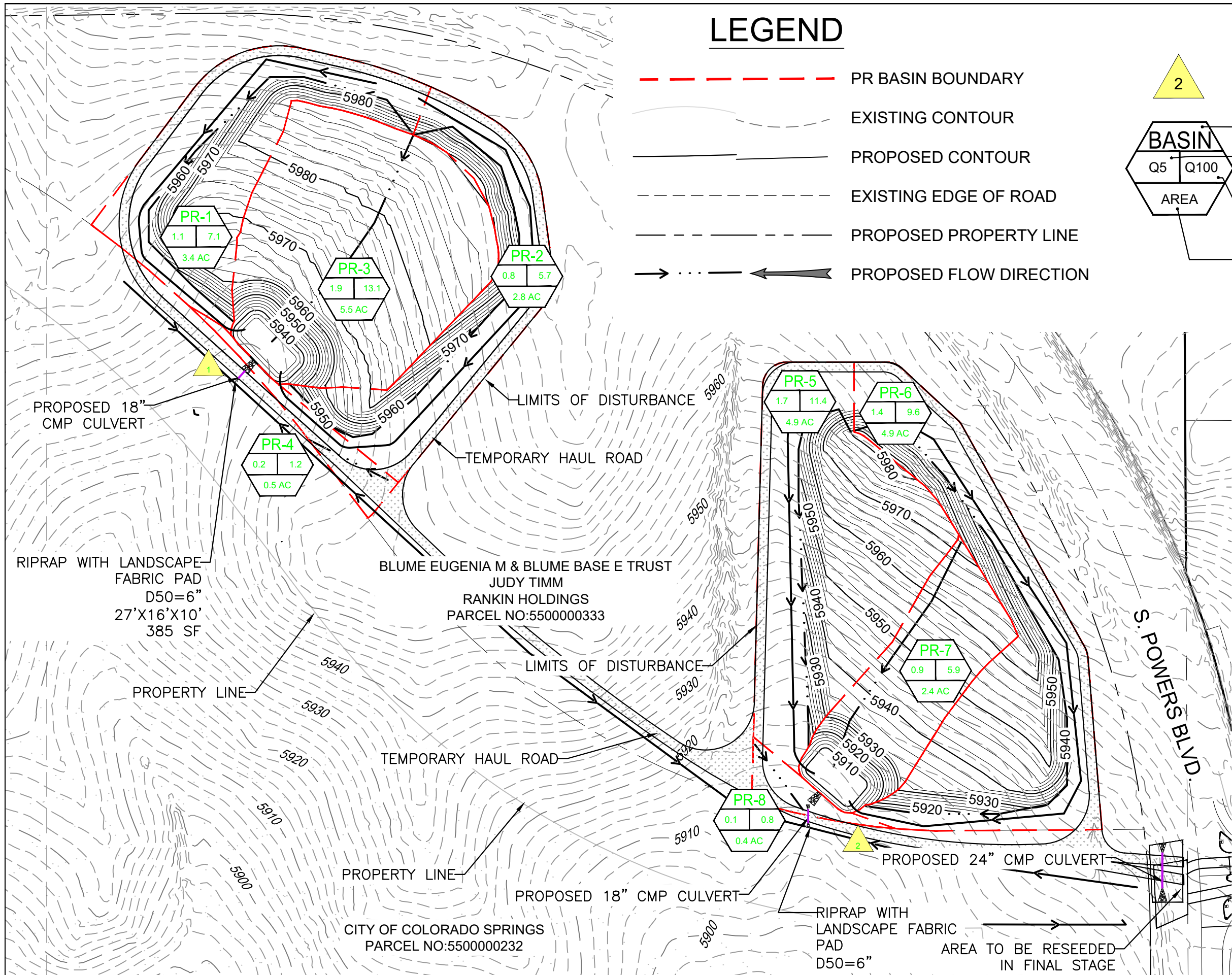
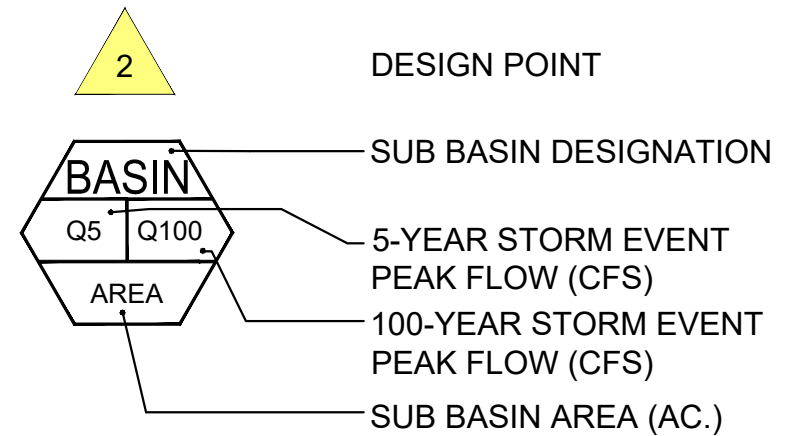
The proposed Stockpiles at Aspen Ridge site development does not increase developed runoff values above present conditions, does not adversely impact the FEMA regulatory floodplain, downstream or surrounding developments, complies with the governing MS4 permit, and is consistent with the requirements of the El Paso County and the City of Colorado Springs DCM.

## Attachments

Drainage Basin Map  
StormCAD Swale Reports  
Vicinity Map/Haul Route  
Site Plan

# LEGEND

-  PR BASIN BOUNDARY
-  EXISTING CONTOUR
-  PROPOSED CONTOUR
-  EXISTING EDGE OF ROAD
-  PROPOSED PROPERTY LINE
-  PROPOSED FLOW DIRECTION



GRAPHIC SCALE



( IN FEET )  
1 inch = 200 ft.

 **Matrix**  
*Excellence by Design*

2435 Research Parkway, Suite 300  
Colorado Springs, CO 80920  
Contact:  
Phone (719) 575-0100 | Fax (719) 575-0208

## Stockpile 1 Swale Hydraulics

**FlexTable: Conduit Table**

ID	Label	Start Node	Set Invert to Start?	Invert (Start) (ft)	Stop Node
35	CO-1	CB-1	True	90.00	O-1
Set Invert to Stop?	Invert (Stop) (ft)	Has User Defined Length?	Length (User Defined) (ft)	Length (Scaled) (ft)	Slope (Calculated) (ft/ft)
True	81.25	True	500.0	69.6	0.018
Section Type	Diameter (in)	Manning's n	Flow (cfs)	Velocity (ft/s)	Depth (Out) (ft)
Triangular Channel		0.033	1.62	2.25	0.45
Capacity (Full Flow) (cfs)	Flow / Capacity (Design) (%)	Depth (Normal) / Rise (%)	Notes		
32.04	5.1	32.7			

swale1.stw  
7/21/2023

Bentley Systems, Inc. Haestad Methods Solution  
Center  
76 Watertown Road, Suite 2D Thomaston, CT  
06787 USA +1-203-755-1666

StormCAD  
[10.03.04.53]  
Page 1 of 1

## Stockpile 2 Swale Hydraulics

**FlexTable: Conduit Table**

ID	Label	Start Node	Set Invert to Start?	Invert (Start) (ft)	Stop Node
35	CO-1	CB-1	True	90.00	O-1
Set Invert to Stop?	Invert (Stop) (ft)	Has User Defined Length?	Length (User Defined) (ft)	Length (Scaled) (ft)	Slope (Calculated) (ft/ft)
True	61.50	True	500.0	69.6	0.057
Section Type	Diameter (in)	Manning's n	Flow (cfs)	Velocity (ft/s)	Depth (Out) (ft)
Triangular Channel		0.033	2.34	3.84	0.45
Capacity (Full Flow) (cfs)	Flow / Capacity (Design) (%)	Depth (Normal) / Rise (%)	Notes		
57.83	4.0	30.0			

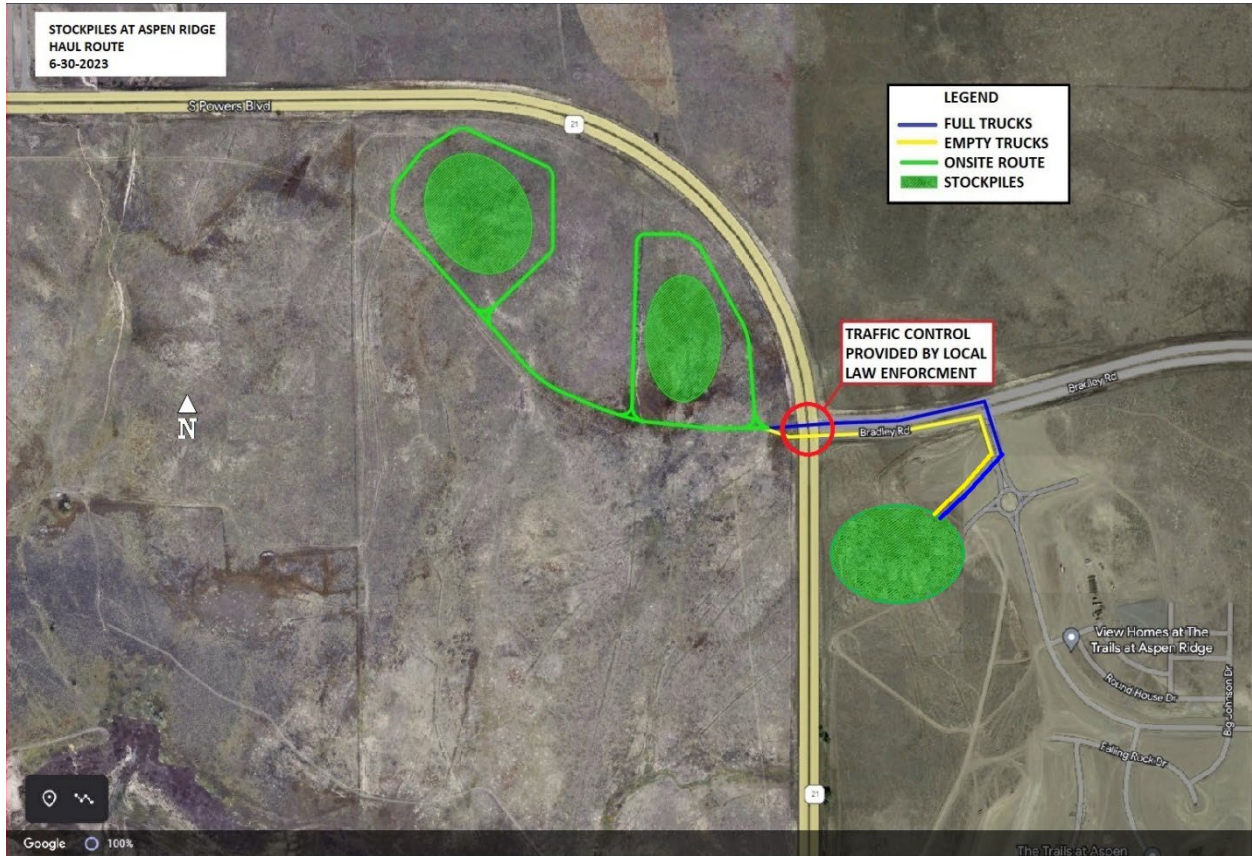
swale2.stw  
7/21/2023

Bentley Systems, Inc. Haestad Methods Solution  
Center  
76 Watertown Road, Suite 2D Thomaston, CT  
06787 USA +1-203-755-1666

StormCAD  
[10.03.04.53]  
Page 1 of 1



# Vicinity Map/Haul Route (not to scale)



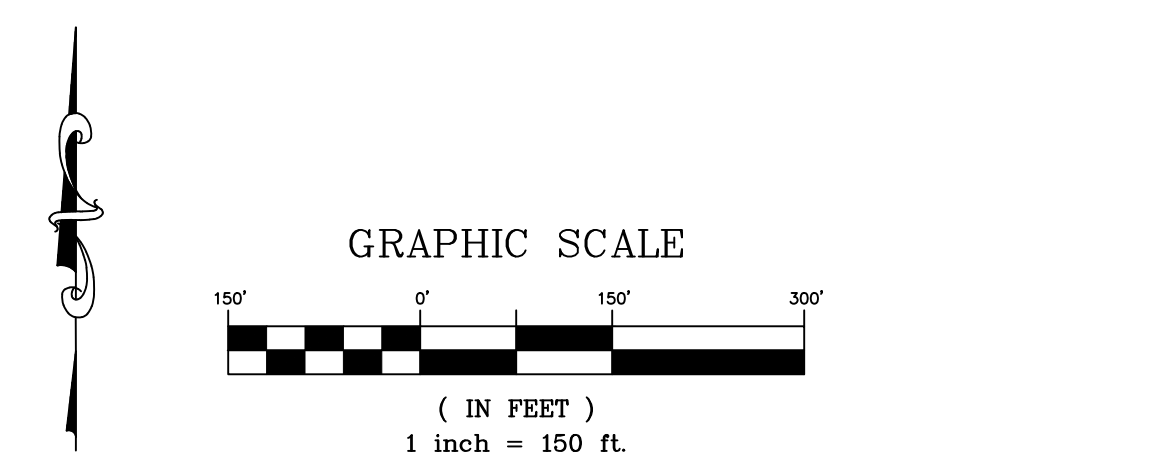
Site plan



Know what's below.  
Call before you dig.

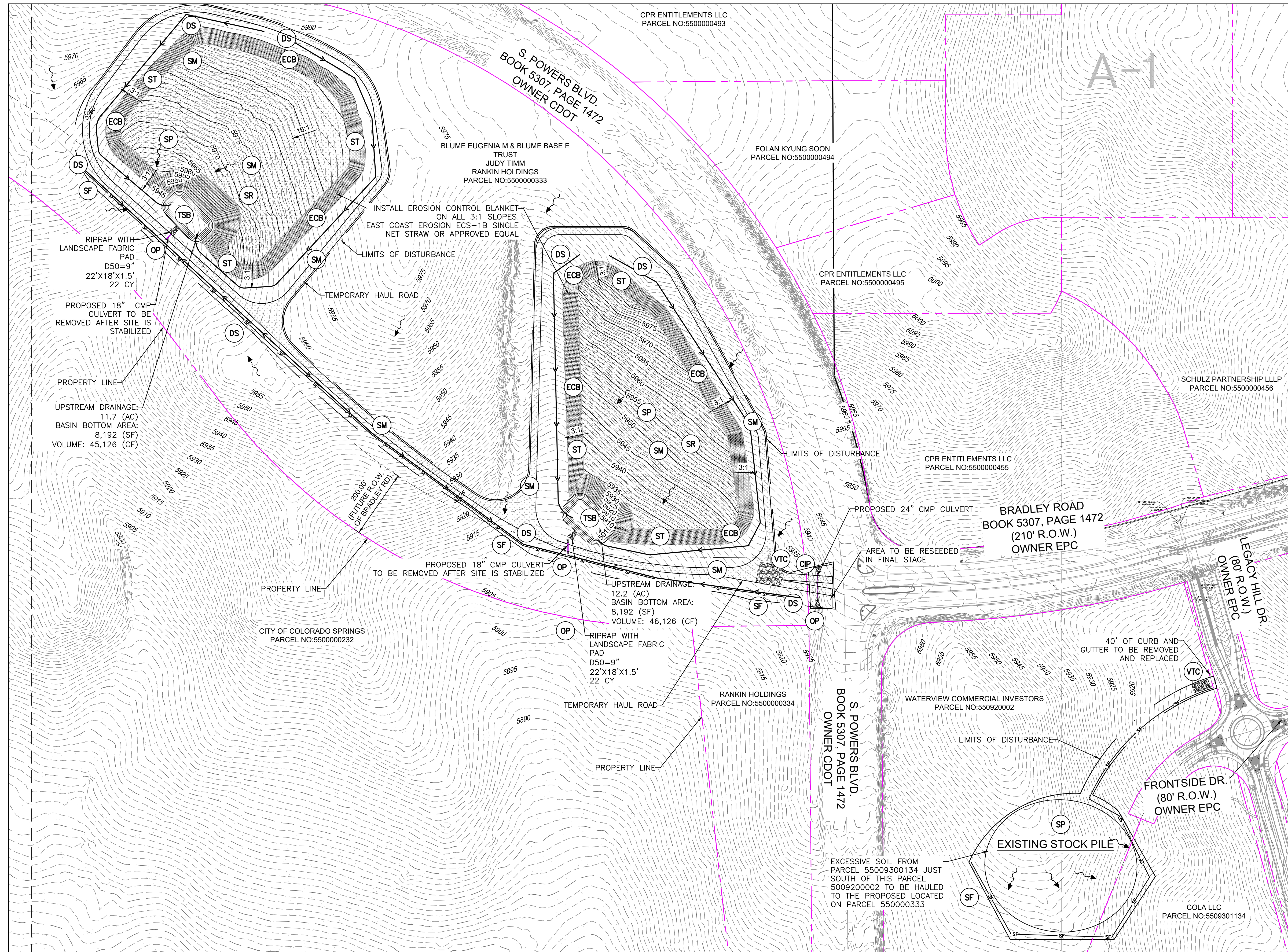
**EROSION CONTROL LEGEND**

INITIAL BMPs	
	SILT FENCE
	VEHICLE TRACKING CONTROL
	TEMPORARY SEDIMENT BASINS
INTERIM BMPs	
	DRAINAGE SWALE WITH EROSION CONTROL BLANKET
	STOCKPILE MANAGEMENT
	SURFACE ROUGHENING ON STOCKPILES SLOPES FLATTER THAN 3:1
	SLOPE TRACKING ON 3:1 SLOPES
FINAL BMPs	
	SEEDING AND MULCHING
	EROSION CONTROL BLANKET IN FINAL STAGE
	CULVERT INLET PROTECTION/ OUTLET PROTECTION
	(TEMPORARY) SEDIMENT BASINS TO BE LEFT IN PLACE
GENERAL ITEMS	
	PROPOSED CONTOURS
	EXISTING CONTOURS
	SLOPE LABEL
	PROPERTY LINE
	LIMITS OF DISTURBANCE/ CONSTRUCTION SITE BOUNDARY
	PROPOSED TEMPORARY ROAD



- NOTES:
- ALL DRAINAGE SWALES SHALL HAVE A MINIMUM LONGITUDINAL SLOPE OF 0.5%, MINIMUM 1.5' DEPTH, AND MAXIMUM 3:1 SIDE SLOPES. LINE SWALES WITH EAST COAST EROSION ECC-2B DOUBLE NET COCONUT BIODEGRADABLE ROLLED EROSION CONTROL PRODUCT OR APPROVED EQUAL.
  - ALL EROSION CONTROL BLANKET SHALL BE INSPECTED 24-MONTHS AFTER INSTALLATION. EROSION CONTROL BLANKET MAY BE REQUIRED TO RE-INSTALLED PER MANUFACTURER SPECIFICATIONS. CONTRACTOR TO USE SLOPE TRACKING OR EROSION CONTROL BLANKET ON SLOPES 3:1 OR GREATER PER CITY STANDARDS.
  - ALL EROSION CONTROL MEASURES REQUIRED WITHIN THE INITIAL AND INTERIM PHASE OF THIS PLAN ARE TO REMAIN UNTIL FINAL STABILIZATION IS ACHIEVED UNLESS OTHERWISE NOTED.
  - AREAS WITHIN THE SITE THAT ARE INACTIVE FOR 60 DAYS OR GREATER TO BE STABILIZED WITH NATIVE SEED, AS SHOWN ON SHEET ECN03.
  - CONTRACTOR TO PROVIDE DOCUMENTATION FROM GEOTECHNICAL ENGINEER TO CONFIRM STOCKPILES MAY HAVE 3:1 SIDE SLOPES WITH NO COMPACTION PRIOR TO PLACEMENT OF EROSION CONTROL BLANKET.

EPC'S EDARP FILE NUMBER: CDR2312



REFERENCE DRAWINGS	DESCRIPTION	BY
X-886-EX SURVEY		
886-pr legacy drive		
X-Title-GEC		
X-886-EX-BASE		
X-886-PR SITE_F1		
X-886-PR SITE_F2		
886-PR Legacy Drive-Roundabout		
X-Title-GEC-haul route		
Parade		

No.	DATE	DESCRIPTION	BY

COMPUTER FILE MANAGEMENT	
FILE NAME:	S:\20.886.028 Trails PUDSP Major Amend\100 Dwg\104 Plan Sets\Construction Plans\GEC Plan\haul_route GEC.dwg
CTB FILE:	---
PLOT DATE:	July 25, 2023 12:06:20 PM
THIS DRAWING IS CURRENT AS OF PLOT DATE AND MAY BE SUBJECT TO CHANGE.	

**SHEET KEY**

**BENCHMARK**  
 COLORADO SPRINGS UTILITIES (FIMS) MONUMENT F206  
 A BERNTSEN TOP SECURITY MONUMENT SYSTEM WITH A 3.5-INCH DIAMETER ALUMINUM CAP IN A ROAD BOX, LOCATED ON THE NORTHWEST CORNER OF FONTAINE BOULEVARD AND POWERS BOULEVARD.  
 ELEVATION - 5897.89' U.S. SURVEY FT

**BASIS OF BEARING**  
 BEARINGS ARE BASED ON THE NORTH LINE OF THE NORTHWEST QUARTER OF SECTION 9, TOWNSHIP 15 SOUTH, RANGE 65 WEST OF THE 6TH P.M. SAID LINE BEARS S89°51'23"E FROM THE NORTHWEST CORNER OF SAID SECTION 9 (2 1/2" AULM. CAP PLS 17664) TO THE N 1/2 CORNER OF SAID SECTION 9 (3 1/2" AULM. CAP PLS 10377)

SEAL

**PRELIMINARY**  
 THIS DRAWING HAS NOT BEEN APPROVED BY GOVERNING AGENCIES AND IS SUBJECT TO CHANGE

FOR AND ON BEHALF OF  
 MATRIX DESIGN GROUP, INC.  
 PROJECT No. 23.886.078

DESIGNED BY: NMS  
 DRAWN BY: TRS  
 CHECKED BY: NMS

SCALE  
 HORIZ N/A  
 VERT. N/A

DATE ISSUED: MAY 2023  
 SHEET 3 OF 8

DRAWING No. GEC01

PREPARED BY:

**TRAILS AT ASPEN RIDGE - STOCKPILE**

CONSTRUCTION DRAWINGS  
 GRADING AND EROSION CONTROL PLANS

**GRADING AND EROSION CONTROL PLAN**