FINAL DRAINAGE REPORT

FALCON MEADOWS AT BENT GRASS
FILING NO. 3

El Paso County, Colorado

PREPARED FOR:
Challenger Communities
8605 Explorer Dr., Suite 250
Colorado Springs, CO 80920

PREPARED BY:
Galloway & Company, Inc.
1155 Kelly Johnson Blvd., Suite 305
Colorado Springs, CO 80920

DATE:
August 25, 2022

PCD Filing No.: SF2216

ENGINEER'S STATEMENT

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

08/26/22

Grant Dennis, PE 51622 — Date
For and on behalf of Galloway & Company, Inc.

DEVELOPER'S CERTIFICATION

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

By: Jim Byers — 09/26/2022
Date

Address: Challenger Communities, LLC
8605 Explorer Dr., Suite 250
Colorado Springs, CO 80920

EL PASO COUNTY CERTIFICATION

Filed in accordance with the requirements of the Drainage Criteria Manual, Volumes 1 and 2, El Paso County Engineering Criteria Manual and Land Development Code as amended.

APPROVED
Engineering Department
10/19/2022 11:28:55 AM
dsdnijkamp
EPC Planning & Community Development Department

Joshua Palmer, P.E.
County Engineer/ECM Administrator

Conditions:

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I. Purpose

The intent of the developer is to develop the residential portion of the Bent Grass Subdivision. The purpose of this Final Drainage Report is to identify on and offsite drainage patterns, locate and identify tributary or downstream drainage features and facilities that impact the site, and to identify which types of drainage facilities will be needed and where they will be located. This report will remain in general compliance with the MDDP for the site, prepared by Galloway & Company.

II. General Description

The Falcon Meadows at Bent Grass Filing No. 3 is approximately 12.76 acres within the Bent Grass development. It is located along the northern boundary line of the overall Bent Grass development and west of the existing West Tributary of the Falcon Basin. The project is a single-family residential development of 49 lots, located in the Falcon area of El Paso County, Colorado. The site is located in the Northwest ¼ and Southwest ¼ of Section 1, Township 13S, Range 65W, of the Sixth Principal Meridian, County of El Paso, State of Colorado. The subject property is located to the south of The Meadows Filing No. 3; west of Bent Grass Residential Filing No. 2 and north of Falcon Meadows at Bent Grass Filing No. 2; and east of The Meadows Filing No. 2. A Vicinity Map is included in Appendix A.

A Planned Unit Development Plan Amendment was approved for the site, PUD-14-002 in July 2014. An additional Amendment to this PUD has also been approved (PUD-SP-205). The overall Bent Grass site consisted of approximately 103.4 acres and included 309 dwelling units.

The existing soil types within the proposed site as determined by the NRCS Web Soil Survey for El Paso County Area consist of Columbine gravelly sandy loam, Blakeland-Fluvaquentic Haplaquolls, and Blakeland loamy sand. All soils are defined as having a hydrologic soil group of A. See the soils map included in Appendix A.

III. Previous Reports

The proposed site has been included in multiple drainage studies in the past. The following is a composite list of the existing reports pertaining to this site analysis.

1. *Falcon Drainage Basin Planning Study*, by Matrix Design Group, September 2015.
2. *Master Development Drainage Plan – Bent Grass Residential Subdivision*, by Galloway & Company, September 2021.
3. *Master Development Drainage Plan and Preliminary Drainage Plan – Bent Grass Subdivision*, by Kiowa Engineering Corporation, December 2006.
4. *Final Drainage Report for Bent Grass Residential (Filing No. 1)*, by Classic Consulting Engineers & Surveyors, LLC, August 2014.
5. *Final Drainage Report Addendum for Bent Grass Residential (Filing No. 1)*, by Classic Consulting Engineers & Surveyors, LLC, August 2015.
6. *Master Development Drainage Plan for The Ranch*, by Classic Consulting Engineers & Surveyors, LLC, November 2018.
7. *Falcon Highlands Master Development Drainage Plan & Preliminary Drainage Report & Final Drainage Report for Filing 1*, by URS, January 2005.
8. *Final Drainage Report and Erosion Control Plan – Latigo Business Center Filing No. 1 A Re-subdivision of a Portion of Latigo Business and Research Center Filing No. 1*, by Kiowa Engineering Corporation, November 2004.

9. *Final Drainage Letter Report for Lot 1, Latigo Business Center Filing No. 1*, by Colorado Design Concepts, April 2005.
10. *Final Drainage and Erosion Control for The Meadows Filing Three Subdivision,* by LADD Engineering, July 2000.
11. *Final Drainage Report Bent Grass Residential Subdivision, Filing No. 2,* Galloway & Company, March 2020.
12. *Preliminary Drainage Report Falcon Meadows at Bent Grass,* by Galloway & Company, February 2021.
13. *Final Drainage Report for Falcon Meadows at Bent Grass Filing No. 1,* by Galloway & Company, September 2021.
14. *Final Drainage Report for Falcon Meadows at Bent Grass Filing No. 2,* by Galloway & Company, April, 2022.

IV. Drainage Criteria

Hydrology calculations were performed using the City of Colorado Springs/El Paso County Drainage Criteria Manual, as revised in November 1991 and October 1994 with County adopted Chapter 6 and Section 3.2.1 of Chapter 13 of the City of Colorado Springs/El Paso County Drainage Criteria Manual as revised in May 2014 and the El Paso County Engineering Criteria Manual (ECM) as revised in July 2019.

The drainage calculations were based on the criteria manual Figure 6-5 and IDF equations to determine the intensity and are listed in Table 1 below.

Table 1 - Precipitation Data

Return Period	One Hour Depth (in).	Intensity (in/hr)
5-year	1.50	5.17
100-year	2.52	8.68

The rational method was used to calculate peak flows as the tributary areas are less than 100 acres. The rational method has been proven to be accurate for basins of this size and is based on the following formula:

Q = CIA

Where:

Q = Peak Discharge (cfs)
C = Runoff Coefficient
I = Runoff intensity (inches/hour)
A = Drainage area (acres)

The runoff coefficients are calculated based on land use, percent imperviousness, and design storm for each basin, as shown in the drainage criteria manual (Table 6-6). Composite percent impervious and C values were calculated using the residential, streets, roofs, and lawns coefficients found in Table 6-6 of the manual.

The 100-year event was used as the major storm event for pipes and inlets. The 5-year event was used as the minor event.

The UD-Detention spreadsheet was utilized for to check the existing the water quality ponds still function with the revised tributary areas and impervious values. This spreadsheet was also utilized for the original design of the on-site water quality ponds, Pond (North) and Pond (South).

UD-Inlet was utilized to calculate both the street capacities and the inlet capacities.

StormCAD was utilized to size the storm sewer systems.

V. Historic Drainage Conditions

The site is contained fully within one major drainage basin, the West Falcon Tributary. The site generally drains from north to south with an average slope of 2%. The rational method was used to analyze the individual basins within the site as the proposed drainage basins are less than 100 acres. The project site was studied in the Falcon Basin Drainage Basin Planning Study (DBPS) and in the Master Development and Drainage Plan (MDDP) for Bent Grass.

Per the Falcon DBPS by Matrix, the site lies within the basins, WT200, WT210, and WT220. These basins connect to channel reaches RWT202, RWT204, and RWT210. Both the RWT204 and RWT210 sections of channel currently exist and appear as a drainageway when visiting the site. Reach RWT202 appears to be a shallow overland flow through the project site. It is nearly unrecognizable through the site from a visual standpoint.

A historic basin map has been prepared for this site to analyze the historic basins as well as the offsite basins contributing to the site. Historic basins have been discussed in the Bent Grass Residential Filing No. 2 Final Drainage Report, El Paso County Project # SF-19-014. Copies of the hydrology calculations have been included in Appendix B and a copy of the historic map is included in Appendix E. Efforts have been made to comply with the recommendations set forth in the approved DBPS and MDDP.

VI. Existing Drainage Conditions

An existing/current conditions basin map has been prepared for the development site, Falcon Meadows at Bent Grass Filing No. 3. Under this scenario, it is assumed that Bent Grass Residential Filing No. 2 and Falcon Meadows at Bent Grass Filing No. 1 and Filing No. 2 are developed. This should be very similar to the proposed conditions from the Falcon Meadows at Bent Grass Filing No. 2 Final Drainage Report. An existing/current drainage map is included in Appendix E and the basins are described below.

Basin OS-1 (32.28 AC, Q5 = 15.1 cfs, Q100 = 65.1 cfs) is associated with The Meadows Filing No. 3 lots 14, 15, 16, and 17. Runoff from this basin sheet flows to the northern property line of the Bent Grass Residential Filing No. 2 site and then flows, via an existing drainage swale, into the existing channel reach RWT204 from the Falcon DBPS at **DP 21**.

Basin EX-1 (1.19 AC, Q_5 = 0.4 cfs, Q_{100} = 2.5 cfs): is associated with the northwestern portion of the Bent Grass Residential Filing No. 2 site east of the existing channel. The basin is currently undeveloped. Runoff from the basin generally flows to the southwest, into Basin EX-2**.**

Basin EX-2 (1.60 AC, Q_5 = 0.5 cfs, Q_{100} = 3.8 cfs): is along the western boundary portion of the Bent Grass Residential Filing No. 2 site and is south of Basin EX-1, east of the existing channel. The basin is currently undeveloped and receives flows from Basins OS-4 & OS-5. Runoff from the basin generally flows to the southeast into Basin EX-3 at **DP 5** combined with flows from **DP 1, & 2**.

Basin EX-3 (0.66 AC, Q_5 = 0.2 cfs, Q_{100} = 1.6 cfs): is along the western boundary portion of the Bent Grass Residential Filing No. 2 site south of Basin EX-2 and east of the existing channel. The basin currently contains an existing WQCV pond created as part of Bent Grass Residential Filing No. 2 (North Pond). This basin receives flows from **DP 5** and **DP 3**.

Basin C-1b (0.45 AC, Q5 = 1.3 cfs, Q100 = 2.5 cfs): a basin that encompasses the existing temporary Swale B. Flows will be conveyed to the south to **DP 41**.

Basin C-2 (3.27 AC, Q5 = 8.7 cfs, Q100 = 17.7 cfs): Is a basin for the future Falcon Meadows Filing 3 which will encompass single-family residential lots including the east half of Henzlee Place. Runoff will flow to the south to **DP 19.** Flows will then enter an existing 18" rcp, releasing into the Falcon Meadows Filing No. 2 existing north WQCV pond at **DP 13**.

Basin D-1a (1.49 AC, Q5 = 4.0 cfs, Q100 = 8.7 cfs): a basin for a future Falcon Meadows Filing 3 at the northeast corner of the future intersection of Isabel Place and Daelyn Drive. Runoff will flow to the south to the public R.O.W. of Daelyn Drive, existing mountable curb and gutter will convey flows to **DP 51** where flows will be intercepted by an existing 15' at grade CDOT Type R inlet, which is part of Storm System B**.** Bypass flows will continue to the east, releasing into the proposed temporary swale (Swale B) at **DP 40**.

Basin D-1f (1.61 AC, Q5 = 3.1 cfs, Q100 = 6.7 cfs): a basin for a future Falcon Meadows Filing 3 east of Basin D-1a and north of Daelyn Place. Runoff will flow into the public R.O.W. of Daelyn Drive where proposed mountable curb and gutter will convey flows across the temporary turnaround to a low point at **DP 40,** where flows will be released into an existing temporary swale (Swale B)**.**

Basin D-1b (4.02 AC, Q5 = 6.5 cfs, Q100 = 14.6 cfs): a basin for a future Falcon Meadows Filing 3 along the west property line of the site. It encompasses single-family residential lots & the remaining west half of Daelyn Drive. Runoff will flow into the public R.O.W. of Daelyn Drive, at **DP 16a.** From here, flows will be released into existing mountable curb and gutter which will deliver flows to the south to **DP 16.** Flows will then enter an existing CDOT at grade Type R inlet, which is part of Storm System A, where captured flows will then be piped and ultimately outfall in the existing south WQCV pond at **DP 31**. Bypass flows from the inlet will continue to the south in Bent Grass Meadows Drive to be intercepted by the existing CDOT Type R inlet at **DP 24**.

Below is a description of the basins which were developed as part of Falcon Meadows at Bent Grass Filing No. 1 & Bent Grass Residential Filing No. 2:

Basin B-1 (6.06 AC, Q5 = 1.6 cfs, Q100 = 10.9 cfs): a basin that is along the north boundary of the site and through the center of the site, encompassing the existing rerouted channel RWT202 and channel RWT204. Flows will continue south in the existing channel where they will then be conveyed through the existing twin 16' x 6' RCBC's to **DP AA**.

Basin OS-4 (4.46 AC, Q5 = 5.6 cfs, Q100 = 14.0 cfs) is associated with The Bent Grass Residential Filing No. 2, lots 152-160, lots 163-168, Tract D, and portions of Thedford Court & Willmore Drive. Runoff from this basin flows via curb & gutter south on Thedford Court then continues flowing west along the northern curb & gutter along Willmore Drive before discharging into Basin EX-2 at **DP 1**.

Basin OS-5 (0.46 AC, Q5 = 1.1 cfs, Q100 = 2.3 cfs): is associated with The Bent Grass Residential Filing No. 2, lots 161 & 162 along with a portion of Silky Thread Road. Runoff from this basin generally flows to the west via curb & gutter along Silky Thread Road before discharging into Basin EX-2 at **DP 2**.

Basin OS-6 (1.17 AC, Q5 = 2.0 cfs, Q100 = 4.3 cfs): is associated with The Bent Grass Residential Filing No. 2, the northern halves of Lots 170-178 and a portion of the southern side of Willmore Drive. Runoff from this basin generally flows to the west via curb & gutter along Willmore Drive before discharging into Basin EX-2 at **DP 3**.

Basin D-4a (0.98 AC, Q5 = 2.1 cfs, Q100 = 4.4 cfs): a basin in Falcon Meadows at Bent Grass Filing No. 1 that is east of Bent Grass Meadows Drive. It encompasses single-family residential lots, north half of Rowena Way, & a portion of the west half of Nico Way. Runoff will flow from each lot onto the public R.O.W. where existing mountable curb and gutter will convey flows to **DP 17a**. Flow will continue as gutter flow in Nico Way, Linley Way and Jayla Trail to **DP 17b.**

Basin D-4b (0.95 AC, Q5 = 2.5 cfs, Q100 = 4.9 cfs): a basin in Falcon Meadows at Bent Grass Filing No. 1 that is east of Bent Grass Meadows Drive. It encompasses single-family residential lots, Rowena Way, & portions of Linley Way and Jayla Trail. Runoff will flow from each lot onto the public R.O.W. where existing mountable curb and gutter will convey flows to **DP 17b**, which is the combined flow from the south side of **DP 17**.

Basin D-4c (1.22 AC, Q5 = 2.4 cfs, Q100 = 5.0 cfs): a basin in Falcon Meadows at Bent Grass Filing No. 1 that is east of Henzlee Place and Jayla Trail and south of Bent Grass Meadows Drive. It encompasses single-family residential lots, & portions of Nico Way, Jayla Trail, and Henzlee Place. Runoff will flow from each lot onto the public R.O.W. where existing mountable curb and gutter will convey flows to **DP 17c**, the north side of **DP 17**. Flows at **DP 17** (combined flows from **DP 17b** & **DP 17c** with bypass from **DP 18**) will then enter an existing sump CDOT Type 'R' inlet where it will then be piped and ultimately outfall in the existing Falcon Meadows Filing No. 1 south WQCV pond at **DP 31**. Overflow from this inlet will overtop the curb and then continue via an existing swale, following the same path as the proposed pipe, to the east until flows are released into the existing south water quality pond.

Basin D-5 (1.08 AC, Q5 = 2.8 cfs, Q100 = 6.0 cfs): a basin that is located at the southwest corner of Bent Grass Meadows Drive and Henzlee Place. It includes residential lots, as well as a portion of the north half of Nico Way and west half of Henzlee Place. Flows will be directed towards the public R.O.W. where existing curb and gutter will convey flows to the south along Henzlee Place to **DP 18**. Flows will then enter an existing CDOT Type 'R' inlet where it will then be piped and ultimately outfall in the existing south WQCV pond at **DP 31**.

Basin D-6a (1.33 AC, Q5 = 3.8 cfs, Q100 = 7.5 cfs): a basin in Falcon Meadows at Bent Grass Filing No. 1 that is south of Basin D-6b & east of Basin D-4a. It encompasses single-family residential lots & half of Linley Way, Jayla Trail, Henzlee Place, & Nico Way. Runoff will flow from each lot onto the public R.O.W. where existing mountable curb and gutter will convey flows to **DP 18.**

Basin D-6b (2.69 AC, Q5 = 5.6 cfs, Q100 = 11.4 cfs): a basin in Falcon Meadows Filing No. 1that is south of Basin D-5 & east of Basin D-4a. It encompasses single-family residential lots & half of Linley Way, Jayla Trail, Henzlee Place, & Nico Way. Runoff will flow from each lot onto public R.O.W. where existing mountable curb and gutter will convey flows to **DP 18**, along with flows from Basin D-6a. Flows will then enter an existing sump CDOT Type 'R' inlet where it will then be piped and ultimately outfall in the existing south WQCV pond at **DP 31**.

Basin D-7 (7.65 AC, Q5 = 4.3 cfs, Q100 = 18.2 cfs): a basin that is in the south end of the site, east of Bent Grass Meadows Drive & west of the existing channel. It encompasses the back half of several

single-family residential lots as well as the existing south WQCV pond and an existing drainage swale (Swale F). Runoff will flow, via sheet flow, until it enters the drainage swale and is conveyed to the existing south WQCV pond or will directly flow into the south WQCV pond at **DP 30**.

Basin D-8 (1.69 AC, Q5 = 2.6 cfs, Q100 = 6.0 cfs): a basin that is west of the existing channel & south of Bent Grass Meadows Drive. It encompasses the back half of single-family residential lots. Runoff will flow from each lot and discharge into an existing drainage swale. The drainage swale (Swale C) will then convey flows to the south, ultimately discharging into the existing south WQCV pond at **DP 32**.

Basins E-1 thru E-5 were developed as part of Bent Grass Residential Filing No. 2 development. Information for those basins was taken from the accompanying Final Drainage Report for Filing No. 2.

Below is a description of the basins which were developed as part of Falcon Meadows at Bent Grass Filing No. 2:

Basin OS-2 (20.07 AC, Q5 = 9.0 cfs, Q100 = 43.4 cfs): is associated with The Meadows Filing No. 1 lots 1, 2, 3, 4, 5, and 6. Runoff from this basin sheet flows from the northwest to the southeast, crossing the west property line of the site at **DP 9**. Flows will then be conveyed to the south where it will enter Basin D-3 and tie into the existing drainage swale (Swale E) along the southern boundary. It will then continue flowing east before entering an existing area inlet at **DP 11** where it will be piped, ultimately outfalling into the existing south WQCV pond at **DP 31**.

Basin OS-3 (10.61 AC, Q5 = 4.7 cfs, Q100 = 22.6 cfs): is associated with The Meadows Filing No. 1 lot 11 and The Meadows Filing No. 2 Lots 1 & 2. Runoff from this basin sheet flows from the northwest to the southeast, crossing the west property line of the site into Basin D-3 at **DP 10**. Flows will then be conveyed via an existing drainage swale (Swale E) to the east where it will enter an existing area inlet at **DP 11** where it will be piped, ultimately outfalling into the existing south WQCV pond at **DP 31**.

Basin C-1a (0.38 AC, Q5 = 1.0 cfs, Q100 = 2.2 cfs): a basin located near the northern edge of Bent Grass Meadows Filing No. 2. It contains the south half of Daelyn Drive, east of Kittrick Place, includes a temporary turnaround and future residential lots adjacent to the roadway. A temporary drainage swale (Swale B) will collect flows at **DP 40**, a low spot at the end of the temporary turnaround, and convey flows to the south, where they will be intercepted by an existing 15' at grade CDOT Type R inlet at **DP 41,** which is part of Storm System B, built with Falcon Meadows at Bent Grass Filing No. 2. Bypass flows will be conveyed to the south to **DP 15**.

Basin C-1c (1.77 AC, Q5 = 5.6 cfs, Q100 = 11.0 cfs): a basin for a future Falcon Meadows filing that will include a portion of the west half of Henzlee Place, north portion of Kittrick Place, and encompasses single-family residential lots. Runoff will flow towards the future road and will be directed towards the proposed 15' at-grade CDOT Type R inlet at **DP 41**.

Basin C-1d (1.72 AC, Q5 = 4.6 cfs, Q100 = 9.5 cfs): a basin that will include the north half of Kittrick Place and encompasses single-family residential lots. Runoff will flow from each lot onto the public R.O.W. where existing mountable curb and gutter will convey flows to **DP 43.** Flows will continue to the south via curb and gutter to **DP 15**, where they will be intercepted by an existing 15' at grade CDOT Type R inlet, part of Storm System B, and ultimately release into the existing WQCV (North Pond), located north of Bent Grass Meadows Drive at **DP 13**. Bypass flows from the inlet at **DP 15** will continue to the south to **DP 45** and then eventually reach **DP 8**, an existing CDOT sump Type R inlet, which releases into the existing WQCV pond in Bent Grass Residential Filing No. 2.

Basin C-1e (0.29 AC, Q5 = 1.3 cfs, Q100 = 2.4 cfs): a basin that will include the east half of Henzlee Place. Runoff will flow from the R.O.W. into the existing mountable curb and gutter where it will be conveyed to **DP 12.** Flows will then enter an existing 15' at grade CDOT Type R inlet, part of Storm System B, where it will be piped to the existing north WQCV pond at **DP 13**. Bypass flows from the inlet at **DP 12** will travel to the south, then east in Bent Grass Meadows Drive to **DP 8**, an existing CDOT sump Type R inlet, which releases into the existing WQCV pond in Bent Grass Residential Filing No. 2.

Basin C-1f (0.08 AC, Q5 = 0.4 cfs, Q100 = 0.7 cfs): a basin that includes the west half of Henzlee Place between Kittrick Place and the centerline of Henzlee Place. Runoff will flow from the proposed R.O.W. into the proposed mountable curb and gutter which will convey flows to **DP 15.** Flows will then enter a proposed 15' at grade CDOT Type R, part of Storm System B, inlet where it will be ultimately piped to the proposed north WQCV pond at **DP 13**. Bypass flows will continue to the south to DP 45 and ultimately to **DP 8**, existing sump CDOT Type R inlet, releasing into the existing WQCV pond in Bent Grass Filing No. 2.

Basin C-3 (0.18 AC, Q5 = 0.7 cfs, Q100 = 1.2 cfs): Is a basin that includes a south portion of Daelyn Drive between a high point and Kittrick Place. Flows will be conveyed as gutter flow to the east and then south along Kittrick Place to **DP 44**.

Basin C-4 (2.67 AC, Q5 = 4.2 cfs, Q100 = 9.7 cfs): Is a basin which will encompass residential lots and open space easy of Henzlee Place. Runoff will flow from the open space onto the lots, eventually releasing into the public R.O.W. of Kittrick Place, where existing mountable curb and gutter will convey flows to **DP 44.** Flows will then enter an existing 15' at grade CDOT Type R inlet, part of Storm System B, where it will ultimately be released into the existing north WQCV pond at **DP 13**. Bypass flow will travel to the south to be intercepted at **DP 15**.

Basin C-7 (0.52 AC, Q5 = 1.4 cfs, Q100 = 2.9 cfs): Is a basin encompassing the west half of Henzlee Place and residential lots west, located between Kittrick Place and Bent Grass Meadows Drive. Flows will be directed towards Henzlee Place, where it will enter public R.O.W. and be conveyed as gutter flow to the south to **DP 45** at Bent Grass Meadows Drive. From here, flows will continue to the east to **DP 8**, where they will be intercepted by an existing CDOT Type R inlet, releasing into the existing WQCV pond in Bent Grass Residential Filing No. 2.

Basin C-5 (0.60 AC, Q5 = 0.3 cfs, Q100 = 1.9 cfs): Is a basin which will encompass the existing north WQCV pond area in Falcon Meadows Filing No. 2. The stormwater within the existing north WQCV pond will be released at a controlled rate, via an outlet structure with orifice holes, into the existing channel RWT204.

Basin C-6 (0.94 AC, Q5 = 1.0 cfs, Q100 = 3.4 cfs): a basin from Falcon Meadows at Bent Grass Filing No. 2, will include mostly open area and some small areas of back residential lots. The basin is located on the west side of Bent Grass Meadows Drive. The basin drains towards the existing Bent Grass Meadows Drive. Flows will be conveyed via curb and gutter to the east to **DP 8**, an existing CDOT type R sump inlet, which releases into the existing north WQCV pond in Bent Grass Residential Filing No. 2.

Basin D-1c (4.34 AC, Q5 = 5.9 cfs, Q100 = 13.1 cfs): a basin along the west property line of the site. It encompasses single-family residential lots & the remaining west half of Daelyn Drive. Runoff will flow from each lot onto the public R.O.W. where existing mountable curb and gutter will convey flows to **DP 16**, along with flows from **DP16a.** Flows will then enter an existing CDOT at grade Type 'R' inlet where

captured flows will be piped and ultimately outfall in the existing south WQCV pond at **DP 31**. Bypass flows from the inlet will continue to the south in Bent Grass Meadows Drive to be intercepted by the existing CDOT Type R inlet at **DP 24**.

Basin D-2a (0.50 AC, Q5 = 1.9 cfs, Q100 = 3.6 cfs): a basin south of Basin D-1a. It encompasses a portion of the south half of Daelyn Drive. Runoff will flow to public R.O.W., where existing mountable curb and gutter will convey flows to **DP 14a.**

Basin D-2b (0.74 AC, Q5 = 1.4 cfs, Q100 = 3.2 cfs): a basin south of Basin D-2a. It encompasses single-family residential lots and the north half of Raylan Way. Runoff will flow from each lot onto the public R.O.W, in Raylan Drive. where existing mountable curb and gutter will convey flows to **DP 14a.**

Basin D-2c (0.31 AC, Q5 = 1.1 cfs, Q100 = 2.1 cfs): a basin south of Basin D-2b. It encompasses the south half of Raylan Way. Runoff will be conveyed as gutter flow to **DP 14a.** Combined flows from DP 14a will continue south, as gutter flow, in the east side of Daelyn Drive at **DP 14b**.

Basin D-2d (0.24 AC, Q5 = 0.8 cfs, Q100 = 1.6 cfs): a basin east of Basin D-1c. It encompasses the east half of Daelyn Drive, between Raylan Way and Isabel Place. Runoff will be conveyed as gutter flow to **DP 14b.**

Basin D-2e (1.41 AC, Q5 = 3.3 cfs, Q100 = 6.7 cfs): a basin east of Basin D-2d and south of D-2c. It encompasses single-family residential lots and the west half of Isabel Place. Runoff will flow from each lot onto the public R.O.W. where existing mountable curb and gutter will convey flows to **DP 14d,** a low point on the west side of Isabel Place**.** Flows will be intercepted by an existing 5' sump CDOT Type R inlet. These flows will be a part of Storm System A, which was built partially in Falcon Meadows at Bent Grass Filing No. 1. This system ultimately outfalls into the existing south WQCV pond at **DP 31.**

Basin D-2f (2.43 AC, Q5 = 6.0 cfs, Q100 = 12.2 cfs): a basin east of Basin D-2e. It encompasses single-family residential lots, east half of Isabel Place and Jolie Court. Runoff will flow from each lot onto public R.O.W. where existing mountable curb and gutter will convey flows to **DP 14e**, a low point on the east side of Isabel Place. Flows will be intercepted by an existing 10' sump CDOT Type R inlet, as part of Storm System A. Flows will ultimately outfall into the existing south WQCV pond at **DP 31.**

Basin D-2g (1.81 AC, Q5 = 2.9 cfs, Q100 = 6.5 cfs): a basin south of Basin D-2f. It encompasses single-family residential lots, east half of Daelyn Drive and north half of Rowena Way. Runoff will flow from each lot onto public R.O.W. where existing mountable curb and gutter will convey flows to **DP 14,** which combines with the flow from **DP 14b.** Flows will then enter an existing at grade CDOT Type R inlet where captured flows will be piped and ultimately outfall in the existing south WQCV pond at **DP 31**. Bypass flows from the inlet would continue to the south as gutter flow in Bent Grass Meadows Drive to **DP 24**.

Basin D-2h (0.23 AC, Q5 = 0.3 cfs, Q100 = 0.8 cfs): a basin south of Basin D-2d and east of Bent Grass Meadows Drive, containing residential lots which will flow into Bent Grass Meadows Drive. Flows will be conveyed via existing curb and gutter to the existing CDOT Type R inlet at **DP 24**.

Basin D-9 (0.72 AC, Q5 = 0.8 cfs, Q100 = 2.7 cfs): a basin that is east of Basin D-2f & west of Bent Grass Meadows Drive. It encompasses the back half of single-family residential lots. Runoff will flow from each lot and release into Bent Grass Meadows Drive. This flow will be conveyed as gutter flow to the south in the roadway, where it will be intercepted by an existing at grade inlet at **DP 24**.

Basin D-3 (2.26 ac, Q5 = 2.6 cfs, Q100 = 6.3 cfs): a basin that is in the southwest corner of the site, south of Basin D-1. It encompasses the backs of several residential lots as well as existing drainage swales (Swale D along west property line and Swale E along south property line). Runoff will flow from basin OS-2 and OS-3 into existing Swale D and convey flows to the existing drainage Swale E which will convey flows to an existing area inlet at **DP 11**. From there, flows will be piped and ultimately outfall at the south WQCV pond at **DP 31**.

Basin B-2 (4.16 AC, Q5 = 1.3 cfs, Q100 = 8.6 cfs): a basin that is located along the eastern property line, south of Bent Grass Meadows Drive and encompasses channel reach RWT204/ RWT210. Flows will sheet flow into the channel where they will then be conveyed to **DP CC**, combining with other on-site flows, prior to exiting the site.

Basin RWT202 (1574.4 AC,Q5 = 200 cfs, Q100 = 1000 cfs), RWT204 (38.4 AC, Q5 = 7 cfs, Q100 = 43 cfs) and WT200 (192 AC, Q5 = 52 cfs, Q100 = 190 cfs) represent larger offsite basins to the north of the proposed project. These areas were studied as part of the Falcon Basin DBPS prepared by Matrix and were also part of the Bent Grass MDDP, approved September 21, 2021. There have been no changes to these basins as they are offsite and existing.

Design Point CC is the location in channel reach RWT210, where flows exit the Falcon Meadows development, including the offsite flows from RWT202, RWT204 and WT200. The minor flows are 335.9 cfs and the major flows are 1384.4 cfs.

VII. Four Step Process

The Four Step Process is used to minimize the adverse impacts of urbanization and is a vital component of developing a balanced, sustainable project. Below identifies the approach to the four-step process:

1. Employ Runoff Reduction Practices

The proposed development uses Low Impact Development (LID) practices to reduce runoff at the source. Rather than creating point discharges that are directly connected to impervious areas, runoff is routed through pervious areas to promote infiltration and minimize directly connected impervious areas (MDCIA). Grass buffers and swales are used where practical.

2. Stabilize Drainageways

This step implements stabilization to channels to accommodate developed flows while protecting infrastructure and controlling sediment loading from erosion in the drainageways. Erosion protection in the form of riprap pads at all outfall points to the channel to prevent scouring of the channel from point discharges. A HEC-RAS model was created and used to evaluate the stability of the existing channels. The HEC-RAS results are included in previous reports. It was determined that given the channel is stable in its current state and the proposed velocities and Froude numbers are similar to those in the existing channel, no improvements will be made to the channel with this filing. This will be further discussed later in this report, see Section XI Channels and Swales.

3. Provide Water Quality Capture Volume (WQCV)

This step utilizes formalized water quality capture volume to slow the release of runoff from the site. The WQCV will release in no less than 40 hours. On-site water quality control volume detention ponds will provide water quality treatment prior to the runoff being released into the channel.

4. Consider Need for Industrial and Commercial BMPs

Industrial and Commercial BMP's are not applicable to this proposed site. Source control BMPs for homeowners include the use of garages as the primary area where pollutants can be stored. The single-family detached homes provide garages which can act as storage areas. The proposed development does not include outdoor storage or the potential for introduction of contaminants to the Counties' MS4, thus no targeted source control BMPs are necessary. The biggest source control BMP is public education which can be found on the El Paso County website and discuss topics such as: pet waste, car washing, lawn care, fall leaves, and snow melt and deicer.

VIII. Proposed Drainage Conditions

There are two existing WQCV Detention Ponds that will provide water quality treatment for the site prior to discharging the runoff directly into the West Tributary channel RWT204/RWT210. One of these WQCV ponds was designed with Falcon Meadows Filing No. 1 (Pond South) and the other with Falcon Meadows Filing No. 2 (Pond North).

There are two basins, within the proposed development, which are not routed to any of the WQ facilities. Basins B-1 (5.25 acres) & B-2 (4.16 acres), although larger than 1 acre, do not count towards the allowable area of 1 acre or less to be released from a site, untreated, as these basins represent the channel reaches RWT204/210, and are described as undeveloped land remaining undeveloped. All on site flows eventually release into West Tributary of Falcon Basin, where flows will continue to the south, exiting the site at Design Point CC.

As mentioned previously, the site is proposed to be single family residential. The site is designed to provide a large lot buffer between the existing large lots to the north and west of the site and the proposed site. Beyond this buffer the majority of the site is much smaller lots, approximately 1/8 acre lots.

Below is a description of the basins that encompass Falcon Meadows at Bent Grass Filing No. 3

Basin C-1b (1.77 AC, Q5 = 3.9 cfs, Q100 = 8.7 cfs): a basin that includes residential lots and the east half of Sophia Lane. Runoff will flow from each lot onto the proposed public R.O.W. where proposed mountable curb and gutter will convey flows to **DP 54.** Flows will continue to the south, as gutter flow, where it will be intercepted by an existing 15' at grade CDOT Type R inlet at **DP 41,** which is part of Storm System B.

Basin C-1c (1.19 AC, Q5 = 3.1 cfs, Q100 = 6.5 cfs): a basin that includes a portion of the south and west half of Sophia Lane located between Daelyn Drive and Henzlee Place, a portion of Henzlee Place, and encompasses single-family residential lots. Runoff will flow towards the proposed public R.O.W. and will be directed towards the existing 15' at-grade CDOT Type R inlet at **DP 41**, part of Storm System B. Bypass flows from **DP 41** will be conveyed as gutter flow to the south to the existing 15' at grade CDOT Type R inlet at **DP 15.**

Basin C-1f (0.14 AC, Q5 = 0.5 cfs, Q100 = 1.0 cfs): a basin that includes a portion of the west half of Henzlee Place between Kittrick Place and the centerline of Henzlee Place. Runoff will flow from the R.O.W. into the existing mountable curb and gutter which will convey flows to **DP 42.** Flows will continue south, as gutter flow, where it will then enter an existing 15' at grade CDOT Type R, part of Storm System B, inlet where it will be ultimately piped to the existing north WQCV pond at **DP 13**. Bypass flows will continue to the south to DP 45 and ultimately to **DP 8**, existing sump CDOT Type R inlet, releasing into the existing WQCV pond in Bent Grass Residential Filing No. 2.

Basin C-2 (1.00 AC, Q5 = 2.5 cfs, Q100 = 5.0 cfs): Is a basin that encompasses single-family residential lots including the east half of Henzlee Place, north of Sophia Lane. Runoff will flow from each lot onto the proposed public R.O.W. where proposed mountable curb and gutter will convey flows to **DP 54.** Flows will continue to the south, as gutter flow, where it will be intercepted by an existing 15' at grade CDOT Type R inlet at **DP 41,** which is part of Storm System B.

Basin D-1a (1.83 AC, Q5 = 3.3 cfs, Q100 = 7.5 cfs): a basin at the northeast corner of the intersection of Isabel Place and Daelyn Drive. It encompasses single-family residential lots, the east half of Isabel Place, & a portion of the north half of Daelyn Drive. Runoff will flow to the south to the proposed public R.O.W. where proposed mountable curb and gutter will convey flows to **DP 16a.** Runoff will the continue to flow south via gutter in Daelyn Drive to an existing CDOT at grade Type R inlet at **DP 16,** which is part of Storm System A.

Basin D-1b (1.19 AC, Q5 = 2.4 cfs, Q100 = 5.3 cfs): a basin along the west property line of the site. It encompasses single-family residential lots & the west half of Isabel Place. Runoff will flow into the proposed public R.O.W. of Daelyn Drive, at **DP 16a.** From here, flows will be released into proposed mountable curb and gutter which will deliver flows to the south to **DP 16.** Flows will then enter an existing CDOT at grade Type R inlet, which is part of Storm System A, where captured flows will then be piped and ultimately outfall in the existing south (part of Falcon Meadows Filing No. 1) WQCV pond at **DP 31**. Bypass flows from the inlet will continue to the south in Bent Grass Meadows Drive to be intercepted by the existing CDOT Type R inlet at **DP 24**.

Basin D-1f (0.67 AC, Q5 = 1.9 cfs, Q100 = 3.9 cfs): a basin east of Basin D-1j and north of Daelyn Place. It encompasses single-family residential lots, & a portion of the north half of Daelyn Drive, between Kittrick Place and Sophia Lane. Runoff will flow into the public R.O.W. of Daelyn Drive where existing mountable curb and gutter will convey flows to **DP 52.** It will then flow south via gutter in Sophia Lane to a proposed CDOT at grade 15' Type R inlet at **DP 53.**

Basin D-1g (0.78 AC, Q5 = 1.1 cfs, Q100 = 2.5 cfs): a basin east of Basin D-1a and contains open space/trail, portions of back residential lots and a portion of the north half of Daelyn Drive between Isabel Place and Kittrick Place. Runoff will flow into the proposed public R.O.W. of Daelyn Drive, at **DP 51.** Flows will then enter an existing 15' CDOT at grade Type R inlet, which is part of Storm System B, where captured flows will then be piped and ultimately outfall in the existing north (part of Falcon Meadows Filing No. 2) WQCV pond at **DP 13**. Bypass flows from the inlet will continue to the east to **DP 52**.

Basin D-1h (1.57 AC, Q5 = 2.4 cfs, Q100 = 5.8 cfs): a basin east of Basin D-1a and contains open space/trail, portions of residential lots and the west half of Kittrick Place. Runoff will flow into the proposed public R.O.W. and travel to the south as gutter flow to **DP 51.** Flows will then enter an existing 15' CDOT at grade Type R inlet, which is part of Storm System B, where captured flows will then be piped and ultimately outfall in the existing north (part of Falcon Meadows Filing No. 2) WQCV pond at **DP 13**. Bypass flows from the inlet will continue to the east to **DP 52**.

Basin D-1j (0.95 AC, Q5 = 2.1 cfs, Q100 = 4.6 cfs): a basin east of Basin D-1h and contains residential lots and the east half Kittrick Place. Runoff will flow into the proposed public R.O.W. and travel to the south as gutter flow to **DP 51.** Flows will then enter an existing 15' CDOT at grade Type R inlet, which is part of Storm System B, where captured flows will then be piped and ultimately outfall in the existing north (part of Falcon Meadows Filing No. 2) WQCV pond at **DP 13**. Bypass flows from the inlet will continue to the east to **DP 52**.

Basin D-1k (0.80 AC, Q5 = 1.4 cfs, Q100 = 3.3 cfs): a basin east of Basin D-1j & D-1f. It encompasses single-family residential lots, & a portion of the west half of Sophia Lane, north of Daelyn Drive. Runoff will flow into the public R.O.W. of Sophia Lane where proposed mountable curb and gutter will convey flows to **DP 52.** It will then flow south via gutter in Sophia Lane to a proposed CDOT at grade 15' Type R inlet at **DP 53.** This inlet is part of Storm System B, and captured flows will be piped and ultimately outfall in the existing north (part of Falcon Meadows Filing No. 2) WQCV pond at **DP 13**. Bypass flows from the inlet will continue to the east and then south to **DP 41**.

The following basins are offsite basins that impact the Filing 3 site.

Basin OS-1 (32.28 AC, Q5 = 15.1 cfs, Q100 = 65.1 cfs) is associated with The Meadows Filing No. 3 lots 14, 15, 16, and 17. Runoff from this basin sheet flows to the northern property line of the Bent Grass Residential Filing No. 2 site and then flows, via an existing drainage swale, into the existing channel reach RWT204 from the Falcon DBPS at **DP 21**.

Basin OS-2 (20.07 AC, Q5 = 9.0 cfs, Q100 = 43.4 cfs): is associated with The Meadows Filing No. 1 lots 1, 2, 3, 4, 5, and 6. Runoff from this basin sheet flows from the northwest to the southeast, crossing the west property line of the site at **DP 9**. Flows will then be conveyed to the south where it will enter Basin D-3 and tie into the existing drainage swale (Swale E) along the southern boundary. It will then continue flowing east before entering an existing area inlet at **DP 11** where it will be piped, ultimately outfalling into the existing south WQCV pond at **DP 31**.

Basin OS-3 (10.61 AC, Q5 = 4.7 cfs, Q100 = 22.6 cfs): is associated with The Meadows Filing No. 1 lot 11 and The Meadows Filing No. 2 Lots 1 & 2. Runoff from this basin sheet flows from the northwest to the southeast, crossing the west property line of Falcon Meadows at Bent Grass Filing No. 2 into Basin D-3 at **DP 10**. Flows from Basin OS-3 will contribute to and be conveyed via an existing drainage swale (Swale E) to the east where it will enter an existing area inlet at **DP 11** where it will be piped, ultimately outfalling into the existing south WQCV pond at **DP 31**.

The following basins were all developed as part of Falcon Meadows at Bent Grass Filing No. 2. Basins C-1a, C-1d, C-1e, and D-1c have minor basin boundary revisions from the FM Filing No. 2 report due to the final grading for FM Filing No. 3.

Basin C-1a (0.27 AC, Q5 = 1.0 cfs, Q100 = 1.9 cfs): a basin located near the eastern edge of this filing. It contains the south half of Daelyn Drive, east of Kittrick Place, and portions of residential lots adjacent to the roadway. Runoff will flow from each lot onto the proposed public R.O.W. where proposed mountable curb and gutter will convey flows to **DP 53,** where a proposed 15' at grade CDOT Type R inlet will intercept flows, part of the Storm System B. Bypass flows from this inlet will continue to the south, where it will be intercepted by an existing 15' at grade CDOT Type R inlet at **DP 41,** which is part of Storm System B. Bypass flows from **DP 41** will be conveyed as gutter flow to the south to the existing 15' at grade CDOT Type R inlet at **DP 15.**

Basin C-1d (1.97 AC, Q5 = 4.2 cfs, Q100 = 8.8 cfs): a basin that will include the north half of Kittrick Place and encompasses single-family residential lots. Runoff will flow from each lot onto public R.O.W. where existing mountable curb and gutter will convey flows to **DP 43.** Flows will continue to the south via curb and gutter to **DP 15**, where they will be intercepted by an existing 15' at grade CDOT Type R inlet, part of Storm System B, and ultimately release into the existing WQCV (North Pond, part of Falcon Meadows Filing No. 2), located north of Bent Grass Meadows Drive at **DP 13**. Bypass flows will continue

to the south to **DP 45** and eventually reach **DP 8**, an existing CDOT sump Type R inlet, which releases into the existing north WQCV pond in Bent Grass Residential Filing No. 2.

Basin C-1e (0.49 AC, Q5 = 2.3 cfs, Q100 = 4.1 cfs): a basin that will include the east half of Henzlee Place. Runoff will flow from the R.O.W. into the proposed mountable curb and gutter where it will be conveyed to **DP 12.** Flows will then enter an existing 15' at grade CDOT Type R inlet, part of Storm System B, where it will be piped to the existing north WQCV pond at **DP 13**. Bypass flows will travel to the south then east in Bent Grass Meadows Drive to **DP 8**, an existing CDOT sump Type R inlet, which releases into the existing WQCV pond in Bent Grass Residential Filing No. 2.

Basin C-3 (0.18 AC, Q5 = 0.7 cfs, Q100 = 1.2 cfs): Is a basin that includes a south portion of Daelyn Drive between a high point and Kittrick Place. Flows will be conveyed as gutter flow to the east and then south along Kittrick Place to the existing CDOT at-grade inlet at **DP 44**.

Basin C-4 (2.67 AC, Q5 = 4.2 cfs, Q100 = 9.7 cfs): Is a basin which will encompass residential lots and open space easy of Henzlee Place. Runoff will flow from the open space onto the lots, eventually releasing into the public R.O.W. of Kittrick Place, where existing mountable curb and gutter will convey flows to **DP 44.** Flows will then enter an existing 15' at grade CDOT Type R inlet, part of Storm System B, where it will ultimately be released into the existing north WQCV pond at **DP 13**. Bypass flow from **DP 44** will travel to the south to be intercepted at **DP 15**.

Basin C-5 (0.60 AC, Q5 = 0.3 cfs, Q100 = 1.9 cfs): Is a basin which will encompass the existing north WQCV pond area. The stormwater within the existing north WQCV pond will be released at a controlled rate, via an outlet structure with orifice holes, into the existing channel RWT204.

Basin C-6 (0.94 AC, Q5 = 1.0 cfs, Q100 = 3.4 cfs): a basin from Falcon Meadows Filing No. 2 that will includes mostly open area and some small areas of back residential lots. The basin is located on the west side of Bent Grass Meadows Drive. The basin drains towards the existing roadway. Flows will be conveyed via curb and gutter to the east to **DP 8**, an existing CDOT type R sump inlet, which releases into the existing WQCV pond in Bent Grass Filing No. 2.

Basin C-7 (0.52 AC, Q5 = 1.4 cfs, Q100 = 2.9 cfs): Is a basin encompassing the west half of Henzlee Place and residential lots west, located between Kittrick Place and Bent Grass Meadows Drive. Flows will be directed towards Henzlee Place, where it will enter public R.O.W. and be conveyed as gutter flow to the south to **DP 45** at Bent Grass Meadows Drive. From here, flows will continue to the east to **DP 8**, where they will be intercepted by an existing CDOT Type R inlet, releasing into the existing WQCV pond in Bent Grass Residential Filing No. 2.

Basin D-9 (0.72 AC, Q5 = 0.8 cfs, Q100 = 2.7 cfs): a basin that is east of Basin D-2f & west of Bent Grass Meadows Drive. It encompasses the back half of single-family residential lots. Runoff will flow from each lot and release into Bent Grass Meadows Drive. This flow will be conveyed as gutter flow to the south in the roadway, where it will be intercepted by an existing at grade inlet at **DP 24**.

Basin D-1c (3.95 AC, Q5 = 5.4 cfs, Q100 = 12.0 cfs): a basin along the west property line of the site. It encompasses single-family residential lots & the remaining west half of Daelyn Drive. Runoff will flow from each lot onto public R.O.W. where existing mountable curb and gutter will convey flows to **DP 16**, along with flows from **DP16a.** Flows will then enter an existing CDOT at grade Type 'R' inlet where captured flows will be piped and ultimately outfall in the existing south WQCV pond at **DP 31**. Bypass flows from

the inlet will continue to the south in Bent Grass Meadows Drive to be intercepted by the existing CDOT Type R inlet at **DP 24**.

Basin D-2a (0.50 AC, Q5 = 1.9 cfs, Q100 = 3.6 cfs): a basin south of Basin D-1a. It encompasses a portion of the south half of Daelyn Drive. Runoff will flow onto public R.O.W., where existing mountable curb and gutter will convey flows to **DP 14a.**

Basin D-2b (0.74 AC, Q5 = 1.4 cfs, Q100 = 3.2 cfs): a basin south of Basin D-2a. It encompasses single-family residential lots and the north half of Raylan Way. Runoff will flow from each lot onto public R.O.W, in Raylan Drive. where existing mountable curb and gutter will convey flows to **DP 14a.**

Basin D-2c (0.31 AC, Q5 = 1.1 cfs, Q100 = 2.1 cfs): a basin south of Basin D-2b. It encompasses the south half of Raylan Way. Runoff will be conveyed as gutter flow to **DP 14a.** Combined flows from DP 14a will continue south, as gutter flow, in the east side of Daelyn Drive to **DP 14b**.

Basin D-2d (0.24 AC, Q5 = 0.8 cfs, Q100 = 1.6 cfs): a basin east of Basin D-1c. It encompasses the east half of Daelyn Drive, between Raylan Way and Isabel Place. Runoff will be conveyed as gutter flow to **DP 14b.**

Basin D-2e (1.41 AC, Q5 = 3.3 cfs, Q100 = 6.7 cfs): a basin east of Basin D-2d and south of D-2c. It encompasses single-family residential lots and the west half of Isabel Place. Runoff will flow from each lot onto public R.O.W. where existing mountable curb and gutter will convey flows to **DP 14d,** a low point on the west side of Isabel Place**.** Flows will be intercepted by an existing 5' sump CDOT Type R inlet. These flows will be a part of Storm System A, which was built in Falcon Meadows at Bent Grass Filing No. 1 and 2. This system ultimately outfalls into the existing south WQCV pond at **DP 31.**

Basin D-2f (2.43 AC, Q5 = 6.0 cfs, Q100 = 12.2 cfs): a basin east of Basin D-2e. It encompasses single-family residential lots, east half of Isabel Place and Jolie Court. Runoff will flow from each lot onto public R.O.W. where existing mountable curb and gutter will convey flows to **DP 14e**, a low point on the east side of Isabel Place. Flows will be intercepted by an existing 10' sump CDOT Type R inlet, as part of Storm System A. Flows will ultimately outfall into the existing south WQCV pond at **DP 31.**

Basin D-2g (1.81 AC, Q5 = 2.9 cfs, Q100 = 6.5 cfs): a basin south of Basin D-2f. It encompasses single-family residential lots, east half of Daelyn Drive and north half of Rowena Way. Runoff will flow from each lot onto public R.O.W. where existing mountable curb and gutter will convey flows to **DP 14,** which combines with the flow from **DP 14b.** Flows will then enter an existing at grade CDOT Type R inlet where captured flows will then be piped and ultimately outfall in the existing south WQCV pond at **DP 31**. Bypass flows from the inlet would continue south as gutter flow in Bent Grass Meadows Drive to **DP 24,** an existing at grade CDOT Type R inlet.

Basin D-2h (0.23 AC, Q5 = 0.3 cfs, Q100 = 0.8 cfs): a basin south of Basin D-2d and east of Bent Grass Meadows Drive, containing residential lots which will flow into Bent Grass Meadows Drive. Flows will be conveyed via existing curb and gutter to the existing CDOT Type R inlet at **DP 24**.

Basin D-3 (2.26 AC, Q5 = 2.6 cfs, Q100 = 6.3 cfs): a basin that is in the southwest corner of Falcon Meadows Filing 2, south of Basin D-1. It encompasses the backs of several residential lots as well as existing drainage swales (Swale D along west property line and Swale E along south property line). Runoff will flow from basin OS-2 and OS-3 into existing Swale D and convey flows to the existing

drainage Swale E which will convey flows to an existing area inlet at **DP 11**. From there, flows will be piped and ultimately outfall at the south WQCV pond at **DP 31**.

The following basins were all developed as part of Falcon Meadows at Bent Grass Filing No. 1 & Bent Grass Residential Filing No. 2. There are no revisions to the basins described below with the exception of Basin B-1 where minor revisions were made due to the final grading for FM Filing No. 3

Basin OS-4 (4.46 AC, Q5 = 5.6 cfs, Q100 = 14.0 cfs): is associated with The Bent Grass Residential Filing No. 2, lots 152-160, lots 163-168, Tract D, and portions of Thedford Court & Willmore Drive. Runoff from this basin flows via curb & gutter south on Thedford Court then continues flowing west along the northern curb & gutter along Willmore Drive before discharging into Basin A-1 at **DP 1**.

Basin OS-5 (0.46 AC, Q5 = 1.1 cfs, Q100 = 2.3 cfs): is associated with The Bent Grass Residential Filing No. 2, lots 161 & 162 along with a portion of Silky Thread Road. Runoff from this basin generally flows to the west via curb & gutter along Silky Thread Road before discharging into Basin A-1 at **DP 2**.

Basin OS-6 (1.17 AC, Q5 = 2.0 cfs, Q100 = 4.3 cfs): is associated with The Bent Grass Residential Filing No. 2, the northern halves of Lots 170-178 and a portion of the southern side of Willmore Drive. Runoff from this basin generally flows to the west via curb & gutter along Willmore Drive before discharging into Basin A-1 at **DP 3**.

Basin EX-1 (1.19 AC, Q_5 = 0.4 cfs, Q_{100} = 2.5 cfs): is associated with the northwestern portion of the Bent Grass Residential Filing No. 2 site east of the existing channel. The basin is currently undeveloped. Runoff from the basin generally flows to the southwest, into Basin EX-2**.**

Basin EX-2 (1.60 AC, Q_5 = 0.5 cfs, Q_{100} = 3.8 cfs): is along the western boundary portion of the Bent Grass Residential Filing No. 2 site and is south of Basin EX-1, east of the existing channel. The basin is currently undeveloped and receives flows from Basins OS-4 & OS-5. Runoff from the basin generally flows to the southeast into Basin EX-3 at **DP 5** combined with flows from **DP 1, & 2**.

Basin EX-3 (0.66 AC, Q_5 = 0.2 cfs, Q_{100} = 1.6 cfs): is along the western boundary portion of the Bent Grass Residential Filing No. 2 site south of Basin EX-2 and east of the existing channel. The basin currently contains an existing WQCV pond created as part of Bent Grass Residential Filing No. 2 (North Pond). This basin receives flows from **DP 5** and **DP 3**.

Basin B-1 (6.59 AC, Q5 = 1.8 cfs, Q100 = 11.8 cfs): a basin that is along the north boundary of the site and through the center of the site, encompassing the existing rerouted channel RWT202 and channel RWT204. Minor revisions to this basin include the addition of Pond North (future WQCV detention pond) within Basin C-5 at the downstream end of Basin B-1. Flows will continue south in the existing channel where they will then be conveyed through the existing twin 16' x 6' RCBC's to **DP AA**.

Basin B-2 (4.16 AC, Q5 = 1.3 cfs, Q100 = 8.6 cfs): a basin that is in the south area of the site on the eastern property line of Falcon Meadows Filing No. 1 and encompasses channel reach RWT204/ RWT210. Flows will sheet flow into the channel where they will then be conveyed to **DP CC**, combining with other on-site flows, prior to exiting the site.

Basin D-4a (0.98 AC, Q5 = 2.1 cfs, Q100 = 4.4 cfs): a basin that is east of Bent Grass Meadows Drive. It encompasses single-family residential lots, north half of Rowena Way, & a portion of the west half of Nico Way. Runoff will flow from each lot onto public R.O.W. where existing mountable curb and gutter will

convey flows to **DP 17a**. Flow will continue as gutter flow in Nico Way, Linley Way and Jayla Trail to **DP 17b.**

Basin D-4b (0.95 AC, Q5 = 2.5 cfs, Q100 = 4.9 cfs): a basin that is east of Bent Grass Meadows Drive. It encompasses single-family residential lots, Rowena Way, & portions of Linley Way and Jayla Trail. Runoff will flow from each lot onto the existing public R.O.W. where existing mountable curb and gutter will convey flows to **DP 17b**, which is the combined flow from the south side of **DP 17**.

Basin D-4c (1.21 AC, Q5 = 2.4 cfs, Q100 = 5.0 cfs): a basin that is east of Henzlee Place and south of Bent Grass Meadows Drive. It encompasses single-family residential lots, & portions of Nico Way, Jayla Trail, and Henzlee Place. Runoff will flow from each lot onto the existing public R.O.W. where existing mountable curb and gutter will convey flows to **DP 17c**, the north side of **DP 17**. Flows at **DP 17** (combined flows from **DP 17b** & **DP 17c** with bypass from **DP 18**) will then enter an existing sump CDOT Type R inlet, part of Storm System A, where it will then be piped and ultimately outfall in the existing south WQCV pond at **DP 31**. Overflow from this inlet would be to overtop the curb and then continue via an existing swale, following the same path as the existing pipe, to the east until flows are released into the existing south water quality pond.

Basin D-5 (1.08 AC, Q5 = 2.8 cfs, Q100 = 6.0 cfs): a basin that is located at the southwest corner of Bent Grass Meadows Drive and Henzlee Place. It includes residential lots, as well as a portion of the north half of Nico Way and west half of Henzlee Place. Flows will be directed towards the public R.O.W. where existing curb and gutter will convey flows to the south along Henzlee Place to **DP 18**. Flows will then enter an existing CDOT Type R inlet, part of Storm System A, where it will then be piped and ultimately outfall in the existing south WQCV pond at **DP 31**.

Basin D-6a (1.33 AC, Q5 = 3.8 cfs, Q100 = 7.5 cfs): a basin filing that is south of Basin D-6b & east of Basin D-4a. It encompasses single-family residential lots & half of Linley Way, Jayla Trail, Henzlee Place, & Nico Way. Runoff will flow from each lot onto the existing public R.O.W. where existing mountable curb and gutter will convey flows to **DP 18.**

Basin D-6b (2.69 AC, Q5 = 5.6 cfs, Q100 = 11.4 cfs): a basin that is south of Basin D-5 & east of Basin D-4a. It encompasses single-family residential lots & half of Linley Way, Jayla Trail, Henzlee Place, & Nico Way. Runoff will flow from each lot onto the existing public R.O.W. where existing mountable curb and gutter will convey flows to **DP 18**, along with flows from Basin D-6a. Flows will then enter an existing sump CDOT Type R inlet where it will then be piped and ultimately outfall in the existing south WQCV pond at **DP 31**.

Basin D-7 (7.65 AC, Q5 = 4.3 cfs, Q100 = 18.2 cfs): a basin that is in the south end of the site, east of Bent Grass Meadows Drive & west of the existing channel. It encompasses the back half of several single-family residential lots as well as the existing south WQCV pond and an existing drainage ditch (Swale F). Runoff will flow, via sheet flow, until it enters the existing swale and is conveyed to the existing south WQCV pond or will directly flow into the existing south WQCV pond at **DP 30**.

Basin D-8 (1.69 AC, Q5 = 2.6 cfs, Q100 = 6.0 cfs): a basin that is west of the existing channel & south of Bent Grass Meadows Drive. It encompasses the back half of single-family residential lots. Runoff will flow from each lot and discharge into an existing drainage swale (Swale C). The swale will convey flows to the south, ultimately discharging into the existing south WQCV pond at **DP 32**.

Basins E-1 thru E-5 are the same as discussed under the Existing Conditions Section, as these basins represent the already built Bent Grass Meadows Drive through the proposed site.

Basin RWT202 (1574.4 AC,Q5 = 200 cfs, Q100 = 1000 cfs), RWT204 (38.4 AC, Q5 = 7 cfs, Q100 = 43 cfs) and WT200 (192 AC, Q5 = 52 cfs, Q100 = 190 cfs) represent larger offsite basins to the north of the proposed project. These areas were studied as part of the Falcon Basin DBPS prepared by Matrix and were also part of the Bent Grass MDDP, submitted for review in January. There have been no changes to these basins as they are offsite and existing.

Design Point CC is the location in channel reach RWT210, where flows exit the Bent Grass Site, including the offsite flows from RWT202, RWT204 and WT200. The minor flows are 340.0 cfs and the major flows are 1395.4 cfs. The MDDP Amendment, form the HEC-HMS model, has flows of 191.8 cfs and 1075.3 cfs for the 5- and 100-year flows under proposed/future conditions analysis. The FEMA FIS report has a total flow of 1400 cfs in channel reach RWT210.

IX. Storm Sewer System

All development is anticipated to be urban and will include storm sewer & street inlets. Storm sewers collect storm water runoff and convey the water to existing water quality facilities prior to discharging. Storm sewer systems will be designed to the 100-year storm and checked with the 5-year storm. Inlets will be placed at sump areas and intersections where street flow is larger than street capacity. The UDFCD Inlet spreadsheet will be used to determine the size of all at-grade and sump inlets. There will be a minimum of 1 proposed storm systems and two existing systems within the site. It is anticipated that there will be an additional future storm system with subsequent filings of Falcon Meadows, as the area develops north of Bent Grass Meadows Drive.

There is one future storm system. The future storm system will consist of an area inlet to collect flows before entering the existing channel. This system will release directly into the existing north WQCV pond. The stub was installed with Falcon Meadows at Bent Grass Filing No. 2 along with the pond construction.

The proposed storm system (Storm System B), collects flows north of Bent Grass Meadows Drive, over to a “ridge line” located between Henzlee Place and the western property boundary. These flows are routed through the proposed development, with captured flows releasing into the existing North water quality pond, constructed as part of Falcon Meadows at Bent Grass Filing No. 2. A portion of this storm system was constructed as part of the Falcon Meadows at Bent Grass Filing No. 2 development. The design of the entire system has been included in the appendix. Flows not intercepted from this area, reach the existing sump inlet at DP 8, which releases into the existing WQCV pond in Bent Grass Residential Filing No. 2. All design calculations (StormCAD, inlet design & street capacity spreadsheets, etc.) have been included in Appendix C for this system.

The inlets located within Bent Grass Meadows Drive (DP-8, DP-24, and DP-25) were all designed under the FDR for Bent Grass Residential Filing No. 2. The inlets were “rechecked” based on updated flows reaching each of these design points. The analysis of these inlets is included in Appendix C. Analysis of the existing inlets as part of Storm A, designed in Falcon Meadows Filing No. 2, have also been included in Appendix C, to ensure inlets still perform adequately.

Final drainage reports for future filings will include details concerning inlet location, street capacity, storm sewer sizing, outlet protection and location for any future storm systems.

X. Proposed Water Quality Detention Ponds

There are 3 facilities which provide water quality for this site. One facility was constructed under the Bent Grass Residential Filing No. 2 project and is located north of Bent Grass Meadows Drive. An existing inlet at DP 8 releases into this facility. The second WQCV (Pond South) was constructed as part of the Falcon Meadows at Bent Filing No. 1 project and is situated north of the southern property line and west of the existing channel. Design Points 30, 31 and 32 are the ultimate outfalls releasing into this facility. The final WQCV facility (Pond North) was constructed as part of Falcon Meadows at Bent Grass Filing No. 2 and is located north of Bent Grass Meadows Drive and east of the existing facility built with Bent Grass Residential Filing No. 2. Ultimate release points into this facility are DP 19 and 12. An analysis of both the North and South existing facilities is included in the appendix to ensure it functions adequately with minor revisions made to hydrology routing with this filing.

All three facilities release treated waters to the exiting channel at RWT204 (north of Bent Grass Meadows Drive) or RWT210 (south of Bent Grass Meadows Drive).

There are two basins which are not provided with on-site water quality, as stated previously. Basins B-1 and B-2 (combined area of 8.87 acres) represents the area of the West Tributary Channel (RWT204/RWT210) for the Falcon Basin as it traverses the project site. These areas are undeveloped, will remain undeveloped, and release onto undeveloped land (continuation of channel reach RWT210). This project is not a stream stabilization site as a standalone project has been designated for this (CDR 21-014). This area is not to be detained in a PBMP per section I.7.1.B.7 (Land disturbance to undeveloped land that will remain undeveloped). Therefore, they do not “count” towards the 1 acre of area being able to be released untreated from the site.

Total non-excluded area which will not be treated via on-site facilities is less than 1.0 acre, as required.

XI. Channel and Swales

Swales

All swales were designed with previous Bent Grass or Falcon Meadows filings. No additional analysis has been provided in this report.

Channel

With the proposed development of Falcon Meadows at Bent Grass Filing No. 3, there is no encroachment (50’ undisturbed buffer from FEMA floodplain) into the existing channel reaches RWT204/RWT210. Current channel design and report are being prepared and will be submitted to El Paso County for review under a separate cover.

XII. Maintenance

The future channel is to be a private facility, which will be maintained by the Bent Grass Metropolitan District. After completion of construction and upon the Board of County Commissioners acceptance, all public drainage facilities within easements and public Right-of-Way will be owned and maintained by El Paso County. No channel improvements are proposed with this Filing, as improvements are being provided under a separate cover. Channel improvements and maintenance will be addressed with the channel design report.

XIII. Wetlands Mitigation

No wetlands are located on site.

XIV. Floodplain Statement

A portion of the project site lies within Zone AE Special Flood Hazard Area as defined by the FIRM Map number 08041C0553G effective December 7, 2018. A copy of the FIRM Panel is included in Appendix A.

The portion of channel that has a floodplain designation is only the RWT210 and RWT204 portions of the channel. It is unknown why the western channel, RWT202 is unmapped since it is the larger contributor regarding flow rates. Discussions have occurred with PPRBD and a no rise certificate will be required for the existing channel. Models have been obtained from FEMA which show that the FEMA discharges are higher than the DBPS. Therefore, the culvert crossing at Bent Grass Meadows Parkway was sized per the FEMA flows and not the DBPS. The no rise certification will be provided under a separate report, when channel improvements are addressed with future filings.

XV. Drainage/Bridge Fees and Credits/Reimbursements

The site lies within the Falcon Drainage Basin. The DBPS was approved in 2013 and has drainage and bridge fees associated with the basin.

The project site has a total area of 12.74 acres. The tracts account for a total of 1.75 acres, 42 residential lots are 8.41 acres and 2.58 acres of right-of-way. The following calculations for the imperviousness of this development have been computed as follows:

Average Residential lot size: 8.41 acres / 42 lots = 8,722 sf/lot

Average lot imperviousness = 8,722 sf x 43% = 3750 sf

Average Residential imperviousness: 3750/8722 = 43.0%

ROW area is 100% impervious
Open Space is 0% impervious

Average imperviousness for developed area:
(0.43 x 8.41) + (1.0 x 2.58) + (0 x 1.75) / 12.74 = 0.4864

12.74 acres x 48.64% = 6.197 Impervious Acres

The following calculations are based on the 2022 Falcon Basin drainage/bridge fees:

Drainage Fees

$34,117 x 6.197 Imp. Acres = $211,423.05

Bridge Fees

$4,687 x 6.197 Imp. Acres = $29,045.34

Per discussions with El Paso County the fees will be offset by drainage improvements. The tables below provide a tabular summary of previous fees and offsets for the overall Bent Grass development.

(SF-19-014) Bent Grass Residential Filing No. 2 - Final Drainage Report *FALCON DRAINAGE BASIN* *2019 Original Drainage and Bridge Fees*														
	Impervious Area (acres)	*	Fee Per Impervious Acre	=	Total Fee	- (	Total Collateral from FAE	+	Remaining Fee Offset from Previous Filings	) =	Remaining Fee Offset	OR	Fee Due at Platting
Drainage Fee	23.45		$ 29,622.00		$ 694,635.90		$ 1,270,481.00		$ -		$ 575,845.10		
Bridge Fee	23.45		$ 4,069.00		$ 95,418.05		$ 480,000.00		$ -		$ 384,581.95		

(SF-21-020) Falcon Meadows at Bent Grass Filing No. 1 - Final Drainage Report *FALCON DRAINAGE BASIN* *2021 Original Drainage and Bridge Fees*														
	Impervious Area (acres)	*	Fee Per Impervious Acre	=	Total Fee	- (	Total Collateral from FAE	+	Remaining Fee Offset from Previous Filings	) =	Remaining Fee Offset	OR	Fee Due at Platting
Drainage Fee	5.73		$ 31,885.00		$ 182,701.05		$ -		$ 575,845.10		$ 393,144.05		
Bridge Fee	5.73		$ 4,380.00		$ 25,097.40		$ -		$ 384,581.95		$ 359,484.55		

(SF-21-034) Falcon Meadows at Bent Grass Filing No. 2 - Final Drainage Report *FALCON DRAINAGE BASIN* *2021 Original Drainage and Bridge Fees*														
	Impervious Area (acres)	*	Fee Per Impervious Acre	=	Total Fee	- (	Total Collateral from FAE	+	Remaining Fee Offset from Previous Filings	) =	Remaining Fee Offset	OR	Fee Due at Platting
Drainage Fee	9.6		$ 31,885.00		$ 306,096.00		$ -		$ 393,144.05		$ 87,048.05		
Bridge Fee	9.6		$ 4,380.00		$ 42,048.00		$ -		$ 359,484.55		$ 317,436.55		

(SF-22-016) Falcon Meadows at Bent Grass Filing No. 3 - Final Drainage Report *FALCON DRAINAGE BASIN* *2022 Original Drainage and Bridge Fees*														
	Impervious Area (acres)	*	Fee Per Impervious Acre	=	Total Fee	- (	Total Collateral from FAE	+	Remaining Fee Offset from Previous Filings	) =	Remaining Fee Offset	OR	Fee Due at Platting
Drainage Fee	6.197		$ 34,117.00		$ 211,423.05		$ -		$ 87,048.05				$ (124,375.00)
Bridge Fee	6.197		$ 4,687.00		$ 29,045.34		$ -		$ 317,436.55		$ 288,391.21		

Below is a cost estimate for the improvements proposed with this filing.

Item	Quantity	Unit	Unit Cost	Cost
Storm Drain Improvements (Public)				
15' CDOT Type R Inlet (Public)	1	EA	$ 9,800.00	$ 9,800.00
4' Manhole - Type II (Public)	6	EA	$ 3,000.00	$ 18,000.00
5' Manhole - Type II (Public)	1	EA	$ 3,500.00	$ 3,500.00
18" RCP Storm Drain (Public)	89	LF	$ 60.00	$ 5,340.00
24" RCP Storm Drain (Public)	437	LF	$ 70.00	$ 30,590.00
Total				**$ 67,230.00**
Contingency			10%	$ 6,723.00
Grand Total				**$ 73,953.00**

XVI. Conclusion

The Falcon Meadows at Bent Grass Filing No. 3 Subdivision lies within the West Tributary of the Falcon Area Watershed. Detention for the site is provided in three existing WQCV ponds to provide water quality for the entire tributary area. The proposed development will not have any adverse impacts on downstream developments or existing drainageways.

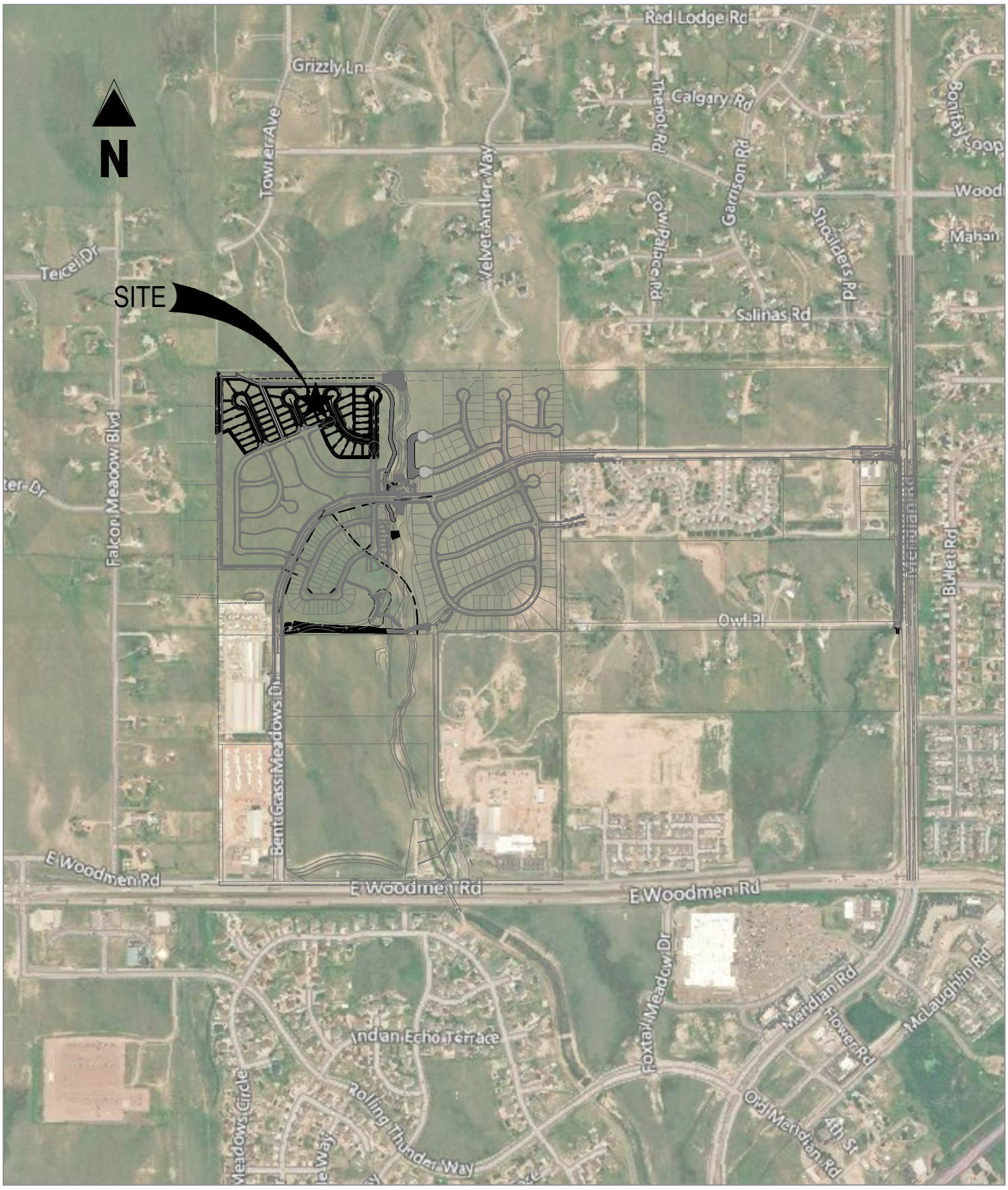
All drainage facilities within this report were sized according to the Drainage Criteria Manuals. Bent Grass Metropolitan District will own and maintain the channels until such a time that all final improvements have been constructed. At that time, channel corridors will become publicly owned and maintained and shall be the responsibility of El Paso County. Upon development of future filings within the Bent Grass Residential Subdivision, separate Final Drainage Reports will be required to be submitted and approved by El Paso County.

XVII. References

1. *City of Colorado Springs/County of El Paso Drainage Criteria Manual*, October 1991.
2. *Drainage Criteria Manual, Volume 2*, City of Colorado Springs, November 2002.
3. *Urban Storm Drainage Criteria Manual*, Urban Drainage and Flood Control District, January 2016 (with current revisions).
4. *Falcon Drainage Basin Planning Study*, by Matrix Design Group, September 2015.
5. *Master Development Drainage Plan and Preliminary Drainage Plan – Bent Grass Subdivision*, by Kiowa Engineering Corporation, December 2006.
6. *Final Drainage Report for Bent Grass Residential (Filing No. 1)*, by Classic Consulting Engineers & Surveyors, LLC, August 2014.
7. *Final Drainage Report Addendum for Bent Grass Residential (Filing No. 1)*, by Classic Consulting Engineers & Surveyors, LLC, August 2015.
8. *Master Development Drainage Plan for The Ranch*, by Classic Consulting Engineers & Surveyors, LLC, November 2018.
9. *Falcon Highlands Master Development Drainage Plan & Preliminary Drainage Report & Final Drainage Report for Filing 1*, by URS, January 2005.
10. *Final Drainage Report and Erosion Control Plan – Latigo Business Center Filing No. 1 A Re-subdivision of a Portion of Latigo Business and Research Center Filing No. 1*, by Kiowa Engineering Corporation, November 2004.
11. *Final Drainage Report for Bent Grass Residential (Filing No. 2),* by Galloway & Company, May 2020.
12. *Preliminary Drainage Report-Falcon Meadows at Bent Grass,* by Galloway & Company, February 2021.
13. *Final Drainage Report for Falcon Meadows at Bent Grass Filing No. 1,* by Galloway & Company, September 2021.
14. *Final Drainage Report for Falcon Meadows at Bent Grass Filing No. 2,* by Galloway & Company, under review.

APPENDIX A

Exhibits and Figures



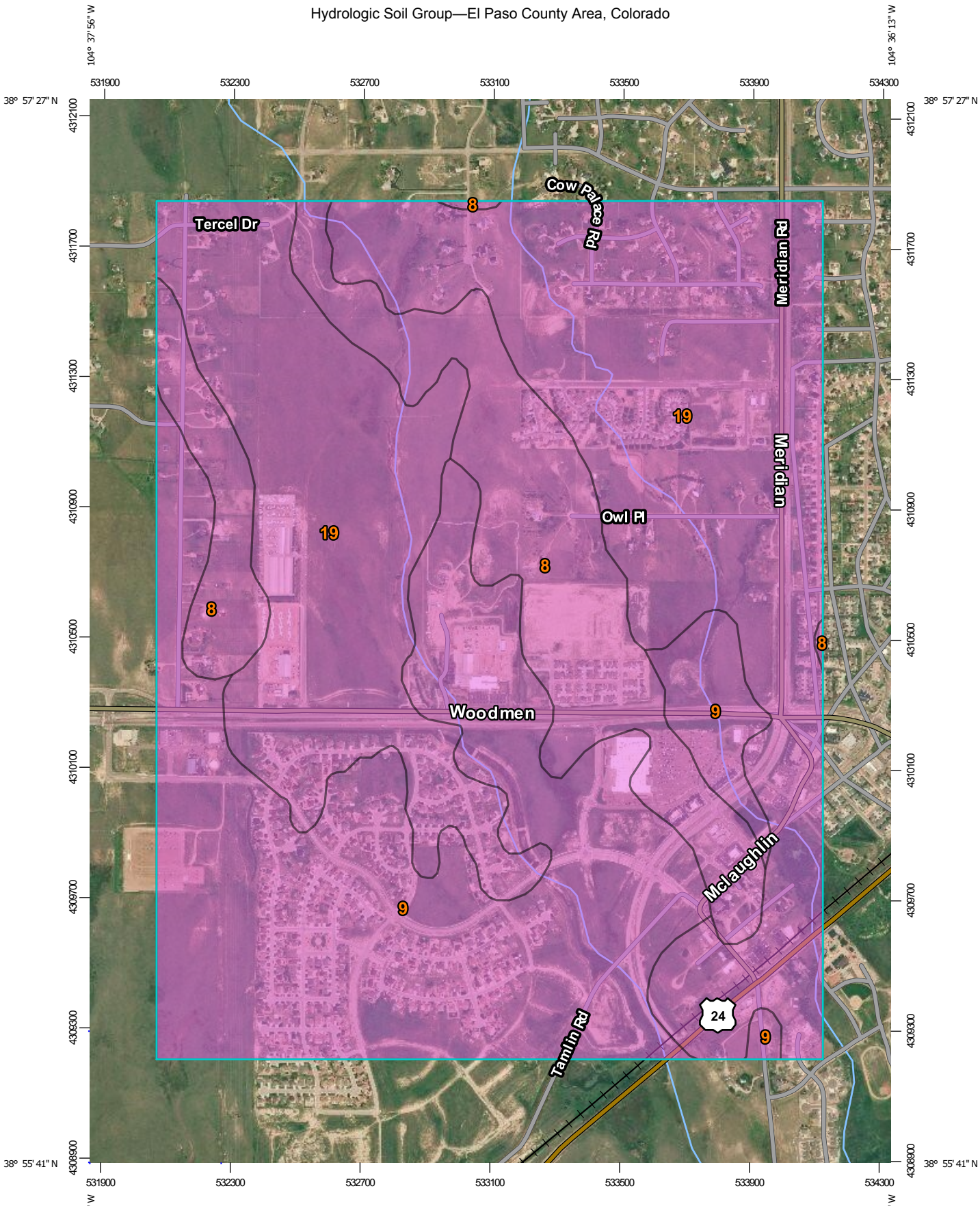
FALCON MEADOWS AT BENT GRASS
FILING NO. 3

BENT GRASS MEADOWS DRIVE
SCALE: 1"=1,000'

VICINITY MAP

Project No:	CLH000020.20
Drawn By:	TJE
Checked By:	CMD
Date:	06/10/2021

Galloway
1155 Kelly Johnson Blvd., Suite 305
Colorado Springs, CO 80920
719.900.7220 • GallowayUS.com



Map Scale: 1:15,900 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 200 400 800 1200

Feet: 0 500 1000 2000 3000

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.

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 16, Sep 10, 2018

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

Date(s) aerial images were photographed: Jun 7, 2016—Aug 17, 2017

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	214.3	16.0%
9	Blakeland-Fluvaquentic Haplaquolls	A	465.8	34.7%
19	Columbine gravelly sandy loam, 0 to 3 percent slopes	A	662.6	49.3%
Totals for Area of Interest			**1,342.6**	**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

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.

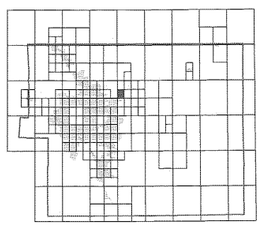
Contact **FEMA Map Service Center** (MSC) via the FEMA Map Information eXchange (FMIX) 1-877-336-2627 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this 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

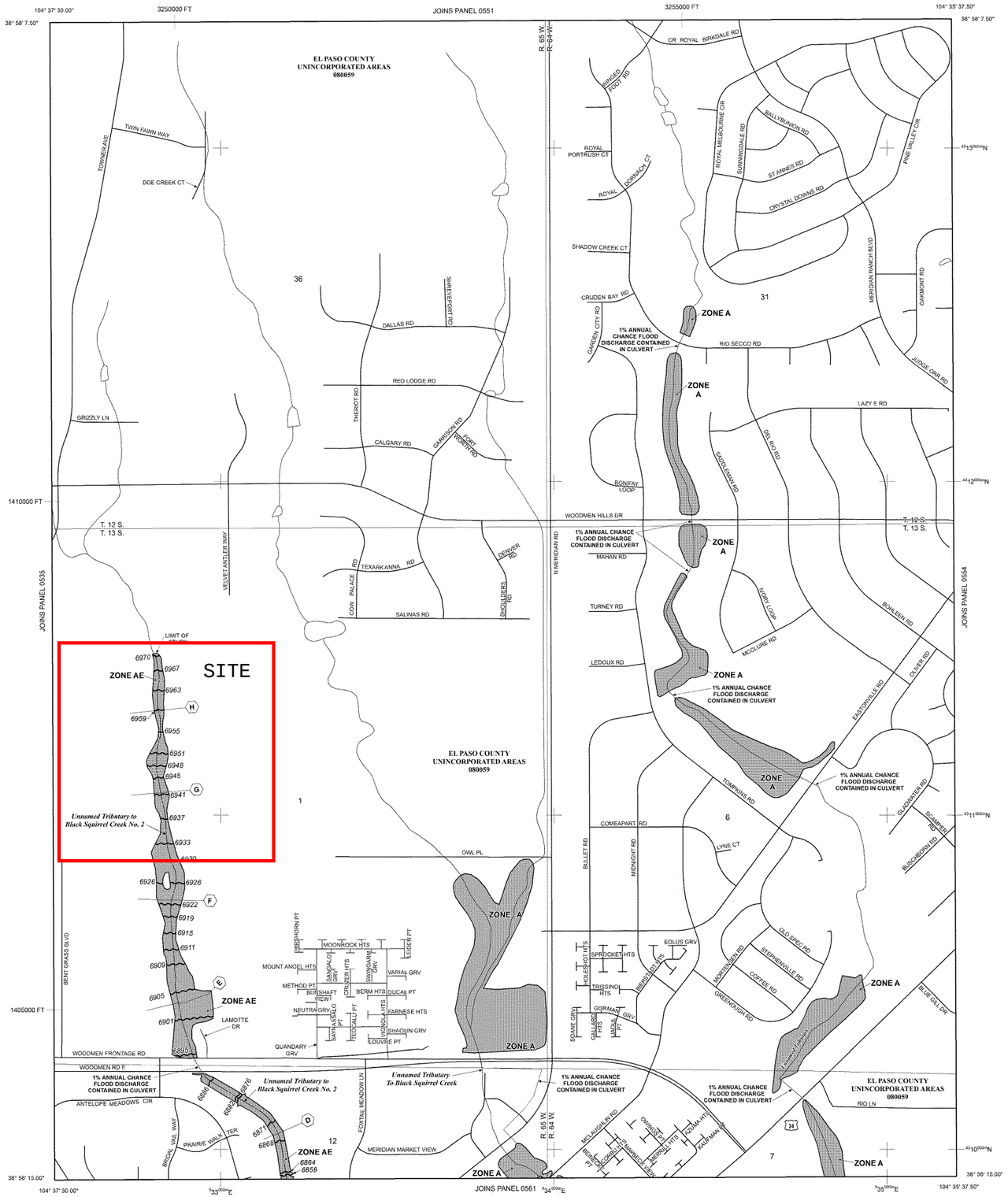
Flooding Source	Vertical Datum Offset (ft)
REFER TO SECTION 3.3 OF THE EL PASO COUNTY FLOOD INSURANCE STUDY FOR STREAM BY STREAM VERTICAL DATUM CONVERSION INFORMATION	

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.



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 0553G

NATIONAL FLOOD INSURANCE PROGRAM

FIRM

FLOOD INSURANCE RATE MAP

EL PASO COUNTY, COLORADO AND INCORPORATED AREAS

PANEL 553 OF 1300

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
EL PASO COUNTY	080059	0553	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 08041C0553G

MAP REVISED DECEMBER 7, 2018

Federal Emergency Management Agency

APPENDIX B

Hydrologic Computations

Historic Computations

COMPOSITE % IMPERVIOUS CALCULATIONS (EXISTING/HISTORIC CONDITIONS)

Subdivision: Falcon Meadows — Falcon Meadows at Bent Grass Filing No. 3
Location: CO, Colorado Springs — CLH020.20
TJE
CMD
12/2/20

Basin ID	Total Area (ac)	Paved Roads			Lawns			Roofs			Basins Total Weighted % Imp.
		% Imp.	Area (ac)	Weighted % Imp.	% Imp.	Area (ac)	Weighted % Imp.	% Imp.	Area (ac)	Weighted % Imp.	
OFFSITE BASINS											
WT200	192.00										10.0
OS-25	14.13	100	0.17	1.2	2	13.71	1.9	90	0.22	1.4	4.5
OS-26	5.81	100	0.00	0.0	2	5.81	2.0	90	0.00	0.0	2.0
OS-1	13.06	100	0.84	6.4	2	11.65	1.8	90	0.57	3.9	12.1
OS-2	17.81	100	2.00	11.2	2	15.18	1.7	90	0.63	3.2	16.1
OS-4	30.69	100	1.42	4.6	2	28.41	1.9	90	0.86	2.5	9.0
BENT GRASS FILING NO. 2 & BENT GRASS WEST BASINS											
A-1	5.42	100	0.16	3.0	2	5.26	1.9	90	0.00	0.0	4.9
A-2	18.00	100	0.00	0.0	2	18.00	2.0	90	0.00	0.0	2.0
A-3	19.59	100	0.00	0.0	2	19.59	2.0	90	0.00	0.0	2.0
A-4	23.81	100	0.57	2.4	2	23.12	1.9	90	0.12	0.5	4.8
B-1	32.53	100	0.00	0.0	2	32.53	2.0	90	0.00	0.0	2.0
B-2	4.51	100	0.00	0.0	2	4.51	2.0	90	0.00	0.0	2.0
B-3	16.18	100	1.00	6.2	2	15.18	1.9	90	0.00	0.0	8.1

COMPOSITE RUNOFF COEFFICIENT CALCULATIONS (EXISTING/HISTORIC CONDITIONS)

Subdivision: Falcon Meadows — Falcon Meadows at Bent Grass Filing No. 3
Location: CO, Colorado Springs — CLH020.20
TJE
CMD
12/2/20

Basin ID	Total Area (ac)	Hydrologic Soils Group	Paved Roads			Lawns			Roofs			Composite C_5	Composite C_{100}
			C_5	C_{100}	Area (ac)	C_5	C_{100}	Area (ac)	C_5	C_{100}	Area (ac)		
OFFSITE BASINS													
WT200	192.00											0.20	0.44
OS-25	14.13	A	0.90	0.96	0.17	0.09	0.36	13.71	0.73	0.81	0.22	0.11	0.37
OS-26	5.81	A	0.90	0.96	0.00	0.09	0.36	5.81	0.73	0.81	0.00	0.09	0.36
OS-1	13.06	A	0.90	0.96	0.84	0.09	0.36	11.65	0.73	0.81	0.57	0.17	0.42
OS-2	17.81	A	0.90	0.96	2.00	0.09	0.36	15.18	0.73	0.81	0.63	0.20	0.44
OS-4	30.69	A	0.90	0.96	1.42	0.09	0.36	28.41	0.73	0.81	0.86	0.15	0.40
BENT GRASS FILING NO. 2 & BENT GRASS WEST BASINS													
A-1	5.42	A	0.90	0.96	0.16	0.09	0.36	5.26	0.73	0.81	0.00	0.11	0.38
A-2	18.00	A	0.90	0.96	0.00	0.09	0.36	18.00	0.73	0.81	0.00	0.09	0.36
A-3	19.59	A	0.90	0.96	0.00	0.09	0.36	19.59	0.73	0.81	0.00	0.09	0.36
A-4	23.81	A	0.90	0.96	0.57	0.09	0.36	23.12	0.73	0.81	0.12	0.11	0.38
B-1	32.53	A	0.90	0.96	0.00	0.09	0.36	32.53	0.73	0.81	0.00	0.09	0.36
B-2	4.51	A	0.90	0.96	0.00	0.09	0.36	4.51	0.73	0.81	0.00	0.09	0.36
B-3	16.18	A	0.90	0.96	1.00	0.09	0.36	15.18	0.73	0.81	0.00	0.14	0.40

STANDARD FORM SF-2
TIME OF CONCENTRATION
EXISTING/HISTORIC CONDITIONS

Subdivision: Falcon Meadows
Location: CO, Colorado Springs

Project Name: Falcon Meadows at Bent Grass Filing No. 3
Project No.: CLH020.20
Calculated By: TJE
Checked By: CMD
Date: 12/2/20

SUB-BASIN DATA						INITIAL/OVERLAND (T_i)			TRAVEL TIME (T_t)					Tc CHECK (URBANIZED BASINS)			FINAL
BASIN ID	D.A. (AC)	Hydrologic Soils Group	Impervious (%)	C5	C_{100}	L (FT)	S (%)	T_i (MIN)	L (FT)	S (%)	Cv	VEL. (FPS)	T_t (MIN)	COMP. T_c (MIN)	TOTAL LENGTH (FT)	Urbanized T_c (MIN)	T_c (MIN)
OFFSITE BASINS																	
WT200	192.00	A	10.00	0.20	0.44	300	2.0	22.7	2060	2.0	15.0	2.1	16.2	38.8	2360.0	23.1	23.1
OS-25	14.13	A	4.50	0.11	0.37	300	2.5	23.1	1400	3.0	15.0	2.6	9.0	32.1	1700.0	19.4	19.4
OS-26	5.81	A	2.00	0.09	0.36	300	2.0	25.4	400	2.0	15.0	2.1	3.1	28.6	700.0	13.9	13.9
OS-1	13.06	A	12.10	0.17	0.42	300	2.5	21.7	1420	2.5	15.0	2.4	10.0	31.7	1720.0	19.6	19.6
OS-2	17.81	A	16.10	0.20	0.44	300	2.3	21.6	1370	2.3	15.0	2.3	10.0	31.7	1670.0	19.3	19.3
OS-4	30.69	A	9.00	0.15	0.40	300	2.3	22.8	2600	2.3	15.0	2.3	19.0	41.9	2900.0	26.1	26.1
BENT GRASS FILING NO. 2 & BENT GRASS WEST BASINS																	
A-1	5.42	A	4.90	0.11	0.38	300	2.5	23.0	466	2.5	15.0	2.4	3.3	26.3	766.0	14.3	14.3
A-2	18.00	A	2.00	0.09	0.36	300	2.4	23.9	1130	2.0	15.0	2.1	8.9	32.8	1430.0	17.9	17.9
A-3	19.59	A	2.00	0.09	0.36	300	2.7	23.0	760	2.7	15.0	2.5	5.1	28.1	1060.0	15.9	15.9
A-4	23.81	A	4.80	0.11	0.38	300	2.0	24.9	1500	2.0	15.0	2.1	11.8	36.7	1800.0	20.0	20.0
B-1	32.53	A	2.00	0.09	0.36	300	2.6	23.3	1100	2.6	15.0	2.4	7.6	30.9	1400.0	17.8	17.8
B-2	4.51	A	2.00	0.09	0.36	300	3.0	22.2	323	5.0	15.0	3.4	1.6	23.8	623.0	13.5	13.5
B-3	16.18	A	8.10	0.14	0.40	300	2.9	21.4	780	2.9	15.0	2.6	5.1	26.4	1080.0	16.0	16.0

NOTES:

$T_i = (0.395*(1.1 - C_5)*(L)^0.5)/((S)^0.33)$, S in ft/ft

T_t=L/60V

Velocity V=Cv*S^0.5, S in ft/ft

Tc Check = 10+L/180

For Urbanized basins a minimum T_c of 5.0 minutes is required.

For non-urbanized basins a minimum T_c of 10.0 minutes is required

Type of Land Surface	Cv
Heavy Meadow	2.5
Tillage/field	5
Short pasture and lawns	7
Nearly bare ground	10
Grassed waterway	15
Paved areas and shallow paved swales	20

STANDARD FORM SF-3

STORM DRAINAGE SYSTEM DESIGN (EXISTING/HISTORIC CONDITIONS)

(RATIONAL METHOD PROCEDURE)

Subdivision: Falcon Meadows
Location: CO, Colorado Springs
Design Storm: 5-Year

Project Name: Falcon Meadows at Bent Grass Filing No. 3
Project No.: CLH020.20
Calculated By: TJE
Checked By: CMD
Date: 12/2/20

STREET	Design Point	DIRECT RUNOFF							TOTAL RUNOFF				STREET		PIPE			TRAVEL TIME			REMARKS
		Basin ID	Area (Ac)	Runoff Coeff.	Tc (min)	C*A (Ac)	I (in/hr)	Q (cfs)	Tc (min)	C*A (Ac)	I (in/hr)	Q (cfs)	Slope (%)	Street Flow (cfs)	Design Flow (cfs)	Slope (%)	Pipe Size (inches)	Length (ft)	Velocity (fps)	Tt (min)	
		RWT202	1574.40						46.6	7.69	1.82	14.0									From Falcon DBPS by Matrix (Existing Flows)
		RWT204	38.40						11.4	1.78	3.94	7.0									From Falcon DBPS by Matrix (Existing Flows)
		WT200	192.00						37.8	11.74	2.13	25.0									From Falcon DBPS by Matrix (Existing Flows)
		OS-25	14.13	0.11	19.4	1.55	3.13	4.9													
		OS-26	5.81	0.09	13.9	0.52	3.64	1.9													
		OS-1	13.06	0.17	19.6	2.22	3.12	6.9													
		OS-2	17.81	0.20	19.3	3.56	3.14	11.2													
		OS-4	30.69	0.15	26.1	4.60	2.69	12.4													
BENT GRASS FILING NO. 2 & BENT GRASS WEST BASINS																					
		A-1	5.42	0.11	14.3	0.60	3.60	2.2													
		A-2	18.00	0.09	17.9	1.62	3.25	5.3													
		A-3	19.59	0.09	15.9	1.76	3.43	6.0													
		A-4	23.81	0.11	20.0	2.62	3.09	8.1													
		B-1	32.53	0.09	17.8	2.93	3.27	9.6													
		B-2	4.51	0.09	13.5	0.41	3.68	1.5													
		B-3	16.18	0.14	16.0	2.27	3.42	7.8													

STANDARD FORM SF-3
STORM DRAINAGE SYSTEM DESIGN
(RATIONAL METHOD PROCEDURE)

Subdivision: Falcon Meadows
Location: CO, Colorado Springs
Design Storm: 100-Year

Project Name: Falcon Meadows at Bent Grass Filing No. 3
Project No.: CLH020.20
Calculated By: TJE
Checked By: CMD
Date: 12/2/20

		DIRECT RUNOFF							TOTAL RUNOFF				STREET		PIPE			TRAVEL TIME			
STREET	Design Point	Basin ID	Area (Ac)	Runoff Coeff.	Tc (min)	C*A (Ac)	I (in/hr)	Q (cfs)	Tc (min)	C*A (Ac)	I (in/hr)	Q (cfs)	Slope (%)	Street Flow (cfs)	Design Flow (cfs)	Slope (%)	Pipe Size (inches)	Length (ft)	Velocity (fps)	Tt (min)	REMARKS
		RWT202	1574.40						46.6	252.46	3.05	770.0									From Falcon DBPS by Matrix (Existing Flows)
		RWT204	38.40						11.4	6.51	6.61	43.0									From Falcon DBPS by Matrix (Existing Flows)
		WT200	192.00						37.8	30.73	3.58	110.0									From Falcon DBPS by Matrix (Existing Flows)
		OS-25	14.13	0.37	19.4	5.23	5.26	27.5													
		OS-26	5.81	0.36	13.9	2.09	6.10	12.7													
		OS-1	13.06	0.42	19.6	5.49	5.24	28.8													
		OS-2	17.81	0.44	19.3	7.84	5.28	41.4													
		OS-4	30.69	0.40	26.1	12.28	4.51	55.4													
BENT GRASS FILING NO. 2 & BENT GRASS WEST BASINS																					
		A-1	5.42	0.38	14.3	2.06	6.04	12.4													
		A-2	18.00	0.36	17.9	6.48	5.46	35.4													
		A-3	19.59	0.36	15.9	7.05	5.77	40.7													
		A-4	23.81	0.38	20.0	9.05	5.19	47.0													
		B-1	32.53	0.36	17.8	11.71	5.48	64.2													
		B-2	4.51	0.36	13.5	1.62	6.18	10.0													
		B-3	16.18	0.40	16.0	6.47	5.75	37.2													

Existing Computations

COMPOSITE % IMPERVIOUS CALCULATIONS: CURRENT/EXISTING

Subdivision: Falcon Meadows
Location: CO, Colorado Springs

Project Name: Falcon Meadows at Bent Grass Filing No. 3
Project No.: CLH000020
Calculated By: CMV
Checked By: SMB
Date: 6/24/22

1	2	3	4	5	6	7	8	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
Basin ID	**Total Area (ac)**	**Paved/Gravel Roads**			**Lawns/Undeveloped**			**Residential - 1/8 Acre**			**Residential - 1/4 Acre**			**Residential - 1/3 Acre**			**Residential - 1/2 Acre**			**Residential - 1 Acre**			**Basins Total Weighted % Imp.**
		% Imp.	**Area (ac)**	**Weighted % Imp.**	**% Imp.**	**Area (ac)**	**Weighted % Imp.**	**% Imp.**	**Area (ac)**	**Weighted % Imp.**	**% Imp.**	**Area (ac)**	**Weighted % Imp.**	**% Imp.**	**Area (ac)**	**Weighted % Imp.**	**% Imp.**	**Area (ac)**	**Weighted % Imp.**	**% Imp.**	**Area (ac)**	**Weighted % Imp.**	
OFFSITE																							
OS-1	32.28	100	2.15	6.7	2	29.25	1.8	65.0	0.00	0.0	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	11.0
OS-2	20.07	80	0.90	3.6	2	18.62	1.9	65.0	0.00	0.0	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	8.0
OS-3	10.61	80	0.48	3.6	2	9.84	1.9	65.0	0.00	0.0	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	8.0
BENT GRASS FILING NO. 2 & FALCON MEADOWS AT BENT GRASS FILING NO. 1																							
EX-1	1.19	100	0.00	0.0	2	1.19	2.0	65.0	0.00	0.0	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	2.0
EX-2	1.60	100	0.00	0.0	2	1.60	2.0	65.0	0.00	0.0	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	2.0
EX-3	0.66	100	0.00	0.0	2	0.66	2.0	65.0	0.00	0.0	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	2.0
B-1	6.77	100	0.00	0.0	2	6.77	2.0	65.0	0.00	0.0	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	2.0
B-2	4.16	100	0.00	0.0	2	4.16	2.0	65.0	0.00	0.0	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	2.0
D-4a	0.98	100	0.21	21.4	2	0.00	0.0	65.0	0.77	51.1	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	72.5
D-4b	0.95	100	0.43	45.3	2	0.00	0.0	65.0	0.52	35.6	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	80.9
D-4c	1.22	100	0.43	35.2	2	0.24	0.4	65.0	0.55	29.3	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	64.9
D-5	1.08	100	0.22	20.4	2	0.11	0.2	65.0	0.75	45.1	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	65.7
D-6a	1.33	100	0.44	33.1	2	0.00	0.0	65.0	0.89	43.5	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	76.6
D-6b	2.69	100	0.59	21.9	2	0.00	0.0	65.0	2.10	50.7	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	72.6
D-7	7.65	100	0.00	0.0	2	6.22	1.6	65.0	1.43	12.2	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	13.8
D-8	1.69	100	0.00	0.0	2	0.11	0.1	65.0	1.58	60.8	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	60.9
E-1	1.71	100	0.78	45.6	2	0.23	0.3	65.0	0.00	0.0	40	0.70	16.4	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	62.3
E-2	0.68	100	0.56	82.4	2	0.12	0.4	65.0	0.00	0.0	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	82.8
E-3	0.78	100	0.69	88.5	2	0.09	0.2	65.0	0.00	0.0	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	88.7
E-4	0.91	100	0.73	80.2	2	0.18	0.4	65.0	0.00	0.0	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	80.6
E-5	0.89	100	0.79	88.8	2	0.10	0.2	65.0	0.00	0.0	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	89.0
OS-4	4.46	100	0.00	0.0	2	0.00	0.0	65.0	2.28	33.2	40	1.46	13.1	30	0.00	0.0	25	0.00	0.0	20	0.72	3.2	49.5
OS-5	0.46	100	0.00	0.0	2	0.00	0.0	65.0	0.46	65.0	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	65.0
OS-6	1.17	100	0.00	0.0	2	0.00	0.0	65.0	1.17	65.0	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	65.0
FALCON MEADOWS FILING NO. 2																							
C-1a	0.38	100	0.16	41.1	2	0.14	0.7	65.0	0.09	14.9	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	56.7
C-1c	1.77	100	0.63	35.6	2	0.00	0.0	65.0	1.14	41.9	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	77.5
C-1d	1.72	100	0.40	23.3	2	0.00	0.0	65.0	1.32	49.9	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	73.2
C-1e	0.29	100	0.29	100.0	2	0.00	0.0	65.0	0.00	0.0	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	100.0
C-1f	0.08	100	0.08	100.0	2	0.00	0.0	65.0	0.00	0.0	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	100.0
C-3	0.18	100	0.14	77.8	2	0.02	0.3	65.0	0.02	7.6	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	85.7
C-4	2.67	100	0.41	15.4	2	0.84	0.6	65.0	1.41	34.3	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	50.3
C-5	0.60	100	0.00	0.0	2	0.60	2.0	65.0	0.00	0.0	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	2.0
C-6	0.94	100	0.00	0.0	2	0.65	1.4	65.0	0.29	20.1	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	21.5
C-7	0.52	100	0.15	29.4	2	0.00	0.0	65.0	0.37	46.3	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	75.7
D-9	0.72	100	0.00	0.0	2	0.46	1.3	65.0	0.26	23.5	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	24.8
D-1c	4.34	100	0.33	7.6	2	0.00	0.0	65.0	3.06	45.8	40	0.95	8.8	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	62.2
D-2a	0.50	100	0.33	66.0	2	0.00	0.0	65.0	0.17	22.7	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	88.7
D-2b	0.74	100	0.18	24.3	2	0.14	0.4	65.0	0.42	37.1	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	61.8
D-2c	0.31	100	0.15	50.0	2	0.00	0.0	65.0	0.16	33.5	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	83.5
D-2d	0.24	100	0.10	43.4	2	0.00	0.0	65.0	0.14	37.9	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	81.3
D-2e	1.41	100	0.41	29.3	2	0.00	0.0	65.0	1.00	46.1	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	75.4
D-2f	2.43	100	0.70	28.8	2	0.07	0.1	65.0	1.67	44.7	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	73.6
D-2g	1.81	100	0.48	26.5	2	0.57	0.6	65.0	0.76	27.3	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	54.4
D-2h	0.23	100	0.00	0.0	2	0.00	0.0	65.0	0.23	65.0	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	65.0
D-3	2.26	100	0.00	0.0	2	0.28	0.2	65.0	1.74	50.0	40	0.13	2.3	30	0.11	1.5	25	0.00	0.0	20	0.00	0.0	54.0
FUTURE FILINGS																							
C-1b	0.45	100	0.00	0.0	2	0.45	2.0	65.0	0.00	0.0	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	2.0
C-2	3.27	100	0.00	0.0	2	3.27	2.0	65.0	0.00	0.0	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	2.0
D-1a	1.49	100	0.00	0.0	2	1.49	2.0	65.0	0.00	0.0	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	2.0
D-1b	4.02	100	0.00	0.0	2	4.02	2.0	65.0	0.00	0.0	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	2.0
D-1f	1.61	100	0.00	0.0	2	1.61	2.0	65.0	0.00	0.0	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	2.0

Lot Type Identification:	
Lot Size (SF)	*Lot Size (Acre)*
0 - 8,167	1/8 Acre
8,168 - 12,704	1/4 Acre
12,705 - 18,149	1/3 Acre
18,150 - 32,670	1/2 Acre
32,671 - 43,560	1 Acre

NOTES:
% Impervious values are taken directly from Table 6-6 in the Colorado Springs DCM Vol. 1. CH. 6 (Referencing UDFCD 2001)

COMPOSITE RUNOFF COEFFICIENT CALCULATIONS: CURRENT/EXISTING

Subdivision: Falcon Meadows
Location: CO, Colorado Springs

Project Name: Falcon Meadows at Bent Grass Filing No. 3
Project No.: CLH000020
Calculated By: CMV
Checked By: SMB
Date: 6/24/22

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Basin ID	**Total Area (ac)**	**Paved/Gravel Roads**			**Lawns/Undeveloped**			**Roofs**			**Residential - 1/8 Acre**			**Residential - 1/4 Acre**			**Residential - 1/3 Acre**			**Residential - 1/2 Acre**			**Residential - 1 Acre**			**Composite C_5**	**Composite C_{100}**
		C_5	**C_{100}**	**Area (ac)**	**C_5**	**C_{100}**	**Area (ac)**	**C_5**	**C_{100}**	**Area (ac)**	**C_5**	**C_{100}**	**Area (ac)**	**C_5**	**C_{100}**	**Area (ac)**	**C_5**	**C_{100}**	**Area (ac)**	**C_5**	**C_{100}**	**Area (ac)**	**C_5**	**C_{100}**	**Area (ac)**		
OFFSITE																											
OS-1	32.28	0.90	0.96	2.15	0.09	0.36	29.25	0.73	0.81	0.88	0.45	0.59	0.00	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.16	0.41
OS-2	20.07	0.90	0.96	0.90	0.09	0.36	18.62	0.73	0.81	0.56	0.45	0.59	0.00	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.14	0.40
OS-3	10.61	0.90	0.96	0.48	0.09	0.36	9.84	0.73	0.81	0.30	0.45	0.59	0.00	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.14	0.40
BENT GRASS FILING NO. 2 & FALCON MEADOWS AT BENT GRASS FILING NO. 1																											
EX-1	1.19	0.90	0.96	0.00	0.09	0.36	1.19	0.73	0.81	0.00	0.45	0.59	0.00	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.09	0.36
EX-2	1.60	0.90	0.96	0.00	0.09	0.36	1.60	0.73	0.81	0.00	0.45	0.59	0.00	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.09	0.36
EX-3	0.66	0.90	0.96	0.00	0.09	0.36	0.66	0.73	0.81	0.00	0.45	0.59	0.00	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.09	0.36
B-1	6.77	0.90	0.96	0.00	0.09	0.36	6.77	0.73	0.81	0.00	0.45	0.59	0.00	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.09	0.36
B-2	4.16	0.90	0.96	0.00	0.09	0.36	4.16	0.73	0.81	0.00	0.45	0.59	0.00	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.09	0.36
D-4a	0.98	0.90	0.96	0.21	0.09	0.36	0.00	0.73	0.81	0.00	0.45	0.59	0.77	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.55	0.67
D-4b	0.95	0.90	0.96	0.43	0.09	0.36	0.00	0.73	0.81	0.00	0.45	0.59	0.52	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.65	0.76
D-4c	1.22	0.90	0.96	0.43	0.09	0.36	0.24	0.73	0.81	0.00	0.45	0.59	0.55	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.54	0.68
D-5	1.08	0.90	0.96	0.22	0.09	0.36	0.11	0.73	0.81	0.00	0.45	0.59	0.75	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.51	0.64
D-6a	1.33	0.90	0.96	0.44	0.09	0.36	0.00	0.73	0.81	0.00	0.45	0.59	0.89	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.60	0.71
D-6b	2.69	0.90	0.96	0.59	0.09	0.36	0.00	0.73	0.81	0.00	0.45	0.59	2.10	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.55	0.67
D-7	7.65	0.90	0.96	0.00	0.09	0.36	6.22	0.73	0.81	0.00	0.45	0.59	1.43	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.16	0.40
D-8	1.69	0.90	0.96	0.00	0.09	0.36	0.11	0.73	0.81	0.00	0.45	0.59	1.58	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.43	0.58
E-1	1.71	0.90	0.96	0.78	0.09	0.36	0.23	0.73	0.81	0.00	0.45	0.59	0.00	0.30	0.50	0.70	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.55	0.69
E-2	0.68	0.90	0.96	0.56	0.09	0.36	0.12	0.73	0.81	0.00	0.45	0.59	0.00	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.76	0.85
E-3	0.78	0.90	0.96	0.69	0.09	0.36	0.09	0.73	0.81	0.00	0.45	0.59	0.00	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.81	0.89
E-4	0.91	0.90	0.96	0.73	0.09	0.36	0.18	0.73	0.81	0.00	0.45	0.59	0.00	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.74	0.84
E-5	0.89	0.90	0.96	0.79	0.09	0.36	0.10	0.73	0.81	0.00	0.45	0.59	0.00	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.81	0.89
OS-4	4.46	0.90	0.96	0.00	0.09	0.36	0.00	0.73	0.81	0.00	0.45	0.59	2.28	0.30	0.50	1.46	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.72	0.36	0.54
OS-5	0.46	0.90	0.96	0.00	0.09	0.36	0.00	0.73	0.81	0.00	0.45	0.59	0.46	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.45	0.59
OS-6	1.17	0.90	0.96	0.00	0.09	0.36	0.00	0.73	0.81	0.00	0.45	0.59	1.17	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.45	0.59
FALCON MEADOWS FILING NO. 2																											
C-1a	0.38	0.90	0.96	0.16	0.09	0.36	0.14	0.73	0.81	0.00	0.45	0.59	0.09	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.51	0.66
C-1c	1.77	0.90	0.96	0.63	0.09	0.36	0.00	0.73	0.81	0.00	0.45	0.59	1.14	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.61	0.72
C-1d	1.72	0.90	0.96	0.40	0.09	0.36	0.00	0.73	0.81	0.00	0.45	0.59	1.32	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.55	0.68
C-1e	0.29	0.90	0.96	0.29	0.09	0.36	0.00	0.73	0.81	0.00	0.45	0.59	0.00	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.90	0.96
C-1f	0.08	0.90	0.96	0.08	0.09	0.36	0.00	0.73	0.81	0.00	0.45	0.59	0.00	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.90	0.96
C-3	0.18	0.90	0.96	0.14	0.09	0.36	0.02	0.73	0.81	0.00	0.45	0.59	0.02	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.76	0.86
C-4	2.67	0.90	0.96	0.41	0.09	0.36	0.84	0.73	0.81	0.00	0.45	0.59	1.41	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.41	0.57
C-5	0.60	0.90	0.96	0.00	0.09	0.36	0.60	0.73	0.81	0.00	0.45	0.59	0.00	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.09	0.36
C-6	0.94	0.90	0.96	0.00	0.09	0.36	0.65	0.73	0.81	0.00	0.45	0.59	0.29	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.20	0.43
C-7	0.52	0.90	0.96	0.15	0.09	0.36	0.00	0.73	0.81	0.00	0.45	0.59	0.37	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.58	0.70
D-9	0.72	0.90	0.96	0.00	0.09	0.36	0.46	0.73	0.81	0.00	0.45	0.59	0.26	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.22	0.44
D-1c	4.34	0.90	0.96	0.33	0.09	0.36	0.00	0.73	0.81	0.00	0.45	0.59	3.06	0.30	0.50	0.95	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.45	0.60
D-2a	0.50	0.90	0.96	0.33	0.09	0.36	0.00	0.73	0.81	0.00	0.45	0.59	0.17	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.75	0.84
D-2b	0.74	0.90	0.96	0.18	0.09	0.36	0.14	0.73	0.81	0.00	0.45	0.59	0.42	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.49	0.64
D-2c	0.31	0.90	0.96	0.15	0.09	0.36	0.00	0.73	0.81	0.00	0.45	0.59	0.16	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.68	0.78
D-2d	0.24	0.90	0.96	0.10	0.09	0.36	0.00	0.73	0.81	0.00	0.45	0.59	0.14	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.65	0.76
D-2e	1.41	0.90	0.96	0.41	0.09	0.36	0.00	0.73	0.81	0.00	0.45	0.59	1.00	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.58	0.70
D-2f	2.43	0.90	0.96	0.70	0.09	0.36	0.07	0.73	0.81	0.00	0.45	0.59	1.67	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.57	0.69
D-2g	1.81	0.90	0.96	0.48	0.09	0.36	0.57	0.73	0.81	0.00	0.45	0.59	0.76	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.46	0.62
D-2h	0.23	0.90	0.96	0.00	0.09	0.36	0.00	0.73	0.81	0.00	0.45	0.59	0.23	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.45	0.59
D-3	2.26	0.90	0.96	0.00	0.09	0.36	0.28	0.73	0.81	0.00	0.45	0.59	1.74	0.30	0.50	0.13	0.25	0.47	0.11	0.22	0.46	0.00	0.20	0.44	0.00	0.39	0.55
FUTURE FILINGS																											
C-1b	0.45	0.90	0.96	0.00	0.09	0.36	0.45	0.73	0.81	0.00	0.45	0.00	0.00	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.09	0.36
C-2	3.27	0.90	0.96	0.00	0.09	0.36	3.27	0.73	0.81	0.00	0.45	0.00	0.00	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.09	0.36
D-1a	1.49	0.90	0.96	0.00	0.09	0.36	1.49	0.73	0.81	0.00	0.45	0.00	0.00	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.09	0.36
D-1b	4.02	0.90	0.96	0.00	0.09	0.36	4.02	0.73	0.81	0.00	0.45	0.00	0.00	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.09	0.36
D-1f	1.61	0.90	0.96	0.00	0.09	0.36	1.61	0.73	0.81	0.00	0.45	0.00	0.00	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.09	0.36

02- C Co	
Lot Size (SF)	*Lot Size (Acre)*
0 - 8,167	</= 1/8 Acre
8,168 - 12,704	1/4 Acre
12,705 - 18,149	1/3 Acre
18,150 - 32,670	1/2 Acre
32,671 - 43,560	1 Acre

NOTES:
C values are taken directly from Table 6-6 in the Colorado Springs DCM Vol. 1. CH. 6 (Referencing UDFCD 2001)
Coeffficients use HSG A&B soils - Refer to "Appendix A: Exhibits and Figures" for soil map

STANDARD FORM SF-2: CURRENT/EXISTING TIME OF CONCENTRATION

Subdivision: Falcon Meadows
Location: CO, Colorado Springs

Project Name: Falcon Meadows at Bent Grass Filing No. 3
Project No.: CLH000020
Calculated By: CMV
Checked By: SMB
Date: 12/2/21

1	2	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
SUB-BASIN DATA					**INITIAL/OVERLAND (T_i)**			**TRAVEL TIME (T_t)**					**Tc CHECK (URBANIZED BASINS)**			**FINAL**
BASIN ID	**D.A. (AC)**	**Impervious (%)**	**C_5**	**C_{100}**	**L (FT)**	**S (%)**	**T_i (MIN)**	**L (FT)**	**S (%)**	**Cv**	**VEL. (FPS)**	**T_t (MIN)**	**COMP. T_c (MIN)**	**TOTAL LENGTH(FT)**	**Urbanized T_c (MIN)**	**T_c (MIN)**
OFFSITE																
OS-1	32.28	11.0	0.16	0.41	100	2.4	12.9	2100	2.2	15	2.2	15.7	28.6	2200.0	22.2	22.2
OS-2	20.07	8.0	0.14	0.40	100	2.3	13.3	1400	2.3	15	2.3	10.3	23.6	1500.0	18.3	18.3
OS-3	10.61	8.0	0.14	0.40	100	2.0	14.0	1500	2.0	15	2.1	11.8	25.7	1600.0	18.9	18.9
BENT GRASS FILING NO. 2 & FALCON MEADOWS AT BENT GRASS FILING NO. 1																
EX-1	1.19	2.0	0.09	0.36	300	2.7	23.0	690	2.7	15	2.5	4.7	27.7	990.0	15.5	15.5
EX-2	1.60	2.0	0.09	0.36	200	2.7	18.8	100	2.7	15	2.5	0.7	19.5	300.0	11.7	11.7
EX-3	0.66	2.0	0.09	0.36	100	5.0	10.8	30	2.7	15	2.5	0.2	11.0	130.0	10.7	10.7
B-1	6.77	2.0	0.09	0.36	90	6.4	9.5	2000	1.7	15	2.0	17.0	26.5	2090.0	21.6	21.6
B-2	4.16	2.0	0.09	0.36	160	11.0	10.5	920	1.6	15	1.9	8.1	18.6	1080.0	16.0	16.0
D-4a	0.98	72.5	0.55	0.67	100	2.3	7.6	420	1.0	20	2.0	3.5	11.1	520.0	12.9	11.1
D-4b	0.95	80.9	0.65	0.76	75	1.5	6.2	480	1.0	20	2.0	4.0	10.2	555.0	13.1	10.2
D-4c	1.22	64.9	0.54	0.68	70	0.5	10.8	690	1.0	20	2.0	5.8	16.6	760.0	14.2	14.2
D-5	1.08	65.7	0.51	0.64	10	2.0	2.7	300	1.1	20	2.1	2.4	5.1	310.0	11.7	5.1
D-6a	1.33	76.6	0.60	0.71	20	2.0	3.2	385	1.0	20	2.0	3.2	6.5	405.0	12.3	6.5
D-6b	2.69	72.6	0.55	0.67	45	2.0	5.4	870	1.0	20	2.0	7.3	12.6	915.0	15.1	12.6
D-7	7.65	13.8	0.16	0.40	200	7.5	12.4	665	1.0	15	1.5	7.4	19.8	865.0	14.8	14.8
D-8	1.69	60.9	0.43	0.58	125	3.7	8.9	600	1.0	15	1.5	6.7	15.5	725.0	14.0	14.0
E-1	1.71	62.3	0.55	0.69	25	2.0	4.0	940	1.0	20	2.0	7.8	11.8	965.0	15.4	11.8
E-2	0.68	82.8	0.76	0.85	25	2.0	2.5	665	1.6	20	2.5	4.4	6.9	690.0	13.8	6.9
E-3	0.78	88.7	0.81	0.89	25	2.0	2.1	632	1.0	20	2.0	5.3	7.4	657.0	13.7	7.4
E-4	0.91	80.6	0.74	0.84	25	2.0	2.6	913	2.0	20	2.8	5.4	8.0	938.0	15.2	8.0
E-5	0.89	89.0	0.81	0.89	25	2.0	2.1	903	2.1	20	2.9	5.2	7.3	928.0	15.2	7.3
OS-4	4.46	49.5	0.36	0.54	100	2.0	10.8	910	1.2	20	2.2	6.9	17.7	1010.0	15.6	15.6
OS-5	0.46	65.0	0.45	0.59	15	2.0	3.7	190	1.0	20	2.0	1.6	5.2	205.0	11.1	5.2
OS-6	1.17	65.0	0.45	0.59	85	0.2	18.7	430	0.9	20	1.9	3.8	22.5	515.0	12.9	12.9
FALCON MEADOWS FILING NO. 2																
C-1a	0.38	56.7	0.51	0.66	10	2.0	2.7	220	1.0	20	2.0	1.8	4.5	230.0	11.3	5.0
C-1c	1.77	77.5	0.61	0.72	10	2.0	2.3	500	3.0	20	3.5	2.4	4.7	510.0	12.8	5.0
C-1d	1.72	73.2	0.55	0.68	10	2.0	2.5	620	2.0	20	2.8	3.7	6.2	630.0	13.5	6.2
C-1e	0.29	100.0	0.90	0.96	10	2.0	0.9	275	1.7	20	2.6	1.8	2.7	285.0	11.6	5.0
C-1f	0.08	100.0	0.90	0.96	10	2.0	0.9	130	1.7	20	2.6	0.8	1.8	140.0	10.8	5.0
C-3	0.18	85.7	0.76	0.86	10	2.0	1.6	580	1.0	20	2.0	4.8	6.4	590.0	13.3	6.4
C-4	2.67	50.3	0.41	0.57	100	3.0	8.8	600	2.0	20	2.8	3.5	12.3	700.0	13.9	12.3

1	2	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
SUB-BASIN					**INITIAL/OVERLAND**			**TRAVEL TIME**					**Tc CHECK**			
DATA					**(T_i)**			**(T_t)**					**(URBANIZED BASINS)**			**FINAL**
BASIN ID	**D.A. (AC)**	**Impervious (%)**	**C_5**	**C_{100}**	**L (FT)**	**S (%)**	**T_i (MIN)**	**L (FT)**	**S (%)**	**Cv**	**VEL. (FPS)**	**T_t (MIN)**	**COMP. T_c (MIN)**	**TOTAL LENGTH(FT)**	**Urbanized T_c (MIN)**	**T_c (MIN)**
C-5	0.60	2.0	0.09	0.36	5	2.0	3.3		1.0	15	1.5	0.0	3.3	5.0	10.0	5.0
C-6	0.94	21.5	0.20	0.43	20	3.3	5.0	90	5.0	15	3.4	0.4	5.4	110.0	10.6	5.4
C-7	0.52	75.7	0.58	0.70	100	6.8	5.0	165	1.3	15	1.7	1.6	6.7	265.0	11.5	6.7
D-9	0.72	24.8	0.22	0.44	10	2.0	4.0	250	3.6	15	2.8	1.5	5.5	260.0	11.4	5.5
D-1c	4.34	62.2	0.45	0.60	100	2.6	8.7	1900	1.3	20	2.3	13.9	22.5	2000.0	21.1	21.1
D-2a	0.50	88.7	0.75	0.84	10	2.0	1.6	495	1.3	20	2.3	3.6	5.2	505.0	12.8	5.2
D-2b	0.74	61.8	0.49	0.64	100	1.7	9.4	189	1.0	20	2.0	1.6	10.9	289.0	11.6	10.9
D-2c	0.31	83.5	0.68	0.78	5	2.0	1.4	275	1.0	20	2.0	2.3	3.7	280.0	11.6	5.0
D-2d	0.24	81.3	0.65	0.76	5	2.0	1.5	200	1.3	20	2.3	1.5	2.9	205.0	11.1	5.0
D-2e	1.41	75.4	0.58	0.70	100	1.9	7.7	340	0.8	20	1.8	3.2	10.9	440.0	12.4	10.9
D-2f	2.43	73.6	0.57	0.69	75	2.0	6.7	175	0.5	20	1.4	2.1	8.7	250.0	11.4	8.7
D-2g	1.81	54.4	0.46	0.62	35	2.0	5.5	1355	1.3	20	2.3	9.9	15.4	1390.0	17.7	15.4
D-2h	0.23	65.0	0.45	0.59	35	2.0	5.6	1355	1.3	20	2.3	9.9	15.5	1390.0	17.7	15.5
D-3	2.26	54.0	0.39	0.55	25	8.0	3.3	1960	1.0	15	1.5	21.8	25.0	1985.0	21.0	21.0
FUTURE FILINGS																
C-1b	0.45	72.8	0.55	0.67	10	2.0	2.5	365	1.9	15	2.1	2.9	5.5	375.0	12.1	5.5
C-2	3.27	73.0	0.55	0.67	10	2.0	2.5	650	2.0	20	2.8	3.8	6.4	660.0	13.7	6.4
D-1a	1.49	70.2	0.52	0.67	5	1.0	2.4	360	2.4	15	2.3	2.6	5.0	365.0	12.0	5.0
D-1b	4.02	56.7	0.44	0.59	100	3.2	8.2	540	1.3	15	1.7	5.3	13.5	640.0	13.6	13.5
D-1f	1.61	67.4	0.48	0.62	100	2.7	8.2	380	2.0	15	2.1	3.0	11.1	480.0	12.7	11.1

NOTES:

$T_i = (0.395*(1.1 - C_5)*(L)^{0.5})/((S)^{0.33})$, S in ft/ft

T_t=L/60V (Velocity From Fig. 501)

Velocity V=Cv*S^0.5, S in ft/ft

T_c Check = 10+L/180

For Urbanized basins a minimum T_c of 5.0 minutes is required.

For non-urbanized basins a minimum T_c of 10.0 minutes is required

STANDARD FORM SF-3: CURRENT/EXISTING

STORM DRAINAGE SYSTEM DESIGN

(RATIONAL METHOD PROCEDURE)

Subdivision: Falcon Meadows
Location: CO, Colorado Springs
Design Storm: 5-Year

Project Name: Falcon Meadows at Bent Grass Filing No. 3
Project No.: CLH000020
Calculated By: CMV
Checked By: SMB
Date: 12/2/21

		DIRECT RUNOFF							TOTAL RUNOFF				STREET		PIPE			TRAVEL TIME			
STREET	Design Point	Basin ID	Area (Ac)	Runoff Coeff.	Tc (min)	C*A (Ac)	I (in/hr)	Q (cfs)	Tc (min)	C*A (Ac)	I (in/hr)	Q (cfs)	Slope (%)	Street Flow (cfs)	Design Flow (cfs)	Slope (%)	Pipe Size (inches)	Length (ft)	Velocity (fps)	Tt (min)	REMARKS
		RWT202	1574.40						46.6	120.88	1.82	220.0									From Falcon DBPS by Matrix
		RWT204	38.40						11.37	1.78	3.94	7.0									From Falcon DBPS by Matrix
		WT200	192.00						37.8	24.41	2.13	52.0									From Falcon DBPS by Matrix
	21	OS-1	32.28	0.16	22.2	5.16	2.93	15.1	46.6	152.23	1.82	277.1									Flows obtained from Bent Grass Filing No. 2 FDR. Q=65.1 CFS Cumulation of northern off-site flows entering Basin B-1
	1	OS-4	4.46	0.36	15.6	1.61	3.46	5.6					1.2	5.6				910	2.2	6.9	Flows from Basin B-1 of Bent Grass Filing No. 2 FDR into Basin EX-2
	2	OS-5	0.46	0.45	5.2	0.21	5.10	1.1					1	1.1				190	2.0	1.6	Flows from Basin B-2 of Bent Grass Filing No. 2 FDR into Basin EX-2
	3	OS-6	1.17	0.45	12.9	0.53	3.75	2.0					0.9	2.0				430	1.9	3.8	Flows from Basin B-3 of Bent Grass Filing No. 2 FDR into Basin EX-2
		EX-1	1.19	0.09	15.5	0.11	3.47	0.4													Flows to Basin EX-2
	5	EX-2	1.60	0.09	11.7	0.14	3.90	0.5	22.5	2.60	2.91	7.6									Flows to Basin EX-3
	7	E-3	0.78	0.81	7.4	0.63	4.59	2.9													
		C-6	0.94	0.20	5.4	0.19	5.05	1.0					1	1.0				216	2.0	1.8	
	45	C-7	0.52	0.58	6.7	0.30	4.74	1.4					1	1.4				216	2.0	1.8	
		E-2	0.68	0.76	6.9	0.52	4.70	2.4	8.5	1.01	4.38	4.4									Combination of C-6, C-7, E-2
	8	E-1	1.71	0.55	11.8	0.94	3.88	3.6	11.8	2.58	3.88	10.0									Ex Basin from Filing No. 2(East side of BGMD) Combination of EX-4, EX-5, E-1, E-2, E-3. Flows to Basin EX-3
	15a	EX-3	0.66	0.09	10.7	0.06	4.02	0.2	22.5	5.24	2.91	15.2									Flows to Basin B-1
	51	D-1a	1.49	0.52	5.0	0.77	5.17	4.0							4.0	1.2	18	217	2.2	1.7	
		D-1f	1.61	0.48	11.1	0.77	3.97	3.1													
	40	C-1a	0.38	0.51	5.0	0.19	5.17	1.0	11.1	1.73	3.97	6.9									Flows to Swale B
		C-1b	0.45	0.55	5.5	0.25	5.03	1.3	11.1	1.98	3.97	7.9	1	7.9				175	2.0	1.5	Flows exiting Swale B towards DP41
	41	C-1c	1.77	0.61	5.0	1.08	5.17	5.6	11.1	3.06	3.97	12.1			12.1	1.3	30	180	2.2	1.3	Flow into inlet at DP41
		C-3	0.18	0.76	6.4	0.14	4.80	0.7					1	0.7				660	2.0	5.5	Gutter flow through C-4 to DP44
	44	C-4	2.67	0.41	12.3	1.09	3.82	4.2	12.3	1.23	3.82	4.7			4.7	1.3	24	70	2.2	0.5	Flow into inlet at DP44
	42	C-1f	0.08	0.90	5.0	0.07	5.17	0.4					1	0.4				185	2.0	1.5	Gutter flow to DP15
	43 15	C-1d	1.72	0.55	6.2	0.95	4.85	4.6	6.5	1.02	4.77	4.9									Flow into inlet at DP15
	12 13	C-1e	0.29	0.90	5.0	0.26	5.17	1.3	12.8	5.57	3.76	20.9			20.9	1.0	42	33	2.0	0.3	Flow into inlet at DP12 Combination of flow from DP12, DP15, DP41, DP44 into North Pond
	19	C-2	3.27	0.55	6.4	1.80	4.81	8.7													Flow into Pond North
	13a	C-5	0.60	0.09	5.0	0.05	5.17	0.3	13.1	7.42	3.72	27.6									North Pond Flows to Basin B-1
	AA	B-1	6.77	0.09	21.6	0.61	2.97	1.8	46.6	165.50	1.82	301.2									Total flow under BGMD into Basin B-2
		D-2b	0.74	0.49	10.9	0.36	4.00	1.4													
		D-2a	0.50	0.75	5.2	0.38	5.10	1.9													

STANDARD FORM SF-3: CURRENT/EXISTING

STORM DRAINAGE SYSTEM DESIGN

(RATIONAL METHOD PROCEDURE)

Subdivision: Falcon Meadows
Location: CO, Colorado Springs
Design Storm: 5-Year

Project Name: Falcon Meadows at Bent Grass Filing No. 3
Project No.: CLH000020
Calculated By: CMV
Checked By: SMB
Date: 12/2/21

		DIRECT RUNOFF							TOTAL RUNOFF				STREET		PIPE			TRAVEL TIME			
STREET	Design Point	Basin ID	Area (Ac)	Runoff Coeff.	Tc (min)	C*A (Ac)	I (in/hr)	Q (cfs)	Tc (min)	C*A (Ac)	I (in/hr)	Q (cfs)	Slope (%)	Street Flow (cfs)	Design Flow (cfs)	Slope (%)	Pipe Size (inches)	Length (ft)	Velocity (fps)	Tt (min)	REMARKS
	14a	D-2c	0.31	0.68	5.0	0.21	5.17	1.1	10.9	0.95	4.00	3.8	1.3	3.8				230	2.3	1.7	Gutter flow through D-2d to DP14b
	14b	D-2d	0.24	0.65	5.0	0.16	5.17	0.8	12.6	1.11	3.78	4.2	1.3	4.2				625	2.3	4.6	Gutter flow through D-2d to DP14b
	14	D-2g	1.81	0.46	15.4	0.83	3.48	2.9	17.2	1.94	3.32	6.4									Flow into existing inlet at DP14
	9	OS-2	20.07	0.14	18.3	2.81	3.22	9.0													Overland flow into Basin D-3. Flow obtained from Bent Grass Filing No. 2 FDR
	10	OS-3	10.61	0.14	18.9	1.49	3.18	4.7													Offsite flow into Basin D-3. Flow obtained from Bent Grass Filing No. 2 FDR
	11	D-3	2.26	0.39	21.0	0.88	3.01	2.6	21.0	5.18	3.01	15.6			15.6	1.0	42	100	2.0	0.8	Flows conveyed via existing ditch into proposed area inlet.
	14e	D-2f	2.43	0.57	8.7	1.39	4.33	6.0													
	14d	D-2e	1.41	0.58	10.9	0.82	4.01	3.3	10.9	2.21	4.01	8.9			8.9	1.0	42	100	2.0	0.8	Flows conveyed storm sewer to DP16
	16a	D-1b	4.02	0.44	13.5	1.77	3.68	6.5					1.3	6.5				1300	2.3	9.5	Gutter flow through Basin D-1c to DP16
	16	D-1c	4.34	0.45	21.1	1.95	3.01	5.9	23.0	11.11	2.88	32.0			32.0	2.0	48	835	2.8	4.9	Combination of flows to existing inlets at DP14 and DP16. Flows to DP 17
		D-5	1.08	0.51	5.1	0.55	5.14	2.8					1	2.8				600	2.0	5.0	Gutter flow through Basin D-6b to DP18
		D-6b	2.69	0.55	12.6	1.48	3.78	5.6													
	18	D-6a	1.33	0.60	6.5	0.80	4.79	3.8	12.6	2.83	3.78	10.7			10.7	2.0	24	38	2.8	0.2	Flow to existing inlet. Flow out of inlet to DP17c
	17a	D-4a	0.98	0.55	11.1	0.54	3.97	2.1					1	2.1				700	2.0	5.8	Gutter flow through Basin D-4b to DP17b
	17b	D-4b	0.95	0.65	10.2	0.62	4.09	2.5	17.0	1.16	3.34	3.9									Gutter flow to DP17c
	17c	D-4c	1.22	0.54	14.2	0.66	3.60	2.4	17.0	3.99	3.34	13.3			13.3	2.0	24	8	2.8	0.0	Flows from Basin B-3 of Bent Grass Filing No. 2 FDR. Flows at existing inlet. Flow out to DP17
	17								27.9	15.10	2.59	39.1									Storm system entering existing pond at Basin D-7
		D-9	0.72	0.22	5.5	0.16	5.02	0.8					1.5	0.8				625	2.4	4.3	Gutter flow through Basin E-4 to DP24
		D-2h	0.23	0.45	15.5	0.10	3.47	0.3					1.5	0.3				550	2.4	3.7	Gutter flow through Basin E-4 to DP24
	24	E-4	0.91	0.74	8.0	0.67	4.46	3.0	19.2	0.93	3.15	2.9									Flow to existing inlet at DP24
	25 26	E-5	0.89	0.81	7.3	0.72	4.60	3.3	19.2	1.65	3.15	5.2									Flow to existing inlet at DP25 Flow into existing pond via Swale F at DP26
	32	D-8	1.69	0.43	14.0	0.73	3.62	2.6													Flow in Swale C (Basin D-8) into existing pond
	30	D-7	7.65	0.16	14.8	1.22	3.54	4.3	27.9	18.70	2.59	48.4									Exisitng Water quality pond Outlet to existing channel Basin B-2
	CC	B-2	4.16	0.09	16.0	0.37	3.42	1.3	46.6	184.57	1.82	335.9									

STANDARD FORM SF-3: CURRENT/EXISTING

STORM DRAINAGE SYSTEM DESIGN

(RATIONAL METHOD PROCEDURE)

Subdivision: Falcon Meadows
Location: CO, Colorado Springs
Design Storm: 100-Year

Project Name: Falcon Meadows at Bent Grass Filing No. 3
Project No.: CLH000020
Calculated By: CMV
Checked By: SMB
Date: 12/2/21

		DIRECT RUNOFF							TOTAL RUNOFF				STREET		PIPE			TRAVEL TIME			
STREET	Design Point	Basin ID	Area (Ac)	Runoff Coeff.	Tc (min)	C*A (Ac)	I (in/hr)	Q (cfs)	Tc (min)	C*A (Ac)	I (in/hr)	Q (cfs)	Slope (%)	Street Flow (cfs)	Design Flow (cfs)	Slope (%)	Pipe Size (inches)	Length (ft)	Velocity (fps)	Tt (min)	REMARKS
		RWT202	1574.40						46.6	327.87	3.05	1000.0									From Falcon DBPS by Matrix
		RWT204	38.40						11.4	6.52	6.60	43.0									From Falcon DBPS by Matrix
		WT200	192.00						37.8	53.07	3.58	190.0									From Falcon DBPS by Matrix
	21	OS-1	32.28	0.41	22.2	13.23	4.92	65.1	46.6	400.69	3.05	1222.1									Flows obtained from Bent Grass Filing No. 2 FDR. Q=65.1 CFS Cumulation of northern off-site flows entering Basin B-1
	1	OS-4	4.46	0.54	15.6	2.41	5.81	14.0					1.2	14.0				910	2.2	6.9	Flows from Basin B-1 of Bent Grass Filing No. 2 FDR into Basin EX-2
	2	OS-5	0.46	0.59	5.2	0.27	8.56	2.3					1	2.3				190	2.0	1.6	Flows from Basin B-2 of Bent Grass Filing No. 2 FDR into Basin EX-2
	3	OS-6	1.17	0.59	12.9	0.69	6.30	4.3					0.9	4.3				430	1.9	3.8	Flows from Basin B-3 of Bent Grass Filing No. 2 FDR into Basin EX-2
		EX-1	1.19	0.36	15.5	0.43	5.83	2.5													Flows to Basin EX-2
	5	EX-2	1.60	0.36	11.7	0.58	6.54	3.8	22.5	4.38	4.89	21.4									Flows to Basin EX-3
	7	E-3	0.78	0.89	7.4	0.69	7.70	5.3													
		C-6	0.94	0.43	5.4	0.40	8.49	3.4					1	3.4				216	2.0	1.8	
	45	C-7	0.52	0.70	6.7	0.36	7.95	2.9					1	2.9				216	2.0	1.8	
		E-2	0.68	0.85	6.9	0.58	7.89	4.6	8.5	1.34	7.35	9.8									Combination of C-6, C-7, E-2
	8	E-1	1.71	0.69	11.8	1.18	6.51	7.7	11.8	3.21	6.51	20.9									Ex Basin from Filing No. 2(East side of BGMD) Combination of EX-4, EX-5, E-1, E-2, E-3. Flows to Basin EX-3
	15a	EX-3	0.66	0.36	10.7	0.24	6.76	1.6	22.5	7.83	4.89	38.3									Flows to Basin B-1
	51	D-1a	1.49	0.67	5.0	1.00	8.68	8.7							8.7	1.2	18	217	2.2	1.7	
		D-1f	1.61	0.62	11.1	1.00	6.66	6.7													
	40	C-1a	0.38	0.66	5.0	0.25	8.68	2.2	11.1	2.25	6.66	15.0									Flows to Swale B
		C-1b	0.45	0.67	5.5	0.30	8.45	2.5	11.1	2.55	6.66	17.0	1	17.0				175	2.0	1.5	Flows exiting Swale B towards DP41
	41	C-1c	1.77	0.72	5.0	1.27	8.68	11.0	11.1	3.82	6.66	25.4			25.4	1.3	30	180	2.2	1.3	Flow into inlet at DP41
		C-3	0.18	0.86	6.4	0.15	8.06	1.2					1	1.2				660	2.0	5.5	Gutter flow through C-4 to DP44
	44	C-4	2.67	0.57	12.3	1.52	6.41	9.7	12.3	1.67	6.41	10.7			10.7	1.3	24	70	2.2	0.5	Flow into inlet at DP44
	42	C-1f	0.08	0.96	5.0	0.08	8.68	0.7					1	0.7				185	2.0	1.5	Gutter flow to DP15
	43 15	C-1d	1.72	0.68	6.2	1.17	8.14	9.5	6.5	1.25	8.00	10.0									Flow into inlet at DP15
	12 13	C-1e	0.29	0.96	5.0	0.28	8.68	2.4	12.8	7.02	6.31	44.3			44.3	1.0	42	33	2.0	0.3	Flow into inlet at DP12 Combination of flow from DP12, DP15, DP41, DP44 into North Pond
	19	C-2	3.27	0.67	6.4	2.19	8.07	17.7													Flow into Pond North
	13a	C-5	0.60	0.36	5.0	0.22	8.68	1.9	13.1	9.43	6.25	58.9									North Pond Flows to Basin B-1
	AA	B-1	6.77	0.36	21.6	2.44	4.99	12.2	46.6	420.39	3.05	1282.2									Total flow under BGMD into Basin B-2
		D-2b	0.74	0.64	10.9	0.47	6.71	3.2													
		D-2a	0.50	0.84	5.2	0.42	8.57	3.6													

STANDARD FORM SF-3: CURRENT/EXISTING

STORM DRAINAGE SYSTEM DESIGN

(RATIONAL METHOD PROCEDURE)

Subdivision: Falcon Meadows
Location: CO, Colorado Springs
Design Storm: 100-Year

Project Name: Falcon Meadows at Bent Grass Filing No. 3
Project No.: CLH000020
Calculated By: CMV
Checked By: SMB
Date: 12/2/21

		DIRECT RUNOFF							TOTAL RUNOFF				STREET		PIPE			TRAVEL TIME			
STREET	Design Point	Basin ID	Area (Ac)	Runoff Coeff.	Tc (min)	C*A (Ac)	I (in/hr)	Q (cfs)	Tc (min)	C*A (Ac)	I (in/hr)	Q (cfs)	Slope (%)	Street Flow (cfs)	Design Flow (cfs)	Slope (%)	Pipe Size (inches)	Length (ft)	Velocity (fps)	Tt (min)	REMARKS
	14a	D-2c	0.31	0.78	5.0	0.24	8.68	2.1	10.9	1.13	6.71	7.6	1.3	7.6				230	2.3	1.7	Gutter flow through D-2d to DP14b
	14b	D-2d	0.24	0.76	5.0	0.18	8.68	1.6	12.6	1.31	6.35	8.3	1.3	8.3				625	2.3	4.6	Gutter flow through D-2d to DP14b
	14	D-2g	1.81	0.62	15.4	1.12	5.84	6.5	17.2	2.43	5.57	13.5									Flow into existing inlet at DP14
	9	OS-2	20.07	0.40	18.3	8.03	5.41	43.4													Overland flow into Basin D-3. Flow obtained from Bent Grass Filing No. 2 FDR
	10	OS-3	10.61	0.40	18.9	4.24	5.33	22.6													Offsite flow into Basin D-3. Flow obtained from Bent Grass Filing No. 2 FDR
	11	D-3	2.26	0.55	21.0	1.24	5.06	6.3	21.0	13.51	5.06	68.4			68.4	1.0	42	100	2.0	0.8	Flows conveyed via existing ditch into proposed area inlet.
	14e	D-2f	2.43	0.69	8.7	1.68	7.27	12.2													
	14d	D-2e	1.41	0.70	10.9	0.99	6.73	6.7	10.9	2.67	6.73	18.0			18.0	1.0	42	100	2.0	0.8	Flows conveyed storm sewer to DP16
	16a	D-1b	4.02	0.59	13.5	2.37	6.18	14.6					1.3	14.6				1300	2.3	9.5	Gutter flow through Basin D-1c to DP16
	16	D-1c	4.34	0.60	21.1	2.60	5.05	13.1	23.0	21.15	4.84	102.4			102.4	2.0	48	835	2.8	4.9	Combination of flows to existing inlets at DP14 and DP16. Flows to DP 17
		D-5	1.08	0.64	5.1	0.69	8.63	6.0					1	6.0				600	2.0	5.0	Gutter flow through Basin D-6b to DP18
		D-6b	2.69	0.67	12.6	1.80	6.35	11.4													
	18	D-6a	1.33	0.71	6.5	0.94	8.03	7.5	12.6	3.43	6.35	21.8			21.8	2.0	24	38	2.8	0.2	Flow to existing inlet. Flow out of inlet to DP17c
	17a	D-4a	0.98	0.67	11.1	0.66	6.66	4.4					1	4.4				700	2.0	5.8	Gutter flow through Basin D-4b to DP17b
	17b	D-4b	0.95	0.76	10.2	0.72	6.87	4.9	17.0	1.38	5.60	7.7									Gutter flow to DP17c
	17c	D-4c	1.22	0.68	14.2	0.83	6.04	5.0	17.0	4.81	5.60	26.9			26.9	2.0	24	8	2.8	0.0	Flows from Basin B-3 of Bent Grass Filing No. 2 FDR. Flows at existing inlet. Flow out to DP17
	17								27.9	25.96	4.35	112.9									Storm system entering existing pond at Basin D-7
		D-9	0.72	0.44	5.5	0.32	8.44	2.7					1.5	2.7				625	2.4	4.3	Gutter flow through Basin E-4 to DP24
		D-2h	0.23	0.59	15.5	0.14	5.83	0.8					1.5	0.8				550	2.4	3.7	Gutter flow through Basin E-4 to DP24
	24	E-4	0.91	0.84	8.0	0.76	7.50	5.7	19.2	1.22	5.28	6.4									Flow to existing inlet at DP24
	25 26	E-5	0.89	0.89	7.3	0.79	7.73	6.1	19.2	2.01	5.28	10.6									Flow to existing inlet at DP25 Flow into existing pond via Swale F at DP26
	32	D-8	1.69	0.58	14.0	0.98	6.08	6.0													Flow in Swale C (Basin D-8) into existing pond
	30	D-7	7.65	0.40	14.8	3.06	5.94	18.2	27.9	32.01	4.35	139.2									Exisitng Water quality pond Outlet to existing channel Basin B-2
	CC	B-2	4.16	0.36	16.0	1.50	5.75	8.6	46.6	453.90	3.05	1384.4									

Proposed Computations

COMPOSITE % IMPERVIOUS CALCULATIONS: PROPOSED

Subdivision: Falcon Meadows
Location: CO, Colorado Springs

Project Name: Falcon Meadows at Bent Grass Filing No. 3
Project No.: CLH000020
Calculated By: CMV
Checked By: SMB
Date: 12/6/21

Basin ID	Total Area (ac)	Paved/Gravel Roads			Lawns/Undeveloped			Residential - 1/8 Acre			Residential - 1/4 Acre			Residential - 1/3 Acre			Residential - 1/2 Acre			Residential - 1 Acre			Basins Total Weighted % Imp.
		% Imp.	Area (ac)	Weighted % Imp.	% Imp.	Area (ac)	Weighted % Imp.	% Imp.	Area (ac)	Weighted % Imp.	% Imp.	Area (ac)	Weighted % Imp.	% Imp.	Area (ac)	Weighted % Imp.	% Imp.	Area (ac)	Weighted % Imp.	% Imp.	Area (ac)	Weighted % Imp.	
OFFSITE																							
OS-1	32.28	100	2.15	6.7	2	29.25	1.8	65.0	0.00	0.0	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	11.0
OS-2	20.07	80	0.90	3.6	2	18.62	1.9	65.0	0.00	0.0	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	8.0
OS-3	10.61	80	0.48	3.6	2	9.84	1.9	65.0	0.00	0.0	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	8.0
BENT GRASS FILING NO. 2 & FALCON MEADOWS AT BENT GRASS FILING NO. 1																							
EX-1	1.19	100	0.00	0.0	2	1.19	2.0	65.0	0.00	0.0	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	2.0
EX-2	1.60	100	0.00	0.0	2	1.60	2.0	65.0	0.00	0.0	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	2.0
EX-3	0.66	100	0.00	0.0	2	0.66	2.0	65.0	0.00	0.0	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	2.0
B-1	6.59	100	0.00	0.0	2	6.59	2.0	65.0	0.00	0.0	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	2.0
B-2	4.16	100	0.00	0.0	2	4.16	2.0	65.0	0.00	0.0	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	2.0
D-4a	0.98	100	0.21	21.4	2	0.00	0.0	65.0	0.77	51.1	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	72.5
D-4b	0.95	100	0.43	45.3	2	0.00	0.0	65.0	0.52	35.6	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	80.9
D-4c	1.22	100	0.43	35.2	2	0.24	0.4	65.0	0.55	29.3	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	64.9
D-5	1.08	100	0.22	20.4	2	0.11	0.2	65.0	0.75	45.1	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	65.7
D-6a	1.33	100	0.44	33.1	2	0.00	0.0	65.0	0.89	43.5	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	76.6
D-6b	2.69	100	0.59	21.9	2	0.00	0.0	65.0	2.10	50.7	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	72.6
D-7	7.65	100	0.00	0.0	2	6.22	1.6	65.0	1.43	12.2	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	13.8
D-8	1.69	100	0.00	0.0	2	0.11	0.1	65.0	1.58	60.8	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	60.9
E-1	1.71	100	0.78	45.6	2	0.23	0.3	65.0	0.00	0.0	40	0.70	16.4	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	62.3
E-2	0.68	100	0.56	82.4	2	0.12	0.4	65.0	0.00	0.0	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	82.8
E-3	0.78	100	0.69	88.5	2	0.09	0.2	65.0	0.00	0.0	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	88.7
E-4	0.91	100	0.73	80.2	2	0.18	0.4	65.0	0.00	0.0	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	80.6
E-5	0.89	100	0.79	88.8	2	0.10	0.2	65.0	0.00	0.0	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	89.0
OS-4	4.46	100	0.00	0.0	2	0.00	0.0	65.0	2.28	33.2	40	1.46	13.1	30	0.00	0.0	25	0.00	0.0	20	0.72	3.2	49.5
OS-5	0.46	100	0.00	0.0	2	0.00	0.0	65.0	0.46	65.0	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	65.0
OS-6	1.17	100	0.00	0.0	2	0.00	0.0	65.0	1.17	65.0	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	65.0
FALCON MEADOWS AT BENT GRASS FILING NO. 2																							
C-1a	0.27	100	0.15	55.6	2	0.00	0.0	65.0	0.12	28.9	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	84.5
C-1d	1.97	100	0.40	20.3	2	0.00	0.0	65.0	1.57	51.8	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	72.1
C-1e	0.49	100	0.49	100.0	2	0.00	0.0	65.0	0.00	0.0	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	100.0
C-3	0.18	100	0.14	77.8	2	0.02	0.3	65.0	0.02	7.6	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	85.7
C-4	2.67	100	0.41	15.4	2	0.84	0.6	65.0	1.41	34.3	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	50.3
C-5	0.60	100	0.00	0.0	2	0.60	2.0	65.0	0.00	0.0	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	2.0
C-6	0.94	100	0.00	0.0	2	0.65	1.4	65.0	0.29	20.1	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	21.5
C-7	0.52	100	0.15	29.4	2	0.00	0.0	65.0	0.37	46.3	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	75.7
D-9	0.72	100	0.00	0.0	2	0.46	1.3	65.0	0.26	23.5	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	24.8
D-1c	3.95	100	0.33	8.4	2	0.00	0.0	65.0	2.67	43.9	40	0.95	9.6	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	61.9
D-2a	0.50	100	0.33	66.0	2	0.00	0.0	65.0	0.17	22.7	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	88.7
D-2b	0.74	100	0.18	24.3	2	0.14	0.4	65.0	0.42	37.1	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	61.8
D-2c	0.31	100	0.15	50.0	2	0.00	0.0	65.0	0.16	33.5	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	83.5
D-2d	0.24	100	0.10	43.4	2	0.00	0.0	65.0	0.14	37.9	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	81.3
D-2e	1.41	100	0.41	29.3	2	0.00	0.0	65.0	1.00	46.1	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	75.4
D-2f	2.43	100	0.70	28.8	2	0.07	0.1	65.0	1.67	44.7	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	73.6
D-2g	1.81	100	0.48	26.5	2	0.57	0.6	65.0	0.76	27.3	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	54.4
D-2h	0.23	100	0.00	0.0	2	0.00	0.0	65.0	0.23	65.0	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	65.0
D-3	2.26	100	0.00	0.0	2	0.28	0.2	65.0	1.74	50.0	40	0.13	2.3	30	0.11	1.5	25	0.00	0.0	20	0.00	0.0	54.0
FALCON MEADOWS AT BENT GRASS FILING NO. 3																							
C-1b	1.77	100	0.38	21.5	2	0.10	0.1	65.0	0.75	27.5	40	0.54	12.2	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	61.3
C-1c	1.19	100	0.26	21.8	2	0.00	0.0	65.0	0.72	39.3	40	0.21	7.1	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	68.2
C-1f	0.14	100	0.09	64.3	2	0.00	0.0	65.0	0.05	23.2	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	87.5
C-2	1.00	100	0.27	27.0	2	0.04	0.1	65.0	0.69	44.9	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	72.0
D-1a	1.83	100	0.35	19.1	2	0.15	0.2	65.0	0.75	26.6	40	0.25	5.5	30	0.33	5.4	25	0.00	0.0	20	0.00	0.0	56.8
D-1b	1.19	100	0.29	24.4	2	0.00	0.0	65.0	0.39	21.3	40	0.39	13.1	30	0.12	3.0	25	0.00	0.0	20	0.00	0.0	61.8
D-1f	0.67	100	0.16	23.9	2	0.00	0.0	65.0	0.51	49.5	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	73.4
D-1g	0.78	100	0.13	16.7	2	0.20	0.5	65.0	0.34	28.3	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	45.5
D-1h	1.57	100	0.23	14.6	2	0.31	0.4	65.0	0.58	24.0	40	0.19	4.8	30	0.26	5.0	25	0.00	0.0	20	0.00	0.0	48.8
D-1j	0.95	100	0.23	24.2	2	0.09	0.2	65.0	0.38	26.0	40	0.22	9.3	30	0.03	0.9	25	0.00	0.0	20	0.00	0.0	60.6
D-1k	0.80	100	0.18	22.5	2	0.10	0.3	65.0	0.19	15.4	40	0.00	0.0	30	0.33	12.4	25	0.00	0.0	20	0.00	0.0	50.6
FUTURE FILINGS																							
C-1g	1.02	100	0.00	0.0	2	0.00	0.0	65.0	1.02	65.0	40	0.00	0.0	30	0.00	0.0	25	0.00	0.0	20	0.00	0.0	65.0

Lot Type Identification:	
Lot Size (SF)	*Lot Size (Acre)*
0 - 8,167	1/8 Acre
8,168 - 12,704	1/4 Acre
12,705 - 18,149	1/3 Acre
18,150 - 32,670	1/2 Acre
32,671 - 43,560	1 Acre

NOTES:
% Impervious values are taken directly from Table 6-6 in the Colorado Springs DCM Vol. 1, Ch. 6 (Referencing UDFCD 2001)

COMPOSITE RUNOFF COEFFICIENT CALCULATIONS: PROPOSED

Subdivision: Falcon Meadows
Location: CO, Colorado Springs

Project Name: Falcon Meadows at Bent Grass Filing No. 3
Project No.: CLH000020
Calculated By: CMV
Checked By: SMB
Date: 12/6/21

Basin ID	Total Area (ac)	Paved/Gravel Roads			Lawns/Undeveloped			Residential - 1/8 Acre			Residential - 1/4 Acre			Residential - 1/3 Acre			Residential - 1/2 Acre			Residential - 1 Acre			Composite	Composite
		C_5	C_{100}	Area (ac)	C_5	C_{100}	Area (ac)	C_5	C_{100}	Area (ac)	C_5	C_{100}	Area (ac)	C_5	C_{100}	Area (ac)	C_5	C_{100}	Area (ac)	C_5	C_{100}	Area (ac)	C_5	C_{100}
OFFSITE																								
OS-1	32.28	0.90	0.96	2.15	0.09	0.36	29.25	0.45	0.59	0.00	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.16	0.41
OS-2	20.07	0.90	0.96	0.90	0.09	0.36	18.62	0.45	0.59	0.00	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.14	0.40
OS-3	10.61	0.90	0.96	0.48	0.09	0.36	9.84	0.45	0.59	0.00	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.14	0.40
BENT GRASS FILING NO. 2 & FALCON MEADOWS AT BENT GRASS FILING NO. 1																								
EX-1	1.19	0.90	0.96	0.00	0.09	0.36	1.19	0.45	0.59	0.00	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.09	0.36
EX-2	1.60	0.90	0.96	0.00	0.09	0.36	1.60	0.45	0.59	0.00	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.09	0.36
EX-3	0.66	0.90	0.96	0.00	0.09	0.36	0.66	0.45	0.59	0.00	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.09	0.36
B-1	6.59	0.90	0.96	0.00	0.09	0.36	6.59	0.45	0.59	0.00	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.09	0.36
B-2	4.16	0.90	0.96	0.00	0.09	0.36	4.16	0.45	0.59	0.00	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.09	0.36
D-4a	0.98	0.90	0.96	0.21	0.09	0.36	0.00	0.45	0.59	0.77	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.55	0.67
D-4b	0.95	0.90	0.96	0.43	0.09	0.36	0.00	0.45	0.59	0.52	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.65	0.76
D-4c	1.22	0.90	0.96	0.43	0.09	0.36	0.24	0.45	0.59	0.55	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.54	0.68
D-5	1.08	0.90	0.96	0.22	0.09	0.36	0.11	0.45	0.59	0.75	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.51	0.64
D-6a	1.33	0.90	0.96	0.44	0.09	0.36	0.00	0.45	0.59	0.89	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.60	0.71
D-6b	2.69	0.90	0.96	0.59	0.09	0.36	0.00	0.45	0.59	2.10	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.55	0.67
D-7	7.65	0.90	0.96	0.00	0.09	0.36	6.22	0.45	0.59	1.43	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.16	0.40
D-8	1.69	0.90	0.96	0.00	0.09	0.36	0.11	0.45	0.59	1.58	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.43	0.58
E-1	1.71	0.90	0.96	0.78	0.09	0.36	0.23	0.45	0.59	0.00	0.30	0.50	0.70	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.55	0.69
E-2	0.68	0.90	0.96	0.56	0.09	0.36	0.12	0.45	0.59	0.00	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.76	0.85
E-3	0.78	0.90	0.96	0.69	0.09	0.36	0.09	0.45	0.59	0.00	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.81	0.89
E-4	0.91	0.90	0.96	0.73	0.09	0.36	0.18	0.45	0.59	0.00	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.74	0.84
E-5	0.89	0.90	0.96	0.79	0.09	0.36	0.10	0.45	0.59	0.00	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.81	0.89
OS-4	4.46	0.90	0.96	0.00	0.09	0.36	0.00	0.45	0.59	2.28	0.30	0.50	1.46	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.72	0.36	0.54
OS-5	0.46	0.90	0.96	0.00	0.09	0.36	0.00	0.45	0.59	0.46	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.45	0.59
OS-6	1.17	0.90	0.96	0.00	0.09	0.36	0.00	0.45	0.59	1.17	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.45	0.59
FALCON MEADOWS FILING NO. 2																								
C-1a	0.27	0.90	0.96	0.15	0.09	0.36	0.00	0.45	0.59	0.12	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.70	0.80
C-1d	1.97	0.90	0.96	0.40	0.09	0.36	0.00	0.45	0.59	1.57	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.54	0.67
C-1e	0.49	0.90	0.96	0.49	0.09	0.36	0.00	0.45	0.59	0.00	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.90	0.96
C-3	0.18	0.90	0.96	0.14	0.09	0.36	0.02	0.45	0.59	0.02	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.76	0.86
C-4	2.67	0.90	0.96	0.41	0.09	0.36	0.84	0.45	0.59	1.41	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.41	0.57
C-5	0.60	0.90	0.96	0.00	0.09	0.36	0.60	0.45	0.59	0.00	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.09	0.36
C-6	0.94	0.90	0.96	0.00	0.09	0.36	0.65	0.45	0.59	0.29	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.20	0.43
C-7	0.52	0.90	0.96	0.15	0.09	0.36	0.00	0.45	0.59	0.37	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.58	0.70
D-9	0.72	0.90	0.96	0.00	0.09	0.36	0.46	0.45	0.59	0.26	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.22	0.44
D-1c	3.95	0.90	0.96	0.33	0.09	0.36	0.00	0.45	0.59	2.67	0.30	0.50	0.95	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.45	0.60
D-2a	0.50	0.90	0.96	0.33	0.09	0.36	0.00	0.45	0.59	0.17	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.75	0.84
D-2b	0.74	0.90	0.96	0.18	0.09	0.36	0.14	0.45	0.59	0.42	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.49	0.64
D-2c	0.31	0.90	0.96	0.15	0.09	0.36	0.00	0.45	0.59	0.16	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.68	0.78
D-2d	0.24	0.90	0.96	0.10	0.09	0.36	0.00	0.45	0.59	0.14	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.65	0.76
D-2e	1.41	0.90	0.96	0.41	0.09	0.36	0.00	0.45	0.59	1.00	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.58	0.70
D-2f	2.43	0.90	0.96	0.70	0.09	0.36	0.07	0.45	0.59	1.67	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.57	0.69
D-2g	1.81	0.90	0.96	0.48	0.09	0.36	0.57	0.45	0.59	0.76	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.46	0.62
D-2h	0.23	0.90	0.96	0.00	0.09	0.36	0.00	0.45	0.59	0.23	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.45	0.59
D-3	2.26	0.90	0.96	0.00	0.09	0.36	0.28	0.45	0.59	1.74	0.30	0.50	0.13	0.25	0.47	0.11	0.22	0.46	0.00	0.20	0.44	0.00	0.39	0.55
FALCON MEADOWS FILING NO. 3																								
C-1b	1.77	0.90	0.96	0.38	0.09	0.36	0.10	0.45	0.59	0.75	0.30	0.50	0.54	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.48	0.63
C-1c	1.19	0.90	0.96	0.26	0.09	0.36	0.00	0.45	0.59	0.72	0.30	0.50	0.21	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.52	0.65
C-1f	0.14	0.90	0.96	0.09	0.09	0.36	0.00	0.45	0.59	0.05	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.74	0.83

Basin ID	Total Area (ac)	Paved/Gravel Roads			Lawns/Undeveloped			Residential - 1/8 Acre			Residential - 1/4 Acre			Residential - 1/3 Acre			Residential - 1/2 Acre			Residential - 1 Acre			Composite	Composite
		C_5	C_{100}	Area (ac)	C_5	C_{100}	Area (ac)	C_5	C_{100}	Area (ac)	C_5	C_{100}	Area (ac)	C_5	C_{100}	Area (ac)	C_5	C_{100}	Area (ac)	C_5	C_{100}	Area (ac)	C_5	C_{100}
C-2	1.00	0.90	0.96	0.27	0.09	0.36	0.04	0.45	0.59	0.69	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.56	0.68
D-1a	1.83	0.90	0.96	0.35	0.09	0.36	0.15	0.45	0.59	0.75	0.30	0.50	0.25	0.25	0.47	0.33	0.22	0.46	0.00	0.20	0.44	0.00	0.45	0.61
D-1b	1.19	0.90	0.96	0.29	0.09	0.36	0.00	0.45	0.59	0.39	0.30	0.50	0.39	0.25	0.47	0.12	0.22	0.46	0.00	0.20	0.44	0.00	0.49	0.64
D-1f	0.67	0.90	0.96	0.16	0.09	0.36	0.00	0.45	0.59	0.51	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.56	0.68
D-1g	0.78	0.90	0.96	0.13	0.09	0.36	0.20	0.45	0.59	0.34	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.37	0.51
D-1h	1.57	0.90	0.96	0.23	0.09	0.36	0.31	0.45	0.59	0.58	0.30	0.50	0.19	0.25	0.47	0.26	0.22	0.46	0.00	0.20	0.44	0.00	0.39	0.57
D-1j	0.95	0.90	0.96	0.23	0.09	0.36	0.09	0.45	0.59	0.38	0.30	0.50	0.22	0.25	0.47	0.03	0.22	0.46	0.00	0.20	0.44	0.00	0.48	0.63
D-1k	0.80	0.90	0.96	0.18	0.09	0.36	0.10	0.45	0.59	0.19	0.30	0.50	0.00	0.25	0.47	0.33	0.22	0.46	0.00	0.20	0.44	0.00	0.42	0.60
FUTURE FILINGS																								
C-1g	1.02	0.90	0.96	0.00	0.09	0.36	0.00	0.45	0.59	1.02	0.30	0.50	0.00	0.25	0.47	0.00	0.22	0.46	0.00	0.20	0.44	0.00	0.45	0.59

Lot Type Identification:	
Lot Size (SF)	*Lot Size (Acre)*
0 - 8,167	</= 1/8 Acre
8,168 - 12,704	1/4 Acre
12,705 - 18,149	1/3 Acre
18,150 - 32,670	1/2 Acre
32,671 - 43,560	1 Acre

NOTES:

C values are taken directly from Table 6-6 in the Colorado Springs DCM Vol. 1. CH. 6 (Referencing UDFCD 2001)

Coeffficients use HSG A&B soils - Refer to "Appendix A: Exhibits and Figures" for soil map

STANDARD FORM SF-2: PROPOSED
TIME OF CONCENTRATION

Subdivision: Falcon Meadows
Location: CO, Colorado Springs

Project Name: Falcon Meadows at Bent Grass Filing No. 3
Project No.: CLH000020
Calculated By: CMV
Checked By: SMB
Date: 12/6/21

SUB-BASIN DATA					INITIAL/OVERLAND (T_i)			TRAVEL TIME (T_t)					Tc CHECK (URBANIZED BASINS)			FINAL
BASIN ID	D.A. (AC)	Impervious (%)	C_5	C_{100}	L (FT)	S (%)	T_i (MIN)	L (FT)	S (%)	Cv	VEL. (FPS)	T_t (MIN)	COMP. T_c (MIN)	TOTAL LENGTH(FT)	Urbanized T_c (MIN)	T_c (MIN)
OFFSITE																
OS-1	32.28	11.0	0.16	0.41	100	2.4	12.9	2100	2.2	15	2.2	15.7	28.6	2200.0	22.2	22.2
OS-2	20.07	8.0	0.14	0.40	100	2.3	13.3	1400	2.3	15	2.3	10.3	23.6	1500.0	18.3	18.3
OS-3	10.61	8.0	0.14	0.40	100	2.0	14.0	1500	2.0	15	2.1	11.8	25.7	1600.0	18.9	18.9
BENT GRASS FILING NO. 2 & FALCON MEADOWS AT BENT GRASS FILING NO. 1																
EX-1	1.19	2.0	0.09	0.36	300	2.7	23.0	690	2.7	15	2.5	4.7	27.7	990.0	15.5	15.5
EX-2	1.60	2.0	0.09	0.36	200	2.7	18.8	100	2.7	15	2.5	0.7	19.5	300.0	11.7	11.7
EX-3	0.66	2.0	0.09	0.36	100	5.0	10.8	30	2.7	15	2.5	0.2	11.0	130.0	10.7	10.7
B-1	6.59	2.0	0.09	0.36	90	6.4	9.5	2000	1.7	15	2.0	17.0	26.5	2090.0	21.6	21.6
B-2	4.16	2.0	0.09	0.36	160	11.0	10.5	920	1.6	15	1.9	8.1	18.6	1080.0	16.0	16.0
D-4a	0.98	72.5	0.55	0.67	100	2.3	7.6	420	1.0	20	2.0	3.5	11.1	520.0	12.9	11.1
D-4b	0.95	80.9	0.65	0.76	75	1.5	6.2	480	1.0	20	2.0	4.0	10.2	555.0	13.1	10.2
D-4c	1.22	64.9	0.54	0.68	70	0.5	10.8	690	1.0	20	2.0	5.8	16.6	760.0	14.2	14.2
D-5	1.08	65.7	0.51	0.64	10	2.0	2.7	300	1.1	20	2.1	2.4	5.1	310.0	11.7	5.1
D-6a	1.33	76.6	0.60	0.71	20	2.0	3.2	385	1.0	20	2.0	3.2	6.5	405.0	12.3	6.5
D-6b	2.69	72.6	0.55	0.67	45	2.0	5.4	870	1.0	20	2.0	7.3	12.6	915.0	15.1	12.6
D-7	7.65	13.8	0.16	0.40	200	7.5	12.4	665	1.0	15	1.5	7.4	19.8	865.0	14.8	14.8
D-8	1.69	60.9	0.43	0.58	125	3.7	8.9	600	1.0	15	1.5	6.7	15.5	725.0	14.0	14.0
E-1	1.71	62.3	0.55	0.69	25	2.0	4.0	940	1.0	20	2.0	7.8	11.8	965.0	15.4	11.8
E-2	0.68	82.8	0.76	0.85	25	2.0	2.5	665	1.6	20	2.5	4.4	6.9	690.0	13.8	6.9
E-3	0.78	88.7	0.81	0.89	25	2.0	2.1	632	1.0	20	2.0	5.3	7.4	657.0	13.7	7.4
E-4	0.91	80.6	0.74	0.84	25	2.0	2.6	913	2.0	20	2.8	5.4	8.0	938.0	15.2	8.0
E-5	0.89	89.0	0.81	0.89	25	2.0	2.1	903	2.1	20	2.9	5.2	7.3	928.0	15.2	7.3
OS-4	4.46	49.5	0.36	0.54	100	2.0	10.8	910	1.2	20	2.2	6.9	17.7	1010.0	15.6	15.6
OS-5	0.46	65.0	0.45	0.59	15	2.0	3.7	190	1.0	20	2.0	1.6	5.2	205.0	11.1	5.2
OS-6	1.17	65.0	0.45	0.59	85	0.2	18.7	430	0.9	20	1.9	3.8	22.5	515.0	12.9	12.9
FALCON MEADOWS FILING NO. 2																
C-1a	0.27	84.5	0.70	0.80	10	2.0	1.8	230	1.0	20	2.0	1.9	3.8	240.0	11.3	5.0
C-1d	1.97	72.1	0.54	0.67	100	3.8	6.6	505	0.8	20	1.8	4.6	11.2	605.0	13.4	11.2
C-1e	0.49	100.0	0.90	0.96	10	2.0	0.9	68	3.4	20	3.7	0.3	1.2	78.0	10.4	5.0
C-3	0.18	85.7	0.76	0.86	10	2.0	1.6	580	1.0	20	2.0	4.8	6.4	590.0	13.3	6.4
C-4	2.67	50.3	0.41	0.57	100	3.0	8.8	600	2.0	20	2.8	3.5	12.3	700.0	13.9	12.3
C-5	0.60	2.0	0.09	0.36	5	2.0	3.3		1.0	15	1.5	0.0	3.3	5.0	10.0	5.0
C-6	0.94	21.5	0.20	0.43	20	3.3	5.0	90	5.0	15	3.4	0.4	5.4	110.0	10.6	5.4
C-7	0.52	75.7	0.58	0.70	100	6.8	5.0	165	1.3	15	1.7	1.6	6.7	265.0	11.5	6.7

SUB-BASIN DATA					INITIAL/OVERLAND (T_i)			TRAVEL TIME (T_t)					Tc CHECK (URBANIZED BASINS)			FINAL
BASIN ID	D.A. (AC)	Impervious (%)	C_5	C_{100}	L (FT)	S (%)	T_i (MIN)	L (FT)	S (%)	Cv	VEL. (FPS)	T_t (MIN)	COMP. T_c (MIN)	TOTAL LENGTH(FT)	Urbanized T_c (MIN)	T_c (MIN)
D-9	0.72	24.8	0.22	0.44	10	2.0	4.0	250	3.6	15	2.8	1.5	5.5	260.0	11.4	5.5
D-1c	3.95	61.9	0.45	0.60	100	2.6	8.7	1900	1.3	20	2.3	13.9	22.5	2000.0	21.1	21.1
D-2a	0.50	88.7	0.75	0.84	10	2.0	1.6	495	1.3	20	2.3	3.6	5.2	505.0	12.8	5.2
D-2b	0.74	61.8	0.49	0.64	100	1.7	9.4	189	1.0	20	2.0	1.6	10.9	289.0	11.6	10.9
D-2c	0.31	83.5	0.68	0.78	5	2.0	1.4	275	1.0	20	2.0	2.3	3.7	280.0	11.6	5.0
D-2d	0.24	81.3	0.65	0.76	5	2.0	1.5	200	1.3	20	2.3	1.5	2.9	205.0	11.1	5.0
D-2e	1.41	75.4	0.58	0.70	100	1.9	7.7	340	0.8	20	1.8	3.2	10.9	440.0	12.4	10.9
D-2f	2.43	73.6	0.57	0.69	75	2.0	6.7	175	0.5	20	1.4	2.1	8.7	250.0	11.4	8.7
D-2g	1.81	54.4	0.46	0.62	35	2.0	5.5	1355	1.3	20	2.3	9.9	15.4	1390.0	17.7	15.4
D-2h	0.23	65.0	0.45	0.59	35	2.0	5.6	1355	1.3	20	2.3	9.9	15.5	1390.0	17.7	15.5
D-3	2.26	54.0	0.39	0.55	25	8.0	3.3	1960	1.0	15	1.5	21.8	25.0	1985.0	21.0	21.0
FALCON MEADOWS FILING NO. 3																
C-1b	1.77	61.3	0.48	0.63	50	12.0	3.5	570	1.7	20	2.6	3.7	7.2	620.0	13.4	7.2
C-1c	1.19	68.2	0.52	0.65	10	2.0	2.7	440	1.7	20	2.6	2.9	5.5	450.0	12.5	5.5
C-1f	0.14	87.5	0.74	0.83	60	7.0	2.7	90	1.8	20	2.7	0.6	3.2	150.0	10.8	5.0
C-2	1.00	72.0	0.56	0.68	80	2.4	6.6	360	3.4	20	3.7	1.6	8.2	440.0	12.4	8.2
D-1a	1.83	56.8	0.45	0.61	100	3.6	7.8	550	2.2	20	3.0	3.1	10.9	650.0	13.6	10.9
D-1b	1.19	61.8	0.49	0.64	100	3.9	7.1	520	2.2	20	3.0	2.9	10.0	620.0	13.4	10.0
D-1f	0.67	73.4	0.56	0.68	20	2.0	3.5	225	1.0	20	2.0	1.9	5.4	245.0	11.4	5.4
D-1g	0.78	45.5	0.37	0.51	100	2.3	10.1	395	1.0	20	2.0	3.3	13.4	495.0	12.8	12.8
D-1h	1.57	48.8	0.39	0.57	100	2.3	9.8	380	2.9	20	3.4	1.9	11.7	480.0	12.7	11.7
D-1j	0.95	60.6	0.48	0.63	75	4.4	6.0	320	2.9	20	3.4	1.6	7.6	395.0	12.2	7.6
D-1k	0.80	50.6	0.42	0.60	100	3.8	8.0	300	1.7	20	2.6	1.9	9.9	400.0	12.2	9.9
FUTURE FILINGS																
C-1g	1.02	65.0	0.45	0.59	100	6.1	6.5	375	2.4	20	3.1	2.0	8.5	475.0	12.6	8.5

NOTES:

$T_i = (0.395*(1.1 - C_5)*(L)^{0.5})/((S)^{0.33})$, S in ft/ft

T_t=L/60V (Velocity From Fig. 501)

Velocity V=Cv*S^0.5, S in ft/ft

Tc Check = 10+L/180

For Urbanized basins a minimum T_c of 5.0 minutes is required.

For non-urbanized basins a minimum T_c of 10.0 minutes is required

Type of Land Surface	Cv
Heavy Meadow	2.5
Tillage/field	5
Short pasture and lawns	7
Nearly bare ground	10
Grassed waterway	15
Paved areas and shallow paved swale	20

STANDARD FORM SF-3: PROPOSED
STORM DRAINAGE SYSTEM DESIGN
(RATIONAL METHOD PROCEDURE)

Subdivision: Falcon Meadows
Location: CO, Colorado Springs
Design Storm: 5-Year

Project Name: Falcon Meadows at Bent Grass Filing No. 3
Project No.: CLH000020
Calculated By: CMV
Checked By: SMB
Date: 12/6/21

		DIRECT RUNOFF							TOTAL RUNOFF				STREET		PIPE			TRAVEL TIME			
STREET	Design Point	Basin ID	Area (Ac)	Runoff Coeff.	Tc (min)	C*A (Ac)	I (in/hr)	Q (cfs)	Tc (min)	C*A (Ac)	I (in/hr)	Q (cfs)	Slope (%)	Street Flow (cfs)	Design Flow (cfs)	Slope (%)	Pipe Size (inches)	Length (ft)	Velocity (fps)	Tt (min)	REMARKS
		RWT202	1574.40						46.6	120.88	1.82	220.0									From Falcon DBPS by Matrix
		RWT204	38.40						11.37	1.78	3.94	7.0									From Falcon DBPS by Matrix
		WT200	192.00						37.8	24.41	2.13	52.0									From Falcon DBPS by Matrix
	21	OS-1	32.28	0.16	22.2	5.16	2.93	15.1	46.6	152.23	1.82	277.1									Flows obtained from Bent Grass Filing No. 2 FDR. Q=65.1 CFS Cumulation of northern off-site flows entering Basin B-1
	1	OS-4	4.46	0.36	15.6	1.61	3.46	5.6					1.2	5.6				910	2.2	6.9	Flows from Basin B-1 of Bent Grass Filing No. 2 FDR into Basin EX-2
	2	OS-5	0.46	0.45	5.2	0.21	5.10	1.1					1	1.1				190	2.0	1.6	Flows from Basin B-2 of Bent Grass Filing No. 2 FDR into Basin EX-2
	3	OS-6	1.17	0.45	12.9	0.53	3.75	2.0					0.9	2.0				430	1.9	3.8	Flows from Basin B-3 of Bent Grass Filing No. 2 FDR into Basin EX-2
		EX-1	1.19	0.09	15.5	0.11	3.47	0.4													Flows to Basin EX-2
	5	EX-2	1.60	0.09	11.7	0.14	3.90	0.5	22.5	2.60	2.91	7.6									Flows to Basin EX-3
	7	E-3	0.78	0.81	7.4	0.63	4.59	2.9													
		C-6	0.94	0.20	5.4	0.19	5.05	1.0					1	1.0				216	2.0	1.8	
	45	C-7	0.52	0.58	6.7	0.30	4.74	1.4					1	1.4				216	2.0	1.8	
		E-2	0.68	0.76	6.9	0.52	4.70	2.4	8.5	1.01	4.38	4.4									Combination of C-6, C-7, E-2
	8	E-1	1.71	0.55	11.8	0.94	3.88	3.6	11.8	2.58	3.88	10.0									Ex Basin from Filing No. 2(East side of BGMD) Combination of C-7, E-1, E-2, E-3. Flows to Basin EX-3
	6 15a	EX-3	0.66	0.09	10.7	0.06	4.02	0.2	22.5	5.24	2.91	15.2									Flows to Basin B-1
		D-1g	0.78	0.37	12.8	0.29	3.76	1.1					1	1.1				57	2.0	0.5	
		D-1h	1.57	0.39	11.7	0.61	3.89	2.4													
	51	D-1j	0.95	0.48	7.6	0.46	4.55	2.1	13.2	1.36	3.71	5.0	0.9	0.0	5.0			225	1.9	2.0	Flows to existing on-grade inlet at DP51
		D-1f	0.67	0.56	5.4	0.38	5.06	1.9													
	52	D-1k	0.80	0.42	9.9	0.34	4.14	1.4	9.9	0.72	4.14	3.0									
	53	C-1a	0.27	0.70	5.0	0.19	5.17	1.0	15.2	0.92	3.50	3.2	1.1	0.0	3.2			430	2.1	3.4	Flows to proposed on-grade inlet at DP53
	53								15.1	2.26	3.51	7.9			7.9						Total pipe flow at DP 53
		C-1b	1.77	0.48	7.2	0.85	4.62	3.9													
	54	C-2	1.00	0.56	8.2	0.56	4.42	2.5	8.2	1.41	4.42	6.2	1	6.2				130	1.6	1.4	
	41	C-1c	1.19	0.52	5.5	0.62	5.02	3.1	9.6	2.03	4.19	8.5		0.3	8.2	1.3	30	180	2.2	1.3	On-grade inlet
									15.1	4.22	3.51	14.8			14.8						Total pipe flow at DP 41
	42	C-1f	0.14	0.74	5.0	0.10	5.17	0.5	10.9	0.17	4.00	0.7	1	0.7				185	2.0	1.5	Gutter flow to DP15
		C-3	0.18	0.76	6.4	0.14	4.80	0.7					1	0.7				660	2.0	5.5	Gutter flow through C-4 to DP44
	44	C-4	2.67	0.41	12.3	1.09	3.82	4.2	12.3	1.23	3.82	4.7	1	0.0	4.7	1.3	24	70	2.2	0.5	Flow into on-grade inlet at DP44
	43 15	C-1d	1.97	0.54	11.2	1.06	3.96	4.2	12.5	1.23	3.80	4.7									Flow into inlet at DP15

STANDARD FORM SF-3: PROPOSED
STORM DRAINAGE SYSTEM DESIGN
(RATIONAL METHOD PROCEDURE)

Subdivision: Falcon Meadows
Location: CO, Colorado Springs
Design Storm: 5-Year

Project Name: Falcon Meadows at Bent Grass Filing No. 3
Project No.: CLH000020
Calculated By: CMV
Checked By: SMB
Date: 12/6/21

		DIRECT RUNOFF							TOTAL RUNOFF				STREET		PIPE			TRAVEL TIME			
STREET	Design Point	Basin ID	Area (Ac)	Runoff Coeff.	Tc (min)	C*A (Ac)	I (in/hr)	Q (cfs)	Tc (min)	C*A (Ac)	I (in/hr)	Q (cfs)	Slope (%)	Street Flow (cfs)	Design Flow (cfs)	Slope (%)	Pipe Size (inches)	Length (ft)	Velocity (fps)	Tt (min)	REMARKS
	15								15.1	6.68	3.51	23.5									Total pipe flow at DP15
	12	C-1e	0.49	0.90	5.0	0.44	5.17	2.3													Flow into inlet at DP12
	19	C-1g	1.02	0.45	8.5	0.46	4.37	2.0	15.1	7.12	3.51	25.0			25.0						Total pipe flow at DP12 Flow into Pond North
	13	C-5	0.60	0.09	5.0	0.05	5.17	0.3	15.1	7.63	3.51	26.8									North Pond Total flow to Pond North. Outfalls to Basin B-1
	AA	B-1	6.59	0.09	21.6	0.59	2.97	1.8	46.6	165.69	1.82	301.6									Total flow under BGMD into Basin B-2
		D-2b	0.74	0.49	10.9	0.36	4.00	1.4													
		D-2a	0.50	0.75	5.2	0.38	5.10	1.9													
	14a	D-2c	0.31	0.68	5.0	0.21	5.17	1.1	10.9	0.95	4.00	3.8	1.3	3.8				230	2.3	1.7	Gutter flow through D-2d to DP14b
	14b	D-2d	0.24	0.65	5.0	0.16	5.17	0.8	12.6	1.11	3.78	4.2	1.3	4.2				625	2.3	4.6	Gutter flow through D-2d to DP14b
	14	D-2g	1.81	0.46	15.4	0.83	3.48	2.9	17.2	1.94	3.32	6.4	2.5	0.9	5.5			625	3.2	3.3	Flow into existing inlet at DP14
	9	OS-2	20.07	0.14	18.3	2.81	3.22	9.0													Overland flow into Basin D-3. Flow obtained from Bent Grass Filing No. 2 FDR
	10	OS-3	10.61	0.14	18.9	1.49	3.18	4.7													Offsite flow into Basin D-3. Flow obtained from Bent Grass Filing No. 2 FDR
	11	D-3	2.26	0.39	21.0	0.88	3.01	2.6	21.0	5.18	3.01	15.6			15.6	1.0	42	100	2.0	0.8	Flows conveyed via existing ditch into proposed area inlet.
	14e	D-2f	2.43	0.57	8.7	1.39	4.33	6.0													Flows to existing inlet at DP14e
	14d	D-2e	1.41	0.58	10.9	0.82	4.01	3.3	10.9	2.21	4.01	8.9			8.9	1.0	42	100	2.0	0.8	Flows to existing inlet at DP14d Flows conveyed storm sewer to DP16
		D-1a	1.83	0.45	10.9	0.82	4.01	3.3													
	16a	D-1b	1.19	0.49	10.0	0.58	4.13	2.4	10.9	1.40	4.01	5.6	1.3	5.6				1300	2.3	9.5	Gutter flow through Basin D-1c to DP16
	16	D-1c	3.95	0.45	21.1	1.78	3.01	5.4	21.1	3.18	3.01	9.6	2.5	2.7	6.9			625	3.2	3.3	Flows to existing inlet at DP16
	16								21.9	11.34	2.96	33.6			33.6	2.0	48	835	2.8	4.9	Combination of flows to existing inlets at DP14 and DP16. Flows to DP 17
		D-5	1.08	0.51	5.1	0.55	5.14	2.8					1	2.8				600	2.0	5.0	Gutter flow through Basin D-6b to DP18
		D-6b	2.69	0.55	12.6	1.48	3.78	5.6													
	18	D-6a	1.33	0.60	6.5	0.80	4.79	3.8	12.6	2.83	3.78	10.7			10.7	2.0	24	38	2.8	0.2	Flow to existing inlet. Flow out of inlet to DP17c
	17a	D-4a	0.98	0.55	11.1	0.54	3.97	2.1					1	2.1				700	2.0	5.8	Gutter flow through Basin D-4b to DP17b
	17b	D-4b	0.95	0.65	10.2	0.62	4.09	2.5	17.0	1.16	3.34	3.9									Gutter flow to DP17c
	17c	D-4c	1.22	0.54	14.2	0.66	3.60	2.4	17.0	1.82	3.34	6.1			6.1	2.0	24	8	2.8	0.0	Flows from Basin B-3 of Bent Grass Filing No. 2 FDR. Flows to existing inlet at DP17c
									17.0	4.65	3.34	15.5									Total pipe flow at DP17c to DP17
	17								26.8	15.99	2.65	42.4									Storm system entering existing pond at Basin D-7
		D-9	0.72	0.22	5.5	0.16	5.02	0.8					1.5	0.8				625	2.4	4.3	Gutter flow through Basin E-4 to DP24
		D-2h	0.23	0.45	15.5	0.10	3.47	0.3					1.5	0.3				550	2.4	3.7	Gutter flow through Basin E-4 to DP24
	24	E-4	0.91	0.74	8.0	0.67	4.46	3.0	24.4	2.10	2.79	5.9									Flow to existing inlet at DP24

STANDARD FORM SF-3: PROPOSED

STORM DRAINAGE SYSTEM DESIGN

(RATIONAL METHOD PROCEDURE)

Subdivision: Falcon Meadows
Location: CO, Colorado Springs
Design Storm: 5-Year

Project Name: Falcon Meadows at Bent Grass Filing No. 3
Project No.: CLH000020
Calculated By: CMV
Checked By: SMB
Date: 12/6/21

		DIRECT RUNOFF							TOTAL RUNOFF				STREET		PIPE			TRAVEL TIME			
STREET	Design Point	Basin ID	Area (Ac)	Runoff Coeff.	Tc (min)	C*A (Ac)	I (in/hr)	Q (cfs)	Tc (min)	C*A (Ac)	I (in/hr)	Q (cfs)	Slope (%)	Street Flow (cfs)	Design Flow (cfs)	Slope (%)	Pipe Size (inches)	Length (ft)	Velocity (fps)	Tt (min)	REMARKS
	25	E-5	0.89	0.81	7.3	0.72	4.60	3.3													Flow to existing inlet at DP25
	26								24.4	2.82	2.79	7.9									Flow into existing pond via Swale F at DP26
	32	D-8	1.69	0.43	14.0	0.73	3.62	2.6													Flow in Swale C (Basin D-8) into existing pond
		D-7	7.65	0.16	14.8	1.22	3.54	4.3													Exisitng Water quality pond
	30								26.8	20.76	2.65	55.0									Outlet to existing channel Basin B-2
		B-2	4.16	0.09	16.0	0.37	3.42	1.3													
	CC								46.6	186.82	1.82	340.0									

STANDARD FORM SF-3: PROPOSED
STORM DRAINAGE SYSTEM DESIGN
(RATIONAL METHOD PROCEDURE)

Subdivision: Falcon Meadows
Location: CO, Colorado Springs
Design Storm: 100-Year

Project Name: Falcon Meadows at Bent Grass Filing No. 3
Project No.: CLH000020
Calculated By: CMV
Checked By: SMB
Date: 12/6/21

		DIRECT RUNOFF							TOTAL RUNOFF				STREET		PIPE			TRAVEL TIME			
STREET	Design Point	Basin ID	Area (Ac)	Runoff Coeff.	Tc (min)	C*A (Ac)	I (in/hr)	Q (cfs)	Tc (min)	C*A (Ac)	I (in/hr)	Q (cfs)	Slope (%)	Street Flow (cfs)	Design Flow (cfs)	Slope (%)	Pipe Size (inches)	Length (ft)	Velocity (fps)	Tt (min)	REMARKS
		RWT202	1574.40						46.6	327.87	3.05	1000.0									From Falcon DBPS by Matrix
		RWT204	38.40						11.4	6.52	6.60	43.0									From Falcon DBPS by Matrix
		WT200	192.00						37.8	53.07	3.58	190.0									From Falcon DBPS by Matrix
	21	OS-1	32.28	0.41	22.2	13.23	4.92	65.1	46.6	400.69	3.05	1222.1									Flows obtained from Bent Grass Filing No. 2 FDR. Q=65.1 CFS Cumulation of northern off-site flows entering Basin B-1
	1	OS-4	4.46	0.54	15.6	2.41	5.81	14.0					1.2	14.0				910	2.2	6.9	Flows from Basin B-1 of Bent Grass Filing No. 2 FDR into Basin EX-2
	2	OS-5	0.46	0.59	5.2	0.27	8.56	2.3					1	2.3				190	2.0	1.6	Flows from Basin B-2 of Bent Grass Filing No. 2 FDR into Basin EX-2
	3	OS-6	1.17	0.59	12.9	0.69	6.30	4.3					0.9	4.3				430	1.9	3.8	Flows from Basin B-3 of Bent Grass Filing No. 2 FDR into Basin EX-2
		EX-1	1.19	0.36	15.5	0.43	5.83	2.5													Flows to Basin EX-2
	5	EX-2	1.60	0.36	11.7	0.58	6.54	3.8	22.5	4.38	4.89	21.4									Flows to Basin EX-3
	7	E-3	0.78	0.89	7.4	0.69	7.70	5.3													
		C-6	0.94	0.43	5.4	0.40	8.49	3.4					1	3.4				216	2.0	1.8	
	45	C-7	0.52	0.70	6.7	0.36	7.95	2.9	16.7	1.28	5.64	7.2	1	2.9				216	2.0	1.8	
		E-2	0.68	0.85	6.9	0.58	7.89	4.6	18.5	2.26	5.38	12.2									Combination of C-6, C-7, E-2
	8	E-1	1.71	0.69	11.8	1.18	6.51	7.7	18.5	4.13	5.38	22.2									Ex Basin from Filing No. 2(East side of BGMD) Combination of C-6, C-7, E-1, E-2, E-3. Flows to Basin EX-3
	6 15a	EX-3	0.66	0.36	10.7	0.24	6.76	1.6	22.5	8.75	4.89	42.8									Flows to Basin B-1
		D-1g	0.78	0.51	12.8	0.40	6.32	2.5					1	2.5				57	2.0	0.5	
		D-1h	1.57	0.57	11.7	0.89	6.53	5.8													
	51	D-1j	0.95	0.63	7.6	0.60	7.63	4.6	13.2	1.89	6.23	11.8	0.9	1.6	10.2			225	1.9	2.0	Flows to existing on-grade inlet at DP51
		D-1f	0.67	0.68	5.4	0.46	8.49	3.9													
	52	D-1k	0.80	0.60	9.9	0.48	6.95	3.3	9.9	1.19	6.95	8.3									
	53	C-1a	0.27	0.80	5.0	0.22	8.68	1.9	9.9	1.41	6.95	9.8	1.1	0.8	9.0			430	2.1	3.4	Flows to proposed on-grade inlet at DP53
	53								13.2	2.93	6.23	18.3			18.3						Total pipe flow at DP 53
		C-1b	1.77	0.63	7.2	1.12	7.76	8.7													
	54	C-2	1.00	0.68	8.2	0.68	7.42	5.0	8.2	1.80	7.42	13.4	1	13.4				130	1.6	1.4	
	41	C-1c	1.19	0.65	5.5	0.77	8.43	6.5	13.3	2.69	6.21	16.7		4.1	12.6	1.3	30	180	2.2	1.3	Flow into existing on-grade inlet at DP41
									13.3	4.96	6.21	30.8			30.8						Total pipe flow at DP41
	42	C-1f	0.14	0.83	5.0	0.12	8.68	1.0	14.7	0.78	5.96	4.6	1	4.6				185	2.0	1.5	Gutter flow to DP15
		C-3	0.18	0.86	6.4	0.15	8.06	1.2					1	1.2				660	2.0	5.5	Gutter flow through C-4 to DP44
	44	C-4	2.67	0.57	12.3	1.52	6.41	9.7	12.3	1.67	6.41	10.7	1	1.1	9.6	1.3	24	70	2.2	0.5	Flow into existing on-grade inlet at DP44
	43 15	C-1d	1.97	0.67	11.2	1.32	6.64	8.8	16.2	2.27	5.71	13.0	2	2.1	10.9			85	2.8	0.5	Flow into inlet at DP15

STANDARD FORM SF-3: PROPOSED
STORM DRAINAGE SYSTEM DESIGN
(RATIONAL METHOD PROCEDURE)

Subdivision: Falcon Meadows
Location: CO, Colorado Springs
Design Storm: 100-Year

Project Name: Falcon Meadows at Bent Grass Filing No. 3
Project No.: CLH000020
Calculated By: CMV
Checked By: SMB
Date: 12/6/21

STREET	Design Point	DIRECT RUNOFF							TOTAL RUNOFF				STREET		PIPE			TRAVEL TIME			REMARKS
		Basin ID	Area (Ac)	Runoff Coeff.	Tc (min)	C*A (Ac)	I (in/hr)	Q (cfs)	Tc (min)	C*A (Ac)	I (in/hr)	Q (cfs)	Slope (%)	Street Flow (cfs)	Design Flow (cfs)	Slope (%)	Pipe Size (inches)	Length (ft)	Velocity (fps)	Tt (min)	
	15								16.2	8.37	5.71	47.8									Total pipe flow at DP15
	12	C-1e	0.49	0.96	5.0	0.47	8.68	4.1					2	0.1	4.0			85	2.8	0.5	Flow into inlet at DP12
									16.2	8.83	5.71	50.4			50.4						Total pipe flow at DP12
	19	C-1g	1.02	0.59	8.5	0.60	7.33	4.4													Flow into Pond North
	13	C-5	0.60	0.36	5.0	0.22	8.68	1.9	16.2	9.65	5.71	55.1									North Pond Total flow to Pond North. Outfalls to Basin B-1
	AA	B-1	6.59	0.36	21.6	2.37	4.99	11.8	46.6	421.46	3.05	1285.4									Total flow under BGMD into Basin B-2
		D-2b	0.74	0.64	10.9	0.47	6.71	3.2													
		D-2a	0.50	0.84	5.2	0.42	8.57	3.6													
	14a	D-2c	0.31	0.78	5.0	0.24	8.68	2.1	10.9	1.13	6.71	7.6	1.3	7.6				230	2.3	1.7	Gutter flow through D-2d to DP14b
	14b	D-2d	0.24	0.76	5.0	0.18	8.68	1.6	12.6	1.31	6.35	8.3	1.3	8.3				625	2.3	4.6	Gutter flow through D-2d to DP14b
	14	D-2g	1.81	0.62	15.4	1.12	5.84	6.5	17.2	2.43	5.57	13.5	2.5	5.3	8.2			625	3.2	3.3	Flow into existing inlet at DP14
	9	OS-2	20.07	0.40	18.3	8.03	5.41	43.4													Overland flow into Basin D-3. Flow obtained from Bent Grass Filing No. 2 FDR
	10	OS-3	10.61	0.40	18.9	4.24	5.33	22.6													Offsite flow into Basin D-3. Flow obtained from Bent Grass Filing No. 2 FDR
	11	D-3	2.26	0.55	21.0	1.24	5.06	6.3	21.0	13.51	5.06	68.4			68.4	1.0	42	100	2.0	0.8	Flows conveyed via existing ditch into proposed area inlet.
	14e	D-2f	2.43	0.69	8.7	1.68	7.27	12.2													Flows to existing inlet at DP14e
	14d	D-2e	1.41	0.70	10.9	0.99	6.73	6.7	10.9	2.67	6.73	18.0			18.0	1.0	42	100	2.0	0.8	Flows to existing inlet at DP14d Flows conveyed storm sewer to DP16
		D-1a	1.83	0.61	10.9	1.12	6.73	7.5													
	16a	D-1b	1.19	0.64	10.0	0.76	6.93	5.3	10.9	1.88	6.73	12.7	1.3	12.7				1300	2.3	9.5	Gutter flow through Basin D-1c to DP16
	16	D-1c	3.95	0.60	21.1	2.37	5.05	12.0	21.1	4.25	5.05	21.5	2.5	11.3	10.2			625	3.2	3.3	Flows to existing inlet at DP16
	16								21.9	19.67	4.96	97.6			97.6	2.0	48	835	2.8	4.9	Combination of flows to existing inlets at DP14 and DP16. Flows to DP 17
		D-5	1.08	0.64	5.1	0.69	8.63	6.0					1	6.0				600	2.0	5.0	Gutter flow through Basin D-6b to DP18
		D-6b	2.69	0.67	12.6	1.80	6.35	11.4													
	18	D-6a	1.33	0.71	6.5	0.94	8.03	7.5	12.6	3.43	6.35	21.8			21.8	2.0	24	38	2.8	0.2	Flow to existing inlet. Flow out of inlet to DP17c
	17a	D-4a	0.98	0.67	11.1	0.66	6.66	4.4					1	4.4				700	2.0	5.8	Gutter flow through Basin D-4b to DP17b
	17b	D-4b	0.95	0.76	10.2	0.72	6.87	4.9	17.0	1.38	5.60	7.7									Gutter flow to DP17c
	17c	D-4c	1.22	0.68	14.2	0.83	6.04	5.0	17.0	2.21	5.60	12.4			12.4	2.0	24	8	2.8	0.0	Flows from Basin B-3 of Bent Grass Filing No. 2 FDR. Flows to existing inlet at DP17c
	17c								17.0	5.64	5.60	31.6									Total pipe flow at DP17c to DP17
	17								26.8	25.31	4.45	112.6									Storm system entering existing pond at Basin D-7
		D-9	0.72	0.44	5.5	0.32	8.44	2.7					1.5	2.7				625	2.4	4.3	Gutter flow through Basin E-4 to DP24
		D-2h	0.23	0.59	15.5	0.14	5.83	0.8					1.5	0.8				550	2.4	3.7	Gutter flow through Basin E-4 to DP24
	24	E-4	0.91	0.84	8.0	0.76	7.50	5.7	24.4	4.41	4.68	20.6									Flow to existing inlet at DP24

STANDARD FORM SF-3: PROPOSED

STORM DRAINAGE SYSTEM DESIGN

(RATIONAL METHOD PROCEDURE)

Subdivision: Falcon Meadows
Location: CO, Colorado Springs
Design Storm: 100-Year

Project Name: Falcon Meadows at Bent Grass Filing No. 3
Project No.: CLH000020
Calculated By: CMV
Checked By: SMB
Date: 12/6/21

		DIRECT RUNOFF							TOTAL RUNOFF				STREET		PIPE			TRAVEL TIME			
STREET	Design Point	Basin ID	Area (Ac)	Runoff Coeff.	Tc (min)	C*A (Ac)	I (in/hr)	Q (cfs)	Tc (min)	C*A (Ac)	I (in/hr)	Q (cfs)	Slope (%)	Street Flow (cfs)	Design Flow (cfs)	Slope (%)	Pipe Size (inches)	Length (ft)	Velocity (fps)	Tt (min)	REMARKS
	25	E-5	0.89	0.89	7.3	0.79	7.73	6.1													Flow to existing inlet at DP25
	26								24.4	5.20	4.68	24.3									Flow into existing pond via Swale F at DP26
	32	D-8	1.69	0.58	14.0	0.98	6.08	6.0													Flow in Swale C (Basin D-8) into existing pond
		D-7	7.65	0.40	14.8	3.06	5.94	18.2													Exisitng Water quality pond
	30								26.8	34.55	4.45	153.7									Outlet to existing channel Basin B-2
		B-2	4.16	0.36	16.0	1.50	5.75	8.6													
	CC								46.6	457.51	3.05	1395.4									

APPENDIX C

Hydraulic Computations

Channel Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Tuesday, Jun 21 2022

SWALE-D

Trapezoidal

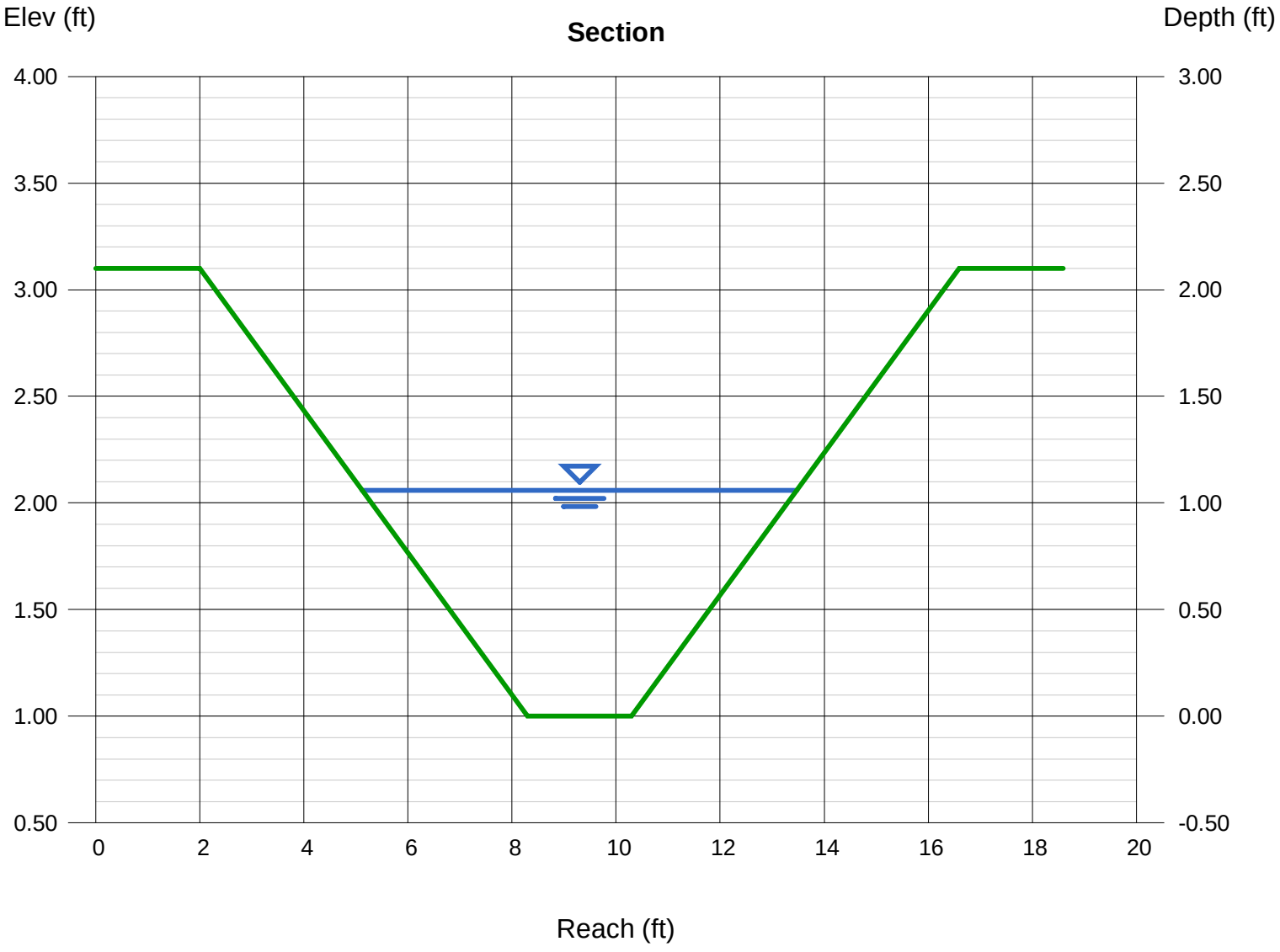
Bottom Width (ft)	= 2.00
Side Slopes (z:1)	= 3.00, 3.00
Total Depth (ft)	= 2.10
Invert Elev (ft)	= 1.00
Slope (%)	= 2.10
N-Value	= 0.020

Calculations

Compute by:	Known Q
Known Q (cfs)	= 43.40

Highlighted

Depth (ft)	= 1.06
Q (cfs)	= 43.40
Area (sqft)	= 5.49
Velocity (ft/s)	= 7.90
Wetted Perim (ft)	= 8.70
Crit Depth, Yc (ft)	= 1.38
Top Width (ft)	= 8.36
EGL (ft)	= 2.03



Inlets-Proposed Design

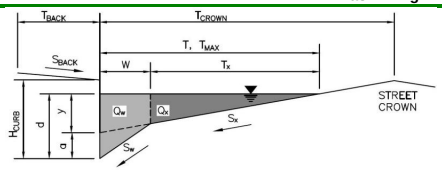
Version 4.06 Released August 2018

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: Falcon Meadows at Bent Grass Filing No. 3

Inlet ID: Basin D-1g



Gutter Geometry (Enter data in the blue cells)

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	8.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.013	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	17.0	ft
Gutter Width	W =	2.00	ft
Street Transverse Slope	S_X =	0.020	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.010	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.016	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	17.0	17.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	6.0	12.0	inches
Allow Flow Depth at Street Crown (leave blank for no)		☐	☐	check = yes

		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Spread Criterion				
MAJOR STORM Allowable Capacity is based on Spread Criterion	**Q_{allow} =**	**10.9**	**10.9**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

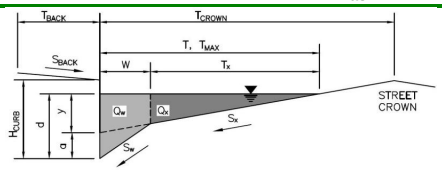
Version 4.06 Released August 2018

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: Falcon Meadows at Bent Grass Filing No. 3

Inlet ID: Basin D-1h



Gutter Geometry (Enter data in the blue cells)

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	8.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.013	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	17.0	ft
Gutter Width	W =	2.00	ft
Street Transverse Slope	S_X =	0.020	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.029	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.016	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	17.0	17.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	6.0	12.0	inches
Allow Flow Depth at Street Crown (leave blank for no)		☐	☐	check = yes

		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Spread Criterion	**Q_{allow} =**	**17.9**	**18.5**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

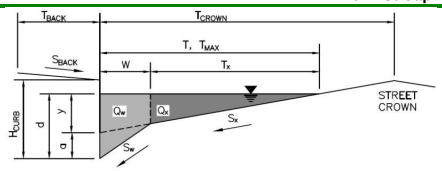
Version 4.06 Released August 2018

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: Falcon Meadows at Bent Grass Filing No. 3

Inlet ID: DP 52 - St Cap



Gutter Geometry (Enter data in the blue cells)

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	8.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.013	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	17.0	ft
Gutter Width	W =	2.00	ft
Street Transverse Slope	S_X =	0.020	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.029	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.016	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	17.0	17.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	6.0	12.0	inches
Allow Flow Depth at Street Crown (leave blank for no)		☐	☐	check = yes

		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Spread Criterion	**Q_{allow} =**	**17.9**	**18.5**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

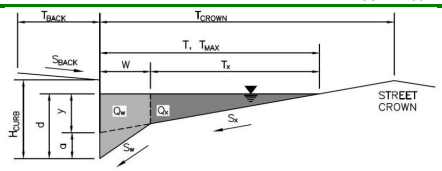
Version 4.06 Released August 2018

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: Falcon Meadows at Bent Grass Filing No. 3

Inlet ID: DP 53 - Inlet



Gutter Geometry (Enter data in the blue cells)

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	8.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.013	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	17.0	ft
Gutter Width	W =	2.00	ft
Street Transverse Slope	S_X =	0.020	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.009	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.016	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	17.0	17.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	6.0	12.0	inches
Allow Flow Depth at Street Crown (leave blank for no)		☐	☐	check = yes

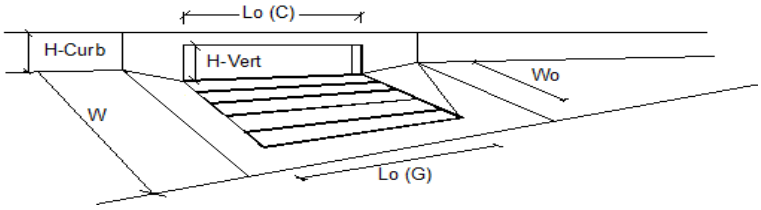
		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Spread Criterion				
MAJOR STORM Allowable Capacity is based on Spread Criterion	**Q_{allow} =**	**10.0**	**10.0**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

Version 4.06 Released August 2018



Design Information (Input)		MINOR	MAJOR	
Type of Inlet	Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a')	a_{LOCAL} =	3.0	3.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	1	1	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	15.00	15.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	W_o =	N/A	N/A	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f-G =	N/A	N/A	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f-C =	0.10	0.10	

Street Hydraulics: OK - Q < Allowable Street Capacity'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q =**	**3.4**	**9.0**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.0**	**0.8**	**cfs**
Capture Percentage = Q_a/Q_o =	**C% =**	**100**	**92**	**%**

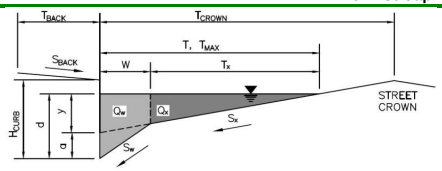
Version 4.06 Released August 2018

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: Falcon Meadows at Bent Grass Filing No. 3

Inlet ID: DP 54 - St Cap



Gutter Geometry (Enter data in the blue cells)

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	8.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.013	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	17.0	ft
Gutter Width	W =	2.00	ft
Street Transverse Slope	S_X =	0.020	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.050	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.016	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	17.0	17.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	6.0	12.0	inches
Allow Flow Depth at Street Crown (leave blank for no)		☐	☐	check = yes

		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Spread Criterion	**Q_{allow} =**	**15.2**	**24.3**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Inlets – Existing Analysis

Existing Inlet - DP 51

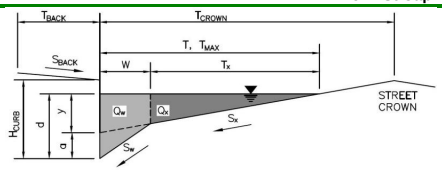
Version 4.06 Released August 2018

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: Falcon Meadows at Bent Grass Filing No. 3 - Existing Inlet Analysis

Inlet ID: DP 51 - St Cap



Gutter Geometry (Enter data in the blue cells)

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	8.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.013	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	17.0	ft
Gutter Width	W =	2.00	ft
Street Transverse Slope	S_X =	0.020	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.010	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.016	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	17.0	17.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	6.0	12.0	inches
Allow Flow Depth at Street Crown (leave blank for no)		☐	☐	check = yes

		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Spread Criterion				
MAJOR STORM Allowable Capacity is based on Spread Criterion	**Q_{allow} =**	**10.9**	**10.9**	**cfs**

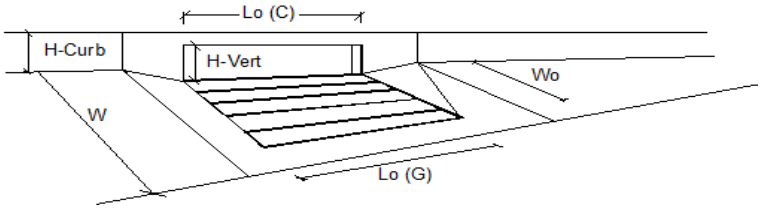
Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

WARNING: MAJOR STORM max. allowable capacity is less than the design flow given on sheet 'Inlet Management'

Existing Inlet - DP 51

INLET ON A CONTINUOUS GRADE

Version 4.06 Released August 2018



Design Information (Input)		MINOR	MAJOR	
Type of Inlet	Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a')	a_{LOCAL} =	3.0	3.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	1	1	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	15.00	15.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	W_o =	N/A	N/A	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f-G =	N/A	N/A	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f-C =	0.10	0.10	

Street Hydraulics: WARNING: Q > ALLOWABLE Q FOR MAJOR STORM		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q =**	**5.0**	**10.2**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.0**	**1.6**	**cfs**
Capture Percentage = Q_a/Q_o =	**C% =**	**100**	**87**	**%**

Existing Inlet - DP 41

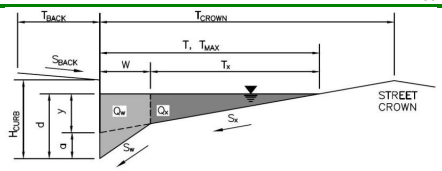
Version 4.06 Released August 2018

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: Falcon Meadows at Bent Grass Filing No. 3 - Existing Inlet Analysis

Inlet ID: DP 41 - Ex Inlet



Gutter Geometry (Enter data in the blue cells)

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	8.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.013	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	17.0	ft
Gutter Width	W =	2.00	ft
Street Transverse Slope	S_X =	0.020	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.020	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.016	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	17.0	17.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	6.0	12.0	inches
Allow Flow Depth at Street Crown (leave blank for no)		☐	☐	check = yes

		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Spread Criterion				
MAJOR STORM Allowable Capacity is based on Spread Criterion	**Q_{allow} =**	**15.4**	**15.4**	**cfs**

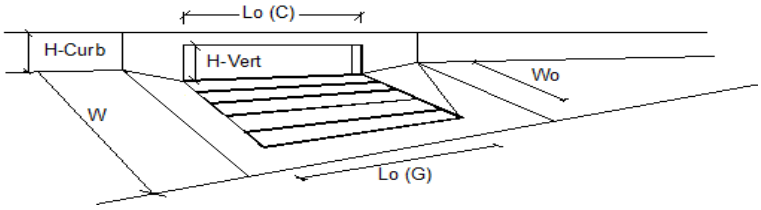
Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

WARNING: MAJOR STORM max. allowable capacity is less than the design flow given on sheet 'Inlet Management'

Existing Inlet - DP 41

INLET ON A CONTINUOUS GRADE

Version 4.06 Released August 2018



Design Information (Input)		MINOR	MAJOR	
Type of Inlet	Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a')	a_{LOCAL} =	3.0	3.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	1	1	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	15.00	15.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	W_o =	N/A	N/A	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f-G =	N/A	N/A	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f-C =	0.10	0.10	

Street Hydraulics: WARNING: Q > ALLOWABLE Q FOR MAJOR STORM		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q =**	**8.2**	**12.6**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.3**	**4.1**	**cfs**
Capture Percentage = Q_a/Q_o =	**C% =**	**97**	**76**	**%**

Existing Inlet - DP 44

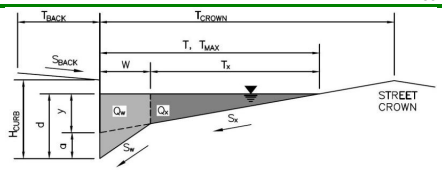
Version 4.06 Released August 2018

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: Falcon Meadows at Bent Grass Filing No. 3 - Existing Inlet Analysis

Inlet ID: DP 44 - Ex Inlet



Gutter Geometry (Enter data in the blue cells)

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	8.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.013	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	17.0	ft
Gutter Width	W =	2.00	ft
Street Transverse Slope	S_X =	0.020	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.010	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.016	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	17.0	17.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	6.0	12.0	inches
Allow Flow Depth at Street Crown (leave blank for no)		☐	☐	check = yes

		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Spread Criterion				
MAJOR STORM Allowable Capacity is based on Spread Criterion	**Q_{allow} =**	**10.9**	**10.9**	**cfs**

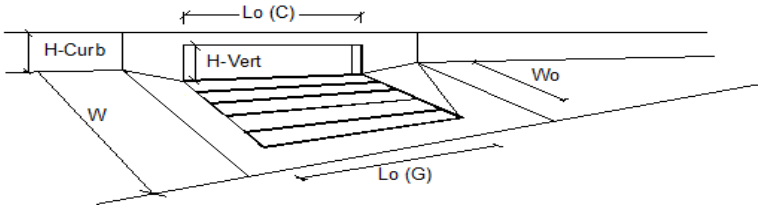
Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Existing Inlet - DP 44

INLET ON A CONTINUOUS GRADE

Version 4.06 Released August 2018



Design Information (Input)		MINOR	MAJOR	
Type of Inlet	Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a')	a_{LOCAL} =	3.0	3.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	1	1	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	15.00	15.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	W_o =	N/A	N/A	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f-G =	N/A	N/A	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f-C =	0.10	0.10	

Street Hydraulics: OK - Q < Allowable Street Capacity'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q =**	**4.7**	**9.6**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.0**	**1.1**	**cfs**
Capture Percentage = Q_a/Q_o =	**C% =**	**100**	**90**	**%**

Existing Inlet - DP 8

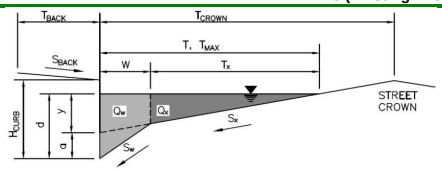
Version 4.06 Released August 2018

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: Falcon Meadows at Bent Grass Filing No. 3 - Existing Inlet Analysis

Inlet ID: DP 8 (Existing Inlet)



Gutter Geometry (Enter data in the blue cells)

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	14.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.013	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	26.0	ft
Gutter Width	W =	2.00	ft
Street Transverse Slope	S_X =	0.020	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.000	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.016	

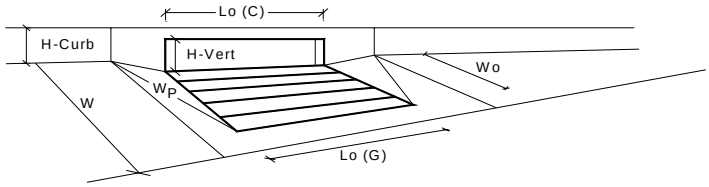
		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	26.0	26.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	6.0	12.0	inches
Check boxes are not applicable in SUMP conditions		☐	☐	

		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Depth Criterion	**Q_{allow} =**	**SUMP**	**SUMP**	**cfs**

Existing Inlet - DP 8

INLET IN A SUMP OR SAG LOCATION

Version 4.06 Released August 2018



Design Information (Input)		MINOR	MAJOR	
Type of Inlet (CDOT Type R Curb Opening)	Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a' from above)	a_{local} =	3.00	3.00	inches
Number of Unit Inlets (Grate or Curb Opening)	No =	2	2	
Water Depth at Flowline (outside of local depression)	Ponding Depth =	6.0	12.0	inches
Grate Information		MINOR	MAJOR	☑ Override Depths
Length of a Unit Grate	L_o (G) =	N/A	N/A	feet
Width of a Unit Grate	W_o =	N/A	N/A	feet
Area Opening Ratio for a Grate (typical values 0.15-0.90)	A_{ratio} =	N/A	N/A	
Clogging Factor for a Single Grate (typical value 0.50 - 0.70)	C_f (G) =	N/A	N/A	
Grate Weir Coefficient (typical value 2.15 - 3.60)	C_w (G) =	N/A	N/A	
Grate Orifice Coefficient (typical value 0.60 - 0.80)	C_o (G) =	N/A	N/A	
Curb Opening Information		MINOR	MAJOR	
Length of a Unit Curb Opening	L_o (C) =	10.00	10.00	feet
Height of Vertical Curb Opening in Inches	H_{vert} =	6.00	6.00	inches
Height of Curb Orifice Throat in Inches	H_{throat} =	6.00	6.00	inches
Angle of Throat (see USDCM Figure ST-5)	Theta =	63.40	63.40	degrees
Side Width for Depression Pan (typically the gutter width of 2 feet)	W_p =	2.00	2.00	feet
Clogging Factor for a Single Curb Opening (typical value 0.10)	C_f (C) =	0.10	0.10	
Curb Opening Weir Coefficient (typical value 2.3-3.7)	C_w (C) =	3.60	3.60	
Curb Opening Orifice Coefficient (typical value 0.60 - 0.70)	C_o (C) =	0.67	0.67	
Low Head Performance Reduction (Calculated)		MINOR	MAJOR	
Depth for Grate Midwidth	d_{Grate} =	N/A	N/A	ft
Depth for Curb Opening Weir Equation	d_{Curb} =	0.33	0.83	ft
Combination Inlet Performance Reduction Factor for Long Inlets	$RF_{Combination}$ =	0.57	1.00	
Curb Opening Performance Reduction Factor for Long Inlets	RF_{Curb} =	0.79	1.00	
Grated Inlet Performance Reduction Factor for Long Inlets	RF_{Grate} =	N/A	N/A	
		MINOR	MAJOR	
Total Inlet Interception Capacity (assumes clogged condition)	**Q_a =**	**14.4**	**52.7**	**cfs**
Inlet Capacity IS GOOD for Minor and Major Storms(>Q PEAK)	$Q_{PEAK\ REQUIRED}$ =	10.0	22.2	cfs

Existing Inlet - DP 12

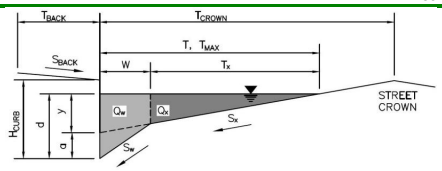
Version 4.06 Released August 2018

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: Falcon Meadows at Bent Grass Filing No. 3 - Existing Inlet Analysis

Inlet ID: DP 12 - Ex Inlet



Gutter Geometry (Enter data in the blue cells)

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	8.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.013	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	17.0	ft
Gutter Width	W =	2.00	ft
Street Transverse Slope	S_X =	0.020	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.030	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.016	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	17.0	17.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	6.0	12.0	inches
Allow Flow Depth at Street Crown (leave blank for no)		☐	☐	check = yes

		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Spread Criterion	**Q_{allow} =**	**17.7**	**18.8**	**cfs**

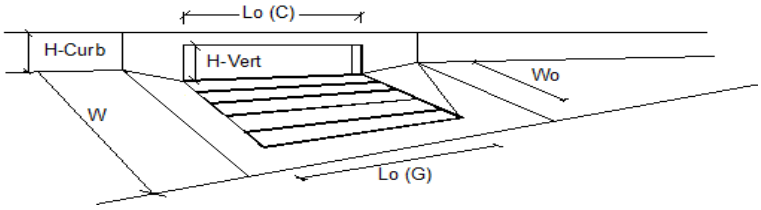
Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Existing Inlet - DP 12

INLET ON A CONTINUOUS GRADE

Version 4.06 Released August 2018



Design Information (Input)		MINOR	MAJOR	
Type of Inlet	Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a')	a_{LOCAL} =	3.0	3.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	1	1	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	10.00	10.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	W_o =	N/A	N/A	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f-G =	N/A	N/A	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f-C =	0.10	0.10	

Street Hydraulics: OK - Q < Allowable Street Capacity'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q =**	**2.3**	**4.0**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.0**	**0.1**	**cfs**
Capture Percentage = Q_a/Q_o =	**C% =**	**100**	**99**	**%**

Existing Inlet - DP 15

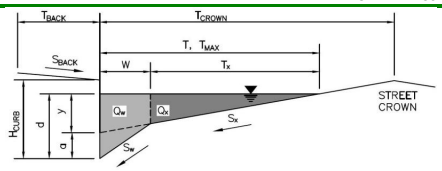
Version 4.06 Released August 2018

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: Falcon Meadows at Bent Grass Filing No. 3 Existing Inlet Analysis

Inlet ID: DP 15 - Ex Inlet



Gutter Geometry (Enter data in the blue cells)

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	8.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.013	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	17.0	ft
Gutter Width	W =	2.00	ft
Street Transverse Slope	S_X =	0.020	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.018	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.016	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	17.0	17.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	6.0	12.0	inches
Allow Flow Depth at Street Crown (leave blank for no)		☐	☐	check = yes

		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Spread Criterion				
MAJOR STORM Allowable Capacity is based on Spread Criterion	**Q_{allow} =**	**14.6**	**14.6**	**cfs**

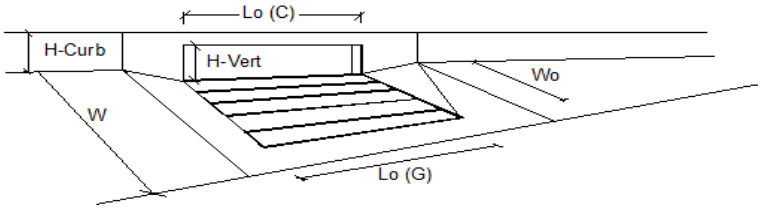
Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Existing Inlet - DP 15

INLET ON A CONTINUOUS GRADE

Version 4.06 Released August 2018



Design Information (Input)		MINOR	MAJOR	
Type of Inlet	Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a')	a_{LOCAL} =	3.0	3.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	1	1	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	15.00	15.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	W_o =	N/A	N/A	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f-G =	N/A	N/A	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f-C =	0.10	0.10	

Street Hydraulics: OK - Q < Allowable Street Capacity'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q =**	**4.7**	**10.9**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.0**	**2.1**	**cfs**
Capture Percentage = Q_a/Q_o =	**C% =**	**100**	**84**	**%**

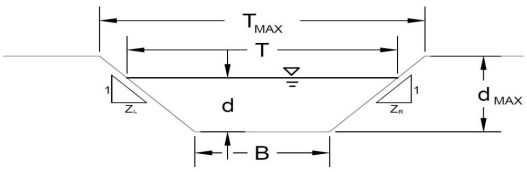
Existing Inlet - DP 11

Version 4.06 Released August 2018

AREA INLET IN A SWALE

Falcon Meadows at Bent Grass Filing No. 3 - Existing Inlet Analysis

DP 11 - Type D Area Inlet (Relocated)



This worksheet uses the NRCS vegetal retardance method to determine Manning's n.

For more information see Section 7.2.3 of the USDCM.

Analysis of Trapezoidal Grass-Lined Channel Using SCS Method

NRCS Vegetal Retardance (A, B, C, D, or E)	A, B, C, D or E		
Manning's n (Leave cell D16 blank to manually enter an n value)	n =	0.030	
Channel Invert Slope	S_O =	0.0050	ft/ft
Bottom Width	B =	3.00	ft
Left Side Slope	Z1 =	4.00	ft/ft
Right Side Slope	Z2 =	4.00	ft/ft

Check one of the following soil types:

Soil Type:	Max. Velocity (V_{MAX})	Max Froude No. (F_{MAX})
Non-Cohesive	5.0 fps	0.60
Cohesive	7.0 fps	0.80
Paved	N/A	N/A

Choose One:
- Non-Cohesive
- Cohesive
- Paved

		Minor Storm	Major Storm	
Max. Allowable Top Width of Channel for Minor & Major Storm	T_{MAX} =	11.00	18.00	feet
Max. Allowable Water Depth in Channel for Minor & Major Storm	d_{MAX} =	1.00	2.00	feet

Allowable Channel Capacity Based On Channel Geometry

		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion	Q_{allow} =	17.9	72.2	cfs
MAJOR STORM Allowable Capacity is based on Top Width Criterion	d_{allow} =	1.00	1.88	ft

Water Depth in Channel Based On Design Peak Flow

Design Peak Flow	Q_o =	15.6	68.4	cfs
Water Depth	d =	0.94	1.83	feet

Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Existing Inlet - DP 11

Version 4.06 Released August 2018

AREA INLET IN A SWALE

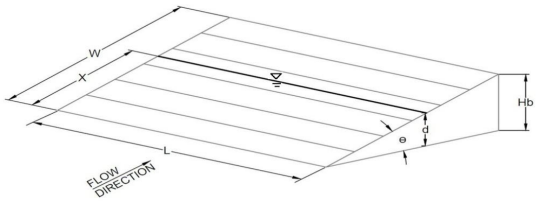
Falcon Meadows at Bent Grass Filing No. 3 - Existing Inlet Analysis

DP 11 - Type D Area Inlet (Relocated)

Inlet Design Information (Input)

Type of Inlet: CDOT TYPE D (Parallel & Depressed)

Inlet Type = CDOT TYPE D (Parallel & Depressed)



Angle of Inclined Grade (must be <= 30 degrees)	θ =	25.00	degrees
Width of Grade	W =	6.00	feet
Length of Grade	L =	3.00	feet
Open Area Ratio	A_{RATIO} =	0.70	
Height of Inclined Grade	H_B =	1.27	feet
Clogging Factor	C_f =	0.38	
Grate Discharge Coefficient	C_d =	0.63	
Orifice Coefficient	C_o =	0.42	
Weir Coefficient	C_w =	1.34	

		MINOR	MAJOR	
Water Depth at Inlet (for depressed inlets, 1 foot is added for depression)	d =	1.94	2.83	
Total Inlet Interception Capacity (assumes clogged condition)	**Q_a =**	**46.2**	**57.7**	**cfs**
	Bypassed Flow, Q_b =	**0.0**	**10.7**	**cfs**
	Capture Percentage = Q_a/Q_o = C%	**100**	**84**	**%**

Warning 04: Froude No. exceeds USDCM Volume I recommendation.

Existing Inlet - DP 14

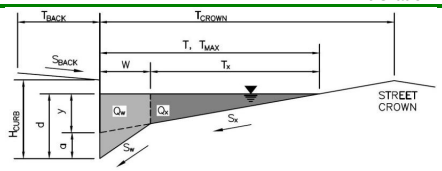
Version 4.06 Released August 2018

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: Falcon Meadows at Bent Grass Filing No. 3 - Existing Inlet Analysis

Inlet ID: DP 14 - At Grade Inlet



Gutter Geometry (Enter data in the blue cells)

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	8.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.013	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	17.0	ft
Gutter Width	W =	2.00	ft
Street Transverse Slope	S_X =	0.020	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.013	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.016	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	17.0	17.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	6.0	12.0	inches
Allow Flow Depth at Street Crown (leave blank for no)		☐	☐	check = yes

		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Spread Criterion				
MAJOR STORM Allowable Capacity is based on Spread Criterion	**Q_{allow} =**	**12.4**	**12.4**	**cfs**

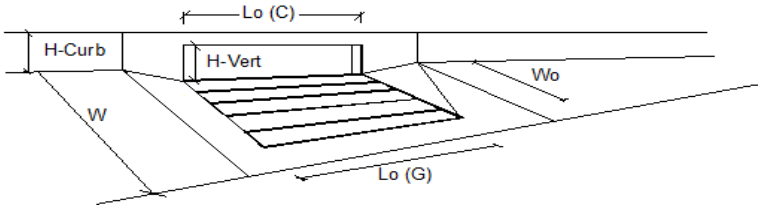
Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

WARNING: MAJOR STORM max. allowable capacity is less than the design flow given on sheet 'Inlet Management'

Existing Inlet - DP 14

INLET ON A CONTINUOUS GRADE

Version 4.06 Released August 2018



Design Information (Input)		MINOR	MAJOR	
Type of Inlet	Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a')	a_{LOCAL} =	3.0	3.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	1	1	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	10.00	10.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	W_o =	N/A	N/A	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f-G =	N/A	N/A	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f-C =	0.10	0.10	

Street Hydraulics: WARNING: Q > ALLOWABLE Q FOR MAJOR STORM		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q =**	**5.5**	**8.2**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.9**	**5.3**	**cfs**
Capture Percentage = Q_a/Q_o =	**C% =**	**86**	**61**	**%**

Existing Inlet - DP 16

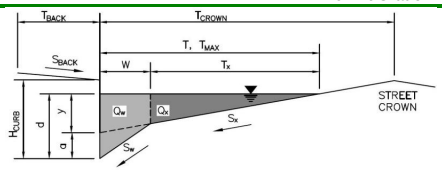
Version 4.06 Released August 2018

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: Falcon Meadows at Bent Grass Filing No. 3 - Existing Inlet Analysis

Inlet ID: DP 16 - At Grade Inlet



Gutter Geometry (Enter data in the blue cells)

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	8.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.013	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	17.0	ft
Gutter Width	W =	2.00	ft
Street Transverse Slope	S_X =	0.020	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.013	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.016	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	17.0	17.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	6.0	12.0	inches
Allow Flow Depth at Street Crown (leave blank for no)		☐	☐	check = yes

		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Spread Criterion				
MAJOR STORM Allowable Capacity is based on Spread Criterion	**Q_{allow} =**	**12.4**	**12.4**	**cfs**

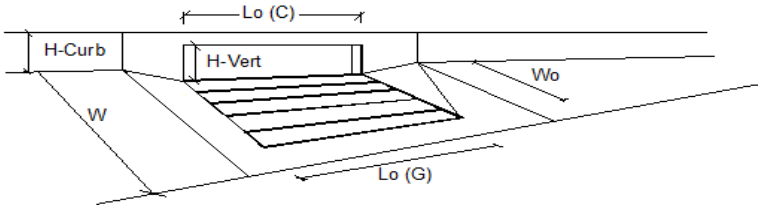
Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

WARNING: MAJOR STORM max. allowable capacity is less than the design flow given on sheet 'Inlet Management'

Existing Inlet - DP 16

INLET ON A CONTINUOUS GRADE

Version 4.06 Released August 2018



Design Information (Input)		MINOR	MAJOR	
Type of Inlet	Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a')	a_{LOCAL} =	3.0	3.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	1	1	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	10.00	10.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	W_o =	N/A	N/A	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f-G =	N/A	N/A	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f-C =	0.10	0.10	

Street Hydraulics: WARNING: Q > ALLOWABLE Q FOR MAJOR STORM		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q =**	**6.9**	**10.2**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**2.7**	**11.3**	**cfs**
Capture Percentage = Q_a/Q_o =	**C% =**	**72**	**47**	**%**

Existing Inlet - DP 24

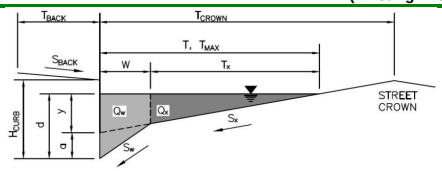
Version 4.06 Released August 2018

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: Falcon Meadows at Bent Grass Filing No. 3 - Existing Inlet Analysis

Inlet ID: DP 24 (Existing Inlet)



Gutter Geometry (Enter data in the blue cells)

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	14.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.013	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	26.0	ft
Gutter Width	W =	2.00	ft
Street Transverse Slope	S_X =	0.020	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.028	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.016	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	26.0	26.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	6.0	12.0	inches
Allow Flow Depth at Street Crown (leave blank for no)		☐	☑	check = yes

		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Depth Criterion	**Q_{allow} =**	**18.1**	**152.7**	**cfs**

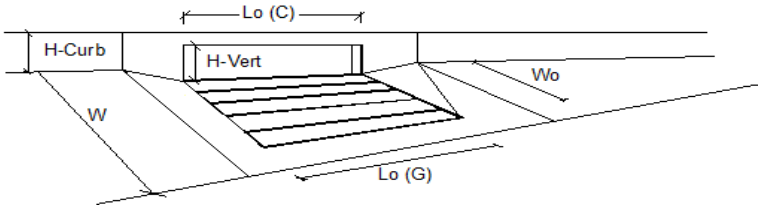
Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Existing Inlet - DP 24

INLET ON A CONTINUOUS GRADE

Version 4.06 Released August 2018



Design Information (Input)		MINOR	MAJOR	
Type of Inlet	Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a')	a_{LOCAL} =	3.0	3.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	1	1	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	25.00	25.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	W_o =	N/A	N/A	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f-G =	N/A	N/A	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f-C =	0.10	0.10	

Street Hydraulics: OK - Q < Allowable Street Capacity'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q =**	**5.9**	**19.5**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.0**	**1.1**	**cfs**
Capture Percentage = Q_a/Q_o =	**C% =**	**100**	**95**	**%**

Existing Inlet - DP 25

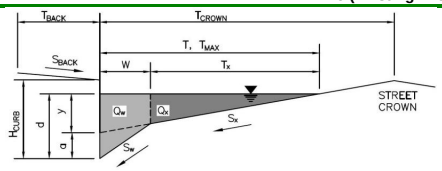
Version 4.06 Released August 2018

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: Falcon Meadows at Bent Grass Filing No. 3 - Existing Inlet Analysis

Inlet ID: DP 25 (Existing Inlet)



Gutter Geometry (Enter data in the blue cells)

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	14.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.013	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	26.0	ft
Gutter Width	W =	2.00	ft
Street Transverse Slope	S_X =	0.020	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.028	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.013	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	26.0	26.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	6.0	12.0	inches
Allow Flow Depth at Street Crown (leave blank for no)		☐	☑	check = yes

		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Depth Criterion	**Q_{allow} =**	**22.2**	**179.9**	**cfs**

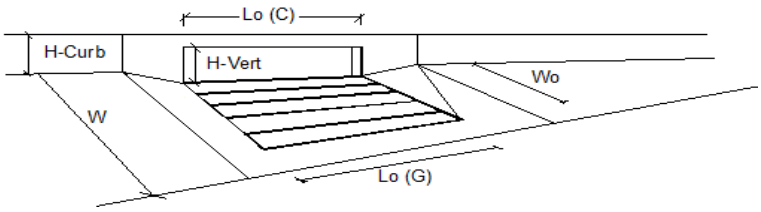
Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Existing Inlet - DP 25

INLET ON A CONTINUOUS GRADE

Version 4.06 Released August 2018



Design Information (Input)		MINOR	MAJOR	
Type of Inlet	Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a')	a_{LOCAL} =	3.0	3.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	1	1	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	25.00	25.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	W_o =	N/A	N/A	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f-G =	N/A	N/A	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f-C =	0.10	0.10	

Street Hydraulics: OK - Q < Allowable Street Capacity'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q =**	**3.3**	**9.7**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.0**	**0.0**	**cfs**
Capture Percentage = Q_a/Q_o =	**C% =**	**100**	**100**	**%**

Existing Inlet - DP 17

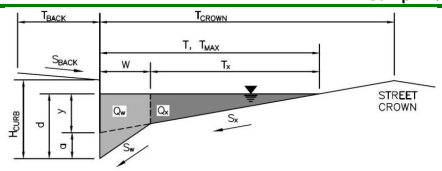
Version 4.06 Released August 2018

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: Falcon Meadows at Bent Grass Filing No. 3 - Existing Inlet Analysis

Inlet ID: DP 17 - Sump Inlet



Gutter Geometry (Enter data in the blue cells)

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	8.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.013	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	17.0	ft
Gutter Width	W =	2.00	ft
Street Transverse Slope	S_X =	0.020	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.000	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.016	

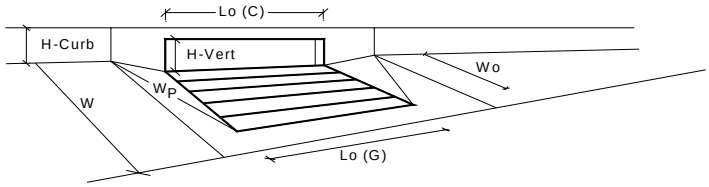
		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	17.0	17.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	6.0	12.0	inches
Check boxes are not applicable in SUMP conditions		☐	☐	

		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Depth Criterion	**Q_{allow} =**	**SUMP**	**SUMP**	**cfs**

Existing Inlet - DP 17

INLET IN A SUMP OR SAG LOCATION

Version 4.06 Released August 2018



Design Information (Input)		MINOR	MAJOR	
Type of Inlet	Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a' from above)	a_{local} =	3.00	3.00	inches
Number of Unit Inlets (Grate or Curb Opening)	No =	1	1	
Water Depth at Flowline (outside of local depression)	Ponding Depth =	5.6	12.0	inches
Grate Information		MINOR	MAJOR	☑ Override Depths
Length of a Unit Grate	L_o (G) =	N/A	N/A	feet
Width of a Unit Grate	W_o =	N/A	N/A	feet
Area Opening Ratio for a Grate (typical values 0.15-0.90)	A_{ratio} =	N/A	N/A	
Clogging Factor for a Single Grate (typical value 0.50 - 0.70)	C_f (G) =	N/A	N/A	
Grate Weir Coefficient (typical value 2.15 - 3.60)	C_w (G) =	N/A	N/A	
Grate Orifice Coefficient (typical value 0.60 - 0.80)	C_o (G) =	N/A	N/A	
Curb Opening Information		MINOR	MAJOR	
Length of a Unit Curb Opening	L_o (C) =	15.00	15.00	feet
Height of Vertical Curb Opening in Inches	H_{vert} =	6.00	6.00	inches
Height of Curb Orifice Throat in Inches	H_{throat} =	6.00	6.00	inches
Angle of Throat (see USDCM Figure ST-5)	Theta =	63.40	63.40	degrees
Side Width for Depression Pan (typically the gutter width of 2 feet)	W_p =	2.00	2.00	feet
Clogging Factor for a Single Curb Opening (typical value 0.10)	C_f (C) =	0.10	0.10	
Curb Opening Weir Coefficient (typical value 2.3-3.7)	C_w (C) =	3.60	3.60	
Curb Opening Orifice Coefficient (typical value 0.60 - 0.70)	C_o (C) =	0.67	0.67	
Low Head Performance Reduction (Calculated)		MINOR	MAJOR	
Depth for Grate Midwidth	d_{Grate} =	N/A	N/A	ft
Depth for Curb Opening Weir Equation	d_{Curb} =	0.30	0.83	ft
Combination Inlet Performance Reduction Factor for Long Inlets	$RF_{Combination}$ =	0.53	1.00	
Curb Opening Performance Reduction Factor for Long Inlets	RF_{Curb} =	0.76	1.00	
Grated Inlet Performance Reduction Factor for Long Inlets	RF_{Grate} =	N/A	N/A	
		MINOR	MAJOR	
Total Inlet Interception Capacity (assumes clogged condition)	**Q_a =**	**8.0**	**39.1**	**cfs**
Inlet Capacity IS GOOD for Minor and Major Storms(>Q PEAK)	$Q_{PEAK\ REQUIRED}$ =	6.1	12.4	cfs

Existing Inlet - DP 18

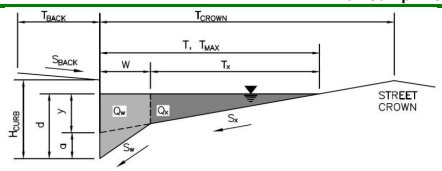
Version 4.06 Released August 2018

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: Falcon Meadows at Bent Grass Filing No. 3 - Existing Inlet Analysis

Inlet ID: DP 18 - Sump Inlet



Gutter Geometry (Enter data in the blue cells)

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	8.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.013	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	17.0	ft
Gutter Width	W =	2.00	ft
Street Transverse Slope	S_X =	0.020	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.000	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.016	

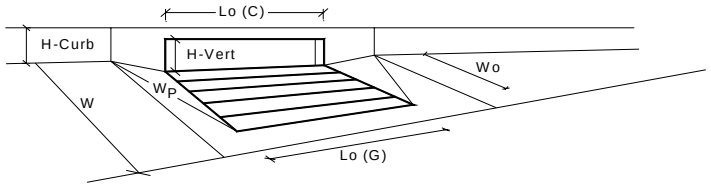
		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	17.0	17.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	6.0	12.0	inches
Check boxes are not applicable in SUMP conditions		☐	☐	

		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Depth Criterion	**Q_{allow} =**	**SUMP**	**SUMP**	**cfs**

Existing Inlet - DP 18

INLET IN A SUMP OR SAG LOCATION

Version 4.06 Released August 2018



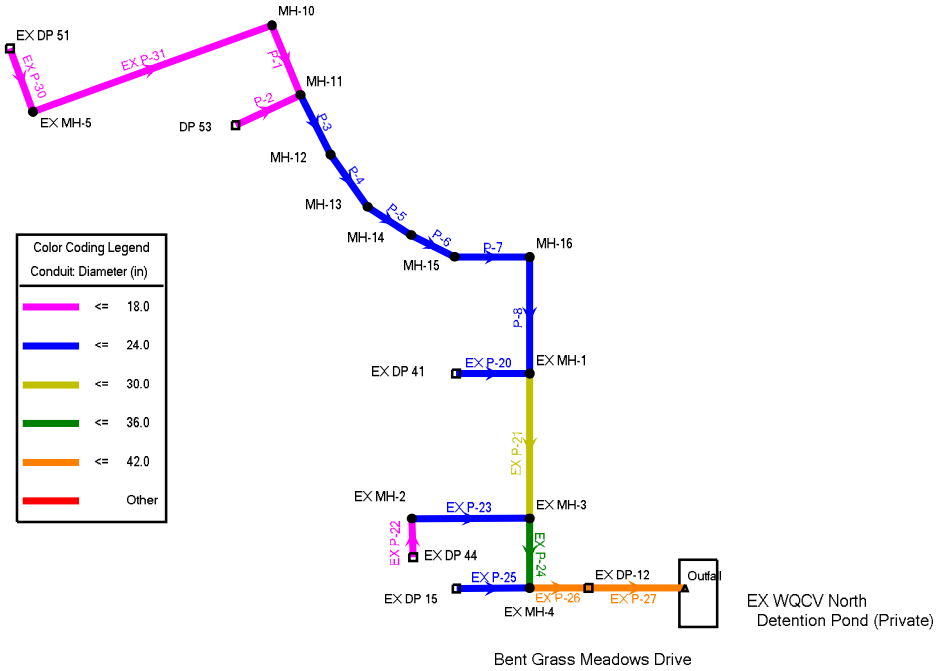
Design Information (Input)		MINOR	MAJOR	
Type of Inlet	Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a' from above)	a_{local} =	3.00	3.00	inches
Number of Unit Inlets (Grate or Curb Opening)	No =	1	1	
Water Depth at Flowline (outside of local depression)	Ponding Depth =	5.6	12.0	inches
Grate Information		MINOR	MAJOR	☑ Override Depths
Length of a Unit Grate	L_o (G) =	N/A	N/A	feet
Width of a Unit Grate	W_o =	N/A	N/A	feet
Area Opening Ratio for a Grate (typical values 0.15-0.90)	A_{ratio} =	N/A	N/A	
Clogging Factor for a Single Grate (typical value 0.50 - 0.70)	C_f (G) =	N/A	N/A	
Grate Weir Coefficient (typical value 2.15 - 3.60)	C_w (G) =	N/A	N/A	
Grate Orifice Coefficient (typical value 0.60 - 0.80)	C_o (G) =	N/A	N/A	
Curb Opening Information		MINOR	MAJOR	
Length of a Unit Curb Opening	L_o (C) =	15.00	15.00	feet
Height of Vertical Curb Opening in Inches	H_{vert} =	6.00	6.00	inches
Height of Curb Orifice Throat in Inches	H_{throat} =	6.00	6.00	inches
Angle of Throat (see USDCM Figure ST-5)	Theta =	63.40	63.40	degrees
Side Width for Depression Pan (typically the gutter width of 2 feet)	W_p =	2.00	2.00	feet
Clogging Factor for a Single Curb Opening (typical value 0.10)	C_f (C) =	0.10	0.10	
Curb Opening Weir Coefficient (typical value 2.3-3.7)	C_w (C) =	3.60	3.60	
Curb Opening Orifice Coefficient (typical value 0.60 - 0.70)	C_o (C) =	0.67	0.67	
Low Head Performance Reduction (Calculated)		MINOR	MAJOR	
Depth for Grate Midwidth	d_{Grate} =	N/A	N/A	ft
Depth for Curb Opening Weir Equation	d_{Curb} =	0.30	0.83	ft
Combination Inlet Performance Reduction Factor for Long Inlets	$RF_{Combination}$ =	0.53	1.00	
Curb Opening Performance Reduction Factor for Long Inlets	RF_{Curb} =	0.76	1.00	
Grated Inlet Performance Reduction Factor for Long Inlets	RF_{Grate} =	N/A	N/A	
		MINOR	MAJOR	
Total Inlet Interception Capacity (assumes clogged condition)	**Q_a =**	**8.0**	**39.1**	**cfs**
WARNING: Inlet Capacity less than Q Peak for Minor Storm	$Q_{PEAK\ REQUIRED}$ =	10.7	21.8	cfs

StormCAD

BG Filing No. 3 Storm

Scenario: 100 YR

Active Scenario: 100 YR



Bentley Systems, Inc. Haestad Methods Solution Center
27 Siemon Company Drive Suite 200 W Watertown, CT 06795 USA +1-203-755-1666

BG Filing No. 3 Storm
FlexTable: Conduit Table
Active Scenario: 100 YR

Label	Start Node	Stop Node	Invert (Start) (ft)	Invert (Stop) (ft)	Length (User Defined) (ft)	Slope (Calculated) (ft/ft)	Section Type	Diameter (in)	Manning's n	Flow (cfs)	Velocity (ft/s)	Capacity (Full Flow) (cfs)	Hydraulic Grade Line (In) (ft)	Hydraulic Grade Line (Out) (ft)	Energy Grade Line (In) (ft)	Energy Grade Line (Out) (ft)
EX P-27	EX DP-12	Outfall	6,942.20	6,941.87	32.8	0.010	Circle	42.0	0.013	71.02	11.37	100.96	6,945.67	6,945.51	6,946.52	6,946.36
EX P-26	EX MH-4	EX DP-12	6,942.58	6,942.30	27.5	0.010	Circle	42.0	0.013	68.48	7.12	101.51	6,946.48	6,946.35	6,947.26	6,947.14
EX P-20	EX DP 41	EX MH-1	6,946.36	6,946.32	6.4	0.006	Circle	24.0	0.013	12.60	4.01	17.84	6,949.00	6,948.98	6,949.25	6,949.23
EX P-25	EX DP 15	EX MH-4	6,944.16	6,944.08	7.5	0.011	Circle	24.0	0.013	31.59	10.05	23.36	6,947.25	6,947.11	6,948.82	6,948.68
EX P-22	EX DP 44	EX MH-2	6,945.66	6,945.58	7.5	0.011	Circle	18.0	0.013	9.60	5.43	10.85	6,947.97	6,947.91	6,948.43	6,948.36
EX P-21	EX MH-1	EX MH-3	6,945.82	6,944.12	136.7	0.012	Circle	30.0	0.013	30.80	6.27	45.73	6,948.50	6,947.72	6,949.11	6,948.34
EX P-24	EX MH-3	EX MH-4	6,943.62	6,943.08	43.8	0.012	Circle	36.0	0.013	40.40	5.72	74.10	6,947.27	6,947.11	6,947.77	6,947.61
EX P-23	EX MH-2	EX MH-3	6,945.08	6,944.62	36.8	0.013	Circle	24.0	0.013	9.60	3.06	25.30	6,947.79	6,947.72	6,947.94	6,947.87
P-8	MH-16	EX MH-1	6,948.26	6,946.32	136.5	0.014	Circle	24.0	0.013	18.30	9.23	26.97	6,949.80	6,948.98	6,950.57	6,949.51
P-7	MH-15	MH-16	6,949.50	6,948.56	70.5	0.013	Circle	24.0	0.013	18.30	9.00	26.13	6,951.04	6,950.42	6,951.81	6,950.98
P-6	MH-14	MH-15	6,950.20	6,949.80	72.2	0.006	Circle	24.0	0.013	18.30	5.83	16.84	6,951.96	6,951.43	6,952.57	6,952.12
P-5	MH-13	MH-14	6,950.90	6,950.50	65.1	0.006	Circle	24.0	0.013	18.30	6.42	17.73	6,952.63	6,952.26	6,953.25	6,952.87
P-4	MH-12	MH-13	6,951.84	6,951.20	57.2	0.011	Circle	24.0	0.013	18.30	8.39	23.93	6,953.38	6,952.94	6,954.15	6,953.56
P-3	MH-11	MH-12	6,954.07	6,952.14	46.9	0.041	Circle	24.0	0.013	18.30	13.79	45.91	6,955.61	6,953.77	6,956.38	6,954.46
P-1	MH-10	MH-11	6,955.90	6,954.57	55.1	0.024	Circle	18.0	0.013	10.20	9.74	16.32	6,957.13	6,956.00	6,957.80	6,956.53
EX P-31	EX MH-5	MH-10	6,958.81	6,956.20	224.8	0.012	Circle	18.0	0.013	10.20	7.25	11.32	6,960.04	6,957.67	6,960.71	6,958.19
EX P-30	EX DP 51	EX MH-5	6,959.19	6,959.11	7.5	0.011	Circle	18.0	0.013	10.20	6.98	10.85	6,960.55	6,960.51	6,961.12	6,961.06
P-2	DP 53	MH-11	6,954.69	6,954.57	7.9	0.015	Circle	18.0	0.013	9.00	7.93	12.98	6,955.99	6,956.00	6,956.47	6,956.41

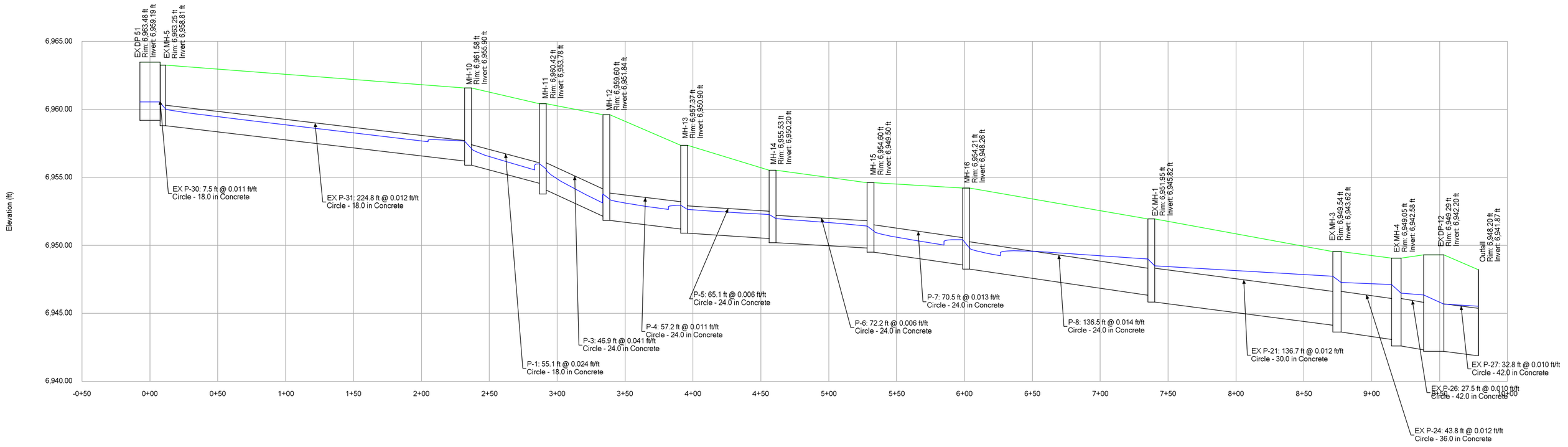
BG Filing No. 3 Storm
FlexTable: Manhole Table
Active Scenario: 100 YR

Label	Elevation (Rim) (ft)	Flow (Total Out) (cfs)	Headloss Method	Headloss Coefficient (Standard)	Headloss (ft)	Hydraulic Grade Line (In) (ft)	Hydraulic Grade Line (Out) (ft)	Energy Grade Line (In) (ft)	Energy Grade Line (Out) (ft)
EX MH-1	6,951.95	30.80	Standard	0.800	0.49	6,948.98	6,948.50	6,949.51	6,949.11
EX MH-4	6,949.05	68.48	Standard	0.800	0.63	6,947.11	6,946.48	6,947.61	6,947.26
EX MH-2	6,949.58	9.60	Standard	0.800	0.12	6,947.91	6,947.79	6,948.36	6,947.94
EX MH-3	6,949.54	40.40	Standard	0.900	0.46	6,947.72	6,947.27	6,947.87	6,947.77
MH-16	6,954.21	18.30	Standard	0.800	0.62	6,950.42	6,949.80	6,950.98	6,950.57
MH-15	6,954.60	18.30	Standard	0.500	0.39	6,951.43	6,951.04	6,952.12	6,951.81
MH-14	6,955.53	18.30	Standard	0.500	0.30	6,952.26	6,951.96	6,952.87	6,952.57
MH-13	6,957.37	18.30	Standard	0.500	0.31	6,952.94	6,952.63	6,953.56	6,953.25
MH-12	6,959.60	18.30	Standard	0.500	0.39	6,953.77	6,953.38	6,954.46	6,954.15
MH-11	6,960.42	18.30	Standard	0.500	0.39	6,956.00	6,955.61	6,956.41	6,956.38
MH-10	6,961.58	10.20	Standard	0.800	0.54	6,957.67	6,957.13	6,958.19	6,957.80
EX MH-5	6,963.25	10.20	Standard	0.700	0.47	6,960.51	6,960.04	6,961.06	6,960.71

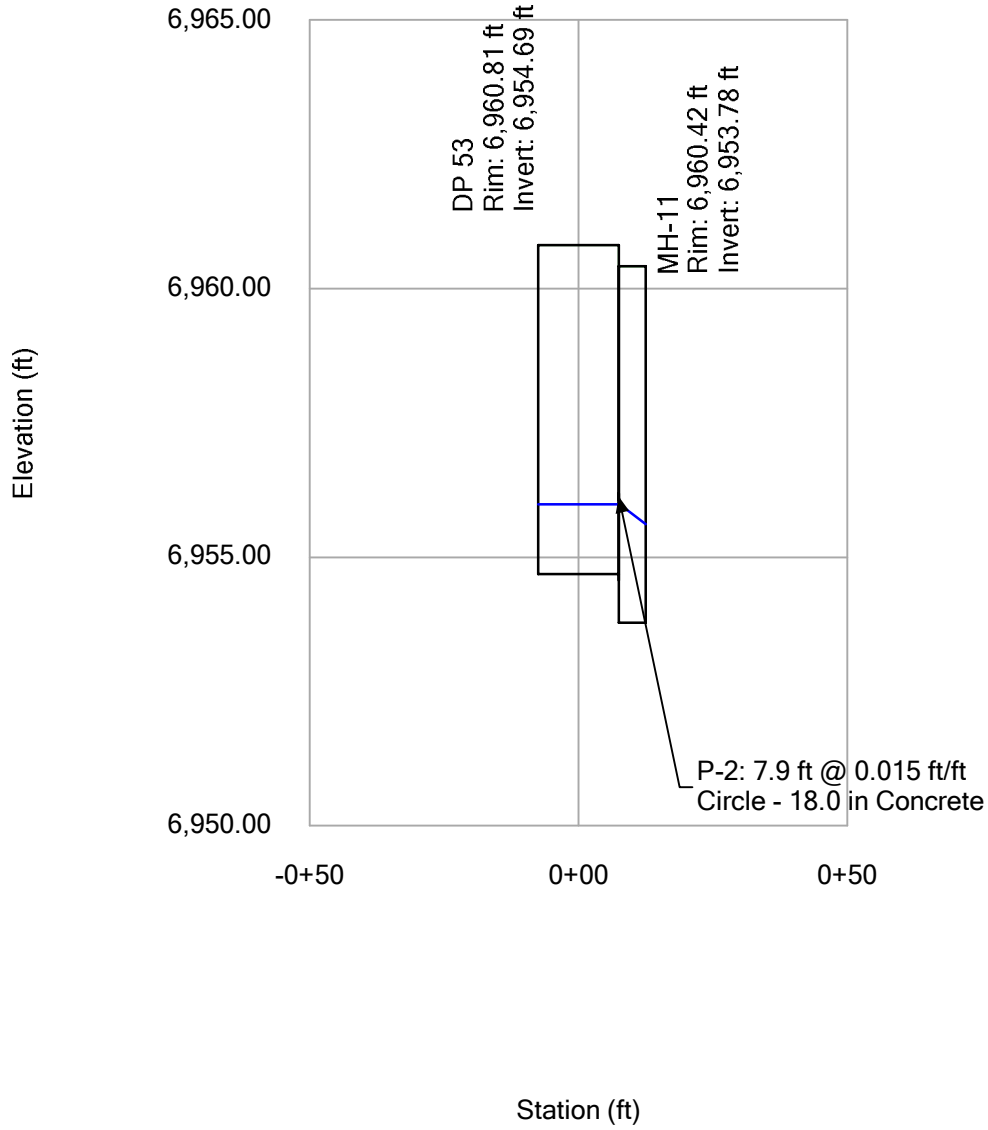
BG Filing No. 3 Storm
FlexTable: Outfall Table
Active Scenario: 100 YR

Label	Elevation (Ground) (ft)	Elevation (Invert) (ft)	Boundary Condition Type	Elevation (User Defined Tailwater) (ft)	Hydraulic Grade (ft)	Energy Grade Line (ft)	Flow (Total Out) (cfs)
Outfall	6,948.20	6,941.87	User Defined Tailwater	6,945.51	6,945.51	6,945.51	70.98

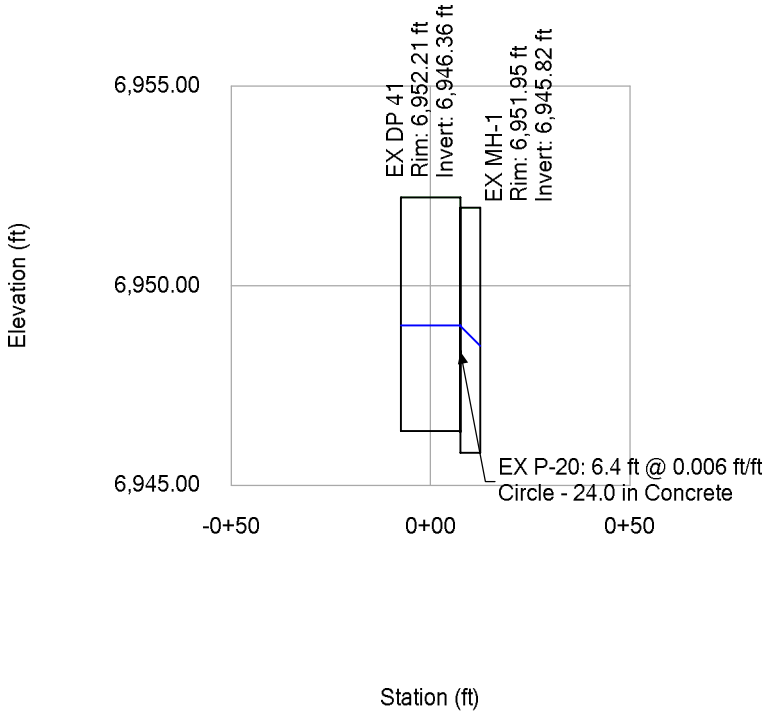
BG Filing No. 3 Storm
Profile Report
Engineering Profile - Mainline (FM Filing 3 System B.stsw)
Active Scenario: 100 YR



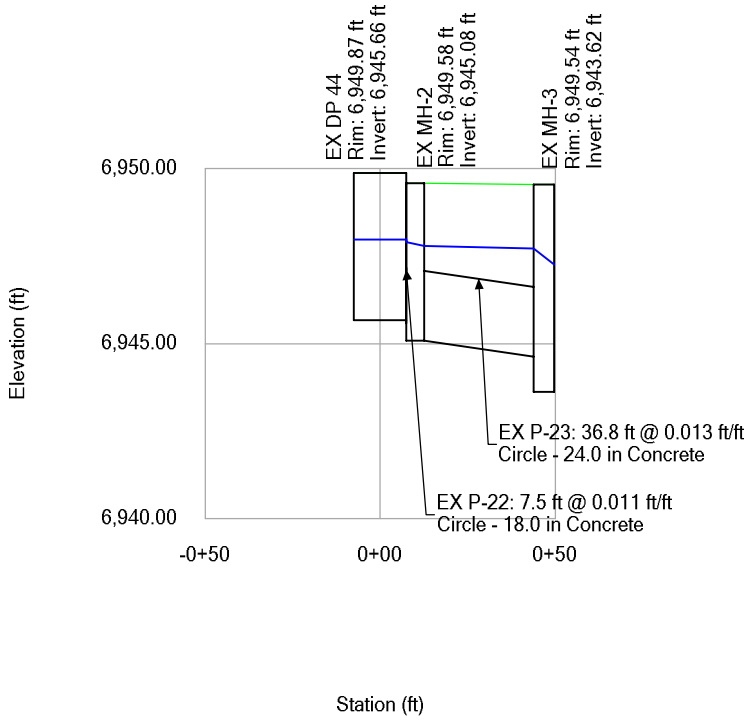
BG Filing No. 3 Storm
Profile Report
Engineering Profile - Lateral-DP 53 (FM Filing 3 System B.stsw)
Active Scenario: 100 YR



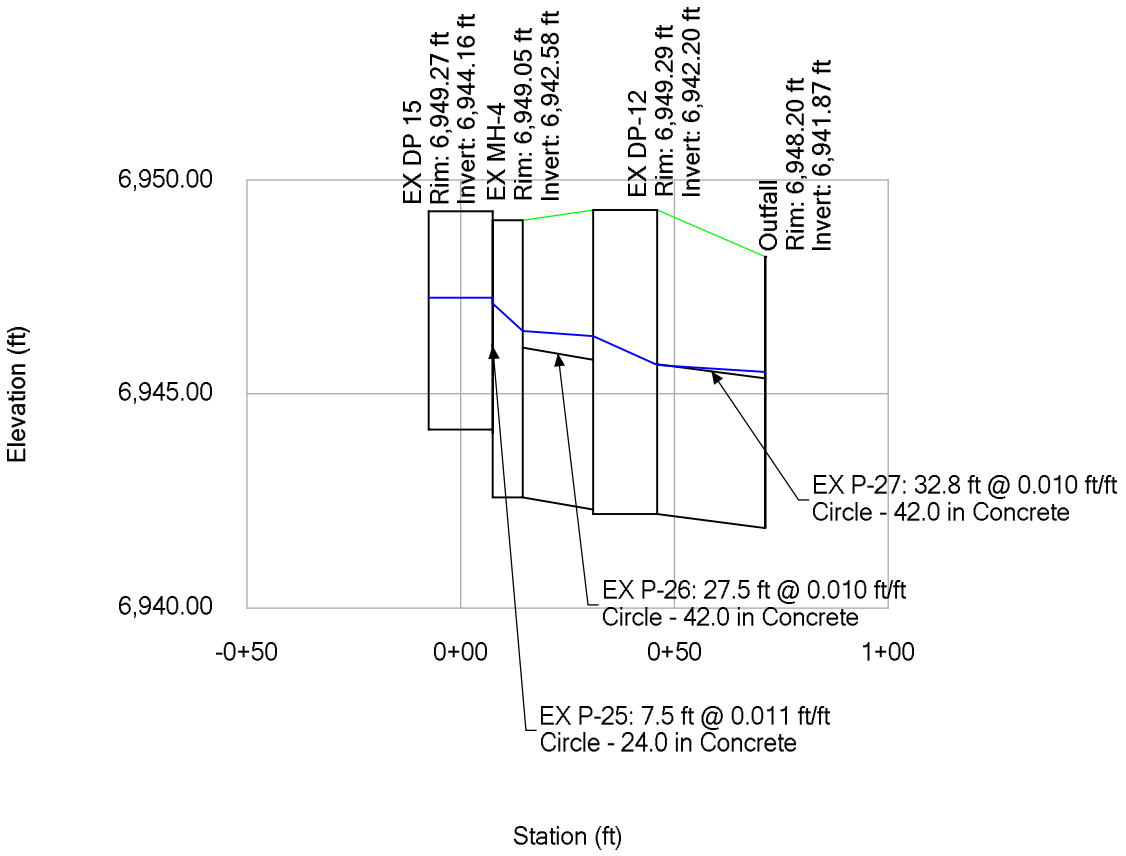
BG Filing No. 3 Storm
Profile Report
Engineering Profile - Lateral-DP 41 (Existing) (FM Filing 3 System B.stsw)
Active Scenario: 100 YR



BG Filing No. 3 Storm
Profile Report
Engineering Profile - Laterals-DP 44 (Existing) (FM Filing 3 System B.stsw)
Active Scenario: 100 YR



BG Filing No. 3 Storm
Profile Report
Engineering Profile - Laterals and Outfall to Pond (FM Filing 3 System B.stsw)
Active Scenario: 100 YR



BG Filing No. 3 Storm
FlexTable: Conduit Table
Active Scenario: 5 YR

Label	Start Node	Stop Node	Invert (Start) (ft)	Invert (Stop) (ft)	Length (User Defined) (ft)	Slope (Calculated) (ft/ft)	Section Type	Diameter (in)	Manning's n	Flow (cfs)	Velocity (ft/s)	Capacity (Full Flow) (cfs)	Hydraulic Grade Line (In) (ft)	Hydraulic Grade Line (Out) (ft)	Energy Grade Line (In) (ft)	Energy Grade Line (Out) (ft)
EX P-27	EX DP-12	Outfall	6,942.20	6,941.87	32.8	0.010	Circle	42.0	0.013	25.00	8.70	100.96	6,944.91	6,944.92	6,945.06	6,945.04
EX P-26	EX MH-4	EX DP-12	6,942.58	6,942.30	27.5	0.010	Circle	42.0	0.013	23.50	8.59	101.51	6,945.02	6,945.03	6,945.18	6,945.17
EX P-20	EX DP 41	EX MH-1	6,946.36	6,946.32	6.4	0.006	Circle	24.0	0.013	8.20	5.56	17.84	6,947.52	6,947.53	6,947.81	6,947.79
EX P-25	EX DP 15	EX MH-4	6,944.16	6,944.08	7.5	0.011	Circle	24.0	0.013	4.70	5.82	23.36	6,945.13	6,945.15	6,945.28	6,945.27
EX P-22	EX DP 44	EX MH-2	6,945.66	6,945.58	7.5	0.011	Circle	18.0	0.013	4.70	5.92	10.85	6,946.49	6,946.32	6,946.83	6,946.77
EX P-21	EX MH-1	EX MH-3	6,945.82	6,944.12	136.7	0.012	Circle	30.0	0.013	14.80	8.31	45.73	6,947.12	6,945.53	6,947.63	6,945.95
EX P-24	EX MH-3	EX MH-4	6,943.62	6,943.08	43.8	0.012	Circle	36.0	0.013	19.50	8.84	74.10	6,945.04	6,945.15	6,945.58	6,945.37
EX P-23	EX MH-2	EX MH-3	6,945.08	6,944.62	36.8	0.013	Circle	24.0	0.013	4.70	6.16	25.30	6,945.84	6,945.53	6,946.13	6,945.71
P-8	MH-16	EX MH-1	6,948.26	6,946.32	136.5	0.014	Circle	24.0	0.013	7.90	7.45	26.97	6,949.26	6,947.53	6,949.65	6,947.77
P-7	MH-15	MH-16	6,949.50	6,948.56	70.5	0.013	Circle	24.0	0.013	7.90	7.29	26.13	6,950.50	6,949.57	6,950.89	6,949.95
P-6	MH-14	MH-15	6,950.20	6,949.80	72.2	0.006	Circle	24.0	0.013	7.90	5.27	16.84	6,951.20	6,950.76	6,951.59	6,951.20
P-5	MH-13	MH-14	6,950.90	6,950.50	65.1	0.006	Circle	24.0	0.013	7.90	5.48	17.73	6,951.90	6,951.44	6,952.29	6,951.90
P-4	MH-12	MH-13	6,951.84	6,951.20	57.2	0.011	Circle	24.0	0.013	7.90	6.83	23.93	6,952.84	6,952.00	6,953.23	6,952.71
P-3	MH-11	MH-12	6,954.07	6,952.14	46.9	0.041	Circle	24.0	0.013	7.90	10.94	45.91	6,955.07	6,952.73	6,955.46	6,954.36
P-1	MH-10	MH-11	6,955.90	6,954.57	55.1	0.024	Circle	18.0	0.013	5.00	8.12	16.32	6,956.76	6,955.15	6,957.11	6,956.14
EX P-31	EX MH-5	MH-10	6,958.81	6,956.20	224.8	0.012	Circle	18.0	0.013	5.00	6.21	11.32	6,959.67	6,956.90	6,960.02	6,957.50
EX P-30	EX DP 51	EX MH-5	6,959.19	6,959.11	7.5	0.011	Circle	18.0	0.013	5.00	6.02	10.85	6,960.05	6,959.88	6,960.40	6,960.35
P-2	DP 53	MH-11	6,954.69	6,954.57	7.9	0.015	Circle	18.0	0.013	3.20	6.08	12.98	6,955.37	6,955.27	6,955.63	6,955.51

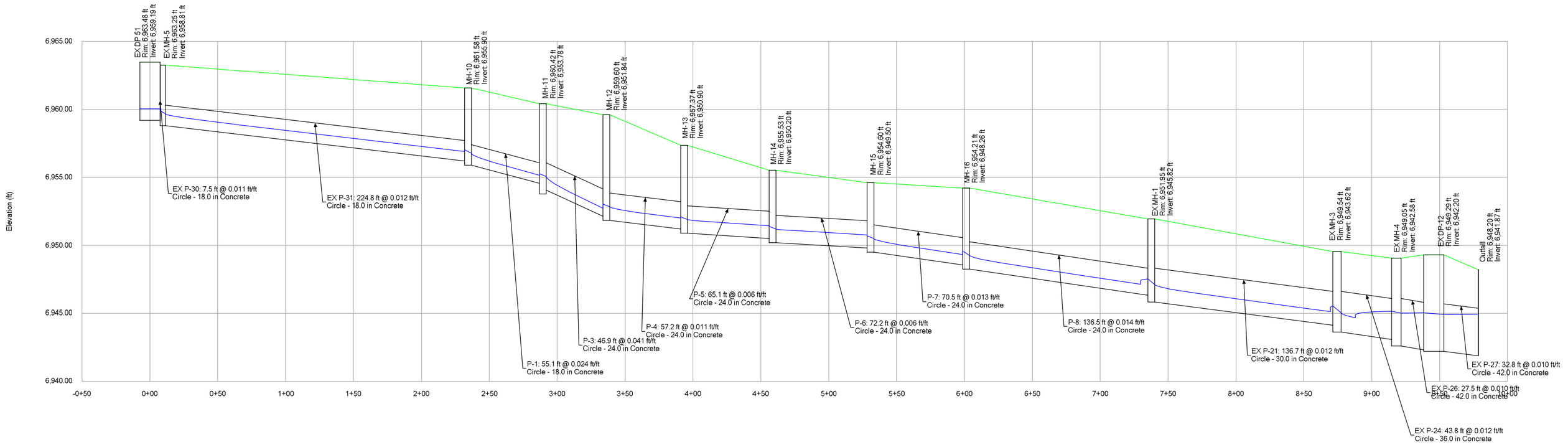
BG Filing No. 3 Storm
FlexTable: Manhole Table
Active Scenario: 5 YR

Label	Elevation (Rim) (ft)	Flow (Total Out) (cfs)	Headloss Method	Headloss Coefficient (Standard)	Headloss (ft)	Hydraulic Grade Line (In) (ft)	Hydraulic Grade Line (Out) (ft)	Energy Grade Line (In) (ft)	Energy Grade Line (Out) (ft)
EX MH-1	6,951.95	14.80	Standard	0.800	0.41	6,947.53	6,947.12	6,947.77	6,947.63
EX MH-4	6,949.05	23.50	Standard	0.800	0.13	6,945.15	6,945.02	6,945.37	6,945.18
EX MH-2	6,949.58	4.70	Standard	0.800	0.23	6,946.07	6,945.84	6,946.52	6,946.13
EX MH-3	6,949.54	19.50	Standard	0.900	0.49	6,945.53	6,945.04	6,945.71	6,945.58
MH-16	6,954.21	7.90	Standard	0.800	0.31	6,949.57	6,949.26	6,949.95	6,949.65
MH-15	6,954.60	7.90	Standard	0.500	0.20	6,950.70	6,950.50	6,951.13	6,950.89
MH-14	6,955.53	7.90	Standard	0.500	0.20	6,951.40	6,951.20	6,951.86	6,951.59
MH-13	6,957.37	7.90	Standard	0.500	0.20	6,952.10	6,951.90	6,952.80	6,952.29
MH-12	6,959.60	7.90	Standard	0.500	0.20	6,953.04	6,952.84	6,954.67	6,953.23
MH-11	6,960.42	7.90	Standard	0.500	0.20	6,955.27	6,955.07	6,956.26	6,955.46
MH-10	6,961.58	5.00	Standard	0.800	0.28	6,957.04	6,956.76	6,957.64	6,957.11
EX MH-5	6,963.25	5.00	Standard	0.700	0.25	6,959.92	6,959.67	6,960.39	6,960.02

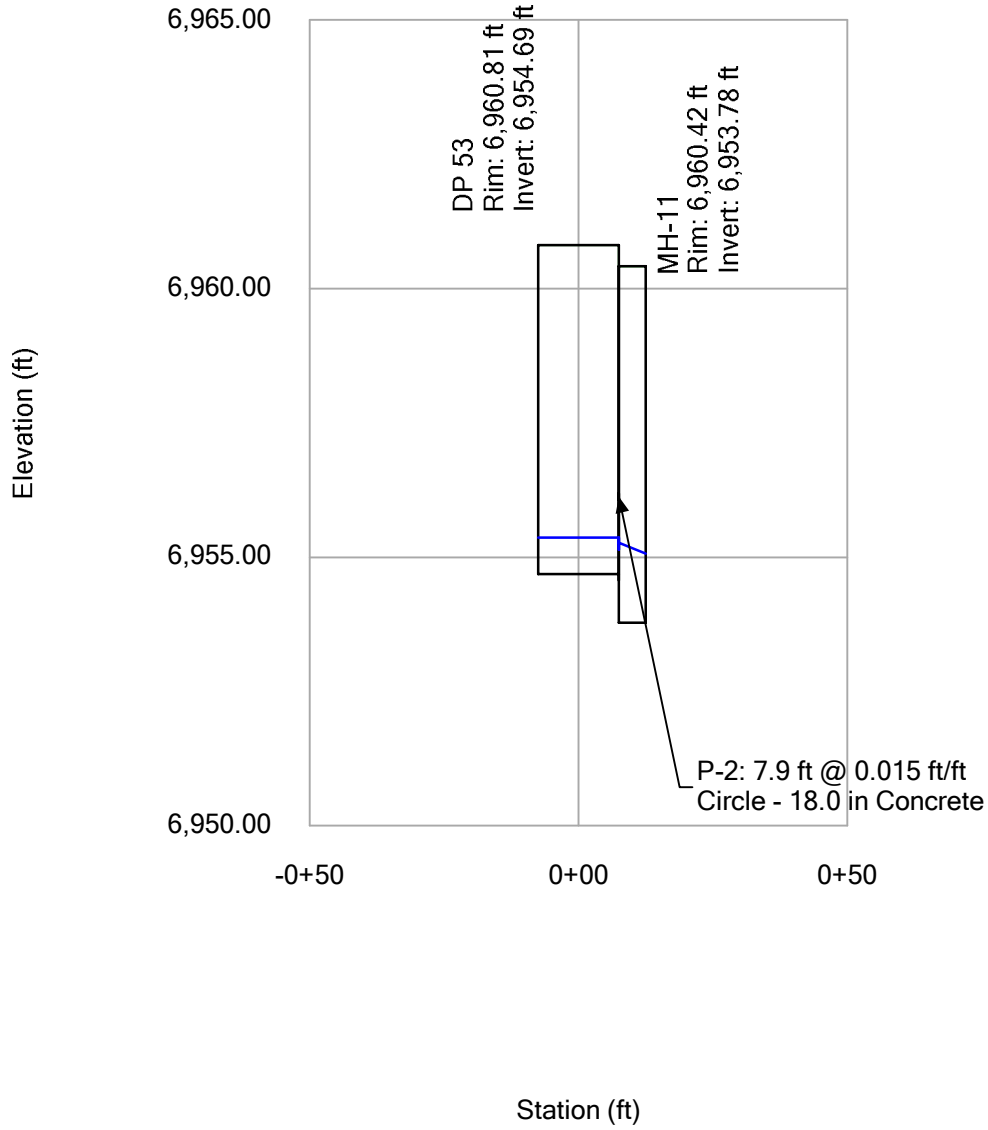
BG Filing No. 3 Storm
FlexTable: Outfall Table
Active Scenario: 5 YR

Label	Elevation (Ground) (ft)	Elevation (Invert) (ft)	Boundary Condition Type	Elevation (User Defined Tailwater) (ft)	Hydraulic Grade (ft)	Energy Grade Line (ft)	Flow (Total Out) (cfs)
Outfall	6,948.20	6,941.87	User Defined Tailwater	6,944.92	6,944.92	6,944.92	25.00

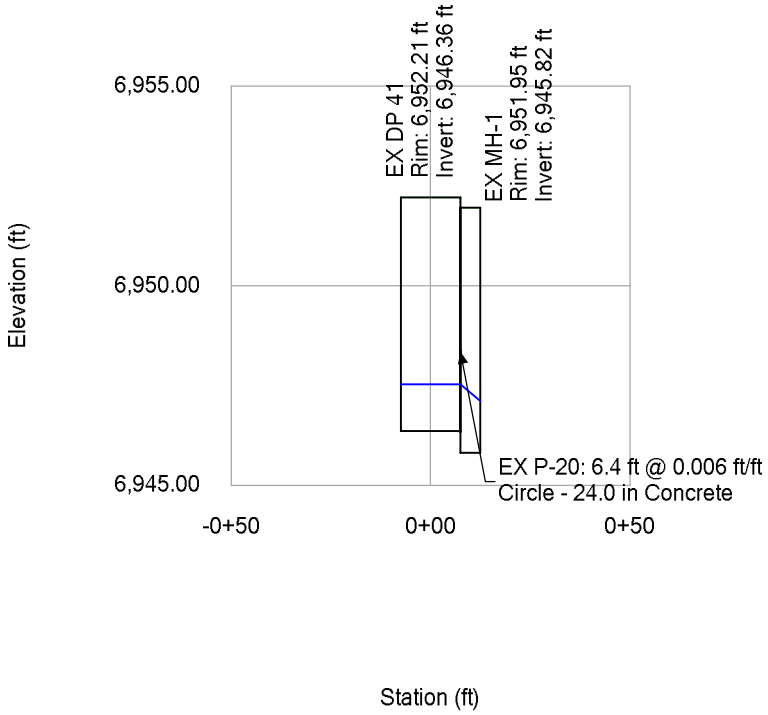
BG Filing No. 3 Storm
Profile Report
Engineering Profile - Mainline (FM Filing 3 System B.stsw)
Active Scenario: 5 YR



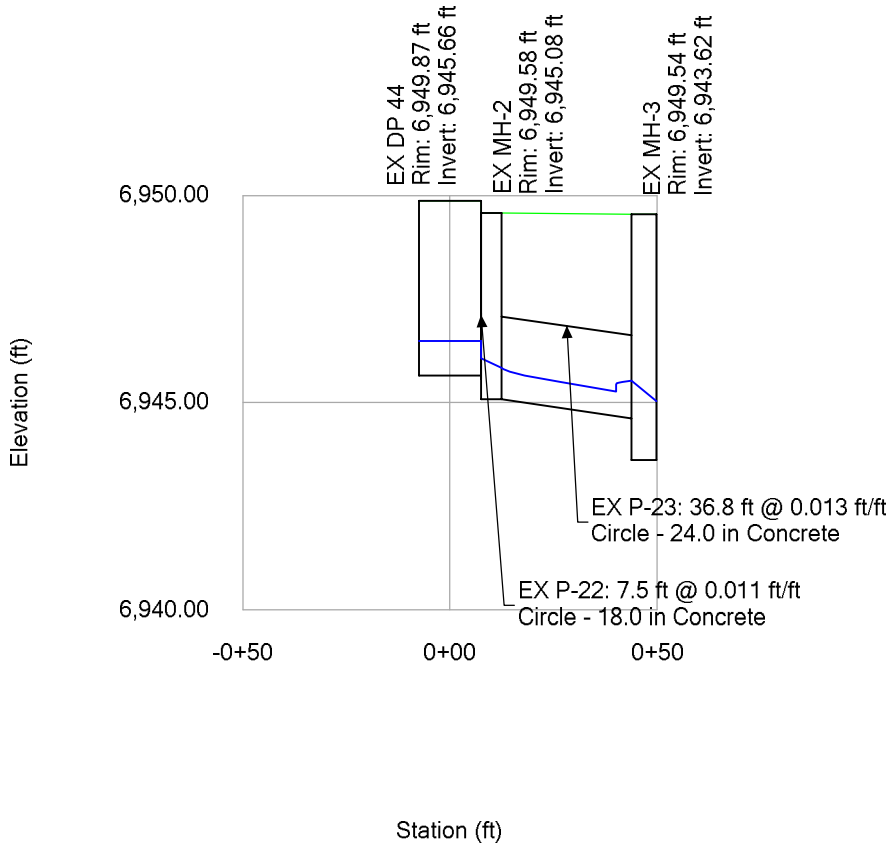
BG Filing No. 3 Storm
Profile Report
Engineering Profile - Lateral-DP 53 (FM Filing 3 System B.stsw)
Active Scenario: 5 YR



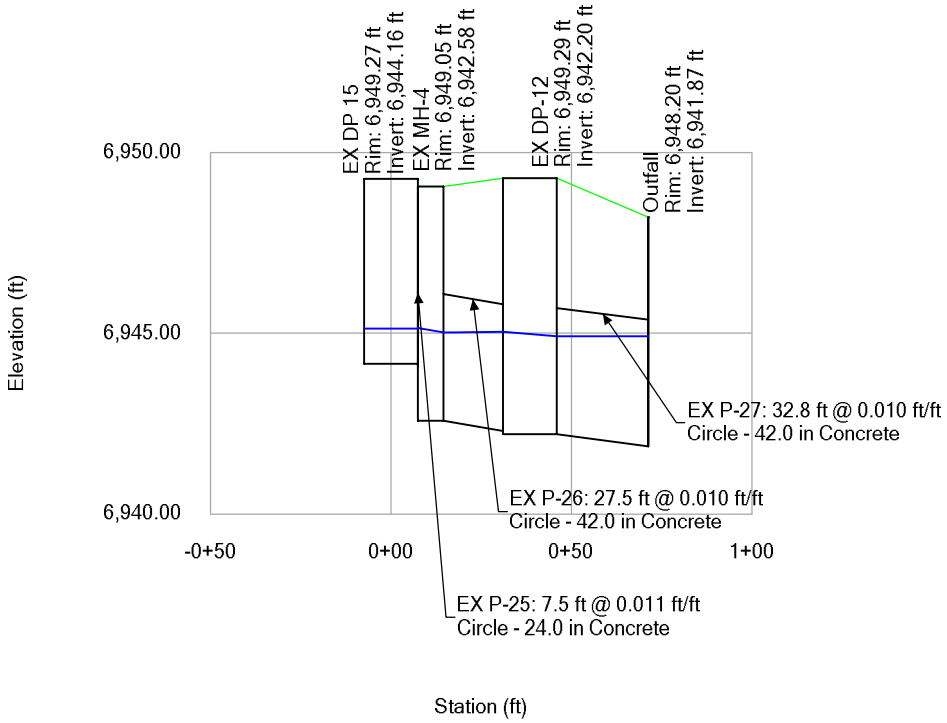
BG Filing No. 3 Storm
Profile Report
Engineering Profile - Lateral-DP 41 (Existing) (FM Filing 3 System B.stsw)
Active Scenario: 5 YR



BG Filing No. 3 Storm
Profile Report
Engineering Profile - Laterals-DP 44 (Existing) (FM Filing 3 System B.stsw)
Active Scenario: 5 YR



BG Filing No. 3 Storm
Profile Report
Engineering Profile - Laterals and Outfall to Pond (FM Filing 3 System B.stsw)
Active Scenario: 5 YR



APPENDIX D

Pond Calculations – **Existing Analysis**

Detention Pond Tributary Areas

Subdivision: Falcon Meadows
Location: CO, Colorado Springs

Project Name: Falcon Meadows at Bent Grass Filing No. 3
Project No.: CLH000020
Calculated By: CMV
Checked By: SMB
Date: 12/6/21

Pond (North-Existing)

Basin	Area	% Imp
C-1a	0.27	84.5
C-1b	1.77	61.3
C-1c	1.19	68.2
C-1d	1.97	72.1
C-1e	0.49	100
C-1f	0.14	87.5
C-1g	1.02	65
C-2	1.00	72
C-3	0.18	85.7
C-4	2.67	50.3
C-5	0.60	2
D-1f	0.67	73.4
D-1g	0.78	45.5
D-1h	1.57	48.8
D-1j	0.95	60.6
D-1k	0.80	50.6
Total	**16.07**	**60.0**

Pond (South-Existing)

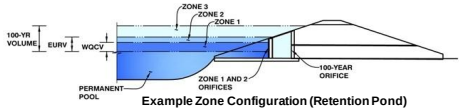
Basin	Area	% Imp
D-1a	1.83	56.8
D-1b	1.19	61.8
D-1c	3.95	61.9
D-2a	0.50	88.7
D-2b	0.74	61.8
D-2c	0.31	83.5
D-2d	0.24	81.3
D-2e	1.41	75.4
D-2f	2.43	73.6
D-2g	1.81	54.4
D-2h	0.23	65
D-3	2.26	54
D-4a	0.98	72.5
D-4b	0.95	80.9
D-4c	1.22	64.9
D-5	1.08	65.7
D-6a	1.33	76.6
D-6b	2.69	72.6
D-7	7.65	13.8
D-8	1.69	60.9
D-9	0.72	24.8
E-4	0.91	80.6
E-5	0.89	89
OS-2	20.07	8
OS-3	10.61	8
Total	**67.69**	**33.9**

DETENTION BASIN STAGE-STORAGE TABLE BUILDER

MHFD-Detention, Version 4.03 (May 2020)

Project: Falcon Meadows at Bent Grass Filing No. 2

Basin ID: WQCV Pond - North (Analysis)



Example Zone Configuration (Retention Pond)

Watershed Information

Selected BMP Type =	EDB	
Watershed Area =	16.07	acres
Watershed Length =	1,275	ft
Watershed Length to Centroid =	750	ft
Watershed Slope =	0.030	ft/ft
Watershed Imperviousness =	60.00%	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) =	0.316	acre-feet	acre-feet
Excess Urban Runoff Volume (EURV) =	1.170	acre-feet	acre-feet
2-yr Runoff Volume (P1 = 1.19 in.) =	0.861	acre-feet	1.19 inches
5-yr Runoff Volume (P1 = 1.5 in.) =	1.134	acre-feet	1.50 inches
10-yr Runoff Volume (P1 = 1.75 in.) =	1.353	acre-feet	1.75 inches
25-yr Runoff Volume (P1 = 2 in.) =	1.652	acre-feet	2.00 inches
50-yr Runoff Volume (P1 = 2.25 in.) =	1.946	acre-feet	2.25 inches
100-yr Runoff Volume (P1 = 2.52 in.) =	2.309	acre-feet	2.52 inches
500-yr Runoff Volume (P1 = 3.68 in.) =	3.824	acre-feet	3.68 inches
Approximate 2-yr Detention Volume =	0.758	acre-feet	
Approximate 5-yr Detention Volume =	0.994	acre-feet	
Approximate 10-yr Detention Volume =	1.202	acre-feet	
Approximate 25-yr Detention Volume =	1.454	acre-feet	
Approximate 50-yr Detention Volume =	1.608	acre-feet	
Approximate 100-yr Detention Volume =	1.776	acre-feet	

Define Zones and Basin Geometry

Zone 1 Volume (WQCV) =	0.316	acre-feet
Select Zone 2 Storage Volume (Optional) =		acre-feet
Select Zone 3 Storage Volume (Optional) =		acre-feet
Total Detention Basin Volume =	0.316	acre-feet
Initial Surcharge Volume (ISV) =	user	ft^3
Initial Surcharge Depth (ISD) =	user	ft
Total Available Detention Depth (H_{total}) =	user	ft
Depth of Trickle Channel (H_{TC}) =	user	ft
Slope of Trickle Channel (S_{TC}) =	user	ft/ft
Slopes of Main Basin Sides (S_{main}) =	user	H:V
Basin Length-to-Width Ratio (R_{LW}) =	user	

Total detention volume is less than 100-year volume.

Initial Surcharge Area (A_{ISV}) =	user	ft^2
Surcharge Volume Length (L_{ISV}) =	user	ft
Surcharge Volume Width (W_{ISV}) =	user	ft
Depth of Basin Floor (H_{FLOOR}) =	user	ft
Length of Basin Floor (L_{FLOOR}) =	user	ft
Width of Basin Floor (W_{FLOOR}) =	user	ft
Area of Basin Floor (A_{FLOOR}) =	user	ft^2
Volume of Basin Floor (V_{FLOOR}) =	user	ft^3
Depth of Main Basin (H_{MAIN}) =	user	ft
Length of Main Basin (L_{MAIN}) =	user	ft
Width of Main Basin (W_{MAIN}) =	user	ft
Area of Main Basin (A_{MAIN}) =	user	ft^2
Volume of Main Basin (V_{MAIN}) =	user	ft^3
Calculated Total Basin Volume (V_{total}) =	user	acre-feet

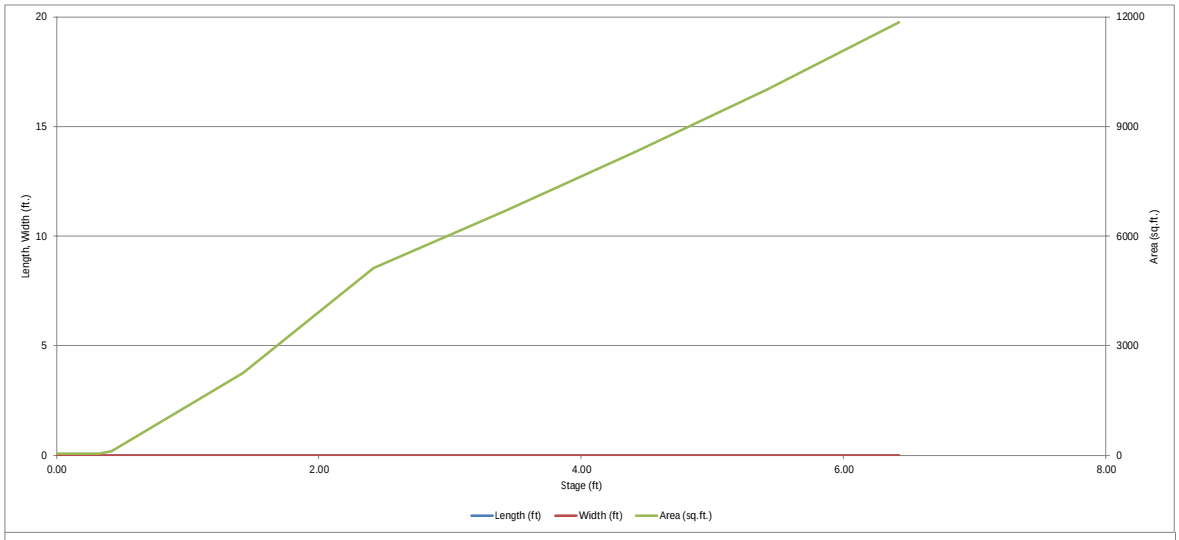
Depth Increment = ft

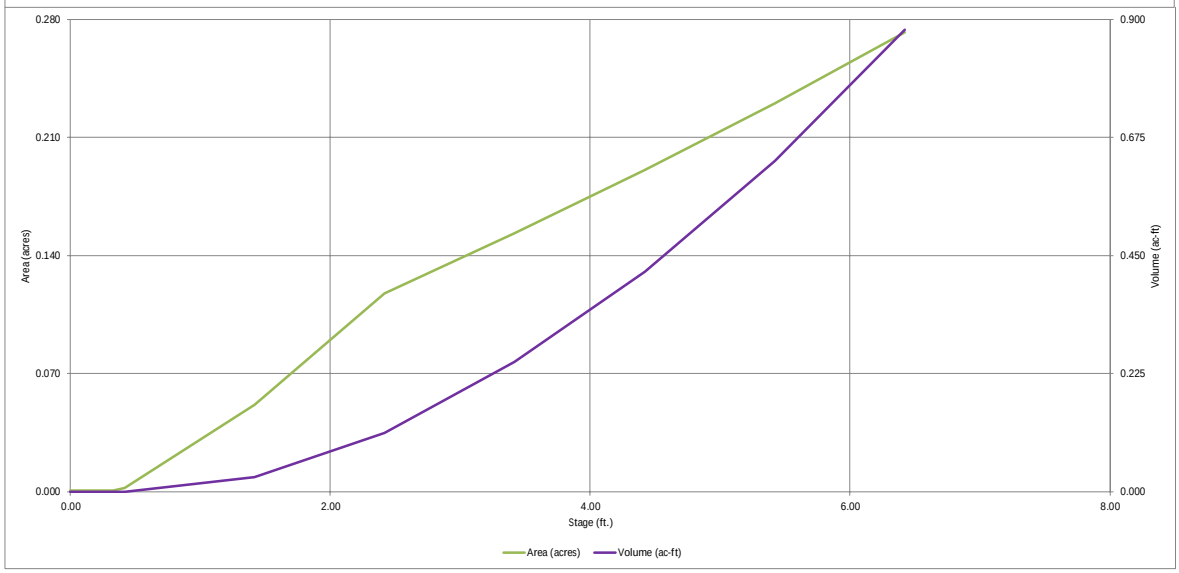
Stage - Storage Description	Stage (ft)	Optional Override Stage (ft)	Length (ft)	Width (ft)	Area (ft^2)	Optional Override Area (ft^2)	Area (acre)	Volume (ft^3)	Volume (ac-ft)
Top of Micropool	--	0.00	--	--	--	40	0.001		
Trickle Channel Inv	--	0.33	--	--	--	40	0.001	13	0.000
6941	--	0.42	--	--	--	102	0.002	20	0.000
6942	--	1.42	--	--	--	2,246	0.052	1,194	0.027
6943	--	2.42	--	--	--	5,126	0.118	4,880	0.112
6944	--	3.42	--	--	--	6,678	0.153	10,782	0.248
6945	--	4.42	--	--	--	8,308	0.191	18,275	0.420
6946	--	5.42	--	--	--	10,025	0.230	27,441	0.630
Top of Bank	--	6.42	--	--	--	11,873	0.273	38,390	0.881

6940.58
6940.91
6947.00

DETENTION BASIN STAGE-STORAGE TABLE BUILDER

MHFD-Detention, Version 4.03 (May 2020)



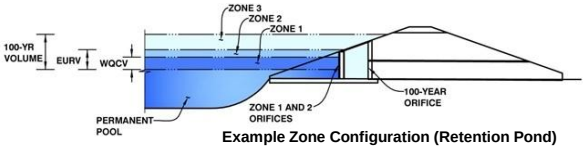


DETENTION BASIN OUTLET STRUCTURE DESIGN

MHFD-Detention, Version 4.03 (May 2020)

Project: Falcon Meadows at Bent Grass Filing No. 2

Basin ID: WQCV Pond - North (Analysis)



Example Zone Configuration (Retention Pond)

	Estimated Stage (ft)	Estimated Volume (ac-ft)	Outlet Type
Zone 1 (WQCV)	3.85	0.316	Orifice Plate
Zone 2			
Zone 3			
Total (all zones)		0.316	

User Input: Orifice at Underdrain Outlet (typically used to drain WQCV in a Filtration BMP)

Underdrain Orifice Invert Depth =		ft (distance below the filtration media surface)	Underdrain Orifice Area =		ft^2
Underdrain Orifice Diameter =		inches	Underdrain Orifice Centroid =		feet

Calculated Parameters for Underdrain

User Input: Orifice Plate with one or more orifices or Elliptical Slot Weir (typically used to drain WQCV and/or EURV in a sedimentation BMP)

Invert of Lowest Orifice =	0.00	ft (relative to basin bottom at Stage = 0 ft)	WQ Orifice Area per Row =	7.014E-03	ft^2
Depth at top of Zone using Orifice Plate =	4.07	ft (relative to basin bottom at Stage = 0 ft)	Elliptical Half-Width =	N/A	feet
Orifice Plate: Orifice Vertical Spacing =	N/A	inches	Elliptical Slot Centroid =	N/A	feet
Orifice Plate: Orifice Area per Row =	1.01	sq. inches (diameter = 1-1/8 inches)	Elliptical Slot Area =	N/A	ft^2

Calculated Parameters for Plate

User Input: Stage and Total Area of Each Orifice Row (numbered from lowest to highest)

	Row 1 (required)	Row 2 (optional)	Row 3 (optional)	Row 4 (optional)	Row 5 (optional)	Row 6 (optional)	Row 7 (optional)	Row 8 (optional)
Stage of Orifice Centroid (ft)	0.00	1.10	2.20					
Orifice Area (sq. inches)	1.01	1.01	1.01					

	Row 9 (optional)	Row 10 (optional)	Row 11 (optional)	Row 12 (optional)	Row 13 (optional)	Row 14 (optional)	Row 15 (optional)	Row 16 (optional)
Stage of Orifice Centroid (ft)								
Orifice Area (sq. inches)								

User Input: Vertical Orifice (Circular or Rectangular)

	Not Selected	Not Selected			Not Selected	Not Selected	
Invert of Vertical Orifice =			ft (relative to basin bottom at Stage = 0 ft)	Vertical Orifice Area =			ft^2
Depth at top of Zone using Vertical Orifice =			ft (relative to basin bottom at Stage = 0 ft)	Vertical Orifice Centroid =			feet
Vertical Orifice Diameter =			inches				

Calculated Parameters for Vertical Orifice

User Input: Overflow Weir (Dropbox with Flat or Sloped Grate and Outlet Pipe OR Rectangular/Trapezoidal Weir (and No Outlet Pipe)

	Not Selected	Not Selected			Not Selected	Not Selected	
Overflow Weir Front Edge Height, Ho =	4.08		ft (relative to basin bottom at Stage = 0 ft)	Height of Grate Upper Edge, H_t =	4.08		feet
Overflow Weir Front Edge Length =	6.00		feet	Overflow Weir Slope Length =	3.00		feet
Overflow Weir Grate Slope =	0.00		H:V	Grate Open Area / 100-yr Orifice Area =	4.01		
Horiz. Length of Weir Sides =	3.00		feet	Overflow Grate Open Area w/o Debris =	12.60		ft^2
Overflow Grate Open Area % =	70%		%, grate open area/total area	Overflow Grate Open Area w/ Debris =	6.30		ft^2
Debris Clogging % =	50%		%				

Calculated Parameters for Overflow Weir

User Input: Outlet Pipe w/ Flow Restriction Plate (Circular Orifice, Restrictor Plate, or Rectangular Orifice)

	Not Selected	Not Selected			Not Selected	Not Selected	
Depth to Invert of Outlet Pipe =	0.25		ft (distance below basin bottom at Stage = 0 ft)	Outlet Orifice Area =	3.14		ft^2
Circular Orifice Diameter =	24.00		inches	Outlet Orifice Centroid =	1.00		feet
				Half-Central Angle of Restrictor Plate on Pipe =	N/A	N/A	radians

Calculated Parameters for Outlet Pipe w/ Flow Restriction Plate

User Input: Emergency Spillway (Rectangular or Trapezoidal)

Spillway Invert Stage=	4.92	ft (relative to basin bottom at Stage = 0 ft)	Spillway Design Flow Depth=	0.66	feet
Spillway Crest Length =	25.00	feet	Stage at Top of Freeboard =	5.58	feet
Spillway End Slopes =	4.00	H:V	Basin Area at Top of Freeboard =	0.24	acres
Freeboard above Max Water Surface =	0.00	feet	Basin Volume at Top of Freeboard =	0.67	acre-ft

Calculated Parameters for Spillway

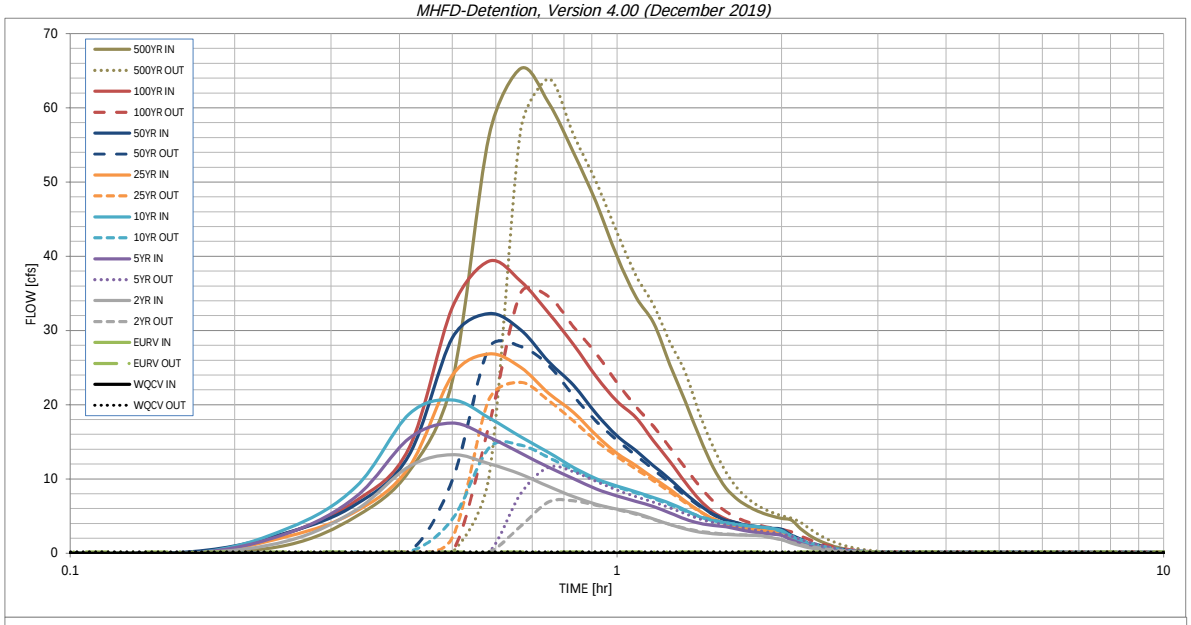
Routed Hydrograph Results

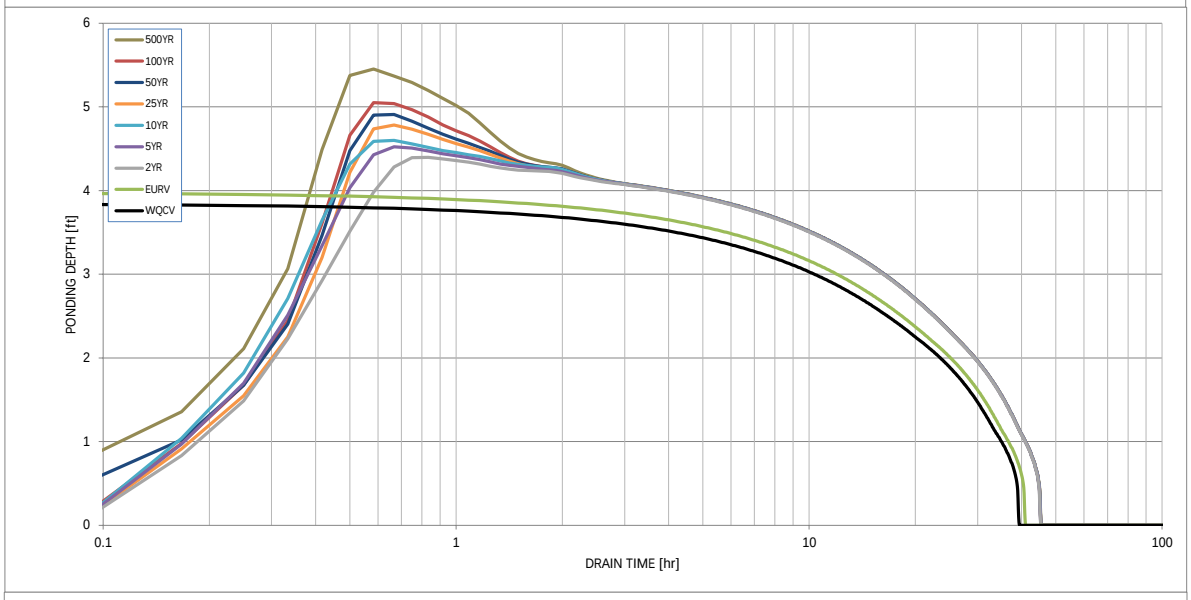
The user can override the default CUHP hydrographs and runoff volumes by entering new values in the Inflow Hydrographs table (Columns W through AF).

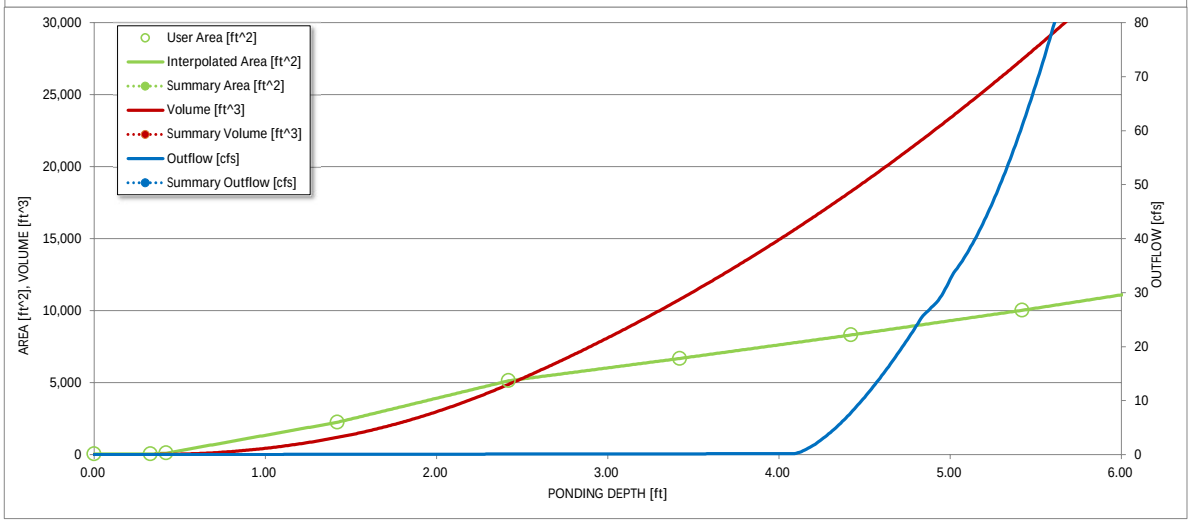
Design Storm Return Period =	WQCV	EURV	2 Year	5 Year	10 Year	25 Year	50 Year	100 Year	500 Year
One-Hour Rainfall Depth (in) =	N/A	N/A	1.19	1.50	1.75	2.00	2.25	2.52	3.68
CUHP Runoff Volume (acre-ft) =	0.316	1.170	0.861	1.134	1.353	1.652	1.946	2.309	3.824
Inflow Hydrograph Volume (acre-ft) =	N/A	N/A	0.861	1.134	1.353	1.652	1.946	2.309	3.824
CUHP Predevelopment Peak Q (cfs) =	N/A	N/A	0.1	0.2	0.3	2.8	5.7	9.2	23.7
OPTIONAL Override Predevelopment Peak Q (cfs) =	N/A	N/A							
Predevelopment Unit Peak Flow, q (cfs/acre) =	N/A	N/A	0.01	0.01	0.02	0.18	0.35	0.58	1.47
Peak Inflow Q (cfs) =	N/A	N/A	13.3	17.5	20.6	26.8	32.3	39.3	65.3
Peak Outflow Q (cfs) =	0.2	120.9	7.0	11.6	14.5	23.0	27.9	35.1	63.9
Ratio Peak Outflow to Predevelopment Q =	N/A	N/A	N/A	53.0	47.5	8.1	4.9	3.8	2.7
Structure Controlling Flow =	Plate	Plate	Overflow Weir 1	Overflow Weir 1	Overflow Weir 1	Overflow Weir 1	Overflow Weir 1	Spillway	Spillway
Max Velocity through Grate 1 (fps) =	N/A	N/A	0.55	0.9	1.1	1.8	2.2	2.5	2.6
Max Velocity through Grate 2 (fps) =	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Time to Drain 97% of Inflow Volume (hours) =	35	33	37	35	34	33	31	29	24
Time to Drain 99% of Inflow Volume (hours) =	38	38	42	41	40	39	38	37	35
Maximum Ponding Depth (ft) =	3.85	3.97	4.40	4.52	4.60	4.78	4.91	5.05	5.45
Area at Maximum Ponding Depth (acres) =	0.17	0.17	0.19	0.19	0.20	0.20	0.21	0.22	0.23
Maximum Volume Stored (acre-ft) =	0.317	0.336	0.414	0.439	0.453	0.491	0.516	0.548	0.637

DETENTION BASIN OUTLET STRUCTURE DESIGN

MHFD-Detention, Version 4.00 (December 2019)







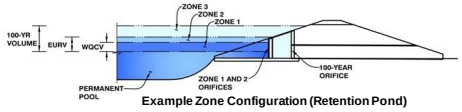
S-A-V-D Chart Axis Override	X-axis	Left Y-Axis	Right Y-Axis
minimum bound			
maximum bound			

DETENTION BASIN STAGE-STORAGE TABLE BUILDER

MHFD-Detention, Version 4.03 (May 2020)

Project: Falcon Meadows at Bent Grass Filing No. 2

Basin ID: WQCV Pond - South (Analysis)



Example Zone Configuration (Retention Pond)

Watershed Information

Selected BMP Type =	EDB	
Watershed Area =	67.69	acres
Watershed Length =	3,600	ft
Watershed Length to Centroid =	1,500	ft
Watershed Slope =	0.030	ft/ft
Watershed Imperviousness =	33.90%	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) =	0.920 acre-feet		acre-feet
Excess Urban Runoff Volume (EURV) =	2.373 acre-feet		acre-feet
2-yr Runoff Volume (P1 = 1.19 in.) =	1.722 acre-feet	1.19	inches
5-yr Runoff Volume (P1 = 1.5 in.) =	2.346 acre-feet	1.50	inches
10-yr Runoff Volume (P1 = 1.75 in.) =	2.854 acre-feet	1.75	inches
25-yr Runoff Volume (P1 = 2 in.) =	4.007 acre-feet	2.00	inches
50-yr Runoff Volume (P1 = 2.25 in.) =	5.094 acre-feet	2.25	inches
100-yr Runoff Volume (P1 = 2.52 in.) =	6.542 acre-feet	2.52	inches
500-yr Runoff Volume (P1 = 3.68 in.) =	12.604 acre-feet	3.68	inches
Approximate 2-yr Detention Volume =	1.500 acre-feet		
Approximate 5-yr Detention Volume =	1.995 acre-feet		
Approximate 10-yr Detention Volume =	2.479 acre-feet		
Approximate 25-yr Detention Volume =	3.108 acre-feet		
Approximate 50-yr Detention Volume =	3.558 acre-feet		
Approximate 100-yr Detention Volume =	4.241 acre-feet		

Define Zones and Basin Geometry

Zone 1 Volume (WQCV) =	0.920	acre-feet
Select Zone 2 Storage Volume (Optional) =		acre-feet
Select Zone 3 Storage Volume (Optional) =		acre-feet
Total Detention Basin Volume =	0.920	acre-feet
Initial Surcharge Volume (ISV) =	user	ft^3
Initial Surcharge Depth (ISD) =	user	ft
Total Available Detention Depth (H_{total}) =	user	ft
Depth of Trickle Channel (H_{TC}) =	user	ft
Slope of Trickle Channel (S_{TC}) =	user	ft/ft
Slopes of Main Basin Sides (S_{main}) =	user	H:V
Basin Length-to-Width Ratio (R_{LW}) =	user	
Initial Surcharge Area (A_{ISV}) =	user	ft^2
Surcharge Volume Length (L_{ISV}) =	user	ft
Surcharge Volume Width (W_{ISV}) =	user	ft
Depth of Basin Floor (H_{FLOOR}) =	user	ft
Length of Basin Floor (L_{FLOOR}) =	user	ft
Width of Basin Floor (W_{FLOOR}) =	user	ft
Area of Basin Floor (A_{FLOOR}) =	user	ft^2
Volume of Basin Floor (V_{FLOOR}) =	user	ft^3
Depth of Main Basin (H_{MAIN}) =	user	ft
Length of Main Basin (L_{MAIN}) =	user	ft
Width of Main Basin (W_{MAIN}) =	user	ft
Area of Main Basin (A_{MAIN}) =	user	ft^2
Volume of Main Basin (V_{MAIN}) =	user	ft^3
Calculated Total Basin Volume (V_{total}) =	user	acre-feet

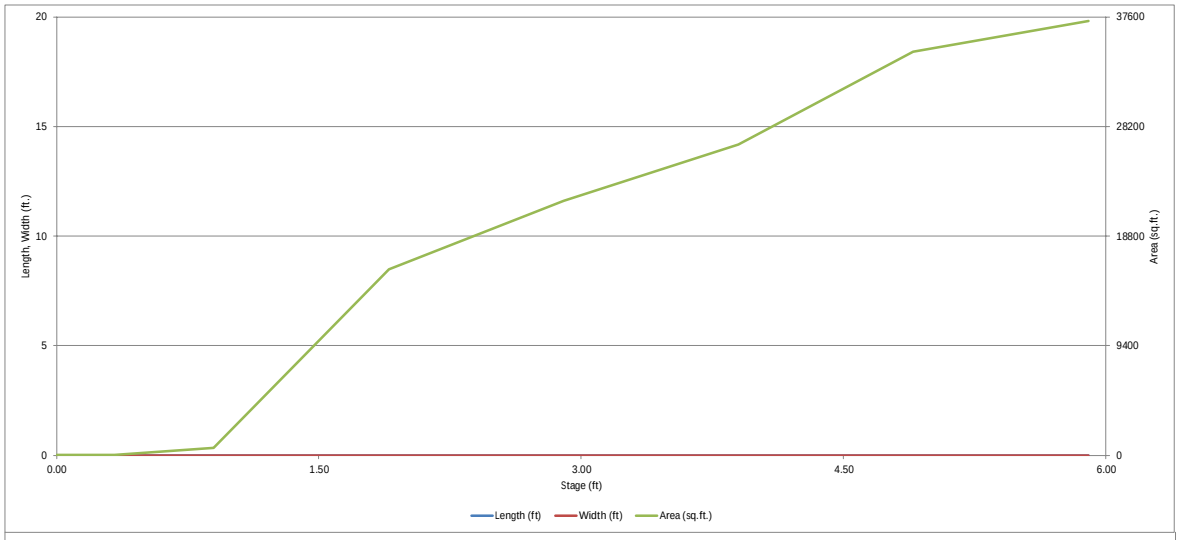
Total detention volume is less than 100-year volume.

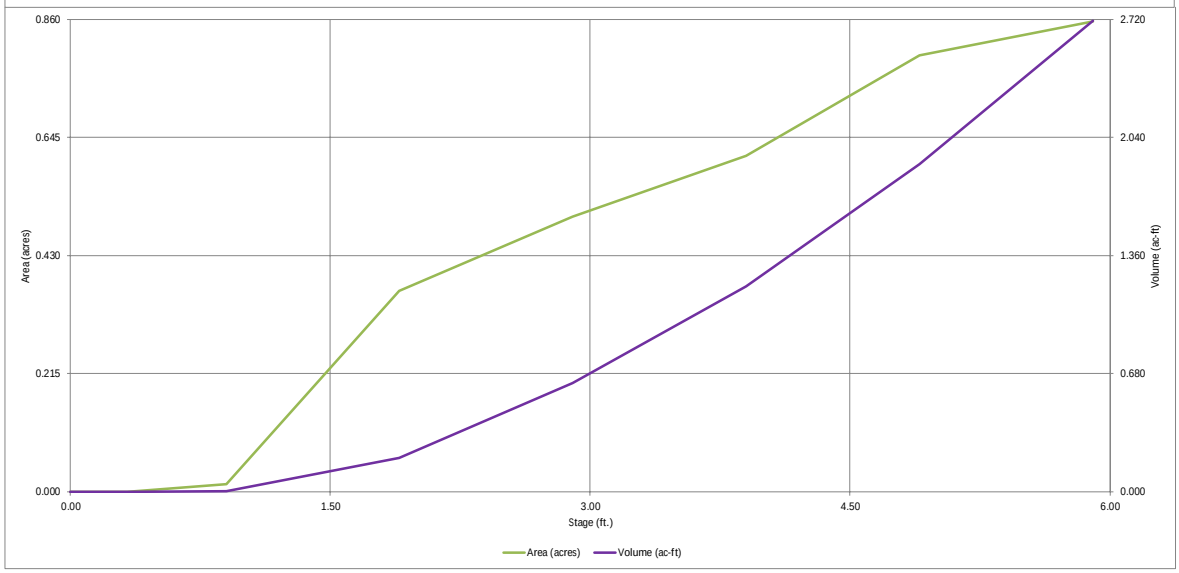
Depth Increment = 1.00 ft

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)
6923.1 Top of Micropool	--	0.00	--	--	--	35	0.001		
(Trickle Channel Inv) 6923.43	--	0.33	--	--	--	35	0.001	12	0.000
6924	--	0.90	--	--	--	593	0.014	191	0.004
6925	--	1.90	--	--	--	15,946	0.366	8,460	0.194
6926	--	2.90	--	--	--	21,804	0.501	27,335	0.628
6927	--	3.90	--	--	--	26,657	0.612	51,565	1.184
(Spillway Invert) 6928	--	4.90	--	--	--	34,630	0.795	82,209	1.887
(Top of Bank) 6929	--	5.90	--	--	--	37,309	0.856	118,178	2.713

DETENTION BASIN STAGE-STORAGE TABLE BUILDER

MHFD-Detention, Version 4.03 (May 2020)



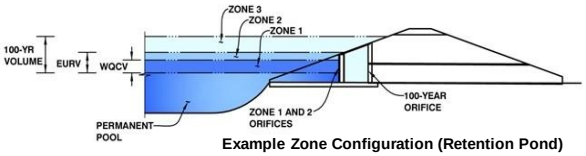


DETENTION BASIN OUTLET STRUCTURE DESIGN

MHFD-Detention, Version 4.03 (May 2020)

Project: Falcon Meadows at Bent Grass Filing No. 2

Basin ID: WQCV Pond - South (Analysis)



Example Zone Configuration (Retention Pond)

	Estimated Stage (ft)	Estimated Volume (ac-ft)	Outlet Type
Zone 1 (WQCV)	3.46	0.920	Orifice Plate
Zone 2			
Zone 3			
Total (all zones)		0.920	

User Input: Orifice at Underdrain Outlet (typically used to drain WQCV in a Filtration BMP)

Underdrain Orifice Invert Depth = ft (distance below the filtration media surface)

Underdrain Orifice Diameter = inches

Calculated Parameters for Underdrain

Underdrain Orifice Area = ft²

Underdrain Orifice Centroid = feet

User Input: Orifice Plate with one or more orifices or Elliptical Slot Weir (typically used to drain WQCV and/or EURV in a sedimentation BMP)

Invert of Lowest Orifice =	0.00	ft (relative to basin bottom at Stage = 0 ft)	WQ Orifice Area per Row =	1.670E-02	ft²
Depth at top of Zone using Orifice Plate =	3.41	ft (relative to basin bottom at Stage = 0 ft)	Elliptical Half-Width =	N/A	feet
Orifice Plate: Orifice Vertical Spacing =	N/A	inches	Elliptical Slot Centroid =	N/A	feet
Orifice Plate: Orifice Area per Row =	2.41	sq. inches (diameter = 1-3/4 inches)	Elliptical Slot Area =	N/A	ft²

Calculated Parameters for Plate

User Input: Stage and Total Area of Each Orifice Row (numbered from lowest to highest)

	Row 1 (required)	Row 2 (optional)	Row 3 (optional)	Row 4 (optional)	Row 5 (optional)	Row 6 (optional)	Row 7 (optional)	Row 8 (optional)
Stage of Orifice Centroid (ft)	0.00	1.14	2.27					
Orifice Area (sq. inches)	2.41	2.41	2.41					

	Row 9 (optional)	Row 10 (optional)	Row 11 (optional)	Row 12 (optional)	Row 13 (optional)	Row 14 (optional)	Row 15 (optional)	Row 16 (optional)
Stage of Orifice Centroid (ft)								
Orifice Area (sq. inches)								

User Input: Vertical Orifice (Circular or Rectangular)

	Not Selected	Not Selected			Not Selected	Not Selected	
Invert of Vertical Orifice =			ft (relative to basin bottom at Stage = 0 ft)	Vertical Orifice Area =			ft²
Depth at top of Zone using Vertical Orifice =			ft (relative to basin bottom at Stage = 0 ft)	Vertical Orifice Centroid =			feet
Vertical Orifice Diameter =			inches				

Calculated Parameters for Vertical Orifice

User Input: Overflow Weir (Dropbox with Flat or Sloped Grate and Outlet Pipe OR Rectangular/Trapezoidal Weir (and No Outlet Pipe)

	Not Selected	Not Selected			Not Selected	Not Selected	
Overflow Weir Front Edge Height, Ho =	3.50		ft (relative to basin bottom at Stage = 0 ft)	Height of Grate Upper Edge, H_t =	3.50		feet
Overflow Weir Front Edge Length =	6.00		feet	Overflow Weir Slope Length =	6.00		feet
Overflow Weir Grate Slope =	0.00		H:V	Grate Open Area / 100-yr Orifice Area =	5.87		
Horiz. Length of Weir Sides =	6.00		feet	Overflow Grate Open Area w/o Debris =	28.80		ft²
Overflow Grate Open Area % =	80%		%, grate open area/total area	Overflow Grate Open Area w/ Debris =	14.40		ft²
Debris Clogging % =	50%		%				

Calculated Parameters for Overflow Weir

User Input: Outlet Pipe w/ Flow Restriction Plate (Circular Orifice, Restrictor Plate, or Rectangular Orifice)

	Not Selected	Not Selected			Not Selected	Not Selected	
Depth to Invert of Outlet Pipe =	2.50		ft (distance below basin bottom at Stage = 0 ft)	Outlet Orifice Area =	4.91		ft²
Circular Orifice Diameter =	30.00		inches	Outlet Orifice Centroid =	1.25		feet
				Half-Central Angle of Restrictor Plate on Pipe =	N/A	N/A	radians

Calculated Parameters for Outlet Pipe w/ Flow Restriction Plate

User Input: Emergency Spillway (Rectangular or Trapezoidal)

Spillway Invert Stage=	4.90	ft (relative to basin bottom at Stage = 0 ft)	Spillway Design Flow Depth=	0.93	feet
Spillway Crest Length =	24.00	feet	Stage at Top of Freeboard =	5.83	feet
Spillway End Slopes =	4.00	H:V	Basin Area at Top of Freeboard =	0.85	acres
Freeboard above Max Water Surface =	0.00	feet	Basin Volume at Top of Freeboard =	2.65	acre-ft

Calculated Parameters for Spillway

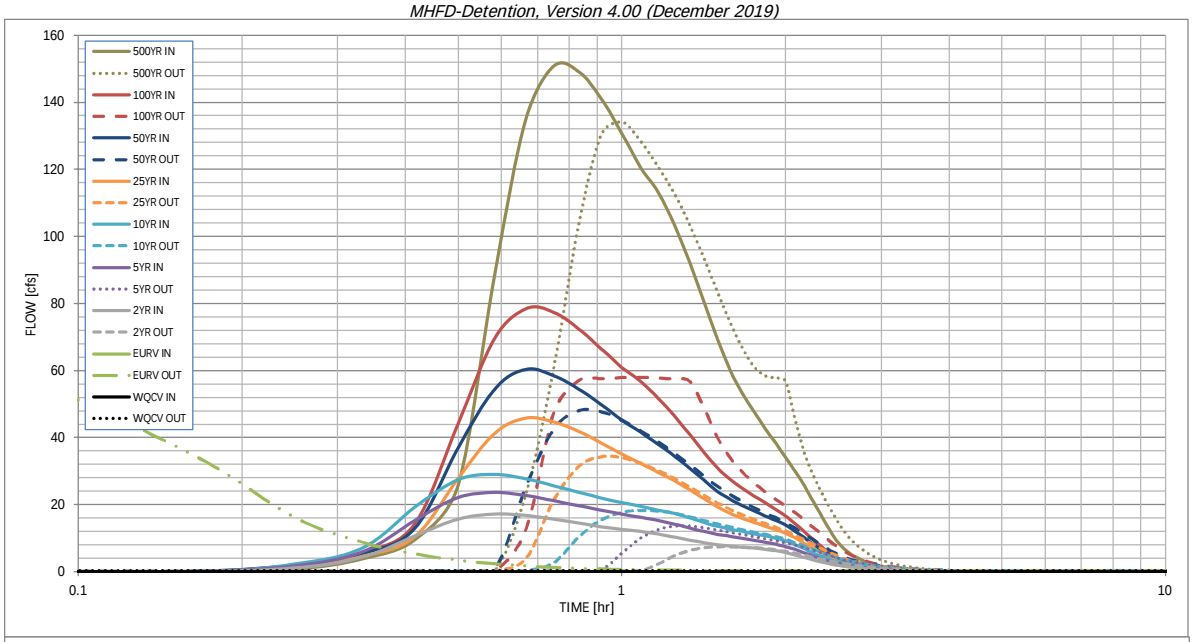
Routed Hydrograph Results

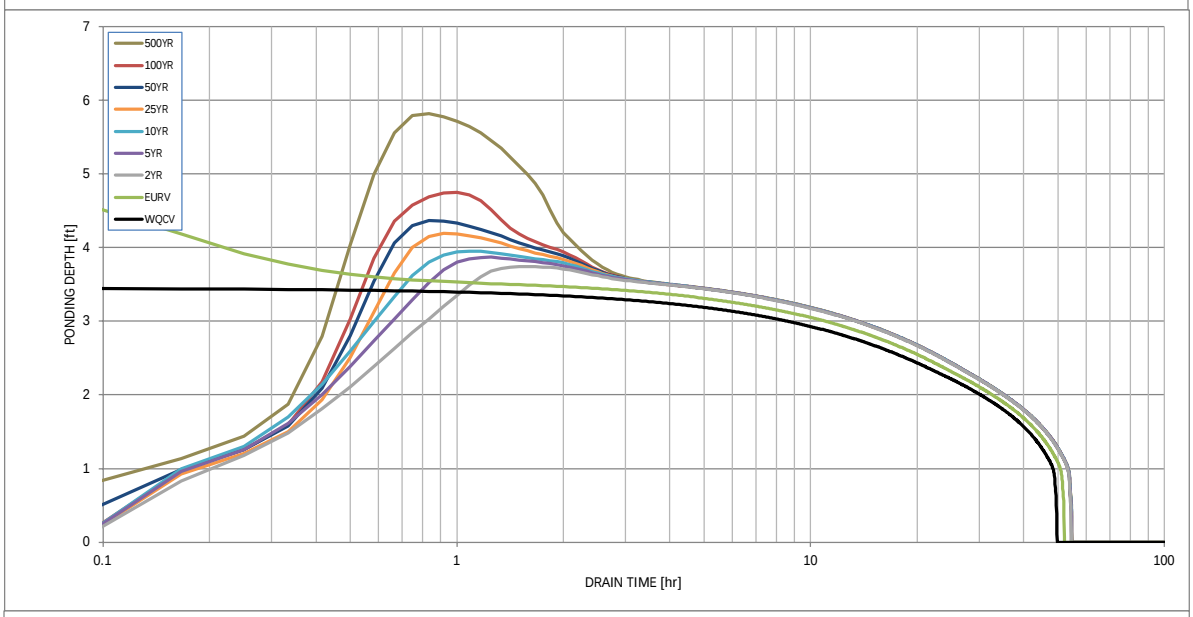
The user can override the default CUHP hydrographs and runoff volumes by entering new values in the Inflow Hydrographs table (Columns W through AF).

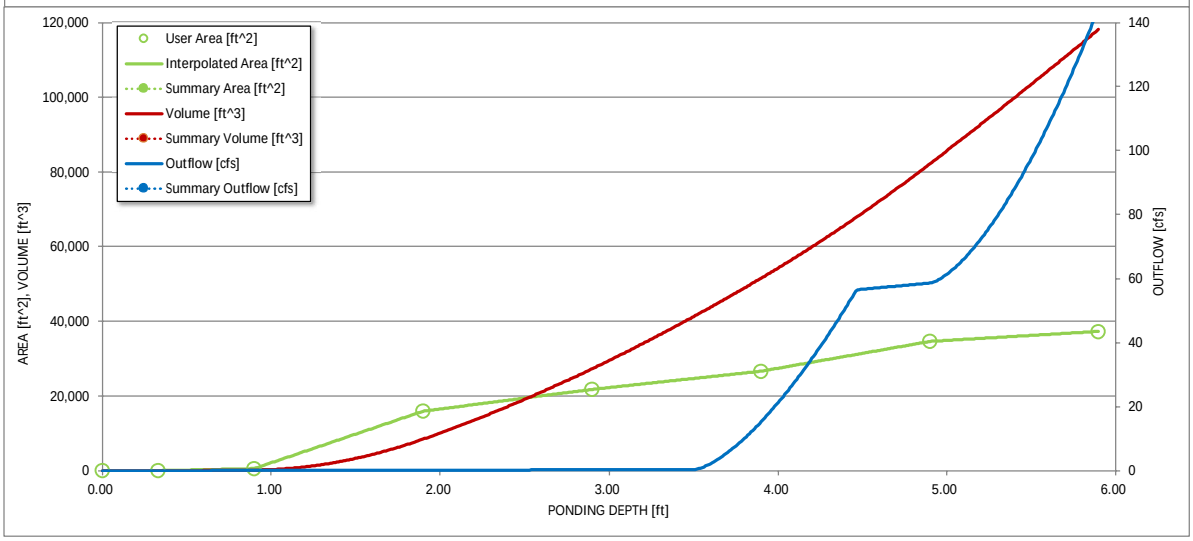
Design Storm Return Period =	WQCV	EURV	2 Year	5 Year	10 Year	25 Year	50 Year	100 Year	500 Year
One-Hour Rainfall Depth (in) =	N/A	N/A	1.19	1.50	1.75	2.00	2.25	2.52	3.68
CUHP Runoff Volume (acre-ft) =	0.920	2.373	1.722	2.346	2.854	4.007	5.094	6.542	12.604
Inflow Hydrograph Volume (acre-ft) =	N/A	N/A	1.722	2.346	2.854	4.007	5.094	6.542	12.604
CUHP Predevelopment Peak Q (cfs) =	N/A	N/A	0.4	0.8	1.1	10.1	20.2	33.6	87.7
OPTIONAL Override Predevelopment Peak Q (cfs) =	N/A	N/A							
Predevelopment Unit Peak Flow, q (cfs/acre) =	N/A	N/A	0.01	0.01	0.02	0.15	0.30	0.50	1.30
Peak Inflow Q (cfs) =	N/A	N/A	17.1	23.7	29.0	45.9	60.3	78.4	150.9
Peak Outflow Q (cfs) =	0.4	72.0	7.5	13.6	18.3	34.3	48.0	57.9	134.1
Ratio Peak Outflow to Predevelopment Q =	N/A	N/A	N/A	17.4	16.7	3.4	2.4	1.7	1.5
Structure Controlling Flow =	Plate	Spillway	Overflow Weir 1	Overflow Weir 1	Overflow Weir 1	Overflow Weir 1	Overflow Weir 1	Outlet Plate 1	Spillway
Max Velocity through Grate 1 (fps) =	N/A	2.11	0.24	0.5	0.6	1.2	1.7	2.0	2.2
Max Velocity through Grate 2 (fps) =	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Time to Drain 97% of Inflow Volume (hours) =	46	45	48	47	46	43	41	38	27
Time to Drain 99% of Inflow Volume (hours) =	48	49	52	51	51	49	48	47	43
Maximum Ponding Depth (ft) =	3.46	5.50	3.74	3.87	3.95	4.19	4.37	4.75	5.82
Area at Maximum Ponding Depth (acres) =	0.56	0.83	0.59	0.61	0.62	0.67	0.70	0.77	0.85
Maximum Volume Stored (acre-ft) =	0.925	2.375	1.087	1.159	1.215	1.369	1.485	1.770	2.636

DETENTION BASIN OUTLET STRUCTURE DESIGN

MHFD-Detention, Version 4.00 (December 2019)







S-A-V-D Chart Axis Override	X-axis	Left Y-Axis	Right Y-Axis
minimum bound			
maximum bound			

APPENDIX E

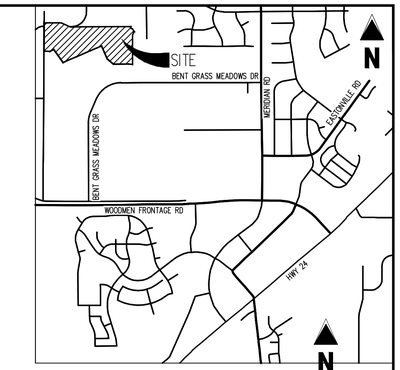
Drainage Maps

RUNOFF SUMMARY TABLE

Basin ID	Area (acres)	Q_5 (cfs)	Q_{100} (cfs)
RWT202	1574.40	14.0	770.0
RWT204	38.40	7.0	43.0
WT200	192.00	25.0	110.0
OS-25	14.13	4.9	27.5
OS-26	5.81	1.9	12.7
OS-1	13.06	6.9	28.8
OS-2	17.81	11.2	41.4
OS-4	30.69	12.4	55.4
A-1	5.42	2.2	12.4
A-2	18.00	5.3	35.4
A-3	19.59	6.0	40.7
A-4	23.81	8.1	47.0
B-1	32.53	9.6	64.2
B-2	4.51	1.5	10.0
B-3	16.18	7.8	37.2

DESIGN POINT SUMMARY TABLE

Design Point	Q_5 (cfs)	Q_{100} (cfs)
1	8.3	38.9
30	1.0	160.0
31	4.0	123.3
32	10.5	148.0
8	28.7	132.6
9	14.0	770.0
2	5.0	34.9
3	42.0	865.5
4	18.2	93.7
5	9.1	63.4
6	41.1	838.2
7	44.1	843.6



VICINITY MAP
1"=2,000'

SCALE: 1"=200'

DRAINAGE LEGEND

- PROPERTY LINE
- EXISTING MAJOR CONTOUR (6485)
- EXISTING MINOR CONTOUR (6483)
- BASIN BOUNDARY LINE
- FEMA EFFECTIVE 100-YR FLOODPLAIN (100YR)
- CENTERLINE OF STREAM
- BASIN DESIGNATION
- 5-YEAR RUNOFF IN CUBIC FEET PER SECOND
- 100-YEAR RUNOFF IN CUBIC FEET PER SECOND
- BASIN AREA IN ACRES
- DIRECTION OF RUNOFF

Galloway
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CHALLENGER HOMES

FINAL DRAINAGE REPORT FALCON MEADOWS AT BENT GRASS FILING NO. 3 FOR CHALLENGER COMMUNITIES, LLC

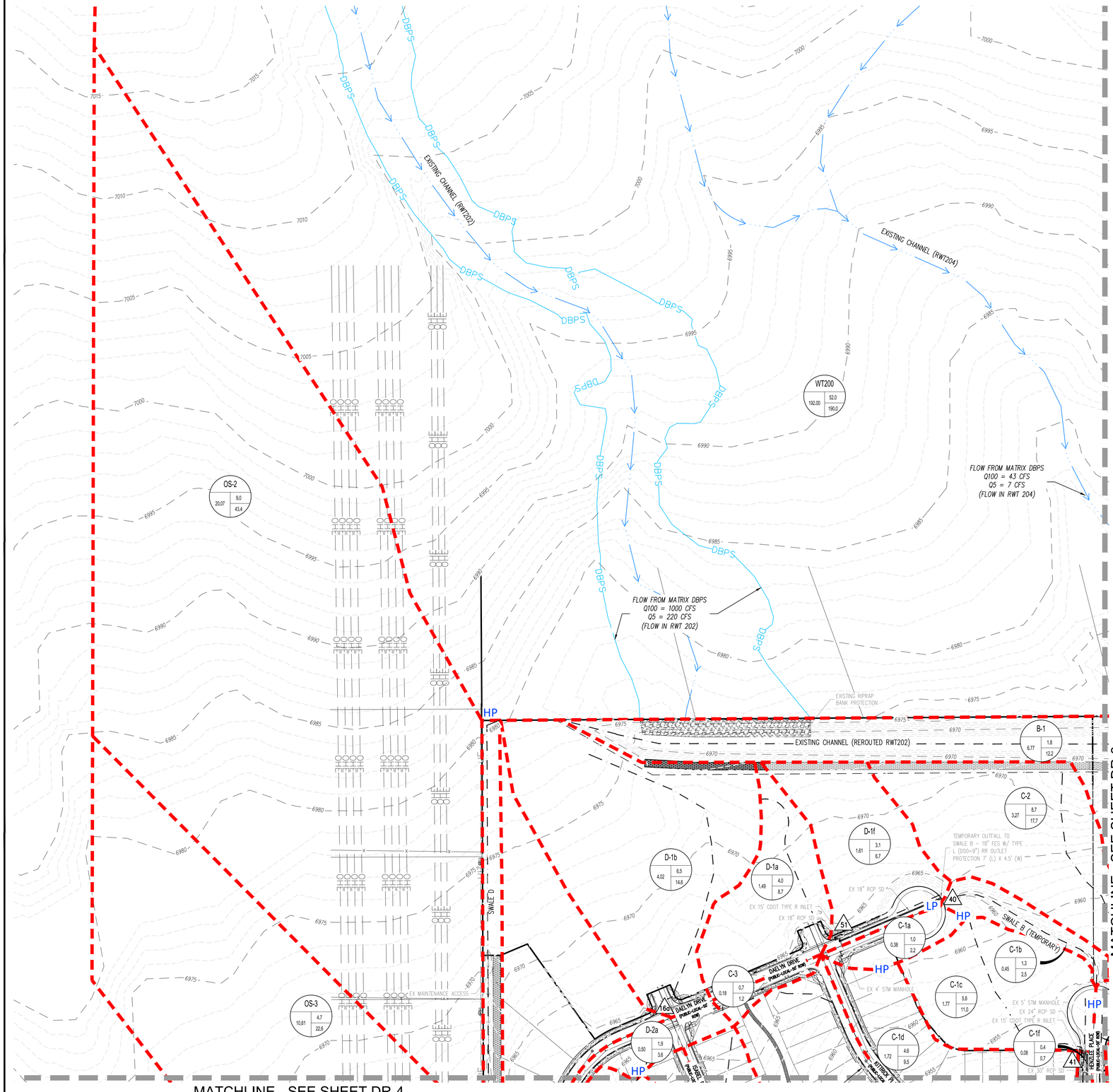
BENT GRASS MEADOWS DRIVE
FALCON, CO 80831 - EL PASO COUNTY

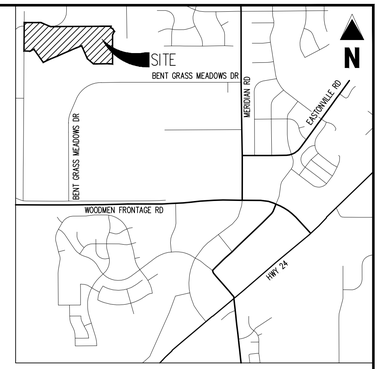
#	Date	Issue / Description	Init.

Project No:	CLH000014.20
Drawn By:	CMWJ
Checked By:	SMB
Date:	OCTOBER 2019

HISTORIC CONDITIONS DRAINAGE MAP

ED-1
Sheet 1 of 1





VICINITY MAP
1"=2,000'

DRAINAGE LEGEND

- PROPERTY LINE
- 6480 — EXISTING MAJOR CONTOUR
- 6482 — EXISTING MINOR CONTOUR
- 6480 — PROPOSED MAJOR CONTOUR
- 6482 — PROPOSED MINOR CONTOUR
- BASIN BOUNDARY LINE
- DRAINAGE TRAVEL PATH
- 100YR — FEMA EFFECTIVE 100-YR FLOODPLAIN
- DBPS — 100-YR FLOODPLAIN PER MATRIX DBPS
- CENTERLINE OF STREAM
- EXISTING RIPRAP
- EXISTING ACCESS
- PROPOSED RIPRAP
- PROPOSED ACCESS
- BASIN DESIGNATION
- 5-YEAR RUNOFF IN CUBIC FEET PER SECOND
- 100-YEAR RUNOFF IN CUBIC FEET PER SECOND
- BASIN AREA IN ACRES
- DESIGN POINT
- DIRECTION OF RUNOFF

RUNOFF SUMMARY TABLE

Basin ID	Area (acres)	Q_5 (cfs)	Q_{100} (cfs)
RWT202	1574.40	220.0	1000.0
RWT204	38.40	7.0	43.0
WT200	192.00	52.0	190.0
EX-1	1.19	0.4	2.5
EX-2	1.60	0.5	3.8
EX-3	0.66	0.2	1.6
B-1	6.77	1.8	12.2
B-2	4.16	1.3	8.6
C-1a	0.38	1.0	2.2
C-1b	0.45	1.3	2.5
C-1c	1.77	5.6	11.0
C-1d	1.72	4.6	9.5
C-1e	0.29	1.3	2.4
C-1f	0.08	0.4	0.7
C-2	3.27	8.7	17.7
C-3	0.18	0.7	1.2
C-4	2.67	4.2	9.7
C-5	0.60	0.3	1.9
C-6	0.94	1.0	3.4
C-7	0.52	1.4	2.9
D-1a	1.49	4.0	8.7
D-1b	4.02	6.5	14.6
D-1c	4.34	5.9	13.1
D-1f	1.61	3.1	6.7
D-2a	0.50	1.9	3.6
D-2b	0.74	1.4	3.2
D-2c	0.31	1.1	2.1
D-2d	0.24	0.8	1.6
D-2e	1.41	3.3	6.7
D-2f	2.43	6.0	12.2
D-2g	1.81	2.9	6.5
D-2h	0.23	0.3	0.8
D-3	2.26	2.6	6.3
D-4a	0.98	2.1	4.4
D-4b	0.95	2.5	4.9
D-4c	1.22	2.4	5.0
D-5	1.08	2.8	6.0
D-6a	1.33	3.6	7.5
D-6b	2.69	5.6	11.4
D-7	7.65	4.3	18.2
D-8	1.69	2.6	6.0
D-9	0.72	0.8	2.7
OS-1	32.28	15.1	65.1
OS-2	20.07	9.0	43.4
OS-3	10.61	4.7	22.6
OS-4	4.45	5.6	14.0
OS-5	0.46	1.1	2.3
OS-6	1.17	2.0	4.3
E-1	1.71	3.6	7.7
E-2	0.68	2.4	4.6
E-3	0.78	2.9	5.3
E-4	0.91	3.0	5.7
E-5	0.89	3.3	6.1

DESIGN POINT SUMMARY TABLE

Design Point	Q_5 (cfs)	Q_{100} (cfs)
21	277.1	1222.1
1	5.6	14.0
2	1.1	2.3
3	2.0	4.3
5	7.6	21.4
15A	15.2	38.3
51	4.0	8.7
40	6.9	15.0
41	12.1	25.4
42	0.4	0.7
43	4.6	9.5
44	8.7	10.7
19	8.7	17.7
15	4.9	10.0
12	1.3	2.4
45	1.4	2.9
13	20.9	44.3
13A	27.6	58.9
7	2.9	5.3
8	10.0	20.9
AA	301.2	1282.2
9	9.0	43.4
10	4.7	22.6
11	15.6	68.4
14a	3.8	7.6
14d	3.3	6.7
14e	6.0	12.2
14b	4.2	8.3
14	6.4	13.5
16a	6.5	14.6
16	32.0	102.4
18	10.7	21.5
17a	2.1	4.4
17b	3.9	7.7
17c	13.3	26.9
17	39.1	112.9
24	2.9	6.4
25	3.1	6.1
26	5.2	10.6
30	48.4	139.2
32	2.6	6.0
OC	335.9	1384.4

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719.900.7220
GallowayUS.com

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NOT FOR CONSTRUCTION

CHALLENGER HOMES

FINAL DRAINAGE REPORT
FALCON MEADOWS AT BENT GRASS FILING NO. 3
FOR
CHALLENGER COMMUNITIES, LLC

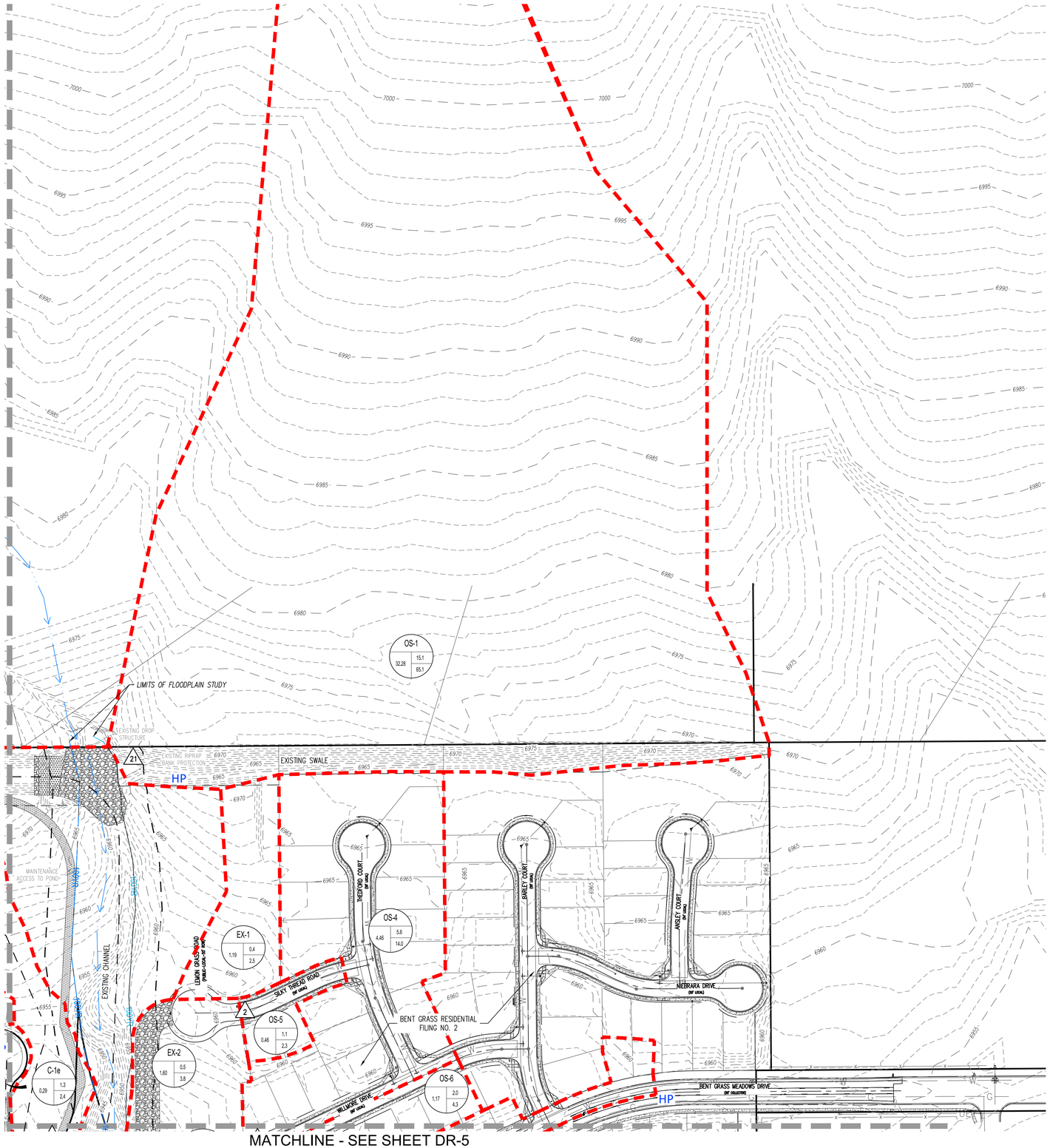
BENT GRASS MEADOWS DRIVE
FALCON, CO 80831 - EL PASO COUNTY

#	Date	Issue / Description	Init.

Project No:	CLH000020
Drawn By:	CMWJ
Checked By:	RGD
Date:	08/05/2020

EXISTING DRAINAGE MAP

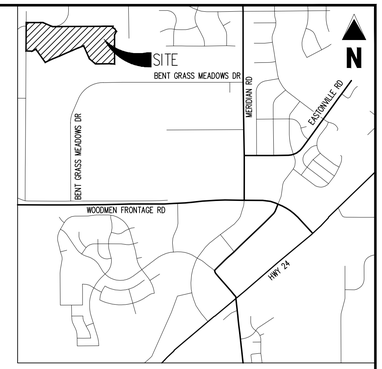
DR-2



N

0 25 50 100

SCALE: 1"=100'



VICINITY MAP
1"=2,000'

DRAINAGE LEGEND

- PROPERTY LINE
- 6480 — EXISTING MAJOR CONTOUR
- 6482 — EXISTING MINOR CONTOUR
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- 6482 — PROPOSED MINOR CONTOUR
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- 100YR — FEMA EFFECTIVE 100-YR FLOODPLAIN
- DBPS — 100-YR FLOODPLAIN PER MATRIX DBPS
- CENTERLINE OF STREAM
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- EXISTING ACCESS
- PROPOSED RIPRAP
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- BASIN DESIGNATION
- 5-YEAR RUNOFF IN CUBIC FEET PER SECOND
- 100-YEAR RUNOFF IN CUBIC FEET PER SECOND
- BASIN AREA IN ACRES
- DESIGN POINT
- DIRECTION OF RUNOFF

RUNOFF SUMMARY TABLE

Basin ID	Area (acres)	Q_5 (cfs)	Q_{100} (cfs)
RWT202	1574.40	220.0	1000.0
RWT204	39.40	7.0	43.0
WT200	192.00	52.0	190.0
EX-1	1.19	0.4	2.5
EX-2	1.60	0.5	3.8
EX-3	0.66	0.2	1.6
B-1	6.77	1.8	12.2
B-2	4.16	1.3	8.6
C-1a	0.38	1.0	2.2
C-1b	0.45	1.3	2.5
C-1c	1.77	5.6	11.0
C-1d	1.72	4.6	9.5
C-1e	0.29	1.3	2.4
C-1f	0.08	0.4	0.7
C-2	3.27	8.7	17.7
C-3	0.18	0.7	1.2
C-4	2.67	4.2	9.7
C-5	0.60	0.3	1.9
C-6	0.94	1.0	3.4
C-7	0.52	1.4	2.9
D-1a	1.49	4.0	8.7
D-1b	4.02	6.5	14.6
D-1c	4.34	5.9	13.1
D-1f	1.61	3.1	6.7
D-2a	0.50	1.9	3.6
D-2b	0.74	1.4	3.2
D-2c	0.31	1.1	2.1
D-2d	0.24	0.8	1.6
D-2e	1.41	3.3	6.7
D-2f	2.43	6.0	12.2
D-2g	1.81	2.9	6.5
D-2h	0.23	0.3	0.8
D-3	2.26	2.6	6.3
D-4a	0.98	2.1	4.4
D-4b	0.95	2.5	4.9
D-4c	1.22	2.4	5.0
D-5	1.08	2.8	6.0
D-8a	1.33	3.8	7.5
D-8b	2.69	5.6	11.4
D-7	7.65	4.3	18.2
D-8	1.69	2.6	6.0
D-9	0.72	0.8	2.7
OS-1	32.28	15.1	65.1
OS-2	20.07	9.0	43.4
OS-3	10.61	4.7	22.6
OS-4	4.46	5.6	14.0
OS-5	0.46	1.1	2.3
OS-6	1.17	2.0	4.3
E-1	1.71	3.6	7.7
E-2	0.68	2.4	4.6
E-3	0.78	2.9	5.3
E-4	0.91	3.0	5.7
E-5	0.89	3.3	6.1

DESIGN POINT SUMMARY TABLE

Design Point	Q_5 (cfs)	Q_{100} (cfs)
21	277.1	1222.1
1	5.6	14.0
2	1.1	2.3
3	2.0	4.3
5	7.6	21.4
15A	15.2	38.3
51	4.0	8.7
40	6.9	15.0
41	12.1	25.4
42	0.4	0.7
43	4.6	9.5
44	4.7	10.7
19	8.7	17.7
15	4.9	10.0
12	1.3	2.4
45	1.4	2.9
13	20.9	44.3
13A	27.6	58.9
7	2.9	5.3
8	10.0	20.9
AA	301.2	1282.2
9	9.0	43.4
10	4.7	22.6
11	15.6	68.4
14a	3.8	7.6
14d	3.3	6.7
14e	6.0	12.2
14b	4.2	8.3
14	6.4	13.5
16a	6.5	14.6
16	32.0	102.4
18	10.7	21.8
17a	2.1	4.4
17b	3.9	7.7
17c	13.3	26.9
17	39.1	112.9
24	2.9	6.4
25	3.3	6.1
26	5.2	10.6
30	48.4	139.2
32	2.6	6.0
OC	335.9	1384.4

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CHALLENGER HOMES

FINAL DRAINAGE REPORT
FALCON MEADOWS AT BENT GRASS FILING NO. 3
FOR
CHALLENGER COMMUNITIES, LLC

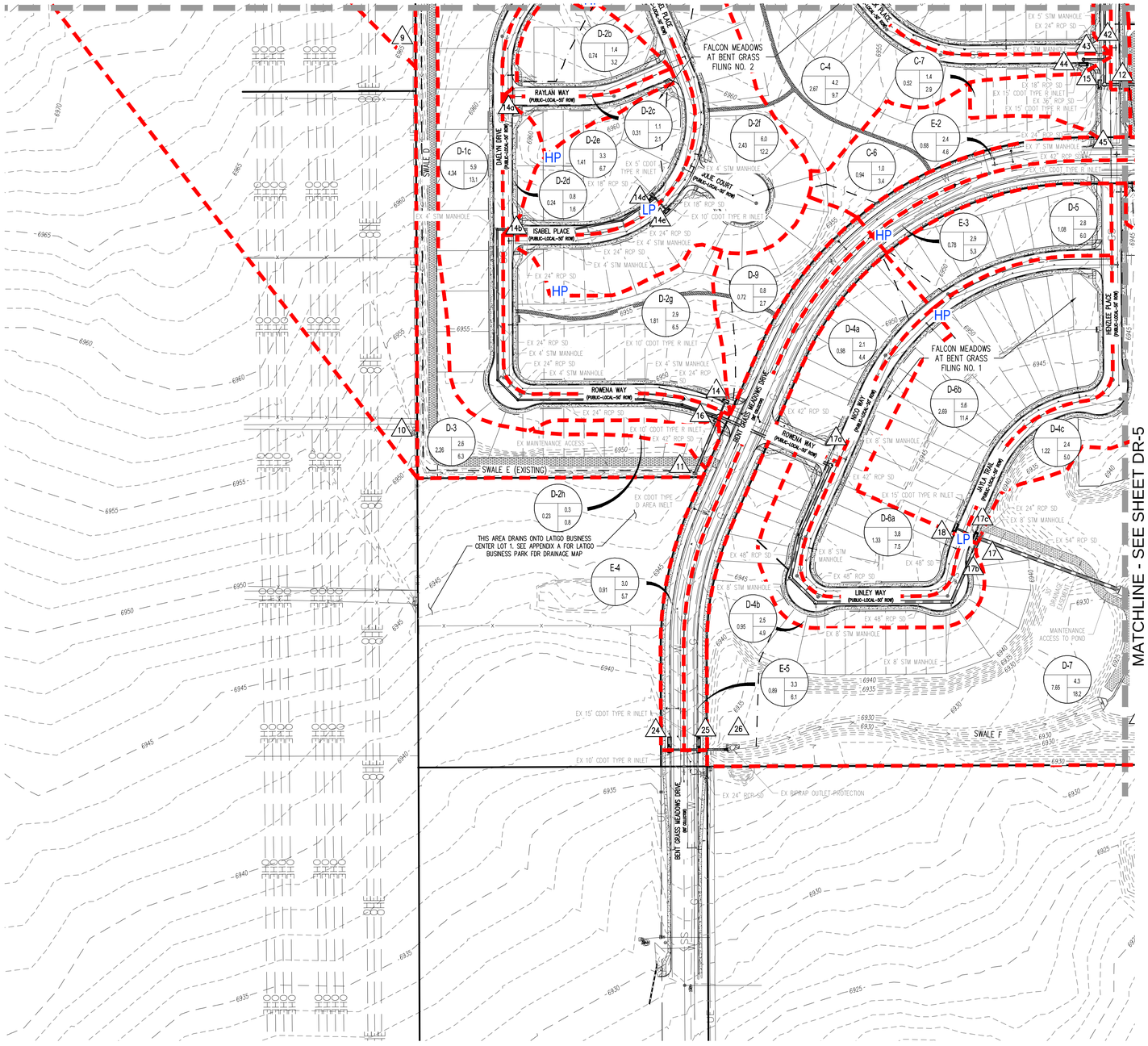
BENT GRASS MEADOWS DRIVE
FALCON, CO 80831 - EL PASO COUNTY

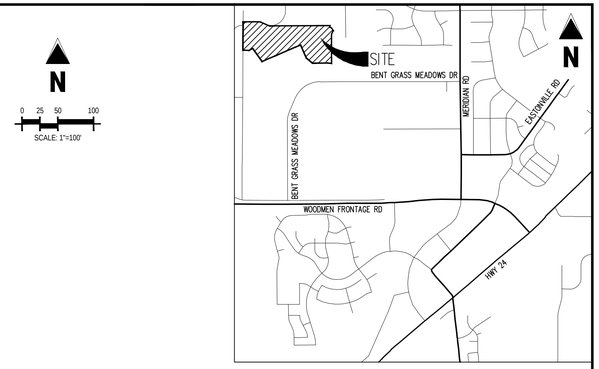
#	Date	Issue / Description	Init.

Project No:	CLH000017
Drawn By:	CMWJ
Checked By:	RGD
Date:	08/05/2020

EXISTING DRAINAGE MAP

DR-3





VICINITY MAP
1"=2,000'

N
0 25 50 100
SCALE: 1"=100'

DRAINAGE LEGEND

- PROPERTY LINE
- 6480 EXISTING MAJOR CONTOUR
- 6482 EXISTING MINOR CONTOUR
- 6480 PROPOSED MAJOR CONTOUR
- 6482 PROPOSED MINOR CONTOUR
- BASIN BOUNDARY LINE
- DRAINAGE TRAVEL PATH
- 100YR FEMA EFFECTIVE 100-YR FLOODPLAIN
- DBPS 100-YR FLOODPLAIN PER MATRIX DBPS
- CENTERLINE OF STREAM
- EXISTING RIPRAP
- EXISTING ACCESS
- PROPOSED RIPRAP
- PROPOSED ACCESS
- BASIN DESIGNATION (1 / 1.9 / 0.71 / 4.6)
- 5-YEAR RUNOFF IN CUBIC FEET PER SECOND
- 100-YEAR RUNOFF IN CUBIC FEET PER SECOND
- BASIN AREA IN ACRES
- DESIGN POINT
- DIRECTION OF RUNOFF

RUNOFF SUMMARY TABLE

Basin ID	Area (acres)	Q_5 (cfs)	Q_{100} (cfs)
RWT202	1574.40	220.0	1000.0
RWT204	38.40	7.0	43.0
WT200	192.00	52.0	190.0
EX-1	1.19	0.4	2.5
EX-2	1.60	0.5	3.8
EX-3	0.66	0.2	1.6
B-1	6.77	1.8	12.2
B-2	4.16	1.3	8.6
C-1a	0.38	1.0	2.2
C-1b	0.45	1.3	2.5
C-1c	1.77	5.6	11.0
C-1d	1.72	4.6	9.5
C-1e	0.29	1.3	2.4
C-1f	0.08	0.4	0.7
C-2	3.27	8.7	17.7
C-3	0.18	0.7	1.2
C-4	2.67	4.2	9.7
C-5	0.60	0.3	1.9
C-6	0.94	1.0	3.4
C-7	0.52	1.4	2.9
D-1a	1.49	4.0	8.7
D-1b	4.02	6.5	14.6
D-1c	4.34	5.9	13.1
D-1f	1.61	3.1	6.7
D-2a	0.50	1.9	3.6
D-2b	0.74	1.4	3.2
D-2c	0.31	1.1	2.1
D-2d	0.24	0.8	1.6
D-2e	1.41	3.3	6.7
D-2f	2.43	6.0	12.2
D-2g	1.81	2.9	6.5
D-2h	0.23	0.3	0.8
D-3	2.26	2.6	6.3
D-4a	0.98	2.1	4.4
D-4b	0.95	2.5	4.9
D-4c	1.22	2.4	5.0
D-5	1.08	2.8	6.0
D-6a	1.33	3.8	7.5
D-6b	2.89	5.6	11.4
D-7	7.65	4.3	18.2
D-8	1.69	2.6	6.0
D-9	0.72	0.8	2.7
OB-1	32.28	16.1	66.1
OB-2	20.07	9.0	43.4
OB-3	10.61	4.7	22.6
OB-4	4.46	5.6	14.0
OB-5	0.46	1.1	2.3
OB-6	1.17	2.0	4.3
E-1	1.71	3.6	7.7
E-2	0.68	2.4	4.6
E-3	0.78	2.9	5.3
E-4	0.91	3.0	5.7
E-5	0.89	3.3	6.1

DESIGN POINT SUMMARY TABLE

Design Point	Q_5 (cfs)	Q_{100} (cfs)
21	277.1	1222.1
1	5.6	14.0
2	1.1	2.3
3	2.0	4.3
5	7.6	21.4
15A	15.2	38.3
51	4.0	8.7
40	6.9	15.0
41	12.1	25.4
42	0.4	0.7
43	4.6	9.5
44	4.7	10.7
19	8.7	17.7
15	4.9	10.0
12	1.3	2.4
45	1.4	2.9
13	20.9	44.3
13A	27.6	58.9
7	2.9	5.3
8	10.0	20.9
AA	301.2	1282.2
9	9.0	43.4
10	4.7	22.6
11	15.6	68.4
14a	3.8	7.6
14d	3.3	6.7
14e	6.0	12.2
14b	4.2	8.3
14	6.4	13.5
16a	6.5	14.6
16	32.0	102.4
18	10.7	21.8
17a	2.1	4.4
17b	3.9	7.7
17c	13.3	26.9
17	59.1	112.9
24	2.9	6.4
25	3.3	6.1
26	5.2	10.6
30	48.4	139.2
32	2.6	6.0
CC	335.9	1384.4

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CHALLENGER HOMES

FINAL DRAINAGE REPORT
FALCON MEADOWS AT BENT GRASS FILING NO. 3
FOR
CHALLENGER COMMUNITIES, LLC

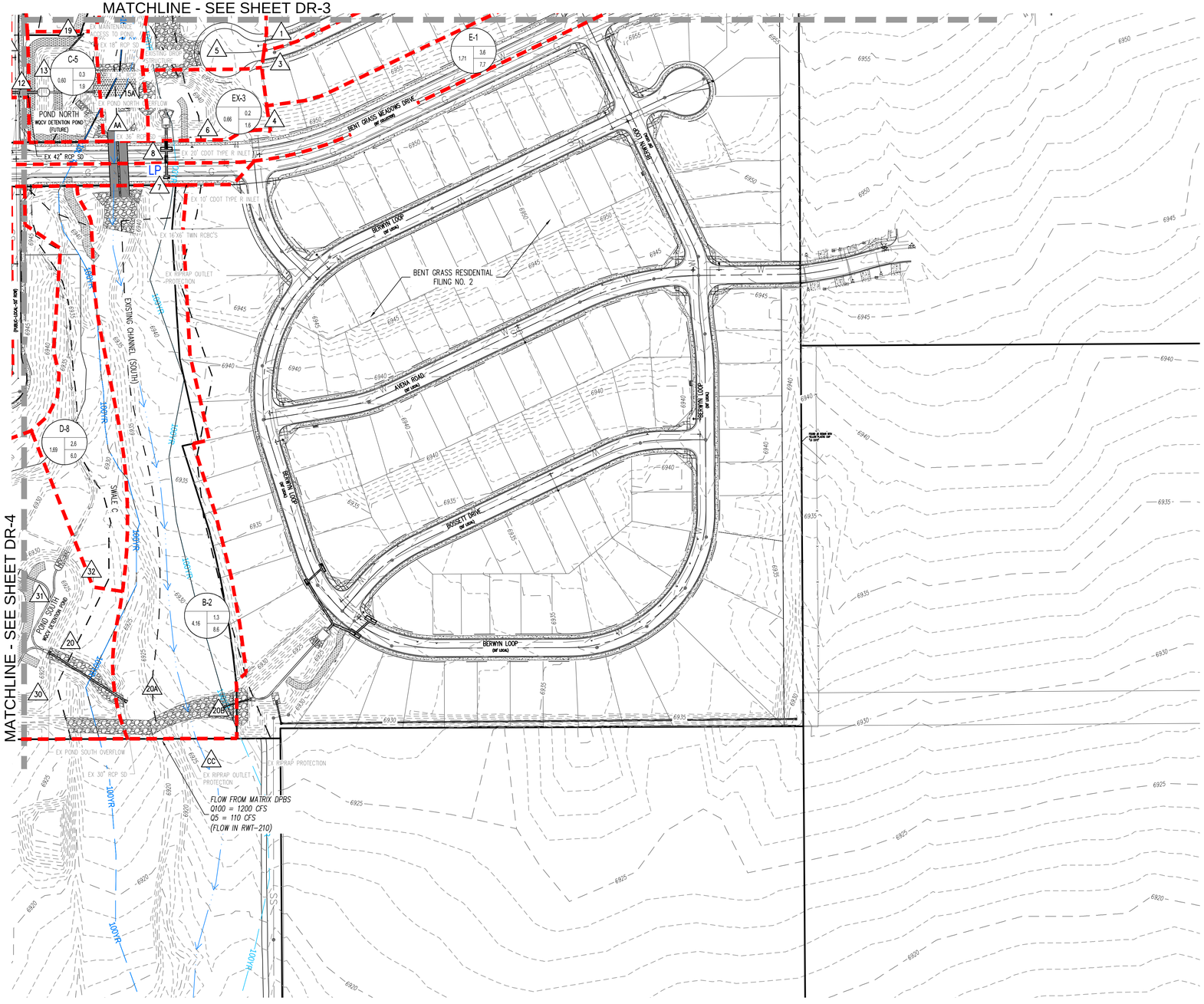
BENT GRASS MEADOWS DRIVE
FALCON, CO 80831 - EL PASO COUNTY

#	Date	Issue / Description	Init.

Project No:	CLH000017
Drawn By:	CMWJ
Checked By:	RGD
Date:	08/05/2020

EXISTING DRAINAGE MAP

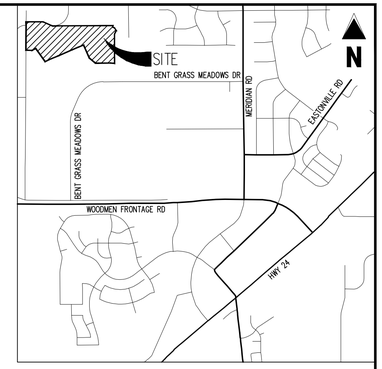
DR-4



N

0 25 50 100

SCALE: 1"=100'



VICINITY MAP
1"=2,000'

DRAINAGE LEGEND

- PROPERTY LINE
- 6480 EXISTING MAJOR CONTOUR
- 6482 EXISTING MINOR CONTOUR
- 6480 PROPOSED MAJOR CONTOUR
- 6482 PROPOSED MINOR CONTOUR
- BASIN BOUNDARY LINE
- DRAINAGE TRAVEL PATH
- 100YR FEMA EFFECTIVE 100-YR FLOODPLAIN
- DBPS 100-YR FLOODPLAIN PER MATRIX DBPS
- CENTERLINE OF STREAM
- EXISTING RIPRAP
- EXISTING ACCESS
- PROPOSED RIPRAP
- PROPOSED ACCESS
- BASIN DESIGNATION
- 5-YEAR RUNOFF IN CUBIC FEET PER SECOND
- 100-YEAR RUNOFF IN CUBIC FEET PER SECOND
- BASIN AREA IN ACRES
- DESIGN POINT
- DIRECTION OF RUNOFF

RUNOFF SUMMARY TABLE

Basin ID	Area (acres)	Q_5 (cfs)	Q_{100} (cfs)
RWT202	1574.40	220.0	1000.0
RWT204	38.40	7.0	43.0
WT200	992.00	52.0	190.0
EX-1	1.19	0.4	2.5
EX-2	1.60	0.5	3.8
EX-3	0.66	0.2	1.6
B-1	6.77	1.8	12.2
B-2	4.16	1.3	8.6
C-1a	0.38	1.0	2.2
C-1b	0.45	1.3	2.5
C-1c	1.77	5.6	11.0
C-1d	1.72	4.6	9.5
C-1e	0.29	1.3	2.4
C-1f	0.08	0.4	0.7
C-2	3.27	8.7	17.7
C-3	0.18	0.7	1.2
C-4	2.67	4.2	9.7
C-5	0.60	0.3	1.9
C-6	0.94	1.0	3.4
C-7	0.52	1.4	2.9
D-1a	1.49	4.0	8.7
D-1b	4.02	6.5	14.6
D-1c	4.34	5.9	13.1
D-1f	1.61	3.1	6.7
D-2a	0.50	1.9	3.6
D-2b	0.74	1.4	3.2
D-2c	0.31	1.1	2.1
D-2d	0.24	0.8	1.6
D-2e	1.41	3.3	6.7
D-2f	2.43	6.0	12.2
D-2g	1.81	2.9	6.5
D-2h	0.23	0.3	0.8
D-3	2.26	2.6	6.3
D-4a	0.98	2.1	4.4
D-4b	0.95	2.5	4.9
D-4c	1.22	2.4	5.0
D-5	1.08	2.8	6.0
D-6a	1.33	3.8	7.5
D-6b	2.69	5.6	11.4
D-7	7.65	4.3	18.2
D-8	1.69	2.6	6.0
D-9	0.72	0.8	2.7
OS-1	32.28	15.1	65.1
OS-2	20.07	9.0	43.4
OS-3	10.61	4.7	22.6
OS-4	4.46	5.6	14.0
OS-5	0.46	1.1	2.3
OS-6	1.17	2.0	4.3
E-1	1.71	3.6	7.7
E-2	0.68	2.4	4.6
E-3	0.78	2.9	5.3
E-4	0.91	3.0	5.7
E-5	0.89	3.3	6.1

DESIGN POINT SUMMARY TABLE

Design Point	Q_5 (cfs)	Q_{100} (cfs)
21	277.1	1222.1
1	5.6	14.0
2	1.1	2.3
3	2.0	4.3
5	7.6	21.4
15A	15.2	38.3
51	4.0	8.7
40	6.9	15.0
41	12.1	25.4
42	0.4	0.7
43	4.6	9.5
44	4.7	10.7
19	8.7	17.7
15	4.9	10.0
12	1.3	2.4
45	1.4	2.9
13	20.9	44.3
13A	27.6	58.9
7	2.9	5.3
8	10.0	20.9
AA	301.2	1282.2
9	9.0	43.4
10	4.7	22.6
11	15.6	68.4
14a	3.8	7.6
14d	3.3	6.7
14e	6.0	12.2
14b	4.2	8.3
14	6.4	13.5
16a	6.5	14.6
16	32.0	102.4
18	10.7	21.8
17a	2.1	4.4
17b	3.9	7.7
17c	13.3	26.9
17	39.1	112.9
24	2.9	6.4
25	3.3	6.1
26	5.2	10.6
30	48.4	130.2
32	2.6	6.0
CC	335.9	1384.4

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CHALLENGER HOMES

FINAL DRAINAGE REPORT
FALCON MEADOWS AT BENT GRASS FILING NO. 3
FOR
CHALLENGER COMMUNITIES, LLC

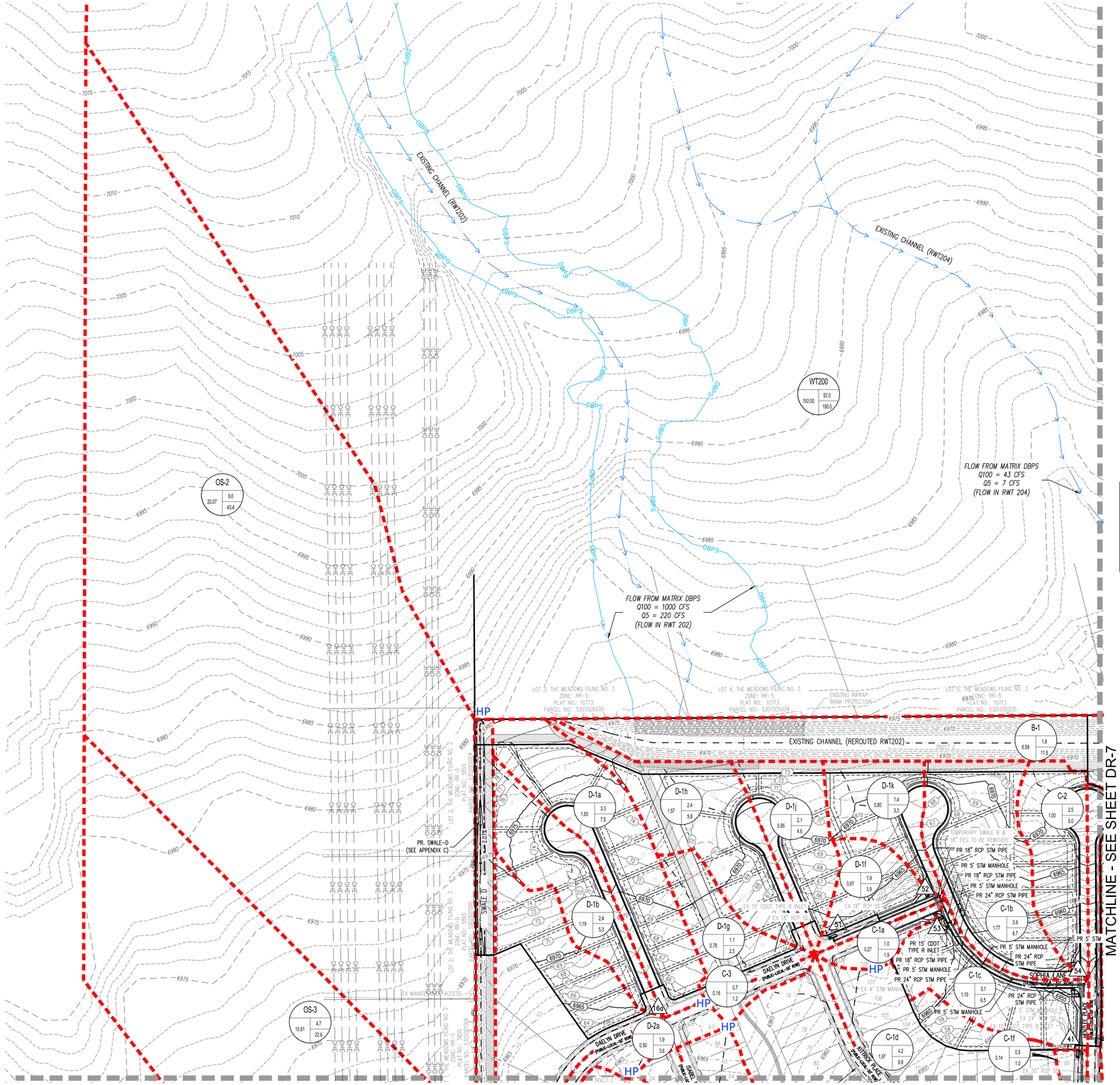
BENT GRASS MEADOWS DRIVE
FALCON, CO 80831 - EL PASO COUNTY

#	Date	Issue / Description	Init.

Project No:	CLH000017
Drawn By:	CMWJ
Checked By:	RGD
Date:	08/05/2020

EXISTING DRAINAGE MAP

DR-5



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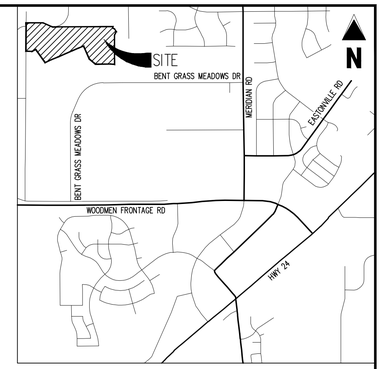
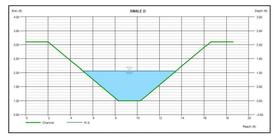
SCALE: 1"=100'



VICINITY MAP
1"=2,000'

DRAINAGE LEGEND

- PROPERTY LINE
- 6480 EXISTING MAJOR CONTOUR
- 6482 EXISTING MINOR CONTOUR
- 6480 PROPOSED MAJOR CONTOUR
- 6482 PROPOSED MINOR CONTOUR
- BASIN BOUNDARY LINE
- DRAINAGE TRAVEL PATH
- 100YR FEMA EFFECTIVE 100–YR FLOODPLAIN
- DBPS DBPS 100–YR FLOODPLAIN PER MATRIX DBPS
- CENTERLINE OF STREAM
- EXISTING RIPRAP
- EXISTING ACCESS
- PROPOSED RIPRAP
- PROPOSED ACCESS
- 1 / 1.8 / 0.71 / 4.6 BASIN DESIGNATION; 5–YEAR RUNOFF IN CUBIC FEET PER SECOND; 100–YEAR RUNOFF IN CUBIC FEET PER SECOND; BASIN AREA IN ACRES
- 1 DESIGN POINT
- DIRECTION OF RUNOFF



PR. SWALE D SECTION
(BTM WIDTH: 2.0'; DEPTH: 2.10'; SIDE SLOPES: 3:1; SLOPE: 2.10%; Q: 43.4 cfs)

RUNOFF SUMMARY TABLE

Basin ID	Area (acres)	Q_5 (cfs)	Q_{100} (cfs)
RWT202	1574.40	220.0	1000.0
RWT204	38.40	7.0	43.0
WT200	192.00	52.0	190.0
EX-1	1.19	0.4	2.5
EX-2	1.60	0.5	3.8
EX-3	0.66	0.2	1.6
B-1	6.59	1.8	11.8
B-2	4.16	1.3	8.6
C-1a	0.27	1.0	1.9
C-1b	1.77	3.9	8.7
C-1c	1.19	3.1	6.5
C-1d	1.97	4.2	8.8
C-1e	0.49	2.3	4.1
C-1f	0.14	0.5	1.0
C-1g	1.02	2.0	4.4
C-2	1.00	2.5	5.0
C-3	0.18	0.7	1.2
C-4	2.67	4.2	9.7
C-5	0.60	0.3	1.9
C-6	0.94	1.0	3.4
C-7	0.52	1.4	2.9
D-1a	1.83	3.3	7.5
D-1b	1.19	2.4	5.3
D-1c	3.95	5.4	12.0
D-1f	0.67	1.9	3.9
D-1g	0.78	1.1	2.5
D-1h	1.57	2.4	5.8
D-1j	0.95	2.1	4.6
D-1k	0.80	1.4	3.3
D-2a	0.50	1.9	3.6
D-2b	0.74	1.4	3.2
D-2c	0.31	1.1	2.1
D-2d	0.24	0.8	1.6
D-2e	1.41	3.3	6.7
D-2f	2.43	6.0	12.2
D-2g	1.81	2.9	6.5
D-2h	0.23	0.3	0.8
D-3	2.26	2.6	6.3
D-4a	0.98	2.1	4.4
D-4b	0.95	2.5	4.9
D-4c	1.22	2.4	5.0
D-5	1.08	2.8	6.0
D-6a	1.33	3.8	7.5
D-6b	2.69	5.6	11.4
D-7	7.65	4.3	18.2
D-8	1.69	2.6	6.0
D-9	0.72	0.8	2.7
OS-1	32.26	15.1	65.1
OS-2	20.07	9.0	43.4
OS-3	10.61	4.7	22.6
OS-4	4.46	5.6	14.0
OS-5	0.46	1.1	2.3
OS-6	1.17	2.0	4.3
E-1	1.71	3.6	7.7
E-2	0.68	2.4	4.5
E-3	0.78	2.5	5.3
E-4	0.91	3.0	5.7
E-5	0.89	3.3	6.1

DESIGN POINT SUMMARY TABLE

Design Point	Q_5 (cfs)	Q_{100} (cfs)
21	277.1	1222.1
1	5.6	14.0
2	1.1	2.3
3	2.0	4.3
5	7.6	21.4
6	0.2	1.6
15A	15.2	42.8
51	5.0	11.8
52	3.0	8.3
53	7.5	18.3
54	6.2	13.4
41	14.8	30.8
42	0.7	4.6
43	4.2	8.8
44	4.7	10.7
19	2.0	4.4
15	23.5	47.8
12	25.0	50.4
45	1.4	7.2
13	26.8	55.1
7	2.9	5.3
8	10.0	22.2
AA	301.6	1285.4
9	9.0	43.4
10	4.7	22.6
11	15.6	68.4
14a	3.8	7.6
14d	8.5	18.0
14e	6.0	12.2
14b	4.2	8.3
14	6.4	13.5
16a	5.6	12.7
16	33.6	97.6
18	10.7	21.8
17a	2.1	4.4
17b	3.5	7.7
17c	15.5	31.6
17	42.4	112.6
24	5.9	20.6
25	3.3	6.1
26	7.5	24.3
30	59.0	153.7
32	2.6	6.3
CC	340.0	1395.4

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CHALLENGER HOMES

FINAL DRAINAGE REPORT FALCON MEADOWS AT BENT GRASS FILING NO. 3 FOR CHALLENGER COMMUNITIES, LLC

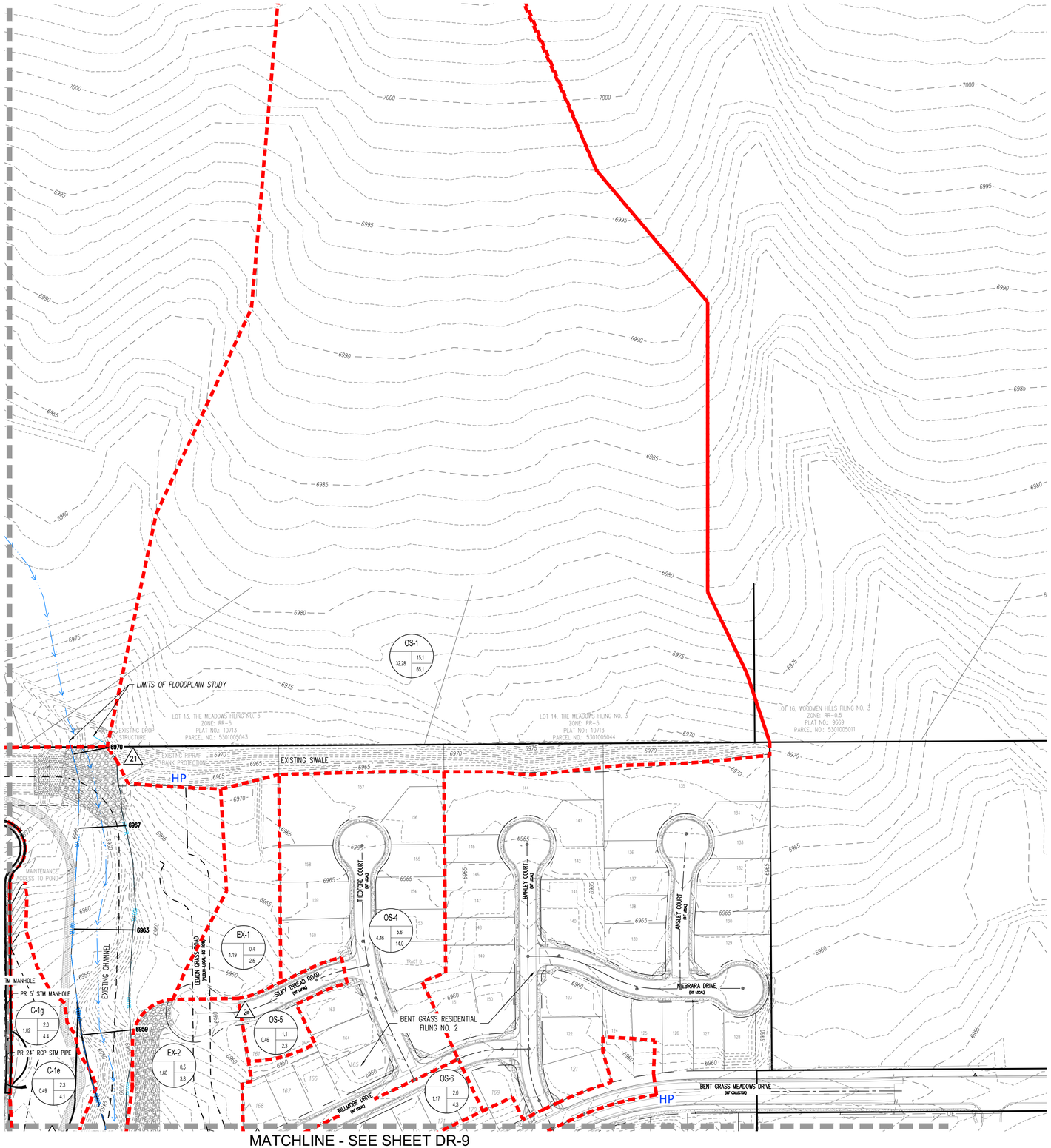
BENT GRASS MEADOWS DRIVE
FALCON, CO 80831 - EL PASO COUNTY

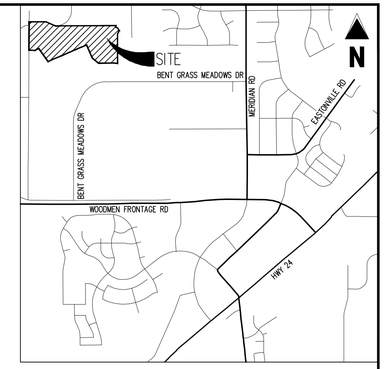
#	Date	Issue / Description	Init.

Project No:	CLH000020
Drawn By:	CMWJ
Checked By:	RGD
Date:	08/05/2020

PROPOSED DRAINAGE MAP

DR-6





VICINITY MAP
1"=2,000'

DRAINAGE LEGEND

- PROPERTY LINE
- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- BASIN BOUNDARY LINE
- DRAINAGE TRAVEL PATH
- FEMA EFFECTIVE 100-YR FLOODPLAIN
- 100-YR FLOODPLAIN PER MATRIX DBPS
- CENTERLINE OF STREAM
- EXISTING RIPRAP
- EXISTING ACCESS
- PROPOSED RIPRAP
- PROPOSED ACCESS
- BASIN DESIGNATION
- 5-YEAR RUNOFF IN CUBIC FEET PER SECOND
- 100-YEAR RUNOFF IN CUBIC FEET PER SECOND
- BASIN AREA IN ACRES
- DESIGN POINT
- DIRECTION OF RUNOFF

RUNOFF SUMMARY TABLE

Basin ID	Area (acres)	Q_5 (cfs)	Q_{100} (cfs)
RWT202	1674.40	220.0	1000.0
RWT204	39.40	7.0	43.0
WT200	192.00	52.0	190.0
EX-1	1.19	0.4	2.5
EX-2	1.60	0.5	3.8
EX-3	0.66	0.2	1.6
B-1	6.99	1.8	11.8
B-2	4.16	1.3	8.6
C-1a	0.27	1.0	1.9
C-1b	1.77	3.9	8.7
C-1c	1.19	3.1	6.5
C-1d	1.97	4.2	8.8
C-1e	0.49	2.3	4.1
C-1f	0.14	0.5	1.0
C-1g	1.02	2.0	4.4
C-2	1.00	2.5	5.0
C-3	0.18	0.7	1.2
C-4	2.67	4.2	9.7
C-5	0.60	0.3	1.9
C-6	0.54	1.0	3.4
C-7	0.52	1.4	2.9
D-1a	1.83	3.3	7.9
D-1b	1.19	2.4	5.3
D-1c	3.95	5.4	12.0
D-1f	0.67	1.9	3.9
D-1g	0.78	1.1	2.5
D-1h	1.57	2.4	5.8
D-1i	0.95	2.1	4.6
D-1k	0.80	1.4	3.3
D-2a	0.50	1.9	3.6
D-2b	0.74	1.4	3.2
D-2c	0.31	1.1	2.1
D-2d	0.24	0.8	1.6
D-2e	1.41	3.3	6.7
D-2f	2.43	6.0	12.2
D-2g	1.81	2.9	6.5
D-2h	0.23	0.3	0.8
D-3	2.26	2.6	6.3
D-4a	0.98	2.1	4.4
D-4b	0.56	2.5	4.9
D-4c	1.22	2.4	5.0
D-5	1.08	2.8	6.0
D-6a	1.33	3.8	7.5
D-6b	2.69	5.6	11.4
D-7	7.68	4.3	18.2
D-8	1.69	2.6	6.0
D-9	0.72	0.8	2.7
OS-1	32.28	15.1	85.1
OS-2	20.07	9.0	43.4
OS-3	10.61	4.7	22.6
OS-4	4.46	5.6	14.0
OS-5	0.46	1.1	2.3
OS-6	1.17	2.0	4.3
E-1	1.71	3.6	7.7
E-2	0.68	2.4	4.6
E-3	0.78	2.9	5.3
E-4	0.91	3.0	5.7
E-5	0.89	3.3	6.1

DESIGN POINT SUMMARY TABLE

Design Point	Q_5 (cfs)	Q_{100} (cfs)
21	277.1	1222.1
1	5.6	14.0
2	1.1	2.3
3	2.0	4.3
5	7.6	21.4
6	0.2	1.6
15A	15.2	42.6
51	5.0	11.8
52	3.0	8.3
53	7.9	18.3
54	6.2	13.4
41	14.8	30.8
42	0.7	4.6
43	4.2	8.8
44	4.7	10.7
19	2.0	4.4
15	23.5	47.8
12	29.0	50.4
45	1.4	7.2
13	26.8	55.1
7	2.9	5.3
8	10.0	22.2
AA	301.6	1285.4
9	9.0	43.4
10	4.7	22.6
11	15.6	68.4
14a	3.8	7.6
14d	8.9	18.0
14e	6.0	12.2
14b	4.2	8.3
14	6.4	13.5
16a	5.9	12.7
16	33.6	97.6
18	10.7	21.8
17a	2.1	4.4
17b	3.9	7.7
17c	15.5	31.6
17	42.4	112.5
24	5.9	20.6
25	3.3	6.1
26	7.9	24.3
30	55.0	153.7
32	2.6	6.0
CC	340.0	1395.4

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CHALLENGER HOMES

FINAL DRAINAGE REPORT
FALCON MEADOWS AT BENT GRASS FILING NO. 3
FOR
CHALLENGER COMMUNITIES, LLC

BENT GRASS MEADOWS DRIVE
FALCON, CO 80831 - EL PASO COUNTY

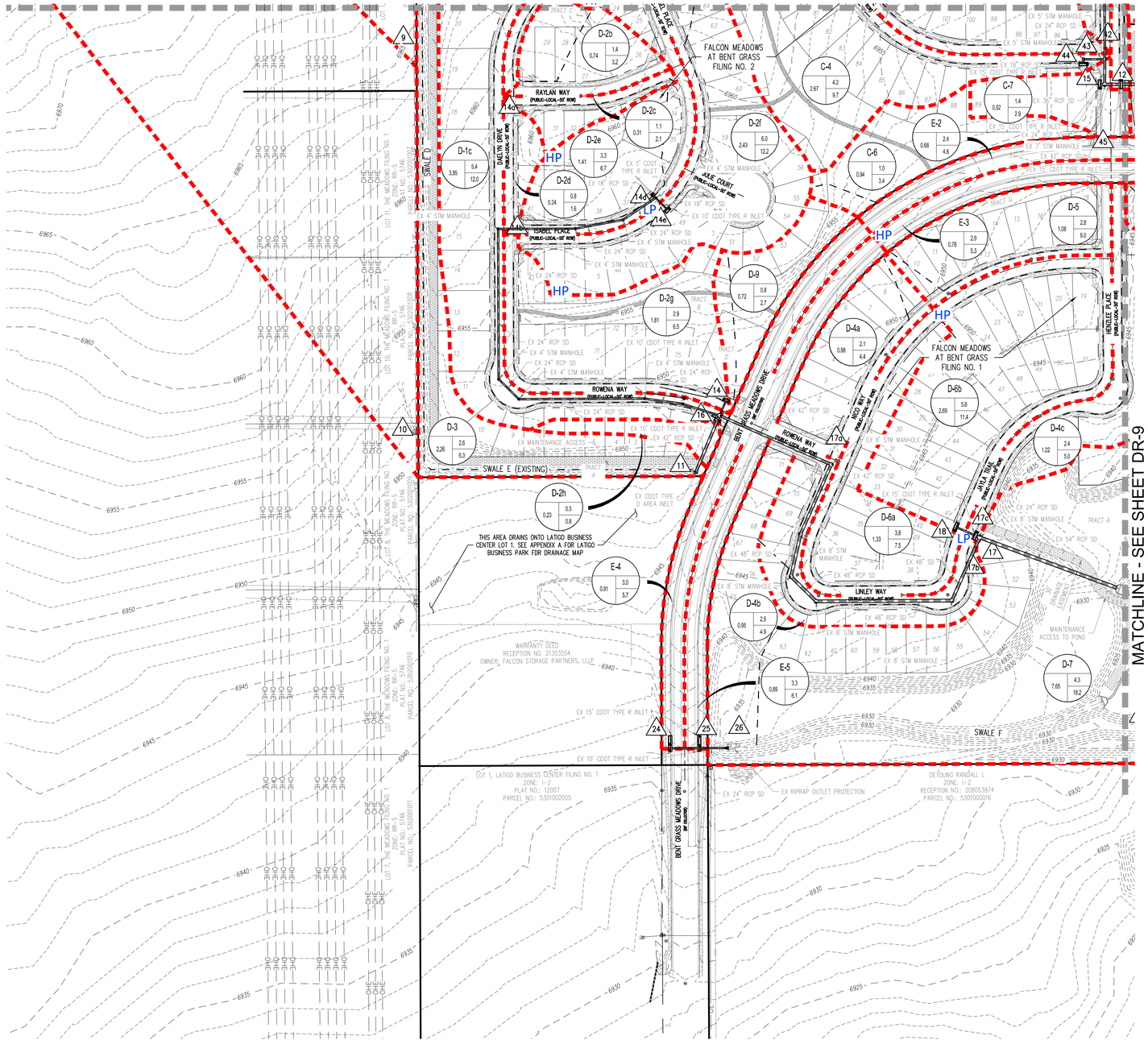
#	Date	Issue / Description	Init.

Project No:	CLH000017
Drawn By:	CMWJ
Checked By:	RGD
Date:	08/05/2020

PROPOSED DRAINAGE MAP

DR-7

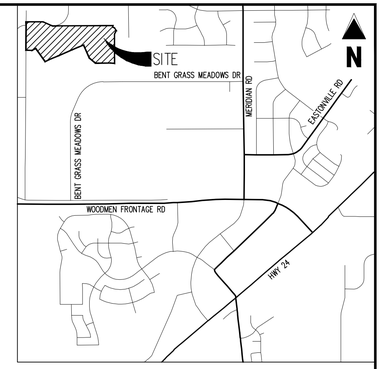
MATCHLINE - SEE SHEET DR-6



MATCHLINE - SEE SHEET DR-9

N

0 25 50 100
SCALE: 1"=100'



VICINITY MAP
1"=2,000'

DRAINAGE LEGEND

- PROPERTY LINE
- 6480 EXISTING MAJOR CONTOUR
- 6482 EXISTING MINOR CONTOUR
- 6480 PROPOSED MAJOR CONTOUR
- 6482 PROPOSED MINOR CONTOUR
- BASIN BOUNDARY LINE
- DRAINAGE TRAVEL PATH
- 100YR FEMA EFFECTIVE 100-YR FLOODPLAIN
- DBPS DBPS 100-YR FLOODPLAIN PER MATRIX DBPS
- CENTERLINE OF STREAM
- EXISTING RIPRAP
- EXISTING ACCESS
- PROPOSED RIPRAP
- PROPOSED ACCESS
- 1 / 0.71 / 1.8 / 4.6 BASIN DESIGNATION, 5-YEAR RUNOFF IN CUBIC FEET PER SECOND, 100-YEAR RUNOFF IN CUBIC FEET PER SECOND, BASIN AREA IN ACRES
- 1 DESIGN POINT
- DIRECTION OF RUNOFF

RUNOFF SUMMARY TABLE

Basin ID	Area (acres)	Q_5 (cfs)	Q_{100} (cfs)
RWT202	1574.40	220.0	1000.0
RWT204	38.40	7.0	43.0
WT200	192.00	52.0	190.0
EX-1	1.19	0.4	2.5
EX-2	1.60	0.5	3.8
EX-3	0.66	0.2	1.6
B-1	6.59	1.8	11.8
B-2	4.16	1.3	8.6
C-1a	0.27	1.0	1.9
C-1b	1.77	3.9	8.7
C-1c	1.19	3.1	6.5
C-1d	1.97	4.2	8.8
C-1e	0.49	2.3	4.1
C-1f	0.14	0.5	1.0
C-1g	1.02	2.0	4.4
C-2	1.00	2.5	5.0
C-3	0.18	0.7	1.2
C-4	2.67	4.2	9.7
C-5	0.60	0.3	1.9
C-6	0.94	1.0	3.4
C-7	0.52	1.4	2.9
D-1a	1.83	3.3	7.5
D-1b	1.19	2.4	5.3
D-1c	3.95	5.4	12.0
D-1f	0.67	1.9	3.9
D-1g	0.78	1.1	2.5
D-1h	1.57	2.4	5.8
D-1i	0.95	2.1	4.6
D-1k	0.80	1.4	3.3
D-2a	0.50	1.9	3.6
D-2b	0.74	1.4	3.2
D-2c	0.31	1.1	2.1
D-2d	0.24	0.8	1.6
D-2e	1.41	3.3	6.7
D-2f	2.43	6.0	12.2
D-2g	1.81	2.9	6.5
D-2h	0.23	0.3	0.8
D-3	2.26	2.6	6.3
D-4a	0.98	2.1	4.4
D-4b	0.95	2.5	4.9
D-4c	1.22	2.4	5.0
D-5	1.08	2.8	6.0
D-6a	1.33	3.8	7.5
D-6b	2.89	5.6	11.4
D-7	7.65	4.3	18.2
D-8	1.69	2.6	6.0
D-9	0.72	0.8	2.7
OB-1	32.28	15.1	65.1
OB-2	20.07	9.0	43.4
OB-3	10.61	4.7	22.6
OB-4	4.46	5.6	14.0
OB-5	0.46	1.1	2.3
OB-6	1.17	2.0	4.3
E-1	1.71	3.6	7.7
E-2	0.68	2.4	4.6
E-3	0.78	2.9	5.3
E-4	0.91	3.0	5.7
E-5	0.89	3.3	6.1

DESIGN POINT SUMMARY TABLE

Design Point	Q_5 (cfs)	Q_{100} (cfs)
21	277.1	1222.1
1	5.6	14.0
2	1.1	2.3
3	2.0	4.3
5	7.6	21.4
6	0.2	1.6
15A	15.2	42.6
51	5.0	11.9
52	3.0	8.3
53	7.9	18.3
54	6.2	13.4
41	14.8	30.8
42	0.7	4.6
43	4.2	8.8
44	4.7	10.7
19	2.0	4.4
15	23.5	47.8
12	25.0	50.4
45	1.4	7.2
13	26.8	55.1
7	2.9	5.3
8	10.0	22.2
AA	301.6	1285.4
9	9.0	43.4
10	4.7	22.6
11	15.6	68.4
14a	3.8	7.6
14d	8.9	18.0
14e	6.0	12.2
14b	4.2	8.3
14	6.4	13.5
16a	5.6	12.7
16	33.6	97.6
18	10.7	21.8
17a	2.1	4.4
17b	3.9	7.7
17c	15.5	31.6
17	42.4	112.5
24	5.3	20.8
25	3.3	6.1
26	7.9	24.1
30	55.0	153.7
32	2.6	6.0
CC	340.0	1395.4

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CHALLENGER HOMES

FINAL DRAINAGE REPORT
FALCON MEADOWS AT BENT GRASS FILING NO. 3
FOR
CHALLENGER COMMUNITIES, LLC

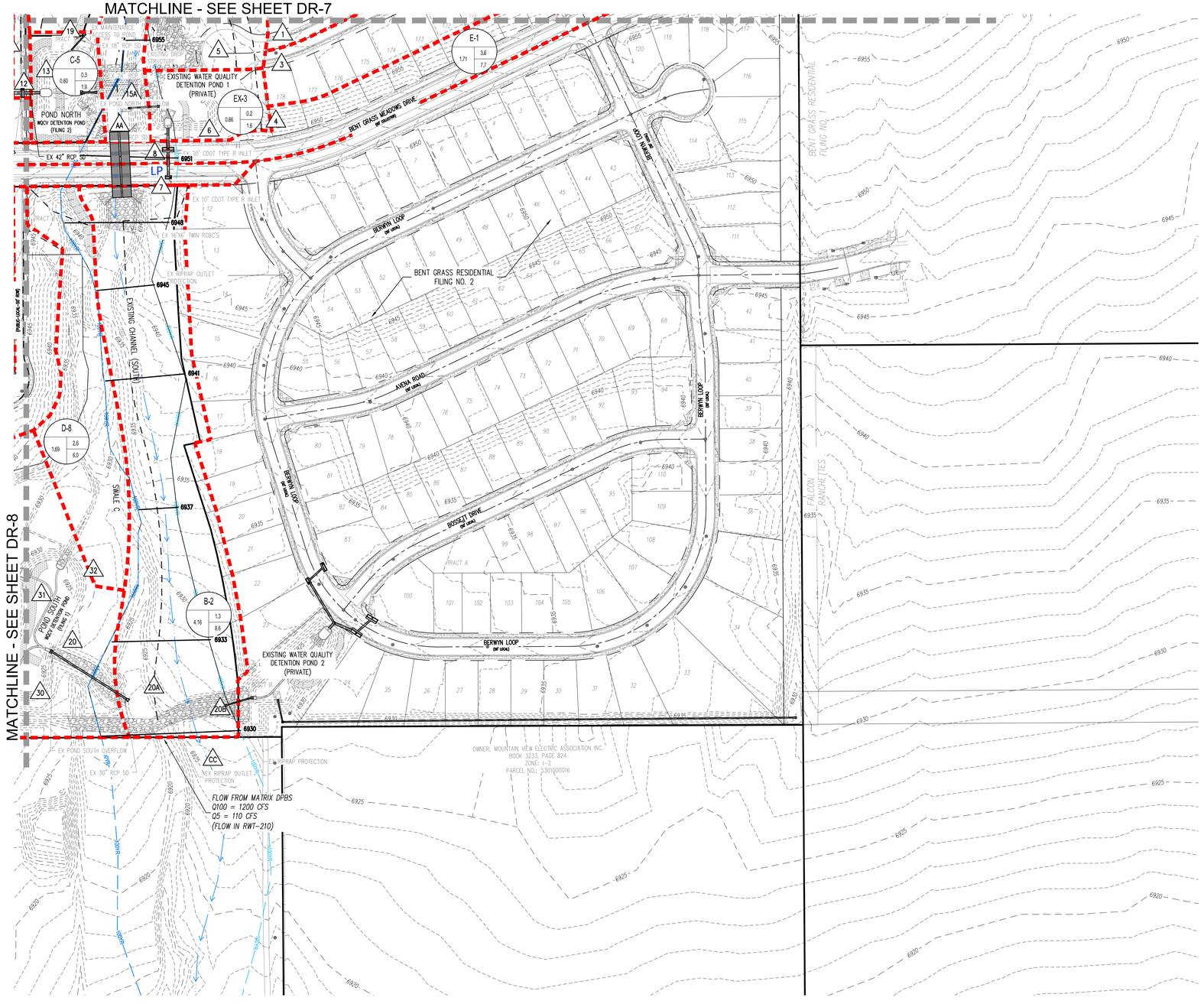
BENT GRASS MEADOWS DRIVE
FALCON, CO 80831 - EL PASO COUNTY

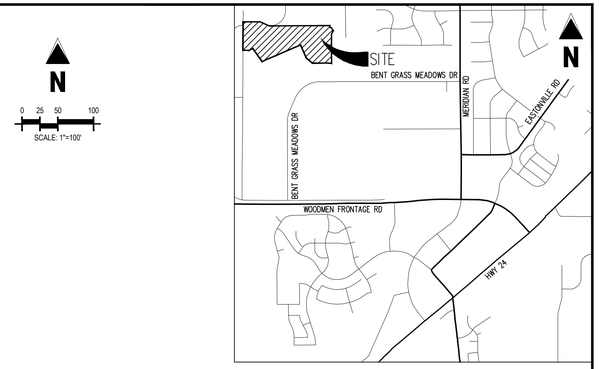
#	Date	Issue / Description	Init.

Project No:	CLH000017
Drawn By:	CMWJ
Checked By:	RGD
Date:	08/05/2020

PROPOSED DRAINAGE MAP

DR-8





VICINITY MAP
1"=2,000'

N

0 25 50 100
SCALE: 1"=100'

DRAINAGE LEGEND

- PROPERTY LINE
- 6480 EXISTING MAJOR CONTOUR
- 6482 EXISTING MINOR CONTOUR
- 6480 PROPOSED MAJOR CONTOUR
- 6482 PROPOSED MINOR CONTOUR
- BASIN BOUNDARY LINE
- DRAINAGE TRAVEL PATH
- 100YR FEMA EFFECTIVE 100-YR FLOODPLAIN
- DBPS DBPS 100-YR FLOODPLAIN PER MATRIX DBPS
- CENTERLINE OF STREAM
- EXISTING RIPRAP
- EXISTING ACCESS
- PROPOSED RIPRAP
- PROPOSED ACCESS
- BASIN DESIGNATION
- 5-YEAR RUNOFF IN CUBIC FEET PER SECOND
- 100-YEAR RUNOFF IN CUBIC FEET PER SECOND
- BASIN AREA IN ACRES
- DESIGN POINT
- DIRECTION OF RUNOFF

RUNOFF SUMMARY TABLE

Basin ID	Area (acres)	Q_5 (cfs)	Q_{100} (cfs)
RWT-202	1574.40	220.0	1000.0
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WT-200	192.00	52.0	190.0
EX-1	1.19	0.4	2.5
EX-2	1.60	0.5	3.8
EX-3	0.66	0.2	1.6
B-1	6.59	1.8	11.8
B-2	4.16	1.3	8.6
C-1a	0.27	1.0	1.9
C-1b	1.77	3.9	8.7
C-1c	1.19	3.1	6.5
C-1d	1.97	4.2	8.8
C-1e	0.49	2.3	4.1
C-1f	0.14	0.5	1.0
C-1g	1.02	2.0	4.4
C-2	1.00	2.5	5.0
C-3	0.18	0.7	1.2
C-4	2.67	4.2	9.7
C-5	0.60	0.3	1.9
C-6	0.94	1.0	3.4
C-7	0.52	1.4	2.9
D-1a	1.83	3.3	7.5
D-1b	1.19	2.4	5.3
D-1c	3.95	5.4	12.0
D-1f	0.67	1.9	3.9
D-1g	0.78	1.1	2.5
D-1h	1.57	2.4	5.8
D-1i	0.95	2.1	4.6
D-1k	0.80	1.4	3.3
D-2a	0.50	1.9	3.6
D-2b	0.74	1.4	3.2
D-2c	0.31	1.1	2.1
D-2d	0.24	0.8	1.6
D-2e	1.41	3.3	6.7
D-2f	2.43	5.0	12.2
D-2g	1.81	2.9	6.5
D-2h	0.23	0.3	0.8
D-3	2.26	2.6	6.3
D-4a	0.98	2.1	4.4
D-4b	0.95	2.5	4.9
D-4c	1.22	2.4	5.0
D-5	1.08	2.8	6.0
D-5a	1.33	3.8	7.5
D-5b	2.69	5.6	11.4
D-7	7.65	4.3	18.2
D-8	1.69	2.6	6.0
D-9	0.72	0.8	2.7
OB-1	32.28	15.1	68.1
OB-2	20.07	9.0	43.4
OB-3	10.61	4.7	22.6
OB-4	4.46	5.6	14.0
OB-5	0.46	1.1	2.3
OB-6	1.17	2.0	4.3
E-1	1.71	3.6	7.7
E-2	0.68	2.4	4.6
E-3	0.78	2.9	5.3
E-4	0.51	3.0	5.7
E-5	0.89	3.3	6.1

DESIGN POINT SUMMARY TABLE

Design Point	Q_5 (cfs)	Q_{100} (cfs)
21	277.1	1222.1
1	5.6	14.0
2	1.1	2.3
3	2.0	4.3
5	7.6	21.4
6	0.2	1.6
15A	15.2	42.8
51	5.0	11.8
52	3.0	8.3
53	7.9	18.3
54	6.2	13.4
41	14.8	30.8
42	0.7	4.6
43	4.2	8.8
44	4.7	10.7
19	2.0	4.4
15	23.5	47.8
12	25.0	50.4
45	1.4	7.2
13	26.8	55.1
7	2.9	5.3
8	10.0	22.2
AA	301.6	1265.4
9	9.0	43.4
10	4.7	22.6
11	15.6	68.4
14a	3.8	7.6
14d	8.9	18.0
14e	6.0	12.2
14b	4.2	8.3
14	6.4	13.5
16a	5.6	12.7
16	33.6	57.6
18	10.7	21.8
17a	2.1	4.4
17b	3.9	7.7
17c	15.5	31.6
17	42.4	112.6
24	5.7	20.6
25	3.3	6.1
26	7.9	24.3
30	55.0	153.7
32	2.6	6.0
CC	340.0	1395.4

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CHALLENGER HOMES

FINAL DRAINAGE REPORT
FALCON MEADOWS AT BENT GRASS FILING NO. 3
FOR
CHALLENGER COMMUNITIES, LLC

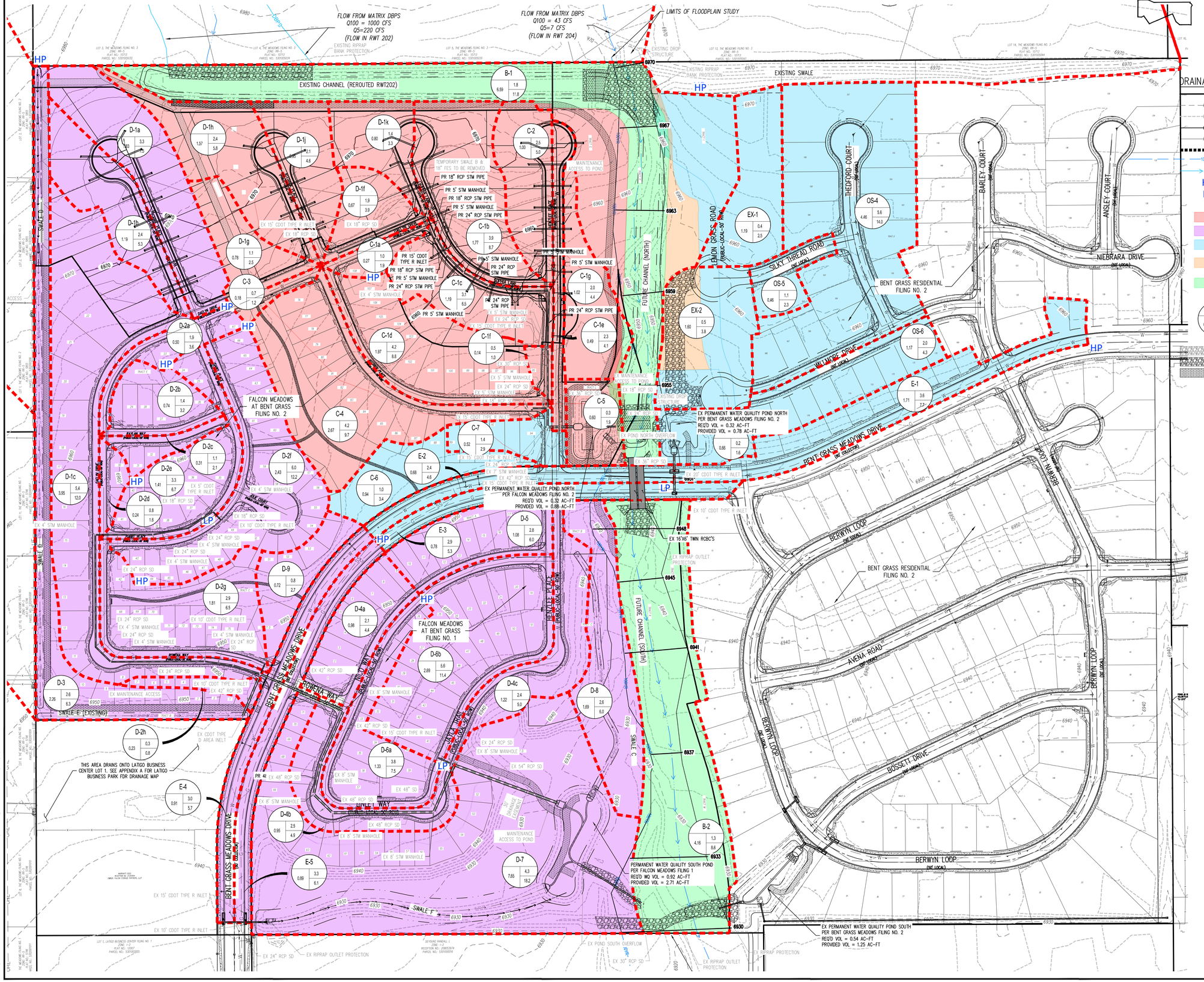
BENT GRASS MEADOWS DRIVE
FALCON, CO 80831 - EL PASO COUNTY

#	Date	Issue / Description	Init.

Project No:	CLH000017
Drawn By:	CMWJ
Checked By:	RGD
Date:	08/05/2020

PROPOSED DRAINAGE MAP

DR-9



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CHALLENGER HOMES

FINAL DRAINAGE REPORT FALCON MEADOWS AT BENT GRASS FILING NO. 3 FOR CHALLENGER COMMUNITIES, LLC

BENT GRASS MEADOWS DRIVE
FALCON, CO 80831 - EL PASO COUNTY

#	Date	Issue / Description	Init.

Project No:	CLH000017
Drawn By:	CMWJ
Checked By:	RGD
Date:	08/05/2020

WQ PLAN

DR-10