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

Drainage Letter

The Landings of Denmark

Filing No. 2

MVE Project No. 61108

August 24, 2021

PCD Proj No.: CDR-21-003

Update PCD File No. to CDR-22-012

Copyright © MVE, Inc., 2021

Drainage Letter

for

The Landings of Denmark
Filing No. 2
El Paso County, Colorado

Project No. 61108

August 24, 2021

prepared for:

Charles M. McAllister
PO Box 6797
Colorado Springs, CO 80934

prepared by:

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

Copyright © MVE, Inc., 2021

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.

COLORADO LICENSED
DAVID RAYMOND GORMAN
31672
8/24/21
PROFESSIONAL ENGINEER

David R. Gorman, P.E. Colorado Reg. 31672
For and on Behalf of MVE, Inc.

8/24/2021
Date

Developer's Statement

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

Charles M. McAllister
PO Box 6797
Colorado Springs, CO 80934

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.

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

Date

Conditions:

Please remove "Jennifer Irvine, P.E." and replace with "Joshua Palmer, P.E.".

Drainage Letter

The purpose of this Drainage Letter for The Landings of Denmark Filing No. 2 is to update the approved drainage report to allow the construction of the subdivision improvements which have not been constructed following the recording of the Final Plat on August 4, 2006. The approved drainage report is titled "Final Drainage Report The Landings of Denmark Filing No. 2" prepared by Premier Engineering, Inc., dated January, 2005. The property owners intend at this time to complete the subdivision improvements.

The existing subdivision known as "The Landings of Denmark Filing No. 2" is located in the West One-Half of Section 11, Township 13 South, Range 63 West of the 6th P.M., El Paso County, Colorado. The site is made up of two (2) separate parcels made up of 13 vacant lots located in the northwest and southeast corners of The Landings of Denmark Filing No. 1. The subdivision is located on the east side of Log Road, north of Falcon Highway, south of Highway 110, and west of McClelland Road. The Final Plat for The Landings of Denmark Filing No. 2 was recorded August 4, 2006 under Reception Number 206712385 of the records of El Paso County, Colorado. Copies of the recorded plat have been included for reference. The site is located in both the Hook and Line Ranch Drainage Basin (CHBS1800), and the La Vega Ranch Drainage Basin (CHBR0400). The subdivision is zone RR-5 and contains thirteen (5-acre rural) residential lots. The site is split into two (2) parcels (A and B). Parcel A is located northwest of The Landings of Denmark Filing No. 1, and Parcel B is located southeast of The Landings of Denmark Filing No. 1. The subdivision is 75.167± acres in area, including the right-of-way that was dedicated to El Paso County for Osteen Ct., and Byrd Ct.

Parcel A, which is located northwest of The Landings of Denmark Filing No. 1, is bounded on the north by an unplatted parcel containing a single-family residence, several detached garages/sheds, and an unpaved driveway (zone A-35). The east side of Parcel A is adjacent to a vacant unplatted parcel (zone PUD). Parcel A is bounded on the south by lots 57, 65, 66, and 67 of The Landings of Denmark Filing No. 1 (zone RR-5). Log Road borders the west side of the Parcel A. Three (3) vacant unplatted lots lie across Log Road to the west.

Parcel B, which is located southeast of The Landings of Denmark Filing No. 1, is bounded on the north by lot 115 of The Landings of Denmark Filing No. 1 and on the east by a vacant unplatted parcel (zone PUD). Parcel B is bounded on the west by lot 29 of The Landings of Denmark Filing No. 1 (zone RR-5). Falcon Highway borders the south side of the Parcel B. Three (3) unplatted lots, each containing a single-family residence, lie across Falcon Highway to the south.

All of The Landings of Denmark Filing No. 2 is vacant.

According to the Federal Emergency Management Agency's Flood Insurance Rate Map (FIRM) Community Panel Numbers 08041C0585G, and 08041C0595G, 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 Truckton Sandy Loam (map unit 96), which is part of hydrologic soil group A. Truckton Sandy Loam 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.

Revise this map to be Historic Conditions map and create a current Existing Conditions Map showing what all has been built with Filing No. 1

The existing drainage patterns of the The Landings of Denmark Filing No. 2 site are indicated in the attached **Drainage Map Existing Conditions** from the previously approved Final Drainage Report. The site is described by two (2) sub-basins. Parcel A drains easterly in sub-basin H1 to Design Point 1. Parcel B drains southerly in sub-basin H3 to Design Point 2. All flows from the site eventually enter Chico Creek. The sub-basins are described in more detail in the previously approved Final Drainage Report.

The Proposed drainage patterns of the Drainage Letter site are indicated on the attached **Drainage Map Proposed Conditions** from the previously approved Final Drainage Report. The drainage patterns are described by four (4) onsite sub-basins, and four (4) offsite sub-basins. The site will continue to drain as in existing conditions with Parcel A draining offsite to the east and Parcel B draining offsite to the south. The sub-basins are described in more detail in the previously approved Final Drainage Report.

The proposed improvements to be constructed are Byrd Court, and O'Steen Court, public paved rural local roadways each in a 60' right-of-way. The proposed roads will provide access to all thirteen (13) residential lots of the subdivision. Byrd Court will have roadside ditches and one culvert crossing. O'Steen Court will have roadside ditches and one culvert crossing. The roadside ditches were sized to safely convey the stormwater runoff from the proposed roadways. Further details and calculations can be found in the previously approved Final Drainage Report.

Need to be included in appendix

The proposed development will not alter the existing basic drainage patterns of the site. The site will continue to drain off-site to the south and east as in existing conditions. The developed flow runoff quantities will not change from those described in the approved Final Drainage Report For The Landings of Denmark Filing No. 2.

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, Byrd Court and O'Steen Court, which are both public roadways, are 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.

shown in appendix

Not shown on GEC/CDs

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 grass-lined triangular channel downstream of the new culvert crossing of proposed O'Steen 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:

156 LF 24" HDPE Pipe	at	$66 / LF	=	$ 10,296
100 LF 30" HDPE Pipe	at	$74 / LF	=	$ 7,400
4 - 30" HDPE Flared End Section	at	$900/ EA	=	$ 3,600
6 - 24" HDPE Flared End Section	at	$700/ EA	=	$ 4,200
80 CY Rip-Rap Type M	at	$116 /CY	=	$ 9,280
Total			=	$34,776

The Hook and Line Ranch and the La Vega Ranch Drainage Basins have not been studied and are not Fee Basins at this time. No Drainage Fees or Bridge Fees were due or paid for the proposed Final Plat of The Landings of Denmark Filing No. 2 at the time it was platted.

Please revise cost estimate. The county does not allow HDPE material in public right-of-way. Per ECM Chapter 3.3 pipes within County right-of-way shall be Class 3 RCP.

In Conclusion, the drainage patterns generated by the The Landings of Denmark 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 2005. 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:\61108\Documents\Drainage\61108-LOD-Drainage Letter.odt

Provide hydrology calculations for all basins & any needed routing

Provide ditch capacity and flow calculations.

Provide culvert crossing calculations

Provide inlet and outlet protection calculations and associated riprap sizing calcs.

Please provide updated hydrological calculations demonstrating Class 3 RCP pipes will meet county criteria for runoff flows and previous drainage reports. HDPE is not an allowed pipe material in county right-of-way.

Attachments

Hydrologic Soil Group—El Paso County Area, Colorado

Map Scale: 1:3,670 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 150 300 600 900

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

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features

Streams and Canals

Transportation

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

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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 18, Jun 5, 2020

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.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
96	Truckton sandy loam, 0 to 3 percent slopes	A	41.9	100.0%
Totals for Area of Interest			**41.9**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Hydrologic Soil Group—El Paso County Area, Colorado

Map Scale: 1:3,500 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 150 300 600 900

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

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features

Streams and Canals

Transportation

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

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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 18, Jun 5, 2020

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.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
96	Truckton sandy loam, 0 to 3 percent slopes	A	30.2	100.0%
Totals for Area of Interest			**30.2**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Almost all areas of this soil are used as rangeland. A few areas of crops such as alfalfa and corn are grown under sprinkler irrigation.

This soil is well suited to the production of native vegetation suitable for grazing. It is best suited to deep-rooted grasses. The native vegetation is mainly cool- and warm-season grasses such as western wheatgrass, sideoats grama, and needleandthread.

Proper range management is needed to prevent excessive removal of the plant cover. Interseeding is used to improve the existing vegetation. Deferment of grazing in spring increases plant vigor and soil stability. Properly locating livestock watering facilities helps to control grazing.

Windbreaks and environmental plantings are fairly well suited to this soil. Blowing sand is the main limitation for the establishment of trees and shrubs. The soil is so loose that trees need to be planted in shallow furrows and plant cover needs to be maintained between the rows. Supplemental irrigation may be needed to insure survival. Trees that are best suited and have good survival are Rocky Mountain juniper, eastern redcedar, ponderosa pine, and Siberian elm. Shrubs that are best suited are skunkbush sumac, lilac, and Siberian peashrub.

This soil is suited to wildlife habitat. It is best suited to openland and rangeland wildlife habitat. Rangeland wildlife, 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 use as homesites. The main limitation of this soil for roads and streets is frost action potential. Special designs for roads are needed to minimize this limitation. Practices are needed to control soil blowing and water erosion on construction sites where the plant cover has been removed. Capability subclass VIe, nonirrigated.

96—Truckton sandy loam, 0 to 3 percent slopes. This deep, well drained soil formed in alluvium and residuum derived from arkosic sedimentary rock on uplands. Elevation ranges from 6,000 to 7,000 feet. The average annual precipitation is about 15 inches, the average annual air temperatue is about 47 degrees F, and the average frost-free period is about 135 days.

Typically, the surface layer is grayish brown sandy loam about 5 inches thick. The next layer is dark grayish brown sandy loam about 3 inches thick. The subsoil is brown sandy loam about 16 inches thick. The substratum is light yellowish brown coarse sandy loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Blakeland loamy sand, 1 to 9 percent slopes; Bresser sandy loam, 0 to 3 percent slopes; Ellicott loamy coarse sand, 0 to 5 percent slopes; and Ustic Torrifluvents, loamy.

Permeability of this Truckton soil is moderately rapid. Effective rooting depth is 60 inches or more. Available water capacity is moderate. Surface runoff is slow, and the hazards of erosion and soil blowing are moderate.

This soil is used mainly for cultivated crops. It is also used for livestock grazing, for wildlife habitat, and as homesites.

Crops are commonly grown in combination with summer fallow because moisture is insufficient for annual cropping. Alfalfa can also be grown on this soil. When this soil is used as cropland, crop residue management and minimum tillage are necessary conservation practices.

This soil is well suited to the production of native vegetation suitable for grazing (fig. 7). It favors deep-rooted grasses. The native vegetation is mainly cool- and warm-season grasses such as western wheatgrass, sideoats grama, and needleandthread.

Proper range management is needed to prevent excessive removal of the plant cover. Interseeding is used to improve the existing vegetation. Deferment of grazing in spring increases plant vigor and soil stability. Properly locating livestock watering facilities helps to control grazing.

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 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.

This soil is suited to wildlife habitat. It is best suited to habitat for openland and rangeland wildlife. In cropland areas, habitat favorable for ring-necked pheasant, mourning dove, and many nongame species can be developed by establishing areas for nesting and escape cover. For pheasant, undisturbed nesting cover is vital and should be provided in plans for habitat development. This is especially true in areas of intensive farming. Rangeland wildlife, 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 use as homesites. The main limitation of this soil for roads and streets is frost-action potential. Special designs for roads are needed to overcome this limitation. Capability subclasses IIIe, nonirrigated, and IIe, irrigated.

97—Truckton sandy loam, 3 to 9 percent slopes. This deep, well drained soil formed in alluvium and residuum derived from arkosic sedimentary rock on uplands. Elevation ranges from 6,000 to 7,000 feet. The average annual precipitation is about 15 inches, the average annual air temperature is about 47 degrees F, and the average frost-free period is about 135 days.

Typically, the surface layer is grayish brown sandy loam about 5 inches thick. The next layer is dark grayish brown sandy loam about 3 inches thick. The subsoil is brown sandy loam about 16 inches thick. The substratum is light yellowish brown coarse sandy loam to a depth of 60 inches or more.

National Flood Hazard Layer FIRMette

FEMA

104°25'30"W 38°56'29"N

104°24'53"W 38°56'1"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 7/27/2021 at 6:38 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.

National Flood Hazard Layer FIRMette

FEMA

104°25'5"W 38°55'48"N

104°24'27"W 38°55'20"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 7/27/2021 at 6:38 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.

THE LANDINGS OF DENMARK FILING NO. 2

A Portion of the Northwest One-Quarter (N.W.1/4) of Section 11,
and a Portion of the South One-Half (S.1/2) of Section 11,
Township 13 South, Range 63 West of the 6th P.M.,
County of El Paso, State of Colorado

KNOW ALL MEN BY THESE PRESENTS:

That Landings of Denmark, L.L.C., a Limited Liability Company, being the owner of the described tract of land, to wit:

LAND DESCRIPTION: PARCEL A

A portion of the Northwest One-Quarter (N.W.1/4) of Section 11, Township 13 South, Range 63 West of the 6th P.M., County of El Paso, State of Colorado, being more particularly described as follows:

Beginning at the Northwest corner of said Section 11; Thence S89°45'39"E along the northerly line of said Section 11, a distance of 1378.16 feet; Thence S20°13'15"E, a distance of 531.10 feet; Thence S15°37'19"E, a distance of 355.20 feet to the most northwesterly corner of Lot 67 of The Landings of Denmark Filing No. 1 as recorded under Reception No. 201031405 of the records of the Clerk and Recorder's Office of said County; Thence along the northerly line of said The Landings of Denmark Filing No. 1 the following nine (9) courses;

1) S32°17'28"W, a distance of 248.67 feet;
2) Thence N58°54'22"W, a distance of 634.63 feet;
3) Thence along the arc of a non-tangential curve to the right, having a central angle of 40°12'55", a radius of 55.00 feet, an arc length of 38.60 feet, whose chord bears S40°52'43"W;
4) Thence S60°59'10"W, a distance of 64.20 feet;
5) Thence along the arc of a curve to the left having a central angle of 16°42'28", a radius of 100.00 feet, an arc length of 29.16 feet;
6) Thence S44°16'42"W, a distance of 41.95 feet;
7) Thence along the arc of a curve to the left having a central angle of 43°23'11", a radius of 530.00 feet, an arc length of 401.33 feet;
8) Thence S00°53'31"W, a distance of 232.35 feet;
9) Thence N89°06'29"W, a distance of 715.85 feet to a point on the Westerly line of said Section 11;

Thence N00°53'25"E along said westerly Section line, a distance of 1419.18 feet to the Point of Beginning.

Said parcel contains 1,752,281 sq.ft. (40.227 acres), more or less.

LAND DESCRIPTION: PARCEL B

A portion of the South One-Half (S.1/2) of Section 11, Township 13 South, Range 63 West of the 6th P.M., County of El Paso, State of Colorado, being more particularly described as follows:

Beginning at the most Southeasterly corner of The Landings of Denmark Filing No. 1 as recorded under Reception No. 201031405 of the records of the Clerk and Recorder's Office of said County, Said point being also a point on the easterly right-of-way line of O'Toole Drive; Thence along the southerly and easterly lines of said The Landings of Denmark Filing No. 1 and said easterly right-of-way line of O'Toole Drive the following four (4) courses:

1) N00°16'47"E, a distance of 718.66 feet to the Southwest corner of Lot 115 of said subdivision;
2) Thence S89°43'13"E along the South line of said Lot 115, a distance of 671.08 feet to the point of curvature of said Lot 115;
3) Thence along the arc of a curve to the left having a central angle of 01°30'12", a radius of 720.00 feet, an arc length of 18.89 feet to the Southeast corner of said Lot 115;
4) Thence N00°16'47"E along the East line of said Lot 115, a distance of 655.11 feet to the angle point of Lot 114 of said Subdivision;

Thence N67°53'15"E, a distance of 39.16 feet; Thence S51°41'17"E, a distance of 666.60 feet; Thence S52°16'47"W, a distance of 173.71 feet; Thence S37°43'13"E, a distance of 60.00 feet; Thence S34°59'49"E, a distance of 377.58 feet; Thence S78°39'06"E, a distance of 545.46 feet; Thence S33°09'53"E, a distance of 492.61 feet to a point on the Southerly line of said Section 11; Thence N89°43'13"W along said Southerly line, a distance of 2176.16 feet to the Point of Beginning.

Said parcel contains 1,522,002 sq.ft. (34.940 acres), more or less.

BASIS OF BEARINGS STATEMENT

The Basis of Bearings for this description are relative to Southerly line of said Section 11, Township 13 South, Range 63 West of the 6th P.M., County of El Paso, State of Colorado, being monumented by a found 3-1/4" Aluminum Cap L.S. #25968 at the most southwesterly corner of said Section 11 and a found 3-1/4" Aluminum Cap L.S. #27270 at the most southeasterly corner of said Section 11. Said line bears S89°43'13"E, a distance of 5254.83 feet.

EASEMENTS:

Unless otherwise indicated, side, front and rear lot lines are hereby platted on either side with a ten (10') foot public utilities and drainage easement. All exterior subdivision bounadries shall have a twenty (20') foot public utilities and drainage easement. The sole responsibility for maintenance of these easements is hereby vested with individual property owners.

DEDICATION:

The above party in interest has caused said tract to be platted into Lots, Streets, and Easements as shown on the plat, which is drawn to a fixed scale as indicated thereon, and accurately sets forth the boundaries and dimensions of said Lots, Streets, and Easements which shall be known as "THE LANDINGS OF DENMARK FILING NO. 2" EL Paso County, Colorado. All streets as platted are hereby dedicated to public use and said owner does hereby personally covenant and agree that all platted streets will be graded, graveled, paved and that proper drainage for same will be provided at his own expense, all to the satisfaction of the Board of County Commissioners of El Paso County, Colorado, and upon acceptance by resolution, all streets so dedicated will become matters of maintenance by EL Paso County, Colorado.

VICINITY MAP
N.T.S.

APPROVALS:

The accompanying plat was approved by the EL Paso County Planning Department this 1st day of August, 2006 A.D.

R Tindersled
Development Services Director

The accompanying plat was approved by the Board of County Commissioners this 14th day of April, 2005 A.D.

Dallie Clark
Chair County Commissioners

RECORDING:

STATE OF COLORADO)
) SS
COUNTY OF EL PASO)

I hereby certify that this instrument was filed for record in my office at 10:21 o'clock A.M., this 4th day of August, 2006 A.D., and is duly recorded at Reception No. 206172385 of the records of El Paso County, Colorado.

SURCHARGE: 1.00 ROBERT C. BALINK, Recorder

FEE: 20.00 By: Michelle Thomson
Deputy

IN WITNESS WHEREOF:

The aforementioned, Landings of Denmark, L.L.C., has executed this instrument this 28th day of July, 2006 A.D.

John Stowe
P.L. Howerton, Member

NOTARIAL:

STATE OF COLORADO)
) SS
COUNTY OF EL PASO)

The foregoing instrument was acknowledged before me this 28th day of July, 2006 A.D., by Phil Howerton of Landings of Denmark, L.L.C.

Witness my Hand and Seal: Sylvia Scott
Notary Public

My Commission Expires: 10/04/09
Address: 6895 Duke Dr.
Colo. Spgs, CO. 80918

SYLVIA SCOTT NOTARY PUBLIC STATE OF COLORADO

BRIDGE FEES: Ø SCHOOL FEES: District #11 $405.00
DRAINAGE FEES: Ø PARK FEES: $3991.00

SURVEYOR'S CERTIFICATION:

The undersigned Registered land Surveyor in the State of Colorado hereby certifies that the accompanying plat was surveyed and drawn under his supervision and accurately shows the described tract of land, and subdivision thereof, and that the requirements of Title 38 of the Colorado Revised Statutes, 1973, as amended, have been complied with, to the best of his professional knowledge and belief.

PINNACLE LAND SURVEYING CO., INC.
John W. Towner 4/28/06
John W. Towner, Registered Professional Land Surveyor No. 25968

COLORADO JOHN W. TOWNER 25968 PROFESSIONAL LAND SURVEYOR

NOTES:

1. These tracts of land are subject to the following:

a) Protective Covenants, recorded at Reception No. 201031404, of the records of the El Paso County Clerk and Recorder.

b) Reservations contained in United States Patent recorded in Book 350 at Page 122 and in Book 420 at Page 209 and in Book 165 at Page 364 as follows: Subject to the right of the proprietor of a vein or lode to extract and remove his ore therefrom, should the same be found to penetrate or intersect the premises hereby granted, as provided by law. And there is reserved from the lands hereby granted, a right of way thereof for ditches or canals constructed by the authority of the United States.

c) Except 60 foot Right of Way to El Paso County along all section lines as recorded in Road Record A at Page 78 being 30 feet on each side of each section line.

d) Undivided one-half interest in and to all oil, gas and other minerals on, in and under subject property, with right of ingress and egress, as reserved in the deed recorded in Book 1770 at Page 36, and any interests therein or rights thereunder.

e) Right of Way and easement to El Paso County Telephone Company in instrument recorded in Book 2399 at Page 635.

f) Terms, agreements, provisions, conditions, and obligations as contained in Final Order and Decree of the Upper Black Squirrel Creek Ground Water Management District recorded in Book 3260 at Page 701.

g) Right of Way and easement granted to Mountain View Electric Association, Inc., in instrument recorded in Book 3649 at Page 438.

h) Right of Way and easement granted to Mountain View Electric Association, Inc., in instrument recorded in Book 3649 at Page 369.

i) Right of Way and easement granted to Mountain View Electric Association, Inc., in instrument recorded in Book 6015 at Page 704.

j) Right of Way and easement granted to Mountain View Electric Association, Inc., in instrument recorded in Book 6774 at Page 1346.

k) Right of Way and easement granted to Mountain View Electric Association, Inc., in instrument recorded at Reception No. 20101774.

l) Terms, agreements, provisions, conditions, and obligations as contained in Resolution No. 00-146 recorded at Reception No. 201033975.

m) Right of way and easement granted to Mountain View Electric Association, Inc., in instrument recorded at Reception No. 201140748.

n) Terms, agreements, provisions, conditions, and obligations as contained in Order and Decree creating the Ellicott Metropolitan District recorded at Reception No. 97015577.

o) Reservation of minerals rights in the deed recorded at Reception No. 99091488, and any interests therein or rights thereunder.

2. Waste Water and Water:
   Sewage treatment is the responsibility of each individual property owner. The El Paso County Department of Health and Environment must approve each system and, in some cases the Department may require an engineer designed system prior to permit approval.
   Individual wells are the responsibility of each property owner. Permits for individual wells must be obtained from the State Engineer who by law has the authority to set conditions for the issuance of these permits.

3. Prior to the establishment of any driveway on to a County road, an access permit must be granted by the El Paso County Department of Transportation.

4. All structural foundations shall be located and designed by a Professional Engineer, currently registered in the State of Colorado.

5. The following reports have been submitted and are on file at the County Planning Department: Soils and Geological Study; Water Availability Study; Drainage Report; Wildfire Hazard Report; Natural Features Report; Erosion Control Report.

6. All property owners are responsible for maintaining proper storm water drainage in and through their property.

7. No lot, or interest therein, shall be sold, conveyed or transferred whether by deed or by contract, nor shall building permits be issued, until and unless the required public improvements have been constructed and completed in accordance with the subdivision improvements agreement between the applicant and EL Paso County as recorded at Reception No. 206113196 in the office of the Clerk and Recorder of EL Paso County, Colorado, or in the alternative, other collateral is provided which is sufficient in the judgment of the Board of County Commissioners, to make provision for the completion of said improvements.

8. The addresses (_____) exhibited on this plat are for informational purposes only. They are not the legal descriptions and are subject to change.

9. There shall be no direct lot access to Log Road, to Falcon Highway, or to Highway 110.

10. Mailboxes shall be installed in accordance with all El Paso County Department of Transportation and United States Postal Service regulations.

11. The property owner, its successors and assigns, and all future lot owners in this development are hereby on notice that they may be required to comply with applicable rules, if any, of the Colorado Ground Water Commission and/or the Upper Black Squirrel Creek Ground Water Management District, which compliance may result in a reduction of well withdrawal limits and thus a reduction in water availability.

12. Water in the Denver Basin Aquifers is allocated based on a 100 year aquifer life; however, for El Paso County planning purposes, water in the Denver Basin Aquifers is allocated based on a 300 year aquifer life. Applicants, the Home Owners Association, and all future owners in the subdivision should be aware that the economic life of a water supply based on wells in a given Denver Basin Aquifer may be less than either the 100 years or the 300 years indicated due to anticipated water level declines. Furthermore, the water supply plan should not rely solely upon nonrenewable aquifers. Alternative renewable water resources should be acquired and incorporated in a permanent water supply plan that provides future generations with a water supply.

13. Applicants, the Home Owners Association, and all future owners in the subdivision should be aware that without a plan for augmentation approved by the Water Court, the Denver Aquifer is not available for individual wells in this subdivision. Wells will be allowed in the Arapahoe Aquifer and the Laramie-Fox Hill Aquifer. There may be additional expenses in accessing water in these lower aquifers.

14. A twenty-five foot (25') by twenty-five foot (25') sight triangle no-build area exists for all corner lots. No obstruction greater than eighteen inches (18") in height is allowed in this area.

15. Water withdrawal and wells are subject to limitations, restrictions and augmentation requirements and responsibilities as found within the Covenants for this subdivision recorded in Reception No. 201031404, of the Office of the El Paso County Clerk and Recorder and the terms of the water court approved water augmentation plan.

12385

THE LANDINGS OF DENMARK FILING NO. 2

A Portion of the Northwest One-Quarter (N.W.1/4) of Section 11,
and a Portion of the South One-Half (S.1/2) of Section 11,
Township 13 South, Range 63 West of the 6th P.M.,
County of El Paso, State of Colorado

AREA MAP

PARCEL A

PARCEL B

LEGEND

- BOUNDARY LINE
- LOT LINE
- (P) PLATTED LOT LINE
- EASEMENT LINE
- CENTERLINE
- ADJACENT LOT LINE
- SET #4 REBAR & CAP MARKED "PLSC RLS 25968"
- FOUND AS SHOWN
- FOUND #4 REBAR & CAP "PLSC RLS 25968"
- DRAINAGE EASEMENT

PROPERTY TABLES

LINE TABLE		
LINE	BEARING	LENGTH
L1	S80°59'10"W	64.20'(P)
L2	S44°16'42"W	41.95'(P)
L3	S00°53'31"W	232.35'(P)
L4	N27°34'14"E	64.20'
L5	S44°16'42"W	41.95'

CURVE TABLE			
CURVE	DELTA	RADIUS	LENGTH
C1	40°12'55"	55.00'	38.60'(P)
C2	16°42'28"	100.00'	29.16'(P)
C3	43°23'11"	530.00'	401.33'(P)
C4	16°42'28"	100.00'	29.16'
C5	51°28'02"	55.00'	49.41'
C6	48°51'59"	55.00'	46.91'
C7	45°50'58"	55.00'	44.01'

EASEMENT TABLES

LINE TABLE		
LINE	BEARING	LENGTH
L6	N00°00'56"E	75.68'
L7	N37°05'06"E	98.84'
L8	N55°44'38"E	92.52'
L9	S35°24'44"E	17.25'
L10	S59°53'12"W	59.22'
L11	S45°55'59"W	73.38'
L12	S67°03'39"W	58.77'
L13	N76°04'25"E	188.93'
L14	S83°47'44"E	123.62'
L15	S65°55'28"E	92.40'
L16	S32°44'47"E	143.59'
L17	S53°53'11"E	113.06'
L18	S65°55'28"E	114.43'
L19	S83°51'46"E	147.94'
L20	N74°59'22"E	278.92'

CURVE TABLE			
CURVE	DELTA	RADIUS	LENGTH
C8	21°18'40"	710.00'	264.08'

PINNACLE LAND SURVEYING COMPANY, INC.
925 W. CUCHARRAS ST., C.S., CO 634-0751

NOTICE: ACCORDING TO COLORADO LAW YOU MUST COMMENCE ANY LEGAL ACTION BASED UPON ANY DEFECT IN THIS SURVEY WITHIN THREE YEARS AFTER YOU FIRST DISCOVER SUCH DEFECT. IN NO EVENT, MAY ANY ACTION BASED UPON ANY DEFECT IN THIS SURVEY BE COMMENCED MORE THAN TEN YEARS FROM THE DATE OF THE CERTIFICATION SHOWN HEREON.

THE LANDINGS OF DENMARK FILING NO. 2

DRAWN BY: CAJ/MWW
JOB NO.: 01012100
CHECKED BY: JWT
DWG: 01012100FP.DWG
DATE: 03/08/05
SHEET 2 OF 2

SURFACE TYPES

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

RPA should be extended to the middle of the ditch (i.e. flowline).

(719) 635-5736

MONUMENT VALLEY ENGINEERS INC.

*** ENGINEERS *** SURVEYORS ***

1903 LELARAY ST., COLORADO SPRINGS, COLORADO 80909

BMP_AREA_I.D.

With a V ditch, you can only use the portion of the ditch where the SW sheet flows off the road into the ditch for RPA (i.e. half the ditch) and the slope would be the fall from the road to the bottom of the ditch. So in the example below the slope would be 25% and the RPA would be the length of the ditch (also the UIA:RPA Interface) multiplied by 10 feet. It looks like only 1/2 the road will have a ditch, the other side of the road should be similar but only extend through the ROW to avoid additional WQ easements.

Design Procedure Form: Ru

UD-BMP (Version 3.07, March

Designer:	**WCG**
Company:	**M.V.E., Inc.**
Date:	**July 29, 2021**
Project:	**THE LANDINGS OF DENMARK FILING NO 2**
Location:	

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 Outsi

Area Type	UIA:RPA	UIA:RPA										
Area ID	BYRD CT	O'STEEN CT										
Downstream Design Point ID	1	3										
Downstream BMP Type	None	None										
DCIA (ft^2)	--	--										
UIA (ft^2)	27,335	40,933										
RPA (ft^2)	9,259	14,847										
SPA (ft^2)	--	--										
HSG A (%)	100%	100%										
HSG B (%)	0%	0%										
HSG C/D (%)	0%	0%										
Average Slope of RPA (ft/ft)	0.020	0.020										
UIA:RPA Interface Width (ft)	50.00	100.00										

CALCULATED RUNOFF RESULTS

Area ID	BYRD CT	O'STEEN CT										
UIA:RPA Area (ft^2)	36,594	55,780										
L / W Ratio	14.64	5.58										
UIA / Area	0.7470	0.7338										
Runoff (in)	0.00	0.00										
Runoff (ft^3)	0	0										
Runoff Reduction (ft^3)	1139	1706										

CALCULATED WQCV RESULTS

Area ID	BYRD CT	O'STEEN CT										
WQCV (ft^3)	1139	1706										
WQCV Reduction (ft^3)	1139	1706										
WQCV Reduction (%)	100%	100%										
Untreated WQCV (ft^3)	0	0										

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

Downstream Design Point ID	1	3										
DCIA (ft^2)	0	0										
UIA (ft^2)	27,335	40,933										
RPA (ft^2)	9,259	14,847										
SPA (ft^2)	0	0										
Total Area (ft^2)	36,594	55,780										
Total Impervious Area (ft^2)	27,335	40,933										
WQCV (ft^3)	1,139	1,706										
WQCV Reduction (ft^3)	1,139	1,706										
WQCV Reduction (%)	100%	100%										
Untreated WQCV (ft^3)	0	0										

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

Total Area (ft^2)	92,374
Total Impervious Area (ft^2)	68,268
WQCV (ft^3)	2,845
WQCV Reduction (ft^3)	2,845
WQCV Reduction (%)	100%
Untreated WQCV (ft^3)	0

Okay - Meets 60% WQCV Requirement for Runoff Reduction

VICINITY MAP
NO SCALE

Peak Flow Rate Summary Table

Existing Conditions

Sub-basin	Design Point	Peak Flow Rate (CFS) 5 Year	100 Year
H1	1	63.8	156.0
H2	2	49.9	122.1

Need Basin H3 infomation, based on mp

LEGEND

- EXISTING BASIN BOUNDARY
- DIRECTION OF FLOW
- (7290) EXISTING CONTOUR
- DESIGN POINT
- EXISTING CMP CULVERT

SUB-BASIN DESIGNATION
H1
185.84 ac
AREA IN ACRES

-Turn off Filing 1 & 2 information

-Label contours

-Show flow arrows

-Label property boundary

-Label all easements

-Label all existing roads, ROW widths and roadway classification

Create an existing drainage map, which included everything built as part of Filing No. 1

N

SCALE : 1"= 200'

THE LANDINGS OF
DENMARK SUBDIVISION
FILING NO. 2

FINAL DRAINAGE PLAN
PROPOSED CONDITIONS

Historic Conditions

THE LANDINGS OF DENMARK
FILING NO. 2
FINAL DRAINAGE BASIN MAP
EXISTING CONDITIONS

PREMIER ENGINEERING, INC.
Professional Civil Engineers
2110 Vickers Drive
Colorado Springs, CO 80918
(719) 598 6951
PremierEng@aol.com

VICINITY MAP

NO SCALE

Peak Flow Rate Summary Table

Proposed Conditions

Sub-basin	Design Point	Peak Flow Rate (CFS) 5 Year	100 Year
A	1	15 3	36 6
B		8 7	20 8
C		4 8	11 6
D		19 8	47 5
A,B,OS1-2	2	65 4	159 0
C,OS3	3	15 9	38 0
OS4		28 2	67 6
C,D,OS3-4	5	52 2	125 0

LEGEND

- EXISTING BASIN BOUNDARY
- PROPOSED BASIN BOUNDARY
- PROPOSED DRAINAGE EASEMENT
- DIRECTION OF FLOW
- (7290) EXISTING CONTOUR
- DESIGN POINT
- PROPOSED HDPE CULVERT

SUB-BASIN DESIGNATION

E1

25 80 ac

AREA IN ACRES

- Label Property boundary
- Differentiate between existing & proposed items (roads, culverts, etc)

Property Boundary

Existing culvert

Existing Drainage Easement

THE LANDINGS OF

DENMARK SUBDIVISION

FILING NO. 2

FINAL DRAINAGE PLAN

PROPOSED CONDITIONS

N

SCALE 1" = 200'

THE LANDINGS OF DENMARK FILING NO. 1

FINAL DRAINAGE BASIN MAP

PROPOSED CONDITIONS

PREMIER ENGINEERING, INC

Professional Civil Engineers

2110 Vickers Drive

Colorado Springs CO 80918

(719) 598 6951

PremierEng@aol com

Drainage Letter_v1.pdf Markup Summary

Callout (29)

Subject: Callout
Page Label: 3
Author: Carlos
Date: 9/14/2022 10:32:02 AM
Status:
Color:
Layer:
Space:

Please remove "Jennifer Irvine, P.E." and replace with "Joshua Palmer, P.E.".

Subject: Callout
Page Label: 5
Author: CDurham
Date: 9/14/2022 5:27:23 PM
Status:
Color:
Layer:
Space:

Revise this map to be Historic Conditions map and create a current Existing Conditions Map showing what all has been built with Filing No. 1

Subject: Callout
Page Label: 5
Author: CDurham
Date: 9/14/2022 5:28:04 PM
Status:
Color:
Layer:
Space:

Need to be included in appendix

Subject: Callout
Page Label: 24
Author: CDurham
Date: 9/15/2022 8:13:11 AM
Status:
Color:
Layer:
Space:

Historic Conditions

Subject: Callout
Page Label: 24
Author: CDurham
Date: 9/15/2022 8:14:13 AM
Status:
Color:
Layer:
Space:

Label existing ditch

Subject: Callout
Page Label: 24
Author: CDurham
Date: 9/15/2022 8:14:26 AM
Status:
Color:
Layer:
Space:

Label existing ditch

Subject: Callout
Page Label: 24
Author: CDurham
Date: 9/15/2022 8:14:58 AM
Status:
Color:
Layer:
Space:

Label existing storm facilities as public or private

Subject: Callout
Page Label: 24
Author: CDurham
Date: 9/15/2022 8:15:17 AM
Status:
Color:
Layer:
Space:

Label existing storm facilities as public or private

Subject: Callout
Page Label: 24
Author: CDurham
Date: 9/15/2022 8:16:01 AM
Status:
Color:
Layer:
Space:

Need Basin H3 infomation, based on mp

Subject: Callout
Page Label: 24
Author: CDurham
Date: 9/15/2022 8:19:24 AM
Status:
Color:
Layer:
Space:

Are these berms which are redirecting flow?

Subject: Callout
Page Label: 25
Author: CDurham
Date: 9/15/2022 8:21:50 AM
Status:
Color:
Layer:
Space:

Include roadway classification on surrounding roads

Subject: Callout
Page Label: 25
Author: CDurham
Date: 9/15/2022 8:22:20 AM
Status:
Color:
Layer:
Space:

Include ROW width & roadway classification on all Filing 1 & 2 roads

Subject: Callout
Page Label: 25
Author: CDurham
Date: 9/15/2022 8:26:02 AM
Status:
Color:
Layer:
Space:

RR outlet protection needed at all culverts. Include calculations for RR size, length and width in appendix

---

Subject: Callout
Page Label: 25
Author: CDurham
Date: 9/15/2022 8:27:19 AM
Status:
Color:
Layer:
Space:

Provide detail for swale & provide calculation sizing in appendix

---

Subject: Callout
Page Label: 25
Author: CDurham
Date: 9/15/2022 8:28:34 AM
Status:
Color:
Layer:
Space:

Label existing ditch

Subject: Callout
Page Label: 25
Author: CDurham
Date: 9/15/2022 8:28:48 AM
Status:
Color:
Layer:
Space:

Label existing ditch

Subject: Callout
Page Label: 25
Author: CDurham
Date: 9/15/2022 8:29:33 AM
Status:
Color:
Layer:
Space:

Provide calculations for this culvert to show it can handle developed flow

---

Subject: Callout
Page Label: 25
Author: CDurham
Date: 9/15/2022 8:30:12 AM
Status:
Color:
Layer:
Space:

Provide calculations for channel to show it can handle developed flow

Subject: Callout
Page Label: 25
Author: CDurham
Date: 9/15/2022 8:31:16 AM
Status:
Color:
Layer:
Space:

Show second culvert & provide sizing calculation in appendix - Indication if public or private

---

Subject: Callout
Page Label: 25
Author: CDurham
Date: 9/15/2022 8:31:48 AM
Status:
Color:
Layer:
Space:

Show additional culverts & provide sizing calculation in appendix - Indication if public or private

---

Subject: Callout
Page Label: 25
Author: CDurham
Date: 9/15/2022 8:33:50 AM
Status:
Color:
Layer:
Space:

Label all storm facilities as public or private

Subject: Callout
Page Label: 25
Author: CDurham
Date: 9/15/2022 8:34:48 AM
Status:
Color:
Layer:
Space:

What happens with this flow? Is it conveyed by roadside ditch to the south, through the lot in a drainage easement?

Subject: Callout
Page Label: 25
Author: CDurham
Date: 9/15/2022 8:43:35 AM
Status:
Color:
Layer:
Space:

Include existing road and ditch grading

Subject: Callout
Page Label: 25
Author: CDurham
Date: 9/15/2022 8:43:55 AM
Status:
Color:
Layer:
Space:

Include proposed road and ditch grading

Subject: Callout
Page Label: 25
Author: CDurham
Date: 9/15/2022 8:44:06 AM
Status:
Color:
Layer:
Space:

Include proposed road and ditch grading

Subject: Callout
Page Label: 25
Author: CDurham
Date: 9/15/2022 8:45:15 AM
Status:
Color:
Layer:
Space:

Label & include in legend

Subject: Callout
Page Label: 25
Author: CDurham
Date: 9/15/2022 8:45:30 AM
Status:
Color:
Layer:
Space:

Label & include in legend

Subject: Callout
Page Label: 25
Author: CDurham
Date: 9/15/2022 8:46:30 AM
Status:
Color:
Layer:
Space:

Flows are higher than existing at this location. Provide calculation showing culvert can handle developed flow.

Subject: Callout
Page Label: 25
Author: CDurham
Date: 9/15/2022 8:49:18 AM
Status:
Color:
Layer:
Space:

Easement will need to extend to existing easement or through whole lot until flows exit site. Include calculation of swale carrying flow.

Cloud+ (1)

Subject: Cloud+
Page Label: 6
Author: Carlos
Date: 9/14/2022 10:27:59 AM
Status:
Color:
Layer:
Space:

Please revise cost estimate. The county does not allow HDPE material in public right-of-way. Per ECM Chapter 3.3 pipes within County right-of-way shall be Class 3 RCP.

Engineer (9)

Subject: Engineer
Page Label: 6
Author: dotprete
Date: 9/12/2022 1:30:01 PM
Status:
Color:
Layer:
Space:

All culverts will have rip-rap aprons at entrance and exits.

Subject: Engineer
Page Label: 6
Author: dotprete
Date: 9/12/2022 1:30:16 PM
Status:
Color:
Layer:
Space:

Not shown on GEC/CDs

Subject: Engineer
Page Label: 6
Author: dotprete
Date: 9/12/2022 1:31:15 PM
Status:
Color:
Layer:
Space:

Runoff Reduction can be found in the Previously Approved
Preliminary and Final Drainage Report.

Subject: Engineer
Page Label: 23
Author: dotprete
Date: 9/12/2022 1:57:10 PM
Status:
Color:
Layer:
Space:

Subject: Engineer
Page Label: 23
Author: dotprete
Date: 9/12/2022 1:57:14 PM
Status:
Color:
Layer:
Space:

Subject: Engineer
Page Label: 23
Author: dotprete
Date: 9/12/2022 2:09:42 PM
Status:
Color:
Layer:
Space:

With a V ditch, you can only use the portion of the ditch where the SW sheet flows off the road into the ditch for RPA (i.e. half the ditch) and the slope would be the fall from the road to the bottom of the ditch. So in the example below the slope would be 25% and the RPA would be the length of the ditch (also the UIA:RPA Interface) multiplied by 10 feet. It looks like only 1/2 the road will have a ditch, the other side of the road should be similar but only extend through the ROW to avoid additional WQ easements.

Subject: Engineer
Page Label: 22
Author: dotprete
Date: 9/12/2022 2:13:20 PM
Status:
Color:
Layer:
Space:

RPA should be extended to the middle of the ditch (i.e. flowline).

Subject: Engineer
Page Label: 6
Author: dotprete
Date: 9/12/2022 2:14:19 PM
Status:
Color:
Layer:
Space:

shown in appendix

Subject: Engineer
Page Label: 7
Author: dotprete
Date: 9/12/2022 2:15:49 PM
Status:
Color:
Layer:
Space:

Provide ditch capacity and flow calculations.

Provide culvert crossing calculations

Provide inlet and outlet protection calculations and associated riprap sizing calcs.

Image (1)

Subject: Image
Page Label: 23
Author: dotprete
Date: 9/12/2022 1:56:46 PM
Status:
Color:
Layer:
Space:

Line (2)

Subject: Line
Page Label: 23
Author: dotprete
Date: 9/12/2022 1:57:17 PM
Status:
Color:
Layer:
Space:

Subject: Line
Page Label: 23
Author: dotprete
Date: 9/12/2022 1:57:22 PM
Status:
Color:
Layer:
Space:

PolyLine (1)

Subject: PolyLine
Page Label: 22
Author: dotprete
Date: 9/12/2022 2:13:25 PM
Status:
Color:
Layer:
Space:

Text Box (10)

Subject: Text Box
Page Label: 7
Author: Carlos
Date: 9/14/2022 10:31:20 AM
Status:
Color:
Layer:
Space:

Please provide updated hydrological calculations demonstrating Class 3 RCP pipes will meet county criteria for runoff flows and previous drainage reports. HDPE is not an allowed pipe material in county right-of-way.

Subject: Text Box
Page Label: 25
Author: Carlos
Date: 9/14/2022 10:34:59 AM
Status:
Color:
Layer:
Space:

Please update draiange maps as HDPE pipe material is not allowed in County right-of-way. Per ECM Chapter 3.3 culverts should be Class 3 RCP.

Subject: Text Box
Page Label: 7
Author: CDurham
Date: 9/14/2022 5:24:26 PM
Status:
Color:
Layer:
Space:

Provide hydrology calculations for all basins & any needed routing

---

Subject: Text Box
Page Label: 24
Author: CDurham
Date: 9/15/2022 8:18:15 AM
Status:
Color:
Layer:
Space:

-Turn off Filing 1 & 2 information

-Label contours

-Show flow arrows

-Label property boundary

-Label all easements

-Label all existing roads, ROW widths and roadway classification

---

Subject: Text Box
Page Label: 24
Author: CDurham
Date: 9/15/2022 8:20:08 AM
Status:
Color:
Layer:
Space:

Need this basin information as it contributes to ditch along south property line

Subject: Text Box
Page Label: 24
Author: CDurham
Date: 9/15/2022 8:20:50 AM
Status:
Color:
Layer:
Space:

Create an existing drainage map, which included everything built as part of Filing No. 1

Subject: Text Box
Page Label: 25
Author: CDurham
Date: 9/15/2022 8:23:48 AM
Status:
Color:
Layer:
Space:

- Label Property boundary

-Differentiate between existing & proposed items (roads, culverts, etc)

Subject: Text Box
Page Label: 25
Author: CDurham
Date: 9/15/2022 8:24:44 AM
Status:
Color:
Layer:
Space:

Property Boundary

Existing culvert

Existing Drainage Easement

Subject: Text Box
Page Label: 25
Author: CDurham
Date: 9/15/2022 8:27:37 AM
Status:
Color:
Layer:
Space:

Need this basin information as it contributes to ditch along south property line

---

August 24, 2021

PCD Proj No.: CDR-21-003

Update PCD File No. to CDR-22-012

Subject: Text Box
Page Label: 1
Author: Carlos
Date: 9/8/2022 1:27:28 PM
Status:
Color:
Layer:
Space:

Update PCD File No. to CDR-22-012