

DRAINAGE LETTER
for
LOT 4, OWL MARKETPLACE

7885 Meridian Park Drive
Falcon, Colorado

December 2024

PCD File No: PPR2439

Prepared for:

Meridian & Owl X, LLC
450 N. McClintock Drive
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(480) 313-2724

Prepared by:

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DRAINAGE LETTER
for
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1.0 CERTIFICATION STATEMENTS

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 city/county for drainage reports and said report is in conformity with the master plan of the drainage. I accept responsibility for any liability caused by any negligent acts, errors or omissions on my part in preparing this report.

SIGNATURE (Affix Seal): _____



For and on behalf of Drexel, Barrell & Co.
Katherine Varnum, P.E. #53459



Developer's Statement

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



Authorized Signature
Meridian & Owl X, LLC
450 N. McClintock Drive
Chandler, AZ 85226

12/2/2024
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:

DRAINAGE LETTER
for
LOT 4, OWL MARKETPLACE

2.0 PURPOSE

The purpose of this letter is to supplement the Final Drainage Report for Owl Marketplace (Filed under El Paso County File No: VR2321) with regards to the development of Lot 4 in order to establish that the development is in conformance with the approved drainage design.

Runoff patterns, drainage facilities and the ability to safely pass developed runoff to historic downstream facilities shall be presented.

3.0 GENERAL SITE DESCRIPTION

Location

Lot 4 Owl Marketplace is located in Falcon, El Paso County, Colorado, within the Southeast Quarter of Section 1, Township 13 South, Range 65 West of the 6th P.M. The property is bounded by Lot 3 to the south and by the Owl Place roadway to the north, Meridian Road to the east, and Meridian Park Drive to the west. The site lies within the Falcon Drainage Basin.

Proposed Development

The proposed development of Lot 4 is the construction of a commercial drive-thru coffee restaurant building, with associated parking and landscaping. The proposed disturbed area consists of 1.01-acres. The imperviousness of the site will increase with this development, but is slightly less than that assumed in the approved Final Drainage Report for the overall Owl Marketplace development, as described above.

Soils

According to the Soil Survey of El Paso County Area, Colorado, prepared by the U.S. Department of Agriculture Soil Conservation Service, the site is underlain by the Columbine gravelly sandy loam (Soil No. 19), a hydrologic type A soil. See appendix for Soils map.

Climate

This area of El Paso County can be described as the foothills, with total precipitation amounts typical of a semi-arid region. Winters are generally cold and dry, and summers relatively warm and dry. Precipitation ranges from 12 to 14 inches per year, with the majority of this moisture occurring in the spring and summer in the form of rainfall. Thunderstorms are common during the summer months.

Floodplain Statement

According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) Panel 08041C0553G (December 7, 2018), a portion of the site lies within the floodplain.

A CLOMR to modify the floodplain was approved by FEMA Case No. 22-08-0669R (December 21, 2022).

4.0 DRAINAGE CRITERIA

The drainage analysis has been prepared in accordance with the current El Paso County Drainage Criteria Manual. Calculations were performed to determine runoff quantities during the 5-year and 100-year frequency storms for existing and developed conditions using the Rational Method as required for basins containing less than 100 acres.

5.0 EXISTING CONDITION

The existing condition is as described in the aforementioned Final Drainage Report for the overall Owl Marketplace development, as part of Basin A (see appendix for drainage map excerpt). Overlot grading has been completed and access roadway and utility infrastructure have been installed. The site generally follows a 2%-3% grade from northeast to southwest and drains directly into the sub-regional detention facility Pond SR4 located on the Falcon Marketplace property to the south. A 18" RCP storm sewer stub has been installed to the southwestern corner of the lot.

6.0 DEVELOPED CONDITION

The proposed development consists of a drive-thru restaurant building, and associated parking and landscaping. The proposed grading will route flows to the southwest where they will be collected by proposed curb inlets and directed to the existing 18" RCP storm sewer, ultimately reaching the sub-regional Pond SR4 to the southwest. As established by the Owl Marketplace Final Drainage Report, downstream Pond SR4 will treat incoming flows from Lot 4 Owl Marketplace for water quality and detention.

Basin A covers an open landscaped area adjacent to the proposed building. Runoff generated by this basin ($Q_5=0.3$ cfs and $Q_{100}=0.5$ cfs) will be captured by a proposed Nyloplast area inlet located at **Design Point DP1** and discharged to the west via proposed private 12" storm sewer.

Basin B covers the roof of the proposed fast-food restaurant building. Runoff rates of $Q_5=0.3$ cfs and $Q_{100}=0.5$ cfs will be captured by roof drains around the edges of the roof (See building plans for more details). This roof drain flow will combine with flows from DP1 and be directed around the building to the south towards **Design Point DP2**

Basin C covers the central 0.26-acres of the site. Runoff rates of $Q_5=1.1$ cfs and $Q_{100}=2.1$ cfs will travel southwest towards a proposed single Type 16 combo inlet at **Design Point DP3**. Flows combine with those from upstream DP2 and continue to the west via 12" private storm sewer.

BASIN	DP	AREA (AC)	Q5 (cfs)	Q100 (cfs)
A	DP1	0.07	0.3	0.5
B		0.06	0.3	0.5
DP1+B	DP2	0.13	0.5	0.9
C		0.26	1.1	2.1
DP2+C	DP3	0.38	1.5	2.8
OS1	DPOS1	0.08	0.1	0.3
D		0.37	1.1	2.3
DPOS1+D	DP4	0.45	1.0	2.2
OS2	DPOS2	0.07	0.1	0.3
E		0.17	0.6	1.2
DPOS2+E	DP5	0.24	0.7	1.4
DP3+DP4+DP5	DP6	1.07	3.0	6.0
F		0.09	0.1	0.4

Basin OS1 covers 0.08 acres to the east of the site. Runoff ($Q_5=0.1$ cfs and $Q_{100}=0.3$ cfs) will travel to the west onto the site discharging into Basin D at **Design Point DPOS1**

Basin D represents the east and southern drive aisles of the site. Runoff generated by this basin ($Q_5=1.1$ cfs and $Q_{100}=2.3$ cfs) will combine with flow from offsite basin OS1 and travel to the west via curb and gutter towards **Design Point DP4**. Flows will ultimately reach the proposed 5' Type R curb inlet at Design Point DP5.

Basin OS2 covers 0.07 acres to the north of the site. Runoff ($Q_5=0.1$ cfs and $Q_{100}=0.3$ cfs) will travel to the south onto the site discharging into Basin E at **Design Point DPOS2**

Basin E represents the north and west drive aisles of the site. Runoff generated by this basin ($Q_5=0.6$ cfs and $Q_{100}=1.2$ cfs) will combine with flow from offsite basin OS2 and travel to the west and south via curb and gutter towards a proposed low point and 5' Type R curb inlet at **Design Point DP5**.

Design Point DP6 represents the flows exiting the proposed 5' Type R inlet at DP5. These flows ($Q_5=3.0$ cfs and $Q_{100}=6.0$ cfs) will continue to the west and south in the existing storm sewer system along Meridian Park Drive.

Basin F covers the western portion of the site that will drain directly into Meridian Park Drive. These flows ($Q_5=0.1$ cfs and $Q_{100}=0.4$ cfs) have been accounted for in the design of the Meridian Park Drive storm sewer system and will not adversely affect the Owl Marketplace development.

7.0 FOUR-STEP PROCESS

This project conforms to the El Paso County Four Step Process. The process for this site focuses on reducing runoff volumes, accounting for water quality capture volume treatment (WQCV), stabilizing drainage ways and implementing long-term source controls.

1. **Employ Runoff Reduction Practices:** Proposed impervious areas on this site (roofs, asphalt/sidewalk) will sheet flow across landscaped ground as much as possible to slow runoff and increase time of concentration prior to being conveyed to the proposed public streets and storm sewer system. This will minimize directly connected impervious areas within the project site.
2. **Implement CM's that provide a Water Quality Capture Volume with slow release:** Runoff from this project will be routed through the sub-regional detention facility Pond SR4 immediately to the southwest of the Owl Marketplace property. Water quality treatment is provided for the upstream watershed as described above.
3. **Stabilize Drainage Ways:** The existing tributary that bisects the site and subsequent floodplain is being modified by the overall Owl Marketplace development. A 10'x6' box culvert has been designed to intercept the upstream flows and direct towards the existing sub-regional detention facility SR4 to the southwest.
4. **Implement Site Specific and Other Source Control CM's:** Standard commercial source control will be utilized in order to minimize potential pollutants entering the storm system. Example source control measures consist of: indoor storage of household chemicals; and trash receptacles in common areas.

8.0 DRAINAGE & BRIDGE FEES

Drainage and bridge fees are not required as the site has been previously platted.

9.0 SUMMARY

Development of Lot 4 Owl Marketplace will not adversely affect surrounding or downstream developments. The runoff coefficients established by Final Drainage Report for Owl Marketplace for Basin A were $C_5=0.81$ and $C_{100}=0.88$, the combined runoff coefficients for Basins OS1, OS2 and A-F for this development are less at $C_5=0.63$ and $C_{100}=0.75$. In addition, the runoff values established in the Owl Marketplace Drainage Report (**$Q_5=5.0$ cfs and $Q_{100}=9.1$ cfs**) are higher than those determined by this report (**$Q_5=3.0$ cfs and $Q_{100}=6.0$ cfs**). This means that it is acceptable to state the drainage design for Lot 4 is in conformance with the Final Drainage Report for the overall Owl Marketplace development.

10.0 REFERENCES

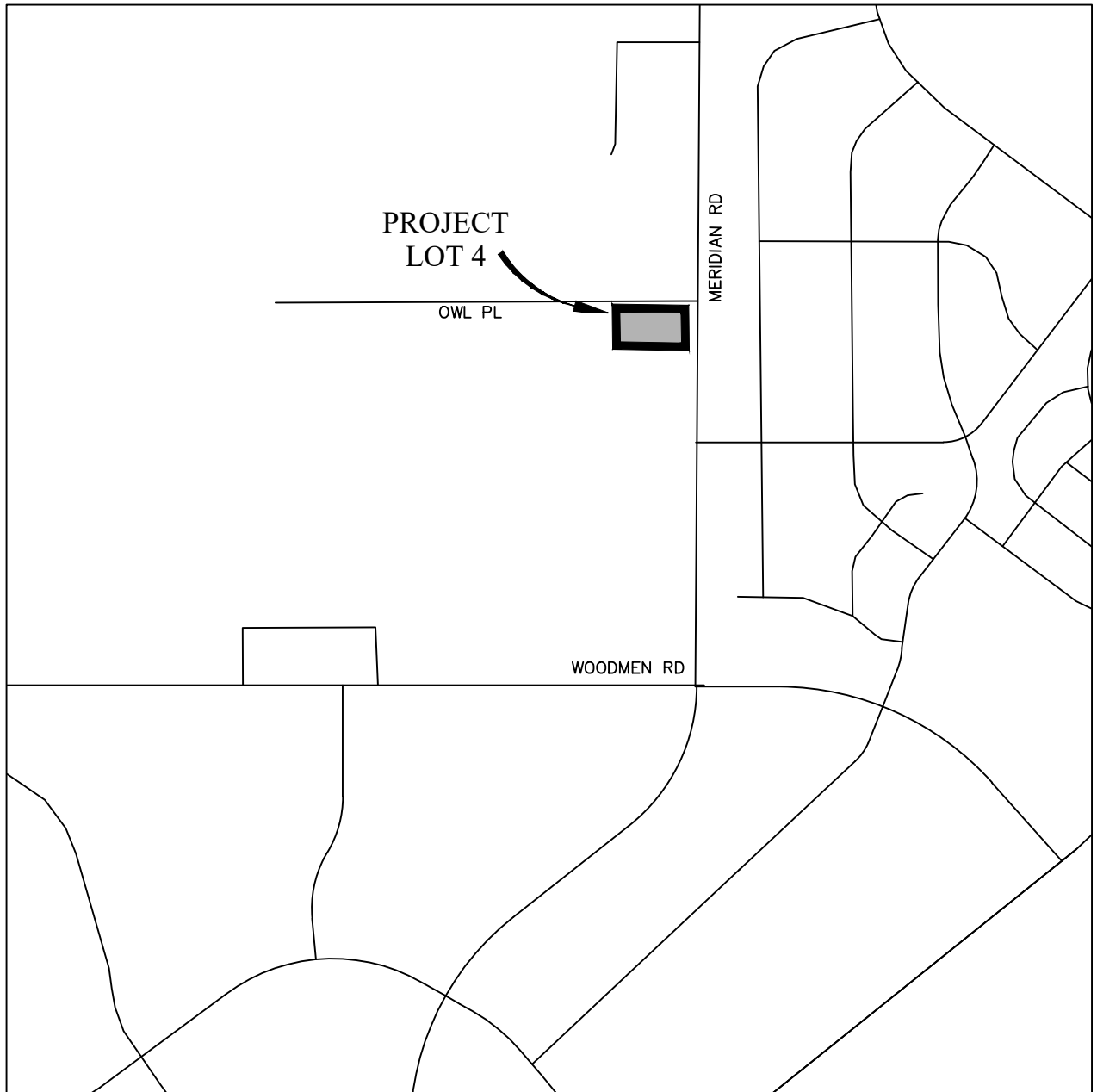
The sources of information used in the development of this study are listed below:

1. El Paso County Drainage Criteria Manual, 10-31-2018.
2. Final Drainage Report for Owl Marketplace Filing No. 1 (Drexel, Barrell & Co.)

Unresolved comment from Review #1:
The engineer must provide a statement verifying the pond was designed to accept the flows for the site.

Review #2 update: this could be as simple as referencing and providing an excerpt from the approved FDR from SF191. Also the statement should say that the pond is functioning as intended.

Appendix



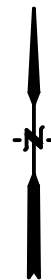
PROJECT
LOT 4

OWL PL

MERIDIAN RD

WOODMEN RD

Vicinity Map
Not to scale



**LOT 4 OWL MARKETPLACE
EL PASO COUNTY, CO
VICINITY MAP**

Drexel, Barrell & Co.
Engineers • Surveyors

DATE:
8-23-2024

DWG. NO.

JOB NO:
21611-03CSCV

VMAP

SHEET 1 OF 1



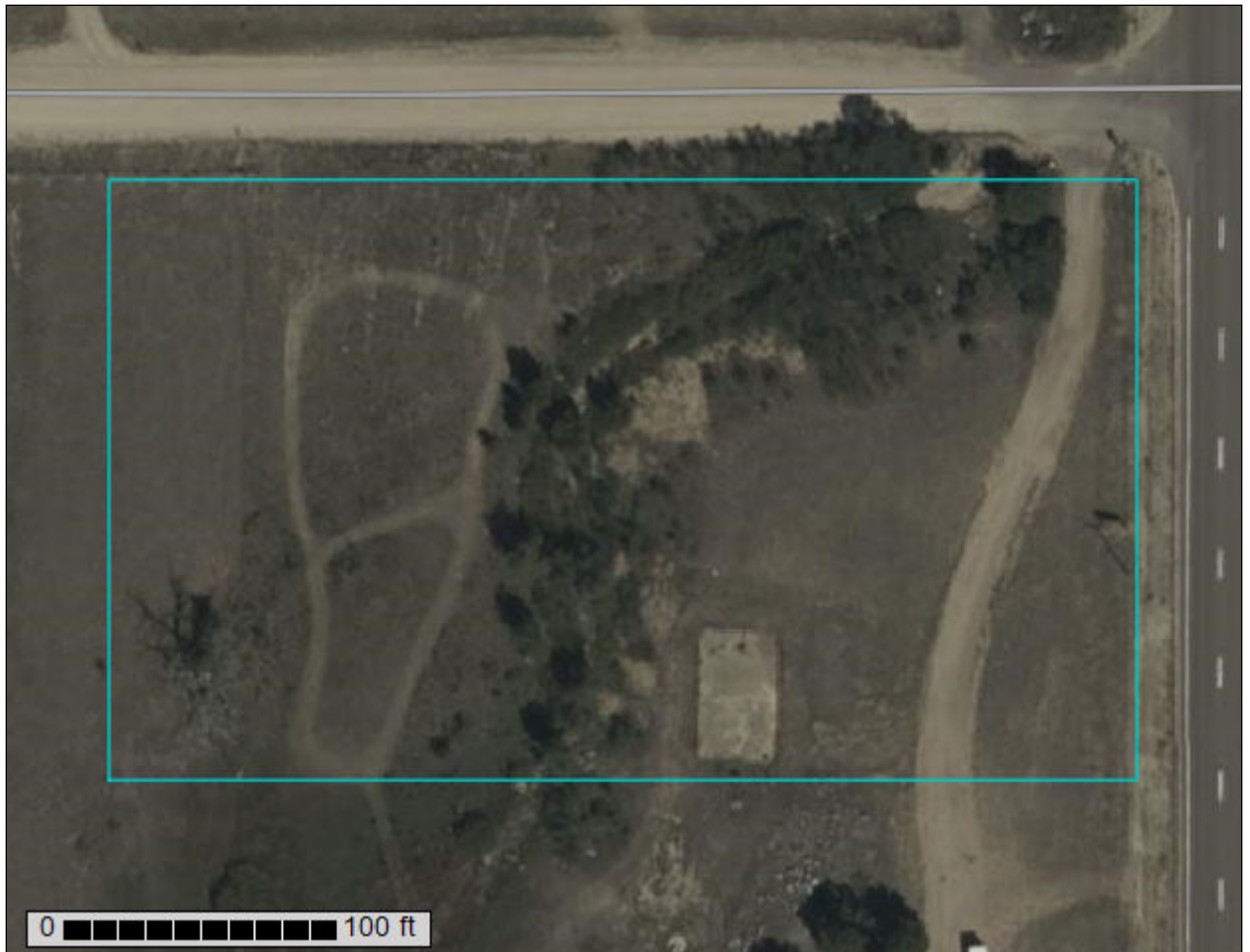
United States
Department of
Agriculture

NRCS

Natural
Resources
Conservation
Service

A product of the National
Cooperative Soil Survey,
a joint effort of the United
States Department of
Agriculture and other
Federal agencies, State
agencies including the
Agricultural Experiment
Stations, and local
participants

Custom Soil Resource Report for El Paso County Area, Colorado



Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<https://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

Custom Soil Resource Report

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

Custom Soil Resource Report

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

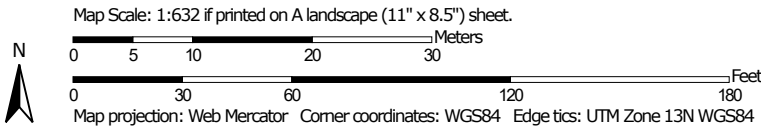
Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report Soil Map




Soil Map may not be valid at this scale.




MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)




















Soils







 Soil Map Unit Polygons

 Soil Map Unit Lines


 Soil Map Unit Points

Special Point Features






-  Blowout
-  Borrow Pit
-  Clay Spot
-  Closed Depression
-  Gravel Pit
-  Gravelly Spot
-  Landfill
-  Lava Flow
-  Marsh or swamp
-  Mine or Quarry
-  Miscellaneous Water
-  Perennial Water
-  Rock Outcrop
-  Saline Spot
-  Sandy Spot
-  Severely Eroded Spot
-  Sinkhole
-  Slide or Slip
-  Sodic Spot

-  Spoil Area
-  Stony Spot
-  Very Stony Spot
-  Wet Spot
-  Other
-  Special Line Features

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 1:24,000.

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: El Paso County Area, Colorado
 Survey Area Data: Version 21, Aug 24, 2023

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

Date(s) aerial images were photographed: Sep 11, 2018—Oct 20, 2018

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.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
19	Columbine gravelly sandy loam, 0 to 3 percent slopes	1.9	100.0%
Totals for Area of Interest		1.9	100.0%

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Custom Soil Resource Report

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

El Paso County Area, Colorado

19—Columbine gravelly sandy loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 367p
Elevation: 6,500 to 7,300 feet
Mean annual precipitation: 14 to 16 inches
Mean annual air temperature: 46 to 50 degrees F
Frost-free period: 125 to 145 days
Farmland classification: Not prime farmland

Map Unit Composition

Columbine and similar soils: 97 percent
Minor components: 3 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Columbine

Setting

Landform: Flood plains, fan terraces, fans
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile

A - 0 to 14 inches: gravelly sandy loam
C - 14 to 60 inches: very gravelly loamy sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.5 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: A
Ecological site: R049XY214CO - Gravelly Foothill
Hydric soil rating: No

Minor Components

Fluvaquentic haplaquolls

Percent of map unit: 1 percent
Landform: Swales
Hydric soil rating: Yes

Custom Soil Resource Report

Other soils

Percent of map unit: 1 percent

Hydric soil rating: No

Pleasant

Percent of map unit: 1 percent

Landform: Depressions

Hydric soil rating: Yes

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Custom Soil Resource Report

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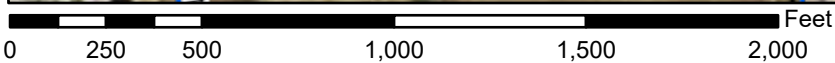
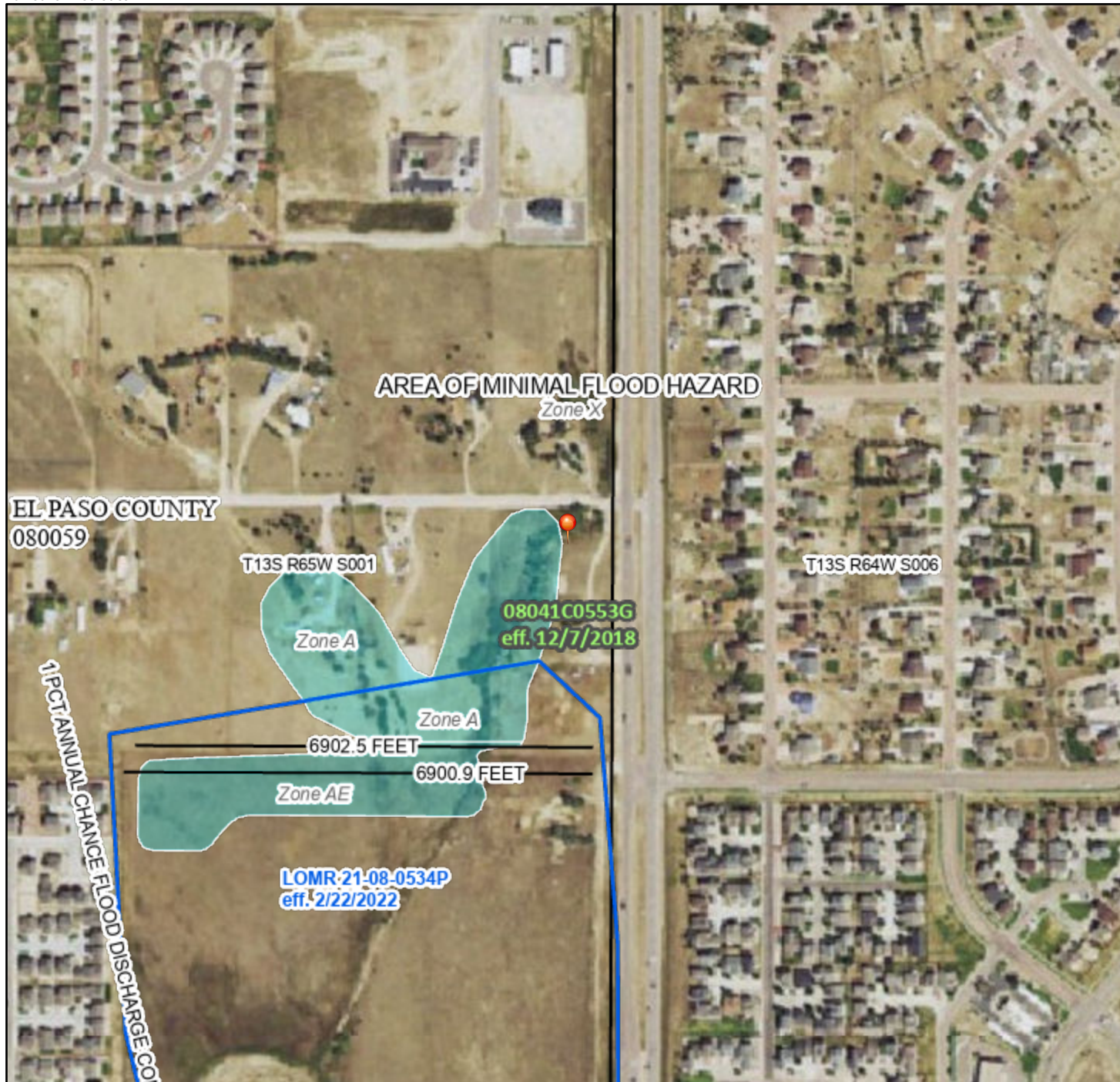
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National Flood Hazard Layer FIRMette



104°36'49"W 38°56'59"N



1:6,000

104°36'11"W 38°56'31"N

Basemap Imagery Source: USGS National Map 2023

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
GENERAL STRUCTURES		Area of Undetermined Flood Hazard Zone D
		Channel, Culvert, or Storm Sewer
OTHER FEATURES		Levee, Dike, or Floodwall
		20.2 Cross Sections with 1% Annual Chance Water Surface Elevation
		17.5 Coastal Transect
		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



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 8/23/2024 at 3:05 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.

PROJECT INFORMATION

PROJECT: Lot 4 Owl Marketplace
 PROJECT NO: 21611-03
 DESIGN BY: CGH
 REV. BY: KGV
 AGENCY: El Paso County
 REPORT TYPE: Final
 DATE: 12/12/2024
 Soil Type: A



Drexel, Barrell & Co.

	C2*	C5*	C10*	C100*	% IMPERV
Open Space		0.08		0.35	0
Commercial Development		0.81		0.88	90
Asphalt/Sidewalk/Roof		0.90		0.95	100

*C-Values and Basin Imperviousness based on Table 5-1, El Paso County Drainage Criteria Manual Vol 1

PROPOSED

SUB-BASIN	SURFACE DESIGNATION	AREA ACRE	COMPOSITE RUNOFF COEFFICIENTS				% IMPERV
			C2	C5	C10	C100	
A	Open Space	0.01		0.08		0.35	0
	Commercial Development	0.00		0.81		0.88	90
	Asphalt/Sidewalk/Roof	0.06		0.90		0.95	100
	WEIGHTED AVERAGE			0.78		0.86	85%
TOTAL A		0.07					
B	Open Space	0.00		0.08		0.35	0
	Commercial Development	0.00		0.81		0.88	90
	Asphalt/Sidewalk/Roof	0.06		0.90		0.95	100
	WEIGHTED AVERAGE			0.90		0.95	100%
TOTAL B		0.06					
C	Open Space	0.01		0.08		0.35	0
	Commercial Development	0.00		0.81		0.88	90
	Asphalt/Sidewalk/Roof	0.25		0.90		0.95	100
	WEIGHTED AVERAGE			0.87		0.93	96%
TOTAL C		0.26					
OS1	Open Space	0.07		0.08		0.35	0
	Commercial Development	0.00		0.81		0.88	90
	Asphalt/Sidewalk/Roof	0.01		0.90		0.95	100
	WEIGHTED AVERAGE			0.18		0.42	12%
TOTAL OS1		0.08					
D	Open Space	0.14		0.08		0.35	0
	Commercial Development	0.00		0.81		0.88	90
	Asphalt/Sidewalk/Roof	0.23		0.90		0.95	100
	WEIGHTED AVERAGE			0.59		0.73	63%
TOTAL D		0.37					
OS2	Open Space	0.05		0.08		0.35	0
	Commercial Development	0.00		0.81		0.88	90
	Asphalt/Sidewalk/Roof	0.02		0.90		0.95	100
	WEIGHTED AVERAGE			0.33		0.53	30%
TOTAL OS2		0.07					
E	Open Space	0.05		0.08		0.35	0
	Commercial Development	0.00		0.81		0.88	90
	Asphalt/Sidewalk/Roof	0.13		0.90		0.95	100
	WEIGHTED AVERAGE			0.67		0.78	72%
TOTAL E		0.17					
F	Open Space	0.06		0.08		0.35	0
	Commercial Development	0.00		0.81		0.88	90
	Asphalt/Sidewalk/Roof	0.03		0.90		0.95	100
	WEIGHTED AVERAGE			0.33		0.53	30%
TOTAL F		0.09					

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RATIONAL METHOD CALCULATIONS FOR STORM WATER RUNOFF
 PROPOSED TIME OF CONCENTRATION STANDARD FORM SF-2

SUB-BASIN DATA					OVERLAND TIME (t _o)					TRAVEL TIME (t _t)				TIME OF CONC. t _c		FINAL t _c
BASIN	DESIGN PT.	C _s	C ₁₀₀	AREA	CA5	CA100	LENGTH	SLOPE	t _o	LENGTH	SLOPE	VEL.	t _t	COMP.	MINIMUM	Min
				Ac			Ft	%	Min	Ft	%	FPS	Min	t _c	t _c	Min
A	DP1	0.78	0.86	0.07	0.05	0.06	40	0.5	4.8	100	2.0	2.8	0.6	5.4	5	5.4
B		0.90	0.95	0.06	0.05	0.05	35	3.3	1.5	10	0.5	1.4	0.1	1.6	5	5.0
DP1+B	DP2	0.83	0.90	0.13	0.10	0.11	From DP1		5.4	120	1.0	2.0	1.0	6.4	5	6.4
C		0.87	0.93	0.26	0.22	0.24	20	2.1	1.5	150	2.5	3.2	0.8	2.3	5	5.0
DP2+C	DP3	0.86	0.92	0.38	0.33	0.35	From DP2		6.4	70	1.0	2.0	0.6	6.9	5	6.9
OS1	DPOS1	0.18	0.42	0.08	0.01	0.03	20	2.1	6.0	100	10.0	6.3	0.3	6.3	5	6.3
D		0.59	0.73	0.37	0.22	0.26	20	2.5	3.1	321	2.0	2.8	1.9	5.0	5	5.0
DPOS1+D	DP4	0.52	0.67	0.45	0.23	0.30	From DPOS1		6.3	250	1.0	2.0	2.1	8.3	5	8.3
OS2	DPOS2	0.33	0.53	0.07	0.02	0.04	20	2.1	5.0	100	5.0	4.5	0.4	5.4	5	5.4
E		0.67	0.78	0.17	0.12	0.14	20	2.1	2.8	280	1.5	2.4	1.9	4.7	5	5.0
DPOS2+E	DP5	0.58	0.71	0.24	0.14	0.17	From DPOS2		5.4	175	1.5	2.4	1.2	6.6	5	6.6
DP3+DP4+DP5	DP6	0.65	0.77	1.07	0.70	0.82	From DP4		8.3	10	0.5	1.4	0.1	8.5	5	8.5
F		0.33	0.53	0.09	0.03	0.05	30	3.2	5.4	50	3.3	3.6	0.2	5.6	5	5.6

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RATIONAL METHOD CALCULATIONS FOR STORM WATER RUNOFF

PROPOSED RUNOFF 5 YR STORM P1= 1.50

BASIN (S)	DESIGN POINT	AREA (AC)	DIRECT RUNOFF		C * A	I (IN/HR)	Q (CFS)
			RUNOFF COEFF	t _c (MIN)			
A	DP1	0.07	0.78	5.4	0.05	5.01	0.3
B		0.06	0.90	5.0	0.05	5.10	0.3
DP1+B	DP2	0.13	0.83	6.4	0.10	4.78	0.5
C		0.26	0.87	5.0	0.22	5.10	1.1
DP2+C	DP3	0.38	0.86	6.9	0.33	4.65	1.5
OS1	DPOS1	0.08	0.18	6.3	0.01	4.80	0.1
D		0.37	0.59	5.0	0.22	5.10	1.1
DPOS1+D	DP4	0.45	0.52	8.3	0.23	4.38	1.0
OS2	DPOS2	0.07	0.33	5.4	0.02	5.00	0.1
E		0.17	0.67	5.0	0.12	5.10	0.6

PROJECT INFORMATION

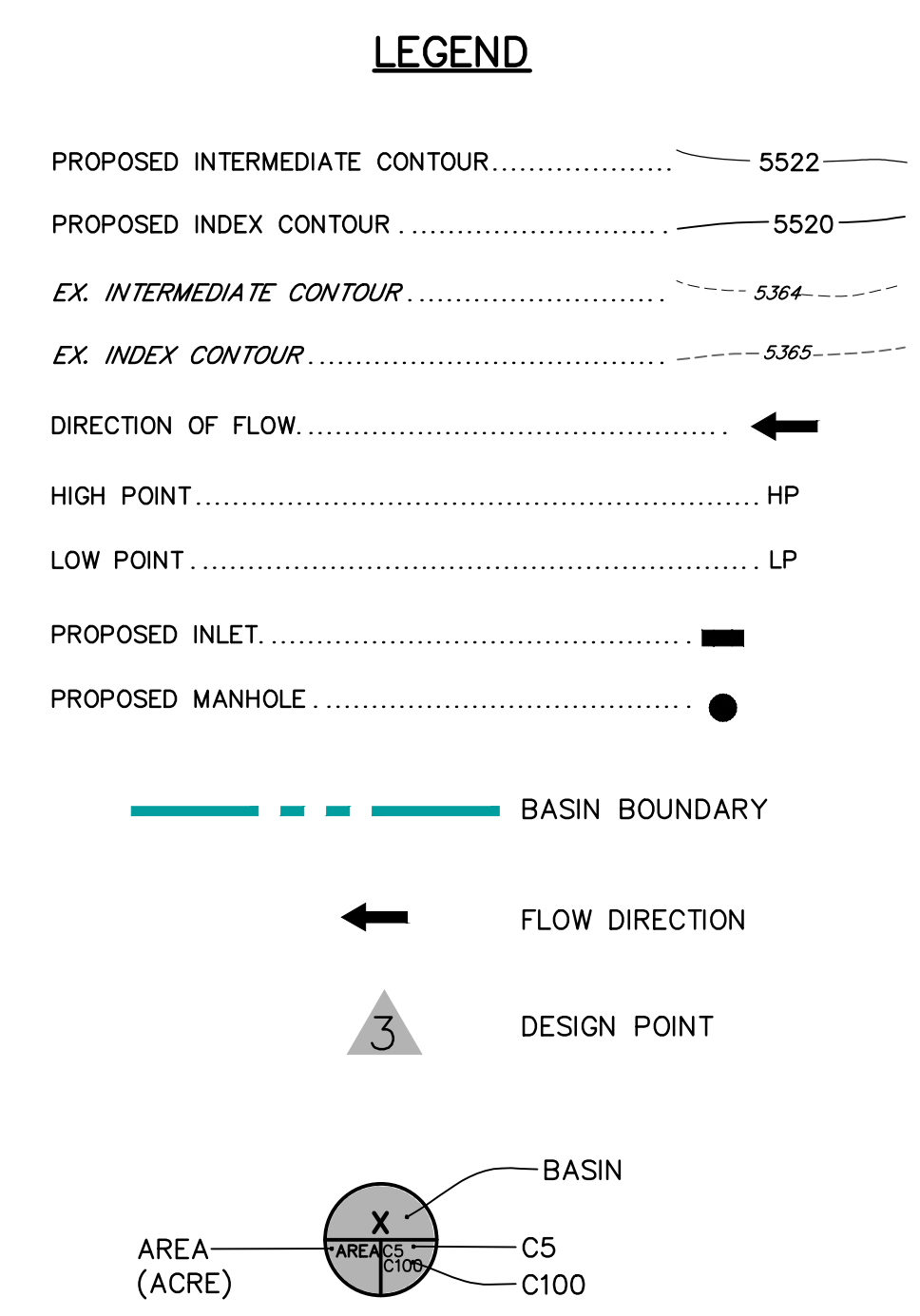
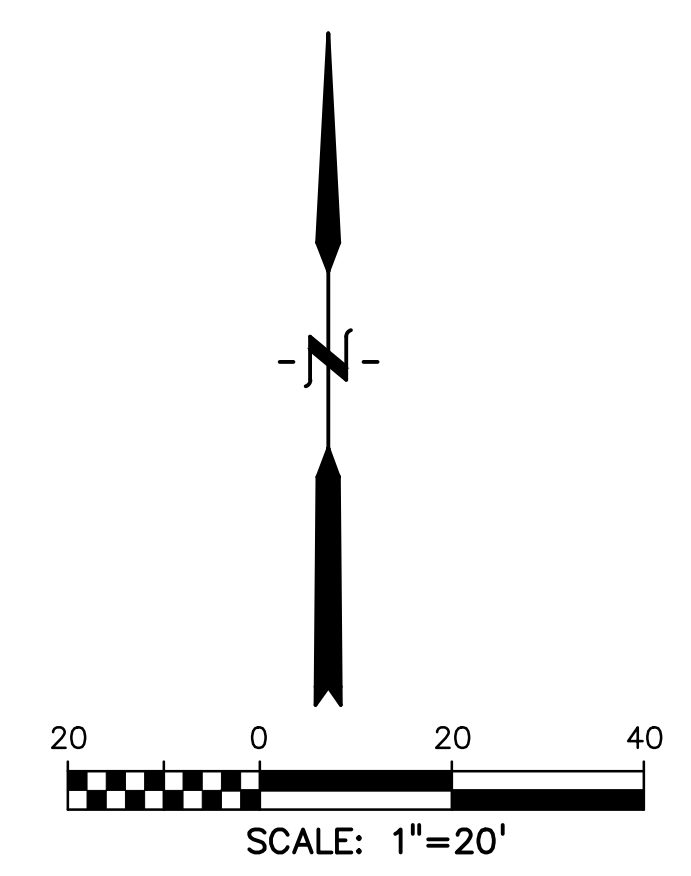
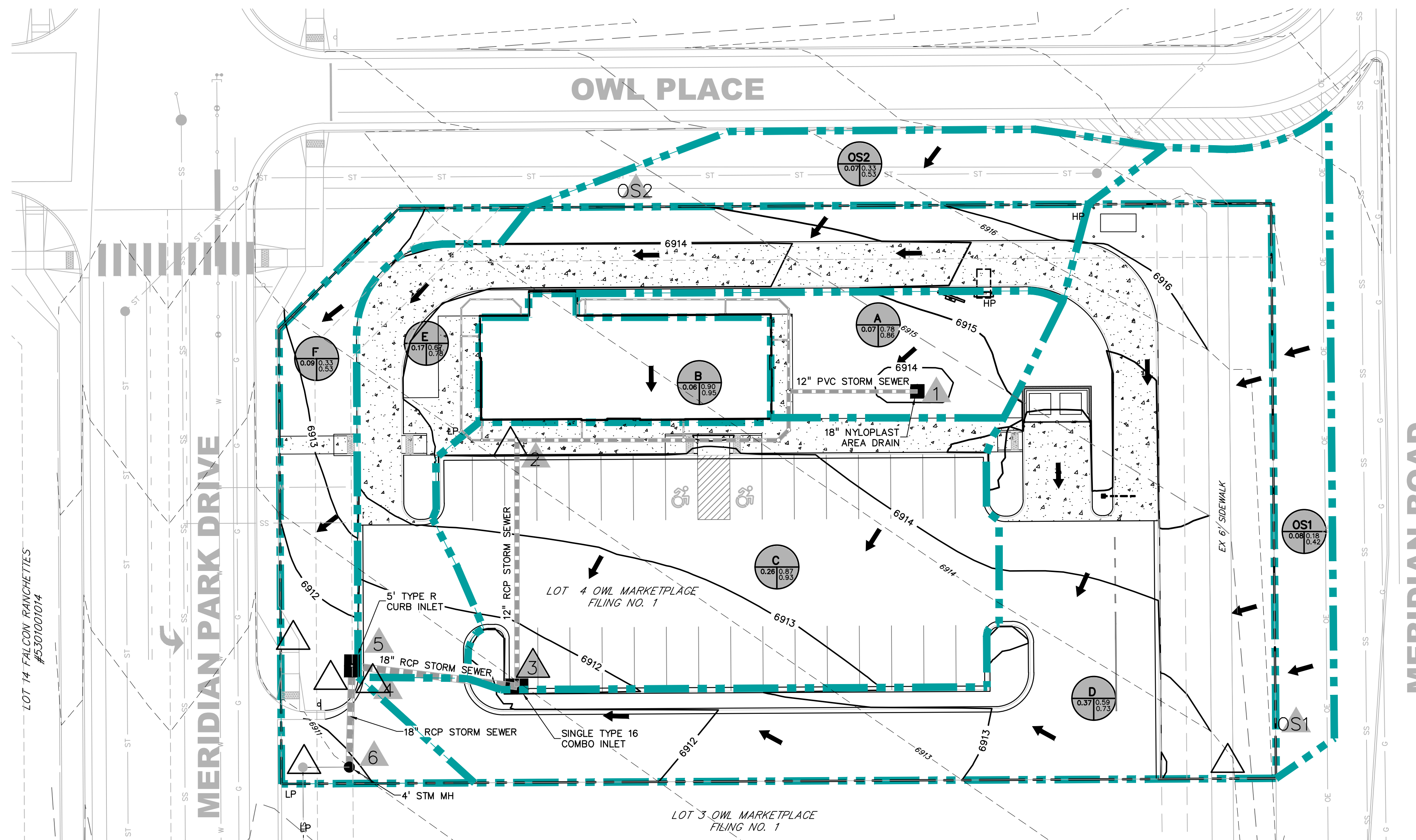
PROJECT: Lot 4 Owl Marketplace
 PROJECT NO: 21611-03
 DESIGN BY: CGH
 REV. BY: KGV
 AGENCY: El Paso County
 REPORT TYPE: Final
 DATE: 12/12/2024



RATIONAL METHOD CALCULATIONS FOR STORM WATER RUNOFF

PROPOSED RUNOFF 100 YR STORM P1= 2.52

BASIN (S)	DESIGN POINT	AREA (AC)	DIRECT RUNOFF		C * A	I (IN/HR)	Q (CFS)
			RUNOFF COEFF	t _c (MIN)			
A	DP1	0.07	0.86	5.4	0.06	8.42	0.5
B		0.06	0.95	5.0	0.05	8.58	0.5
DP1+B	DP2	0.13	0.90	6.4	0.11	8.03	0.9
C		0.26	0.93	5.0	0.24	8.58	2.1
DP2+C	DP3	0.38	0.92	6.9	0.35	7.82	2.8
OS1	DPOS1	0.08	0.42	6.3	0.03	8.07	0.3
D		0.37	0.73	5.0	0.26	8.57	2.3
DPOS1+D	DP4	0.45	0.67	8.3	0.30	7.36	2.2
OS2	DPOS2	0.07	0.53	5.4	0.04	8.40	0.3
E		0.17	0.78	5.0	0.14	8.58	1.2



BASIN	DP	AREA (AC)	Q5 (cfs)	Q100 (cfs)
A	DP1	0.07	0.3	0.5
B	DP2	0.06	0.3	0.5
C	DP3	0.26	1.1	2.1
	DP3	0.38	1.5	2.8
OS1	DPOS1	0.08	0.1	0.3
D	DP4	0.37	1.1	2.3
	DP4	0.45	1.0	2.2
OS2	DPOS2	0.07	0.1	0.3
E	DP5	0.17	0.6	1.2
	DP5	0.24	0.7	1.4
	DP6	1.07	3.0	6.0
F		0.09	0.1	0.4

PREPARED BY:

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GRADING & EROSION CONTROL PLANS FOR:
LOT 4, OWL MARKETPLACE
 COLORADO SPRINGS, COLORADO

ISSUE	DATE
INITIAL ISSUE	12/12/24
DESIGNED BY:	CGH
DRAWN BY:	CGH
CHECKED BY:	KGV
FILE NAME:	21611-03-DRN

PREPARED UNDER MY DIRECT SUPERVISION FOR AND ON BEHALF OF DREXEL, BARRELL & CO.
 DRAWING SCALE:
 HORIZONTAL: 1" = 20'
 VERTICAL: N/A

PROPOSED DRAINAGE PLAN
 PROJECT NO. 21611-03CSCV
 DRAWING NO.

DRN
 SHEET: 1 OF 1