MVE, INC.
ENGINEERS SURVEYORS
1903 lelaray street, suite 200
colorado springs, co 80909
719.576.0311

Drainage Letter

Matika Subdivision

Filing No. 1

MVE Project No. 61154

June 8, 2021

PCD Proj No.: CDR-21-003

Drainage Letter

for

Matika Subdivision
Filing No. 1
El Paso County, Colorado

Project No. 61154

June 8, 2021

prepared for:

Westover Homes LLC
8605 Explorer Dr, Ste 250
Colorado Springs, CO 80920

prepared by:

MVE, Inc.
1903 Lelaray Street, Suite 200
Colorado Springs, CO 80909
719.576.0311

Statements and Acknowledgments

Engineer's Statement

The attached drainage plan and report were prepared under my direction and supervision and are correct to the best of my knowledge and belief. Said drainage report has been prepared according to the criteria established by the County for drainage reports and said report is in conformity with the applicable master plan of the drainage basin. I accept responsibility for any liability caused by any negligent acts, errors or omissions on my part in preparing this report.

6/18/2021

David R. Gorman, P.E., Colorado No. 31672 — Date
For and on Behalf of MVE, Inc.

COLORADO LICENSED
DAVID RAYMOND GORMAN
31672
6/18/2021
PROFESSIONAL ENGINEER

Developer's Statement

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

Jordan Savage — 6/17/21

Jordan Savage
Westover Homes LLC, Owner — Date
8605 Explorer Dr, Ste 250
Colorado Springs, CO 80920

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.

Jennifer Irvine, P.E., — Date
County Engineer / ECM Administrator

Conditions:

Drainage Letter

The purpose of this Drainage Letter for Matika Subdivision Filing No. 1. is to update the approved drainage report for Matika Subdivision Filing No. 1 to allow the construction of the subdivision improvements which have not yet been constructed following the approval of the subdivision by the Board of County Commissioners on December 17, 2009, or following the recording of the Final Plat on January 17, 2012. The approved drainage report is titled "Preliminary and Final Drainage Report for Matika Subdivision Filing No. 1" prepared by M.V.E., Inc, dated April 9, 2009 and approved by the El Paso County Engineer on December 21, 2009. The property owners intend at this time to complete the subdivision improvements.

The existing subdivision known as "Matika Subdivision Filing No. 1" is located in the North One-Half of the Southwest One-Quarter of Section 32, Township 11 South, Range 65 West of the 6th P.M., El Paso County, Colorado. The current addresses for the properties are 6818, 6902, 6986, 7070, 7154, 7237, & 7153 Marshbern Ct., all of which are currently vacant parcels, except for 6818 Marshbern Ct. The subdivision is located on the east side of Black Forest Road, north of Snow Mass Dr, and south of Terra Ridge Circle. The Final Plat for Matika Subdivision Filing No. 1 was recorded January 17, 2012 under Reception Number 212713179 of the records of El Paso County, Colorado. The site is located in the East Cherry Creek Drainage Basin (CYCY0200). East Cherry Creek flows south to north approximately 1600 feet east of the east border of the site. The subdivision is 42.26 acres in area, including the right-of-way that was dedicated to El Paso County for Marshbern Court. The subdivision is zone RR-5 and contains seven (7) 5-acre rural residential lots and one (1) open space Tract A.

The site is bounded on the north by the residential lots of Terra Ridge Filing No. 2. The east side of the site is adjacent to Wildwood Ranch Estates Filing No. 3. The site is bounded on the south by lots 1, 7, 8, and 9 of Wildwood Ranch Estates Filing No. 7, and by lot 1 of Wildwood Ranch Estates Filing No. 3. Black Forest Road borders the west side of the site. Lot 2, of Palmer Divide and lots 1 and 2 of Country View Estates lie across Black Forest Road to the west. A separate cell tower parcel is adjacent to the east side of Tract A and the west side of Lot 7. The Cell Tower parcel is not part of Matika Subdivision Filing No. 1.

The site is mostly vacant except for the existing residence located on Lot 1. Black Forest Road, a public paved road in a 70 ft right-of-way is adjacent to the west side of Lot 1. An existing private gravel driveway extends east from Black Forest Road, providing access to the existing cell tower located in the above mentioned cell tower parcel.

According to the Federal Emergency Management Agency's Flood Insurance Rate Map (FIRM) Community Panel Number 08041C0315G, dated December 7, 2018, for El Paso County, Colorado the site is not located within any Federal Emergency Management Agency (FEMA) designated Special Flood Hazard Areas (SFHA). A portion of the **FIRM** is included with this Drainage Letter for reference.

According to the Natural Resources Conservation Service Web National Cooperative Soil Survey, the soil of the site is Peyton-Pring Complex (map unit 68), which is part of hydrologic soil group B. The Peyton-Pring Complex soil is typically deep and well drained. The permeability of the soil is moderate to rapid, surface runoff is medium and hazard of erosion is moderate. A portion of the **National Cooperative Soil Survey Map** is included with this Drainage Letter.

The existing drainage patterns of the Matika site are indicated in the attached **Drainage Map Existing Conditions** from the previously approved Preliminary and Final Drainage Report. A sub-basin encompassing the west two thirds of the site drains east and northwest into the unnamed tributary of East Cherry Creek, which bisects the Matika site from south to north, and drains across the north border of the site. A sub-basin encompassing the east third of the site drains east to the east borders of the site. All runoff originating on or flowing through the site eventually drains to East Cherry Creek. These sub-basins are described in more detail in the previously approved Preliminary and Final Drainage Report. The offsite drainage sub-basins affecting the site include three significant sub-basins to the south, one sub-basin to the southwest, and one sub-basin to the west, all of which drain generally northeast, crossing into the site across the south and west borders. These offsite sub-basins contribute significant runoff onto the site. An **Existing Offsite Basins** map is included in the Appendix and the sub-basins are described in more detail in the previously approved Preliminary and Final Drainage Report.

The Proposed drainage patterns of the Matika site are indicated on the attached **Drainage Map Proposed Conditions** from the previously approved Preliminary and Final Drainage Report. The drainage patterns are described by four (4) onsite sub-basins, and five (5) offsite sub-basins. The site will continue to drain as in existing conditions with the eastern portion of the site draining offsite to the east and the western portion of the site draining to the north through the previously mentioned unnamed tributary to East Cherry Creek. The sub-basins are described in more detail in the Preliminary and Final Drainage Report.

The proposed improvements to be constructed are Marshbern Court, a public paved rural local roadway in 60' right-of-way. The proposed road will provide access to all seven (7) residential lots of the subdivision along with the existing cell tower site. Marshbern Court will have roadside ditches and one culvert crossing. The roadside ditches were sized to safely convey the stormwater runoff from the proposed roadway. Further details and calculations can be found in the previously approved Preliminary and Final Drainage Report.

For the purpose of runoff calculations, each lot is expected to be developed with a single family home having a footprint of 4,000 square feet along with a gravel driveway to give access to the home from the proposed roadway. These assumptions were used to calculate the imperviousness of the site. Runoff calculations for both existing and proposed conditions can be found in the approved Preliminary and Final Drainage Report.

The proposed development will not alter the existing basic drainage patterns of the site. The site will continue to drain off-site to the north and east as in existing conditions. Off-site flows will continue to enter the site as described in the approved Preliminary & Final Drainage Report For Matika Subdivision. The developed flow runoff quantities will not change from those described in the approved Preliminary & Final Drainage Report For Matika Subdivision. An unnamed tributary to

East Cherry Creek runs from south to north through the eastern half of the site. The unnamed tributary will cross the proposed Marshbern Court through a 60" type 3 RC culvert.

Four Step Process:

The El Paso County Engineering Criteria Manual (Appendix I, Section I.7.2) requires the consideration of a "Four Step Process for receiving water protection that focuses on reducing runoff volumes, treating the water quality capture volume (WQCV), stabilizing drainageways, and implementing long term source controls". The Four Step Process is incorporated in this project and the elements are discussed below.

The portion of the site that is contained within the 5-acre single family residential lots are excluded from Post Construction Stormwater Management requirements by ECM 1.7.1.B.5 due to the low development density as 5-acre lots. However, Marshbern Court, a public roadway, is subject to Post Construction Stormwater Treatment requirements. This site will meet the requirements based the Runoff Reduction Standard indicated in ECM 1.7.1.C.3.

1) Runoff Reduction Practices are employed in this project. Impervious surfaces have been reduced as much as practically possible with the low residential density. All impervious surfaces on the site will drain to the surrounding pervious areas allowing infiltration and water quality mitigation. Minimized Directly Connected Impervious Areas (MDCIA) is employed on the project because runoff from the impervious areas of the future home sites will pass over the adjacent natural grassed areas for a distance of 25 feet to 300 feet before entering a roadside ditch or natural drainage way. Runoff from the paved public road will drain to the adjacent native vegetated roadside ditches that will capture and infiltrate runoff from the roadway surface. Runoff Reduction calculations are included in the appendix showing that the roadway runoff will infiltrate into the ground, evaporate, or evapotranspire a quantity of water equal to at least 60% of what the calculated WQCV would be if all impervious area for the applicable development site discharged without infiltration.

2) All drainage paths on the site will remain stabilized with the natural native grass lining. Disturbed areas will be reseeded. All culverts will have rip-rap aprons at entrance and exits. The existing natural swale downstream of the new culvert crossing of proposed Marshbern Court was analyzed for hydraulic depths & velocities. The swale with the existing stable vegetative cover consisting of the natural native grasses on the site are adequate to convey the minor and major storm flows without erosion and sedimentation. No further stabilization is required.

3) The project contains no potentially hazardous uses. The site is exempted from the use of WQCV BMPs by ECM 1.7.1.B.5 by virtue of the large lot rural residential nature of the site having percent imperviousness of less than 10%. The site includes the use of permanent rip rap aprons at the culvert crossings to control potential sedimentation. The runoff in the roadside ditches of the public roadway will infiltrate into the ground, evaporate, or evapotranspire a quantity of water equal to at least 60% of what the calculated WQCV would be if all impervious area for the applicable development site discharged without infiltration. Runoff Reduction can be found in the Previously Approved Preliminary and Final Drainage Report.

4) The site contains no storage of potentially harmful substances or use of potentially harmful substances. No Site Specific or Other Source Control BMP's are required.

No offsite drainage improvements will be required for the project. Costs for public non-reimbursable drainage improvements are listed below:

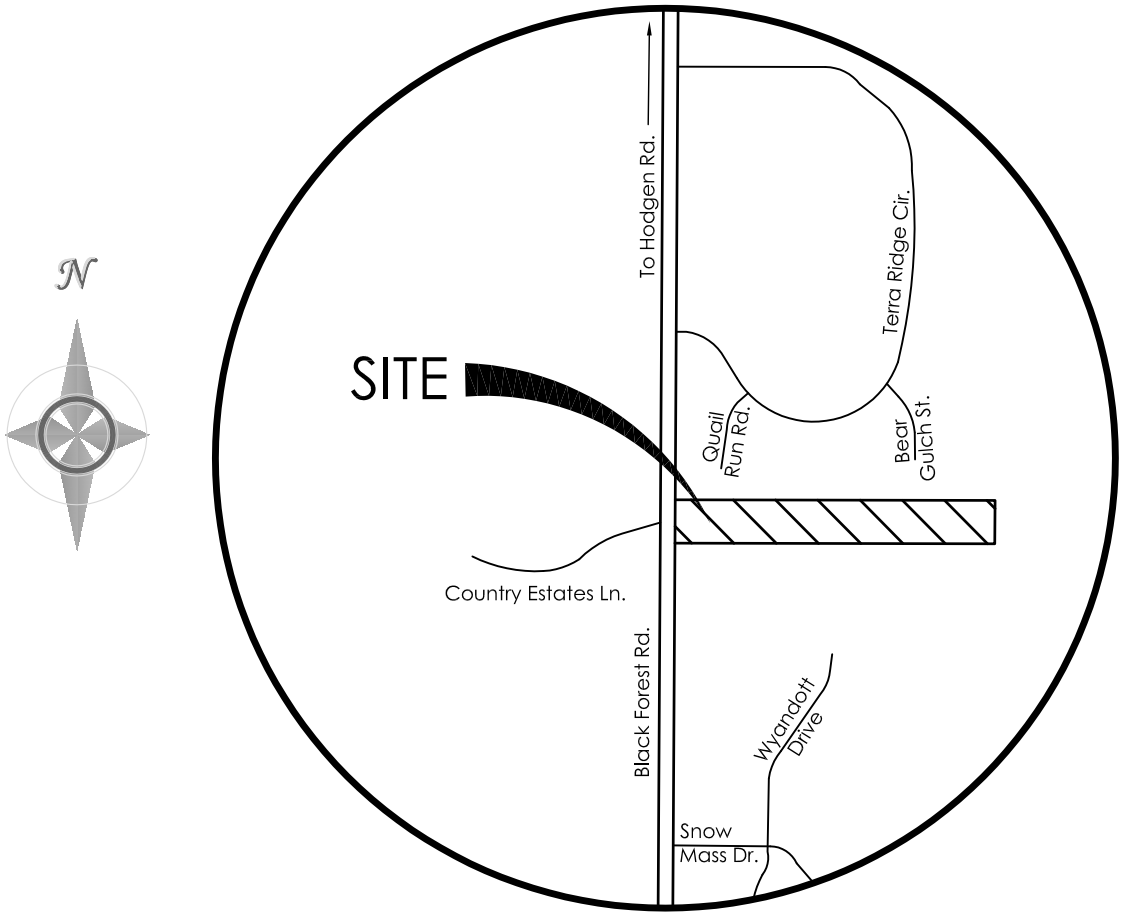
83 LF 60” Class 3 RC Pipe	at	$298 / LF	=	$24,734
2 - 60” RC Flared End Section	at	$1,788/ EA	=	$ 3,576
366 CY Rip-Rap Type M	at	$83 /CY	=	$30,378
5 - Rock Check Dam	at	$518 / EA	=	$ 2,590
Total			=	$61,278

The East Cherry Creek Drainage Basin has not been studied and is not a Fee Basin at this time. No Drainage Fees or Bridge Fees are due for the proposed Final Plat of Matika.

In Conclusion, the drainage patterns generated by the Matika Subdivision site under proposed developed conditions are essentially the same as those which existed for the existing Plan. The site and drainage are substantially in accordance with the previously approved Drainage Report prepared at the time of the Plan in 2009. The proposed development as described in this Drainage Letter will have no adverse impacts to downstream and surrounding developments or downstream drainage ways or storm drain facilities.

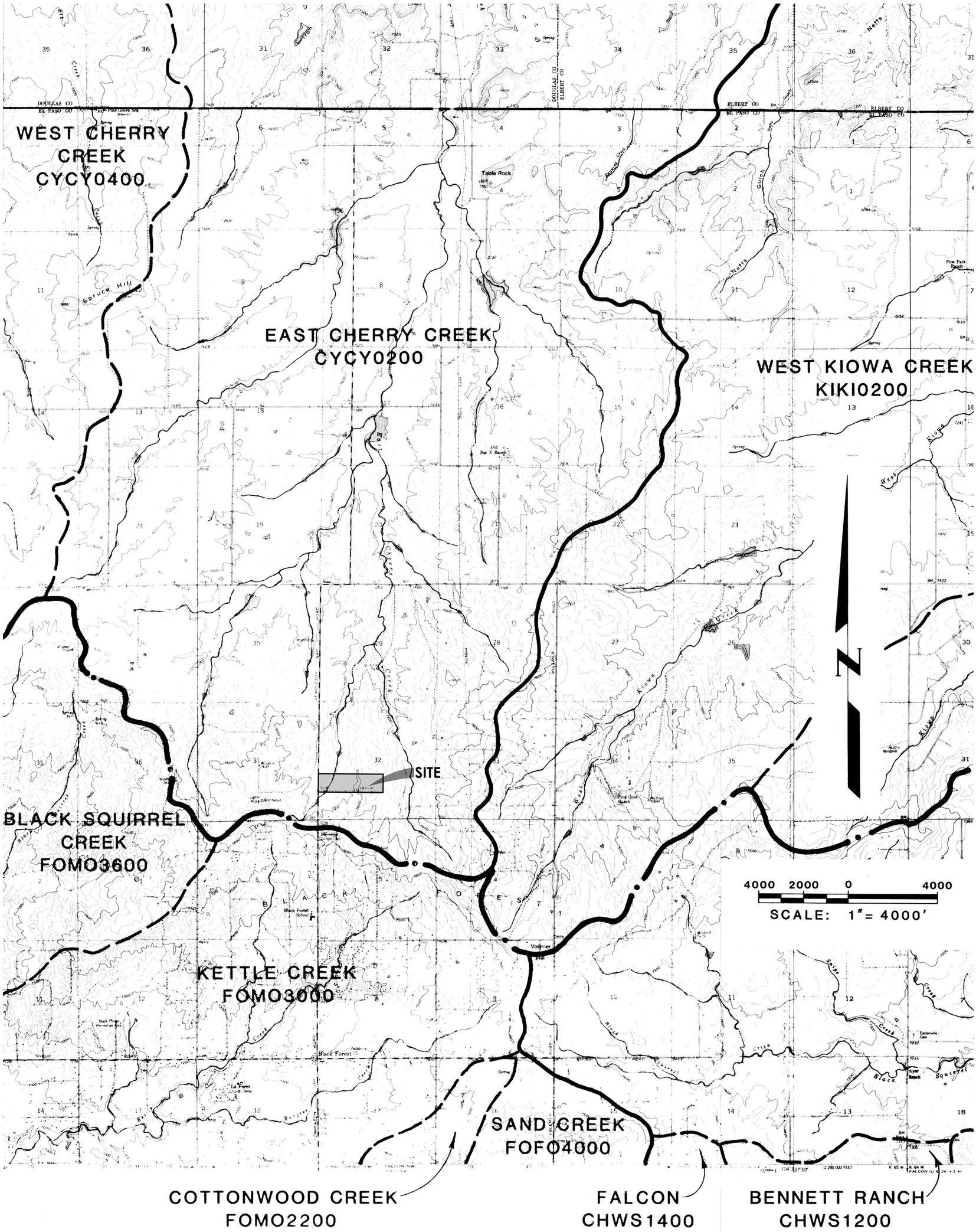
Z:\61154\Documents\Reports\61154 Matika Drainage Letter.odt

Attachments



VICINITY MAP

N.T.S.



MULLER ENGINEERING COMPANY, INC. CONSULTING ENGINEERS 7000 WEST FOURTEENTH AVENUE LAKEWOOD, COLORADO 80215 (303) 232-9340	DESIGNED JTW, BAD DATE 4/86 DRAWN BMG DATE 4/86 CHECKED LAM DATE 4/86 REVISED DATE

A PORTION OF THE EL PASO COUNTY DEPARTMENT OF TRANSPORTATION
DRAINAGE AREA IDENTIFICATION STUDY, MAP NO. 2

Hydrologic Soil Group—El Paso County Area, Colorado
(Matika Subdivision Filing No. 1)

Hydrologic Soil Group

Hydrologic Soil Group— Summary by Map Unit — El Paso County Area, Colorado				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
68	Peyton-Pring complex, 3 to 8 percent slopes	B	42.2	100.0%
Totals for Area of Interest			**42.2**	**100.0%**

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: *None Specified*

Tie-break Rule: Lower

support a load and potential frost action on roads and streets. Roads and buildings can be designed to overcome these limitations. Capability subclass IVe.

67—Peyton sandy loam, 5 to 9 percent slopes. This deep, noncalcareous, well drained soil formed in alluvium and residuum derived from weathered arkosic sedimentary rock on uplands. Elevation ranges from 6,800 to 7,600 feet.

Typically, the surface layer is grayish brown sandy loam about 12 inches thick. The subsoil, about 23 inches thick, is pale brown sandy clay loam in the upper 13 inches and pale brown sandy loam in the lower 10 inches. The substratum is pale brown sandy loam to a depth of 60 inches.

Included with this soil in mapping are small areas of Holderness loam, 5 to 8 percent slopes; Pring coarse sandy loam, 3 to 8 percent slopes; and Tomah-Crowfoot loamy sands, 3 to 8 percent slopes.

Permeability of this soil is moderate. Effective rooting depth is 60 inches or more. Available water capacity is high. Surface runoff is medium, and the hazard of erosion is moderate. Gullies and rills are common.

Most of the acreage of this Peyton soil is used as rangeland. Some areas are used for wheat and oats. Stubble mulching or other crop residue management practices are needed to control water erosion. Wildlife habitat is also an important use.

This soil is well suited to the production of native vegetation suitable for grazing. The native vegetation is mainly mountain muhly, bluestem, mountain brome, needleandthread, and blue grama. This soil is subject to invasion by Kentucky bluegrass and Gambel oak. Minor amounts of forbs such as hairy goldenrod, geranium, milkvetch, low larkspur, fringed sage, and buckwheat are in the stand.

Proper location of livestock watering facilities helps to control grazing. Timely deferment of grazing is needed to protect the plant cover.

Windbreaks and environmental plantings generally are suited to this soil. Soil blowing is the main limitation to the establishment of trees and shrubs. This limitation can be overcome by cultivating only in the tree rows and leaving a strip of vegetation between the rows. Supplemental irrigation may be necessary when planting and during dry periods. Trees that are best suited and have good survival are Rocky Mountain juniper, eastern redcedar, ponderosa pine, Siberian elm, Russian-olive, and hackberry. Shrubs that are best suited are skunkbush sumac, lilac, and Siberian peashrub.

This soil is suited to habitat for openland and rangeland wildlife. Rangeland wildife, such as pronghorn antelope, can be encouraged by developing livestock watering facilities, properly managing livestock grazing, and reseeding range where needed.

This soil has good potential for homesites. The main limitation is the limited ability to support a load and potential frost action. Buildings and roads can be designed to overcome these limitations. Capability subclass IVe.

68—Peyton-Pring complex, 3 to 8 percent slopes. These gently sloping to moderately sloping soils are on valley side slopes and on uplands. Elevation ranges from 6,800 to 7,600 feet. The average annual precipitation is about 17 inches, the average annual air temperature is about 43 degrees F, and the average frost-free period is about 120 days.

The Peyton soil makes up about 40 percent of the complex, the Pring soil about 30 percent, and other soils about 30 percent.

Included with these soils in mapping are areas of Holderness loam, 1 to 5 percent slopes; Holderness loam, 5 to 8 percent slopes; and Tomah-Crowfoot loamy sands, 3 to 8 percent slopes. In some places arkosic beds of sandstone and shale are at a depth of 0 to 40 inches.

The Peyton soil is commonly on the less sloping part of the landscape. It is deep, noncalcareous, and well drained. It formed in alluvium and residuum derived from weathered arkosic sedimentary rock. Typically, the surface layer is grayish brown sandy loam about 12 inches thick. The subsoil, about 23 inches thick, is pale brown sandy clay loam in the upper 13 inches and pale brown sandy loam in the lower 10 inches. The substratum is pale brown sandy loam to a depth of 60 inches or more.

Permeability of the Peyton soil is moderate. Effective rooting depth is 60 inches or more. Available water capacity is high. Surface runoff is medium, and the hazard of erosion is moderate.

The Pring soil is deep, noncalcareous, and well drained. It formed in sandy sediment derived from weathered arkosic sedimentary rock. Typically, the surface layer is dark grayish brown coarse sandy loam about 4 inches thick. The substratum is dark grayish brown coarse sandy loam about 10 inches thick over pale brown gravelly sandy loam that extends to a depth of 60 inches or more.

Permeability of the Pring soil is rapid. Effective rooting depth is 60 inches or more. Available water capacity is moderate. Surface runoff is medium, and the hazard of erosion is moderate.

These soils are used as rangeland, for wildlife habitat, and for homesites.

These soils are well suited to the production of native vegetation suitable for grazing. The dominant native species are mountain muhly, bluestem, needleandthread, and blue grama. These soils are subject to invasion of Kentucky bluegrass and Gambel oak. Common forbs are hairy goldenrod, geranium, milkvetch, low larkspur, fringed sage, and buckwheat.

Properly locating livestock watering facilities helps to control grazing. Timely deferment of grazing is needed to protect the plant cover.

Windbreaks and environmental plantings generally are suited to these soils. Soil blowing is the main limitation to the establishment of trees and shrubs. This limitation can be overcome by cultivating only in the tree rows and leaving a strip of vegetation between the rows. Supplemental irrigation may be needed when planting and during dry periods. Trees that are best suited and have good

survival are Rocky Mountain juniper, eastern redcedar, ponderosa pine, Siberian elm, Russian-olive, and hackberry. Shrubs that are best suited are skunkbush sumac, lilac, and Siberian peashrub.

These soils are suited to habitat for openland and rangeland wildlife. Rangeland wildlife, such as pronghorn antelope, can be encouraged by developing livestock watering facilities, properly managing livestock grazing, and reseeding range where needed.

These soils have a good potential for homesites. The main limitations, especially on the Peyton soil, are low bearing strength and frost-action potential. Buildings and roads can be designed to overcome these limitations. Access roads should have adequate cut-slope grade and be provided with drains to control surface runoff and keep soil losses to a minimum. Capability subclass VIe.

69—Peyton-Pring complex, 8 to 15 percent slopes. These gently to moderately sloping soils are on valley side slopes and on uplands. Elevation ranges from 6,800 to 7,600 feet. The average annual precipitation is about 17 inches, the average annual air temperature is about 43 degrees F, and the average frost-free period is about 120 days.

The Peyton soil makes up about 40 percent of the complex, the Pring soil about 30 percent, and other soils about 30 percent.

Included with these soils in mapping are areas of Holderness loam, 8 to 15 percent slopes; Tomah-Crowfoot loamy sands, 8 to 15 percent slopes; Kettle gravelly loamy sand, 8 to 40 percent slopes; and a few areas of Rock outcrop.

The Peyton soil is commonly on the less sloping part of the landscape. It is deep, noncalcareous, and well drained. It formed in alluvium and residuum derived from weathered, arkosic, sedimentary rock. Typically, the surface layer is grayish brown sandy loam about 12 inches thick. The subsoil, about 23 inches thick, is pale brown sandy clay loam in the upper 13 inches and pale brown sandy loam in the lower 10 inches. The substratum is pale brown sandy loam to a depth of 60 inches or more.

Permeability of the Peyton soil is moderate. Effective rooting depth is 60 inches or more. Available water capacity is high. Surface runoff is medium to rapid, and the hazard of erosion is moderate to high. Some gullies have developed along drainageways and livestock trails.

The Pring soil is deep, noncalcareous, and well drained. It formed in sandy sediment derived from weathered, arkosic, sedimentary rock. Typically, the surface layer is dark grayish brown coarse sandy loam about 4 inches thick. The substratum is dark grayish brown coarse sandy loam about 10 inches thick over pale brown gravelly sandy loam that extends to a depth of 60 inches or more.

Permeability of the Pring soil is rapid. Effective rooting depth is 60 inches or more. Available water capacity is moderate. Surface runoff is medium to rapid, and the hazard of erosion is moderate to high. Some gullies have developed along drainageways and livestock trails.

The soils in this complex are used as rangeland, for wildlife habitat, and for homesites.

These soils are well suited to the production of native vegetation suitable for grazing. The dominant native species are mountain muhly, bluestem grasses, needleandthread, and blue grama. These soils are subject to invasion of Kentucky bluegrass and Gambel oak. Common forbs are hairy goldenrod, geranium, milkvetch, low larkspur, fringed sage, and buckwheat.

Properly locating livestock watering facilities helps to control grazing. Timely deferment of grazing is needed to protect the plant cover.

Windbreaks and environmental plantings generally are suited to these soils. Soil blowing is the main limitation to the establishment of trees and shrubs. This limitation can be overcome by cultivating only in the tree rows and leaving a strip of vegetation between the rows. Supplemental irrigation may be needed when planting and during dry periods. Trees that are best suited and have good survival are Rocky Mountain juniper, eastern redcedar, ponderosa pine, Siberian elm, Russian-olive, and hackberry. Shrubs that are best suited are skunkbush sumac, lilac, and Siberian peashrub.

These soils are well suited to wildlife habitat. They are best suited to habitat for openland and rangeland wildlife. Rangeland wildlife, such as pronghorn antelope, can be encouraged by developing livestock watering facilities, properly managing livestock grazing, and reseeding range where needed.

These soils have good potential for use as homesites. The main limitations are steepness of slope, limited ability to support a load, and frost-action potential. Buildings and roads can be designed to overcome these limitations. These soils also require special site or building designs because of the slope. Access roads should have adequate cut-slope grade, and drains should be provided to control surface runoff and keep soil losses to a minimum. Capability subclass VIe.

70—Pits, gravel. Gravel pits are in nearly level to rolling areas. They are open excavations several feet deep and commonly 5 acres or less in size.

Gravel pits are very low in natural fertility and are highly susceptible to soil blowing. A cover of weeds or straw helps to control erosion.

Windbreaks and environmental plantings generally are not suited to these areas. Onsite investigation is needed to determine if plantings are feasible. Capability subclass VIIIs.

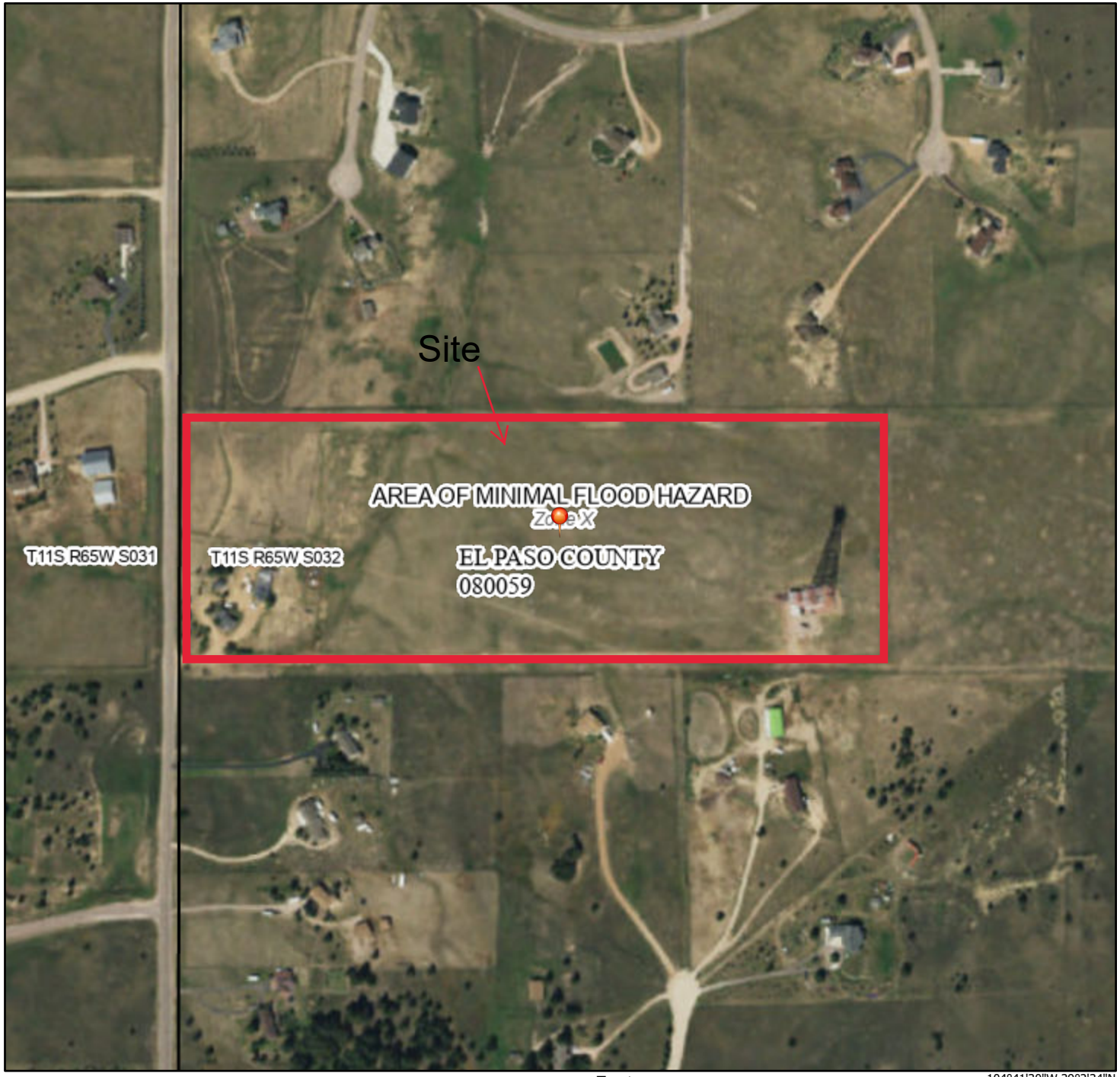
71—Pring coarse sandy loam, 3 to 8 percent slopes. This deep, noncalcareous, well drained soil formed in sandy sediment derived from arkosic sedimentary rock on valley side slopes and on uplands. Elevation ranges from 6,800 to 7,600 feet. The average annual precipitation is about 17 inches, the average annual air temperature is about 43 degrees F, and the average frost-free period is about 120 days.

Typically, the surface layer is dark grayish brown coarse sandy loam about 4 inches thick. The substratum is dark grayish brown coarse sandy loam about 10 inches thick over pale brown gravelly sandy loam that extends to a depth of 60 inches or more.

National Flood Hazard Layer FIRMette

FEMA

104°42'7"W 39°3'2"N



104°41'30"W 39°2'34"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS

- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD

- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS

- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES

- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES

- B 20.2 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation
- 8 Coastal Transect
- 513 Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS

- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 3/25/2021 at 2:53 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

Design Procedure Form: Runoff Reduction

UD-BMP (Version 3.07, March 2018)

Designer:	
Company:	**M.V.E., Inc.**
Date:	**April 12, 2021**
Project:	**Matika Subdivision**
Location:	**Marshbern Court**

SITE INFORMATION (User Input in Blue Cells)

WQCV Rainfall Depth: 0.60 inches

Depth of Average Runoff Producing Storm, d_6 = 0.43 inches (for Watersheds Outside of the Denver Region, Figure 3-1 in USDCM Vol. 3)

Area Type	UIA:RPA	UIA:RPA	UIA:RPA	UIA:RPA		UIA:RPA	UIA:RPA					
Area ID	A1-1	A1-2	A1-3	A1-4		A2-1	A2-2					
Downstream Design Point ID	DP13	DP13	DP13	DP13		DP12	DP12					
Downstream BMP Type	None	None	None	None		None	None					
DCIA (ft^2)	--	--	--	--		--	--					
UIA (ft^2)	5,614	5,692	10,780	5,348		5,355	19,838					
RPA (ft^2)	1,204	6,125	19,250	9,550		1,530	5,668					
SPA (ft^2)	--	--	--	--		--	--					
HSG A (%)	0%	0%	0%	0%		0%	0%					
HSG B (%)	100%	100%	100%	100%		100%	100%					
HSG C/D (%)	0%	0%	0%	0%		0%	0%					
Average Slope of RPA (ft/ft)	0.050	0.037	0.014	0.024		0.023	0.029					
UIA:RPA Interface Width (ft)	300.00	245.00	600.00	382.00		325.00	600.00					

CALCULATED RUNOFF RESULTS

Area ID	A1-1	A1-2	A1-3	A1-4		A2-1	A2-2					
UIA:RPA Area (ft^2)	6,818	11,817	30,030	14,898		6,885	25,506					
L / W Ratio	0.08	0.20	0.08	0.10		0.07	0.07					
UIA / Area	0.8234	0.4817	0.3590	0.3590		0.7778	0.7778					
Runoff (in)	0.21	0.00	0.00	0.00		0.15	0.14					
Runoff (ft^3)	122	0	0	0		84	302					
Runoff Reduction (ft^3)	112	237	449	223		139	525					

CALCULATED WQCV RESULTS

Area ID	A1-1	A1-2	A1-3	A1-4		A2-1	A2-2					
WQCV (ft^3)	234	237	449	223		223	827					
WQCV Reduction (ft^3)	112	237	449	223		139	525					
WQCV Reduction (%)	48%	100%	100%	100%		62%	63%					
Untreated WQCV (ft^3)	122	0	0	0		84	302					

CALCULATED DESIGN POINT RESULTS (sums results from all columns with the same Downstream Design Point ID)

Downstream Design Point ID	DP13	DP12										
DCIA (ft^2)	0	0										
UIA (ft^2)	27,434	25,193										
RPA (ft^2)	36,129	7,198										
SPA (ft^2)	0	0										
Total Area (ft^2)	63,563	32,391										
Total Impervious Area (ft^2)	27,434	25,193										
WQCV (ft^3)	1,143	1,050										
WQCV Reduction (ft^3)	1,021	664										
WQCV Reduction (%)	89%	63%										
Untreated WQCV (ft^3)	122	386										

CALCULATED SITE RESULTS (sums results from all columns in worksheet)

Total Area (ft^2)	95,954
Total Impervious Area (ft^2)	52,627
WQCV (ft^3)	2,193
WQCV Reduction (ft^3)	1,685
WQCV Reduction (%)	77%
Untreated WQCV (ft^3)	508

Okay - Meets 60% WCCV Requirement for Runoff Reduction

LEGEND

PROPERTY LINE

EASEMENT LINE

LOT LINE

EXISTING

5985 INDEX CONTOUR

84 INTERMEDIATE CONTOUR

PROPOSED

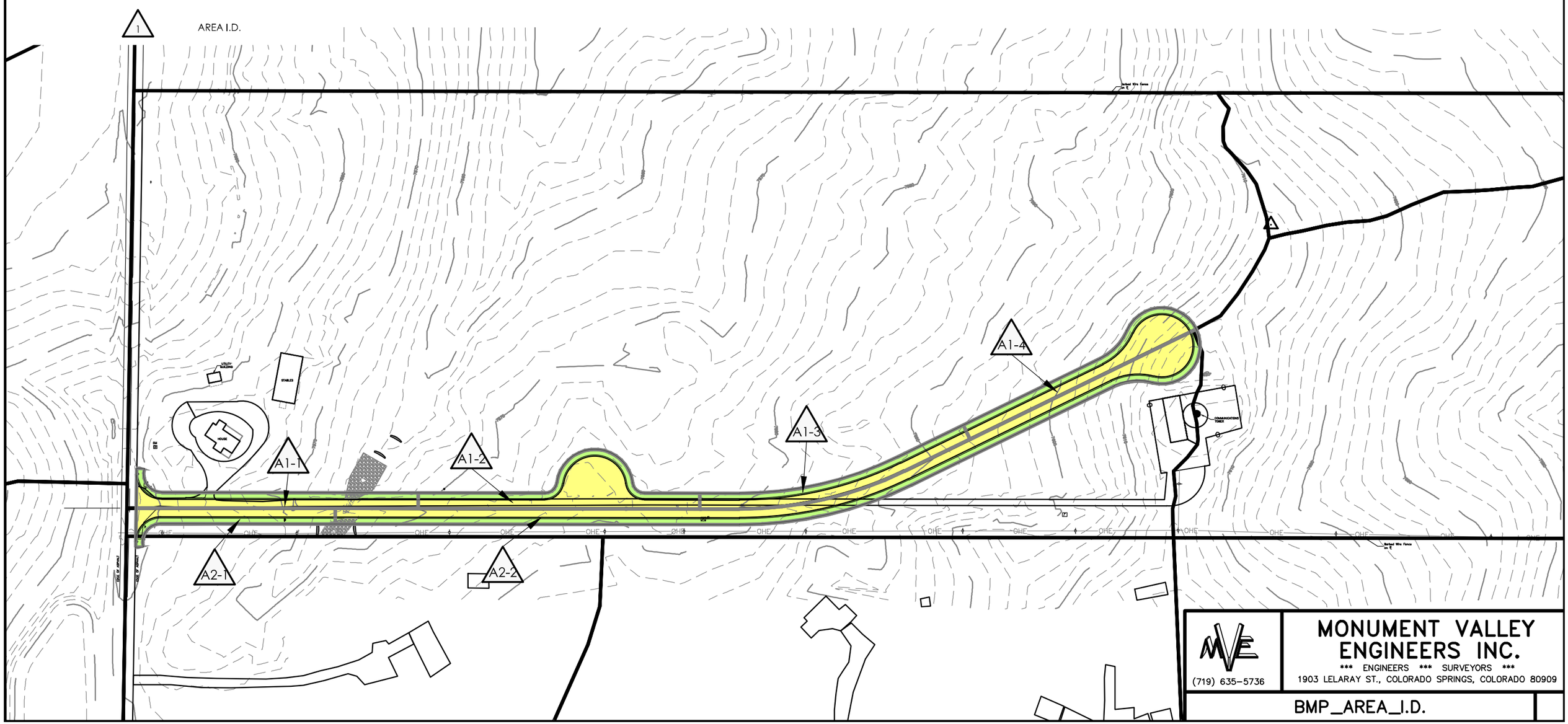
5985 INDEX CONTOUR

84 INTERMEDIATE CONTOUR

AREA BOUNDARY

SURFACE TYPES

UNCONNECTED IMPERVIOUS AREA (UIA)	
RECEIVING PERVIOUS AREA (RPA)	



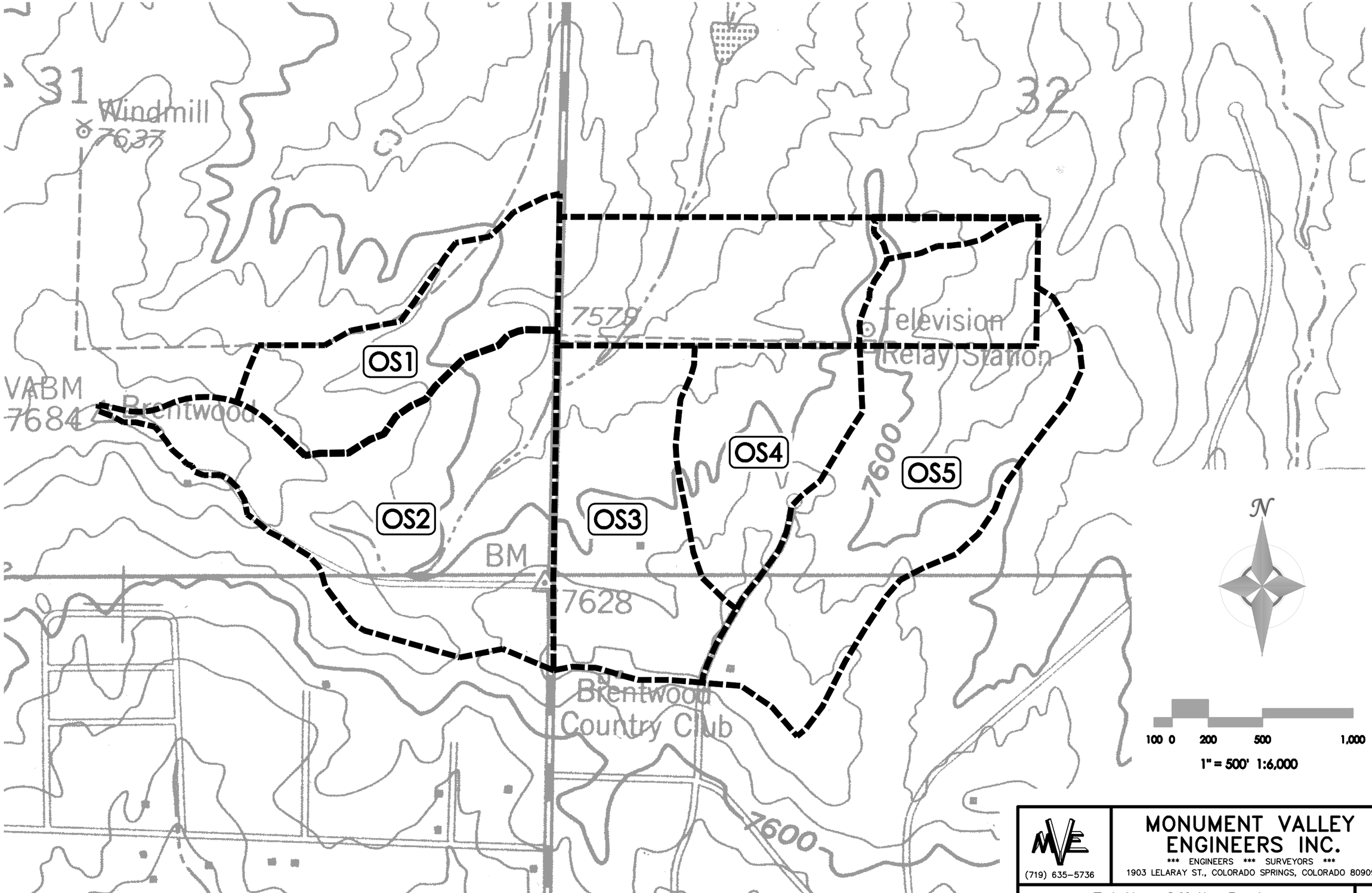
MONUMENT VALLEY ENGINEERS INC.

*** ENGINEERS *** SURVEYORS ***

1903 LELARAY ST., COLORADO SPRINGS, COLORADO 80909

(719) 635-5736

BMP_AREA_I.D.



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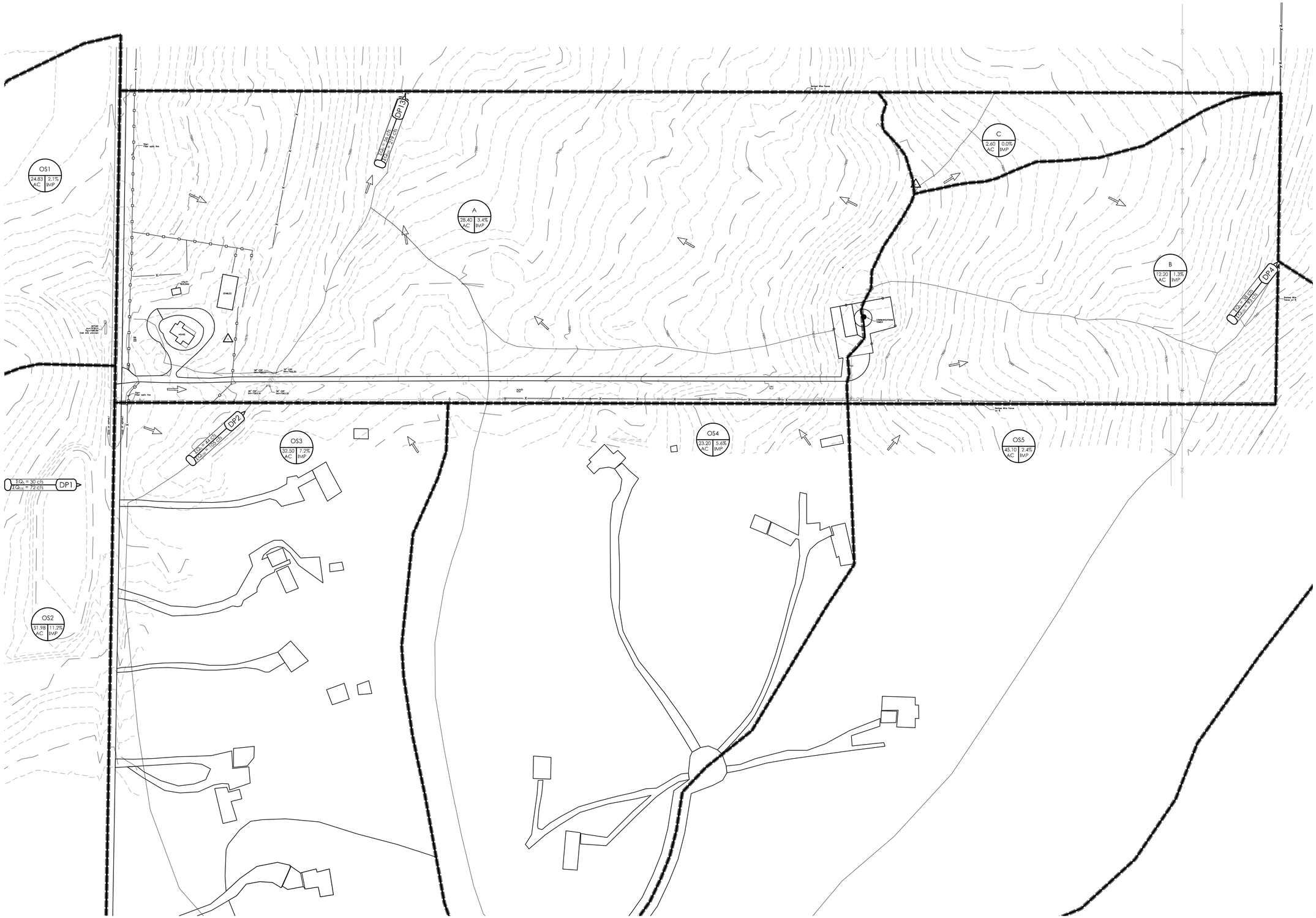
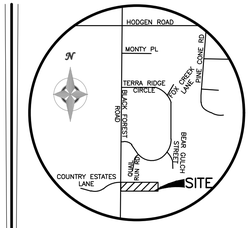
*** ENGINEERS *** SURVEYORS ***
(719) 635-5736
1903 LELARAY ST., COLORADO SPRINGS, COLORADO 80909

Existing Offsite Basins

60





VICINITY MAP

NTS

BENCHMARK

THE BENCHMARK FOR THESE PLANS IS AN NGS MONUMENT DESIGNATION 4 BB RESET (PID KK2118) LOCATED AT THE INTERSECTION OF HODGEN ROAD AND STATE HIGHWAY 83. ELEVATION = 7570.80 SFT (NAVD 88).

BASIS OF BEARINGS

BEARINGS REFERRED TO HEREIN ARE BASED ON THE WEST LINE OF THE SOUTHWEST QUARTER OF SECTION 32, TOWNSHIP 11 SOUTH, RANGE 65 WEST OF THE 6TH P.M., EL PASO COUNTY, COLORADO, ASSUMED TO BEAR N00°57'55"E.

10 0 50 100 200

1" = 100' 1:1,200

MVE, INC.
ENGINEERS SURVEYORS
1903 lelaray street, suite 200 colorado springs co 80909 719.635.5736

REVISIONS

DESIGNED BY	PFM	01-09-2008
DRAWN BY	PFM	01-20-2008
CHECKED BY		
AS-BUILTS BY		
CHECKED BY		

MATIKA
SUBDIVISION FIL. NO. 1

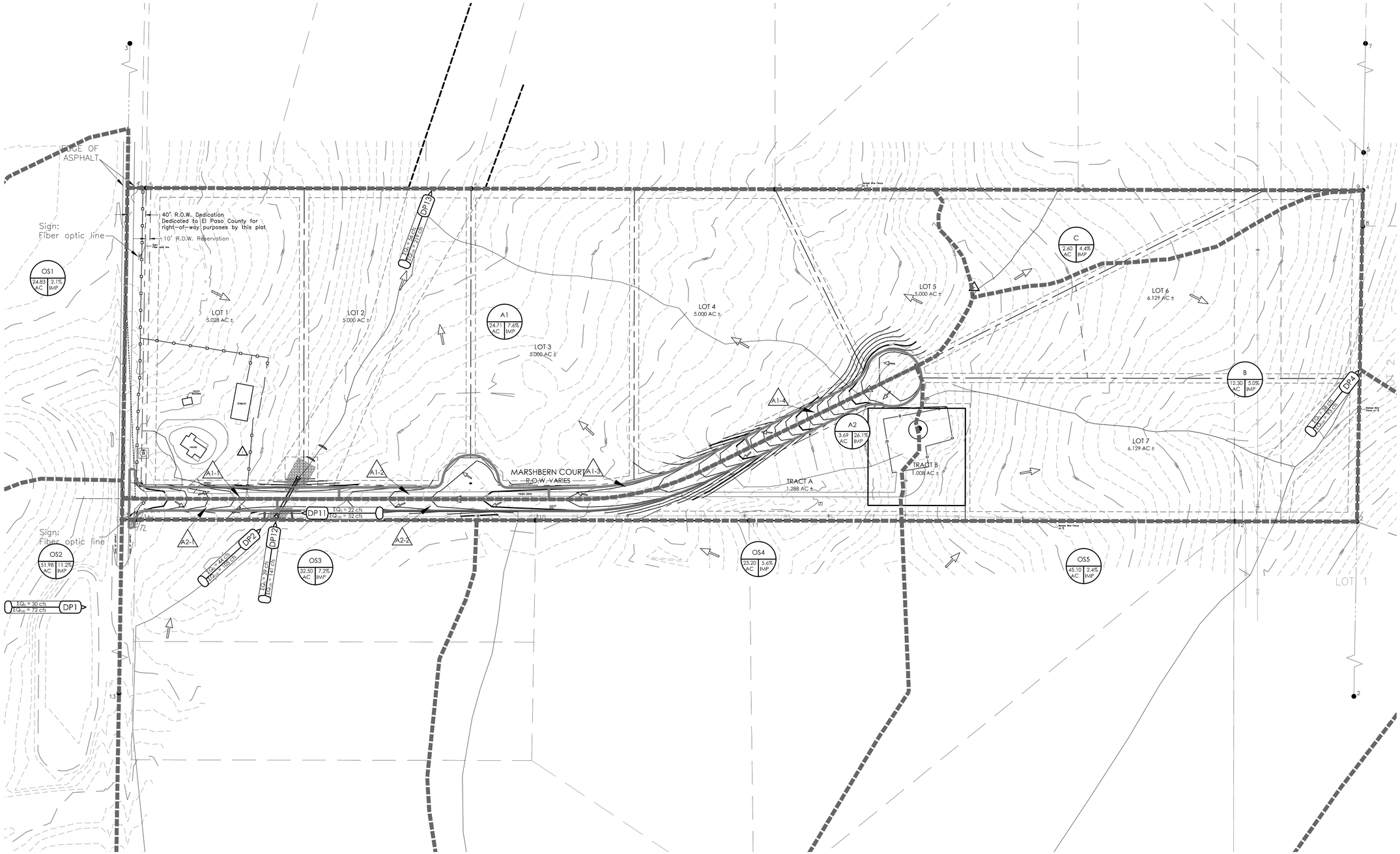
Drainage Map
Existing Conditions

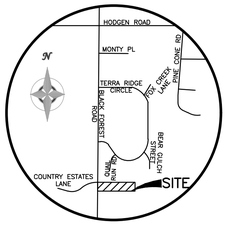
MVE PROJECT **61154**

MVE DRAWING **61154011**

June 8, 2021

SHEET 1 OF 1





VICINITY MAP

NTS

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N

10 0 50 100 200

1" = 100' 1:1,200

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ENGINEERS, SURVEYORS
1903 lelaney street, suite 200 colorado springs co 80909 719.635.5736

REVISIONS

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DRAWN BY	PFM	01-20-2008
CHECKED BY		
AS-BUILTS BY		
CHECKED BY		

MATIKA
SUBDIVISION FIL. NO. 1

Drainage Map
Proposed Conditions

MVE PROJECT **61154**

MVE DRAWING **61154013**

June 8, 2021

SHEET 1 OF 1