Falcon Highlands Filing No. 3

Master Development Drainage Plan

Owner/Developer
Challenger Homes
8605 Explorer Drive Ste. 250
Colorado Springs, CO 80920
(719) 598-5192
Contact: Jim Byers

Engineer
Atwell, LLC
143 Union Blvd., Suite 700
Lakewood, CO 80228
303-462-1100
Contact: Richard Lyon, PE

Atwell Project Number
21000656

Submitted by: Atwell, LLC

June 2021

SKP-21-004

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 basin. I accept responsibility for any liability caused by any negligent acts, errors or omissions on my part in preparing this report.

Richard D Lyon 06/17/2021

Richard D. Lyon, PE 53921 Date Seal:

Developer's Statement:

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

Business Name: Challenger Homes

By:

Title:

Address:

El Paso County Approval:

Filed in accordance with Section 51.1 of the El Paso County Land Development Code as amended.

Jennifer Irvine / County Engineer, Director Date

Conditions:

change to " requirements of the Drainage Criteria Manual, Volumes 1 & 2, El Paso County Engineering Criteria Manual and Land Development Code, as amended.

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Address how this sketch plan is proposing an increased density & lot count from previously approved report.

INTRODUCTION

This Master Development Drainage Plan Report has been completed for Challenger Homes in order to present an effective storm water management plan for the Falcon Highlands Filing No. 3 development, hereinafter referred to as the Site. This report is intended to guide the development of the site and recommend general drainage concepts that can be implemented as development progresses. Included within this report is a proposed drainage plan for the Site along with reference information for drainage basins and storm water conveyance facilities.

The Site was most recently studied in the *Falcon Highlands Filing No. 2 & 3 Final Drainage Report* by Terra Nova Engineering, Inc., latest revision August 2010 for the development of Filing No. 2. Prior to that Final Drainage Report, a Master Development Drainage Plan report entitled *Falcon Highlands Phase 2, Filing No. 2 & 3 Master Development Drainage Plan and Preliminary Drainage Report* by Terra Nova Engineering, Inc. latest revision September 2005 was developed. This new Master Development Drainage Plan (MDDP) acts as an update of the previous MDDP and FDR for the development of Falcon Highlands Filing No. 3 area and basins.

Application states 114.9 acres

The entire site for Falcon Highlands Filing No. 3 is approximately 127.8 acres. The drainage exhibits and calculations within the appendix present Filing No. 2 and other off-site basins consistent with that of previous reports. The total acreage of Filing No. 2 and 3 is approximately 257.7 acres and a portion of Filing No. 1 area totaling 10.6 acre was included for consistency in presenting tributary areas to detention ponds with that of previous studies.

Proposed herein is a network of storm infrastructure, ponds and channels that will meet the relevant criteria for storm water quality and detention, but also allow for aesthetically pleasing landscape and enjoyable green spaces within the PUD community.

GENERAL LOCATION AND DESCRIPTION

The Site is located within Section 12, Township 13 South, Range 65 West of the Sixth Principal Meridian, County of El Paso, State of Colorado. The Site is bounded by Tamlin Road to the south and east, Birch Hollow Way to the north and Bridal Vail Way to the west for the northern portion of the Site and Antelope Meadow Circle to the north for the western end of the Site. The Site, or Filing No. 3 specifically, is directly adjacent and south of Falcon Highlands Filing No. 2 and adjacent to the east and north of Banning Lewis Ranch subdivisions. The overall area consists of approximately 127.8 acres that is proposed to be developed into approximately 395 single-family residential units including 24 nearly half-acre lots and 371 PUD units in varying lot sizes such as eighth-acre lots, quarter-acre lots, and half-acre lots. In addition to the single-family residential units and lots, there is proposed development for open space, a well site, and associated roadways and landscaping. An off-site lift station property subject to potential upgrades to serve the development exists to the south central area of the Site.

Include acreage of open space area

The filing is presented in three phases to plan for and accommodate water supply by the Metro District for what is anticipated to be approximately 250 water service taps in the initial Phase 1 of

the development. However, this MDDP considers development of the entire Filing No. 3 as well as off-site, upstream Filing No. 2 conditions to be comprehensive in the development of the entirety of Filing No. 3.

SOILS AND EXISTING SITE CONDITIONS

The majority of the Site is currently undeveloped. Of the development within the Site, there are existing dirt roadways and sanitary sewer infrastructure installed per the Preliminary Plan and Development Plan for Falcon Highlands Phase 2, Filing No. 2 & 3 prepared by Terra Nova Engineering, most recent revised date of September 15, 2005. The ALTA survey conducted by Atwell, LLC. Shows the existing conditions of Filing No. 3 and adjacent development of Filing No. 2. The Site is nearly 100% existing natural grass vegetation typical of the eastern plains with sparse vegetative cover at its outer limits to the south and southeast. There is an existing regional drainage pond referred to as Pond WU, east of the Site within Falcon Highlands Filing No. 2 dedicated to water quality and detention for storm water runoff from Falcon Highlands Filing No. 1, 2, and a small portion (Basin D) of Filing No. 3. There are two water quality and detention ponds to the south of the Site that were cut in during the construction of Filing No. 2 that were designed for development of both Filings Nos. 2 and 3. The on site slopes range from 0 percent to 10 percent and generally sheet flows from west to east. A Historic Drainage Map is included in Appendix F showing the delineated drainage basins.

Not a

The west edge of the Site has existing electric power lines and natural gas main within an existing utility easement. The south side of the Site has a 12" water main and a fiber optic line within what is considered future Tamlin Road right of way.

The Site is made up of mostly loamy sand soils with 100 percent of the soils being Hydrologic Soil Group A. The on-site soils are specified as Blakeland loamy sand (8), Blakeland Complex (8), and Columbine (19) as mapped by the Soil Conservation Service (SCS). The Natural Resources Conservation Service of the United State Department of Agriculture Web Soil Survey has been included in Appendix B for reference.

The western two thirds of the Site are contained within the Sand Creek Basin, the rest within the Falcon Basin.

Per previous drainage studies for the Site and the environmental study for Filing No. 1, there is a high ground water table that should be addressed with the final soils reports for this development. It is recommended that subsurface drains be installed for proposed structures.

Drainage improvements for the Site will include storm sewer infrastructure to capture runoff before street capacities are exceeded and at sump locations as well as channels and swales for potential overflow areas. The existing detention and water quality ponds south of the Site are assessed in this report and are to be constructed according to engineered construction drawings and a Final Drainage Report for Filing No. 3. More specific details regarding the proposed drainage improvements for the Site are provided in the Detention and Water Quality section of this report.

Appendix only has pond voluming sizing information. Details of pond design will be included with the Final Drainage Report for the site. Please revise statement accordingly.

FLOODPLAIN

According to the Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Map No. 08041C0561G and 08041C0545G dated December 7, 2018, the vast majority of the Site lies within Zone X, which is designated as "Areas determined to be outside the 0.2% annual chance flood hazard area", a portion of the site to the east that is proposed open space is located within a Zone A, which is designated as "Areas determined to be within the 0.2% annual chance flood hazard area". The Zone A designation to the east of Tamlin Road is comprised of an Unnamed Tributary that drains to the Black Squirrel Creek No. 2. The FEMA FIRM, Community Panels Nos. 08041 C 0561 G and 08041 C 0545 G (effective December 7,2018) are included in Appendix C for reference.

El Paso County is involved with the Colorado Hazard Mapping Program (CHAMP) because the CWCB delegates its authority to the County to enforce the regulatory floodplain. El Paso County is part of the NFIP (National Flood Insurance Program) which provides assistance to property owners affected by flooding. Inclusion into this program requires that the County enforce floodplain regulations and any changes made to the regulatory maps. Failure to implement these changes could result in the County losing its NFIP status as such a Preliminary FEMA FIRM panel is also included in Appendix C that was remapped as part of CHAMP.

Include discussion of recommendati
made in approved DBPS's (Sand Cr
& Falcon) for the site.

DRAINAGE DESIGN CRITERIA

The El Paso County Drainage Criteria Manual and El Paso County Engineering Criteria Manual were used in conjunction with the Mile High Flood District Criteria Manual. The rational method was used for drainage basin less than 100-acres. The 5-year design frequency was used for the minor storm and a 100-year design frequency was used for the major storm in calculating onsite storm facility hydraulics. The one-hour point rainfall depth used for the 5-year storm was 1.50 inches and 2.52 inches for the 100-year event. The City of Colorado Springs IDF Curve (Figure 6-5 of the Drainage Criteria Manual Volume 1) was used for calculating rainfall intensity.

HISTORIC AND OFFSITE DRAINAGE BASINS

The Site has been assessed previously via the *Falcon Highlands Phase 2, Filing No. 2 & 3 Master Development Drainage Plan and Preliminary Drainage Report* developed by Terra Nova Engineering, Inc. latest revision September 2005 as well as a Final Drainage Report for Filing No. 2 & 3 by Terra Nova Enginering, Inc. dated August 2010.

The developments of Falcon Highlands Filing No. 1 & 2 remained consistent with their respective Master Development Drainage Plans and Final Drainage Reports and therefore offsite drainage basin descriptions and delineations provided in this report are based on those previous County approved reports.

Include copies of the drainage calculations and maps
referenced from these reports in the appendix.

All off-site drainage basin runoff data and calculations have been updated for current codes and standards consistent with the El Paso County Drainage Criteria Manual. Part of the Site lies within

the Sand Creek Basin and the other part within the Falcon Basin. Therefore, the *Sand Creek Drainage Basin Study* and the *Falcon Basin Drainage Basin Planning Study* were both referenced as well as the El Paso County Master Plan approved in May of 2021. Previous studies show the delineation between the two basins.

Needs to be shown on drainage maps in appendix.

The site has been broken down into five major off-site basins upstream of Filing No. 3, within the existing development of Filing No. 2 and relatively small portions of Filing No. 1. Descriptions of the major basins and their respective sub-basins are below. A drainage map is in the appendix.

Sub-basins are not warranted at this level. You may choose to leave them in, but they will not be reviewed until next level of drainage report.

Off-Site Basins (Filing No. 2):

OS-1 (11.11 ac, Q_5 = 14.8 cfs, Q_{100} = 32.3 cfs) is an off-site basin located on the southwestern part of Falcons Highlands Filing No. 2 and consists of mostly Tract A and portions of PUD residential zoned lots rear yard areas. The historic drainage pattern sheet flows south where it is captured by basin A.

OS-2 (65.78 ac, Q_5 = 89.8 cfs, Q_{100} = 177.2 cfs) is an off-site basin that stretches from the eastern border of basin OS-1 to the eastern edge of Bridal Vail Way within Filing No. 2. The basin is zoned as PUD residential lots of about quarter-acre size. Runoff is carried in the public right-of-ways where the flow travels south through a series of public curb and gutters, sump inlets and storm infrastructure connected to Filing No. 2 where the flow outfalls into Pond 1. Basin OS-2 has been broken down into smaller sub-basins and are described below.

Areas for OS-2 sub-basins do not ma from OS-2. If all of OS-2 does not co to development area, remove this ba the discussion.

OS-2.1 (6.38 ac, Q_5 = 10.7 cfs, Q_{100} = 21.7 cfs) is an off-site within Filin as an off-site basin in the previous MDDP for Filing No. 2. The basin co No. 1 area for quarter-acre lots that drains to the public storm system within Filing No. 2 and ultimately flows to Detention Pond 1.

OS-2.2 (26.52 ac, Q_5 = 36.1 cfs, Q_{100} = 72.2 cfs) is the off-site sub-basin that encompasses the western part of basin OS-2, west of Honeycomb Drive. Basin OS-2.1 is zoned as PUD residential lots of quarter-acre size. Runoff is directed by the street sections of Spurlock Place, Cascading Spring and Honeycomb Drive to a public 20' sump inlet. The sump captures a flow and directs it into a public 30" RCP transports the flow to a junction with a public 60" RCP where it travels south into Basin B's storm system, and ultimately outfalls into Pond 1.

OS-2.2?

OS-2.3 (29.84 ac, Q_5 = 37.5 cfs, Q_{100} = 74.2 cfs) is the off-site sub-basin located between basin OS-2.1 and Bridal Vail Way consisting of PUD residentially zoned lots of quarter-acre size. Runoff from the basin is directed by the street sections of Honeycomb Drive and Hidden Haven Way to a low point where a 20' sump inlet captures the and directs it to a public 30" RCP directs the flow to a junction with a public 60" RCP that travels south into Basin B's storm system, and ultimately outfalls into Pond 1.

OS-2.4 (6.30 ac, Q_5 = 8.4 cfs, Q_{100} = 17.2 cfs) is the off-site sub-basin containing the Bridal Vail Way right-of-way with the rear portion of some PUD residentially zoned lots. The runoff is directed by public curb and gutters into a public 14' at grade inlet. The captured runoff is carried

Basin does not appear to be near Bridal Veil Way, missing boundary lines on map.

through a public 18" RCP to a junction with a public 24" and 36" RCP. The flow travels west to a public manhole junction with a public 36" and 60" RCP that is directed south into Basin B's storm system, and ultimately outfalls into Pond 1.

OS-2.5 – **(3.12 ac, Q_5 = 7.8 cfs, Q_{100} = 13.6 cfs)** is an off-site sub-basin within the developed area of Filing No. 1 for quarter-acre lots and is an off-site basin that was included in the MDDP for Filing No. 2. The basin's runoff sheet flows due south in Filing No. 2 and is captured by the roadways and storm system in Filing No. 2 which is connected to the storm system of Filing No. 3, and ultimately outfalls into Pond 1.

Missing basin on drainage map. Please include

OS-3 (37.32 ac, Q_5 = 41.2 cfs, Q_{100} = 87.3 cfs) is off-site basin located between Bridal Vail Way and Antelope Meadows Circle within Filing 2. This basin includes PUD residential zoned lots of half-acre size and contains drainage tracts. The basin is captured by a series of public curb and gutter systems in the right-of-ways where inlets and various size RCPs convey storm water to the end of the cul-de-sac of Wagon Track Drive where the public storm system of Filing No. 2 is to connect to Filing No. 3 within Antelope Meadows Circle . The basin was broken into smaller basins and are described below.

OS-3.1 (2.14 ac, Q_5 = 1.9 cfs, Q_{100} = 6.6 cfs) is the off-site sub-basin within Filing No. 2 located on the southwestern edge of basin OS-3, adjacent to Filing No. 3's larger northern lots and is primarily PUD residentially zoned lots of half-acre size. The sub-basin's area sheet flows from the rear of the PUD lots into Filing No. 3's Basin C where it enters the roadway due south to Antelope Meadows Circle and is captured by Basin C's storm system, and ultimately outfalls into Pond 2.

OS-3.2 (29.88 ac, Q_5 = 29.2 cfs, Q_{100} = 58.5 cfs) is the off-site sub-basin within Filing No. 2 located north of OS-3.1 consisting of half-acre PUD residential lots and roadways within Filing No. 2. The runoff from the residential lots enters their respective adjacent roadways and flows to public 36" RCP that conveys storm water south into Basin C's storm system, and ultimately outfalls into Pond 2. An emergency overflow swale is designed for flow due south into Basin C in case of surcharge.

OS-3.3 (4.16 ac, Q_5 = 6.7 cfs, Q_{100} = 16.4 cfs) is the off-site basin within Filing No. 2 that borders the east side of basin OS-3 that consists mostly of the right of way area of Antelope Meadows Circle within Filing No. 2 and some half-acre PUD zoned residential lots. Sheet flow from the lots enters the public right of way of Antelope Meadows Circle and enters the storm system within Basin C of Filing No. 3, and ultimately outfalls into Pond 2.

OS-3.4 (1.14 ac, Q_5 = 3.4 cfs, Q_{100} = 6.0 cfs) is an off-site basin within Filing No. 1 that includes the developed right of way of Rolling Thunder Way. This sub-basin was included in the previous MDDP as an off-site basin and represents a portion of the landscaped right of way on the south side of Rolling Thunder Way that sheet flows due south into the developed areas of Filing No. 2 and ultimately into the public storm system shared with Filing No. 3, outfalling to Detention Pond 2.

OS-4 (6.47 ac, Q_5 = 5.2 cfs, Q_{100} = 17.5 cfs) is the off-site basin within Filing No. 2 north of Basin D. The site is comprised of three-quarter acre PUD residentially zoned lots and runoff sheet flows

to the street sections of Foxwell Way and then onto Antelope Meadows Circle where curb and gutter directs the flow south to Birch Hollow Way and south into Basin D's roadways where the public storm system within Filing No. 3 conveys storm water due south and east where it ultimately outfalls into the existing Regional Detention Pond WU. This basin is consistent with the previous FDR for Filing No. 2.

OS-5 – **(13.44 ac, Q_5 = 4.73 cfs, Q_{100} = 31.73 cfs)** is not included within the limits of Filing No. 3 but was included as a part of the basin delineations of the previous MDDP within Basin D, specifically sub-basin D3 with an acreage of 14.62 acres. This area is the open space in which existing Pond WU is located. This basin is recalculated within this report because the previous report calculated this basin with a 5-year coefficient of 0.90 and a 100-year coefficient of 0.95. This area is not to be developed as a part of Filing No. 3 and therefore should have much lower runoff coefficients for the tributary area. Revised drainage data is presented in the appendix for this basin that sheet flows to Pond WU.

On-site Basins (Filing No. 3, Undeveloped):

The site has been broken down into seven major on-site basins upstream within the limits of Filing No. 3. A drainage map is in the appendix.

Basin A (3.7 ac, Q_5 = 5.7 cfs, Q_{100} = 8.1 cfs) is the basin located southwest of Antelope Meadow Circle, just below basin OS-1, west of Basin B. The majority of the site is comprised of Tract A and consists of some rear yard runoff from the PUD lots at the western edge of Basin B. The storm water runoff sheet flows south and off-site and per historical drainage patterns is not tributary to on-site detention ponds.

Basin B (39.23 ac, Q_5 = 36.6 cfs, Q_{100} = 113.3 cfs) is located south of Antelope Meadow Circle, adjacent to basin A. The site is covered in native grasses with limited grading work from a previous development. Runoff from the site sheet flows southwesterly overland to a dedicated pond, Pond 1.

Basin C (55.8 ac, Q_5 = 15.8 cfs, Q_{100} = 106.0 cfs) is located adjacent to basin B and covered in native grasses. The site has limited grading due to work from a previous development that did not finish. Runoff from the site sheet flows southwesterly overland to a dedicated pond, Pond 2.

Is pond existing not, then remov discussion.

Basin D (7.87 ac, Q_5 = 2.6 cfs, Q_{100} = 17.2 cfs) is located adjacent to basin C and east of Antelo Meadows Circle. The site is covered in native grasses with limited grading due to work from a previous development that did not finish. Runoff from the site sheet flows southwesterly overland to a dedicated pond.

Basin E (2.20 ac, Q_5 = 1.8 cfs, Q_{100} = 4.2 cfs) is the undeveloped, natural landscaped area between Tamlin Road and Detention Pond 1. Runoff from Basin E is directed by a ditch section to a low point where an inline inlet will capture flow and direct it south offsite along with the allowable

release rate of the pond. This drainage concept and its associated storm infrastructure is presented in Existing pond? er plan and is to remain as the intended plan.

Basin F (6.34 ac, Q_5 = 5.3 cfs, Q_{100} = 12.5 cfs) is the undeveloped area between Tamlin Road and Detention Pond 2. The runoff from Basin F is directed by a ditch section to a low point where an inline inlet will capture the flow and direct it south offsite along with the allowable release rate of Pond 2. This drainage concept and its associated storm infrastructure is presented in the previous master plan and is to remain as the intended plan.

Basin G (12.61 ac, Q_5 = 6.8 cfs, Q_{100} = 16.0 cfs) is the area south of Basin D that is not to be disturbed and remain as open, natural landscape. The runoff from Basin G sheet flows downstream and is undetained. There is no increase runoff and the drainage pattern remains that of its historical flow path in the channel south to the box culverts at Highway 24.

PROPOSED DRAINAGE BASINS

This report has been prepared in accordance with the El Paso County Drainage Criteria Manual and the Mile High Flood District Criteria Manual. The 5-year storm was used as the minor storm event, while the 100-year storm was used as the major event. The one-hour point rainfall depth used for the 5-year storm was 1.50 inches and 2.52 inches for the 100-year event.

Grading design is preliminary or has not begun for much of the site. Due to this, the assumption has been made that the developed conditions drainage patterns presented in the previous MDDP (Terra Nova Engineering, Inc., September 2005) and FDR (Terra Nova Engineering, Inc., August 2010) will remain for all relevant developed areas consistent with the updated design plan and assumed drainage patterns within altered design areas will conform with the design intent. As design and development progress, this should be revisited to confirm the proposed drainage patterns used in this analysis are still applicable. Since the development of Filing No. 2, sketch plans for Filing No. 3 have been altered from the previous MDDP and FDR. Due to the change in the layout of Filing No. 3 from previous design plans and reports, this report serves to provide updated drainage information for the planned development based on new concept grading and drainage patterns. However, as mentioned previously, the drainage concept for the new layout aims to follow previous master plans as closely as possible including basin delineation areas and pond routing in order to keep with previous detention and water quality pond designs.

The overarching premise of the drainage design is to route overland flow from residential lots and units to adjacent rights-of-way where public storm infrastructure will be installed and ultimately convey the storm water to respective ponds to provide water quality treatment as well as flow attenuation and detention. Previous studies designed Ponds 1 and 2 in order to provide full spectrum detention and water quality for Filing Nos. 2 and 3. The analysis within this report provides more defined pond sizing requirements due to the change in layout for Filing No. 3 as well as preliminary locations and sizes for culverts and/or open channels and the public storm system. This idea is intended to be followed for the entirety of the developed site. Basins which are not along the main drainageways within the proposed developed areas or which are expected to flow offsite have been analyzed.

Preliminary pond sizing and conveyance structures will be analyzed as development progresses to ensure that the final design meets the standards set forward in the El Paso County Engineering Criteria Manual as well as the Mile-High Flood Control Criteria Manual.

As with the historic conditions. the twelve historic major drainage basins have been delineated into seven major basins based on preliminary grading of the Site – basins A through G within the limits of Filing No. 3 and basins OS-1 through OS-5 for off-site basins consistent with the historic conditions for the developed areas of Filing No. 2 and relatively small developed area of Filing No. 1. Of the major basins within the Site, basins A, E, F, and G are consistent with previous reports for Filing Nos. 2 and 3 as those basins are not to be altered during the development of Filing No. 3. Basins B, C, and D are the basins in which development of Sub-basin analysis within these major basins is provided as a part of the h order to plan for storm infrastructure and channels on the Site.

Historic flow not utilized for any of basins in proposed conditions. Please remove reference.

Pervious factors for historic flow analysis have been determined to be 2% by the MHFD. The rational method was used to estimate runoff rates for the proposed development and are in accordance to El Paso County Drainage Criteria Manual and any references within the County criteria to the City of Colorado Springs Drainage Criteria Manuals, volumes 1, 2, and 3. These calculations can be found in Appendix D.

Basin A (3.7 ac, Q_5 = 5.7 cfs, Q_{100} = 8.1 cfs) is the western most basin of the site and consists of the open space Tract A and some small portions of the rear lots of the one-eighth acre single family lots. The runoff from Basin A sheet flows west off site and onto the adjacent open space. Runoff reductions via grass buffers and natural landscape to Design Point 1 allow for no detention of this basin as no down stream conditions will be affected. An area of discharge from the Site to the west property is the west end of Antelope Meadows Circle where it will dead end. It is recommended that temporary control measures such as straw bales or sediment control logs be installed at this dead end for energy dissipation and to disperse any channelized flow from the curb and gutter.

Offsite Basin OS-1 (17.49 ac, Q_5 = 25.5 cfs, Q_{100} = 54.0 cfs) remains as presented in the Historical Drainage Conditions section due to the full development of Filing No. 2. Basin A has been delineated between Filing Nos. 2 and 3 for this report and any basin area tributary to off-site drainage within Filing No. 2 is now considered off-site basin area.

Basin B (39.2 ac, Q_5 = 67.0 cfs, Q_{100} = 157.1 cfs) is the southwestern portion of Filing No. 3 consisting of the area south of Antelope Meadows Circle and west of Basin C. Basin B is laid out with several 50’ public right of way roadways with curb and gutter, detached pedestrian sidewalk, and landscape areas. The PUD residential developments within Basin B are shown as 123 lots, varying from 50’x110’ to 60’x110’. The roadways consist of high points at the eastern and western edges and low points central to the basin with a drainage Tract that flows north to south. The general drainage pattern is due south to Pond 1. Within the roadways is a public storm system and a series of sump inlets at the low points to capture surface runoff and convey storm water to forebays within Pond 1. A relatively small portion of the northern half-acre lots east of Bridal Vail

Way are included in Basin B where a low point in the western cul-de-sac is to have a sump inlet for surface runoff collection that connects to the Pond 1 storm system.

Basin B1 (2.41 ac, Q_5 = 6.39 cfs, Q_{100} = 13.04 cfs frontage of the PUD residential development facin right of way of **STREET B-D** where runoff flows inlets will capture the runoff at the low point and direct flow south into Pond 1. An emergency overflow swale will be developed to route excess runoff south to Pond 1 in case of failure at inlet.

Sub-basins are not warranted at this level. You may choose to leave them in, but they will not be reviewed until next level of drainage report.

Basin B2 (4.96 ac, Q_5 = 13.35 cfs, Q_{100} = 27.91 cfs) is the entrance to Filing 3 from Honeycomb Drive heading south and includes PUD residential lots and the northern portion of **STREET B-A**. Runoff is captured in the public 50' right of way within Honeycomb Drive where public storm sump inlets are located across from each other at a low point. Public storm infrastructure will direct flow to outfall in Pond 1. An emergency flow path carries excess runoff south via swale through landscaped areas.

Basin B3 (5.46 ac, Q_5 = 11.81 cfs, Q_{100} = 24.76 cfs) is located between **STREET B-A** and **STREET B-C** and collects runoff from **STREET B-B** into public storm inlets that direct flow through public storm infrastructure that eventually outfalls into Pond 1. An emergency flow path carries excess runoff south via swale through landscaped areas.

Basin B4 (3.84 ac, Q_5 = 8.25 cfs, Q_{100} = 17.02 cfs) is the area located directly south of basin B3 where runoff is collected within the right of way of **STREET B-C** into storm inlets that captures runoff and directs the flow south into Pond 1. An emergency flow path carries excess runoff south via swale through landscaped areas.

Basin B5 (3.24 ac, Q_5 = 5.89 cfs, Q_{100} = 12.25 cfs) carries through PUD residential lots near Antelope Meadows Circle onto **STREET B-E** where runoff travels south within the right of way via public curb and gutters. Runoff travels south to a low point where it is captured in a public sump inlet and directed to Pond 1.

Basin B6 (2.00 ac, Q_5 = 4.29 cfs, Q_{100} = 8.94) is the tract and **STREET B-C** between **STREET B-E** and **STREET C-G**. Runoff travels overland south where it eventually reaches two sump inlets in the right of way of **STREET B-C** where the flow is directed west where it eventually outfalls into Pond 1. An emergency flow path carries excess runoff south via swale through landscaped areas on the south side of **STREET B-C**.

Basin B7 (3.22 ac, Q_5 = 8.5 cfs, Q_{100} = 17.78 cfs) is the eastern portion of basin B with PUD residential lots and the 50' public right of way **STREET C-G**. Runoff is captured within **STREET C-G** curb and gutter. The flow travels south to a low point and is captured within public sump inlets and directed west where it eventually outfalls into Pond 1. A concrete pan is located at the north end of **STREET B-C** where it intersects **STREET C-G** to capture excess runoff and direct it west to another sump inlet.

Offsite Basin OS-2 (65.78 ac, Q_5 = 89.8 cfs, Q_{100} = 177.2 cfs) remains as presented in the Historical Drainage Conditions section due to the full development of Filing No. 2. Basin B has been delineated between Filing Nos. 2 and 3 for this report and any basin area tributary to Pond 1 within Filing No. 2 is now considered off-site basin area.

Detention Pond 1 is a 17-acre-foot pond that will also act as a water quality basin. Pond 1 was preliminary sized using Haestad's Pondpack program in a previous study. This pond is to be temporary until downstream channel improvements and ponds are installed per the Sand Creek DBPS. At the time all released flows shall conform to the allowable release rates. The allowable release rate of Pond 1 (Q_5 = 32.2 cfs, Q_{100} = 73.2 cfs) was calculated by detaining in the pond for Basin E's un-detained runoff. The pond will need to have more detail taken into account at the time of the Final Drainage Report. For now, it is determined that the pond will have an Extended Basin as the water quality feature. A 15' access road will be placed around the top, with the pond having slopes of 4:1. The preliminary outlet structure consisting of an 18" culvert and a 3' x 4' grated inlet box will restrict flows to the above mentioned allowable release rates. The outlet structure will need to have a more detailed analysis at the time of the Final Drainage Report. A 42" RCP outlet will pass the discharge south where it will combine with the runoff from Basin E. From here the outlet pipe will transport the flow south under Tamlin Road onto the adjacent undeveloped Banning Lewis Ranch property. Rip rap protection will need to be provided at the end of the outlet pipe at the time of final construction. From here the runoff drains south across a defined broad open grassland swale to Highway 24. A 72' wide emergency spillway set at 6817.00 will pass the complete 100-year developed flow safely over the proposed riprap lined weir. Where it can be collected with the inline grate inlet mentioned for Basin E. Some of the flow will overtop a high point in the north ditch section of Tamlin Road about 150' west and then be directed west to the 3-36" RCP culverts. A more detailed analysis of the pond will need to be done at the time of the Final Drainage Report.

Basin C (55.82 ac, Q_5 = 91.1 cfs, Q_{100} = 203.9 cfs) is the more central to east basin within Filing No. 3 that is tributary to Pond 2. The basin includes the majority of the half-acre PUD residential lots in the northern area south of Filing No. 2 and east of Bridal Vail Way, and stretches south to the very south and east edges of the Filing with the exception of Basin D and Pond WU areas. Basin C areas south of Antelope Meadows Circle consists of approximately 248 lots with some lots of 35'x110' and others of 50'x110' and 60'x110' in size. A public storm system is to be designed within the roadways to convey storm water from the off-site Basin OS-3 within Filing No. 2 and the runoff from the entire Basin C areas. The storm system is to outfall into Pond 2.

Offsite Basin OS-3 (37.32 ac, Q_5 = 41.2 cfs, Q_{100} = 87.3 cfs) remains as presented in the Historical Drainage Conditions section due to the full development of Filing No. 2. Basin C has been delineated between Filing Nos. 2 and 3 for this report and any basin area tributary to Pond 2 within Filing No. 2 is now considered off-site basin area.

Basin C1 (2.89 ac, Q_5 = 5.6 cfs, Q_{100} = 12.4 cfs) is the northern most western portion of basin C with PUD residential lots and the 50' public right of way **STREET H.** Runoff is captured within **STREET H** curb and gutter. The flow travels south to a public on-grade inlet. Any carry overflow

continues to flow south into a low point and is captured within a public sump inlet and directed west where it eventually outfalls into Pond 2. An engineered swale or concrete pan is to be later engineered to carry any excess flow from the sump inlet directly into Pond 2.

Basin C2 (3.02 ac, Q_5 = 6.7 cfs, Q_{100} = 14.3 cfs) is the north western portion of basin C with PUD residential lots and the 50' public right of way **STREET H** and **STREET I**. Runoff is captured within **STREET H** curb and gutter and **STREET I** curb and gutter. Runoff from **STREET I** flows westerly into **STREET H** and continues to flow due south to a public on-grade inlet. Any carry overflow continues to flow south into a low point and is captured within a public sump inlet and directed west where it eventually outfalls into Pond 2. An engineered swale or concrete pan is to be later engineered to carry any excess flow from the sump inlet directly into Pond 2.

Basin C3 (5.62 ac, Q_5 = 8.7 cfs, Q_{100} = 20.5 cfs) is the southern most western portion of basin C with PUD residential lots and the 50' public right of way **STREET H** and **STREET J.** Runoff is captured within **STREET J** curb and gutter and flows east into the curb and gutter of **STREET H** to a public on-grade inlet. Any carry overflow continues to flow south into a low point and is captured within a public sump inlet and directed west where it eventually outfalls into Pond 2. An engineered swale or concrete pan is to be later engineered to carry any excess flow from the sump inlet directly into Pond 2.

Basin C4 (1.63 ac, Q_5 = 4.7 cfs, Q_{100} = 9.5 cfs) is the south western portion of basin C with PUD residential lots and the 50' public right of way **STREET H**. The runoff is captured within **STREET H** curb and gutter and flows south western to a public on-grade inlet. Runoff is also captured in **STREET H** curb and gutter and flows south eastern to a public on-grade inlet. Any carry overflow continues to flow south into a low point and is captured within a public sump inlet and directed west where it eventually outfalls into Pond 2. An engineered swale or concrete pan is to be later engineered to carry any excess flow from the sump inlet directly into Pond 2.

Basin C5 (1.42 ac, Q_5 = 4.2 cfs, Q_{100} = 8.5 cfs) is the southern portion of basin C with PUD residential lots and the 50' public right of way **STREET H.** The runoff is captured within the **STREET H** curb and gutter and flows south westerly to a public sump inlet that also captures excess runoff from Basins C1, C2, C3, C4, and C6. The sump inlet outlets into Pond 2. An engineered swale or concrete pan is to be later engineered to carry any excess flow from the sump inlet directly into Pond 2.

Basin C6 (2.74 ac, Q_5 = 5.8 cfs, Q_{100} = 12.1 cfs) is a centerally located portion of basin C with PUD residential lots and the 50' public right of way **Sahalee Trail, STREET C-F,** and **STREET C-E**. The runoff is captured within the **STREET C-F** and **STREET C-E** curb and gutter and flows south easterly and flows into **Sahalee Trail** curb and gutter. The runoff then flows into a public on-grade inlet. Any carry-over flow continues to flow south into a low point and is captured within a public sump inlet and directed west where it eventually outfalls into Pond 2. An engineered swale or concrete pan is to be later engineered to carry any excess flow from the sump inlet directly into Pond 2.

Basin C7 (3.24 ac, Q_5 = 8.5 cfs, Q_{100} = 17.6 cfs) is a centerally located portion of basin C with PUD residential lots and the 50'public right of way of **STREET C-H, STREET C-E, Sahalee Trail** and **STREET C-D**. The runoff is captured in **STREET C-H** curb and gutter and flows into the curb and gutter of **STREET C-D** and **STREET C-E** and flows south easterly. The flow from **STREET C-E** flows north easterly into a public on-grade inlet. The flow from **STREET C-D** flows south westerly, meeting the flow from **STREET C-E** at a public on-grade inlet. Any carry-over flow flows across the right of way of **STREET C-D** into a public sump inlet. An engineered swale or concrete pan is to be later engineered to carry any excess flow from the sump inlet directly into Pond 2.

Basin C8 (2.09 ac, Q_5 = 3.5 cfs, Q_{100} = 7.7 cfs) is the most northern portion of basin C with PUD residential lots and the 50' public right of way of **STREET C-H**. The runoff is captured in **STREET C-H** curb and gutter and flows south easterly to a public on-grade inlet. Any carry-over flow flows southerly to a low point and is captures within a public sump inlet and outlets to an engineered swale or concrete pan that is to later be engineered to carry flow from the sump inlet directly into Pond 2.

Basin C9 (3.30 ac, Q_5 = 7.1 cfs, Q_{100} = 14.9 cfs) is the north eastern portion of basin C with PUD residential lots and the 50' public right of way of **STREET C-H**, **STREET C-C,** and **STREET C-B.** The runoff is captured in **STREET C-C** and **STREET C-B** curb and gutter and flows northerly into the **STREET C-H** curb and gutter. The runoff then flows into a public on-grade inlet. Any carry-over flow flows southerly to a low point and is captures within a public sump inlet and outlets to an engineered swale or concrete pan that is to later be engineered to carry flow from the sump inlet directly into Pond 2.

Basin C10 (1.85 ac, Q_5 = 5.6 cfs, Q_{100} = 11.6 cfs) is the eastern most portion of basin C with PUD residential lots and the public right of way of **STREET C-D** and Sahalee Trail. The runoff is captured in **STREET C-D** curb and gutter and flows southerly where it meets the runoff captured in Sahalee Trail curb and gutter that flows north easterly in a public sump inlet. An engineered swale or concrete pan is to be later engineered to carry any excess flow from the sump inlet directly into Pond 2.

Basin C11 (11.8 ac, Q_5 = 9.6 cfs, Q_{100} = 64.9 cfs) is the north western portion of basin C with PUD residential lots and the 50' public right of way of Sahalee Trail and **STREET C-A**. The runoff is captured in **STREET C-A** curb and gutter and flows south westerly where it meets the runoff contained in Sahalee Trail curb and gutter and continues to flow southerly into public sump inlets within the right of way of Antelope Meadow Circle.

Basin C12 (1.7 ac, Q_5 = 1.7 cfs, Q_{100} = 5.4 cfs) is the north western portion of basin C with PUD residential lots and the 50' public right of way of Sahalee Trail. The runoff is captured in Sahalee Trail curb and gutter and flows southerly into public sump inlets within the right of way of Antelope Meadow Circle.

Basin C13 (1.7 ac, Q_5 = 1.7 cfs, Q_{100} = 5.4 cfs) is the north western portion of basin C with the right of way of Antelope Meadow Circle. The runoff flows south westerly into public sump inlets within the right of way of Antelope Meadow Circle.

Basin C14 (2.82 ac, Q_5 = 4.6 cfs, Q_{100} = 10.7 cfs) is the north eastern portion of basin C with the right of way of Antelope Meadow Circle. The runoff flows to a low point towards the center of the right of way of Antelope Meadow Circle. The runoff then flows into sump inlets.

Basin C15 (11.15 ac, Q_5 = 15.1 cfs, Q_{100} = 22.4 cfs) is the southern most portion of basin C with PUD residential lots, a full spectrum detention basin and engineered swales or concrete pans to be designed in the future. Flow comes from the sump inlets located in basins C5 and C10 and the subsequent carry-over flows that were not captured by the sump inlets but were captured by the swales/concrete pans to carry the flows in the full spectrum detention basin.

Basin D (7.87 ac, Q_5 = 10.6 cfs, Q_{100} = 27.2 cfs) lies within the Falcon Basin and will be tributary to the existing Regional Detention Pond WU that is located in the southeast corner of the site. This pond was proposed in the *Falcon Drainage Basin Planning Study* and was also recreated in the *Falcon Highlands Master Development Drainage Plan and Preliminary Drainage Report and Final Drainage Report for Filing No. 1* by URS. Since those reports, construction drawings for Pond WU and its upstream channel have been completed. The runoff from Basin D is directed to Pond WU by the storm drain system and overland channel. Basin D was taken into account in previous studies and designs. Due to grading and layout changes within Filing No. 2 and now in Filing No. 3, the area that is tributary to Falcon Basin was reduced by approximately 31 acres and therefore developed flows for Basin D are less than what was originally planned for in Pond WU. As stated in previous studies for Filing Nos. 2 and 3, the reduction in size of the acreage is in conformance with the Previous MDDP's assumptions.

Basin D1 (5.47 ac, Q_5 = 9.2 cfs, Q_{100} = 21.2 cfs) is the majority of basin D with PUD residential lots and the public right of way of **STREET C-H** and **STREET D-A**. The runoff flows to a low point within **STREET C-H** and then continues to a low point within **STREET D-A** where it flows into a public sump inlet. The inlet then outflows into Pond WU.

Basin D2 (2.4 ac, Q_5 = 1.45 cfs, Q_{100} = 5.97 cfs) is the remaining amount of basin D with PUD residential lots. The runoff sheet flows across and ultimately into Pond WU.

Offsite Basin OS-4 (6.47 ac, Q_5 = 5.2 cfs, Q_{100} = 17.5 cfs) remains as presented in the Historical Drainage Conditions section due to the full development of Filing No. 2. Basin D has been delineated between Filing Nos. 2 and 3 for this report and any basin area tributary to Pond WU within Filing No. 2 is now considered off-site basin area.

Offsite Basin OS-5 (13.44 ac, Q_5 = 4.7 cfs, Q_{100} = 31.7 cfs) remains as presented in the Historical Drainage Conditions section due to the full development of Filing No. 2. Basin D has been delineated between Filing Nos. 2 and 3 for this report and any basin area tributary to Pond WU

within Filing No. 2 is now considered off-site basin area. This off-site basin has been delineated separate from OS-4 as Filing No. 3 does not include the area within OS-5.

Basin E (2.20 ac, Q_5 = 1.8 cfs, Q_{100} = 4.2 cfs) is the undeveloped, natural landscaped area between Tamlin Road and Detention Pond 1. Runoff from Basin E is directed by a ditch section to a low point where an inline inlet will capture flow and direct it south offsite along with the allowable release rate of the pond. This drainage concept and its associated storm infrastructure is presented in the previous master plan and is to remain as the intended plan.

Basin F (6.34 ac, Q_5 = 5.3 cfs, Q_{100} = 12.5 cfs) is the undeveloped area between Tamlin Road and Detention Pond 2. The runoff from Basin F is directed by a ditch section to a low point where a inline inlet will capture the flow and direct it south offsite along with the allowable release rate o Pond 2. This drainage concept and its associated storm infrastructure is presented in the previou master plan and is to remain as the intended plan.

Not able to ve the structures as was not inc appendix.

Detention Pond 2 is a temporary 7 acre-ft pond to be removed once the future Dublin Road is constructed by other and down stream improvements are completed as directed by the Sand Creek DBPS from stream segments 150 and 152. The allowable release rate of Pond 2 (Q_5 = 52.0 cfs, Q_{100} = 117.6 cfs) was calculated by over detaining in the pond for Basin F's un-detained runoff. The pond will need to have more detail taken into account at the time of the Final Drainage Report. For now it is determined that the pond will have an Extended Basin as the water quality feature. A 15' access road will be placed around the top, with the pond having sloped of 4:1. The preliminary outlet structure consisting of an 18" culvert and a 4' x 4' grated inlet box will restrict flows to the above mentioned allowable release rates. A 48" RCP outlet will pass the discharge south where it will combine with the runoff from Basin F. From here the outlet pipe will transport the flow south under Tamlin Road onto the adjacent undeveloped Banning Lewis Ranch property. Rip rap protection will need to be provided at the end of the outlet pipe at the time of final construction. From here the runoff drains south to an existing channel and then is directed to a Highway 24 culvert. A 50' wide emergency spillway set at 6817.50 will pass the complete 100-year developed flow safely over the proposed riprap lined weird. Where it can be collected with the inline grate inlet mentioned for Basin F. Some of the flow will overtop a low point in Tamlin Road and then be directed south the existing channel. A more detailed analysis of the pond will need to be done at the time of the Final Drainage Report.

Basin G (12.61 ac, Q_5 = 6.8 cfs, Q_{100} = 16.0 cfs) is the area south of Basin D that is not to be disturbed and remain as open, natural landscape. The runoff from Basin G sheet flows downstream and is undetained. There is no increase runoff and the drainage pattern remains that of its historical flow path in the channel south to the box culverts at Highway 24.

Due to the revised layout and grading of the site, approximately 31 acres of area that was tributary to the Falcon Basin will now be tributary to the Sand Creek Basin. This cross basin transfer should not cause any downstream problems as detention of the additional runoff and release rates conforming to drainage standards will be implemented.

The Developed Condition's runoff flows are kept at or below historic flows by way of detention within existing Pond WU, proposed Detention Pond 1, and proposed Detention Pond 2; all of which are designed for water quality capture and to release storm water at rates conforming to the El Paso County Drainage Criteria Manual. It is anticipated that there will be no negative affects to downstream areas due to developed drainage conditions.

STORM WATER CONVEYANCE AND STORAGE FACILITIES

The proposed on-site conveyance facilities will consist of a combination of storm pipe, swales/channels, curb/gutter, and inlets. Proposed drainage patterns will generally follow the historic drainage patterns outlined in the previous sections of this report, including previous master plans and reports for upstream filings. Within the proposed roadway network, stormwater runoff will be conveyed overland via surface flow of streets in the curb and gutter until street capacities have been exceeded or where storm sewer inlets have been designed. At sump locations, inlets will be sized to collect 100-year flows. Runoff entering the inlets will be conveyed within the storm sewer system to detention and water quality ponds. The general onsite drainage paths and patterns were previously discussed in the Proposed Drainage Basins section of this report.

The proposed pond outfalls will be routed to the Sand Creek Basin. These outfalls have been preliminarily sized based on standard pond release rates required by the MHFD criteria. Release rates will be further evaluated and the design stage for each phase of the development.

Detention and Water Quality Ponds for the Site have been preliminarily designed based on previous MDDP and FDR studies for off-site basins and for Filing No. 3 with the methods outlined in the MHFD Urban Storm Drainage Criteria Manual Volumes 1, 2 and 3 along with the MHFD MHFD-Detention_v4.00. The ponds are designed to detain the Excess Urban Runoff Volume (EURV) and the 100-year Detention Volume. Excess Runoff from the upstream tributary areas will be conveyed to the pond via storm sewers. The storm sewers will then outlet into the pond in concrete forebays.

The proposed ponds have also included preliminary outlet structures that contain 2.5-ft deep micro-pools. EURV release rates will be controlled by an orifice plate designed to meet the MHFD release rate criteria. The 100-year storage volume will be routed through a grate and restricted by a plate that was sized to limit the release rate to the allowable release rate.

The ponds have been previously designed using the runoff data from the Final Drainage Reports from Filing No. 1 and Filing No. 2 as well as assumed runoff data for Filing No. 3 via the most recent FDR in August of 2010 for the development of Filing No. 2.

This report provides more concise drainage calculations for Filing No. 3, consistent with the new layout and grading concept and thus for the tributary areas to Ponds 1 and 2. The MHFD UD-Detention calculator was used to determine Pond 1 and Pond 2's required water quality capture volume, excess urban runoff volume, the 100-year detention volume, and the total volume required as a total of each zone.

A summary of the required pond volumes is presented in the table below.

Extended Detention Pond Volumes				
	Zone 1 (WQCV)	**Zone 2 (EURV - Zone 1)**	**Zone 3 (100-Year - Zones 1 & 2)**	**Total Volume Required**
Pond 1	1.999 ac-ft	6.852 ac-ft	3.938 ac-ft	10.790 ac-ft
Pond 2	1.591 ac-ft	4.955 ac-ft	3.173 ac-ft	8.128 ac-ft

This MDDP consists of the most up to date calculations for percent imperviousness for the tributary areas to Ponds 1 and 2 and therefore has new, adjusted volume requirements compared to that of previous reports.

Pond 1 was calculated to require 10.79 ac-ft of detention volume and with 1-ft of freeboard within the pond, would yield a volume of 14.94 ac-ft. As described in previous sections, Pond 1 was preliminarily sized as a 17 ac-ft pond using Haestad's Pondpack Program and HEC modeling. A Final Drainage Report for Filing No. 3 may require analysis of Pond 1's size and infrastructure to adjust to final hydrology and hydraulic conditions tributary to the pond.

Pond 2 was calculated to require 8.13 ac-ft of detention volume and with 1-ft of freeboard within the pond, would yield a volume of 10.48 ac-ft. As described in previous sections, Pond 1 was preliminarily sized as a 9.43 ac-ft pond using Haestad's Pondpack Program and HEC modeling.

2?

A Final Drainage Report for Filing No. 3 will require analysis of Pond 2's size and infrastructure to adjust to final hydrology and hydraulic conditions tributary to the pond. Adjustments to the delineation between major basins B and C may be considered in order to add more tributary area and runoff to Pond 1 and reduce tributary area and runoff to Pond 2 as there is currently an excess of 2.06 ac-ft of volume in Pond 1 and a need to reduce approximately 1.3 ac-ft of volume to Pond 2.

Existing Regional Detention Pond WU was designed for Filing No. 2 and parts of Filing No. 2 and 3 is was subject to a decrease in storm water runoff as a result of this report's analysis. While the new layout for Filing No. 3 has more density in Basin D resulting in approximately 41 cfs more than previously calculated for a major storm event, the revised runoff for Basin OS-5 (D3 in previous FDR) was reduced by approximately 56.8 cfs for a major storm event yielding a net reduction of 15.8 cfs for a major storm event and therefore a reduction in the required detention volume. No adjustments to Pond WU are required.

WATER QUALITY ENHANCEMENT BEST MANAGEMENT PRACTICES

The detention ponds discussed in the previous section have been designed in accordance with the MHFD Urban Storm Drainage Criteria Manual Volumes 1, 2 and 3 as well as the El Paso County

and City of Colorado Springs Drainage Criteria Manuals. The ponds are designed to provide Water Quality Capture Volume and detain the Excess Urban Runoff Volume and the 100-year Detention Volume. Excess Runoff from the upstream tributary areas will be conveyed to the ponds via storm sewer and designed channels as emergency overflow routes directed to the ponds.

Non-structural Best Management Practices that will be incorporated into the project are anticipated to include grass swales.

Structural Best Management Practices that are incorporated in the Site design include grass swales and extended detention ponds.

MAINTENANCE

Maintenance of Detention Ponds 1 and 2 shall be by the Falcon Highlands Metro District along with the outlet works for the pond. Public Pond WU will be maintained by El Paso County along with the channel on the east side of the property. The proposed storm sewer system in the internal streets will be owned and maintained by El Paso County once approved.

FLOODPLAIN MODIFICATIONS

A portion of the Site within Flood Zone AE is delineated as Basin G and previously discussed in this report. Basin G is an open natural landscaped area not to be disturbed therefore there will be no modifications to the 100-year floodplain, nor will the development be impacted by said floodplain.

CONCLUSION

This Master Development Drainage Plan report covers the conceptual storm water management plan for the Falcon Highlands Filing No. 3 development. Detailed design will be required to develop individual portions of the site, but this document will provide guidance so that the drainage infrastructure constructed throughout the Falcon Highlands Filing No. 3 development will function efficiently and effectively. This report follows all standard criteria set forth by the El Paso County Drainage Criteria Manual, El Paso County Engineering Criteria Manual, the City of Colorado Springs Drainage Criteria Manuals Volumes 1, 2, and 3, and the Mile High Flood District Urban Storm Drainage Criteria Manual, with no requested variances. Downstream drainage facilities will not be negatively affected, as historic drainage patterns and allowable release rates are planned to be maintained.

Need to include discussion on Sand Creek and Falcon Basin DBPS recommendations for the area and how they are being addressed.

Include analysis of Pond WU, showing pond still functions adequately based on changes discussed in report.

Include discussion section & analysis of channels exiting site, to show they are adequate to handle flows.

REFERENCES

1) Urban Storm Drainage Criteria Manuals; Mile High Flood District; latest edition

2) El Paso County Engineering Criteria Manual (ECM), latest revision 6 dated December 13, 2016

3) El Paso County Drainage Criteria Manual (DCM), latest revision October 31, 2018

4) City of Colorado Springs Drainage Criteria Manuals, Volumes 1, 2, and 3, latest revision May 2014

5) Flood Insurance Rate Map of El Paso County Colorado, Federal Emergency Management Agency, Flood Insurance Rate Map No. 08041C0561G and 08041C0545G dated December 7, 2018.

6) Hydrologic Soil Group – El Paso County, Colorado, Web Soil Survey, National Cooperative Soils Survey, May 21, 2021

7) *Falcon Highlands Filing No. 2 & 3 Final Drainage Report* by Terra Nova Engineering, Inc., latest revision August 2010.

8) *Falcon Highlands Phase 2, Filing No. 2 & 3 Master Development Drainage Plan and Preliminary Drainage Report* by Terra Nova Engineering, Inc. latest revision September 2005

9) URS Section for Regional Detention Pond WU

10) Sand Creek DBPS

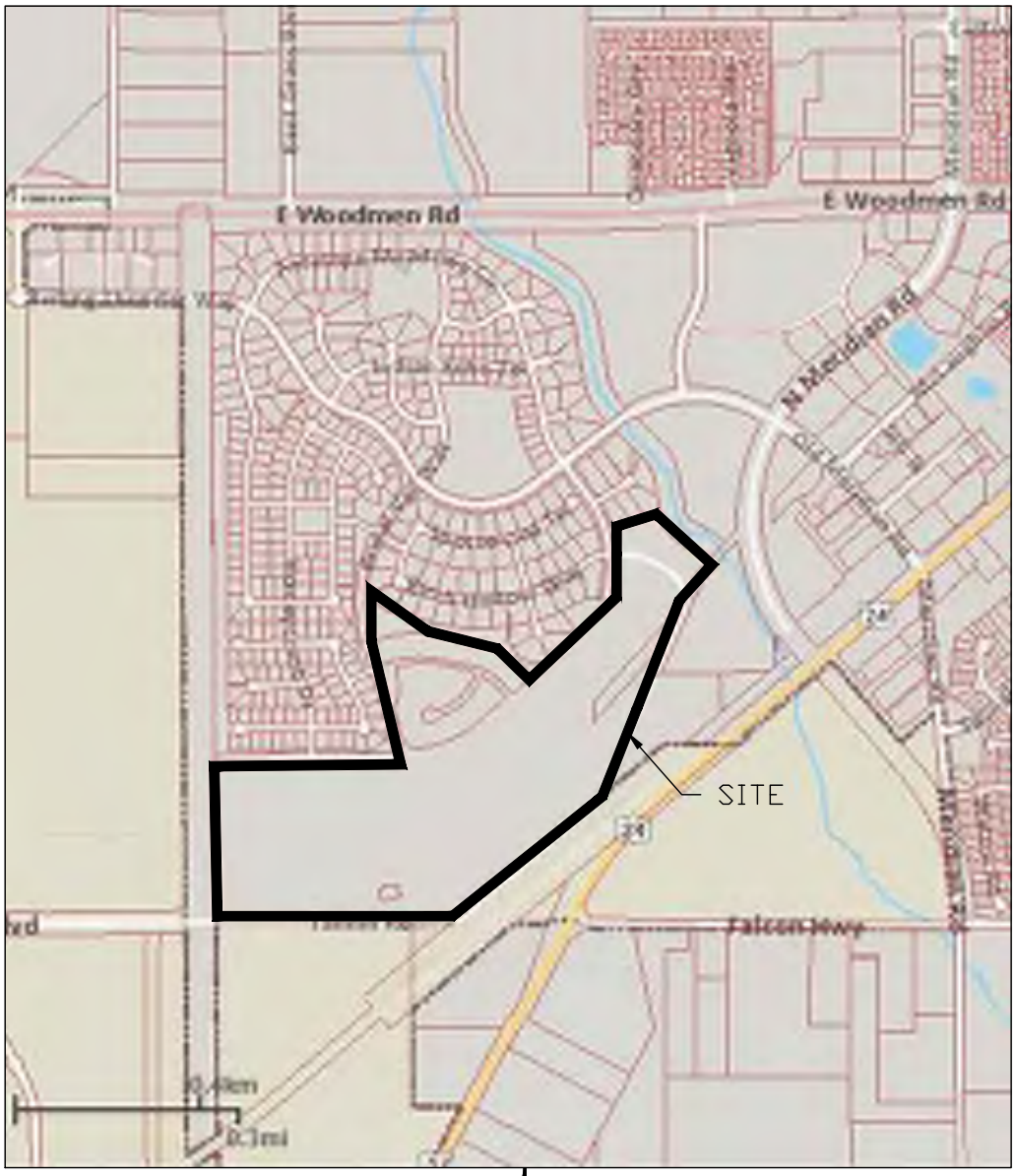
11) Falcon DBPS

APPENDIX A

VICINITY MAP

Falcon Highlands - Filing No. 3

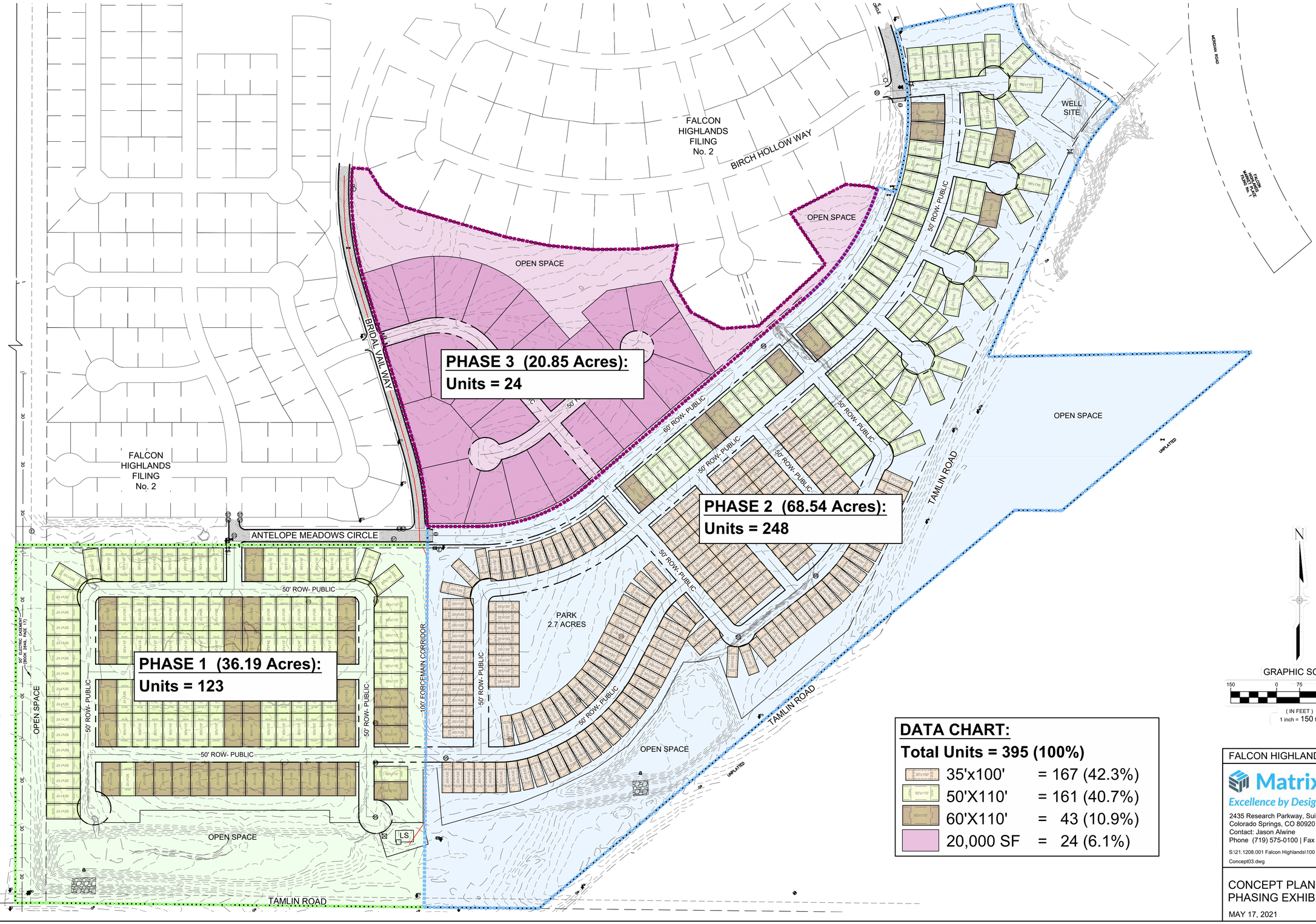
A PART OF SECTION 12, TOWNSHIP 13 SOUTH, RANGE 65 WEST
OF THE SIXTH PRINCIPAL MERIDIAN,
COUNTY OF EL PASO,
STATE OF COLORADO



PROJECT NO.: 21000656
DATE: 6/8/21

SCALE: 1" = 0.3mi

ATWELL
866.850.4200 www.atwell-group.com
6200 S. SYRACUSE WAY, SUITE470
GREENWOOD VILLAGE, CO 80111
303.825.7100
CONTACT: DANIEL MADRUGA
DMADRUGA@ATWELL-GROUP.COM



DATA CHART:

Total Units = 395 (100%)

35'x100'	= 167	(42.3%)
50'X110'	= 161	(40.7%)
60'X110'	= 43	(10.9%)
20,000 SF	= 24	(6.1%)

N

GRAPHIC SCALE

150 0 75 150 300

(IN FEET)

1 inch = 150 ft.

FALCON HIGHLANDS

Matrix
Excellence by Design
2435 Research Parkway, Suite 300
Colorado Springs, CO 80920
Contact: Jason Alwine
Phone (719) 575-0100 | Fax (719) 575-0208

S:\21.1208.001 Falcon Highlands\100 Dwg\105 Exhibits Concept03.dwg

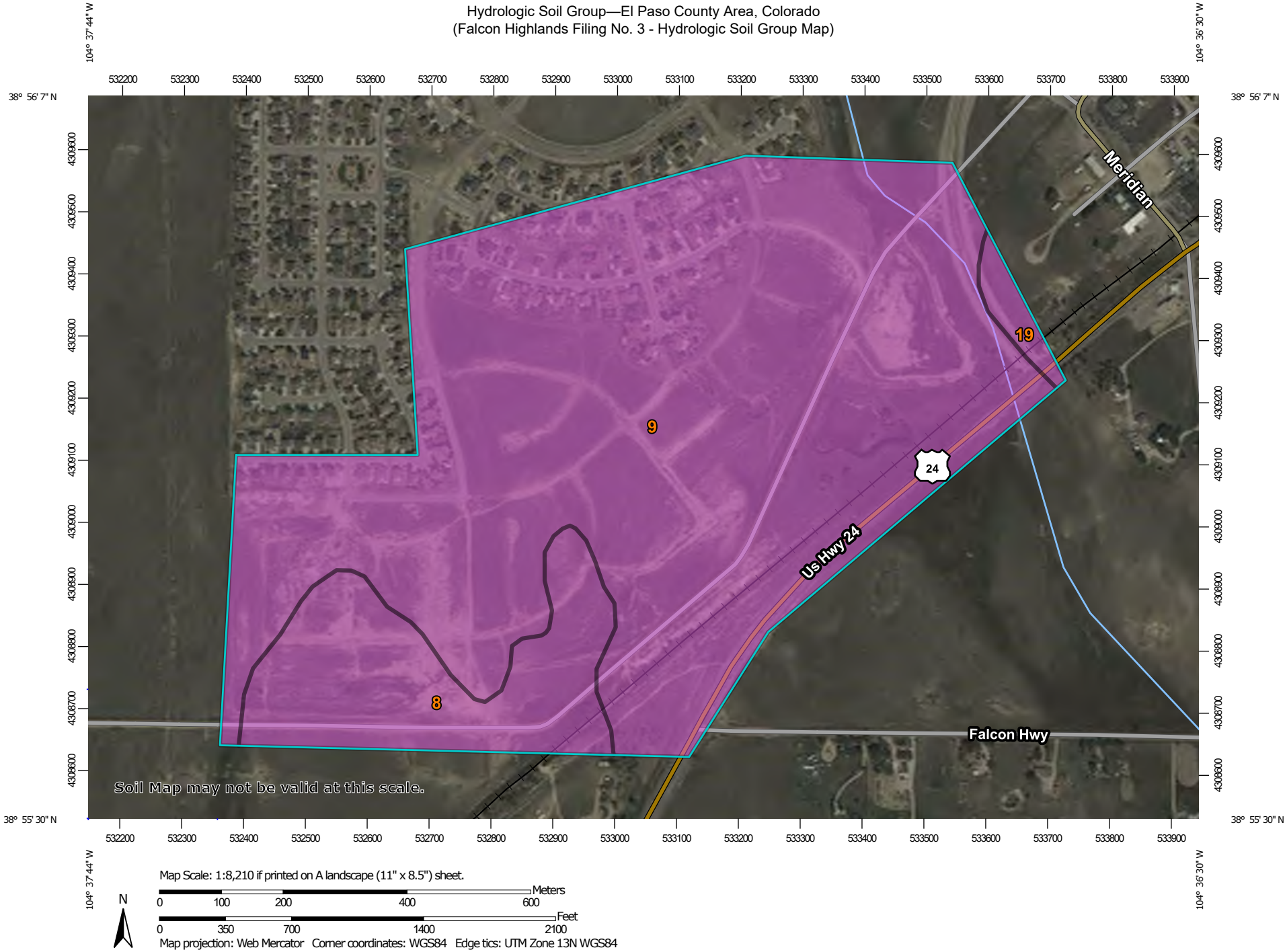
CONCEPT PLAN 03
PHASING EXHIBIT

MAY 17, 2021

APPENDIX B

SOILS SURVEY

Hydrologic Soil Group—El Paso County Area, Colorado
(Falcon Highlands Filing No. 3 - Hydrologic Soil Group Map)



Map Scale: 1:8,210 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 100 200 400 600

Feet: 0 350 700 1400 2100

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
8	Blakeland loamy sand, 1 to 9 percent slopes	A	31.0	14.2%
9	Blakeland-Fluvaquentic Haplaquolls	A	184.2	84.5%
19	Columbine gravelly sandy loam, 0 to 3 percent slopes	A	2.8	1.3%
Totals for Area of Interest			**218.0**	**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

APPENDIX C

FEMA FIRMETTE

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) zone 13. The **horizontal datum** was NAD83, GRS80 spheroid. Differences in datum, spheroid, projection or UTM zones zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the **North American Vertical Datum of 1988 (NAVD88)**. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov/ or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, MD 20910-3282

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (301) 713-3242 or visit its website at http://www.ngs.noaa.gov/.

Base Map information shown on this FIRM was provided in digital format by El Paso County, Colorado Springs Utilities, City of Fountain, Bureau of Land Management, National Oceanic and Atmospheric Administration, United States Geological Survey, and Anderson Consulting Engineers, Inc. These data are current as of 2006.

This map reflects more detailed and up-to-date **stream channel configurations and floodplain delineations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study Report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map. The profile baselines depicted on this map represent the hydraulic modeling baselines that match the flood profiles and Floodway Data Tables if applicable, in the FIS report. As a result, the profile baselines may deviate significantly from the new base map channel representation and may appear outside of the floodplain.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

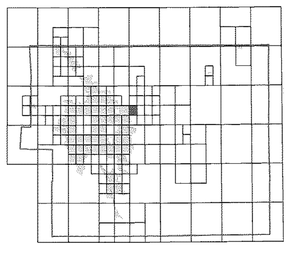
Contact **FEMA Map Service Center** (MSC) via the FEMA Map Information eXchange (FMIX) 1-877-336-2627 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. The MSC may also be reached by Fax at 1-800-358-9620 and its website at http://www.msc.fema.gov/.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1-877-FEMA MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov/business/nfip.

El Paso County Vertical Datum Offset Table

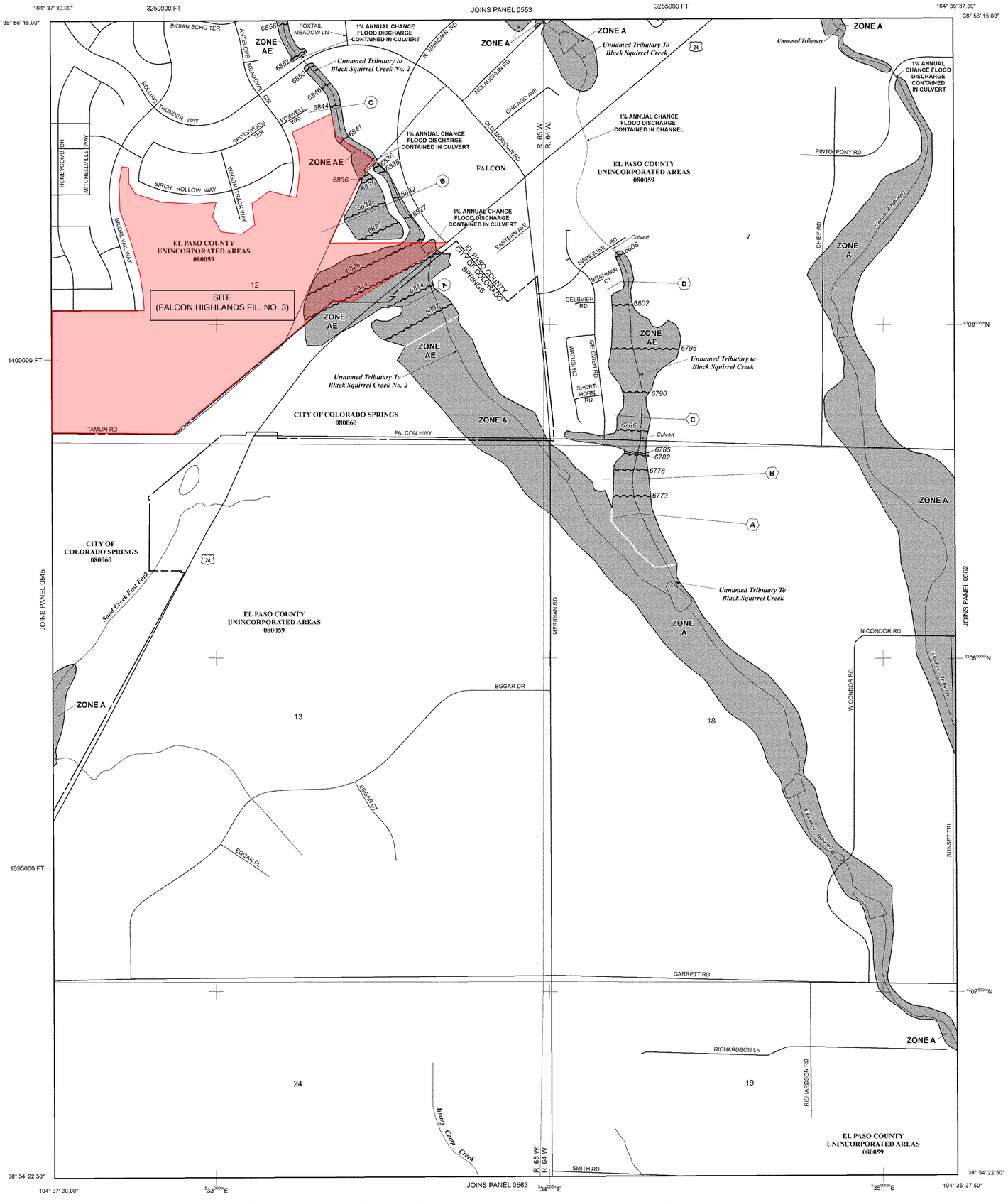
Flooding Source	Vertical Datum Offset (ft)
REFER TO SECTION 3.3 OF THE EL PASO COUNTY FLOOD INSURANCE STUDY FOR STREAM BY STREAM VERTICAL DATUM CONVERSION INFORMATION	

Panel Location Map



This Digital Flood Insurance Rate Map (DFIRM) was produced through a Cooperating Technical Partner (CTP) agreement between the State of Colorado Water Conservation Board (CWCB) and the Federal Emergency Management Agency (FEMA).

Additional Flood Hazard information and resources are available from local communities and the Colorado Water Conservation Board.



NOTE: MAP AREA SHOWN ON THIS PANEL IS LOCATED WITHIN TOWNSHIP 13 SOUTH, RANGE 64 WEST, AND TOWNSHIP 13 SOUTH, RANGE 65 WEST.

LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAS) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area Formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

	Floodplain boundary
	Floodway boundary
	Zone D Boundary
	CBRS and OPA boundary
	Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
513	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988 (NAVD 88)

A — A	Cross section line
23 — 23	Transect line
97° 07' 30.00" 32° 22' 30.00"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
4275000mN	1000-meter Universal Transverse Mercator grid ticks, zone 13
6000000 FT	5000-foot grid ticks: Colorado State Plane coordinate system, central zone (FIPSZONE 0502), Lambert Conformal Conic Projection
DX5510 ×	Bench mark (see explanation in Notes to Users section of this FIRM panel)
M1.5	River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
MARCH 17, 1997

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL
DECEMBER 7, 2018 - to update corporate limits, to change Base Flood Elevations and Special Flood Hazard Areas, to update map format, to add roads and road names, and to incorporate previously issued Letters of Map Revision.

For community map revision history prior to countywide mapping, refer to the Community Map History Table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 500'

250 0 500 1000 FEET
150 0 150 300 METERS

NFIP

PANEL 0561G

NATIONAL FLOOD INSURANCE PROGRAM

FIRM

FLOOD INSURANCE RATE MAP

EL PASO COUNTY, COLORADO AND INCORPORATED AREAS

PANEL 561 OF 1300

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
COLORADO SPRINGS, CITY OF	080060	0561	G
EL PASO COUNTY	080059	0561	G

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER 08041C0561G

MAP REVISED DECEMBER 7, 2018

Federal Emergency Management Agency

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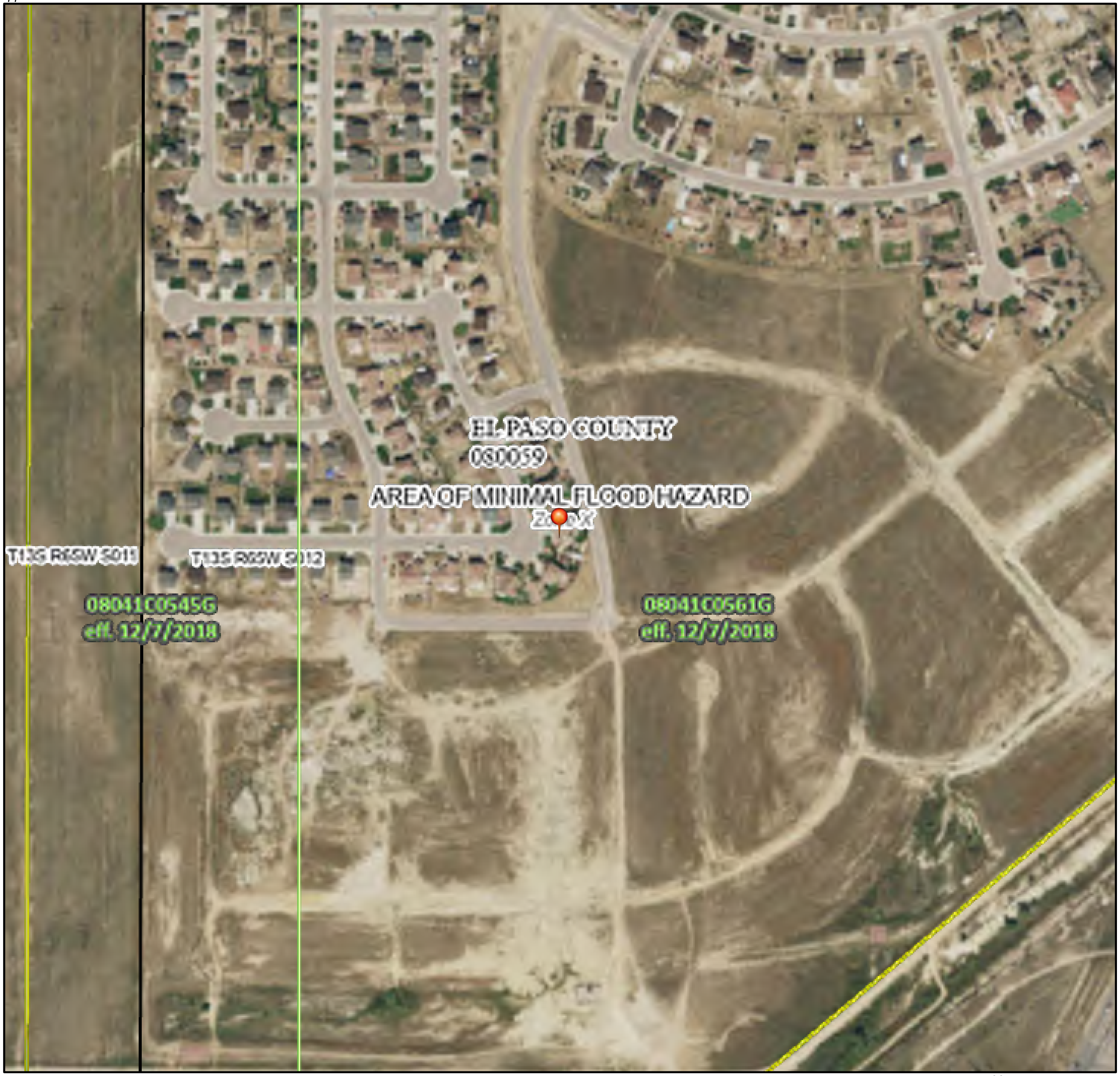
FEMA



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- 'LJLWDO 'DWD $YDLODEOH
- 1R 'LJLWDO 'DWD $YDLODEOH
- 8QPDSSHG

7KH SLQ GLVSOD\HG RQ WKH PDS LV DQ DSSUR[LPDWH SRLQW VHOHFWHG E\ WKH XVHU DQG GRHV QRW UHSUHVHQW DQ DXWKRULWDWLYH SURSHUW\ ORFDWLRQ

7KLV PDS FRPSOLHV ZLWK)(0\$V VWDQGDUGV IRU WKH XVH RI GLJLWDO IORRG PDSV LI LW LV QRW YRLG DV GHVFULEHG EHORZ 7KH EDVHPDS VKRZQ FRPSOLHV ZLWK)(0\$V EDVHPDS DFFXUDF\ VWDQGDUGV

7KH IORRG KD]DUG LQIRUPDWLRQ LV GHULYHG GLUHFWO\ IURP WKH DXWKRULWDWLYH 1)+/ ZHE VHUYLFHV SURYLGHG E\ )(0\$ 7KLV PDS ZDV H[SRUWHG RQ DW $0 DQG GRHV QRW UHIOHFW FKDQJHV RU DPHQGPHQWV VXEVHTXHQW WR WKLV GDWH DQG WLPH 7KH 1)+/ DQG HIIHFWLYH LQIRUPDWLRQ PD\ FKDQJH RU EHFRPH VXSHUVHGHG E\ QHZ GDWD RYHU WLPH

7KLV PDS LPDJH LV YRLG LI WKH RQH RU PRUH RI WKH IROORZLQJ PDS HOHPHQWV GR QRW DSSHDU EDVHPDS LPDJHU\ IORRG]RQH ODEHOV OHJHQG VFDOH EDU PDS FUHDWLRQ GDWH FRPPXQLW\ LGHQWLILHUV)Ζ50 SDQHO QXPEHU DQG)Ζ50 HIIHFWLYH GDWH 0DS LPDJHV IRU XQPDSSHG DQG XQPRGHUQL]HG DUHDV FDQQRW EH XVHG IRU UHJXODWRU\ SXUSRVHV

%DVHPDS 86*6 1DWLRQDO 0DS 2UWKRLPDJHU\ 'DWD UHIUHVKHG 2FWREHU

APPENDIX D

HYDROLOGICAL CALCULATIONS

Should be using Historical flow coefficients (0.09 & 0.36). Basin uses are all known.

RUNOFF COEFFICIENTS AND IMPERVIOUSNESS
Falcon Highlands Filing No. 3 - EXISTING CONDITIONS
El Paso County, Colorado
6/1/2021

Basin No	Hydrologic Grouping	Total Area	1/8 Acre or Less 65%			Paved 100%			Drive and Walks 100%			Lawns 0%			1/2 Acre 25%			1/4 Acre 40%			Offsite Flow Analysis (when landuse is undefined) 45%			Runoff Coefficient		Imperviousness
		(AC)	C5	C100	(AC)	C5	C100	(AC)	C5	C100	(AC)	C5	C100	(AC)	C5	C100	(AC)	C5	C100	(AC)	C5	C100	(AC)	5-Year	100-Year	(%)
A	A	3.70	0.45	0.59	0.00	0.90	0.96	0.00	0.90	0.96	0.00	0.08	0.35	0.00	0.22	0.46	0.00	0.30	0.5	0.00	0.32	0.59	3.70	0.32	0.59	45.0%
B	A	39.23	0.45	0.59	0.00	0.90	0.96	0.00	0.90	0.96	0.00	0.08	0.35	0.00	0.22	0.46	0.00	0.30	0.5	0.00	0.32	0.59	39.23	0.32	0.59	45.0%
C	A	55.82	0.45	0.59	0.00	0.90	0.96	0.00	0.90	0.96	0.00	0.08	0.35	0.00	0.22	0.46	0.00	0.30	0.5	0.00	0.32	0.59	55.82	0.32	0.59	45.0%
D	A	7.87	0.45	0.59	0.00	0.90	0.96	0.00	0.90	0.96	0.00	0.08	0.35	0.00	0.22	0.46	0.00	0.30	0.5	0.00	0.32	0.59	7.87	0.32	0.59	45.0%
E	A	2.20	0.45	0.59	0.00	0.90	0.96	0.00	0.90	0.96	0.00	0.08	0.35	0.00	0.22	0.46	0.00	0.30	0.5	0.00	0.32	0.59	2.20	0.32	0.59	45.0%
F	A	6.34	0.45	0.59	0.00	0.90	0.96	0.00	0.90	0.96	0.00	0.08	0.35	0.00	0.22	0.46	0.00	0.30	0.5	0.00	0.32	0.59	6.34	0.32	0.59	45.0%
G	A	12.61	0.45	0.59	0.00	0.90	0.96	0.00	0.90	0.96	0.00	0.08	0.35	0.00	0.22	0.46	0.00	0.30	0.5	0.00	0.32	0.59	12.61	0.32	0.59	45.0%
OS-1	A	11.11	0.45	0.59	0.00	0.90	0.96	0.00	0.90	0.96	0.00	0.08	0.35	0.00	0.22	0.46	0.00	0.30	0.5	1.61	0.32	0.59	9.50	0.32	0.58	44.3%
OS-2.1	A	6.38	0.45	0.59	0.00	0.90	0.96	0.00	0.90	0.96	0.00	0.08	0.35	0.00	0.22	0.46	0.00	0.30	0.5	6.38	0.32	0.59	0.00	0.30	0.50	40.0%
OS-2.2	A	26.52	0.45	0.59	0.00	0.90	0.96	2.98	0.90	0.96	1.03	0.08	0.35	0.00	0.22	0.46	0.00	0.30	0.5	22.51	0.32	0.59	0.00	0.39	0.57	49.1%
OS-2.3	A	29.84	0.45	0.59	0.00	0.90	0.96	3.25	0.90	0.96	1.12	0.08	0.35	0.00	0.22	0.46	0.00	0.30	0.5	25.46	0.32	0.59	0.00	0.39	0.57	48.8%
OS-2.4	A	6.30	0.45	0.59	0.00	0.90	0.96	1.04	0.90	0.96	0.51	0.08	0.35	0.05	0.22	0.46	0.00	0.30	0.5	4.71	0.32	0.59	0.00	0.45	0.61	54.4%
OS-2.5	A	3.12	0.45	0.59	0.00	0.90	0.96	0.00	0.90	0.96	0.00	0.08	0.35	0.00	0.22	0.46	0.00	0.30	0.5	3.12	0.32	0.59	0.00	0.30	0.50	40.0%
OS-3.1	A	2.14	0.45	0.59	0.00	0.90	0.96	0.00	0.90	0.96	0.00	0.08	0.35	0.00	0.22	0.46	2.14	0.30	0.5	0.00	0.32	0.59	0.00	0.22	0.46	25.0%
OS-3.2	A	29.88	0.45	0.59	0.00	0.90	0.96	2.29	0.90	0.96	0.87	0.08	0.35	0.01	0.22	0.46	26.70	0.30	0.5	0.00	0.32	0.59	0.00	0.29	0.51	32.9%
OS-3.3	A	4.16	0.45	0.59	0.00	0.90	0.96	1.01	0.90	0.96	0.25	0.08	0.35	0.02	0.22	0.46	2.88	0.30	0.5	0.00	0.32	0.59	0.00	0.43	0.61	47.7%
OS-3.4	A	1.14	0.45	0.59	0.00	0.90	0.96	0.00	0.90	0.96	1.14	0.08	0.35	0.00	0.22	0.46	0.00	0.30	0.5	0.00	0.32	0.59	0.00	0.90	0.96	100.0%
OS-4	A	6.47	0.45	0.59	0.00	0.90	0.96	0.14	0.90	0.96	0.06	0.08	0.35	0.00	0.22	0.46	6.28	0.30	0.5	0.00	0.32	0.59	0.00	0.24	0.48	27.3%
OS-5	A	13.44	0.45	0.59	0.00	0.90	0.96	0.00	0.90	0.96	0.00	0.08	0.35	0.00	0.22	0.46	0.00	0.30	0.5	0.00	0.32	0.59	13.44	0.32	0.59	45.0%
TOTAL		**268.3**			**0.0**			**10.7**			**5.0**			**0.1**			**38.0**			**63.8**			**150.7**			**44.2%**

Missing Basins OS-2 & OS-3, as described in report.

Note: Sub basins are not needed at this stage. They may be left in but will not be reviewed until later submissions.

Note: Sub basins are not needed at this stage. They may be left in but will not be reviewed until later submissions.

Place this sheet in front of other proposed spreadsheet calculations.

For open space areas, assume 10% impervious area for C values.

RUNOFF COEFFICIENTS AND IMPERVIOUSNESS

Falcon Highlands Filing No. 3
El Paso County, Colorado
6/1/2021

-PROPOSED CONDITIONS

Basin No	Hydrologic Grouping	Total Area	1/8 Acre or Less			Paved			Drive and Walks			Lawns			1/2 Acre			1/4 Acre			Offsite Flow Analysis (when landuse is undefined)			Runoff Coefficient		Imperviousness
			65%			100%			100%			0%			25%			40%			45%					
		(AC)	C5	C100	(AC)	C5	C100	(AC)	C5	C100	(AC)	C5	C100	(AC)	C5	C100	(AC)	C5	C100	(AC)	C5	C100	(AC)	5-Year	100-Year	(%)
A	A	3.70	0.45	0.59	0.50	0.90	0.96	0.00	0.90	0.96	0.00	0.08	0.35	3.20	0.22	0.46	0.00	0.30	0.5	0.00	0.32	0.59	0.00	0.13	0.38	8.8%
B1.1	A	2.41	0.45	0.59	1.83	0.90	0.96	0.48	0.90	0.96	0.10	0.08	0.35	0.00	0.22	0.46	0.00	0.30	0.5	0.00	0.32	0.59	0.00	0.56	0.68	73.4%
B2.1	A	1.48	0.45	0.59	1.27	0.90	0.96	0.15	0.90	0.96	0.06	0.08	0.35	0.00	0.22	0.46	0.00	0.30	0.5	0.00	0.32	0.59	0.00	0.51	0.64	70.0%
B2.2	A	1.35	0.45	0.59	1.15	0.90	0.96	0.14	0.90	0.96	0.06	0.08	0.35	0.00	0.22	0.46	0.00	0.30	0.5	0.00	0.32	0.59	0.00	0.52	0.64	70.2%
B2.3	A	2.13	0.45	0.59	1.76	0.90	0.96	0.23	0.90	0.96	0.14	0.08	0.35	0.00	0.22	0.46	0.00	0.30	0.5	0.00	0.32	0.59	0.00	0.53	0.65	71.1%
B3.1	A	3.32	0.45	0.59	2.88	0.90	0.96	0.31	0.90	0.96	0.13	0.08	0.35	0.00	0.22	0.46	0.00	0.30	0.5	0.00	0.32	0.59	0.00	0.51	0.64	69.6%
B3.2	A	2.14	0.45	0.59	1.79	0.90	0.96	0.25	0.90	0.96	0.10	0.08	0.35	0.00	0.22	0.46	0.00	0.30	0.5	0.00	0.32	0.59	0.00	0.52	0.65	70.7%
B4.1	A	3.01	0.45	0.59	2.66	0.90	0.96	0.25	0.90	0.96	0.10	0.08	0.35	0.00	0.22	0.46	0.00	0.30	0.5	0.00	0.32	0.59	0.00	0.50	0.63	69.1%
B4.2	A	0.83	0.45	0.59	0.48	0.90	0.96	0.25	0.90	0.96	0.10	0.08	0.35	0.00	0.22	0.46	0.00	0.30	0.5	0.00	0.32	0.59	0.00	0.64	0.75	79.8%
B5.1	A	3.24	0.45	0.59	2.69	0.90	0.96	0.44	0.90	0.96	0.11	0.08	0.35	0.00	0.22	0.46	0.00	0.30	0.5	0.00	0.32	0.59	0.00	0.53	0.65	70.9%
B6.1	A	1.43	0.45	0.59	1.29	0.90	0.96	0.10	0.90	0.96	0.04	0.08	0.35	0.00	0.22	0.46	0.00	0.30	0.5	0.00	0.32	0.59	0.00	0.49	0.63	68.4%
B6.2	A	0.57	0.45	0.59	0.41	0.90	0.96	0.13	0.90	0.96	0.03	0.08	0.35	0.00	0.22	0.46	0.00	0.30	0.5	0.00	0.32	0.59	0.00	0.58	0.69	74.8%
B7.1	A	1.81	0.45	0.59	1.57	0.90	0.96	0.17	0.90	0.96	0.07	0.08	0.35	0.00	0.22	0.46	0.00	0.30	0.5	0.00	0.32	0.59	0.00	0.51	0.64	69.6%
B7.2	A	1.41	0.45	0.59	1.16	0.90	0.96	0.18	0.90	0.96	0.07	0.08	0.35	0.00	0.22	0.46	0.00	0.30	0.5	0.00	0.32	0.59	0.00	0.53	0.66	71.2%
B8	A	6.10	0.45	0.59	0.00	0.90	0.96	0.39	0.90	0.96	0.16	0.08	0.35	0.69	0.22	0.46	4.86	0.30	0.5	0.00	0.32	0.59	0.00	0.27	0.49	28.9%
B9	A	8.00	0.45	0.59	0.13	0.90	0.96	0.00	0.90	0.96	0.00	0.08	0.35	3.54	0.22	0.46	0.00	0.30	0.5	0.00	0.32	0.59	4.34	0.22	0.48	25.4%
C1.1	A	1.64	0.45	0.59	1.34	0.90	0.96	0.00	0.90	0.96	0.30	0.08	0.35	0.00	0.22	0.46	0.00	0.30	0.5	0.00	0.32	0.59	0.00	0.53	0.66	71.4%
C1.2	A	1.25	0.45	0.59	0.00	0.90	0.96	0.00	0.90	0.96	0.34	0.08	0.35	0.91	0.22	0.46	0.00	0.30	0.5	0.00	0.32	0.59	0.00	0.30	0.52	27.2%
C2.1	A	1.68	0.45	0.59	0.76	0.90	0.96	0.00	0.90	0.96	0.36	0.08	0.35	0.57	0.22	0.46	0.00	0.30	0.5	0.00	0.32	0.59	0.00	0.42	0.59	50.5%
C2.2	A	1.34	0.45	0.59	0.88	0.90	0.96	0.00	0.90	0.96	0.43	0.08	0.35	0.03	0.22	0.46	0.00	0.30	0.5	0.00	0.32	0.59	0.00	0.59	0.70	74.8%
C3.1	A	4.04	0.45	0.59	1.53	0.90	0.96	0.00	0.90	0.96	0.53	0.08	0.35	1.98	0.22	0.46	0.00	0.30	0.5	0.00	0.32	0.59	0.00	0.33	0.52	37.7%
C3.2	A	1.58	0.45	0.59	1.09	0.90	0.96	0.00	0.90	0.96	0.49	0.08	0.35	0.00	0.22	0.46	0.00	0.30	0.5	0.00	0.32	0.59	0.00	0.59	0.70	75.8%
C4.1	A	1.63	0.45	0.59	1.06	0.90	0.96	0.00	0.90	0.96	0.50	0.08	0.35	0.07	0.22	0.46	0.00	0.30	0.5	0.00	0.32	0.59	0.00	0.57	0.69	72.8%
C5.1	A	1.42	0.45	0.59	0.85	0.90	0.96	0.00	0.90	0.96	0.46	0.08	0.35	0.11	0.22	0.46	0.00	0.30	0.5	0.00	0.32	0.59	0.00	0.57	0.69	71.2%
C6.1	A	2.74	0.45	0.59	1.85	0.90	0.96	0.00	0.90	0.96	0.66	0.08	0.35	0.23	0.22	0.46	0.00	0.30	0.5	0.00	0.32	0.59	0.00	0.53	0.66	68.0%
C7.1	A	0.82	0.45	0.59	0.38	0.90	0.96	0.00	0.90	0.96	0.22	0.08	0.35	0.22	0.22	0.46	0.00	0.30	0.5	0.00	0.32	0.59	0.00	0.47	0.62	56.6%
C7.2	A	2.42	0.45	0.59	1.56	0.90	0.96	0.00	0.90	0.96	0.71	0.08	0.35	0.15	0.22	0.46	0.00	0.30	0.5	0.00	0.32	0.59	0.00	0.56	0.68	71.3%
C8.1	A	2.09	0.45	0.59	1.33	0.90	0.96	0.00	0.90	0.96	0.38	0.08	0.35	0.39	0.22	0.46	0.00	0.30	0.5	0.00	0.32	0.59	0.00	0.46	0.61	59.3%
C9.1	A	3.30	0.45	0.59	1.70	0.90	0.96	0.00	0.90	0.96	1.03	0.08	0.35	0.57	0.22	0.46	0.00	0.30	0.5	0.00	0.32	0.59	0.00	0.53	0.66	64.7%
C10.1	A	1.85	0.45	0.59	1.29	0.90	0.96	0.00	0.90	0.96	0.48	0.08	0.35	0.08	0.22	0.46	0.00	0.30	0.5	0.00	0.32	0.59	0.00	0.55	0.68	71.3%
C11.1	A	7.80	0.45	0.59	0.00	0.90	0.96	0.00	0.90	0.96	0.70	0.08	0.35	2.51	0.22	0.46	4.59	0.30	0.5	0.00	0.32	0.59	0.00	0.24	0.47	23.7%
C11.2	A	4.00	0.45	0.59	0.00	0.90	0.96	0.00	0.90	0.96	0.42	0.08	0.35	1.28	0.22	0.46	2.30	0.30	0.5	0.00	0.32	0.59	0.00	0.25	0.48	24.9%
C12.1	A	1.68	0.45	0.59	0.00	0.90	0.96	0.18	0.90	0.96	0.05	0.08	0.35	0.53	0.22	0.46	0.92	0.30	0.5	0.00	0.32	0.59	0.00	0.27	0.49	27.4%
C13.1	A	0.57	0.45	0.59	0.00	0.90	0.96	0.57	0.90	0.96	0.48	0.08	0.35	-0.48	0.22	0.46	0.00	0.30	0.5	0.00	0.32	0.59	0.00	1.59	1.47	184.2%
C14.1	A	2.82	0.45	0.59	0.00	0.90	0.96	0.85	0.90	0.96	0.38	0.08	0.35	1.59	0.22	0.46	0.00	0.30	0.5	0.00	0.32	0.59	0.00	0.44	0.62	43.6%
C15	A	11.15	0.45	0.59	1.88	0.90	0.96	0.00	0.90	0.96	0.00	0.08	0.35	0.00	0.22	0.46	0.00	0.30	0.5	0.00	0.32	0.59	9.28	0.34	0.59	48.4%
D1.1	A	1.70	0.45	0.59	0.82	0.90	0.96	0.00	0.90	0.96	0.23	0.08	0.35	0.65	0.22	0.46	0.00	0.30	0.5	0.00	0.32	0.59	0.00	0.37	0.55	45.0%
D1.2	A	1.20	0.45	0.59	0.44	0.90	0.96	0.00	0.90	0.96	0.29	0.08	0.35	0.46	0.22	0.46	0.00	0.30	0.5	0.00	0.32	0.59	0.00	0.42	0.59	48.4%
D1.3	A	2.57	0.45	0.59	1.26	0.90	0.96	0.00	0.90	0.96	0.72	0.08	0.35	0.59	0.22	0.46	0.00	0.30	0.5	0.00	0.32	0.59	0.00	0.49	0.64	59.9%
D2.1	A	2.40	0.45	0.59	0.55	0.90	0.96	0.00	0.90	0.96	0.00	0.08	0.35	1.85	0.22	0.46	0.00	0.30	0.5	0.00	0.32	0.59	0.00	0.16	0.41	14.9%
E	A	2.20	0.45	0.59	0.00	0.90	0.96	0.00	0.90	0.96	0.00	0.08	0.35	0.00	0.22	0.46	0.00	0.30	0.5	0.00	0.32	0.59	2.20	0.32	0.59	45.0%
F	A	6.34	0.45	0.59	0.00	0.90	0.96	0.00	0.90	0.96	0.00	0.08	0.35	0.00	0.22	0.46	0.00	0.30	0.5	0.00	0.32	0.59	6.34	0.32	0.59	45.0%
G	A	12.61	0.45	0.59	0.00	0.90	0.96	0.00	0.90	0.96	0.00	0.08	0.35	0.00	0.22	0.46	0.00	0.30	0.5	0.00	0.32	0.59	12.61	0.32	0.59	45.0%
OS-1	A	11.11	0.45	0.59	0.00	0.90	0.96	0.00	0.90	0.96	0.00	0.08	0.35	0.00	0.22	0.46	0.00	0.30	0.5	1.61	0.32	0.59	9.50	0.32	0.58	44.3%
OS-2.1	A	6.38	0.45	0.59	0.00	0.90	0.96	1.40	0.90	0.96	0.00	0.08	0.35	0.00	0.22	0.46	0.00	0.30	0.5	4.98	0.32	0.59	0.00	0.43	0.60	53.2%
OS-2.2	A	26.52	0.45	0.59	0.00	0.90	0.96	2.98	0.90	0.96	1.03	0.08	0.35	0.00	0.22	0.46	0.00	0.30	0.5	22.51	0.32	0.59	0.00	0.39	0.57	49.1%
OS-2.3	A	29.84	0.45	0.59	0.00	0.90	0.96	3.25	0.90	0.96	1.12	0.08	0.35	0.00	0.22	0.46	0.00	0.30	0.5	25.46	0.32	0.59	0.00	0.39	0.57	48.8%
OS-2.4	A	6.30	0.45	0.59	0.00	0.90	0.96	1.04	0.90	0.96	0.51	0.08	0.35	0.05	0.22	0.46	0.00	0.30	0.5	4.71	0.32	0.59	0.00	0.45	0.61	54.4%
OS-2.5	A	3.12	0.45	0.59	0.00	0.90	0.96	1.00	0.90	0.96	0.00	0.08	0.35	0.00	0.22	0.46	0.00	0.30	0.5	2.12	0.32	0.59	0.00	0.49	0.65	59.2%
OS-3.1	A	2.14	0.45	0.59	0.00	0.90	0.96	0.00	0.90	0.96	0.00	0.08	0.35	0.00	0.22	0.46	2.14	0.30	0.5	0.00	0.32	0.59	0.00	0.22	0.46	25.0%
OS-3.2	A	29.88	0.45	0.59	0.00	0.90	0.96	2.29	0.90	0.96	0.87	0.08	0.35	0.01	0.22	0.46	26.70	0.30	0.5	0.00	0.32	0.59	0.00	0.29	0.51	32.9%
OS-3.3	A	4.16	0.45	0.59	0.00	0.90	0.96	1.01	0.90	0.96	0.25	0.08	0.35	0.02	0.22	0.46	2.88	0.30	0.5	0.00	0.32	0.59	0.00	0.43	0.61	47.7%
OS-3.4	A	1.14	0.45	0.59	0.00	0.90	0.96	0.00	0.90	0.96	1.14	0.08	0.35	0.00	0.22	0.46	0.00	0.30	0.5	0.00	0.32	0.59	0.00	0.90	0.96	100.0%
OS-4	A	6.47	0.45	0.59	0.00	0.90	0.96	0.14	0.90	0.96	0.06	0.08	0.35	0.00	0.22	0.46	6.28	0.30	0.5	0.00	0.32	0.59	0.00	0.24	0.48	27.3%
OS-5	A	13.44	0.45	0.59	0.00	0.90	0.96	0.00	0.90	0.96	0.00	0.08	0.35	0.00	0.22	0.46	0.00	0.30	0.5	0.00	0.32	0.59	13.44	0.32	0.59	45.0%
TOTAL		**268.3**			**42.1**			**18.2**			**16.4**			**21.8**			**50.7**			**61.4**			**57.7**			**46.7%**

Missing from Drainage Plan

Labeled as OS-1.1 on plan.

APPENDIX E

HYDRAULIC CALCULATIONS

Move this sheet to in front of Pond spreadsheets

Include copies of pages from previous reports where information was taken from.

TIME OF CONCENTRATION

Falcon Highlands Filing No. 3 - EXISTING CONDITIONS

El Paso County, Colorado

DATE: 6/1/2021
CALCULATED BY: AMC/ARP

PROJECT: 21000656
DESIGN STORM: 5 Year

			INITIAL/OVERLAND TIME (t_i)			TRAVEL TIME (t_t)					t_c CHECK (URBANIZED BASINS)			FINAL t_c
TRIBUTARY BASINS	AREA Ac (2)	C5 (3)	LENGTH Ft (4)	SLOPE % (5)	t_i Min. (6)	LENGTH Ft. (7)	SLOPE % (8)	Conveyance Coefficient	VEL fps (9)	t_t Min. (10)	COMP. t_c (11)	TOTAL LENGTH (12)	(L/180)+10 Min. (13)	Min. (14)
A	3.70	0.32	202	1.00	20.02	910	1.00	15	1.50	10.11	30.13	1112	16.18	16.18
B	39.23	0.32	1256	1.00	49.91	979	1.00	15	1.50	10.88	60.79	2235	22.42	22.42
C	55.82	0.32	1104	2.00	37.23	571	1.00	15	1.50	6.34	43.57	1675	19.31	19.31
D	7.87	0.32	254	2.00	17.86	492	2.00	15	2.12	3.87	21.72	746	14.14	14.14
E	2.20	0.32	108	1.00	14.64	842	1.00	15	1.50	9.36	23.99	950	15.28	15.28
F	6.34	0.32	0	0.00	0.00	1097	1.00	15	1.50	12.19	12.19	1097	16.09	12.19
G	12.61	0.32	340	3.00	18.07	0	0.00	15	0.00	0.00	18.07	340	11.89	11.89
OS-1	11.11	0.32	80	2.00	10.06	2300	2.00	20	2.83	13.55	23.61	2380	23.22	23.22
OS-2.1	6.38	0.30	100	2.00	11.49	608	2.00	20	2.83	3.58	15.07	708	13.93	13.93
OS-2.2	26.52	0.39	200	2.00	14.41	2300	2.00	20	2.83	13.55	27.96	2500	23.89	23.89
OS-2.3	29.84	0.39	200	2.00	14.46	2300	2.00	20	2.83	13.55	28.02	2500	23.89	23.89
OS-2.4	6.30	0.45	50	2.00	6.65	2180	2.00	20	2.83	12.85	19.50	2230	22.39	19.50
OS-2.5	3.12	0.30	100	2.00	11.49	1525	1.20	20	2.19	11.60	23.09	1625	19.03	19.03
OS-3.1	2.14	0.22	100	2.00	12.64	0	2.00	20	2.83	0.00	12.64	100	10.56	10.56
OS-3.2	29.88	0.29	300	2.00	20.11	2200	2.00	20	2.83	12.96	33.07	2500	23.89	23.89
OS-3.3	4.16	0.43	50	2.00	6.85	980	2.00	20	2.83	5.77	12.62	1030	15.72	12.62
OS-3.4	1.14	0.90	20	2.00	1.28	1190	0.60	20	1.55	12.80	14.09	1210	16.72	14.09
OS-4	6.47	0.24	350	2.00	23.10	790	1.00	20	2.00	6.58	29.68	1140	16.33	16.33
OS-5	13.44	0.32	185	8.20	9.57	103	1.90	20	2.76	0.62	10.19	288	11.60	10.19

5-YEAR RUNOFF CALCULATIONS
Falcon Highlands Filing No. 3 - EXISTING CONDITIONS
El Paso County, Colorado

DATE: 6/1/2021
CALCULATED BY: AMC/ARP

PROJECT: 21000656
DESIGN STORM: 5-Year

		FLOW TO INLETS								Minimum	Maximum	Under	INLETS								Carry-Over
Sub-Basin	Design Point	Area (acres)	C	C x A	Tc (min)	Intensity (in/hr)	Qd = CIA (cfs)	Qco (cfs)	Qt (cfs)	Street Slope (%)	Street/Paseo Capacity (cfs)	Capacity?	Inlet	Type	Condition	Slope at Inlet (%)	Inlet Capacity (cfs)	R	Intercepted (cfs)	Carry-Over (cfs)	to Sub-basin/ Design Point (DP)
A	POND 1	3.70	0.32	1.18	16.18	3.41	**4.03**	0.00	4.03	-	-	-	-	-	-	-	-	-	-	-	-
B	POND 1	39.23	0.32	12.55	22.42	2.92	**36.64**	0.00	3.01	-	-	-	-	-	-	-	-	-	-	-	-
C	POND 2	55.82	0.32	17.86	19.31	3.14	**56.13**	0.00	56.13	-	-	-	-	-	-	-	-	-	-	-	-
D	POND WU	7.87	0.32	2.52	14.14	3.61	**9.09**	0.00	4.68	-	-	-	-	-	-	-	-	-	-	-	-
E	POND 1	2.20	0.32	0.70			1.80	0.00	**1.80**	-	-	OK	-	-	-	-	-	-	-	-	-
F	POND 2	6.34	0.32	2.03			5.30	0.00	**5.30**	-	-	OK	-	-	-	-	-	-	-	-	-
G	POND WU	12.61	0.32	4.04			6.80	0.00	**6.80**	-	-	OK	-	-	-	-	-	-	-	-	-
OS-1	OFFSITE	11.11	0.32	3.52			16.47	0.00	**16.47**	-	-	OK	-	-	-	-	-	-	-	-	-
OS-2.1	POND 1	6.38	0.30	1.91			10.70	0.00	**10.70**	-	-	OK	-	-	-	-	-	-	-	-	-
OS-2.2	POND 1	26.52	0.39	10.36			36.10	0.00	**36.10**	-	-	OK	-	-	-	-	-	-	-	-	-
OS-2.3	POND 1	29.84	0.39	11.57			37.50	0.00	**37.50**	-	-	OK	-	-	-	-	-	-	-	-	-
OS-2.4	POND 1	6.30	0.45	2.80			8.40	0.00	**8.40**	-	-	OK	-	-	-	-	-	-	-	-	-
OS-2.5	POND 1	3.12	0.30	0.94			7.80	0.00	**7.80**	-	-	OK	-	-	-	-	-	-	-	-	-
OS-3.1	POND 2	2.14	0.22	0.47	10.56	4.05	1.91	0.00	**1.91**	-	-	OK	-	-	-	-	-	-	-	-	-
OS-3.2	POND 2	29.88	0.29	8.72			29.20	0.00	**29.20**	-	-	OK	-	-	-	-	-	-	-	-	-
OS-3.3	POND 2	4.16	0.43	1.77	12.62	3.78	6.70	0.00	**6.70**	-	-	OK	-	-	-	-	-	-	-	-	-
OS-3.4	POND 2	1.14	0.90	1.03			3.40	0.00	**3.40**	-	-	OK	-	-	-	-	-	-	-	-	-
OS-4	POND WU	6.47	0.24	1.56	16.33	3.39	5.28	0.00	**5.28**	-	-	OK	-	-	-	-	-	-	-	-	-
OS-5	POND WU	13.44	0.32	4.30	10.19	4.10	17.64	0.00	**17.64**	-	-	OK	-	-	-	-	-	-	-	-	-

Notes:
***DATA IN RED REPRESENTS AND OVERRIDE WITH VALUES PER PREVIOUS DRAINAGE REPORTS**

Update based on changes to C-values.

100-YEAR RUNOFF CALCULATIONS
Falcon Highlands Filing No. 3 - EXISTING CONDITIONS
El Paso County, Colorado

DATE: 6/1/2021
CALCULATED BY: RDL

PROJECT: 21000656
DESIGN STORM: 100-Year

		FLOW TO INLETS								Minimum	Maximum	Under	INLETS								Carry-Over
Sub-Basin	Design Point	Area (acres)	C	C x A	Tc (min)	Intensity (in/hr)	Qd = CIA (cfs)	Qco (cfs)	Qt (cfs)	Street Slope (%)	Street/Paseo Capacity (cfs)	Capacity?	Inlet	Type	Condition	Slope at Inlet (%)	Inlet Capacity (cfs)	R	Intercepted (cfs)	Carry-Over (cfs)	to Sub-basin/ Design Point (DP)
A	POND 1	3.70	0.59	2.18	16.18	5.72	**12.49**	0.00	12.49	-	-	-	-	-	-	-	-	-	-	-	-
B	POND 1	39.23	0.59	23.15	22.42	4.90	**113.37**	0.00	113.37	-	-	-	-	-	-	-	-	-	-	-	-
C	POND 2	55.82	0.59	32.93	19.31	5.27	**173.72**	0.00	173.72	-	-	-	-	-	-	-	-	-	-	-	-
D	POND WU	7.87	0.59	4.64	14.14	6.06	**28.13**	0.00	28.13	-	-	-	-	-	-	-	-	-	-	-	-
E	POND 1	2.20	0.59	1.30			4.20	0.00	**4.20**	-	-	-	-	-	-	-	-	-	-	-	-
F	POND 2	6.34	0.59	3.74			12.50	0.00	**12.50**	-	-	-	-	-	-	-	-	-	-	-	-
G	POND WU	12.61	0.59	7.44			16.00	0.00	**16.00**	-	-	-	-	-	-	-	-	-	-	-	-
OS-1	OFFSITE	11.11	0.58	6.41			28.01	0.00	**28.01**	-	-	-	-	-	-	-	-	-	-	-	-
OS-2.1	POND 1	6.38	0.50	3.19			21.70	0.00	**21.70**	-	-	-	-	-	-	-	-	-	-	-	-
OS-2.2	POND 1	26.52	0.57	15.10			72.20	0.00	**72.20**	-	-	-	-	-	-	-	-	-	-	-	-
OS-2.3	POND 1	29.84	0.57	16.93			74.20	0.00	**74.20**	-	-	-	-	-	-	-	-	-	-	-	-
OS-2.4	EX DP13	6.30	0.61	3.85			17.20	0.00	**17.20**	-	-	-	-	-	-	-	-	-	-	-	-
OS-2.5	EX DP10	3.12	0.50	1.56			13.60	0.00	**13.60**	-	-	-	-	-	-	-	-	-	-	-	-
OS-3.1	C.11	2.14	0.46	0.98	10.56	6.80	6.69	0.00	**6.69**	-	-	-	-	-	-	-	-	-	-	-	-
OS-3.2	EX DP10	29.88	0.51	15.32			58.50	0.00	**58.50**	-	-	-	-	-	-	-	-	-	-	-	-
OS-3.3	C.15	4.16	0.61	2.54	12.62	6.35	16.14	0.00	**16.14**	-	-	-	-	-	-	-	-	-	-	-	-
OS-3.4	C.15	1.14	0.96	1.09			6.00	0.00	**6.00**	-	-	-	-	-	-	-	-	-	-	-	-
OS-4	D.1	6.47	0.48	3.07	16.33	5.70	17.51	0.00	**17.51**	-	-	-	-	-	-	-	-	-	-	-	-
OS-5	D.4	13.44	0.59	7.93	10.19	6.89	54.60	0.00	**54.60**	-	-	-	-	-	-	-	-	-	-	-	-

Notes:
***DATA IN RED REPRESENTS AND OVERRIDE WITH VALUES PER PREVIOUS DRAINAGE REPORTS**

EXISTING CONDITIONS DRAINAGE SUB-BASIN SUMMARY

Basin	Design Point	Area (acres)	C_5	C_{100}	Q_5 (cfs)	Q_{100} (cfs)
A	POND 1	3.70	0.32	0.59	4.03	12.49
B	POND 1	39.23	0.32	0.59	36.64	113.37
C	POND 2	55.82	0.32	0.59	56.13	173.72
D	POND WU	7.87	0.32	0.59	9.09	28.13
E	POND 1	2.20	0.32	0.59	1.80	4.20
F	POND 2	6.34	0.32	0.59	5.30	12.50
G	POND WU	12.61	0.32	0.59	6.80	16.00
OS-1	OFFSITE	11.11	0.32	0.58	16.47	28.01
OS-2.1	POND 1	6.38	0.30	0.50	10.70	21.70
OS-2.2	POND 1	26.52	0.39	0.57	36.10	72.20
OS-2.3	POND 1	29.84	0.39	0.57	37.50	74.20
OS-2.4	POND 1	6.30	0.45	0.61	8.40	17.20
OS-2.5	POND 1	3.12	0.30	0.50	7.80	13.60
OS-3.1	POND 2	2.14	0.22	0.46	1.91	6.69
OS-3.2	POND 2	29.88	0.29	0.51	29.20	58.50
OS-3.3	POND 2	4.16	0.43	0.61	6.70	16.14
OS-3.4	POND 2	1.14	0.90	0.96	3.40	6.00
OS-4	POND WU	6.47	0.24	0.48	5.28	17.51
OS-5	POND WU	13.44	0.32	0.59	17.64	54.60

EXISTING CONDITIONS ~~DRAINAGE BASIN~~ DESIGN POINT SUMMARY

Basin	Design Point	Area (acres)	C_5	C_{100}	Q_5 (cfs)	Q_{100} (cfs)
A	OFF-SITE	3.70	0.32	0.59	4.03	12.49
B	POND 1	39.23	0.32	0.59	36.64	113.37
C	POND 2	55.82	0.32	0.59	56.13	173.72
D	POND WU	7.87	0.32	0.59	9.09	28.13
E	POND 1	2.20	0.32	0.59	1.80	4.20
F	POND 2	6.34	0.32	0.59	5.30	12.50
G	POND WU	12.61	0.32	0.59	6.80	16.00
OS-1	OFF-SITE	11.11	0.32	0.58	16.47	28.01
OS-2	POND 1	72.16	0.38	0.56	100.50	198.90
OS-3	POND 2	37.32	0.32	0.53	41.20	87.33
OS-4	POND WU	6.47	0.24	0.48	5.28	17.51
OS-5	POND WU	13.44	0.32	0.59	17.64	54.60

Note: Sub basins are not needed at this stage. They may be left in but will not be reviewed until later submissions.

TIME OF CONCENTRATION
Falcon Highlands Filing No. 3 -PROPOSED CONDITIONS
El Paso County, Colorado

DATE: 6/1/2021
CALCULATED BY: AMC/ARP

PROJECT: 21000656
DESIGN STORM: 5 Year

			INITIAL/OVERLAND TIME (t_i)			TRAVEL TIME (t_t)					t_c CHECK (URBANIZED BASINS)			FINAL t_c
TRIBUTARY BASINS	AREA Ac (2)	C5 (3)	LENGTH Ft (4)	SLOPE % (5)	t_i Min. (6)	LENGTH Ft. (7)	SLOPE % (8)	Conveyance Coefficient	VEL fps (9)	t_t Min. (10)	COMP. t_c (11)	TOTAL LENGTH (12)	(L/180)+10 Min. (13)	Min. (14)
A	3.70	0.13	180	2.00	18.69	900	1.00	20	2.00	7.50	26.19	1080	16.00	16.00
B1.1	2.41	0.56	0	0.00	0.00	907	1.30	20	2.28	6.63	6.63	907	15.04	6.63
B2.1	1.48	0.51	0	0.00	0.00	417	1.50	20	2.45	2.84	2.84	417	12.32	5.00
B2.2	1.35	0.52	0	0.00	0.00	380	1.40	20	2.37	2.68	2.68	380	12.11	5.00
B2.3	2.13	0.53	0	0.00	0.00	431	1.50	20	2.45	2.93	2.93	431	12.39	5.00
B3.1	3.32	0.51	222	1.10	15.39	610	1.10	20	2.10	4.85	20.24	832	14.62	14.62
B3.2	2.14	0.52	0	0.00	0.00	478	1.10	20	2.10	3.80	3.80	478	12.66	5.00
B4.1	3.01	0.50	220	1.00	16.01	471	1.00	20	2.00	3.93	19.93	691	13.84	13.84
B4.2	0.83	0.64	0	0.00	0.00	463	1.00	20	2.00	3.86	3.86	463	12.57	5.00
B5.1	3.24	0.53	223	0.40	20.93	806	1.10	20	2.10	6.40	27.33	1029	15.72	15.72
B6.1	1.43	0.49	134	0.40	17.14	518	1.30	20	2.28	3.79	20.92	652	13.62	13.62
B6.2	0.57	0.58	0	0.00	0.00	300	2.50	20	3.16	1.58	1.58	300	11.67	5.00
B7.1	1.81	0.51	0	0.00	0.00	590	0.80	20	1.79	5.50	5.50	590	13.28	5.50
B7.2	1.41	0.53	0	0.00	0.00	533	0.80	20	1.79	4.97	4.97	533	12.96	5.00
B8	6.10	0.27	300	2.00	20.77	180	1.00	20	2.00	1.50	22.27	480	12.67	12.67
B9	8.00	0.22	265	4.00	16.44	860	1.00	20	2.00	7.17	23.61	1125	16.25	16.25
C1.1	1.64	0.53	532	1.50	20.68	492	1.00	20	2.00	4.10	24.78	1024	15.69	15.69
C1.2	1.25	0.30	169	1.00	18.71	557	1.00	20	2.00	4.64	23.35	726	14.03	14.03
C2.1	1.68	0.42	126	1.80	11.34	500	1.00	20	2.00	4.17	15.51	626	13.48	13.48
C2.2	1.34	0.59	0	2.00	0.00	410	1.50	20	2.45	2.79	2.79	410	12.28	5.00
C3.1	4.04	0.33	600	2.00	27.18	785	1.00	20	2.00	6.54	33.72	1385	17.69	17.69
C3.2	1.58	0.59	0	2.00	0.00	785	1.00	20	2.00	6.54	6.54	785	14.36	6.54
C4.1	1.63	0.57	0	2.00	0.00	658	1.00	20	2.00	5.48	5.48	658	13.66	5.48
C5.1	1.42	0.57	0	2.00	0.00	583	1.00	20	2.00	4.86	4.86	583	13.24	5.00
C6.1	2.74	0.53	90	2.00	7.80	423	1.25	20	2.24	3.15	10.96	513	12.85	10.96
C7.1	0.82	0.47	120	1.00	12.48	235	1.00	20	2.00	1.96	14.44	355	11.97	11.97
C7.2	2.42	0.56	0	2.00	0.00	610	1.00	20	2.00	5.08	5.08	610	13.39	5.08
C8.1	2.09	0.46	122	1.00	12.70	642	1.30	20	2.28	4.69	17.39	764	14.24	14.24
C9.1	3.30	0.53	45	2.00	5.53	672	1.30	20	2.28	4.91	10.44	717	13.98	10.44
C10.1	1.85	0.55	0	2.00	0.00	574	1.00	20	2.00	4.78	4.78	574	13.19	5.00
C11.1	7.80	0.24	520	2.50	26.28	765	2.25	20	3.00	4.25	30.53	1285	17.14	17.14
C11.2	4.00	0.25	550	2.00	28.74	250	1.10	20	2.10	1.99	30.73	800	14.44	14.44
C12.1	1.68	0.27	250	2.00	18.87	110	1.00	20	2.00	0.92	19.79	360	12.00	12.00
C13.1	0.57	1.59	10	2.00	-2.23	550	1.00	20	2.00	4.58	2.36	560	13.11	5.00
C14.1	2.82	0.44	220	2.00	14.11	430	1.00	20	2.00	3.58	17.69	650	13.61	13.61
C15	11.15	0.34	500	2.00	24.35	1500	1.00	20	2.00	12.50	36.85	2000	21.11	21.11
D1.1	1.70	0.37	75	2.00	9.08	150	3.50	20	3.74	0.67	9.75	225	11.25	9.75
D1.2	1.20	0.42	168	2.00	12.72	220	1.20	20	2.19	1.67	14.40	388	12.16	12.16
D1.3	2.57	0.49	230	2.00	13.26	360	2.00	20	2.83	2.12	15.38	590	13.28	13.28
D2.1	2.40	0.16	670	1.60	37.42	0	2.00	20	2.83	0.00	37.42	670	13.72	13.72
E	2.20	0.32	90	8.30	6.65	1080	1.00	20	2.00	9.00	15.65	1170	16.50	15.65
F	6.34	0.32	125	4.90	9.32	630	1.60	20	2.53	4.15	13.47	755	14.19	13.47
G	12.61	0.32	300	3.55	16.06	285	1.80	20	2.68	1.77	17.83	585	13.25	13.25
OS-1	11.11	0.32	80	2.00	10.06	2300	2.00	20	2.83	13.55	23.61	2380	23.22	23.22
OS-2.1	6.38	0.43	100	2.00	9.60	608	2.00	20	2.83	3.58	13.18	708	13.93	13.18
OS-2.2	26.52	0.39	200	2.00	14.41	2300	2.00	20	2.83	13.55	27.96	2500	23.89	23.89
OS-2.3	29.84	0.39	200	2.00	14.46	2300	2.00	20	2.83	13.55	28.02	2500	23.89	23.89
OS-2.4	6.30	0.45	50	2.00	6.65	2180	2.00	20	2.83	12.85	19.50	2230	22.39	19.50
OS-2.5	3.12	0.49	100	2.00	8.73	1525	1.20	20	2.19	11.60	20.33	1625	19.03	19.03
OS-3.1	2.14	0.22	100	2.00	12.64	0	2.00	20	2.83	0.00	12.64	100	10.56	10.56
OS-3.2	29.88	0.29	300	2.00	20.11	2200	2.00	20	2.83	12.96	33.07	2500	23.89	23.89
OS-3.3	4.16	0.43	50	2.00	6.85	980	2.00	20	2.83	5.77	12.62	1030	15.72	12.62
OS-3.4	1.14	0.90	20	2.00	1.28	1190	0.60	20	1.55	12.80	14.09	1210	16.72	14.09
OS-4	6.47	0.24	350	2.00	23.10	790	1.00	20	2.00	6.58	29.68	1140	16.33	16.33
OS-5	13.44	0.32	185	8.20	9.57	103	1.90	20	2.76	0.62	10.19	288	11.60	10.19

5-YEAR RUNOFF CALCULATIONS

Falcon Highlands Filing No. 3 -PROPOSED CONDITIONS

El Paso County, Colorado

DATE: 6/1/2021
CALCULATED BY: AMC/ARP

PROJECT: 21000656
DESIGN STORM: 5-Year

		FLOW TO INLETS								Minimum	Maximum	Under	INLETS								Carry-Over
Sub-Basin	Design Point	Area (acres)	C	C x A	Tc (min)	Intensity (in/hr)	Qd = CIA (cfs)	Qco (cfs)	Qt (cfs)	Street Slope (%)	Street/Paseo Capacity (cfs)	Capacity?	Inlet	Type	Condition	Slope at Inlet (%)	Inlet Capacity (cfs)	R	Intercepted (cfs)	Carry-Over (cfs)	to Sub-basin/ Design Point (DP)
A	A.1	3.70	0.45	1.67	16.00	3.42	**5.70**	0.00	5.70	-	-	-	-	-	-	-	-	-	-	-	-
B1.1	B.1	2.41	0.56	1.35	6.63	4.75	**6.39**	0.00	6.39	1.00	16.40	OK	-	-	-	-	-	-	-	-	-
	B.1						6.39	0.00	**6.39**	-	-	-	INL-1	15' TYPE R	SUMP	0.00%	18.57	1.00	6.39	0.00	POND 1
B2.1	B.2	1.48	0.51	0.76	5.00	5.17	**3.93**	0.00	3.93	1.00	8.20	OK	-	-	-	-	-	-	-	-	-
-	**B.2**						3.93	0.00	**3.93**	-	-	-	INL-2	10' TYPE R	SUMP	0.00%	13.58	1.00	3.93	0.00	B.3
B2.2	B.3	1.35	0.52	0.70	5.00	5.17	**3.61**	0.00	3.61	1.00	8.20	OK	-	-	-	-	-	-	-	-	-
-	**B.3**						3.61	0.00	**3.61**	-	-	-	INL-3	5' TYPE R	SUMP	0.00%	8.59	1.00	3.61	0.00	B2.3
B2.3	B.4	2.13	0.53	1.13	5.00	5.17	**5.81**	0.00	5.81	1.00	8.20	OK	-	-	-	-	-	-	-	-	-
-	**B.4**						5.81	0.00	**5.81**	-	-	-	INL-4	15' TYPE R	SUMP	0.00%	18.57	1.00	5.81	0.00	B3.1
B3.1	B.5	3.32	0.51	1.69	14.62	3.56	**6.02**	0.00	6.02	1.00	8.20	OK	-	-	-	-	-	-	-	-	-
-	**B.5**						6.02	0.00	**6.02**	-	-	-	INL-5	15' TYPE R	SUMP	0.00%	18.57	1.00	6.02	0.00	B3.2
B3.2	B.6	2.14	0.52	1.12	5.00	5.17	**5.79**	0.00	5.79	1.00	8.20	OK	-	-	-	-	-	-	-	-	-
-	**B.6**						5.79	0.00	**5.79**	-	-	-	INL-6	15' TYPE R	SUMP	0.00%	18.57	1.00	5.79	0.00	B4.1
B4.1	B.7	3.01	0.50	1.51	13.84	3.64	**5.51**	0.00	5.51	1.00	8.20	OK	-	-	-	-	-	-	-	-	-
-	**B.7**						5.51	0.00	**5.51**	-	-	-	INL-7	15' TYPE R	SUMP	0.00%	18.57	1.00	5.51	0.00	B4.2
B4.2	B.8	0.83	0.64	0.53	5.00	5.17	**2.74**	0.00	2.74	1.00	8.20	OK	-	-	-	-	-	-	-	-	-
-	**B.8**						2.74	0.00	**2.74**	-	-	-	INL-8	5' TYPE R	SUMP	0.00%	8.59	1.00	2.74	0.00	POND 1
B5.1	B.9	3.24	0.53	1.71	15.72	3.45	**5.89**	0.00	5.89	1.00	16.40	OK	-	-	-	-	-	-	-	-	-
-	**B.9**						5.89	0.00	**5.89**	-	-	-	INL-9	15' TYPE R	SUMP	0.00%	18.57	1.00	5.89	0.00	POND 1
B6.1	B.10	1.43	0.49	0.71	13.62	3.67	**2.59**	0.00	2.59	1.00	8.20	OK	-	-	-	-	-	-	-	-	-
-	**B.10**						2.59	0.00	**2.59**	-	-	-	INL-10	5' TYPE R	SUMP	0.00%	8.59	1.00	2.59	0.00	B6.2
B6.2	B.11	0.57	0.58	0.33	5.00	5.17	**1.70**	0.00	1.70	1.00	8.20	OK	-	-	-	-	-	-	-	-	-
-	**B.11**						1.70	0.00	**1.70**	-	-	-	INL-11	5' TYPE R	SUMP	0.00%	8.59	1.00	1.70	0.00	B5.1
B7.1	B.12	1.81	0.51	0.92	5.50	5.03	**4.64**	0.00	4.64	1.00	8.20	OK	-	-	-	-	-	-	-	-	-
-	**B.12**						4.64	0.00	**4.64**	-	-	-	INL-12	10' TYPE R	SUMP	0.00%	13.58	1.00	4.64	0.00	B7.2
B7.2	B.13	1.41	0.53	0.75	5.00	5.17	**3.86**	0.00	3.86	-	-	-	-	-	-	-	-	-	-	-	-
-	**B.13**						3.86	0.00	**3.86**	-	-	-	INL-13	10' TYPE R	SUMP	0.00%	13.58	1.00	3.86	0.00	B6.2
B8	B.13	6.10	0.27	1.62	12.67	3.77	**6.10**	0.00	6.10	1	8.20	OK	-	-	-	-	-	-	-	-	-
	B.14						6.10	0.00	**6.10**	-	-	-	INL-13	20' TYPE R	SUMP	0.00%	23.56	1.00	6.10	0.00	-
B9	**POND 1**	8.00	0.22	1.73	16.25	3.40	**5.88**	0.00	5.88	-	-	-	-	-	-	-	-	-	-	-	-
C1.1	C.1	1.64	0.53	0.87	15.69	3.45	**3.01**	0.00	3.01	1.00	8.20	OK	-	-	-	-	-	-	-	-	-
C1.2	C.1	1.25	0.30	0.38	14.03	3.62	**1.37**	0.00	1.37	1.00	8.20	OK	-	-	-	-	-	-	-	-	-
-	**C.1**						4.39	0.00	**4.39**	-	-	-	INL-C5	20' TYPE R	ON-GRADE	4.15%	3.60	0.82	3.60	0.79	C.3
C2.1	C.2	1.68	0.42	0.71	13.48	3.68	**2.60**	0.00	2.60	1.00	8.20	OK		-	-	-	-	-	-	-	-
C2.2	C.2	1.34	0.59	0.79	5.00	5.17	**4.06**	0.00	4.06	1.00	8.20	OK		-	-	-	-	-	-	-	-
-	**C.2**						6.66	0.00	**6.66**	-	-	-	INL-C10	20' TYPE R	ON-GRADE	4.15%	4.10	0.62	4.10	2.56	C.5
C3.1	C.3	4.04	0.33	1.32	17.69	3.27	**4.33**	0.00	4.33	1.00	8.20	OK		-	-	-	-	-	-	-	-
C3.2	C.3	1.58	0.59	0.93	6.54	4.77	**4.43**	0.00	4.43	1.00	8.20	OK		-	-	-	-	-	-	-	-
-	**C.3**						8.77	0.79	**9.55**	-	-	-	INL-C6	20' TYPE R	ON-GRADE	4.15%	7.70	0.81	7.70	1.85	C.5
C4.1	C.4	1.63	0.57	0.93	5.48	5.03	**4.68**	0.00	4.68	1.00	8.20	OK		-	-	-	-	-	-	-	-
-	**C.4**						4.68	1.07	**5.75**	-	-	-	INL-C8	20' TYPE R	ON-GRADE	4.15%	4.70	0.82	4.70	1.05	C.5
C5.1	C.5	1.42	0.57	0.80	5.00	5.17	**4.16**	0.00	4.16	1.00	8.20	OK	-	-	-	-	-	-	-	-	-
-	**C.5**						4.16	5.46	**9.62**	-	-	-	INL-C11	25' TYPE R	SUMP	0.00%	28.55	1.00	9.62	0.00	POND 2
C6.1	C.6	2.74	0.53	1.44	10.96	3.99	**5.77**	0.00	5.77	1.00	8.20	OK	-	-	-	-	-	-	-	-	-
-	**C.6**						5.77	0.00	**5.77**	-	-	-	INL-C7	20' TYPE R	ON-GRADE	4.15%	4.70	0.81	4.70	1.07	C.4
C7.1	C.7	0.82	0.47	0.38	11.97	3.86	**1.48**	0.00	1.48	1.00	8.20	OK	-	-	-	-	-	-	-	-	-
C7.2	C.7	2.42	0.56	1.35	5.08	5.14	**6.96**	0.00	6.96	1.00	8.20	OK	-	-	-	-	-	-	-	-	-
-	**C.7**						8.45	0.00	**8.45**	-	-	-	INL-C3	20' TYPE R	ON-GRADE	4.15%	6.90	0.82	6.90	1.55	C.10
C8.1	C.8	2.09	0.46	0.97	14.24	3.60	**3.48**	0.00	3.48	1.00	8.20	OK	-	-	-	-	-	-	-	-	-
-	**C.8**						3.48	0.00	**3.48**	-	-	-	INL-C1	20' TYPE R	ON-GRADE	4.15%	2.80	0.80	2.80	0.68	C.9
C9.1	C.9	3.30	0.53	1.74	10.44	4.06	**7.06**	-	7.06	1.00	8.20	OK	-	-	-	-	-	-	-	-	-
-	**C.9**						7.06	0.68	**7.74**	-	-	-	INL-C2	20' TYPE R	ON-GRADE	4.15%	6.30	0.81	6.30	1.44	C.10
C10.1	C.10	1.85	0.55	1.02	5.00	5.17	**5.27**	0.00	5.27	1.00	8.20	OK	-	-	-	-	-	-	-	-	-
-	**C.10**						5.27	2.98	**8.25**	-	-	-	INL-C4	20' TYPE R	SUMP	0.00%	23.56	1.00	8.25	0.00	POND 2

Inlet design not needed until

5-YEAR RUNOFF CALCULATIONS

Falcon Highlands Filing No. 3 -PROPOSED CONDITIONS

El Paso County, Colorado

DATE: 6/1/2021
CALCULATED BY: AMC/ARP

PROJECT: 21000656
DESIGN STORM: 5-Year

		FLOW TO INLETS								Minimum	Maximum	Under	INLETS								Carry-Over
Sub-Basin	Design Point	Area (acres)	C	C x A	Tc (min)	Intensity (in/hr)	Qd = CIA (cfs)	Qco (cfs)	Qt (cfs)	Street Slope (%)	Street/Paseo Capacity (cfs)	Capacity?	Inlet	Type	Condition	Slope at Inlet (%)	Inlet Capacity (cfs)	R	Intercepted (cfs)	Carry-Over (cfs)	to Sub-basin/ Design Point (DP)
C11.1	C.11	7.80	0.24	1.84	17.14	3.32	**6.13**	0.00	6.13	1.00	8.20	OK	-	-	-	-	-	-	-	-	-
C11.2	C.11	4.00	0.25	0.99	14.44	3.58	**3.53**	0.00	3.53	1.00	8.20	OK	-	-	-	-	-	-	-	-	-
	C.11						9.66	0.00	**9.66**	-	-	-	INL-C9	2x20' TYPE R	SUMP	0.00%	43.53	1.00	9.66	0.00	C.13
C12.1	C.12	1.68	0.27	0.45	12.00	3.86	**1.74**	0.00	1.74	1.00	8.20	OK	-	-	-	-	-	-	-	-	-
-	**C.12**						1.74	0.00	**1.74**	-	-	-	INL-C12	5' TYPE R	SUMP	0.00%	8.59	1.00	1.74	0.00	C.13
C13.1	C.13, C.14	0.57	0.45	0.26	5.00	5.17	**1.33**	0.00	1.33	1.00	8.20	OK	-	-	-	-	-	-	-	-	-
	C.13						0.66	0.00	**0.66**	-	-	-	INL-C13	5' TYPE R	SUMP	0.00%	8.59	1.00	0.66	0.00	C.2
	C.14						0.66	0.00	**0.66**	-	-	-	INL-C14	5' TYPE R	SUMP	0.00%	8.59	1.00	0.66	0.00	C.2
C14.1	C.15, C.16	2.82	0.45	1.27	13.61	3.67	**4.65**	0.00	4.65	1.00	8.20	OK	-	-	-	-	-	-	-	-	-
	C.15						2.33	0.00	**2.33**	-	-	-	INL-C13	5' TYPE R	SUMP	0.00%	8.59	1.00	2.33	0.00	C.8
	C.16						2.33	0.00	**2.33**	-	-	-	INL-C14	5' TYPE R	SUMP	0.00%	8.59	1.00	2.33	0.00	C.8
C15	POND 2	11.15	0.45	5.02	21.11	3.01	**15.10**	0.00	15.10	-	-	-	-	-	-	-	-	-	-	-	-
D1.1	D.1	1.70	0.37	0.63	9.75	4.17	**2.62**	0.00	2.62	1.00	8.20	OK	-	-	-	-	-	-	-	-	-
-	**D.1**						2.62	0.00	**2.62**	-	-	-	INL-D1	10' TYPE R	ON-GRADE	4.15%	1.60	0.61	1.60	1.02	D.3
D1.2	D.3	1.20	0.42	0.50	12.16	3.84	**1.92**	0.00	1.92	1.00	8.20	OK	-	-	-	-	-	-	-	-	-
-	**D.2**						1.92	0.00	**1.92**	-	-	-	INL-D3	10' TYPE R	ON-GRADE	4.15%	1.20	0.63	1.20	0.72	D.3
D1.3	D.3	2.57	0.49	1.26	13.28	3.70	**4.68**	1.74	4.68	1.00	8.20	OK	-	-	-	-	-	-	-	-	-
-	**D.3**						4.68	1.74	**6.42**	-	-	-	INL-D4	15' TYPE R	SUMP	0.00%	18.57	1.00	6.42	0.00	POND WU
D2.1	POND WU	2.40	0.16	0.40	13.72	3.65	**1.45**	0.00	4.68	1.00	8.20	OK	-	-	-	-	-	-	-	-	-
E	E.1	2.20	0.32	0.70			1.80	0.00	**1.80**	-	-	OK	-	-	-	-	-	-	-	-	-
F	F.1	6.34	0.32	2.03			5.30	0.00	**5.30**	-	-	OK	-	-	-	-	-	-	-	-	-
G	G.1	12.61	0.32	4.04			6.80	0.00	**6.80**	-	-	OK	-	-	-	-	-	-	-	-	-
OS-1	A.1	11.11	0.32	3.52			14.80	0.00	**14.80**	-	-	OK	-	-	-	-	-	-	-	-	-
OS-2.1	EX DP1	6.38	0.43	2.75			10.70	0.00	**10.70**	-	-	OK	-	-	-	-	-	-	-	-	-
OS-2.2	EX DP1, DP2, DP3	26.52	0.39	10.36			36.10	0.00	**36.10**	-	-	OK	-	-	-	-	-	-	-	-	-
OS-2.3	EX DP4, DP5	29.84	0.39	11.57			37.50	0.00	**37.50**	-	-	OK	-	-	-	-	-	-	-	-	-
OS-2.4	EX DP13	6.30	0.45	2.80			8.40	0.00	**8.40**	-	-	OK	-	-	-	-	-	-	-	-	-
OS-2.5	EX DP10	3.12	0.49	1.54			7.80	0.00	**7.80**	-	-	OK	-	-	-	-	-	-	-	-	-
OS-3.1	C.11	2.14	0.22	0.47	10.56	4.05	1.91	0.00	**1.91**	-	-	OK	-	-	-	-	-	-	-	-	-
OS-3.2	EX DP10	29.88	0.29	8.72			29.20	0.00	**29.20**	-	-	OK	-	-	-	-	-	-	-	-	-
OS-3.3	C.15	4.16	0.43	1.77	12.62	3.78	6.70	0.00	**6.70**	-	-	OK	-	-	-	-	-	-	-	-	-
OS-3.4	C.15	1.14	0.90	1.03			3.40	0.00	**3.40**	-	-	OK	-	-	-	-	-	-	-	-	-
OS-4	D.1	6.47	0.24	1.56	16.33	3.39	5.28	0.00	**5.28**	-	-	OK	-	-	-	-	-	-	-	-	-
OS-5	POND WU	13.44	0.32	4.30	10.19	4.10	17.64	0.00	**17.64**	-	-	OK	-	-	-	-	-	-	-	-	-

Notes:

***DATA IN RED REPRESENTS AND OVERRIDE WITH VALUES PER PREVIOUS DRAINAGE REPORTS**

100-YEAR RUNOFF CALCULATIONS

Falcon Highlands Filing No. 3 -PROPOSED CONDITIONS

El Paso County, Colorado

DATE: 6/1/2021
CALCULATED BY: RDL

PROJECT: 21000656
DESIGN STORM: 100-Year

		FLOW TO INLETS								Minimum	Maximum	Under	INLETS								Carry-Over
Sub-Basin	Design Point	Area (acres)	C	C x A	Tc (min)	Intensity (in/hr)	Qd = CIA (cfs)	Qco (cfs)	Qt (cfs)	Street Slope (%)	Street/Paseo Capacity (cfs)	Capacity?	Inlet	Type	Condition	Slope at Inlet (%)	Inlet Capacity (cfs)	R	Intercepted (cfs)	Carry-Over (cfs)	to Sub-basin/ Design Point (DP)
A	A.1	3.70	0.38	1.42	16.00	5.75	**8.13**	0.00	8.13	1.00	102.00	OK	-	-	-	-	-	-	-	-	-
B1.1	B.1	2.41	0.68	1.64	6.63	7.97	**13.04**	0.00	13.04	1.00	102.00	OK	-	-	-	-	-	-	-	-	-
	B.1						13.04	0.00	**13.04**	-	-	-	INL-1	15' TYPE R	SUMP	0.00%	18.57	1.00	13.04	0.00	POND 1
B2.1	B.2	1.48	0.64	0.95	5.00	8.68	**8.25**	0.00	8.25	1.00	51.00	OK	-	-	-	-	-	-	-	-	-
-	**B.2**						8.25	0.00	**8.25**	-	-	-	INL-2	10' TYPE R	SUMP	0.00%	13.58	1.00	8.25	0.00	B.3
B2.2	B.3	1.35	0.64	0.87	5.00	8.68	**7.56**	0.00	7.56	1.00	51.00	OK	-	-	-	-	-	-	-	-	-
-	**B.3**						7.56	0.00	**7.56**	-	-	-	INL-3	5' TYPE R	SUMP	0.00%	8.59	1.00	7.56	0.00	B2.3
B2.3	B.4	2.13	0.65	1.39	5.00	8.68	**12.10**	0.00	12.10	1.00	51.00	OK	-	-	-	-	-	-	-	-	-
-	**B.4**						12.10	0.00	**12.10**	-	-	-	INL-4	15' TYPE R	SUMP	0.00%	18.57	1.00	12.10	0.00	B3.1
B3.1	B.5	3.32	0.64	2.12	14.62	5.97	**12.68**	0.00	12.68	1.00	51.00	OK	-	-	-	-	-	-	-	-	-
-	**B.5**						12.68	0.00	**12.68**	-	-	-	INL-5	15' TYPE R	SUMP	0.00%	18.57	1.00	12.68	0.00	B3.2
B3.2	B.6	2.14	0.65	1.39	5.00	8.68	**12.08**	0.00	12.08	1.00	51.00	OK	-	-	-	-	-	-	-	-	-
-	**B.6**						12.08	0.00	**12.08**	-	-	-	INL-6	15' TYPE R	SUMP	0.00%	18.57	1.00	12.08	0.00	B4.1
B4.1	B.7	3.01	0.63	1.91	13.84	6.11	**11.65**	0.00	11.65	1.00	51.00	OK	-	-	-	-	-	-	-	-	-
-	**B.7**						11.65	0.00	**11.65**	-	-	-	INL-7	15' TYPE R	SUMP	0.00%	18.57	1.00	11.65	0.00	B4.2
B4.2	B.8	0.83	0.75	0.62	5.00	8.68	**5.37**	0.00	5.37	1.00	51.00	OK	-	-	-	-	-	-	-	-	-
-	**B.8**						5.37	0.00	**5.37**	-	-	-	INL-8	5' TYPE R	SUMP	0.00%	8.59	1.00	5.37	0.00	POND 1
B5.1	B.9	3.24	0.65	2.12	15.72	5.79	**12.25**	0.00	12.25	1.00	102.00	OK	-	-	-	-	-	-	-	-	-
-	**B.9**						12.25	0.00	**12.25**	-	-	-	INL-9	15' TYPE R	SUMP	0.00%	18.57	1.00	12.25	0.00	POND 1
B6.1	B.10	1.43	0.63	0.90	13.62	6.15	**5.51**	0.00	5.51	1.00	51.00	OK	-	-	-	-	-	-	-	-	-
-	**B.10**						5.51	0.00	**5.51**	-	-	-	INL-10	5' TYPE R	SUMP	0.00%	8.59	1.00	5.51	0.00	B6.2
B6.2	B.11	0.57	0.69	0.40	5.00	8.68	**3.43**	0.00	3.43	1.00	51.00	OK	-	-	-	-	-	-	-	-	-
-	**B.11**						3.43	0.00	**3.43**	-	-	-	INL-11	5' TYPE R	SUMP	0.00%	8.59	1.00	3.43	0.00	B5.1
B7.1	B.12	1.81	0.64	1.16	5.50	8.44	**9.76**	0.00	9.76	1.00	51.00	OK	-	-	-	-	-	-	-	-	-
-	**B.12**						9.76	0.00	**9.76**	-	-	-	INL-12	10' TYPE R	SUMP	0.00%	13.58	1.00	9.76	0.00	B7.2
B7.2	B.13	1.41	0.66	0.92	5.00	8.68	**8.02**	0.00	8.02	-	-	-	-	-	-	-	-	-	-	-	-
-	**B.13**						8.02	0.00	**8.02**	-	-	-	INL-13	10' TYPE R	SUMP	0.00%	13.58	1.00	8.02	0.00	B6.2
B8	B.14	6.10	0.49	3.00	12.67	6.34	**19.03**	0.00	19.03	-	-	-	-	-	-	-	-	-	-	-	-
	B.14						19.03	0.00	**19.03**	-	-	-	INL-13	20' TYPE R	SUMP	0.00%	23.56	1.00	19.03	0.00	-
B9	POND 1	8.00	0.48	3.87	16.25	5.71	**22.10**	0.00	22.10	-	-	-	-	-	-	-	-	-	-	-	-
C1.1	C.1	1.64	0.66	1.08	15.69	5.80	**6.25**	0.00	6.25	1.00	51.00	OK	-	-	-	-	-	-	-	-	-
C1.2	C.1	1.25	0.52	0.64	14.03	6.08	**3.92**	0.00	3.92	1.00	51.00	OK	-	-	-	-	-	-	-	-	-
-	**C.1**						10.17	0.00	**10.17**	-	-	-	INL-C5	20' TYPE R	ON-GRADE	4.15%	8.30	0.82	8.30	1.87	C.3
C2.1	C.2	1.68	0.59	0.99	13.48	6.18	**6.10**	0.00	6.10	1.00	51.00	OK		-	-	-	-	-	-	-	-
C2.2	C.2	1.34	0.70	0.94	5.00	8.68	**8.18**	0.00	8.18	1.00	51.00	OK		-	-	-	-	-	-	-	-
-	**C.2**						14.28	0.00	**14.28**	-	-	-	INL-C10	20' TYPE R	ON-GRADE	4.15%	8.80	0.62	8.80	5.48	C.5
C3.1	C.3	4.04	0.52	2.10	17.69	5.49	**11.56**	1.87	13.43	1.00	51.00	OK		-	-	-	-	-	-	-	-
C3.2	C.3	1.58	0.70	1.11	6.54	8.00	**8.90**	0.00	8.90	1.00	51.00	OK		-	-	-	-	-	-	-	-
-	**C.3**						20.46	1.87	**22.34**	-	-	-	INL-C6	20' TYPE R	ON-GRADE	4.15%	18.10	0.81	18.10	4.24	C.5
C4.1	C.4	1.63	0.69	1.13	5.48	8.45	**9.53**	2.30	11.83	1.00	51.00	OK		-	-	-	-	-	-	-	-
-	**C.4**						9.53	2.30	**11.83**	-	-	-	INL-C8	20' TYPE R	ON-GRADE	4.15%	9.60	0.81	9.60	2.23	C.5
C5.1	C.5	1.42	0.69	0.98	5.00	8.68	**8.51**	11.95	20.47	1.00	51.00	OK	-	-	-	-	-	-	-	-	-
-	**C.5**						8.51	11.95	**20.47**	-	-	-	INL-C11	25' TYPE R	SUMP	0.00%	28.55	1.00	20.47	0.00	POND 2
C6.1	C.6	2.74	0.66	1.81	10.96	6.70	**12.10**	0.00	12.10	1.00	51.00	OK	-	-	-	-	-	-	-	-	-
-	**C.6**						12.10	0.00	**12.10**	-	-	-	INL-C7	20' TYPE R	ON-GRADE	4.15%	9.80	0.81	9.80	2.30	C.4
C7.1	C.7	0.82	0.62	0.51	11.97	6.48	**3.31**	0.00	3.31	1.00	51.00	OK	-	-	-	-	-	-	-	-	-
C7.2	C.7	2.42	0.68	1.65	5.08	8.64	**14.29**	0.00	14.29	1.00	51.00	OK	-	-	-	-	-	-	-	-	-
-	**C.7**						17.60	0.00	**17.60**	-	-	-	INL-C3	20' TYPE R	ON-GRADE	4.15%	14.30	0.81	14.30	3.30	C.10
C8.1	C.8	2.09	0.61	1.28	14.24	6.04	**7.73**	0.00	7.73	1.00	51.00	OK	-	-	-	-	-	-	-	-	-
-	**C.8**						7.73	0.00	**7.73**	-	-		INL-C1	20' TYPE R	ON-GRADE	4.15%	6.30	0.81	6.30	1.43	C.9
C9.1	C.9	3.30	0.66	2.19	10.44	6.82	**14.94**	1.43	16.38	1.00	51.00	OK	-	-	-	-	-	-	-	-	-
-	**C.9**						14.94	1.43	**16.38**	-	-	-	INL-C2	20' TYPE R	ON-GRADE	4.15%	13.3	0.81	13.30	3.08	C.10
C10.1	C.10	1.85	0.68	1.25	5.00	8.68	**10.85**	6.38	17.23	1.00	51.00	OK	-	-	-	-	.	-	-	-	-
-	**C.10**						10.85	6.38	**17.23**	-	-	-	INL-C4	20' TYPE R	SUMP	0.00%	23.56	1.00	17.23	0.00	POND 2

100-YEAR RUNOFF CALCULATIONS

Falcon Highlands Filing No. 3 -PROPOSED CONDITIONS

El Paso County, Colorado

DATE: 6/1/2021
CALCULATED BY: RDL

PROJECT: 21000656
DESIGN STORM: 100-Year

		FLOW TO INLETS								Minimum	Maximum	Under	INLETS								Carry-Over
Sub-Basin	Design Point	Area (acres)	C	C x A	Tc (min)	Intensity (in/hr)	Qd = CIA (cfs)	Qco (cfs)	Qt (cfs)	Street Slope (%)	Street/Paseo Capacity (cfs)	Capacity?	Inlet	Type	Condition	Slope at Inlet (%)	Inlet Capacity (cfs)	R	Intercepted (cfs)	Carry-Over (cfs)	to Sub-basin/ Design Point (DP)
C11.1	C.11	7.80	0.47	3.66	17.14	5.57	**20.43**	0.00	20.43	1.00	51.00	OK	-	-	-	-	-	-	-	-	-
C11.2	C.11	4.00	0.48	1.91	14.44	6.01	**11.47**	0.00	11.47	1.00	51.00	OK	-	-	-	-	-	-	-	-	-
-	**C.11**						31.90	0.00	**31.90**	-	-	-	INL-C12	2x20' TYPE R	SUMP	0.00%	43.53	1.00	31.90	0.00	C.13
C12.1	C.12	1.68	0.49	0.83	12.00	6.47	**5.37**	0.00	5.37	1.00	51.00	OK	-	-	-	-	-	-	-	-	-
-	**C.12**						5.37	0.00	**5.37**	-	-	-	INL-C12	5' TYPE R	SUMP	0.00%	8.59	1.00	5.37	0.00	C.13
C13.1	C.13, C.14	0.57	1.47	0.84	5.00	8.68	**7.29**	0.00	7.29	1.00	51.00	OK	-	-	-	-	-	-	-	-	-
	C.13						3.65	0.00	**3.65**	-	-	-	INL-C13	5' TYPE R	SUMP	0.00%	8.59	1.00	3.65	0.00	C.2
	C.14						3.65	0.00	**3.65**				INL-C14	5' TYPE R	SUMP	0.00%	8.59	1.00	3.65	0.00	C.2
C14.1	C.15, C.16	2.82	0.62	1.74	13.61	6.16	**10.69**	0.00	10.69	1.00	51.00	OK	-	-	-	-	-	-	-	-	-
	C.15						5.35	0.00	**5.35**	-	-	-	INL-C13	5' TYPE R	SUMP	0.00%	8.59	1.00	5.35	0.00	C.8
	C.16						5.35	0.00	**5.35**				INL-C14	5' TYPE R	SUMP	0.00%	8.59	1.00	5.35	0.00	C.8
C15	POND 2	11.15	0.59	6.58	21.11	5.05	**33.23**	0.00	33.23	-	51.00	OK	-	-	-	-	-	-	-	-	-
D1.1	D.1	1.70	0.55	0.93	9.75	7.00	**6.53**	0.00	6.53	1.00	51.00	OK	-	-	-	-	-	-	-	-	-
-	**D.1**						6.53	0.00	**6.53**	-	-	-	INL-D1	10' TYPE R	ON-GRADE	4.15%	4.00	0.61	4.00	2.53	D.3
D1.2	D.3	1.20	0.59	0.70	12.16	6.44	**4.54**	0.00	4.54	1.00	51.00	OK	-	-	-	-	-	-	-	-	-
-	**D.2**						4.54	0.00	**4.54**	-	-	-	INL-D3	10' TYPE R	ON-GRADE	4.15%	2.8	0.62	2.80	1.74	D.3
D1.3	D.3	2.57	0.64	1.64	13.28	6.22	**10.20**	4.27	14.47	1.00	51.00	OK	-	-	-	-	-	-	-	-	-
-	**D.3**						10.20	4.27	**14.47**	-	-	-	INL-D4	15' TYPE R	SUMP	0.00%	18.57	1.00	14.47	0.00	POND WU
D2.1	POND WU	2.40	0.41	0.97	13.72	6.14	**5.97**	0.00	5.97	-	-	OK	-	-	-	-	-	-	-	-	-
E	E.1	2.20	0.59	1.30			4.20	0.00	**4.20**	-	-	-	-	-	-	-	-	-	-	-	-
F	F.1	6.34	0.59	3.74			12.50	0.00	**12.50**	-	-	-	-	-	-	-	-	-	-	-	-
G	G.1	12.61	0.59	7.44			16.00	0.00	**16.00**	-	-	-	-	-	-	-	-	-	-	-	-
OS-1	A.1	11.11	0.58	6.41			32.37	0.00	**32.37**	-	-	-	-	-	-	-	-	-	-	-	-
OS-2.1	EX DP1	6.38	0.60	3.83			21.70	0.00	**21.70**	-	-	-	-	-	-	-	-	-	-	-	-
OS-2.2	EX DP1, DP2, DP3	26.52	0.57	15.10			72.20	0.00	**72.20**	-	-	-	-	-	-	-	-	-	-	-	-
OS-2.3	EX DP4, DP5	29.84	0.57	16.93			74.20	0.00	**74.20**	-	-	-	-	-	-	-	-	-	-	-	-
OS-2.4	EX DP13	6.30	0.61	3.85			17.20	0.00	**17.20**	-	-	-	-	-	-	-	-	-	-	-	-
OS-2.5	EX DP10	3.12	0.65	2.02			13.60	0.00	**13.60**	-	-	-	-	-	-	-	-	-	-	-	-
OS-3.1	C.11	2.14	0.46	0.98	10.56	6.80	6.69	0.00	**6.69**	-	-	-	-	-	-	-	-	-	-	-	-
OS-3.2	EX DP10	29.88	0.51	15.32			58.50	0.00	**58.50**	-	-	-	-	-	-	-	-	-	-	-	-
OS-3.3	C.15	4.16	0.61	2.54	12.62	6.35	16.14	0.00	**16.14**	-	-	-	-	-	-	-	-	-	-	-	-
OS-3.4	C.15	1.14	0.96	1.09			6.00	0.00	**6.00**	-	-	-	-	-	-	-	-	-	-	-	-
OS-4	D.1	6.47	0.48	3.07	16.33	5.70	17.51	0.00	**17.51**	-	-	-	-	-	-	-	-	-	-	-	-
OS-5	D.4	13.44	0.59	7.93	10.19	6.89	54.60	0.00	**54.60**	-	-	-	-	-	-	-	-	-	-	-	-

Notes:

***DATA IN RED REPRESENTS AND OVERRIDE WITH VALUES PER PREVIOUS DRAINAGE REPORTS**

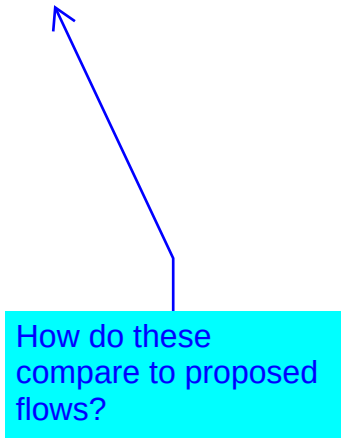
DEVELOPED CONDITIONS DRAINAGE SUB-BASIN SUMMARY

Basin	Design Point	Area (acres)	C_5	C_{100}	Q_5 (cfs)	Q_{100} (cfs)
A	A.1	3.70	0.13	0.38	5.70	8.13
B1.1	B.1	2.41	0.56	0.68	6.39	13.04
B2.1	B.2	1.48	0.51	0.64	3.93	8.25
B2.2	B.3	1.35	0.52	0.64	3.61	7.56
B2.3	B.4	2.13	0.53	0.65	5.81	12.10
B3.1	B.5	3.32	0.51	0.64	6.02	12.68
B3.2	B.6	2.14	0.52	0.65	5.79	12.08
B4.1	B.7	3.01	0.50	0.63	5.51	11.65
B4.2	B.8	0.83	0.64	0.75	2.74	5.37
B5.1	B.9	3.24	0.53	0.65	5.89	12.25
B6.1	B.10	1.43	0.49	0.63	2.59	5.51
B6.2	B.11	0.57	0.58	0.69	1.70	3.43
B7.1	B.12	1.81	0.51	0.64	4.64	9.76
B7.2	B.13	1.41	0.53	0.66	3.86	8.02
B8	B.14	6.10	0.27	0.49	6.10	19.03
B9	POND 1	8.00	0.22	0.48	5.88	22.10
C1.1	C.1	1.64	0.53	0.66	3.01	6.25
C1.2	C.1	1.25	0.30	0.52	1.37	3.92
C2.1	C.2	1.68	0.42	0.59	2.60	6.10
C2.2	C.2	1.34	0.59	0.70	4.06	8.18
C3.1	C.3	4.04	0.33	0.52	4.33	11.56
C3.2	C.3	1.58	0.59	0.70	4.43	8.90
C4.1	C.4	1.63	0.57	0.69	4.68	9.53
C5.1	C.5	1.42	0.57	0.69	4.16	8.51
C6.1	C.6	2.74	0.53	0.66	5.77	12.10
C7.1	C.7	0.82	0.47	0.62	1.48	3.31
C7.2	C.7	2.42	0.56	0.68	6.96	14.29
C8.1	C.8	2.09	0.46	0.61	3.48	7.73
C9.1	C.9	3.30	0.53	0.66	7.06	14.94
C10.1	C.10	1.85	0.55	0.68	5.27	10.85
C11.1	C.11	7.80	0.24	0.47	6.13	20.43
C11.2	C.11	4.00	0.25	0.48	3.53	11.47
C12.1	C.12	1.68	0.27	0.49	1.74	5.37
C13.1	C.13, C.14	0.57	1.59	1.47	1.33	7.29
C14.1	C.15, C.16	2.82	0.44	0.62	4.65	10.69
C15	POND 2	11.15	0.34	0.59	15.10	33.23
D1.1	D.1	1.70	0.37	0.55	2.62	6.53
D1.2	D.3	1.20	0.42	0.59	1.92	4.54
D1.3	D.3	2.57	0.49	0.64	4.68	10.20
D2.1	POND WU	2.40	0.16	0.41	1.45	5.97
E	E.1	2.20	0.32	0.59	1.80	4.20
F	F.1	6.34	0.32	0.59	5.30	12.50
G	G.1	12.61	0.32	0.59	6.80	16.00
OS-1	A.1	11.11	0.32	0.58	14.80	32.37
OS-2.1	EX DP1	6.38	0.43	0.60	10.70	21.70
OS-2.2	EX DP1, DP2, DP3	26.52	0.39	0.57	36.10	72.20
OS-2.3	EX DP4, DP5	29.84	0.39	0.57	37.50	74.20
OS-2.4	EX DP13	6.30	0.45	0.61	8.40	17.20
OS-2.5	EX DP10	3.12	0.49	0.65	7.80	13.60
OS-3.1	C.11	2.14	0.22	0.46	1.91	6.69
OS-3.2	EX DP10	29.88	0.29	0.51	29.20	58.50
OS-3.3	C.15	4.16	0.43	0.61	6.70	16.14
OS-3.4	C.15	1.14	0.90	0.96	3.40	6.00
OS-4	D.1	6.47	0.24	0.48	5.28	17.51
OS-5	POND WU	13.44	0.32	0.59	17.64	54.60

DEVELOPED CONDITIONS ~~DRAINAGE BASIN~~ DESIGN POINT SUMMARY

Basin	Design Point	Area (acres)	C_5	C_{100}	Q_5 (cfs)	Q_{100} (cfs)
A	OFF-SITE	3.70	0.13	0.38	5.70	8.13
B	POND 1	39.23	0.42	0.59	70.45	162.84
C	POND 2	55.82	0.34	0.60	91.15	214.68
D	POND WU	7.87	0.35	0.54	10.66	27.24
E	E.1	2.20	0.32	0.59	1.80	4.20
F	F.1	6.34	0.32	0.59	5.30	12.50
G	G.1	12.61	0.32	0.59	6.80	16.00
OS-1	OFF-SITE	11.11	0.32	0.58	14.80	32.37
OS-2	POND 1	72.16	0.40	0.58	100.50	198.90
OS-3	POND 2	37.32	0.32	0.53	41.20	87.33
OS-4	POND WU	6.47	0.24	0.48	5.28	17.51
OS-5	POND WU	13.44	0.32	0.59	17.64	54.60

DEVELOPED CONDITIONS - SUMMARY OF FILING NO. 3 MDDP COMPARED TO 2010 FDR								
FIL NO. 3 MDDP/PDR			2010 FDR			DIFFERENCE		ULTIMATE DESIGN POINT
	Q5 (CFS)	Q100 (CFS)		Q5 (CFS)	Q100 (CFS)	Q5 (CFS)	Q100 (CFS)	
BASIN A + OS-1	20.5	40.5	BASIN A	20.5	40.5	0.0	0.0	OFF-SITE
BASIN B + OS-2 + E	172.8	365.9	BASIN B + OS-1 + OS-2 + E	159.8	316.8	13.0	49.1	POND 1
BASIN C + OS-3 + F	137.6	314.5	BASIN C + OS-3 + F	118.2	235.1	19.4	79.4	POND 2
BASIN D + OS-4 + OS-5	33.6	99.4	BASIN D	66.3	124.0	-32.7	-24.6	POND WU
TOTAL	**364.5**	**820.3**		**364.8**	**716.4**	**-0.3**	**103.9**	



POND 1 TRIBUTARY AREA AND IMPERVIOUSNESS

Falcon Highlands Filing No. 3
El Paso County, Colorado
6/1/2021

Basin No	Total Area (AC)	Effective Imperviousness (%)
B1.1	2.41	73.4%
B2.1	1.48	70.0%
B2.2	1.35	70.2%
B2.3	2.13	71.1%
B3.1	3.32	69.6%
B3.2	2.14	70.7%
B4.1	3.01	69.1%
B4.2	0.83	79.8%
B5.1	3.24	70.9%
B6.1	1.43	68.4%
B6.2	0.57	74.8%
B7.1	1.81	69.6%
B7.2	1.41	71.2%
B8	6.10	28.9%
B9	8.00	25.4%
E	2.20	45.0%
Onsite Subtotal	41.43	54.5%
OS-2.1	6.38	53.2%
OS-2.2	26.52	49.1%
OS-2.3	29.84	48.8%
OS-2.4	6.30	54.4%
OS-2.5	3.12	59.2%
Offsite Subtotal	72.16	50.2%
TOTAL	**113.59**	**51.8%**

POND 2 TRIBUTARY AREA AND IMPERVIOUSNESS

Falcon Highlands Filing No. 3
El Paso County, Colorado
6/1/2021

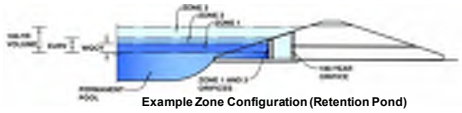
Basin No	Total Area (AC)	Effective Imperviousness (%)
C1.1	1.64	71.4%
C1.2	1.25	27.2%
C2.1	1.68	50.5%
C2.2	1.34	74.8%
C3.1	4.04	37.7%
C3.2	1.58	75.8%
C4.1	1.63	72.8%
C5.1	1.42	71.2%
C6.1	2.74	68.0%
C7.1	0.82	56.6%
C7.2	2.42	71.3%
C8.1	2.09	59.3%
C9.1	3.30	64.7%
C10.1	1.85	71.3%
C11.1	7.80	23.7%
C11.2	4.00	24.9%
C12.1	1.68	27.4%
C13.1	0.57	184.2%
C14.1	2.82	43.6%
C15	11.15	48.4%
F	6.34	45.0%
Onsite Subtotal	62.16	49.6%
OS-3.1	2.14	25.0%
OS-3.2	29.88	32.9%
OS-3.3	4.16	47.7%
OS-3.4	1.14	100.0%
Offsite Subtotal	37.32	36.2%
TOTAL	**99.48**	**44.6%**

DETENTION BASIN STAGE-STORAGE TABLE BUILDER

MHFD-Detention, Version 4.04 (February 2021)

Project: FALCON HIGHLANDS FILING NO. 3

Basin ID: DETENTION POND 1 (BASIN B)



Example Zone Configuration (Retention Pond)

Watershed Information

Selected BMP Type =	EDB	
Watershed Area =	113.59	acres
Watershed Length =	3,500	ft
Watershed Length to Centroid =	800	ft
Watershed Slope =	0.010	ft/ft
Watershed Imperviousness =	51.80%	percent
Percentage Hydrologic Soil Group A =	100.0%	percent
Percentage Hydrologic Soil Group B =	0.0%	percent
Percentage Hydrologic Soil Groups C/D =	0.0%	percent
Target WQCV Drain Time =	40.0	hours
Location for 1-hr Rainfall Depths =	User Input	

After providing required inputs above including 1-hour rainfall depths, click 'Run CUHP' to generate runoff hydrographs using the embedded Colorado Urban Hydrograph Procedure.

			Optional User Overrides
Water Quality Capture Volume (WQCV) =	1.999	acre-feet	acre-feet
Excess Urban Runoff Volume (EURV) =	6.852	acre-feet	acre-feet
2-yr Runoff Volume (P1 = 1.19 in.) =	5.133	acre-feet	1.19 inches
5-yr Runoff Volume (P1 = 1.5 in.) =	6.809	acre-feet	1.50 inches
10-yr Runoff Volume (P1 = 1.75 in.) =	8.153	acre-feet	1.75 inches
25-yr Runoff Volume (P1 = 2 in.) =	10.225	acre-feet	2.00 inches
50-yr Runoff Volume (P1 = 2.25 in.) =	12.247	acre-feet	2.25 inches
100-yr Runoff Volume (P1 = 2.52 in.) =	14.804	acre-feet	2.52 inches
500-yr Runoff Volume (P1 = 3.14 in.) =	20.345	acre-feet	inches
Approximate 2-yr Detention Volume =	4.413	acre-feet	
Approximate 5-yr Detention Volume =	5.804	acre-feet	
Approximate 10-yr Detention Volume =	7.071	acre-feet	
Approximate 25-yr Detention Volume =	8.631	acre-feet	
Approximate 50-yr Detention Volume =	9.615	acre-feet	
Approximate 100-yr Detention Volume =	10.790	acre-feet	

Define Zones and Basin Geometry

Zone 1 Volume (WQCV) =	1.999	acre-feet
Zone 2 Volume (EURV - Zone 1) =	4.853	acre-feet
Zone 3 Volume (100-year - Zones 1 & 2) =	3.938	acre-feet
Total Detention Basin Volume =	10.790	acre-feet
Initial Surcharge Volume (ISV) =	261	ft^3
Initial Surcharge Depth (ISD) =	0.50	ft
Total Available Detention Depth (H_{total}) =	6.00	ft
Depth of Trickle Channel (H_{TC}) =	0.50	ft
Slope of Trickle Channel (S_{TC}) =	0.004	ft/ft
Slopes of Main Basin Sides (S_{main}) =	4	H:V
Basin Length-to-Width Ratio ($R_{L/W}$) =	5	

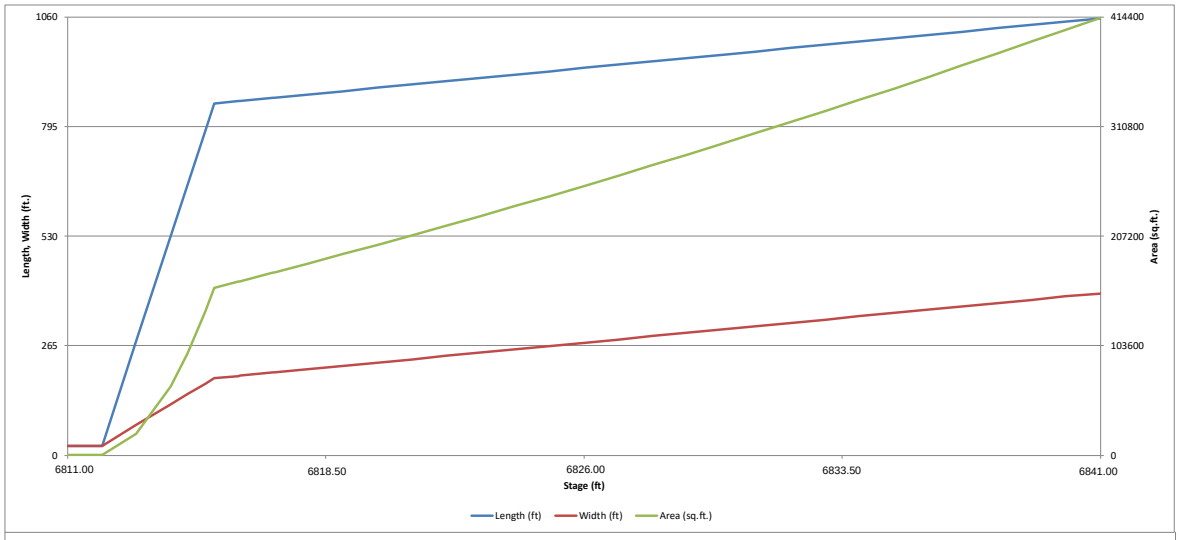
Initial Surcharge Area (A_{ISV}) =	523	ft^2
Surcharge Volume Length (L_{ISV}) =	22.9	ft
Surcharge Volume Width (W_{ISV}) =	22.9	ft
Depth of Basin Floor (H_{FLOOR}) =	3.26	ft
Length of Basin Floor (L_{FLOOR}) =	850.9	ft
Width of Basin Floor (W_{FLOOR}) =	185.9	ft
Area of Basin Floor (A_{FLOOR}) =	158,148	ft^2
Volume of Basin Floor (V_{FLOOR}) =	182,300	ft^3
Depth of Main Basin (H_{MAIN}) =	1.74	ft
Length of Main Basin (L_{MAIN}) =	864.8	ft
Width of Main Basin (W_{MAIN}) =	199.8	ft
Area of Main Basin (A_{MAIN}) =	172,773	ft^2
Volume of Main Basin (V_{MAIN}) =	287,807	ft^3
Calculated Total Basin Volume (V_{total}) =	**10.804**	acre-feet

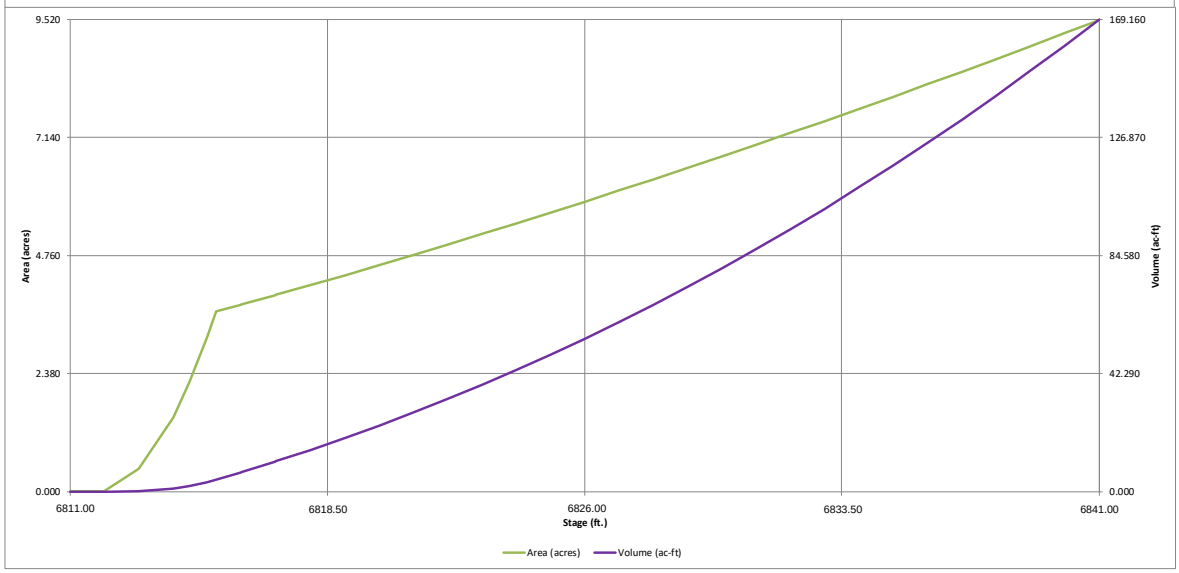
Total Basin Volume with 1' of Freeboard = 14.938 acre-feet

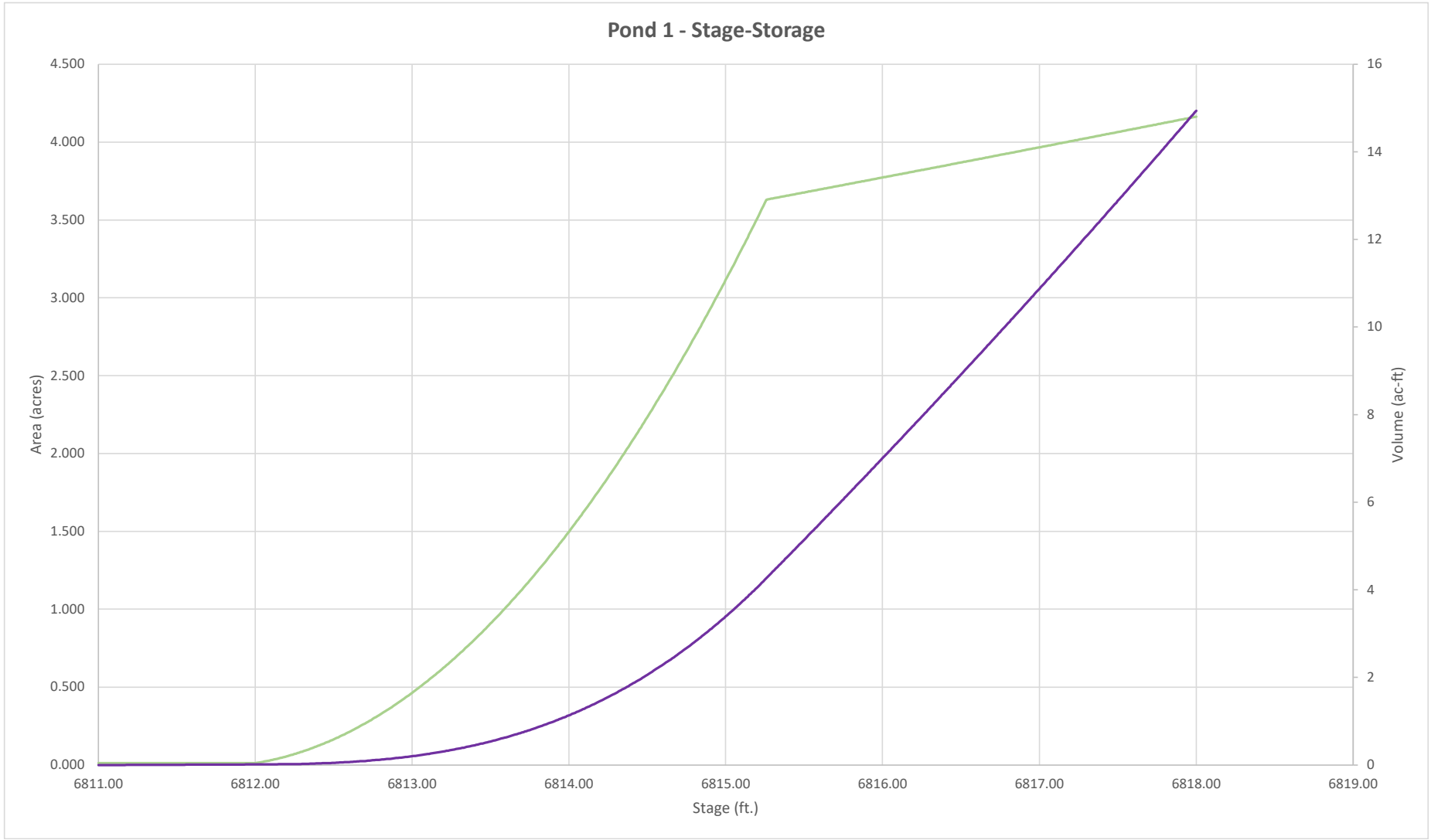
August 2010 Final Drainage Report Pond 1 Designed for a total of 17 ac-ft

Depth Increment = 1.00 ft

Stage - Storage Description	Stage (ft)	Optional Override Stage (ft)	Length (ft)	Width (ft)	Area (ft^2)	Optional Override Area (ft^2)	Area (acre)	Volume (ft^3)	Volume (ac-ft)
Top of Micropool	0.00	**6811.00**	22.9	22.9	523		0.012		
ISV	0.50	**6812.00**	22.9	22.9	523		0.012	261	0.006
	1.00	**6812.50**	22.9	22.9	523		0.012	523	0.012
	2.00	**6813.00**	276.9	72.9	20,172		0.463	8,753	0.201
	3.00	**6814.00**	530.9	122.9	65,221		1.497	49,333	1.133
Zone 1 (WQCV)	3.48	**6815.00**	652.8	146.9	95,867		2.201	87,760	2.015
	4.00	**6815.48**	784.9	172.9	135,670		3.115	147,662	3.390
Floor	4.26	**6816.00**	850.9	185.9	158,148		3.631	185,821	4.266
Zone 2 (EURV)	4.96	**6816.26**	856.5	191.5	163,985		3.765	298,564	6.854
	5.00	**6816.96**	856.8	191.8	164,320		3.772	305,130	7.005
Zone 3 (100-year)	5.98	**6817.00**	864.7	199.6	172,603		3.962	470,212	10.795
	6.00	**6817.98**	864.8	199.8	172,773		3.966	473,666	10.874
1-FT FREEBOARD	7.00	**6818.00**	872.8	207.8	181,354		4.163	650,718	14.938
	8.00	**6819.00**	880.8	215.8	190,063		4.363	836,416	19.201
	9.00		888.8	223.8	198,899		4.566	1,030,886	23.666
	10.00		896.8	231.8	207,864		4.772	1,234,257	28.335
	11.00		904.8	239.8	216,957		4.981	1,446,657	33.211
	12.00		912.8	247.8	226,178		5.192	1,668,214	38.297
	13.00		920.8	255.8	235,527		5.407	1,899,055	43.596
	14.00		928.8	263.8	245,003		5.625	2,139,310	49.112
	15.00		936.8	271.8	254,608		5.845	2,389,105	54.846
	16.00		944.8	279.8	264,341		6.068	2,648,569	60.803
	17.00		952.8	287.8	274,202		6.295	2,917,829	66.984
	18.00		960.8	295.8	284,190		6.524	3,197,015	73.393
	19.00		968.8	303.8	294,307		6.756	3,486,253	80.033
	20.00		976.8	311.8	304,552		6.992	3,785,672	86.907
	21.00		984.8	319.8	314,925		7.230	4,095,400	94.017
	22.00		992.8	327.8	325,426		7.471	4,415,564	101.367
	23.00		1,000.8	335.8	336,054		7.715	4,746,294	108.960
	24.00		1,008.8	343.8	346,811		7.962	5,087,716	116.798
	25.00		1,016.8	351.8	357,696		8.212	5,439,959	124.884
	26.00		1,024.8	359.8	368,709		8.464	5,803,151	133.222
	27.00		1,032.8	367.8	379,850		8.720	6,177,419	141.814
	28.00		1,040.8	375.8	391,118		8.979	6,562,892	150.663
	29.00		1,048.8	383.8	402,515		9.240	6,959,698	159.773
	30.00		1,056.8	391.8	414,040		9.505	7,367,965	169.145


1060
795
530
265
0
Length, Width (ft.)
414400
310800
207200
103600
0
Area (sq.ft.)
6811.00
6818.50
6826.00
6833.50
6841.00
Stage (ft)
Length (ft)
Width (ft)
Area (sq.ft.)


9.520
7.140
4.760
2.380
0.000
Area (acres)
169.160
126.870
84.580
42.290
0.000
Volume (ac-ft)
6811.00
6818.50
6826.00
6833.50
6841.00
Stage (ft.)
Area (acres)
Volume (ac-ft)

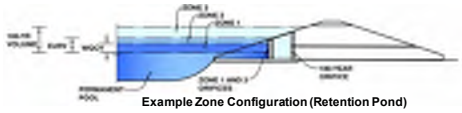

Pond 1 - Stage-Storage
4.500
4.000
3.500
3.000
2.500
2.000
1.500
1.000
0.500
0.000
Area (acres)
16
14
12
10
8
6
4
2
0
Volume (ac-ft)
6811.00
6812.00
6813.00
6814.00
6815.00
6816.00
6817.00
6818.00
6819.00
Stage (ft.)

DETENTION BASIN STAGE-STORAGE TABLE BUILDER

MHFD-Detention, Version 4.04 (February 2021)

Project: FALCON HIGHLANDS FILING NO. 3

Basin ID: DETENTION POND 2 (BASIN C)



Example Zone Configuration (Retention Pond)

Watershed Information

Selected BMP Type =	EDB	
Watershed Area =	99.48	acres
Watershed Length =	2,300	ft
Watershed Length to Centroid =	1,500	ft
Watershed Slope =	0.010	ft/ft
Watershed Imperviousness =	44.60%	percent
Percentage Hydrologic Soil Group A =	100.0%	percent
Percentage Hydrologic Soil Group B =	0.0%	percent
Percentage Hydrologic Soil Groups C/D =	0.0%	percent
Target WQCV Drain Time =	40.0	hours
Location for 1-hr Rainfall Depths =	User Input	

After providing required inputs above including 1-hour rainfall depths, click 'Run CUHP' to generate runoff hydrographs using the embedded Colorado Urban Hydrograph Procedure.

			Optional User Overrides
Water Quality Capture Volume (WQCV) =	1.591	acre-feet	acre-feet
Excess Urban Runoff Volume (EURV) =	4.955	acre-feet	acre-feet
2-yr Runoff Volume (P1 = 1.19 in.) =	3.752	acre-feet	1.19 inches
5-yr Runoff Volume (P1 = 1.5 in.) =	5.018	acre-feet	1.50 inches
10-yr Runoff Volume (P1 = 1.75 in.) =	6.025	acre-feet	1.75 inches
25-yr Runoff Volume (P1 = 2 in.) =	7.765	acre-feet	2.00 inches
50-yr Runoff Volume (P1 = 2.25 in.) =	9.460	acre-feet	2.25 inches
100-yr Runoff Volume (P1 = 2.52 in.) =	11.654	acre-feet	2.52 inches
500-yr Runoff Volume (P1 = 3.14 in.) =	16.389	acre-feet	inches
Approximate 2-yr Detention Volume =	3.170	acre-feet	
Approximate 5-yr Detention Volume =	4.186	acre-feet	
Approximate 10-yr Detention Volume =	5.135	acre-feet	
Approximate 25-yr Detention Volume =	6.328	acre-feet	
Approximate 50-yr Detention Volume =	7.109	acre-feet	
Approximate 100-yr Detention Volume =	8.128	acre-feet	

Define Zones and Basin Geometry

Zone 1 Volume (WQCV) =	1.591	acre-feet
Zone 2 Volume (EURV - Zone 1) =	3.364	acre-feet
Zone 3 Volume (100-year - Zones 1 & 2) =	3.173	acre-feet
Total Detention Basin Volume =	8.128	acre-feet
Initial Surcharge Volume (ISV) =	208	ft^3
Initial Surcharge Depth (ISD) =	0.50	ft
Total Available Detention Depth (H_{total}) =	6.00	ft
Depth of Trickle Channel (H_{TC}) =	0.50	ft
Slope of Trickle Channel (S_{TC}) =	0.004	ft/ft
Slopes of Main Basin Sides (S_{main}) =	4	H:V
Basin Length-to-Width Ratio ($R_{L/W}$) =	2.5	

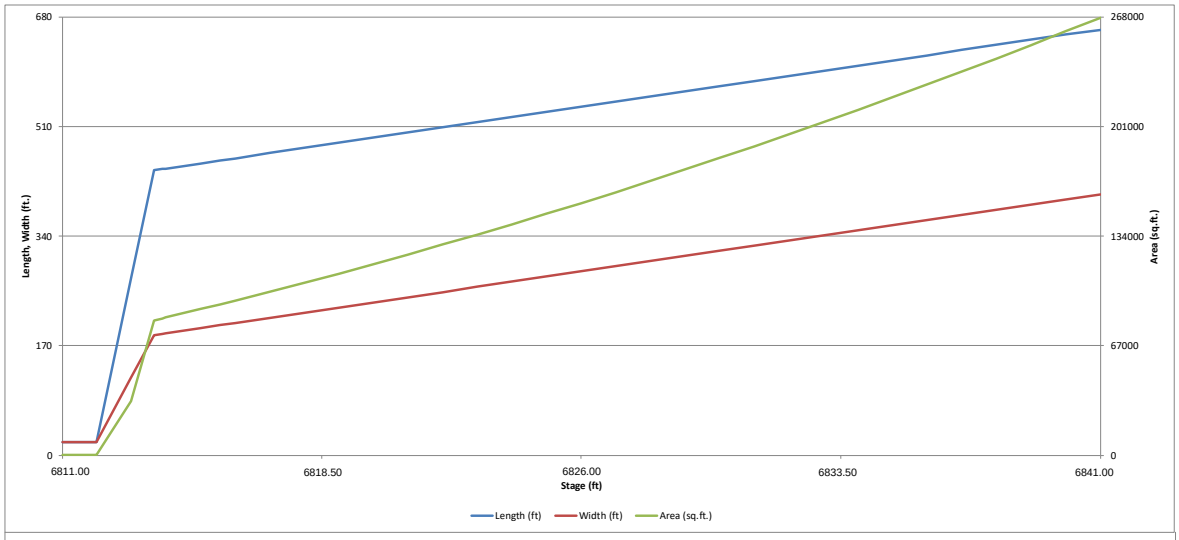
Initial Surcharge Area (A_{ISV}) =	416	ft^2
Surcharge Volume Length (L_{ISV}) =	20.4	ft
Surcharge Volume Width (W_{ISV}) =	20.4	ft
Depth of Basin Floor (H_{FLOOR}) =	1.66	ft
Length of Basin Floor (L_{FLOOR}) =	442.0	ft
Width of Basin Floor (W_{FLOOR}) =	186.4	ft
Area of Basin Floor (A_{FLOOR}) =	82,391	ft^2
Volume of Basin Floor (V_{FLOOR}) =	49,058	ft^3
Depth of Main Basin (H_{MAIN}) =	3.34	ft
Length of Main Basin (L_{MAIN}) =	468.8	ft
Width of Main Basin (W_{MAIN}) =	213.1	ft
Area of Main Basin (A_{MAIN}) =	99,896	ft^2
Volume of Main Basin (V_{MAIN}) =	303,949	ft^3
Calculated Total Basin Volume (V_{total}) =	**8.113**	acre-feet

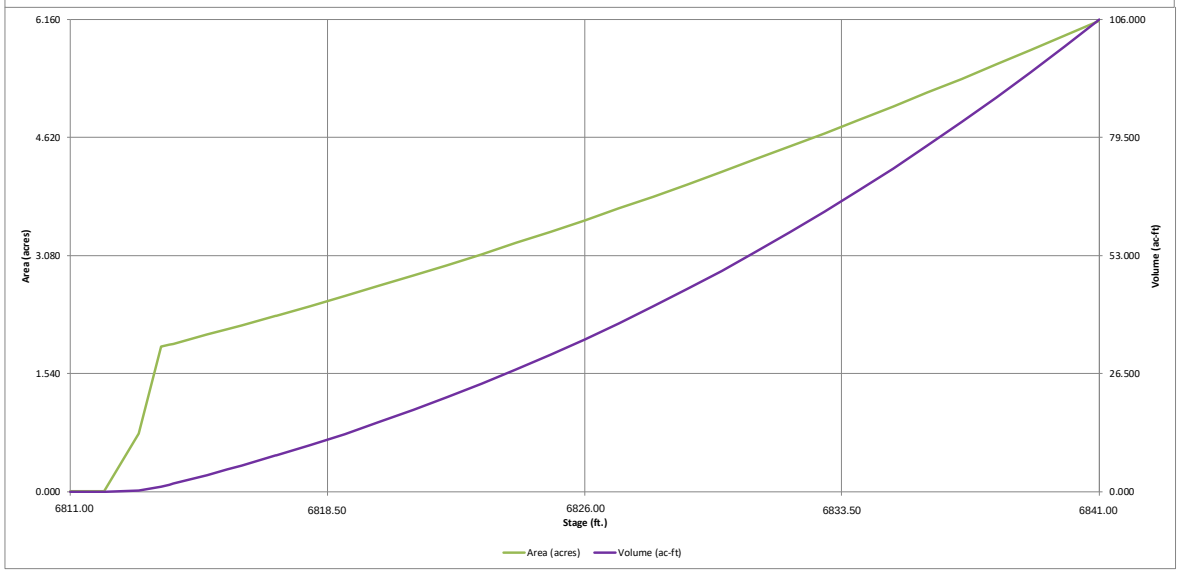
Total Basin Volume with 1' of Freeboard = 10.479 acre-feet

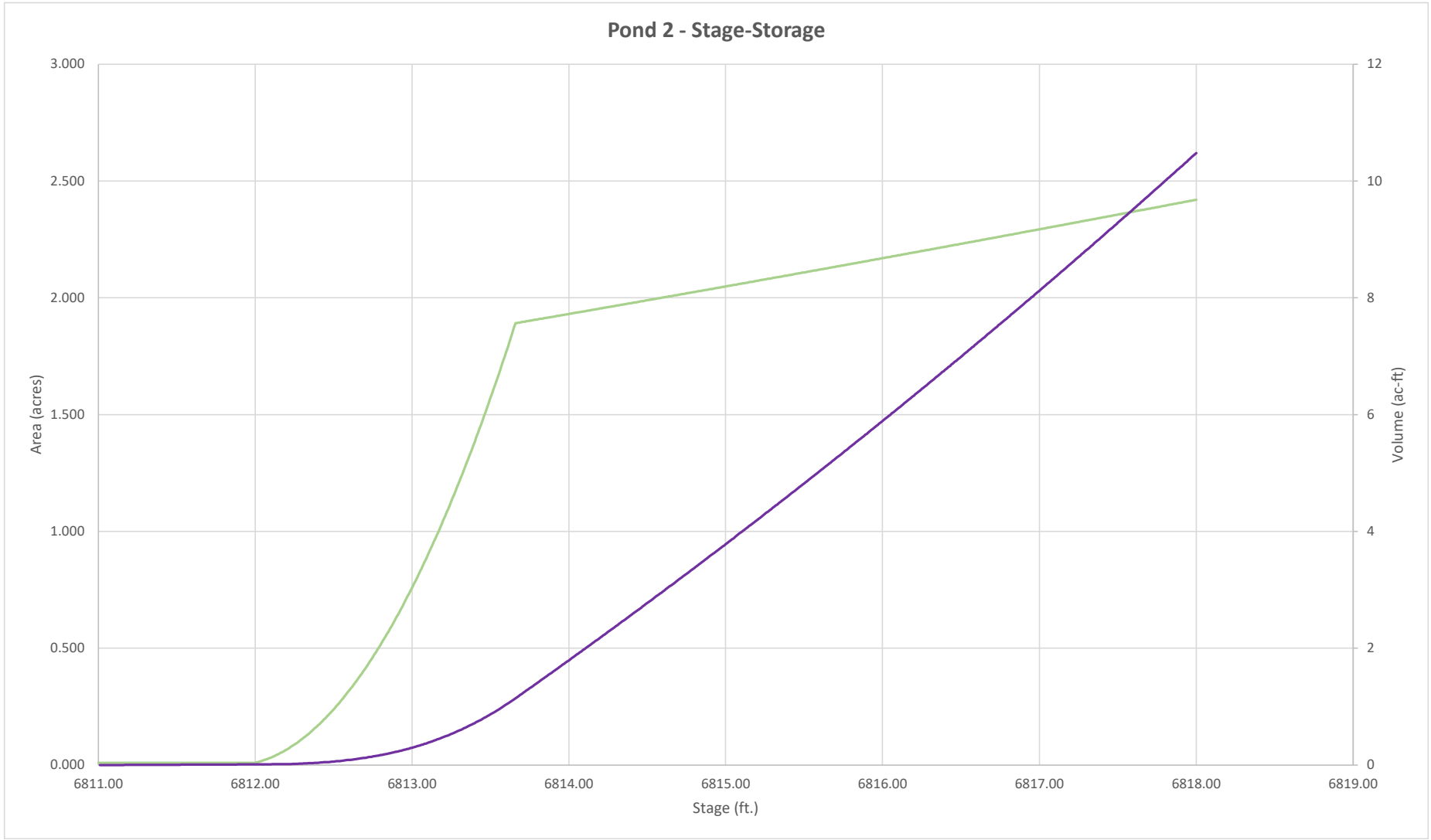
August 2010 Final Drainage Report Pond 1 Designed for a total of 9.43 ac-ft

Depth Increment = 1.00 ft

Stage - Storage Description	Stage (ft)	Optional Override Stage (ft)	Length (ft)	Width (ft)	Area (ft^2)	Optional Override Area (ft^2)	Area (acre)	Volume (ft^3)	Volume (ac-ft)
Top of Micropool	0.00	**6811.00**	20.4	20.4	416		0.010		
ISV	0.50	**6811.50**	20.4	20.4	416		0.010	208	0.005
	1.00	**6812.00**	20.4	20.4	416		0.010	416	0.010
	2.00	**6813.00**	274.4	120.4	33,034		0.758	12,907	0.296
Floor	2.66	**6813.66**	442.0	186.4	82,391		1.891	49,781	1.143
Zone 1 (WQCV)	2.90	**6813.90**	444.0	188.3	83,601		1.919	69,699	1.600
	3.00	**6814.00**	444.8	189.1	84,107		1.931	78,085	1.793
	4.00	**6815.00**	452.8	197.1	89,242		2.049	164,749	3.782
Zone 2 (EURV)	4.57	**6815.57**	457.3	201.7	92,226		2.117	216,465	4.969
	5.00	**6816.00**	460.8	205.1	94,505		2.170	256,612	5.891
	6.00	**6817.00**	468.8	213.1	99,896		2.293	353,801	8.122
Zone 3 (100-year)	6.01	**6817.01**	468.8	213.2	99,950		2.295	354,801	8.145
1-FT FREEBOARD	7.00	**6818.50**	476.8	221.1	105,415		2.420	456,446	10.479
	8.00	**6819.50**	484.8	229.1	111,062		2.550	564,674	12.963
	9.00		492.8	237.1	116,837		2.682	678,612	15.579
	10.00		500.8	245.1	122,740		2.818	798,390	18.329
	11.00		508.8	253.1	128,770		2.956	924,134	21.215
	12.00		516.8	261.1	134,929		3.098	1,055,973	24.242
	13.00		524.8	269.1	141,216		3.242	1,194,035	27.411
	14.00		532.8	277.1	147,631		3.389	1,338,448	30.727
	15.00		540.8	285.1	154,174		3.539	1,489,340	34.191
	16.00		548.8	293.1	160,845		3.692	1,646,839	37.806
	17.00		556.8	301.1	167,644		3.849	1,811,073	41.577
	18.00		564.8	309.1	174,571		4.008	1,982,169	45.504
	19.00		572.8	317.1	181,626		4.170	2,160,257	49.593
	20.00		580.8	325.1	188,808		4.334	2,345,463	53.844
	21.00		588.8	333.1	196,119		4.502	2,537,916	58.263
	22.00		596.8	341.1	203,558		4.673	2,737,744	62.850
	23.00		604.8	349.1	211,125		4.847	2,945,075	67.610
	24.00		612.8	357.1	218,820		5.023	3,160,037	72.544
	25.00		620.8	365.1	226,643		5.203	3,382,758	77.657
	26.00		628.8	373.1	234,594		5.386	3,613,366	82.951
	27.00		636.8	381.1	242,673		5.571	3,851,988	88.429
	28.00		644.8	389.1	250,880		5.759	4,098,754	94.094
	29.00		652.8	397.1	259,215		5.951	4,353,790	99.949
	30.00		660.8	405.1	267,677		6.145	4,617,225	105.997


680
510
340
170
0
Length, Width (ft.)
268000
201000
134000
67000
0
Area (sq.ft.)
6811.00
6818.50
6826.00
6833.50
6841.00
Stage (ft)
Length (ft)
Width (ft)
Area (sq.ft.)


6.160
4.620
3.080
1.540
0.000
Area (acres)
106.000
79.500
53.000
26.500
0.000
Volume (ac-ft)
6811.00
6818.50
6826.00
6833.50
6841.00
Stage (ft.)
Area (acres)
Volume (ac-ft)


Pond 2 - Stage-Storage
3.000
2.500
2.000
1.500
1.000
0.500
0.000
Area (acres)
12
10
8
6
4
2
0
Volume (ac-ft)
6811.00
6812.00
6813.00
6814.00
6815.00
6816.00
6817.00
6818.00
6819.00
Stage (ft.)

APPENDIX F

DRAINAGE MAPS

Basin boundaries?

Show limits of Basin OS-2, if entirety of basin contributes to project site

Missing Basins OS-2.5

Remove label - Basin not in spreadsheet or narrative

Area does not match spreadsheet & narrative

Update label and area to match spreadsheet & narrative

Delete - Proposed items should not be shown on this map.

Delete - Proposed items should not be shown on this map.

Existing map should not have any proposed items shown.

Hard to tell where boundary/property line is. Please make more distinguishable.

label all adjacent property owners

Missing Design Points - Please add to plan

Show FEMA floodplain

Indicate/show where offsite flows enter the site & where flows exit the site

Show offsite topography

Include and label all existing storm facilities (channels, culverts, sotrm sewers, etc)

Need to show basin boundary between Falcon & Sand Creek Basins

Should match plan view

FALCON HIGHLANDS FILING NO. 1

FALCON HIGHLANDS FILING NO. 2

FALCON HIGHLANDS FILING NO. 3

OS-1.2 | 6.38 | 10.7 | 21.7

OS-2.4 | 3.12 | 7.8 | 13.6

OS-3.4 | 1.14 | 3.4 | 6.0

OS-2.3 | 6.3 | 8.4 | 17.2

OS-2.1 | 26.5 | 38.1 | 72.2

OS-2.2 | 29.8 | 37.5 | 81.2

OS-3.1 | 1.6 | 4.2 | 5

OS-3.2 | 29.8 | 29.2 | 58.5

OS-3.3 | 4.1 | 5.7 | 16.1

OS-4 | 6.5 | 5.2 | 17.5

D | 7.9 | 2.6 | 17.2

OS-5 | 13.4 | 17.8 | 54.6

OS-1.1 | 9.4 | 14.8 | 32.3

C | 55.8 | 56.1 | 73.7

G | 12.6 | 6.8 | 16.0

B | 39.2 | 36.6 | 13.4

A | 3.7 | 4.0 | 12.5

E | 2.2 | 1.8 | 4.2

F | 6.3 | 5.3 | 12.5

QUINCY MARR DR

LANDSCAPED PARK

SEELY

BRADBURY WAY

ANTELOPE MEADOWS CIR

HONEYCOMB DR

MITCHELLVILLE WAY

BONNEBELLE CIR

TRACT A

MIDDLEGATE CT

HIDDEN RIDGE CIR

SPURLOCK PL

HIDDEN HASAHA LEE TRAIL

HIDDEN HAVEN WAY

BRIDAL VAIL WAY

CASCADING SPRING CIR

TRACT G

ANTELOPE MEADOW CIR

NULATO CIR

SPOTSWOOD TERRACE

BIRCH HOLLOW WAY

WAGON TRACK WAY

ANTELOPE MEADOW CIR

FOXMEADOW CIR

TRACT R

TRACT X

TRACT T

EXISTING REGIONAL POND WU

TRACT JA

TRACT Z

TRACT JB

TRACT J

TRACT K

FILING NO. 3 BOUNDARY

FLOW ARROWS (TYP)

PROPOSED DETENTION POND 1
VOLUME PROVIDED = 13.80 AC
YR. HIGH WATER LINE = 6814.60
YR. HIGH WATER LINE = 6816.10
TOP OF POND = 6818.00
5 YR. ALLOWABLE = 32.2 CFS
100 YR. ALLOWABLE = 73.2 CFS
5 YR. RELEASE = 28.9 CFS
100 YR. RELEASE = 73.3 CFS

PROPOSED DETENTION POND 2
VOLUME PROVIDED = 9.43 AC
5 YR. HIGH WATER LINE = 6814.25
100 YR. HIGH WATER LINE = 6815.56
TOP OF POND = 6818.50
5 YR. ALLOWABLE = 52.0 CFS
100 YR. ALLOWABLE = 117.6 CFS
5 YR. RELEASE = 44.6 CFS
100 YR. RELEASE = 101.2 CFS

LEGEND

- PROPERTY BOUNDARY
- EXISTING RIGHT-OF-WAY
- PROPOSED LOT LINE
- EXISTING LOT LINE
- EXISTING SECTION LINE
- PROPOSED EASEMENT
- EXISTING EASEMENT
- PROPOSED CONTOURS
- EXISTING CONTOURS
- BASIN ID (BASIN / AREA / 5YR / 100YR)
- DESIGN POINT ID (X)
- MAJOR BASIN BOUNDARY
- MINOR BASIN BOUNDARY

(IN FEET)
1 inch = 200 ft.

EXISTING CONDITIONS DRAINAGE BASIN SUMMARY

Basin	Design Point	Area (acres)	C5	C100	Q5 (cfs)	Q100 (cfs)
A	OFF-SITE	3.70	0.09	0.36	1.13	7.62
B	POND 1	~~30.20~~	0.11	0.44	4.51	30.29
C	POND 2	55.82	0.09	0.36	15.79	106.00
D	POND WU	7.87	0.09	0.36	2.56	17.17
E	POND 1	2.20	0.09	0.36	1.80	4.20
F	POND 2	6.34	0.09	0.36	5.30	12.50
G	POND WU	12.61	0.09	0.36	6.80	16.00
OS-1.1	OFF-SITE	9.41	0.12	0.38	14.82	32.31
OS-1.2	OFF-SITE	6.38	0.30	0.50	10.70	21.70
OS-2.1	POND 1	26.52	0.39	0.57	36.10	72.20
OS-2.2	POND 1	29.84	0.39	0.57	37.50	74.20
OS-2.3	POND 1	6.30	0.45	0.61	8.40	17.20
OS-2.4	POND 1	3.12	0.30	0.50	7.80	13.60
OS-3.1	POND 2	1.60	0.22	0.46	1.42	5.00
OS-3.2	POND 2	29.88	0.29	0.51	29.20	58.50
OS-3.3	POND 2	4.16	0.43	0.61	6.70	16.14
OS-3.4	POND 2	1.14	0.90	0.96	3.40	6.00
OS-4	POND WU	6.47	0.24	0.48	5.28	17.51
OS-5	POND WU	13.97	0.09	0.36	4.73	31.73

Know what's below. Call before you dig.

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(719) 598-5192
JIM BYERS

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FALCON HIGHLANDS FILING NO. 3
EL PASO COUNTY, COLORADO

DRAINAGE MAP
EXISTING CONDITIONS

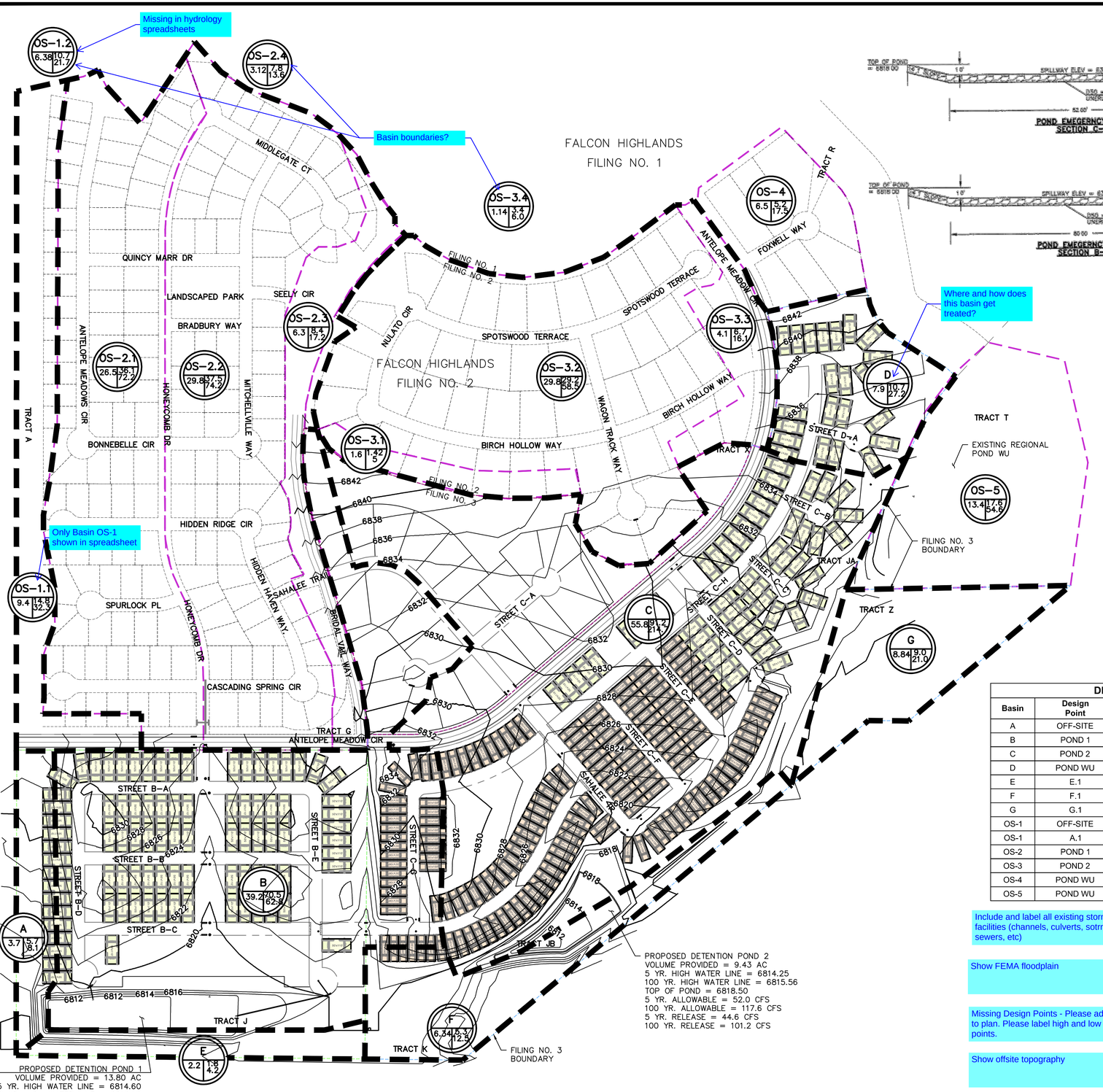
DATE --

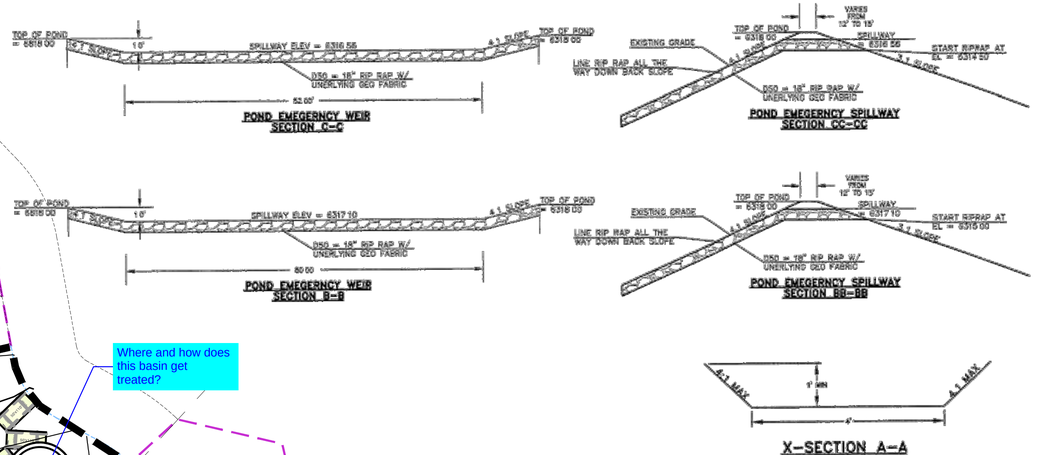
A	1st SUBMITTAL TO JURISDICTION 00/00/20XX - JDE

REVISIONS

DR. AMC | CH. RDL
P.M. RDL
JOB 21000656
SHEET NO. 1
EX-01

CAD FILE: 21000656-EC_DRAINAGE MAP_REPORT EXHIBIT.DWG





DRAINAGE BASIN SUMMARY

Basin	Design Point	Area (acres)	C5	C100	Q5 (cfs)	Q100 (cfs)
A	OFF-SITE	3.70	0.13	0.38	5.70	8.13
B	POND 1	39.23	0.42	0.59	70.45	162.84
C	POND 2	55.82	0.34	0.60	91.15	214.68
D	POND WU	7.87	0.35	0.54	10.66	27.24
E	E.1	2.20	0.32	0.59	1.80	4.20
F	F.1	6.34	0.32	0.59	5.30	12.50
G	G.1	12.61	0.32	0.59	6.80	16.00
OS-1	OFF-SITE	11.11	0.32	0.58	14.80	32.37
OS-1	A.1	11.11	0.32	0.58	14.80	32.37
OS-2	POND 1	72.16	0.40	0.58	100.50	198.90
OS-3	POND 2	37.32	0.32	0.53	41.20	87.33
OS-4	POND WU	6.47	0.24	0.48	5.28	17.51
OS-5	POND WU	13.44	0.32	0.59	17.64	54.60

Include and label all existing storm facilities (channels, culverts, sotrm sewers, etc)

Need to show basin boundary between Falcon & Sand Creek Basins

Show FEMA floodplain

Missing Design Points - Please add to plan. Please label high and low points.

Show offsite topography

Indicate/show where offsite flows enter the site & where flows exit the site

Need to show basin boundary between Falcon & Sand Creek Basins

(IN FEET)
1 inch = 200 ft.

Know what's below. Call before you dig.

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CLIENT

CHALLENGER HOMES
FALCON HIGHLANDS FILING NO. 3
EL PASO COUNTY, COLORADO
DRAINAGE MAP
DEVELOPED CONDITIONS

DATE --

A	1ST SUBMITTAL TO JURISDICTION 00/00/20XX - JOE

REVISIONS

DR. AMC | CH. RDL
P.M. RDL
JOB 21000656
SHEET NO. 1
EX-02

CAD FILE: 21000656-DRAINAGE MAP_REPORT EXHIBIT.DWG

This sheet and the following 2 have not been reviewed at this time, as sub-basins are not warranted at this stage.

CASCADING SPRING CIR

ANTELOPE MEADOW CIR

FALCON HIGHLAND FILING NO. 2

TRACT G

FALCON HIGHLAND FILING NO. 3

PROPOSED 20' SUMP INLET

STREET B–A

STREET B–B

STREET B–C

STREET B–D

STREET B–E

STREET C–G

TRACT J

TRACT K

FILING NO. 3 BOUNDARY

OS–1.1 | 9.4 | 14.8 | 32.3

OS–2.1 | 26.5 | 36.1 | 72.2

OS–2.2 | 29.8 | 37.5 | 74.2

B1.1 | 2.41 | 6.4 | 7.8

B2.1 | 1.48 | 3.9 | 7.6

B2.2 | 1.35 | 3.6 | 7.6

B2.3 | 2.13 | 5.8 | 12.1

B3.1 | 3.32 | 6.0 | 16.0

B3.2 | 2.14 | 5.8 | 19.3

B4.1 | 3.01 | 5.5 | 22.1

B4.2 | 0.83 | 2.7 | 18.7

B5.1 | 3.24 | 5.9 | 12.4

B6.1 | 1.43 | 2.6 | 5.5

B6.2 | 0.57 | 1.7 | 3.6

B7.1 | 1.81 | 4.6 | 9.8

B7.2 | 1.41 | 3.9 | 9.0

B8 | 8.00 | 6.1 | 19.0

E | 2.2 | 1.8 | 4.2

F | 6.34 | 5.3 | 12.5

(IN FEET)
1 inch = 60 ft.

LEGEND

- PROPERTY BOUNDARY
- EXISTING RIGHT–OF–WAY
- PROPOSED LOT LINE
- EXISTING LOT LINE
- EXISTING SECTION LINE
- PROPOSED EASEMENT
- EXISTING EASEMENT
- PROPOSED CONTOURS
- EXISTING CONTOURS
- BASIN ID (AREA / STR. / DDYR)
- DESIGN POINT ID
- MAJOR BASIN BOUNDARY
- MINOR BASIN BOUNDARY

DRAINAGE BASIN SUMMARY

Basin	Design Point	Area (acres)	C5	C100	Q5 (cfs)	Q100 (cfs)
B1.1	B.1	2.41	0.56	0.68	6.39	13.04
B2.1	B.2	1.48	0.51	0.64	3.93	8.25
B2.2	B.3	1.35	0.52	0.64	3.61	7.56
B2.3	B.4	2.13	0.53	0.65	5.81	12.10
B3.1	B.5	3.32	0.51	0.64	6.02	12.68
B3.2	B.6	2.14	0.52	0.65	5.79	12.08
B4.1	B.7	3.01	0.50	0.63	5.51	11.65
B4.2	B.8	0.83	0.64	0.75	2.74	5.37
B5.1	B.9	3.24	0.53	0.65	5.89	12.25
B6.1	B.10	1.43	0.49	0.63	2.59	5.51
B6.2	B.11	0.57	0.58	0.69	1.70	3.43
B7.1	B.12	1.81	0.51	0.64	4.64	9.76
B7.2	B.13	1.41	0.53	0.66	3.86	8.02
B8	B.14	6.10	0.27	0.49	6.10	19.03
E	E.1	2.20	0.32	0.59	1.80	4.20

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FALCON HIGHLANDS FILING NO. 3
EL PASO COUNTY, COLORADO

DRAINAGE MAP
DEVELOPED CONDITIONS
BASIN B

DATE --

	REVISIONS
1	1st SUBMITTAL TO JURISDICTION 00/00/202X – JDE

DR. AMC | CH. RDL
P.M. RDL
JOB 21000656
SHEET NO. 1
EX–03

CAD FILE: 21000656–DRAINAGE MAP_REPORT EXHIBIT–BASINB.DWG

DRAINAGE BASIN SUMMARY						
Basin	Design Point	Area (acres)	C5	C100	Q5 (cfs)	Q100 (cfs)
C1.1	C.1	1.64	0.53	0.66	3.01	6.25
C1.2	C.1	1.25	0.30	0.52	1.37	3.92
C2.1	C.2	1.68	0.42	0.59	2.60	6.10
C2.2	C.2	1.34	0.59	0.70	4.06	8.18
C3.1	C.3	4.04	0.33	0.52	4.33	11.56
C3.2	C.3	1.58	0.59	0.70	4.43	8.89
C4.1	C.4	1.63	0.57	0.69	4.68	9.53
C5.1	C.5	1.42	0.57	0.69	4.16	8.51
C6.1	C.6	2.74	0.53	0.66	5.77	12.10
C7.1	C.7	0.82	0.47	0.62	1.48	3.31
C7.2	C.7	2.42	0.56	0.68	6.96	14.29
C8.1	C.8	2.09	0.46	0.61	3.48	7.73
C9.1	C.9	3.30	0.53	0.66	7.06	14.94
C10.1	C.10	1.85	0.55	0.68	5.27	10.85
C11.1	C.11	7.80	0.24	0.47	6.13	20.43
C11.2	C.11	4.00	0.25	0.48	3.53	11.47
C13.1	C.13, C.14	0.57	1.59	1.47	1.33	7.29
C14.1	C.15, C.16	2.82	0.44	0.62	4.65	10.69
C15	POND 2	11.15	0.34	0.59	15.10	33.23
G	G.1	12.61	0.32	0.59	6.80	16.00
OS-3.1	C.11	2.14	0.22	0.46	1.91	6.69
OS-3.2	EX DP10	29.88	0.29	0.51	29.20	58.50
OS-5	POND WU	13.44	0.32	0.59	17.64	54.60

LEGEND

- PROPERTY BOUNDARY
- EXISTING RIGHT-OF-WAY
- PROPOSED LOT LINE
- EXISTING LOT LINE
- EXISTING SECTION LINE
- PROPOSED EASEMENT
- EXISTING EASEMENT
- PROPOSED CONTOURS
- EXISTING CONTOURS
- BASIN ID (AREA / 5YR / 100YR)
- DESIGN POINT ID
- MAJOR BASIN BOUNDARY
- MINOR BASIN BOUNDARY

PROPOSED DETENTION POND 2
VOLUME PROVIDED = 9.43 AC
5 YR. HIGH WATER LINE = 6814.25
100 YR. HIGH WATER LINE = 6815.56
TOP OF POND = 6818.50
5 YR. ALLOWABLE = 52.0 CFS
100 YR. ALLOWABLE = 117.6 CFS
5 YR. RELEASE = 44.6 CFS
100 YR. RELEASE = 101.2 CFS

(IN FEET)
1 inch = 100 ft.

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EL PASO COUNTY, COLORADO
DRAINAGE MAP
DEVELOPED CONDITIONS
BASIN C

DATE --

A	1st SUBMITTAL TO JURISDICTION 00/00/20XX – JDE

REVISIONS

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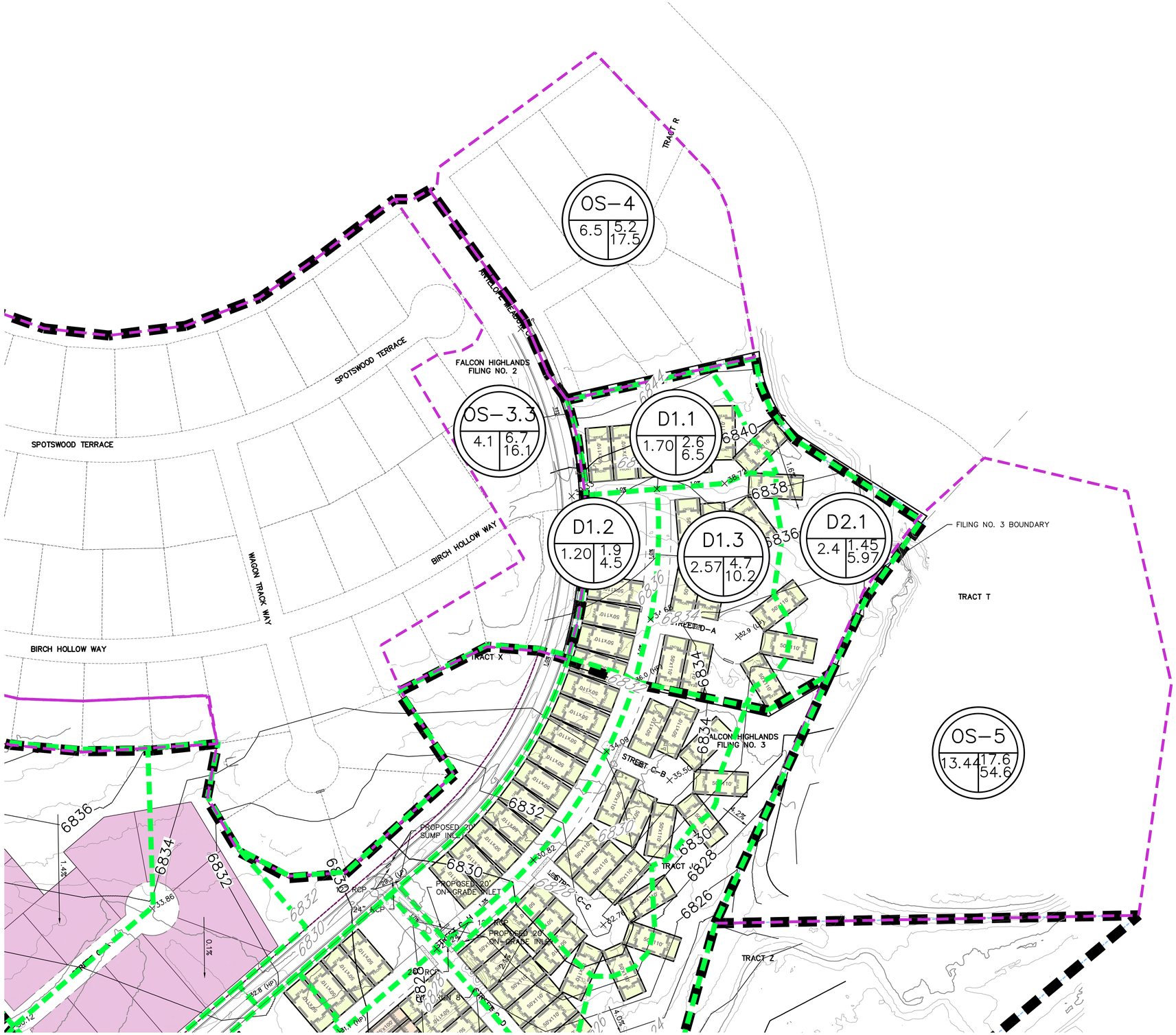
P.M. RDL
JOB 21000656
SHEET NO. 1
EX-04

CAD FILE: 21000656-DRAINAGE MAP_REPORT EXHIBIT-BASINC0.DWG

DRAINAGE BASIN SUMMARY						
Basin	Design Point	Area (acres)	C5	C100	Q5 (cfs)	Q100 (cfs)
D1.1	D.1	1.70	0.37	0.55	2.62	6.53
D1.2	D.3	1.20	0.42	0.59	1.92	4.54
D1.3	D.4	2.57	0.49	0.64	4.68	10.20
D2.1	POND WU	2.4	0.16	0.41	1.45	5.97
OS-3.3	C.15	4.16	0.43	0.61	6.70	16.14
OS-4	D.1	6.47	0.24	0.48	5.28	17.51
OS-5	POND WU	13.44	0.32	0.59	17.64	54.60



LEGEND

- PROPERTY BOUNDARY
- EXISTING RIGHT-OF-WAY
- PROPOSED LOT LINE
- EXISTING LOT LINE
- EXISTING SECTION LINE
- PROPOSED EASEMENT
- EXISTING EASEMENT
- PROPOSED CONTOURS
- EXISTING CONTOURS
- BASIN ID (BASIN AREA 5YR 100YR)
- DESIGN POINT ID (X)
- MAJOR BASIN BOUNDARY
- MINOR BASIN BOUNDARY

(IN FEET)
1 inch = 50 ft.

811 Know what's below. Call before you dig.

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JIM BYERS

PROJECT
FALCON HIGHLANDS FILING NO. 3
EL PASO COUNTY, COLORADO
DRAINAGE MAP
DEVELOPED CONDITIONS
BASIN D

DATE --

REVISIONS
A 1st SUBMITTAL TO JURISDICTION 00/00/20XX – JOE

DR. AMC | CH. RDL
P.M. RDL
JOB 21000656
SHEET NO. 1
EX-05

CAD FILE: 21000656-DRAINAGE MAP_REPORT EXHIBIT-BASIN D.DWG

Master Development Drainage Plan (MDDP)_V1 comment.pdf Markup Summary 12-14-2021

CDurham (87)

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Author: CDurham
Date: 12/9/2021 8:31:49 AM
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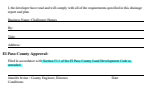
SKP-21-004



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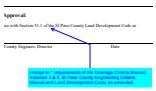
Section 51.1 of the El Paso County Land Development Code as amended.



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change to " requirements of the Drainage Criteria Manual, Volumes 1 & 2, El Paso County Engineering Criteria Manual and Land Development Code, as amended.

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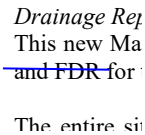
Address how this sketch plan is proposing an increased density & lot count from previously approved report.



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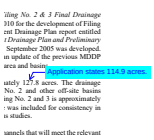

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Author: CDurham
Date: 12/9/2021 2:20:30 PM
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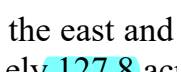
Application states 114.9 acres.



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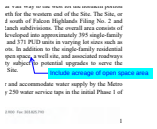
127.8



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Author: CDurham
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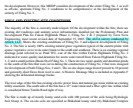
Include acreage of open space area



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Page Label: 5
Author: CDurham
Date: 12/9/2021 2:24:26 PM
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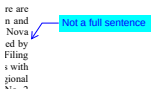
The ALTA survey conducted by Atwell, LLC



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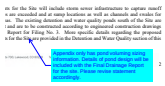
Not a full sentence



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Page Label: 5
Author: CDurham
Date: 12/9/2021 2:29:39 PM
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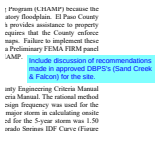
Appendix only has pond voluming sizing information. Details of pond design will be included with the Final Drainage Report for the site. Please revise statement accordingly.



Subject: Text Box
Page Label: 6
Author: CDurham
Date: 12/9/2021 2:35:28 PM
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Include discussion of recommendations made in approved DBPS's (Sand Creek & Falcon) for the site.

Subject: Text Box
Page Label: 6
Author: CDurham
Date: 12/9/2021 2:38:08 PM
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Include copies of the drainage calculations and maps referenced from these reports in the appendix.

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Date: 12/9/2021 3:02:24 PM
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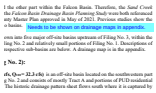
Previous studies show the delineation between the two basins.



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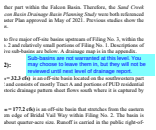
Needs to be shown on drainage maps in appendix.



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Author: CDurham
Date: 12/9/2021 3:04:21 PM
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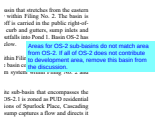
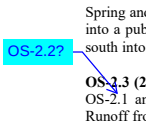
Space:

Sub-basins are not warranted at this level. You may choose to leave them in, but they will not be reviewed until next level of drainage report.



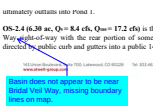
Subject: Text Box
Page Label: 7
Author: CDurham
Date: 12/9/2021 3:19:58 PM
Status:
Color:
Layer:
Space:

Areas for OS-2 sub-basins do not match area from OS-2. If all of OS-2 does not contribute to development area, remove this basin from the discussion.



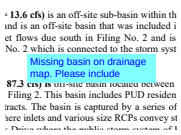
Subject: Callout
Page Label: 7
Author: CDurham
Date: 12/13/2021 8:39:18 AM
Status:
Color:
Layer:
Space:

OS-2.2?



Subject: Callout
Page Label: 7
Author: CDurham
Date: 12/13/2021 8:41:09 AM
Status:
Color:
Layer:
Space:

Basin does not appear to be near Bridal Veil Way, missing boundary lines on map.

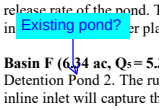


Subject: Text Box
Page Label: 8
Author: CDurham
Date: 12/13/2021 8:42:00 AM
Status:
Color:
Layer:
Space:

Missing basin on drainage map. Please include

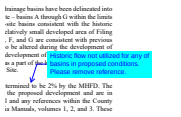
Subject: Callout
Page Label: 9
Author: CDurham
Date: 12/13/2021 8:45:46 AM
Status:
Color:
Layer:
Space:

Is pond existing? If not, then remove from discussion.



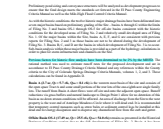
Subject: Callout
Page Label: 10
Author: CDurham
Date: 12/13/2021 8:46:29 AM
Status:
Color:
Layer:
Space:

Existing pond?



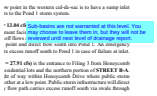
Subject: Callout
Page Label: 11
Author: CDurham
Date: 12/13/2021 8:51:36 AM
Status:
Color:
Layer:
Space:

Historic flow not utilized for any of basins in proposed conditions. Please remove reference.



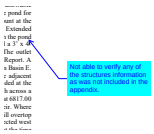
Subject: Highlight
Page Label: 11
Author: CDurham
Date: 12/13/2021 8:51:45 AM
Status:
Color:
Layer:
Space:

Pervious factors for historic flow analysis have been determined to be 2% by the MHFD



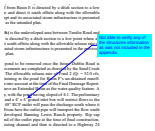
Subject: Text Box
Page Label: 12
Author: CDurham
Date: 12/13/2021 8:55:03 AM
Status:
Color:
Layer:
Space:

Sub-basins are not warranted at this level. You may choose to leave them in, but they will not be reviewed until next level of drainage report.



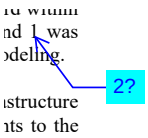
Subject: Callout
Page Label: 13
Author: CDurham
Date: 12/13/2021 8:59:04 AM
Status:
Color:
Layer:
Space:

Not able to verify any of the structures information as was not included in the appendix.



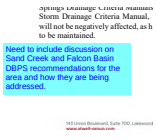
Subject: Callout
Page Label: 17
Author: CDurham
Date: 12/13/2021 9:04:05 AM
Status:
Color:
Layer:
Space:

Not able to verify any of the structures information as was not included in the appendix.



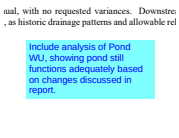
Subject: Callout
Page Label: 19
Author: CDurham
Date: 12/13/2021 9:12:55 AM
Status:
Color:
Layer:
Space:

2?



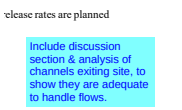
Subject: Text Box
Page Label: 20
Author: CDurham
Date: 12/13/2021 9:15:45 AM
Status:
Color:
Layer:
Space:

Need to include discussion on Sand Creek and Falcon Basin DBPS recommendations for the area and how they are being addressed.



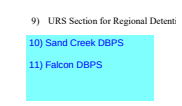
Subject: Text Box
Page Label: 20
Author: CDurham
Date: 12/13/2021 9:16:21 AM
Status:
Color:
Layer:
Space:

Include analysis of Pond WU, showing pond still functions adequately based on changes discussed in report.



Subject: Text Box
Page Label: 20
Author: CDurham
Date: 12/13/2021 9:44:45 AM
Status:
Color:
Layer:
Space:

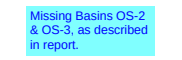
Include discussion section & analysis of channels exiting site, to show they are adequate to handle flows.



Subject: Text Box
Page Label: 21
Author: CDurham
Date: 12/13/2021 9:19:10 AM
Status:
Color:
Layer:
Space:

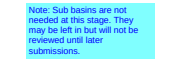
10) Sand Creek DBPS

11) Falcon DBPS



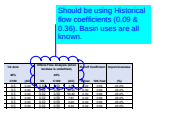
Subject: Text Box
Page Label: 55
Author: CDurham
Date: 12/13/2021 9:20:36 AM
Status:
Color:
Layer:
Space:

Missing Basins OS-2 & OS-3, as described in report.



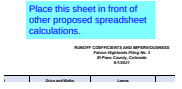
Subject: Text Box
Page Label: 55
Author: CDurham
Date: 12/13/2021 9:21:27 AM
Status:
Color:
Layer:
Space:

Note: Sub basins are not needed at this stage. They may be left in but will not be reviewed until later submissions.



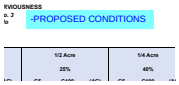
Subject: Cloud+
Page Label: 55
Author: CDurham
Date: 12/13/2021 9:22:51 AM
Status:
Color:
Layer:
Space:

Should be using Historical flow coefficients (0.09 & 0.36). Basin uses are all known.



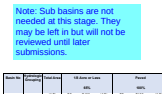
Subject: Text Box
Page Label: 56
Author: CDurham
Date: 12/13/2021 9:26:27 AM
Status:
Color:
Layer:
Space:

Place this sheet in front of other proposed spreadsheet calculations.



Subject: Text Box
Page Label: 56
Author: CDurham
Date: 12/13/2021 9:24:34 AM
Status:
Color:
Layer:
Space:

-PROPOSED CONDITIONS



Subject: Text Box
Page Label: 56
Author: CDurham
Date: 12/13/2021 9:26:09 AM
Status:
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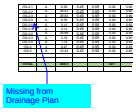
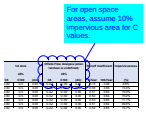
Space:

Note: Sub basins are not needed at this stage. They may be left in but will not be reviewed until later submissions.



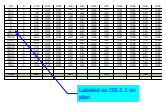
Subject: Callout
Page Label: 56
Author: CDurham
Date: 12/13/2021 9:27:34 AM
Status:
Color:
Layer:
Space:

Missing from Drainage Plan



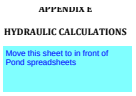
Subject: Cloud+
Page Label: 56
Author: CDurham
Date: 12/13/2021 9:27:18 AM
Status:
Color:
Layer:
Space:

For open space areas, assume 10% impervious area for C values.



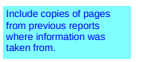
Subject: Callout
Page Label: 56
Author: CDurham
Date: 12/13/2021 9:27:54 AM
Status:
Color:
Layer:
Space:

Labeled as OS-1.1 on plan.



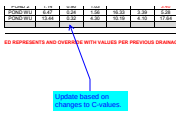
Subject: Text Box
Page Label: 57
Author: CDurham
Date: 12/13/2021 9:28:25 AM
Status:
Color:
Layer:
Space:

Move this sheet to in front of Pond spreadsheets



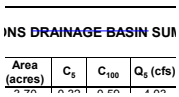
Subject: Text Box
Page Label: 58
Author: CDurham
Date: 12/13/2021 9:29:02 AM
Status:
Color:
Layer:
Space:

Include copies of pages from previous reports where information was taken from.

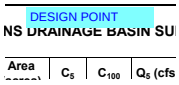


Subject: Callout
Page Label: 59
Author: CDurham
Date: 12/13/2021 9:29:31 AM
Status:
Color:
Layer:
Space:

Update based on changes to C-values.

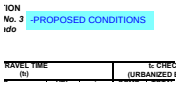


Subject: Line
Page Label: 62
Author: CDurham
Date: 12/13/2021 9:30:09 AM
Status:
Color:
Layer:
Space:



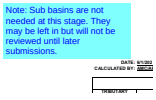
Subject: Text Box
Page Label: 62
Author: CDurham
Date: 12/13/2021 9:30:17 AM
Status:
Color:
Layer:
Space:

DESIGN POINT



Subject: Text Box
Page Label: 63
Author: CDurham
Date: 12/13/2021 9:24:56 AM
Status:
Color:
Layer:
Space:

-PROPOSED CONDITIONS

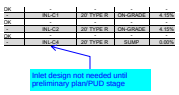


Subject: Text Box
Page Label: 63
Author: CDurham
Date: 12/13/2021 9:30:30 AM
Status:
Color:
Layer:
Space:

Note: Sub basins are not needed at this stage. They may be left in but will not be reviewed until later submissions.

Subject: Text Box
Page Label: 64
Author: CDurham
Date: 12/13/2021 9:25:03 AM
Status:
Color:
Layer:
Space:

-PROPOSED CONDITIONS



Subject: Callout
Page Label: 64
Author: CDurham
Date: 12/13/2021 9:31:33 AM
Status:
Color:
Layer:
Space:

Inlet design not needed until preliminary plan/PUD stage

Subject: Text Box
Page Label: 65
Author: CDurham
Date: 12/13/2021 9:25:10 AM
Status:
Color:
Layer:
Space:

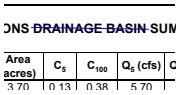
-PROPOSED CONDITIONS

Subject: Text Box
Page Label: 66
Author: CDurham
Date: 12/13/2021 9:25:15 AM
Status:
Color:
Layer:
Space:

-PROPOSED CONDITIONS

Subject: Text Box
Page Label: 67
Author: CDurham
Date: 12/13/2021 9:25:21 AM
Status:
Color:
Layer:
Space:

-PROPOSED CONDITIONS



Subject: Line
Page Label: 69
Author: CDurham
Date: 12/13/2021 9:32:04 AM
Status:
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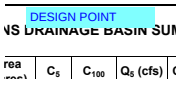
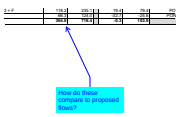
Layer:
Space:



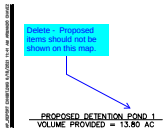
Subject: Text Box
Page Label: 69
Author: CDurham
Date: 12/13/2021 9:32:14 AM
Status:
Color:
Layer:
Space:

DESIGN POINT



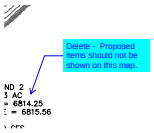
Subject: Callout
Page Label: 70
Author: CDurham
Date: 12/13/2021 9:33:02 AM
Status:
Color:
Layer:
Space:

How do these compare to proposed flows?



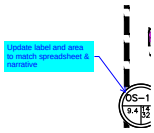
Subject: Callout
Page Label: [1] DRAINAGE MAP-EX CONDITIONS
Author: CDurham
Date: 12/13/2021 9:34:05 AM
Status:
Color:
Layer:
Space:

Delete - Proposed items should not be shown on this map.



Subject: Callout
Page Label: [1] DRAINAGE MAP-EX CONDITIONS
Author: CDurham
Date: 12/13/2021 9:34:22 AM
Status:
Color:
Layer:
Space:

Delete - Proposed items should not be shown on this map.

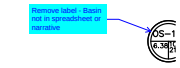


Subject: Callout
Page Label: [1] DRAINAGE MAP-EX CONDITIONS
Author: CDurham
Date: 12/13/2021 9:34:31 AM
Status:
Color:
Layer:
Space:

Update label and area to match spreadsheet & narrative

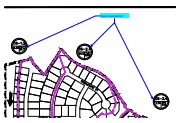
Subject: Callout
Page Label: [1] DRAINAGE MAP-EX CONDITIONS
Author: CDurham
Date: 12/13/2021 9:35:16 AM
Status:
Color:
Layer:
Space:

Area does not match spreadsheet & narrative



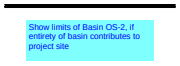
Subject: Callout
Page Label: [1] DRAINAGE MAP-EX CONDITIONS
Author: CDurham
Date: 12/13/2021 9:35:29 AM
Status:
Color:
Layer:
Space:

Remove label - Basin not in spreadsheet or narrative



Subject: Callout
Page Label: [1] DRAINAGE MAP-EX CONDITIONS
Author: CDurham
Date: 12/13/2021 9:36:08 AM
Status:
Color:
Layer:
Space:

Basin boundaries?



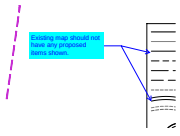
Subject: Text Box
Page Label: [1] DRAINAGE MAP-EX CONDITIONS
Author: CDurham
Date: 12/13/2021 9:36:25 AM
Status:
Color:
Layer:
Space:

Show limits of Basin OS-2, if entirety of basin contributes to project site

---

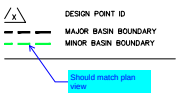
Subject: Text Box
Page Label: [1] DRAINAGE MAP-EX CONDITIONS
Author: CDurham
Date: 12/13/2021 9:36:34 AM
Status:
Color:
Layer:
Space:

Missing Basins OS-2.5



Subject: Callout
Page Label: [1] DRAINAGE MAP-EX CONDITIONS
Author: CDurham
Date: 12/13/2021 9:36:57 AM
Status:
Color:
Layer:
Space:

Existing map should not have any proposed items shown.



Subject: Callout
Page Label: [1] DRAINAGE MAP-EX CONDITIONS
Author: CDurham
Date: 12/13/2021 9:37:10 AM
Status:
Color:
Layer:
Space:

Should match plan view

Hard to tell where boundary/property line is. Please make more distinguishable.

Subject: Text Box
Page Label: [1] DRAINAGE MAP-EX CONDITIONS
Author: CDurham
Date: 12/13/2021 9:37:20 AM
Status:
Color:
Layer:
Space:

Hard to tell where boundary/property line is. Please make more distinguishable.

---

label all adjacent property owners

Subject: Text Box
Page Label: [1] DRAINAGE MAP-EX CONDITIONS
Author: CDurham
Date: 12/13/2021 9:37:34 AM
Status:
Color:
Layer:
Space:

label all adjacent property owners

Missing Design Points - Please add to plan

Subject: Text Box
Page Label: [1] DRAINAGE MAP-EX CONDITIONS
Author: CDurham
Date: 12/13/2021 9:37:43 AM
Status:
Color:
Layer:
Space:

Missing Design Points - Please add to plan

Show FEMA floodplain

Subject: Text Box
Page Label: [1] DRAINAGE MAP-EX CONDITIONS
Author: CDurham
Date: 12/13/2021 9:37:51 AM
Status:
Color:
Layer:
Space:

Show FEMA floodplain

Indicate/show where offsite flows enter the site & where flows exit the site

Subject: Text Box
Page Label: [1] DRAINAGE MAP-EX CONDITIONS
Author: CDurham
Date: 12/13/2021 9:37:59 AM
Status:
Color:
Layer:
Space:

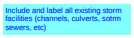
Indicate/show where offsite flows enter the site & where flows exit the site

---

Show offsite topography

Subject: Text Box
Page Label: [1] DRAINAGE MAP-EX CONDITIONS
Author: CDurham
Date: 12/13/2021 9:38:07 AM
Status:
Color:
Layer:
Space:

Show offsite topography



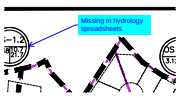
Subject: Text Box
Page Label: [1] DRAINAGE MAP-EX CONDITIONS
Author: CDurham
Date: 12/13/2021 9:38:17 AM
Status:
Color:
Layer:
Space:

Include and label all existing storm facilities (channels, culverts, sotrm sewers, etc)

Subject: Text Box
Page Label: [1] DRAINAGE MAP-EX CONDITIONS
Author: CDurham
Date: 12/13/2021 9:38:26 AM
Status:
Color:
Layer:
Space:

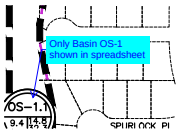
Need to show basin boundary between Falcon & Sand Creek Basins

---



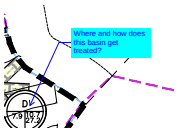
Subject: Callout
Page Label: [1] DRAINAGE MAP
Author: CDurham
Date: 12/13/2021 9:38:46 AM
Status:
Color:
Layer:
Space:

Missing in hydrology spreadsheets



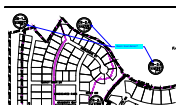
Subject: Callout
Page Label: [1] DRAINAGE MAP
Author: CDurham
Date: 12/13/2021 9:39:01 AM
Status:
Color:
Layer:
Space:

Only Basin OS-1 shown in spreadsheet



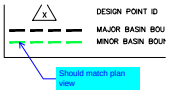
Subject: Callout
Page Label: [1] DRAINAGE MAP
Author: CDurham
Date: 12/13/2021 9:39:47 AM
Status:
Color:
Layer:
Space:

Where and how does this basin get treated?



Subject: Callout
Page Label: [1] DRAINAGE MAP
Author: CDurham
Date: 12/13/2021 9:40:33 AM
Status:
Color:
Layer:
Space:

Basin boundaries?



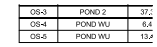
Subject: Callout
Page Label: [1] DRAINAGE MAP
Author: CDurham
Date: 12/13/2021 9:40:52 AM
Status:
Color:
Layer:
Space:

Should match plan view

Show FEMA floodplain

Subject: Text Box
Page Label: [1] DRAINAGE MAP
Author: CDurham
Date: 12/13/2021 9:41:39 AM
Status:
Color:
Layer:
Space:

Show FEMA floodplain



Subject: Text Box
Page Label: [1] DRAINAGE MAP
Author: CDurham
Date: 12/13/2021 9:41:41 AM
Status:
Color:
Layer:
Space:

Include and label all existing storm facilities (channels, culverts, sotrm sewers, etc)

Missing Design Points - Please add to plan. Please label high and low points.

Subject: Text Box
Page Label: [1] DRAINAGE MAP
Author: CDurham
Date: 12/13/2021 9:41:53 AM
Status:
Color:
Layer:
Space:

Missing Design Points - Please add to plan. Please label high and low points.

Show offsite topography

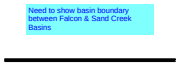
Subject: Text Box
Page Label: [1] DRAINAGE MAP
Author: CDurham
Date: 12/13/2021 9:42:06 AM
Status:
Color:
Layer:
Space:

Show offsite topography

Indicate/show where offsite flows enter the site & where flows exit the site

Subject: Text Box
Page Label: [1] DRAINAGE MAP
Author: CDurham
Date: 12/13/2021 9:42:17 AM
Status:
Color:
Layer:
Space:

Indicate/show where offsite flows enter the site & where flows exit the site



Subject: Text Box
Page Label: [1] DRAINAGE MAP
Author: CDurham
Date: 12/13/2021 9:42:25 AM
Status:
Color:
Layer:
Space:

Need to show basin boundary between Falcon & Sand Creek Basins

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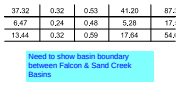

Subject: Text Box
Page Label: [1] DRAINAGE MAP
Author: CDurham
Date: 12/13/2021 9:42:34 AM
Status:
Color:
Layer:
Space:

Need to show basin boundary between Falcon & Sand Creek Basins

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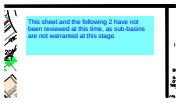

Subject: Text Box
Page Label: [1] BASIN B-DC DRAINAGE MAP
Author: CDurham
Date: 12/13/2021 9:43:28 AM
Status:
Color:
Layer:
Space:

This sheet and the following 2 have not been reviewed at this time, as sub-basins are not warranted at this stage.