

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
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COLA

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Prepared by:



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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

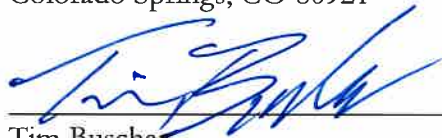


Developer's Statement:

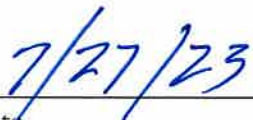
I, the developer, have read and will comply with all of the requirements specified in this drainage report and plan.

COLA

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



Tim Buschar



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

Date

Conditions:

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

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

Table 2. Channel Characteristics

	Channel Width (Ft)	Channel Depth (Ft)	Channel Capacity (cfs)	100-year Water Depth (Ft)	Average Channel Slope	100-year Velocity (Ft/sec)
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

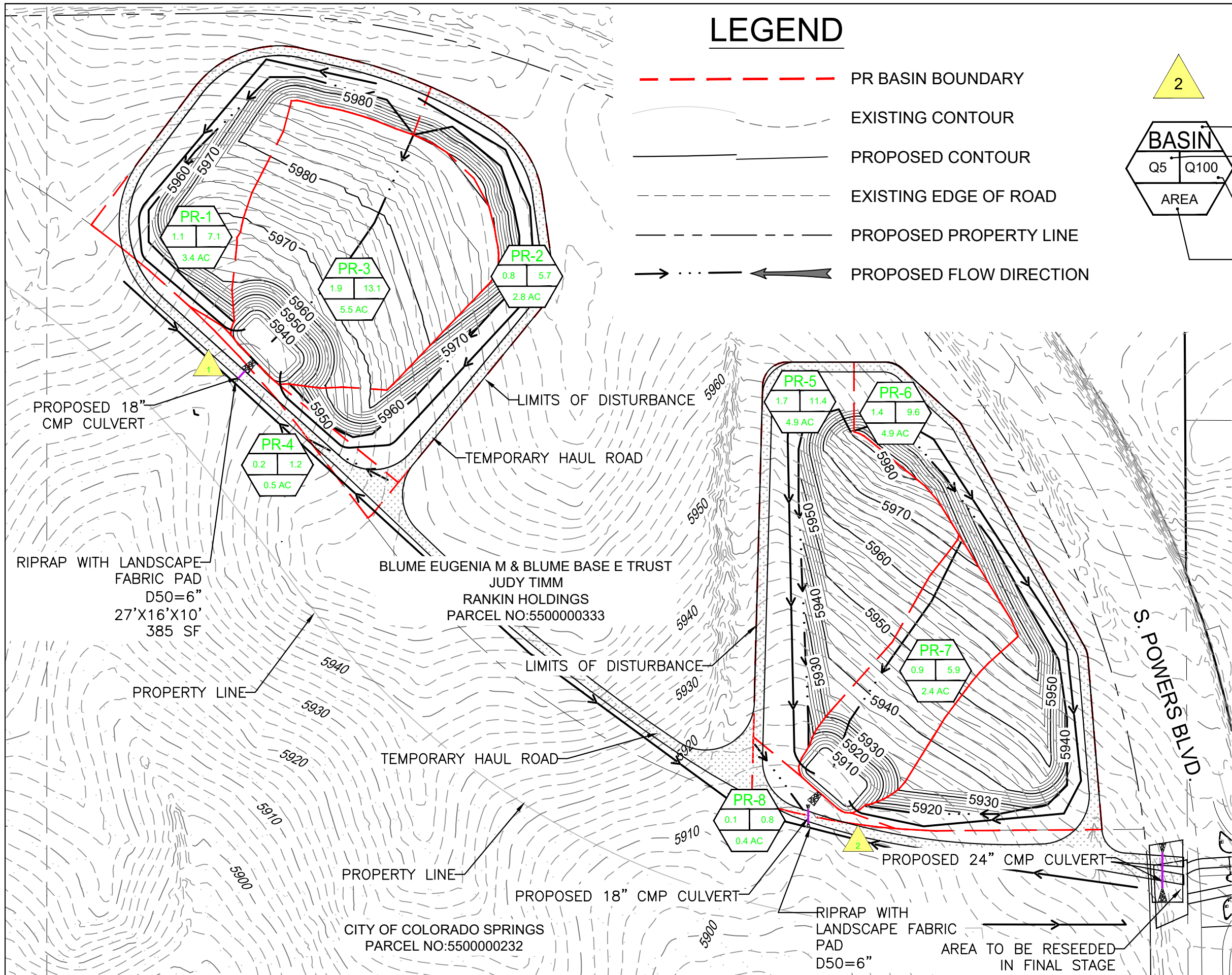
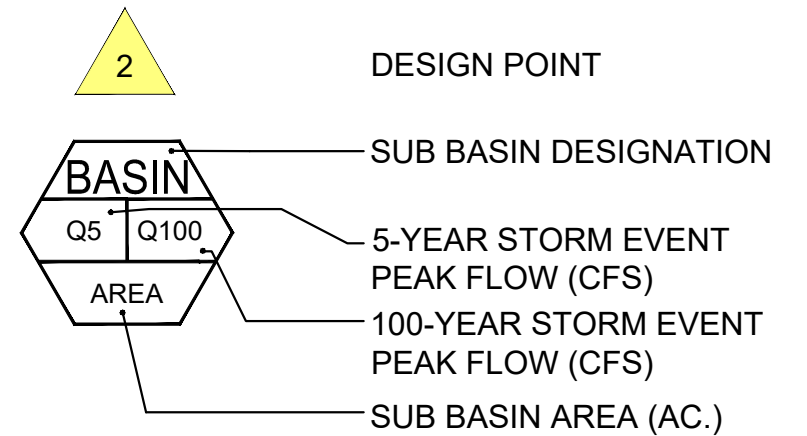
The proposed Stockpiles at Aspen Ridge site development does not increase developed runoff values above present conditions, does not adversely impact the FEMA regulatory floodplain, downstream or surrounding developments, complies with the governing MS4 permit, and is consistent with the requirements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

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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

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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			

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Site plan

