Mike Bramlett

From:	Mike Bramlett
Sent:	Friday, March 25, 2022 6:57 AM
To:	Wodiuk - DNR, Jessica
Cc:	Doug.Hollister@state.co.us; John.Hunyadi@state.co.us
Subject:	Non-Jurisdictional Water Impoundment Structure Notice - Homestead North at Sterling Ranch Filing 1 Full Spectrum Detention Pond
Attachments:	NOI Pond C_Homestead North F1.pdf

Jessica,

I have attached a notice of non-jurisdictional water impoundment structure for the full spectrum detention pond associated with Homestead North at Sterling Ranch Filing 1. This pond provides detention and water quality for the single family lots and roadways that are part of the filing 1 development.

Please let me know if you need additional information / drawings.

Thanks

Mike Bramlett, PE
Client Manager
JR Engineering, LLC
5475 Tech Center Drive, Suite 235, Colorado Springs, CO 80919
Phone: (719) 593-2593 Cell: (719) 659-7679

mbramlett@jrengineering.com

March 21, 2022

J·R ENGINEERING

Colorado Division of Water Resources
310 E. Abriendo Ave., Suite B
Pueblo, CO 81004

RE: Non-Jurisdictional Water Impoundment Structure Notice
Homestead North at Sterling Ranch Filing 1, El Paso County

JR Engineering is performing civil engineering services for the proposed Homestead North at Sterling Ranch Filing 1 development northeast of the intersection of Vollmer Road and future Briargate Parkway in El Paso County. The development is comprised of urban residential lots, tracts roadways and utilities.

As part of this development, one (1) full spectrum detention pond is proposed. The pond is identified as Pond C. The pond will have an embankment on the downhill side but, in my opinion, the pond is non-jurisdictional and provide no public exposure in the event of embankment failure as they are adjacent to the Sand Creek drainageway. Groundwater is not anticipated to be encountered based on the depth of excavation and soils report completed by Entech Engineering. In the event groundwater is encountered, your office will be notified.

I have attached the NOI and the grading/pond plans for the pond. I have also attached an overall vicinity map to help define the location of the proposed pond.

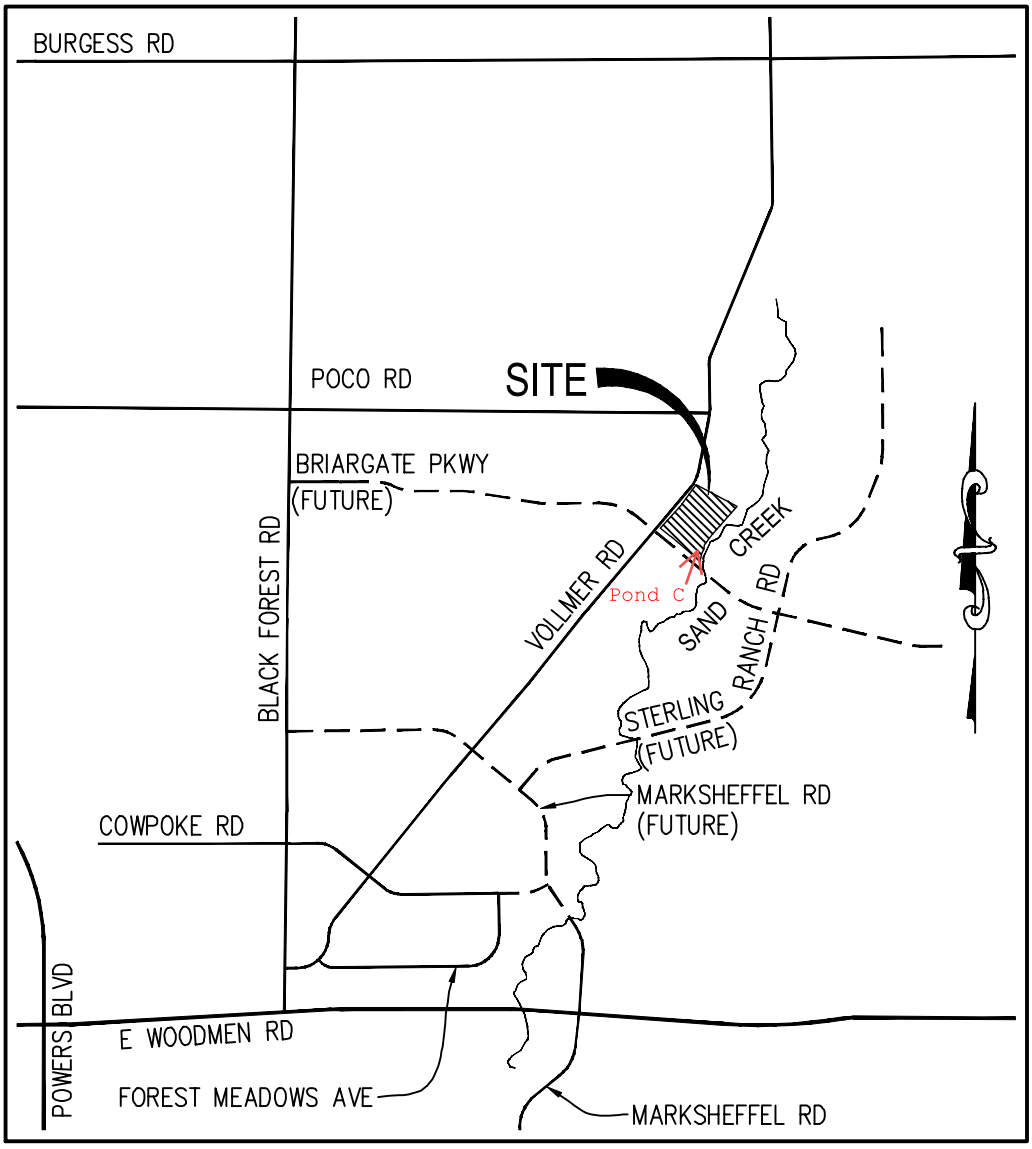
If additional information or clarification is needed to support this submittal, please feel free to contact me.

Respectfully submitted,

JR ENGINEERING, LLC

Mike Bramlett

Mike Bramlett, PE
Client Manager
Ph: (303) 267-6240
Cell: (719) 659-7679
Email: mbramlett@jrengineering.com



VICINITY MAP

N.T.S.

VICINITY MAP
HOMESTEAD NORTH FIL. 1
JOB NO. 25188.00
08/24/21
SHEET 1 OF 1

J·R ENGINEERING
A Westrian Company

Centennial 303-740-9393 • Colorado Springs 719-593-2593
Fort Collins 970-491-9888 • www.jrengineering.com

COLORADO
Division of Water Resources
Department of Natural Resources
www.water.state.co.us P 303.866.3581

NON-JURISDICTIONAL WATER IMPOUNDMENT STRUCTURE[1]

This notice is required per Section 37-87-125, C.R.S. (1998) and
must be submitted to the Division Engineer's Office a minimum of 45 days prior to construction.

OWNER INFORMATION

Name: SR LAND, LLC Telephone/E-Mail: (719) 491-3024 / JMORLEY3870@AOL.COM

Address: 20 BOULDER CRESCENT, SUITE 200 COLORADO SPRINGS CO 80903
Street / P.O. Box/ Rural Route City State Zip Code

Responsible Person: JIM MORLEY Telephone/E-Mail: (719) 491-3024 / JMORLEY3870@AOL.COM

Address: 20 BOULDER CRESCENT, SUITE 200 COLORADO SPRINGS CO 80903
Street / P.O. Box/ Rural Route City State Zip Code

Contractor: TO BE DETERMINED. Telephone/E-Mail: ( ) TO BE DETERMINED.

STRUCTURE INFORMATION

Name of Dam: HOMESTEAD NORTH F1 - POND C Water Division: 2 Water District: 10

Location: *(Provide Section, Township, Range, **and** GPS Point taken at crest of dam above streamline/outlet)*

- Section: 33, Township: 12S, Range: 65W, 6th P.M.

- Northing 4313295.13 meters, Easting 528589.33 meters (*Datum should be UTM, NAD 83)*

Dam Dimensions:

- Vertical Height[2]: 9.9 ft., Length: 190 ft., Crest Width: 10 ft., Slopes: U/S: 4 (H:1V), D/S 4 (H:1V)

Reservoir:

- Surface Area[1]: 1.49 acres, Capacity[1]: 9.3 acre-feet, Drainage Area*: 224.3 acres
**(If drainage area is unknown leave blank and a spillway size will be assigned):*

Emergency Spillway: *(See Table 1, Spillway Sizing Guidelines)*

- Bottom Width: 123 ft., Side Slopes: 4 H:1V, Freeboard[3]: 2.5' ft

Outlet Conduit Type: RCP, Size: 48" inches, Location: SAND CREEK

Stream Name or Water Source[4]: SAND CREEK Proposed Water Use: FULL SPECTRUM DETENTION POND

Water Court Case ***or*** WDID : _____
(Water District Identification Number)

Signature of Owner 3/21/22 Date

Office Use Only

DIVISION ENGINEER'S REQUIREMENTS: _____

_____

_____

Dam I.D. _____ Signature of Division Engineer Date

[1] A "Non-Jurisdictional Structure" is a dam creating a reservoir with a capacity of 100 acre-feet or less *and* a surface area of 20 acres or less *and* a vertical height (footnote 2) of 10 feet or less. Non-jurisdictional size dams are regulated and subject to the authority of the State Engineer consistent with sections 37-87-102 and 37-87-105 C.R.S.

[2] "Vertical Height" is measured from the elevation of the lowest point of the natural surface of the ground or the invert of the outlet conduit (whichever is lower) where that point occurs along the longitudinal centerline of the dam up to the crest of the emergency spillway of the dam.

[3] "Freeboard" is the vertical distance from the bottom of spillway to the crest of the dam. Minimum Freeboard is 3 feet.

[4] If construction in reservoir intercepts groundwater, a well permit is required. (Well permit applications can be found at www.water.state.co.us)

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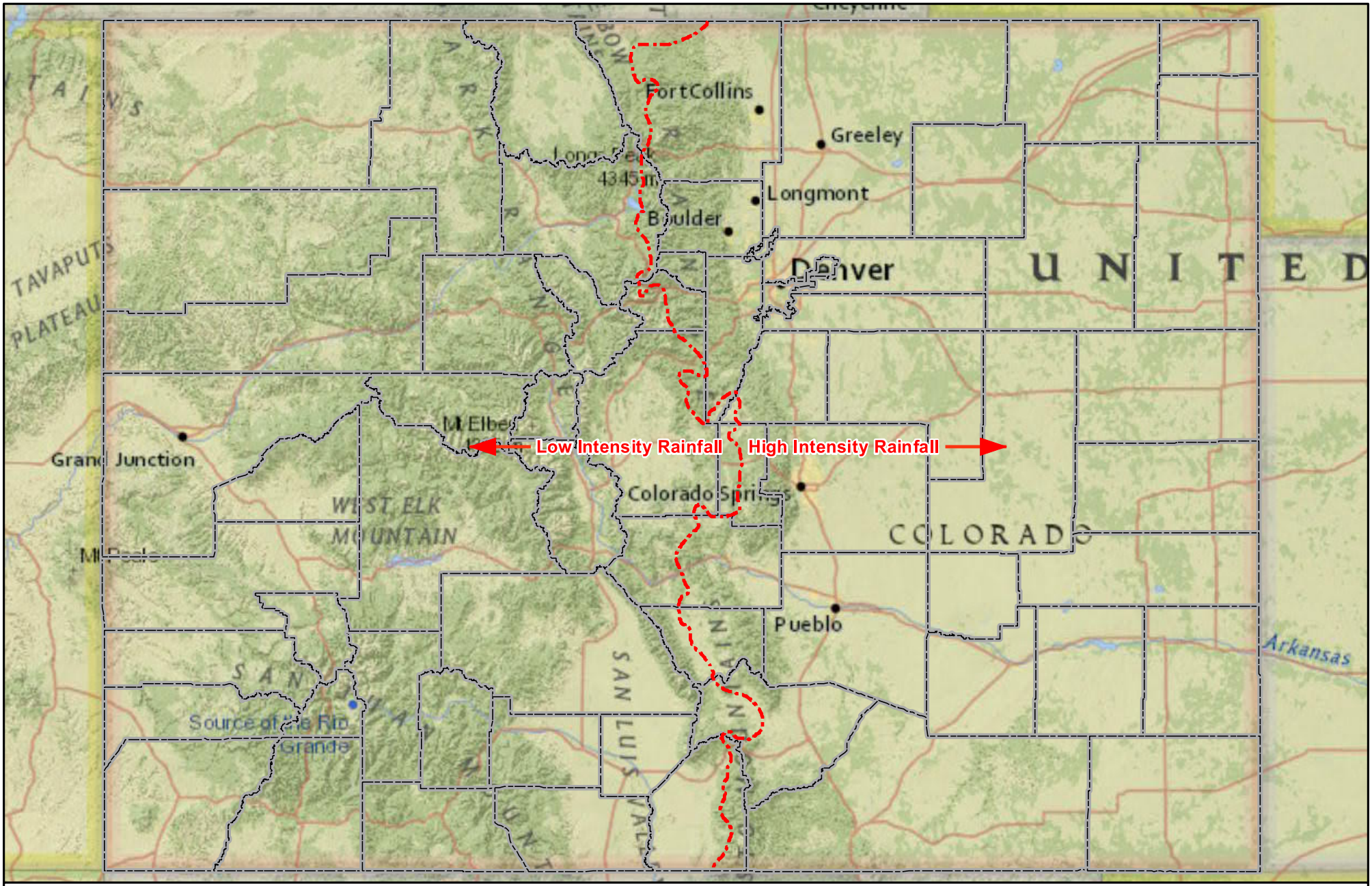
Table 1 DAM SAFETY BRANCH Spillway Sizing Guidelines for Non-Jurisdictional Dams

Drainage Area (Acres)	Minimum Recommended Bottom Width[1] (Feet) Low Intensity Rainfall Zone	Minimum Recommended Bottom Width[1] (Feet) High Intensity Rainfall Zone
175	8	8
225	8	10
275	8	12
325	8	15
375	10	17
425	11	19
475	12	21
525	13	24
575	15	26
625	16	28
675	17	30
725	19	33
775	20	35
825	21	37
875	22	39
925	24	42
975	25	44
1025	26	46
1075	28	48
1125	29	51
1175	30	53
1225	31	55
1275	33	57
1325	34	59
1375	35	62
1425	37	64
1475	38	66

[1]Minimum recommended bottom width for drainage areas less than 175 acres is 8 feet

Spillway Section



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Rainfall Intensity Zones for Non-Jurisdictional Dam Spillway Sizing

COLORADO
Division of Water Resources
Department of Natural Resources

DAM SAFETY BRANCH Specifications for Construction of Non-Jurisdictional Dams

- Site Selection:
  - Foundation soils should be firm to provide adequate support for the embankment and should have low permeability to allow for water retention. Site selection should consider potential downstream property damage in the event of a dam failure. Construction of dams in boggy areas, areas with non-uniform fractured rock, or sands/gravels is not recommended and an engineer should be hired to evaluate the site conditions. Any part of the reservoir basin excavated below grade cannot expose groundwater.

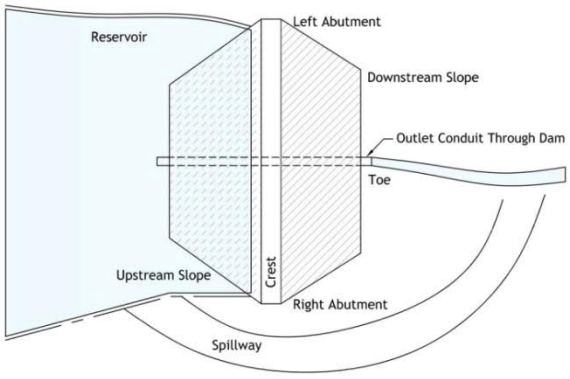
- Embankment Design:
  - Backfill material to be used for construction of the cutoff trench and embankment should be a suitable clay material and contain no material larger than 6 inches in diameter.
  - The upstream slope should be constructed with a slope no steeper than 3:1, and the downstream slope should be no steeper than 2:1 (see cross section below). The dam crest should have a minimum width of 10 feet and the surface should be graded with positive drainage toward the reservoir basin.
  - It is recommended that rock rip rap or other suitable material be placed on the upstream slope of the embankment to protect it from wave action. A suitable gravel or geosynthetic material should be placed under the rip rap to prevent fine material from washing out from behind the larger rock.
  - The embankment should be fenced to restrict livestock from accessing the dam since they damage the protective vegetation and increase erosion.

- Embankment Construction
  - The topsoil and all organic material should be removed from the foundation of the proposed dam site. Organic soil should only be reused for placement on the completed embankment to promote the re-growth of vegetation.
  - A cutoff trench should be excavated under the full length of the centerline of the dam with sloping sides (1:1 min.), a minimum bottom width of 3 feet and a depth of 3 feet.
  - The foundation of the dam should be scarified/ripped to a depth of 6-inches to provide proper contact between the native foundation and embankment. This surface should then be moisture treated before placement of fill.
  - Fill material should be placed in layers not exceeding 12 inches in thickness prior to compaction. Suitable backfill material should have enough clay and moisture content to roll a small ball by hand. If this cannot be done, the soil is likely too dry or does not have adequate clay content.
  - Each lift should be thoroughly compacted using a sheeps foot compactor. Care should be taken not to allow the top layers of the soil to dry out between placement of lifts.
  - Fill should be placed in uniform lifts that cover the entire embankment length and width.

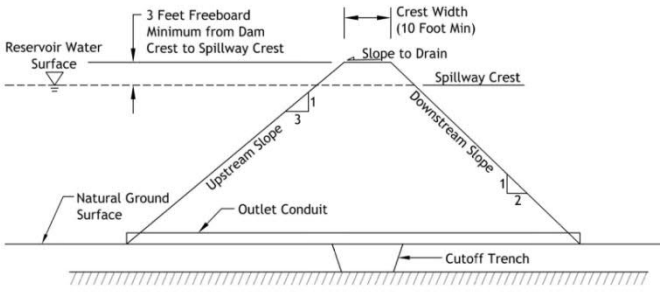
- Outlet
  - Unless a waiver is granted in writing by the Division Engineer, all non-jurisdictional dams require an outlet conduit positioned at the natural low point of the reservoir basin. A minimum diameter of 12 inches is recommended and should be controlled at the upstream end by a valve and trash rack.

- Emergency Spillway
  - The spillway should have sufficient width to provide capacity to route the runoff from the drainage basin above the dam during rainfall/runoff events.
  - The emergency spillway should be located on natural ground far enough away to prevent erosion of the dam embankment. A spillway over the dam embankment is not acceptable.
  - A minimum of 3 feet of freeboard is required from the bottom of the emergency spillway to the top of the dam.
  - To determine the minimum spillway width, see the attached table for your area and drainage basin size.

- Example Plan View and Cross Section



Plan View



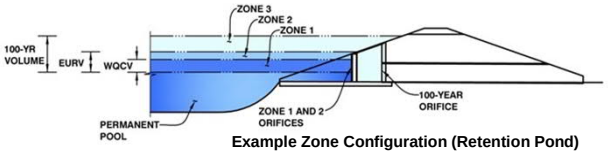
Cross Section Through Dam at Outlet

DETENTION BASIN OUTLET STRUCTURE DESIGN

MHFD-Detention, Version 4.04 (February 2021)

Project: Pond C with offsite flow

Basin ID:



Example Zone Configuration (Retention Pond)

	Estimated Stage (ft)	Estimated Volume (ac-ft)	Outlet Type
Zone 1 (WQCV)	3.32	1.285	Orifice Plate
Zone 2 (EURV)	4.27	0.892	Orifice Plate
Zone 3 (100-year)	9.35	6.216	Weir&Pipe (Restrict)
Total (all zones)		8.393	

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

Underdrain Orifice Invert Depth =	N/A	ft (distance below the filtration media surface)	Underdrain Orifice Area =	N/A	ft^2
Underdrain Orifice Diameter =	N/A	inches	Underdrain Orifice Centroid =	N/A	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 =	3.257E-02	ft^2
Depth at top of Zone using Orifice Plate =	4.27	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 =	4.69	sq. inches (use rectangular openings)	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	1.25	2.50					
Orifice Area (sq. inches)	4.69	4.69	4.69					

	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 =	N/A	N/A	ft (relative to basin bottom at Stage = 0 ft)	Vertical Orifice Area =	N/A	N/A	ft^2
Depth at top of Zone using Vertical Orifice =	N/A	N/A	ft (relative to basin bottom at Stage = 0 ft)	Vertical Orifice Centroid =	N/A	N/A	feet
Vertical Orifice Diameter =	N/A	N/A	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))

	Zone 3 Weir	Not Selected			Zone 3 Weir	Not Selected	
Overflow Weir Front Edge Height, Ho =	4.36	N/A	ft (relative to basin bottom at Stage = 0 ft)	Height of Grate Upper Edge, H_t =	7.47	N/A	feet
Overflow Weir Front Edge Length =	7.00	N/A	feet	Overflow Weir Slope Length =	12.80	N/A	feet
Overflow Weir Grate Slope =	4.00	N/A	H:V	Grate Open Area / 100-yr Orifice Area =	7.70	N/A	
Horiz. Length of Weir Sides =	12.42	N/A	feet	Overflow Grate Open Area w/o Debris =	70.89	N/A	ft^2
Overflow Grate Type =	Close Mesh Grate	N/A		Overflow Grate Open Area w/ Debris =	17.72	N/A	ft^2
Debris Clogging % =	75%	N/A	%				

Calculated Parameters for Overflow Weir

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

	Zone 3 Restrictor	Not Selected			Zone 3 Restrictor	Not Selected	
Depth to Invert of Outlet Pipe =	6.29	0.00	ft (distance below basin bottom at Stage = 0 ft)	Outlet Orifice Area =	9.21		ft^2
Outlet Pipe Diameter =	48.00		inches	Outlet Orifice Centroid =	1.54		feet
Restrictor Plate Height Above Pipe Invert =	33.00		inches	Half-Central Angle of Restrictor Plate on Pipe =	1.96		radians

Calculated Parameters for Outlet Pipe w/ Flow Restriction Plate

User Input: Emergency Spillway (Rectangular or Trapezoidal)

Spillway Invert Stage=	9.99	ft (relative to basin bottom at Stage = 0 ft)	Spillway Design Flow Depth=	0.74	feet
Spillway Crest Length =	123.00	feet	Stage at Top of Freeboard =	11.73	feet
Spillway End Slopes =	4.00	H:V	Basin Area at Top of Freeboard =	1.67	acres
Freeboard above Max Water Surface =	1.00	feet	Basin Volume at Top of Freeboard =	12.10	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	4.00
CUHP Runoff Volume (acre-ft) =	1.285	2.177	3.053	6.690	10.314	16.752	21.154	27.479	55.481
Inflow Hydrograph Volume (acre-ft) =	N/A	N/A	3.053	6.690	10.314	16.752	21.154	27.479	55.481
CUHP Predevelopment Peak Q (cfs) =	N/A	N/A	17.6	49.5	77.1	142.3	179.0	229.8	455.6
OPTIONAL Override Predevelopment Peak Q (cfs) =	N/A	N/A							
Predevelopment Unit Peak Flow, q (cfs/acre) =	N/A	N/A	0.08	0.22	0.34	0.63	0.80	1.02	2.03
Peak Inflow Q (cfs) =	N/A	N/A	29.2	62.9	90.7	154.6	191.5	243.2	468.8
Peak Outflow Q (cfs) =	0.7	0.8	2.3	20.6	43.8	91.5	124.0	170.1	467.1
Ratio Peak Outflow to Predevelopment Q =	N/A	N/A	N/A	0.4	0.6	0.6	0.7	0.7	1.0
Structure Controlling Flow =	Plate	Plate	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	N/A	0.02	0.3	0.6	1.3	1.7	2.4	2.4
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) =	38	50	58	55	51	45	41	37	21
Time to Drain 99% of Inflow Volume (hours) =	40	54	62	62	60	57	55	53	44
Maximum Ponding Depth (ft) =	3.32	4.27	4.80	6.22	7.11	8.35	9.02	9.96	10.83
Area at Maximum Ponding Depth (acres) =	0.87	1.01	1.06	1.17	1.25	1.35	1.41	1.49	1.58
Maximum Volume Stored (acre-ft) =	1.288	2.178	2.724	4.310	5.376	7.001	7.928	9.278	10.635

Stormwater Detention and Infiltration Design Data Sheet

Workbook Protected Worksheet Protected

Stormwater Facility Name: Homestead North at Sterling Ranch

Facility Location & Jurisdiction: Pond C

User Input: Watershed Characteristics

Watershed Slope =	0.034	ft/ft
Watershed Length =	1580	ft
Watershed Area =	224.34	acres
Watershed Imperviousness =	10.3%	percent
Percentage Hydrologic Soil Group A =		percent
Percentage Hydrologic Soil Group B =	100.0%	percent
Percentage Hydrologic Soil Groups C/D =		percent

Location for 1-hr Rainfall Depths (use dropdown): User Input

WQCV Treatment Method = Extended Detention

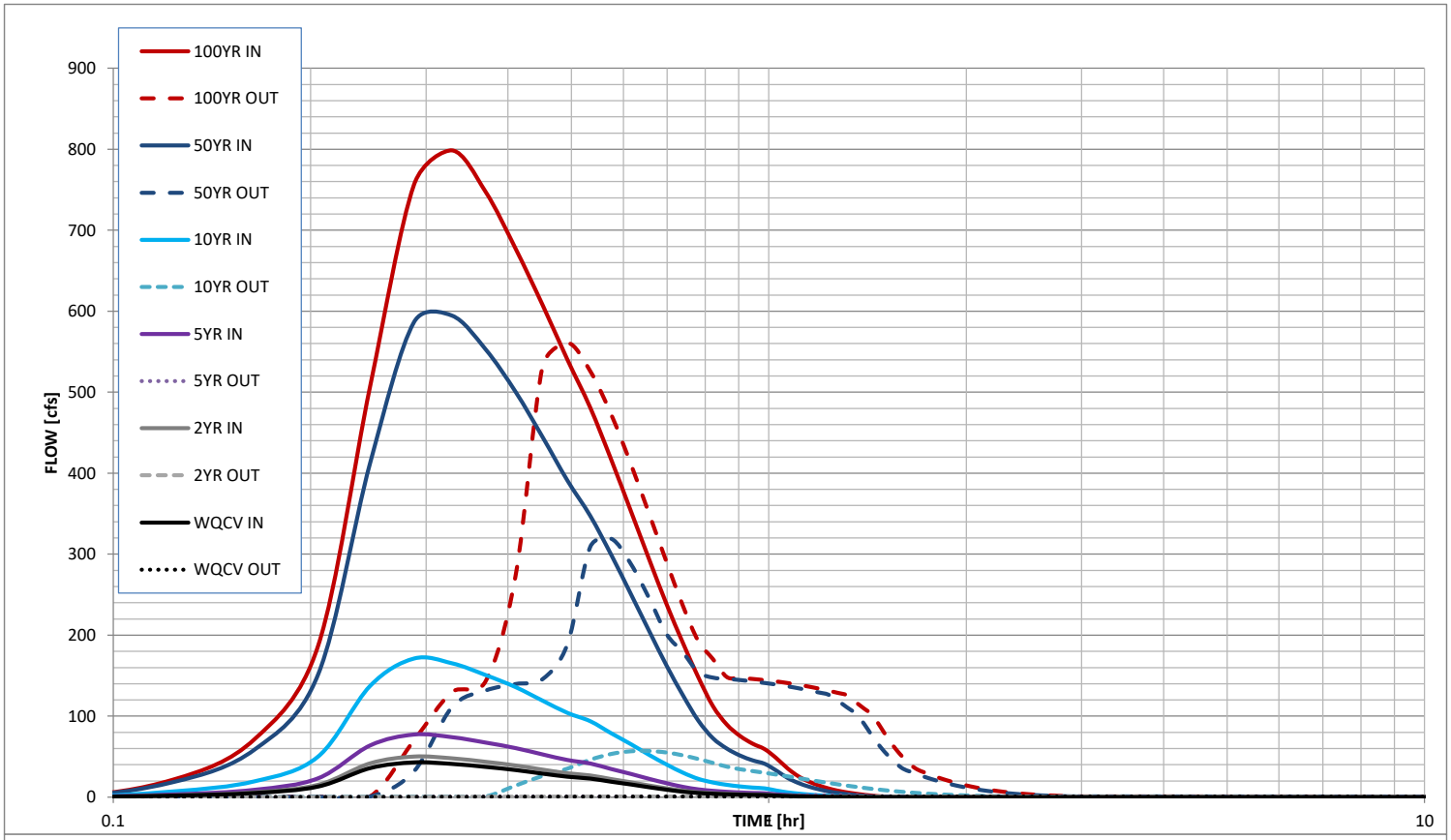
User Defined Stage [ft]	User Defined Area [ft^2]	User Defined Stage [ft]	User Defined Discharge [cfs]
0.00	90	0.00	0.00
0.24	421	0.24	0.09
1.24	9,215	1.24	0.20
2.24	25,614	2.24	0.43
3.24	37,949	3.24	0.66
4.24	43,976	4.24	0.88
5.24	47,684	5.24	35.83
6.24	51,279	6.24	99.85
7.24	54,996	7.24	126.14
8.24	58,816	8.24	134.71
9.24	62,675	9.24	142.76
9.99	65,646	9.99	148.51
10.24	66,643	10.24	196.81
11.24	70,696	11.24	690.10

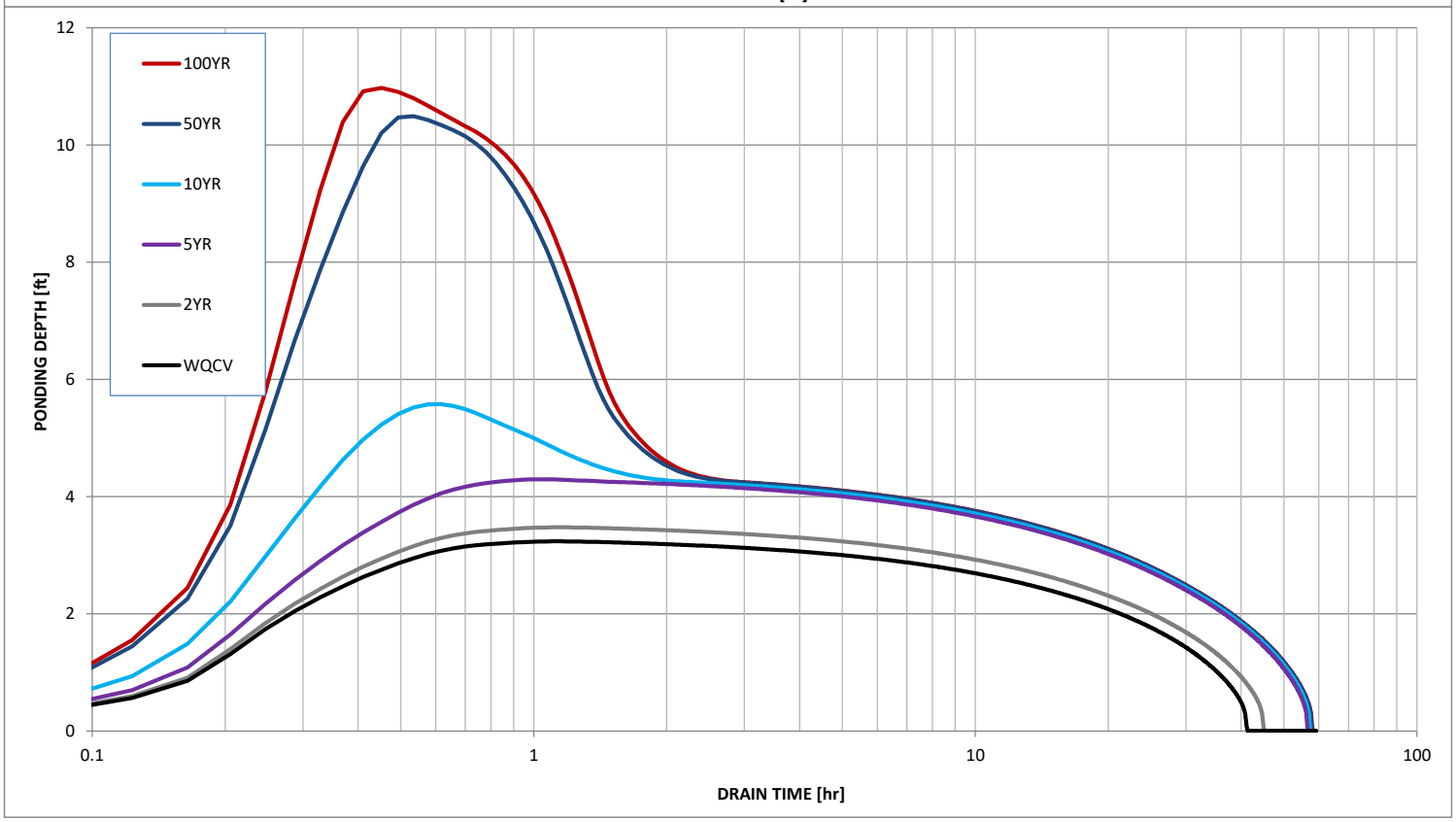
After completing and printing this worksheet to a pdf, go to:
https://maperture.digitaldataservices.com/gvh/?viewer=cswdif
create a new stormwater facility, and
attach the pdf of this worksheet to that record.

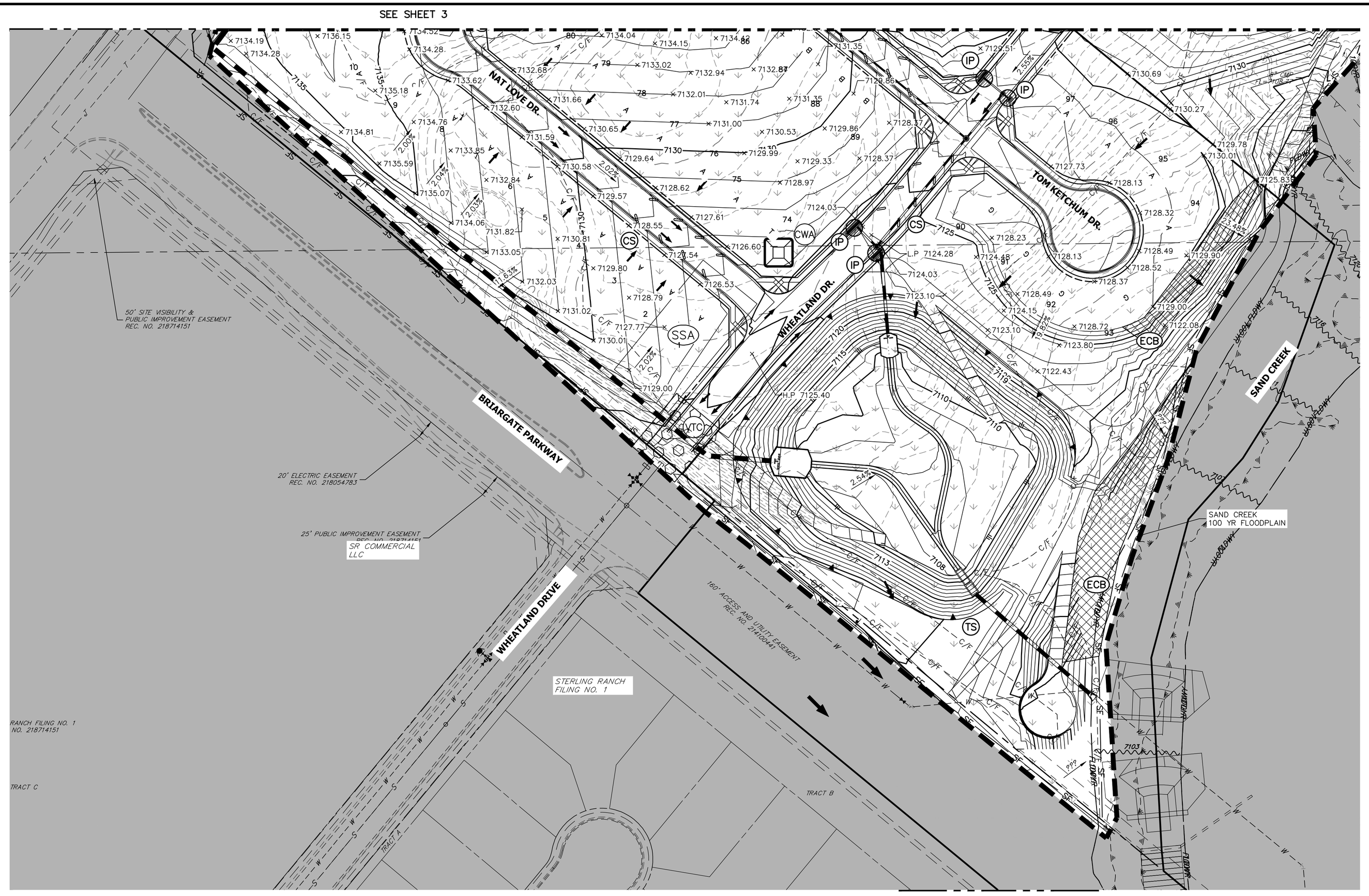
Routed Hydrograph Results

Design Storm Return Period =	WQCV	2 Year	5 Year	10 Year	50 Year	100 Year	
One-Hour Rainfall Depth =	0.53	1.19	1.50	1.75	2.25	2.52	in
Calculated Runoff Volume =	1.285	1.501	2.330	5.238	18.960	25.857	acre-ft
OPTIONAL Override Runoff Volume =							acre-ft
Inflow Hydrograph Volume =	1.284	1.501	2.330	5.231	18.959	25.854	acre-ft
Time to Drain 97% of Inflow Volume =	37.4	40.7	**50.4**	46.0	32.4	27.4	hours
Time to Drain 99% of Inflow Volume =	39.7	43.3	54.1	52.5	45.1	**42.3**	hours
Maximum Ponding Depth =	3.24	3.47	4.30	5.58	10.49	10.97	ft
Maximum Ponded Area =	0.87	0.90	1.01	1.12	1.55	**1.60**	acres
Maximum Volume Stored =	1.230	1.442	2.224	3.596	10.141	10.911	acre-ft

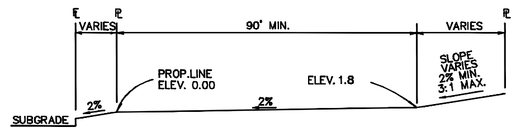
Stormwater Detention and Infiltration Design Data Sheet



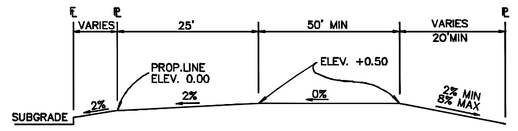




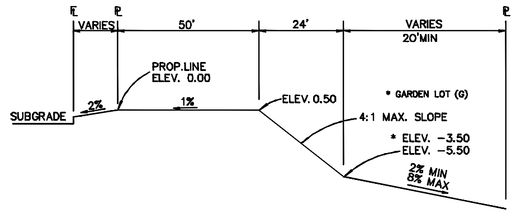
KEY MAP
SCALE: NTS



TYPICAL A LOT
NOT TO SCALE



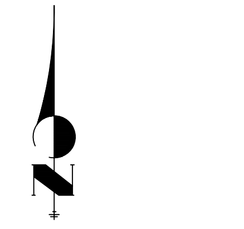
TYPICAL B LOT
NOT TO SCALE



TYPICAL WALKOUT LOT (W/O) OR GARDEN (G)
NOT TO SCALE

NOTE:
"T" LOTS OR "TRANSITION " LOTS OCCUR IN PLACES WHERE BOTH PROPERTY LINES CANNOT BE GRADED AS THE TYPICAL STANDARD LOT TEMPLATES SHOWN. THESE LOTS WILL STILL BE GRADED TO CREATE POSITIVE DRAINAGE AWAY FROM THE STRUCTURE.

NOTE:
SIDE LOT SWALES WILL BE PROVIDED WHEN APPROPRIATE.



ORIGINAL SCALE: 1" = 60'

CONSTRUCTION NOTES:

NO WETLANDS ARE TO BE PERMANENTLY DISTURBED PER THIS GRADING PLAN.

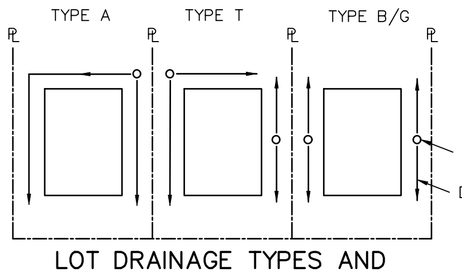
NO EARLY GRADING IS TO OCCUR WITHIN THE 100 YEAR FLOODPLAIN.

ADDITIONAL NOTES:

EXISTING VEGETATION: AN AERIAL SURVEY WAS USED TO DETERMINE A 30% COVER OF NATIVE GRASSES.

STAGING AREA & STOCKPILE LOCATION TO BE DETERMINED BY CONTRACTOR IN THE FIELD. THE LOCATIONS SHALL BE DELINEATED ON THIS PLAN BY THE CONTRACTOR.

THE EROSION CONTROL DELINEATED ON THIS PLAN SHALL BE REGULARLY UPDATED BY THE CONTRACTOR.



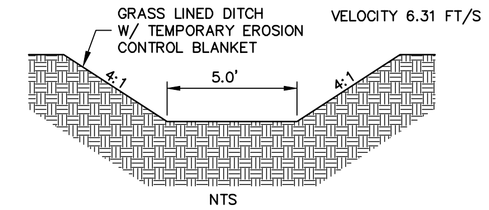
LOT DRAINAGE TYPES AND SWALE DIRECTION
NOT TO SCALE

LEGEND

EXISTING STORM SEWER
STORM SEWER PROPOSED
PROPOSED R.O.W.
PROPOSED PROPERTY LINE
PROPOSED SIDEWALK
EXISTING PROPERTY LINE
ROW EXISTING
FL EXISTING
SIDEWALK EXISTING
DRAINAGE ACCESS & MAINTENANCE EASEMENT
SILT FENCE — SF —
LIMITS OF CONSTRUCTION/ DISTURBANCE
EXISTING WETLAND BOUNDARY
EXISTING 100 YEAR FLOODPLAIN — 100YR —
CUT/ FILL — C/F —
TEMPORARY DITCH
CHECK DAM

EXISTING 7100
PROPOSED 7100

L.P./H.P. INLET
LOW POINT/HIGH POINT
(2.0)% FLOW DIRECTION & SLOPE
FLOW DIRECTION ARROW
EXISTING FLOW DIRECTION ARROW
EMERGENCY OVERFLOW DIRECTION
CWA CONCRETE WASHOUT AREA
IP INLET PROTECTION
SB TEMPORARY SEDIMENT BASIN
SF SILT FENCE
VTC VEHICLE TRACKING CONTROL
SSA STAGE STABILIZED AREA
TS TEMPORARY SEEDING
ECB EROSION CONTROL BLANKET
CS CURB SOCK



NTS

ENGINEER'S STATEMENT

PREPARED UNDER MY DIRECT SUPERVISION AND ON BEHALF OF JR ENGINEERING

MIKE A. BRAMLETT, P.E.
COLORADO P.E. 32314
FOR AND ON BEHALF OF JR ENGINEERING, LLC

DATE

UNTIL SUCH TIME AS THESE DRAWINGS ARE APPROVED BY THE APPROPRIATE REVIEWING AGENCIES, JR ENGINEERING APPROVES THEIR USE ONLY FOR THE PURPOSES DESIGNATED BY WRITTEN AUTHORIZATION.

PREPARED FOR
SR LAND, LLC
20 BOULDER CRESCENT
SUITE 201
COLORADO SPRINGS, CO 80903
JAMES F. MORLEY
(719) 471-1742

J·R ENGINEERING
A Westrian Company
Centennial 303-740-9393 • Colorado Springs 719-593-2593
Fort Collins 970-491-9888 • www.jrengineering.com

No.	REVISION	BY	DATE

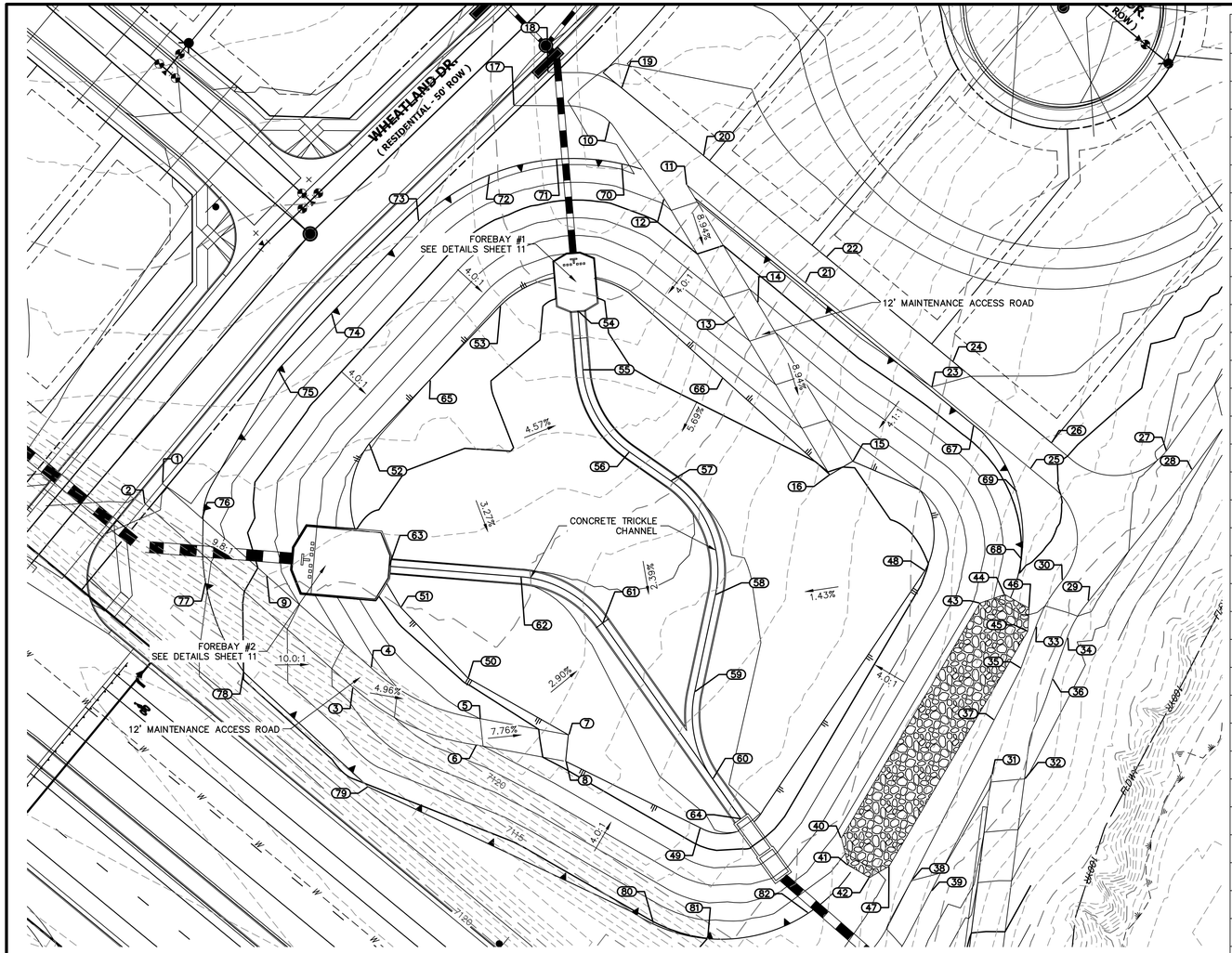
H-SCALE	1"=60'
V-SCALE	N/A
DATE	11/16/21
DESIGNED BY	BAB
DRAWN BY	ARJ
CHECKED BY	

HOMESTEAD NORTH AT STERLING RANCH FILING NO. 1

GRADING & EROSION CONTROL PLAN

SHEET 2 OF ##

JOB NO. 25188.00



POINT TABULATION				POINT TABULATION			
ID NO.	DESCRIPTION	NORTHING/EASTING	ELEVATION	ID NO.	DESCRIPTION	NORTHING/EASTING	ELEVATION
1	TBC/ACCESS ROAD	N: 415207.41 E: 237288.64	7124.91	35	ACCESS ROAD	N: 415124.13 E: 237676.13	7116.40
2	TBC/ACCESS ROAD	N: 415198.15 E: 237280.99	7124.28	36	ACCESS ROAD	N: 415119.08 E: 237690.25	7116.10
3	ACCESS ROAD	N: 415115.28 E: 237374.76	7115.04	37	ACCESS ROAD	N: 415100.75 E: 237664.08	7116.30
4	ACCESS ROAD	N: 415124.27 E: 237382.71	7114.81	38	ACCESS ROAD	N: 415028.60 E: 237626.90	7116.00
5	ACCESS ROAD	N: 415101.18 E: 237432.38	7111.97	39	ACCESS ROAD	N: 415023.48 E: 237635.58	7115.95
6	ACCESS ROAD	N: 415089.32 E: 237430.52	7112.21	40	SPILLWAY CREST	N: 415047.36 E: 237595.07	7116.75
7	ACCESS ROAD/TOE	N: 415093.94 E: 237471.86	7108.99	41	SPILLWAY TOP	N: 415035.12 E: 237598.12	7119.00
8	ACCESS ROAD/TOE	N: 415081.98 E: 237470.63	7109.23	42	SPILLWAY TOP	N: 415029.45 E: 237607.73	7119.00
9	ACCESS ROAD	N: 415165.90 E: 237335.59	7119.49	43	SPILLWAY CREST	N: 415153.44 E: 237657.60	7116.75
10	ACCESS ROAD	N: 415370.60 E: 237490.50	7123.32	44	SPILLWAY TOP	N: 415157.29 E: 237668.78	7119.00
11	ACCESS ROAD	N: 415342.08 E: 237525.43	7122.77	45	SPILLWAY CREST	N: 415140.74 E: 237679.13	7116.76
12	ACCESS ROAD	N: 415335.91 E: 237515.14	7122.53	46	SPILLWAY TOP	N: 415150.97 E: 237679.80	7118.94
13	ACCESS ROAD	N: 415282.79 E: 237546.97	7117.13	47	SPILLWAY CREST	N: 415034.66 E: 237616.61	7116.76
14	ACCESS ROAD	N: 415288.96 E: 237557.27	7117.37	48	TOE	N: 415168.07 E: 237632.77	7109.84
15	ACCESS ROAD/TOE	N: 415217.46 E: 237600.12	7110.10	49	TOE	N: 415051.92 E: 237531.47	7108.34
16	ACCESS ROAD/TOE	N: 415211.29 E: 237589.83	7109.86	50	TOE	N: 415119.59 E: 237426.50	7109.53
17	ACCESS ROAD/TBC	N: 415377.99 E: 237447.36	7124.47	51	TOE	N: 415151.53 E: 237396.16	7108.86
18	ACCESS ROAD/TBC	N: 415392.93 E: 237462.76	7124.40	52	TOE	N: 415225.30 E: 237381.90	7112.20
19	ACCESS ROAD	N: 415386.01 E: 237495.82	7123.73	53	TOE	N: 415287.87 E: 237441.36	7111.75
20	ACCESS ROAD	N: 415355.51 E: 237532.73	7123.10	54	FOREBAY	N: 415285.29 E: 237476.17	7108.11
21	ACCESS ROAD	N: 415298.13 E: 237578.62	7122.80	55	TRICKLE CHANNEL	N: 415258.73 E: 237478.39	7107.93
22	ACCESS ROAD	N: 415309.70 E: 237588.17	7123.10	56	TRICKLE CHANNEL	N: 415221.61 E: 237499.48	7107.71
23	ACCESS ROAD	N: 415251.02 E: 237635.69	7122.00	57	TRICKLE CHANNEL	N: 415208.58 E: 237518.05	7107.59
24	ACCESS ROAD	N: 415262.58 E: 237645.25	7122.30	58	TRICKLE CHANNEL	N: 415157.21 E: 237538.23	7107.30
25	ACCESS ROAD	N: 415214.23 E: 237680.18	7120.37	59	TRICKLE CHANNEL	N: 415113.38 E: 237528.87	7107.08
26	ACCESS ROAD	N: 415225.79 E: 237689.74	7120.67	60	TRICKLE CHANNEL	N: 415074.07 E: 237536.94	7106.87
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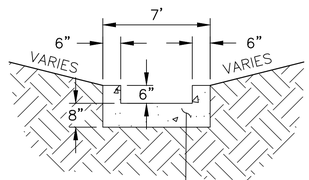
28	ACCESS ROAD	N: 415213.71 E: 237753.44	7116.71	62	TRICKLE CHANNEL	N: 415165.27 E: 237450.42	7107.52
29	ACCESS ROAD	N: 415154.31 E: 237706.65	7118.80	63	FOREBAY	N: 415170.03 E: 237390.85	7107.83
30	ACCESS ROAD	N: 415163.69 E: 237694.95	7119.40	64	OUTLET STRUCTURE	N: 415056.03 E: 237549.70	7107.05
31	ACCESS ROAD	N: 415075.96 E: 237662.82	7116.29	65	TOE	N: 415254.20 E: 237409.37	7111.99
32	ACCESS ROAD	N: 415074.03 E: 237677.70	7116.00	66	TOE	N: 415254.94 E: 237541.64	7110.85
33	ACCESS ROAD	N: 415142.88 E: 237682.83	7116.70	67	TOP	N: 415233.64 E: 237654.88	7121.59
34	ACCESS ROAD	N: 415137.83 E: 237696.95	7116.40	68	TOP	N: 415173.04 E: 237676.75	7120.13

POINT TABULATION			
ID NO.	DESCRIPTION	NORTHING/EASTING	ELEVATION
69	TOP	N: 415203.70 E: 237674.43	7120.81
70	TOP	N: 415351.68 E: 237496.12	7124.60
71	TOP	N: 415353.86 E: 237466.63	7124.72
72	TOP	N: 415346.59 E: 237435.99	7124.85
73	TOP	N: 415325.90 E: 237404.45	7125.00
74	TOP	N: 415284.11 E: 237364.84	7125.28
75	TOP	N: 415258.79 E: 237340.82	7125.45
76	TOP	N: 415191.71 E: 237306.41	7123.38
77	TOP	N: 415162.66 E: 237308.27	7122.14
78	TOP	N: 415122.36 E: 237325.44	7119.98
79	TOP	N: 415070.46 E: 237381.53	7120.19
80	TOP	N: 415008.80 E: 237510.38	7120.14
81	TOP	N: 415001.97 E: 237534.87	7120.00
82	TOP	N: 415013.54 E: 237580.12	7119.72

KEY MAP
SCALE: NTS

UNTIL SUCH TIME AS THESE PLANS ARE APPROVED BY THE APPROPRIATE REVIEWING AGENCIES, JR ENGINEERING APPROVES THEIR USE ONLY FOR THE PURPOSES DESIGNATED BY WRITTEN AUTHORIZATION.

PREPARED FOR
SR LAND, LLC
20 BOULDER CRESCENT
SUITE 201
COLORADO SPRINGS, CO 80903
JAMES F. MORLEY
(719) 471-1742

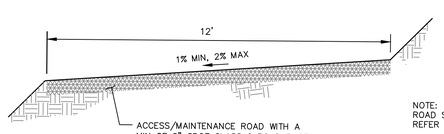


GRADING NOTES:

1. ALL PROPOSED CONTOURS ARE TO FINISHED GRADE.
2. EARTHEN CUT AND FILL SLOPES SHALL BE 3:1 MAXIMUM. SLOPES IN EXCESS OF 4:1 AND AREAS OTHERWISE INDICATED BY WITHIN THESE PLANS. SHALL BE COVERED WITH SOIL RETENTION BLANKET OVER 4" MIN. THICKNESS OF TOPSOIL AND SEEDED.
3. IF THE PROJECT IS CONSTRUCTED DURING THE SUMMER WHEN SEEDING IS NOT ALLOWED, APPLY 1-1/2 TONS OF CERTIFIED WEED FREE MULCH PER ACRE MECHANICALLY CRIMPED INTO THE SOIL IN COMBINATION WITH AN ORGANIC MULCH TACKIFIER.
4. PRIOR TO ANY CONSTRUCTION ACTIVITIES THE PROPOSED SILT FENCE SHOWN ON THE EROSION CONTROL SHEET SHALL BE CONSTRUCTED. THE FENCE SHALL BE REMOVED UPON THE LATER OF STABILIZATION OF THE SITE OR COMPLETION OF CONSTRUCTION.
5. TO REDUCE THE POTENTIAL FOR CLOGGING OF DEBRIS GRATES, NO STRAW MULCH SHALL BE USED WITHIN THE EURV OR WQCV OF A DETENTION BASIN. INSTEAD, EROSION CONTROL BLANKETS SHALL BE INSTALLED FOR A WIDTH OF AT LEAST 6 FEET ON EITHER SIDE OF CONCRETE LOW-FLOW CHANNELS. THE BLANKETS SHALL COMPLY WITH THE MATERIALS AND INSTALLATION REQUIREMENTS FOR EROSION CONTROL BLANKETS (STRAW COCONUT OR 100 PERCENT COCONUT). SITE-SPECIFIC CONDITIONS MAY REQUIRE ADDITIONAL BLANKET OR OTHER EROSION CONTROL MEASURES.

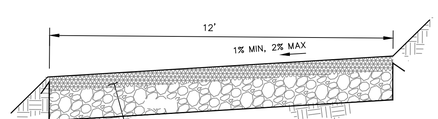
POND TRICKLE CHANNEL (ALL PONDS)

N.T.S.

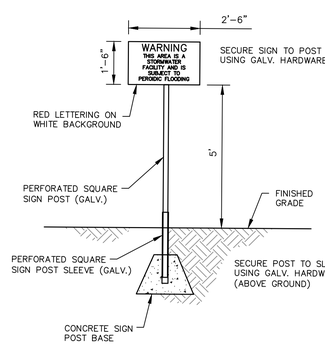


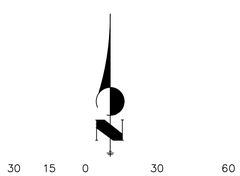
NOTE:
ROAD SLOPE DIRECTION VARIES REFER TO PLAN

MAINTENANCE & ACCESS ROAD ABOVE EURV TYPICAL SECTION
NOT TO SCALE



MAINTENANCE & ACCESS ROAD BELOW EURV TYPICAL SECTION
NOT TO SCALE





HORIZONTAL
ORIGINAL SCALE: 1" = 30
VERTICAL
ORIGINAL SCALE: 1" = 5'

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

ENGINEER'S STATEMENT

PREPARED UNDER MY DIRECT SUPERVISION AND ON BEHALF OF JR ENGINEERING

MIKE A. BRAMLETT, P.E.
COLORADO P.E. 32314
FOR AND ON BEHALF OF JR ENGINEERING, LLC

DATE

J·R ENGINEERING
A Westrian Company
Centennial 303-740-9393 • Colorado Springs 719-593-2593
Fort Collins 970-491-9888 • www.jrengineering.com

No.	REVISION	BY	DATE

H-SCALE	1" = 30'	DESIGNED BY	RAB
V-SCALE	1" = 5'	DRAWN BY	MC
DATE	11/16/21	CHECKED BY	

HOMESTEAD NORTH AT STERLING RANCH FILING NO. 1

POND GRADING PLAN

SHEET 10 OF 15

JOB NO. 25188.00

Mike Bramlett

From:	Mike Bramlett
Sent:	Tuesday, March 29, 2022 6:47 AM
To:	'Wodiuk - DNR, Jessica'
Cc:	'Doug.Hollister@state.co.us'; 'brian.c.mccormick@state.co.us'
Subject:	RE: Non-Jurisdictional Water Impoundment Structure Notice - Homestead North at Sterling Ranch Filing 2 - Full Spectrum Detention Pond B
Attachments:	NOI Pond B Homestead North at Sterling Ranch F2.pdf

Jessica,

I have attached a notice of non-jurisdictional water impoundment structure for the full spectrum detention pond associated with Homestead North at Sterling Ranch Filing 2. This pond provides detention and water quality for the single family lots and roadways that are part of the filing 1 development.

Please let me know if you need additional information / drawings.

Thanks

Mike Bramlett, PE
Client Manager
JR Engineering, LLC
5475 Tech Center Drive, Suite 235, Colorado Springs, CO 80919
Phone: (719) 593-2593 Cell: (719) 659-7679

mbramlett@jrengineering.com

March 28, 2022

J·R ENGINEERING

Colorado Division of Water Resources
310 E. Abriendo Ave., Suite B
Pueblo, CO 81004

RE: Non-Jurisdictional Water Impoundment Structure Notice
Homestead North at Sterling Ranch Filing 2, El Paso County

JR Engineering is performing civil engineering services for the proposed Homestead North at Sterling Ranch Filing 2 development northeast of the intersection of Vollmer Road and future Briargate Parkway in El Paso County. The development is comprised of urban residential lots, tracts roadways and utilities.

As part of this development, one (1) full spectrum detention pond is proposed. The pond is identified as Pond B. The pond will have an embankment on the downhill side but, in my opinion, the pond is non-jurisdictional and provide no public exposure in the event of embankment failure as they are adjacent to the Sand Creek drainageway. Groundwater is not anticipated to be encountered based on the depth of excavation and soils report completed by Entech Engineering. In the event groundwater is encountered, your office will be notified.

I have attached the NOI and the grading/pond plans for the pond. I have also attached an overall vicinity map to help define the location of the proposed pond.

If additional information or clarification is needed to support this submittal, please feel free to contact me.

Respectfully submitted,

JR ENGINEERING, LLC

Mike Bramlett

Mike Bramlett, PE
Client Manager
Ph: (303) 267-6240
Cell: (719) 659-7679
Email: mbramlett@jrengineering.com

COLORADO
Division of Water Resources
Department of Natural Resources
www.water.state.co.us P 303.866.3581

NON-JURISDICTIONAL WATER IMPOUNDMENT STRUCTURE[1]

This notice is required per Section 37-87-125, C.R.S. (1998) and
must be submitted to the Division Engineer's Office a minimum of 45 days prior to construction.

OWNER INFORMATION

Name: SR LAND, LLC Telephone/E-Mail: (719) 491-3024 / JMORLEY3870@AOL.COM

Address: 20 BOULDER CRESCENT, SUITE 200 COLORADO SPRINGS CO 80903
Street / P.O. Box/ Rural Route | City | State | Zip Code

Responsible Person: JIM MORLEY Telephone/E-Mail: (719) 491-3024 / JMORLEY3870@AOL.COM

Address: 20 BOULDER CRESCENT, SUITE 200 COLORADO SPRINGS CO 80903
Street / P.O. Box/ Rural Route | City | State | Zip Code

Contractor: TO BE DETERMINED. Telephone/E-Mail: ( ) TO BE DETERMINED.

STRUCTURE INFORMATION

Name of Dam: HOMESTEAD NORTH F2 - POND B Water Division: 2 Water District: 10

Location: *(Provide Section, Township, Range, **and** GPS Point taken at crest of dam above streamline/outlet)*

- Section: 34, Township: 12S, Range: 65W, 6th P.M.

- Northing 4313521.56 meters, Easting 528793.89 meters (*Datum should be UTM, NAD 83)*

Dam Dimensions:

- Vertical Height[2]: 7.1 ft., Length: 270 ft., Crest Width: 10 ft., Slopes: U/S: 4 (H:1V), D/S 4 (H:1V)

Reservoir:

- Surface Area[1]: 0.67 acres, Capacity[1]: 2.495 acre-feet, Drainage Area*: 27.86 acres
**(If drainage area is unknown leave blank and a spillway size will be assigned):*

Emergency Spillway: *(See Table 1, Spillway Sizing Guidelines)*

- Bottom Width: 75 ft., Side Slopes: 4 H:1V, Freeboard[3]: 2.2' ft

Outlet Conduit Type: RCP, Size: 24" inches, Location: SAND CREEK

Stream Name or Water Source[4]: SAND CREEK Proposed Water Use: FULL SPECTRUM DETENTION POND

Water Court Case ***or*** WDID : _____
(Water District Identification Number)

Signature of Owner 3/28/22
Date

Office Use Only

DIVISION ENGINEER'S REQUIREMENTS: _____

_____

_____

Dam I.D._____ Signature of Division Engineer Date

[1] A "Non-Jurisdictional Structure" is a dam creating a reservoir with a capacity of 100 acre-feet or less *and* a surface area of 20 acres or less *and* a vertical height (footnote 2) of 10 feet or less. Non-jurisdictional size dams are regulated and subject to the authority of the State Engineer consistent with sections 37-87-102 and 37-87-105 C.R.S.

[2] "Vertical Height" is measured from the elevation of the lowest point of the natural surface of the ground or the invert of the outlet conduit (whichever is lower) where that point occurs along the longitudinal centerline of the dam up to the crest of the emergency spillway of the dam.

[3] "Freeboard" is the vertical distance from the bottom of spillway to the crest of the dam. Minimum Freeboard is 3 feet.

[4] If construction in reservoir intercepts groundwater, a well permit is required. (Well permit applications can be found at www.water.state.co.us)

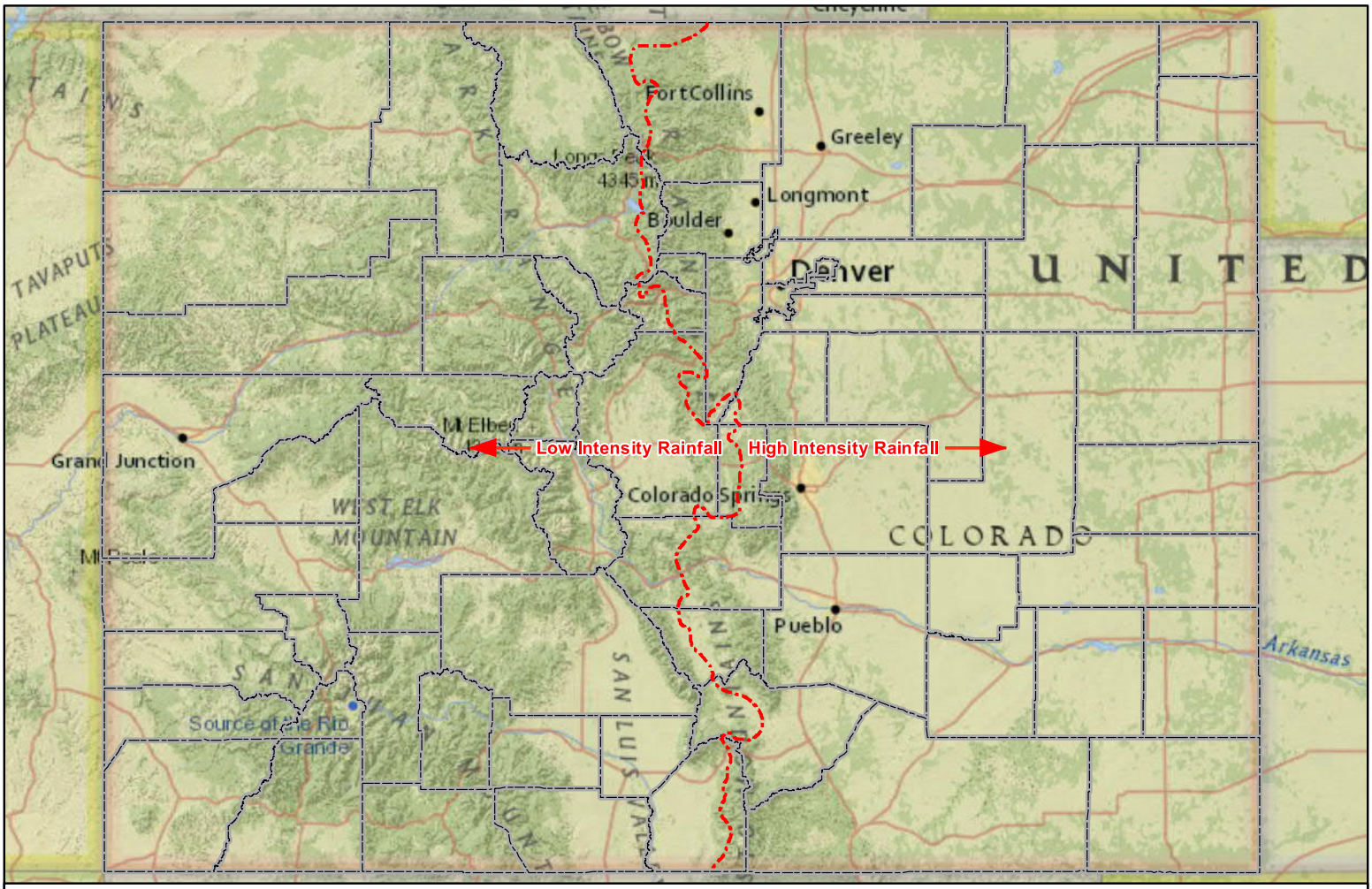
COLORADO
Division of Water Resources
Department of Natural Resources

Table 1 DAM SAFETY BRANCH Spillway Sizing Guidelines for Non-Jurisdictional Dams

Drainage Area (Acres)	Minimum Recommended Bottom Width[1] (Feet) Low Intensity Rainfall Zone	Minimum Recommended Bottom Width[1] (Feet) High Intensity Rainfall Zone
175	8	8
225	8	10
275	8	12
325	8	15
375	10	17
425	11	19
475	12	21
525	13	24
575	15	26
625	16	28
675	17	30
725	19	33
775	20	35
825	21	37
875	22	39
925	24	42
975	25	44
1025	26	46
1075	28	48
1125	29	51
1175	30	53
1225	31	55
1275	33	57
1325	34	59
1375	35	62
1425	37	64
1475	38	66

[1]Minimum recommended bottom width for drainage areas less than 175 acres is 8 feet

Spillway Section



COLORADO
Division of Water Resources
Department of Natural Resources

Rainfall Intensity Zones for Non-Jurisdictional Dam Spillway Sizing

COLORADO
Division of Water Resources
Department of Natural Resources

DAM SAFETY BRANCH Specifications for Construction of Non-Jurisdictional Dams

- Site Selection:
  - Foundation soils should be firm to provide adequate support for the embankment and should have low permeability to allow for water retention. Site selection should consider potential downstream property damage in the event of a dam failure. Construction of dams in boggy areas, areas with non-uniform fractured rock, or sands/gravels is not recommended and an engineer should be hired to evaluate the site conditions. Any part of the reservoir basin excavated below grade cannot expose groundwater.

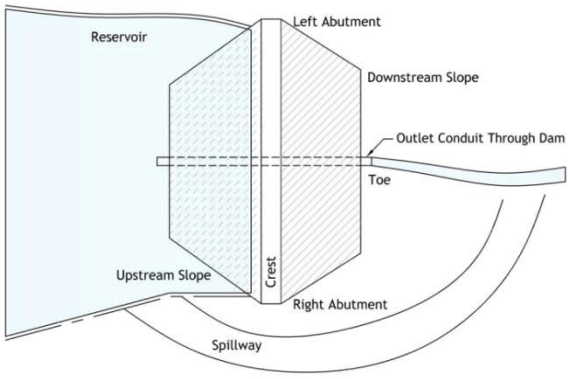
- Embankment Design:
  - Backfill material to be used for construction of the cutoff trench and embankment should be a suitable clay material and contain no material larger than 6 inches in diameter.
  - The upstream slope should be constructed with a slope no steeper than 3:1, and the downstream slope should be no steeper than 2:1 (see cross section below). The dam crest should have a minimum width of 10 feet and the surface should be graded with positive drainage toward the reservoir basin.
  - It is recommended that rock rip rap or other suitable material be placed on the upstream slope of the embankment to protect it from wave action. A suitable gravel or geosynthetic material should be placed under the rip rap to prevent fine material from washing out from behind the larger rock.
  - The embankment should be fenced to restrict livestock from accessing the dam since they damage the protective vegetation and increase erosion.

- Embankment Construction
  - The topsoil and all organic material should be removed from the foundation of the proposed dam site. Organic soil should only be reused for placement on the completed embankment to promote the re-growth of vegetation.
  - A cutoff trench should be excavated under the full length of the centerline of the dam with sloping sides (1:1 min.), a minimum bottom width of 3 feet and a depth of 3 feet.
  - The foundation of the dam should be scarified/ripped to a depth of 6-inches to provide proper contact between the native foundation and embankment. This surface should then be moisture treated before placement of fill.
  - Fill material should be placed in layers not exceeding 12 inches in thickness prior to compaction. Suitable backfill material should have enough clay and moisture content to roll a small ball by hand. If this cannot be done, the soil is likely too dry or does not have adequate clay content.
  - Each lift should be thoroughly compacted using a sheeps foot compactor. Care should be taken not to allow the top layers of the soil to dry out between placement of lifts.
  - Fill should be placed in uniform lifts that cover the entire embankment length and width.

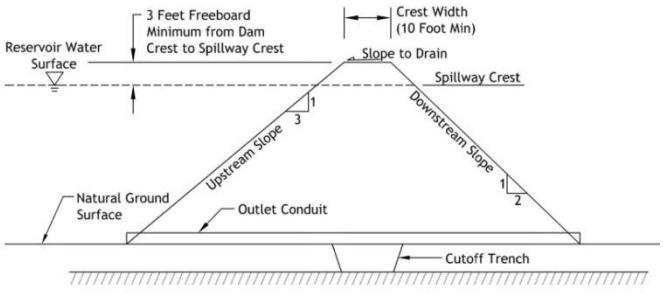
- Outlet
  - Unless a waiver is granted in writing by the Division Engineer, all non-jurisdictional dams require an outlet conduit positioned at the natural low point of the reservoir basin. A minimum diameter of 12 inches is recommended and should be controlled at the upstream end by a valve and trash rack.

- Emergency Spillway
  - The spillway should have sufficient width to provide capacity to route the runoff from the drainage basin above the dam during rainfall/runoff events.
  - The emergency spillway should be located on natural ground far enough away to prevent erosion of the dam embankment. A spillway over the dam embankment is not acceptable.
  - A minimum of 3 feet of freeboard is required from the bottom of the emergency spillway to the top of the dam.
  - To determine the minimum spillway width, see the attached table for your area and drainage basin size.

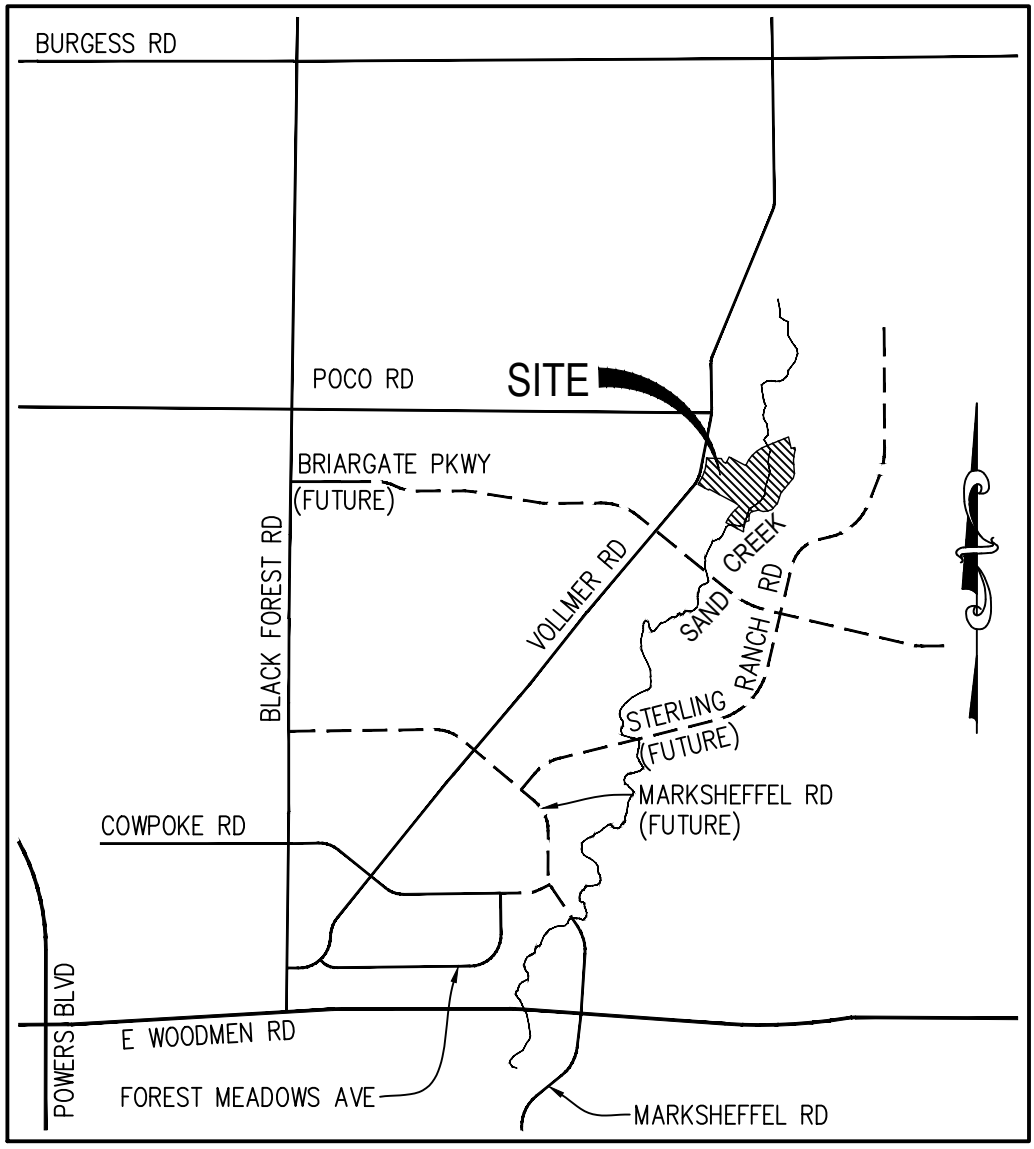
- Example Plan View and Cross Section



Plan View



Cross Section Through Dam at Outlet



VICINITY MAP

N.T.S.

VICINITY MAP
HOMESTEAD NORTH AT
STERLING RANCH FILING NO. 2
JOB NO. 25188.00
02–16–2022

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Stormwater Detention and Infiltration Design Data Sheet

Workbook Protected Worksheet Protected

Stormwater Facility Name: **Pond HNF2**

Facility Location & Jurisdiction: **Sterling Ranch Sudivision, Vollmer Road, El Paso County / El Paso County**

User Input: Watershed Characteristics

Watershed Slope =	0.020	ft/ft
Watershed Length =	1290	ft
Watershed Area =	27.86	acres
Watershed Imperviousness =	50.0%	percent
Percentage Hydrologic Soil Group A =	0.0%	percent
Percentage Hydrologic Soil Group B =	100.0%	percent
Percentage Hydrologic Soil Groups C/D =	0.0%	percent

Location for 1-hr Rainfall Depths (use dropdown): User Input

WQCV Treatment Method = Extended Detention

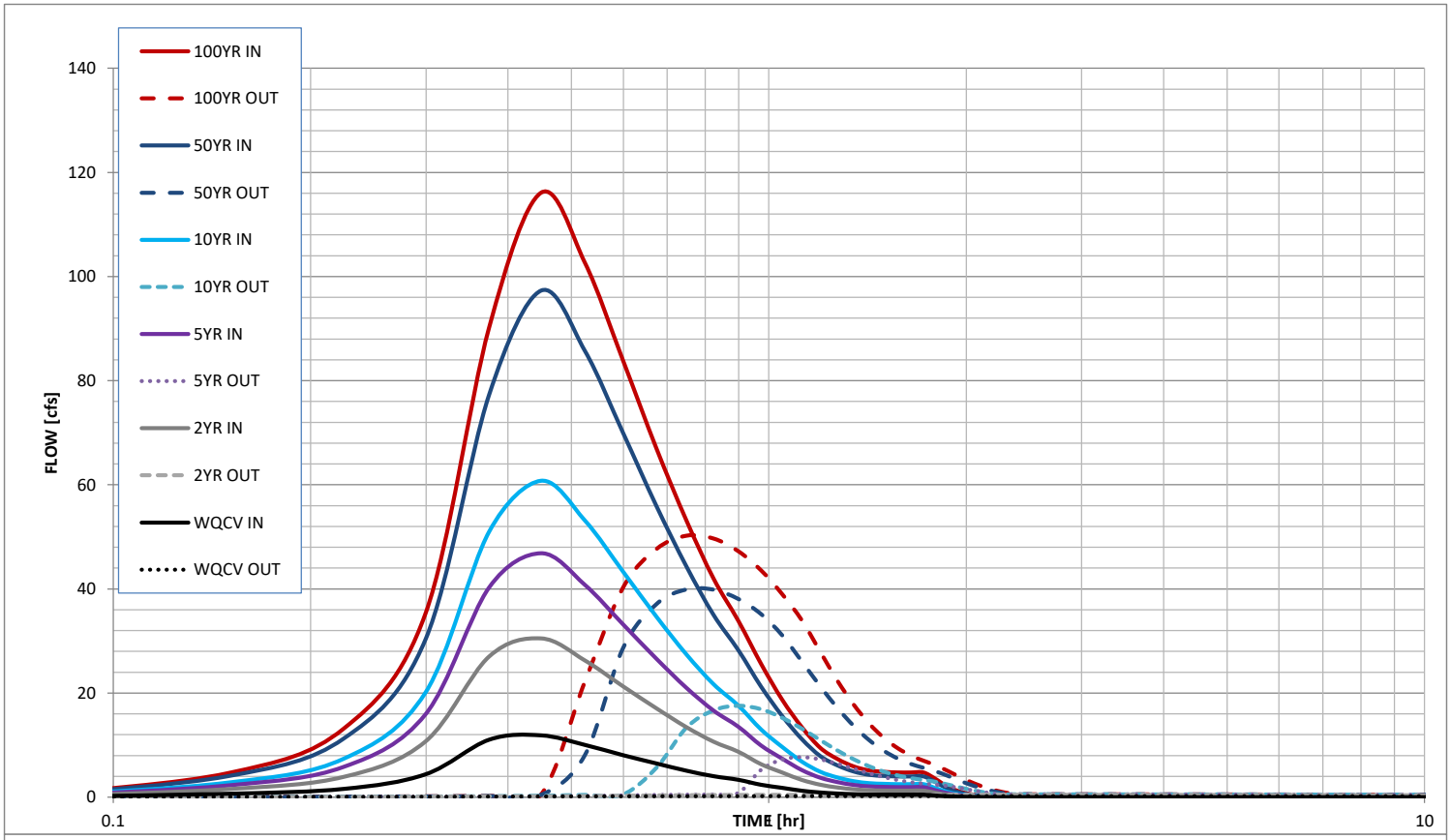
User Defined Stage [ft]	User Defined Area [ft^2]	User Defined Stage [ft]	User Defined Discharge [cfs]
0.00	10	0.00	0.00
0.33	49	0.33	0.04
0.41	86	0.41	0.04
1.41	3,212	1.41	0.08
2.41	12,291	2.41	0.16
3.41	16,722	3.41	0.22
4.41	20,119	4.41	0.41
5.41	23,358	5.41	0.55
6.41	26,733	6.41	32.84
7.41	30,244	7.41	57.56
8.41	33,892	8.41	353.31
9.41	37,675	9.41	849.78

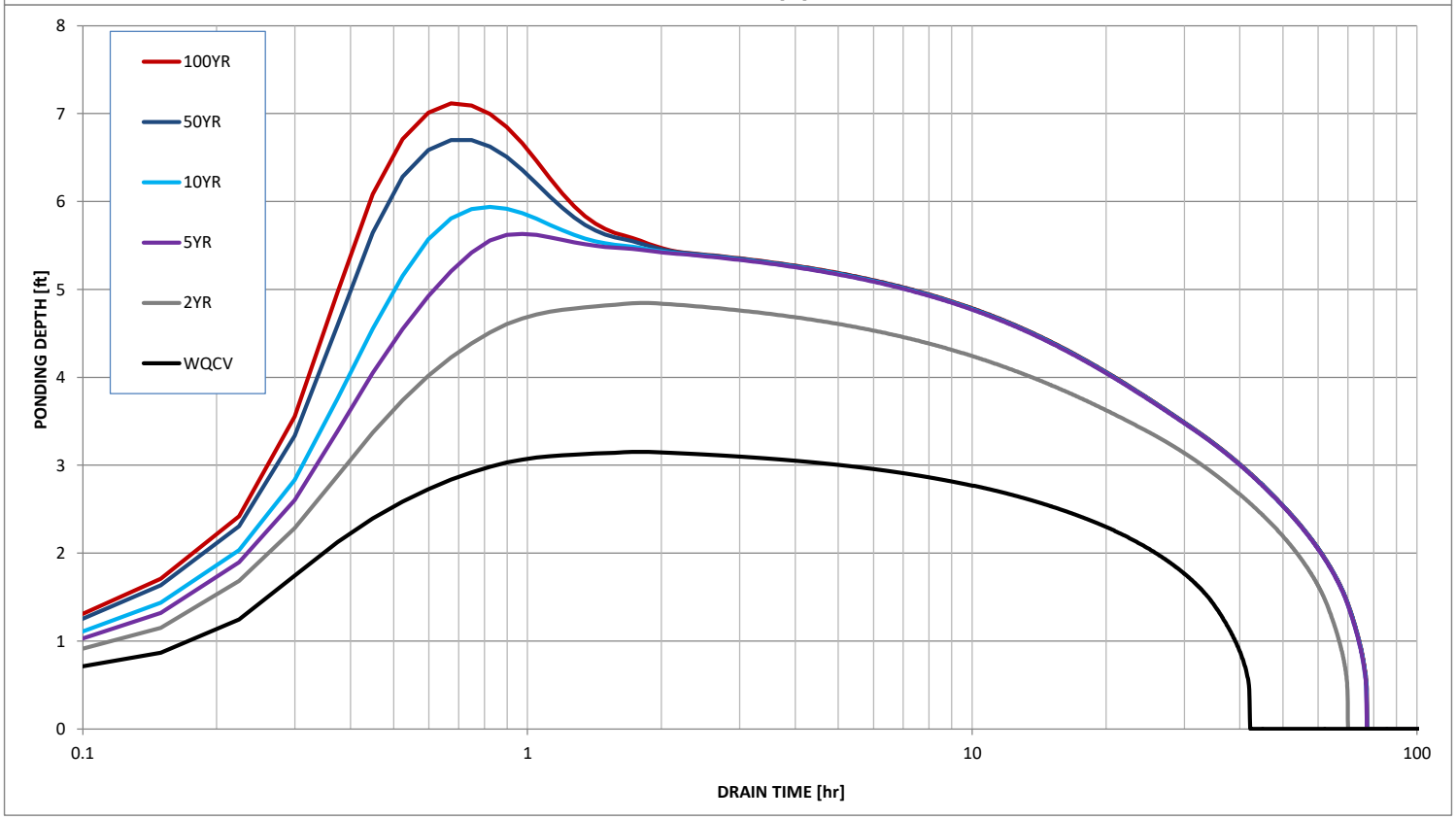
After completing and printing this worksheet to a pdf, go to:
https://maperture.digitaldataservices.com/gvh/?viewer=cswdif
create a new stormwater facility, and
attach the pdf of this worksheet to that record.

Routed Hydrograph Results

Design Storm Return Period =	WQCV	2 Year	5 Year	10 Year	50 Year	100 Year	
One-Hour Rainfall Depth =	0.53	1.19	1.50	1.75	2.25	2.52	in
Calculated Runoff Volume =	0.479	1.235	1.901	2.462	3.918	4.669	acre-ft
OPTIONAL Override Runoff Volume =							acre-ft
Inflow Hydrograph Volume =	0.478	1.234	1.901	2.461	3.917	4.668	acre-ft
Time to Drain 97% of Inflow Volume =	39.0	63.0	**67.4**	65.4	61.0	59.0	hours
Time to Drain 99% of Inflow Volume =	40.9	67.2	73.1	72.2	70.0	**68.9**	hours
Maximum Ponding Depth =	3.15	4.85	5.63	5.94	6.70	7.12	ft
Maximum Ponded Area =	0.36	0.49	0.55	0.58	0.64	**0.67**	acres
Maximum Volume Stored =	0.450	1.176	1.588	1.760	2.222	2.495	acre-ft

Stormwater Detention and Infiltration Design Data Sheet



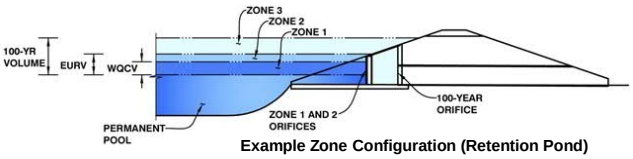


DETENTION BASIN OUTLET STRUCTURE DESIGN

MHFD-Detention, Version 4.04 (February 2021)

Project: 25188.10 Homestead North Filing No. 2

Basin ID:



Example Zone Configuration (Retention Pond)

	Estimated Stage (ft)	Estimated Volume (ac-ft)	Outlet Type
Zone 1 (WQCV)	3.12	0.442	Orifice Plate
Zone 2 (EURV)	5.09	0.860	Orifice Plate
one 3 (100-year)	6.94	1.078	Weir&Pipe (Restrict)
Total (all zones)		2.380	

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

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

Calculated Parameters for Underdra

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 =	N/A	ft^2
Depth at top of Zone using Orifice Plate =	5.36	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 =	N/A	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)	ow 3 (optiona	Row 4 (optional)	Row 5 (optional)	Row 6 (optional)	Row 7 (optional)	Row 8 (optional)
Stage of Orifice Centroid (ft)	0.00	1.79	3.57	4.00				
Orifice Area (sq. inches)	2.00	2.00	2.00	4.00				

	Row 9 (optional)	Row 10 (optional)	w 11 (optiona	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 =	N/A	N/A	ft (relative to basin bottom at Stage = 0 ft)	Vertical Orifice Area =	N/A	N/A
Depth at top of Zone using Vertical Orifice =	N/A	N/A	ft (relative to basin bottom at Stage = 0 ft)	Vertical Orifice Centroid =	N/A	N/A
Vertical Orifice Diameter =	N/A	N/A	inches			

Calculated Parameters for Vertical

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

	Zone 3 Weir	Not Selected			Zone 3 Weir	Not Selected
Overflow Weir Front Edge Height, Ho =	5.60	N/A	ft (relative to basin bottom at Stage = 0 ft)	Height of Grate Upper Edge, H_t =	5.60	N/A
Overflow Weir Front Edge Length =	5.00	N/A	feet	Overflow Weir Slope Length =	5.00	N/A
Overflow Weir Grate Slope =	0.00	N/A	H:V	Grate Open Area / 100-yr Orifice Area =	6.88	N/A
Horiz. Length of Weir Sides =	5.00	N/A	feet	Overflow Grate Open Area w/o Debris =	17.40	N/A
Overflow Grate Type =	Type C Grate	N/A		Overflow Grate Open Area w/ Debris =	17.40	N/A
Debris Clogging % =	0%	N/A	%			

Calculated Parameters for Overflow

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

	Zone 3 Restricto	Not Selected			Zone 3 Restrictor	Not Selected
Depth to Invert of Outlet Pipe =	0.00	N/A	ft (distance below basin bottom at Stage = 0 ft)	Outlet Orifice Area =	2.53	N/A
Outlet Pipe Diameter =	24.00	N/A	inches	Outlet Orifice Centroid =	0.83	N/A
Restrictor Plate Height Above Pipe Invert =	18.00		inches	Half-Central Angle of Restrictor Plate on Pipe =	2.09	N/A

Calculated Parameters for Outlet Pipe w/ Flow Restriction

User Input: Emergency Spillway (Rectangular or Trapezoidal)

Spillway Invert Stage=	7.20	ft (relative to basin bottom at Stage = 0 ft)	Spillway Design Flow Depth=	0.44	feet
Spillway Crest Length =	75.00	feet	Stage at Top of Freeboard =	8.64	feet
Spillway End Slopes =	4.00	H:V	Basin Area at Top of Freeboard =	0.80	acres
Freeboard above Max Water Surface =	1.00	feet	Basin Volume at Top of Freeboard =	3.62	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
One-Hour Rainfall Depth (in) =	N/A	N/A	1.19	1.50	1.75	2.00	2.25	2.52
CUHP Runoff Volume (acre-ft) =	0.442	1.302	1.255	1.836	2.352	3.073	3.644	4.379
Inflow Hydrograph Volume (acre-ft) =	N/A	N/A	1.255	1.836	2.352	3.073	3.644	4.379
CUHP Predevelopment Peak Q (cfs) =	N/A	N/A	3.0	8.2	12.5	22.4	28.1	36.0
OPTIONAL Override Predevelopment Peak Q (cfs) =	N/A	N/A						
Predevelopment Unit Peak Flow, q (cfs/acre) =	N/A	N/A	0.11	0.30	0.45	0.81	1.02	1.30
Peak Inflow Q (cfs) =	N/A	N/A	18.7	28.3	35.4	47.4	56.3	67.3
Peak Outflow Q (cfs) =	0.2	0.5	0.5	3.1	10.7	23.5	28.5	30.0
Ratio Peak Outflow to Predevelopment Q =	N/A	N/A	N/A	0.4	0.9	1.0	1.0	0.8
Structure Controlling Flow =	Plate	Plate	Plate	Overflow Weir 1	Overflow Weir 1	Overflow Weir 1	Outlet Plate 1	Outlet Plate 1
Max Velocity through Grate 1 (fps) =	N/A	N/A	N/A	0.2	0.6	1.3	1.6	1.7
Max Velocity through Grate 2 (fps) =	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Time to Drain 97% of Inflow Volume (hours) =	38	68	67	75	72	70	68	66
Time to Drain 99% of Inflow Volume (hours) =	40	72	72	80	79	78	77	76
Maximum Ponding Depth (ft) =	3.12	5.09	4.85	5.72	5.89	6.10	6.30	6.92
Area at Maximum Ponding Depth (acres) =	0.35	0.51	0.49	0.56	0.57	0.59	0.61	0.65
Maximum Volume Stored (acre-ft) =	0.442	1.303	1.182	1.635	1.737	1.860	1.979	2.370

ain

Orifice

ft^2
feet

/ Weir

feet
feet

ft^2
ft^2

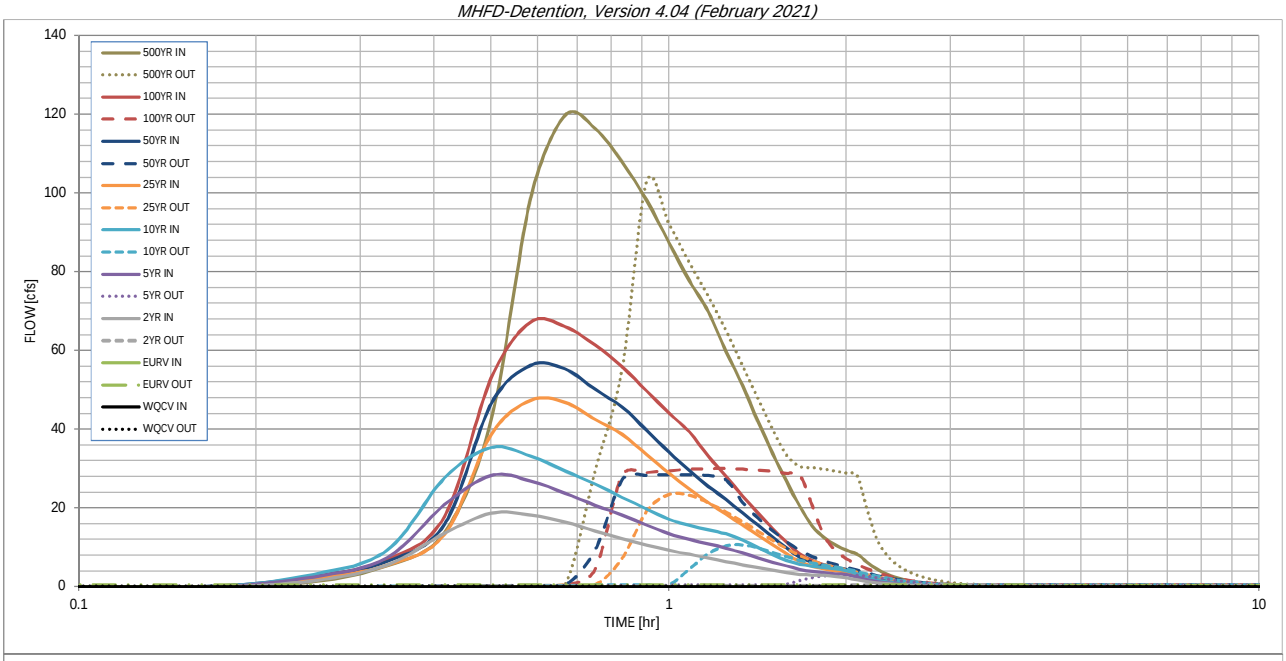
Plate

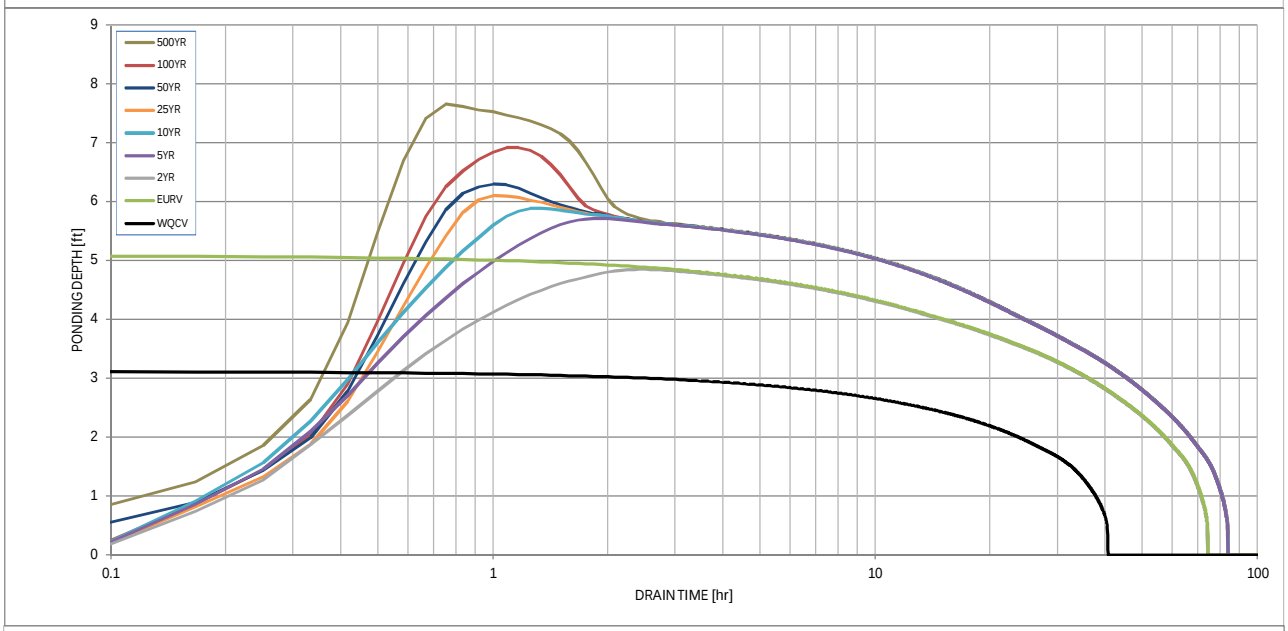
ft^2
feet
radians

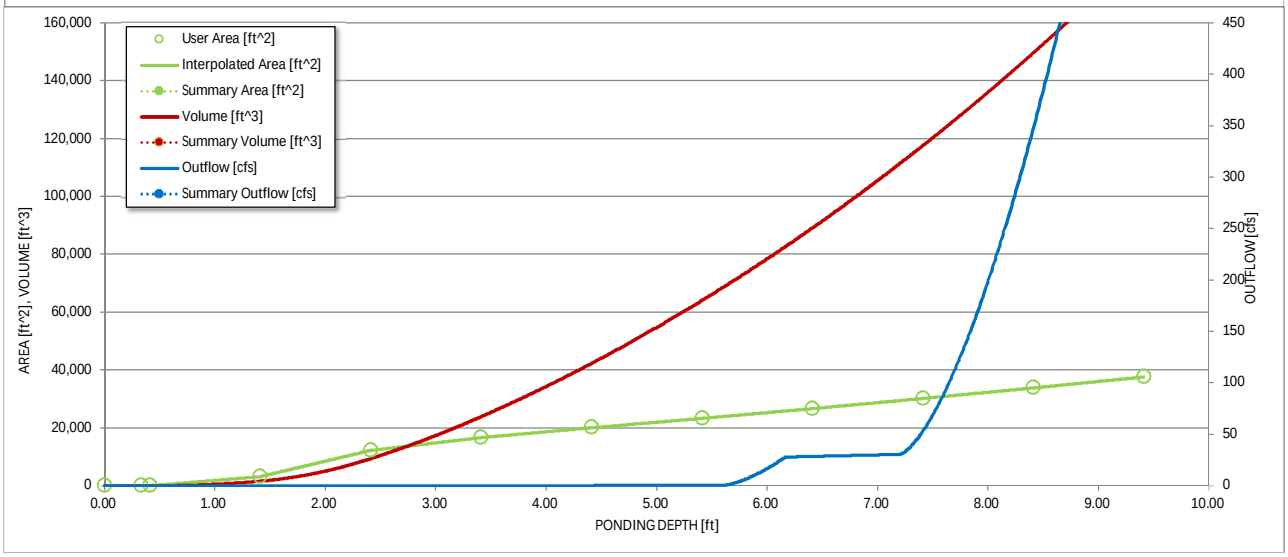
500 Year
4.00
7.939
7.939
70.5
2.55
119.7
102.9
1.5
Spillway
1.8
N/A
57
71
7.66
0.71
2.869

DETENTION BASIN OUTLET STRUCTURE DESIGN

MHFD-Detention, Version 4.04 (February 2021)







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

DETENTION BASIN OUTLET STRUCTURE DESIGN

Outflow Hydrograph Workbook Filename:

Inflow Hydrographs

The user can override the calculated inflow hydrographs from this workbook with inflow hydrographs developed in a separate program.

	SOURCE	CUHP	CUHP	CUHP	CUHP	CUHP	CUHP	CUHP	CUHP	CUHP
Time Interval	TIME	WQCV [cfs]	EURV [cfs]	2 Year [cfs]	5 Year [cfs]	10 Year [cfs]	25 Year [cfs]	50 Year [cfs]	100 Year [cfs]	500 Year [cfs]
5.00 min	0:00:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0:05:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0:10:00	0.00	0.00	0.00	0.00	0.00	0.00	0.18	0.02	1.35
	0:15:00	0.00	0.00	1.56	2.56	3.17	2.13	2.67	2.60	5.41
	0:20:00	0.00	0.00	5.63	7.46	9.36	5.56	6.49	6.94	13.86
	0:25:00	0.00	0.00	13.61	20.88	27.68	13.40	15.94	17.90	42.45
	0:30:00	0.00	0.00	18.74	28.32	35.41	38.74	46.60	53.06	98.82
	0:35:00	0.00	0.00	18.24	26.90	33.22	47.40	56.32	67.31	119.75
	0:40:00	0.00	0.00	16.49	23.82	29.49	46.91	55.38	66.10	116.43
	0:45:00	0.00	0.00	14.22	20.74	26.12	42.52	50.15	61.47	107.92
	0:50:00	0.00	0.00	12.28	18.25	22.76	38.74	45.69	55.91	98.24
	0:55:00	0.00	0.00	10.66	15.77	19.78	33.65	39.79	49.78	87.53
	1:00:00	0.00	0.00	9.26	13.52	17.19	28.90	34.24	44.19	77.77
	1:05:00	0.00	0.00	8.28	12.02	15.59	24.85	29.55	39.37	69.87
	1:10:00	0.00	0.00	7.29	11.01	14.49	21.36	25.49	33.22	59.77
	1:15:00	0.00	0.00	6.42	9.86	13.48	18.52	22.16	28.04	51.17
	1:20:00	0.00	0.00	5.65	8.60	11.89	15.74	18.80	23.07	42.03
	1:25:00	0.00	0.00	4.91	7.38	9.95	13.18	15.71	18.67	33.87
	1:30:00	0.00	0.00	4.20	6.28	8.19	10.69	12.69	14.81	26.74
	1:35:00	0.00	0.00	3.60	5.33	6.71	8.38	9.90	11.32	20.41
	1:40:00	0.00	0.00	3.19	4.47	5.79	6.43	7.54	8.39	15.45
	1:45:00	0.00	0.00	3.00	3.94	5.26	5.27	6.19	6.70	12.54
	1:50:00	0.00	0.00	2.90	3.59	4.90	4.56	5.34	5.62	10.62
	1:55:00	0.00	0.00	2.59	3.34	4.55	4.11	4.79	4.88	9.29
	2:00:00	0.00	0.00	2.30	3.07	4.12	3.79	4.40	4.34	8.32
	2:05:00	0.00	0.00	1.82	2.43	3.24	2.97	3.43	3.29	6.31
	2:10:00	0.00	0.00	1.40	1.86	2.47	2.23	2.58	2.39	4.59
	2:15:00	0.00	0.00	1.08	1.42	1.87	1.68	1.93	1.75	3.36
	2:20:00	0.00	0.00	0.83	1.08	1.40	1.27	1.45	1.32	2.52
	2:25:00	0.00	0.00	0.63	0.81	1.04	0.95	1.08	0.99	1.87
	2:30:00	0.00	0.00	0.48	0.60	0.77	0.70	0.80	0.74	1.40
	2:35:00	0.00	0.00	0.35	0.43	0.57	0.51	0.58	0.55	1.03
	2:40:00	0.00	0.00	0.26	0.32	0.42	0.39	0.44	0.41	0.77
	2:45:00	0.00	0.00	0.18	0.22	0.30	0.28	0.31	0.29	0.55
	2:50:00	0.00	0.00	0.12	0.15	0.19	0.19	0.21	0.20	0.36
	2:55:00	0.00	0.00	0.07	0.09	0.11	0.11	0.13	0.12	0.22
	3:00:00	0.00	0.00	0.03	0.05	0.06	0.06	0.07	0.06	0.11
	3:05:00	0.00	0.00	0.01	0.02	0.02	0.02	0.02	0.02	0.03
	3:10:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:15:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:20:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:25:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:30:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:35:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:40:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:45:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:50:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:55:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:00:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:05:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:10:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:15:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:20:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:25:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:30:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:35:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:40:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:45:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:50:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:55:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:00:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:05:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:10:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:15:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:20:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:25:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:30:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:35:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:40:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:45:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:50:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:55:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	6:00:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

DETENTION BASIN OUTLET STRUCTURE DESIGN

MHFD-Detention, Version 4.04 (February 2021)

Summary Stage-Area-Volume-Discharge Relationships

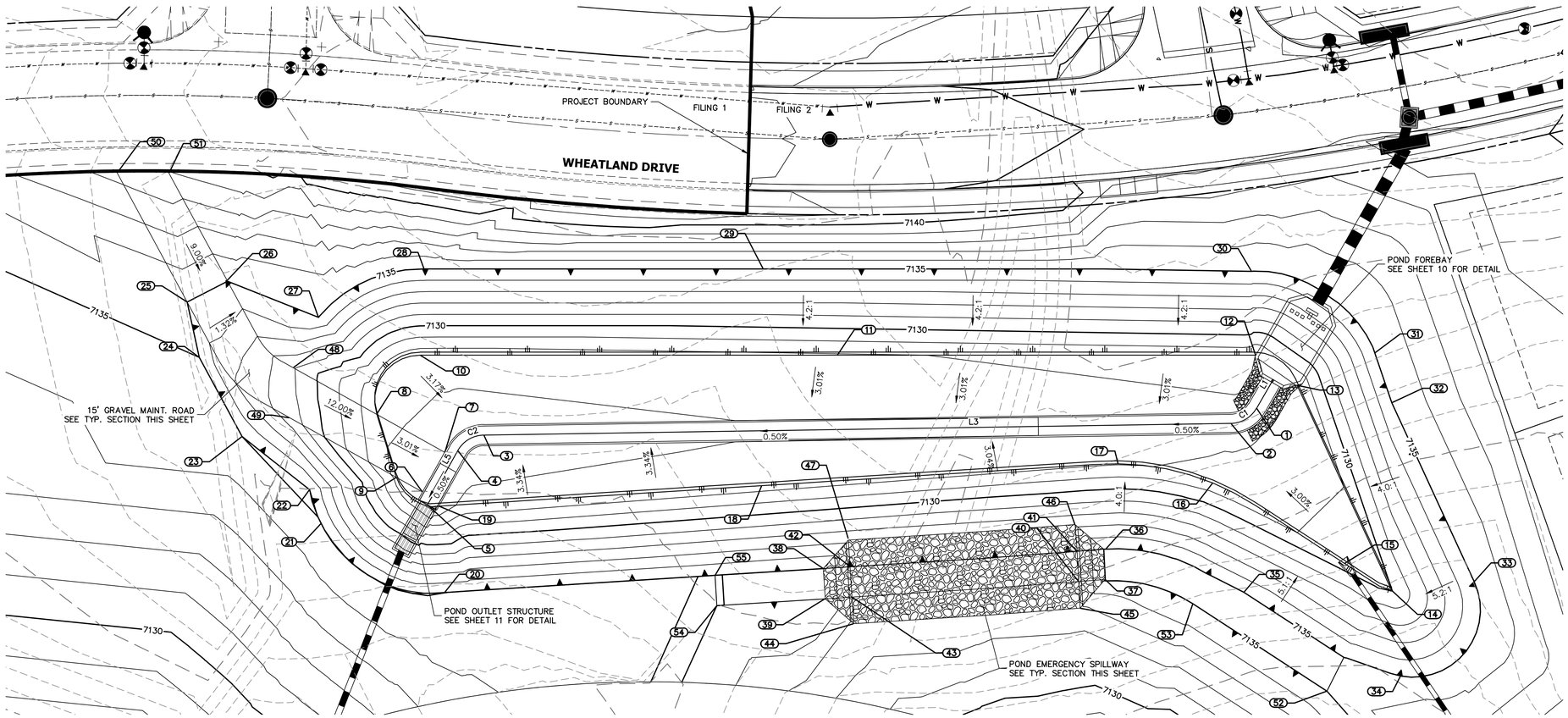
The user can create a summary S-A-V-D by entering the desired stage increments and the remainder of the table will populate automatically.

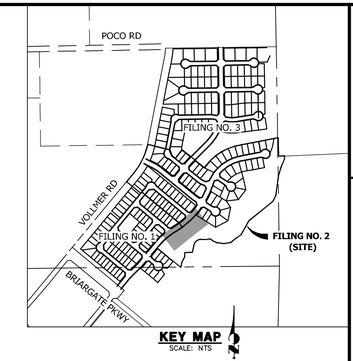
The user should graphically compare the summary S-A-V-D table to the full S-A-V-D table in the chart to confirm it captures all key transition points.

Stage - Storage Description	Stage [ft]	Area [ft^2]	Area [acres]	Volume [ft^3]	Volume [ac-ft]	Total Outflow [cfs]

For best results, include the stages of all grade slope changes (e.g. ISV and Floor) from the S-A-V table on Sheet 'Basin'.

Also include the inverts of all outlets (e.g. vertical orifice, overflow grate, and spillway, where applicable).

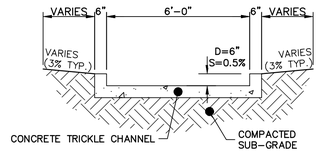




KEY MAP
SCALE: NTS

LINE TABLE		
LINE	BEARING	DISTANCE
L1	N08°05'30"W	10.96'
L3	N50°54'45"E	246.67'
L5	N09°01'10"W	20.48'

CURVE TABLE			
CURVE	DELTA	RADIUS	LENGTH
C1	59°00'14"	10.00'	10.30'
C2	59°55'55"	10.00'	10.46'



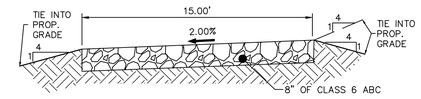
POND TRICKLE CHANNEL
SCALE: 1"=3'

POINT TABULATION			
ID NO.	DESCRIPTION	NORTHING/EASTING	ELEVATION
1	TRICKLE CHANNEL	N: 415943.29 E: 238148.24	7127.37
2	TRICKLE CHANNEL	N: 415934.12 E: 238144.65	7127.32
3	TRICKLE CHANNEL	N: 415778.59 E: 237953.18	7126.08
4	TRICKLE CHANNEL	N: 415769.26 E: 237949.61	7126.03
5	TRICKLE CHANNEL	N: 415749.03 E: 237952.82	7125.93
6	MAINT. ROAD	N: 415751.35 E: 237948.91	7126.44
7	MAINT. ROAD	N: 415766.17 E: 237946.56	7126.52
8	MAINT. ROAD/ TOE	N: 415762.22 E: 237921.11	7127.29
9	MAINT. ROAD/ TOE	N: 415749.81 E: 237939.18	7126.74
10	TOE	N: 415786.35 E: 237920.36	7127.42
11	TOE	N: 415871.47 E: 238028.57	7127.89
12	TOE/ FOREBAY	N: 415956.86 E: 238137.22	7128.11
13	TOE/ FOREBAY	N: 415957.56 E: 238154.05	7128.06
14	TOE	N: 415923.61 E: 238220.44	7129.97
15	TOE	N: 415920.98 E: 238202.72	7129.50

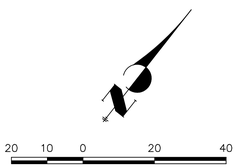
POINT TABULATION			
ID NO.	DESCRIPTION	NORTHING/EASTING	ELEVATION
16	TOE	N: 415914.97 E: 238152.13	7128.34
17	TOE	N: 415900.72 E: 238123.72	7127.91
18	TOE	N: 415822.26 E: 238035.68	7127.51
19	TOE	N: 415751.01 E: 237956.05	7126.43
20	TOP	N: 415729.70 E: 237975.12	7135.00
21	TOP	N: 415722.49 E: 237929.10	7135.00
22	TOP	N: 415728.88 E: 237919.21	7135.00
23	TOP	N: 415728.94 E: 237890.77	7135.00
24	TOP	N: 415740.74 E: 237863.52	7135.00
25	MAINT. ROAD/ TOP	N: 415752.61 E: 237849.06	7135.00
26	MAINT. ROAD/ TOP	N: 415766.39 E: 237855.01	7135.03
27	TOP	N: 415775.45 E: 237886.29	7135.00
28	TOP	N: 415809.56 E: 237903.84	7135.00
29	TOP	N: 415878.78 E: 237991.83	7135.00
30	TOP	N: 415977.83 E: 238119.03	7135.00

POINT TABULATION			
ID NO.	DESCRIPTION	NORTHING/EASTING	ELEVATION
31	TOP	N: 415981.81 E: 238167.59	7135.00
32	TOP	N: 415972.36 E: 238182.15	7135.00
33	TOP	N: 415942.75 E: 238240.08	7135.00
34	TOP	N: 415903.23 E: 238240.31	7135.00
35	TOP	N: 415892.96 E: 238182.45	7135.00
36	SPILLWAY TOP	N: 415875.86 E: 238137.75	7135.00
37	SPILLWAY TOP	N: 415867.90 E: 238143.84	7134.96
38	SPILLWAY TOP	N: 415813.29 E: 238068.53	7135.00
39	SPILLWAY TOP	N: 415805.83 E: 238075.20	7135.00
40	SPILLWAY CREST	N: 415862.04 E: 238137.42	7132.79
41	SPILLWAY CREST	N: 415869.55 E: 238130.85	7132.79
42	SPILLWAY CREST	N: 415819.26 E: 238075.21	7132.79
43	SPILLWAY CREST	N: 415811.73 E: 238081.80	7132.79
44	SPILLWAY CREST	N: 415805.16 E: 238087.69	7132.79
45	SPILLWAY CREST	N: 415855.39 E: 238143.24	7132.79

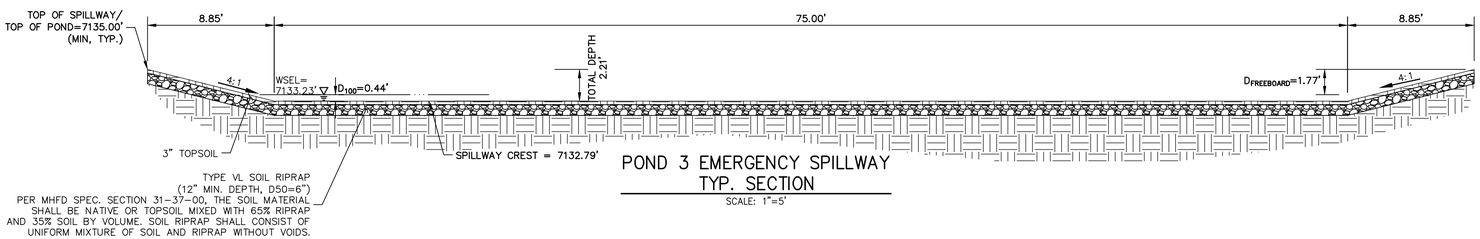
POINT TABULATION			
ID NO.	DESCRIPTION	NORTHING/EASTING	ELEVATION
46	SPILLWAY CREST	N: 415876.07 E: 238124.86	7132.79
47	SPILLWAY CREST	N: 415826.06 E: 238068.98	7132.69
48	MAINT. ROAD	N: 415757.18 E: 237889.95	7131.09
49	MAINT. ROAD	N: 415743.48 E: 237899.34	7131.58
50	MAINT. ROAD	N: 415771.84 E: 237804.50	7138.31
51	MAINT. ROAD	N: 415782.36 E: 237817.98	7138.94
52	TOP	N: 415884.27 E: 238224.25	7135.00
53	TOP	N: 415879.59 E: 238171.62	7135.00
54	TOP	N: 415781.94 E: 238048.50	7135.00
55	TOP	N: 415789.39 E: 238041.83	7135.00



15' GRAVEL MAINTENANCE
ACCESS ROAD TYPICAL SECTION
N.T.S.



20 10 0 20 40
ORIGINAL SCALE: 1" = 20'



POND 3 EMERGENCY SPILLWAY
TYP. SECTION
SCALE: 1"=5'

Know what's below.
Call before you dig.

ENGINEER'S STATEMENT

PREPARED UNDER MY DIRECT SUPERVISION AND ON BEHALF OF JR ENGINEERING

MIKE A. BRAMLETT, P.E.
COLORADO P.E. 32314
FOR AND ON BEHALF OF JR ENGINEERING, LLC

DATE

COLORADO REGISTERED MIKE A. BRAMLETT 32314 PROFESSIONAL ENGINEER

UNTIL SUCH TIME AS THESE DRAWINGS ARE APPROVED BY THE APPROPRIATE REVIEWING AGENCIES, JR ENGINEERING APPROVES THEIR USE ONLY FOR THE PURPOSES DESIGNATED BY WRITTEN AUTHORIZATION.

PREPARED FOR
SR LAND, LLC
20 BOULDER CRESCENT
SUITE 201
COLORADO SPRINGS, CO 80903
JAMES F. MORLEY
(719) 471-1742

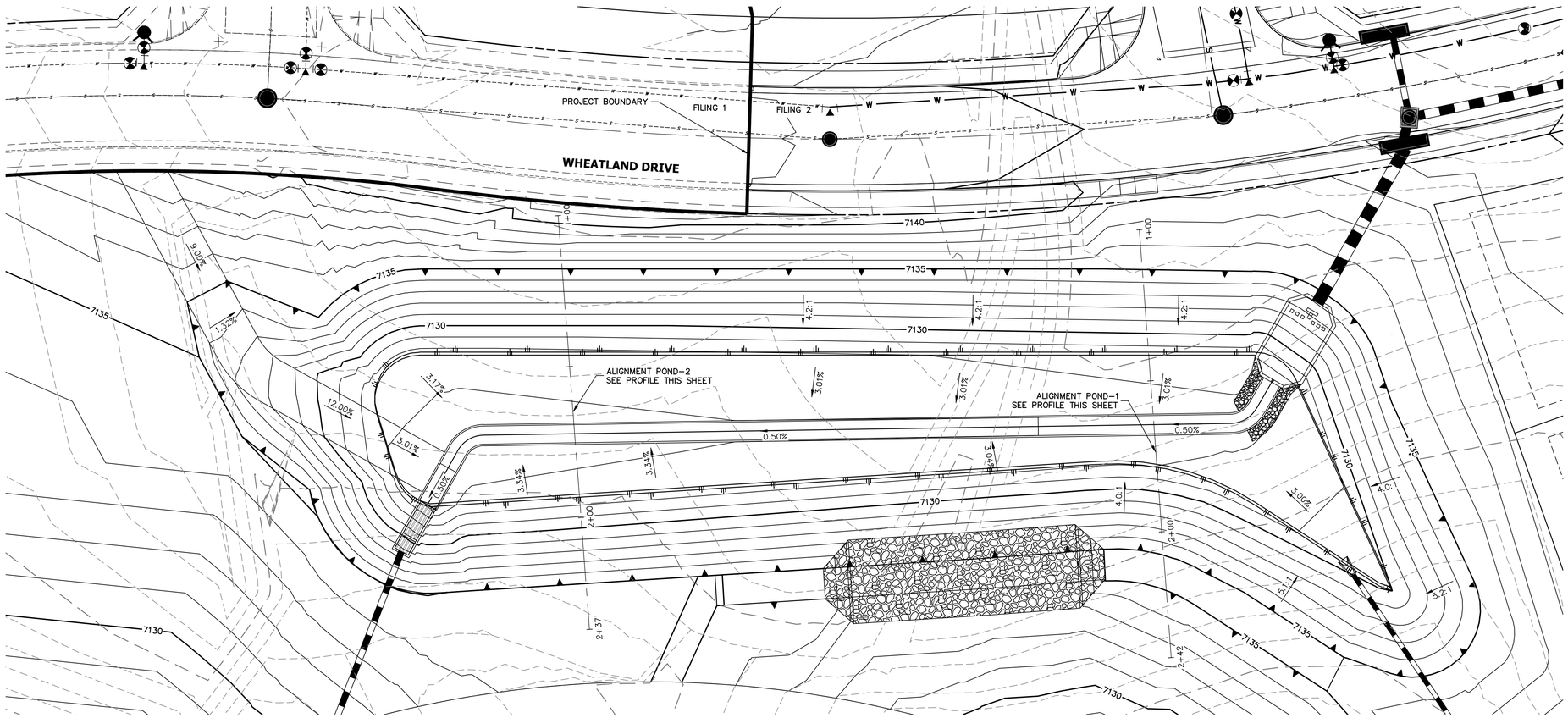
J·R ENGINEERING
A Westrian Company
Centennial 303-740-9393 • Colorado Springs 719-593-2593
Fort Collins 970-491-9888 • www.jrengineering.com

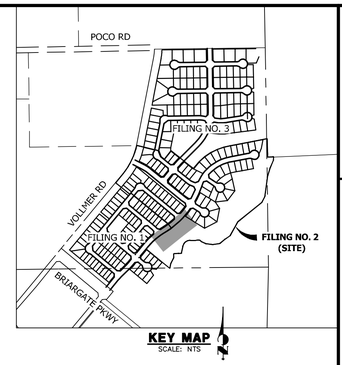
No.	REVISION	DATE	BY

H-SCALE	1"=20'
V-SCALE	N/A
DATE	02/18/22
DESIGNED BY	APL
DRAWN BY	APL
CHECKED BY	

HOMESTEAD NORTH AT STERLING RANCH FILING NO. 2
POND PLANS

SHEET 8 OF 14
JOB NO. 25188.10





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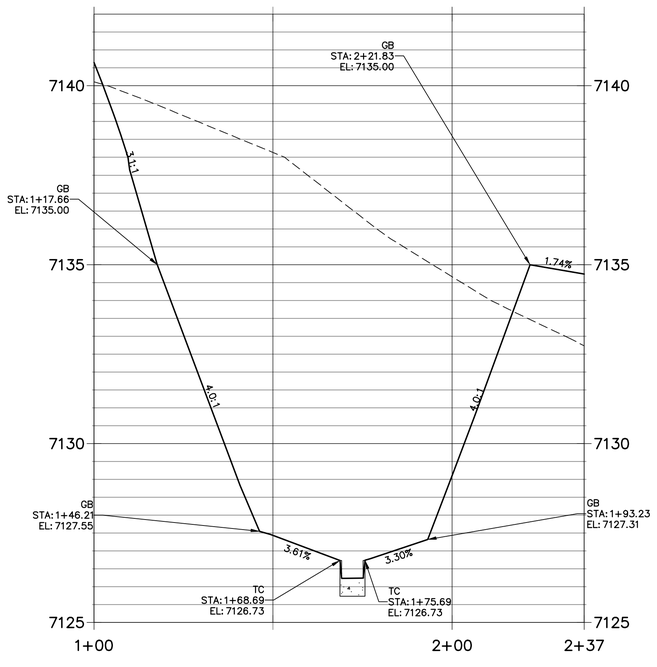
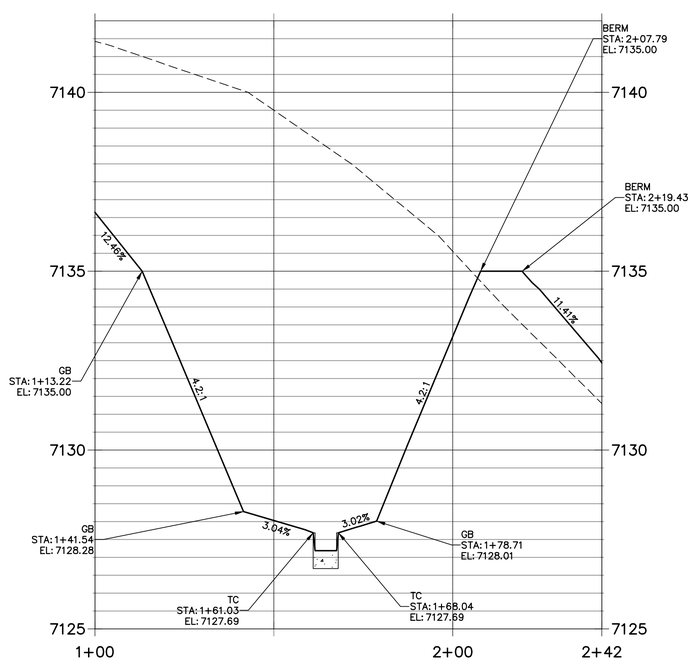
POND-2 PROFILE
STA 1+00.00 TO 2+36.96



POND-1 PROFILE
STA 1+00.00 TO 2+41.67



20 10 0 20 40
HORIZONTAL
ORIGINAL SCALE: 1" = 20'
VERTICAL
ORIGINAL SCALE: 1" = 2'

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COLORADO P.E. 32314
FOR AND ON BEHALF OF JR ENGINEERING, LLC

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No.	REVISION	BY	DATE

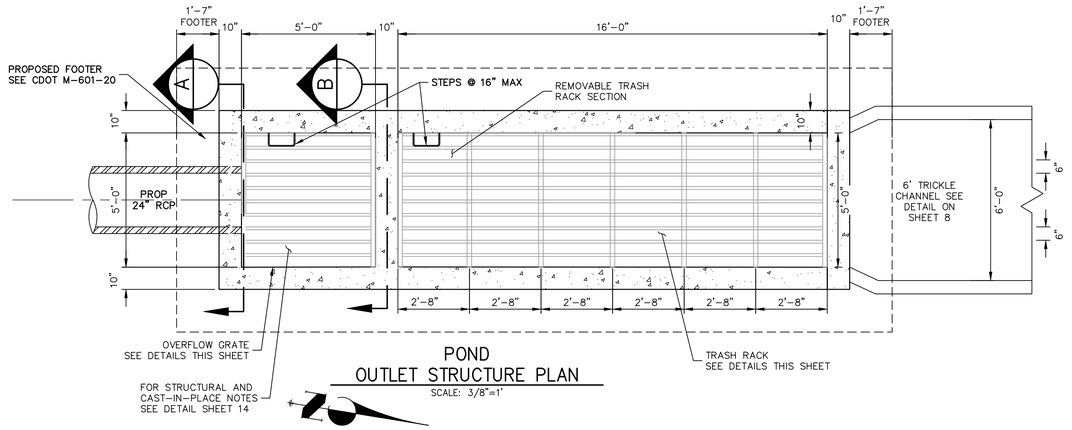
H-SCALE	1"=20'
V-SCALE	1"=2'
DATE	02/18/22
DESIGNED BY	APL
DRAWN BY	APL
CHECKED BY	

HOMESTEAD NORTH AT STERLING RANCH FILING NO. 2

POND PLANS

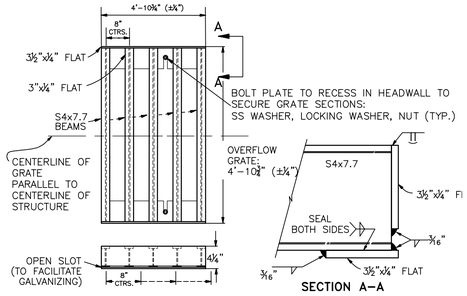
SHEET 9 OF 14

JOB NO. 25188.10



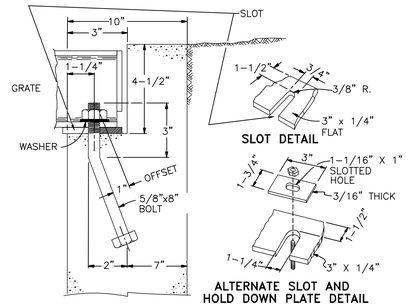
POND OUTLET STRUCTURE PLAN

SCALE: 3/8"=1'



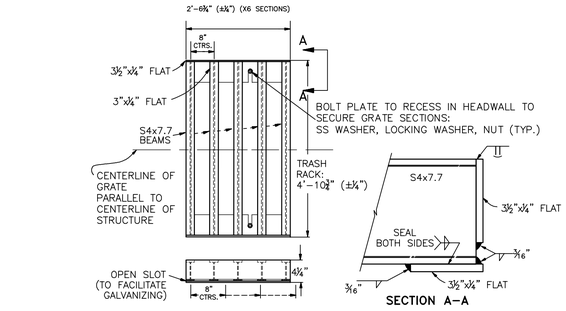
OVERFLOW GRATE DETAILS

N.T.S.



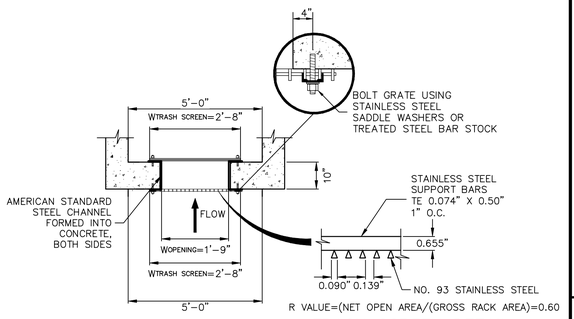
OVERFLOW GRATE/TRASH RACK INSTALLATION DETAIL

N.T.S.



TRASH RACK DETAILS

N.T.S.



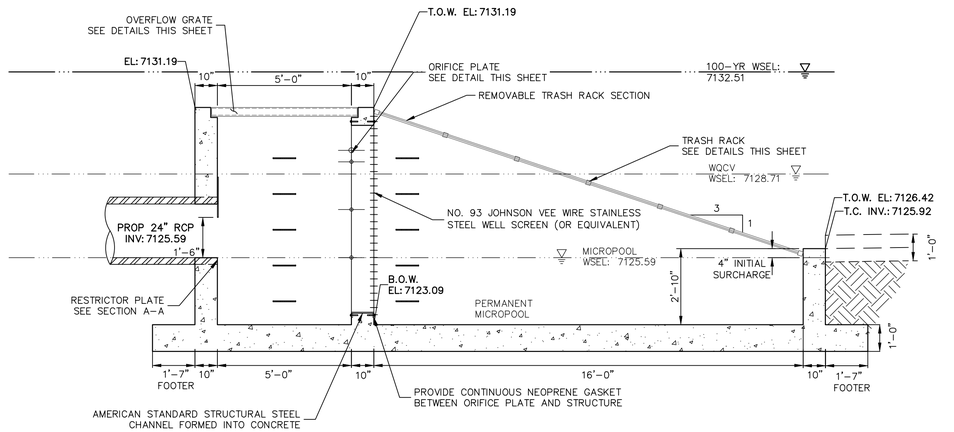
R VALUE=(NET OPEN AREA/(GROSS RACK AREA)=0.60

TRASH SCREEN DETAIL

N.T.S.

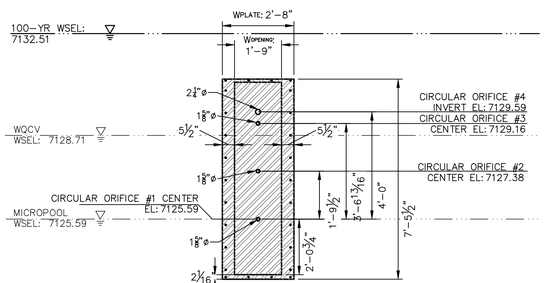
TRASH SCREEN AND PLATE DETAIL (PLAN)

N.T.S.



POND OUTLET STRUCTURE PROFILE

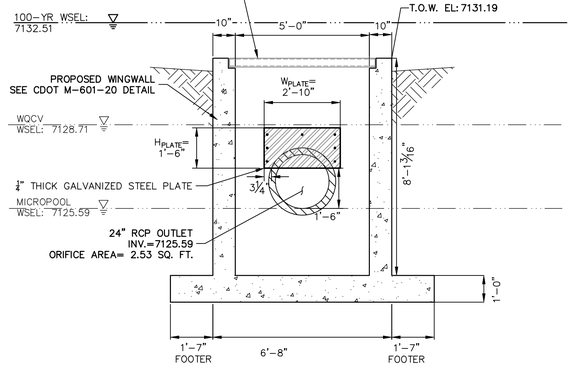
SCALE: 3/8"=1'



¼" THICK ORIFICE PLATE, GALVANIZED STEEL WITH 3 – 1⅞"ø CIRCULAR ORIFICE, AND 1 – 2¼" CIRCULAR ORIFICE BOLT PLATE TO CONCRETE @ 10" O.C. MAX. PROVIDE GASKET BETWEEN PLATE AND CONCRETE

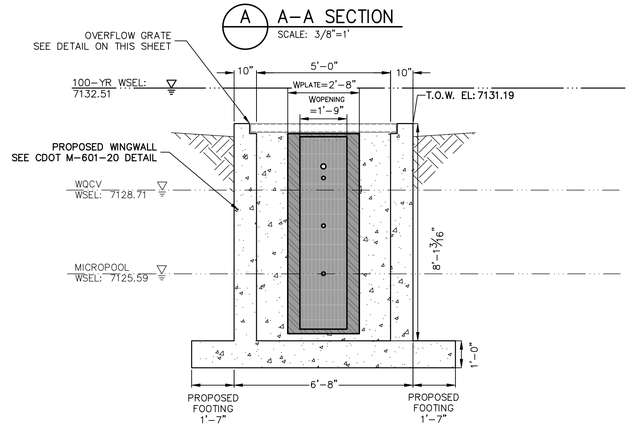
ORIFICE PLATE DETAIL

SCALE: 3/8"=1'



A A–A SECTION

SCALE: 3/8"=1'



B B–B SECTION

SCALE: 3/8"=1'

POND 3 OUTLET STRUCTURE NOTES:

ORIFICE PLATE:

1. PROVIDE CONTINUOUS NEOPRENE GASKET MATERIAL BETWEEN THE ORIFICE PLATE AND CONCRETE AND BETWEEN THE RESTRICTOR PLATE AND CONCRETE.
2. BOLT PLATE TO CONCRETE 12" MAX. ON CENTER.

TRASH RACKS:

3. TRASH RACKS SHALL BE 1¼" SCH.40 STEEL PIPE, GALVANIZED, @ 6" CENTERS. SUPPORT BARS SHALL BE ¼"x2" STEEL RECTANGULAR BARS, GALVANIZED, @ 36". ALL TRASH RACKS SHALL BE MOUNTED USING STAINLESS STEEL HARDWARE.
4. REMOVABLE TRASH RACK SECTIONS SHALL BE MOUNTED USING STAINLESS STEEL HARDWARE AND PROVIDED WITH HINGED & LOCKABLE OR BOLTABLE ACCESS PANELS AS SHOWN ON THE PLANS.
5. STEEL TRASH RACKS SHALL BE HOT DIP GALVANIZED AND MAY BE HOT POWDER COATED AFTER GALVANIZING.
6. STRUCTURAL STEEL FOR GRATES, ORIFICE PLATES, AND BARS SHALL BE GALVANIZED AND SHALL BE IN ACCORDANCE WITH CDOT STANDARD SPECIFICATIONS, SUBSECTION 712.06.
7. ALL HARDWARE, BOLTS, AND FASTENERS SHALL BE STAINLESS STEEL.
8. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR ALL PLATES AND GRATING FOR ENGINEER'S APPROVAL PRIOR TO CONSTRUCTION.

ENGINEER'S STATEMENT

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COLORADO P.E. 32314
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COLORADO REGISTERED MIKE A. BRAMLETT 32314 PROFESSIONAL ENGINEER

DATE

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No.	REVISION	BY	DATE

H-SCALE	3/8"=1'	DESIGNED BY	APL
V-SCALE	3/8"=1'	DRAWN BY	APL
DATE	1/24/22	CHECKED BY	

HOMESTEAD NORTH AT STERLING RANCH FILING NO. 2

POND PLANS

SHEET 11 OF 14

JOB NO. 25188.10