Mike Bramlett

From:	Mike Bramlett
Sent:	Tuesday, March 29, 2022 6:47 AM
To:	'Wodiuk - DNR, Jessica'
Cc:	'Doug.Hollister@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



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 <u>Pond B</u>. 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 Bunlitt

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 STRUCTURE¹

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: (<u>719</u>)49	01-3024 / јмогі	EY3870@AOL.COM
Address: 20 BOULDER CRESCENT, SUITE 200	COLORADO SPRINGS	CO	80903
Street / P.O. Box/ Rural Route	City	State	Zip Code
Responsible Person:	Telephone/E-Mail: (7	19 <u>)</u> 491-3024	JMORLEY3870@AOL.COM
Address: 20 BOULDER CRESCENT, SUITE 200	COLORADO SPRINGS	СО	80903
Street / P.O. Box/ Rural Route	City	State	Zip Code
Contractor:TO BE DETERMINED	Telephone/E-Mail: (<u>TO BE</u>	DETERMINED.	
STRUCTURE INFORMATION			
Name of Dam: HOMESTEAD NORTH F2 - POND	B Water Divi	sion: <u>2</u>	Water District:10
Location: (Provide Section, Township, Range, an	d GPS Point taken at crest o	f dam above str	eamline/outlet)
- Section: <u>34</u> , Township: <u>12S</u> , Range:	65W , 6th P.M.		
- Northing4313521.56meters, Easting	m	eters (<i>Datum sl</i>	nould be UTM, NAD 83)
Dam Dimensions:			
- Vertical Height ² :ft., Length:ft.	, Crest Width: <u>10</u> ft., Slo	opes: U/S:4	_(H:1V), D/S4 (H:1V)
Reservoir:			
- Surface Area ¹ : <u>0.67</u> acres, Capacity ¹ : *(<i>If drainage area is unknown leave blank and a</i>	2.495 acre-feet, Dr spillway size will be assigned	ainage Area*: _ d):	27.86acres
Emergency Spillway: (See Table 1, Spillway Sizir	ng 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 : <u>SAND CREEK</u>	Proposed W	ater Use: <u>FULL</u>	SPECTRUM DETENTION POND
Water Court Case or WDID : (Water District Identification Number)	Dange	tor	3/28/22
	Signature of 0	Owner D	Date
	V		
DIVISION ENGINEER'S REQUIREMENTS:			
Dam I.D	Signature of I	Division Engine	er Date
A "Non-Jurisdictional Structure" is a dam creating a reservoir with a c	apacity of 100 acre-feet or less and a sur	face area of 20 acres	or less and a vertical height (footnote 2)
 ² "Vertical Height" is measured from the elevation of the lowest point of occurs along the longitudinal centerline of the dam up to the crest of the dam up to the crest	the natural surface of the ground or the he emergency spillway of the dam.	invert of the outlet con	duit (whichever is lower) where that point

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



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

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



Spillway Section





DAM SAFETY BRANCH Specifications for Construction of Non-Jurisdictional Dams

<u>Site Selection:</u>

- 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 vie



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



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

Stormwater Detention and Infiltration Design Data Sheet

Workbook Protected

/orksheet Protected

Stormwater Facility Name: Pond HNF2

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



	Routed Hydro	graph 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







Orifice

ft² feet

/ Weir

feet feet ft²

ft²

Plate

ft² 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



maximum bound

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

I									CLILID	OLIUD
	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
ļ	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
	2.23.00	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
·	2:33:00	0.00	0.00	0.35	0.43	0.57	0.51	0.58	0.55	0.77
	2:45:00	0.00	0.00	0.20	0.32	0.42	0.39	0.44	0.41	0.55
	2:50:00	0.00	0.00	0.13	0.22	0.30	0.20	0.21	0.27	0.35
	2:55:00	0.00	0.00	0.07	0.19	0.17	0.17	0.13	0.20	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
ļ	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
ļ	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
	4:25:00	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
	4:55:00	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
	5:20:00	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
ļ	5:30:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ļ	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
	5:50:00	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

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	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,
							where applicable).
	+						
						1	1



	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					POINT	TABULATION	
ID NO.	DESCRIPTION	NORTHING/EASTING	ELEVATION		ID NO.	DESCRIPTION	NORTHING/EASTING	ELEVATION
16	TOE	N: 415914.97 E: 238152.13	7128.34		31	TOP	N: 415981.81 E: 238167.59	7135.00
17	TOE	N: 415900.72 E: 238123.72	7127.91		32	TOP	N: 415972.36 E: 238182.15	7135.00
18	TOE	N: 415822.26 E: 238035.68	7127.51		33	TOP	N: 415942.75 E: 238240.08	7135.00
19	TOE	N: 415751.01 E: 237956.05	7126.43		34	TOP	N: 415903.23 E: 238240.31	7135.00
20	TOP	N: 415729.70 E: 237975.12	7135.00		35	TOP	N: 415892.96 E: 238182.45	7135.00
21	TOP	N: 415722.49 E: 237929.10	7135.00		36	SPILLWAY TOP	N: 415875.86 E: 238137.75	7135.00
22	TOP	N: 415728.88 E: 237919.21	7135.00		37	SPILLWAY TOP	N: 415867.90 E: 238143.84	7134.96
23	TOP	N: 415728.94 E: 237890.77	7135.00		38	SPILLWAY TOP	N: 415813.29 E: 238068.53	7135.00
24	TOP	N: 415740.74 E: 237863.52	7135.00		39	SPILLWAY TOP	N: 415805.83 E: 238075.20	7135.00
25	MAINT. ROAD/ TOP	N: 415752.61 E: 237849.06	7135.00		40	SPILLWAY CREST	N: 415862.04 E: 238137.42	7132.79
26	MAINT. ROAD/ TOP	N: 415766.39 E: 237855.01	7135.03		41	SPILLWAY CREST	N: 415869.55 E: 238130.85	7132.79
27	TOP	N: 415775.45 E: 237886.29	7135.00		42	SPILLWAY CREST	N: 415819.26 E: 238075.21	7132.79
28	TOP	N: 415809.56 E: 237903.84	7135.00		43	SPILLWAY CREST	N: 415811.73 E: 238081.80	7132.79
29	TOP	N: 415878.78 E: 237991.83	7135.00		44	SPILLWAY CREST	N: 415805.16 E: 238087.69	7132.79
30	TOP	N: 415977.83 E: 238119.03	7135.00		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 F: 238041 83	7135.00						

75.00'	8.85'
D _{FREEBOARD} =1.77	4:1
	<u> </u>
^{= 7132.79} POND 3 EMERGENCY SPILLWAY	
TYP. SECTION	







